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REVIEW OF GROUNDFISH FISHERIES IN THE PRINCE WILLIAM SOUND MANAGEMENT AREA: REPORT TO THE ALASKA BOARD OF FISHERIES

By

Robert Berceli, Charles Trowbridge,
Morris Lambdin, and William R. Bechtol

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Alaska Department of Fish and Game
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INTRODUCTION

This report describes the commercial groundfish fisheries managed by the Alaska Department of Fish and Game (ADF&G) in the Prince William Sound (PWS) Management Area through October 15, 1999. State managed fisheries for rockfish, pollock, Pacific cod, sablefish, lingcod, and miscellaneous groundfish species will be discussed. Lingcod and black rockfish harvests are also included from adjacent federal waters of the exclusive economic zone (EEZ).

The PWS Area encompasses waters of Alaska from 140°W. longitude outside of Yakutat Bay to the longitude of Cape Fairfield at 148°50'15" W. longitude (Figure 1). The area is divided into the Inside and Outside Districts. The Inside District includes waters enclosed by lines from Point Whitshed to Point Bentinck, from Cape Hinchinbrook to Zaikof Point, and from Cape Cleare to Cape Puget. The Outside District, comprised of the Gulf of Alaska waters 0-3 miles from shore is divided into three sections: Western, Eastern, and West Yakutat. The Western Section includes waters between Cape Fairfield and 147° W. longitude. The Eastern Section includes waters between 147° W. longitude and Cape Suckling (143° 53'W. long.) and the West Yakutat Section includes waters of Alaska that lie between Cape Suckling and 140° W. longitude and excluding waters three miles seaward of a line from Point Manby to Ocean Cape at the entrance to Yakutat Bay.

Area regulations restrict legal gear types for groundfish to longline, pelagic trawl, hand troll, seine, mechanical jigging machine, dinglebar troll gear, and pots. However, shrimp trawl vessels may retain groundfish bycatch not to exceed 10% of the gross weight of the landed shrimp. In addition, one bottom trawl vessel qualifies for the limited entry sablefish fishery.

ROCKFISH

Proposals 14 – 21

The Board of Fisheries will address proposals 14-21 at it's November 1999 meeting in Valdez. This suite of proposals deals with all aspects of the Prince William Sound commercial rockfish fishery. Issues include closure of the directed fishery; allocation by user group; harvest area; directed season; retention of incidental catch; the guideline harvest level (GHL), and season dates. Some of these issues complement components of proposals submitted for halibut Local Area Management Plans.

Background

Rockfish (genera *Sebastes* and *Sebastolobus*) may be categorized into pelagic shelf, demersal shelf, and slope species assemblages defined in regulation under 5 AAC 39.975 (34, 37, 38). Pelagic shelf rockfish are usually associated with near shore, rocky reef areas, may exhibit a

midwater schooling behavior, and are often harvested in directed fisheries with mechanical and hand jig gear. Pelagic shelf species common to PWS include black, dusky, and yellowtail rockfish. Demersal shelf rockfish are also associated with rocky, reef areas, but tend to be bottom dwelling and often occur at greater depths than pelagic shelf species. Yelloweye and quillback rockfish are common demersal shelf species in PWS and are likely to be taken with jig or longline gear. Slope rockfish include any rockfish not specified as either demersal shelf or pelagic shelf rockfish. Slope rockfish are typically found near the bottom in waters deeper than 200 meters and therefore are most likely to be taken with longline or trawl gear. Common slope species in PWS include rougheye, shortraker, and thornyhead rockfish.

Rockfish were not actively managed in PWS prior to 1989, as the season remained open all year. From 1989 through 1991, rockfish seasons were set by emergency order to coincide with National Marine Fisheries Service (NMFS) inseason adjustments for the federal Central Gulf of Alaska (CGOA) Regulatory Area. Favorable market conditions in conjunction with lengthy seasons in adjacent federal waters resulted in large annual harvests from PWS. Following dramatic increases in rockfish harvests, the Alaska Board of Fisheries (BOF) adopted the PWS Rockfish Management Plan in 1992. Original provisions of the management plan were:

1. a 3,000 lb trip limit within a five-day period.
2. a 150,000 lb guideline harvest level (GHL) for all rockfish species to trigger a transition to a bycatch-only fishery
3. a 20% bycatch limit once the directed fishery was closed.

The PWS rockfish directed season opening date remained January 1.

When the management plan was adopted, PWS was defined to include only that area now described as the Inside District, and the GHL was based on mean annual harvests (Bechtol 1992). Since adoption of the GHL, numerous regulatory changes affecting rockfish management have occurred.

To reduce overall rockfish harvests, the BOF amended the plan in October 1996 to make the 150,000 lb GHL a harvest cap. For groundfish management, the BOF also redefined PWS to include waters from Cape Fairfield to Cape Suckling. In January 1997, the management area was further expanded to include waters from Cape Suckling to 140° W. longitude. In 1998, the state accepted management authority for black and blue rockfish in federal waters of the EEZ. Despite these changes, the magnitude of the rockfish GHL has remained unchanged.

Following adoption of the rockfish harvest cap, the department has managed the fishery by identifying a harvest level that functions as a "trigger". This means that when the harvest level is achieved, it triggers a closure of the directed fishery and rockfish re-opens as a bycatch-only fishery. This approach places the department in the role of allocating rockfish harvests between directed and bycatch fisheries. The establishment of a "trigger" has proven problematic due to the uncertainty in projecting bycatch needs for other directed fisheries.

Aside from the directed rockfish fishery, rockfish are taken incidentally in the parallel Pacific cod fishery, the IFQ Pacific halibut fishery and the PWS sablefish fishery. The parallel Pacific cod fishery opens on January 1 and generally closes in late March. The Pacific halibut fishery is

opened from March 15 to November 15. The PWS sablefish fishery opens on May 1 for 36 to 48 hours. Beginning in 1997, the department used emergency orders to set rockfish bycatch at 10% of the gross round weight of all delivered groundfish species. However, for the 1998 and 1999 PWS sablefish fisheries, the department increased the rockfish bycatch level to 20% to accommodate ambient bycatch levels in this fishery.

When the directed rockfish fishery is open, all landed rockfish are counted as part of the directed harvest. However, a review of rockfish bycatch landings indicates a decline in rockfish bycatch during the PWS sablefish fishery and an increase in incidental rockfish catch during the halibut fishery (unpublished data). These changes are probably due to transitions in the management of these fisheries, particularly available fishing time.

Rockfish harvests from PWS since 1987 ranged from 108,806 lb in 1993 to 506,435 lb in 1990, and averaged 197,939 lb annually (Table 1, Figure 2). Historically the majority of the harvest was comprised of slope rockfish harvested by longline gear from the Inside District (Tables 1,2, and 3). Pelagic shelf rockfish are historically the second most common harvest component and are typically harvested by jig gear from the Outside District (Table 4).

In response to the changes in the rockfish management plan and the increase in the size of the management area, the department closed the 1997 directed rockfish fishery on August 21 when the harvest was 129,000 lb. The total 1997 rockfish harvest of 166,542 lb exceeded the harvest cap. The overage was due, in part, to rockfish bycatch from longline gear during an unanticipated parallel Pacific cod fishery in September.

