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US West Coast Pink Shrimp (*Pandalus jordani*) Trawl Fishery

Certificate No: MSC-F-31354 & MSC-F-31355

Final Draft Report

Conformity Assessment Body (CAB)	MRAG Americas, Inc.
Assessment team	Susan Hanna, Tom Jagielo, and Amanda Stern-Pirlot
Fishery client	Oregon Trawl Commission and Pacific Seafood Group
Assessment type	Reassessment
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2 Glossary of Abbreviations

ABC	Allowable Biological Catch
ACAP	Agreement on the Conservation of Albatrosses and Petrels
ACL	Annual Catch Limit
APA	Administrative Procedures Act
BiOp	Biological Opinion
BRD	Bycatch Reduction Devices
CCIEA	California Current Integrated Ecosystem Assessment
CCLME	California Current Large Marine Ecosystem
CDFG	California Department of Fish and Wildlife (formally California Department of Fish and Game)
CDFW	California Department of Fish and Wildlife
CFGC	The California Fish and Game Commission
CPUE	Catch Per Unit Effort
CZMA	Coastal Zone Management Act
DFO	Department of Fisheries and Oceans
DPS	Distinct Population Segment
EC	Ecosystem Component
EDAR	Electronic Daily Activity Report
EEZ	Exclusive Economic Zone

EFH	Essential Fish Habitat
ESA	Endangered Species Act
ESR	Enhanced Status Report
ETP	Endangered, threatened, and protected (species)
FEP	Fishery Ecosystem Plan
FMP	Fishery Management Plan
FRAM	Fishery Resource Analysis and Monitoring
HAPC	Habitat Areas of Particular Concern
HCR	Harvest Control Rules
ITS	Incidental Take Statement
IUCN	International Union of Conservation of Nature
JEA	Joint Enforcement Agreement
LE	Limited Entry
LED	Light Emitting Diode
LRP	Limit Reference Point
LTL	Low Trophic Level
MBTA	Migratory Bird Treaty Act (the Act)
MFT	Marine Fisheries Team
MLMA	California Marine Life Management Act
MMPA	Marine Mammal Protection Act
MRC	Marine Resources Commission
MRP	Marine Resources Program (ODFW)
MSC	Marine Stewardship Council
MSRA/ MSA	The Magnuson-Stevens Fishery Conservation and Management Reauthorization Act
MSY	Maximum Sustainable Yield
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NSP	National Seabird Plan
NWIFC	Northwest Fisheries Indian Commission
NWFSC	Northwest Fisheries Science Center
OARs	Oregon Administrative Rules
OCZMA	Oregon Coastal Zone Management Association
ODFW	Oregon Department of Fish and Wildlife
OFL	Overfishing Limit
OLE	Office of Law Enforcement
OPR	Office of Protected Resources
OPAC	Ocean Policy Advsory Council
ORS	Oregon Revised Statutes
OSP	Oregon State Police
OTC	Oregon Trawl Commission
PacFIN	Pacific Fisheries Information Network
PFMC	Pacific Fishery Management Council
PRA	Paper Reduction Act
PRI	Point of Recruitment Impairment
PSMFC	Pacific States Marine Fisheries Commission
RBF	Risk-Based Framework
RFA	Regulatory Flexibility Act
RCW	Revised Code of Washington
RPA	Reasonable and Prudent Alternative

RPM	Reasonable and Prudent Measures
SAR	Stock Assessment Report
SLH	Sea Level Height
SSB	Spawning Stock Biomass
SSC	Scientific and Statistical Committee
SRE	Single Rig Equivalent
TAC	Total Allowable Catch
TRP	Target Reference Point
TW	Trawls
UoA	Unit of Assessment
USFWS	U.S. Fish and Wildlife Services
U&A	Usual and Accustomed
VME	Vulnerable Marine Ecosystems
VPA	Virtual Population Analysis
WAC	Washington Administrative Code
WCVI	West Coast Vancouver Island
WCGOP	West Coast Groundfish Observer Program
WCLEGT	West Coast Limited Entry Groundfish Trawl
WDFW	Washington Department of Fish and Wildlife
WFWC	Washington Fish and Wildlife Commission
WOC	West Coast USA, Oregon, Washington, California
WRC	Wildlife Resources

3 Executive summary

MRAG Americas was contracted by Oregon Trawl Commission and Pacific Seafood Group.to undertake a fishery reassessment for US West Coast Pink Shrimp Trawl Fishery. The Final Draft Report (FDR) is drafted after the information gathering, site visit, client and peer review, and public comment stages of the assessment, and sets out the draft results of an assessment of the fishery against the MSC Fisheries Standard. This is the 3rd reassessment for the Oregon component of the fishery, second reassessment for the Washington component, and second assessment for the California component (the California component having been assessed and unsuccessful at achieving certification previously). There are 3 Units of Assessment (UoAs), however Principles 1 and 2 are identical because this is a coastwide stock and coastwide fishing operation. However, it is also a state managed fishery, meaning management systems must separately be assessed for each of the three coastal states.

The assessment site visit took place the week of April 11th, 2022, remotely due to the COVID-19 outbreak. During that time, the assessment team met with scientists, fishery managers and stakeholders as well as client representatives.

The assessment is being undertaken in accordance with the MSC Fisheries Certification Process v2.1, MSC Fisheries Standard v2.0/2.1, and using the MSC Guidance to MSC Fisheries Certification Requirements v2.3 which sets out the assessment and certification process. The default assessment tree contained within FCP v2.1 and FCR v2.0/2.01 is being used to evaluate the fishery. As a result, to date, the following steps have been undertaken:

- Announcement of the assessment and publication of the Announcement Comment Draft Report
- Appointment of the assessment team
- Notification and undertaking of the site visit
- Production of the Client and Peer Review draft report that describes the background to the fishery, the fishery management operation and the evaluation procedure and results

- Response to Peer Review comments, and report revisions where necessary
- Production of the Public Comment Draft Report
- Response to stakeholder comments on the Public Comment Draft Report
- Review by MRAG Americas' qualified nominated Reviewer and Decision Maker
- Consultation on the Final Draft Report (current step)
- ~~Production of the Public Certification Report~~

The assessment of the fishery is being undertaken by Amanda Stern-Pirlot (team leader) and covering Principle 2, Tom Jagielo covering Principle 1, and Dr. Susan Hanna covering Principle 3 of the components of the MSC Standard, respectively.

Strengths and weaknesses

Principle 1:
The assessment of the status of the pink shrimp stock does not follow conventional approaches because recruitment is influenced strongly by environmental conditions associated with upwelling conditions and currents. The control rule uses innovative proxy reference points based on both environmental and stock abundance indicators. Uncertainty remains regarding how effective the HCRs will be in the event of long-term climate change, and other unforeseen environmentally related fluctuations in ocean productivity.

Principle 2: There is excellent data-collection, monitoring and management of fishery and other impacts to all Principle 2 components of this fishery. There are overall low levels of non-target catches, and adverse habitat impact is minimal. Although state managed, this fishery benefits from the federal observer program, and habitat and ecosystem management and research undertaken at the federal level.

Principle 3: The three states of Washington, Oregon and California each have well developed legal systems under which their fisheries are managed, and these systems extend to an explicit recognition of indigenous rights. Each state manages its fishery under a fishery management plan that contains clear long-term and short-term objectives. The management systems of Washington and Oregon use transparent decision-making processes, have well-developed consultation processes, effective enforcement with high levels of compliance, comprehensive data systems and external evaluations. The California management system is less comprehensive in areas of stakeholder consultation and formal reporting on fishery performance. California's regulatory differences with Oregon and Washington somewhat constrain enforcement efficiency and limit the degree of confidence in levels of compliance. Evaluation of management system performance is hindered by difficulties in monitoring, incomplete information and limited external review.

4 Report details

4.1 Authorship and peer review details

Ms. Amanda Stern-Pirlot serves as team leader for the assessment. Amanda is an M.Sc graduate of the University of Bremen, Center for Marine Tropical Ecology (ZMT) in marine ecology and fisheries biology. Ms. Stern-Pirlot joined MRAG Americas in mid-June 2014 as MSC Certification Manager (now Director of the Fishery Certification Division) and is currently serving on several different assessment teams as team leader and team member. She has worked together with other scientists, conservationists, fisheries managers and producer groups on international fisheries sustainability issues for over 15 years. With the Institute for Marine Research (IFM-GEOMAR) in Kiel, Germany, she led a work package on simple indicators for sustainable within the EU-funded international cooperation project INCOFISH, followed by five years within the Standards Department at the Marine Stewardship Council (MSC) in London, developing standards, policies and assessment methods informed by best practices in fisheries management around the globe. Most recently she has worked with the Alaska pollock industry as a resources analyst, within the North Pacific Fisheries Management Council process, focusing on bycatch and ecosystem-based management issues, and

managing the day-to-day operations of the offshore pollock cooperative. She has co-authored a dozen publications on fisheries sustainability in the developing world and the functioning of the MSC as an instrument for transforming fisheries to a sustainable basis.

Mr. Tom Jagielo has a wide breadth of experience in fisheries science and habitat studies in marine and freshwater systems. He has been a consultant in quantitative fisheries science since 2008. Previously he served for 24 years with the Washington Department of Fish and Wildlife, and 6 years with the Fisheries Research Institute at the University of Washington in Seattle. He has specialized in groundfish stock assessment and survey design, to assess marine fish populations for sustainable fisheries management. He has produced groundfish stock assessments for the Pacific Fishery Management Council, including analysis of lingcod, black rockfish, and yelloweye rockfish populations. Tom has experience working with government agencies, commercial and recreational fisheries groups, Native American tribes, community organizations, and both national and international advisory groups. He has received appointments to the Scientific and Statistical Committee of the Pacific Fishery Management Council, the Technical Subcommittee of the US-Canada Groundfish Committee, and the Pacific Coast Ocean Observation System. He has published in peer-reviewed journals and symposium proceedings, and has presented papers at national and international meetings. Tom received a B.S. degree in Biology from the Pennsylvania State University, and a M.S. degree in Fisheries from the University of Washington, where he also conducted post M.S. graduate studies in fisheries population dynamics and parameter estimation. Tom has served as an MSC Team Member and Peer Reviewer for fish populations in Europe, Australia, New Zealand and the US.

Dr. Susan Hanna is professor emeritus of marine economics at Oregon State University. Her research and publications are in the area of marine economics and policy, with an emphasis on fishery management, ecosystem-based fishery management, property rights and institutional design. Dr. Hanna has served as a scientific advisor to the U.S. Commission on Ocean Policy, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Minerals Management Service, Northwest Power and Conservation Council and the Pacific Fishery Management Council. She served on the Ocean Studies Board of the National Research Council (NRC), National Academy of Sciences, and several NRC Committees, including the Committee to Review Individual Quotas in Fisheries and the Committee on Protection and Management of Pacific Northwest Anadromous Salmonids.

A discussion between team members regarding conflict of interest and biases was held and none were identified.

Peer Reviewers

Al Cass has almost 50 years of experience in fisheries stock assessment in British Columbia, Canada. Key stocks include Pacific groundfish species, BC salmon and recently as a member of a Pacific herring technical working group to advise on technical issues related to a management strategy evaluation of BC herring fisheries. Nearly 35 years of experience was with Fisheries and Oceans Canada (DFO). In addition to extensive fisheries stock assessment experience, Mr. Cass was head of the regional DFO peer-review science advisory process (2002-2009) in support of fisheries management in Canada (Canadian Science Advisory Secretariat (CSAS). During 2009-2011 he also participated as the science lead and member of the DFO Pacific Cohen Commission of Inquiry into the decline of Fraser sockeye to: 1) coordinate Science sector staff contributions to the Inquiry; 2) participate in Team activities in an advisory capacity on Science and Department activities related to the Inquiry. Mr. Cass retired from DFO in 2011 and has participated in fisheries science and management issues as a private fisheries consultant since then including as a team member of the MSC assessment of BC salmon fisheries (certified in 2016). He has also contracted with the Fisheries Sustainability Partnership Foundation (BC salmon) and Global Trust (Alaska salmon).

Dr Julian Addison is an independent fisheries consultant with 30 years' experience of stock assessment and provision of management advice on shellfish fisheries, and a background of scientific research on shellfish biology and population dynamics and inshore fisheries. Until December 2010 he worked at the Centre for

Environment, Fisheries and Aquaculture Science (Cefas) in Lowestoft, England where he was Senior Shellfish Advisor to Government policy makers, which involved working closely with marine managers, legislators and stakeholders, Government Statutory Nature Conservation Organisations and environmental NGOs. He has also worked as a visiting scientist at DFO in Halifax, Nova Scotia and at NMFS in Woods Hole, Massachusetts where he experienced shellfish management approaches in North America. For four years he was a member of the Scientific Committee and the UK delegation to the International Whaling Commission providing scientific advice to the UK Commissioner. He has worked extensively with ICES and most recently was Chair of the Working Group on the Biology and Life History of Crabs, a member of the Working Group on Crangon Fisheries and Life History and a member of the Steering Group on Ecosystems Function. He has extensive experience of the MSC certification process primarily as a P1 team member but also as a P2 team member and team leader, undertaking MSC full assessments for the Newfoundland and Labrador snow crab fishery, the Ireland and Northern Ireland bottom grown mussel fisheries, both the Estonia and Faroe Islands Barents Sea cold water prawn fisheries, the Nephrops fishery in the Skagerrak and Kattegat, separate assessments for the Swedish, Danish and Norwegian Skagerrak and Norwegian Deep cold water prawn fishery, the Eastern Canada offshore lobster fishery and the Limfjord mussel and cockle fisheries. He has also undertaken MSC pre-assessments, numerous annual surveillance audits and has carried out peer reviews of MSC assessments in both Europe and North America of lobster, cold water prawn, razorfish, cockle and scallop fisheries. Other recent work includes a review of the stock assessment model for blue crabs in Chesapeake Bay, USA, and an assessment of three Alaskan crab fisheries under the FAO-based Responsible Fisheries Management scheme.

4.2 Version details

Table 1. Fisheries program document versions.

Document	Version number
MSC Fisheries Certification Process	**Version 2.2**
MSC Fisheries Standard	**Version 2.01**
MSC General Certification Requirements	**Version 2.4.1**
MSC Reporting Template	**Version 1.2**

5 Unit(s) of Assessment and Unit(s) of Certification and results overview

5.1 Unit(s) of Assessment and Unit(s) of Certification

5.1.1 Unit(s) of Assessment

MRAG Americas has confirmed that this fishery is within scope for MSC fisheries certification through the following determinations (FCP v2.2 7.4):

7.4.2.1 The following taxa are not target species under Principle 1:

a. Amphibians
b. Reptiles
c. Birds
d. Mammals

7.4.2.2 The fishery does not use poisons or explosives.

7.4.2.3 The fishery is not conducted under a controversial unilateral exemption to an international agreement.

7.4.2.4 No member of the client group has been successfully prosecuted for a forced or child labour violation

in the last 2 years.

7.4.2.10 The fishery has not been convicted for a shark finning violation in the last 2 years.

7.4.2.11 The fishery has a mechanism for resolving disputes and disputes do not overwhelm the fishery.

7.4.2.12 The fishery is not enhanced.

7.4.2.13 The fishery is not based on introduced species.

Table 2. Units of Assessment (UoA). This fishery takes place along the US west coast, but is managed by each state individually. Thus, there are three UoAs, which are identical for Principles 1 and 2, but differ in Principle 3 because they are under different management systems.

UoA 1	Description
Species	Pink (Ocean) Shrimp (*Pandalus jordani*)
Stock	West coast ocean shrimp stock which extends from south east Alaska to California waters.
Fishing gear type(s) and, if relevant, vessel type(s)	Otter trawl
Client group	Oregon Trawl Commission and Pacific Seafood Group
Other eligible fishers	No other eligible fishers
Geographical area	West Coast USA, Oregon, Washington, California (WOC)—this UoA applies to vessels licensed to land in the state of **Washington**.
UoA 2	Description
Species	Pink (Ocean) Shrimp (*Pandalus jordani*)
Stock	West coast ocean shrimp stock which extends from south east Alaska to California waters.
Fishing gear type(s) and, if relevant, vessel type(s)	Otter trawl
Client group	Oregon Trawl Commission and Pacific Seafood Group
Other eligible fishers	No other eligible fishers
Geographical area	West Coast USA, Oregon, Washington, California (WOC)—this UoA applies to vessels licensed to land in the state of **Oregon**.
UoA 3	Description
Species	Pink (Ocean) Shrimp (*Pandalus jordani*)

Stock	West coast ocean shrimp stock which extends from south east Alaska to California waters.
Fishing gear type(s) and, if relevant, vessel type(s)	Otter trawl
Client group	Oregon Trawl Commission and Pacific Seafood Group
Other eligible fishers	No other eligible fishers
Geographical area	West Coast USA, Oregon, Washington, California (WOC)—this UoA applies to vessels licensed to land in the state of **California**.

5.1.2 Unit(s) of Certification

Table 3. Units of Certification (UoC). This fishery takes place along the US west coast but is managed by each state individually. Thus, there are three UoCs, which are identical for Principles 1 and 2, but differ in Principle 3 because they are under different management systems.

UoC 1	Description
Species	Pink (Ocean) Shrimp (*Pandalus jordani*)
Stock	West coast ocean shrimp stock which extends from south east Alaska to California waters.
Fishing gear type(s) and, if relevant, vessel type(s)	Otter trawl
Client group	Oregon Trawl Commission and Pacific Seafood Group
Geographical area	West Coast USA, Oregon, Washington, California (WOC)—this UoA applies to vessels licensed to land in the state of **Washington**.
UoC 2	Description
Species	Pink (Ocean) Shrimp (*Pandalus jordani*)
Stock	West coast ocean shrimp stock which extends from south east Alaska to California waters.
Fishing gear type(s) and, if relevant, vessel type(s)	Otter trawl
Client group	Oregon Trawl Commission and Pacific Seafood Group
Geographical area	West Coast USA, Oregon, Washington, California (WOC)—this UoA applies to vessels licensed to land in the state of **Oregon**.
UoC 3	Description
Species	Pink (Ocean) Shrimp (*Pandalus jordani*)

Stock	West coast ocean shrimp stock which extends from south east Alaska to California waters.
Fishing gear type(s) and, if relevant, vessel type(s)	Otter trawl
Client group	Oregon Trawl Commission and Pacific Seafood Group
Geographical area	West Coast USA, Oregon, Washington, California (WOC)—this UoA applies to vessels licensed to land in the state of **California**.

5.1.3 Scope of assessment in relation to enhanced or introduced fisheries

This is not an enhanced fishery, or a fishery based on introduced species.

5.2 Assessment results overview

5.2.1 Determination, formal conclusion and agreement

MRAG Americas has provisionally determined on the basis of the assessment team evaluation, peer review and public comment that the fishery should be re-certified. Please note, this is a draft determination, still subject to completion of the objections process.

5.2.2 Principle level scores

Principle level scores

Principle	Washington	Oregon	California
Principle 1 – Target species	90.8		
Principle 2 – Ecosystem impacts	92.7		
Principle 3 – Management system	100	100	92.5

5.2.3 Summary of conditions

No conditions have been assigned to this fishery.

5.2.4 Recommendations

No recommendations.

6 Traceability and eligibility

6.1 Eligibility date

The eligibility date for product from the fishery under assessment is concurrent with the expiry of the existing certificate. As this is a recertification assessment, any product landed prior to the expiry of the exiting certificate is considered certified. The traceability and segregation systems in the fishery are appropriately implemented. This fishery has been certified since 2007.

6.2 Traceability within the fishery

Table 4. Traceability within the fishery

Factor	Description
Will the fishery use gears that are not part of the Unit of Certification (UoC)? If Yes, please describe: - If this may occur on the same trip, on the same vessels, or during the same season; - How any risks are mitigated.	No risk present. All pink shrimp is harvested using certified gears
Will vessels in the UoC also fish outside the UoC geographic area? If Yes, please describe: - If this may occur on the same trip; - How any risks are mitigated.	No risk present. All vessels fish only within the geographic area of the UoA/UoC
Do the fishery client members ever handle certified and non-certified products during any of the activities covered by the fishery certificate? This refers to both at-sea activities and on-land activities. - Transport - Storage - Processing - Landing - Auction If Yes, please describe how any risks are mitigated.	No risk present. Fishery client group member activity that involves transport, storage or processing is covered under their Chain of Custody certification, not within the scope of the fishery certificate.
Does transhipment occur within the fishery? If Yes, please describe: - If transhipment takes place at-sea, in port, or both; - If the transhipment vessel may handle product from outside the UoC; - How any risks are mitigated.	No risk present. No transshipment occurs.
Are there any other risks of mixing or substitution between certified and non-certified fish? If Yes, please describe how any risks are mitigated.	No other risks present.

6.3 Eligibility to enter further chains of custody

The fishery assessment covers all pink shrimp, *P. jordani*, landed from vessels operating in the Units of Certification until the point of landing, therefore the scope of certification ends at the point of landing. Beyond landing, any company that is part of the client group or buys from the client group, taking ownership of the product and wishing to identify it as MSC certified will need a CoC certificate. Members of the client group are listed on a schedule to the fishery certificate, which can be amended as necessary to accommodate companies joining or leaving the group.

Traceability of product from the fishery is covered by the fishery certificate up until the first point of landing in Washington, Oregon or California ports by legally permitted Washington, Oregon or California shrimp fishing vessels. In order for subsequent links in the distribution chain to be able to use the MSC logo, companies and/or individuals must be part of the client group and enter into separate chain of custody certification and be able to track product to CA, OR or WA permitted vessels landing in CA, OR, or WA ports. As the entire shrimp fishery is certified up to the point of landing, risk of non-certified fish or products entering the supply chain is minimal to zero. The risk of non-eligible companies (i.e. buyers outside of the client group) taking ownership of product and identifying it as certified is minimized because primary receivers of the certified product must have chain of custody, and chain of custody audits address the risk of non-client group members selling pink shrimp as certified.

Product from the fishery under assessment is landed in one of several ports including: WA ports: Westport, Ilwaco, OR ports: Astoria, Newport, Charleston, Brookings; CA ports: Crescent City, Eureka, Morro Bay. On occasion, but seldom, product maybe landed in Winchester Bay, WA.

6.4 Eligibility of Inseparable or Practicably Inseparable (IPI) stock(s) to enter further chains of custody

There is no inseparable or practically inseparable stock involved in this assessment.

7 Scoring

7.1 Summary of Performance Indicator level scores

Table 5. Summary of Performance Indicator Scores. For Principles 1 and 2, scores will be identical for all three states, because it is one fishery. For Principle 3, scores can differ because of different management systems.

Principle	Component	Wt	Performance Indicator (PI)		Wt	Score		
One	Outcome	0.333	1.1.1	Stock status	1.0	90		
	Management	0.667	1.2.1	Harvest strategy	0.25	95		
			1.2.2	Harvest control rules & tools	0.25	85		
			1.2.3	Information & monitoring	0.25	90		
			1.2.4	Assessment of stock status	0.25	95		
Two	Primary species	0.2	2.1.1	Outcome	0.333	100		
			2.1.2	Management strategy	0.333	95		
			2.1.3	Information/Monitoring	0.333	100		
	Secondary species	0.2	2.2.1	Outcome	0.333	80		
			2.2.2	Management strategy	0.333	100		
			2.2.3	Information/Monitoring	0.333	100		
	ETP species	0.2	2.3.1	Outcome	0.333	80		
			2.3.2	Management strategy	0.333	85		
			2.3.3	Information strategy	0.333	85		
	Habitats	0.2	2.4.1	Outcome	0.333	90		
			2.4.2	Management strategy	0.333	95		
			2.4.3	Information	0.333	80		
	Ecosystem	0.2	2.5.1	Outcome	0.333	100		
			2.5.2	Management	0.333	100		
			2.5.3	Information	0.333	100		
						WA	**OR**	**CA**
Three	Governance and policy	0.5	3.1.1	Legal &/or customary framework	0.333	100	100	100
			3.1.2	Consultation, roles & responsibilities	0.333	100	100	85
			3.1.3	Long term objectives	0.333	100	100	100
	Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.25	100	100	100
			3.2.2	Decision making processes	0.25	100	100	95

			3.2.3	Compliance & enforcement	0.25	100	100	85
			3.2.4	Monitoring & management performance evaluation	0.25	100	100	80

7.2 Principle 1

7.2.1 Principle 1 background

a. Fishery resources and life history

Distribution of the target species *Pandalus jordani*, commonly referred to as ocean or pink shrimp extends from the Aleutian Islands in Alaska to southern California. Pink shrimp are generally found in mud-sand habitat at depths ranging from about 40 to 450 m. Throughout the range, beds with commercial concentrations, in depths of about 100 to 200 m, support fisheries from British Columbia, Canada south to Point Arguello, California (Collier and Hannah, 2001). In the past decade coastwide landings averaged 66%, 23%, 8%, and 2% in Oregon, Washington, California, and British Columbia, respectively (Figure 12).

Like most pandalid shrimp, *Pandalus jordani* are protandrous hermaphrodites, beginning life as males and, later, changing sex to become females. The time spent at each life stage (larvae, juvenile males, mature males and females) varies by location and population density (Charnov and Hannah, 2002; Hannah and Jones, 2016). Individuals may change sex sooner (early maturing females) or even bypass the male phase entirely (primary females). Densities of primary females are higher when population levels are low.

The life span of pink shrimp is up to 4 years. Natural mortality is high, variable by year class and has been related to predator abundance (Hannah, 1995). Pink shrimp are responsive to fishing pressure and there is evidence that growth increases with higher fishing pressure and lower densities (Hannah and Jones 2016).

Mating occurs during September and October when females begin extruding eggs (external fertilization). Females carry the eggs (about 1,000 to 3,000) in a clutch under the abdomen between the pleopods (Hannah et al., 1995). Hatching occurs during late March to early May and the pelagic larval phase lasts about 2.5 to 3 months. Juvenile male shrimp occur in increasingly deeper water as they develop and begin to appear in commercial catches by late summer (Collier and Hannah, 2001).

Shrimp grow by periodically shedding their exoskeletons through a process called moulting. Growth rates and age/size of sex change for ocean shrimp are variable by area, sex and year class (Dahlstrom, 1970). There tends to be rapid growth during spring and summer and slower growth over the winter. The growth rate decreases as the shrimp age and, during the ovigerous period from fall to spring, females do not grow at all. As shrimp undergo moulting, no permanent body structures are retained, precluding age determination using conventional techniques. Rather, an analysis of length data that incorporates the animal's sex and maturity condition is used to determine age.

Migratory behavior of pink shrimp is primarily passive, associated with ocean currents, summer winds and upwelling (Hannah, 1993). Nightly vertical migrations take place as shrimp move off the bottom into the water column to feed (Pearcy, 1970). These vertical migrations may also assist with movement and dispersal of shrimp by alongshore currents; as they migrate vertically, they become more exposed to currents.

Oceanographic factors explain most of the variation in recruitment and, subsequently, the abundance of adults. Recruitment has been negatively correlated with April sea level height (SLH) and it has been inferred that, when winter-like current conditions extend into the spring beyond the average timing of transition, newly released shrimp larvae are advected to the north away from favorable habitat. Furthermore, strong periods of upwelling may result in shrimp larvae being advected offshore and also away from favorable habitat (Hannah, 1993; 1995; 1999; 2010; 2011).

Pink shrimp are prey for several groundfish species, and some are thought to have a significant impact on natural mortality rates of shrimp. In particular, shrimp mortality is related to the abundance of age-2 Pacific whiting, *Merluccius productus* (Hannah, 1995).

b. Status of stocks as indicated by stock assessments, including a description of the assessment methods, standards, and stock indicators, and biological limits.

Stock Assessment Methodology. Using a time-series of annual catch and age composition data collected from Oregon fishery landings, a stock reconstruction is periodically conducted to estimate the historical survival of each cohort through age 3, and the number of age 1 shrimp in the population. The stock reconstruction is done using a separable Virtual Population Analysis (VPA) with time-varying selectivity (two time periods) of age-1 recruits (Hannah and Jones 2014; 2016; Groth and Hannah 2018, Groth et al 2021.).

As noted above, studies of the population dynamics of pink shrimp off the coast of Oregon have concluded that the survival of larvae is influenced strongly by environmental conditions associated with upwelling conditions and currents, and recruitment is not demonstrably related to spawning biomass. Specifically, Oregon Department of Fish and Wildlife (ODFW) has found that recruitment has been correlated with SLH. By relating the historical time series of age 1 shrimp numbers (estimated from the VPA) to a measure of SLH in their larval year, an index has been established to forecast recruitment of age-1 shrimp for the next year's fishery (Hannah and Jones 2014; 2016). This pre-recruit abundance index fits historical data well and is presently used to provide annual pre-season predictions of pink shrimp recruitment (Groth et.al. 2021; 2022). Additionally, since 2019, a second pre-season forecast for next year's fishery has been reported annually using fishery sampling catch-at-age data (Groth et. al. 2022).

Empirical monitoring of stock status off Oregon and Washington also includes an annual examination of trends in 1) age, size and sex composition of landings, 2) catch per unit effort (CPUE) measured as both Single Rig Equivalents (SRE) and average catch per trip, and 3) the geo-spatial distribution of pink shrimp catches from fishery logbook data (Groth et al. 2022). Note: units of Single Rig Equivalent (SRE) hours (Hannah 1993), are used as the means to standardize fishing effort between vessels using single rigs and double rigs; meaning that single rig hours are counted 'as is' and double rig hours are multiplied by 1.6. (Groth et al 2022).

Biological Limits. Traditional measures of stock status compare the current spawning population biomass to estimates of the stock in an unfished condition, or measures of B_{msy}, and make use of spawner-recruit relationships (Mace 1993), This approach is not appropriate for pink shrimp populations, because stocks are driven primarily by environmental conditions and thus the spawner recruit relationship is not meaningful. Furthermore, fishery independent estimates of biomass are not available. Given these constraints, ODFW has developed an innovative input control rule that reduces the fishery's impact on egg-bearing females whenever there is in-season evidence that spawning biomass may be very low, but significant uncertainty remains (Hannah and Jones 2014; 2016). The control rule takes into account both oceanic conditions in the larval year, as well as fishery catch rates during the year of age-1 recruitment as in-season indicators of stock status. Specifically, the control rule uses: 1) a time series of April-January SLH (measured at Crescent City, CA) during the larval year as a pre-season indicator of pink shrimp stock status, and 2) the fishery average June catch per trip (as a proxy for the standing stock biomass of shrimp in a given year). Washington (Wargo et al) and California (CDFG) have followed Oregon by also adopting this rule in their FMP's.

Under the control rule, a June catch-per-trip value of less than 12,500 lbs (the "target") is the catch level that signals the need for some additional precautionary management of shrimp spawning stock biomass. When the June average catch per trip drops below this level, the ocean shrimp season will be closed on October 15th and will not reopen until April 15th of the following year. When there are indications of a more severe stock decline, the "limit" action level is reached, and fishing is suspended. This will be the case when the mean Crescent City SLH from April of the year prior to January of the current year exceeds 7.5 ft and June catch per-trip in the current year drops below 10,000 lbs. When these two conditions coincide, the shrimp trawl fishery will be closed as soon as possible for the remainder of the season and not re-opened until April 15th of the following year (Hannah et al. 2018).

Current Status of the Stock. The status of the pick shrimp stock is evaluated annually by ODFW and has been reported in the *ODFW Annual Pink Shrimp Review* for the past 33 years (Groth et al 2022). An annual fishery newsletter detailing monitoring, management and research in Washington has also been produced by Washington Department of Fish and Wildlife (WDFW) for the past 7 years (Wargo et al 2022).

Stock status is currently informed by 1) the SLH-Recruitment index, 2) the inputs to the control rule (SLH and average June catch per trip), 3) size-age composition of the fishery landings, 4) historically tracked changes in fishery CPUE (lbs/SRE-hour), and 5) the geo-spatial distribution of pink shrimp catches. Recent trends in these indices are provided below.

The SLH-Recruitment index was most recently updated in 2022 (Figure 1). Recently, favorable environmental conditions have resulted in good year classes (Groth et al 2022),

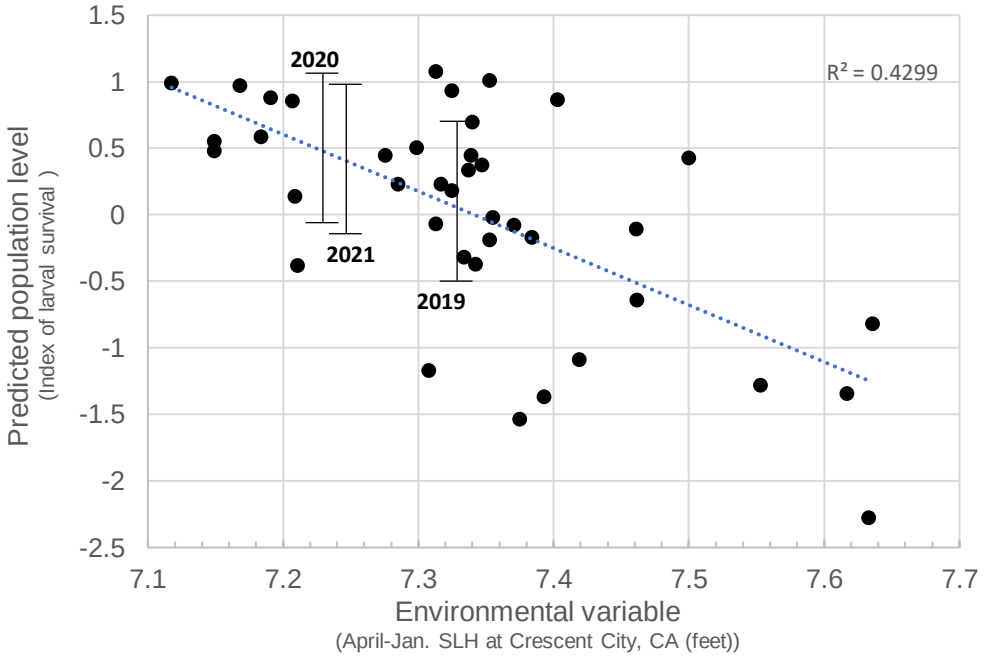

Figure 1. SLH-Recruitment index, relating Sea Level Height (SLH) at Cresent City, CA in the larval year, to subsequent recruitment of age-1 pink shrimp to the fishery in Oregon.(Source: Groth et. al. 2022).

The average catch per trip in June (Figure 2), and the larval year SLH (Figure 3) have shown positive indications for pink shrimp stock status in recent years. June catch per trip has been well above the target value of 12,000 lbs/trip, and SLH has been consistently below the limit index value (7.5).

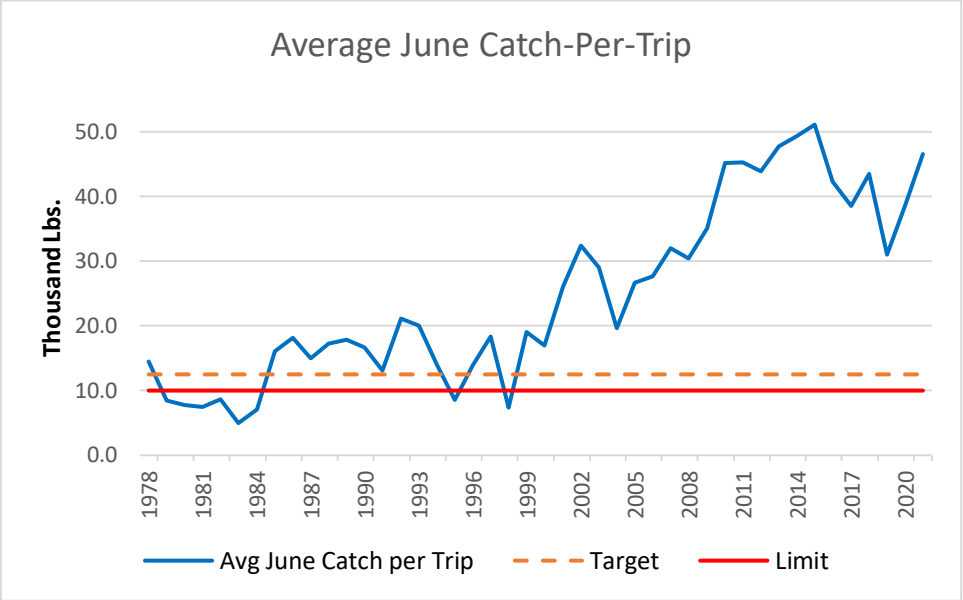

Figure 2. Average June catch per trip in the Oregon fishery 1978-2021, showing target (12,000 lbs/trip.) and limit (10,000 lbs/trip) values. (Source: Groth, 2022).

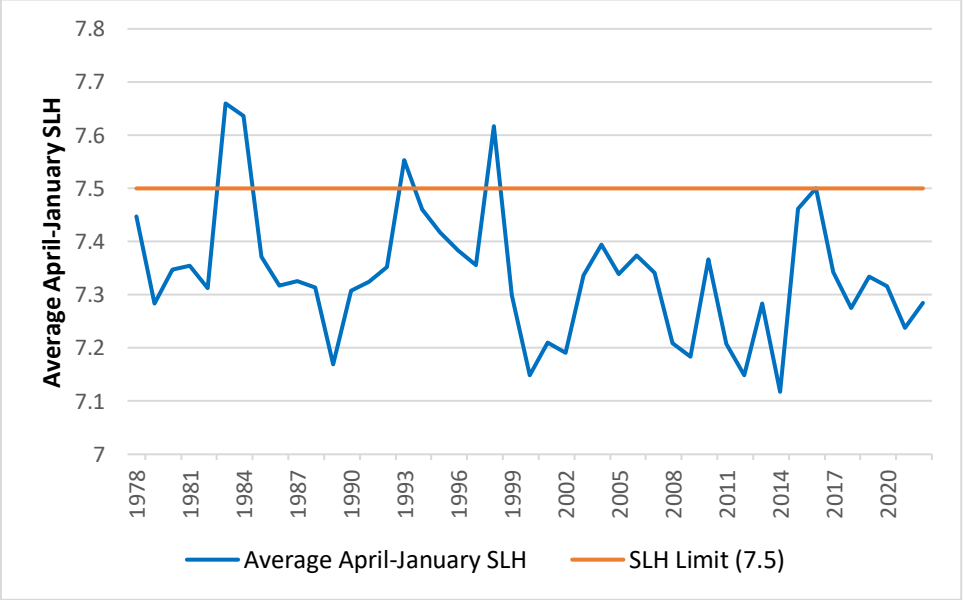

Figure 3. Average (larval year) April-January Sea Level Height (SLH) at Crescent City, CA 1978-2022, showing the limit value (7.5). (Source: Groth, 2022)

The size-age composition of the fishery landings for 2020 and 2021 is shown in Figure 4. The excellent environmental conditions of 2020 delivered a good recruitment class. Over 3 billion age one shrimp were caught 2021 in Oregon alone (6th best on record). The environmental conditions which larval pink shrimp experienced in 2021 were also favorable, though not quite as good as in 2020. When compared to the past 43 years it was in the 76th percentile. These data, together with the SLH-Recruitment index, indicate good year-classes to support the fishery in the near future. (Groth et. al. 2022).

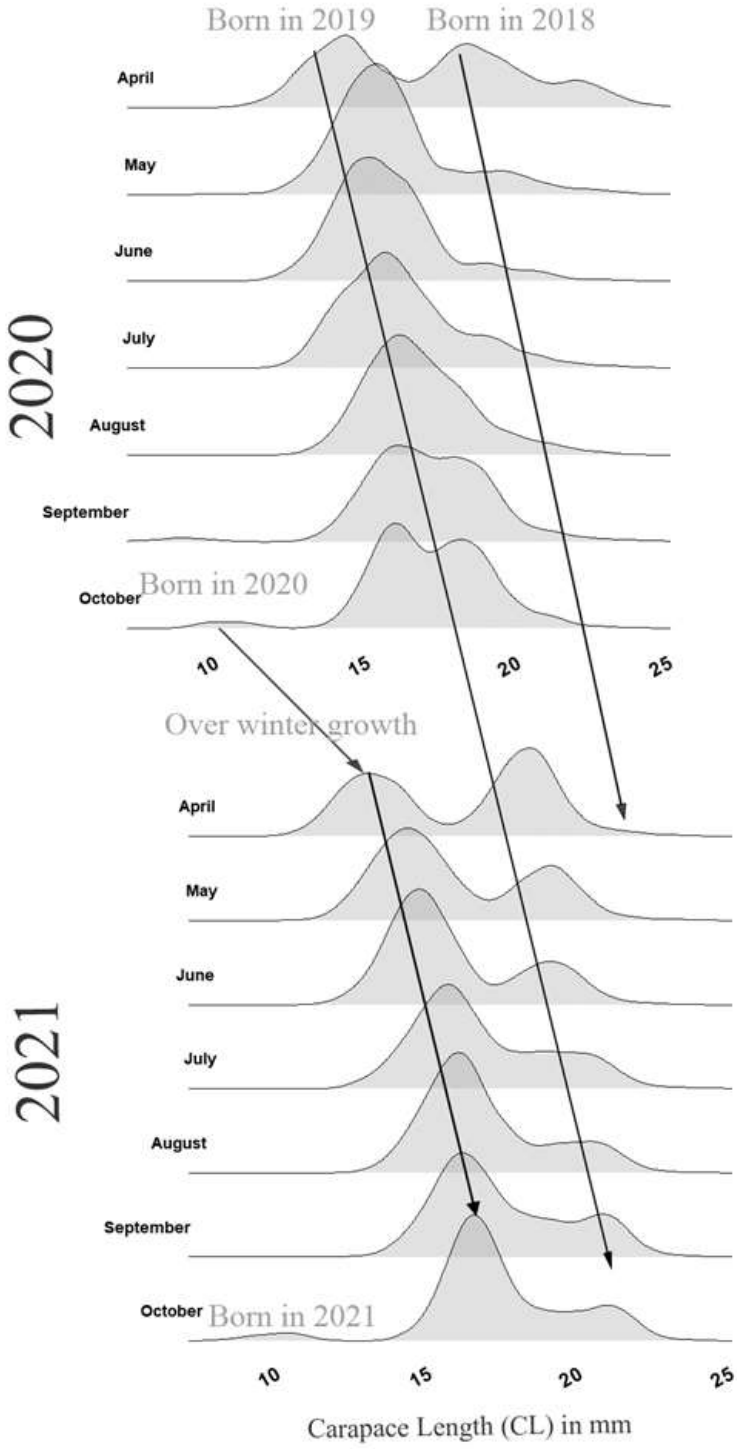

Figure 4. Oregon pink shrimp size-age distributions by month, 2020-2021. (Source: Groth et. al. 2022).

Standardized catch per unit effort (lbs/SRE hour), an indicator of relative stock biomass, exceeded 1000 lbs/SRE hour for Oregon vessels from 2009 to 2015, and then declined to numbers similar to those in the mid-2000s. Groth et al. (2017) reported that relatively lower CPUE in 2016 was likely due to the weak 2014-year class (2 year olds in 2016). Catch rates for Washington vessels have been comparable to Oregon for the shorter (2011-2021) data time series.

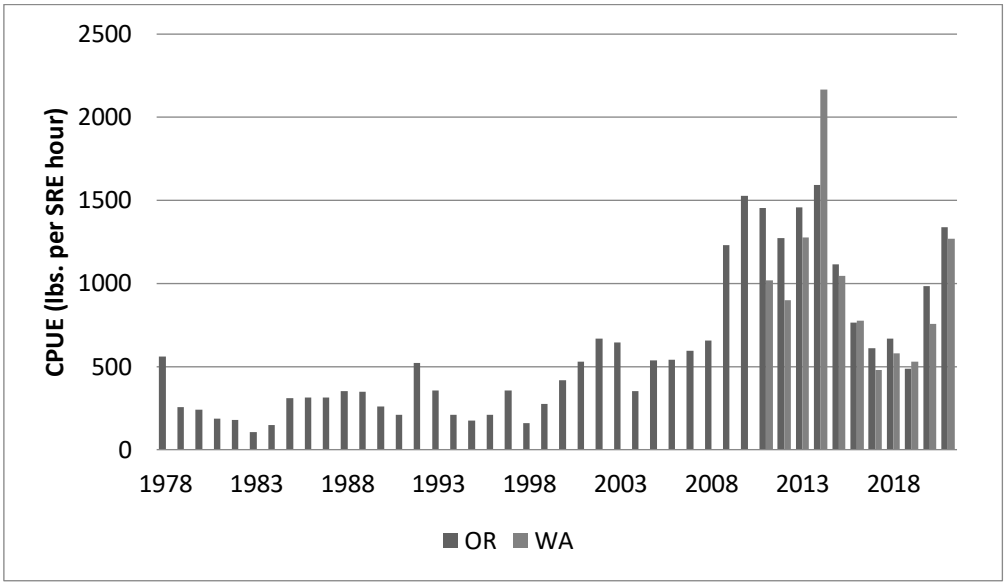

Figure 5. Fishing catch per unit effort (CPUE in lbs/SRE hour) for pink shrimp landed in Oregon (1978-2021), and in Washington (2011-2021). (Source: Groth et al. 2022; Wargo et al. 2022).

The spatial distribution of fishery catches delivered to Oregon (Figure 6) and Washington (Figure 7) ports in 2022 shows that areas of increased catch were well distributed along their respective coasts. This is a positive sign, as the size of the shrimping area is known to vary with population size (Hannah 1995).

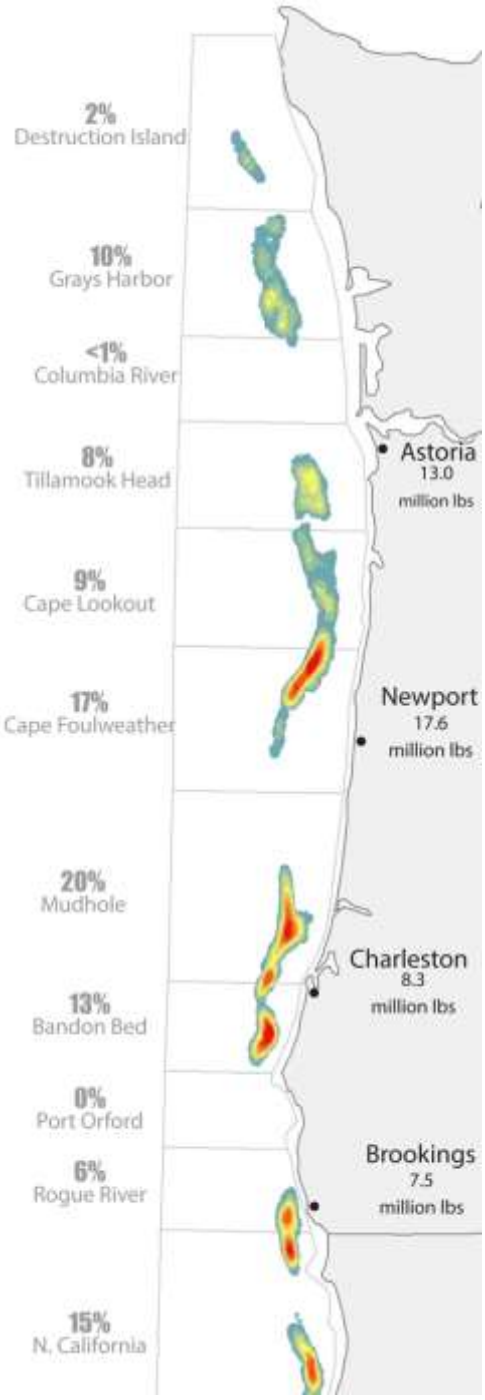

Figure 6. Spatial distribution of catch areas for pink shrimp landed in Oregon in 2021. Note: darker areas indicate increased catch levels. (Source: Groth et al., 2022)

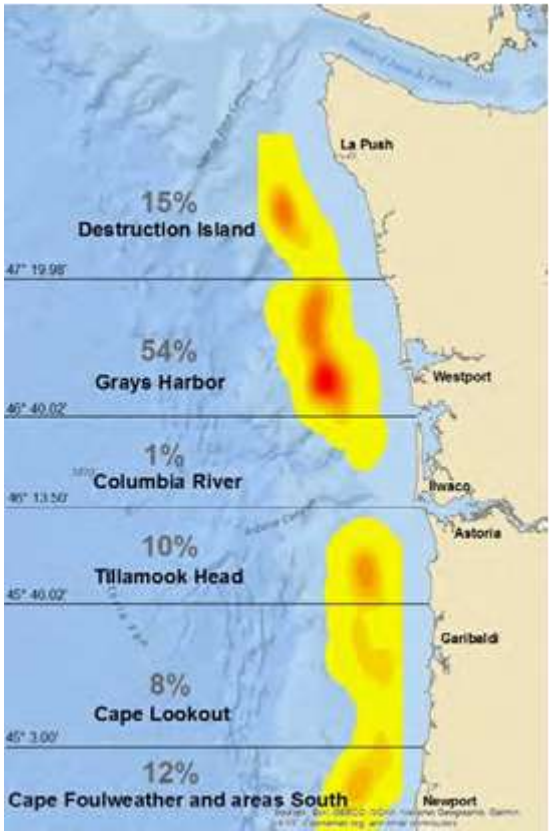

Figure 7. Spatial distribution of catch areas for pink shrimp landed in Washington in 2021. Note: darker areas indicate increased catch levels. (Source: Wargo et al., 2022).

Evaluation. The ODFW assessment approach for pink shrimp was designed recognizing that stock dynamics are largely driven by environmental factors. Thus, the dynamic nature of ocean conditions and population responses to them are the chief uncertainties in forecasting harvestable stock size. Confidence limits for the SLH-Recruitment index address the uncertainty associated with the point estimates of annual values. Additionally, the standardization of effort to single rig equivalents, and its use in the calculation of CPUE, accounts for some uncertainty in the fishery performance data as an indicator of biomass.

The 65-year history of the fishery, through periods of highly variable, environmentally-driven recruitment have provided empirical evidence that the stock is resilient to harvest pressure under current (and historical) levels of fishing effort. To ensure a sustainable future fishery, ODFW has implemented a precautionary management strategy for catch-based action levels as proxies for target and limit-based management for times when environmental conditions result in very low stock abundance (Hannah et al 2018). The historical trends and current values for the stock-status proxies described above (i.e. SLH, CPUE, population age-size structure, and geographic distribution), provide evidence that the current status of the pink shrimp stock is good.

c. History of fishing and management.

The Oregon trawl fishery targeting pink shrimp began in 1957 and developed slowly over its first decade (Figure 8).

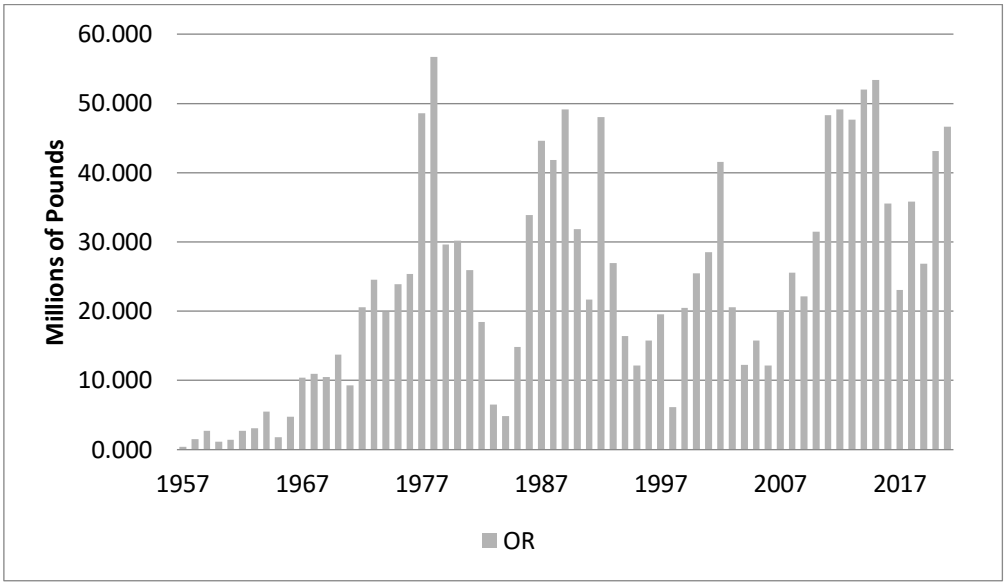

Figure 8. Pink shrimp landings (millions of pounds) in Oregon ports, 1957-2021. (Source: Groth 2022)

Landings subsequently increased sharply from about 10 million pounds in 1967 to a record high 56 million pounds in 1977, before declining to just over 4 million pounds in 1984. Wide fluctuations in landings followed, attributed to large scale ocean environmental events. Sharp declines during 1982-1983 and 1997-1998 were associated with *El Niño* conditions. Subsequently, a peak in landings occurred during a La Niña event in 2010-2011, followed by decreased landings in 2014-2015 that occurred during an ocean warming event (Groth et al 2022).

The ocean pink shrimp fishery in Washington also dates from the late 1950's. Beginning off Grays Harbor in 1956, the use of mechanical peelers and growing consumer demand for "cocktail" shrimp spurred fishery development. In the 1970's and 1980's, the fishery expanded with abundant shrimp and good markets (Wargo et al 2017). Landings from the 1990's through the present have followed a pattern similar to Oregon (Figure 12).

Pink shrimp are most abundant off the coasts of Oregon and Washington; correspondingly, a smaller volume of landings have been made in California historically (Figure 13). In California, the number of active vessels fluctuated during the 1970s and mid-1990s with a peak in 1994 (122 vessels) followed by a decline to a low in 2006 (4 vessels). Since 2006, the number of active vessels has increased steadily for more than 10 years (CDFG 2022).

The historical trend in pink shrimp fishing effort (1968-2021), reported in single rig equivalent (SRE) hours, is shown in Figure 9.The number of vessels making pink shrimp landings in Oregon and Washington (1990-2021) is shown in Figure 10. The annual number of trips landing pink shrimp in Oregon and Washington ports (1979-2021) is shown in Figure 11.

