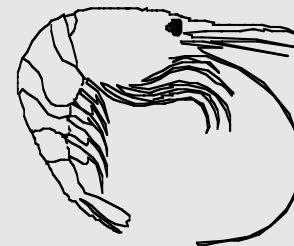




~17TH~

# Annual Pink Shrimp Review

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**TO: OREGON SHRIMP INDUSTRY**  
**FROM: Bob Hannah and Steve Jones**  
**Subject: Opening of 2006 Commercial Fishery**  
**Date: 20 February 2006**

The 2006 pink shrimp (*Pandalus jordani*) season will begin 1 April and extend through 31 October. A summary of the 2005 season is provided for your review, including catch, effort, market sample information, plus a discussion of what we might expect during the 2006 season. Research results on a comparison between 0.75" and 1.25" rigid-grate BRD's are highlighted.

### Notices

- Oregon pink shrimp rated "Best Choice" by Monterey Bay Aquarium Seafood Watch! (see pg. 5).
- A first look at West Coast Groundfish Observer Program shrimp bycatch data. (see pg. 7).
- EFH no trawl areas and VMS requirements (see pg. 4).
- Don't forget to declare (see pg. 4).
- NMFS observer coverage changes in 2006 (see pg. 4).

### 2005 Season Summary

Oregon shrimpers began fishing on about 10 April, after a short delay due to weather and price negotiations. Since the prospect of large amounts of older shrimp (age-2 plus) on the grounds was low, shrimpers and processors were anxious to see how abundant and widespread the incoming year-class (age-1) was.

Shrimpers landed about 15.8 million pounds of pink shrimp into Oregon ports during 2005, about 3.6 million pounds more than in 2004 (Figure 1). It was the third consecutive year that landing totals fell below the 15 year average (about 23.1 million pounds this year). This trend probably reflects the lack of recent strong recruitment events coupled with recent declines in fishing effort.

Monthly landings were highly variable in 2005, in sharp contrast to the steady decline seen in 2004 (Figure 2). The low landing total in July reflected decreased fishing effort due to price disputes and trip limits, together with rough seas. Overall, monthly landings roughly followed the 15 year average trend, with peaks in May and August-September. October landings were low due to weather and a price drop.

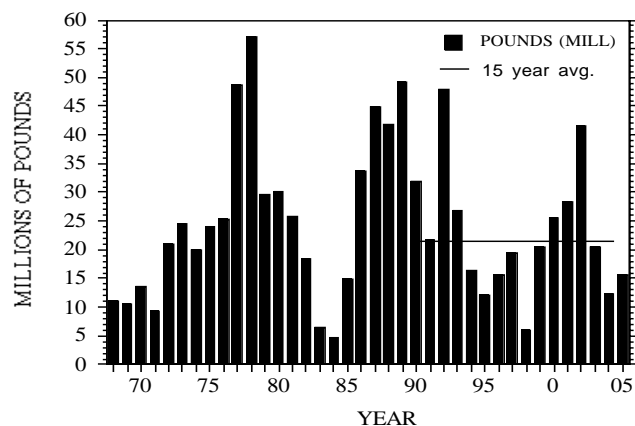


Figure 1. Oregon pink shrimp commercial landings (millions of lbs) 1968-2005. Includes all pink shrimp landed into Oregon ports.

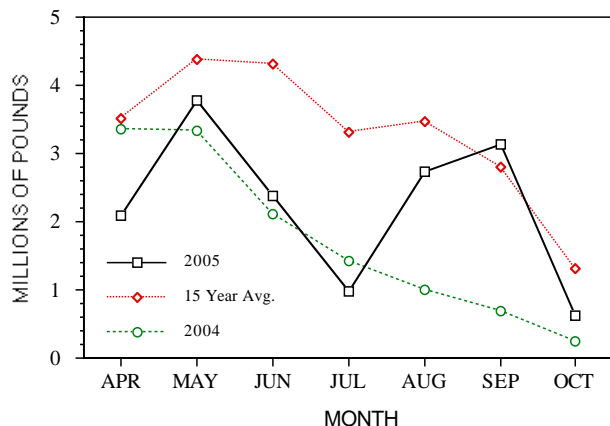
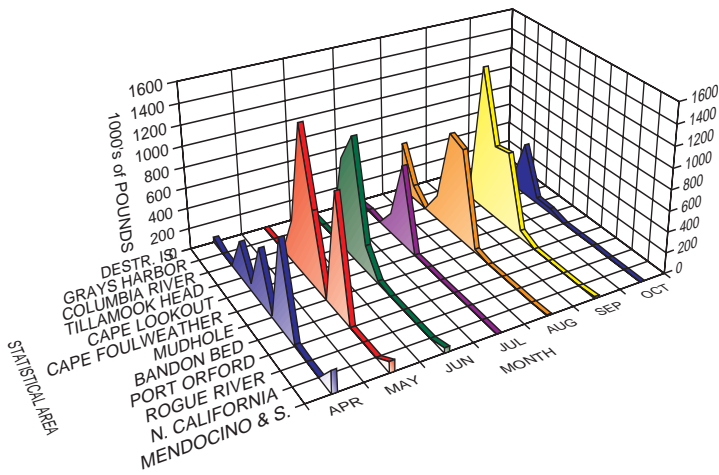


