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Annual Pink Shrimp Review

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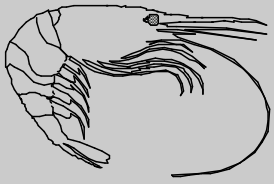

TO: OREGON SHRIMP INDUSTRY
FROM: Bob Hannah and Steve Jones
Subject: Opening of 2007 Commercial Fishery
Date: 15 February 2007

The 2007 pink shrimp (*Pandalus jordani*) season will begin 1 April and extend through 31 October. A summary of the 2006 season is provided for your review, including catch, effort and market sample information, plus a discussion of the outlook for the 2007 season.

Notices

- Don't forget to declare (see pg 4).
- Be aware of Nehalem Bank no trawl zone boundaries (see pg 4).
- Innovative research to improve shrimp counts (see pg 7).
- NMFS observers back in 2007 (see pg 7).

2006 Season Summary

Shrimp fishing began in early April, but most vessels waited until mid-month due to price negotiations. Initial catches were good and shrimp counts were relatively low, a trend that continued through most of the season. Shrimpers landed about 12.2 million pounds of pink shrimp into Oregon ports during 2006, about 3.6 million pounds less than during 2005 (Figure 1). It was the fourth consecutive season landing total below the long-term average. Recent below average landings have most likely resulted from declining fishing effort and changing market conditions. Monthly landings followed the long-term average pattern during 2006, but were about half of the average poundage per month (Figure 2).

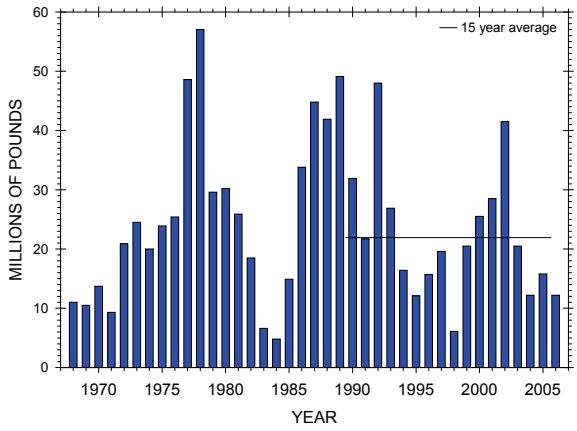

Figure 1. Oregon pink shrimp commercial landings (millions of lbs) 1968-2006. Includes all pink shrimp landed into Oregon ports.

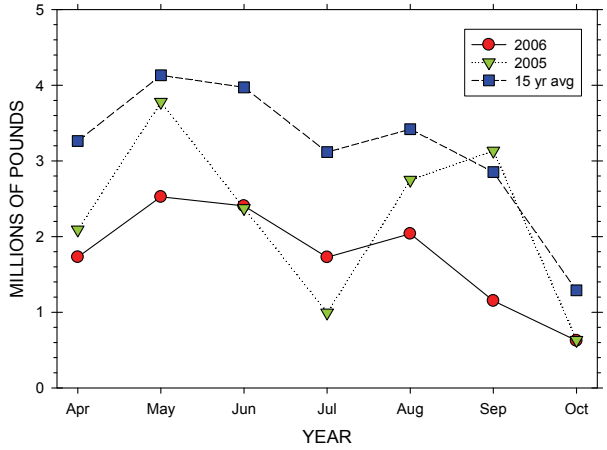

Figure 2. Oregon pink shrimp landings by month during 2005, 2006 and the 15 year average (1990-2005).

As in 2005, nearly all shrimp harvest occurred north of Cape Blanco during 2006. The catch distribution by area was different during 2006 though, with catches more evenly distributed between the Grays Harbor bed and the Bandon bed. Shrimp harvest was highest from the Cape Lookout bed during 2006, with the Mudhole, Tillamook Head and Bandon beds coming in close at 2nd, 3rd and 4th. The highest landing total by month and area occurred during May from the Cape Lookout bed, with other peaks from the Tillamook Head Bed in April and the Bandon bed in August (Figure 3). Landings of shrimp harvested off Washington increased sharply during 2006, particularly from the Grays Harbor bed.

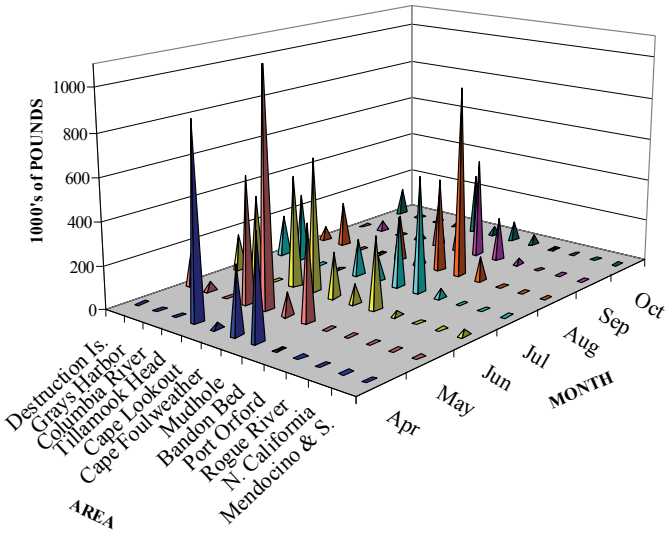

Figure 3. Total 2006 Oregon pink shrimp landings (1000's of pounds) by month and area.

