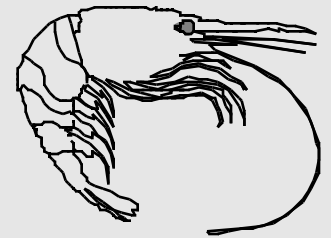




Annual Pink Shrimp Review

Oregon Department of Fish and Wildlife

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TO: OREGON SHRIMP INDUSTRY
FROM: BOB HANNAH, PINK SHRIMP PROJECT LEADER
SUBJECT: OPENING OF 1993 COMMERCIAL FISHERY FOR PINK SHRIMP
DATE: 20 MARCH 1993

1992 COMMERCIAL FISHERY

A new season is almost upon us. The 1993 pink shrimp season will open as usual on April first and will extend through October. We'd like to provide you with an updated 1992 season summary and also discuss some important items concerning the upcoming season and our recent research.

The 1992 season held several surprises for the shrimp industry and for us. The primary factor leading to these circumstances was the presence of an unexpectedly large incoming year-class of age-1 shrimp. The total amount of pink shrimp landed into Oregon ports was approximately 48.0 million pounds (Figure 1), the fourth highest season on record. The landing total was 26.3 million pounds larger than last year and almost double the ten year average landing of about 26.7 million pounds. Most of these shrimp were caught from the mudhole south (Figure 2).

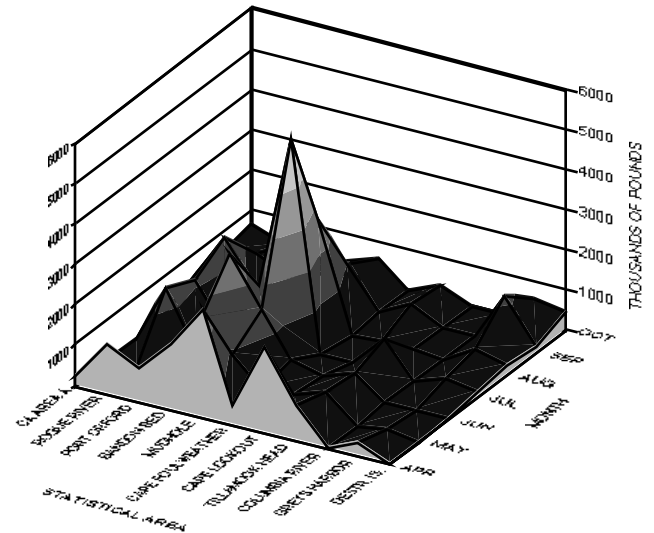


Figure 2. Total monthly catch (1000's of lb) of pink shrimp by area (preliminary), 1992. Monthly landing totals were well above the ten year average except for May. The April landing total of 10.4 million pounds was the largest monthly total since July of 1978. The low landings during May followed the large inventories accumulated during April and a sharp price decline. This resulted in vessel tie-ups and trip limits for many vessels.

The total number of hours fished for shrimp landed in Oregon declined to about 92,000 single-rig-equivalent hours (Figure 3). This was the fourth consecutive annual decline and the first season below 100,000 hours since 1985. However, unlike recent years, effort declined primarily due to price disputes and trip limits rather than declining catch per unit of effort (CPUE).

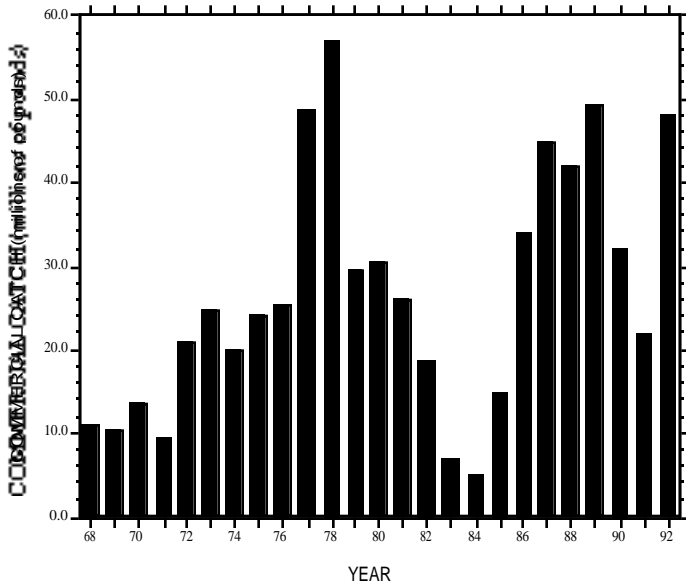


Figure 1. Oregon pink shrimp commercial catch (millions of pounds), 1975-1992. Includes all pink shrimp landed annually into Oregon ports.