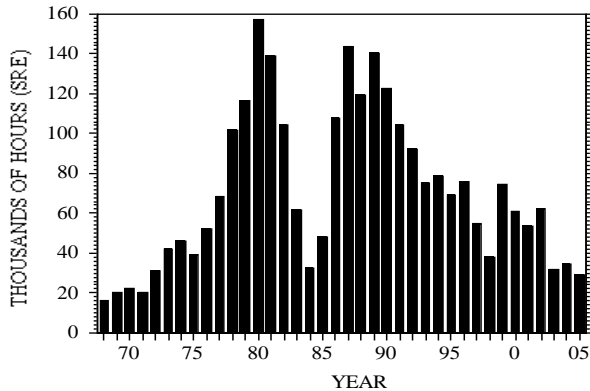
Figure 2. Oregon pink shrimp landings by month during 2004, 2005 and the 15 yr average (1989-2004).

Following the trend seen in the last three years, most shrimp landed in Oregon during 2005 were harvested from beds off the northern half of the state (Figure 3). Approximately 78 percent of Oregon landings came from the Tillamook Head, Cape Lookout and Cape Foulweather beds. Like last year, most production came from the Cape Lookout bed. Harvest from the south coast was generally low and sporadic, except about 2.0 million pounds were taken from the Bandon Bed during April and May. Shrimpers reportedly stayed away from the Bandon Bed during June due to high shrimp counts, but large concentrations of shrimp were not located there later in the season. As in 2004, Oregon landings harvested off Washington and California were low.

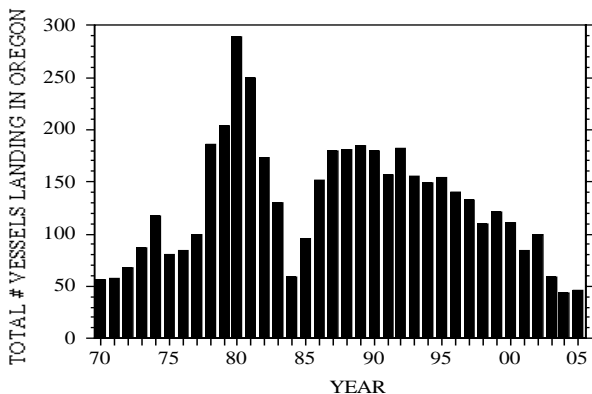


**Figure 3. Total 2005 Oregon pink shrimp landings (1000's of pounds) by month and statistical area.**

Shrimping effort during 2005, in terms of hours fished, was the lowest recorded since 1971 (Figure 4) and just below the near record low levels seen since 2003. Forty-six vessels landed shrimp into Oregon in 2005, just two more than in 2004 which was itself a record low for recent years (Figure 5). We suspect that overall low effort levels in the fishery may persist in the foreseeable future considering the current modest price structure for pink shrimp, elevated fuel prices and decreased processing capacity.



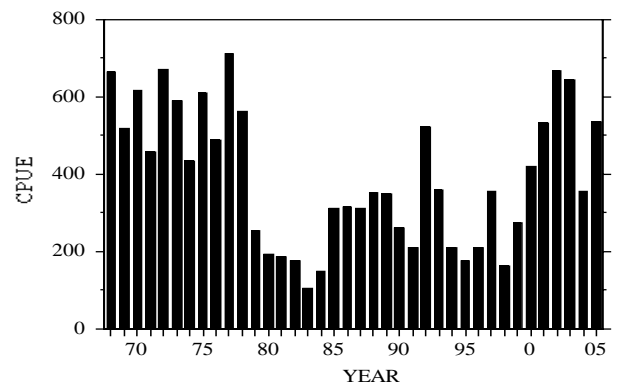
**Figure 4. Fishing effort (1000's of single-rig equivalent hours: 1SRE = 1 single-rig hour = 1 double-rig hour X 1.6) for pink shrimp landed in Oregon, 1968-2005.**



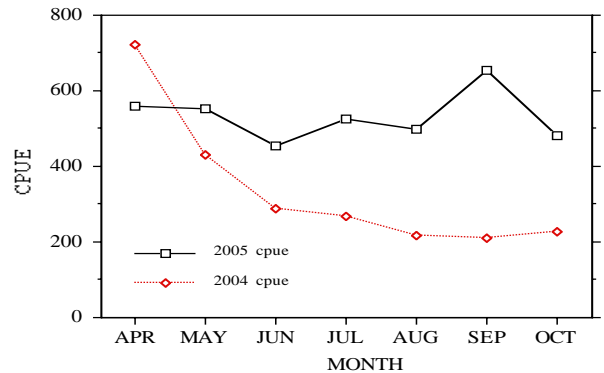
**Figure 5. Annual number of vessels landing pink shrimp into Oregon ports: 1970-2005.**

Overall catch-per-unit-effort (CPUE = pounds-per-sre hour) was on the high side in 2005, coming in at 536 lb./hr (Figure 6). The increase over the 2004 level was about 182 lb./hour, the sharpest annual increase we've seen for a while. Monthly CPUE was fairly stable during 2005 as opposed to the steady decline noted for 2004 (Figure 7). The decline during 2004 was probably due to poor age-1 recruitment that was inadequate to sustain high yields through the season. The high and steady CPUE seen in 2005 suggests that age-1 recruitment was much better this year, at least on the north coast.