Shrimping effort, both in terms of hours fished and number of vessels, continued to decline during 2006. The number of vessels landing pink shrimp into Oregon ports in 2006 was 37, the lowest number since prior to 1970 (Figure 4). Hours spent shrimp fishing also declined to the level seen in 1970 (Figure 5).

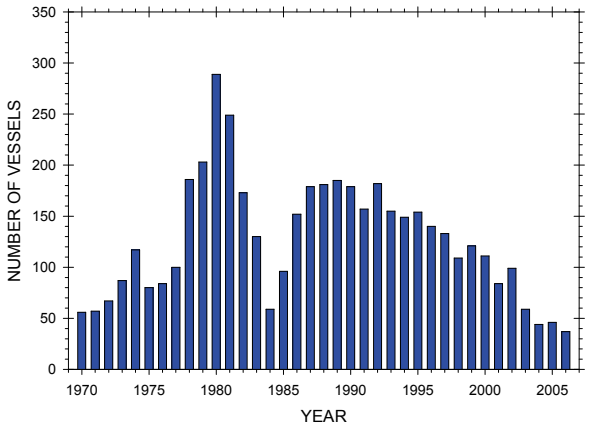

Figure 4. Annual number of vessels landing pink shrimp into Oregon ports: 1970-2006.

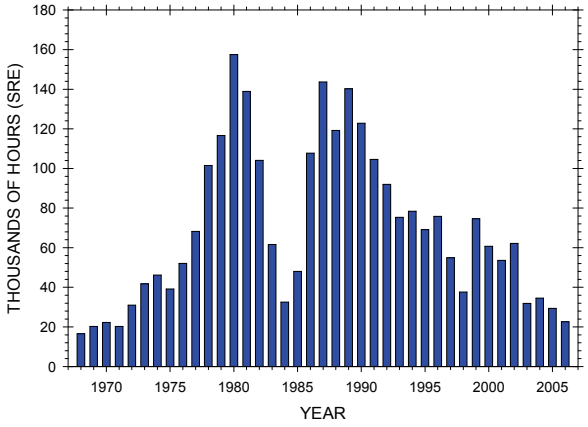

Figure 5. Fishing effort (1000's of single-rig equivalent hours: 1 SRE = 1 single-rig hour = 1 double-rig hour X 1.6) for pink shrimp landed in Oregon, 1968-2006.

Overall catch per hour (CPUE) in 2006 was a robust 540 lb/hr, just above the high level seen in 2005 (Figure 6). However, monthly CPUE in 2006 showed a much different pattern than it did during 2005 (Figure 7). Average CPUE during April 2006 was 1,258 lb/hr. The catch rate declined sharply in May and remained fairly stable through August. The rate declined further to about 300 lb/hr during September and October. Monthly CPUE was much more stable during 2005 and remained at a much higher level at the end of the season than it did this year.

The age composition of shrimp harvested during 2006 was unusual. The age-2 percentage was the highest recorded in our time series, back to 1975 (Figure 8). Market samples showed that the age-1 component was low coast-wide and throughout the season, strongly indicating a very weak year class. Unsurprisingly, the age-3 component was very low since the 2004 year class was also weak and they've been harvested for three seasons.

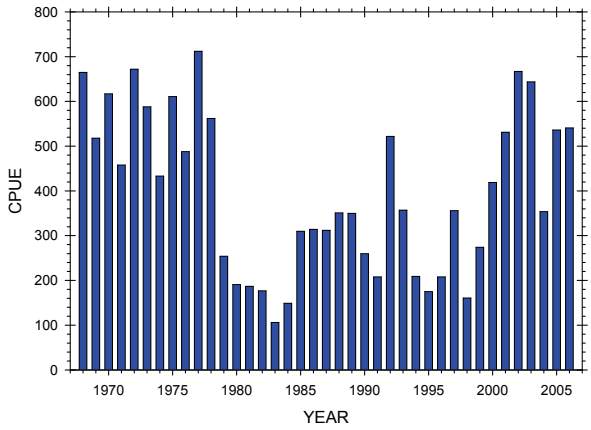

Figure 6. Catch per unit of effort (CPUE=lbs/SREhr) for vessels landing pink shrimp into Oregon, 1968-2006.