Based on the 1997 experience, the department established a harvest level of 50,000 lb for the 1998 directed rockfish fishery, and allocated the balance of the GHL as bycatch to other directed fisheries. The directed fishery closed by emergency order on March 13 and a 10% bycatch allowance was adopted. The 1998 fishery achieved a total harvest of 109,140 lb. In 1998, yelloweye rockfish were actively targeted in combination with Pacific cod resulting in an Inside District yelloweye harvest of 50,000 lb by mid-March. The yelloweye harvest was well above the previous 5-year harvest average of 28,000 lb and was attributable to favorable market conditions.

Annual rockfish harvests in the Inside District during 1987 – 1998, have ranged from 81,352 lb in 1993 to 489,118 lb in 1990, and averaged 151,742 lb (Tables 1 and 3). The peak harvest in 1990 is attributed to market conditions that encouraged targeting of rockfish. Historically, slope species, predominantly rougheye and shortraker rockfish, comprised 69% of the total harvest (Table 3). Demersal shelf species, predominantly yelloweye rockfish, and pelagic shelf species, predominantly black rockfish have comprised 21% and 10% of the total harvest (Table 3).

Annual rockfish harvests in the Outside District during 1987 - 1998 ranged from 2,289 lb in 1987 to 158,451 lb in 1995 and averaged 46,197 lb annually (Tables 1 and 4). Pelagic shelf species, primarily black rockfish taken by jig gear, have dominated Outside District harvests and averaged 39,370 lb per year. It is believed that the relatively high harvests during 1994 – 1996 indicated misreporting during periods when the directed state fishery was closed but adjacent federal waters remained open.

Recreational Fishery

The estimated rockfish sport harvest in the PWS area increased from about 38,000 lb in 1991 to around 100,000 lb in 1997 and 1998 and has historically been composed primarily of pelagic and demersal shelf rockfish (Table 5). During the same period, commercial harvest in the Inside and Outside Districts ranged from 109,000 to 312,000 pounds. The recreational harvest has therefore been a significant source of removals making up from 19 to 47 percent of the known removals in any year. It is also important to note that the sport harvest is distributed over a smaller geographic area than the commercial harvest because it does not include harvests from the West Yakutat Section of the Outside District (Meyer 1999).

1999 Season Summary

Through October 15, 1999 the PWS commercial rockfish harvest for all species was 69,106 lb from 231 landings by 91 vessels (Tables 1 and 2). The directed fishery closed on March 27, 1999. Similar to 1998, demersal shelf rockfish, primarily yelloweye harvest from the Inside District, comprised 63% (43,232 lb) of the harvest total (Tables 3 and 4). In retrospect, the closure of the directed fishery was premature, as the anticipated rockfish bycatch needs in other directed fisheries did not develop. One factor that has contributed to the low rockfish harvest in 1999 was the lack of an opening to longline gear during the fall parallel Pacific cod season.

2000 Management Outlook

The directed rockfish fishery will open by regulation on January 1 and be managed for a total harvest, including bycatch, of 150,000 lb. Based on the fishery performance in 1998 and 1999, the department will close the 2000 directed fishery when the total harvest reaches 90,000 lb. After the directed fishery closes, the department will set rockfish bycatch allowances at 10% except for a bycatch level of 20% in the sablefish fishery. Black rockfish harvests from federal waters are expected to remain low.

PACIFIC COD

Proposals 24- 26, and 32-33

The Board of Fisheries will address proposals 24-26 and 32-33 at it's November 1999 meeting in Valdez. Proposals 24-26 would increase the harvest opportunity for Pacific cod by vessels fishing longline gear in PWS. Proposals 32-33 would allow the longlining of groundfish pots in the PWS Area, a gear type currently used only in the Pacific cod fishery.

Background

Pacific cod fisheries in the PWS Area are managed under the PWS Pacific Cod Management Plan (5AAC 28.267) which provides for two seasons, the parallel season and the state waters season.

Statewide regulations for groundfish pots specify a tunnel eye perimeter not to exceed 36 inches, a biodegradable escape panel in the pot wall, and a tag on each pot displaying the word "groundfish". Area regulations specify a partial area groundfish pot closure in waters of eastern Prince William Sound and in waters more than 75 fathoms deep in Hinchinbrook Entrance.

Parallel Fishery

The commercial Pacific cod fishery was historically regulated to coincide with inseason adjustments for the adjacent federal CGOA fishery. The parallel season opens January 1 and generally closes in mid March. The fishery is open to all groundfish gear types legal in PWS. Since 1997, NMFS has reopened for a second directed fishing period in September or October. This fall season is not always open to longline gear and depends on whether that gear type has any remaining halibut bycatch allowance.

Since 1987, annual catch and effort in the parallel Pacific cod fishery ranged from 73,595 lb from 48 landings by 23 vessels in 1989 to 2.2 million lb from 235 landings by 90 vessels in 1991 and averaged 1.1 million lb (Table 6). Throughout the history of the fishery, longline and pot gear have taken the majority of the harvest. For example, during development of the fishery virtually all of the harvest was taken by longline gear. However, since the pot fishery for Pacific cod began in 1990, the overall harvest increased and the proportion harvested by pot gear increased to almost 80% of the total in most years. More recently, harvests by longline gear have again risen to account for more than half the harvest while harvests by pot gear have declined.

The 1996 parallel season dates were January 1 to March 18 after which Pacific cod could be retained only at a 20% bycatch level. The harvest of 853,925 lb from 136 landings by 51 vessels is notable because it was the lowest since the mid-1980's and also the only year that over 25% of the harvest was taken by trawl gear. One explanation for the low harvest is that Pacific cod closed to retention on May 5 and remained closed for the balance of the year.

The 1997 season dates for the parallel fishery were January 1 to March 11 and October 1 – 26, with a provision for a 20% bycatch level during closed periods. The fishery was open to all legal gear types during both open periods. The harvest was 921,979 lb from 173 landings by 60 vessels.

The 1998 parallel season dates were January 1 to March 10 and October 5 – 9, with a provision for a 20% bycatch allowance during closed periods. All legal gears were open during the spring season, but longline gear was prohibited during the fall season. The 1998 harvest totaled 677,373 lb from 157 landings by 50 vessels.

State Waters Fishery

The state waters season was developed by the BOF in October 1996. Elements of the PWS state waters Pacific cod fishery include:

1. the state waters season opens by emergency order seven days following the closure of the federal season of the Central Gulf of Alaska area by the NMFS;
2. GHL calculated as 25 percent of the total allowable harvest of Pacific cod for the federal Eastern Gulf of Alaska Area;
3. a pot closure when 60 percent of the GHL is reached, or December 31;
4. the state season applies only in waters of the Inside District,
5. the Inside District is an exclusive registration area for Pacific cod
6. gear limits are 5 jigs or 60 pots with a pot buoy tag requirement
7. rockfish bycatch limited to 5 percent when directed fishing for rockfish is closed.

Gear limit restrictions and the exclusive area registration requirement may be relaxed after October 30, to facilitate achievement of the GHL. To date, the state waters GHL has not been achieved in any year.

Following a nine-day delay for approval of the new regulations, the 1997 fishery opened on April 4 with a GHL of 880,000 lb. Gear limits and the exclusive area registration requirements were removed by emergency order on October 31. The Pacific cod harvest for the 1997 state waters season totaled 200,510 lb from 36 landings by 9 vessels.

