



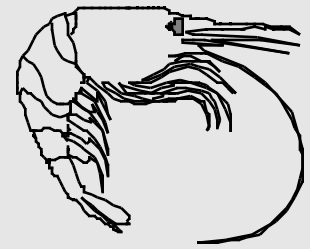
Annual Pink Shrimp Review

Oregon Department of Fish and Wildlife

ODFW Marine Resources Program, 2040 S.E. Marine Science Dr.

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TO: OREGON SHRIMP INDUSTRY
FROM: Bob Hannah and Steve Jones
Subject: Opening of 1999 Commercial Fishery
Date: 16 February 1999

The 1999 pink shrimp season begins on April 1 and extends through October. After such a disappointing 1998 season, there is much speculation over what the new season will bring. Recent federal groundfish regulation changes make this years harvest even less certain. This newsletter includes a summary of the 1998 season for your review, including catch, effort, and market sample information. Updates on some of our latest research, upcoming projects and important regulation changes are included.

1998 Season Summary

Only 6.1 million pounds of pink shrimp were landed into Oregon ports during 1998, the lowest landing total since 1984 (Figure 1). The 1998 total was about 13.5 million pounds less than in 1997 and about 19.8 million pounds less than the 15 year (1983-'97) average.

Monthly landing totals were well below average throughout the season, but followed a typical landing pattern with a peak in May and declining landings through the rest of the season (Figure 2). A combination of factors contributed to this scenario. Among them, holdover of age-2 and older shrimp from 1997 was apparently modest at best, and recruitment of age-1 shrimp was low. The result was a low standing crop of shrimp to harvest.

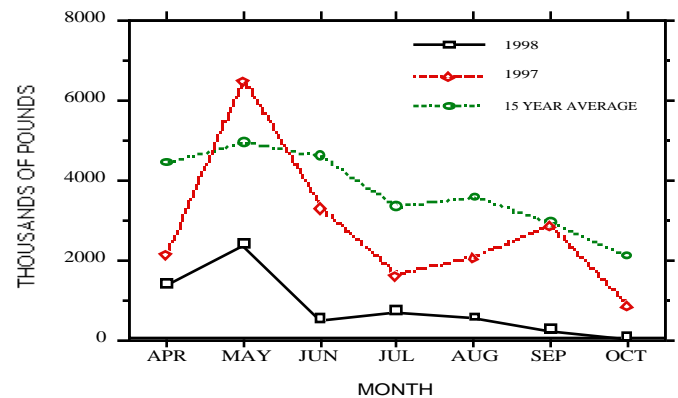


Figure 2. Monthly Oregon pink shrimp landings during 1997, 1998 and the 15 year average (1983-1997).

Most of the 1998 shrimp harvest occurred from the Bandon Bed to Tillamook Head early in the season, with the largest amounts taken in the Tillamook Head and Cape Lookout areas (Figure 3). During 1997, the harvest was focused further south and was more evenly distributed through the season.

The total number of hours fished for shrimp landed into Oregon in 1998 declined for the third consecutive year, continuing a long-term decline that began during the late 1980's (Figure 4). About 37,600 single-rig equivalent (SRE) hours were fished in 1998, the lowest effort level recorded since 1985. Many shrimpers devoted extended periods to tuna fishing this year which, depressed effort further than usual.

The season average catch per unit of effort (CPUE) in 1998 was 161 lb/SRE, sharply lower than in 1997 and the lowest recorded since 1985 (Figure 5). Given the apparent low stock abundance of shrimp, average CPUE may have been even lower if tuna fishing hadn't been as prevalent. CPUE was highest during May in the Cape Foulweather bed at 433 lb/SRE (Figure 6).