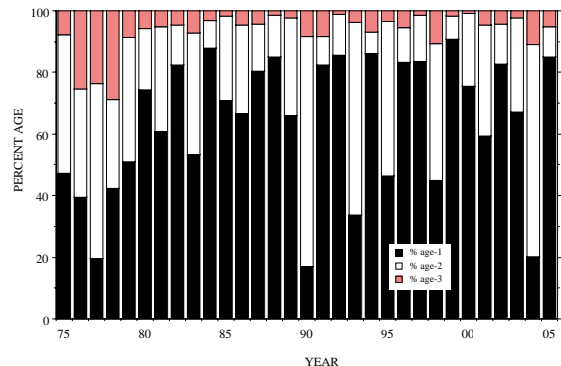
The age composition of shrimp landed in 2005 was heavily dominated by age-1 shrimp, making up about 85 percent of the catch by number of shrimp (Figure 8). As anticipated, the age-2 component was low due to the 2004 age-1 year class being so weak last year.



**Figure 6. Catch per unit of effort (CPUE=lbs/SREhr.) for vessels landing pink shrimp into Oregon, 1968-2005.**

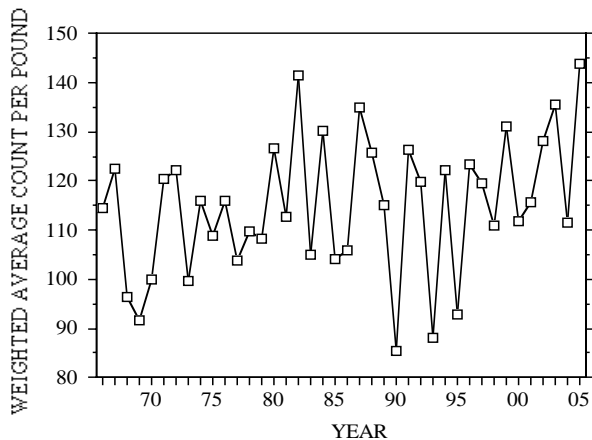


**Figure 7. Monthly CPUE (=lbs/SREhr.) for vessels landing pink shrimp into Oregon in 2004 and 2005.**



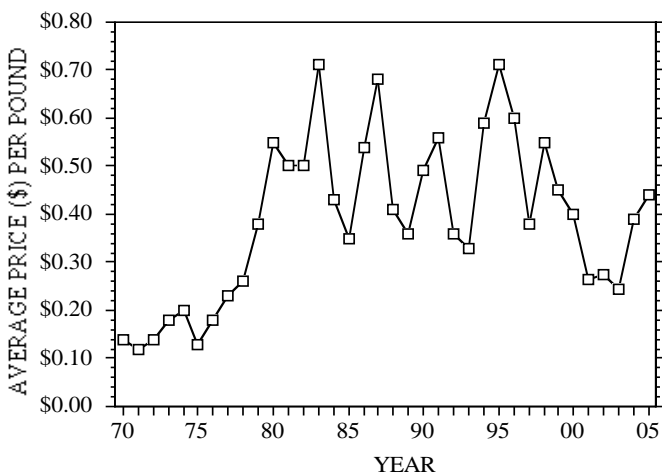
**Figure 8. Annual percent age composition of pink shrimp (#'s of shrimp) landed in Oregon, 1975-2005.**

The overall catch-weighted count-per-pound (count) was approximately 144 shrimp/lb. in 2005, the highest average count in our time series (Figure 9). The average overall count by bed was lowest in the Cape Foulweather bed (127 count), which had the highest percentage of age-2 shrimp harvested early in the season, and also had the highest age-1 shrimp growth rate. The Cape Lookout bed, which produced the highest poundage of any bed, had an average count of 146 shrimp/lb.