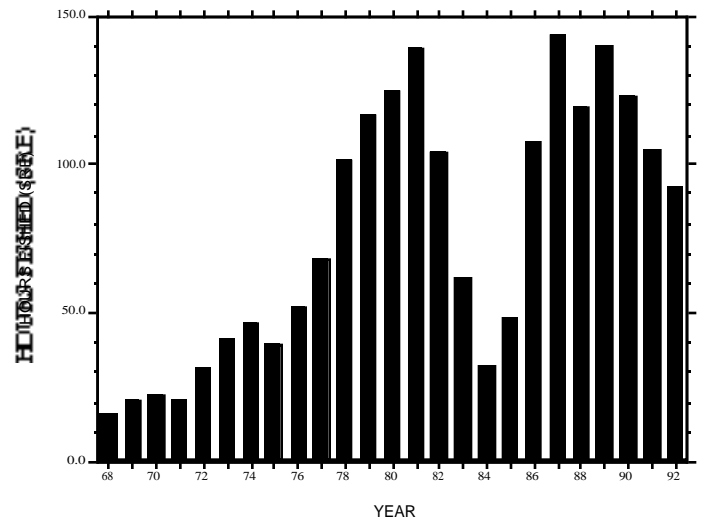


Figure 3. Fishing effort (single-rig equivalent hours) for pink shrimp landed in Oregon ports, 1968-1992 (preliminary).

Average CPUE for 1992 was about 522 lb/hr (single-rig-equivalents), the highest annual average since 1978 (Figure 4). The average during 1991 was about 208 lb/hr. CPUE during September and October was above the average annual rate seen since 1978, further indicating that the age-1 component was exceptionally strong.

The growth rate of age-1 and age-2 shrimp was generally above average during the 1992 season, compared to rates observed since 1978. Shrimp size exhibited the usual pattern, being larger at any given age toward the south. The rapid growth rate, combined with the strong age-1 year class, contributed to the large 1992 landings. The average count-per-pound of shrimp landed in Oregon was about 120 (Figure 5), down from about 126 ct/lb for 1991.

The sex composition of shrimp during fall 1992 was characterized by high levels of primary females (age-1 shrimp that are female); just as expected with a dominant year class of age-1 shrimp. As the end of the season approached, age-2 and 3 shrimp were scarce, while age-1 male shrimp were abundant. Many of these males later transitioned into females, leading to a roughly balanced sex composition in the fall.

Research - Finfish Bycatch

In 1992 we applied for Saltonstall-Kennedy grant monies to fund charter costs for testing the Nordmore Grate (Figure 6) as a bycatch reduction device in the pink shrimp fishery. The Nordmore Grate is a vertical bar separator grid which has become mandatory in the Norwegian, Canadian and U.S. shrimp fisheries for *Pandalus borealis*. The device has been shown to effectively reduce finfish bycatch in these fisheries, with very minimal reduction in shrimp catch. Although finfish bycatch in the Oregon pink shrimp fishery is not currently a resource concern, there are several reasons why we wanted to move ahead with testing this device. First, some of the bycatch species, like yellowtail rockfish and sablefish, are coming under decreasing trip limits for groundfish fishermen, drawing attention to the catches of these species in the shrimp fishery. Secondly, there have been some concerns raised about both roller graders and smelt-belts being used to high-grade catches of small shrimp. This practice, whichever device is used, is wasteful and circumvents the intent of the count-per-pound regulation. The Nordmore Grate may offer an alternative technology for cleaning up the catch with less waste of finfish, and easier shrimp handling on deck.