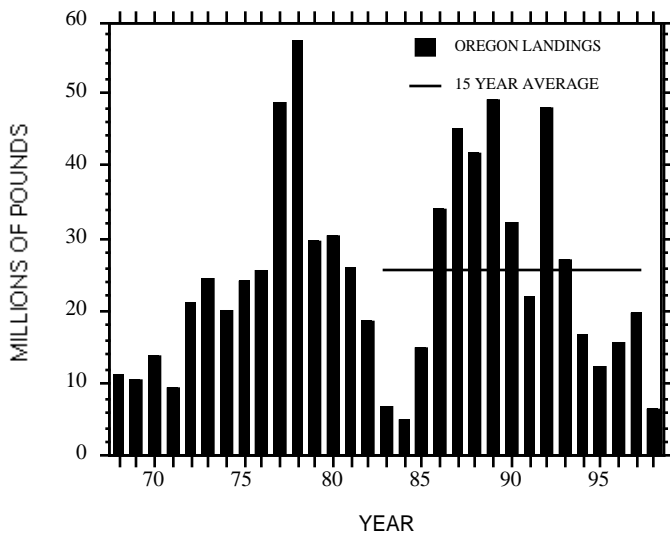


Figure 1. Oregon pink shrimp commercial catch (millions of pounds) 1968-1998. Includes all pink shrimp landed into Oregon ports.

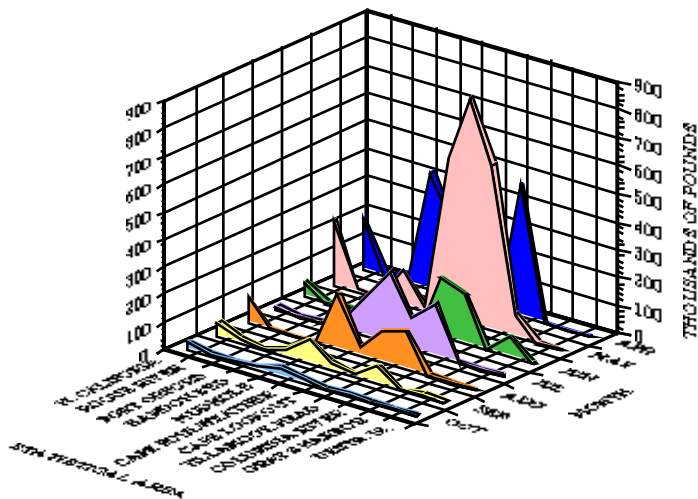


Figure 3. Total Oregon pink shrimp landings (1,000's of pounds) by month and area, 1998.

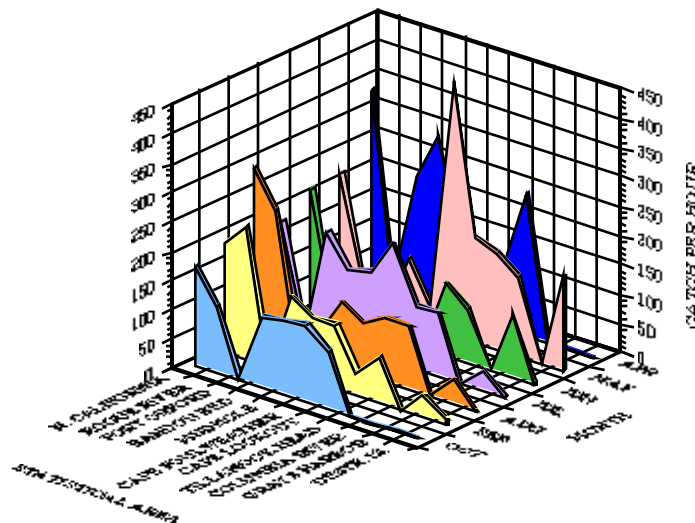


Figure 6. CPUE (preliminary) by area and month for the 1998 Oregon pink shrimp fishery.

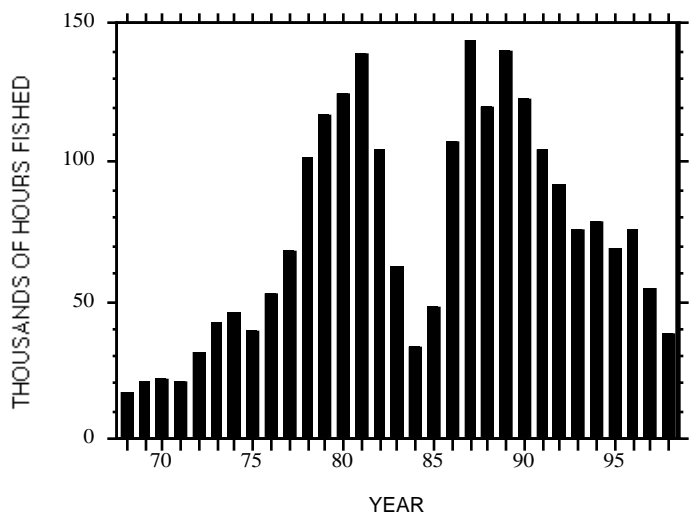


Figure 4. Fishing effort (1000's of single-rig equivalent hours) for pink shrimp landed into Oregon ports, 1968-1998.