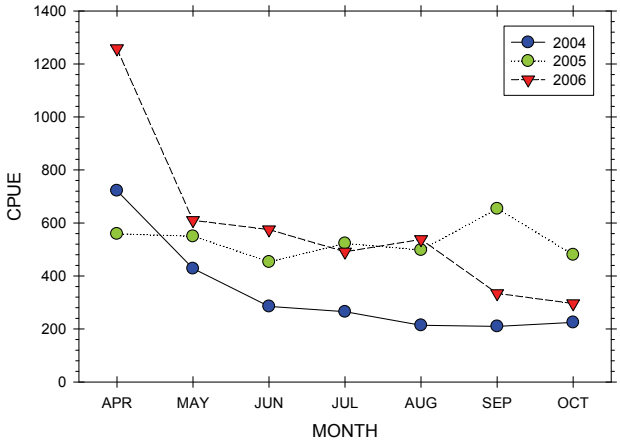

Figure 7. Monthly CPUE (=lbs/SRE hr) for vessels landing pink shrimp into Oregon in 2004,'05 and '06.

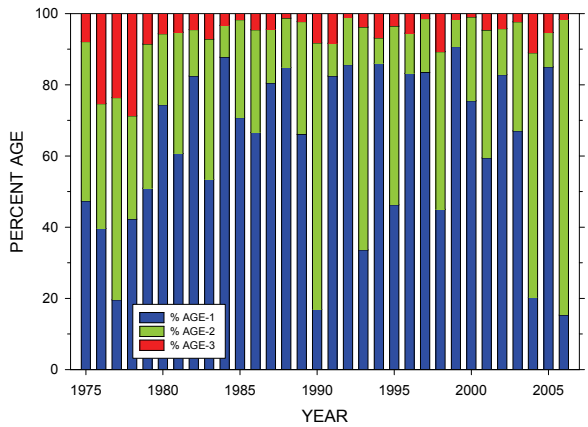

Figure 8. Annual percent age composition of pink shrimp (#'s of shrimp) landed in Oregon, 1975-2006.

The weighted average count-per-pound (count) was 106 shrimp-per-pound in 2006; sharply lower than the record high average count of 144 shrimp/lb in 2005 (Figure 9). The average count was fairly low in 2006, but not as low as some years in the early 1990's which were also dominated by age-2 shrimp. Market samples showed that both age-1 and age-2 shrimp were relatively small for their age during 2006. The reasons for slow growth are unclear. However, the slow growth functionally increased the average count. Also, age-3 shrimp were less abundant than usual, which contributed to a higher average count. During April, average counts by bed were highest from the Tillamook Head bed at about 135 count. By July, all beds off Oregon were producing counts less than 105 shrimp/lb and by September counts less than 90 shrimp/lb were common. Shrimp harvested off Washington had counts over 110 shrimp/lb for the entire season.

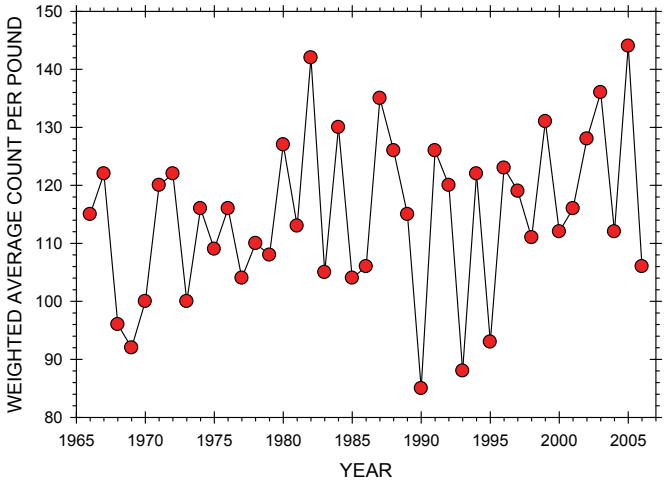

Figure 9. Average (catch weighted) count-per-pound of pink shrimp landed into Oregon; 1966-2006.

The average ex-vessel price of shrimp landed into Oregon during 2006 was 37¢/lb, 7¢ lower than during 2005 and the lowest average price in three years (Figure 10). The average opening price/lb for shrimp in April 2006 was sharply lower than in 2005; 34¢/lb this year versus 49¢/lb in 2005 (Figure 11). Unlike 2005 when the average price declined through the season, the monthly average price increased gradually during 2006 to a high of 41¢/lb in September. A split-price structure based on finished meat counts was in effect throughout the season, with shrimp producing finished counts over 500 meats/lb often sold for 25¢ or less per pound.

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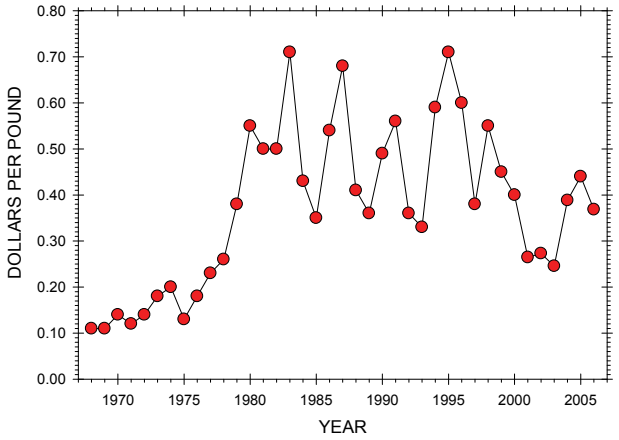

Figure 10. Average ex-vessel price per pound paid for pink shrimp landed in Oregon; 1970-2006. Prices not adjusted for inflation.

