Annual Pink Shrimp Review

Oregon Department of Fish and Wildlife

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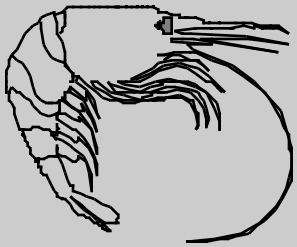


TO: **OREGON SHRIMP INDUSTRY**
FROM: **Bob Hannah and Steve Jones**
Subject: **Opening of 1997 Commercial Fishery**
Date: **10 March 1997**

The 1997 pink shrimp season begins on April 1 and extends through October. After only a modest improvement in landings during 1996, we're all wondering what recruitment of one year old shrimp will be like this coming season. We'll need them if our catches are going to improve this year. This newsletter includes a summary of the 1996 season for your review, including catch, effort and market sample information. Updates on some of our latest research, upcoming projects and important recent regulation changes are included.

1996 Season Summary

Approximately 15.7 million pounds of pink shrimp were landed into Oregon ports during the season, an increase of about 3.6 million pounds over the 1995 season total. It was the third consecutive year landings were below 17.0 million pounds. An average season is about 26.5 million pounds (Figure 1).

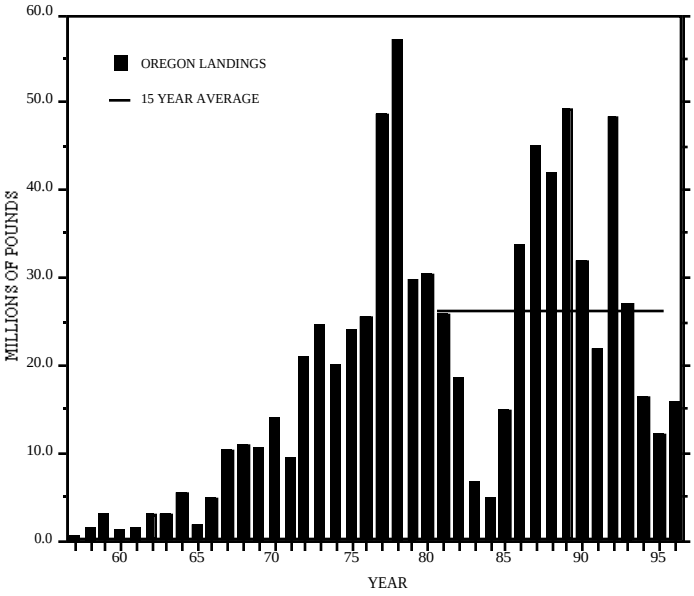


Figure 1. Oregon pink shrimp commercial catch (millions of pounds) 1957-1996. Includes all pink shrimp landed annually into Oregon ports.

Shrimp fishing began quickly in 1996, with most vessels leaving port on 2 April. Fishing was hampered by bad weather for much of the month, resulting in low April landings. Monthly landing totals during the remaining months were all above monthly totals in 1995 (Figure 2). The monthly landings declined gradually after peaking in June, following a pattern similar to longterm average monthly landing totals. Catches peaked in California Area A, and in the Bandon Bed on the southern Oregon coast during June (Figure 3). Harvest was sharply less in other area-months.

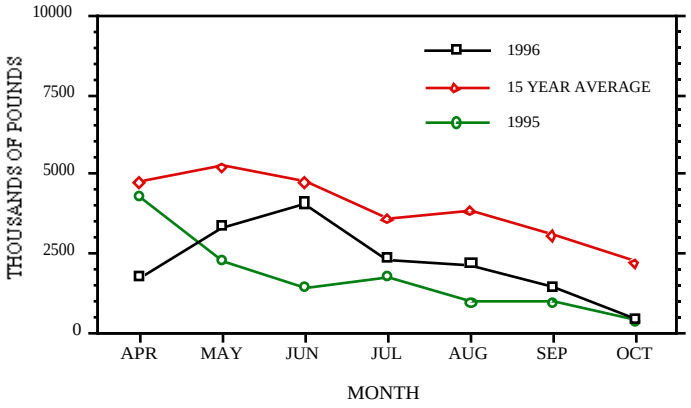


Figure 2. Monthly Oregon pink shrimp landings during 1995, 1996 and the 15 year average (1981-1996).