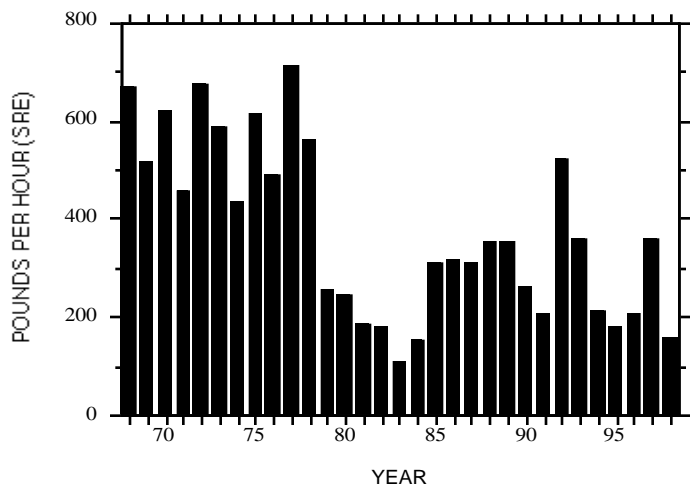


Figure 5. Catch per unit of effort (CPUE=lbs/SRE hour) for vessels landing shrimp into Oregon, 1968-'98.

The weighted average count per pound was about 111 shrimp/lb in 1998, just slightly below the long-term average (Figure 7). The percent age composition in 1998 shows a relatively low age-1 component (Figure 8), which would usually mean a much lower average count than we saw. Our market sample data indicate that age-1 and age-2 shrimp were relatively small at-age in 1998, having grown at a slower rate than other recent years. Growth rates in 1998 seem to have been more similar to those in the mid 1970's and the average counts are similar. Oceanographic conditions are the most likely cause of the slow growth rate experienced in 1998.

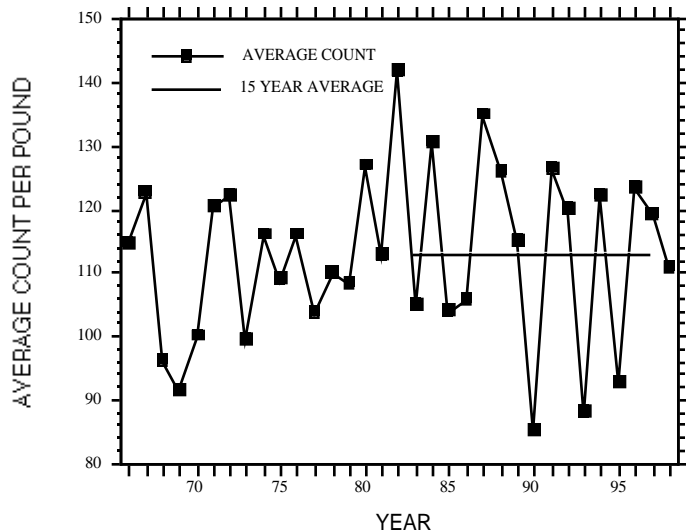


Figure 7. Average (catch weighted) count per pound of pink shrimp landed in Oregon, 1966-'98.

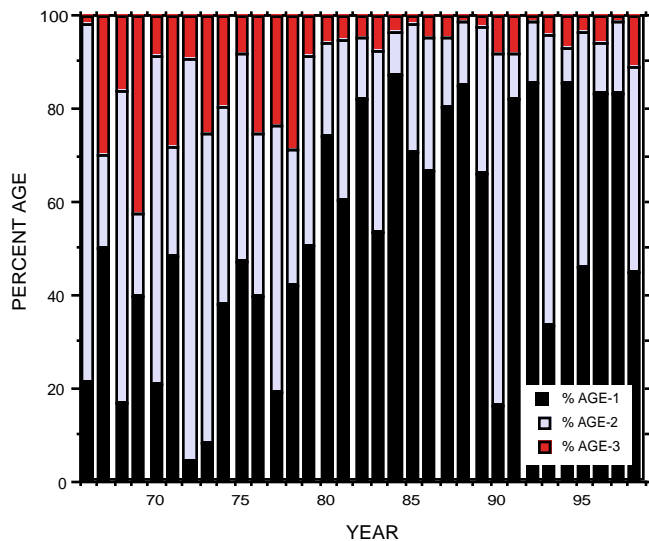


Figure 8. Annual percent age composition of pink shrimp (#'s of shrimp) landed in Oregon, 1966-'98.