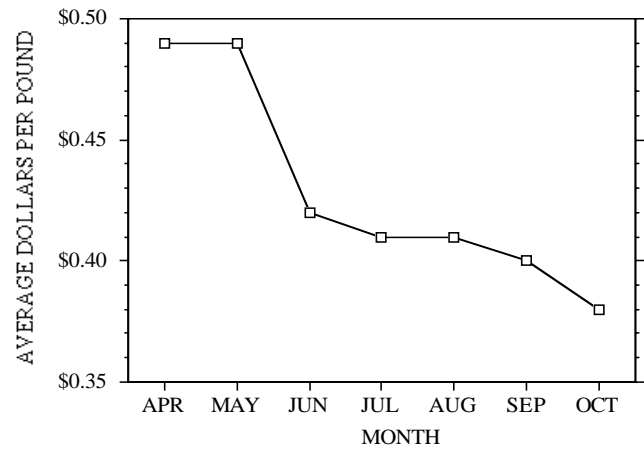


**Figure 9. Average (catch weighted) count-per-pound of pink shrimp landed into Oregon, 1966-2005.**

The average ex-vessel price for pink shrimp in Oregon was 44¢/lb. in 2005, a 5¢/lb. increase over 2004 (Figure 10). A common price structure for the opener was 25¢, 50¢ and 53¢/lb. based on finished counts. The average monthly price was stable through May before declining sharply in June (Figure 11). The monthly average declined further through October to a low of 38¢/lb. Many shrimpers stated that they quit fishing early in October because prices were continuing to drop.



**Figure 10. Average ex-vessel price per pound paid for pink shrimp landed in Oregon, 1970-2005.**



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

**Indicators for 2006**

Unlike last year, holdover of age-1 shrimp should be relatively high in 2006. As indicated by the high and steady CPUE seen in 2005 (Figure 7), age-2 shrimp should be much more abundant than they were in 2005. Hopefully this means that shrimpers will be able to locate good grade shrimp early in the season, at least in those areas where production was high in 2005.

The big unknown is what recruitment of age-1 shrimp will be like in 2006. Zero-age (zero's) shrimp abundance in September and October market samples was lower than in 2004, suggesting that recruitment may not be as good in 2006. We regard this measure as weak though and it's just one indicator. Unfortunately, market sample coverage was very limited during 2005 due to fleet fishing patterns. Our estimates of fall zero-age relative abundance refer only to the Cape Foulweather, Cape Lookout and Tillamook Head beds.

Shrimpers reported seeing zero's in each of the beds mentioned above. Some shrimpers reported catching large numbers of them at times in the Cape Foulweather bed during late September to early October. However, our mid-October research cruise showed much lower levels of zero's in the Cape Foulweather and Cape Lookout beds than we saw in 2004. There again, this indicator is probably weak. Overall shrimp catch on our October cruise was very low, even though we fished in areas that had produced well commercially two weeks prior. We believe the shrimp, perhaps including the zero's, were off bottom.

One question expressed by many shrimpers is: what's happening with shrimp production on the south coast? In general, shrimp harvest has been down for the Mudhole and south since 2001. Shrimp recruitment presumably has been down, but it has been hard to measure because most fishing effort and harvest has come from the north. With fewer

vessels fishing fewer hours these days, it's hard to get a handle on age composition and relative abundance in most southern areas. Certainly we've had north-south abundance shifts in the past and will again. What's causing the apparent shift now is a matter of conjecture. One hypothesis is that upwelling has been stronger to the south and has pumped larvae offshore and hence lost to the fishery.

What's the bottom line for 2006? Our best guess from the limited information available is that recruitment of age-1 shrimp will be weaker than in 2005 and holdover of age-2 shrimp will be much better than last year.

### Regulation Information

#### EFH/VMS News;

In 2005, the Pacific Fisheries Management Council (PFMC) identified several essential fish habitat (EFH) areas off the Oregon coast as potential no trawl zones. Once approved, the no trawl zones will become effective sometime in 2006. The designated areas are designed to protect primarily hard bottom habitats and associated species. The designated area most likely to affect shrimpers is the Nehalem Bank "no bottom trawl area". Other designated areas near commonly shrimped areas are Daisy Bank, Stonewall Bank, Heceta Bank and Coquille Bank. Once approved, final coordinates for the no trawl zones will be published in the Federal Register, which can be reached on line at "<http://www.gpoaccess.gov/fr/index.html>". The coordinates and maps should also be available on the PFMC web site at "<http://www.pcouncil.org/>". If you can't get the coordinates there, please give the Marine Program office a call at 541 867-4741.

To enforce the no-trawl areas identified under EFH, the PFMC has decided to recommend to NMFS that they expand the vessel monitoring system (VMS) to include the shrimp trawl fishery. If approved by NMFS, all shrimp trawl vessels may be required to install a VMS system by 2007. For more information on VMS for the shrimp fishery, contact NOAA Fisheries directly.

#### Declaration Reminder;

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) or a Cowcod Conservation Area (CCA). Shrimpers need to remember to declare before leaving for their first shrimp trip. Only one declaration is necessary each season unless the vessel engages in another fishery. For details and declaration procedures, contact the NOAA Fisheries Groundfish Team in Seattle about NMFS policies and regulations at (206) 526-6150., or visit the Northwest Region web site (<http://www.nwr.noaa.gov/1sustfish/gdfsh01.htm>).

#### NMFS Observer News;

The NMFS plans for observer coverage during 2006 indicate that the west coast shrimp trawl fishery will be a low priority this year. However, shrimp trip observations may return in future years as NMFS priorities change.