The 1998 season opened March 17 with a GHL of 860,000 lb. The department issued an emergency order on October 31 to remove gear limits and the exclusive area registration. Despite few landings during the summer months, increased market value throughout the fall provided continued interest in the fishery and half the harvest occurred during November and December. The 1998 state waters harvest totaled 418,976 pounds from 33 landings by 9 vessels.

1999 Season Summary

The parallel Pacific cod fishery was open January 1 to March 14 and September 1 to October 5. Similar to 1998, the fall season was not open to longline gear. The harvest through October 15 totaled 1.3 million lb (Table 6). Four vessels fishing pot gear landed 641,508 lb from 33 landings and 42 vessels fishing longline gear landed 685,123 lb from 145 landings. The balance of the harvest was bycatch to the pollock trawl fishery.

The state waters Pacific cod season opened March 21 with a GHL of 930,000 lb. Relatively small harvests occurred throughout the summer and into the fall. On October 31, the department again removed gear limits and the exclusive area registration. Harvest data through October 15 indicate the state waters Pacific cod harvest totals 327,669 lb from 23 landings by 6 vessels (Table 6). Effort in the fishery has remained low with sporadic landings during the fall.

2000 Management Outlook

The parallel Pacific cod fishery will open January 1 and is expected to close during mid-March, although it is anticipated that NMFS will announce a fall season. When the parallel season in PWS closes, the bycatch level for those not participating in the state waters fishery will be set at 20%. If fishing patterns from 1999 persist, longline and pot gear will each take approximately half the harvest.

The state waters Pacific cod fishery will open seven days following closure of the parallel fishery and remain open to pot and jig gear until pot gear harvests achieve 60% of the GHL or the total GHL is reached. The GHL will be announced after the total-allowable-catch specifications have been set by the North Pacific Fisheries Management Council. Effort in the fishery is expected to remain at a low level.

SABLEFISH

Proposals 27, 28, 29, and 30

The Board of Fisheries will address proposals 27-30 at it's November 1999 meeting in Valdez. These proposals would establish a quota system that: (1) divides the Prince William Sound (PWS) sablefish guideline harvest level (GHL) evenly among permit holders; (2) extends the season through the months of May and June; and (3) establishes the season opening as the second Monday in May.

Background

The PWS sablefish fishery developed in the late 1970's in response to increased value for the product, and the decline of shrimp and crab fisheries (Bechtol and Morrison 1993). The fishery is managed for a GHL equal to the midpoint of a guideline harvest range (GHR) that is derived from the estimated area of potential sablefish habitat, and a yield per unit area model. The GHR from 1987 – 1992 was 88,200 lb to 308,600 lb. In 1993, based upon new information from improved bathymetric mapping, the GHR was increased to a range of 97,000 lb to 385,900 lb with the GHL set at the midpoint of 242,000 lb.

From 1987 – 1992, PWS sablefish seasons opened concurrently with the federal CGOA and closed by emergency order when the GHL was attained. As effort and efficiency of the sablefish fleet increased, fishing seasons became more restrictive. Since 1993, seasons have been comprised of one or two fishing periods with a total fishery duration of 24 to 96 hours.

In 1996 the Commercial Fisheries Entry Commission (CFEC) initiated a program to limit entry to the PWS sablefish fishery. The program only addressed sablefish fishing in the Inside District. Based upon qualifying years of 1991 – 1994, the program established a target number of 49 permanent permits divided into four vessel size classes with two gear distinctions. The

vessel sizes classes are 90, 60, 50, and 35 feet maximum length, and the gear distinctions are "fixed gear" and trawl. Fixed gear includes longline, pot and other potential hook and line gear that might eventually be viable (Muse et. al 1995). Some permanent transferable permits have been issued, but the balance are issued on an interim basis pending adjudication.

Regulations that directly address the PWS sablefish fishery specify sablefish may be taken only in the Inside District from May 1 until closed by emergency order. Sablefish may be taken only under the conditions of a permit issued by the department. Permit conditions include:

1. In the Inside District of (PWS), sablefish may not be possessed on board a vessel registered to participate in the PWS sablefish fishery, within 24 hours prior to the opening of the PWS sablefish fishing season.
2. PWS sablefish logbooks must be completed and returned to ADF&G within five days of the closure of the sablefish fishing season.

The department has established the duration of the fishery period based on the GHL, the projected number of participants, and past performance of the fishery. In some instances, the department has adjusted the time at which the season opens to provide for daylight opening and closure. The department has closed a portion of the Inside District to fishing with longline gear for 48 hours before and 24 hours after the sablefish fishery. These adjustments were necessary to facilitate fishery enforcement as well as biological concerns for exceeding the sablefish GHL. Another in-season management measure included increasing the rockfish bycatch limit from 10% to 20%.

The department monitored the fishery on the grounds aboard the *R/V Montague* over the past four years. Working in cooperation with Department of Public Safety, Division of Fish and Wildlife Protection (FWP), vessels are boarded prior to the fishery to verify the permit holder is aboard with all necessary licenses and permits. To the extent practical, fish holds are also inspected.

Historically, sablefish harvests have primarily come from the Inside District. However, in some years, Outside District catches comprised almost 20% of the total harvest (Table 7). Fishing in the Outside District has been closed since 1996 when regulations were adopted to limit sablefish fishing to the Inside District only. However, some illegal landings do still occur. Currently, most of the Inside District effort occurs along a deepwater trench between Lone Island and the Naked Island group (Figure 2). Other areas that are also fished include Port Wells, Knight Island Passage, and the deeper waters of central PWS near the tanker traffic lane.

Among the longline fleet, smaller vessels are likely to fish with snap-on gear, while larger vessels are likely to fish with conventional gear. The greatest difference between these gear types is the amount of hooks that can be practicably set. During a fishery of such short duration, vessels using snap-on gear may fish several thousand hooks while vessels using conventional gear may fish several tens of thousands of hooks.

In 1996, the department initiated a sablefish assessment program with the goal of developing a fishery-independent index of sablefish abundance to serve as a baseline for monitoring changes in the sablefish resource (Bechtol and Vansant 1998). Survey results will ultimately be used to

model the PWS sablefish population and provide data to justify modifications to annual harvest levels. Fish caught during the assessment are sold under the department's program receipts authority and used to defray survey costs (Table 7 as "test fish").

Since 1987, annual commercial catch and effort from the Inside District have ranged from 187,843 lb by 25 vessels in 1989 to 565,252 lb by 126 vessels in 1995 (Table 7). The 1995 peak in catch and effort is partially attributed to speculation by fishermen interested in qualifying for the limited entry program. Since implementation of the limited entry program in 1996, catch and effort for the directed fishery averaged 225,000 lb and 57 vessels. During this period, harvests from the Outside District, which closed to sablefish fishing in 1996, declined from 33,464 lb in 1996 to 14 lb in 1998.

1999 Season Summary

The sablefish fishery opened for a 42-hour fishing period at 12:00 noon on Saturday, May 1 and closed at 6:00 a.m. Monday, May 3. The fishery GHL was 242,000 pounds. Two-thirds of the fleet was boarded prior to the fishery and good regulatory compliance was observed. The fishery harvest totaled 205,951 lb from 39 landings by 39 vessels. The GHL may have well been achieved if it were not for the occurrence of a gale force storm that hindered both setting and retrieval of gear during the fishery. Total sablefish harvest, including a test fish catch of 7, 715 lb and illegal harvest of 82 lb, was 213,748 lb (Table 7).