The 1998 ex-vessel shrimp price varied from a low of .40¢/lb in mid April to about .65\$/lb in October. Most shrimpers delayed fishing until about 17 April due to price disagreements, but settled at .40\$/lb. The price had increased quickly to .50\$/lb by the end of April, apparently in response to low volume. Volume peaked in May and the price fluctuated from .45\$-.50\$/lb. The price increased to .60\$/lb in June as volume declined and had increased to .65\$/lb in September.

Indicators For 1999

The harvest prognosis for the upcoming season is particularly hard to call this year. The success of the incoming age-1 (spawned fall 1997; hatched spring 1998) shrimp will be the determining factor. All indicators suggest that the shrimp stock size on the grounds is low. Not much in the way of hold-over of age-2 and age-3 shrimp is expected in 1999. Fishing effort and sampling were sporadic during September and October, making judgments from this data limited. However, our late-season 1998 market samples and reports from shrimpers suggest that age-0 shrimp were widespread along the coast. No exceptional numbers were noted in Oregon or northern California areas, but the age-0 percentage found in the Grays Harbor area was the highest since 1987.

Our shrimp recruitment model, which is based on April sea level, indicates that recruitment could range from slightly below to above average. The 1998 value shown (solid line) is 7.26 feet (Figure 9). We've been testing this model for several years now (such is the nature of modeling), and the recent values from El Nino years may diminish its utility: we just don't know yet. The 1997 value of 6.9 (dashed line) suggested above average to strong recruitment. We apparently got very poor recruitment last year instead. On the other hand, the sea level was 7.27 in 1996 and apparently produced average recruitment as

indicated. There is also the possibility that recruitment has been affected by environmental factors not included in our model, especially during warm water events. We strongly believe that the increased presence of hake on the shrimp grounds during fall and winter may depress shrimp recruitment below expected levels. The bottom line is that there is too much conflicting information for us to confidently make an estimate of recruitment in 1999.

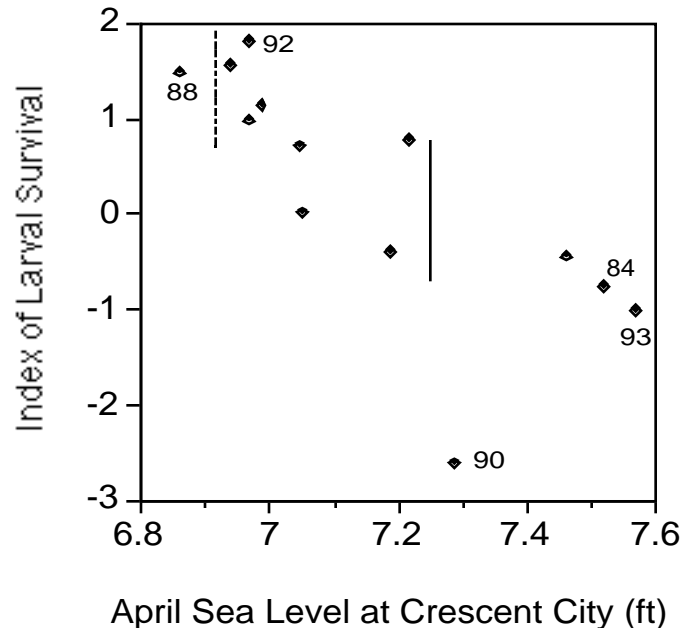


Figure 9. Index of shrimp survival vs. April sea level one year prior at Crescent City, CA. Points shown indicate year of age-1 catch. For example, 1990 refers to the shrimp that recruited to the fishery in 1990 at age-1. The solid vertical line shows the survival range expected for 1999 1-year olds. The dashed line shows the comparable range from last year.