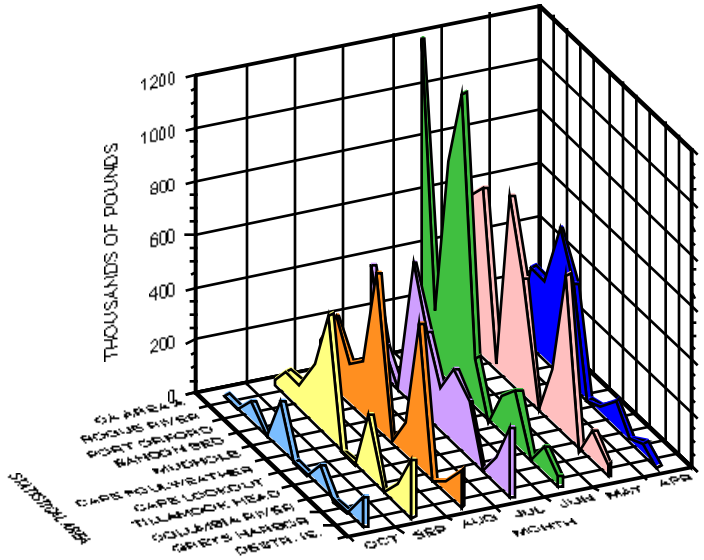


Figure 3. Total Oregon pink shrimp catch (1,000's of pounds)by month and area (preliminary), 1996.

Shrimpers spent slightly more hours trawling during the 1996 season than they did during 1995 (Figure 4). About 76,000 SRE hours (single-rig equivalent hours) were spent fishing, which is similar to the effort levels in the Oregon fishery over the last four years. Catch per unit of effort (CPUE) was also slightly higher than last year but remained near the low levels experienced since 1994 (Figure 5). CPUE was highest off the Rogue River and in California's Area A during May, but was less than half of this rate during other area-months (Figure 6).

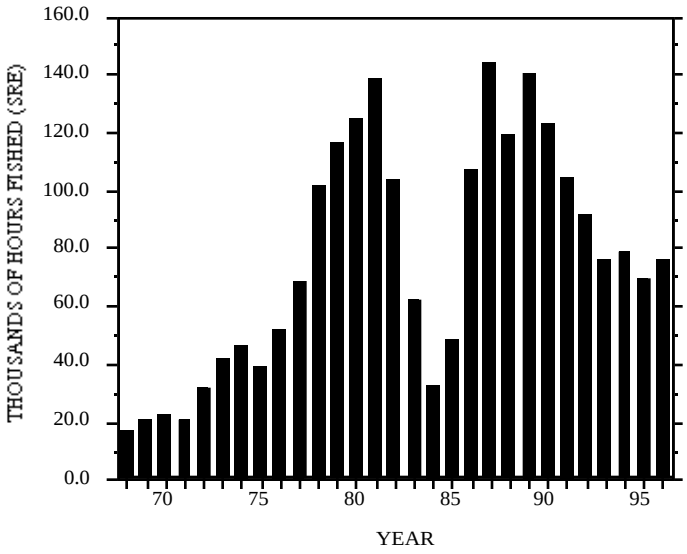


Figure 4. Fishing effort (1000's of single-rig eqivalent hours) for pink shrimp landed into Oregon ports, 1968-1996.