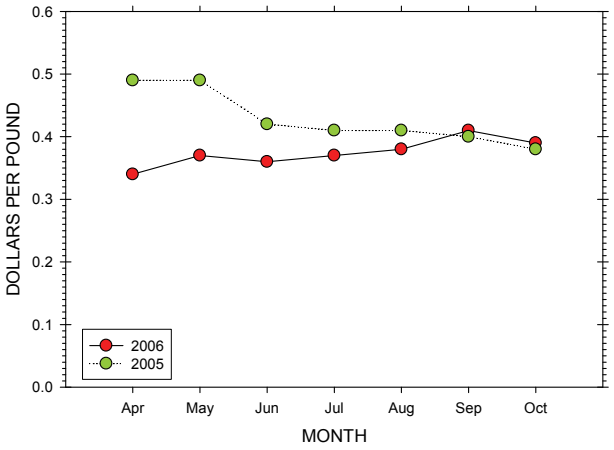

Figure 11. Monthly average ex-vessel price-per-pound paid for pink shrimp landed in Oregon during 2005 and 2006.

Indicators for 2007

So what shrimp availability can we expect in 2007? Based on several factors, we think shrimp should be reasonably abundant but the age composition is in question. Market samples collected during 2006 consistently showed that age-1 shrimp were scarce, indicating a very weak year-class of shrimp hatched in March 2005. There probably will be a low volume of age-2 shrimp available in 2007.

Samples also showed that 83% of the shrimp landed in Oregon last year (numbers of shrimp) were age-2 shrimp. The big question is whether these age-2 shrimp will survive to age-3 in large numbers until the 2007 season begins in April. Staff opinion varies on this issue. Optimistically, survival to age-3 will be high and the age-3 component of the 2007 catch will return to the high levels seen from 1976 to 1978 (Figure 8). By the end of the 2006 season, monthly CPUE was about 300 lb/hr indicating that a moderate amount of age-2 shrimp remained after the 2006 season (Figure 7). Higher than

normal carry-over to age-3 would potentially help shrimpers weather what could be a fairly good recruitment of small age-1 shrimp early in the 2007 season.

On the other hand, if the remaining age-2 shrimp from the 2006 season do not survive well to age-3, incoming age-1 shrimp may dominate the catch in 2007. Potential precedent for this scenario is supported by the fact that the age-3 component of the catch hasn't risen above 11% (numbers of shrimp) since 1978 (Figure 8). Despite some years in which the age-2 component was high (i.e. 1990, 2004), the age-3 component remained low the following year. One possible explanation of poor survival from age-2 to age-3 is that natural mortality may increase with age and with the number of times individuals have spawned.

Market sample analysis and reports from shrimpers suggest that age-1 recruitment probably will be "good" in 2007. These are shrimp that hatched in March 2006. The strongest evidence that a good recruitment event may be in the offing came from reports from shrimpers. Many shrimpers reported that zero-age shrimp were widespread and abundant in all areas fished during fall 2006; more-so than what many had seen for several years. Our fall market samples were spotty from the Tillamook Head bed extending north, and south of the Bandon bed, so our information is weak from those areas. Analysis of fall samples from the Cape Lookout bed and south through the Bandon bed showed a wide range of zero-age relative abundance, with most less than 1%. However, samples from the Cape Lookout bed averaged 15% which is well above the norm. In fall 2004, market samples showed about 14% zero-age from the Cape Foulweather bed. This cohort of shrimp was strong and has supplied the bulk of the shrimp to the fishery for the last two years. Since zero-age shrimp in market samples may be a weak indicator of abundance, no firm conclusion can be drawn from them about age-1 abundance in 2007. However, the suggestive market sample evidence combined with shrimpers reports suggests that age-1 shrimp may be abundant in 2007.

If that weren't complicated enough, there is now an El Niño happening in the southern ocean. This one is a mild event, and may have no influence on the ocean off Oregon. In the past, mild El Niño events at the equator have produced everything from no effect off Oregon (1986/87) up to fairly strong effects (1957/58). All that we do know is that if the ocean is impacted up here, it will have a negative effect on shrimp abundance. For more information on the El Niño that's brewing, go to http://www.cdc.noaa.gov/ENSO/enso.mei_index.html.