Regulation Changes & Related Issues

The National Marine Fisheries Service (NMFS) has **dramatically altered groundfish retention limits** in the pink shrimp fishery **effective 1 January 1999**. The retention limits are described below and will apply to the 1999 shrimp season unless **OFFICIALLY ALTERED BY NMFS**.

TAKE NOTE! The Groundfish Management Team (GMT) will conduct a public meeting and workshop to review new information on groundfish harvest policies from **February 22-25** at the Hatfield Marine Science Center, Newport, OR. The meeting is an opportunity for shrimpers to see regional representatives and hear what each member will be proposing to the GMT and hence the Pacific Fishery Management Council (PFMC) in March. The next opportunity for changing the regulations will occur at the March 1999 PFMC meeting in Portland. The

Council will meet **March 8-12** at the Doubletree Hotel - Columbia River (see address below). We encourage shrimpers to attend the GMT public meeting and to express their views on current limits to the PFMC either in writing or in person at their public meeting (see address below). Meeting agendas are available from PMFC in Portland or ODFW offices in Astoria, Newport and Coos Bay.

PMFC
2130 SW Fifth Avenue, Suite 224
Portland, OR 97201
(503) 326-6352

Doubletree Hotel -Columbia River
1410 North Hayden Island Drive
Portland, OR 97217

The Oregon Department of Fish and Wildlife (ODFW) has received many negative comments from shrimpers and other open access participants regarding the new groundfish limits. ODFW shrimp staff were just as surprised as shrimpers at the degree of reductions and apparent lack of written rationale. ODFW has officially asked PFMC to reconsider the highly restrictive groundfish limits in the open access fishery that were set at their November 1998 meeting. A draft informational staff report is being circulated explaining ODFW's rationale for requesting changes to the current limits (see page 7 for excerpts). If you'd like a copy of the full report, give us a call at (541) 867-4741.

The current groundfish limits for shrimpers are as follows:

- the groundfish **TRIP LIMIT** for shrimpers is **300 lb/trip** regardless of the number of days fished in a trip.
- **no Thornyheads** may be landed
- no more than 1000 lb of Widow Rockfish per month
- no more than 100 lb of Pacific Ocean Perch per month
- no more than 1000 lb of Canary Rockfish per month
- no more than 2600 lb of Yellowtail Rockfish per month
- no more than 1800 lb of Sablefish per 2 month period (the first 2 mo. period is 1 March-30 April)
- no more than 250 lb of Lingcod per month, 24 inch minimum length except that up to 100 lb/trip of lingcod less than 24 inches may be retained.
- no more than 100 lb of Dover Sole per month
- no more than 100 lb of Pacific Whiting per month (no, this is not a typo)

Obviously, the current regulation scenario is going to place new burdens on shrimpers. Skippers will be responsible for not exceeding the 300 lb/trip fish limit and making sure the individual species cumulative monthly limits are not exceeded.

Research

Economics Logbook

One of our major research projects in 1999 was a volunteer logbook program designed to collect economic data on shrimping operations. This project was partially Sea Grant funded and is a cooperative effort between ODFW, OSU and the Astoria Seafood Lab. The work on this project has been shared between ODFW staff and Vicki Krutzikowsky, an OSU graduate student working on her master's thesis. In this part of the project, volunteer vessels are using a new logbook with extra space for fishermen to record information on why they made a variety of fishing decisions on a tow-by-tow and daily basis. Although 1998 was an odd year, with low stock size and low effort, this project was very successful. We collected data from a total of 262 fishing trips. In all, 32 vessels participated in the project. Vicki will be analyzing this data over the next year and will provide us with a summary of the results sometime this spring.

As a reward for participating in this project, skippers received a hat with a colorful pink shrimp logo. After a vessel contributed ten useable logs, the crew received hats. In addition to hats, participating vessels were entered in a raffle for a \$500 Cabelas gift certificate. Vessels received one raffle ticket for each completed and useable log, so the more data each vessel contributed, the greater their chance of winning the prize. The raffle was held on January 12th, using randomly assigned 3 digit numbers for each trip. The numbers were drawn and matched to the randomized list. The winner was the F/V Ginger B, out of Warrenton. So we sent the \$500 gift certificate to Dale Adams, skipper of the Ginger B. Congratulations to Dale, and thanks to everyone who helped out with the study.