Information from CFEC indicated that although 67 individuals were eligible to receive PWS sablefish permits for the 1999 season, only 57 individuals renewed their permits. The department issued 41 commissioner's permits through offices in Anchorage, Homer and Cordova.

2000 Management Outlook

The PWS sablefish fishery will open at 12:00 noon May 1. Effort is expected to remain near the 1999 level. However the department will confer with CFEC to verify the status of permit renewals in order to determine the fishery duration. Based upon the 1999 fishery performance, a single fishing period of 36 to 48 hours in duration should be adequate to achieve the midpoint of the GHL.

POLLOCK

Proposals 22 and 23

The Board of Fisheries will address proposals 22 and 23 at its November 1999 meeting in Valdez. Proposal 22 would establish a season opening date for the Prince William Sound (PWS) pollock fishery that closely coincide with the federal season in the Central Gulf of Alaska. Proposal 23 would allow the use of pelagic trawl gear in a portion of eastern Prince William

Sound (PWS) and establish a management plan which would, among other things, divide PWS into three harvest areas that may be fished concurrently, and limit the pollock harvest in any one area to no more than 40% of the guideline harvest level (GHL).

Background

The PWS pollock fishery historically consisted of incidental harvests by jig, longline, and trawl gears during other directed fisheries (Bechtol 1995). The directed trawl fishery for pollock in state waters of PWS began in 1995 when Kodiak based trawlers and a Cordova processor combined efforts to establish the fishery.

The department has utilized several approaches to setting the GHL although all current approaches rely on an assumption that pollock assessed in PWS during the summer are not sampled by the summer NMFS bottom trawl survey in adjacent federal waters. Although winter acoustic surveys have documented substantial volumes of pollock in PWS after the close of the commercial fishery, the relationship between these prespawing aggregations and the summer population which is not assessed by the NMFS surveys is unknown (Bechtol 1996). Therefore, management of the PWS pollock fishery has been based on model estimates of the local summer population as assessed by department trawl and longline surveys.

Beginning in 1995 the department instituted a guideline harvest range of 2.1 to 3.1 million lb with a mid-point of 2.6 million lb from a trawl survey database population model. The 1996 fishery GHL was derived from a 1994 spring acoustic survey biomass estimate of 53.6 million lb (Bechtol 1995). The GHL for subsequent pollock fisheries was developed by either adjusting the previous year's GHL to mirror relative annual changes in the pollock allowable catch within the CGOA, or by applying 8 – 10% harvest rates to biomass estimates derived from department bottom trawl assessment surveys (Bechtol 1998a, 1998b, 1999). The GHL for the pollock fishery gradually increased from 3.0 million pounds in 1996, to 3.9 million pounds in 1997 and 1998.

Emergency regulations adopted prior to the 1996 fishery included a January 13 registration deadline and a commissioner's permit requirement. The commissioner's permit specifies check-in and check-out requirements, catch reporting procedures, and logbooks. An emergency order, issued annually, opens the season on January 20; concurrent with the opening of directed trawl fishing in federal waters. Department staff have been present on the grounds each year to observe and manage the fishery and sample the catch.

The department has conducted a pollock test fishery in PWS annually since 1996 under the department's program receipts authority. Revenues generated from the test fishery provide funding for commercial fishery management, catch sampling and analysis, and PWS pollock stock assessment projects. The department also cooperated with the Prince William Sound Science Center and the fishing industry to conduct acoustic biomass assessments of prespawning pollock in PWS during the winters of 1995, 1997 and 1998 (Thomas and Stables 1995; Kirsch 1997; Kirsch and Thomas 1998). Survey results indicated substantial variability in pollock distribution. The 1998 acoustic survey observed a previously undetected aggregation of pollock, distributed from Hinchinbrook Entrance to near Knowles Head (Bechtol 1998b; Kirsch 1998). This area is presently closed to commercial fishing with trawl gear (Figure 3).

From 1987 to 1994, reported annual pollock harvests ranged from 0 lb in 1991 to 7,331 lb in 1990 (Table 8). The commercial trawl fishery has primarily occurred in Port Bainbridge with occasional catches along the southern end of Knight Island. In 1995, nine vessels participated in the fishery and landed 6.3 million pounds of pollock from 35 landings. Catch and effort averaged 3.9 million lb and 11 vessels during 1996 – 1998. Participation in the fishery has varied from vessels making a single landing to those that remain for the extent of the fishery.

The duration of the PWS pollock trawl fishery has generally increased over time. From 1996 to 1998 the fishery has averaged 11 vessels and approximately 6.5 days. Fishery average tow duration and catch per unit effort (CPUE) in Port Bainbridge have changed inversely and ranged from 2.1 hours and 24,914 lb/hr in 1996 to 7.5 hours and 6,371 lb/hr in 1998. It is believed the increase in season length and corresponding decline in catch rates is attributable to natural mortality of the 1990 year-class that had been the primary harvest component for several years. Pollock samples from the 1999 fishery ranged from age 3 to age 14, with the 1994 age class (age 5) comprising the largest component (25%) of the catch (Bechtol unpublished data).

1999 Season Summary

The PWS directed pollock trawl fishery opened at 12:00 noon January 20, 1999 with a GHL of 4.6 million lb. The GHL was determined by applying a 10% harvest rate to a pollock biomass estimate of 46.8 million lb $\pm$ 20.9 million lb. The biomass estimate was derived from trawl and longline surveys conducted within PWS during the summer of 1997. The directed trawl fishery closed at 12:00 noon February 25, 1999 with a harvest of 4.7 million lb from 34 landings by 6 vessels over a period of 36 days (Table 8). The average tow duration and CPUE in the Port Bainbridge area were 10.1 hours and 3,462 lb/hr. Fishery performance was poor compared to past years, however, fishermen reported that aggregations of pollock tended to build as the season progressed.

After the directed trawl fishery closed, the department issued an emergency order to provide for the bycatch retention of pollock in order to meet the intent of the regulations (5 AAC 28.070 (e); 5 AAC 28.075) for improved retention/improved utilization (IR/IU) of groundfish.

The department conducted a pollock test fishery in early March that landed 490,761 lb. One vessel delivered 387,705 lb of pollock in 3 landings from Port Bainbridge. A second vessel landed 103,056 lb of pollock after a single 3-hour tow in the closed area of eastern PWS (Figure 3). This latter effort was notable because it documented commercially harvestable aggregations of pollock in eastern PWS.

2000 Management Outlook

Two Steller sea lion haulouts, Point Elrington and The Needles, are located in PWS and are in close proximity to two of the areas fished for pollock. Under the reasonable and prudent alternatives (RPA) identified by NMFS, all waters within 10 nautical miles of these locations were to be protected from negative interactions with the pollock fishery. Complete closures would displace the current PWS pollock fishery. The RPA's for these locations were modified

to provide an opportunity for ADF&G and NMFS to develop equivalent alternatives. Proposal 23 would develop a pollock management plan. Management of the 2000 fishery will be similar to previous years except the department is considering harvest levels for specific areas to ensure that the harvest is distributed over the management area. The department will seek guidance from the BOF regarding interim measures for the PWS pollock fishery. Permit stipulations will be similar to previous years and the department expects to be on the grounds during the fishery. The GHL will likely be reduced from recent years, as a result of a decline in pollock catch rates in the department's 1999 summer trawl survey relative to 1997.