Regulation Information

- Declarations Required;

DON'T FORGET; The National Marine Fisheries Service (NMFS) requires all open access vessels using trawl gear to file a declaration report before the vessel is used to fish in any Rockfish Conservation Area (RCA). Shrimpers need to declare before leaving for their first shrimp trip of the season. Only one declaration is required for the season, providing that the vessel doesn't engage in another fishery during the season. For details and declaration procedures, please contact the National Oceanic and Atmospheric Administration (NOAA) Fisheries Groundfish Team at 206-526-6140, or visit the NOAA Fisheries Office for Law Enforcement website (http://www.nmfs.noaa.gov/ole/nw_declarationreqs.html).

- VMS Requirement Planned;

As published in the Federal Register on 13 November 2006, the National Marine Fisheries Service (NMFS) "intends to publish a proposed rule to implement VMS in the open access fisheries as soon as possible". We have seen no published rule addressing the VMS requirement since this date. For more up-to-date information, please call the following NMFS Northwest Region contacts: Becky Renko or Yvonne deReynier, (206) 526-6140.

- EFH No-Trawl Zone Boundaries;

In 2005, the Pacific Fisheries Management Council (PFMC) identified several Essential Fish Habitat (EFH) areas off the Oregon coast as potential no-trawl zones. The designated areas were designed to protect primarily hard-bottom habitats and associated species. The designated area most likely to affect shrimpers is the Nehalem Bank/Shalepile (Nehalem Bank) area (Figure 12).

As initially proposed, the Nehalem Bank EFH boundaries included an area on the south-east side that has been shrimped regularly over the years (Figure 12: area bounded by points 3A, 3 and 4). In response to concerns expressed by Oregon shrimpers in 2005, ODFW proposed a change to the Nehalem Bank area in order to "avoid impracticable impacts on the shrimp trawl industry". The National Marine Fisheries Service has implemented the suggested change. The basis for this change was the accurate logbook information recorded by the Oregon shrimp fleet over the years. Without this information, ODFW would not have been able to demonstrate the importance of the excluded area to the shrimp fleet and, by inference, the lack of hard-bottom habitat in the area. Shrimpers; this is a prime example of your logbook information working for you!

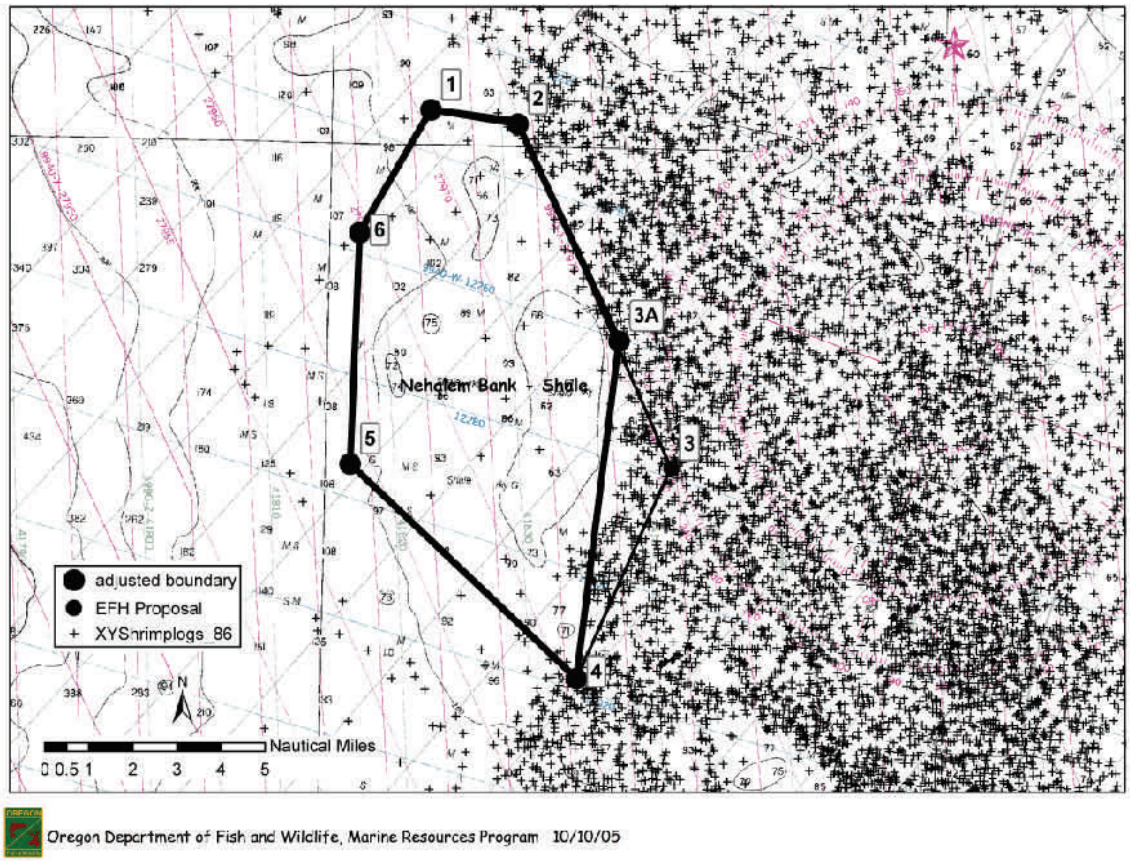

Figure 12. A navigation chart of the Nehalem Bank/Shalepile area showing shrimp tow start locations (+'s) from 1986-1990 within and near the official EFH closure area (thick lines). The area originally proposed included the area bounded by points 3A, 3 and 4.