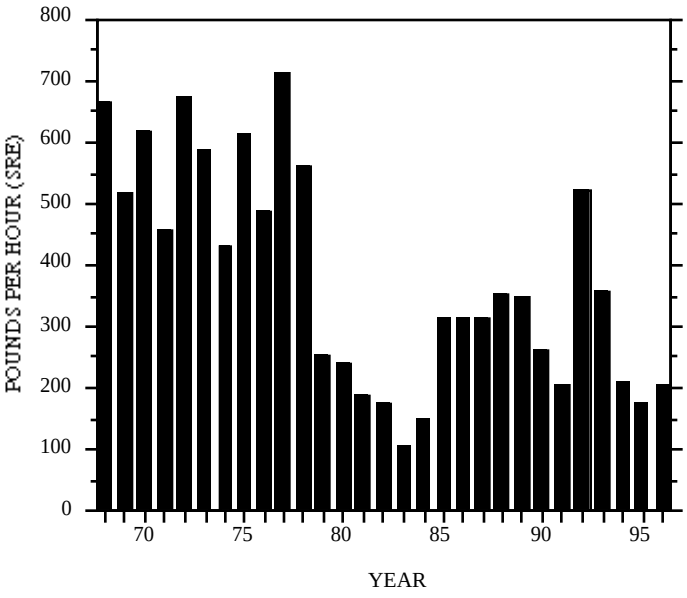


Figure 5. Catch per unit of effort (CPUE = lbs/SRE hour) for vessels landing pink shrimp into Oregon ports, 1968-1996.

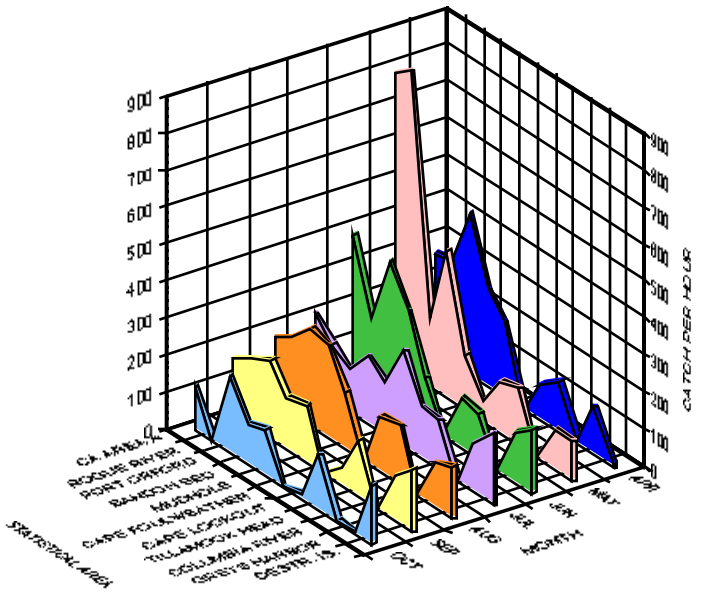


Figure 6. CPUE (preliminary) by area and month for the 1996 Oregon pink shrimp fishery.

Ex-vessel shrimp prices were very stable during 1996 compared to the last few years. The average opening price was about 60¢/lb coastwide, increasing gradually to about 65¢/lb at the end of the season. In comparison, during 1995 the opening price was about 56¢/lb and reached a high of 85¢/lb at the end of the season.

The average count per pound of shrimp landed in Oregon during 1996 was about 123 shrimp/lb, a sharp increase over the average of 93 shrimp/lb in 1995 (Figure 7). For reference, the 15 year average count is about 114 shrimp/lb. The higher average count in 1996 reflects a high percentage of age-1 shrimp this year (Figure 8), and the fact that they grew slower than in recent years. Interestingly, age-2 shrimp grew at rates high in the range noted since 1987, but this age group comprised only a small fraction of the total catch.

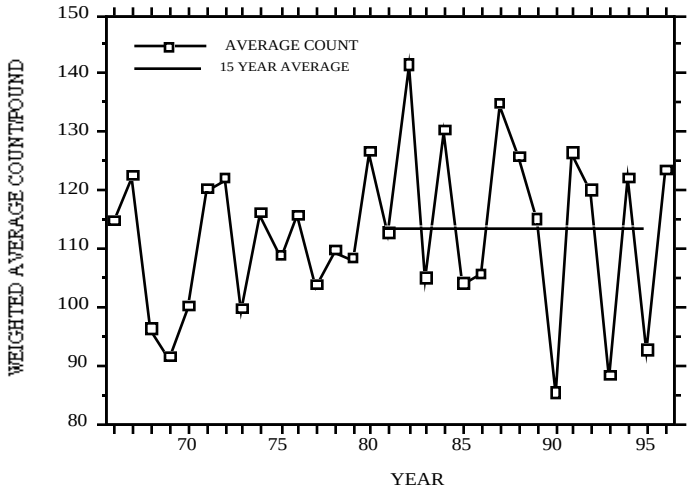


Figure 7. Average (catch-weighted) count per pound of pink shrimp landed in Oregon, 1966-1996.