LINGCOD

Proposals 199 and 208

The Board of Fisheries will address proposals 199 and 208 at its November 1999 meeting in Valdez. Proposal 199 would establish a lingcod fishery for the Yakutat Area managed under a single set of regulations throughout the area. Proposal 208 would allocate the lingcod harvest in the West Yakutat Section according to historic directed fishery harvest levels and harvest of lingcod in other directed fisheries.

Background

The PWS lingcod fishery is characteristically a bycatch fishery composed of many small landings, primarily by longline vessels. Some directed harvest has occurred by vessels fishing jig, and more recently, dinglebar troll gear. The department manages the lingcod harvest in both state waters and adjacent federal waters.

Regulatory season dates for the fishery are July 1 to December 31. There is a minimum size requirement of 35 inches overall or 28 inches measured from the front of the dorsal fin to the tip of the tail. The season closure during the first half of the year protects lingcod during spawning and nest guarding and the minimum legal size is intended to allow at least one spawning opportunity for adult lingcod. When the directed season is closed, there is no allowable bycatch because mortality of released lingcod is relatively minor.

In 1998, the department established lingcod GHL's based upon 50% of the recent 10-year average. This resulted in a 4,000 lb GHL for the Inside District and a 22,500 lb GHL for the Outside District and federal waters.

Lingcod catch and effort since 1987 have ranged from 4,585 lb from 15 landings by 15 vessels in 1987 to 84,679 lb from 95 landings by 67 vessels in 1995 and averaged 44,935 lb (Table 9). Almost 80% of the historic harvest came from adjacent federal waters of the EEZ and while harvests from the Inside and Outside Districts have averaged 14% and 8% of the total.

1999 Season Summary

The fishing season for lingcod opened July 1. The Outside District, including federal waters of the EEZ, closed at 12:00 noon July 30, however the Inside District has remained open. The harvest through October 15 totaled 27,146 lb from 45 landings by 22 vessels (Table 9). Similar to past years, the majority of Outside District harvests came from federal waters and yielded a District total of 25,671 lb from 35 landings by 19 vessels. Approximately 5,000 lb of the Outside District total came as illegal harvest during the closed season. The current harvest total for the Inside District is 1,475 lb with most of the harvest coming as bycatch to other directed fisheries (Table 9).

2000 Management Outlook.

The fishery will open on July 1. Interest in the PWS lingcod fishery appears to be waning, possibly due to conservative GHL that precludes most efforts at a directed fishery. The department may consider relaxing the GHL to 75% of the historic harvest for the 2000 fishery This adjustment would be consistent with the most conservative alternative used by the North Pacific Fishery Management Council when considering fisheries with little data on abundance or stock structure. Lingcod will remain closed to retention as bycatch during the closed season. The department conducts sporadic commercial catch sampling and no stock assessment of lingcod in the PWS area.

MISCELLANEOUS GROUNDFISH

Proposals 31, 196, 200, and ACR 20

The Board of Fisheries will address proposals 31, 196, 200 and ACR 20 at it's November 1999 meeting in Valdez. Proposal 31 would establish a fishing season for sharks in the PWS Management Area and proposal 196 would establish a commercial fishery for spiny dogfish in the Yakutat area. Proposal 200 would create a commercial fishing season for skates similar to the IFQ longline season. Lastly, ACR 20 would require permits prior to fishing for miscellaneous groundfish species.

Background

Numerous species of flatfish, sharks, skates, as well as octopus and squid have been landed incidentally to PWS groundfish fisheries and targeted only sporadically. Seasons for miscellaneous groundfish are typically set by emergency order to coincide with seasons set by NMFS in the adjacent federal waters of the EEZ. However, BOF action in 1998 closed directed fishing for sharks and established a permit requirement for targeting skates. These actions are consistent with the lack of information on stock size necessary to conduct a sustainable fishery.

Shark bycatch, primarily spiny dogfish in salmon gillnet fisheries, has been characterized as very high. Similarly, there is an incidental catch of salmon sharks during salmon seine fisheries. Shark bycatch in groundfish fisheries, particularly those using longline and trawl gear, can also be high. Catch reporting of most miscellaneous groundfish species, particularly sharks and skates, is believed to be extremely poor, with the fish typically discarded at sea. Because there is no regulatory requirement for reporting incidental catch, most bycatch remains undocumented.

In contrast to other years, all sharks that were reported during 1999, as well as flatfish and squid, were landed incidentally to the directed pollock trawl fishery (Table 10). Octopus, although considered a shellfish under state regulation, falls under the "Other" groundfish category in federal regulation. Octopus harvested incidentally to the Pacific cod pot fishery are usually sold or kept for personal use as bait. A bycatch allowance of 20% is set for octopus.

The 1999 reported harvest of miscellaneous groundfish species from PWS is 21,838 lb, comprised of 14,133 lb of sharks, 6,162 lb of squid, and 1,543 lb of skates, flatfish, and other groundfish.

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Table 1. Commercial harvest (lb) of rockfish from the Inside and Outside Districts and black rockfish from federal waters of the Prince William Sound area 1987 - 1999.

	Inside District			Outside District			Total
Year[a]	Vessels	Landings	Pounds	Vessels	Landings	Pounds	Pounds
1987	60	134	119,052	4	4	2,289	121,341
1988	64	175	112,019	12	18	87,006	199,025
1989	35	99	93,428	6	7	25,122	118,550
1990	93	401	489,118	10	11	17,317	506,435
1991	88	244	154,636	7	8	2,780	157,416
1992	105	278	177,814	18	26	13,987	191,801
1993	67	185	81,352	20	33	27,454	108,806
1994	65	163	97,608	34	55	103,334	200,942
1995	122	221	153,556	39	68	158,451	312,007
1996	85	198	105,804	35	64	77,511	183,315
1997	89	240	137,186	26	37	29,356	166,542
1998	79	187	99,379	19	38	9,761	109,140
1999	79	188	57,615	23	44	11,491	69,106
Average[b]	79	210	151,742	19	31	46,197	197,939
Percent of Total			77%			23%	

[a] includes preliminary data through October 15, 1999.

[b] average through 1998.

Table 2. Annual rockfish harvest (lb) by gear, from waters of the Inside and Outside Districts Prince William Sound Area, 1987-1999.

Year[a]	Vessels	Landings[b]	Troll/Jig	Trawl	Longline	Pots	Total
1987	63	138	0	2,508	118,833		121,341
1988	74	193	55,132	36	143,857		199,025
1989	38	106	11,731	992	105,827		118,550
1990	96	412	30,085	20,233	455,765	352	506,435
1991	90	252	16,143	11,416	129,857		157,416
1992	115	304	9,245	28,335	154,119	102	191,801
1993	80	211	13,876	12,606	82,246	78	108,806
1994	92	217	94,562	2,860	103,406	114	200,942
1995	138	287	183,624	267	128,085	31	312,007
1996	102	261	58,280	183	124,852		183,315
1997	105	274	34,029	939	131,219	355	166,542
1998	93	224	3,284	10	105,684	162	109,140
1999	91	231	1,128	677	67,301		69,106
Average[c]	91	240	42,499	6,695	148,646	171	197,939

[a] includes preliminary data through October 15, 1999.