The following coordinates define the modified perimeter of the Nehalem Bank/Shalepile EFH area that became permanently closed to trawling as of June 2006. Shrimpers are cautioned NOT to trawl within the area. The NMFS intends to eventually enforce the EFH no-trawl areas via the Vessel Monitoring System.

1. 46° 00.833' N. lat., 124° 36.775' W. long.
2. 46° 00.599' N. lat., 124° 33.943' W. long.

3A. 45° 55.630' N. lat., 124° 30.516' W. long.

4. 45° 47.948' N. lat., 124° 31.699' W. long.
5. 45° 52.755' N. lat., 124° 39.200' W. long.
6. 45° 58.020' N. lat., 124° 38.989' W. long.

and connecting back to; 46° 00.833' N. lat., 124° 36.775' W. long.

Other EFH no-trawl areas near commonly shrimped grounds are Daisy Bank, Stonewall Bank, Heceta Bank and Coquille Bank. The coordinates delineating these EFH and other areas are listed on the PFMC web page at http://www.pcouncil.org/groundfish/gffmp/gfa19.html, under Appendix C #3: Coordinates for EFH Conservation Areas.

- Groundfish Limits;

The NMFS proposed 2007 groundfish limits for shrimpers are listed below: PLEASE NOTE: Groundfish limits may be changed in-season. Be sure to check on the current regulations frequently again this year!

- The groundfish TRIP LIMIT for shrimpers is 1500 lb/trip, not to exceed 500 lb/day.

- The weight of groundfish landed may not exceed the weight of shrimp landed.

- No Canary Rockfish, Thornyheads or Yelloweye Rockfish may be landed.

- Lingcod, 300 lb/month with a 24" minimum size limit.

- Sablefish; 2000 lb/month.

- All other groundfish; Landings of these species count toward the per-day and per-trip groundfish limits and do not have species-specific limits.

- Limited entry groundfish vessels possessing shrimp permits and harvesting pink shrimp must stay within the daily/monthly limits established for the shrimp fishery. They must also include any fish catch taken while shrimping toward their monthly species limits for the limited entry groundfish fishery.

BRD Use Update

The use of rigid-grate bycatch reduction devices (BRDs) remained high at 95% during 2006, but declined slightly from the record high 97% usage rate documented during 2005 (Figure 13). Only two vessels used soft-panel BRDs during the 2006 season, but the number of vessels landing shrimp into Oregon dropped from 41 in 2005 to 37 in 2006 (Figure 4). Our grate use measure is calculated as the number of trips in which grates were used, divided by the total number of trips during the season. The slight decline in grate use was unexpected, but is attributable to the decline in vessels fishing for shrimp. We encourage all shrimpers to use rigid-grates due to their superior effectiveness and efficiency.

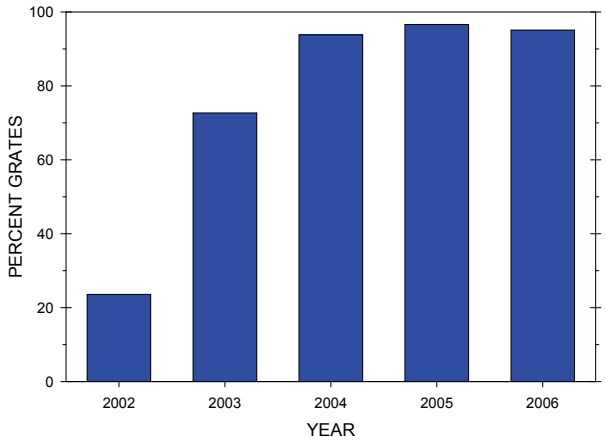

Figure 13. The estimated percentage of shrimp trips landing into Oregon ports that used grates during the last five pink shrimp seasons. (Note: 2002 estimate includes only trips from July through October, when BRDs were required).

We completed a major study in 2006, utilizing 2005 NMFS observer data (thanks Northwest Fisheries Science Center!) to evaluate the effectiveness of BRDs in the shrimp fishery. The bottom line: the shrimp fishery came out looking very good. The analysis showed that by the end of 2005, BRDs had reduced fish bycatch (by weight) by about 66-88% from historical levels. Fish bycatch was reduced from about 32-61% of total catch prior to 2001, down to just 7.5% of total catch in 2005! The analysis showed the strong positive effect of the switch-over from soft-panel BRDs to rigid-grate BRDs as well as the positive effect of many vessels moving to narrower bar spacing in their rigid-grate BRDs. By combining NMFS observer data with ODFW logbook and research cruise data we were also able to show that if the fleet were to all use rigid-grate BRDs with one inch bar spacing (or maybe even a little smaller), we could probably reduce fish bycatch to well below 5% of total catch, without losing shrimp, which if you think about it, is pretty incredible.