The expansion of fishing effort and the accompanying decline in CPUE in the late 1970's prompted coast-wide concern among both fishing industry and state management agencies. In 1981, the states working through the Pacific Fishery Management Council (PFMC) developed a draft Fishery Management Plan (FMP) for the ocean shrimp fishery off Oregon, Washington, and California. The idea of the FMP was to be compliant with the national standards specified in the Fishery Conservation and Management Act and to introduce coast-wide uniformity of regulations across the three states (Abramson et al., 1981). The draft Federal FMP was not implemented. Instead, the PFMC recommended coordinated management by the three states. The states subsequently agreed on coordinated management measures, for example timing of seasons and limited entry programs, to control fishing effort (TAVEL Certification, 2007). Subsequently, formal

FMP's have been implemented separately by Oregon (Hannah et al. 2018), Washington (Wargo and Ayres 2017), and most recently by California (CDFW 2022).

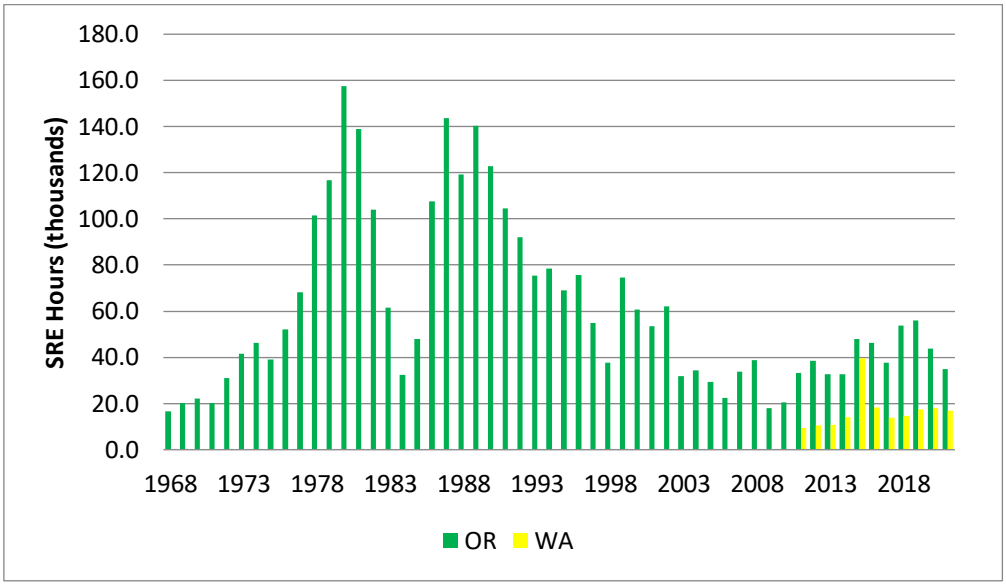

Figure 9. Fishing effort for pink shrimp landed in Oregon, 1968-2021, and Washington, 2011-2021. Note: 1000's of single-rig equivalent (SRE) hours: 1SRE hour = (1 double rig hourX1.6). (Source: Groth et al. 2022; Wargo et al 2022).

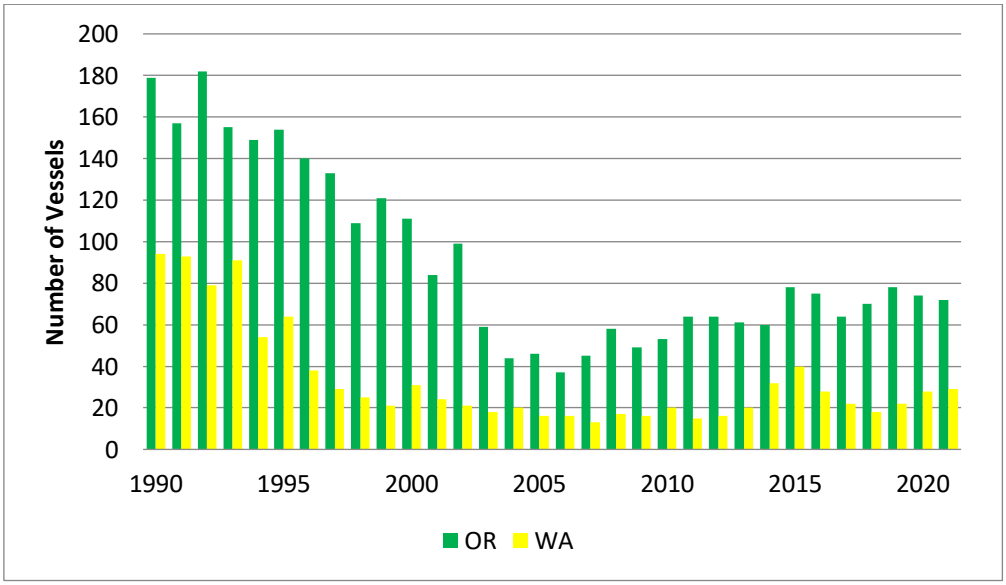

Figure 10. Number of vessels making landings in Oregon and Washington ports, 1990-2021. (Source: Groth et al. 2022; Wargo et al. 2022). Note: Vessel counts are not additive as some vessels make landings in both States.

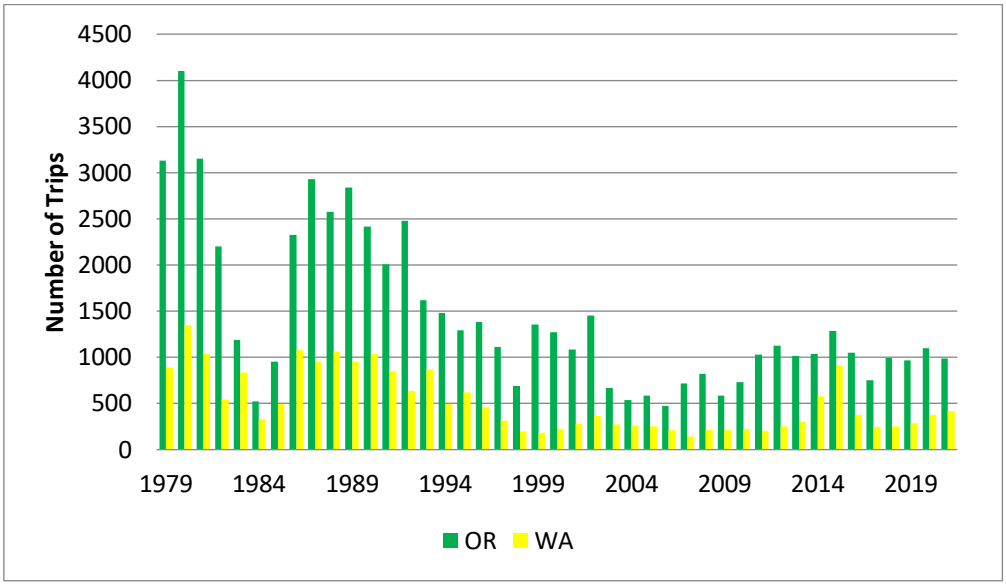

Figure 11. Annual number of trips landing pink shrimp in Oregon and Washington ports, 1979-2021. (Source: Groth et al. 2022; Wargo et al. 2022).

7.2.1 Catch profiles

Pink shrimp landings in Oregon and Washington (1990-2021) are shown in Figure 12, and historical landings for Oregon, Washington, California (1997-2021) and British Columbia-West coast Vancouver Island (1997-2020) are contrasted in Figure 13. The majority of landings have historically been made in Oregon, followed by Washington, and smaller amounts in California and British Columbia, Canada (West Coast Vancouver Island). In 2020, percentages of the coastwide total were: Oregon (71.0%), Washington (26.0%), California (1.3%), and BC (1.7%).

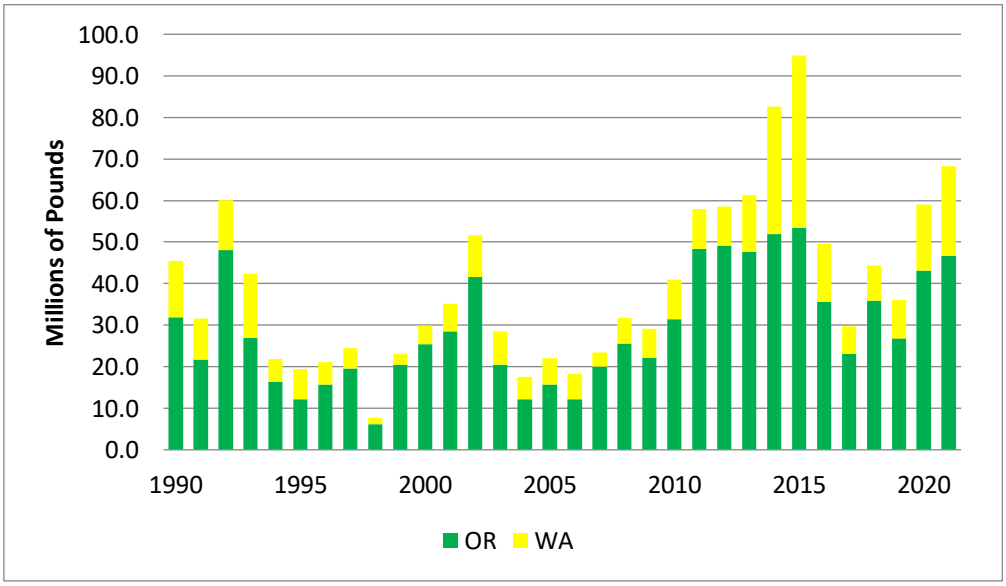

Figure 12. Pink shrimp landings (millions of pounds) in Oregon and Washington ports, 1990-2021. (Source: Groth et al. 2022; Wargo et al. 2022).

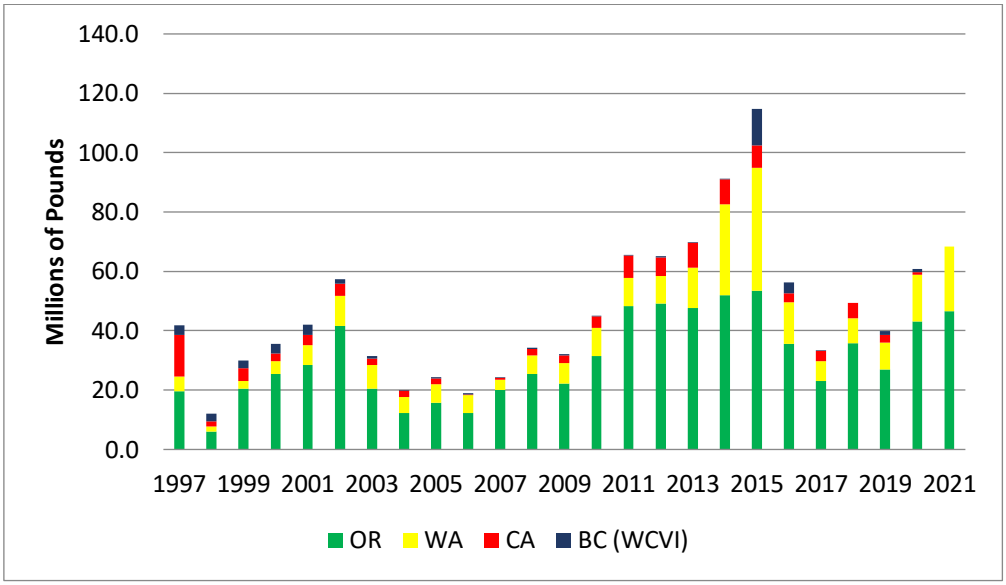

Figure 13. Pink shrimp landings (millions of pounds) in Oregon, Washington, California, (1997-2021), and British Columbia (West Coast Vancouver Island), 1997-2020. (Source: Groth et al 2022; Wargo et al. 2022, Flemming 2022).

7.2.2 Total Allowable Catch (TAC) and catch data

Table 6. Total Allowable Catch and catch data. This will be updated following the site visit.

TAC	Year	**2021**	Amount	**na**
UoA share of TAC	Year	**2021**	Amount	**na**
UoA share of total TAC	Year	**2021**	Amount	**na**
Total green weight catch by UoC	Year (most recent)	**2021**	Amount	• **OR: 46.7 million lbs WA: 21.5 million lbs CA: <100 lbs**
Total green weight catch by UoC	Year (second most recent)	**2020**	Amount	• **OR: 43.1 million lbs WA: 15.8 million lbs CA: 0.8 million lbs**

7.2.3 Principle 1 Performance Indicator scores and rationales

PI 1.1.1 – Stock status

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Stock status relative to recruitment impairment			
	Guide post	It is **likely** that the stock is above the point where recruitment would be impaired (PRI).	It is **highly likely** that the stock is above the PRI.	There is a **high degree of certainty** that the stock is above the PRI.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

It is well documented that pink shrimp recruitment in the UOA is driven by environmental factors, as opposed to spawning stock size (Hannah 1993, 1999, 2010, 2011; Hannah and Jones 2014, 2016). Furthermore, early research determined that fishery independent measures of stock size (e.g. research survey estimates) were poor pre-season predictors of biomass (Abramson et al. 1981). Given these constraints, ODFW makes use of proxy indicators to evaluate pink shrimp stock status with respect to PRI.

The MSC Fishery Standard Ver 2.0.1 provides for the assessment fisheries where proxies are used as indicators of stock status (SA2.2.3), and in particular, for situations where natural environmental variability is known to strongly influence fishery productivity (SA2.2.7). Thus, the assessment team undertook to evaluate SI a (and SI b, below) by 1) determining if the proxy indicators used by ODFW are reasonable in the context of the pink shrimp fishery, and if so, 2) evaluating the current status of the stock with respect to these proxy indicators.

Evaluation of proxy indicators. ODFW employs an innovative approach that closely monitors the fishery on an annual basis (described in Section 7.2.1b above). Assessment of the stock incorporates: 1) an environmental index to forecast recruitment, 2) an input based control rule with proxy target and limit reference points, 3) an evaluation of the size-age composition of the fishery landings to assess the strength of year classes expected to support the fishery in the coming year, 4) ongoing monitoring of the historical trend in fishery CPUE, and 5) examination of the geo-spatial distribution of pink shrimp catches to look for any shrinkage of the fishing area, a potential sign of reduced abundance.

Derivation of the proxies used by ODFW to gauge current stock status with respect to target and limit reference points is described by Hannah and Jones (2014), and further evaluated by Hannah and Jones (2016). Specifically: 1) sea level height (SLH) in the larval year is used as a proxy for environmental conditions (favorable, or deleterious to pink shrimp), 2) current year fishery CPUE (the average June catch per vessel) is used as a proxy for in-season standing stock biomass, and 3) standardized historical fishery CPUE (lbs/SRE-hour) serves as a time series of relative stock abundance. The limit reference point, established in 2014 for the pink shrimp fishery, is summarized in the following two paragraphs (adapted from Hannah and Jones 2014).

A mean April-January SLH greater than 7.5 ft at Crescent City, CA during the larval year, in combination with a June catch per trip in the age 1 harvest year of less than 10,000 lbs provides strong evidence that there is risk of November spawning stock biomass falling below the lowest level previously observed if fishing were to continue through October. The choice of 10,000 lb for June catch per trip is based on the 1983 and 1998 values of less than 7,500 lb per trip, adjusted upward by 2,500 lb/trip to account for improvements over

time in fishing vessel efficiency. If and when these two conditions coincide, the shrimp trawl fishery will be closed as soon as possible for the remainder of the season and not re-open until April 15th of the following year to provide the maximum protection possible for that year's spawning stock biomass and egg-bearing females.

Given this stock's proven ability to rebuild very quickly from the lowest levels observed to date, B_{loss} (lowest observed spawning stock) is an appropriate LRP. If conditions can be identified in-season that accurately predict that the stock may be approaching B_{loss} with continued fishing, the fishery can be closed to prevent the "testing" of even lower spawning stock biomass levels which could result in impairment of reproductive capacity or delayed stock rebound. This strategy is very similar to that used for 3 short-lived penaeid shrimp stocks in the Gulf of Mexico, where environmental conditions also principally determine stock size (Gulf of Mexico Fishery Management Council 2015), and is consistent with MSC guidance on short-lived stocks (https://mscportal.force.com/interpret/s/article/TRP-in-annual-or-nearly-annual-fisheries-PI-1-1-1-1527262011107).

The team concludes that: 1) the proxies used by ODFW are reasonable for the context in which they are used, and 2) the proxy PRI limit reference point is set above the level where there is an appreciable risk of recruitment failure.

Stock status with respect to the proxy indicators. The most recent assessment describes a healthy stock with positive outlook for the short term (Groth et al. 2022). Inputs to the Harvest Control Rule indicate that the pink shrimp stock status has been above the proxy PRI limit levels (see Section 7.2.1b above); June catch per trip has been well above the limit value of 10,000 lbs/trip for over a decade, and SLH has been consistently below the limit index value (7.5 ft.) (Groth et al. 2022).

Standardized catch per unit effort has averaged over 1000 lbs/SRE hour over the past 10 years (2012-2021); by comparison, the average CPUE from 1980 - 2010, a period of relative stability in the fishery, was 417 lbs/SRE hour (Groth et. al. 2022).

Recent size and age composition of the fishery landings indicate a stable stock. Favorable environmental conditions in 2020 delivered a good recruitment class (6th best on record), and the 2021-year class, when compared to the past 43 years, was in the 76th percentile. These data, together with the SLH-Recruitment index, indicate good year-classes to support the fishery in the near future. (Groth et. al. 2022).

The spatial distribution of fishery catches in 2021 showed that areas of increased catch were well distributed along the Oregon and Washington coasts (Groth et al. 2022; Wargo et al. 2022). This is evidence of a healthy stock, as the size of the shrimping area is known to vary with population size (Hannah 1995).

Given positive indications from the three proxy indicators of stock status, along with favorable year class conditions and an apparently healthy geo-spatial distribution, the team concludes that there is a high degree of certainty that the stock is above the PRI. Scoring is justified at the SG100 level.

b	Stock status in relation to achievement of Maximum Sustainable Yield (MSY)			
	Guide post		The stock is at or fluctuating around a level consistent with MSY.	There is **a high degree of certainty** that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?		**Yes**	**No**

Rationale

As noted above under SIa, proxy indicators and reference points are used to score PI 1.1.1 for pink shrimp, as per SA2.2.3. As such, the assessment team made a qualitative evaluation of the status of the stock, based primarily on empirical observation of sustainability (SA2.2.3.1).

The team found evidence to support that the stock is above PRI (see SI a, above); however, it is intractable to relate the status of the pink shrimp stock to any proxy for MSY for this environmentally driven and short-lived species (Hannah and Jones 2014). Inputs to the Harvest Control Rule indicate that the stock status of pink shrimp has been well above the proxy TRP levels (see Section 7.2.1b above); June catch per trip has been above the target value of 12,500 lbs/trip for well over a decade, and SLH has been consistently below the limit index value (7.5 ft.) (Groth et al. 2022). As noted above, standardized CPUE, as well as the size/age composition and geo-spatial distribution of the catches also provide empirical support for sustainability of the fishery, supporting a score at the SG80 level.

The assessment team considers this to be a well-managed stock; however, evaluating stock status using proxy indicators, in particular when natural environmental factors are highly influential, is an inherently uncertain process.

Factors contributing to this uncertainty for pink shrimp are discussed below under PI 1.2.4. Hannah and Jones (2014) note that the pink shrimp TRP, based primarily on in-season catch rates, was established with the intent of providing a "back-stop" for the possibility of unexpected environmental changes that could result in persistent low levels of recruitment. As a target, this is not consistent with a "high degree of certainty" of stock status, and thus the team concludes the SG100 level is not met.

References

Abramson et al. 1981; Groth et al 2022; Gulf of Mexico Fishery Management Council 2015; Hannah 1993, 1995, 1999, 2010, 2011; Hannah and Jones 2014, 2016, Wargo et al. 2022.

Stock status relative to reference points			
	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock relative to PRI (SIa)	Proxy indicators	June average catch per trip of <10,000 lbs. in the age 1 harvest year SLH at Cresent City, CA in larval year >7.5 ft	46,560 lbs/trip (2021) 7.3 ft. (2022)
Reference point used in scoring stock relative to MSY (SIb)	Proxy indicator	June average catch per trip of <12,500 lbs. in the age 1 harvest year	46,560 lbs/trip (2021)

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**90**
Condition number (if relevant)	

PI 1.1.2 – Stock rebuilding

PI 1.1.2		Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	Rebuilding timeframes			
	Guide post	A rebuilding timeframe is specified for the stock that is the **shorter of 20 years or 2 times its generation time**. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.		The shortest practicable rebuilding timeframe is specified which does not exceed **one generation time** for the stock.
	Met?	**NA**		**NA**
Rationale				

No rebuilding needed.

b	Rebuilding evaluation			
	Guide post	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is **evidence** that the rebuilding strategies are rebuilding stocks, **or it is likely** based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the **specified timeframe**.	There is **strong evidence** that the rebuilding strategies are rebuilding stocks, **or it is highly likely** based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the **specified timeframe**.
	Met?	**NA**	**NA**	**NA**
Rationale				

References

The CAB shall list any references here, including hyperlinks to publicly available documents.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**NA**
Information gap indicator	**NA**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	
Condition number (if relevant)	

PI 1.2.1 – Harvest strategy

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Harvest strategy design			
	Guide post	The harvest strategy is **expected** to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy **work together** towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is **designed** to achieve stock management objectives reflected in PI 1.1.1 SG80.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The harvest strategy for pink shrimp relevant to these objectives was designed to avoid recruitment overfishing by protecting spawning females (closed season) and protecting recruiting shrimp by reducing fishing mortality of age-1 shrimp (count per pound, mesh size), thereby increasing the size of spawning stock at the end of each season and ensuring shrimp are taken at a marketable size (Abramson et al., 1981, Hannah et al. 2018). The "count per pound" regulations (Oregon, Washington, and California) require that landings have less than or equal to a count of 160 shrimp per pound landed. The minimum mesh size is 1-3/8" in California (no minimum in Washington or Oregon). Fishing activity logbooks are mandatory in all three states. Also, each of the three states has a well-developed Fishery Management Plan (FMP) in place (Hannah et al. 2018, Wargo et al.2017, CDFW 2022).

Stock management objectives are reflected in the target and limit reference points (discussed under PI 1.1.1), put in place to ensure recruitment overfishing is not taking place by shortening the fishing season if there are environmental conditions indicating likely poor recruitment. The control rule takes into account both oceanic conditions in the larval year, as well as fishery catch rates during the year of age-1 recruitment as in-season indicators of stock status (Hannah et al. 2018).

Annual and in-season monitoring of geo-spatial fishing patterns, catch rates, and biological data, as well as forecasting of the next season's recruitment, ensure that the elements of the harvest strategy work together, ensuring that it is responsive to the state of the stock, and that appropriate management action is taken (shortening the fishing season), should the target and limit reference points be approached.

There is good cooperation between the WOC enforcement personnel and their respective state fish and wildlife departments in identifying and resolving issues (e.g. count per pound, BRD requirements) as they arise.

The team concludes the harvest strategy is robust, responsive to the state of the stock, and is designed to achieve stock management objectives reflected in PI 1.1.1 SG80. Requirements at the SG 100 level are met.

b	Harvest strategy evaluation

	Guide post	The harvest strategy is **likely** to work based on prior experience or plausible argument.	The harvest strategy may not have been fully **tested** but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been **fully evaluated** and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	**Yes**	**Yes**	**No**

Rationale

Although there is no annual quota, the harvest strategy has helped to ensure a sustained and healthy fishery since its inception. Long-term fishery impacts are not detectable, and recruitment is heavily influenced by environmental factors during the larval stages (Hannah and Jones 2014, 2016, Hannah et al. 2018, Groth et al. 2022). Regulations are effective in providing additional protection for the spawning stock and recruitment, and additional season-shortening measures in Washington, Oregon, and California should target or limit thresholds be approached, provide extra precaution (Hannah et al. 2018, Wargo et al.2017, CDFW 2022).

Evidence of the full interaction between the harvest strategy components is provided in annual fishery reports, where fishery regulation, enforcement, and research updates are reported, along with an assessment of stock status with respect to the reference points, including a review of the fishery, biological, and environmental data that contribute to the assessment (Groth et al. 2022, Wargo et al. 2022).

Over the history of the fishery, two successive year class failures have not been observed, providing evidence that the strategy is achieving its objectives. Target and limit reference points are in place, and recruitment and stock size have been high, thus the effectiveness of management action should these trigger levels be reached have not been fully tested. However, modelling work used to determine appropriate threshold levels provides evidence that this aspect of the harvest strategy will achieve its objectives (Hannah and Jones 2016, Hannah et al. 2018).

Compliance with rules is monitored principally shore-side by the respective state enforcement authorities, agency staff, and fish processing plants. The federally sponsored at-sea observer program (WCGOP) was implemented in 2001 for the limited entry groundfish trawl fishery. Observers were first deployed in the pink shrimp fishery in 2002. Monitoring through these programs is considered sufficient to ensure that the components of the harvest strategy are implemented successfully.

Monitoring is in place and the 65-year history of the landings demonstrates that, while there are fluctuations, the CPUE is well above average (Groth et al. 2022), providing evidence that objectives are being achieved.

The evidence presented demonstrates that the fishery meets the SG80. The fishery does not meet the SG100 because 1) to date, environmental conditions have not caused recruitment and stock size to fall to levels that would trigger management action (precluding a full evaluation of the harvest strategy), and 2) uncertainty remains regarding how robust and precautionary the strategy will be in the event of long-term climate change, and other unforeseen environmentally related fluctuations in ocean productivity.

	Harvest strategy monitoring			
c	Guide post	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	**Yes**		

Rationale

Harvest control rules (see PI 1.2.2) are described, communicated and enforced. During the fishing season, Oregon, Washington and California monitor fishery performance, collecting information on the distribution of fishing effort, size, and sex. Logbook records are required for this fishery. Additionally, the WCGOP provides at-sea monitoring and estimation of catch and bycatch. The evidence demonstrates that the fishery meets the SG60 level.

	Harvest strategy review			
d	Guide post			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			**Yes**
Rationale				

The harvest strategy is periodically reviewed and improved by ODFW, when the relationship between ocean conditions (SLH) and stock biomass is re-examined and evaluated. This was reviewed at the time target and limit reference points were developed for the fishery, and consisted of looking at indices of recruitment and spawning stock and their relationship to selected environmental variables and CPUE in the fishery (Hannah and Jones 2016). The results of that review were updated indices and further support that population size and recruitment of pink shrimp are largely environmentally driven. Two subsequent reviews followed (Groth and Hannah 2018, Groth et al. 2021). Although these reviews have thus far been undertaken by ODFW scientists and managers, they have evaluated the performance of the entire fishery's harvest strategy, thus also benefiting participants in California and Washington. Scoring is met at the SG 100 level.

	Shark finning			
e	Guide post	It is **likely** that shark finning is not taking place.	It is **highly likely** that shark finning is not taking place.	There is a **high degree of certainty** that shark finning is not taking place.
	Met?	**NA**	**NA**	**NA**
Rationale				

Shrimp are not sharks

	Review of alternative measures			
f	Guide post	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	**NA**	**NA**	**NA**

Rationale

A negligible percentage of the total catch (mostly small shrimp, early in the season) are discarded annually. Count-Per-Pound regulations discourage fishermen from catching small shrimp, and avoidance of areas of small shrimp is actively practiced. Total discard in a year is estimated to be 2% of the season catch, from observer data (Groth 2021).

Given the long history of the fishery, and based on recent interviews with managers, the assessment team deemed scoring of SIf to be not applicable.

References

Abramson, et al. 1981; Groth 2021, Groth et al. 2022, Groth and Hannah 2018, Hannah et al. 2018, Hannah and Jones 2014, 2016, Wargo et al. 2017, 2022.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought on current levels of observer coverage**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**95**
Condition number (if relevant)	

PI 1.2.2 – Harvest control rules and tools

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a	HCRs design and application			
	Guide post	**Generally understood** HCRs are in place **or available** that are **expected** to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	**Well defined** HCRs are **in place** that **ensure** that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock **fluctuating around** a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock **fluctuating at or above** a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, **most** of the time.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The fishery is managed by season duration to protect spawning females, and count-per-pound to protect recruiting shrimp by reducing fishing mortality of age-1 shrimp, thereby increasing the size of spawning stock at the end of each season and ensuring shrimp are taken at a marketable size (Abramson et al. 1981, Groth et al. 2018). In addition, measures to shorten the shrimp season in Oregon (Hannah et al. 2018), Washington (Wargo et al. 2017), and California (CDFW 2022), should target and limit thresholds be approached, are appropriate to ensure that the exploitation rate is appropriately reduced when conditions indicate poor recruitment is likely. As stock dynamics are largely controlled by environmental factors, these rules are precautionary measures.

Signals that would trigger measures to respond to a significant risk to recruitment are given in Hannah et al. (2018). These are: 1) when the June average catch per trip is less than 12,500 lb (proxy target value), the season will be closed on October 15th and will not re-open until April 15th of the following year, and 2) when the mean Crescent City SLH from April of the year prior to January of the current year exceeds 7.5 ft ***and*** the average June catch-per-trip in the current year drops below 10,000 lbs.(proxy limit values) the fishery will be closed as soon as possible and will not be re-opened until April 15th of the following year. The combination of these two situations could indicate a scenario where spawning stock biomass is likely to fall below the lowest observed spawning stock biomass (B_{loss}).

These HCRs have been adopted in all three of the coastal pink shrimp management plans (Hannah et al. 2018, Wargo et al. 2017, CDFW 2022).

The team concludes that the HCRs are expected to keep the stock fluctuating at or above an appropriate level most of the time, and scoring at the SG100 level is appropriate.

b	HCRs robustness to uncertainty			
	Guide post		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a **wide** range of uncertainties including the ecological role of the

				stock, and there is **evidence** that the HCRs are robust to the main uncertainties.
	Met?		**Yes**	**No**
Rationale				

The main uncertainties relate to the protection of recruitment, and spawning females, when the ocean environment is not favorable for survival. The HCRs were crafted as precautionary measures to explicitly address and respond to unfavorable ocean conditions using CPUE and SLH measures as proxy target and limit values (see SIa). The HCRs are likely to be robust to these uncertainties, and scoring requirements are met at the SG80 level. Although the control rules are likely to be robust to the main uncertainties, there is no evidence to suggest that they take into account a wide range of uncertainties (e.g. the effects of long-term climate change). Also, the HCRs have not been empirically tested. Therefore, requirements are not met at the SG100 level.

c	HCRs evaluation			
	Guide post	There is **some evidence** that tools used **or available** to implement HCRs are appropriate and effective in controlling exploitation.	**Available evidence indicates** that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	**Evidence clearly shows** that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	**Yes**	**Yes**	**No**
Rationale				

The continued healthy state of the stock throughout the 65-year history of the fishery and the apparent lack of any significant negative fishery effects provide evidence that existing management tools are appropriate as precautionary measures.

Two independent proxies are employed by the HCRs to indicate that it is likely that overfishing is not occurring: 1) an environmental variable (SLH) to monitor ocean conditions, and 2) a proxy for standing stock abundance (fishery CPUE).

Additionally, essentially uniform HCRs have been adopted across all three states (Hannah et al. 2018, Wargo et al. 2017, CDFW 2022), providing evidence that the tools in use are appropriate and will be effective in achieving the level of exploitation required on a coastwide basis.

The evidence supports that scoring requirements are met at the SG 80 level. The fishery does not meet the SG100 level because uncertainty remains regarding how effective the HCRs will be in the event of long term climate change, and other unforeseen environmentally related fluctuations in ocean productivity.

References

Abramson et al.1981; Hannah et al. 2018; Wargo et al. 2017; CDFW 2022

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**85**
Condition number (if relevant)	

PI 1.2.3 – Information and monitoring

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Range of information			
	Guide post	**Some** relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	**Sufficient** relevant information related to stock structure, stock productivity, fleet composition and other data are available to support the harvest strategy.	A **comprehensive range** of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Managers have developed a harvest strategy for pink shrimp that recognizes the importance of ocean environmental conditions to pink shrimp stock status, as the key driver of recruitment and spawning. Fishery effects are relatively less significant (Hanna and Jones 1991), and the ability to manage the fishery in a way that produces a stable annual yield is very limited (Hannah et al. 2018).

SA2.6.1.1 identifies a range of information categories to be considered for relevance when assessing this performance indicator. Given the harvest strategy design and operation based on monitoring of environmental conditions and fishery parameters, the team determined that the information most relevant in support of the harvest strategy are: 1) ocean environmental conditions relevant to pink shrimp recruitment and survival, 2) stock abundance (monitored using proxies based on fishery data), and 3) fishery data collected in support of the harvest strategy and HCRs, including the monitoring of catch, effort, and the geo-spatial distribution of removals.

Environmental information. Oceanographic factors explain most of the variation in recruitment and, subsequently, the abundance of adults. Recruitment has been negatively correlated with April sea level height and it has been inferred that, when winter-like current conditions extend into the spring beyond the average timing of transition, newly released shrimp larvae are advected to the north away from favorable habitat. Furthermore, strong periods of upwelling may result in shrimp larvae being advected offshore and also away from favorable habitat (Hannah 1993, 1995. 1999, 2010, 2011). In the design and operation of the harvest management strategy, ODFW has assembled, and continues to annually review, ocean environmental data in support of the stock assessment, HCRs, and their evaluation (Hannah et al. 2018, (Groth et al. 2022). As part of the operating HCR, the relationship between SLH and spawners is routinely reviewed, and SLH is used as an input value to the HCR as a limit trigger Groth et al. 2022.

Stock abundance information. ODFW updates the assessment of the pink shrimp stock status annually (Groth et al. 2022), in support of the harvest management strategy employed by the three coastal states (Groth et al. 2018, Wargo et al. 2017, CDFG 2022). Information on stock abundance is derived primarily from fishery data, including CPUE information (catch per trip and lbs per SRE hour). Average June catch per trip is monitored

and used as a target and limit value in the HCR. Population size/age structure data are also compiled annually from biological sampling of the catch in Oregon and Washington, in support of the stock assessment (Groth et al. 2022, Wargo et al. 2022). An annual evaluation of the geo-spatial distribution of fishery removals is also conducted in support of the assessment, by both ODFW and WDFW (Groth et al. 2018, Wargo et al. 2017). This provides an auxiliary indicator of stock abundance, as the size of the shrimping area is known to vary with population size (Hannah 1995).

Fishery data. As noted above, fishery data are important to inform the harvest management strategy. Pink shrimp landings are recorded through the use of fish tickets in Washington, Oregon, and California. All three states also monitor the fishery by collecting and analysing logbook data. In Washington, Oregon, and California, biological samples from landed catch are collected and analysed. Shrimp trips have been observed in Washington, California, and Oregon by the West Coast Groundfish Observer Program (WCGOP) since 2002. This is a statistically based sampling program and estimates of shrimp and groundfish catch and discard are quantified from the observed trips.

Scientists at ODFW have been historically very active in pink shrimp research, and the ODFW pink shrimp management plan contains a prioritized list of ongoing research needs (Hannah et al; 2018). A summary of recent research findings in reported annually in the *Pink Shrimp Review* document (Groth et al. 2022). Additionally, historical and current data, along with a summary of active research, are reported by Washington in an annual pink shrimp report (Wargo et al 2022), and by California on a routine basis in an Enhanced Status Report (ESR) (CDFW 2022).

The information described above represents a comprehensive range which is considered supportive of the harvest strategy and is inclusive of an analysis of the environmental influence on the stock. The assessment team concludes that the requirements of the SG100 are met.

	Monitoring			
b	Guide post	Stock abundance and UoA removals are monitored and **at least one indicator** is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are **regularly monitored at a level of accuracy and coverage consistent with the harvest control rule**, and **one or more indicators** are available and monitored with sufficient frequency to support the harvest control rule.	**All information** required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent **uncertainties** in the information [data] and the robustness of assessment and management to this uncertainty.
	Met?	**Yes**	**Yes**	**No**
Rationale				

In-season tracking and annual summaries of data meet the data requirements for the assessments to ensure that stock size/composition, catch and effort are appropriately monitored (Hannah et al. 2018; Groth et al. 2022,).

Annual and in-season assessments support the management tools and ensure that stock abundance and catch are regularly monitored. The information from logbooks, fish tickets and State sampling programs provides input for the assessment (catch, effort, CPUE, size/age composition) and is considered accurate and spatially representative.

The West Coast Groundfish Observer Program (WCGOP) is a statistically based sampling program and estimates of shrimp and groundfish catch and discard are quantified from the observed trips.

CPUE is an index of stock biomass and dockside sampling, logbooks and fish tickets monitor the fishing season, fishery removals, and count per pound (WOC enforcement and plant monitoring). Environmental indices likely to impact recruitment, such as sea surface height are also monitored.

Stock assessment scientists at ODFW have additionally identified various areas of uncertainty, including the accuracy of the count/lb, the extent of unobserved and unrecorded discard, and the representativeness of the observer coverage.

The team concludes that stock abundance, removals, and indicators are monitored at a level of accuracy and coverage consistent with the harvest control rules and thus requirements at SG80 are met.

There appears to be a good, albeit, qualitative understanding of the robustness of assessment and management to the inherent uncertainties in the information; however, the pink shrimp HCRs rely in part on an environmental index of abundance (SLH) that is not characterized by high certainty. Thus, SG 100 is not met.

	Comprehensiveness of information			
c	Guide post		There is good information on all other fishery removals from the stock.	
	Met?		**Yes**	
Rationale				

Landings data from Canada, when combined with Washington, California, and Oregon data, provide good information on all directed fishery removals, reaching the SG80 level.

No other fishery retains this species as by-catch. Discarding of shrimp within the shrimp fishery has been quantified and is considered negligible (Groth 2021). There are no commercial or recreational pot fisheries targeting pink shrimp.

References

Abramson et al. 1981; Groth et al. 2022; Groth 2021; Hannah 1993, 1995, 1999, 2010, 2011; Hannah and Jones 1991; Hannah et al. 2018; Wargo et al. 2022; CDFG 2022;

Daft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**90**
Condition number (if relevant)	

PI 1.2.4 – Assessment of stock status

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guide post		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		**Yes**	**Yes**
Rationale				

The assessment for pink shrimp was designed recognizing that stock dynamics are driven primarily by environmental factors (see Section 7.2.1b, above). Reviews of stock trends in distribution, biomass and size/sex composition facilitate an evaluation of current stock conditions in a historical context and in relation to harvest control rules (see PI 1.2.2 and 1.2.3 above). An environmental model (Hannah and Jones 2014, 2016; Groth et al. 2022) predicts recruitment for the short term and demonstrates the critical role of the environment in stock dynamics.

The stock does not lend itself to traditional, fishery assessment models that can be used to produce abundance-based target and limit reference points. Rather, the assessment relies on empirical data to assess current stock status and an environmentally driven recruitment model to forecast recruitment for the next fishing season. Therefore, the assessment is appropriate for the stock because it explicitly captures the biology of the species (recruitment dynamics) and nature of the fishery (largely dependent on recruitment). As control measures (i.e. closed season, count per pound, and shortening the season as target or limit reference indicators are reached) are designed to help avoid recruitment overfishing, the assessment is equally appropriate for the harvest control rule.

The modelling efforts by ODFW for pink shrimp are impressive, especially given that lengthy time series of stock production and environmental data are required for their construction. The ODFW research on pink shrimp, with respect to environmental forcing, rates highly when compared to similar efforts for other pandalid stocks throughout the northern hemisphere. The researchers at ODFW are proactive in understanding what drives production for pink shrimp, providing relevant information supported by careful analysis, and this benefits the WOC fishery as a whole.

The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA, and scoring is met at the SG100 level.

b	Assessment approach			
	Guide post	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	**Yes**	**Yes**	
Rationale				

As noted above (PI 1.1.1), the pink shrimp stock is managed using a set of proxy indicators and empirical observations relevant for the context in which they are used. Assessment of the stock incorporates: 1) an environmental index to forecast recruitment, 2) an input based control rule with proxy target and limit reference points, 3) an evaluation of the size-age composition of the fishery landings to assess the strength of year classes expected to support the fishery in the coming year, 4) ongoing monitoring of the historical trend in fishery CPUE, and 5) examination of the geo-spatial distribution of pink shrimp catches to look for any shrinkage of the fishing area, a potential sign of reduced abundance.

The assessment is produced annually by ODFW, using data largely collected from the Oregon fishery operating off the Oregon and Washington coasts (Groth et al. 2022). Biological data (size/age composition), and the geo-spatial distribution of the catch landed in Washington are also contributed by WDFW (Wargo et al. 2022). Though the assessment relies on data collected from pink shrimp removals taken off Oregon and Washington, the assessment is considered representative of the UoA as a whole (over 90% of coastwide landings are taken off Oregon and Washington – see section 7.2.1, Figure 13). Also, California has recently implemented an FMP, and data contributions from CDFW in support of the stock assessment are anticipated in the future (CDFW 2022).

Periodically, ODFW shrimp biologists analyse historical data from the pink shrimp fishery, update long-term recruitment and spawning stock indices, and re-examine existing environmental models to determine if there is any evidence that fishing has negatively impacted recruitment (Hannah and Jones 2016; Groth and Hannah 2018; Groth et al 2021).

In summary, evidence indicates the assessment estimates stock status relative to reference points that are appropriate to the stock, and can be estimated. Scoring requirements are met at the SG80 level.

c	Uncertainty in the assessment			
	Guide post	The assessment **identifies major sources** of uncertainty.	The assessment **takes uncertainty into account**.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a **probabilistic** way.
	Met?	**Yes**	**Yes**	**No**
Rationale				

The major uncertainty of the assessment deals with predicting environmental effects on future stock conditions, and the assessment takes this uncertainty into account. Scoring is met at the SG 80 level. Fishery effects are masked by environmental influences on the survival of recruits. Retrospective studies are periodically conducted for environmentally based models to help explain trends in population abundance (Hannah 1993, 1999, 2010, 2011; Hannah and Jones 2016). The stock is not evaluated relative to reference points in a probabilistic way, precluding a score at the SG100 level.

d	Evaluation of assessment			
	Guide post			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			**Yes**

Rationale

A comprehensive coastwide stock assessment for ocean shrimp was conducted and documented in the Fishery Management Plan for Pink Shrimp (Abramson et al. 1981). Coastwide assessments were made using a Schaefer-type production model for Washington, Oregon, and California catch and effort for the period 1959-1980 (Abramson and Tomlinson 1972). Analysis of the use of this model by Geibel and Heimann (1976) outlined the difficulties of setting meaningful quotas for a stock that appears to be more sensitive to environmental variation than effects of the fishery. General production, yield per recruit and catch-at-age models have been largely unsuccessful in assessing stock status and establishing reference points for management of the pink shrimp fishery. Environmentally based models, on the other hand, have been useful for explaining variation in recruitment but failed to detect any consistent impact of the fishery on future stock abundance (e.g. no consistent stock-recruitment relationship) (Hannah et al 2018).

These early efforts preceded the current stock assessment approach, and provide evidence of a robust exploration of alternative hypotheses and models, supporting a scoring at the SG100 level.

	Peer review of assessment			
e	Guide post		The assessment of stock status is subject to peer review.	The assessment has been **internally and externally** peer reviewed.
	Met?		**Yes**	**Yes**

Rationale

Annual assessments for the WOC pink shrimp fishery conducted by ODFW are reviewed by the ODFW Program supervisor, the Program Manager of the Marine Program and the harvest manager of Fish Division (e.g. Groth et al. 2022). In addition, when periodic evaluations of the evidence for any influence of spawning stock on recruitment are conducted and are submitted for journal publication, they are reviewed by two people internally, then by NMFS staff, and then by 2-4 external journal peer-reviewers.

In addition to internal peer review, periodic independent outside peer reviews have reviewed the monitoring program and stock assessment approach (Golden 2008; Golden Marine Consulting (2017).

The assessment has been internally and externally reviewed, and scoring is met at the SG 100 level.

References

Abramson et al. 1981; Abramson and Tomlinson 1972; CDFW 2022; Geibel and Heimann 1976; Golden 2008; Golden Marine Consulting 2017; Groth and Hannah 2018; Groth et al. 2021; Groth et al. 2022; Hannah 1993, 1999, 2010, 2011; Hannah and Jones 2014, 2016; Hannah et al. 2018; (Wargo et al. 2022).

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**95**

Condition number (if relevant)	

7.3 Principle 2

7.3.1 Principle 2 categorizations

Species categorization in P2:

Primary species in Principle 2 are those that meet the following criteria:

- Species in the catch that are not covered under P1 because they are not included in the UoA;
- Species that are within scope of the MSC program as defined in FCR 7.4.1.1; and
- Species where management tools and measures are in place, intended to achieve stock management objectives reflected in either limit or target reference points.

Secondary species are classified as follows:

- They are not considered 'primary' as defined in SA 3.1.3; or
- They are out of scope for MSC certification (i.e., birds, reptiles, or mammals) but are not Endangered Threatened or Protected (ETP) species.

We designate "main" primary and secondary species as those which comprise at least 5% of the total catch, or at least 2% of the total catch for "more vulnerable/less resilient" species, whose life history characteristics may make them more prone to overexploitation. All "out of scope" secondary species must be classified as "main."

ETP species are classified per section SA3.1.5 of the MSC Fisheries Standard (v2.01) as species that are recognized by national ETP legislation; species that are listed in one or more of the binding international agreements given in SA3.1.5.2; or species classified as out-of-scope that are listed in the IUCN Redlist as vulnerable, endangered or critically endangered.

Habitats categorization in P2:

MSC requires that if a fishery interacts with benthic habitats, they shall be categorized according to the characteristics "substratum, geomorphology, and biota," and requires that encountered habitats are classified as "commonly encountered, VME, or minor/other" according to the following definitions:

- "A commonly encountered habitat shall be defined as a habitat that regularly comes into contact with a gear used by the UoA, considering the spatial (geographical) overlap of fishing effort with the habitat's range within the management area(s) covered by the governance body(s) relevant to the UoA; and
- A VME shall be defined as is done in paragraph 42 subparagraphs (i)-(v) of the FAO Guidelines7 (definition provided in GSA3.13.3.22) [as having one or more of the following characteristics: uniqueness or rarity, functional significance, fragility, Life-history traits of component species that make recovery difficult, and/or structural complexity]. This definition shall be applied both inside and outside EEZs and irrespective of depth."

Both commonly encountered and VME habitats are considered 'main' habitats for scoring purposes where they overlap with the fishery under assessment.

7.3.2 Overview of Non-target Catch

Primary and Secondary Species

Pink shrimp comprises over 96% of the catch, therefore there are no main primary or secondary species in this fishery according to MSC definitions. Minor primary species are listed in Table 7 (orange rows; FRAM Data Warehouse 2021). Of these, Pacific hake, darkblotched rockfish, Dover sole, splitnose rockfish, chilipepper

rockfish, and arrowtooth flounder are all managed under the Pacific Groundfish Fisheries Management Plan (FMP; PFMC 2020) and separately MSC certified with no conditions in P1 on any of these species. Hence, they are all highly likely to be above PRI. The remainder of the minor primary species are also managed under the Pacific Groundfish FMP and none of them are listed on the overfished species list (Appendix F, PFMC 2020).

Secondary species are those listed in the white rows of Table 7. These are all considered as minor species due to the low levels of catch relative to the target pink shrimp catches. They are classified as secondary species because rather than being in the Pacific groundfish FMP, they are considered as "Ecosystem Component" species and thus are not managed with stock specific reference points.

Table 7. Catch composition in the coastwide pink shrimp fishery from 2016-2020. The green row is the target species, orange rows are primary minor species and white rows are secondary minor species (NWFSC FRAM Data Warehouse 2021), based on 10-15% of trips observed (Jannot et. al. 2018)

Year	2016	2017	2018	2019	2020	Total	Percentage of catch
Species	Catch (tons)						
Pink Shrimp (*Pandalus jordani*)	23,881.7	15,009.3	22,333.6	17,479.4	26,208.8	104,912.7	96.14%
Shrimp Unid (*Panaeus spp.*)	368.5	143.6	311.4	144.5	419.6	1,387.7	1.27%
Pacific Hake (*Merluccius productus*)	524.7	376.6	118.6	39.3	96.5	1,155.8	1.06%
Slender Sole (*Lyopsetta exilis*)	70.2	71.6	145.2	115.6	79.3	482.0	0.44%
Non-Humboldt Squid Unid (*Decabrachia spp.*)	4.6	6.1	87.6	130.4	40.5	269.2	0.25%
Rex Sole (*Glyptocephalus zachirus*)	33.9	31.2	28.3	27.1	19.4	139.8	0.13%
Salp Unid (*Salpidae spp.*)	1.4	60.5	67.1	0.1	8.7	137.8	0.13%
Jellyfish Unid (*Scyphozoa spp.*)	13.7	0.4	70.0	2.5	0.7	87.3	0.08%
Non-Eulachon Smelt Unid (*Osmeridae spp.*)	5.3	1.0	4.0	14.5	53.0	77.8	0.07%
Eelpout Unid (*Zoarcidae spp.*)	14.0	9.8	20.0	22.6	3.6	70.0	0.06%
Darkblotched Rockfish (*Sebastes crameri*)	6.4	6.1	3.1	2.8	17.0	35.4	0.03%
Pacific Herring (*Clupea pallasii*)	10.1	2.6	8.2	7.5	2.7	31.1	0.03%
Shortbelly Rockfish (*Sebastes jordani*)	2.2	21.5	3.0	1.2	0.3	28.3	0.03%
Hagfish Unid (*Myxini sp.*)	5.9	7.2	7.0	5.7	2.4	28.1	0.03%
Stripetail Rockfish (*Sebastes Saxicola*)	2.8	7.9	9.5	4.3	1.5	26.0	0.02%
Pacific Sanddab (*Citharichthys sordidus*)	10.0	2.7	3.2	4.8	1.8	22.5	0.02%
Dover Sole (*Solea solea*)	3.6	4.6	4.4	5.4	3.9	21.9	0.02%
Splitnose Rockfish (*Sebastes diploproa*)	1.0	3.8	4.4	5.4	0.7	15.3	0.01%
Poacher Unid (*Agonidae spp.*)	1.3	3.1	5.1	3.0	2.3	14.8	0.01%
Anchovy Unid (*Engraulidae spp.*)	0.1	0.1	0.6	0.4	11.6	12.8	0.01%
Herring Unid (*Clupea spp.*)	2.0	2.1	0.8	1.3	4.3	10.5	0.01%
Urchin Unid (*Echinoidea spp.*)	0.2	4.3	5.4	0.1	0.1	10.1	0.01%
Arrowtooth Flounder (Atheresthes stomias)	4.5	1.1	1.0	0.7	1.4	8.7	0.01%
Flatfish Unid (*Pleuronectiformes spp.*)	2.3	2.1	1.3	2.8	0.0	8.5	0.01%
Sea Anemone Unid (*Actiniaria spp.*)	2.3	2.6	1.7	1.2	0.4	8.3	0.01%
Shelf Rockfish Unid (*Sebastes spp.*)	0.8	2.7	0.9	1.0	2.7	8.1	0.01%

Chilipepper Rockfish (*Sebastes goodei*)	0.4	2.6	2.8	0.2	0.3	6.3	0.01%

In addition to these minor secondary species, there is one main secondary bird species, sooty shearwater. This is considered as main secondary because it is "out of scope" but not ETP. There is also a small number of estimated mortalities from this fishery to pink-footed shearwater, which is classified as ETP because it is "vulnerable" under the IUCN redlist criteria, and one of two shearwaters covered under the Agreement on the Conservation of Albatrosses and Petrels (ACAP). Mortality estimates from Jannot et. al. (2021) are shown in Table 8.

Table 8. Seabird mortality estimates in the Washington, Oregon and California pink shrimp fisheries from 2012-2018 (from Jannot et. al. 2021).

	2012		2013		2014		2015		2016		2017		2018	
Species	Estimate	LCL–UCL	Estimate	LCL–UCL	Estimate	LCL–UCL	Estimate	LCL–UCL	Estimate	LCL–UCL	Estimate	LCL–UCL	Estimate	LCL–UCL
Washington														
Sooty shearwater	21.34	17–27.6	8.83	3.1–16.8	13.44	5–25.9	26.78	12.4–43.8	11.11	4.9–19.6	9.11	3.9–15.2	9.09	3.6–16
Gull, unidentified	1.09	0–3.6	1.73	0–5.9	4.33	1.2–11.6	3.60	0.1–10.8	1.33	0–4.5	0.77	0–2.6	1.02	0–3.3
Oregon														
Sooty shearwater	7.02	2.5–13.5	20.61	16.2–27	9.32	3.2–18.3	11.45	4.4–21.6	10.05	4.4–17.8	9.60	4–16.8	12.35	5.7–21.1
Shearwater, unidentified	1.63	0–5	1.66	0–5.2	4.23	2.1–8.1	2.58	0.1–7.4	2.05	0.2–5.5	1.96	0.2–5.4	2.46	0.3–6.5
California														
Pink-footed shearwater	1.08	0–3.7	1.64	0–5.6	1.22	0–3.9	2.09	0–6.4	0.81	0–2.5	0.96	0–3.1	1.53	0–4.9

The pink shrimp fishery kills between 3 and 40 sooty shearwaters **(***Ardenna grisea*) annually (Jannot et. al. 2021). Sooty shearwaters have a cosmopolitan distribution globally, with a population size of approximately 8.8 million individuals. They are native residents in the southern hemisphere, with breading colonies in New Zealand and southern South America (e.g. Falkland Islands). The US west coast is part of their native non-breeding habitat (Birdlife 2022a). They are listed as Near Threatened on the IUCN red list because they have undergone a "moderately rapid" decline owing to the impact of fisheries, the harvesting of its young, and possibly climate change. In New Zealand, about 250,000 sooty shearwaters are harvested annually for oils and food by the indigenous Māori population (McGonigal 2008). With its small number of encounters relative to other threats globally, there is a high degree of certainty that this fishery is not adversely affecting the sooty shearwater population.

Endangered, Threatened and Protected (ETP) species

According to MSC definitions for ETP species, it is relevant to first look at ETP legislation within the United States to determine which species/populations to consider in this assessment as ETP scoring elements. Of relevance is the Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), and Migratory Bird Treaty Act.

Endangered Species Act (ESA)

According to MSC definitions for ETP species, in addition to listings under binding international agreements such as ACAP (above), it is relevant to first look at ETP legislation within the United States to determine which species/populations to consider in this assessment as ETP scoring elements.