#### BRD's Permanently Required;

Approved rigid-grate (grate) or soft-panel BRD's are permanently required in the Oregon pink shrimp fishery. Shrimpers are reminded that for a grate to meet approved requirements, it must not exceed 2 inches between bars or between the outer and inner ring if a double-ring configuration is used. Soft-Panels may have no more than a 5.5 inch mesh size (stretched; between knots) in any portion and the mesh must be continuous with no zippers or broken meshes. More detailed specifications are available on the ODFW web site at "<http://www.dfw.state.or.us/OARs/OARs.html#Fish>". Just download the commercial shellfish fishery PDF and look under the Pink Shrimp Fishery (Oregon Administrative Rule 635-005-0190).

#### Groundfish Limits;

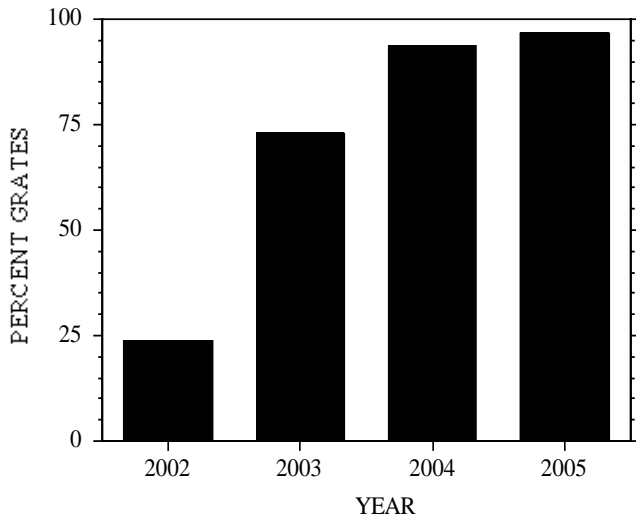
The current groundfish limits for shrimpers as proposed by NMFS are listed below: **PLEASE NOTE! groundfish limits may be changed in-season.** Be sure to check on the current regulations frequently again this year!

- The groundfish **TRIP LIMIT** for shrimpers is **1500 lb./trip**, not to exceed **500 lb./day**.
- For any delivery, the weight of groundfish must not exceed the weight of pink shrimp.
- No **Canary Rockfish, Thornyheads** or **Yelloweye Rockfish** may be landed.
- **Lingcod**; 300 lb./month April through October. 24 inch minimum total length.
- The limit for **Sablefish** is 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 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

Rigid-grate (grate) bycatch reduction devices (BRD's) were used on nearly 97% of all shrimp trips that landed into Oregon during 2005 (Figure 12). The estimated 3% increase over 2004 in grate usage represents progress slow and sure, but still falls short of our 100% goal. Considering the

demonstrated effectiveness of grates in the pink shrimp fishery and today's eco-political climate, it seems hard to justify less than 100% use. Soft-panel BRD's simply are not as effective at reducing bycatch. Cost is the predominant stated reason for not switching to grates. Here's an idea. Since 2002 many shrimpers have switched to grates with narrower bar spacing, which means that there must be many unused grates out there. If any shrimpers would like to donate grates to a vessel currently using soft-panels please give us a call and we'll contact vessels that could use them. The only requirement is that bar spacing needs to be 2 inches or less, which is the legal maximum.



**Figure 12. The estimated percentage of shrimp trips landing into Oregon ports that used grates during the last four pink shrimp seasons. (Note: 2002 estimate includes only trips from July through October, when BRD's were required)**

The average bar spacing of grates used in 2005 was 1.28 inches, about the same as in 2004. The minimum and maximum stated bar spacing (from logbooks) was 1.0 and 1.5 inches respectively. The range fell well below the 2.0 inch maximum allowed, but we feel that going to smaller spacings yet would be doable and could eventually be an economic benefit to the fleet (see MSC & Research sections below).

### Monterey Bay Aquarium Recognition

The Monterey Bay Aquariums' "Seafood Watch" web site now recommends Oregon pink shrimp as the **"BEST CHOICE"** for consumers purchasing salad/cocktail type shrimp ([http://www.mbayaq.org/cr/SeafoodWatch/web/sfw\\_factsheet.aspx?gid=20](http://www.mbayaq.org/cr/SeafoodWatch/web/sfw_factsheet.aspx?gid=20)). The "Seafood Watch" list recommends "sustainable seafood choices for healthy oceans", and is increasingly important to many consumers. The recognition is directly linked to the sustained efforts of the Oregon shrimp fleet to reduce bycatch in the fishery over the last decade (i.e. grate use). Hopefully, the listing will increase demand for our fine Oregon product. **CONGRATULATIONS!**

### Marine Stewardship Council News

The Oregon Trawl Commission (OTC) has applied for full Marine Stewardship Council (MSC) certification of the Oregon pink shrimp commercial fishery. The MSC is an international organization that promotes fisheries that are deemed sustainable under their criteria. The certification process is being conducted by Tavel Certification Inc. and we're told it should be completed in about one year. For more information regarding the progress of the certification, please contact Mr. Brad Pettinger (OTC Chair) at 503 325-3384. Like the "Seafood Watch" recognition mentioned above, MSC certification could improve the market situation for Oregon pink shrimp.