[b] total landings may be less than the total from Table 1 as vessels may fish both districts during a trip.

[c] average through 1998.

Table 3. Annual commercial rockfish harvest (lb) by species assemblage from the Inside District of Prince William Sound, 1987 - 1999.

	Pelagic Shelf		Demersal Shelf		Slope		Total
Year[a]	Pounds	% of total	Pounds	% of total	Pounds	% of total	Pounds
1987	48	0%	63,419	53%	55,585	47%	119,052
1988	1,425	1%	24,201	22%	86,393	77%	112,019
1989	9,752	10%	4,293	5%	79,383	85%	93,428
1990	20,583	4%	24,254	5%	444,281	91%	489,118
1991	25,381	16%	31,616	20%	97,639	63%	154,636
1992	50,016	28%	35,313	20%	92,485	52%	177,814
1993	3,070	4%	12,140	15%	66,142	81%	81,352
1994	17,770	18%	22,280	23%	57,558	59%	97,608
1995	28,098	18%	29,848	19%	95,610	62%	153,556
1996	12,402	12%	38,714	37%	54,688	52%	105,804
1997	17,842	13%	34,767	25%	84,577	62%	137,186
1998	890	1%	53,097	53%	45,392	46%	99,379
1999	1,770	3%	34,230	59%	21,615	38%	57,615
Average[b]	15,602	10%	31,162	21%	104,978	69%	151,742

[a] includes preliminary data through October 15, 1999.

[b] average through 1998.

Table 4. Annual commercial rockfish harvest (lb) by assemblage from the Outside District of Prince William Sound, 1987 - 1999.

	Pelagic Shelf		Demersal Shelf		Slope		Total
year[a]	pounds	% of total	pounds	% of total	pounds	% of total	
1987	372	16%		0%	1,917	84%	2,289
1988	84,269	97%	2,715	3%	22	0%	87,006
1989	11,844	47%	13,278	53%		0%	25,122
1990	6,304	36%		0%	11,013	64%	17,317
1991	1,624	58%	52	2%	1,104	40%	2,780
1992	2,863	20%	7,505	54%	3,619	26%	13,987
1993	24,557	89%	2,069	8%	828	3%	27,454
1994	99,036	96%	921	1%	3,377	3%	103,334
1995	157,063	99%	533	0%	855	1%	158,451
1996	60,314	78%	14,950	19%	2,247	3%	77,511
1997	20,180	69%	6,635	23%	2,541	9%	29,356
1998	4,012	41%	3,906	40%	1,843	19%	9,761
1999	1,451	13%	9,002	78%	1,038	9%	11,491
Average[b]	39,370	85%	4,380	10%	2,447	5%	46,197

[a] includes preliminary data through October 15, 1999.

[b] average through 1998.

Table 5. PWS recreational harvest (lb) of rockfish by assemblage, 1991-1998.

	Pelagic Shelf		Demersal Shelf		Slope		Total[a]
Year	Pounds	% of total	pounds	% of total	pounds	% of total	pounds
1991	20,400	54%	17,100	45%	300	1%	37,800
1992	45,200	56%	35,000	43%	400	0%	80,600
1993	57,200	81%	12,900	18%	400	1%	70,500
1994	46,800	58%	32,900	41%	1,200	1%	80,900
1995	55,300	64%	31,200	36%	0	0%	86,500
1996	48,500	71%	19,200	28%	200	0%	67,900
1997	69,100	68%	32,600	32%	100	0%	101,800
1998	77,700	79%	20,000	20%	1,000	1%	98,700
1999	Data Not Available						

[a] There is considerable uncertainty in the sport harvest biomass estimates (see Meyer 1999).

Table 6. Annual effort and harvest (lb) by gear type from the Prince William Sound Area Pacific cod fishery 1987 - 1999.

Parallel Season

Year[a]	Vessels	Landings	Other[b]	Longline	Pot	Jig[c]	Total
1987	71	136	22,026	513,134			535,160
1988	39	92		330,708			330,708
1989	23	48	701	72,659		235	73,595
1990	84	309	7,712	1,204,070	6,639	2,504	1,220,925
1991	90	235	17,073	1,247,430	961,887	223	2,226,613
1992	141	538	16,226	1,360,723	594,479	2,822	1,974,250
1993	57	208	25,984	810,746	466,184	1,951	1,304,865
1994	45	196		316,399	1,584,686	1,059	1,902,144
1995	75	207	24,539	359,710	1,204,404	6,978	1,595,631
1996	51	136	218,018	214,081	420,168	1,658	853,925
1997	60	173	1,429	333,911	582,308	4,331	921,979
1998	50	157	5,879	533,256	138,238		677,373
1999	51	200	1,909	685,123	641,508		1,328,540

State Waters Season

	Vessels	Landings	GHL	Pots	Jigs	Total
1997	9	36	880,000	192,135	8,375	200,510
1998	9	33	860,000	385,806	33,170	418,976
1999	6	23	930,000			327,669

[a] includes preliminary data through October 15, 1999.

[b] other includes trawl and gillnet.

[c] include mechanical jig and hand troll.

Table 7. Annual sablefish harvest (lb), including testfish from the Inside and Outside Districts of the Prince William Sound Area 1987 - 1999.

Year[a]	Vessels	Landings	Inside	Outside	Testfish[b]	Total
1987	59	113	200,534	218		200,752
1988	54	150	219,052	27,952		247,004
1989	25	101	187,843	744		188,587
1990	71	259	210,970	4,927		215,897
1991	78	160	325,916	24,382		350,298
1992	63	130	432,041	33,674		465,715
1993	60	100	316,436	74,917		391,353
1994	66	107	280,553	60,342		340,895
1995	126	144	565,252	11,759		577,011
1996	69	80	247,507	33,464	10,370	291,341
1997	51	88	196,225	2,688	9,269	208,182
1998	59	62	232,831	14	11,622	244,467
1999	42	48	206,033		7,715	213,748
Average[c]	65	125	284,597	22,923	10,420	310,125

[a] includes preliminary data through October 15, 1999.

[b] testfish not included in landings.

[c] average through 1998

Table 8. Annual effort and harvest (lb) by gear type from the commercial pollock fishery in the Prince William Sound Area 1987-1999.

	Other Gear[b]			Trawl Gear			Testfish	Total
Year[a]	Vessels	Landings	Pounds	Vessels	Landings	Pounds	Pounds	Pounds
1987	6	6	1,366					1,366
1988	-	-	1,548					1,548
1989	-	7	638	-	-	919		1,557
1990	5	8	743	-	4	6,588		7,331
1991								0
1992	7	7	102	-	9	5,956		6,058
1993	-	-	185	-	4	5,441		5,626
1994	4	6	5,664					5,664
1995	10	20	8,268	9	35	6,299,575	215,025	6,522,868
1996[c]	-	8	1,858	11	25	3,270,083	421,134	3,693,075
1997	6	16	3,759	10	33	4,323,129	539,123	4,866,011
1998	6	22	2,672	11	29	4,013,725	631,751	4,648,148
1999	9	28	11,881	6	34	4,673,074	490,761	5,175,716
Average[d]	6	11	2,437	10	20	2,240,677	451,758	1,646,604

[a] includes preliminary data through October 15, 1999.