Research Activity

- Nehalem Bank ROV Study Delayed;

During mid-summer 2006, we decided to take advantage of the recent Essential Fish Habitat (EFH) trawl closure at Nehalem Bank (Figure 12) by planning a comparative pilot study to begin evaluating the effect of shrimp trawl bottom impacts before and after the closure. Although we suspect that any shrimp trawl induced impacts are minimal, bottom trawl impacts are a high profile environmental issue these days and may be important criteria for MSC certification.

Unfortunately, ODFWs Remotely Operated Vehicle (ROV) wasn't available to our project until late October and the weather turned sour. We now hope to conduct the study as soon as possible during 2007. Our first goal in the study is to see if the ROV (Figure 14) can be successfully deployed off a commercial shrimp vessel on the shrimp grounds. We need fairly calm seas with a slow drift. The second goal is to attempt a visual evaluation of the soft-bottom habitat within and adjacent to the Nehalem Bank EFH area. Any evaluation would be based on what we could see using the ROV's two cameras.

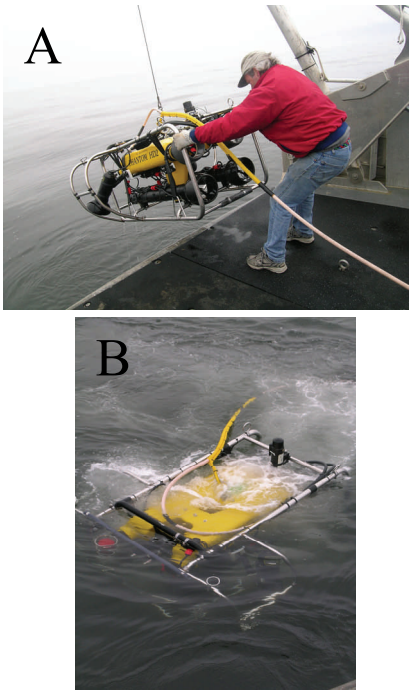

Figure 14 A and B. The ROV and umbilical cable being retrieved after a dive (14A). The ROV at the surface, being positioned for retrieval (14B).

The southeast corner of the Nehalem Bank EFH is of particular interest. Historically, the area has been shrimped regularly and was shrimped during the 2006 season. Theoretically, any visible trawl impacts (i.e. door tracks, macro-invertebrate damage) documented in the area now would allow a comparison with future evaluations of the closed area in comparison with adjacent areas that continue to be trawled. Depending on what we can see with the ROV, it may be a rare chance to track bottom impact changes in the closed EFH area over time. We hope to repeat the initial study in four to five years to look for differences.

- Innovations from Distant Ports;

A cooperative research project on the east coast (Maine) that tested a size-sorting grid system to reduce the catch of small shrimp (*Pandalus borealis*) has shown promising results. Count-per-pound was reduced by about 20 shrimp-per-pound using the arrangement they tested. The study was sponsored by the Northeast Consortium, a group that "encourages and funds cooperative research and monitoring projects in the Gulf of Maine and Georges Bank that have effective, equal partnerships among fishermen, scientists, educators, and marine resource managers". We think that a similar sorting system could be useful in the Oregon pink shrimp fishery. A description of the study (as yet unpublished) can be found on the web at http://www.northeastconsortium.org/shrimp_sorting.shtml.

Nordmore grates with 25mm (1 inch) bar spacing are required in the Maine shrimp fishery and are set up in the same fashion as our "Oregon Grates", except a mesh funnel is often used in place of our accelerator (Guiding) panel. In their size-sorting system, an additional "partial grid" (11 mm bar spacing) is mounted ahead of the mesh funnel. The "partial grate" strains roughly the lower half of the water passing through the net. Small shrimp are able to pass through the partial grate to the outside of the net while larger shrimp pass up and over the partial grate, through the funnel and through the Nordmore grate, which kicks out the fish.

We'd like to test a modified version of the east coast design by incorporating a size-sorting section into the lower half of the "Oregon grate" design (Figure 15). The concept would avoid adding another panel, making the net easier to handle.

Observers Back in 2007

The National Marine Fisheries Service (NMFS) plans to deploy fishery observers on selected shrimpers during the 2007 shrimp season. Shrimp vessels will be a low priority for NMFS this year, but observers will be placed on shrimpers when higher priority fishing vessels are not available. For more information on the NMFS observer program and coverage plans for this year, please contact Mr. Allen Cramer (NMFS Northwest Fisheries Science Center, Newport, OR) at 541 867-0527.