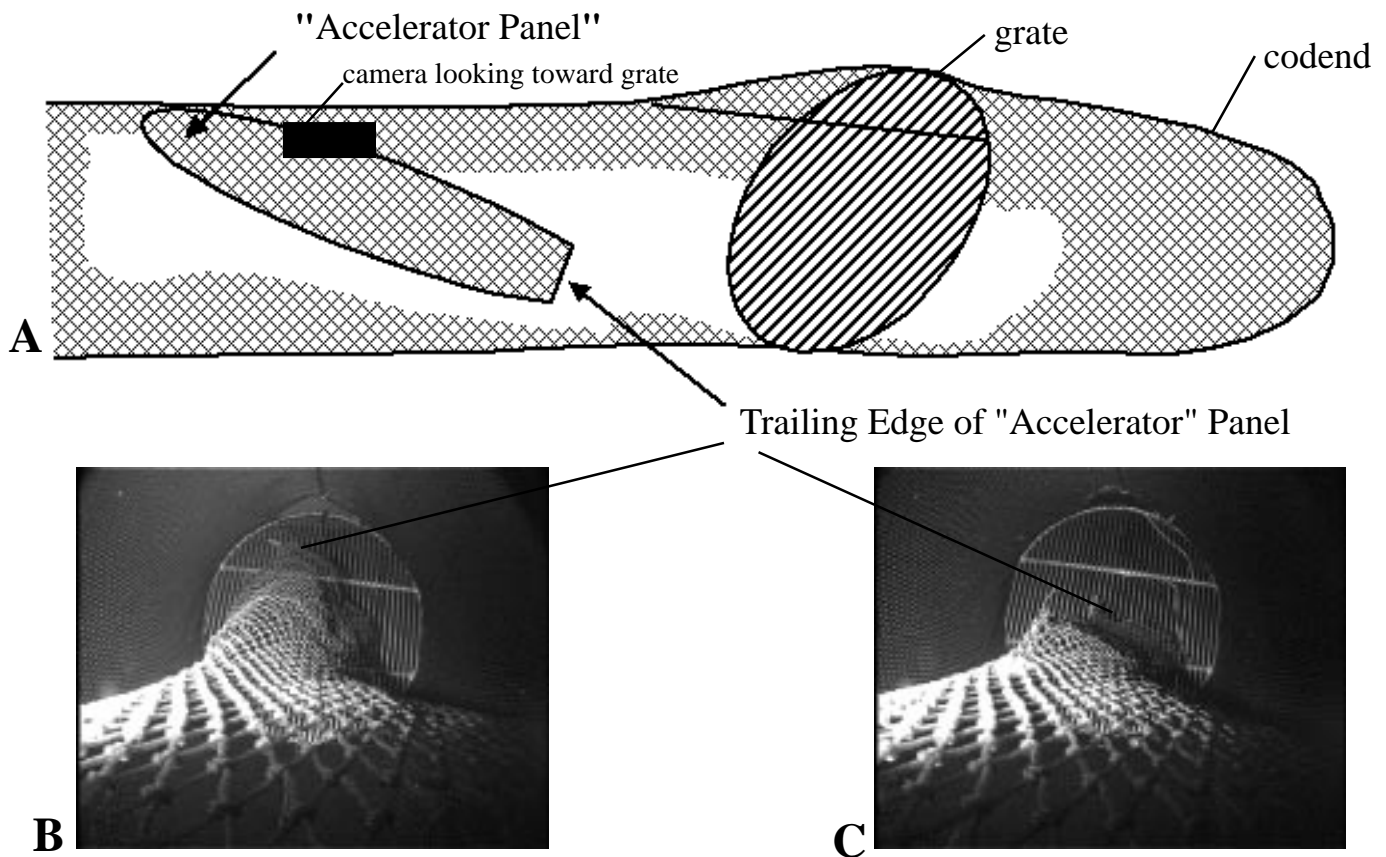
### Research Charter Activity

We conducted a research charter in June 2005 on the F.V. Miss Yvonne. We tested the performance of a rigid-grate BRD with 0.75 inch bar spacing (0.75" grate) versus a similar grate with 1.25 inch bar spacing (1.25" grate).

### 1.25" vs 0.75" Grate Comparison

The comparison was undertaken in an effort to determine how narrow bar spacing could be while still minimizing shrimp loss in the pink shrimp fishery. Many shrimpers have been switching to narrower bar spacing since 2002. The narrowest bar spacing now used is 1.0 inches and the average spacing is about 1.25 inches. We've encouraged the fleet to use narrower bar spacings in an effort to further reduce fish bycatch. The results described here are provided so shrimpers can judge the benefits of using narrower bar spacing, in terms of fish bycatch and potential shrimp loss. Video observations are described that may help shrimpers reduce shrimp loss as they switch to narrower spacing.