[b] includes jig, longline and pot from the Inside and Outside Districts.

[c] 1996 testfish includes 563 lb of longline harvest

[d] average through 1998

- Confidential data.

Table 9. Annual effort and harvest (lb) in the commercial lingcod fishery from the Prince William Sound area, and adjacent federal waters 1987 - 1999.

Year[a]	Vessels	Landings	Inside	Outside	Federal	Total
1987	15	15	859		3,726	4,585
1988	23	31	1,336	7,103	19,529	27,968
1989	31	37	1,278	6,069	20,818	28,165
1990	47	58	8,112	3,352	42,711	54,175
1991	44	61	19,352	4,927	14,156	38,435
1992	76	105	2,346	3,783	44,390	50,519
1993	49	76	244	7,457	70,216	77,917
1994	37	62	9,532	828	36,176	46,536
1995	67	95	136	2,853	81,690	84,679
1996	44	83	5,795	1,189	32,939	39,923
1997	71	112	22,363	2,805	31,032	56,200
1998	37	61	3,387	2,087	24,641	30,115
1999	22	45	1,475	5,350	20,321	27,146
Average[b]	43	74	6,228	3,538	35,169	44,935

[a] includes preliminary data through October 15, 1999.

[b] average through 1998.

Table 10. Annual reported harvest (lb) of miscellaneous groundfish species from the Prince William Sound area, 1987 - 1999.

Year[a]	Vessels	Landings	Other[b]	Flatfish[c]	Sharks[d]	Skates	Octopus	Squid	Totals
1987	20	33	1,498	28,441	502	13,172			43,613
1988	8	14	23	15,457	22	11,770			27,272
1989	5	9	848	56		614		1,467	2,985
1990	19	81	322	72,969				2,067	75,358
1991	26	47	1,127	5,758	175	10,890	15		17,965
1992	31	70	2,946	8,451	1,338	19,192	984	399	33,310
1993	16	65		663	1,080	1,565	4,500	300	8,108
1994	16	44	8	1,014	2,465	4,435	5,499		13,421
1995	33	82	768	10,420	1,518	10,336	3,814	1,367	28,223
1996	30	64	51	76,345	20,589	27,470	994	468	125,917
1997	25	82	1,651	320	4,840	37,666	3,464	18,316	66,257
1998	24	69	36	4,182	8,692	46,553	4,409	22,096	85,968
1999	8	43	158	462	14,133	923		6,162	21,838

[a] includes preliminary data through October 15, 1999.

[b] other, includes general groundfish, sculpin, greenling, and eel.

[c] flatfish, includes general flatfish, flounder, and sole.

[d] includes general shark, spiny dogfish, sleeper and salmon sharks.

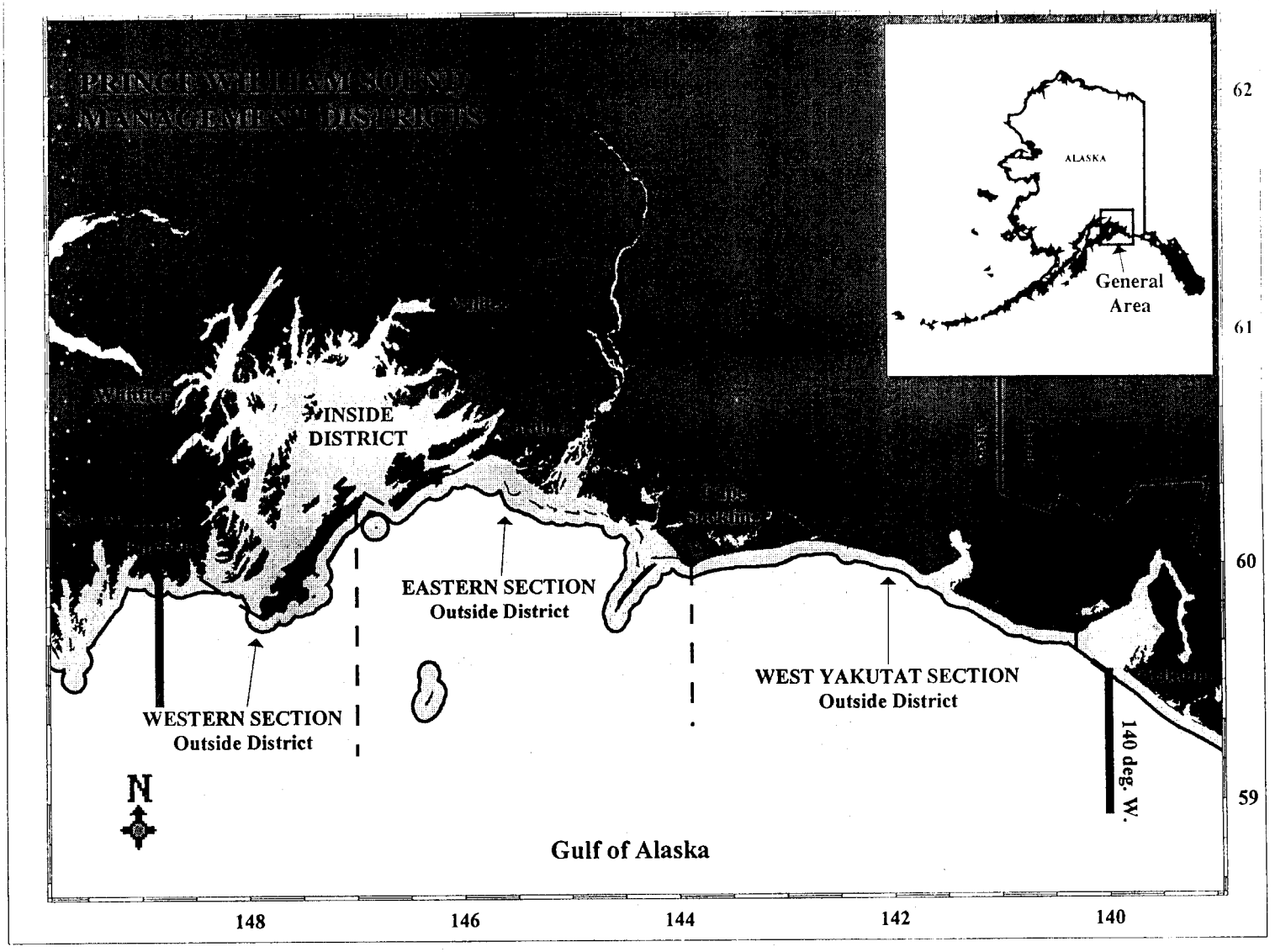

Figure 1. Districts of the Prince William Sound Management Area, 1999.