Excluder Studies

A second part of Vicki's project was an effort to determine whether fish bycatch influences shrimp product quality. Working with the fishing vessel Lady Kaye, chartered by Oregon State University, we completed two trips in June 1998. We fished a Nordmore grate excluder on one side of the boat, with no excluder on the other side. Catches were kept in separate bins depending on which day they occurred and whether or not an excluder was used. Samples of shrimp were taken at a variety of stages, from capture all the way through final processing. The degree to which shrimp were intact or broken was measured along with a variety of laboratory and subjective quality measurements. We had the help of Fishhawk Fisheries on

the processing end to get samples and measure recovery. The Astoria Seafood lab helped with the quality assessment.

The preliminary results show a slight but significant increase in percent broken shrimp from deck samples with increasing bycatch percentages (approximately a 1% increase in broken shrimp per 50% increase in bycatch). Further, nets using the Nordmore excluder had significantly fewer bycatch and fewer broken shrimp in deck samples, compared to nets without an excluder, especially at high bycatch levels. The Nordmore excluder reduced the percent broken shrimp by approximately 1%. Whether this bycatch and excluder effect on the percent broken shrimp is seen in the final product remains to be analyzed.

Shrimp Harvester/Processor Survey

Another graduate student working on the Sea Grant study, Charmaine Gallagher, conducted a preliminary survey of harvesters and processors this summer to learn about economic conditions in the fishery. In all, 20 harvesters and 12 processors were interviewed. Preliminary results show that this fishery is under strong price pressure from imported shrimp, making for some difficult times with recent low catch rates. Other common issues that were raised included concerns about size consistency of shrimp and concerns that processing capacity has dropped to very low levels, possibly prolonging economic difficulties even when stocks rebound. More information from this survey should be available next year when Charmaine is further along on her project.

Hake Abundance

Many shrimpers have commented over the last few years about the very large abundance of hake on the shrimp grounds. We have also observed a lot of whiting while out on shrimp charters. The experimentation that has gone on with fish excluders was largely a response to the high hake abundance. The most unusual part of this phenomenon has been the frequency with which 3 to 4 inch (age zero) and 6 to 8 inch (age 1) fish have been abundant on the northern shrimp grounds. The classic interpretation of whiting distribution is that we don't generally see the fish up here until they reach about age 3.

In order to try and get a better perspective on what is going on with whiting, ODFW shrimp staff attended the NMFS "industry briefing" on the upcoming whiting stock assessment, which was held on January 20th in Newport. Whiting are assessed by combining data from two types of surveys, the triennial shelf survey, which uses a bottom trawl, and the hydro-acoustic survey which uses echo-sounding gear to measure the population that is up in the water column. The data presented from the shelf survey show pretty clearly what shrimpers have been seeing (Figure 10). The biomass on the bottom in the Columbia area has increased about 8 fold since 1977. A similar but smaller increase has been noted in the Vancouver area. However, most of the biomass of whiting is

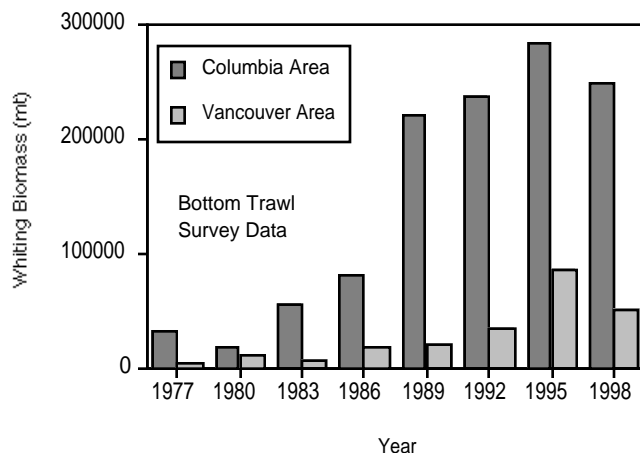


Figure 10. NMFS triennial bottom trawl survey whiting biomass estimates for two areas covering most grounds fished by Oregon shrimpers, 1977-'98.

unavailable to bottom trawl, and shows up in the hydro-acoustic survey. Biomass estimates in this survey are roughly flat or slightly declining since 1977. Combining the two data types produces a picture of whiting biomass that has been flat, or slightly increasing over time, but not the massive increase that seems apparent to shrimpers.