NOAA's Office of Protected Resources (OPR) is the program responsible for protecting endangered/threatened marine life. The OPR works in cooperation with NOAA regional offices and science centers. Responsibilities of the program include listing species under the ESA and designating critical habitat, developing and implementing recovery plans for listed species; consulting on any Federal actions that may affect a listed species to minimize the effects of the action; investigating violations of the ESA and authorizing research on protected species.

The ESA (United States 1983), signed on 1973, provides for the conservation of species that are endangered or threatened and the conservation of the ecosystems on which they depend. NOAA has jurisdiction over endangered and threatened marine species and works with the U.S. Fish and Wildlife Service (USFWS) to manage ESA-listed species. Generally, NOAA manages marine species, while USFWS manages land and freshwater species.

Section 4(f) ESA directs NOAA's National Marine Fisheries Service (NMFS) to develop and implement recovery plans for threatened and endangered species. NMFS Office of Law Enforcement works with the U.S. Coast Guard and other partners to enforce and prosecute ESA violations (NOAA).

Recovery plans for ESA-listed species must include: (1) a description of site-specific management actions necessary to conserve the species or populations; (2) objective, measurable criteria which, when met, will allow the species or populations to be removed from the endangered and threatened species list; and (3) estimates of the time and funding required to achieve the plan's goals. Each ESA-listed species has a recovery plan, and regular updates on progress toward recovery.

When a species is listed as endangered it is illegal to "take" (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to do these things) that species. However, Section 10 of the ESA allows NOAA Fisheries Service to issue permits for incidental take (Incidental Take Statements; ITS), with the requirement of a conservation plan to minimize and mitigate impacts to the affected species.

Section 7(a)(2) of the ESA requires that each federal agency shall ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species. When the action of a federal agency may affect species listed as threatened or endangered, that agency is required to consult with either NOAA's National Marine Fisheries Service (NMFS) or the USFWS, depending upon the species that may be affected. In instances where NMFS or USFWS are themselves proposing an action that may affect listed species, the agency must conduct intra-service consultation.

The product of a formal consultation is a biological opinion (BiOp) that determines if the action is likely to jeopardize the continued existence of any ESA-listed species or result in the destruction of adverse modification of critical habitat. If an opinion determines that the proposed action is likely to jeopardize listed species or destroy of adversely modify critical habitat, it must include a "reasonable and prudent alternative (RPA)" that avoids the likelihood of jeopardy or adverse modification or otherwise indicate that to the best of the agency's knowledge, there are no RPAs. If the analysis concludes with a determination that the proposed action is not likely to jeopardize a listed species or destroy or adversely critical habitat and incidental take of listed species is reasonably certain to occur, then the biological opinion includes an incidental take statement (ITS) with the anticipated level of take of the listed species and "reasonable and prudent measures (RPM)" to avoid and minimize the take.

The pink shrimp fishery is considered one of the primary threats to the ESA-listed southern Distinct Population Segment (DPS) of Pacific eulachon smelt (*Thaleichthys pacificus*).

Other ESA-listed species with distributions that overlap with the pink shrimp fishery (though there are no known interactions) include:

- Chinook Salmon (*Oncorhynchus tshawytscha*) Lower Columbia River Evolutionarily Significant Unit (ESU), Snake River fall-run ESU; Snake River spring/summer-run ESU; Upper Willamette River ESU (Threatened (T))
- Coho Salmon (*O. kisutch*) Oregon Coast ESU; Southern Oregon–Northern California Coast ESU (T);
- Chum Salmon (*O. keta*) Columbia R ESU (T)

- Steelhead (*O. mykiss)* middle Columbia River; Snake River Basin; upper Willamette River (T)
- Southern Resident killer whale (*Orcinus orca*) (Endangered (E))
- Humpback whale (*Megaptera novaeangliae*) (E)
- Blue whale (*Balaenoptera musculus*) (E)
- Fin whale (*Balaenoptera physalus*) (E)
- Sei whale (*Balaenoptera borealis*) (E)
- Sperm whale (*Physeter macrocephalus*) (E)
- Steller sea lion (*Eumetopias jubatus*) (T); critical habitat
- Southern distinct DPS, of north American green sturgeon (*Acipenser medirostris*) (T),
- Leatherback sea turtle (*Dermochelys coriacea*) (E)
- Green sea turtle (*Chelonia mydas*) (E)
- Olive ridley sea turtle (*Lepidochelys olivacea*) (E)
- Loggerhead sea turtle (*Caretta caretta*) (T)
- Albatross, short-tailed (*Phoebastria* (=*Diomedea*) *albatrus*) (E)
- Marbled murrelet, CA, OR, WA (*Brachyramphus marmoratus*) (T)
- Western snowy plover, Pacific coastal pop. (*Charadrius alexandrinus nivosus*) (T)

Migratory Bird Treaty Act (Act)

Migratory bird conventions impose substantive obligations on the United States for the conservation of migratory birds and their habitats, and these migratory bird conventions have been implemented with respect to the United States through the Migratory Bird Treaty Act (Act). Executive Order 13186 (2012) directs executive departments and agencies to take certain actions to further implement the Act. Relevant to NOAA and NOAA fisheries, this executive order includes the following directions:

…identify where unintentional take reasonably attributable to agency actions is having, or is likely to have, a measurable negative effect on migratory bird populations, focusing first on species of concern, priority habitats, and key risk factors. With respect to those actions so identified, the agency shall develop and use principles, standards, and practices that will lessen the amount of unintentional take, developing any such conservation efforts in cooperation with the Service. These principles, standards, and practices shall be regularly evaluated and revised to ensure that they are effective in lessening the detrimental effect of agency actions on migratory bird populations. The agency also shall inventory and monitor bird habitat and populations within the agency's capabilities and authorities to the extent feasible to facilitate decisions about the need for, and effectiveness of, conservation efforts;

To this end, the National Seabird Program within NOAA fisheries has been developed. The following text is excerpted from the National Seabird Program website:
https://www.fisheries.noaa.gov/national/bycatch/seabirds

The National Seabird Program, formed in 2001, comprises managers and scientists form across NOAA Fisheries working domestically and internationally to protect and conserve seabirds. Activities are guided by a number of statutes and agency priorities, and the program has two overarching goals:

Monitor and Mitigate Bycatch: NOAA Fisheries is directly responsible for monitoring and mitigating bycatch in U.S. fisheries and supports a variety of international agreements and Regional Fisheries Management Organizations to mitigate bycatch associated with non-U.S. fisheries.

Promote Seabirds as Ecosystem Indicators: Seabirds are excellent indicators of ecosystem status. As highly migratory, near-apex predators, they travel across trophic levels, space, and time, and are easily studied relative to other marine species. This makes them excellent sources of information for ecosystem-based fisheries management plans, a holistic framework for ensuring that our fisheries are sustainable.

The National Seabird Program has representatives who sit on various working groups and steering committees focused on national and international coordination of efforts to manage and conserve seabirds. The National Seabird Program is a nationally coordinated program that benefits from significant leveraging at the regional level.

Included in the National Seabird Program are several national and regional initiatives aimed at reducing seabird bycatch (Ballence et. al. 2019), including in the West Coast Region. However, for trawl fisheries, there are no regulations directly related to seabird bycatch or mitigation requirements, but there is currently a combination of limited entry, gear restrictions, vessel landing limits and time/area closures in place to control effort in the fishery, thereby also limiting opportunities for seabird interactions. The primary concern for seabird interactions in trawl fisheries is the "third wire" allowing visual signals to be transmitted to the vessel while fishing, and there are collaborative research and industry initiatives in place to understand and, where necessary, deploy mitigation methods to reduce trawl-related seabird bycatch. However, the pink shrimp fishery does not use third wires and, as evident from Table 8, has negligible seabird bycatch.

With the exception of Pacific eulachon and pink-footed shearwater, there has been no interaction with ETP species recorded by observers of the shrimp trawl fishery (Jannot et. al. 2021; Jannot et. al. 2018).

Pink-footed shearwater (*Ardenna creatopus)*

Up to six pink-footed shearwater (*Ardenna creatopus)* mortalities have been estimated to occur in this fishery (all in waters off California; Jannot et. al. 2021). Pink-footed shearwaters are listed as vulnerable on the IUCN redlist because of its very small breeding range at three known locations, rendering it susceptible to stochastic events and human impacts (Birdlife 2022b). It is also covered under ACAP, thus making it an ETP species for the purposes of the MSC assessment. It is a native resident along the west coast of the Americas, including Hawaii, and has an estimated population size of 59,146 individuals.

Pacific eulachon (*Thaleichthys pacificus)*

This species is listed as threatened under the ESA. NMFS received an ESA petition from the Cowlitz Indian Tribe in November 2007 to list eulachon populations in Washington, Oregon and California. After reviewing the information presented in the petition and other information readily available in agency files, NMFS found that the petition presented substantial scientific or commercial information indicating that the petitioned action might be warranted. The agency initiated a status review of eulachon to determine if the species or distinct population segment(s) warranted ESA listing. NMFS proposed listing the southern DPS of eulachon on March 13, 2009. The effective date of the listing was May 17, 2010 (Federal Register, 2010). Critical habitat for eulachon was designated on December 19, 2011. The critical habitat does not include any marine waters where the candidate shrimp fishery operates (Federal Register, 2011).

Eulachon are endemic to the eastern Pacific Ocean, ranging from northern California to southwest Alaska and into the southeastern Bering Sea. Eulachon typically spend three to five years in saltwater before returning to freshwater to spawn from late winter through mid-spring. In the portion of the species' range that lies south of the U.S. – Canada border, most eulachon production originates in the Columbia River Basin. Other river basins in the U.S. where eulachon have been documented include the Mad River, Redwood Creek, and the Klamath River in California; the Umpqua River in Oregon; and infrequently in coastal rivers (primarily the Quinault and Elwha rivers) in Washington.

After reviewing the best scientific and commercial (statistics WDFW and ODFW keep for the Columbia River commercial fisheries and DFOs statistics for the Frasier and other Canadian rivers) information available, NMFS determined that the species is composed of two or more DPS. Following an evaluation of the threats facing the species, and considering efforts being made to protect these fish, the agency determined that eulachon spawning in rivers south of the Skeena River (inclusive) in British Columbia, Canada, to the Mad River (inclusive) in California, are likely to become endangered within the foreseeable future. The agency has

termed this unit of eulachon the southern DPS. Identified threats to this DPS include climate change effects on freshwater and marine habitats, bycatch in the pink shrimp fishery, water management and habitat changes in the Klamath and Columbia basins, and predation by marine mammals and birds, especially in the Fraser River and coastal rivers in British Columbia (NOAA, 2010).

NMFS released its five-year ESA review of Eulachon and a draft recovery plan for eulachon in 2016 (NMFS 2017). Neither document called for a change in the listing status of the southern DPS for eulachon; it remains ESA listed with the major threats identified as climate change and bycatch in the ocean shrimp trawl fisheries. An updated 5-year review is currently in development.

The major focus of the recovery plan for the 2016-2021 period has been to improve information about the status and trends of the eulachon population and the contribution of each of the major threats. Climate change is still identified as the major overriding risk to the population, and NMFS acknowledges that the threat associated with ocean shrimp trawling has been significantly reduced, and continues to be reduced, through advancements in bycatch mitigation. Other future recommended actions are directed at improving information on the impact of eulachon bycatch in the shrimp fishery include to (NMFS 2016a):

- Develop and implement a biologically-based analysis on the long-term effects of bycatch from the ocean shrimp fishery on eulachon recruitment.
- Develop and implement a research and monitoring plan to better understand the relationship between habitat types shared between eulachon and pink shrimp in the California Current.
- Develop and implement a monitoring plan to help quantify the benefits by-catch reduction methods.

Eulachon abundance

Several indices of eulachon abundance showed dramatic increases from 2011–2015, declines from 2016–2018, and subsequent increases in 2019 (Figure 14). Spawning stock biomass (SSB) estimates of eulachon in the Columbia River and mean catch per unit effort (CPUE; kg/h) of eulachon off west coast Vancouver Island (WCVI) as estimated in multispecies small mesh bottom trawl surveys (aka fishery-independent shrimp surveys) both increased by an order of magnitude between 2010 and 2015. However, estimates of eulachon SSB in the Columbia River and mean CPUE off WCVI began declining in 2016, and by 2018 these indices were at less than 3% and 5% of their average 2013–2015 levels, respectively. These declines through 2018 in indices of eulachon abundance parallel declines in estimated bycatch of eulachon in U.S. West Coast groundfish and pink shrimp fisheries, especially in 2016 and 2017. Eulachon abundance increased following 2018 as shown by both indices of abundance—Columbia River SSB and mean CPUE off WCVI— again paralleling increases in eulachon bycatch in U.S. West Coast groundfish and pink shrimp fisheries. Mean eulachon SSB in the Columbia River increased more than ten-fold from 2018 to 2019: however reliable data for 2020 SSB estimated are not available due to COVID-19 restrictions on fieldwork. Similarly, mean CPUE off WCVI increased five-fold from 2018 to 2019; however, recent eulachon CPUE data is unavailable, as this survey did not occur in 2020, again due to COVID-19 restrictions on fieldwork.

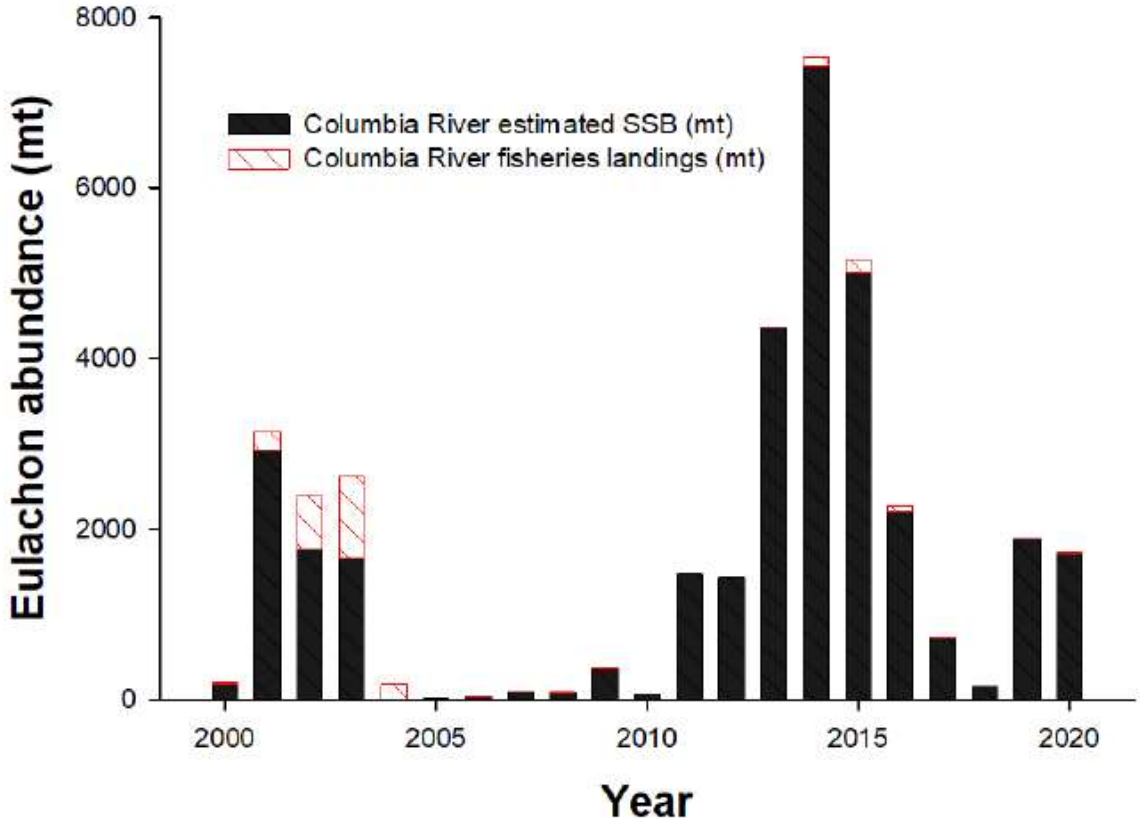

Figure 14 (Source: Gustafson et. al. 2021). Estimated Columbia River eulachon spawning stock biomass and commercial and recreational fisheries landings from 2000-2019. Data for 2020 are not available due to COVID-19 restrictions on fieldwork.

Bycatch reduction strategy

Currently, ocean shrimp vessels are required to use bycatch reduction devices (BRDs) that serve as deflecting grids to guide fin-fish towards an escape opening, which is usually on the top of the net. The primary goal of mandatory BRDs is to reduce bycatch of groundfish species, and more recently, protected species such as eulachon. Deflecting grate BRDs became mandatory in California in 2002 (Frimodig 2008, Frimodig et al. 2009) and in Washington and Oregon in 2003. Current regulations in Washington and Oregon, adopted by both states in 2012, require ocean shrimp trawl fishery BRDs to consist of a rigid panel or grate of narrowly spaced bars (usually constructed of aluminum) with no gaps between the bars exceeding 0.75 inches (19.1 mm).

As of 2018, Washington (WAC 220-340-500) and Oregon (OAR 635-005-0630) also mandate the use of LED (Light Emitting Diode) lights on the fishing line of each trawl net that meet regulatory specifications.

Although bycatch of eulachon has increased with increasing abundance of eulachon since 2018, the bycatch ratio has remained lower (Figure 15). This is expected, as studies of effectiveness of LED lighting (e.g. Lomeli et. al. 2018 and Lomeli et. al 2020) demonstrated that, as compared with using a BRD only, eulachon bycatch rate was significantly lower with LEDs on the fishing line.

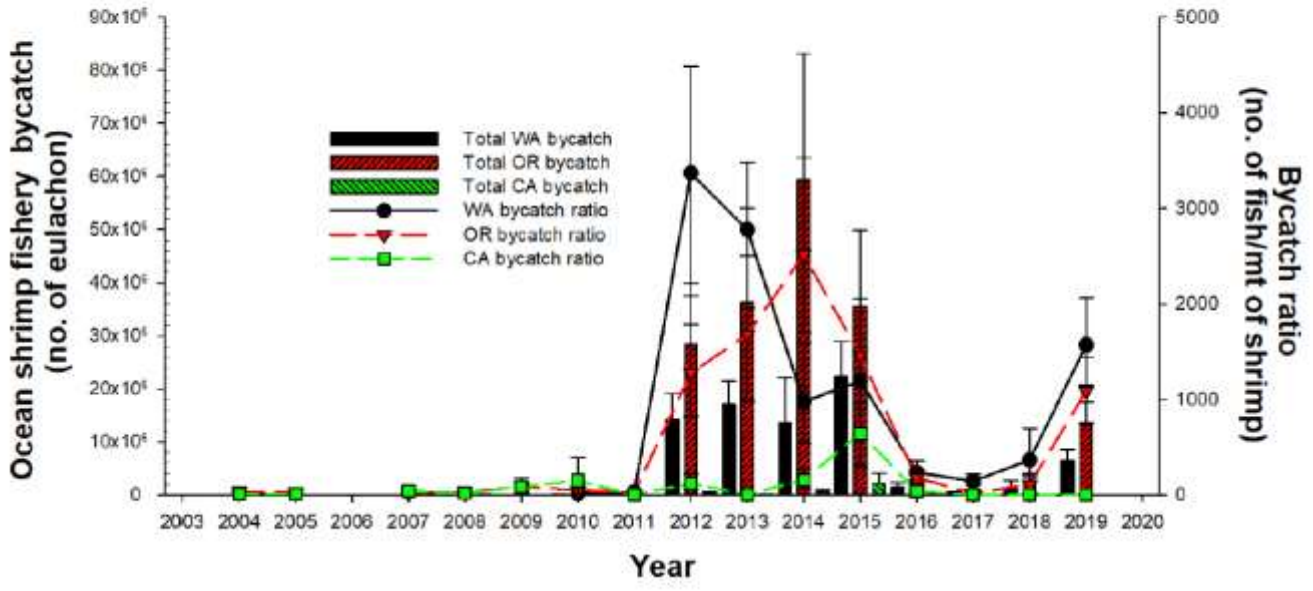

Figure 15 (Source: Gustafson et. al. 2021). Estimated total bycatch and bycatch ratios of eulachon in the CA, OR, and WA pink shrimp trawl fisheries.

7.3.3 Habitats and Ecosystems

The pink shrimp fishery off the US west coast operates within the California Current Large Marine Ecosystem (CCLME). The CCLME is a highly productive coastal ecosystem in the northeastern Pacific Ocean. Seasonal upwelling of cold, nutrient-rich water fuels populations of krill, squid, sardines and other species that are fed upon by larger fishes, seabirds and marine mammals. The ecosystem supports important fisheries and other activities (NOAA 2022).

The California Current Integrated Ecosystem Assessment (CCIEA) is an interdisciplinary research effort led by NOAA scientists along the U.S. West Coast with the goal to provide science support for ecosystem-based management of the CCLME. The CCIEA produces an annual California Current Ecosystem Status Report (e.g. CCIEA 2022). This comprehensive report tracks trends in climate and ocean drivers of ecosystem productivity; focal components of ecological integrity; fishery landings, revenue and activity; and human wellbeing. It supports the PFMC's Fishery Ecosystem Plan (FEP; PFMC 2022), first adopted in 2013 to enhance the PFMC's species-specific management programs with more ecosystem science, broader ecosystem considerations, and management policies that coordinate PFMC management across it's FMPs and the CCLME.

The FEP (PFMC 2022) has six well-articulated goals, each with specific objectives aimed at continued improvement in understanding of ecosystem dynamics and the effects of climate change and human-based activities to inform PFMC decision making; conservation of species and ecological relationships; protection and restoration of habitat diversity; and implementation of fisheries management that ensures continued ecosystem services.

The FEP contains ecosystem-based fishery management initiatives which focus on areas that affect multiple FMPs and they help the PFMC coordinate its management across these different areas. The first initiative under this plan was completed in 2015, resulting in several forage fish species becoming "ecosystem components" of the four PFMC Fishery Management Plans, with directed fishing prohibited on these without

further research and the development of specific FMPs for these species. One of the forage species included is eulachon smelt, an ESA listed species that is caught as bycatch in the pink shrimp fishery.

A model of the CCLME was published by Brand et. al. (2007), in which pink shrimp are included in the category of "benthic herbivorous grazers" along with sails, abalone, sand dollars, sea urchins, etc. Their recruitment and abundance are primarily driven by oceanographic conditions, however this model also shows a relationship between abundance of the main shrimp predators (hake and other finfish) and shrimp abundance, such that in an "unfished" scenario where finfish may be more abundant, pink shrimp are less abundant than today, suggesting a "top-down" relationship. But pink shrimp are not found to be key species—changes in shrimp abundance does not have an outsized impact on the abundance of higher trophic-level species.

Habitat

Double-rigged shrimp trawls are used in state-managed fisheries to harvest ocean shrimp, primarily over sedimentary shelf habitats north or Fort Bragg, California. The footrope of shrimp trawls is designed to run 12-18 in. above the seafloor, though a groundline made of discs or bobbins and sometimes tickler or ladder chains, do contact the seafloor. The components of shrimp trawls that do contact the bottom are much lighter than similar components used on groundfish bottom trawls (PFMC 2019). Though fishing areas do shift from year to year, fishing occurs on the sedimentary shelf over soft sand and mud substrate. Figure 6 shows the spatial distribution of catches landed in Oregon in 2021 and Figure 7 shows the same information for Washington.

Sensitivity to bottom trawling of the sandy and muddy shelf area habitat types where pink shrimp are harvested is rated as 1.2 on a scale of 0 to 3 (highest). Similarly, descriptions of sensitivity levels and recovery time (years) for gear impact assessments have been described. Recovery time for trawls (including shrimp trawl) is generally estimated at 0.4 years (PFMC, 2019) for soft shelf areas.

There are habitat types that could be considered as VME in the broader area in which the pink shrimp fishery takes place. For example, Habitat Areas of Particular Concern (HAPC; Figure 16) are defined based on the following considerations (50 CFR 600.815(a)(8)):

- The importance of the ecological function provided by the habitat
- The extent to which the habitat is sensitive to human-induced environmental degradation
- Whether, and to what extent, development activities are or will be stressing the habitat type
- The rarity of the habitat type.

These criteria are broadly similar to those MSC uses to guide assessment teams to defining VME where the term "VME" is not used within the jurisdiction of the assessment. The HAPCs defined in the US West Coast Essential Fish Habitat (EFH) are as follows, and none occur in pink shrimp trawl areas: Estuaries, Canopy Kelp, Seagrass, and Rocky Reefs. In addition, there are some "areas of interest" mainly comprising specific seamounts.

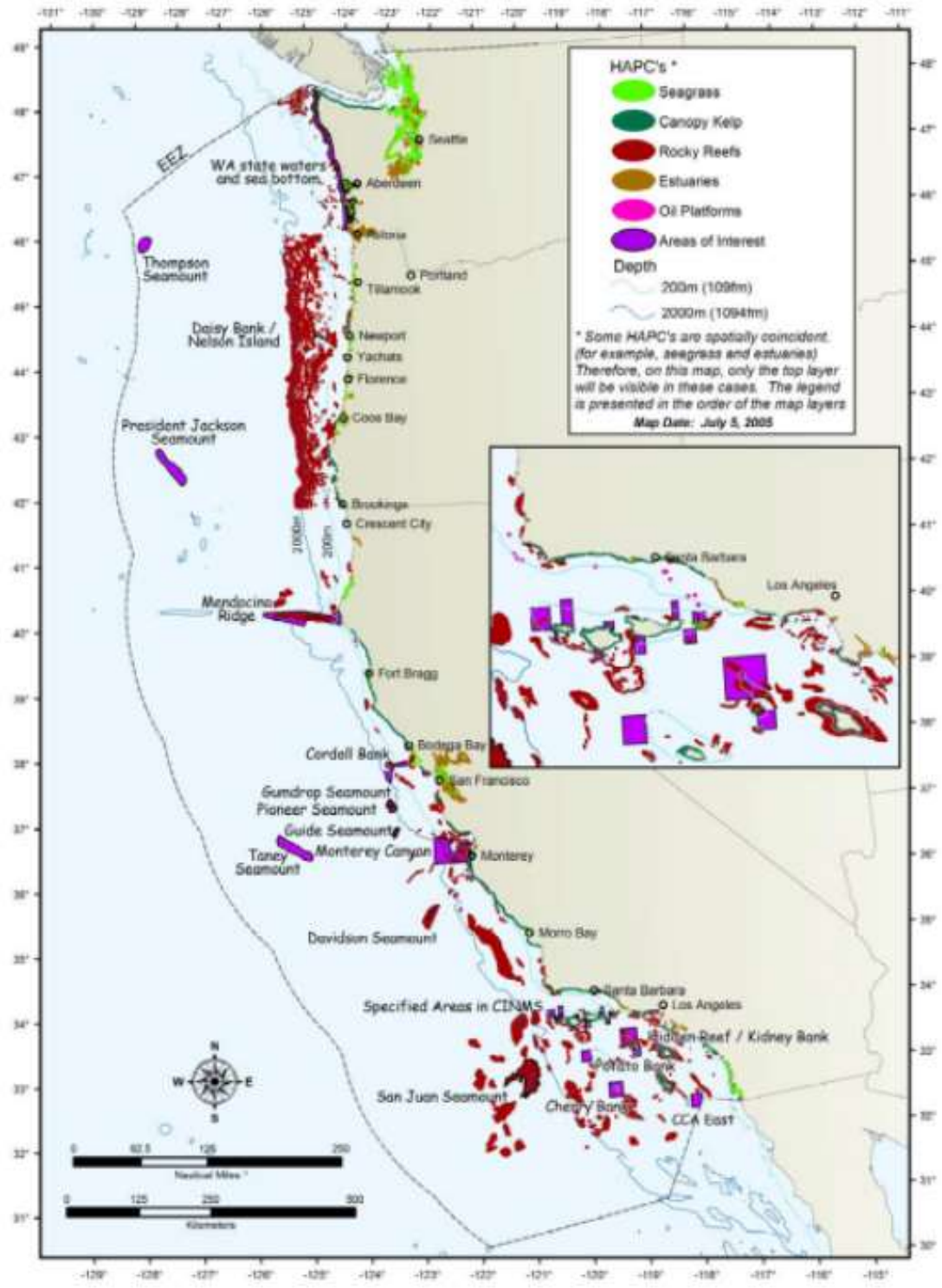

Figure 16 (Source: FRAM Data Warehouse). Distribution of HAPCs and other Areas of Interest along the US west coast.

In terms of regulating overall fishing impacts to EFH, HAPCs and other sensitive habitats, the PFMC has created a network of areas closed to bottom contacting gear, or mobile bottom gear, to which the pink shrimp fishery and other mobile gear groundfish fisheries, must adhere (Figure 17). Although the pink shrimp fishery would not operate in these areas anyway, this closed area management is an important component of the broader habitat conservation and protection strategy in place along the Pacific coast.

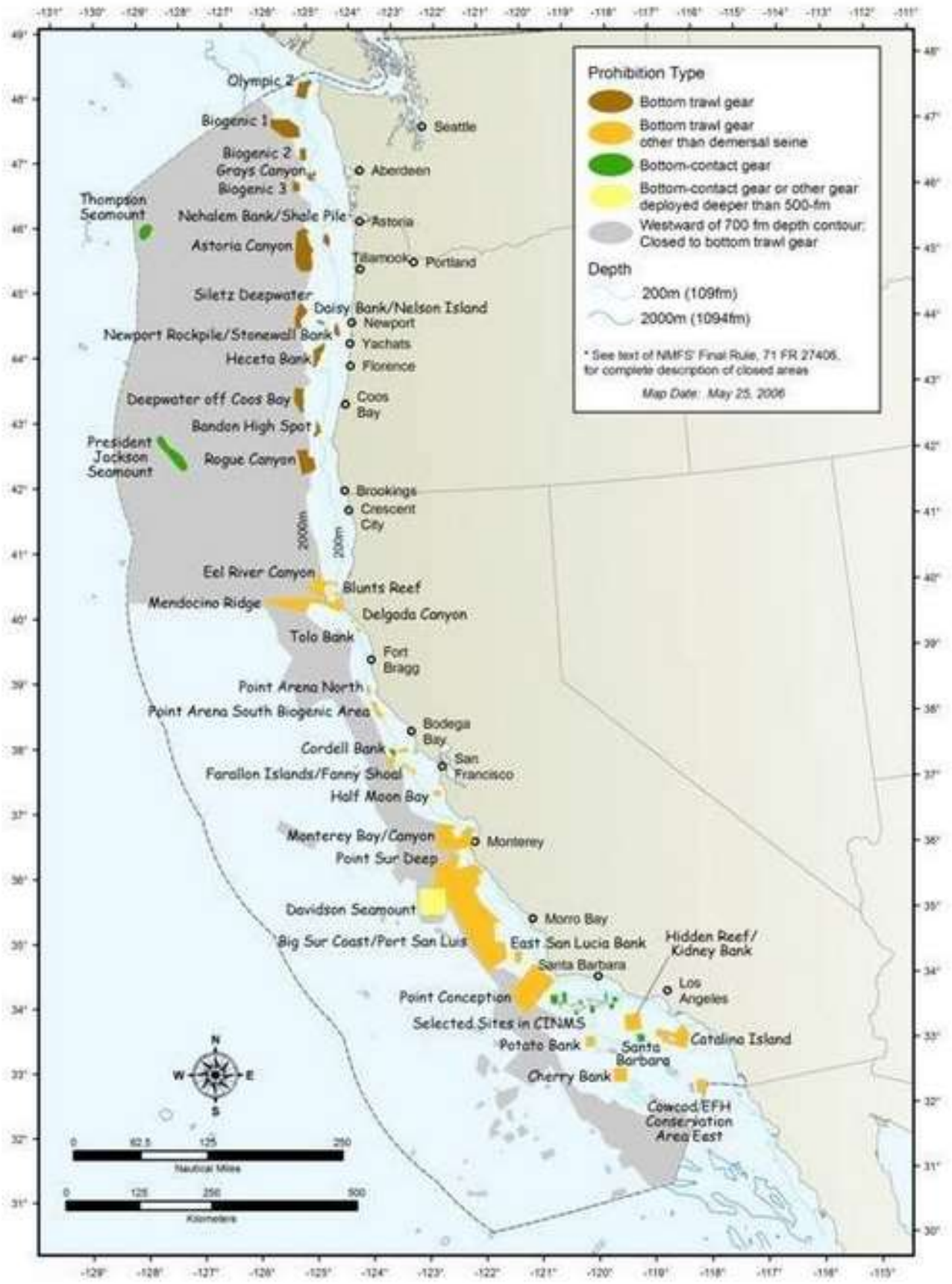

Figure 3. Ecologically important habitat closed areas.

Figure 17. Ecologically important habitat closed areas (source: Figure 3 in PFMC 2019).

Table 9. Scoring elements

Component	Scoring elements	Designation	Data-deficient
Primary	See Table 7 orange rows	All Minor	No
Secondary	See Table 7 white rows	All Minor	Not assessed
Secondary	Sooty shearwater (*Ardenna grisea*)	Main	No
ETP	Pink-footed shearwater (*Ardenna creatopus)*	NA	No
ETP	Pacific eulachon smelt (*Thaleichthys pacificus*)	NA	No
Habitat	Soft bottom mud/sand on continental shelf	Commonly Encountered	No
Ecosystem	California Current LME	Only	No

7.3.4 Principle 2 Performance Indicator scores and rationales

PI 2.1.1 – Primary species outcome

PI 2.1.1		The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI		
Scoring Issue		SG 60	SG 80	SG 100
a	Main primary species stock status			
	Guide post	Main primary species are **likely** to be above the PRI. OR If the species is below the PRI, the UoA has measures in place that are **expected** to ensure that the UoA does not hinder recovery and rebuilding.	Main primary species are **highly likely** to be above the PRI. OR If the species is below the PRI, there is either **evidence of recovery** or a demonstrably effective strategy in place **between all MSC UoAs which categorise this species as main**, to ensure that they collectively do not hinder recovery and rebuilding.	There is a **high degree of certainty** that main primary species are above the PRI **and are** fluctuating around a level consistent with MSY.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

There are no main primary species in this fishery (see Table 7). Hence the SG100 is met by default.

b	Minor primary species stock status			
	Guide post			Minor primary species are highly likely to be above the PRI. OR If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species.
	Met?			**Yes**
Rationale				

Minor primary species are listed in Table 7. Of these, Pacific hake, darkblotched rockfish, Dover sole, splitnose rockfish, chilipepper rockfish, and arrowtooth flounder are all managed under the Pacific Groundfish Fisheries Management Plan (FMP; PFMC 2020) and separately MSC certified with no conditions in P1 on

any of these species. Hence, they are all highly likely to be above PRI, meeting SG100. The remainder of the minor primary species are also managed under the Pacific Groundfish FMP and none of them are listed on the overfished species list (Appendix F, PFMC 2020). Hence, they are also highly likely to be above PRI and SG100 is met.

References

PFMC 2020; NWFSC FRAM Data Warehouse 2021.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 2.1.2 – Primary species management strategy

PI 2.1.2		**There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch**		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are **measures** in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to be above the PRI.	There is a **partial strategy** in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the PRI.	There is a **strategy** in place for the UoA for managing main and minor primary species.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

All primary species (minor) are managed under the PFMC Pacific Groundfish FMP (PFMC 2020). As such, though not specifically for the UoA, there is a comprehensive strategy in place for managing them, comprising sustainability objectives, harvest strategies, control rules, reference points, consideration of traditional fishing rights, sector allocations, and all the concomitant reporting and monitoring requirements necessary to comprise a strategy. In addition, bycatch reduction measures in the pink shrimp fishery such as BRDs and LED lighting, while designed to be part of the strategy for mitigating encounters with ETP eulachon, have also contributed to the strategy for reducing unwanted catches of juvenile rockfish species. SG100 is met.

	Management strategy evaluation			
b	Guide post	The measures are considered **likely** to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some **objective basis for confidence** that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The management strategy has been demonstrated to work for these minor primary species. The biennial harvest specifications process was implemented by the PFMC in 2003 through Amendment 17 to the groundfish FMP and has been functioning successfully ever since. As stated in PI 2.1.1., there is a very small amount of catch of primary species in this fishery, and the managed stocks as a whole have been within the ACLs (and OFLs) for at least the past 5 years and are appreciably above the PRI. Thus it is clear that there is an effective strategy to manage impacts to these stocks within this fishery and generally within the fishery management system. There is some objective basis for confidence that the strategy for managing minor primary species will work based on some information directly about the fishery and species involved and testing supports high confidence that it is working based on information directly about the minor primary species involved, and the shrimp fishery. The SG100 is met for this scoring issue.

	Management strategy implementation			
c	Guide post		There is **some evidence** that the measures/partial strategy is being **implemented successfully**.	There is **clear evidence** that the partial strategy/strategy is being **implemented successfully and is achieving its overall objective as set out in scoring issue (a).**
	Met?		**Yes**	**Yes**
Rationale				

There is clear evidence that the strategy in place is being implemented successfully and achieving its overall objective of ensuring that the science-based ACLs for each stock are not exceeded and evidenced by all minor primary stocks being appreciably above the point of PRI (see 2.1.1). The ACLs are set every two years based on fully vetted recommendations from the SSC to ensure stocks remain highly productive. Therefore, the overall objective is being met, and a score of 100 is awarded.

	Shark finning			
d	Guide post	It is **likely** that shark finning is not taking place.	It is **highly likely** that shark finning is not taking place.	There is a **high degree of certainty** that shark finning is not taking place.
	Met?	**NA**	**NA**	**NA**
Rationale				

There is virtually no incidental shark catch in this fishery. The occasional spiny dogfish or skate is captured, but not enough to require the scoring of the shark finning scoring issue.

	Review of alternative measures			
e	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?	**Yes**	**Yes**	**No**
Rationale				

Since at least 2017, the pink shrimp fishery has been in a continual process of reviewing and implementing alternative measures to reduce unwanted catches, primarily of Pacific eulachon, but also juvenile rockfish species of the types listed here under minor primary. Bycatch reduction grates and LED lights on the headropes have been the principle alternative measures reviewed and tested. In recent years, this has been at least biennial, but also in response to a "crisis" situation regarding the eulachon. Therefore at least SG80 is met but not SG100 since a biennial review is not embedded within the management system.

References

PFMC 2020; Groth 2022

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought** *Regarding ongoing review of alternative measures*

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**95**
Condition number (if relevant)	

PI 2.1.3 – Primary species information

PI 2.1.3	**Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species**		
Scoring Issue	SG 60	SG 80	SG 100

a	Information adequacy for assessment of impact on main primary species			
	Guide post	Qualitative information is **adequate to estimate** the impact of the UoA on the main primary species with respect to status. **OR** **If RBF is used to score PI 2.1.1 for the UoA:** Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is **adequate to assess** the impact of the UoA on the main primary species with respect to status. **OR** **If RBF is used to score PI 2.1.1 for the UoA:** Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is **adequate to assess with a high degree of certainty** the impact of the UoA on main primary species with respect to status.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

There are no main primary species, so SG100 is met by default.

b	Information adequacy for assessment of impact on minor primary species			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			**Yes**
Rationale				

Stock assessment reports for all primary minor species are available, and none of them are on the overfished list (PFMC 2020 Appendix F), thus there is quantitative information on them with respect to status. In relation to the UoA impact on them, there is also good quantification of UoA catches of these species, which is very low relative to catches of the targeted pink shrimp. SG100 is met.

c	Information adequacy for management strategy			
	Guide post	Information is adequate to support **measures** to manage **main** primary species.	Information is adequate to support a **partial strategy** to manage **main** primary species.	Information is adequate to support a **strategy** to manage **all** primary species, and evaluate with a **high degree of certainty** whether the strategy is achieving its objective.
	Met?	**Yes**	**Yes**	**Yes**

Rationale

Information that supports the management strategy embodied in the Pacific groundfish FMP, among others, are stock assessments underpinned by fishery-independent trawl surveys and fishery-dependent data. With these and other sources of data (e.g. biological studies on species life histories, genetic analyses, etc) it is possible to determine with a high degree of certainty whether the fisheries management strategy for rockfish and other Pacific groundfish is meeting its objectives. SG100 is met.

References

PFMC 2020

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 2.2.1 – Secondary species outcome

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit		
Scoring Issue		SG 60	SG 80	SG 100
a	Main secondary species stock status			
	Guide post	Main secondary species are **likely** to be above biologically based limits. OR If below biologically based limits, there are **measures** in place expected to ensure that the UoA does not hinder recovery and rebuilding.	Main secondary species are **highly likely** to be above biologically based limits. OR If below biologically based limits, there is either **evidence of recovery** or a **demonstrably effective partial strategy** in place such that the UoA does not hinder recovery and rebuilding. AND Where catches of a main secondary species outside of biological limits are **considerable**, there is either **evidence of recovery** or a, **demonstrably effective strategy in place between those MSC UoAs that have considerable catches of the species**, to ensure that they collectively do not hinder recovery and rebuilding.	There is a **high degree of certainty** that main secondary species are above biologically based limits.
	Met?	**Yes**	**Yes**	**Sooty shearwater-No** **All others-Yes (no other main spp)**
Rationale				

Most secondary species in this fishery are minor (see Table 7), thus meeting SG100 by default. Sooty shearwater is a main secondary species because it is out of scope and not ETP. The pink shrimp fishery kills between 3 and 40 sooty shearwaters **(***Ardenna grisea*) annually (Jannot et. al. 2021). Sooty shearwaters have a cosmopolitan distribution globally, with a population size of approximately 8.8 million individuals. They are native residents in the southern hemisphere, with breading colonies in New Zealand and southern South America (e.g. Falkland Islands). The US west coast is part of their native non-breeding habitat (Birdlife 2022a). They are listed as Near Threatened on the IUCN red list because they have undergone a “moderately rapid” decline owing to the impact of fisheries, the harvesting of its young, and possibly climate change. In New Zealand, about 250,000 sooty shearwaters are harvested annually for oils and food by the indigenous

Māori population (McGonigal 2008). With its small number of encounters relative to other threats globally, there is a high degree of certainty that this fishery is not adversely affecting the sooty shearwater population, however, information is currently not sufficient to say they are above biologically based limits as a population, with a high degree of certainty as indicated by their IUCN status and population trajectory. SG80 is met but not SG100.

	Minor secondary species stock status			
b	Guide post			Minor secondary species are highly likely to be above biologically based limits. OR If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?			**No**
Rationale				

There are some minor secondary species and species groups as indicated in Table 7 (white rows). However, as secondary species these are not necessarily managed with biologically-based reference points, though removals from these fisheries is small, there is not sufficient information to say with high likelihood that they are all above biologically based limits. There is also not sufficient information to say they are below biologically based limits, though according to MSC guidance, we can conclude that the UoA is not hindering their recovery, due to comprising a low contribution to their mortality. The SG80 is met but not SG100.

References

NWFSC FRAM Data Warehouse (2021); Jannot et. al. (2021); Birdlife International (2022a).

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought on minor secondary species status**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**Sooty shearwater: 80** **Minor secondary species: 80** **Overall: 80**
Condition number (if relevant)	

PI 2.2.2 – Secondary species management strategy

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are **measures** in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a **partial strategy** in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a **strategy** in place for the UoA for managing main and minor secondary species.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Regarding minor secondary species (ecosystem component species in the groundfish FMP), these do not require specification of reference points and OFLs, ABCs, and ACLs but are monitored to the extent that any new pertinent scientific information becomes available (e.g., catch trends, vulnerability, etc.) to determine changes in their status or their vulnerability to the fishery. For this classification, such species should:

1. Be a non-target species or stock;
2. Not be determined to be subject to overfishing, approaching overfished, or overfished;
3. Not be likely to become subject to overfishing or overfished, according to the best available information, in the absence of conservation and management measures' and
4. Not generally be retained for sale or personal use (PFMC 2016a).

Therefore, the strategy in place for managing minor secondary species consists of regular monitoring of catches and abundance trends, and if any of the above conditions for ecosystem species classification are called into question, there is a review and possible redesignation of these stocks as individually managed within the FMP. As such, this comprises a strategy for the UoA managing minor secondary species and therefore the SG100 is met for this scoring issue.

For the secondary main sooty shearwater, included in the National Seabird Program are several national and regional initiatives aimed at reducing seabird bycatch (Ballence et. al. 2019), including in the West Coast Region. However, for trawl fisheries, there are no regulations directly related to seabird bycatch or mitigation requirements, but there is currently a combination of limited entry, gear restrictions, vessel landing limits and time/area closures in place to control effort in the fishery, thereby also limiting opportunities for seabird interactions. The primary concern for seabird interactions in trawl fisheries is the "third wire" allowing visual signals to be transmitted to the vessel while fishing, and there are collaborative research and industry initiatives in place to understand and, where necessary, deploy mitigation methods to reduce trawl-related seabird bycatch. However, the pink shrimp fishery does not use third wires and, as evident from Table 8, has negligible seabird bycatch. The SG100 is met because there is a strategy in place for managing seabird bycatch.

b	Management strategy evaluation			
	Guide post	The measures are considered **likely** to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is **some objective basis for confidence** that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The process of keeping a watchful eye on ecosystem component species and redesignating them as 'part of the fishery' within the FMP if they fail to meet the four conditions laid out above supports high confidence that the strategy of managing these minor secondary species does work. For example, based on steadily increasing catches and higher market values, in 2015, the PFMC redesignated big skate as an individual stock 'in the fishery' and thus removed it from the EC portion of the FMP. This demonstrates that the above strategy for managing minor secondary species (by effectively turning them into primary species according to MSC terminology) is working. Hence the SG100 is met.

For sooty shearwater, the mortalities in this fishery are negligible relative to the size of the population and to other anthropogenic impacts (e.g. harvesting for food in New Zealand). Therefore, measures described in scoring issue a are working to keep bird bycatch low. SG100 is met.

c	Management strategy implementation			
	Guide post		There is **some evidence** that the measures/partial strategy is being **implemented successfully**.	There is **clear evidence** that the partial strategy/strategy is being **implemented successfully and is achieving its objective as set out in scoring issue (a).**
	Met?		**Yes**	**Yes**
Rationale				

There is clear evidence that the strategy for managing minor secondary species is being implemented successfully. As indicated above, the implementation of the process of keeping a watchful eye on ecosystem component species and redesignating them as 'part of the fishery' within the FMP if they fail to meet the four conditions laid out above shows that. For example, based on steadily increasing catches and higher market values, in 2015, the PFMC redesignated big skate as an individual stock 'in the fishery' and thus removed it from the EC portion of the FMP. For the main secondary sooty shearwater, negligible mortalities in this fishery provide clear evidence of the successful implementation of the strategy. SG100 is met.

d	Shark finning			
	Guide post	It is **likely** that shark finning is not taking place.	It is **highly likely** that shark finning is not taking place.	There is a **high degree of certainty** that shark finning is not taking place.

	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Shark species are encountered in relatively small numbers within this fishery (mainly spiny dogfish and some skates in very small quantities) and there is a high degree of certainty that shark finning is not taking place. A federal law (the Shark Finning Prohibition Act of 2000) prohibits shark finning, where the fins are removed and the carcass is discarded. The law prohibits any person under U.S. jurisdiction from engaging in the finning of sharks, possessing shark fins aboard a fishing vessel without the corresponding carcass, and landing shark fins without the corresponding carcass. The Shark Finning Prohibition Act also requires NOAA Fisheries to provide Congress with an annual report describing efforts to implement the law. In addition, on January 4, 2011, the Shark Conservation Act of 2010 was signed into law, amending the High Seas Driftnet Fishing Moratorium Protection Act and the MSRA. The Shark Conservation Act requires that all sharks in the United States, with one exception (commercial fisheries for smooth dogfish), be brought to shore with their fins naturally attached. Moreover, several states, including California, Oregon and Washington, have shark fin laws that prohibit the possession and/or retention of shark fins (even if they are legally landed under the requirements of the Shark Conservation Act).

In addition, including pelagic shark species in the Highly Migratory Species FMP enables catches to be monitored and managed. The FMP also designates great white, megamouth, and basking sharks as prohibited species, meaning if these species are caught, they may not be retained. This discourages intentional catch and, in cases where the shark survives the interaction, reduces fishing mortality. There is no evidence in observer reports of the three prohibited species mentioned above occurring in the catch of this fishery and the current level of observer coverage monitoring catches and discards comprise comprehensive external validation that shark finning is not taking place within this fleet. SG100 is met.

	Review of alternative measures to minimise mortality of unwanted catch			
e	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of main secondary species.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of main secondary species and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of all secondary species, and they are implemented, as appropriate.
	Met?	**NA**	**NA**	**NA**
Rationale				

There are negligible quantities of unwanted secondary species catch, and review of unwanted catches is scored under primary species, thus is not applicable here.

References

NWFSC FRAM Data Warehouse (2021); Jannot et. al. (2021); Birdlife International (2022a).

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 2.2.3 – Secondary species information

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts on main secondary species			
	Guide post	Qualitative information is **adequate to estimate** the impact of the UoA on the main secondary species with respect to status. OR **If RBF is used to score PI 2.2.1 for the UoA:** Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and **adequate to assess** the impact of the UoA on main secondary species with respect to status. OR **If RBF is used to score PI 2.2.1 for the UoA:** Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and **adequate to assess with a high degree of certainty** the impact of the UoA on main secondary species with respect to status.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The only main secondary species in this fishery is the sooty shearwater. Observer data at roughly 14% coverage underpins an estimate of between 3 and 40 sooty shearwater mortalities in this fishery annually. Sooty shearwaters have a cosmopolitan distribution globally, with a population size of approximately 8.8 million individuals. They are native residents in the southern hemisphere, with breading colonies in New Zealand and southern South America (e.g. Falkland Islands). The US west coast is part of their native non-breeding habitat (Birdlife 2022a). They are listed as Near Threatened on the IUCN red list because they have undergone a “moderately rapid” decline owing to the impact of fisheries, the harvesting of its young, and possibly climate change. In New Zealand, about 250,000 sooty shearwaters are harvested annually for oils and food by the indigenous Māori population (McGonigal 2008). Thus information is sufficient to say with a high degree of certainty that this fishery is having a negligible impact on the population status of sooty shearwaters, thus meeting SG100.

b	Information adequacy for assessment of impacts on minor secondary species			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?			**Yes**

Rationale

Some quantitative information, in the form of catch records from observer reports, is available and adequate to estimate the impact of the UoA on minor secondary species. All catches are negligible, with the largest single secondary minor species comprising on average 0.44% of the catch annually. According to survey abundance information, all secondary minor spp in the FMP's "ecosystem component" are trending without concern. Thus, the combination of low catches in the shrimp fishery, and lack of concern relative to stock status means there is some quantitative information sufficient to meet SG100 for this PI.

	Information adequacy for management strategy			
c	Guide post	Information is adequate to support **measures** to manage **main** secondary species.	Information is adequate to support a **partial strategy** to manage **main** secondary species.	Information is adequate to support a **strategy** to manage **all** secondary species, and **evaluate** with a **high degree of certainty** whether the strategy is **achieving its objective**.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Regarding information availability to manage minor secondary species, there is adequate catch accounting and quantitative information on the mortality to these species arising from this and all other commercial fisheries in on the US west coast. As described above, management action is taken regarding ecosystem component species when the need arises based on monitoring. Regarding sooty shearwaters, information on fishery related mortality is adequate and regularly monitored such that it can be said with a high degree of certainty that, where the pink shrimp trawl fishery is concerned, the national seabird bycatch strategy is meeting its objectives. Hence the SG100 is met for this scoring issue.

References

Birdlife (2022a); Jannot (2021); McGonigal (2008).

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 2.3.1 – ETP species outcome

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guide post	Where national and/or international requirements set limits for ETP species, the **effects of the UoA** on the population/ stock are known and **likely** to be within these limits.	Where national and/or international requirements set limits for ETP species, the **combined effects of the MSC UoAs** on the population /stock are known and **highly likely** to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a **high degree of certainty** that the **combined effects of the MSC UoAs** are within these limits.
	Met?	**NA**	**NA**	**NA**
Rationale				

The Southern Distinct Population Segment (DPS) of Pacific eulachon is listed as threatened under the ESA. There are currently no ESA take prohibitions for the Southern DPS eulachon (Federal Register 2011), so there are no limits set within the requirements for protection and rebuilding, therefore the team shall not score the first element in SG 2.3.1.

b	Direct effects			
	Guide post	Known direct effects of the UoA are likely to not **hinder recovery** of ETP species.	Direct effects of the UoA are **highly likely** to not **hinder recovery** of ETP species.	There is a **high degree of confidence** that there are no **significant detrimental direct effects** of the UoA on ETP species.
	Met?	**Pacific eulachon-Yes** **Pink-footed shearwater-Yes**	**Pacific eulachon-Yes** **Pink-footed shearwater-Yes**	**Pacific eulachon-No** **Pink-footed shearwater-No**
Rationale				

Pacific eulachon

Direct effects of the UoA are highly likely to not hinder the recovery of Pacific eulachon. Since its listing in 2010, the population abundance of the southern DPS has increased significantly, decreased again, then increased significantly again since 2018. Thus, the stock appears to be recovering, even with bycatch in the pink shrimp fishery. Moreover, implementation of LED lighting on the fishing line, combined with the previously required BRDs has reduced the bycatch reduction rate from pre-LED light levels, even with rising eulachon abundance (Lomeli et al 2018, Lomeli et al 2020). SG80 is met. SG100 is not met because the most recent 5-year ESA review of eulachon status was carried out in 2016. Without a more up-to-date assessment, it is not possible to say with a high degree of confidence that there are no significant detrimental direct effects of the pink shrimp fishery on Pacific eulachon.

Pink-footed shearwater

Up to six pink-footed shearwater (*Ardenna creatopus)* mortalities have been estimated to occur in this fishery (all in waters off California; Jannot et. al. 2021). Pink-footed shearwaters are listed as vulnerable on the IUCN redlist because of its very small breeding range at three known locations, rendering it susceptible to stochastic events and human impacts (Birdlife 2022b). It is also covered under ACAP, thus making it an ETP species for the purposes of the MSC assessment. It is a native resident along the west coast of the Americas, including Hawaii, and has an estimated population size of 59,146 individuals. Because of the negligible mortalities compared with the population size and other threats, it is highly likely that this UoA is not hindering the recovery of this species and SG80 is met. SG100 is not met because there is not sufficient data to determine this with a high degree of certainty.

c	Indirect effects			
	Guide post		Indirect effects have been considered for the UoA and are thought to be **highly likely** to not create unacceptable impacts.	There is a **high degree of confidence** that there are no **significant detrimental indirect effects** of the UoA on ETP species.
	Met?		**Pacific eulachon-Yes Pink-footed shearwater-Yes**	**Pacific eulachon-No Pink-footed shearwater-No**
Rationale				

The west coast pink shrimp fishery does not affect spawning/rearing habitat or food sources for any ETP species, including Pacific eulachon and pink-footed shearwater. Therefore, the fishery is unlikely to create unacceptable impacts to these species from indirect effects, meeting the SG80. However, a high degree of confidence does not exist to reach SG100 without more specific information.