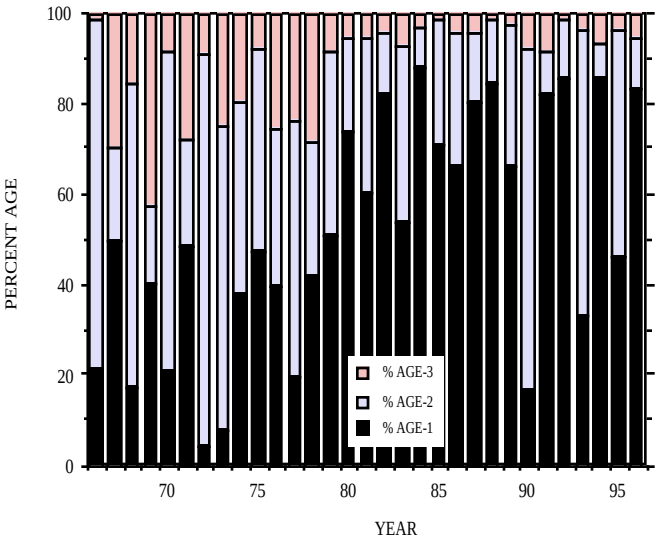


Figure 8. Annual percent age composition of pink shrimp (#'s of shrimp) landed in Oregon, 1966-1996. Note: 1995 data have been changed to correct an error.

Indicators For 1997

So how do things look for the 1997 season? It's hard to say because of fairly "soft" indicators and conflicting evidence. We know that recruitment has been poor for the last few years, which has resulted in low population size and low annual landings. We need good recruitment to boost both of these categories. Our recruitment model, which is based on April sea level, came in with a value of about 7.27 ft this year. This is above last years level of about 7.18, indicating that recruitment may be poorer than last year (Figure 9). We interpreted last years level as about average and it appears that production was low in the range shown for 1995. Even though sea level was higher in 1996, it's important to note that the range of expected production is still very wide. The model indicates possible production ranging from average to very poor in 1997.

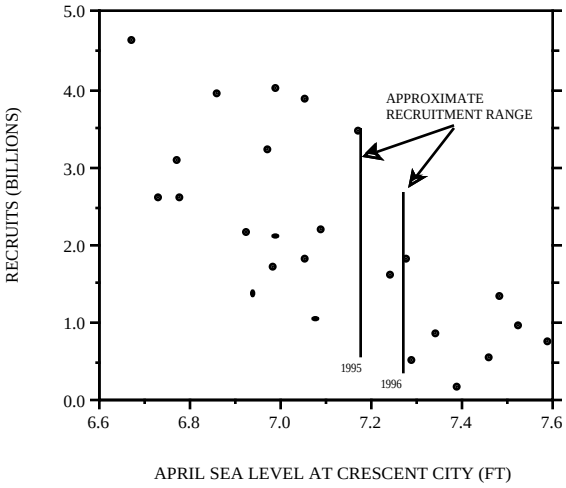


Figure 9. Shrimp recruitment vs. sea level in April of the larval year. High sea level indicates a weak or late spring transition during early larval development.

In contrast to the environmental model, information on the abundance and distribution of zero-age shrimp last fall could be interpreted as encouraging. Fall market samples were sparse however, due to low effort. Since commercial gear isn't designed to catch shrimp of zero-age size, abundance of this age-class may not be accurately reflected. However, zero's occurred in market samples in most statistical areas during September and October 1996. This widespread distribution was verified by comments from shrimpers. October samples taken from areas south of Cape Blanco showed zero-age percentages in the 11-50% range. We believe these percentages were inflated to some extent by low sample size, but it may indicate good recruitment to the south. The percentage of zero's in samples from more northern areas were low, but similar to what we've seen in recent years.