So the best explanation for now is that, for some unknown reason, possibly related to water temperatures, whiting have been more available to bottom trawls on the shelf, especially since about 1989. However, the whiting stock as a whole may not actually have increased very much, according to NMFS scientists. While this view is supported by the available data, it still does not explain the unusual distribution of juvenile whiting. The cause for this phenomenon is unknown, however it is probably also related to generally warmer ocean temperatures since about 1989. When will things get back to normal? This is unknown. Unfortunately, we probably don't know enough yet about how whiting distribution varies over time to know how unusual this really is. Some climatologists say we are overdue for a shift back to colder wetter weather, and colder ocean conditions. If they are right, it would likely be good news for our pink shrimp.

Upcoming Projects

We have a couple of research projects planned for summer 1999. At this point, we haven't decided which project we'll be doing first, or whether we'll have enough funds for both, but we will be making some progress on at least one of them. Inspired by some comments from a local fisherman, we are interested in trying some square mesh panels in shrimp nets, as a means to reduce the catch of whiting. We think that if a large, square mesh panel, say about 2 - 1/2 inch (bar

measure) were to be tied in square, on the top of the codend, just behind the intermediate and reaching back about 3-6 feet, it might allow small to medium whiting to escape. The potential for shrimp loss is unknown. Studies in the North Sea have shown that square mesh panels can be effective in increasing escapement of undersized or pelagic fish, if the panel is placed at a point where there is a natural escape stimulus. Our video work has shown that the picking strap often constricts the net some, so we think a square mesh panel just ahead of the picking strap might work. We hope to test this hypothesis with a one trip charter later in 1999.

Another project we'd like very much to do is to use a Tucker trawl (Figure 11) to measure the efficiency of shrimp nets and learn more about where shrimp are in the water column during the day. The Tucker trawl is a staged plankton sampling device that can be fitted with larger mesh to catch shrimp. The one we're thinking of buying is 6.5 feet square and will weigh about 300 lbs, assembled. This type of sampling gear has up to 3 nets that are opened and closed by sending 1 kg. messengers down the tow line, so 3 samples can be taken at different heights above bottom. Our idea is to deploy the Tucker trawl off of a block (or a traveling block) midway out one outrigger, so that it fishes in front of one net of a double-rigger. Then we can compare the catches in the Tucker trawl with those in the net. We also would like to use a net-sounder system to be sure that we have the Tucker trawl at the right depth.

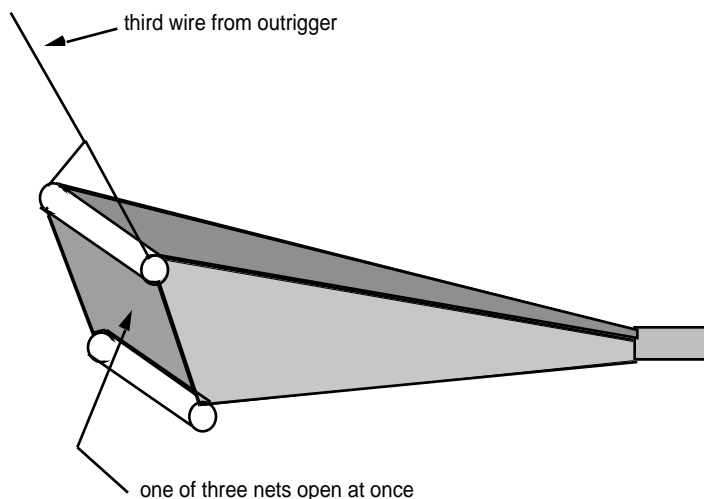


Figure 11. The Tucker trawl pictured with one of its three nets open. Weights slide down the third wire to close the open trawl and open the second and third consecutively.

We're not sure this sampling approach will work, and if it does it will still take numerous sampling trips spread out over about 5 years to estimate the average efficiency of shrimp trawls. We're very interested in knowing what the efficiency is because many of the population parameters we've been trying to measure for shrimp, such as natural mortality rate, fishing mortality rate etc. depend on

knowing how efficient the trawls are. So this is a project that might work, or might not, but would provide very useful information if it did. We're hopeful that we can get together with a vessel that is properly rigged to fish this device for some trials in 1999. If you're already set up to deploy this type of rig from an outrigger, or if you're interested in talking about some cooperative work on this project, please contact Bob Hannah at our Newport office (541 867-4741).