Our 1992 funding application was denied, but we are planning to submit an improved proposal in 1993. The proposed study would compare the catch composition from each side of a double-rigged shrimper, with one side employing the grate and the other fished normally. The comparisons should show how effective this device is in excluding bycatch species typically encountered on our shrimp beds, and also show how the grate effects the catch of our pink shrimp *Pandalus jordani*. Although we expect the device will work to some extent in our fishery, there are some differences between the west coast pink shrimp fishery and the fisheries for *Pandalus borealis*, which may reduce the device's effectiveness. Our charter work will

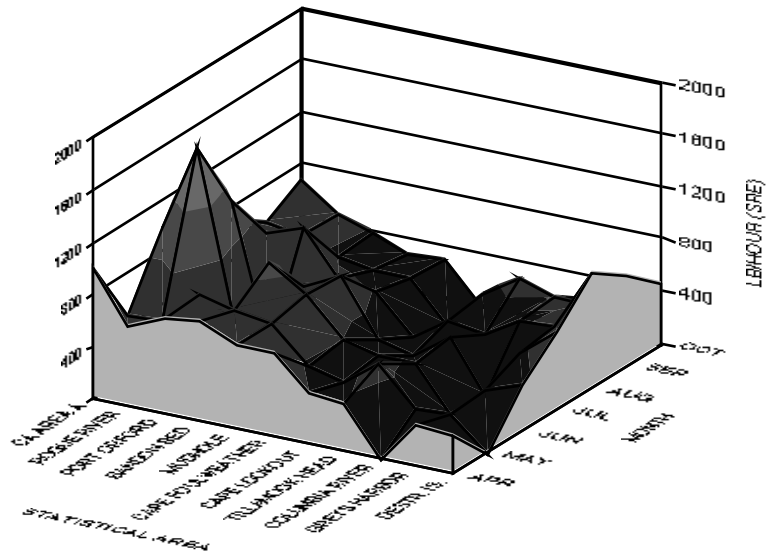


Figure 4. Catch per unit of effort (preliminary) by area and month for the 1991 Oregon pink shrimp fishery.

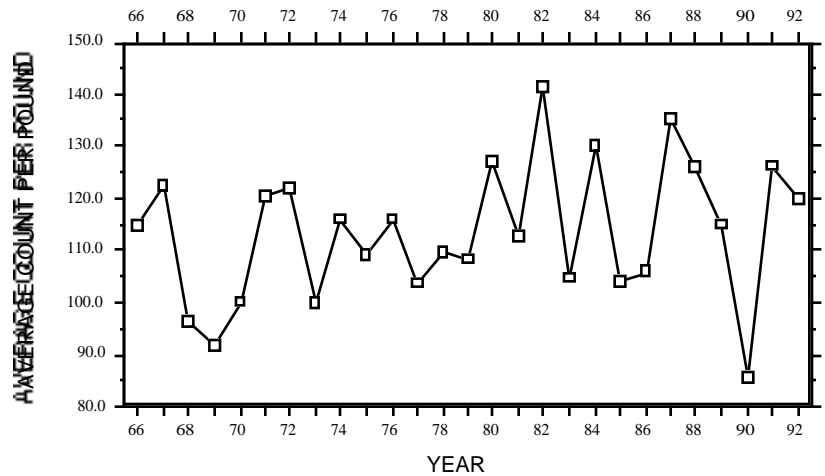


Figure 5. Average (catch weighted) count per pound of pink shrimp landed in Oregon, 1966-1992.

Figure 6. Diagram of a shrimp trawl codend with the Nordmore Grate and associated gear installed.

require double-rigged commercial vessels capable of accommodating two scientists and associated sampling gear for several days. The project could begin no earlier than 1994, if we are successful in getting funds.

Some Oregon shrimpers have already expressed interest in trying the grate on their own. They view the device as a possible way to reduce bycatch in general, but especially to reduce catches of hake and smelt, and maybe open up some grounds that have been unfishable at times in recent years. We are interested in hearing from any fishermen who may be planning to use the Nordmore grate during the 1993 season. If the vessel is suitable, we are willing to supply scientific personnel to collect data and help evaluate the effectiveness of the grate on a ride-along basis. Frankly, fleet support of this project may go a long ways toward securing S-K funding for a large scale study of the device. If you're interested expressing support for this type of research, send us a letter and we'll attach it to our S-K proposal which will be submitted in late June. We have literature and manufacturers information describing the Nordmore grate and its performance which we'd be glad to provide to interested parties.

Recent Reports Available

Our study of factors influencing shrimp recruitment is scheduled to be published in the Canadian Journal of Fisheries and Aquatic Sciences this spring. Much of the information presented in the paper was derived from the Oregon pink shrimp trawl fishery. We should have copies to distribute to interested people soon after publication. We also still have copies of "The Oregon Pink Shrimp Fishery; 1985-1989" and the "Pink Shrimp Data Series Report; 1985-1989" available on request. These reports discuss important trends in the pink shrimp fishery through 1989 and provide data summaries for 1985 through 1989.