Regulation Changes & Related Issues

The National Marine Fisheries Service (NMFS) has changed the regulations governing groundfish retention in the pink shrimp fishery for 1997. The changes became effective on 1 January 1997, **AND MAY CHANGE DURING THE SEASON** as catches accrue for various species in the open access fishery. The regulations as they stand now are as follows:

1. The trip limit for all groundfish is **500 POUNDS PER DAY** for a vessel engaged in fishing for pink shrimp, **MULTIPLIED by the NUMBER of DAYS in the TRIP**.

2. No more than **300 POUNDS of SABLEFISH** may be landed **PER TRIP**.

3. No more than **3,000 POUNDS of YELLOWTAIL ROCKFISH** may be landed **PER MONTH**.

4. **NO THORNYHEADS** may be retained or landed.

5. Shrimpers are reminded that no lingcod landed may be smaller than 22 inches (total length), **EXCEPT 100 POUNDS of TRAWL-CAUGHT** lingcod smaller than 22 inches may be landed **PER TRIP**.

Please note again that these limits may be changed by NMFS during the shrimp season depending on harvest rates within the open access fishery. Yellowtail rockfish harvest is probably of foremost concern to the fleet. High levels of incidentally caught "greenies" could result in the open access harvest guideline (HG) for this species being met, causing NMFS to prohibit all retention of yellowtail rockfish. Targeting yellowtail will not benefit the fleet as a whole and is discouraged. If you have questions about current regulations, give us a call at 541 867-4741.

ODFW has received several inquiries from shrimpers regarding the new limits for yellowtail rockfish. Much of the fleet may still not know the details of the changes and are unfamiliar with the regulatory process involved in determining the limits. Groundfish are federally managed

while shrimp are managed by the state. The Pacific Fisheries Management Council (PFMC) meets periodically to assess finfish stocks and to monitor harvest guidelines (HG's). PFMC recommendations are implemented as regulations by NMFS. Many shrimpers have expressed surprise that yellowtail rockfish monthly limits are so low in the shrimp fishery and want to get their views heard. Some have stated that they anticipate high discard rates as a result of the low limit; and they may be right. Others point out that yellowtail rockfish have been a traditional component of the shrimp catch and argue that it should be preserved as such. We encourage shrimpers to get involved in the groundfish management process, by attending PFMC meetings, by writing to the Council or by writing to the appropriate Groundfish Management Team or Groundfish Advisory Panel member. Getting on the Council News mailing list may be a good way to keep up with the issues and hear of upcoming council meetings. The council meetings from July through November will probably interest shrimpers most. The address and telephone number of the PFMC office in Portland is:

Pacific Fishery Management Council
2130 SW Fifth Avenue, Suite 224
Portland, Oregon 97201
(503) 326-6352

A number of factors influence how the PFMC and NMFS develop a set of groundfish harvest regulations for the pink shrimp fishery. A schematic of the process is shown in Figure 10 (see next page). First, a stock assessment is completed that results in an Acceptable Biological Catch (ABC) level for each species or species group (e.g. Sebastes complex). The ABC is an annual catch that is believed to be sustainable over the long term. It is considered along with social and economic conditions to set the annual HG. For 1997, consideration of various fishery, social and economic factors resulted in the yellowtail HG set at a level above the ABC (see Fig. 10).

In the case of yellowtail rockfish, some new information was incorporated into the stock assessment that resulted in a substantial reduction in the ABC. A lot of controversy has surrounded the new assessment for yellowtail rockfish and accordingly, it's being reviewed again in 1997. After the HG is set, 9.6% of the HG is set aside for the open access fishery, which includes the shrimp fishery and every other non-limited-entry fishery that takes groundfish. The rest is reserved for limited entry vessels. So, this "open access allocation" is one limit on the take of yellowtail rockfish, and if it is reached, PFMC/ NMFS may take action to prohibit retention of yellowtail rockfish by all open access vessels. This is essentially what happened with thornyheads in 1996. This has not happened for yellowtail rockfish before, but it could happen in 1997, depending on how much the other limits slow the catch of yellowtail rockfish.