References

Lomeli et al 2018, Lomeli et al 2020, Gustafson et al 2021.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI** *If more information is sought, include a description of what the information gap is and what is information is sought*

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**80**
Condition number (if relevant)	

PI 2.3.2 – ETP species management strategy

PI 2.3.2		The UoA has in place precautionary management strategies designed to: - meet national and international requirements; - ensure the UoA does not hinder recovery of ETP species. Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place (national and international requirements)			
	Guide post	There are **measures** in place that minimise the UoA-related mortality of ETP species, and are expected to be **highly likely to achieve** national and international requirements for the protection of ETP species.	There is a **strategy** in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be **highly likely to achieve** national and international requirements for the protection of ETP species.	There is a **comprehensive strategy** in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to **achieve above** national and international requirements for the protection of ETP species.
	Met?	**Pacific eulachon-Yes** **Pink-footed shearwater-Yes**	**Pacific eulachon-Yes** **Pink-footed shearwater-Yes**	**Pacific eulachon-No** **Pink-footed shearwater-No**
Rationale				

There is a strategy in place to manage the UoA's impacts on ETP species. This strategy is designed to minimize ETP species mortality by the UoA and is highly likely to achieve national and international requirements and to ensure the UoA does not hinder recovery.

Pacific eulachon

Because of its ESA listing, NOAA produced an ESA Recovery Plan for the southern DPS of Pacific eulachon (NOAA Fisheries 2017). The recovery plan identifies and ranks threats to the listed population, establishes priority actions for addressing those threats, and also identifies research priorities for understanding the population to enable better management for recovery. ESA recovery plans comprise comprehensive strategies. In addition, ODFW, WDFW and CDFW, in cooperation with shrimp fishers, have implemented a comprehensive strategy to limit bycatch of eulachon. Implementation of the use BRDs with 19 mm bar spacing, and results from reconfiguration of trawl footropes and use of LED lights has reduced bycatch of eulachon (Hannah et al., 2011, Hannah 2012, Hannah et al 2015). ODFW and WDFW are continuing research and responding to results and changing conditions, and both states have implemented rules that mandate the use of LED lights in the fishery, and rulemaking to this effect is underway in CA. There is undoubtedly a comprehensive strategy in place. However, because the strategy is not designed to achieve above national requirements for protection, SG100 is not met.

Pink-footed shearwater

Migratory bird conventions impose substantive obligations on the United States for the conservation of migratory birds and their habitats, and these migratory bird conventions have been implemented with respect to the United States through the Migratory Bird Treaty Act (Act). In the National Seabird Program, there are several national and regional initiatives aimed at reducing seabird bycatch (Ballence et. al. 2019), including in the West Coast Region. However, for trawl fisheries, there are no regulations directly related to seabird

bycatch or mitigation requirements, but there is currently a combination of limited entry, gear restrictions, vessel landing limits and time/area closures in place to control effort in the fishery, thereby also limiting opportunities for seabird interactions. The primary concern for seabird interactions in trawl fisheries is the "third wire" allowing visual signals to be transmitted to the vessel while fishing, and there are collaborative research and industry initiatives in place to understand and, where necessary, deploy mitigation methods to reduce trawl-related seabird bycatch. However, the pink shrimp fishery does not use third wires and, as evident from Table 8, has negligible seabird bycatch.

While there arguably is a comprehensive strategy in place, it is not designed to achieve above national and international requirements so SG100 is not met.

b	Management strategy in place (alternative)			
	Guide post	There are **measures** in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a **strategy** in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a **comprehensive strategy** in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species.
	Met?	NA	NA	NA
Rationale				

.NA

c	Management strategy evaluation			
	Guide post	The measures are **considered likely** to work, based on **plausible argument** (e.g. general experience, theory or comparison with similar fisheries/species).	There is an **objective basis for confidence** that the measures/strategy will work, based on **information** directly about the fishery and/or the species involved.	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a **quantitative analysis** supports **high confidence** that the strategy will work.
	Met?	**Pacific eulachon-Yes Pink-footed shearwater-Yes**	**Pacific eulachon-Yes Pink-footed shearwater-Yes**	**Pacific eulachon-Yes Pink-footed shearwater-No**
Rationale				

Pacific eulachon

The ESA recovery strategy for Pacific eulachon is based on information specifically about this DPS and the threats to it, including the fisheries involved. Quantitative analyses of bycatch mitigation measures, as well as eulachon population abundance and CPUE measures support high confidence that the strategy is working.

For instance, the results presented by Hannah et al. (2011), Hannah and Jones (2007), and Hannah et al (2015) on the effectiveness of BRD use and LED light use in the fishery to minimize eulachon mortality provide an

objective basis for confidence that the strategy in place is working (see details in 2.3.1 SIb), and the current abundance trend for eulachon (see Figure 14) demonstrates that recovery is occurring. SG100 is met.

Pink-footed shearwater

The UoA has had little or no bycatch of Pink-footed shearwater, showing that the strategy has worked and will likely continue to work. There is a combination of limited entry, gear restrictions, vessel landing limits and time/area closures in place to control effort in the fishery, thereby also limiting opportunities for seabird interactions. The primary concern for seabird interactions in trawl fisheries is the "third wire" allowing visual signals to be transmitted to the vessel while fishing, and there are collaborative research and industry initiatives in place to understand and, where necessary, deploy mitigation methods to reduce trawl-related seabird bycatch. However, the pink shrimp fishery does not use third wires and, as evident from Table 8, has negligible seabird bycatch. Therefore, SG60 and SG80 are met. SG100 is not met because a quantitative analysis has not been done to support the high-confidence level.

d	Management strategy implementation			
	Guide post		There is some **evidence** that the measures/strategy is being implemented successfully.	There is **clear evidence** that the strategy/comprehensive strategy is being implemented successfully and **is achieving its objective as set out in scoring issue (a) or (b).**
	Met?		**Both ETP spp-Yes**	**Both ETP spp-Yes**
Rationale				

Pacific eulachon
BRDs are required in all state pink shrimp fisheries, and as of 2018, Washington (WAC 220-340-500) and Oregon (OAR 635-005-0630) mandate the use of LED (Light Emitting Diode) lights on the fishing line of each trawl net that meet regulatory specifications. In CA, rulemaking is underway to include LED light regulations as well. Thus, there is clear evidence that the strategy as operationalized by the pink shrimp fishery is being implemented successfully. Evidence that it's achieving its objective includes studies demonstrating the effectiveness of the bycatch reduction strategy (e.g. Lomeli et. al. 2018 and 2020), and the increasing population abundance of the southern DPS of Pacific eulachon (see Figure 14). The SG100 is met.

Pink-footed shearwater
For pink-footed shearwater, here is a combination of limited entry, gear restrictions, vessel landing limits and time/area closures in place to control effort in the fishery, thereby also limiting opportunities for seabird interactions. The primary concern for seabird interactions in trawl fisheries is the "third wire" allowing visual signals to be transmitted to the vessel while fishing, and there are collaborative research and industry initiatives in place to understand and, where necessary, deploy mitigation methods to reduce trawl-related seabird bycatch. However, the pink shrimp fishery does not use third wires and, as evident from Table 8, has negligible seabird bycatch. Thus, there is clear evidence from the lack of interactions with the pink shrimp fishery that the strategy is achieving its objectives, and SG100 is met.

e	Review of alternative measures to minimise mortality of ETP species			
	Guide post	There is a review of the potential effectiveness and practicality of alternative	There is a **regular** review of the potential effectiveness and	There is a **biennial** review of the potential effectiveness and

		measures to minimise UoA-related mortality of ETP species.	practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	**Both ETP spp-Yes**	**Both ETP spp-Yes**	**Both ETP spp-No**
Rationale				

Since at least 2017, the pink shrimp fishery has been in a continual process of reviewing and implementing alternative measures to reduce unwanted catches, primarily of Pacific eulachon. Bycatch reduction grates and LED lights on the headropes have been the principle alternative measures reviewed and tested. In recent years, this has been at least biennial, but also in response to a "crisis" situation regarding the eulachon. Therefore at least SG80 is met but not SG100 since a biennial review is not embedded within the management system. There is no need for a review relative to pink-footed shearwater, as interactions are negligible.

References

Ballence et. al. 2019, Lomeli et. al. 2018 and 2020, WAC 220-340-500, OAR 635-005-0630, Hannah et al. (2011), Hannah and Jones (2007), Hannah et al (2015), NOAA Fisheries 2017,

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**Eulachon-90** **Pink-footed shearwater-85** **Overall: 85**
Condition number (if relevant)	

PI 2.3.3 – ETP species information

PI 2.3.3		Relevant information is collected to support the management of UoA impacts on ETP species, including: - Information for the development of the management strategy; - Information to assess the effectiveness of the management strategy; and - Information to determine the outcome status of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts			
	Guide post	Qualitative information is **adequate to estimate** the UoA related mortality on ETP species. **OR** **If RBF is used to score PI 2.3.1 for the UoA:** Qualitative information is **adequate to estimate productivity and susceptibility** attributes for ETP species.	Some quantitative information is **adequate to assess** the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. **OR** **If RBF is used to score PI 2.3.1 for the UoA:** Some quantitative information is **adequate to assess productivity and susceptibility attributes** for ETP species.	Quantitative information is available to assess with a high degree of certainty the **magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status** of ETP species.
	Met?	**Pacific eulachon-Yes** **Pink-footed shearwater-Yes**	**Pacific eulachon-Yes** **Pink-footed shearwater-Yes**	**Pacific eulachon-No** **Pink-footed shearwater-Yes**
Rationale				

Pacific eulachon

There are several sources of quantitative information available which contribute to the ability to estimate eulachon mortality the impact of the US west coast pink shrimp fishery on the southern DPU of eulachon including: at-sea observer coverage, mandatory logbook reporting, observation by ODFW and WDFW of the performance of BRDs and LED lights, footrope configuration, and landings documentation. In addition, there is good information on the population status and abundance of Pacific eulachon sufficient to determine threats to protection and recovery (e.g. Gustafson 2021, NMFS 2016a and b). However, since the 5-year status update has not been updated since 2016, information is not sufficient to meet SG100. SG80 is met.

Pink-footed shearwater

A comprehensive system of monitoring, control and surveillance is in place, involving the ODFW, WDFW, and CDFW and NMFS West Coast Groundfish Observer Program. According to Jannot et all 2021, there is a small number of estimated mortalities from this fishery to pink-footed shearwaters (Table 8). Up to six pink-footed shearwater (*Ardenna creatopus)* mortalities have been estimated to occur in this fishery (all in waters off California; Jannot et. al. 2021). Quantitative information is available and adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species because even though observer coverage is only partial and estimates of mortality come with some uncertainty, the numbers are sufficiently small to say with a high degree of

certainty that the consequences of pink-footed shearwater catch in the pink shrimp fishery are negligible. SG100 is met.

	Information adequacy for management strategy			
b	Guide post	Information is adequate to support **measures** to manage the impacts on ETP species.	Information is adequate to measure trends and support a **strategy** to manage impacts on ETP species.	Information is adequate to support a **comprehensive strategy** to manage impacts, minimise mortality and injury of ETP species, and evaluate with a **high degree of certainty** whether a strategy is achieving its objectives.
	Met?	**Pacific eulachon-Yes Pink-footed shearwater-Yes**	**Pacific eulachon-Yes Pink-footed shearwater-Yes**	**Pacific eulachon-No Pink-footed shearwater-No**
Rationale				

Pacific eulachon

Information, in the form of fishery independent abundance surveys, catches from this and other groundfish fisheries, and other indices (e.g. CPUE, eulachon "hot spot" designations), rate of compliance with BRDs and LED lights and data on their effectiveness, is adequate to support the strategy to manage impacts to eulachon from the pink shrimp fishery.

The status of eulachon, risks to the population, and sources of mortality (including the impact of bycatch in the shrimp fishery) are comprehensively analyzed in the Eulachon 5-year review and recovery plan (NMFS 2016a and 2016b). In addition, Hannah (2016) modeled the effects of changing fishing effort and bycatch reduction technology on risks to eulachon by the shrimp fishery.

This constitutes sufficient information to determine whether the pink shrimp fishery may be a threat to the protection and recovery of eulachon hence the SG80 level is met. The information is sufficient to support a comprehensive strategy, but not to evaluate it with a high degree of certainty, particularly as the 5-year review is now out-of-date, thereby not meeting SG100.

Pink-footed shearwater

The National Seabird Plan (NSP) is comprised of a group of managers and scientists who work domestically and internationally to protect and conserve seabirds. NSP activities are guided by statutes, policies and emerging agency priorities. The NSP works through representation on steering committees and working groups within and external to NOAA fisheries and through partnerships with other States, regional Fisheries Management Councils and other Federal agencies. The National Seabird Program Five-Year Strategic Plan for 2020-2024 sets out strategic initiatives and goals to monitor and estimate seabird bycatch, mitigate bycatch and promote seabirds in Ecosystem-based management (NOAA 2019). Observer coverage and other monitoring available for fishery interactions with ETP seabirds is available, as well as estimates of population size, status and trends for the pink-footed shearwater. The SG 60 and SG80 levels are met. However, this information does support a comprehensive strategy to manage impacts on this species, simply because it has not been a focus, so the SG100 level is not met.

References

NOAA 2019. National Seabird Program Five-Year Strategic Plan: 2020-2024. Al-Humaidhi et al., 201; Hannah and Jones, in preparation; Biological Review Team 2008; and Federal Register 2011. Sommers et al 2016; NMFS 2016a and 2016b; Hannah 2016, Lomeli et. al 2018, Lomeli et. al. 2020, Gustafson et al 2021.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**Pacific Eulachon: 80** **Pink-footed Shearwater: 90** **Overall: 85**
Condition number (if relevant)	

PI 2.4.1 – Habitats outcome

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates		
Scoring Issue		SG 60	SG 80	SG 100
a	Commonly encountered habitat status			
	Guide post	The UoA is **unlikely** to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is **highly unlikely** to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is **evidence** that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	Y	Y	y
Rationale				

The pink shrimp fishery operates over shelf areas with sandy or muddy substrate (commonly encountered habitats). The gear used is twin-rigged shrimp trawls which have a footrope designed to run 12-18 inches above the seafloor, with a groundline made of discs or bobbins and sometimes tickler or ladder chains. The components of shrimp trawls that contact the bottom are much lighter than similar components used on groundfish bottom trawls (PFMC 2019).

Sensitivity to bottom trawling of the sandy and muddy shelf area habitat types is rated as 1.2 on a scale of 0-3 (3 being highest). Similarly, descriptions of sensitivity levels and recovery time (years) for gear impact assessments have been described. Recovery time for trawls (including shrimp trawl) is generally estimated at 0.4 years (PFMC, 2019) for soft shelf areas.

MSC's definition of serious or irreversible harm is changes caused by the UoA that fundamentally alter the capacity of the habitat or ecosystem to maintain its structure and function. For the habitat component, this is the reduction in habitat structure, biological diversity, abundance and function such that the habitat would be unable to recover to at least 80% of its unimpacted structure, biological diversity and function within 20 years if fishing were to cease entirely.

Given that the recovery time from trawling of the commonly encountered habitat type for this UoA is estimated at 0.4 years, even after trawling from gears heavier than pink shrimp trawls, we consider it highly unlikely that this fishery reduces the structure and function of this habitat to the point of serious or irreversible harm and SG80 is met.

Underwater video taken by ODFW shows that only the shoe of the trawl doors is in contact, making a furrow up to 3" deep. Furrows quickly fill in due to energy generated from currents, rendering the impact undetectable (Hannah et al., 2010). This comprises evidence as required by SG100. Thus SG100 is also met.

b	VME habitat status			
	Guide post	The UoA is **unlikely** to reduce structure and function of the VME habitats to a point where	The UoA is **highly unlikely** to reduce structure and function of the VME habitats to a	There is **evidence** that the UoA is highly unlikely to reduce structure and function of the VME

		there would be serious or irreversible harm.	point where there would be serious or irreversible harm.	habitats to a point where there would be serious or irreversible harm.
	Met?	**NA**	**NA**	**NA**
Rationale				

This fishery does not take place in potential VME areas. Competent authorities have not established VMEs, and areas within the broader fishing zone off the US west coast that could be classified as VME, such as HAPCs, RCAs and deep water closures, are closed to bottom contacting gear and are also not suitable shrimp habitat.

	Minor habitat status			
c	Guide post			There is **evidence** that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?			**No**
Rationale				

This fishery takes place over muddy substrates on the shrimp banks identified earlier in the report. There is no indication of the existence of 'minor habitats' within the shrimp fishing area, but due to a lack of finer scale resolution on habitat types, it cannot be said that there is evidence that the UoA is highly unlikely to reduce the structure and function of the minor habitats. Thus, this SI is not met at the 100 level.

References

Federal Register 2005; Federal Register 2010, Federal Register 2011; Hannah, et al. 2010; PFMC, 2005; PFMC, 2005b

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought** *Updated information on EFH and critical habitat, as well as more recent FMP amendments related to trawl closures are needed.*

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**90**
Condition number (if relevant)	

PI 2.4.2 – Habitats management strategy

PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are **measures** in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a **partial strategy** in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a **strategy** in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

By regulation the shrimp trawl season runs from April 1 through October 31. The PFMC has proposed, and NMFS has implemented area closures for protection of Essential Fish Habitat (EFH Conservation Areas), rockfish habitat areas (RCAs) (NOAA, 2011b), and Marine Protected Areas (MPAs) (PFMC, 2012a). ODFW and WDFW have gear regulations that focus on minimizing impact to habitats (see description of twin-rigged shrimp trawl gear above).

Closed seasons and areas, along with gear regulations, are considered measures that contribute to the protection of habitats within the area of operation of the fishery. In addition, the permitted gear type used in the fishery under assessment provides as a measure for protection of hard surface sensitive benthic habitats (i.e. corals) as nets tear easily; these areas are generally avoided by those participating in the fishery.

Closed areas, identified by the PFMC, are intended to minimize to the extent adverse effects of fishing on groundfish EFH. EFH Conservation Areas are closed to specific types of fishing (PFMC 2019). Rockfish Conservation Areas (RCAs) are large-scale closed areas that extend along the entire length of the U.S. West Coast. The RCA boundaries are lines that connect a series of latitude/longitude coordinates intended to approximate particular depth contours. Locations of the boundaries are set in order to minimize opportunities for vessels to incidentally take overfished rockfish by eliminating fishing in areas where, and times when, overfished species are likely to co-occur with healthy stocks of groundfish (NOAA, 2011b). Based on evaluation of the effectiveness of these measures, EFH areas and RCA boundaries may be modified.

NMFS has implemented the regulatory provisions of Amendment 19 to the Pacific Coast Groundfish Fishery Management Plan. These are intended to minimize, to the extent practicable, adverse effects to EFH from fishing. The measures include fishing gear restrictions and prohibitions, areas that are closed to bottom trawling, and areas that are closed to all fishing that contacts the bottom (Federal Register, 2006a). See Figures 16 and 17 for illustrations.

The WCGOP reports observations of any bottom debris that may occur in trawl hauls. Information can alert managers of any emerging issues.

Federal agents and state police enforce regulations for area closures.

ODFW continues gear research to minimize effects of trawl groundlines on benthic organisms (Hannah, 2012).

The fact that measures have been designed to directly manage habitat impacts, there is monitoring in place understand if they are working, and that there is the ability to increase or decrease protected areas through various options (see 80c), it is considered that the components of a strategy are in place, reaching the SG100.

	Management strategy evaluation			
b	Guide post	The measures are **considered likely** to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some **objective basis for confidence** that the measures/partial strategy will work, based on **information directly about the UoA and/or habitats** involved.	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on **information directly about the UoA and/or habitats** involved.
	Met?	**Yes**	**Yes**	**No**
Rationale				

Shrimp grounds habitat recovery time for trawls is generally estimated at 0.4 years (PFMC 2019). Based on the maximum season permitted for the OR and WA pink shrimp fishery, trawled habitat has 5 months to fully recover between seasons. Likewise, there are several closed areas within the area of operation of the fishery which have been implemented to minimize to the extent possible effect of fishing on EFH. Closed areas provide protection from trawl impacts not only to sensitive species, but also to sensitive habitats. In addition, areas of coral are avoided, not only due to low shrimp abundance, but also high risk of gear damage or loss.

There is information directly about the fishery and/or habitats involved. The PFMC process includes review of regulatory strategies by stakeholders, technical teams and scientific and statistical committees, which provide some objective basis for confidence that the strategy is working, thus meeting the SG80.

Testing of all aspects of this strategy has not been conducted, to date, hence SG100 is not met.

	Management strategy implementation			
c	Guide post		There is **some quantitative evidence** that the measures/partial strategy is being implemented successfully.	There is **clear quantitative evidence** that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		**Yes**	**Yes**
Rationale				

Neither Oregon State Police nor WDFW enforcement officers have reported any incidents of shrimp trawlers fishing out of season or within closed areas, which is substantiated by VMS data. During the public comment period for the PFMC Groundfish Plan Amendment 19 (establishment of EFH and associated regulations), the ODFW proposed a change to the proposed Nehalem Bank/Shale Pile area in order to avoid impracticable impacts to the shrimp trawl industry. The change would replace the point at 45° 52.77′ N. lat., 124° 28.75′ W. long. with a point at 45° 55.63′ N. lat., 124° 30.516′ W. long. NMFS determined that the suggested change was consistent with Amendment 19 in that it provides for substantial protection of rocky reef habitat within the constraints of practicability. Therefore, NMFS made the suggested change in the rule (Federal Register, 2006a).
ODFW continues gear research to understand gear impacts and to determine if there are additional measures that can be taken to minimize effects of trawl groundlines on benthic organisms (Hannah, 2012).

Ongoing federal research on EFH continues. NMFS performs periodic research to evaluate whether these measures are achieving their purpose or if adjustments are needed to EFH Conservation areas (PMFC 2019).This constitutes clear quantitative evidence that the strategy is being implemented successfully and achieving its objectives, meeting SG100.

d	Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs			
	Guide post	There is **qualitative evidence** that the UoA complies with its management requirements to protect VMEs.	There is **some quantitative evidence** that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is **clear quantitative evidence** that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Competent authorities have not established VME per se, but HAPCs, RCAs and other "areas of interest" can be considered as VME habitat types off the US west coast, and they are protected from trawling. As stated under PI 2.4.1, this fishery is prohibited from fishing within established EFH areas that could be regarded as VMEs. There is clear quantitative evidence through OSP and WDFW enforcement reports that season and area restrictions on the fishery are complied with. These closed-area protection measures are afforded to these potential VME areas by all US west coast fisheries, including the pink shrimp fishery. Hence the SG100 level is reached.

References

Federal Register, 2006a; NOAA, 2011b; PFMC, 2005; PFMC, 2005b; PFMC, 2005d; PFMC, 2005e; PFMC 2012; PFMC, 2012a; PFMC 2019; Hannah 2011.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought** *Information from California regarding enforcement of and compliance with, habitat closures is needed. All information needs to be updated with most recent EFH and habitat management measures included.*

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**95**
Condition number (if relevant)	

PI 2.4.3 – Habitats information

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	The types and distribution of the main habitats are **broadly understood**. **OR** **If CSA is used to score PI 2.4.1 for the UoA:** Qualitative information is adequate to estimate the types and distribution of the main habitats.	The nature, distribution and **vulnerability** of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. **OR** **If CSA is used to score PI 2.4.1 for the UoA:** Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.
	Met?	**Yes**	**Yes**	**No**
Rationale				

As noted above, the geographic stock area of shrimp varies from one year to the next, is generally known, and is monitored annually. Likewise, sediment and substrate type in these areas are also known and have been documented (Abramson, et al. 1981; Dahlstrom 1970; PFMC 2019). In addition, the vulnerability of the main shrimp habitat type to shrimp trawls is known (PFMC 2019), having been assessed, along with recovery time, as part of the habitat suitability mapping for the PFMC's 5-year EFH review. Given that the main habitat type is estimated to recover from impact in 0.4 years, and the shrimp fishery is closed between October and April each year, this level of detail is sufficient relative to the scale and intensity of the fishery. Thus, SG80 is met.

However, as noted in PI 2.4.1, it can't be said that the distribution of ALL habitats are known throughout the range of the fishery, therefore the SG100 is not reached.

b	Information adequacy for assessment of impacts			
	Guide post	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear. OR **If CSA is used to score PI 2.4.1 for the UoA:**	Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear. OR	The physical impacts of the gear on all habitats have been quantified fully.

		Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	**If CSA is used to score PI 2.4.1 for the UoA:** Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	
	Met?	**Yes**	**Yes**	**No**
Rationale				

ODFW and WDFW maintain a fishermen's logbook system that documents location of the fishing effort (e.g. ODFW 2015). The NMFS Vessel Monitoring System (VMS) also tracks distribution of effort. That program is an enforcement tool used to monitor compliance with areas closed to fishing such as RCAs and other sensitive habitat areas. This information, as well as information collected on effort through the WCGOP can be used to understand the potential impacts in the areas of operation of the fishery, given the habitat distributions are known.

The nature of the impacts of the fishery on habitat types has been described in Hannah et al., 2010. Because the spatial distribution of fishing effort is known from analysis of the logbook and VMS data, the extent, timing, and location of interaction can be deduced. Shrimp trawl grounds are mapped annually (e.g. Figure 6 and Figure 7 for 2021).

Data analysis that has been completed to address habitat types has included spatial and temporal analysis of the distribution of habitat types, distribution of fish species, habitat use by fish, sensitivities of habitat to perturbations, and the dynamics of fishing effort (PFMC 2019). Therefore, the SG80 is met. However, as before, there is not sufficient information to determine that the physical impacts of the gear on ALL habitat types have been fully quantified, therefore the SG100 is not met.

c	Monitoring			
	Guide post		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in all habitat distributions over time are measured.
	Met?		**Yes**	**No**
Rationale				

The Pacific Fishery Management Council has established a two-phase process (see Council Operating Procedure 22) to consider proposals to modify groundfish essential fish habitat (EFH) (PFMC 2012). ODFW and WDFW continue to collect fishery logbook, fish ticket, and biological data, as well as interactive communication with fishers. In addition, the WCGOP continues annually at a coverage rate of 11-15%. This supplies information to detect changes in risk, meeting the SG80. Determination of habitat changes over time does not occur, thereby not reaching SG100.

References

Abramson et al., 1981; Bellman and Heppel, 2004; Dahlstrom, 1970; Hannah, 1997; Hannah, 1999; Hannah, 2010; Hannah, 2012; Hannah et al., 2010; MRAG Americas, 2004; NMFS, 2005a; ODFW, 2008; ODFW, 2009; ODFW, 2010; PFMC 2012; PFMC, 2005b; PFMC, 2005d; Somers et al 2016b, PFMC 2019.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought** *This is rationale from the 2018 reassessment and it all needs to be updated following the site visit*

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**80**
Condition number (if relevant)	

PI 2.5.1 – Ecosystem outcome

PI 2.5.1		The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Ecosystem status			
	Guide post	The UoA is **unlikely** to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is **highly unlikely** to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is **evidence** that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

According to the MSC, serious or irreversible harm in the ecosystem context should be interpreted in relation to the capacity of the ecosystem to deliver ecosystem services. Examples include trophic cascades, severely truncated size composition of the ecological community, gross changes in species diversity of the ecological community, or changes in genetic diversity of species caused by selective fishing.

The fishery is highly unlikely to disrupt the key issues underlying ecosystem structure and function to a point where there would be a serious or irreversible harm, as shown in studies of the California Current Ecosystem (CCE) Integrated Ecosystem Assessment (IEA) (NOAA Fisheries 2014c) and Kaplan et al. (2012). The direct fishery impacts on shrimp predators in the ecosystem are very low due to the negligible bycatch. Ocean shrimp occupy a lower trophic level than the diverse ichthyofauna, which prey on shrimp. It is important to note that the current shrimp fleet operates in a small percentage of the total shrimp habitat (by both depth and area) at any one time along the coast. For example, there are high percentages (5 – 45%) of pink shrimp in the diets of rougheye rockfish, rosethorn rockfish, and Pacific ocean perch, but these species occur much deeper in rocky areas that do not overlap the shrimp fishing grounds (Buckley et al., 1999; Dufault, 2009). Pacific sanddab, Pacific whiting, arrowtooth flounder, sablefish, and other finfish species occupying the same areas as the shrimp fishery are known to be predators of pink shrimp, however the average proportion of pink shrimp is <10% generally of their overall diet, but may be higher depending on season, area, and life history stage (Dufault, 2009). Small, plankton-feeding pelagic fish can exert a major control on energy flows in productive ecosystems, and this has been termed “wasp-waist” control as those forage fish resources can affect trophic levels both downwards and upwards (i.e. a bottom-up control of top predators by small pelagic fishes, and top-down control of plankton) (Cury, et al., 2000). Examples are Pacific herring, anchovies, and sardines in the California Current upwelling system. Because the fishery does not capture such fishes, and pink shrimp are not in this category of forage species, their level of removal by the fishery is highly unlikely to seriously, let alone irreversibly, disrupt the key elements underlying ecosystem structure and function. Therefore, the risk of trophic cascade, caused by the depletion of predators, especially keystone predators, is not a concern in the fishery.

Based on existing studies, there are no gross changes in the species biodiversity of the ecological community caused by the fishery. Fishery effects on habitat structure are limited and reversible (Hannah et al., 2010; PFMC 2019).

The evidence provided above demonstrates that the fishery does not cause serious or irreversible harm to the ecosystem structure and function, thereby meeting the SG100.

References

Buckley et al., 1999; Cury, et al., 2000; Dufault, 2009; Hannah et al., 2010; PFMC, 2005; PFMC, 2005b; Rexstad and Pikitch, 1986, NOAA fisheries 2014c; Kaplan et. al. 2012; PFMC 2019

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought** **All information needs updating since it is pulled directly from the previous reassessment report**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 2.5.2 – Ecosystem management strategy

PI 2.5.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are **measures** in place, if necessary which take into account the **potential impacts** of the UoA on key elements of the ecosystem.	There is a **partial strategy** in place, if necessary, which takes into account **available information and is expected to restrain impacts** of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a **strategy** that consists of a **plan**, in place which contains measures to **address all main impacts of the UoA** on the ecosystem, and at least some of these measures are in place.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The PFMC's Fishery Ecosystem Plan (FEP; PFMC 2022), comprises a strategy to address all main impacts of all fishery activities, including those of the pink shrimp fishery, on the CCLME. This is supported by the CCLME ecosystem status report produced annually by the CCIEA (e.g. CCIEA 2022). As discussed in section 7.3.1, the pink shrimp fishery itself is extremely unlikely to have any noticeable impacts on the ecosystem in which it operates. Nonetheless, shrimp catches and abundance are monitored along with several other parameters of ecosystem health such that if such an impact were to occur, it would be detected and addressed.

Specifically regarding the shrimp fishery's impacts on ecosystem components such as nontarget species and habitats, there is a specific strategy and operational management in place (please see other P2 components for details). Specific features of the pink shrimp fishery, such as habitats trawled, gear configurations, and fishing season, contribute to its overall negligible impact to the ecosystem.

SG100 is met.

b	Management strategy evaluation			
	Guide post	The **measures** are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar UoAs/ ecosystems).	There is **some objective basis for confidence** that the measures/ partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved.	**Testing** supports **high confidence** that the partial strategy/ strategy will work, based on information directly about the UoA and/or ecosystem involved.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Sensitive ecosystem elements are protected when fishing is restricted in those areas. Fishers are prohibited from and willingly avoid sensitive areas of corals and rocky bottoms. Required BRDs and LED lights reduce bycatch to less than 3% (lowest of any net fishery in the region).

The shrimp trawl fishery has relatively low impact on the type of grounds fished. Enforcement of closures of the RCAs and EFH areas to shrimp fisheries preclude impact to these sensitive areas.

OR and WA laws prohibit landing of small shrimp and prohibited species and impose incidental landing limits on selected groundfish species. Sensitive ecosystem elements are protected when fishing is restricted in those areas. Fishers are prohibited from sensitive areas of corals and rocky bottoms. The measures are considered likely to work because they are enforced, and results of enforcement show very high compliance.
Apart from the shrimp fishery directly, several important indicators of ecosystem health are monitored, and the PFMC's FEP prioritizes initiatives that help fisheries as a whole in the west coast region minimize impacts to the ecosystem. For example, designating several "forage species" as ecosystem components and prohibiting directed fishing on them.

Thus it can be concluded that testing supports high confidence that the strategy is working based on information directly about the UoA and ecosystem involved and the SG100 is met.

	Management strategy implementation			
c	Guide post		There is **some evidence** that the measures/partial strategy is being **implemented successfully**.	There is **clear evidence** that the partial strategy/strategy is being **implemented successfully and is achieving its objective as set out in scoring issue (a).**
	Met?		**Yes**	**Yes**
Rationale				

Oregon State Police and WDFW enforcement records show very few violations associated with the fishery. The majority of fishers willingly work with state biologists and managers to develop and maintain a clean fishery. This constitutes clear evidence that the strategy with respect to the pink shrimp fishery specifically is being implemented successfully and is achieving its objective, thus the SG100 is met.

References

NOAA, 2011b; PFMC, 2012a; Jones et al., 2010, Somers et al 2016, PFMC 2013; CCEIA 2022; PFMC 2022.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought to update the text from the 2018 report, and include enforcement information from California**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 2.5.3 – Ecosystem information

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	Information is adequate to **identify** the key elements of the ecosystem.	Information is adequate to **broadly understand** the key elements of the ecosystem.	
	Met?	**Yes**	**Yes**	
Rationale				

Information is adequate to identify and broadly understand the key elements of the ecosystem. According to MSC, "key" ecosystem elements are features of an ecosystem considered as being most crucial to giving the ecosystem its characteristic nature and dynamics, and are considered relative to the sale and intensity of the UoA. They are features most crucial to maintaining the integrity of its structure and functions and the key determinants of the ecosystem resilience and productivity.

In the case of the California Current LME, upwelling as the main driver of productivity in the CCLME is the most key ecosystem element, which is well understood and regularly monitored, along with many other indicators of ecosystem health, as part of the California Current Ecosystem Status Report produced annually by the NOAA California Current Integrated Ecosystem Assessment Team (e.g. CCIEA 2022). "Focal components of ecological integrity" related to productivity, monitored in the abovementioned report include copepods and krill abundance, regional forage availability (tracking a number of forage species), juvenile salmon abundance, groundfish stock abundance and fishing intensity, highly migratory species, seabirds, marine mammals, and harmful algal blooms.

The drivers of change to these focal components are broadly understood. SG80 is met.

b	Investigation of UoA impacts			
	Guide post	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but **have not been investigated** in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and **some have been investigated in detail**.	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and **have been investigated in detail**.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The main interactions between the fishery and key ecosystem elements can be inferred from existing information, and have been investigated in detail. As mentioned above, the key ecosystem element characterizing and underpinning the productivity of the CCLME is nutrient upwelling, driven by the El Niño Sothern Oscillation (ENSO) climate pattern. As such, this is typically a highly productive ecosystem. Zooplankton, juvenile fish, forage species abundance and environmental conditions are monitored and studied in detail. Diet composition of predators foraging on pink shrimp has also been investigated (Dufault, 2009). In reality, the pink shrimp fishery can't plausibly "interact" with key elements of the CCLME, and there is sufficient information available to know with certainty that the fishery cannot cause changes to the ecosystem through creating trophic cascades, competing indirectly with predators of pink shrimp, or through any other means.

In general the CCLME is very well studied and monitored. Several large scale ecosystem studies for the California to Washington coast have been conducted, either model-based or using modeling as a key tool. NOAA has a initiated an on-going study, the California Current Integrated Ecosystem Assessment (CCIEA) (Burner, 2010), which is producing outputs that better define the understanding of the California Current system and inputs to the approach that the PFMC is developing to manage the fisheries in a more holistic way (Brand et al., 2008; NOAA, 2011c; NOAA 2011d). A key aspect of these studies is large scale modeling using the Atlantis model, which permits many different aspects of the ecosystem to be explored, including various socio-economic aspects that have been omitted from studies elsewhere (Horne et al. 2010). Therefore, it is clear that main impacts of the UoA on ecosystem elements can be inferred based on existing information and have been investigated in detail. Hence the SG100 is met.

	Understanding of component functions			
c	Guide post		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are **known**.	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are **understood**.
	Met?		**Yes**	**Yes**
Rationale				

There is generally good, but not comprehensive information about the key trophic relationships of this ecosystem. There have been a number of studies examining trophic relationships within this ecosystem, with one focused specifically on depleted fish species and interactions with predators (Brand et al., 2008; Harvey et al., 2008; Horne et al., 2010).

Much is known about the ETP species in the ecosystem, but the most relevant information to the shrimp fishery is about eulachon, which is an important marine forage fish and component of riverine ecology (BRT 2008).

The broader physical aspects of ecosystem function are supported by a number of initiatives. An example is the multi-disciplinary Pacific Coast Ocean Observing System (PACOOS), which is “Providing ocean information for the sustained use of the California Current Large Marine Ecosystem under a changing climate”. This initiative publishes online quarterly reports detailing aspects of biotic and physical (oxygen concentration, temperature, salinity, etc.) as well as climate scale issues (ENSO, upwelling indices) http://www.pacoos.org/.

Other physical studies of the ecosystem and its functional state have been conducted and are highly pertinent, including, for example, a study of ocean acidification in the California Current system (Hauri, et al., 2009). Biological habitat components of the ecosystem are modeled through the Essential Fish Habitat process (PFMC 2019). Studies if these types are enabling initial understanding of the vulnerability and robustness of organisms, communities and eventually ecosystems to specific and large-scale perturbation.

Retained and bycatch catches are estimated by federal, on-board fishery observers, and information is considered by stock assessment used to manage the target, bycatch and most ETP species. The effects of the fishery on eulachon have been identified and there is an increasing understanding of the impact of the pink shrimp fishery on eulachon. Therefore, the SG100 is met, because impacts of the UoA have been identified, and the main functions of these components of the ecosystem are understood.

	Information relevance			
d	Guide post		Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components **and elements** to allow the main consequences for the ecosystem to be inferred.
	Met?		**Yes**	**Yes**
Rationale				

Adequate information is available (see above citations, as well as Hannah 2010, and Hannah et al. 2015) on the impacts of the UoA on the components and elements of the ecosystem to allow the main consequences for the ecosystem to be inferred. More generally, trawl fishery effects on biological components of the ecosystem are modeled in the Essential Fish Habitat EIS. Hence the SG100 is met.

	Monitoring			
e	Guide post		Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?		**Yes**	**Yes**
Rationale				

OR and WA monitoring of the fishery, bycatch reduction studies, and investigation of trawl effects on substrate and continuing and provide sufficient data to detect changes in risk levels. All important indicators of ecosystem health are regularly monitored in the annual CCLME Ecosystem Status Reports (e.g. CCIEA 2022), including trends in commercial fish catches—pink shrimp among them. Therefore, trends that may indicate a change to management is needed to address ecosystem impacts will be noticed, and such strategies can be developed. SG100 is met.

References

Brand et al., 2008; Buckley et al., 1999; Burner, 2010, 2012; Dufault, 2009; Fields, 2004; Fields et al, 2006; Hannah, 2003; Hannah et al., 2010; Harvey et al., 2008; Hauri et al., 2009; Hixon & Tissot, 2007; Horn, et al. 2010; Levin and Wells, 2011; MRAG Americas 2004; NOAA 2011c; NOAA 2011 d; PFMC 2005a; 2005b; and 2005c; PFMC and NMFS 2010; PFMC 2008. Keller, et al 2017.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought to update the text from the 2018 reassessment report and include California enforcement information.**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**

Condition number (if relevant)	

7.4 Principle 3

7.4.1 Principle Three: Management System Background (WASHINGTON)

Area of Operation of the Fishery

State waters extend to 3 nautical miles (nm) offshore; federal waters extend from 3 to 200 nm offshore. The fishery occurs predominantly within federal waters of the US EEZ. Harvesters are allowed to fish anywhere within US federal waters beyond state limits but may land their catch only in the states for which they have landing permits (Wargo 2014).

Pink shrimp are fished in areas of relatively flat, soft substrate at depths ranging from 75-145 fathoms (ODFW 2012g). The fishery targets areas where stocks are concentrated, called beds. These beds increase and decrease in size as population abundance varies. Figure 1 illustrates the area of operation of the fishery and the extent of variation of the size of shrimp beds (Groth et al. 2017). In 2016, stock conditions in each area varied over the season. In the early season catches were concentrated in southern areas. By mid-season legal-size northern-area shrimp supported the fishery, and by late season the fishery was focusing on the Coos Bay area (Groth et al. 2017). The majority of the catch was taken from the northern California to Washington areas (Groth et al., 2017; Wargo 2017a).

User Groups and Rights

The pink shrimp fishery is currently non-tribal commercial, prosecuted by Washington, Oregon and California fishers. A small number of Washington and California fishers are also permitted to land in Oregon ports. All three states have a limited entry permit system that limits the number of vessels participating.

At the federal level, NMFS and the PFMC are both bound by Federal Executive Order 13175 (2000), which requires meaningful consultation and collaboration with Indian tribal governments. The sovereign status and co-manager role of Native American tribes over shared federal and tribal fishery resources is recognized. At the regional level, this role is reflected in a designated tribal seat on the Pacific Fishery Management Council (PFMC 2022e; 2022f).

Three coastal Washington tribes have federally adjudicated “usual and accustomed” fishing grounds that include pink shrimp grounds. An intertribal dispute over the western boundaries of these grounds for two of the three coastal tribes has been heard in federal court and a decision has been rendered. This decision is referred to as: United States v. Washington, 2:09-sp-00001-RSM (Ayres 2017). Formal state/tribal fishery management plans must be agreed to prior to any tribe fishing for pink shrimp. While WDFW has signed a fishery management plan with one of these tribes, no tribal fishing has occurred to date (WFWC 1996; WDFW and NWIFC 2017; Ayres 2017; Wargo and Forster 2022b).

Legal Context

Washington. In Washington, the management system operates within state laws: Title 77 Revised Code of Washington (RCW); and administrative rules: Title 220 Washington Administrative Code (WAC). Fishery management decisions are made by the Washington Fish and Wildlife Commission (WFWC) and implemented through the Washington Department of Fish and Wildlife (WDFW). The WFWC receives its authority from the passage of Referendum 45 by the 1995 Legislature and public at the 1995 general election (Ayres 2017; RCW 2015a – 2015i; WDFW 2017c;2017d; 2017g).

National. At the national level, management of state fisheries takes place within, and is coordinated with, a larger framework of federal laws, through the interface with the regional fishery management council system. Federal fishery management is carried out under the authority of the Magnuson Stevens Fishery

Conservation and Management Act (MSA), first passed in 1976 and most recently reauthorized in 2006 (MSA 2007). It is the principal law governing the harvest of fishery resources within the federal portion of the U.S. 200-mile zone. Under the MSA, the PFMC recommends management actions to the National Marine Fisheries Service (NMFS; also called NOAA Fisheries) for approval. Ultimate decision authority for fishery management lies with the Secretary of Commerce.

In addition to the MSA, the PFMC adheres to a suite of "other applicable laws" (Buck 1995; PFMC 2022f):

o National Environmental Policy Act (NEPA): requires environmental impact assessments of federal actions and compliance with other laws and executive orders (EO).

o Endangered Species Act (ESA): prohibits actions that are expected to jeopardize the continued existence of any endangered or threatened species under NMFS' jurisdiction or result in harmful effects on critical habitat.

o Marine Mammal Protection Act (MMPA): requires protection of marine mammals. NMFS is responsible for whales, dolphins, porpoise, seals, sea lions and fur seals. The U.S. Fish and Wildlife Service (USFWS) is responsible for walrus, sea otters, and the West Indian manatee.

o Migratory Bird Treaty Act (MBTA): a shared agreement between the United States, Canada, Japan, Mexico, and Russia to protect migratory birds, prohibiting their taking, killing, or possession. The directed take of seabirds is prohibited.

o Coastal Zone Management Act (CZMA): requires all federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable

o Administrative Procedures Act (APA): provides for public participation in the rulemaking process

o Paperwork Reduction Act (PRA): regulates the collection of information from the public

o Regulatory Flexibility Act (RFA): requires assessment of the regulatory impact on small entities through a regulatory flexibility analysis. The analysis is combined with the regulatory impact review (RIR) and NEPA analyses.

o EO 12866 (Regulatory Planning and Review): establishes guidelines for promulgating new regulations and reviewing existing regulations and requires agencies to assess the costs and benefits of all regulatory action alternatives.

o EO 12898 (Environmental Justice): requires federal agencies to identify and address "disproportionately high adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations in the United States" as part of an environmental impact analysis associated with an action.

o EO 13175 (Consultation and Coordination with Indian Tribal Governments): requires regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications and the avoidance of unfunded mandates imposed on tribes.

o EO 13132 (Federalism): requires federal agencies to consider the implications of policies that may limit the scope of or pre-empt states' legal authority. Such actions require a consultation process with the states and may not create unfunded mandates for the states.

o EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds): supplements the MBTA by requiring Federal agencies to work with the U. S. Fish and Wildlife Service (USFWS) to develop

memoranda of agreement to conserve migratory birds and to evaluate the effects of their actions on migratory birds in NEPA documents.

Administrative Context

Washington Fish and Wildlife Commission

The Washington Fish and Wildlife Commission (WFWC) consists of nine members serving six-year terms. Members are appointed by the governor and confirmed by the senate. The WFWC formulates fishery management policies and sets fishing seasons and other regulations. Ultimate approval authority for WFWC decisions rests with governor. Some regulations, such as the maximum count per pound, are set in statute. The Commission is the supervising authority for the Department. Through formal public meetings and informal hearings held around the state, the Commission provides an opportunity for citizens to actively participate in management of Washington's fish and wildlife (WDFW 2017c).

The WFWC website (http://wdfw.wa.gov/commission/) contains information on Commission membership, as well as meeting minutes, a schedule of upcoming meetings, and meeting procedures. It also provides a link to email questions and comments to the Commission. Through formal public meetings and informal hearings held around the state, the Commission provides an opportunity for citizens to actively participate in management of Washington's fish and wildlife.

Washington Department of Fish and Wildlife

The Washington Department of Fish and Wildlife (WDFW) is charged with carrying out the policies set by the WFWC and as required by statute. WDFW consists of a director appointed by the WFWC and a state-wide staff of about 1,480 employees. The mission of the WDFW is “To preserve, protect and perpetuate fish, wildlife and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities”. In addition to its administrative headquarters in Olympia Washington, the Department is divided into six regions. Region 6, the Coastal Region, has field responsibility for coastal shellfish, including pink shrimp (WDFW 2017a).

The WDFW is involved in multiple state, federal and regional policy processes related to the shrimp fishery. Washington is a member of the (PFMC (comprising Oregon, California, Washington and Idaho) (PFMC 2022f), North Pacific Fishery Management Council (NPFMC) (Alaska) (NPFMC 2022), and Pacific States Marine Fishery Commission (PSMFC) (Oregon, California, Washington, Idaho and Alaska) (PSMFC 2022).

Washington Department of Fish and Wildlife Police

The WDFW Police Officers (FWOs) are general authority peace officers deployed to six regions throughout the state and a Marine Division. The Enforcement Program has more than 140 commissioned FWOs, with most being field deployed. Non-commissioned employees include aircraft pilots, vessel/vehicle shop staff and administrative support and professional staff. Officers assigned to Westport and Ilwaco duty stations opportunistically enforce pink shrimp regulations (WDFW 2017b;f).

Officers also hold federal U.S. Fish and Wildlife and National Marine Fisheries Service (NMFS) commissions, and have jurisdiction over federal violations, the most important of which are the Endangered Species Act and the Lacey Act. Officers work joint patrols and coordinate with these agencies and the U.S. Coast Guard (WDFW 2017f; Dielman 2022b).

Pacific States Marine Fisheries Commission

The Pacific States Marine Fisheries Commission (PSMFC) is an interstate compact agency established by consent of Congress in 1947. Member states are California, Oregon, Washington, Idaho, and Alaska, each

represented by three Commissioners. The purpose of the PSMFC is "to promote the better utilization of fisheries – marine, shellfish, and anadromous – of mutual concern, and to develop a joint program of protection and prevention of physical waste of such fisheries in all of those areas of the Pacific Ocean over which the compacting states jointly or separately now have or may hereafter acquire jurisdiction" (PSMFC 2022).

PSMFC has no regulatory or management authority. Instead, it serves as a neutral convener for discussion, interstate coordination, state-federal coordination, grants administration, funds disbursement, research and management coordination and database management. The pink shrimp fish ticket data from Washington and California (as well as Oregon) in entered into the PSMFC' Pacific Fisheries Information Network (PacFIN) system, and reports for fish product landings and value (including pink shrimp) are available. The PSMFC also participates as a non-voting member of the PFMC and the NPFMC (PSMFC 2022).

Pacific Fishery Management Council

The WDFW coordinates state fishery management with the regional PFMC. The PFMC is responsible for managing Pacific Ocean fisheries in the 317,690 nm^2 federal EEZ off the coasts of California, Oregon and Washington. The Pacific fisheries comprise about 119 species of salmon, groundfish, coastal pelagic species (sardines, anchovies, and mackerel), shellfish, and highly migratory species (tunas, sharks, and swordfish) (PFMC 2022f).

The Council has fourteen voting members, consisting of four state fishery agency directors, the regional administrator of NMFS (NW or SW Region, depending on the issue under consideration), 4 state obligatory appointments, four at-large appointments, and one tribal appointment representing Federally recognized fishing rights from California, Oregon, Washington, or Idaho (MSA 2007). The state obligatory and at-large appointments are made by the Secretary of Commerce based on nominations from the governors of the four member states, with a maximum of three terms. The tribal appointment is made by the Secretary of Commerce in consultation with the Secretary of the Interior and tribal governments based on a list of nominees submitted by the tribal governments, with representation to be rotated among the treaty tribes (MSA 2007).

The Council meets five times a year. All meetings are open to the public, except for discussions of personnel or other administrative matters. Meeting locations rotate among member state cities. Advisory bodies also meet at various times between Council meetings. The Council briefing books containing meeting agendas, agenda item summaries, and background information are available to the public online in advance of each meeting. Post- meeting summaries of Council decisions are also available online, as are complete minutes of meetings (PFMC 2022a; 2022c).

Fishery Management Objectives

As stated earlier, in 1981 the three coastal states worked through the PFMC to develop a draft regional FMP for the ocean shrimp fishery off Washington, Oregon, and California (Abramson et al.1981). That draft FMP stated specific management objectives:

1. Prevent Long-Term Biological Damage to the Stock
2. Maximize the Long-Term Value of the Shrimp Catch
3. Minimize Costs of Fishing for and Processing Pink Shrimp
4. Minimize Costs of Managing the Pink Shrimp Fishery
5. Avoid Regulations that may cause Intra-Fishery Conflicts
6. Minimize Adverse Impacts of Regulation on the Social Structure of Coastal Communities
7. Avoid an Unfair Distribution of Income and Wealth from Pink Shrimp Fishing and Processing

Since that time, state agencies have continued to work together, primarily through communication and coordination of agency scientists and enforcement personnel, to address emerging fisheries resource and management issues.

As noted by WDFW in their 2016 Pink Shrimp review (Wargo and Ayres 2016), guiding principles for fishery management are founded in the agency mandate to "protect the resource and enhance commercial opportunity" (WDFW 2022a). More specifically, the mandate for WDFW and the WFWC as it relates to pink shrimp is found at RCW 77.04.012: Wildlife, fish, and shellfish are the property of the state. The commission, director, and the department shall preserve, protect, perpetuate, and manage the wildlife and food fish, game fish, and shellfish in state waters and offshore waters. The department shall conserve the wildlife and food fish, game fish, and shellfish resources in a manner that does not impair the resource. In a manner consistent with this goal, the department shall seek to maintain the economic well-being and stability of the fishing industry in the state. The department shall promote orderly fisheries and shall enhance and improve recreational and commercial fishing in this state.

The Commission may authorize the taking of wildlife, food fish, game fish, and shellfish only at times or places, or in manners or quantities, as in the judgment of the commission does not impair the supply of these resources (WDFW 2022c).

To achieve its mission, WDFW will continue to focus its activities on the following four goals laid out in the WDFW Strategic Plan (WDFW 2017a):

Goal 1: Conserve and protect native fish and wildlife
Goal 2: Provide sustainable fishing, hunting, and other wildlife-related recreational and commercial experiences
Goal 3: Promote a healthy economy, protect community character, maintain an overall high quality of life, and deliver high-quality customer service
Goal 4: Build an effective and efficient organization by supporting our workforce, improving business processes, and investing in technology

The legislature finds (RCW 2995) that all fish, shellfish, and wildlife species should be managed under a single comprehensive set of goals, policies, and objectives, and that the decision-making authority should rest with the Fish and Wildlife Commission.

The Washington Coastal Pink Shrimp FMP adopted in December 2018 reflects the WDFW guiding principles for management. The overarching goal of the FMP is to preserve, protect, and perpetuate the pink shrimp resource and to provide for its sustainable harvest (Wargo and Ayres 2017).

The FMP contains explicit short and long-term objectives that provide the framework for shrimp fishery management (Wargo and Ayres 2017). A principal objective of the plan is to realize a non-treaty commercial fishery that experiences stable seasons, is managed to clearly defined benchmarks, is appropriately capitalized, and pursues optimal bycatch reduction. The plan supports recreational shrimp fishing opportunity yet focuses on commercial harvest because pink shrimp are typically not targeted by recreational fishers.

Ten Guiding Principles listed in the FMP are short-term objectives that dictate management actions.