Gear Survey

We continued our shrimp trawl gear survey in 1992, bringing the total number of vessels surveyed to 42. The survey is designed to improve our database on the types and design of fishing gear being used by the fleet. Not enough data was gathered in the past to document important gear changes that occurred in the 1970's. This has limited our ability to adequately evaluate changes in effective effort and gear efficiency. We plan to continue the project in 1993, hoping to bring the total of vessels interviewed to about 65. Codend mesh size seems to be the most interesting and applicable aspect of the survey to fishermen so far. Many fishermen interviewed did not know what size their codend mesh would actually measure out to. Codend mesh size data gathered in 1992 seems to concur with the 1991 findings (Figure 7). So far, only two of the

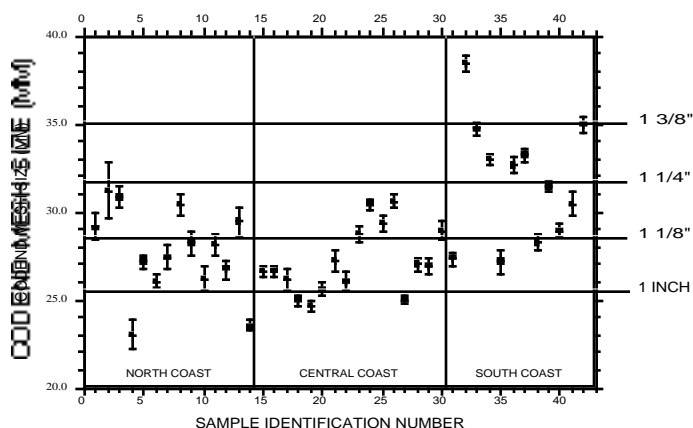


Figure 7. Mean codend mesh size (mm, with 90% confidence limits) for 42 individual Oregon shrimp vessels with home ports along the north, central and south Oregon Coast.

vessels surveyed had an average codend mesh size larger than 1 3/8 inches between the knots. Oregon does not have a minimum mesh size regulation for shrimp, and relies instead on the count-per-pound regulation to minimize harvest of small shrimp. However, shrimp fishermen need to remember that Oregon does have reciprocal shrimp landing laws with California and Washington. This means that shrimp caught north or south of Oregon's borders, but landed in Oregon, must have been caught with gear that was legal in those respective states. California now requires codends with 1 3/8" mesh between the knots. Fishermen should check with Washington Department of Fisheries before fishing off Washington to get an update on their codend mesh regulations.

Fecundity Study

We completed two ride-along shrimp trips during October 1992 to gather samples of egg-bearing females. This study is designed to investigate the variation in pink shrimp fecundity (# of eggs carried by a given size shrimp) between areas, and between years. Data gathered during the past two years, compared with historical data, suggested that fecundity at size varies somewhat between years, perhaps in response to shrimp density or other factors. Understanding the causes of this variation in fecundity may help to explain why heavy fishing since 1978, which has clearly lowered the spawning biomass of pink shrimp, hasn't reduced subsequent recruitment. The 1992 samples are now processed and have been added to our database gathered for the last four years. 1992 was the first year in the study when gravid females from all three age-classes were available during the same year. Gravid shrimp at any given size continue to show significant variation in egg numbers between years and between geographical regions. We hope to continue this study during fall 1993. Thanks again to the owners and crews of the F/V Ginger B and the F/V Nita H for having us along!

A Final Word On Count-per-pound

Several citations for count-per-pound violations were issued during the 1992 season. Most of the Oregon violations occurred very early in the season but there were small shrimp problems reported throughout the season north of the Oregon border. Please take the time to review the count-per-pound regulation and equip yourself with a good scale for measuring count-per-pound at-sea. We will gladly supply you with a report describing at-sea accuracy tests of several types of scales, including the magnetically dampened triple beam balance which we recommend. Our study of shrimp weight change between catch and unloading is also available. We still feel that limiting shrimp loads to a minimum average size of 160 whole shrimp per pound, as our primary management tool, makes good sense for this fishery. In the west coast pink shrimp fishery, fishermen and processors currently decide when, where, and how to fish for shrimp to best respond to the changing market. In most other shrimp fisheries throughout the world, more restrictive measures such as quotas in combination with mesh size restrictions and sometimes area closures, are used as the main management methods. The management scheme here in Oregon really allows fishermen and processors maximum flexibility. The cornerstone of our management scheme is the effectiveness of the count-per-pound regulation.



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