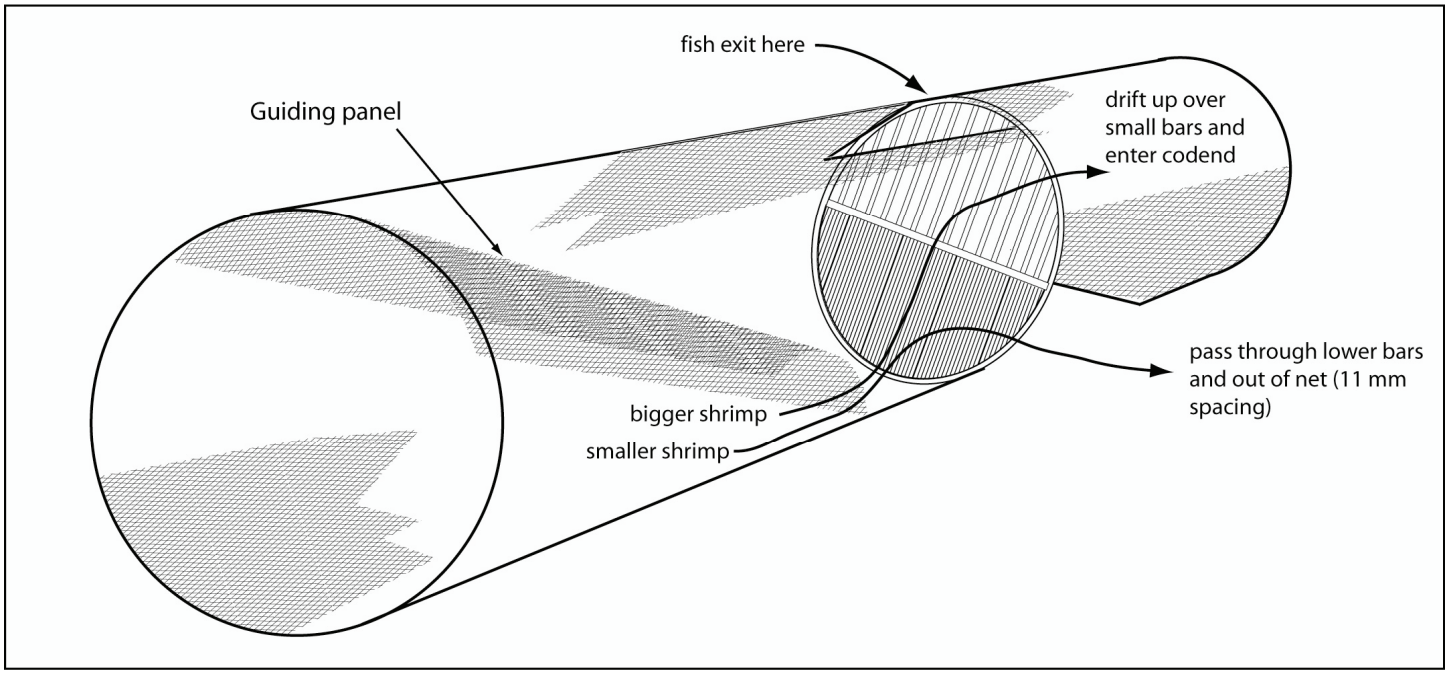

Figure 15. A schematic drawing of a modified Oregon grate assembly and codend showing the narrow spaced bars in the bottom half of the grate and the escape route for excluded small shrimp.

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Marine Stewardship Council Update

For those unfamiliar with the Marine Stewardship Council (MSC), it's an international organization that promotes fisheries that are deemed sustainable under their criteria. The organization rewards environmentally responsible fisheries and practices with its blue product label, which is valued by many seafood consumers. More information about the MSC is available at http://www.msc.org/.

The Oregon Trawl Commission (OTC) applied for a MSC pre-assessment of the Oregon pink shrimp fishery during late 2003, followed by a full assessment application in 2005. The full assessment is now in its final stages with final performance indicators and scoring guideposts established. Based on the scoring, the MSC will either reject certification, grant a five year conditional certification, or approve full certification. The outlook as of this printing appears positive, at least for gaining conditional certification. Conditional certification would require the shrimp industry and fishery managers to address areas of concern. For more up to date information, please contact Mr. Brad Pettinger (OTC Director) at 503 325-3384.

Count-Per-Pound Issues

Shrimpers should be prepared for an abundance of small age-1 shrimp during the first few months of the 2007 season. Hopefully, age-2 shrimp will be abundant enough to supply good catches early in the season, but shrimpers should be prepared to take frequent counts. The Oregon State Police are aware of the possibility of abundant small shrimp in 2007 and will be actively monitoring landings in all Oregon ports. 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 to ask any other questions about count-per-pound issues (541 867-4741).

Acknowledgments

This project was funded in part by a grant/cooperative agreement from the National Oceanic and Atmospheric Administration (NOAA). The views expressed herein are those of the authors and do not necessarily reflect the views of NOAA or any of its sub-agencies. 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# NA06NMF4070244). We wish to thank the Oregon shrimp industry for their continued cooperation and assistance during the last year.

Good Luck Shrimping in 2007!