Next, PMFC/NMFS enacts any regulations needed to control harvest by the various limited entry gears. In the case of yellowtail rockfish, a large portion of the HG was projected to be taken as bycatch in the whiting fishery. As a result, the trip limit established for the directed bottom trawl fishery was set quite low, at roughly 3,000 lb per month. Since open access vessels cannot legally land more than the directed bottom trawl fishery, this action placed a 3,000 lb monthly cumulative limit on shrimpers as well. So, in summary, the factors which caused reduced limits for yellowtail rockfish for shrimpers in 1997 were a lower stock assessment and higher levels of yellowtail rockfish bycatch in the whiting fishery in 1996. We hope this explanation is helpful, however, don't feel bad if you're confused. If you're not confused, call us; you may have a promising career ahead of you in fishery management!

Research

Mesh Pass-Through Study

We successfully used our underwater camera system last summer to evaluate possible damage to shrimp as they pass -through codend meshes while fishing. Our goals were to establish whether shrimp going through codend mesh were visibly injured or otherwise impaired, and to determine when pass-through occurred during a tow. If pass-through tended to occur mostly on haulback, shrimp mortality could conceivably be very high due to light exposure and temperature shock in addition to any physical damage from mesh pass-through. Such a finding might argue against using codend mesh size as a management tool in this fishery as California currently does.

While fishing a 1 3/8" mesh codend under low volume conditions, we found that mesh pass-through occurred more or less throughout the tows. Pass-through was noticeably heavier at the surface on some tows, especially when surge was strong. Shrimp condition after pass-through was difficult to assess, but shrimp were not noticeably damaged after passing through. However, some shrimp appeared to be lethargic or not moving suggesting that some negative consequences of pass-through may have occurred. Shrimp are shown passing through a codend in Figure 11. Our results are somewhat inconclusive but do

Figure 11. A view of the top side of a shrimp trawl codend looking aft while fishing. Shrimp that have passed through mesh are visible, along with eelpouts entangled in mesh. The depth was approximately 80 fathoms.

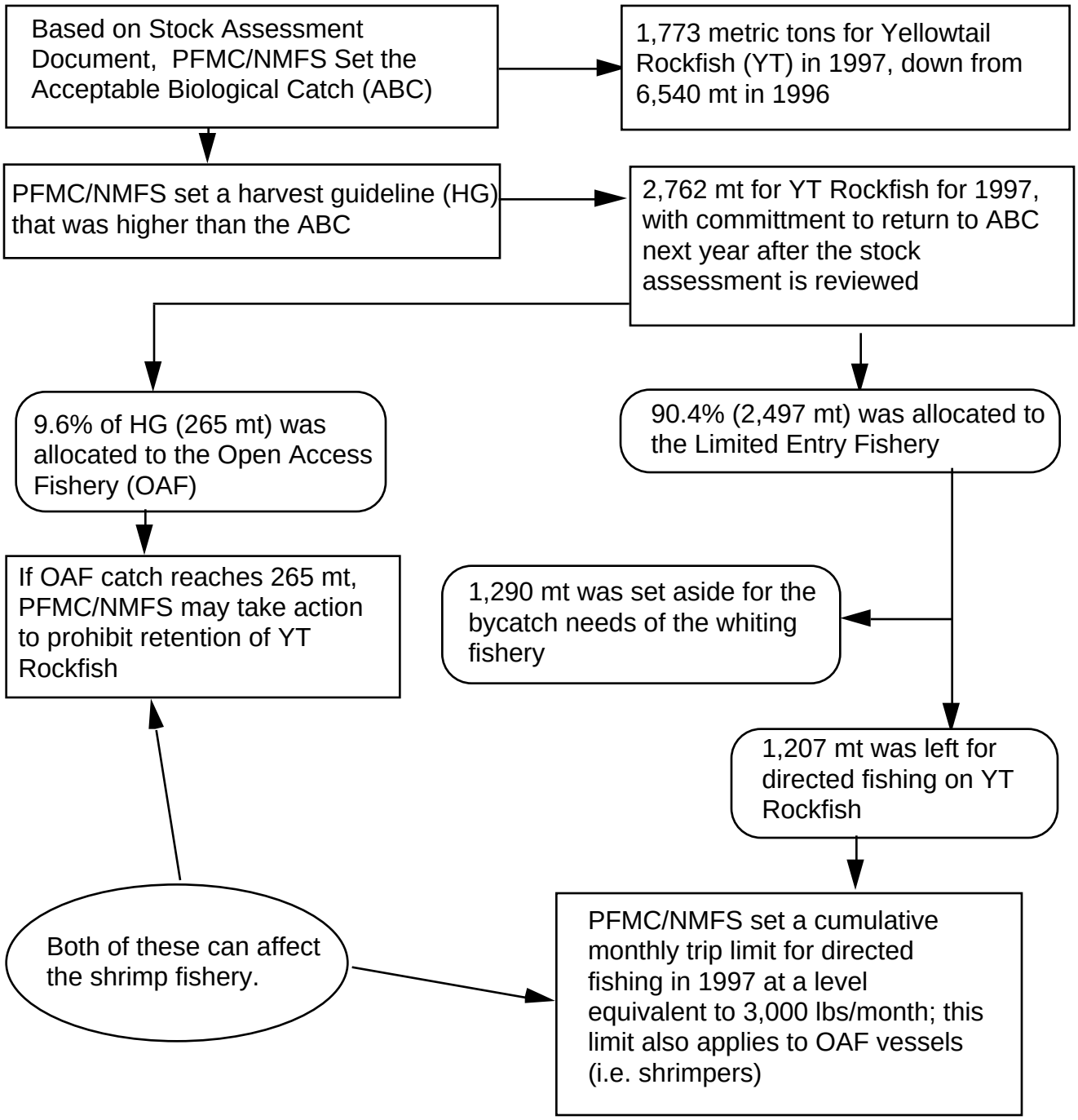
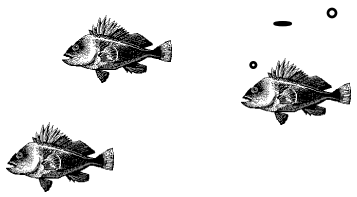