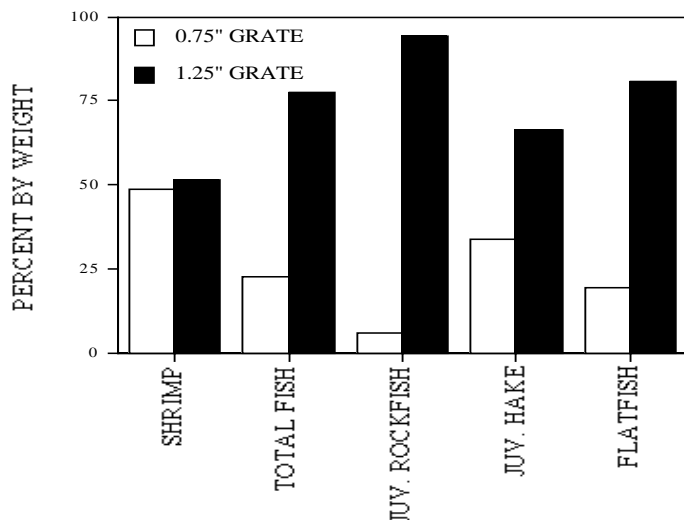
Why test a grate with .75 inch bar spacing? As a reference point, maximum bar spacing requirements in the eastern U.S. and Canadian *Pandalus borealis* fisheries is 22.0mm (0.866 inch) in most areas. East coast shrimpers are using a much narrower bar spacing than west coast shrimpers, even though they're harvesting a longer-lived and larger shrimp. After consulting with some Oregon shrimpers, we decided to compare fish bycatch rates and shrimp retention between two nets, each equipped with either a 1.25" or 0.75" single-ring grates with 44.5 inch outside diameter. Each net had an "accelerator" panel of mesh mounted just ahead of the grate (Figure 13A). We chose to test a narrower spacing than that used on the east coast because *P. jordani* is smaller than *P. borealis*, and we wanted to get an idea of how narrow the bar spacing could be without losing shrimp.



**Figure 13. A:** Schematic showing the location and orientation of the "accelerator" panel in relation to the rigid-grate. The camera position is also shown. **B:** Captured video footage looking down the "accelerator" panel toward the 0.75" rigid-grate, showing the trailing edge rising high before modification. **C:** Footage showing the trailing edge of the "accelerator" panel after a large wedge of mesh was removed.

**Catch Results;**

Shrimp loss by weight in the net using the 0.75" grate was modest at about 5.7 percent (Figure 14). Fish catch reduction between grates was dramatic, with overall fish catch reduced by about 70.8 percent. Juvenile rockfish catch was reduced by a whopping 94.0 percent, most of these being splitnose and darkblotched rockfish. Juvenile hake (approx. 8-10") were reduced by 49.0 percent and flatfish (species combined) dropped 76.2 percent.



**Figure 14. The percentage of the total catch (pounds) of selected catch categories caught using a 0.75" grate and a 1.25" grate during our shrimp charter in June 2005.**

**Video Observations;**

Video footage clearly showed that the "accelerator" panels we used needed to be modified. The web was far too slack at the trailing edge of the panel, causing the edge to billow up too far on the grate (Figure 13B). Shrimp and fish were not being directed to the bottom of the grate as they should, with the trailing edge of the panel rising over 3/4 of the way up the grate. We achieved a better configuration by removing a long dart of mesh (19 meshes wide at the trailing edge) from each "accelerator" panel (Figure 13C). As you can see, the trailing edge of the panel didn't rise as far, but still could be tightened down further and still allow the passage of large fish.

The mesh size used in the "accelerator" panels was 1.38 inch. Video footage showed that euphausiids (krill) readily passed through this mesh size. We could not recognize any pink shrimp passing through the panel mesh, but we suspect that small shrimp were passing through. Recognizable shrimp seen exiting the escape hole didn't appear to have come from underneath the "accelerator" panel, at least after the dart was removed. We suspect that they passed through the panel and were vulnerable to surge-related flow out the escape hole.

A constant water flow out of the escape hole above the 0.75" grate was not apparent from the video footage. Debris and

krill were constantly seen passing through the “accelerator” panel high in the net and close to the escape hole. Most of these objects went straight through the grate, but intermittently, pulses of water caused some of these objects to exit the escape hole.

We suspect that shrimp loss associated with the 0.75" grate was caused by restricted water flow through the grate due to increased surface area of the bars. The 0.75" and 1.25" grates were the same outside diameter, but the 0.75" grate had eleven more 0.375 inch diameter bars. We calculated that the total open space between bars was about 12% less in the 0.75" grate than in the 1.25" grate. Hypothetically, the added surface area was just enough to cause slightly more flow out the escape hole which led to the modest shrimp loss.

If you'd like to view the video footage, please give us a call and we'll try to arrange a viewing at the Marine Program office in Newport. We also have a couple of loaner copies that are available.