Count Per Pound Issues

No count per pound citations were issued in Oregon during the 1998 season. Processors wanted relatively large shrimp (<145 count) and shrimpers easily complied with their requirements. As in the past few seasons, the potential exists for some higher than average counts in 1999. With the stock size at a low level, even an average recruitment could make finding legal grade more difficult. If a good recruitment event has occurred, small age-1 shrimp will predominate. The Oregon State Police will be actively monitoring count per pound again in 1999. For anyone who is unsure about which type of scales work best at sea, or how much the average weight of retained shrimp is likely to change, we have two reports available which detail our research in these areas. Just call us for copies, or for any other questions about count per pound.

Reports Available

ODFW. 1999. Oregon Department of Fish and Wildlife Staff Report on Reconsideration of 1999 Trip Limits for the Open Access Fishery. ODFW draft staff report. 4pp.

Acknowledgments

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Exerpts from ODFW Staff Report Regarding Requested Regulation Changes

We analyzed 1997-98 west coast fish ticket data to estimate the discard that would be caused by the new limits. The analysis shows an “all groundfish” limit of 300 lbs/trip will result in at least 60% of the fish catch being discarded, or about 370,000 pounds of marketable fish. Given that shrimp bycatch is dominated by yellowtail rockfish brought up from 70 to 100 fathoms, we estimate that more than 95% of the discarded fish would not survive. The other limits enacted for 1999 may also increase discard somewhat above these estimated levels, particularly the monthly limit of 100 lbs of Dover sole. In addition, many shrimpers may simply discard all fish because the economic return on 300 lbs of fish is low and the record keeping and risk of an accidental overage are high for limits that are this low and complex.

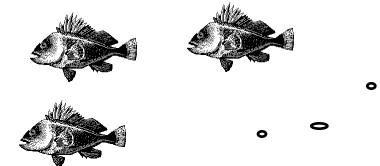
Recent council actions on Open Access (OA) or trip limits seem to be steadily deviating from the initial management goal, as illustrated for OA, which was to provide for historical catch levels. Catch by gear type for yellowtail rockfish (Table 2) suggests that the changes in groundfish limits for the shrimp fishery may have caused some unanticipated changes in catch distribution within the OA fishery. It should be noted that, in contrast to recent years, the catch history for *Sebastes* complex in the OA fishery (on which the yellowtail rockfish allocations are based), was created largely by the pink shrimp fishery. For the base period of 1984-88, 71.3% of the OA landings of rockfish (other than POP or widow, Columbia and Vancouver areas) were landed by the shrimp fishery, with 29.7% percent being landed by other gears.

Table 1. Catch (mt), and percentage of the total catch, for yellowtail rockfish, by OA gear type, 1996-99. Values for 1999 are projected based on applying current catch limits to 1997 catch patterns in the pink shrimp fishery and the assumption that the OA line gear segment will harvest the remaining fish.

Year	Catch (mt) OA Shrimp Trawl	Catch (mt) OA Line Gear	Percentage OA Shrimp Trawl	Percentage OA Line Gear
1994	271.9	163.8	62.4%	37.6%
1995	197.7	65.4	75.2%	24.8%
1996	353.8	76.0	82.3%	17.7%
1997	87.8	98.7	47.1%	42.9%
1998	100.8	118.1	46.1%	53.9%
1999*	97.7	181.3	35.0%	65.0%

* Projected

ODFW plans to recommend that groundfish limits for the pink shrimp trawl fishery be set at 500 lbs per day for all groundfish, principally to minimize discard, but also in part to try and preserve the traditional catch sharing within OA. Combined west coast fish ticket data for the years 1994-98 (see attachment) suggest that a limit for all groundfish of 500 lbs/day, equalling roughly 2100-2400 lbs per trip, would eliminate discard of marketable fish for 92-94% of the trips. As in the past, cumulative monthly limits for the LE fishery would also cap groundfish catch by shrimp trawlers, at times causing additional discard, depending on how these limits vary over time.



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