1. Use best available science to inform management decisions.
2. Utilize a precautionary approach to guide decision-making in the face of scientific and/or management uncertainty.
3. Support tribal fisheries, which are consistent with the applicable federal court orders while recognizing the need for management flexibility to optimize fishing opportunity.

4. Structure fishery regulations to pursue effective enforcement and avoid conflicting regulations with adjacent states.
5. Engage and collaborate with stakeholders, consumptive and non-consumptive, ensuring public transparency.
6. Consider socio-economic effects on harvesters, dealers and processors, and coastal communities dependent on the fishery.
7. Support development of innovative harvest methods or gears to reduce bycatch and any adverse effects on seafloor habitat.
8. Employ technologies to achieve effective, efficient use of agency resources.
9. Allow for recreational opportunity if/as interest arises.
10. Manage fishery using reference points to ensure long-term conservation of the resource.

The FMP acknowledges the legal and policy obligations to support co-management with treaty tribes. However, co-management harvest agreements are addressed through separate process are not incorporated into the FMP. In 2005 the State of Washington developed a formal pink shrimp management plan (WDFW 2005) with the Makah Tribe for that year's shrimp season (although the Makah never fished). The goals were:

- Preserve, protect, and perpetuate the coastal pink shrimp resource to provide for their sustainable harvest.
- Maintain consistent, conservation-based regulations for state and tribal fisheries
- Maintain effective resource management while minimizing management costs
- Protect the reproductive capacity of the pink shrimp stocks
- Minimize harvest of small, unmarketable shrimp
- Minimize bycatch mortalities of other species
- Use simple, enforceable, management tools

It is reasonable to assume the same goals would apply in the future should the Makah develop a pink shrimp fishery.

Fishery Regulations

Fishery regulations designed to achieve the management objectives include a number of input controls. These include mandatory commercial fishing vessel licenses, limited entry shrimp fishing permits, season limits, maximum count per pound, bycatch reduction devices and incidental catch limits. In addition, the fishery is subject to conservation area restrictions, landings fees, and on-board observer coverage.

A requirement to use approved LED lighting on trawl footropes in the coastal ocean pink shrimp fishery was implemented in 2018. The LED regulations have not presented enforcement problems and compliance continues to be high. LEP enforcement remains active throughout the season, patrolling and conducting compliance inspections (Dielman 2022a; Chadwick 2021a;b).

The E-Tix system of electronic fish tickets is now in place and accounts for 100% of fish ticket reporting (Wargo et al. 2021). The rule-making process to make E-Tix mandatory was initiated with the expectation of presenting the proposal to the Washington Fish and Wildlife Commission for their consideration and adoption. If adopted the change would be effective some time in 2022 (Wargo et al. 2022).

WDFW Police monitor landings of small shrimp (>160 count per lb.) through dockside sampling during offloads OSP (Wargo et al. 2022; Dielman 2022a).

Fishery Management Decision Processes

WDFW follows the state laws that govern its rule making activity. Chapter 34.05 RCW requires that agencies conduct a process that ensures public involvement opportunities and considers the economic impact of its rules. The WDFW offers several formal and informal ways to provide input or comments on proposed rules (WDFW 2017d).

Rules are codified under the WAC. The WDFW accepts public input throughout the rule- making process. For example, before WDFW begins the process of changing fishing rules, the agency often holds public workshops, forms advisory committees, and seeks public input to help formulate its rule proposals. Then WDFW offers a formal public comment period for each rule-proposal project once it files its Notice of Proposed Rule Making (Form CR-102), with the Office of the Code Reviser. WDFW posts CR-102s on its agency website within two days of filing, and the Office of the Code Reviser publishes CR-102s in the Washington State Register. CR-102s include information for submitting comments on proposed rules, and they provide the time, date and location of Commission meetings where the public can testify about proposed rule changes (WDFW 2017d).

When a person comments on a rule during the formal public comment period or at a Commission meeting, the comments become part of the public record. The Commission takes these comments into consideration when deciding whether to adopt rules as proposed or to revise the rules if appropriate. Everyone who comments on a proposed rule will get a copy of the Department's official response to the comments.

In addition to the process outlined above, the public can petition the WFWC to change a rule or reconsider a specific rule adoption. If the public desires, one can go forward with a formal petition, by downloading the form at http://www.ofm.wa.gov/reports/petition.pdf (WDFW 20d). The process of Washington State rulemaking is described at http://www.oria.wa.gov/site/alias__oria/448/default.aspx.

Stakeholder Consultations

The WDFW offers several formal and informal ways to provide input or comments on proposed rules as noted above (WDFW 2022d). WDFW technical staff also informally contacts pink shrimp fishery stakeholders to inform or seek input on rule changes that may come under consideration (Wargo and Forster 2022a).

For example, in 2021 WDFW conducted a survey of industry preferences on season start date. The agency obtained input from ODFW on survey question elements and structure to ensure that the two states' results are comparable. The survey also included questions about LED lights – their quantity, type, color, arrangement and effectiveness – as part of the fish excluder system. Questions were also asked about the type of ground gear vessels were using. Survey response rate was 20% of total license holders: of these, 54% favored a later season start date; 80% found LED lights to be effective or very effective, using a range of 5 to 12 lights per net; 85% used ground gear with drop chains, tickle chain or rollers (Wargo et al. 2022).

WDFW staff shared the survey results with industry representatives at a virtual meeting in February 2022. The agency-industry meeting resumed a pattern of annual meetings that had been suspended during two years of COVID restrictions. In contrast to survey respondents, the majority of meeting participants favored the status quo start date of April 1. In light of mixed response from the fleet and in the interest in maintaining season consistency with Oregon and California, WDFW has decided to not take management action to change the season start date at this time. The agency will continue to monitor the issue of undersize shrimp early in the season and to consider and re-evaluate the possibility of changing the season start date (Wargo and Forster 2022a; Wargo et al. 2022).

At the regional level, the PFMC process is based on consultations with member states through state agencies, PFMC appointees, advisory committee members, and meetings. The process of state participation in the formulation of federal management measures encourages complementary approaches between federal and state approaches (PFMC 2007; 2022c). Consultations among state agency staff, industry stakeholders and ENGOs occur informally through regular stakeholder meetings, interactions at PFMC settings, interactions with congressional staff, and various other meetings.

Monitoring, Control and Surveillance

An opportunistic system of monitoring, control and surveillance is in place, involving the WDFW police units, NMFS West Coast Groundfish Observer Program (WCGOP), and US Coast Guard. Harvest control rules (seasons, maximum counts per pound and bycatch reduction devices) are clear and enforceable.

Collaboration among WDFW and ODFW remained strong in 2021, particularly in the area of sampling. WDFW is using the same sampling protocols and data sheets as Oregon. Sampling now takes place in all months of the fishing season, with raw data supplied to ODFW. In turn, ODFW provides sampling data from Washington boats landing in Oregon ports to WDFW. Collaboration between the two agencies continues on logbook design, collection and distribution. Regular inter-agency coordination is maintained through informal contacts through the year (Wargo and Forster 2022a; Wargo et al. 2022).

Shrimp harvest logbooks are required of all vessels (WDFW 2017e; WAC 2015c). WDFW reformatted shrimp logbooks in 2021. The formats of the Oregon and Washington logbooks are now very similar, allowing ODFW and WDFW to collect data on dumped tows. Logbook data entry went well in 2021. A 95% compliance rate and timely submission of logbooks by captains allowed staff to stay current with data entry throughout most of the season. A small backlog occurred at the end of the season due to some late submissions and coordination with ODFW to exchange logbooks submitted to the wrong state, but despite these delays staff completed entry of nearly 100% of the logbooks into the database by December 2021 (Wargo and Forster 2022a).

On March 13, 2009, the National Marine Fisheries Service proposed to list the eulachon Southern Distinct Population Segment (which consists of all eulachon spawning south of the Dixon Entrance and Nass River, BC) as threatened under the Endangered Species Act (74 FR 10857; 50 CFR Part 223: 10857-10876). WDFW felt there was a paucity of genetic data and limited understanding of how freshwater and oceanic environments affect eulachon population structure. They stated that, without direct observation, it was impossible to estimate the amount of bycatch in the Washington shrimp trawl fishery. Furthermore, it was recognized that fishery exploitation could not be calculated due to an unknown terminal run size. The ODFW and WDFW sought and were awarded funds in 2010 by the NOAA Fisheries Service to support a bi-state, multi-part project to address these limitations. The shrimp trawl observer project is one of four parts of the project and is intended to assess and reduce the impacts of shrimp trawl operations on eulachon smelt by initiating an observer program, with also required vessel fishing logbooks, to estimate the bycatch rates in Washington‘s ocean shrimp trawl fishery and by developing and testing modifications to ocean shrimp trawl gear or operations (Wargo and Ayres 2016; Wargo et al. 2016).

The WCGOP monitors the biological parameters of the total catch through at-sea monitoring of pink shrimp trips, the target for the Washington project was to obtain 20% coverage, which was achieved in 2011 but not 2012. Overall coverage is 14 -15% (McVeigh 2015), against an overall target of 15% (McVeigh pers. Comm). Observer coverage varies because directed fisheries for groundfish take priority and actual coverage of the pink shrimp fishery depends on many factors including budget, the location of observers in ports, the seasonal effects of shrimp distribution, fleet behavior, and opportunities to sample the shrimp fishery (McVeigh pers. comm. to Jim Golden).

The WDFW Police conduct opportunistic dockside catch samples to check for compliance with count-per-pound regulations (Chadwick 2021b). During 2021 COVID -19 quarantines and loss of staff led to a temporary decline in overall enforcement activity related to pink shrimp. Compared to 2020, enforcement hours (33), number of contacts (38) and inspected offloads (18) declined by approximately 40% in 2021. By 2022 full enforcement staffing at Ilwaco and Westport has been restored. A new patrol vessel dedicated to commercial fishery enforcement came online in 2021 (Dielman 2022b).

Overall compliance with regulations remains high, with fishery violations remaining below 1% of trips (Wargo and Ayres 2020; Wargo et al. 2021; 2022). Compliance with the count-per-pound regulation is reinforced by market preferences for larger shrimp (Hannah 2012; Groth 2022a; Wargo 2022a). At-sea compliance with regulations (seasons, closed areas, licenses) is monitored by the U.S. Coast Guard (PFMC 2021).

Vessels fishing in the federal EEZ are subject to federal rules and sanctions (cf. NMFS 2017a;b). NOAA Office of Law Enforcement (OLE) monitors compliance with over 35 federal statutes, including declaration reports, vessel monitoring systems (VMS), and closed areas (NOAA OLE 2022a). Federal rules apply to federally managed species that interact with the state management systems. For the shrimp fishery, these rules pertain primarily to bycatch of federally managed species or species protected under the Endangered Species Act (ESA 1973). Representatives from state enforcement agencies in Washington, Oregon, and California, and the federal government (PFMC 2022d) serve on the PFMC Enforcement Consultants committee. Coordination of state and federal laws is accomplished through this body.

Sanctions for non-compliance exist, are defined in law and enforced through at-sea and dockside monitoring. Compliance rates are high; In 2016 there were no incidences of illegal take or other forms of not in compliance with the exception of one Washington resident cited in Oregon for failure to provide a valid Oregon Shrimp Permit and a Non-Resident Boat Registration (Chadwick 2017a).

In 2020 there were an unusual twelve violations reported by enforcement for the fishing season out of a total of 375 trips (3%). A majority (9) of these violations were unlicensed crew members on Oregon boats who failed to get Washington crew member licenses when making deliveries into Washington ports. Overall, the 2020 fishery was orderly. One early season offload was determined to have high counts of small shrimp (approximately 73% of the offload). For this violation the captain was cited, pled guilty, fined $1000 and given a deferred 18-month sentence. The violation was flagged through cooperative work between WDFW Police and OSP (Alexander 2021; Chadwick 2021).

In 2021 citations were written for two unlicensed crewmembers and a warning was given for not having a license on the boat. A single potential instance of high shrimp counts was found on inspection by WDFW Enforcement to be legal (Dielman 2022b). The three violations were out of a total of 420 trips (.7%) (Wargo et al. 2022).

The high compliance rates in the pink shrimp fishery are attributed by law enforcement to the emphasis on prevention, an educational approach to informing participants in the fishery about regulations, the collaborations with industry in developing effective gear design, control rules that are clear and enforceable and a coordinated monitoring and enforcement infrastructure (Dielman 2022a).

Collaboration among WDFW management and enforcement programs continues to be strong, supported by weekly cross-program leader meetings (Wargo 2022a). Collaboration among WDFW and enforcement personnel, as well as with ODFW and the OSP Marine Fisheries Team and USCG, remains strong. For example, the single undersize shrimp case made in 2020 was the result of an OSP trooper contacting WDFW enforcement to advise about a vessel fishing on small shrimp (Chadwick 2021b).

Stakeholder Education and Outreach

Education and outreach in the pink shrimp fishery comprise formal reporting and informal communication.

Formal reporting to all interested stakeholders is provided through various means. Pre-pandemic, WDFW staff met twice per year, pre- and post-season in Westport with fishers, processors and other interested stakeholders to review status of observer program progress on the federal eulachon listing and recovery, and educate them on terms of the ESA or other relevant laws and regulations. Since 2021 pre- and post-season meetings have been conducted virtually (Wargo 2022a).

Staff also interact via mail with fishers in Ilwaco and Westport. Staff distributes an industry newsletter each year to recap the past years performance convey other related fishery management news. The ODFW newsletter is included (Wargo et al 2022). The fishery is described on the WDFW website at URL: http://wdfw.wa.gov/fishing/commercial/shrimp/.

The Washington Coastal Pink Shrimp FMP adopted in December 2018 provides the framework for shrimp fishery management (Wargo and Ayres 2017b). WDFW provided a copy of the FMP to each member of the fleet. The FMP was well received by industry and no issues arose during the first year of its implementation (Wargo 2020a).

Outreach materials developed under the Saltonstall-Kennedy “Section 6” grant were provided to WDFW LEP officers as a context for management and regulatory actions. In March 2019 WDFW held a training session for enforcement officers on shrimp regulations, including LED lights, excluders and shrimp counts (Chadwick 2020a).

Communication and support for accessing federal observer data has improved substantially over the years the newsletter has been produced. The newsletter has received positive comments from NOAA staff; information has been more readily shared as the purpose and intent of the requests for information (not just data) are made evident in the newsletter itself. The newsletter section on bycatch is provided to NOAA for review prior to publication (Wargo 2021b; Wargo et al. 2021).

Review and audit of management

The performance of the fishery is periodically informally discussed by WDFW staff with their respective states’ processors and fishers. Two-way communication between management and industry bring up issues that may need to be acted upon. In 2016 an external review of the Oregon and Washington management systems was conducted by Golden Marine Consulting. The report of the management evaluation was presented to the assessment team at the 2017 Surveillance audit (Golden Marine Consulting 2017).

Research Plans

The Washington pink shrimp fishery has not historically had a separate formal research plan providing a strategic approach to research (Wargo and Ayres 2015;) but instead relied informally on ODFW’s annual research plans, adaptive management of research, and publication and distribution of research results provided through its Annual Pink Shrimp Review, ODFW research reports, and manuscripts published in peer-reviewed literature (Hannah and Jones 2000; Gallagher et al. 2004; Krutzikowsky et al, 2006; Hannah and Jones 2007; Hannah et al. 2010; Hannah et al. 2011; Wargo 2021) to support their respective management decisions.

Logbook data entry was previously challenged by significant competing demands on Shellfish Program staff. However, the closure of the razor clam fishery in 2020 due to domoic acid eased workloads to the benefit of logbook processing (Wargo 2021b) and logbook data entry went well in 2021. As indicated above, a 95% compliance rate and timely submission of logbooks by captains allowed staff to stay

current with data entry throughout most of the 2021 season. A small backlog occurred at the end of the season due to some late submissions and coordination with ODFW to exchange logbooks submitted to the wrong state, but despite these delays staff completed entry of nearly 100% of the logbooks into the database by December 2021 (Wargo and Forster 2022a).

Since 2016 evidence of WDFW research collaboration with ODFW, NMFS and the Cowlitz Tribe as well as within-agency research has been described in the annual Pink Shrimp Review. This research includes projects on eulachon distribution in the Columbia River, estimates of annual spawning stock biomass for the Columbia, Grays, Nashelle, Chehalis and Cowlitz Rivers, eulachon larval collection protocols, eulachon larval genetics, genetic marking of longfin smelt, adult eulachon sampling, and eulachon fecundity.

Collaboration among WDFW and ODFW remains strong. ODFW continues to provide support to augment WDFW operations where resources to manage and monitor the pink shrimp fishery are limited, e.g. ODFW providing biological sampling data collected at Astoria from vessels fishing off Washington. Collaboration is also occurring on logbook design, collection and distribution. Regular informal contacts are maintained throughout the year (Wargo 2021a; 2021b; Wargo et al. 2022).

Work under the Saltonstall-Kennedy “Section 6” Grant on development and distribution of LED lights and information sheets to the fleet was an effective collaboration among WDFW, ODFW and CDFG (Wargo 2020a). The work concluded in 2020, with a final distribution of remaining LED lights (Wargo 2021b).

7.4.2 Principle 3 Management System Background (OREGON)

Area of Operation of the Fishery

The Oregon pink shrimp fishery operates within state and federal waters off the states of Washington, Oregon and California. State waters extend to 3 nautical miles (nm) offshore; federal waters extend from 3 to 200 nm offshore. The fishery occurs predominantly within federal waters of the US Exclusive Economic Zone (EEZ). Harvesters are allowed to fish anywhere within US federal waters beyond state limits but may land their catch only in the states for which they have landing permits (TAVEL Certification 2007).

Pink shrimp are fished in areas of relatively flat, soft substrate at depths ranging from 75-145 fathoms (ODFW 2017g). The fishery targets areas where stocks are concentrated, called beds. These beds increase and decrease in size as population abundance varies. For example in 2011 the majority of the catch was taken from the south coast and northern California areas, but the north coast also had high production levels (Hannah and Jones 2012). By 2016 fishing was best in the southern areas in the early part of the year; mid coast abundances were low and northern area shrimp were too small. By mid-summer, northern area shrimp had grown to legal size and were fished intensely. By the end of the year, catch and effort increased again in the south (Groth et al. 2017). In 2021 Catch was highest in central and southern areas of Oregon, but very good throughout the region and the season. Catch increased throughout the season due to an unusual combination of early-season circumstances, primarily a high percentage of age-one shrimp and large carryover inventories (Groth et al. 2022).

User Groups and Rights

The pink shrimp fishery is exclusively commercial, prosecuted by Oregon fishers and a small number of Washington and California fishers permitted to land in Oregon ports. Washington, Oregon and California each have a limited entry permit system that limits the number of vessels participating.

Within Oregon, statute specifically exempts treaty rights of tribes from Oregon Fish and Wildlife Commission (OFWC) regulations (ORS 1975b). Oregon treaty tribes are Columbia River tribes and do not participate in the shrimp fishery. At the federal level, NMFS and the PFMC are both bound by Federal Executive Order 13175 (2000), which requires meaningful consultation and collaboration with Indian tribal governments. The sovereign status and co-manager role of Indian tribes over shared federal and tribal fishery resources is recognized. At the regional level, this role is reflected in a designated tribal seat on the Pacific Fishery Management Council (PFMC 2022e).

Legal Context

The management system operates within state laws and administrative rules. Oregon fishery management decisions are made by the Oregon Fish and Wildlife Commission (OFWC) and implemented through the ODFW. The OFWC formulates fishery management policies and sets fishing seasons and other regulations. Some regulations, such as the maximum count per pound, are set in statute. Ultimate approval authority rests with governor.

The OFWC and ODFW operate within a framework of state laws, Oregon Revised Statutes (ORS) chapters 496 through 513. Oregon state agencies are guided by a set of Oregon Administrative Rules (OARs) that set out general standards and procedures as well as fishery-specific rules. The OARs pertaining to ODFW are contained in chapter 635. The Oregon Trawl Commission is a state agency and operates under the umbrella mandate of the Oregon Department of Agriculture Commodity Commissions Program (specifically OAR chapter 656; OAR 2012). In addition, all state entities adhere to the Public Meetings Law which requires that all meetings of governing bodies covered by the law are open to the public, that the public be given notice of the time and place of meetings, and that meetings be accessible to everyone (Open Oregon 2017).

At the national level, management of state fisheries takes place within, and is coordinated with, a larger framework of federal laws, through the interface with the regional fishery management council system. Federal fishery management is carried out under the authority of the MSA, first passed in 1976 and most recently reauthorized in 2006 (MSA 2007). The MSA is the principal law governing the harvest of fishery resources within the federal portion of the U.S. 200-mile zone. Under the MSA, the PFMC recommends management actions to the National Marine Fisheries Service (NMFS; also called NOAA Fisheries) for approval. Ultimate decision authority for fishery management lies with the Secretary of Commerce.

In addition to the MSA, the PFMC adheres to a suite of “other applicable laws” (Buck 1995; PFMC 2022f):

o NEPA: requires environmental impact assessments of federal actions and compliance with other laws and executive orders (EO).

o ESA: prohibits actions that are expected to jeopardize the continued existence of any endangered or threatened species under NMFS’ jurisdiction or result in harmful effects on critical habitat.

o MMPA: requires protection of marine mammals. NMFS is responsible for whales, dolphins, porpoise, seals, sea lions and fur seals. The USFWS is responsible for walrus, sea otters, and the West Indian manatee.

o MBTA: a shared agreement between the United States, Canada, Japan, Mexico, and Russia to protect migratory birds, prohibiting their taking, killing, or possession. The directed take of seabirds is prohibited.

o CZMA: requires all federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable

o APA: provides for public participation in the rulemaking process

o (PRA: regulates the collection of information from the public

o RFA: requires assessment of the regulatory impact on small entities through a regulatory flexibility analysis. The analysis is combined with the regulatory impact review (RIR) and NEPA analyses.

o EO 12866 (Regulatory Planning and Review): establishes guidelines for promulgating new regulations and reviewing existing regulations and requires agencies to assess the costs and benefits of all regulatory action alternatives.

o EO 12898 (Environmental Justice): requires federal agencies to identify and address "disproportionately high adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations in the United States" as part of an environmental impact analysis associated with an action.

o EO 13175 (Consultation and Coordination with Indian Tribal Governments): requires regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications and the avoidance of unfunded mandates imposed on tribes.

o EO 13132 (Federalism): requires federal agencies to consider the implications of policies that may limit the scope of or pre-empt states' legal authority. Such actions require a consultation process with the states and may not create unfunded mandates for the states.

o EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds): supplements the MBTA by requiring Federal agencies to work with the USFWS to develop memoranda of agreement to conserve migratory birds and to evaluate the effects of their actions on migratory birds in NEPA documents.

Administrative Context

Oregon Fish and Wildlife Commission

OFWC was formed in 1975 by the merger of the separate fish and wildlife commissions. The Commission has seven members appointed by the governor for staggered four-year terms; one from each congressional district, one from east of the Cascades and one from the west of the Cascades. The Commission formulates policy for the management and conservation of fish and wildlife. It also sets regulations for recreational and commercial resource use, such as seasons and fishing methods (ORS 1975a; ODFW 2017c).

The OFWC website contains information on Commission membership, as well as meeting minutes, a schedule of upcoming meetings, and meeting procedures. It also provides a link to email questions and comments to the Commission. Commission meetings are held monthly and are open to the public.

Oregon Department of Fish and Wildlife

ODFW operates under ORS chapters 496 through 513. It is charged with carrying out the policies set by the Commission and required by statute. ODFW consists of a director appointed by the OWFC and a state-wide staff distributed throughout Oregon. The mission of the ODFW is "to protect and enhance Oregon's fish and wildlife and their habitats for use and enjoyment of present and future generations" (ODFW 2017h). The ODFW is divided into a Fish Division and a Wildlife Division. Oregon statute charges the ODFW with protecting and propagating fish in the state (ORS 1965). This responsibility includes regulation of harvest, protection and enhancement of fish populations, and rearing and release of fish into public waters (ODFW 2017h).

The ODFW is involved in multiple state, federal and regional policy processes related to the shrimp fishery. Oregon is a member of the PFMC (comprising Oregon, California, Washington and Idaho) (PFMC 2022f), NPFMC (Alaska) (NPFMC 2022), and PSMFC (Oregon, California, Washington, Idaho and Alaska) (PSMFC 2022). Within Oregon, the Ocean Policy Advisory Council (OPAC) is an advisory body to local

governments, the Legislature and Governor on state ocean policy. The ODFW Marine Resources Program serves as a non-voting member of OPAC, whose present focus is on the protection of near-shore ocean resources and the spatial management or Oregon's Territorial Sea (OPAC 2017).

ODFW Marine Resources Program

The Marine Resources Program (MRP) is a component of the ODFW Fish Division. The goal of the MRP is "to increase the quality and quantity of stock assessments and biological information collected through improved at-sea and dockside sampling programs and through carefully designed research projects." The MRP is authorized by statute and administrative rule to administer the regulation, harvest and management of commercial and recreational fisheries (ODFW 2017i). It has three areas of focus: 1. Policy, management and regulation; 2. Fisheries monitoring and data collection; 3. Research on species, habitats and fisheries. Specifically, it researches, assesses and manages the Oregon pink shrimp fishery. In addition to these direct responsibilities in state waters the MRP provides technical support and policy recommendations to regional and federal management entities that manage fisheries affecting Oregon stocks, fisheries and communities (ODFW 2017i).

The MRP is based in Newport with field offices in Astoria, Charleston and Brookings. MRP staff are responsible for sampling, monitoring, research and management of commercial and recreational marine fisheries. These include ocean salmon, groundfish, halibut and shellfish. MRP staff have also been charged with managing the process of developing Oregon's system of marine reserves (ODFW 2017f). The 2021-23 MRP budget is approximately $25 million for 2021-23 comprising federal, state general funds, license sales, and dedicated funds such as the commercial fish fund generated through *ad valorem* tax on landings (ODFW 2022a).

Oregon Trawl Commission

The Oregon Trawl Commission (OTC) is a state agency operating under the Oregon Department of Agriculture Commodity Commissions Program. The OTC implements the practices and procedures established for commodity commissions by ORS chapter 656 of OAR. The commission was formed in 1963 by a vote of trawl producers (OAR 2022a; OTC 2017a;b).

The mission of the Oregon Trawl Commission (OTC) is promotion, education, research and information. Specifically, the OTC seeks to enhance the image of the trawl industry, increase industry opportunities and contribute to the development of regulations and legislation (OTC 2017a). The OTC provides web-based information on trawl gear and trawl fishing operations, attends seafood shows to promote trawl-caught products, features trawl-caught fish in cooking competitions and recipes, participates in management processes as advisors and informed stakeholders, and promotes research to resolve trawl-related issues.

The Commission has eight commissioners (eight fishermen, one processor, one distributor and one public member) appointed by the Director of the Oregon Department of Agriculture. Commissioners are chosen from among the owners and captains of trawl vessels, processors, and distributors; the mandated composition is five fishers, one processor, one distributor and one public member. The Commission is entirely funded through a mandatory *ad valorem* landings tax of .5% (OTC 2017b, ORS 2009).

Oregon State Police

The Oregon State Police (OSP) Fish and Wildlife Division is charged with "ensuring compliance with the laws and regulations that protect and enhance the long-term health and equitable utilization of Oregon's fish and wildlife resources and the habitats upon which they depend" (OSP 2022a).

The primary responsibility of the OSP Fish and Wildlife Division is enforcement of fish and wildlife laws. Some elements of that enforcement include laws relating to licenses and permits, fishing vessel and gear

restrictions, inspection of fish processing facilities, monitoring harvest quotas and trip limits, enforcing seasons and fishing areas, shellfish sanitation, marine mammal protection, and conducting deterrent patrols.

Additional responsibilities include public safety and enforcement of traffic, criminal, boating, livestock and environmental protection laws. The Fisheries Section works closely with the ODFW MRP to enforce Oregon's commercial and sport fishing regulations through patrols of state waters and docks (OSP 2022a;d). For example, in late 2015 ODFW conducted team training in various aspects of count sampling and determination in anticipation of potential count problems in 2016 (Groth et al. 2017).

Cooperative enforcement planning is a tool to help ODFW and OSP work together to facilitate enforcement of resource management regulations. Troopers meet yearly with biologists to set enforcement priorities by species and to discuss concerns regarding social issues, seasons, areas, and local issues. Troopers then develop tactical plans to address priority issues and gain desired voluntary compliance levels to protect resources and meet management goals. The results of each tactical plan are quantified and discussed with the biologists. The compliance level obtained through the tactical plan is compared to the compliance level considered necessary to meet management goals. If necessary, tactical plans are adjusted to make the best use of limited resources in manpower and equipment to achieve the goals (OSP 2022b).

In 2015 the Oregon State Police Fish and Wildlife Division formed a Marine Fisheries Team (MFT) organized under a single Sergeant centrally located on the Oregon Coast in Newport. The purpose of forming the MFT was to better coordinate fisheries and habitat enforcement related to the commercial and recreational ocean fisheries along the coast. The MFT is assigned to offices in Astoria, Newport, Florence, Coos Bay, and Gold Beach (OSP 2022c). Changes associated with the COVID 19 pandemic created multiple challenges for the MFT through reduced staffing, budget, and supplies. The MFT had multiple troopers reassigned or transferred during 2021, including Sergeant Todd Thompson who retired after a long career of fish and wildlife enforcement in Oregon. Entering 2022, Heather Van Meter was promoted to fill Sergeant Thompson's position. Several remaining vacancies are expected to be filled by June 2022 to return to full staffing (Howell 2022b).

Pacific States Marine Fisheries Commission

The PSMFC is an interstate compact agency established by consent of Congress in 1947. Member states are California, Oregon, Washington, Idaho, and Alaska, each represented by three Commissioners. The purpose of the PSMFC is "to promote the better utilization of fisheries – marine, shell, and anadromous – of mutual concern, and to develop a joint program of protection and prevention of physical waste of such fisheries in all of those areas of the Pacific Ocean over which the compacting states jointly or separately now have or may hereafter acquire jurisdiction" (PSMFC 2022).

PSMFC has no regulatory or management authority. Instead, it serves as a neutral convener for discussion, interstate coordination, state-federal coordination, grants administration, funds disbursement, research and management coordination and database management. The PSMFC also participates as a non-voting member of the PFMC and the NPFMC (PSMFC 2022).

Pacific Fishery Management Council

The ODFW coordinates state fishery management with the regional PFMC. The PFMC (also Council) is responsible for managing Pacific Ocean fisheries in the 317,690 nm^2 federal EEZ off the coasts of California, Oregon and Washington. The Pacific fisheries comprise about 119 species of salmon, groundfish, coastal pelagic species (sardines, anchovies, and mackerel), shellfish, and highly migratory species (tunas, sharks, and swordfish) (PFMC 2022f).

The Council has fourteen voting members, consisting of four state fishery agency directors, the regional administrator of NMFS, 4 state obligatory appointments, four at-large appointments, and one tribal appointment representing federally recognized fishing rights from California, Oregon, Washington, or Idaho (MSA 2007; PFMC 2022e;f)). The state obligatory and at-large appointments are made by the Secretary of Commerce based on nominations from the governors of the four member states, and have a maximum of three terms. The tribal appointment is made by the Secretary of Commerce in consultation with the Secretary of the Interior and tribal governments based on a list of nominees submitted by the tribal governments, with representation to be rotated among the treaty tribes (MSA 2007).

The Council meets five times a year. All meetings are open to the public, except for discussions of personnel or other administrative matters. Meeting locations rotate among member state cities. Advisory bodies also meet at various times between Council meetings. The Council briefing books containing meeting agendas, agenda item summaries, and background information are available to the public online in advance of each meeting. Post- meeting summaries of Council decisions are also available online, as are complete minutes of meetings (PFMC 2022a; 2022c).

Fishery Management Objectives

The Oregon Food Fish Management Policy (ORS 1975c) lists seven management objectives (identified as goals in the statute) for Oregon food fish that guide management decision-making by the OFWC. The objectives are preceded by a general policy statement that food fish are to be managed to provide the optimum economic, commercial recreational and aesthetic benefits for present and future generations of citizens.

The objectives may be paraphrased as:
(1) To maintain all species of food fish at optimum levels;
(2) To optimize the production, utilization and public enjoyment of food fish;
(3) To permit an optimum and equitable utilization of available food fish;
(4) To maintain public access to food fish resources;
(5) To regulate food fish to provide optimum commercial and recreational benefits;
(6) To preserve the economic contribution of the sports and commercial fishing industries consistent with sound food fish management practices;
(7) To optimize the return of Oregon food fish for Oregon's recreational and commercial fisheries.

The Oregon fishery management system is also guided by Statewide Planning Goal 19 on Ocean Resources (State of Oregon 1973), which is "to conserve marine resources and ecological functions for the purpose of providing long-term ecological, economic, and social value and benefits to future generations." This general goal is supplemented by implementation requirements pertaining to the use, management and protection of renewable marine resources. Complementing Goal 19 is the Governor's Executive order 08-07 which directs state agencies to protect coastal communities in considering the choices for marine reserves and wave energy sites, as well as subsequent state legislation establishing set of pilot marine reserves (State of Oregon 1973; 2008).

While the Oregon's Food Fish Management Policy provides explicit overarching long-term objectives for Oregon's fisheries that guide OFWC decision-making (ORS 1975c), The OARs provide the legally enforceable elements of fish management plans (OAR 2017a). The Fishery Management Plan (FMP) for Oregon's Trawl Fishery for Ocean Shrimp (*Pandalus jordani*) adopted in 2018 provides the framework for shrimp fishery management (Hannah et al. 2018; Groth 2020a).

The FMP comprises three major sections, each with several subsections:

1. Resource Analysis

- Species
- Description of the shrimp resource
- Available data
- Stock status
- Known threats to the resource
- Sustainable harvest levels
- Prioritized list of research needs

2. Harvest Management Strategy.

- Species
- Management objectives
- Current issues
- Description of the fishery
- Other social and/or cultural uses of the resource
- Biological reference points and fishery controls

3. Glossary of terms and literature cited

- Glossary of terms
- Literature cited

The FMP contains three long-term management objectives.

1. Maximize biomass yield from the ocean shrimp fishery, consistent with detecting and addressing any significant growth or recruitment overfishing that develops.
2. Operate the fishery, to the extent possible, under a stable regulatory environment that allows vessel operators maximum flexibility in deciding where, when and how to fish for ocean shrimp.
3. Through collaborative research with vessel operators and the sharing of research findings, develop and implement measures to minimize direct bycatch mortality, the unseen mortality of animals that escape capture and any adverse effects on seafloor habitat from the operation of the fishery.

The FMP lists two short-term management objectives

1. Maximize yield from the ocean shrimp fishery, consistent with detecting and addressing any significant growth or recruitment overfishing that develops.
2. Operate the fishery, to the extent possible, under a stable regulatory environment that allows vessel operators maximum flexibility in deciding where, when and how to fish for ocean shrimp.

In conjunction with the specified objectives, the FMP specifies a target- and limit-based management system for ocean shrimp to provide more precautionary management during severe environmentally-driven declines in stock abundance. Proxies are specified for target- and limit-based reference points at which actions could be taken to restrain fishing mortality. Based on the modeling results in Hannah and Jones (2014b) and input from the shrimp industry, target- and limit-based action levels have been established for management of the ocean shrimp fishery going forward (Hannah et al. 2018).

The fishery is being managed according to the framework of the plan.

Fishery Regulations

Fishery regulations designed to achieve the management objectives include a number of input controls. These include mandatory commercial fishing vessel licenses, limited entry shrimp fishing permits, season limits, maximum count per pound, bycatch reduction devices and incidental catch limits. In addition, the

fishery is subject to conservation area restrictions, landings fees, and onboard observer coverage (OAR 2017 b;c;d;e).

Key regulations that apply to Oregon pink shrimp deliveries are reported in the 2022 Oregon Pink Shrimp Review, summarized in the table below.

Key regulations that apply to **Oregon** pink shrimp deliveries				
		Fishing off CA*	Fishing off OR**	Fishing off WA***
Areas	0-3 miles	No fishing	OR permit needed	No fishing
	3-200 miles Key closed areas	Delgada Canyon, Tolo Bank, other closed areas (see CA regs)	Nehalem Bank, Daisy Bank, Stonewall Bank, Heceta Bank, Coquille Bank	Grays Canyon (see WA regs)
Mesh size Minimum 1-3/8" No minimum				
BRD ≤ 3⁄4" spaced rigid grate				
LEDs 5 LEDs in central 16 feet of each net, spaced 4 feet apart (More LEDs may be used)				
Count per pound ≤160 shrimp/ pound				
VMS declaration Required				
Season April 1- October 31				
Groundfish by-catch****	Groundfish: 500 lb/day, multiplied by the number of days of the trip, not to exceed 1,500 lb/trip. The following sublimits also apply and are counted toward the overall 500 lb/day and 1,500 lb/trip groundfish limits: lingcod 300 lb/month (minimum 24" size limit); sablefish 2,000 lb/month; canary, thornyheads, and yelloweye rockfish are PROHIBITED. All other groundfish species taken are managed under the overall 500 lb/day and 1,500 lb/trip groundfish limits and do not have species specific limits. The amount of groundfish landed may not exceed the amount of pink shrimp landed.			

Source: Groth et al. 2022

Fishery Management Decision Processes

Established decision-making processes of the OFWC are outlined in law. These processes exist to enable the development of management measures that meet Food Fish Management Policy objectives (ORS 506.036, 1965; ORS 1975c; ODFW 2017d).

In establishing and implementing law and policy, the Oregon Legislature and the OFWC use processes that are based on best available scientific information and exhibit a precautionary approach to pink shrimp management. For example, regulations establishing maximum count per pound and closed seasons were implemented to minimize effort on small shrimp and prevent fishing on spawning aggregations (OAR 2017b;c;d). Adoption of the BRD requirement was a precautionary approach to minimizing bycatch of rebuilding groundfish stocks. Further strengthening of the BRD specifications was a proactive and precautionary approach to minimizing all bycatch, including eulachon, listed as threatened under the ESA (OAR 2017d; Hannah and Jones 2012).

The management system provides opportunity, encouragement and facilitation of engagement by stakeholders through formal and informal processes.

Formal processes include the posting of announcements of OFWC meetings on the ODFW website well in advance of meetings, with full information about meeting agendas. The public is encouraged to attend OFWC meetings or provide comment in advance of meetings through the Commissions website link (ODFW 2017c). In addition, ODFW routinely posts notices of public meetings about upcoming regulations on their website and at port offices (ODFW 2017d). The Oregon Public Meetings Law ensures public notice and access to meetings (Open Oregon 2017). Annual planning meetings between enforcement and ODFW, as well as intra-season updates, establish enforcement priorities in anticipation of likely areas needing enforcement attention, and adapt to in-season enforcement issues as they emerge (OSP 2022b; Thompson 2020).

Less formal but equally established processes include a number of types of interaction and coordination among managers, enforcement personnel and stakeholders. Dockside interactions between the industry, ODFW biologists and OSP officers take place on a regular basis through catch sampling and monitoring. MRP staff is generally available for informal meetings with stakeholders, as well as for more formal meetings arranged around a particular topic (Groth 2017; Pettinger 2017).

The ongoing proces of active coordination and consultation with industry in identifying issues, monitoring compliance, and conducting cooperative research contributes to decision processes that are responsive, transparent and adaptive (ODFW 2017b; e; i; ODFW 2022b). The transparency, timeliness and adaptive manner of decision responses are demonstrated through the ODFW Annual Pink Shrimp Review. For example, Eulachon smelt (*Thaleichthys pacificus*) are common bycatch to pink shrimp fishing. In 2010, they were listed as "Threatened" under the Endangered Species Act (ESA). Cooperative scientist and industry efforts have resulted in reducing eulachon bycatch through proper use of LED fishing lights and Bycatch Reduction Devices (BRDs). Design, development and testing of refinements to the bycatch reduction device was done in collaboration with industry members, and the results quickly led to a decision about new regulations. Fishing line height (FLH) also affects catch rates of both shrimp and bycatch (Hannah and Jones 2003). Maintaining proper use of these methods assures that the shrimp fleet is minimizing eulachon bycatch. In its 2022 annual edition the Review reported on a survey of the fleet concerning their use of these critical bycatch reduction methods and described the survey as a great opportunity to share information (Groth et al. 2022).

At the regional level, the PFMC process provides open and transparent distribution of information as well as opportunities for engagement of interested parties through committee membership and public testimony. ENGOs are routinely engaged in this process (PFMC 2022c; 2022d; 2022e).

Executive Order 13132 (1999) requires federal agencies to consider the implications of policies that may limit the scope of or pre-empt states' legal authority. Such actions require a consultation process with the states and may not create unfunded mandates for the states. Any final published rule must be accompanied by a "federalism summary impact statement" (NMFS 2017c).

Stakeholder Consultations

The management system regularly seeks relevant information through extensive consultation with stakeholders. These consultations serve the purpose of proactively avoiding disputes. They provide open lines of communication among fishery participants on the likely impact of regulations and on upcoming fishery-related issues. Mechanisms for consultation include the Annual Pink Shrimp Review (ODFW 1989; 2008-2022), OTC periodic newsletters and online news notices (OTC 2011a; 2011b; 2017c), OSP monthly newsletter (OSP 2022e), meetings at MRP offices, dockside interactions, and public testimony at OFWC meetings (ODFW 2017d).

A recent example of the use of consultation in the pink shrimp management system is the use of the 2022 Annual Pink Shrimp Review to update the fleet ion the latest research into the effectiveness of using LED lights to reduce bycatch of eulachon, Between 2013-2017 experiments with LED lights to reduce eulachon

bycatch were conducted through an active agency-industry consultative process. Throughout that time period the Annual Pink Shrimp Review was used extensively as a tool for the communication of experimental results (Hannah and Jones 2014; 2015, 2016; Groth et al. 2017). Additionally, in 2017 the Review was used to request stakeholder feedback on the newly developed shrimp fishery management plan (Groth et al., 2017). Most recently the Review reported the results of a survey of the fleet on their use of LED lights, bycatch reduction devices (BRDs) and fishing line height (FLH) (Groth et al. 2022).

At the regional level the PFMC process is based on consultations with member states through state agencies, PFMC appointees, advisory committee members, and meetings. The process of state participation in the formulation of federal management measures encourages complementary approaches between federal and state approaches (PFMC 2007; 2022c). Consultations among state agency staff, industry stakeholders and ENGOs occur informally through regular stakeholder meetings, interactions at PFMC settings, interactions with congressional staff, and various other meetings.

Stakeholder Education and Outreach

Education and outreach in the pink shrimp fishery comprise formal reporting and informal communication.

Formal reporting to all interested stakeholders is provided through various published sources. The ODFW Annual Pink Shrimp Review provides annual summaries of fishery performance, describes research results, and identifies upcoming issues affecting the fishery (cf. Hannah and Jones 2015; 2016; Groth et al. 2020; 2021; 2022). OFWC minutes describe Commission deliberations on various issues, the nature of scientific advice and public comment, and decision outcomes (cf. ODFW 2017c, 2017d). Oregon State Police monthly Field Reviews inform fishery stakeholders of existing and emerging compliance and enforcement issues (cf. OSP 2022e). OTC quarterly newsletters provide fishery updates and identify economic and regulatory issues (cf. OTC 2017c). PFMC newsletters describe actions taken at Council meetings, committee openings and meeting schedules, and upcoming issues (cf. PFMC 2022a). The Federal Register provides notice of all proposed federal actions (cf. Federal Register 2022).

The number of informal interactions among stakeholders and agency staff maintain open lines of communication that encourage active participation and promote widespread understanding of the roles and responsibilities of respective entities. The functions, roles and responsibilities are well understood for key areas of responsibility and action. Evidence of successful outreach education can be found in the extent of industry involvement in research (cf. Hannah and Jones 2015, 2016; Groth et al. 2021; 2022)., public testimony to the OFWC, engagement of the OTC in state and federal processes, and good compliance rates.

Monitoring, Control and Surveillance

A comprehensive system of monitoring, control and surveillance is in place, involving ODFW, NMFS WCGOP, OSP and US Coast Guard (USCG). Harvest control rules (seasons, maximum counts per pound and bycatch reduction devices) are clear and enforceable.

The ODFW provides port sampling of catch and actively monitors CPUE and size composition. Fishing location and effort are monitored through mandatory logbooks. The WCGOP monitors the biological parameters of the total catch through at-sea monitoring of pink shrimp trips, the target is to obtain 20% coverage, however to date this has not yet been achieved (NWFSC 2010; McVeigh 2015). The OSP conducts random dockside catch samples to check for compliance with count-per-pound regulations and do pre-season checks of BRDs to ensure compliance with spacing requirements. Compliance with the count-per-pound regulation is reinforced by market preferences for larger shrimp (Hannah 2012; Groth 2017; Pettinger 2012; 2017; Thompson 2020; 2021). At-sea compliance with regulations (seasons, closed areas, licenses) is monitored by the OSP and the US Coast Guard (PFMC 2021).

Vessels fishing in the federal EEZ are subject to federal rules and sanctions (cf. NMFS 2017a; 2017b). NOAA Office of Law Enforcement (OLE) monitors compliance with over 35 federal statutes, including declaration reports, vessel monitoring systems (VMS), and closed areas (NOAA OLE 2017a;b). Federal rules apply to federally managed species that interact with the Oregon management system. For the shrimp fishery, these rules pertain primarily to bycatch of federally managed species or species protected under the ESA 1973. Oregon enforcement is represented on the PFMC Enforcement Consultants committee, which includes representatives from state enforcement agencies in Washington, Oregon, and California, and the federal government (PFMC 2022d). Coordination of state and federal laws is accomplished through this body.

At the state level, the management system uses the ODFW and OSP Cooperative Enforcement Plan (CEP) to coordinate between agencies and to set priorities. Enforcement priorities are reviewed annually under the CEP for all commercial fisheries including the pink shrimp fishery (OSP 2022b).

The ODFW emphasizes an informational and consultative approach to new regulations by working with industry to develop workable approaches to compliance - for example, in the design development of the bycatch reduction device – and by advance notice to industry of upcoming regulation changes and enforcement issues through the Annual Pink Shrimp Review. The management philosophy of both ODFW and the OSP is to promote compliance through education and cooperation and minimize the occurrence of noncompliance (Hannah 2012; Groth 2020; Thompson 2020).

Sanctions for non-compliance exist, are defined in law and enforced through at-sea and dockside monitoring. OSP issues citations for non-compliance at either a violation or misdemeanor level depending on the seriousness of the offense. Fines typically range between $500 and $1000 but can also include seizure of the entire offload of shrimp when there is a history of noncompliance or the level of offense warrants it (Howell 2022b).

The OSP provides information on compliance and enforcement to the ODFW. There are no notable areas of conflict within the fishery and compliance rates are high, with few reported violations in the pink shrimp fishery since 2012 (Howell 2022a; Thompson 2012; 2017; Hannah and Jones, 2012; Groth et al. 2017). In 2016 there was a single violation of the count-per-pound regulation; between 2012 and 2015 there were none. In 2020 two “not in compliance” enforcement contacts were made during the fishing season, out of 1098 trips (.2%). One vessel captain was cited for a count per lb. violation, fined and forfeited the load of shrimp. Information was unavailable on the nature of the second contact (Thompson 2021). In 2021 the OSP identified four cases of shrimp landings exceeding the 160 count per pound limit, out of 988 trips (.4%): one in April, two in May, and one in June. In each case he vessel captain was cited and fined, and a portion of the landing was seized (Groth et al. 2022; Howell 2022b).

The 2021 Review reported these violations along with a reminder to the fleet to monitor the count per pound of tows, especially during the first few months of the season when small aged one shrimp are abundant, so that landings do not exceed the 160 count per pound average. It noted that small shrimp are typically common in the first three months of the season because of the very small size of age one shrimp at that time (Groth et al. 2022).

No violations of the BRD regulation were reported in the period 2012-2021; Season openings are fully enforceable (Groth et al. 2022; Howell 2022a; 2022b). In 2016, one fisher was cited by the OSP for wanton waste of commercial food fish after landing 30k lbs. of spoiled shrimp (OSP 2016). The harvester was subsequently tried, convicted and fined $500 (Groth et al. 2017).

The high compliance rates in the pink shrimp fishery can be attributed to the emphasis on prevention, an educational approach to informing participants in the fishery about regulations, the collaborations with industry in developing effective gear design, control rules that are clear and enforceable and a coordinated monitoring and enforcement infrastructure. In addition, collaboration among ODFW and enforcement

personnel as well as with WDFW and the WDFW Law Enforcement Program (LEP) remains strong (Howell 2022a; Groth 2021b).

Research to Support Management

ODFW MRP has conducted a longstanding and proactive shrimp research program that consists of the annual development of research projects in response to current and emerging conditions. Since 2013 the pink shrimp fishery has published its research plan for the upcoming year, as well as list of ODFW research reports, and peer-reviewed publications, in the Annual Pink Shrimp Review (cf. Groth et al. 2020; 2021; 2022)

Research takes place in three priority areas: shrimp population dynamics, non-target catch and ecosystem effects. Although research priorities are addressed each year, activities that take place within each area depend on availability of staff, equipment and funding (Groth et al. 2022).

ODFW shrimp biologists have a strong publication record (cf. Hannah and Jones 2000; 2003; Gallagher et al., 2004; Krutzikowsky et al., 2006; Hannah and Jones, 2007; Hannah et al. 2010; Hannah et al. 2011; Hannah 2014; 2016; Hannah and Jones 2014; Lomeli et al. 2019; Bancroft and Groth 2021). The MRP is successful in producing reliable, timely and proactive research results that support management decisions. Research results are widely distributed in written form and are also widely disseminated informally through involvement of the industry in cooperative research and through frequent meetings and dockside interactions (Groth 2021a).

Collaboration among ODFW, WDFW and CDFW remains strong. The Saltonstall-Kennedy “Section 6” grant of 2019 was concluded in 2020, with some continuing distribution to deckhands of waterproof information sheets on bycatch species identification (Groth 2021b).

In 2020 NOAA scientists began working on a bioeconomic model of the shrimp fishery to address some of the questions surrounding optimal fishery operation (Groth and Smith 2020). Changeover in post-doc personnel as well as well as the need to conduct some additional supporting data analysis have delayed progress on model development. Modelling work will continue in 2022 (Groth 2022b).

Management Review

Some components of management performance are evaluated annually and reported in the Annual Pink Shrimp Review under the following section heads: season summary, indicators for the upcoming season, issues updates, research results, regulatory changes and enforcement issues (Hannah and Jones 2013-2016; Groth et al. 2020; 2021; 2022). ODFW staff conducts ongoing review of control rules by monitoring CPUE, quantity, quality and size composition of catch, and bycatch. Performance of BRDs – in terms of effectiveness of bycatch reduction as well as impact on fishing operations – is evaluated through onboard observer reports and stakeholder feedback. Bycatch is monitored and evaluated through the onboard observer program. The Annual Pink Shrimp Review is the primary mechanism for reporting evaluation results.

The economic performance of the fishery is annually evaluated through discussions of shrimp processing and fishing effort in the Annual Pink Shrimp Review, and occasionally evaluated through analyses of economic impact of Oregon fisheries sponsored by the Oregon Coastal Zone Management Association or other analyses such as the bioeconomic model being developed by NMFS (OCZMA 2006; Groth et al. 2022).

Research results are subject to external review through the peer reviewed journal process, in which ODFW staff are actively engaged (cf. Hannah and Jones 2000; Hannah and Jones 2007; Hannah et al. 2010; Hannah et al. 2011; Hannah 2014; 2016; Hannah and Jones 2014; Lomeli et al. 2019).

An external review of the management policy was performed as a condition of the 2007 certification (TAVEL Certification Inc 2007; Golden 2008). The initial review was followed in 2016-2017 by a second external review conducted by Golden Marine Consulting. The review focused on six management components: stock assessment; fishery monitoring; enforcement compliance; research; organizational integrity/viability; regulatory action. The review was conducted through a literature search and interviews with decision makers, researchers, and stakeholders. The report of the management evaluation was presented to the assessment team at the 2017 Surveillance audit (Golden Marine Consulting 2017).

Additional Management Issues

Season Start Date

In 2019 the Oregon Trawl Commission surveyed pink shrimp license holders to assess opinions on the possibility of changing the season start date (currently April 1). The underlying issue is how to maximize the value of landed shrimp, balancing avoiding fishing on egged shrimp, avoiding count-per-pound problems of small shrimp, and making most effective use of fleet time. The survey found a distribution of preferences for start date, including April 1 (no change), April 15, May 1 and May 15.

ODFW sent a follow-up survey in 2020 to understand more about preferences for the season start date and to assess whether it was a problem needing agency attention. Although 59% of those responding supported a start date later than April 1, opinions were mixed as to the preferred date. Preferences showed a geographic component; for example, people who fish off the north coast tend to favor an earlier start date than those who fish further south. ODFW explored the nature of the differences in opinion to better understand how to achieve the objective of maximizing fishery value while improving operating logistics for the fishery as a whole (Groth 2021a; Groth 2021b).

In 2021 after discussion and consideration of the varying perspectives the ODFW decided to not recommend to the OFWC a change of season start date, having heard from the fleet that interstate consistency and need for stability coming out of COVID restrictions are a high priority at present. The season start date will continue as April 1 (Groth et al. 2022).

Shrimp and Ice

Notifications were sent to all active 2021 shrimp processors regarding net weights of shrimp and the methodology for deducting ice weights. Each dealer is required to have a department-approved sampling plan for calculating net shrimp weight from the gross weight of shrimp and ice (OAR 2022b).

7.4.1 Principle Three: Management System Background (CALIFORNIA)

Area of Operation of the Fishery

The California pink shrimp trawl sector operates in marine waters off Washington, Oregon, and Northern California. have not been allowed to trawl in state waters since 2008. Vessels are allowed to fish for pink shrimp anywhere within US federal waters beyond state limits but may land their catch only in the states for which they have landing permits (Wargo 2014; CDFW 2021). Since 2008 the amount of California-caught pink shrimp landed in California has been in decline. The decline is attributed in part to the 2008 closure of the Pink Shrimp Trawl grounds (PSTG) within California state waters and reduced processing capacity in California (CDFW 2021) California plants stopped processing shrimp in March 2020 and almost all shrimp landings are now made in Oregon ports (Kirschbaum 2022).