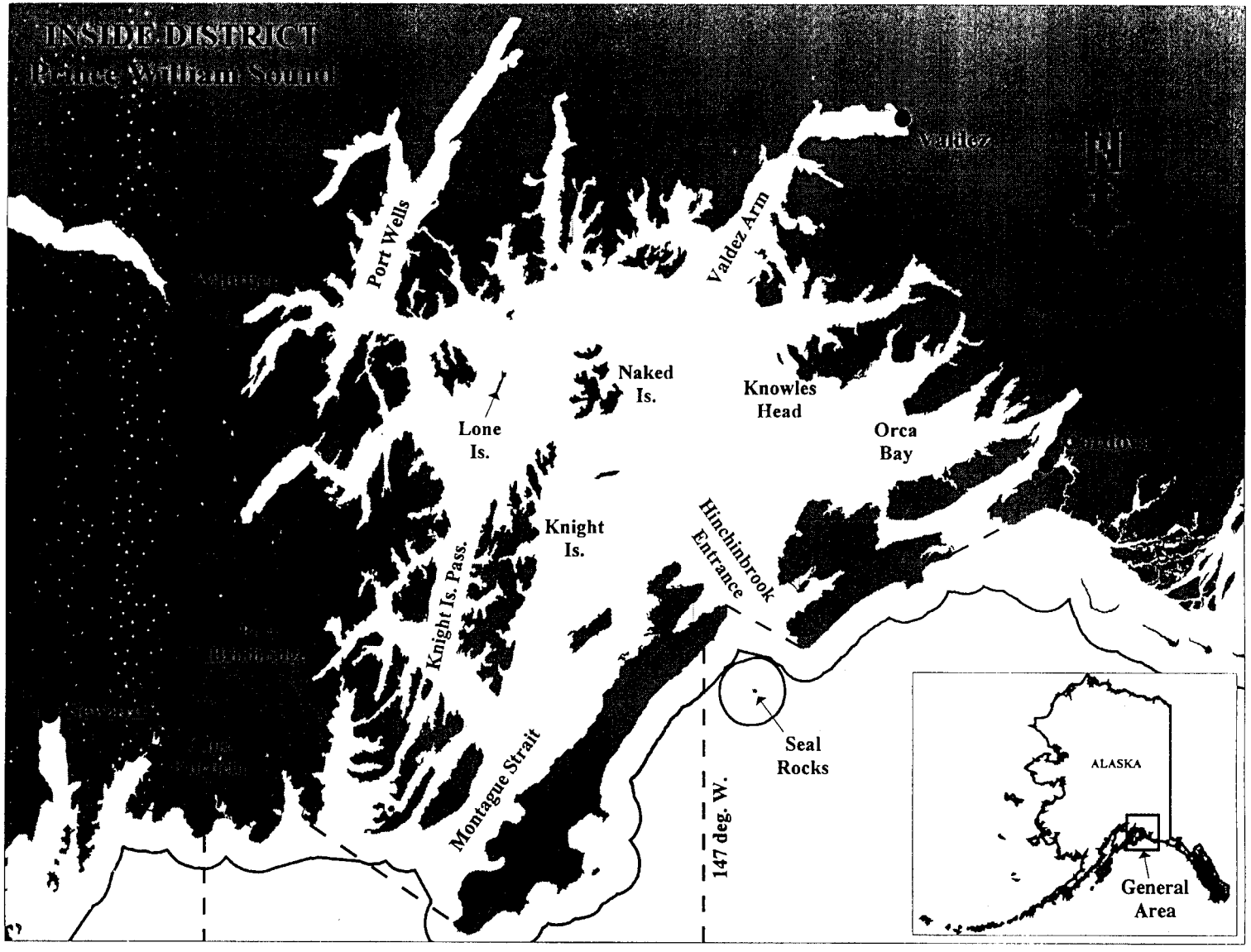

Figure 2. Detail of the Inside District, Prince William Sound Management Area.

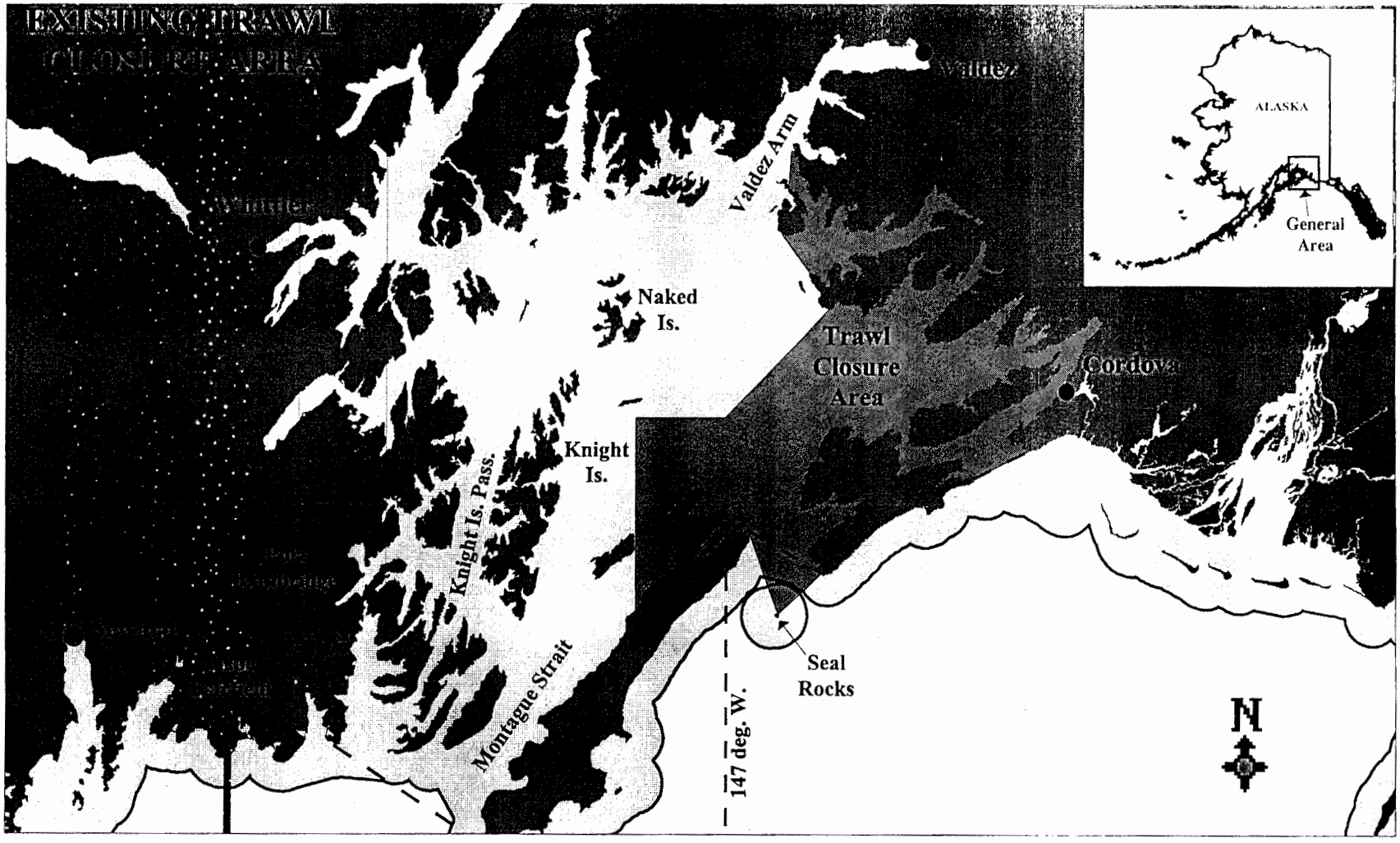

Figure 3. Existing trawl closure area in Prince William Sound.