### Conclusions;

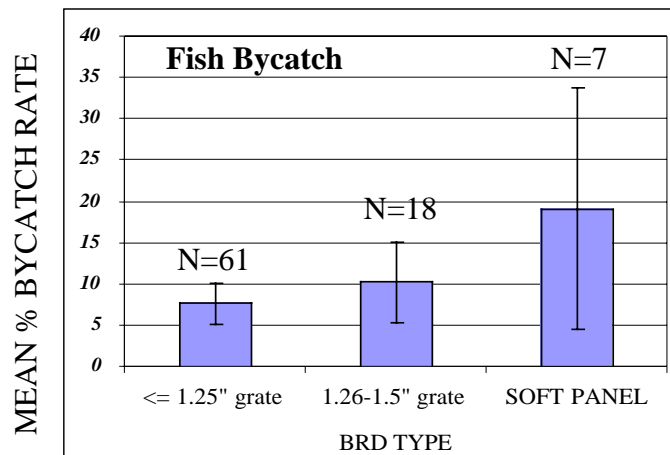
- 1) With further experimentation, the 0.75" grate could be a viable option for shrimpers in the pink shrimp fishery. Shrimp loss was modest with the configuration we tested.
- 2) Shrimp loss associated with the 0.75" grate could possibly be reduced by increasing the grate diameter, thus increasing water flow through the grate. We calculated that a 50 inch (outside diameter) 0.75" grate would have about the same water pass-through area as a 44.5" grate (outside diameter) with 1.25" bar spacing.
- 3) Shrimp loss can be reduced by making sure the trailing edge of the “accelerator” panel is not too slack, forcing the catch close to the bottom of the grate.
- 4) Smaller mesh in the “accelerator” panel (1.0 inch or less?) may help reduce shrimp loss by stopping shrimp pass-through. Any shrimp passing through the panel is more susceptible to being lost through the escape hole.
- 5) Fish bycatch was dramatically reduced using the 0.75" grate; 70.8% overall and 94.0% for juvenile rockfish.

### NMFS Shrimper Observer Data

On February 8th, the West Coast Groundfish Observer Program supplied ODFW with catch data (all fish and shrimp) from 86 observed shrimp trips that landed into Oregon during 2002, 2004 and 2005. We requested this data so we could further evaluate bycatch rates by BRD type and by grate bar spacing.

The data set is large and complex, and will take time to analyze fully. However, we did put together a preliminary comparison of gross fish bycatch rates between two grate

size categories and soft panels (Figure 15) As expected, the data shows that soft panels are generally far less efficient than grates at excluding fish. It also shows that grates with bar spacings of 1.0-1.25 (<= 1.25" in graph) inches exclude more fish than grates with spacings larger than 1.25 inch.



**Figure 15. The gross bycatch rate (lbs. of fish/(lbs. of shrimp + lbs. of fish)) by trip (N=86) for three categories of BRD on observed trips during 2002, 2004 and 2005. Data provided by West Coast Groundfish Observer Program.**

We suspect that the difference between the two grate size categories will be more pronounced when the analysis is complete. The data set lacks detailed grate information for some of the trips. For example, we don't know whether double- or single-ring grates were used on many of the observed trips. The double/single ring issue complicates comparisons between grate sizes because the space between rings is often greater than the bar spacing. We also suspect that flatfish are more prone to passing through the space between rings than between bars due to their swimming orientation. We'll be interviewing skippers of trips observed in the past to find out more specifics on the grates used.

We'd like to especially thank Mr. Jon Cusick and Dr. Elizabeth Clarke of the NMFS Northwest Fisheries Science Center for supplying us with the Oregon pink shrimp fishery observer data referred to above.

### Count-per-pound Issues

The 2005 season was ripe for potential count violations. Age-2 shrimp were relatively scarce and we had fairly good recruitment of age-1 shrimp. Market conditions probably helped to keep violations to a minimum this year. Processors simply didn't want small shrimp and offered a severely reduced price for small product.

**Oregon Dept. of Fish & Wildlife**  
**2040 S.E Marine Science Dr.**  
**Newport, OR 97365**

The Oregon State Police (OSP) were well aware of potential count problems and actively monitored loads in several ports. One count case occurred during early June in Astoria; the load having an average count of about 180 shrimp/lb. The load was confiscated, the skipper and two crew members were cited and the case was closed.

Barring an above average recruitment, the potential for count problems in 2006 may be less than last year due to anticipated good holdover of age-2 shrimp. However, shrimpers need to be prepared to take frequent counts when smaller shrimp are encountered. 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 (541 867-4741).

#### **Acknowledgments**

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through the U. S. National Marine Fisheries Service (contract# NAOSNM4071147). We wish to thank the Oregon shrimp industry for their continued cooperation and assistance during the last year. A special thanks to the West coast Groundfish Observer Program NOAA Fisheries, 2725 Montlake Blvd. Seattle, WA 98112 for providing Oregon shrimp observer bycatch data.

**Good Luck Shrimping in 2006!**