The fishery has been divided into northern and southern regions since 2001, with a separate permit being required for each region. Participation in the northern fishery requires a limited entry permit. Participation in the southern fishery also requires a permit but is open access. In 2020 the northern

fishery had 39 permits; the southern fishery had 15 permits. Vessels use both single-rigged and double-rigged trawl gear; at present the majority of vessels in the northern fishery are double-rigged, whereas the majority in the southern fishery are single-rigged (CDFW 2021). The number of vessels participating in the shrimp fishery is strongly influenced by abundance, price and processing availability (CDFW 2021).

Fishery regulations include a number of input controls including mandatory commercial fishing vessel licenses, limited entry shrimp fishing permits, season limits, minimum mesh size (1.38" or 36mm), maximum count per pound (160), bycatch reduction devices and incidental catch limits. In addition, the fishery is subject to seasonal closures, conservation area restrictions, landings fees, and on-board observer coverage (CDFG 2021; CDFW 2022a; 2022b).

An opportunistic system of monitoring, control and surveillance is in place, involving CDFW Law Enforcement Division (LED), NMFS West Coast Groundfish Observer Program (WCGOP), and US Coast Guard (CDFW 2022b). Harvest control rules (seasons, maximum counts per pound and bycatch reduction devices) are clear and enforceable. In 2018 CDFW reinitiated port sampling of catch to collect biological data (CDFW 2021).

Logbooks are required of all vessels (CDFW 2022a; FGC 8841 (2004)) and would provide data to support analysis of fishing location and effort, but for several years resource constraints prevented the logbook database from being kept up to date (Kalvass 2015). According to the FMP, CDFW staff have renewed efforts to input backlogged logbook data and maintain a database of current data (CDFW 2021; Rienecke 2022a; 2022b).

The California Management System

Administrative Context

The California Fish and Game Commission (CFGC) consists of five members appointed by the Governor subject to confirmation by the California Senate). The CFGC formulates management policies and sets fishing seasons and other regulations. It comprises three committees: Marine Resources (MRC), Wildlife Resources (WRC), and Tribal. The CFGC operates under a tribal consultation policy intended to promote working effectively with tribes to sustainably manage natural resources of mutual interest (CFGC 2015c). All meetings are open to the public. The CFGC holds twelve meetings a year located throughout the State to encourage public outreach and participation. As of April 2022 all meetings have an option to participate in person or virtually (CFGC 2022).

The California Department of Fish and Wildlife (CDFW) is charged with carrying out the policies set by the CFGC and as required by statute. The CDFW director is appointed by the CFGC. The Marine Region, covering the ports or port areas of Eureka, Fort Bragg, Bodega Bay, San Francisco, Monterey, Morro Bay, Santa Barbara, Los Angeles, and San Diego, has field responsibility for coastal shellfish, including pink shrimp. Because shrimp is not managed by a federal fishery management plan the state's jurisdictional boundary is the entire Exclusive Economic Zone (out to 200 nautical miles) (CDFW 2021).

The California Department of Fish and Wildlife Law Enforcement Division (LED) are general authority peace officers deployed to the CDFW regions throughout the state, including the Marine Region. Officers also hold federal U.S. Fish and Wildlife and NMFS commissions, and have jurisdiction over federal violations. Officers work joint patrols and coordinate with these agencies and the U.S. Coast Guard (McVeigh 2015; Farrell 2015; CDFW 2015c).

The PSMFC is an interstate compact agency that has no regulatory or management authority but instead serves as a neutral convener for interstate and state-federal coordination and data management. The

California pink shrimp fish ticket data is entered into the PSMFC "E-Tix" system and combined with data from Oregon and Washington. The data are used to produce reports of shrimp landings and value by state or coastwide (PSMFC 2022).

Legislative Context

The CFGC's decision process is governed by the California Administrative Procedure Act (APA) which allows public participation in the adoption of State regulations in order to ensure that the regulations are clear, necessary, and legally valid (CAPA 2008).

The Bagley-Keene Open Meeting Act of 1967 mandates open meetings for California State agencies, boards, and commissions. The Act facilitates accountability and transparency of government activities and protects the rights of citizens to participate in State government deliberations (CCR 1120-11132 2015).

Accordingly, the CFGC provides an opportunity for members of the public to directly address the CFGC on each agenda item before or during the CFGC's discussion or consideration of an item. This includes advance notice of meetings and their agendas, and the provision of meeting materials used in discussions.

Fishery Management Plan

The California Marine Life Management Act (MLMA) defines a fishery management plan as a document that describes the nature and problems of a fishery along with regulatory recommendations to manage the fishery (CMLMA 1998; CDFW 2001; CDFW 2018).

Fishery management plans will provide:

- Biological information about the marine resources under consideration
- Habitat needs and issues
- Through the MLMA, the Legislature delegates greater management authority to the Fish and Wildlife Commission and the California Department of Fish and Wildlife
- Harvesters and their habits
- Conservation and management measures already in place
- The ecological role of the resource
- The environmental effects that might have to be considered
- The most appropriate management tools

Under the MLMA, FMPs are to include at least the seven following elements:

- Description of the fishery
- Fishery science and essential fishery information
- Basic fishery conservation measures
- Habitat provisions
- Bycatch and discards
- Overfishing and rebuilding
- Procedure for review and amendment of an FMP (CMLMA 1998)

Until the development of the draft pink shrimp FMP in 2021 no specific official written management objectives or management plan existed for the California pink shrimp trawl fishery. The FMP is intended to meet the goals of a Basic FMP as described by the MLMA Master Plan for Fisheries and listed above.

Fishery regulations designed to achieve the management objectives include a number of input controls. These include mandatory commercial fishing vessel licenses, limited entry shrimp fishing permits, seasonal closures, maximum count per pound, bycatch reduction devices and incidental catch limits. In addition, the fishery is subject to conservation area restrictions, landings fees, and on-board observer coverage (CDFW 2021; CCR 2015 a;b;c;d).

Consultation and Public Participation in Management

The 2015 assessment found that although the CDFW was involved in multiple state, federal and regional policy processes related to the shrimp fishery and operated under an executive order requiring effective consultation with tribal communities, overall consultation processes were neither well-developed nor widely employed (MRAG Americas 2015 a;b). Stakeholder involvement in fishery management occurred primarily during periods of regulatory change (CDFW 2021).

Since 2015 the Department has improved its communication with the shrimp fleet and processors by holding fleet meetings (2017; 2019), participating in shrimp capacity discussions at a CFGC Marine Resource Committee meeting (2017), and holding informational webinars (2020; 2021). The FMP indicates the CDFW intention to hold annual meetings with industry to keep it informed of changes and developments affecting the fishery (CDFW 2021).

7.4.2 Principle 3 Evaluation Tables - WASHINGTON

PI 3.1.1 – Legal and/or customary framework

PI 3.1.1		**The management system exists within an appropriate legal and/or customary framework which ensures that it:** - **Is capable of delivering sustainability in the UoA(s);** - **Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and** - **Incorporates an appropriate dispute resolution framework**		
Scoring Issue		SG 60	SG 80	SG 100
a	Compatibility of laws or standards with effective management			
	Guide post	There is an effective national legal system **and a framework for cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and **organised and effective cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and **binding procedures governing cooperation with other parties** which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

At the state level, the management system operates within state laws and the administrative code. Washington fishery management decisions are made by the Washington Fish and Wildlife Commission (WFWC) and implemented through the Washington Department of Fish and Wildlife (WDFW). The WFWC formulates fishery management policies and sets fishing seasons and other regulations to determine who may fish, when they may fish and how they may fish. Some regulations are set in statute. Ultimate approval authority rests with governor. The WFWC and WDFW operate within a framework of state laws

under the Revised Code of Washington (RCW) Title 77. All Washington state executive branch agencies are guided by the Washington Administrative Code (WAC) that codifies regulations. set out general standards and procedures as well as fishery-specific rules. The WACs pertaining to WDFW are contained in Title 220; rules and regulations pertaining specifically to commercial shrimp fishing are WAC 220-52-075 (logbooks) and 220-52-050 (trawl fishery regulations).

In addition, all state entities adhere to the "sunshine laws" (RCW 42); the Open Public Meetings Act and the Public Records Act which require that all meetings of governing bodies and state agencies are open and accessible to the public, and that most public records be made available to members of the public (RCW 42.30.010 e; RCW 42.56).

The Administrative Procedure Act (RCW 34.05) requires that agencies conduct a process that ensures public involvement opportunities and considers the economic impact of its rules. These are binding requirements.

Regulations are enforced by the WDFW Police (WDFW 2017b; 2017f).

WDFW engages in government-to-government relationships with Native American Treaty Tribes. WDFW negotiates with Northwest treaty tribes to develop annual fishery co-management agreements. Principles guiding negotiating agreements are articulated in a WFWC Policy Document (WFWC 1996). These agreements governing cooperation are binding.

At the national level, management of state fisheries takes place within and is coordinated by a larger framework of federal laws, through the interface with the regional fishery management council system. Federal fishery management is carried out under the authority of the federal Magnuson-Stevens Fishery Conservation and Management Act (MSA), first passed in 1976 and most recently reauthorized in 2006 (MSA 2007). The MSA is the principal law governing the harvest of fishery resources within the federal portion of the U.S. 200-mile zone. Under the MSA, the Pacific Fishery Management Council (PFMC) recommends management actions to the National Marine Fisheries Service (NMFS; also called NOAA Fisheries) for approval. Ultimate decision authority for fishery management lies with the Secretary of Commerce. In addition to the MSA, the PFMC adheres to a suite of "other applicable laws:" the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), the Migratory Bird Treaty Act (MBTA); the Administrative Procedure Act (APA), Paperwork Reduction Act (PRA): Regulatory Flexibility Act (RFA): Coastal Zone Management Act (CZMA): and other relevant U.S. laws, Executive Orders and regulations (MSA 2007). This national legal system outlines procedures governing cooperation among entities authorized to implement these acts. The procedures are well described in consultation rules, and are binding.

The conditions of SG100 are met.

	Resolution of disputes			
b	Guide post	The management system incorporates or is subject by law to a **mechanism** for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a **transparent mechanism** for the resolution of legal disputes which is **considered to be effective** in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a **transparent mechanism** for the resolution of legal disputes that is appropriate to the context of the fishery and has been **tested and proven to be effective**.

	Met?	**Yes**	**Yes**	**Yes**
Rationale				

As described above under 3.1.1. a, the fishery is managed primarily under state statutes and administrative codes, in a fashion that respects domestic law. Federal rules apply to federally managed species that interact with the Washington management system. For the pink shrimp fishery, these rules pertain primarily to bycatch of federally managed species or species protected under the ESA (ESA 1973).

The Washington Open Public Meetings Act (RCW 42-30-010) and Public Records Act (RCW 42.56) ensure transparency and public access. Additionally, the WFWC has issued policy guidelines for negotiating shellfish management agreements with treaty tribes (WFWC 1996).

State and federal agents monitor fisheries and enforce compliance with the laws and regulations related to pink shrimp, incidentally caught groundfish, eulachon or other protected species, (WDFW 2017f). Washington enforcement is represented on the PFMC Enforcement Consultants committee, which includes representatives from state enforcement agencies in Washington, Oregon, and California, and the federal government (PFMC, 2017b). Coordination of state and federal laws is accomplished through this body. WDFW police are advised by a seventeen-member Enforcement Advisory Committee, which makes recommendations on issues such as staffing deployment, workload, outreach and education (WDFW 2017b).

At the state level, the management system uses the WDFW Law Enforcement Program Marine Division to enforce laws and regulations (WDFW 2017g)

Fish and Wildlife Officers (FWOs) are general authority peace officers with responsibilities that include fish protection and commercial fish and shellfish harvest. In addition to state laws, they enforce federal laws and Oregon state statutes through memoranda of agreement (WDFW 2017f).

At the national level, management of state fisheries takes place within and is coordinated with a larger framework of federal laws, through the interface with the regional fishery management council system. Federal fishery management is carried out under the authority of the federal Magnuson Stevens Fishery Conservation and Management Act (MSA), first passed in 1976 and most recently reauthorized in 2006 (MSA 2007). It is the principal law governing the harvest of fishery resources within the federal portion of the U.S. 200-mile zone. Under the MSA, the Pacific Fishery Management Council (PFMC) recommends management actions to the National Marine Fisheries Service (NMFS; also called NOAA Fisheries) for approval. Ultimate decision authority for fishery management lies with the Secretary of Commerce. In addition to the MSA, the PFMC adheres to a suite of “other applicable laws:” the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), the Migratory Bird Treaty Act (MBTA); the Administrative Procedure Act (APA), Paperwork Reduction Act (PRA): Regulatory Flexibility Act (RFA): Coastal Zone Management Act (CZMA): and other relevant U.S. laws, Executive Orders and regulations (MSA 2007).

Mechanisms for dispute resolution are transparent, and are both informal and formal:

Informal mechanisms for both avoiding and resolving disputes are contained in the ongoing processes of communication and consultation between WDFW Shellfish Program staff and industry. There are several examples of tests within the shrimp fishery showing the effectiveness of this approach, including:

- The use of the annual WDFW newsletter as well as the ODFW annual shrimp review to inform industry about upcoming changes in stock status, gear research and regulations and to avoid disputes. As an example, the 2014 WDFW newsletter to license holders contained information of no new

changes in regulations and a reminder of the regulations to maintain logbooks and about spacing requirements on rigid grate excluders. (Ayres 2014).

- Meetings between WDFW biologists, industry and the public are held as needed in specific issues. For example meetings were held in the early 2000's to discuss implementation of excluders to reduce rockfish bycatch, and more recently to address eulachon issues and the observer project. The entire fleet was included (Wargo and Ayres 2020; Wargo et al. 2021).
- Following a two-year hiatus, the WDFW re-initiated its annual meeting with shrimp vessel captains and industry representatives in February 20222. The meeting reviewed the 2021 fishery and results of the 2021 survey, and discussed an array of fishery issues (Wargo et al. 2022).

Formal mechanisms for resolving disputes include:

- Petition processes of the WFWC that allow issues to be brought for Commission decision (WFWC, 2017d).
- The tri-state coordination process administered by the Pacific States Marine Fisheries Commission (PSMFC) can be activated as needed to resolve shrimp fishery management issues or disputes among Washington, Oregon and California (Abramson et al. 1981; Hannah 2012).

The coordination mechanism of the PFMC to resolve any disputes between state and federal fisheries (PFMC 2007). The conditions of SG100 are met.

	Respect for rights			
c	Guide post	The management system has a mechanism to **generally respect** the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to **observe** the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to **formally commit** to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Since 1996 the WFWC has had a formal policy for negotiating shellfish management agreements with treaty tribes (WFWC, 1996). An example is the 2014 agreement on fishing arrangements for treaty and non-treaty salmon fisheries. These arrangements are negotiated annually by WDFW and treaty tribes based on best pre-season information available, and may be modified by agreement of the parties on the basis of later information (WDFW and NWIFC 2017).

The Northwest Indian Fisheries Commission (NWIFC) is a support service organization for 20 treaty Indian tribes in western Washington. Headquartered in Olympia, the NWIFC employs approximately 65 people with satellite offices in Burlington and Forks (NWIC 2017).

The NWIFC was created following the U.S. v. Washington ruling (Boldt Decision) (U.S. v. Washington 1074) that re-affirmed the tribes' treaty-reserved fishing rights and established them as natural resources co-managers with the State of Washington. The role of the NWIFC is to assist member tribes in their role as natural resources co-managers. The commission is composed of representatives from each member tribe who elect a chair, vice chair and treasurer. Commissioners provide direction to the NWIFC executive director, who in turn implements that direction (NWIC 2017).

In May 1999, the U.S. Supreme Court upheld a lower court ruling that reaffirmed the tribes' treaty reserved right to harvest shellfish, establishing the tribes as co- managers of shellfish resources in western Washington (Woods, 2005).
The scope of participation by treaty Indian tribes in the management of natural resources in western Washington has grown steadily since the U.S. vs. Washington ruling (NWIC 2017).

At the federal level, NMFS and management through the PFMC are both bound by Federal Executive Order 13175 (2000), which requires meaningful consultation and collaboration with Indian tribal governments. The sovereign status and co-manager role of Indian tribes over shared federal and tribal fishery resources is recognized. At the regional level, this role is reflected in a designated tribal seat on the Pacific Fishery Management Council (PFMC 2022e).

The conditions of SG100 are met.

In sum, the management system operates under effective state and national legal systems, contains binding procedures governing cooperation with other parties and delivers management outcomes consistent with MSC Principles 1 and 2. It has transparent mechanisms that have been shown to be effective in resolving legal disputes. It formally commits to legal rights of indigenous people in a manner consistent with principles 1 and 2.

References
Abramson et al. 1981; E.O. 13175 2000; ESA 1973; Hannah, 2012; MSA 2007; NMFS 1997; Wargo and Ayres 2020; Wargo et al. 2021; 2022; PFMC 2022; NWIFC 2017; PFMC 2007; RCW 42.30.010; RCW 42.56; RCW 34.05; WAC 220- 52-075; WAC 220-52-050; WDFW and NWIFC 2017; WDFW 2017b, 2017f, 2017g.; WFWC, 1996; 2017d; Woods 2005.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 3.1.2 – Consultation, roles and responsibilities

PI 3.1.2		**The management system has effective consultation processes that are open to interested and affected parties** **The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties**		
Scoring Issue		SG 60	SG 80	SG 100
a	Roles and responsibilities			
	Guide post	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **generally understood**.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **explicitly defined and well understood for key areas** of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **explicitly defined and well understood for all areas** of responsibility and interaction.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

WFWC, WDFW, PFMC, and the state and federal enforcement entities of the WDFW Police, US Coast Guard, and NMFS Enforcement are all explicitly identified, and roles defined, in statutes, administrative code, and operating procedures. Open lines of communication between agencies and stakeholders promote widespread understanding of the roles and responsibilities of respective entities. Lines of authority and responsibility among the state and federal entities are clear, as are procedures for coordination among them (Wargo 2020a; 2021a; Chadwick 2020a; 2021a).

The functions, roles and responsibilities are well understood for all areas of responsibility and action. Evidence of understanding on the part of the fishing industry and other stakeholders is provided by testimony to the WFWC, and, in the case of the shrimp fishery, good compliance rates of BRD adoption (Chadwick 2017a). The SG100 is met.

b	Consultation processes			
	Guide post	The management system includes consultation processes that **obtain relevant information** from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that **regularly seek and accept** relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that **regularly seek and accept** relevant information, including local knowledge. The management system demonstrates consideration of the information and **explains how it is used or not used**.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The management system regularly seeks and accepts relevant information through active consultation with the fleet and other stakeholders on the likely impact of regulations and on upcoming fishery-related issues. The system uses local knowledge through such mechanisms as regular feedback from the industry regarding such issues as conditions on the fishing grounds and gear innovation experiments (Wargo 2020a; 2021a).

Specifically, consultations include dockside interactions between WDFW police, fleet and plants; informal stakeholder meetings at WDFW Shellfish Program offices, general availability of WDFW staff to public calls, publication of the WDFW annual newsletter, and public testimony at WFWC meetings (Ayres 2017; Wargo 2020a;b; 2021a;b; 2022a; Chadwick 2020a; 2021a).

The management system demonstrates consideration of the information and provides explanations as to how it is or is not used through newsletters and through records of WFWC decisions (Ayres 2017; WDFW 2017d; Wargo et al. 2022). For example, in 2021 WDFW conducted a survey of industry preferences on season start date. The agency obtained input from ODFW on survey question elements and structure to ensure that the two states' results are comparable. The survey also included questions about LED lights – their quantity, type, color, arrangement and effectiveness – as part of the fish excluder system. Questions were also asked about the type ground gear vessels were using. WDFW staff shared the survey results with industry representatives at a virtual meeting in February 2022. The agency-industry meeting resumed a pattern of annual meetings that had been suspended during two years of COVID restrictions. (Wargo and Forster 2022; Wargo et al. 2022). The frequency of these consultations varies by the particular process. Dockside interactions occur once or twice weekly. WDFW letters to license holders are annual. The WFWC meets monthly. Stakeholder meetings are issue-driven and informal stakeholder-WDFW staff interactions are ongoing on a "drop-in" basis at the Shellfish Program offices (Chadwick 2015; 2020a; 2021a; Wargo 2020a; 2021a).

The conditions of SG100 are met.

	Participation			
c	Guide post		The consultation process **provides opportunity** for all interested and affected parties to be involved.	The consultation process provides **opportunity and encouragement** for all interested and affected parties to be involved, and **facilitates** their effective engagement.
	Met?		**Yes**	**Yes**
Rationale				

The management system's consultation processes provides opportunity, encouragement and facilitation of engagement of any interested party through a variety of mechanisms. These include dockside interactions between the industry and the WDFW police, open availability to stakeholders of WDFW Shellfish Program staff, publication of an annual WDFW newsletter, circulation of the ODFW annual shrimp review summarizing stock status and distribution, CPUE, landings, research results and emerging issues that also relate to the Washington fishery (cf. Wargo and Ayres 2020; Wargo et al 2021; Groth et al. 2020; 2021), and public testimony at WFWC meetings (WDFW 2017e).

Washington's Open Public Meetings Act ensures public notice and access to meetings (RCW 42.30). WDFW routinely posts notices of public meetings about upcoming regulations on their website and at port offices. Likewise, announcements of Washington Fish and Wildlife Commission meetings are posted on the WDFW website well in advance, with full information about meeting agendas (WDFW 2017d). WDFW's online Rules Information Center provides information on processes for permanent and emergency

rulemaking, with information on how stakeholders can be involved (WDFW 2017g). The Washington Public Records Act (RCW 42.56.010) ensures transparency of agency information.

At the regional level, the PFMC process provides open and transparent distribution of information as well as opportunities for engagement of interested parties through committee membership and public testimony. ENGOs are routinely engaged in this process (PFMC 2022c).

Executive Order 13132 (1999) requires federal agencies to consider the implications of policies that may limit the scope of or pre-empt states' legal authority. Such actions require a consultation process with the states and may not create unfunded mandates for the states. Any final published rule must be accompanied by a "federalism summary impact statement" (NMFS, 1997; PFMC 2022c).

The Council process involves different types of consultations with member states through state agencies, Council appointees, advisory committee membership, and meetings. The process of state participation in the formulation of federal management measures encourages complementary approaches between federal and state approaches (PFMC 2007). Consultations among state agency staff, industry stakeholders and ENGOs occurs informally through regular stakeholder meetings, interactions at the Pacific Fishery Management Council settings, interactions with congressional staff, and various other fora.

The various sources of consultation provide opportunity, encouragement and facilitation of effective stakeholder engagement. SG100 is met.

In sum, the functions, roles and responsibilities are well understood for all areas of responsibility and action. The Washington management system includes consultation processes that regularly seek and accept relevant information and the system provides explanations for how information is used.

References

Abramson et al. ,1981; Chadwick 2017a; 2020a; 2021a; E.O. 13172 1999; E.O. 13175 2000; Hannah 2012; Groth et al. 2020; 2021; MSA 2007; NMFS 1997; PFMC 2007; 2022c; RCW 42.30; RCW 42.56.010; Wargo and Ayres 2020; Wargo et al. 2021; WDFW, 2017b, d; e; g;

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 3.1.3 – Long term objectives

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Fisheries Standard, and incorporates the precautionary approach		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	Long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach, are **implicit** within management policy.	**Clear** long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach are **explicit** within management policy.	**Clear** long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach, are **explicit** within **and required by** management policy.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

As noted by WDFW in their 2016 Pink Shrimp review (Wargo and Ayres 2016), guiding principles for fishery management are founded in the agency mandate to "protect the resource and enhance commercial opportunity" (WDFW 2017a). More specifically, the mandate for WDFW and the WFWC as it relates to pink shrimp is found at RCW 77.04.012: Wildlife, fish, and shellfish are the property of the state. The commission, director, and the department shall preserve, protect, perpetuate, and manage the wildlife and food fish, game fish, and shellfish in state waters and offshore waters. The department shall conserve the wildlife and food fish, game fish, and shellfish resources in a manner that does not impair the resource. In a manner consistent with this goal, the department shall seek to maintain the economic well-being and stability of the fishing industry in the state. The department shall promote orderly fisheries and shall enhance and improve recreational and commercial fishing in this state.

The Commission may authorize the taking of wildlife, food fish, game fish, and shellfish only at times or places, or in manners or quantities, as in the judgment of the commission does not impair the supply of these resources (WDFW 2017c).

To achieve its mission, WDFW will continue to focus its activities on the following four goals laid out in the WDFW Strategic Plan (WDFW 2017a):

Goal 1: Conserve and protect native fish and wildlife
Goal 2: Provide sustainable fishing, hunting, and other wildlife-related recreational and commercial experiences
Goal 3: Promote a healthy economy, protect community character, maintain an overall high quality of life, and deliver high-quality customer service
Goal 4: Build an effective and efficient organization by supporting our workforce, improving business processes, and investing in technology

The legislature finds (RCW 77.04.013) that all fish, shellfish, and wildlife species should be managed under a single comprehensive set of goals, policies, and objectives, and that the decision-making authority should rest with the Fish and Wildlife Commission.

The Washington Coastal Pink Shrimp Fishery Management Plan (FMP) adopted in December 2018 reflects the WDFW guiding principles for management. The FMP contains explicit short and long-term objectives that provide the framework for shrimp fishery management (Wargo and Ayres 2017b).

In 2005 the State of Washington developed a formal pink shrimp management plan with the Makah Tribe for that year's shrimp season (although the Makah never fished). The goals were:

- Preserve, protect, and perpetuate the coastal pink shrimp resource to provide for their sustainable harvest.
- Maintain consistent, conservation-based regulations for state and tribal fisheries
- Maintain effective resource management while minimizing management costs
- Protect the reproductive capacity of the pink shrimp stocks
- Minimize harvest of small, unmarketable shrimp
- Minimize bycatch mortalities of other species
- Use simple, enforceable, management tools

It is reasonable to assume the same goals would apply in the future (Washington Department of Fish and Wildlife and Northwest Indian Fisheries Commission 2017).

The WAC codifies regulations, setting out general standards and procedures as well as fishery-specific rules and providing the legally enforceable elements of fish management plans (cf. WAC 220-50-010). The legislature finds (RCW 77.04.013) that all fish, shellfish, and wildlife species should be managed under a single comprehensive set of goals, policies, and objectives, and that the decision-making authority should rest with the Fish and Wildlife Commission.

The Washington Coastal Pink Shrimp Fishery Management Plan (FMP) adopted in December 2018 reflects the WDFW guiding principles for management. The FMP contains explicit short and long-term objectives that provide the framework for shrimp fishery management (Wargo and Ayres 2017b; 2020).

The Washington State Legislature (in establishing law and policy) and the WFWC (in implementing policy) have established long-term objectives for pink shrimp management that guide and require decision-making consistent with the precautionary approach. A precautionary approach based on ecosystem management is explicit in the WDFW Strategic Plan (WDFW 2017a). The regulations establishing maximum count per pound and closed seasons were implemented to minimize effort on small shrimp and prevent fishing on spawning aggregations (WAC 220-52-050). Adoption of the BRD requirement was a precautionary approach to minimize bycatch of rebuilding groundfish stocks. Further strengthening of the BRD specifications was a proactive and precautionary approach to minimizing all bycatch, including eulachon, recently listed as threatened under the ESA (WAC 220-52-050). The fleet's experimentation with LED lights on gear is part of the overall effort to minimize non- shrimp bycatch (Wargo and Ayres 2015; 2016, 2017; 2020; Wargo et al. 2016; 2021).

Washington fisheries are closed by default and open by rule. "Emergency rule" describes routine rulemaking for routine management decisions, such as season opening. The emergency rule process could also accommodate the establishment of target and limit reference points using indicators established by ODFW or other sources (WDFW, 2017g; Wargo and Ayres 2015; 2017a; 2020; Wargo et al. 2021).

The conditions of SG100 are met and a score of 100 is awarded.

References

WAC 220-50-010; WAC 220-52-050; WDFW 2017a;c; Wargo, 2017; Wargo and Ayres, 2015; 2016; 2017a;b; 2020; WDFW 2017a; c; Wargo et al. 2021; Washington Department of Fish and Wildlife and Northwest Indian Fisheries Commission 2017

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 3.2.1 – Fishery-specific objectives

PI 3.2.1		The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	**Objectives**, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **implicit** within the fishery-specific management system.	**Short and long-term objectives**, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **explicit** within the fishery-specific management system.	**Well defined and measurable short and long-term objectives**, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **explicit** within the fishery-specific management system.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The WDFW Strategic Plan contains four goals and sixteen objectives for fish, wildlife and ecosystems (WDFW 2017a). These goals and objectives have shaped the content of the shrimp FMP, which was adopted in 2018 (Wargo and Ayres 2017b).

The Washington Coastal Pink Shrimp Fishery Management Plan FMP) adopted in December 2018 reflects the WDFW guiding principles for management. The FMP contains explicit short and long-term objectives that provide the framework for shrimp fishery management.

The FMP contains explicit and measurable short and long-term objectives that provide the framework for shrimp fishery management (Wargo and Ayres 2017). The plan supports recreational shrimp fishing opportunity yet focuses on commercial harvest because pink shrimp are typically not targeted by recreational fishers.

Four long-term objectives are to realize a non-treaty commercial fishery that:

1. experiences stable seasons
2. is managed to clearly defined benchmarks
3. is appropriately capitalized
4. pursues optimal bycatch reduction.

Ten Guiding Principles listed in the FMP are short-term objectives that dictate management actions.

1. Use best available science to inform management decisions.
2. Utilize a precautionary approach to guide decision-making in the face of scientific and/or management uncertainty.
3. Support tribal fisheries, which are consistent with the applicable federal court orders while recognizing the need for management flexibility to optimize fishing opportunity.
4. Structure fishery regulations to pursue effective enforcement and avoid conflicting regulations with adjacent states.

5. Engage and collaborate with stakeholders, consumptive and non-consumptive, ensuring public transparency.
6. Consider socio-economic effects on harvesters, dealers and processors, and coastal communities dependent on the fishery.
7. Support development of innovative harvest methods or gears to reduce bycatch and any adverse effects on seafloor habitat.
8. Employ technologies to achieve effective, efficient use of agency resources.
9. Allow for recreational opportunity if/as interest arises.
10. Manage fishery using reference points to ensure long-term conservation of the resource.

The FMP acknowledges the legal and policy obligations to support co-management with treaty tribes. However, co-management harvest agreements are addressed through separate process are not incorporated into the FMP.

The objectives are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, as it covers management objectives for the shrimp resource, including harvest strategy and reference points, current management tools, and management of incidental landings, bycatch management and ETP interactions, as well as management of habitat impacts (Wargo and Ayres 2017).

The conditions of SG100 are met and a score of 100 is awarded.

References

Wargo and Ayres, 2017b; WDFW 2017a

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 3.2.2 – Decision-making processes

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery		
Scoring Issue		SG 60	SG 80	SG 100
a	Decision-making processes			
	Guide post	There are **some** decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are **established** decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	**Yes**	**Yes**	
Rationale				

Established decision-making processes are followed by the WFWC and within the WDFW as outlined in law (RCW Title 77.). These processes result in management measures and strategies that meet the objectives specified in the WDFW Strategic Plan (WDFW 2017a). These processes are stable.

The conditions of SG80 are met.

b	Responsiveness of decision-making processes			
	Guide post	Decision-making processes respond to **serious issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to **serious and other important issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to **all issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Decision-making processes have covered a wide range of issues and demonstrated responsiveness to all shrimp fishery issues identified through research, monitoring, evaluation and stakeholder consultation. Coordination and consultation between the state and federal processes, conducted through the PFMC process, promotes the consideration of the effects of pink shrimp fishery management decisions on other fisheries and ecosystem issues, for example the rebuilding of rockfish stocks and the protection of ESA listed species.

A good example of decision response to all of these elements is the adoption of the finfish excluder grate to reduce rockfish bycatch and later, with smaller grate spacing, to protect ESA-listed eulachon. These successive BRD decisions were made in collaboration with industry members and in response to an

identified need to reduce bycatch of finfish species. The transparency, timeliness and adaptive manner of decision response is ensured by the Open Public Meetings Act (RCW 42.30.010 and Public Records Act (RCW 42.56.010), and demonstrated through agency rulemaking authority, stakeholder testimony at monthly WFWC meetings, informal stakeholder- agency contacts, and the provision of information to industry through the annual newsletter (cf. Wargo and Ayres 2020; Wargo et al. 2021; 2022) and the circulation of the Oregon pink shrimp review, which in both its annual edition and a supplemental edition identified upcoming potential issues with eulachon in anticipation of its listing under ESA, and the need to take proactive action (cf. Hannah and Jones 2014; 2015; 2016; Groth et al. 2017; 2020; 2021; 2022).

Frequent communication and coordination between enforcement and WDFW staff, as well as intra-season updates, establish enforcement priorities in anticipation of likely areas needing enforcement attention, and adapt to in-season enforcement issues as they emerge (Chadwick 2020; 2021; Dielman 2022a).

The ongoing process of active coordination and consultation with industry in identifying issues and monitoring compliance also contributes to decision processes that are responsive, transparent and adaptive (Wargo and Ayres, 2015; Wargo, 2017a;b; Wargo 2020a;b; 2021a;b). Coordination and consultation between the state and federal processes, conducted through the PFMC process, promotes the consideration of the effects of pink shrimp fishery management decisions on other fisheries and ecosystem issues, for example the rebuilding of rockfish stocks and the protection of ESA listed species.

The conditions of SG100 are met.

c	Use of precautionary approach			
	Guide post		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		**Yes**	
Rationale				

Decision processes employed by the Washington State Legislature (in establishing law and policy) and the WFWC (in implementing policy) exhibit a precautionary approach to pink shrimp management and a basis in best available scientific information. A precautionary approach based on ecosystem management is explicit in the WDFW Strategic Plan (WDFW 2017a). The regulations establishing maximum count per pound and closed seasons were implemented to minimize effort on small shrimp and prevent fishing on spawning aggregations (WAC 220-52-050). Adoption of the BRD requirement was a precautionary approach to minimize bycatch of rebuilding groundfish stocks. Further strengthening of the BRD specifications was a proactive and precautionary approach to minimizing all bycatch, including eulachon, recently listed as threatened under the ESA (WAC 220-52-050). The fleet's experimentation with LED lights on gear is part of the overall effort to minimize non- shrimp bycatch (Wargo and Ayres 2015; 2016, 2017; 2020; Wargo et al. 2016; 2021).

Washington has the most flexible rulemaking of the three west coast coastal states. In contrast to other states, Washington fisheries are closed by default and open by rule. "Emergency rule" describes routine rulemaking for routine management decisions, such as season opening. The emergency rule process could also accommodate the establishment of target and limit reference points using indicators established by ODFW or other sources (WDFW, 2017g; Wargo and Ayres 2015; 2017a; 2020; Wargo et al. 2021).

Discussions during site reviews have made it evident that WDFW staff as well as members of the Washington shrimp fleet are in close communication with ODFW staff and members of the Oregon fleet

who are conducting research with respect to both the target species and P2 species and impacts. It is clear that management decision processes in the Washington pink shrimp fishery use the precautionary approach and consider all available information, including new and emerging research results. The conditions of SG80 are met.

	Accountability and transparency of management system and decision-making process			
d	Guide post	Some information on the fishery's performance and management action is generally available on request to stakeholders.	**Information on the fishery's performance and management action is available on request**, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders **provides comprehensive information on the fishery's performance and management actions** and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Formal reporting to all interested stakeholders is provided through a number of avenues. WDFW sends an annual newsletter to the fleet providing updates on regulations and summaries of fishery performance, including quantity and value of landings, number of licenses and number of vessels fishing (cf. Ayres 2017; Wargo and Ayres 2015; 2016; 2017; 2020; Wargo et al. 2021). WDFW also circulates the ODFW Annual Shrimp Review to holders of shrimp trawl license holders. This more extensive newsletter contains information directly relevant to the Washington fleet, both those who land in Washington and Oregon ports and those who land in Washington ports exclusively. It provides annual summaries of fishery performance, describes research results, and identifies upcoming issues affecting the fishery (cf. Hannah and Jones, 2014, 2015, 2016; Groth et al., 2017; 2020; 2021). WFWC meeting agendas and minutes describe Commission deliberations on various issues, the nature of scientific advice and public comment, and decision outcomes (WDFW 2017d).

WDFW Police develop weekly reports of dockside enforcement of vessels and processing plants in Westport and Ilwaco that inform fishery stakeholders of existing and emerging compliance and enforcement issues (Chadwick, 2020; 2021).

The PFMC newsletters describe actions taken at Council meetings, committee openings and meeting schedules, and upcoming issues (PFMC 2022a). The Federal Register provides notice of all proposed federal actions (cf. Federal Register 2022).

The conditions of SG100 are met.

	Approach to disputes			
e	Guide post	Although the management authority or fishery may be subject to continuing court	The management system or fishery is attempting to comply in a timely fashion	The management system or fishery acts proactively to avoid legal disputes or

		challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	with judicial decisions arising from any legal challenges.	rapidly implements judicial decisions arising from legal challenges.
	Met?	**Yes**	**Yes**	**Yes**

Rationale

The management system uses coordination, consultation and information transfer between WDFW and stakeholders to proactively avoid disputes. In addition to the general public process requirements to facilitate public participation, the annual newsletter provides specific information to shrimp permit holders about potential or upcoming changes in regulations.

Another proactive avoidance of legal disputes is provided by the dockside enforcement presence of the WDFW Police to explain new regulations and conduct pre-season checks of gear (Chadwick 2020; 2021).

In April 2015 the WDFW pink shrimp regulations received their first legal challenge, which met with an immediate response by WDFW.

On March 31, 2015 WDFW issued an emergency regulation that made it unlawful to violate the following provisions:

- Fail to deliver ocean pink shrimp landings to a processing facility located on shore;
- Process ocean pink shrimp at-sea;
- Freeze ocean pink shrimp at-sea; or
- Transfer pink shrimp catch from one fishing vessel to another.

On April 2, 2015 WDFW was served with a Temporary Restraining Order contesting this regulation. After consultation with the State Attorney General's Office, WDFW rescinded the emergency regulation on April 9, 2015 (Ayres and Wargo 2015).

The PFMC has no existing or previous court challenges related to the fishery nor is there evidence of regulatory noncompliance in other fisheries that could threaten the sustainability of the fishery.

The ongoing process of active coordination and consultation with industry in identifying issues and monitoring compliance also contributes to decision processes that are responsive, transparent and adaptive. As the stakeholder consultation process and the timely reaction of the WDFW to the regulatory challenge of 2015 indicate, the management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges. SG100 is met.

A score of 100 is awarded.

References

Ayres and Wargo 2015; Chadwick 2020; 2021; Federal Register 2022; Groth et al 2020; 2021; 2022; Hannah and Jones, 2014, 2015, 2016; PFMC 2022a; RCW Title 77; RCW 42.30.010; RCW 42.56.010; WAC 220-52-050; Wargo and Ayres, 2015, 2016, 2017; 2020; Wargo et al. 2016; 2021; WDFW 2017c;d.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guide post	Monitoring, control and surveillance **mechanisms** exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance **system** has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A **comprehensive** monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The harvest strategy, comprising seasons, maximum counts per pound and bycatch reduction devices, is clear and enforceable. A comprehensive system of monitoring, control and surveillance for compliance and enforcement is in place, involving the WDFW, NMFS West Coast Groundfish Observer Program, WDFW Police and US Coast Guard. The Groundfish Observer Program has a coverage target of approximately 15% of pink shrimp trips and monitors the biological parameters of the total catch (McVeigh 2015). The WDFW Police conduct random dockside checks of compliance with regulations on count-per-pound and bycatch reduction device spacing. Compliance with the count-per-pound regulation is reinforced by market preferences for larger shrimp (Ayres 2017; Chadwick 2017b; Wargo 2017; Wargo et al. 2021). At-sea compliance with regulations (seasons, closed areas, licenses) is conducted by the US Coast Guard by vessel patrol. While fishing in the federal EEZ (3-200 miles offshore) vessels are also subject to federal rules and sanctions enforced by the US Coast Guard and the NMFS Office of Law Enforcement, such as the requirement (since 2008) that pink shrimp vessels be equipped with VMS (NMFS 2017a; 2017b).

Port sampling of shrimp catch is limited to count-per-pound. Shellfish Program staff do random count checks twice per week, and The WDFW Police conduct opportunistic dockside catch samples to check for compliance with count-per-pound regulations (Chadwick 2017b). Shrimp harvest logbooks are required of all vessels (WDFW 2017e; WAC 2015c; Wargo, 2017).

WDFW emphasizes an informational consultative approach to new regulations by working with industry to develop workable approaches to compliance, for example in the design development of the bycatch reduction device, and by advance notice to industry of upcoming regulation changes and enforcement issues through the annual letter to license holders. The management philosophy of both WDFW and the WDFW Police is to promote compliance through education and cooperation and minimize the occurrence of non-compliance (Chadwick, 2017; 2020; 2021; Dielman 2022a; Wargo, 2017; Wargo and Ayres 2020; Wargo et al. 2021; 2022).

Shrimp harvest logbooks are required of all vessels (WDFW 2017e; WAC 2015c). In 2021 logbooks had a 95% compliance rate and overall timely submissions (Wargo and Forster 2022)

Overall compliance with regulations remains high, with fishery violations remaining below 1% of trips (Wargo and Ayres 2019; 2020; Alexander 2021; Wargo et al. 2021; 2022). in 2021 citations were written for

two unlicensed crewmembers and a warning was given for not having a license on the boat. A single potential instance of high shrimp counts was found on inspection by WDFW Enforcement to be legal (Dielman 2022b). The three violations were out of a total of 420 trips (.7%) (Wargo et al. 2022).

The high compliance rates in the pink shrimp fishery can be attributed to the emphasis on prevention, an educational approach to informing participants in the fishery about regulations, the collaborations with industry in developing effective gear design, control rules that are clear and enforceable and a coordinated monitoring and enforcement infrastructure (Chadwick 2015; 2017b; 2020; 2021; Dielman 2022a).

The conditions of SG100 are met.

b	Sanctions			
	Guide post	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, **are consistently applied** and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and **demonstrably** provide effective deterrence.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Sanctions for non-compliance exist, defined in law and enforced through at-sea and dockside monitoring. WDFW Police issue tickets for non-compliance. Violations of commercial fishing areas or times in the second degree is a gross misdemeanor (punishable by up to up to five years imprisonment; violations of areas or times in the first degree is a Class C felony (punishable by up to five years' imprisonment, a fine of up to $10,000, or both) (RCW 77.15.550; WRC 9A.20.021).WDFW Police provides information on compliance and enforcement to the WDFW and WFWC. Effectiveness of sanctions is evidenced by the high rate of compliance. For example, there have been no violations of the count-per-pound or BRD regulations over the past 10 years. Good relationships with processors and the fleet have created a climate promoting informing enforcement of potential compliance issues. Season openings, BRD specifications, and count-per-pound are all fully enforceable regulations (Chadwick 2015; 2017b; 2021; Dielman 2022a).

Sanctions work in conjunction with three other elements of the system of monitoring and enforcement: 1. pre-season communications between the WDFW, WDFW Police and industry to review regulations assess any likely problems; 2. Continuous dockside monitoring of landed catch; 3. Prompt enforcement reporting and WDFW response to violations.

The effectiveness of sanctions, working in this integrated system of communication, monitoring, and rapid response, in providing deterrence is demonstrated by the existence of low numbers of violations (3 related to licenses in 2021, out of 420 trips), complete compliance with BRD and count-per-pound regulations for the past 10 years, and the lack of conflict within the fleet.

SG100 is met.

c	Compliance			
	Guide post	Fishers are **generally thought** to comply with the management system for the fishery under	**Some evidence exists** to demonstrate fishers comply with the management system under	There is a **high degree of confidence** that fishers comply with the management system under

		assessment, including, when required, providing information of importance to the effective management of the fishery.	assessment, including, when required, providing information of importance to the effective management of the fishery.	assessment, including, providing information of importance to the effective management of the fishery.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Overall compliance with regulations remains high, with fishery violations remaining below 1% of trips (Wargo and Ayres 2019; 2020; Wargo et al. 2021; 2022). Until 2020 there had been no violations of the count-per-pound or BRD regulations for the previous 10 years (Chadwick 2021). In 2020 there were an unusual twelve violations reported by enforcement for the fishing season out of a total of 375 trips (3%). A majority (9) of these violations were unlicensed crew members on Oregon boats who failed to get Washington crew member licenses when making deliveries into Washington ports. in 2021 citations were written for two unlicensed crewmembers and a warning was given for not having a license on the boat. A single potential instance of high shrimp counts was found on inspection by WDFW Enforcement to be legal (Dielman 2022b). The three violations were out of a total of 420 trips (.7%) (Wargo et al. 2022). Good relationships with processors and the fleet have created a climate promoting informing enforcement of potential compliance issues. Season openings are fully enforceable (Chadwick 2015).

The high compliance rates can be attributed to the small size of the fleet, emphasis on prevention, good provision of information about regulations, the collaboration with ODFW and the Oregon industry, control rules that are clear and enforceable and a coordinated monitoring and enforcement infrastructure (Chadwick 2015; 2017b; 2020; 2021; Wargo and Ayres 2017; 2020 Wargo 2017; Wargo et al. 2021; 2022; Dielman 2022a).

There is therefore a high degree of confidence that fishers comply with the management system, and the collaborative nature of the interaction among industry, WDFW and WDFW Police encourages the industry to provide information of importance to the effective management of the fishery. SG100 is met.

	Systematic non-compliance			
d	Guide post		There is no evidence of systematic non-compliance.	
	Met?		**Yes**	
Rationale				

As described above, there is evidence of good compliance in the shrimp fishery and no evidence of systematic non-compliance.

In sum, there is a high degree of confidence that fishers comply with the management system, and the collaborative nature of the interaction among industry, WDFW and WDFW Police encourages the industry to provide information of importance to the effective management of the fishery. There is evidence of good compliance and no evidence of systematic non-compliance; therefore existing sanctions are demonstrably effective.

A score of 100 is awarded.

References

Ayres 2017; Alexander 2021; Chadwick, 2015, 2017a, 2017b; 2020; 2021; McVeigh 2015; NMFS 2017a; 2017b; 2011c; RCW 77.15.550; Wargo 2017; Wargo and Ayres 2015; 2020; Wargo et al. 2020; 2021; WRC 9A.20.021

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought / Information sufficient to score PI** *If more information is sought, include a description of what the information gap is and what is information is sought*

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4		**There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives There is effective and timely review of the fishery-specific management system**		
Scoring Issue		SG 60	SG 80	SG 100
a	Evaluation coverage			
	Guide post	There are mechanisms in place to evaluate **some** parts of the fishery-specific management system.	There are mechanisms in place to evaluate **key** parts of the fishery-specific management system.	There are mechanisms in place to evaluate **all** parts of the fishery-specific management system.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The WDFW conducts annual informal post-season reviews of the Washington pink shrimp trawl fishery, the results of which are presented in the annual newsletter to license holders. The ODFW Annual Pink Shrimp Review also contains post-season summaries and is circulated WA license holders. WDFW staff also discusses compliance and enforcement issues with WDFW Police (Chadwick; 2015; 2017b; Ayres; 2017; Wargo 2017; Wargo and Ayres 2015; 2016; 2017).

In addition, throughout the season WDFW Police and the WC GOP is involved in the continual monitoring of control rules, catch quantity, quality and size composition of catch, and bycatch. IN 2020 COVID-19 outbreaks in some Oregon processing plants resulted in their closure which led in turn to an increase in the number of Oregon vessels delivering shrimp into Westport and other Washington ports. This change added to the enforcement workload through an increase in enforcement contacts and patrol hours. WDFW Police monitored landings of small shrimp (>160 count per lb.) through dockside sampling during offloads (Wargo et al. 2021; Chadwick 2021b).

The fishery has in place to mechanisms to evaluate key aspects of the management system. Population indicators and bycatch are monitored through at-sea sampling through the WC GOP. Fishing location and effort are monitored through mandatory logbooks. Amount of landed catch is comprehensively monitored through dockside sampling and fish tickets. Performance of BRDs – in terms of effectiveness of bycatch reduction as well as impact on fishing operations – is monitored through onboard observer reports and stakeholder feedback. The economic performance of the fishery is annually evaluated in terms of ex-vessel price, landed quantities and value.

Regular dockside biological monitoring has recently been expanded, with the exception of some interruptions during early COVID pandemic restrictions (Wargo 2021a; b). Collaboration among WDFW and ODFW remained strong. ODFW continues to provide support to augment WDFW operations where resources to manage and monitor the pink shrimp fishery are limited, e.g. ODFW providing biological sampling data collected at Astoria from vessels fishing off Washington. Collaboration is also occurring on logbook design, collection and distribution. Regular contact is maintained through informal contacts through the year (Wargo 2021a; 2021b).

Logbook data entry that had previously been challenged by significant competing demands on Shellfish Program staff. went well in 2021. As indicated above, a 95% compliance rate and timely submission of logbooks by captains allowed staff to stay current with data entry throughout most of the 2021 season, with entry of nearly 100% of the logbooks into the database by December 2021 (Wargo and Forster 2022).

The primary mechanism for reporting evaluation results is the annual newsletter to license holders (Ayres 2017; Wargo and Ayres 2020; Wargo et al. 2021) and the ODFW Annual Pink Shrimp Review (Groth et al. 2017; 2020; 2021; 2022).

The conditions of SG100 are met.

	Internal and/or external review			
b	Guide post	The fishery-specific management system is subject to **occasional internal** review.	The fishery-specific management system is subject to **regular internal** and **occasional external** review.	The fishery-specific management system is subject to **regular internal and external** review.
	Met?	**Yes**	**Yes**	**Yes**

Rationale

The pink shrimp fishery is subject to regular informal internal review. Annually the WDFW conducts informal post-season reviews of the Washington pink shrimp trawl fishery, the results of which are presented in the annual newsletter to license holders. The ODFW Annual Pink Shrimp Review also contains post-season summaries and is circulated WA license holders. WDFW staff also discusses compliance and enforcement issues with WDFW Police (Chadwick 2020; 2021; Wargo and Ayres 2015; Ayres 2017; Wargo, 2017; Wargo and Ayres 2020; Wargo et al. 2021).

As a condition of certification, the WDFW and ODFW co-sponsored an external review of the management system by Golden Marine Consulting. The review focused on six management components: stock assessment; fishery monitoring; enforcement compliance; research; organizational integrity/viability; regulatory action. The review was conducted through a literature search and interviews with decision makers, researchers, and stakeholders. The report of the management evaluation was presented to the assessment team at the 2017 Surveillance audit (Golden Marine Consulting 2017).

The conditions of SG100 are met.

In sum, mechanisms exist to evaluate key parts but not all parts of the fishery-specific management system. The fishery has both regular internal review and occasional external review. Fishery managers have committed to a schedule of conducting an external review every five years. As a consequence, the fishery is now subject to both regular internal and external reviews. Through the combination of internal and external reviews, mechanisms are in place to evaluate all parts of the management system.

References

Ayres 2017; Chadwick; 2015; 2017b; 2020; 2021; Golden Marine Consulting 2017; Groth et al. 2017; 2020; 2021; 2022; Hannah and Jones, 2014, 2015, 2016; Wargo, 2017; 2021a;b; Wargo and Ayres 2015; 2016; 2017; 2020.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	100
Condition number (if relevant)	

7.4.3 Principle 3 Evaluation Tables - OREGON

PI 3.1.1 – Legal and/or customary framework

PI 3.1.1		**The management system exists within an appropriate legal and/or customary framework which ensures that it:** - **Is capable of delivering sustainability in the UoA(s);** - **Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and** - **Incorporates an appropriate dispute resolution framework**		
Scoring Issue		SG 60	SG 80	SG 100
a	Compatibility of laws or standards with effective management			
	Guide post	There is an effective national legal system **and a framework for cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and **organised and effective cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and **binding procedures governing cooperation with other parties** which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

At the state level, the management system operates within state laws and administrative rules. Oregon fishery management decisions are made by the Oregon Fish and Wildlife Commission (OFWC) and implemented through the Oregon Department of Fish and Wildlife (ODFW). The OFWC formulates fishery management policies and sets fishing seasons and other regulations to determine who may fish for pink shrimp, when they may fish and how they may fish. Some regulations, such as the maximum count per pound, are set in statute. Ultimate approval authority rests with governor. The OFWC and ODFW operate within a framework of state laws, ORS chapters 496 through 513. All Oregon state agencies are guided by a system of Oregon Administrative Rules (OARs) that set out general standards and procedures as well as fishery-specific rules. The OARs pertaining to ODFW are contained in chapter 635. The Oregon Trawl Commission (OTC) is a state agency and operates under the umbrella mandate of the Oregon Department of Agriculture Commodity Commissions Program (specifically OAR chapter 656; OAR 2017f). In addition, all state entities adhere to the Public Meetings Law which requires that all meetings of governing bodies covered by the law are open to the public, that the public be given notice of the time and place of meetings,

and that meetings be accessible to everyone (Open Oregon 2017). Regulations are enforced by the ODFW and the Oregon State Police (OSP).

At the national level, management of state fisheries takes place within and is coordinated with a larger framework of federal laws, through the interface with the regional fishery management council system. Federal fishery management is carried out under the authority of the federal Magnuson Stevens Fishery Conservation and Management Act (MSA), first passed in 1976 and most recently reauthorized in 2006 (MSA 2007). It is the principal law governing the harvest of fishery resources within the federal portion of the U.S. 200-mile zone. Under the MSA, the Pacific Fishery Management Council (PFMC) recommends management actions to the National Marine Fisheries Service (NMFS; also called NOAA Fisheries) for approval. Ultimate decision authority for fishery management lies with the Secretary of Commerce whose decisions are binding. In addition to the MSA, the PFMC adheres to a suite of "other applicable laws:" the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), the Migratory Bird Treaty Act (MBTA); the Administrative Procedure Act (APA), Paperwork Reduction Act (PRA): Regulatory Flexibility Act (RFA): Coastal Zone Management Act (CZMA): and other relevant U.S. laws, Executive Orders and regulations (MSA 2007).

In conjunction with the state level legal system, there is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2. The SG100 is met.