Figure 10. A simplified schematic showing how groundfish limits are set (i.e. yellowtail rockfish) and how the pink shrimp fishery is affected.



give us a better understanding of conditions during a shrimp tow. We hope to perform a similar evaluation under high volume conditions in the future. We have a video summarizing our results and showing extended clips of different parts of a shrimp trawl in action, including footage inside the codend (Figure 12). The tapes are available to borrow at ODFW offices in Newport, Astoria and Charleston.

Figure 12. A view of the inside of a shrimp trawl codend looking aft while fishing in about 80 fathoms. The shrimp visible were swimming aimlessly, not actively trying to escape. A rex sole is also visible.

Hake Food Habits

Shrimp fishermen often ask us about the impact that Pacific hake have on shrimp populations. Well, we recently completed an analysis of the food habits of some hake captured in shrimp trawls in 1995 and 1996. We analyzed stomach contents from hake collected during the course of other shrimp research projects. The data show that medium-sized hake consume more shrimp than small or large hake and that shrimp are an important component of the hake diet at all sizes (Figure 13). The hake diet progresses from mostly krill, to a diet that's balanced between krill, pink shrimp and fish. Our study collected hake only from known shrimp grounds. Most prior studies of hake food habits were not focused on known shrimp grounds and therefore indicated that shrimp were only a minor component of the hake diet. Since the distribution of Pacific hake far exceeds the extent of the shrimp grounds, it's fair to say that shrimp may not be important to the population dynamics of hake but that hake almost certainly have important impacts on the population dynamics of shrimp.

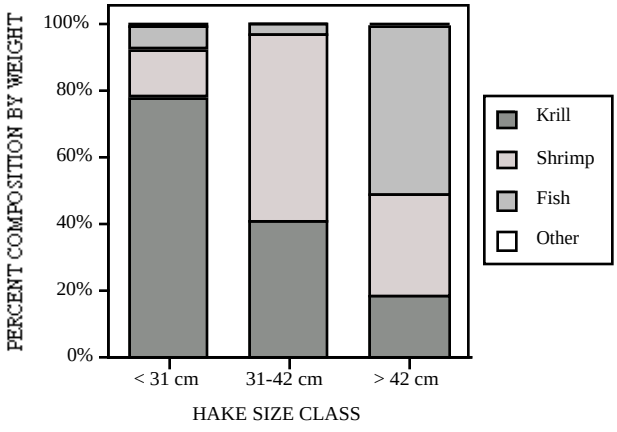


Figure 13. The percentage (by weight) of four hake food item types for three size groupings of hake.