	Resolution of disputes			
b	Guide post	The management system incorporates or is subject by law to a **mechanism** for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a **transparent mechanism** for the resolution of legal disputes which is **considered to be effective** in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a **transparent mechanism** for the resolution of legal disputes that is appropriate to the context of the fishery and has been **tested and proven to be effective**.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The management system is subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective.

As described above under 3.1.1. SG 60a, the fishery is managed primarily under state statutes and administrative rules, in a fashion that respects domestic law. Federal rules apply to federally managed species that interact with the Oregon management system. For the pink shrimp fishery, these rules pertain primarily to bycatch of federally managed species or species protected under the ESA (ESA 1973).

Oregon enforcement is represented on the PFMC Enforcement Consultants committee, which includes representatives from state enforcement agencies in Washington, Oregon, and California, and the federal government (PFMC 2022b). Coordination of state and federal laws is accomplished through this body.

At the state level, the management system uses the ODFW and OSP Coordinated Enforcement Process (CEP) to coordinate between agencies and to set priorities. Enforcement priorities are reviewed annually under the CEP for all commercial fisheries, including the pink shrimp fishery (OSP 2022b).

Mechanisms for dispute resolution are transparent, and are both informal and formal:

Informal mechanisms for both avoiding and resolving disputes are contained in the ongoing processes of communication and consultation between ODFW MRP staff and industry.

Formal mechanisms for resolving disputes include:

• Petition processes of the OFWC that allow issues to be brought for Commission decision (ODFW 2017d).

• The Oregon Fishery Permit Review Board, which evaluates ODFW denials of limited entry permits and considers permit transfers (ORS 508.867 1981).

• The tri-state coordination process administered by the Pacific States Marine Fisheries Commission (PSMFC) can be activated as needed to resolve shrimp fishery management issues or disputes among Washington, Oregon and California (Abramson et al. 1981; Hannah 2012).

• The coordination mechanism of the PFMC to resolve any disputes between state and federal fisheries (PFMC 2007; 2022c.).

The conditions of SG100 are met.

	Respect for rights			
c	Guide post	The management system has a mechanism to **generally respect** the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to **observe** the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to **formally commit** to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Within Oregon, statute specifically exempts treaty rights of tribes from OFWC regulations (ORS 506.045 1975). Oregon treaty tribes are Columbia River tribes and are not affected by the pink shrimp fishery.

At the federal level, NMFS and management through the PFMC are both bound by Federal Executive Order 13175 (2000), which requires meaningful consultation and collaboration with Indian tribal governments. The sovereign status and co-manager role of Indian tribes over shared federal and tribal fishery resources is recognized. At the regional level, this role is reflected in a designated tribal seat on the Pacific Fishery Management Council (PFMC 2022b).

In sum, the management system operates under effective state and national legal systems, contains binding procedures governing cooperation with other parties and delivers management outcomes consistent with MSC Principles 1 and 2. It has transparent mechanisms that have been shown to be effective in resolving legal disputes. It formally commits to legal rights in a manner consistent with principles 1 and 2.

References

Abramson et al. 1981; E.O. 13175 2000; ESA 1973; Hannah 2012; Hannah and Jones 2014a; 2014b; 2015, 2016b, MSA 2007; NMFS 1997; OAR 2012f; ODFW 2009; 2010; 2011; 2012; ODFW 1989; 2010a, 2010b, 2017d; Open Oregon 2017; Oregon State Police Fish and Wildlife Division, 2022b; OAR 2012f; ORS 496 – 513; ORS 506.036 1965; ORS 506.045,1975; ORS 506.129 1975; ORS 508.867 1981; OTC 2011a; 2011b; PFMC 2007; 2022b; 2022c.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 3.1.2 – Consultation, roles and responsibilities

PI 3.1.2		**The management system has effective consultation processes that are open to interested and affected parties** **The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties**		
Scoring Issue		SG 60	SG 80	SG 100
a	Roles and responsibilities			
	Guide post	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **generally understood**.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **explicitly defined and well understood for key areas** of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **explicitly defined and well understood for all areas** of responsibility and interaction.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

OFWC, ODFW, OTC, PFMC, and the state and federal enforcement entities of the Oregon State Police, US Coast Guard, and NMFS Enforcement are all explicitly identified, and roles defined, in statutes, administrative rules, and operating procedures. Open lines of communication between agencies and stakeholders promote widespread understanding of the roles and responsibilities of respective entities. Lines of authority and responsibility among the state and federal entities are clear, as are procedures for coordination among them (cf. OSP 2022a).

The functions, roles and responsibilities are well understood for all areas of responsibility and action. Evidence of understanding on the part of the fishing industry and other stakeholders is provided by various testimony to the OFWC, engagement of the OTC in state and federal processes, and, in the case of the shrimp fishery, good compliance rates of BRD adoption. The conditions of SG100 are met.

b	Consultation processes			
	Guide post	The management system includes consultation processes that **obtain relevant information** from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that **regularly seek and accept** relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that **regularly seek and accept** relevant information, including local knowledge. The management system demonstrates consideration of the information and **explains how it is used or not used**.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The management system regularly seeks and accepts relevant information through active consultation by PFMC and Oregon with the fleet and other stakeholders on the likely impact of regulations and on upcoming fishery-related issues. The system uses local knowledge through such mechanisms as regular feedback from the industry regarding conditions on the fishing grounds and cooperative research (Hannah, 2012; Hannah and Jones, 2013-2-16; Groth et al. 2022).

Specifically, consultations include dockside interactions between the industry, ODFW biologists and OSP, stakeholder meetings at ODFW MRP offices, general availability of ODFW staff to public calls, publication of the ODFW annual newsletter (Hannah, 2012; Groth et al. 2022), OTC quarterly newsletter (OTC 2011a, 2011b), and OSP monthly newsletter (OSP 2009; 2012), and public testimony at OFWC meetings (ODFW 2017d).

The frequency of these consultations varies by the particular process. OSP newsletters are monthly. OTC newsletters are quarterly. MRP shrimp reviews are annual with inter-annual supplements to address emerging issues. The OFWC meets monthly. Stakeholder meetings are issue-driven and informal stakeholder- MRP staff interactions are ongoing on a “drop-in” basis at the MRP offices.

The management system demonstrates consultation processes that regularly seek information, consider the information received, and provide explanations as to how it is or is not used through newsletters and through records of OFWC decisions (Hannah and Jones 2013-2016; Groth et al., 2017; 2020; 2021; 2022). The SG100 is met.

	Participation			
c	Guide post		The consultation process **provides opportunity** for all interested and affected parties to be involved.	The consultation process provides **opportunity and encouragement** for all interested and affected parties to be involved, and **facilitates** their effective engagement.
	Met?		**Yes**	**Yes**
Rationale				

The management system’s consultation processes provides opportunity, encouragement and facilitation of engagement of any interested party through a variety of mechanisms. These include dockside interactions between the industry, ODFW biologists and the OSP, stakeholder meetings at ODFW MRP offices, general availability of ODFW staff to public calls, publication of the ODFW annual newsletter (Groth et al. 2022), OTC quarterly newsletter (OTC 2011a, 2011b), and OSP monthly newsletter (OSP 2010, 2016), and public testimony at OFWC meetings (ODFW 2017d).

Oregon’s Public Meetings Law ensures public notice and access to meetings (Open Oregon 2017). ODFW routinely posts notices of public meetings about upcoming regulations on their website and at port offices (ODFW 2017e). Likewise, announcements of Oregon Fish and Wildlife Commission meetings are posted on the ODFW website well in advance, with full information about meeting agendas (ODFW 2017c; 2017d).

At the regional level, the PFMC process provides open and transparent distribution of information as well as opportunities for engagement of interested parties through committee membership and public testimony. ENGOs are routinely engaged in this process (PFMC 2022e).

Executive Order 13132 (1999) requires federal agencies to consider the implications of policies that may limit the scope of or pre-empt states' legal authority. Such actions require a consultation process with the states and may not create unfunded mandates for the states. Any final published rule must be accompanied by a "federalism summary impact statement" (NMFS 1997; PFMC 2022c).

The Council process involves different types of consultations with member states through state agencies, Council appointees, advisory committee membership, and meetings. The process of state participation in the formulation of federal management measures encourages complementary approaches between federal and state approaches (PFMC 2007). Consultations among state agency staff, industry stakeholders and ENGOs occurs informally through regular stakeholder meetings, interactions at the Pacific Fishery Management Council settings, interactions with congressional staff, and various other fora.

In sum, the functions, roles and responsibilities are well understood for all areas of responsibility and action. The Oregon management system includes consultation processes that regularly seek and accept relevant information and the system provides explanations for how information is used, meeting the SG100.

References

Abramson et al. 1981; E.O. 13172 1999; E.O. 13175 2000; Groth et al. 2017; 2020; 2021; 2022; Hannah 2012; Hannah and Jones 2013-2016; MSA 2007; NMFS 1997; ODFW 2012b,, 2017d, 2017e; ORS 496, 1975; ORS 506.036 1965; ORS 506.129 1975 ; ORS 506.045 1975; Open Oregon 2017; OSP 2022a; Oregon Trawl Commission 2011a; 2011b; Pettinger 2012; 2017; PFMC 2007, 2022c; 2022e.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 3.1.3 – Long term objectives

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Fisheries Standard, and incorporates the precautionary approach		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	Long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach, are **implicit** within management policy.	**Clear** long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach are **explicit** within management policy.	**Clear** long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach, are **explicit** within **and required by** management policy.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The Oregon Food Fish Management Policy (ORS 506.109 1975) lists seven management objectives (identified as goals in the statute) for Oregon food fish that guide management decision-making by the OFWC. The objectives are preceded by a general policy statement that food fish are to be managed to provide the optimum economic, commercial recreational and aesthetic benefits for present and future generations of citizens. The optimization over biological, economic and social objectives requires OFWC and ODFW to take a precautionary approach under conditions of uncertainty or in the absence of adequate scientific information. Examples of precautionary actions that OFWC and ODFW have taken include the implementation of maximum count per pounds to protect small shrimp, timing of seasons to protect spawning, and implementation of BRD's.

The objectives may be paraphrased as:

(1) To maintain all species of food fish at optimum levels

(2) To optimize the production, utilization and public enjoyment of food fish.

(3) To permit an optimum and equitable utilization of available food fish.

(4) To maintain public access to food fish resources

(5) To regulate food fish to provide optimum commercial and recreational benefits.

(6) To preserve the economic contribution of the sports and commercial fishing industries consistent with sound food fish management practices.

(7) To optimize the return of Oregon food fish for Oregon's recreational and commercial fisheries.

In addition, the Oregon fishery management system is guided by Statewide Planning Goal 19 on Ocean Resources (State of Oregon, 1973), which is "To conserve marine resources and ecological functions for the purpose of providing long-term ecological, economic, and social value and benefits to future generations." This general goal is supplemented by implementation requirements pertaining to the use, management and

protection of renewable marine resources. Complementing Goal 19 is the Governor's Executive order 08-07 which directs state agencies to protect coastal communities in locating marine reserves and wave energy sites, as well as subsequent state legislation establishing set of pilot marine reserves (State of Oregon 1973; 2008).

The objectives of Oregon's Food Fish Management Policy (ORS 506.109 1975) are explicit overarching long-term objectives for Oregon's fisheries that guide OFWC decision-making. However, to take the form of requirements, these policy objectives would need to be expressed in the form of fishery management plans (FMPs) that included accountability measures related to those objectives.

The OARs provide the legally enforceable elements of fish management plans.

The Fishery Management Plan for Oregon's Trawl Fishery for Ocean Shrimp (*Pandalus jordani*) (FMP) was adopted in 2018. It provides the framework for shrimp fishery management (Hannah et al. 2018; Groth 2020a).

The FMP comprises three major sections, each with several subsections:

1. Resource Analysis

- Species
- Description of the shrimp resource
- Available data
- Stock status
- Known threats to the resource
- Sustainable harvest levels
- Prioritized list of research needs

2. Harvest Management Strategy.

- Species
- Management objectives
- Current issues
- Description of the fishery
- Other social and/or cultural uses of the resource
- Biological reference points and fishery controls

3. Glossary of terms and literature cited

- Glossary of terms
- Literature cited

The FMP contains both short-term and long-term fishery management objectives. The fishery is being managed according to the framework of the plan. SG100 is met.

References

ORS 506.109 1975; State of Oregon 1973; 2008; Hannah et al. 2018; Groth 2020a

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 3.2.1 – Fishery-specific objectives

PI 3.2.1		The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	**Objectives**, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **implicit** within the fishery-specific management system.	**Short and long-term objectives**, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **explicit** within the fishery-specific management system.	**Well defined and measurable short and long-term objectives**, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **explicit** within the fishery-specific management system.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Objectives for all Oregon food fish fisheries are stated in the Oregon Food Fish Management Policy (ORS 506.109 1975). During the site review ODFW MRP staff also articulated implicit objectives under which the pink shrimp fishery is managed: to prevent recruitment overfishing and maximize economic yield.

Prior to the 2018 adoption of the shrimp FMP implicit management objectives were provided to the Oregon shrimp fishery by the 1981 draft federal shrimp FMP. The National Standard Guidelines under which federal FMPs are structured also provided a framework of objectives for management of the fishery (Hannah 2012; MSA 2007; Abramson et al. 1981)

Actions taken proactively to by the MRP in coordination with the fleet to develop BRDs and experiment with LEDs also reflect implicit objectives on bycatch and ETP species.

Prior to 2018 the pink shrimp fishery had been managed under the umbrella objectives for all Oregon food fish (ORS 506.109, 1975). In 2018 the Fishery Management Plan for Oregon's Trawl Fishery for Ocean Shrimp (*Pandalus jordani*) (FMP) was adopted. It now provides the framework for shrimp fishery management (Hannah et al. 2018; Groth 2020a).

The FMP comprises three major sections, each with several subsections:

1. Resource Analysis (with sections on species, descriptions of the shrimp resource, available data, stock status, known threats to the resource, sustainable harvest levels, prioritized list of research needs); 2. Harvest Management Strategy (with sections on species, management objectives, current issues, description of the fishery, other social and/or cultural uses of the resource, biological reference points and fishery controls); 3. Glossary of Terms and Literature Cited.

The FMP contains three long-term management objectives.

1. Maximize biomass yield from the ocean shrimp fishery, consistent with detecting and addressing any significant growth or recruitment overfishing that develops.

2. Operate the fishery, to the extent possible, under a stable regulatory environment that allows vessel operators maximum flexibility in deciding where, when and how to fish for ocean shrimp.
3. Through collaborative research with vessel operators and the sharing of research findings, develop and implement measures to minimize direct bycatch mortality, the unseen mortality of animals that escape capture and any adverse effects on seafloor habitat from the operation of the fishery.

The FMP lists two short-term management objectives

1. Maximize yield from the ocean shrimp fishery, consistent with detecting and addressing any significant growth or recruitment overfishing that develops.
2. Operate the fishery, to the extent possible, under a stable regulatory environment that allows vessel operators maximum flexibility in deciding where, when and how to fish for ocean shrimp.

In conjunction with the specified objectives, the FMP specifies a target- and limit-based management system for ocean shrimp to provide more precautionary management during severe environmentally-driven declines in stock abundance. Proxies are specified for target- and limit-based reference points at which actions could be taken to restrain fishing mortality. Based on the modeling results in Hannah and Jones (2014b) and input from the shrimp industry, target- and limit-based action levels have been established for management of the ocean shrimp fishery going forward (Hannah et al. 2018).

Well defined and measurable long-term objectives consistent with MSC Principles 1 and 2 are contained within the FMP and are therefore explicit within the fishery management system. A score of 100 is awarded.

References

Abramson et al., 198; MSA 2007; ORS 506.109 1975; Hannah, 2012; Hannah et al. 2018; Groth 2020a

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought / Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 3.2.2 – Decision-making processes

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery		
Scoring Issue		SG 60	SG 80	SG 100
a	Decision-making processes			
	Guide post	There are **some** decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are **established** decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	**Yes**	**Yes**	
Rationale				

Established decision-making processes are followed by the OFWC as outlined in law (ORS 506.036, 1965). These processes result in management measures and strategies that meet the objectives specified by the Food Fish Management Policy (ORS 506.109, 1975). These processes are stable. The conditions of SG80 are met.

b	Responsiveness of decision-making processes			
	Guide post	Decision-making processes respond to **serious issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to **serious and other important issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to **all issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Decision-making processes have covered a wide range of issues and demonstrate responsiveness to all shrimp fishery issues identified through research, monitoring, evaluation and stakeholder consultation. A good example of decision response to all of these elements is the design, development and testing of the BRD in collaboration with industry members and in response to an identified need to reduce bycatch of finfish species. The transparency, timeliness and adaptive manner of decision response is demonstrated through the ODFW Annual Pink Shrimp Review, which in both its annual edition and a supplemental edition identified upcoming potential issues with eulachon in anticipation of its listing under ESA, and the need to take proactive action (Hannah and Jones 2016; Groth et al., 202017; 2020; 2021; 2022).

Annual planning meetings between enforcement and ODFW, as well as intra- season updates, establish enforcement priorities in anticipation of likely areas needing enforcement attention, and adapt to in-season enforcement issues as they emerge (OSP 2016b; 2022b; 2022c).

The ongoing process of active coordination and consultation with industry in identifying issues, monitoring compliance, and conducting cooperative research also contributes to decision processes that are responsive, transparent and adaptive (ODFW, 2017e; Groth et al., 2020; 2021; 2022). Coordination and consultation between the state and federal processes, conducted through the PFMC process, promotes the consideration of the implication of pink shrimp fishery management decisions on other fisheries and ecosystem issues, for example the rebuilding of rockfish stocks and the protection of ESA listed species. SG100 is met.

	Use of precautionary approach			
c	Guide post		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		**Yes**	
Rationale				

Decision processes employed by the Oregon Legislature (in establishing law and policy) and the OFWC (in implementing policy) exhibit a precautionary approach to pink shrimp management and a basis in best available scientific information. The regulations establishing maximum count per pound and closed seasons were implemented to minimize effort on small shrimp and prevent fishing on spawning aggregations (OAR 2017c; 2017d). Adoption of the BRD requirement was a precautionary approach to minimize bycatch of rebuilding groundfish stocks. Further strengthening of the BRD specifications was a proactive and precautionary approach to minimizing all bycatch, including eulachon, recently listed as threatened under the ESA (OAR 2017d; Hannah and Jones 2012).

The assessment made evident that groups and organizations involved in the fishery are conducting ongoing research with respect to both the target species and P2 species and impacts; experiments with LED lights on gear to reduce bycatch of eulachon are a good example. It is clear that management decision processes in the Oregon pink shrimp fishery consider all available information, including new and emerging research results. The SG80 is met.

	Accountability and transparency of management system and decision-making process			
d	Guide post	Some information on the fishery's performance and management action is generally available on request to stakeholders.	**Information on the fishery's performance and management action is available on request**, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders **provides comprehensive information on the fishery's performance and management actions** and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Formal reporting to all interested stakeholders is provided through a number of avenues. The ODFW Annual Pink Shrimp Review provides annual summaries of fishery performance, describes research results, and identifies upcoming issues affecting the fishery (Groth et al. 2020; 2021; 2022). OFWC minutes describe Commission deliberations on various issues, the nature of scientific advice and public comment, and decision outcomes (ODFW 2017c; 2017d).

Oregon State Police monthly Field Reviews inform fishery stakeholders of existing and emerging compliance and enforcement issues (OSP 2022e.) Oregon Trawl Commission quarterly newsletters provide fisheries updates and identify economic and regulatory issues (cf. OTC 2011a; 2011b; 2017c).

The PFMC newsletters describe actions taken at Council meetings, committee openings and meeting schedules, and upcoming issues (PFMC 2022a). The Federal Register provides notice of all proposed federal actions (cf. Federal Register 2022)

Taken together, these reporting sources provide comprehensive information to all stakeholders on the fishery performance, management systems, research and response to new information, meeting the SG100.

	Approach to disputes			
e	Guide post	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

There are no existing or previous court challenges to the fishery nor is there evidence of regulatory noncompliance that could threaten the sustainability of the fishery.

According to information provided by ODFW staff, the Oregon fishery management system is not operating under binding legal decisions arising from legal challenges (Groth, 2017). No legal challenges have been made to Oregon pink shrimp fishery regulations.

Similarly, the PFMC has no existing or previous court challenges related to the fishery nor is there evidence of regulatory noncompliance in other fisheries that could threaten the sustainability of the fishery.

In sum, the Oregon pink shrimp fishery is managed under established and transparent decision processes. These processes respond to all issues in a timely manner, are based on best available information and use a precautionary approach. Decision-making processes are responsive to all issues identified through research, monitoring, evaluation and consultation. Comprehensive information on management actions and fishery performance is provided to stakeholders, and through its extensive consultation the system acts proactively to avoid legal disputes.

References

ORS 506.109 1975; Hannah and Jones 2012; 2016; Groth et al., 2020; 2020; 2021; 2022; OSP 2016b; 2022b; 2022c 2022e; ODFW 2017c; d; e; OAR, 2017d; OTC, 2011a, 2011b, 2017c; PFMC 2022a; Federal Register 2022

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guide post	Monitoring, control and surveillance **mechanisms** exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance **system** has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A **comprehensive** monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Harvest control rules (seasons, maximum counts per pound and bycatch reduction devices) are clear and enforceable. A comprehensive system of monitoring, control and surveillance is in place, involving the Oregon Department of Fish and Wildlife, NMFS West Coast Groundfish Observer Program, Oregon State Police and US Coast Guard. The Oregon Department of Fish and Wildlife conducts port sampling of catch and actively monitors CPUE, and size composition of the catch. The Groundfish Observer Program has a coverage target of 20% of pink shrimp trips and monitors the biological parameters of the total catch (NWFSC, 2010; Golden Marine Consulting, 2017). The Oregon State Police conducts random dockside catch samples to check for compliance with count per pound regulations and does pre-season checks of bycatch reduction devices to ensure compliance with spacing requirements. Compliance with the count-per-pound regulation is reinforced by market preferences for larger shrimp. At-sea compliance with regulations (seasons, closed areas, licenses) is conducted by the US Coast Guard by vessel patrol. While fishing in the federal EEZ (3-200 miles offshore) vessels are also subject to federal rules and sanctions enforced by the US Coast Guard and the NMFS Office of Law Enforcement, such as the requirement (since 2008) that pink shrimp vessels be equipped with VMS (cf. ODFW 2008; NMFS 2017a, 2017b).

At the state level, the management system uses the ODFW and OSP Coordinated Enforcement Process (CEP) to coordinate between agencies and to set priorities. Enforcement priorities are reviewed annually under the CEP for all commercial fisheries including the pink shrimp fishery (OSP FWD 2022a; 2022d).

In 2015 the Oregon State Police formed a Marine Fisheries Team to better coordinate fisheries and habitat enforcement along the Oregon coast. The Team, based in Newport and also working out of offices in Astoria, Tillamook, Florence and Coos Bay, consists of eight Fish and Wildlife troopers (OSP FWD 2022c). The Team works closely with the ODFW MRP to enforce Oregon's commercial and sport fishing regulations through patrols of state waters and docks. For example, in late 2015 ODFW conducted team training in various aspects of count sampling and determination in anticipation of potential count problems in 2016 (Groth et al. 2017)

In addition, ODFW emphasizes an informational consultative approach to new regulations by working with industry to develop workable approaches to compliance, for example in the design development of the bycatch reduction device, and by advance notice to industry of upcoming regulation changes and enforcement issues through the Annual Pink Shrimp Review. The management philosophy of both ODFW

and the OSP is to promote compliance through education and cooperation and minimize the occurrence of non-compliance.

The comprehensive system has demonstrated a consistent ability to enforce management regulations (Thompson 2020; 2021).

The conditions of SG100 are met.

b	Sanctions			
	Guide post	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, **are consistently applied** and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and **demonstrably** provide effective deterrence.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Sanctions for non-compliance exist, defined in law and enforced through at-sea and dockside monitoring. Oregon State Police issue tickets for non-compliance. Fines typically range between $500 and $1000. All commercial fishery citations are reported as misdemeanours, but if there are multiple convictions, further violations may be upgraded to a felony (Thompson 2012). Effectiveness of sanctions is evidenced by the high rate of compliance.

The Oregon State Police provides information on compliance and enforcement to the ODFW. There are no notable areas of conflict within the fishery and compliance rates are high, with few reported violations in the pink shrimp fishery since 2012 (Thompson 2012; 2017; Hannah and Jones, 2012; Groth et al., 2017). In 2016 there was a single violation of the count-per-pound regulation; between 2012 and 2015 there were none. In 2020 two “not in compliance” enforcement contacts were made during the fishing season, out of 1098 trips (.2%). One vessel captain was cited for a count per lb. violation, fined and forfeited the load of shrimp. Information was unavailable on the nature of the second contact (Thompson 2021). In contrast, the 2021 fishing season saw an uptick in violations of the count-per-pound regulation. In 2021 the OSP identified four cases of shrimp landings exceeding the 160 count per pound limit, out of 988 trips (.4%): one in April, two in May, and one in June. In each case the vessel captain was issued a citation, had a portion of the landing seized and was fined (Groth et al. 2022; Howell 2022b).

The 2022 Review reported these violations along with a reminder to the fleet to monitor the count per pound of tows, especially during the first few months of the season when small aged one shrimp are abundant, so that landings do not exceed the 160 count per pound average. It noted that small shrimp are typically common in the first three months of the season because of the very small size of age one shrimp at that time (Groth et al. 2022).

No violations of the BRD regulation were reported in the period 2012-2022; Season openings are fully enforceable (Groth et al 2022; Howell 2022a). In 2016, one fisher was cited by the OSP for wanton waste of commercial food fish after landing 30k lbs of spoiled shrimp (OSP 2016). The harvester was subsequently tried, convicted and fined $500 (Groth et al. 2017).

Sanctions are legally defined and are enforced through a comprehensive program of dockside and at-sea monitoring. Sanctions work in conjunction with three elements of the system of monitoring and enforcement: 1. pre-season communications between the ODFW, OSP and industry to review regulations

assess any likely problems; 2. Continuous dockside monitoring of landed catch; 3. Prompt enforcement reporting and ODFW response to violations.

The effectiveness of sanctions, working in this integrated system of communication, monitoring, and rapid response, in providing deterrence is demonstrated by the existence of low numbers of violations (4 in 2021, out of 988 trips) and the lack of conflict within the fleet.

Sanctions exist, are consistently applied and are demonstrably effective in providing deterrence. The SG100 is met.

	Compliance			
c	Guide post	Fishers are **generally thought** to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	**Some evidence exists** to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a **high degree of confidence** that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The Oregon State Police provides information on compliance and enforcement to the ODFW. There have been few reported violations in the pink shrimp fishery since 2012 (Thompson 2012; 2017; Hannah and Jones, 2012; Groth et al. 2017; Howell 2022a). In 2016 there was a single violation of the count-per-pound regulation; between 2012 and 2015 there were none. No violations of the BRD regulation were reported in the period 2012-2016; Season openings are fully enforceable (ODFW 2012; Thompson 2012). In 2016, one fisher was cited by the OSP for wanton waste of commercial food fish after landing 30k lbs of spoiled shrimp (OSP 2016). The harvester was subsequently tried, convicted and fined $500 (Groth et al. 2017). In 2020 two “not in compliance” enforcement contacts were made during the fishing season, out of 1098 trips (.2%). One vessel captain was cited for a count per lb. violation, fined and forfeited the load of shrimp. No information was available on the nature of the second contact (Thompson 2021). In contrast, the 2021 fishing season saw an uptick in violations of the count-per-pound regulation. The OSP identified three cases of shrimp landings exceeding the 160 count per pound limit, out of 988 trips (.6%): one in April, one in May, and two in June. In several of the cases the vessel captain was issued a citation and a portion of the landing was seized (Groth et al. 2022; Howell 2022b).

The high compliance rates can be attributed to the emphasis on prevention, an educational approach to informing about regulations, the collaborations with industry in developing gear design that achieves regulatory goals, control rules that are clear and enforceable and a coordinated monitoring and enforcement infrastructure (Hannah, 2012; Groth 2017; Howell 2022a).

There are several examples within the shrimp fishery of the effectiveness of this approach, including:

The use of the annual (ODFW) and quarterly (OTC) newsletters to inform industry about upcoming changes in regulations and to avoid disputes. As an example, the subject of first ODFW newsletter was to inform industry about completed research on count per pound and to provide advance notice on the types of regulation to expect (ODFW, 1989). While the count per pound regulations was initially controversial, the Commission adopted the regulation with industry backing.

Communication between port biologists, ODFW, and the OTC about the use of BRDs was actively directed at informing industry of the utility of reducing bycatch and the avoidance of conflict over the adoption of BRDs (ODFW 2010a, 2010b; OTC 2011a, 2011b). By the time a BRD regulation came before the OFWC no industry members testified against it.

A recent example of the use of consultation in the pink shrimp management system is the use of the 2017 Annual Pink Shrimp Review to update the fleet on the latest research into the effectiveness of using LED lights to reduce bycatch of eulachon, Between 2013-2017 experiments with LED lights to reduce eulachon bycatch were conducted through an active agency-industry consultative process. Throughout that time period the Annual Pink Shrimp Review was used extensively as a tool for the communication of experimental results (Hannah and Jones, 2014a; 2014b; 2015, 2016b; Groth et al. 2017) and for preparing the industry for the eventual adoption of LED regulations. In addition, in 2017 the Review was used to request stakeholder feedback on the newly developed shrimp fishery management plan (Groth et al. 2017) in advance of the FMP's being presented to the OFWC for adoption later in 2017.In 2022 the Review reported the results of a survey of the fleet on a potential change in the season start date (Groth et al. 2022).

The strong record of stakeholder consultation combined with evidence of low numbers of violations results in a high degree of confidence that fishers are complying with the management system. SG100 is met. The conditions of SG100 are met.

	Systematic non-compliance			
d	Guide post		There is no evidence of systematic non-compliance.	
	Met?		**Yes**	
Rationale				

As described in 3.2.3b, compliance is good and there is no evidence of systematic non-compliance.

In sum, there is a high degree of confidence that fishers comply with the management system, and the collaborative nature of the interaction among industry, ODFW and OSP encourages the industry to provide information of importance to the effective management of the fishery. There is evidence of good compliance in the shrimp fishery and no evidence of systematic non-compliance; therefore existing sanctions are demonstrably effective and the condition of the SG is met.

A score of 100 is awarded.

References

ODFW 2008; 2012; NMFS 2017a, 2017b; NWFSC 2010; OSP FWD 2016; 2022a; c; d; Thompson 2012; 2017; 2020; 2021; Groth 2017; 2021b; Groth et al 2017; 2022; Hannah and Jones, 2012; Golden Marine Consulting, 2017; Groth et al. 2022.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4		**There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives There is effective and timely review of the fishery-specific management system**		
Scoring Issue		SG 60	SG 80	SG 100
a	Evaluation coverage			
	Guide post	There are mechanisms in place to evaluate **some** parts of the fishery-specific management system.	There are mechanisms in place to evaluate **key** parts of the fishery-specific management system.	There are mechanisms in place to evaluate **all** parts of the fishery-specific management system.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Some components of management performance are evaluated annually and reported in the Annual Pink Shrimp Review under the following section heads: season summary, indicators for the upcoming season, issues updates, research results, regulatory changes and enforcement issues (cf Groth et al. 2020; 2021; 2022).

The fishery has in place to mechanisms to evaluate all meaningful aspects of the management system. Population indicators are monitored through at-sea sampling. Fishing location and effort are monitored through mandatory logbooks. Amount and size composition of landed catch is comprehensively monitored through dockside sampling and fish tickets. Bycatch is monitored and evaluated through the onboard observer program. Performance of BRDs – in terms of effectiveness of bycatch reduction as well as impact on fishing operations – is monitored through onboard observer reports and stakeholder feedback. The economic performance of the fishery is annually evaluated through discussions of shrimp process and effort in the Annual Pink Shrimp Review, and occasionally evaluated through analyses of economic impact of Oregon fisheries sponsored by the Oregon Coastal Zone Management Association (OCZMA 2006).

The primary mechanism for reporting evaluation results is the ODFW Annual Pink Shrimp Review (cf Groth et al. 2020; 2021; 2022).

The conditions of SG100 are met.

b	Internal and/or external review			
	Guide post	The fishery-specific management system is subject to **occasional internal** review.	The fishery-specific management system is subject to **regular internal** and **occasional external** review.	The fishery-specific management system is subject to **regular internal and external** review.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The ODFW conducts annual post-season reviews of the Oregon pink shrimp trawl fishery, the results of which are presented in the Annual pink shrimp review. During the same time, ODFW will meet with OSP to discuss compliance and enforcement within the fleet and address any issues or concerns that were identified.

In addition, throughout the season ODFW is involved in the continual monitoring of control rules, catch quantity, quality and size composition of catch, and bycatch.

The pink shrimp fishery is subject to regular internal review, as described in SG80a above. ODFW staff conducts ongoing review of control rules by monitoring of CPUE, quantity, quality and size composition of catch, and bycatch.

Research results are subject to external review through the peer reviewed journal process, in which ODFW staff are actively engaged (cf. Hannah and Jones 2000; 2007; 2014; 2015b; Hannah et al. 2010; Hannah et al. 2011; Hannah 2014; 2016; Krutzikowsky et al., 2006; Lomeli et al. 2019; Bancroft and Groth 2021).

An external review of the management policy was performed as a condition of the 2007 certification (TAVEL Certification, Inc 2007; Golden 2008). This was followed in 2016-2017 by a second external review conducted by Golden Marine Consulting. The review focused on six management components: stock assessment; fishery monitoring; enforcement compliance; research; organizational integrity/viability; regulatory action. The review was conducted through a literature search and interviews with decision makers, researchers, and stakeholders. The report of the management evaluation was presented to the assessment team at the 2017 Surveillance audit (Golden Marine Consulting 2017).

ODFW Marine Region management has committed to continuing these external reviews on a five-year schedule. As a consequence, the fishery is now subject to both regular internal and external reviews. Through the combination of internal and external reviews, mechanisms are in place to evaluate all parts of the management system.

A score of 100 is awarded.

References

Golden 2008; Golden Marine Consulting 2017; Groth et al 2020; 2021; 2022; Hannah 2012; Hannah and Jones 2000; Hannah and Jones 2007; Hannah et al. 2010; Hannah et al. 2011; Krutzikowsky et al., 2006; Lomeli et al. 2019; Bancroft and Groth 2021; Oregon Coastal Zone Management Association, 2006; TAVEL Certification Inc. 2007.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	100
Condition number (if relevant)	

7.4.4 Principle 3 Evaluation Tables - CALIFORNIA

PI 3.1.1 – Legal and/or customary framework

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it: - **Is capable of delivering sustainability in the UoA(s);** - **Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and** - **Incorporates an appropriate dispute resolution framework**		
Scoring Issue		SG 60	SG 80	SG 100
a	Compatibility of laws or standards with effective management			
	Guide post	There is an effective national legal system **and a framework for cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and **organised and effective cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and **binding procedures governing cooperation with other parties** which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

At the state level, the management system operates within state laws and the California Code of Regulations (CCR). Fishery management decisions regarding pink shrimp are delegated by the California State Legislature to the Fish and Game Commission (CFGC) and implemented through the California Department of Fish and Wildlife (CDFW) (CFGC 2004). The CFGC formulates fishery management policies and sets fishing seasons and other regulations to determine who may fish for pink shrimp, when they may fish and how they may fish. Regulations, such as the maximum count per pound, minimum mesh size and BRD specifications, are set in CCR. The CFGC and CDFW operate within a framework of state laws under Title 12 (Natural Resources) of the CCR. All California executive branch agencies are guided by the California Administrative Code (CAC) which codifies regulations and sets out general standards and procedures. The CACs pertaining to CDFW are contained in Title 14;
rules and regulations pertaining specifically to commercial shrimp fishing are Pink shrimp permit holders are also subject to the provisions of CCR Title 14 §189 and FGC §8841 (CCR 2015a).

In addition, all state entities adhere to the Bagley-Keene Open Public Meetings Act and the Public Records Act which require that all meetings of governing bodies and state agencies are open and accessible to the public, and that most public records be made available to members of the public (CCR 2015c;d).

The California Administrative Procedure Act (CAPA 2008) requires that agencies conduct a process that ensures public involvement opportunities and considers the economic impact of its rules. These cooperation procedures are binding.

Regulations are enforced by the CDFW Law Enforcement Division, which operates out of four districts. The Northern Coastal District oversees enforcement within the pink shrimp fishery (CDFW 2015b; CDFW 2015c; Farrell 2015).

At the national level, management of state fisheries may take place within and may coordinate with a larger framework of federal laws, through the interface with the regional fishery management council system. Federal fishery management is carried out under the authority of the federal Magnuson-Stevens Fishery Conservation and Management Act (MSA), first passed in 1976 and most recently reauthorized in 2006 (MSA, 2007). The MSA is the principal law governing the harvest of fishery resources within the federal portion of the U.S. 200-mile zone. Under the MSA, the Pacific Fishery Management Council (PFMC) recommends management actions to the National Marine Fisheries Service (NMFS; also called NOAA Fisheries) for approval. Ultimate decision authority for fishery management lies with the Secretary of Commerce. In addition to the MSA, the PFMC adheres to a suite of "other applicable laws:" the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), the Migratory Bird Treaty Act (MBTA); the Administrative Procedure Act (APA), Paperwork Reduction Act (PRA): Regulatory Flexibility Act (RFA): Coastal Zone Management Act (CZMA): and other relevant U.S. laws, Executive Orders and regulations (MSA 2007). This national legal system outlines procedures governing cooperation among entities authorized to implement these acts. The procedures are well described in consultation rules, and are binding.

The primary interaction of the California pink shrimp fishery with the federal management system is through finfish bycatch limits and the Groundfish Observer Program. In addition, California cooperates with the federal system and with the other states through provision of data through the Pacific States Marine Fisheries Commission PacFIN database, agreements on gear specifications, joint enforcement agreements, and ETP management.

The shrimp FMP includes an overfishing determination supported by reference points, provisions for ending overfishing, the specification of rebuilding targets and procedures for rebuilding the overfished population if it falls below a biomass threshold.

The conditions of SG100 are met.

b	Resolution of disputes			
	Guide post	The management system incorporates or is subject by law to a **mechanism** for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a **transparent mechanism** for the resolution of legal disputes which is **considered to be effective** in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a **transparent mechanism** for the resolution of legal disputes that is appropriate to the context of the fishery and has been **tested and proven to be effective**.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

As described above under 3.1.1. a, the fishery is managed primarily under state statutes and administrative codes, in a fashion that respects domestic law. Federal rules apply to federally managed species that interact with the California management system. For the pink shrimp fishery, these rules pertain primarily to bycatch of federally managed species or species protected under the ESA (ESA 1973).

The Bagley-Keene Open Meeting Act (CCR 11120-11132) and Public Records Act (CCR 6250-6270) ensure transparency and public access.

State and federal agents monitor fisheries and enforce compliance with the laws and regulations related to pink shrimp, incidentally caught groundfish, eulachon or other protected species, (CDFW 2015b; 2015c). California enforcement is represented on the PFMC Enforcement Consultants committee, which includes representatives from state enforcement agencies in Washington, Oregon, and California, and the federal government (PFMC 2012b). Coordination of state and federal laws is accomplished through this body.

At the state level, the management system uses the CDFW Law Enforcement Division to enforce laws and regulations (CDFW 2015b; 2015c). Fish and Wildlife Officers (FWOs) are general authority peace officers with responsibilities that include fish protection and commercial fish and shellfish harvest. In addition to state laws, they enforce federal laws and Oregon state statutes through memoranda of agreement (Farrell 2015).

Formal mechanisms for resolving disputes include:

- Petition processes of the CFGC that allow issues to be brought for Commission decision (CFGC 2015a; 2015b).
- The tri-state coordination process administered by the Pacific States Marine Fisheries Commission (PSMFC) can be activated as needed to resolve shrimp fishery management issues or disputes among Washington, Oregon and California (Abramson et al, 1981; Hannah 2012).
- The coordination mechanism of the PFMC to resolve any disputes between state and federal fisheries (PFMC 2004; 2007).

The shrimp fishery has not been subjected to legal challenge (Kalvass 2015). However, timely implementation by the CFGC to the MLPA provisions on closed fishing areas provides an example of how the formal mechanisms outlined above have been tested and proven to be effective (CDFW 2013).

The conditions of SG100 are met.

	Respect for rights			
c	Guide post	The management system has a mechanism to **generally respect** the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to **observe** the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to **formally commit** to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Since 2011 all California state agencies have operated under Executive Order B-10-11, requiring effective communication and consultation with California Indian tribes, seeking their meaningful input into regulations, rules, policies and other matters affective tribal communities (CA Office of the Governor 2011). In 2012 a Tribal Consultation Policy was developed by the California Natural Resources Agency (CNRA) to govern and ensure effective government-to-government consultation between Tribes and CNRA and its constituent departments, of which CDFW is one (CNRA 2012). To implement Executive Order B-10-11 and the CNRA Tribal Consultation Policy, the CDFW developed the Tribal Communication and Consultation Policy in 2014 (CDFW 2014).

Negotiated processes between CDFW and California federally recognized tribes around placement of marine protected areas established a process that has served as a template for continued communication (cf. CDFW 2012). In addition, California has close consultation with tribes on salmon, through the Klamath River Management Council.

At the federal level, NMFS and management through the PFMC are both bound by Federal Executive Order 13175 (2000), which requires meaningful consultation and collaboration with Indian tribal governments. The sovereign status and co-manager role of Indian tribes over shared federal and tribal fishery resources is recognized. At the regional level, this role is reflected in a designated tribal seat on the Pacific Fishery Management Council (PFMC 2012a).

The conditions of SG100 are met.

References

CFGC sect. 8841; CCR Title 14 §189; CCR 11020-11032; CCR 6250-6270; CA Administrative Procedure Act 2008; CDFW 2015b; CDFW 2015c; CFGC 2015c; CNRA 2012; Farrell 2015; Abramson et al. 1981; E.O. 13175 2000; ESA 1973; Hannah 2012; MSA 2007; NMFS 1997; Woods 2005; PFMC 2004; 2007; 2012b; CFGC 2015a; 2015b; Kalvass 2015; CDFW 2012; CDFW 2014; CDFW 2021; E.O. 13175 2000; CA Office of the Governor 2011.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought** on relevant updates to California state laws, Code of Regulations, federal laws, data systems, interstate agreements and legal challenges (if any).

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 3.1.2 – Consultation, roles and responsibilities

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
Scoring Issue		SG 60	SG 80	SG 100
a	Roles and responsibilities			
	Guide post	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **generally understood**.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **explicitly defined and well understood for key areas** of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are **explicitly defined and well understood for all areas** of responsibility and interaction.
	Met?	**Yes**	**Yes**	**No**
Rationale				

CFGC, CDFW, PFMC, and the state and federal enforcement entities of the CDFW Enforcement Division, US Coast Guard, and NMFS Enforcement are all explicitly identified, and roles defined, in statutes, administrative code, and operating procedures. Open lines of communication between agencies promote widespread understanding of the roles and responsibilities of respective entities. Lines of authority and responsibility among the state and federal entities are clear, as are procedures for coordination among them (Kalvass 2015; Farrell 2015).

The functions, roles and responsibilities are well defined for all areas of responsibility and action. An example of understanding of regulations on the part of the shrimp fishery is provided by good compliance rates of BRD adoption (Farrell 2015).

In 2015 it was found that the low level of engagement between CDFW and the shrimp fishery created uncertainty as to whether all areas of responsibility and interaction are well understood. Stakeholder involvement primarily occurred during times of regulatory change, such as the requirement of bycatch reduction devices (BRDs) and the adoption of the restricted access program (CDFW 2021).

Since that time CDFW has taken actions to improve communication with the shrimp fleet and processors in order to increase transparency about Department decision making and to enable collaboration with the fleet on stock dynamics and management actions. These actions include hosting a fleet meeting in 2017, participation in discussions about fleet capacity in 2017, hosting an online meeting in 2019 to discuss developments within the fishery, and holding informational webinars in 2020 and 2021. According to the FMP the intent is to hold annual informational meetings with stakeholders from here on out and to provide summary meeting notes to the fleet (CDFW 2021; Rienecke 2022).

Enhanced communication and provision of information will have increased the understanding of key areas of responsibility. Evidence of understanding on the part of the fishing industry and other stakeholders will be further strengthened by continuation of annual stakeholder meetings, records of stakeholder participation and commentary and good compliance with regulations. However, until the FMP and its consultation processes have been in place long enough to build a more complete record of understanding of management

functions, roles and responsibilities it cannot be determined that all areas of responsibility and interaction are understood, and so the conditions of SG100 have not been met. The conditions of SG80 have been met.

b	Consultation processes			
	Guide post	The management system includes consultation processes that **obtain relevant information** from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that **regularly seek and accept** relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that **regularly seek and accept** relevant information, including local knowledge. The management system demonstrates consideration of the information and **explains how it is used or not used**.
	Met?	**Yes**	**Yes**	**No**
Rationale				

The enforcement component of the management system regularly seeks and accepts relevant information through active consultation with the fleet and enforcement entities in Oregon and Washington. Enforcement uses local knowledge by getting regular feedback from the industry regarding such issues as conditions on the fishing grounds and gear innovation experiments. Specifically, consultations include dockside interactions between CDFW police, fleet and plants
(Farrell 2015).

Whereas in 2015 consultation with the agency component of the management system was relatively weak, with no regular interaction between CDFW Invertebrate Program staff and industry (Kalvass, 2015), the level of consultation has since improved as described in SIa above. The conduct of five informational meetings and seminars since 2017 and the stated intent to continue these on an annual basis establishes a process of regular interaction between CDFW and industry stakeholders to provide, seek and accept relevant information. In addition, the CDFW followed a standard public notice and comment process as well as a Tribal consultation in the development of the FMP, providing formal avenues for stakeholder consultation (CDFG 2021b). However, what is missing from the record of informational meetings as well as the FMP is an explanation of how information acquired during these stakeholder consultations is used or not used. The conditions of SG100 are therefore not met. The SG80 is met.

c	Participation			
	Guide post		The consultation process **provides opportunity** for all interested and affected parties to be involved.	The consultation process provides **opportunity and encouragement** for all interested and affected parties to be involved, and **facilitates** their effective engagement.
	Met?		**Yes**	**Yes**
Rationale				

Opportunities for industry involvement are most frequent through interactions with CDFW law enforcement and testimony to the CFGC. The frequency of these interactions varies by the particular process.

Enforcement dockside interactions occur once or twice weekly. The CFGC as a whole meets bi-monthly (Farrell 2015; CFGC 2015a).

The Bagley-Keene Open Meeting Act of California ensures the public right of access to any meetings of state bodies in addition to advance notice and minutes of these meetings. Some specific exceptions exist (Digital Media Law Project 2015; CCR 11120-11132.). It is designed to promote greater public participation in government. CDFW routinely posts notices of public meetings about upcoming regulations on their website and at port offices. Likewise, announcements of California Fish and Game Commission (CFGC) meetings are posted on the CDFW website well in advance, with full information about meeting agendas (CFGC 2015a). The CFGC provides online access for the content and schedule of new and proposed rulemaking as well as information on processes for permanent and emergency rulemaking, with information on how stakeholders can be involved (CFGC 2015b). The California Public Records Act (CCR 6250-6270) ensures transparency of agency information.

At the regional level, the PFMC process provides open and transparent distribution of information as well as opportunities for engagement of interested parties through committee membership and public testimony. ENGOs are routinely engaged in this process (PFMC, 2012c). However, this process is only indirectly related to the state-managed pink shrimp fishery.

Executive Order 13132 (1999) requires federal agencies to consider the implications of policies that may limit the scope of or pre-empt states' legal authority. Such actions require a consultation process with the states and may not create unfunded mandates for the states. Any final published rule must be accompanied by a "federalism summary impact statement" (NMFS 1997; PFMC 2022c).

The Council process involves different types of consultations with member states through state agencies, Council appointees, advisory committee membership, and meetings. The process of state participation in the formulation of federal management measures encourages complementary approaches between federal and state approaches (PFMC, 2004; 2007). Consultations among state agency staff, industry stakeholders and ENGOs occurs informally through regular stakeholder meetings, interactions at the Pacific Fishery Management Council settings, interactions with congressional staff, and various other fora.

Improved consultation processes as represented in the FMP and described in Sia and b above demonstrate that CDFW is providing an opportunity and encouragement for the involvement of all interested stakeholders and is facilitating effective engagement.

The conditions of SG100 are met.

References

Kalvass 2015; Farrell 2015; CFGC 2015a; Digital Media Law Project 2015; CCR 11120-11132; CFGC, 2015a; 2015b; CCR 6250-6270; PFMC 2012c; E.O. 13132, 1999; NMF 1997; PFMC 2022c; PFMC 2004; 2007; CDFW 2021.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought** on the scope of stakeholder involvement as well as Department plans for implementing further communication actions. More information is needed on the process for and degree of consultation in the development of the draft FMP.

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**85**
Condition number (if relevant)	

PI 3.1.3 – Long term objectives

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Fisheries Standard, and incorporates the precautionary approach		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	Long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach, are **implicit** within management policy.	**Clear** long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach are **explicit** within management policy.	**Clear** long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach, are **explicit** within **and required by** management policy.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Long-term objectives guiding all California fisheries are explicit within the Marine Life Management Act (MLMA) of 1998.

The MLMA contains goals and objectives the management of California fisheries. FMPs and regulations for all fisheries are expected to conform to the MLMA (MLMA 1998).

The MLMA specifies seven goals, paraphrased as:

- Conserve entire ecosystems
- Recognize and protect non-consumptive values:
- Achieve sustainability
- Conserve and protect habitat
- Rebuild depressed fisheries
- Limit bycatch
- Minimize adverse impacts on fishing communities

To achieve these goals CDFW is required to prepare a master plan that lists fisheries by priority, according to the need of comprehensive management through FMPs. The purpose of FMPs is to base management decisions on clear objectives for and knowledge of a fishery (CDFW 2001).

The MLMA, requires that FMPs include seven elements (CDFW, 2001):

- Description of the fishery
- Fishery science and essential fishery information
- Basic fishery conservation measures
- Habitat provisions
- Bycatch and discards
- Overfishing and rebuilding
- Procedure for review and amendment of an FMP

The Shrimp FMP contains sections covering the seven elements required by the MLMA (CDFW 2021). Clear long-term objectives to guide decision-making are explicitly provided, consistent with MSC Fisheries

Standard and the precautionary approach. The adoption of the FMP on April 20, 2022 means that these objectives are now required by management policy.

The objectives guide and require decision-making consistent with the precautionary approach. Decision processes employed by the California State Legislature (in establishing law and policy) and the CFGC (in implementing policy) exhibit a precautionary approach to pink shrimp management and a basis in best available scientific information. A precautionary approach based on ecosystem management is explicit in the MLMA (CDFW 2001). The regulations establishing maximum count per pound and closed seasons were implemented to minimize effort on small shrimp and prevent fishing on spawning aggregations (CFGC 8841). Adoption of the BRD requirement was a precautionary approach to minimize bycatch of rebuilding groundfish stocks. Further strengthening of the BRD specifications was a proactive and precautionary approach to minimizing all bycatch, including eulachon, recently listed as threatened under the ESA (CDFW 2015a; CFGC 2015b; CDFW 2001). The fleet's experimentation with LED lights on gear is part of the overall effort to minimize non-shrimp bycatch (Farrell 2015).

The FMP addresses the precautionary approach directly in Section 6.1 by noting that the effect of the HCR, LED requirement and catch weighing requirements is expected to be a more precautionary approach to management (CDFW 2021).

The conditions of SG100 are met. A score of 100 is awarded.

References

MLMA 1998; CDFW 2001; 2015a; 2021; Farrell 2015; Kalvass 2015; CFGC 2015b; CFGC 8841.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought on** the contents and implementation status of a shrimp FMP.

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 3.2.1 – Fishery-specific objectives

PI 3.2.1		The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guide post	**Objectives**, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **implicit** within the fishery-specific management system.	**Short and long-term objectives**, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **explicit** within the fishery-specific management system.	**Well defined and measurable short and long-term objectives**, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **explicit** within the fishery-specific management system.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

As outlined in 3.1.3 SIa above, the MLMA contains seven goals for fish and marine ecosystems (CDFW 2001). These goals and objectives, intended for all California fisheries, apply explicitly to the shrimp fishery and have shaped the content of the shrimp FMP.

The early draft federal shrimp FMP (Abramson et al., 1981) also provided implicit management objectives to the California shrimp fishery, as do the National Standard Guidelines under which federal FMPs are structured (NMFS, 2005).

The FMP developed by CDFW comprises eight major sections: 1. The Species; 2. The Fishery; 3. Management; 4. Monitoring and essential fishery information; 5. New conservation and management measures; 6. Anticipated effects of additional management measures; 7. Future management needs and directions; 8. Review and amendment procedures. Appendix A contains an analysis of the Oregon Department of Fish and Wildlife's pink shrimp fishery harvest control rule and its potential application to the California shrimp fishery. The analysis concludes with a recommendation to adopt the ODFW HCR, corrected for gear type, in the California fishery (CDFW 2021).

The FMP, in being consistent with the seven major elements of the MLMA, provides a set of long-term objectives for the fishery.

Both long-term and short-term fishery management objectives are provided through the FMP's adaptive management framework that promotes fishery sustainability, data quality enhancement and bycatch reduction. The framework meets these long-term objectives through requirements for a harvest control rule (HCR), standardized weighing of catch, and LED lights on nets.

The HCR is based on target and limit reference points (catch reference points as a proxy for spawning stock biomass and sea level height as a proxy for recruitment success. The HCR was developed by ODFW and has been adopted by both ODFW and WDFW, ensuring uniform coastwide management of the pink shrimp population if adopted by CDFW (Hannah and Jones, 2016; Wargo and Ayres, 2017). Standardized weighing of catch is achieved through a requirement to report landings weight net of ice using estimation methods consistent with Oregon and Washington. Reduction of bycatch is achieved through an existing requirement for BRDs and a new requirement for LED lights on nets (CDFW 2021).

The FMP was adopted on April 20, 2022 and now meets the criterion of well-defined and measurable short and long-term objectives that are explicit within the management system. The conditions of SG100 are met. A score of 100 is awarded.

References

CDFW 2001; 2021; Kalvass 2015; Abramson et al. 1981; NMF 2005; Hannah and Jones, 2016; Wargo and Ayres 2017.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**60-79**
Information gap indicator	**More information sought on** a finalized FMP, a description of the FMP adoption and implementation process, and the FMP's status within it.

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**100**
Condition number (if relevant)	

PI 3.2.2 – Decision-making processes

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery		
Scoring Issue		SG 60	SG 80	SG 100
a	Decision-making processes			
	Guide post	There are **some** decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are **established** decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	**Yes**	**Yes**	
Rationale				

Established decision-making processes are followed by the CFGC which has been delegated management authority for pink shrimp by the California State Legislature. These processes are stable and result in regulations designed to meet the overarching goals specified in the MLMA (CFGC 2015a; 2015b). The FMP requires the adoption of new regulations for HCR, LED lights and landing weights. The CFGC has the authority to make these regulatory changes through its existing decision-making processes (CDFW 2021).

The conditions of SG80 are met.

b	Responsiveness of decision-making processes			
	Guide post	Decision-making processes respond to **serious issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to **serious and other important issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to **all issues** identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

Decision-making processes cover serious and important issues related to pink shrimp. A good example of decision response to all of these elements is the adoption of the finfish excluder grate to reduce rockfish bycatch and later, with smaller grate spacing, to protect ESA-listed eulachon. These successive BRD decisions were made in collaboration with industry members and enforcement in response to an identified need to reduce bycatch of finfish species, and in this way it was adaptive. The transparency, timeliness and adaptive manner of decision response is ensured by the Bagley-Keene Open Meeting Act (CCR 11120-11132) and Public Records Act (CCR 6250-6270).

California has had the least flexible rulemaking of the three west coast coastal states. Authority for pink shrimp management is held by the CFGC, which meets only every two months and typically has a full calendar, making rulemaking a slow process (Kalvass 2015). Normal operations such as regular openings and closures are dealt with by CDFW, meeting basic timeliness requirements. The adoption of the management framework as presented in the FMP provides greater flexibility to adapt to changing conditions. The HCR contains actions conditional on stock status. Under the FMP the Department, in response to changing conditions, may implement a number of regulations without an FMP amendment, including the management of the limited access program, fishery impacts to habitat and bycatch (CDFW 2021).

The flexibility accorded by the FMP is in contrast to the legislative-commission decision making process that previously existed, which could not readily respond to situations requiring immediate actions. The HCR, for example, will allow the closure of the fishery once specific conditions are met rather than wait for the statutory closure date. The timeliness of the decision-making process has been improved by the adoption of the framework process described in the FMP (CDFW 2021).

Informal coordination of CDFW with ODFW and the availability of the Oregon Pink Shrimp Review, which in both its annual edition and a supplemental edition identified upcoming potential issues with eulachon in anticipation of its listing under ESA, helps identify need to take proactive action (cf. Hannah and Jones 2014; 2015a).

Frequent communication and coordination between CDFW and ODFW enforcement establish enforcement priorities in anticipation of likely areas needing enforcement attention, and adapt to in-season enforcement issues as they emerge (Farrell 2015).

Coordination and consultation between the state and federal processes, conducted through the PFMC process, promotes the consideration of the effects of pink shrimp fishery management decisions on other fisheries and ecosystem issues, for example the rebuilding of rockfish stocks and the protection of ESA listed species.

Decision-making processes outlined in the FMP allow the timely response to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner. They also take account of the wider implications of decisions.

The conditions of SG100 are met.

c	Use of precautionary approach			
	Guide post		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		**Yes**	
Rationale				

Decision processes employed by the California State Legislature (in establishing law and policy) and the CFGC (in implementing policy) exhibit a precautionary approach to pink shrimp management and a basis in best available scientific information. A precautionary approach based on ecosystem management is explicit in the MLMA (CDFW 2001). The regulations establishing maximum count per pound and closed seasons were implemented to minimize effort on small shrimp and prevent fishing on spawning aggregations (CFGC 8841). Adoption of the BRD requirement was a precautionary approach to minimize bycatch of rebuilding groundfish stocks. Further strengthening of the BRD specifications was a proactive and precautionary approach to minimizing all bycatch, including eulachon, recently listed as threatened under the ESA (CDFW

2015a; CFGC 2015b; CDFW 2001). The fleet's experimentation with LED lights on gear is part of the overall effort to minimize non-shrimp bycatch (Farrell 2015).

The FMP addresses the precautionary approach directly in Section 6.1 by noting that the effect of the HCR, LED requirement and catch weighing requirements is expected to be a more precautionary approach to management (CDFW 2021).

CDFW staff are in communication with ODFW staff and members of the Oregon fleet who are conducting research with respect to both the target species and P2 species and impacts. In this way the California pink shrimp fishery has access to the best available information, including new and emerging research results. The FMP includes plans for increased collaboration with Oregon and Washington in biological sampling and data analysis.

The SG80 is met.

	Accountability and transparency of management system and decision-making process			
d	Guide post	Some information on the fishery's performance and management action is generally available on request to stakeholders.	**Information on the fishery's performance and management action is available on request**, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders **provides comprehensive information on the fishery's performance and management actions** and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	**Yes**	**Yes**	**No**
Rationale				

There is a limited amount of formal reporting providing information on the fishery's performance and management actions.

Management actions are reported through CFGC meeting minutes and records of decisions that are available online (CFGC 2022).

CDFW enforcement officers report to CDFW on a daily basis through the Electronic Daily Activity Report (EDAR), although these reports cover all enforcement contacts and do not contain a separate code for pink shrimp. Enforcement reports are also submitted to CDFW through the Report Management System, which tracks arrest reports, evidence seized, field interviews, etc. CDFW enforcement reports quarterly to the CFGC at each commission meeting. The report is read by the Chief of Patrol. Marine-specific enforcement reports are read to the Commission's Marine Resources Committee (MRC) twice yearly. The MRC hears presentations and discussions on regulatory proposals in greater detail than is possible at Commission meetings (Kord 2022; Farrell 2015).

With regard to finfish bycatch, observer coverage and ETP protections, the PFMC newsletters describe actions taken at Council meetings, committee openings and meeting schedules, and upcoming issues (PFMC 2022). The Federal Register provides notice of all proposed federal actions (cf. Federal Register 2022). Formal reporting to stakeholders is in the form of records of CFGC meetings and decisions, enforcement

reports, and the series of information meetings and webinars described in 3.1.2b above (CGFC 2022). These are available online. The Pink Shrimp Enhanced Status Report (last updated 2019) provides some information on fishery performance and management, but it is not comprehensive or entirely current. For example the only indicators of fishery performance are area of catch (through 2013) and ex-vessel price (through 2016) (CDFW 2019).

The FMP describes processes to be used to evaluate the health of the stock and performance of management strategies on a periodic basis as part of the updating of the shrimp enhanced status report (ESR). However the frequency of this future updating is not specified. The FMP also describes monitoring actions to be taken through biological sampling and improved data sharing with Oregon and Washington. At present logbook data and overall fishery performance remain unanalysed.

In sum, although avenues of formal reporting on the fishery's performance and management actions do exist, they are not comprehensive.

The conditions of SG80 are met.

	Approach to disputes			
e	Guide post	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

At the time of the 2015 assessment the shrimp fishery had not been subjected to legal challenge (Kalvass 2015). Implementation by the CFGC of the MLPA provisions on closed fishing areas provides an example of the timely response to the management system to judicial decisions (CDFW 2012).

As another example, the process followed by the CDFW and CFGC for the controversial abalone recovery and management plan (ARMP) illustrates the ability of the management system to proactively avoid legal disputes. During the development of the ARMP, informal comments received through an advisory panel, workshops, letters, and the CDFW website were used to shape and revise the plan. A formal public review period included written and oral comments that were used to amend the plan prior to CFGC adoption. CDFW responded to all comments (Kalvass 2015).

The active engagement of CDFW enforcement personnel with shrimp fishers and processors represents proactive action to anticipate and avoid legal disputes, particularly surrounding inter-state differences in gear regulations. Whereas previously CDFW management maintained a low level of engagement with the shrimp fishery, the series of meetings and webinars held since 2017 has increased the degree of consultation and communication (CDFW 2021).

The adoption of the FMP includes a commitment by CDFW to continue to conduct outreach and education with stakeholders.

The conditions of SG100 are met.

References

CFGC 2015a; 2015b; CCR 11120-11132; CCR 6250-6270; Hannah and Jones 2014; Farrell 2015; CDFW 2001; CFGC 8841; CDF 2015a; 2015b; 2015c Farrell, 2015; Kalvass 2015; PFMC 2012d; Federal Register 2012; 2013; CDFW 2019; CDFW 2021; Kord 2022.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought** on the degree of certainty of continuing annual stakeholder meetings as well as the frequency of evaluating management performance, stock status and impacts of regulations. More specifics are needed on the nature and extent of the education and outreach programs about new requirements embedded in the FMP.

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**95**
Condition number (if relevant)	

PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guide post	Monitoring, control and surveillance **mechanisms** exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance **system** has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A **comprehensive** monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	**Yes**	**Yes**	**Yes**
Rationale				

The overall harvest strategy comprising seasons, maximum counts per pound, minimum mesh size and bycatch reduction devices is clear and enforceable. A comprehensive system of monitoring, control and surveillance for compliance and enforcement is in place, involving CDFW Enforcement, NMFS West Coast Groundfish Observer Program, and the US Coast Guard. The Groundfish Observer Program has a coverage target of approximately 15% of pink shrimp trips and monitors the biological parameters of the total catch (McVeigh 2015). The observer coverage rate for vessels landing pink shrimp in California is typically between 10-20% of all California annual landings and has averaged around 17% of all landings over the past decade (Rienecke 2022b).

CDFW enforcement officers conduct random dockside checks of compliance with regulations on count-per-pound and bycatch reduction device spacing (CDFW 2021). Until the adoption of the FMP in April 2022, CDFW enforcement performed count-per-pound checks on a random basis. (Kalvass 2015; Farrell 2015). Under the FMP the count-per-pound regulation will be enforced using the same sampling protocols used in Oregon and Washington (Rienecke 2022). Compliance with the count-per-pound regulation is reinforced by market preferences for larger shrimp. At-sea compliance with regulations (seasons, closed areas, licenses) is conducted by the US Coast Guard by vessel patrol. While fishing in the federal EEZ (3-200 miles offshore) vessels are also subject to federal rules and sanctions enforced by the US Coast Guard and the NMFS Office of Law Enforcement, such as the requirement (since 2008) that pink shrimp vessels be equipped with VMS (NMFS 2011a;b;c).

Fishery landings are monitored through state-issued fish tickets. Since 2019 all landings data have been entered directly by seafood buyers into an electronic database (E-Tix) managed by the Pacific States Marine Fisheries Commission (PSMFC) and accessible to CDFW staff (CDF 2021).

In 2018 CDFW, with the assistance of processors, reinitiated port sampling of shrimp. The goal is to incorporate sampling data with those of Oregon and Washington creating a coastwide data system. In addition, CDFW staff have renewed efforts to maintain a database of logbook data and to input backlogged data (CDFW 2021).

The system of enforcement monitoring and control is comprehensive and has demonstrated a consistent ability to enforce management regulations (Farrell 2015). The conditions of SG100 are met.

b	Sanctions			
	Guide post	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, **are consistently applied** and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and **demonstrably** provide effective deterrence.
	Met?	**Yes**	**Yes**	**No**
Rationale				

Sanctions for non-compliance exist, defined in law and enforced through at-sea and dockside monitoring. CDFW enforcement officers issue tickets for non-compliance. Violations of commercial fishing regulations are penalized by fines or revocation of licenses (CDFW 2015a; 2015e).

CDFW enforcement provides information on compliance and enforcement to the CDFW and CFGC through daily, quarterly and semi-annual reports. Effectiveness of sanctions is evidenced by the high rate of compliance during years when landings were reported in California. Good relationships with processors and the fleet have created a climate promoting informing enforcement of potential compliance issues. Season openings, BRD specifications, and count-per-pound are all fully enforceable regulations (Kord 2022; Rienecke 2022b; CDFW 2021).

Evidence exists that fishers comply with the management system. However, given the monitoring difficulties posed by differences in regulations affecting Oregon and Washington-licensed vessels compared to California vessels, the standard of sanctions demonstrably providing effective deterrence cannot be met.

The conditions of SG80 are met, the SG100 is not met.

c	Compliance			
	Guide post	Fishers are **generally thought** to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	**Some evidence exists** to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a **high degree of confidence** that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
	Met?	**Yes**	**Yes**	**No**
Rationale				

As indicated in 3.2.3.b above, Season openings, BRD specifications, and count-per-pound are all fully enforceable regulations. State waters previously open to shrimp trawling were closed in 2008; shrimp trawling is now only allowed in federal waters (CDFW 2021).

However, discussion with enforcement during the 2015 site review identified a source of complication for enforcement. California regulations regarding minimum mesh size and excluder grate spacing (2” in CA; ¾” in OR and WA) are slightly different from those in Oregon and Washington, requiring additional monitoring

of California-licensed and Oregon-licensed vessels delivering into California ports. As a consequence of these differences in regulations, enforcement resources may not always be sufficient to catch violations. Reconciling the state differences in these regulations was identified as a regulatory change that would help enforcement make more effective use of limited resources (Farrell 2015).

Otherwise, compliance is generally good, with good collaboration across enforcement agencies, control rules that are clear and enforceable and a coordinated monitoring and enforcement infrastructure in states where landings were reported. The issue of different state regulations does prevent the standard of a high degree of confidence in compliance in these areas from being met.

Evidence exists that fishers comply with the management system, however given the monitoring difficulties posed by differences in regulations affecting Oregon and Washington-licensed vessels compared to California vessels, the standard of a high degree of confidence in compliance cannot be met. The SG80 is met.

	Systematic non-compliance			
d	Guide post		There is no evidence of systematic non-compliance.	
	Met?		**Yes**	
Rationale				

As described in section b, there is no evidence of systematic non-compliance, however, different regulations affecting California and Oregon vessels pose monitoring complications for enforcement, as described in section c. The SG80 is met,

References

McVeigh 2015; Farrell 2015; NMFS 2011a; 2011b; 2011c; Kalvas, 2015; CDFW 2015a; 2015e; CDFW 2021; Rienecke 2022b.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought** on the operation of the port sampling program and whether data are now regularly combined with those of OR and WA. More specific information on the status of logbook data entry and analysis is needed. Updated information on enforcement resources, any efforts to standardize mesh size regulations across states and the degree of compliance is also needed.

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	**85**
Condition number (if relevant)	

PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4		**There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives There is effective and timely review of the fishery-specific management system**		
Scoring Issue		SG 60	SG 80	SG 100
a	Evaluation coverage			
	Guide post	There are mechanisms in place to evaluate **some** parts of the fishery-specific management system.	There are mechanisms in place to evaluate **key** parts of the fishery-specific management system.	There are mechanisms in place to evaluate **all** parts of the fishery-specific management system.
	Met?	**Yes**	**Yes**	**No**
Rationale				

The CFGC evaluates shrimp fishery management as issues arise (Kalvass 2015).

The fishery has in place mechanisms to evaluate key aspects of the management system. Population indicators and bycatch are monitored through at-sea sampling through the WC GOP. Amount of landed catch is comprehensively monitored through dockside sampling and fish tickets. Performance of BRDs – in terms of effectiveness of bycatch reduction as well as impact on fishing operations – is monitored through onboard observer reports and stakeholder feedback.

The FMP includes periodic review of the performance of the new target and limit reference points (CDFW 2021). The FMP also adopts methods similar to those used in OR and WA of accurately measuring the net weight of shrimp by accounting for ice weight.

The FMP states that CDFW will monitor the performance of the new management framework by analyzing catch, fleet participation, size, age and sex information. Data correction procedures will be evaluated.

Before 2018 regular dockside biological monitoring was not conducted by CDFW (CDFW 2021). In 2018 CDFW, with the assistance of processors, reinitiated port sampling of shrimp. The goal is to incorporate sampling data with those of Oregon and Washington creating a coastwide data system.

Basic fishery performance indicators are reported in the pink shrimp ESR (landings, total value, number of vessels, number of trips, CPUE, port distribution of landings) but the data series are not up to date (CDFW 2019).

Mandatory logbooks provide a database to support analysis of fishing location and effort, but resource constraints have prevented the logbook database from being kept up to date. By 2015, electronic files of logbook data were partially complete (Kalvass 2015). CDFW staff have now renewed efforts to maintain a database of logbook data and to input backlogged data (CDFW 2021; Rienecke 2022).

However, outdated information in the ESR, a lack of information about the status of California data in the tri-state system and the timeframe for the full entry of logbook data means that although there are mechanisms in place to evaluate key parts of the management system, there are not mechanisms in place to evaluate all parts of the fishery management system.

The SG80 is met, the SG100 is not met.

b	Internal and/or external review	

	Guide post	The fishery-specific management system is subject to **occasional internal** review.	The fishery-specific management system is subject to **regular internal** and **occasional external** review.	The fishery-specific management system is subject to **regular internal and external** review.
	Met?	**Yes**	**Yes**	**No**
Rationale				

To the extent that the ODFW Annual Pink Shrimp Review identifies issues and performance indicators of relevance to the California shrimp fishery, it contains post-season summaries and is available online to CDFW and to the California shrimp fishery (cf. Hannah and Jones 2014; 2015a). CDFW staff also discusses compliance and enforcement issues with CDFW enforcement (Farrell 2015; Kalvass 2015; Rienecke 2022; Kord 2022).

In addition, throughout the season CDFW enforcement and the WC GOP is involved in the continual monitoring of control rules, catch quantity, quality and size composition of catch, and bycatch.

The FMP describes a procedure for review and amendment of the plan, to be considered during the periodic updating of the pink shrimp Enhanced Status Report. Catch, catch per trip and count per pound will be used as indicators of the health of the stock and performance of management strategies. If current management strategies are found to be insufficient for resource protection or unnecessarily restricting fishing opportunities, strategies will be modified through rulemaking or FMP amendment. Since adoption of the FMP the Department has authority to implement a number of regulations without an FMP amendment (CDFW 2021).

In this manner the management system is now subject to regular internal review and limited external review. The FMP does not address the issue of external reviews.

The SG80 is met.

References

Farrell 2015; Kalvass 2015; Hannah and Jones 2014; 2015a; CDFW 2015f; Frimodig et al. 2007; Frimodig 2008; CDFW 2021; RIenecke 2022; Kord 2022.

Draft scoring range and information gap indicator added at Announcement Comment Draft Report stage

Draft scoring range	**≥80**
Information gap indicator	**More information sought** on the nature and frequency of evaluations of the new management framework and data correction procedures. Information is also be needed on the existence or plans for external reviews. More specific information on the status of logbook data entry and analysis is sought. Information is needed on the status of California biological sampling data within the tri-state system. Updated information on enforcement resources and the degree of compliance is also needed.

Overall Performance Indicator scores added from Client and Peer Review Draft Report stage

Overall Performance Indicator score	80
Condition number (if relevant)	

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9 Appendices

9.1 Assessment information

9.1.1 Previous assessments

The Oregon component of this fishery was originally certified in 2007 (Tavel 2007) and recertified in 2013 (Intertek Moody Marine 2013). the Washington component was added via a scope extension in 2015, wherein the California component was also assessed but failed to achieve certification (MRAG Americas 2015). Both the Oregon and Washington components of the fishery were recertified in 2018 (MRAG Americas 2018).

There were no open conditions at the time of the previous full reassessment concluding in 2018 (MRAG Americas 2018). There had been one open condition for the Washington component of the fishery in the certification cycle prior to the 2017/18 recertification, to do with short- and long-term objectives. This was resolved with the implementation of the shrimp FMP for Washington.

Table 10. Summary of previous assessment conditions. There were no open conditions at the time of the previous full reassessment in 2017. There were conditions previous to this from earlier assessments.

Condition	PI(s)	Year closed	Justification

Insert condition number and summary	Insert PI	State year of closure, if applicable.	
1	3.2.1	2017	Explicit short and long term objectives were available for the Washington component of the fishery when their shrimp FMP was implemented in 2017.

9.1.2 Small-scale fisheries

To help identify small-scale fisheries in the MSC program, the CAB should complete the table below for each Unit of Assessment (UoA). For situations where it is difficult to determine exact percentages, the CAB may use approximations, e.g. to the nearest 10%.

Small-scale fisheries

Unit of Assessment (UoA)	Percentage of vessels with length <15m	Percentage of fishing activity completed within 12 nautical miles of shore
WA	0	16.4%
OR	0	39.3%
CA	0	80.6%

9.2 Evaluation processes and techniques

9.2.1 Site visits

The reassessment audit process as defined in the MSC Fishery Certification Requirements version 2.2 was followed in this assessment. The site visit for the reassessment was combined with the site visit for the 4th surveillance audit for the WA and OR fisheries.

Information supplied by the clients and management agencies was reviewed by the assessment team ahead of the onsite meeting, and discussions with the clients and management agencies centered on the content within the provided documentation. In cases where relevant documentation was not provided in advance of the meeting, it was requested by the assessment team and subsequently supplied during, or shortly after the meeting.

Thirty days prior to the audit site visit, all stakeholders from the full assessment were informed of the visit and the opportunity to provide information to the auditors in advance of, or during, the site visit.

List of stakeholders contacted:

Name	Organization
Julia Coates	CA Dept. of Fish and Wildlife
Jerry Kashiwada	CA Dept. of Fish and Wildlife
Tom Mason	CA Dept. of Fish and Wildlife
Anthony Shiao	CA Dept. of Fish and Wildlife
Steven Rienecke	CA Dept. of Fish and Wildlife
Rick Harris	Pacific Seafood
Lorna Wargo	WA Dept. of Fish and Wildlife
Michel Culver	WA Dept. of Fish and Wildlife
Dan Chadwick	WA Dept. of Fish and Wildlife
Zachary Forster	WA Dept. of Fish and Wildlife
Pierre Marchand	Ilwaco Fish
Rocky Caldero	Safe Coast Seafood
Greg Shaughnessy	Ocean Gold Seafoods, Inc.
Bill Weidman	Pacific Seafood
Seth Atkinson	National Resources Defense Council
Ben Enticknap	Oceana
Greg Helms	Ocean Conservancy
Shems Jud	Environmental Defense Fund
Bob Sallinger	Portland Audubon
Aimee David	Monteray Bay Aquarium
Alison Cross	WWF - US
Steve Marx	Pew Charitable Trusts
Caren Braby	OR Dept. of Fish and Wildlife
Heather VanMeter	Oregon State Patrol
Ted Gibson	Lady Kaye
Corey Rock	F/V Last Dance
Scott Groth	OR Dept. of Fish and Wildlife
Yelena Nowak	Oregon Trawl Commission
Charles Kirschbaum	Pacific Seafood
Jon Gonzalez	Pacific Seafood
Tom Seaman	Undercurrent News
Peer Review College	MSC

We received no requests from outside stakeholders to take part in meetings or provide information remotely.

The audit visit was held remotely due to COVID-19 travel restrictions, in conjunction with the site visit for the 4th annual surveillance audit of these fisheries the week of April 11th, 2022.

The following participants were in attendence:

Name	Affiliation
Amanda Stern-Pirlot	MRAG Americas, Assessment team
Susan Hanna	Oregon State University, Assessment team
Tom Jagielo	TJC, Assessment team
Yelena Nowak	Oregon Trawl Commission, Client
Charles Kirschbaum	Pacific Seafood Group, Client
Jon Gonzalez	Pacific Seafood Group, Client
Scott Groth	Oregon Department of Fish and Wildlife (ODFW)
Ryan Howell	Oregon State Police
Lorna Wargo	Washington Department of Fish and Wildlife (WDFW)
Zach Forster	WDFW
Sgt. Todd Dieaman	WDFW Enforcement Division
Tom Mason	California Department of Fish and Wildlife (CDFW)
Jerry Kashiwada	CDFW
Antony Shiao	CDFW
Steven Riencke	CDFW
Sonke Mastrup	CDFW
Erin Murray	Marine Stewardship Council (observer)

The table below summarizes the agenda for the meeting, held on April 14th, 2022 via video conference. Unless otherwise specified, the Assessment Team comprises Amanda Stern-Pirlot, Susan Hanna and Tom Jagielo,

Date/Time	Subject	Attendees
April 14, 10:00am	Opening meeting with clients	Yelena, Charlie, Jon, Assessment Team, Erin from MSC (observer)
10:30am	ODFW	Scott, any others from ODFW that Scott invites, Assessment Team, any who wish to attend from WDFW and CDFW, Erin from MSC (observer)
11:30am	WDFW	Lorna, any others from WDFW that Lorna invites, Assessment team, any who wish to attend from ODFW and CDFW, Erin from MSC (observer)
12:30pm	Lunch	
1:30pm	CDFW	Tom, Anthony, Steven and any others invited from CDFW, Assessment team, any who wish to attend from ODFW and WDFW, Erin from MSC (observer)
3:30pm	Assessment team pre-closing meeting	Assessment team, Erin from MSC (observer)
3:45pm	Closing meeting with clients	Yelena, Charlie, Jon, Assessment Team, Erin from MSC (observer)
4:45 pm	End Site Visit	

9.2.2 Stakeholder participation

See above for remote site visit attendees. The list of stakeholders for this fishery were contacted directly via email 30 days before the site visit, and no further stakeholders participated or submitted comments.

9.2.3 Evaluation techniques

MRAG Americas sent a direct email to all stakeholders on our stakeholder list notifying of the reassessment with links to the ACDR and instructions on how to get involved with the assessment. MSC posted the announcement on its US West Coast Pink Shrimp track-a-fishery page, as well as sent it by email in their Fishery Announcements newsletter to all registered recipients. At this time, MRAG Americas also announced the assessment site visit dates and location, as well as the assessment team. This was done according to the process requirements as laid out in MSC's Fisheries Certification Requirements v2.2. The site visit for this assessment was held at the same time as the site visit for the 4th surveillance audit for these fisheries, and the announcements for both went to stakeholders together. Together, these media presented the announcement to a wide audience representing industry, agencies, and other stakeholders.

The assessment team and the clients set up meetings with Oregon, Washington and California fishery management and science personnel, and industry and harvest-sector representatives relevant to the fishery assessment.

In the Fisheries Standard v2.01 default assessment tree used for this assessment, the MSC has 28 'performance indicators', six in Principle 1, 15 in Principle 2, and seven in Principle 3. The performance indicators are grouped in each principle by 'component.' Principle 1 has two components, Principle 2 has five, and Principle 3 has two. Each performance indicator consists of one or more 'scoring issues;' a scoring issue is a specific topic for evaluation. 'Scoring Guideposts' define the requirements for meeting each scoring issue at the 60 (conditional pass), 80 (full pass), and 100 (state of the art) levels.

Note that some scoring issue may not have a scoring guidepost at each of the 60, 80, and 100 levels; in the case of the example above, scoring issue (b) does not have a scoring issue at the SG60 level. The scoring issues and scoring guideposts are cumulative; this means that a performance indicator is scored first at the SG60 levels. If not all of the SG scoring issues meet the 60 requirements, the fishery fails and no further scoring occurs. If all of the SG60 scoring issues are met, the fishery meets the 60 level, and the scoring moves to SG80 scoring issues. If no scoring issues meet the requirements at the SG80 level, the fishery receives a score of 60. As the fishery meets increasing numbers of SG80 scoring issues, the score increases above 60 in proportion to the number of scoring issues met; performance indicator scoring occurs at 5-point intervals. If the fishery meets half the scoring issues at the 80 level, the performance indicator would score 70; if it meets a quarter, then it would score 65; and it would score 75 by meeting three-quarters of the scoring issues. If the fishery meets all of the SG80 scoring issues, the scoring moves to the SG100 level. Scoring at the SG100 level follows the same pattern as for SG80.

Principle scores result from averaging the scores within each component, and then from averaging the component scores within each Principle. If a Principle averages less than 80, the fishery fails.

Scoring for this fishery followed a consensus process in which the assessment team discussed the information available for evaluating performance indicators to develop a broad opinion of performance of the fishery against each performance indicator. Review of the relevant sections by all team members assures that the assessment team is aware of the issues for each performance indicator. Subsequently, the assessment team member responsible for each principle, fills in the scoring table and provides a provisional score. The assessment team members review the rationales and scores, and recommended modifications as necessary, including possible changes in scores.

Performance Indicator scores are entered into MSC's Fishery Assessment Scoring Worksheet to arrive at Principle-level scores.

9.3 Peer Review reports

This report was reviewed by two qualified peer reviewers selected from the MSC's Peer Reviewer College. The general and specific comments from each peer reviewer, together with the responses of the assessment team, are given in the following tables.

Peer Reviewer A general comments and team responses

Question	Yes/No	Peer Reviewer Justification (as given at initial Peer Review stage). Peer Reviewers should provide brief explanations for their 'Yes' or 'No' answers in this table, summarising the detailed comments made in the PI and RBF tables.	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)
Is the scoring of the fishery consistent with the MSC standard, and clearly based on the evidence presented in the assessment report?	Yes	The scoring is consistent with the MSC standard and clearly based on extensive evidence and analysis in the report.	Thank you. No response required.
Are the condition(s) raised appropriately written to achieve the SG80 outcome within the specified timeframe? [Reference: FCP v2.2, 7.18.1 and sub-clauses]	NA	Conditions are not required.	Thank you. No response required.
Enhanced fisheries only: Does the report clearly evaluate any additional impacts that might arise from enhancement activities?	NA	Not enhanced.	Thank you. No response required.
Optional: General Comments on the Peer Review Draft Report (including comments on the adequacy of the background information if necessary). Add extra rows if needed below, including the codes in Columns A-C.		The report is comprehensive and presents an extensive background of information in support of Principles 1-3. This is the 3rd re-assessment of the US westcoast shrimp fishery and the fact that there are no longer any conditions atests to maturity of the stock assessment and management outcomes and processes.	Thank you. No response required.

Peer Reviewer A specific PI comments and team responses

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
Performance Indicator (PI)	Has all available relevant information been used to score this PI?	Does the information and/or rationale used to score this PI support the given score?	Will the condition(s) raised improve the fishery's performance to the SG80 level?	Peer reviewers (PRs) should provide support for their answers in the left three columns by referring to specific scoring issues and/or scoring elements, and any relevant documentation as appropriate. Additional rows should be inserted for any PIs where two or more discrete comments are raised, e.g. for different scoring issues, allowing CABs to give a different answer in each case. Paragraph breaks may also be made within cells using the Alt-return key combination. Detailed justifications are only required where answers given are one of the 'No' options. In other (Yes) cases, either confirm 'scoring agreed' or identify any places where weak rationales could be strengthened (without any implications for the scores).	CABs should summarise their response to the Peer Reviewer comments in the CAB Response Code column and provide justification for their response in this column. Where multiple comments are raised by Peer Reviewers with more than one row for a single PI, the CAB response should relate to each of the specific issues raised in each row. CAB responses should include details of where different changes have been made in the report (which section #, table etc).	See codes page for response options
1.1.1	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
1.1.2	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
1.2.1	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
1.2.2	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
1.2.3	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
1.2.4	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
2.1.1	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)

2.1.2	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
2.1.3	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
2.2.1	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
2.2.2	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
2.2.3	Yes	Yes	NA	Scoring agreed. But, the reported observer coverage of roughly 14% is low compared to other US groundfish fisheries and less that the 20% target. Granted the bycatch is low, but perhaps it would be helpful to encourage, by way of a non-binding recommendation, an increase in coverage to improve the chances of detecting a change in the risk of P2 species over time.	Thank you for noticing this. We reviewed the sources of information again regarding observer coverage targets and rates in the pink shrimp fishery and reconciled some discrepancies. By and large, the goal coverage rate for the pink shrimp fleet is 15%, which has been achieved on average in recent years. There was a specific project running in Washington for a couple of years in 2011 and 2012 with the coverage goal of 20% which was exceeded in 2011 but missed in 2012 due to funding shortfalls. This is all more comprehensively described in the report now and corrected in the scoring rationales.	Accepted (no score change, additional evidence presented)
2.3.1	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
2.3.2	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
2.3.3	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
2.4.1	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
2.4.2	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)

2.4.3	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
2.5.1	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
2.5.2	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
2.5.3	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
3.1.1	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
3.1.2	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
3.1.3	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
3.2.1	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
3.2.2	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)
3.2.3	Yes	Yes	NA	Scoring agreed. It would be helpful to know the basis for the 20% observer coverage target?	Thank you for noticing this. We reviewed the sources of information again regarding observer coverage targets and rates in the pink shrimp fishery, and reconciled some discrepancies. By and large, the goal coverage rate for the pink shrimp fleet is 15%, which has been achieved on average in recent years. There was a specific project running in Washington for a couple of years in 2011 and 2012 with the coverage goal of 20% which was exceeded in 2011 but missed in 2012 due to funding shortfalls. This is all more comprehensively described in the report now and corrected in the scoring rationales.	Accepted (no score change, change to rationale)

3.2.4	Yes	Yes	NA	Scoring agreed	Thank you. No response required.	NA (No response needed)

Peer Reviewer B general comments and team responses

Question	Yes/No	Peer Reviewer Justification (as given at initial Peer Review stage). Peer Reviewers should provide brief explanations for their 'Yes' or 'No' answers in this table, summarising the detailed comments made in the PI and RBF tables.	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)

Is the scoring of the fishery consistent with the MSC standard, and clearly based on the evidence presented in the assessment report?	Yes	The fishery has been scored appropriately and consistent with the MSC Standard based on the evidence presented in the assessment report. I agree with the assessment team's conclusion that the fishery should be recertified. The report covers two UoAs for Washington and Oregon that were previously certified with no conditions and therefore it is not surprising that the fishery scores highly for all three Principles for these UoAs. A third UoA for California has now been added at this recertification stage, with the only significant differences between the UoAs relating to Principle 3. Management and governance of the fishery in California has clearly improved in recent years, but not to the point at which the California UoA scores as highly as the Washington and Oregon UoAs. There are a few PIs for which I have questioned the scores, but none of these queries have implications for the overall conclusion that the fishery should be recertified. Recruitment in the pink shrimp fishery is influenced strongly by environmental conditions and is not demonstrably related to spawning stock biomass and so assessing the fishery against the MSC Standard is less straightforward than for fisheries where stock status is assessed against MSY-based reference points. The assessment team have nevertheless produced clear and well-argued rationales for the scoring of the various Principle 1 Performance Indicators. For Principle 2, there is minimal bycatch, minor potential impacts on habitat due to the fast recovery of habitats following passage of the light weight shrimp trawl, no VMEs have been defined in the fishing area and a robust Fishery Ecosystem Plan is in place for the California Current LME, and therefore the overall Principle 2 score is high. For Principle 3, there is strong management and governance in all States reflected in the high overall P3 scores. I have two minor comments on the presentation of the overall P3 parts of the report. Firstly It would be helpful if the background information, scores and rationales for the three States could be presented in order of the designated UoAs - currently UoAs 1, 2 and 3 are for Washington, Oregon and California respectively, but the report does not evaluate them in that order. Secondly I found the convention of presenting an overall summary and score for each PI following the scoring for the final Scoring Issue to be a little confusing, especially if the overall score does not match that of the final Scoring Issue, e.g. for PI 3.2.2 for California. This presentation of the overall score for the PI is redundant as the overall score is given further down the scoring boxes.	Thank you. Regarding the order of the states, you are correct that the UoAs are not presented in the same order in the different parts of the report. This has been amended so in all instances they are presented from north to south--WA then OR then CA. Responses to specific points raised on PI evidence or scores are given on the PI tab.

Are the condition(s) raised appropriately written to achieve the SG80 outcome within the specified timeframe? [Reference: FCP v2.2, 7.18.1 and sub-clauses]	NA	No conditions were raised during this reassessment of the Washington, Oregon and California components of the US West Coast Pink Shrimp Trawl Fishery.	No response required.
Is the client action plan clear and sufficient to close the conditions raised? [Reference FCR v2.0, 7.11.2-7.11.3 and sub-clauses]	NA	NA	
Enhanced fisheries only: Does the report clearly evaluate any additional impacts that might arise from enhancement activities?	NA	The US West Coast pink shrimp trawl fishery is not an enhanced fishery.	No response required.
Optional: General Comments on the Peer Review Draft Report (including comments on the adequacy of the background information if necessary). Add extra rows if needed below, including the codes in Columns A-C.	NA	The report is very clearly written and comprehensible to readers. The report is particularly thorough in relation to the management structure and governance in the three different States. There are a large number of acronyms because there are three different State management regimes and a number of acronyms in the P2 scoring rationales are not specified, so the inclusion of a Glossary would be helpful. The report is copiously referenced, but for the Principle 2 sections, there are a number of references cited which are not included in the reference list. These include important references relating to seabird bycatches, e.g. Jannot et al., 2021. For non-shrimp fishery biologists, an explanation of the term 'Single Rig Equivalents (SRE)' would be helpful in understanding how CPUE data are standardized. In section 6.2.1, some of the landings, effort and CPUE figures are difficult to interpret as the variations in shadings are not clear. These may be simple copies from stock assessment reports and therefore cannot be changed by the assessment team. In Table 6, the catches for California in 2021 are given as < 0.0 million lbs ! In relation to traceability, the report notes that there are low levels of catches of the target species in the adjoining area of British Columbia. Is there any possibility of these uncertified shrimps being landed in WA ports? Harmonisation - the assessment team concluded that there was no requirement to harmonise the scoring of this fishery with any other MSC-certified fisheries, but no	Thank you for these helpful comments. We have added a glossary of abbreviations, and checked through the references to be sure they all made it into the references list (which is organized by Principle). To clarify the meaning of Single Rig Equivalents (SRE), an explanation was added to the background text in the report, and a citation is given for the reader to find details of the standardization process, if desired. To improve the legibility of figures in section 6.2.1 of the report, shadings were changed where needed, to aid in interpretation. Regarding Table 6, California reported landings were only 15 lbs in 2021. The entry in Table 6 for California landings was modified to "< 100 lbs".

		explanation for this conclusion was provided. While there are no other pink shrimp fisheries certified in the region and therefore there is no requirement to harmonise P1, the assessment team states in the report that many of the primary species caught as bycatch in the shrimp fishery were MSC-certified (presumably under the U.S. West Coast Limited Entry Groundfish Trawl Fishery) so there may be a need to harmonise some of the P2 scores with other trawl fisheries, but certainly there may be some harmonisation required on P3 scores.	Regarding harmonization--point well taken, we have added some additional explanation of our conclusion that no harmonization is needed for this fishery.

Peer Reviewer B specific PI comments and team responses

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Res-ponse Code
Perfor-mance Indica-tor (PI)	Has all available relevant information been used to score this PI?	Does the information and/or rationale used to score this PI support the given score?	Will the condition(s) raised improve the fishery's performance to the SG80 level?	Peer reviewers (PRs) should provide support for their answers in the left three columns by referring to specific scoring issues and/or scoring elements, and any relevant documentation as appropriate. Additional rows should be inserted for any PIs where two or more discrete comments are raised, e.g. for different scoring issues, allowing CABs to give a different answer in each case. Paragraph breaks may also be made within cells using the Alt-return key combination. Detailed justifications are only required where answers given are one of the 'No' options. In other (Yes) cases, either confirm 'scoring agreed' or identify any places where weak rationales could be strengthened (without any implications for the scores).	CABs should summarise their response to the Peer Reviewer comments in the CAB Response Code column and provide justification for their response in this column. Where multiple comments are raised by Peer Reviewers with more than one row for a single PI, the CAB response should relate to each of the specific issues raised in each row. CAB responses should include details of where different changes have been made in the report (which section #, table etc).	See codes page for response options
1.1.1	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)

1.1.2	NA (PI not scored)	NA (PI not scored)	NA		No response required.	NA (No response needed)
1.2.1	No (change to rationale expected, not to scoring)	Yes	NA	SIa. The rationale could be strengthened by mentioning various elements of the harvest strategy that are in place, e.g. minimum mesh size and counts per pound to minimise unwanted catches of small shrimps and the requirement to complete log books, and also in relation to SG100 there is no mention of the FMPs developed for each State.	Thank you for this comment. The rationale has been changed to add clarity to the harvest strategy design description, with respect to mesh size, counts per pound, the logbook requirement, and mention of FMPs for each state.	Accepted (no score change, change to rationale)
1.2.1	No (change to rationale expected, not to scoring)	Yes	NA	SIb. Clarification is required as to whether the season-shortening measure is implemented in California as well as Oregon and Washington - the background information and later PI rationales appear to suggest that it is in place in California.	Thank you for this comment. Clarification has been added to the rationale, to make it clear that this provision exists coastwide (in all three states).	Accepted (no score change, change to rationale)
1.2.2	Yes	Yes	NA	Scoring and rationale agreed.	No response required.	NA (No response needed)

1.2.3	Yes	No (scoring implications unknown)	NA	Scoring and rationale agreed for Washington and Oregon, but it is not clear that data and information is as comprehensive under California state management as it is in Washington and Oregon.	Thank you for pointing out that more clarity was needed for California with respect to this PI. It is true that the richest historical pink shrimp data sets exist for Oregon and Washington, where fishery effort has been greatest historically. Under the provisions of the new California pink shrimp FMP (CDFW 2022), data collection has improved for this portion of the UoA. The assessment team notes that the data presently collected on a routine basis for all three states collectively provides a comprehensive body of information for management of the pink shrimp stock in the UoA, coastwide. Additional references to California data and information have been added to the rationale.	Accepted (no score change, change to rationale)
1.2.4	Yes	Yes	NA	SIb. While I do not disagree with the rationale and scoring for this SI, I think that somewhere in the report some justification should be provided for using catch per trip as the metric for the proxy target and limit reference points. This seems to be a rather crude estimate of CPUE given that trip duration may be variable etc. - catch per hour fished might be more appropriate. This is also surprising given that CPUE data in units of lbs/SRE hour are available for the fisheries.	This is a good observation about the relative utility of CPUE in catch per trip vs lb/SRE hour. It is true that CPUE data in units of lbs/SRE hour are a more refined measure of CPUE than the measure of catch per trip, used as the metric for the CPUE proxy HCR. It is for that reason that a time series of lbs/SRE hour is maintained and tracked to monitor pink shrimp relative abundance across years, instead of relying solely on catch per trip for this purpose. For real time harvest management, managers chose "average June catch per trip" as a practical metric for the CPUE HCR; this measure of CPUE is quicker to obtain in-season (derived directly from landings receipt data) and does not require the additional processing time needed to derive lbs/SRE hour (derived from information on logbooks and landings receipts). Also, the catch per trip HCR is but one of the proxy indicators. The Sea	Not accepted (no change)

					Level Height (SLH) proxy indicator is probably the most sensitive and relevant index to track important changes (in ocean conditions) driving pink shrimp stock status.	
2.1.1	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
2.1.2	No (change to rationale expected, not to scoring)	Yes	NA	SIa. The rationale focusses on the comprehensive strategy in place for managing the primary species within the Pacific Groundfish FMP but should also include measures implemented specifically within the UoA (the pink shrimp fishery) to minimise bycatches of primary species e.g. BRDs etc.	Thanks for this comment. The primary purpose for the BRDs and LED lights, etc (specific bycatch reduction strategies for the fishery) are to reduce catches of Eulachon, which is an ETP species, and this is thus discussed and considered in the ETP component (PI 2.3.2 rather than 2.1.2 or 2.2.2). However, an unexpected consequence of the LED light measure is a reduction in bycatches of juvenile rockfishes, and since rockfishes are mostly minor primary spp, it would be relevant to mention that here. So this has been added to the rationale under 2.1.2, but not 2.2.2.	Accepted (no score change, additional evidence presented)

2.1.3	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
2.2.1	Yes	No (non-material score reduction expected)	NA	SIb. The assessment team concluded that the SG100 was not met for minor secondary species, but then state that the score for minor secondary species is 90. If the SG100 is not met, then I would assume that the SI scores 80 by default, not 90. The overall PI score would then be 80. Alternatively, it might be more appropriate to score minor secondary species using the RBF as they are not managed with biologically-based reference points. Of course, the assessment team could then invoke FCP v2.2 PF4.1.4 - 'The team may elect to conduct a PSA on “main” species only when evaluating PI 2.1.1 or 2.2.1', and so there would then be no requirement to score these minor secondary species.	Thank you for noticing this error. The score for minor secondary species has been revised to 80, and the overall PI score likewise reduced to 80.	Accepted (non-material score reduction)
2.2.2	No (change to rationale expected, not to scoring)	Yes	NA	SIa. As for primary species, the rationale focusses on the strategy in place for managing these species within the Pacific Groundfish FMP but should also include measures implemented specifically within the UoA (the pink shrimp fishery) to minimise bycatches of secondary species e.g. BRDs etc.	See comment under 2.1.2. above. Whereas your point is well taken in relation to primary spp., it doesn’t really apply to secondary spp., thus no additional rationale has been added here as it was above.	Not accepted (no change)

2.2.3	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
2.3.1	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
2.3.2	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
2.3.3	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
2.4.1	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
2.4.2	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
2.4.3	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
2.5.1	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
2.5.2	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
2.5.3	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
3.1.1	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)

3.1.1	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
3.1.1	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
3.1.2	Yes	Yes	NA	Scoring and rationale agreed.	No response required.	NA (No response needed)
3.1.2	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
3.1.2	Yes	No (non-material score reduction expected)	NA	SIa. There does not appear to be sufficient evidence to conclude that at present the functions, roles and responsibilities are well understood for all areas of responsibility and interaction and therefore the SG100 is not met. The rationale seems to suggest a score of 80 is more appropriate.	This is a good observation, thank you. The text of 3.1.2 SIa for California has been edited to state that while key areas of responsibility are well understood, given the newness of the FPM it cannot yet be demonstrated that all areas of responsibility are understood. The score has been changed to 80.	Accepted (non-material score reduction)
3.1.3	Yes	No (non-material score reduction expected)	NA	SIa. The rationale does not explain sufficiently clearly how the objectives are consistent with the precautionary approach. Further evidence is required to justify a score of 100.	Thank you for the comment. Further evidence of the objectives' consistency with the precautionary approach has been added to 3.1.3 SI a to justify the score of 100.	Accepted (no score change, additional evidence presented)
3.1.3	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)

3.1.3	Yes	No (non-material score reduction expected)	NA	SIa. The rationale does not explain sufficiently clearly how the objectives are consistent with the precautionary approach. Further evidence is required to justify a score of 100.	Thank you for the comment. Further evidence of the objectives' consistency with the precautionary approach has been added to 3.1.3 SI a to justify the score of 100.	Accepted (no score change, additional evidence presented)
3.2.1	Yes	No (non-material score reduction expected)	NA	SIa. To justify a score of 100 for this SI, the rationale needs to state explicitly the short and long term objectives for the fishery and therefore how they can be considered as well-defined and measurable.	Thank you. Short-term and long-term objectives for the fishery have been added to 3.2.1 Sia.	Accepted (no score change, additional evidence presented)
3.2.1	Yes	No (non-material score reduction expected)	NA	SIa. To justify a score of 100 for this SI, the rationale needs to state explicitly the short and long term objectives for the fishery and therefore how they can be considered as well-defined and measurable.	Thank you. Short-term and long-term objectives for the fishery have been added to 3.2.1 Sia.	Accepted (no score change, additional evidence presented)
3.2.1	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
3.2.2	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
3.2.2	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
3.2.2	Yes	Yes	NA	Scoring and rationale agreed.	No response required.	NA (No response needed)

3.2.3	Yes	No (non-material score reduction expected)	NA	SIb. Additional information is required to justify the conclusion that sanctions demonstrably provide effective deterrence.	Thank you for the comment. Additional summary text has been added to clarify the conclusion of sanctions providing effective deterrence.	Accepted (no score change, change to rationale)
3.2.3	Yes	No (non-material score reduction expected)	NA	SIb. Additional information is required to justify the conclusion that sanctions demonstrably provide effective deterrence.	Thank you for the comment. Additional summary text has been added to clarify the conclusion of sanctions providing effective deterrence.	Accepted (no score change, change to rationale)
3.2.3	Yes	No (material score reduction expected to <80)	NA	SIb. Additional information is required to justify the conclusion that sanctions demonstrably provide effective deterrence.	Thank you for the comment. Additional information was added to Sib describing monitoring difficulties posed by differences in CA, OR and WA regulations that prevent the demonstrable effectiveness of sanctions. The score for Sib was lowered to 80.	Accepted (no score change, additional evidence presented)
3.2.4	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
3.2.4	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)
3.2.4	Yes	Yes	NA	Scoring and rationale agreed	No response required.	NA (No response needed)

Table 11. PR B follow-up comments and CAB responses--specific PIs

PI	PR Comment Code	Peer Reviewer Justification (as given at Public Comment Draft Report (PCDR) stage)	CAB response to Peer Reviewer's comments (as included in the Final Draft Report)
3.2.3	No (non-material score reduction expected)	SIb. The CAB's response in terms of the change to the rationale has taken into account the comments by the peer reviewer that additional information is required to justify the conclusion that sanctions demonstrably provide effective deterrence. The score for SIb has been reduced accordingly to 80. However the CAB response code has subsequently been incorrectly given as "Accepted - no score change". In addition the revised overall score for PI 3.2.3 (from 95 to 85) has not been carried forward to the Summary of Overall PI scores in Table 5 or the Overall Principle level scores in section 5.2.2.	Thanks for finding this error! Now fixed.

Table 12. PR B General follow up comments.

Question	Peer Reviewer comments at Public Comment Draft Report stage Insert additional rows for each clearly distinct issue raised.	CAB response to Peer Reviewer's Public Comment Draft Report stage comments (as included in Final Draft Report)
List here any issues not covered in the Performance Indicators or Conditions table (following sheet) that you feel have not been adequately addressed in the CAB response and would make a material difference to the scoring of the fishery.	The CAB did not respond to the comment about the P3 scoring rationales potentially being confusing because an overall summary score for each PI is presented following the scoring for the final Scoring Issue. Two examples for the California UoA demonstrate the potential confusion: For PI 3.2.2, the last two lines of the rationale for SIe state: The conditions of SG100 are met. A score of 90 is awarded. (In fact, the overall score should anyway be 95.) Similarly for PI 3.2.3, the last two lines of the rationale for SId state: The SG80 is met. A score of 85 is awarded. This presentation of the overall score for the PI is redundant as the overall score is given at the end of the scoring rationales for each PI. It is recognised however that any revisions to these rationales will not 'make a material difference to the scoring of the fishery.'	Apologies for not fixing this last time. It has now been fixed. The restatement of the overall score has been removed in each offending case. Also the score was raised in the one case highlighted from 90 to 95.

See above	Traceability. The CAB did not respond to the peer reviewer's query about the potential of mixing non-certified shrimp from British Columbia with certified shrimp from Washington state.	Sorry also for overlooking this question. There is no risk in the fishery of shrimp from BC entering the supply chain before the end of the fishery and before the start of chain of custody. This is because boats need permits to land in the US states of CA, WA and OR, and they can only fish in US waters. The location of their fishing and catch is reported on VTRs and elandings reports. It could be that processors also take deliveries from BC shrimp, but if this were the case, that would be assessed under the scope of the chain of custody audit, not covered by the fishery certificate.

9.4 Stakeholder input

No written stakeholder comments have been received. Follow-up Peer Reviewer comments and responses have been added to section 9.3 above.

9.5 Conditions

This fishery has no open conditions.

9.6 Surveillance

Table 13. Fishery surveillance program.

Surveillance level	Year 1	Year 2	Year 3	Year 4
e.g. Level 5	e.g. On-site surveillance audit	e.g. On-site surveillance audit	e.g. On-site surveillance audit	e.g. On-site surveillance audit & re-certification site visit
Level 1	Off-site review of information	Off-site surveillance audit	Off-site review of information	On-site surveillance audit and reassessment

Timing of surveillance audit			
Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale
e.g. 1	e.g. May 2018	e.g. July 2018	e.g. Scientific advice to be released in June 2018, proposal to postpone audit to include findings of scientific advice
1	TBD	TBD	

Surveillance level justification			
Year	Surveillance activity	Number of auditors	Rationale
1	Off-site review of information	3	Fishery has been certified for 15 years, all information is available remotely and there are no open conditions.

9.7 Harmonised fishery assessments

This is a trawl fishery operating off the west coast of the US, and managed by the states of California, Oregon, and Washington (not federally managed). There are other MSC certified fisheries on the west coast, including:

- West Coast Limited Entry Groundfish Trawl
- Pacific Hake (whiting) Midwater Trawl
- AAFA and WFOA North Pacific Albacore

Of these fisheries, none have pink shrimp as target species, and none are state managed. Hence, there is no need for harmonization on Principle 1 or Principle 3. The West Coast Limited Entry Groundfish Trawl fishery does overlap somewhat in gear, since both pink shrimp and groundfish are fished using bottom trawl, albeit with different nets. Several of the certified groundfish stocks, as well as minor P2 stocks, are also minor primary species in the pink shrimp fishery. The fact that they are minor species in both fisheries, and none are overfished, there is no need for a “cumulative impacts” assessment according to the MSC standard. Scoring between the two fisheries is in harmony on primary minor species. Non-endangered seabirds are main secondary species, and scoring is consistent where applicable between the two fisheries (and also with the Pacific Hake fishery, which may encounter birds from the same populations). ETP species is another component that warrants consideration of harmonization. However, there are no ETP species of common concern between the two fisheries. Pacific eulachon is the only ETP species of note in the pink shrimp fishery, and this is not an issue in the groundfish trawl fishery. In any case, the evaluation of ETP species in all US fisheries normally looks first at the overall takes, and biological status of the species, which is reported consistently in all MSC assessment reports. Regarding habitats, shrimp fishing habitat is different from groundfish fishing habitat, so there is no need to harmonize. However, scores do take into consideration much of the same information about west coast habitats and protection measures. Likewise for ecosystems. In summary, upon review, the assessment team determined there was no need for explicit harmonization discussions in relation to the pink shrimp fishery, as any overlaps are already scored consistently.

9.8 Objection Procedure – delete if not applicable

To be added at Public Certification Report stage

The CAB shall include in the report all written decisions arising from the Objection Procedure.

Reference(s): MSC Disputes Process v1.0, FCP v2.2 Annex PD Objection Procedure