Upcoming Projects

Charter Opportunity

We'll be distributing bid packets for a shrimp research charter to interested individuals in late March to early April. The charter will probably be for two 4-day cruises during May or June. The research will add to our previous work testing "WeJo" type soft panel finfish excluders and trying to reduce shrimp loss. Our underwater camera equipment will be a valuable asset in trying to determine why shrimp loss occurs and how to reduce it. Among other specifications and requirements, the vessel chartered will need to be a medium to large size double-rigged shrimper capable of accommodating up to three biologists in addition to the crew. If you're interested in receiving a bid packet, please give us a call at 541 867-4741 and we'll put you on the mailing list.

90-96 Summary Report

We have started writing a report covering the last seven years of the Oregon pink shrimp fishery. The report will emphasize fishery trends, while putting them in historical and regional context. It follows the last summary report we put out in 1992 covering the 1985-89 fishery. The report should be available by the end of the year.

Count Per Pound & Related Issues

Shrimpers complied well with the Oregon count per pound regulation in 1996. There were no citations issued, although some counts were marginal early in the season according to the Oregon State Police (OSP). As in the past few seasons, the potential exists for some higher than average counts in 1997. Recruitment of one year olds has been modest at best for the last three years, resulting in lower than average annual landings and relatively low stock size. If recruitment improves in 1997, as we all hope, small shrimp will be relatively abundant and counts correspondingly high. OSP will be actively monitoring count per pound again in 1997. 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. The best way to protect yourself is to get a good scale and monitor your counts frequently. It also helps to leave yourself a little room for error by not "pushing the line" If you accidentally get into some small shrimp, remember that loads of 3,000 lb. or less are exempt from the 160 count limit.

New Logbook Format

We have changed the format of ODFW Shrimp/Scallop logbooks this year in an effort to improve collection of standard trip and tow data, and to gain tow by tow information on the use of finfish excluders in the pink shrimp fishery. In these days of declining finfish limits, we need the best possible information on the extent of excluder use to document use patterns and to analyze associated changes in fishing strategy. In the past, we have conducted post-season interviews which showed increased voluntary use of excluders. The results were valuable, clearly showing a trend in excluder use, but the information was very general. The old style logbooks included some information that we didn't need and lacked some important information we'd like to have. We took advantage of the opportunity to update the logbook and include excluder information. Some of the changes are listed below:

1. We've gone with a larger format in response to requests by some shrimpers, including more space for writing LORAN readings and taking notes.

2. Rig-type (single or double) is now included on the log.

3. Comprehensive updated instructions are now included on the inside cover of the logbook.

4. The boxes for recording excluder use information include whether an excluder was used on the trip, type of excluder used (if any) on the trip, mesh size or bar spacing of the excluder, and a check box (Y or N) for each tow showing if the excluder was in use, or disabled.

Port biologists will be distributing the new logbooks before the beginning of the season. They are also available on request from ODFW offices in Newport, Astoria and Charleston.

Reports Available

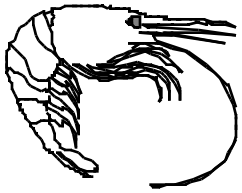
Jones, S.A. and R.W. Hannah. 1996. A Survey of Trawl Gear Employed in the Fishery for Ocean Shrimp *Pandalus jordani*. Oregon Dept. Fish Wildf., Information Rept. Ser., Fish. No. 96-6. 23pp.

Hannah, R.W., S.A. Jones, and V.J. Hoover. 1996. Evaluation of fish excluder technology to reduce finfish bycatch in the pink shrimp trawl fishery. Oregon Dept. Fish. Wildf.,Information Rept. Ser., Fish. No. 96-4. 46pp.

Acknowledgments

This project was financed in part with Federal Interjurisdictional Fisheries Act funds (75% federal, 25% state of Oregon funds) through the U.S. National Marine Fisheries Service (contract# NA56FI0128 - total project funds - $71,665 federal, $23,889 state). We wish to thank the Oregon shrimp fleet for their continued cooperation and assistance during the last year.

Good Luck Shrimping in 1997!



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