

EXECUTIVE SUMMARY

In 2003, The Washington Department of Fish and Wildlife (WDFW) sponsored its first spiny dogfish at-sea data collection program. This program was administered under an Exempted Fishing Permit (EFP) issued by the National Marine Fisheries Service (NMFS) to the Washington Department of Fish and Wildlife to measure the bycatch rates of canary rockfish and yelloweye rockfish in the longline dogfish fishery. The program continued for two consecutive years--2003 and 2004.

This report is a summary of the data collected and is presented on a trip-by-trip basis. There were three vessels that met the minimum landing requirements to participate in the EFP; however, only one vessel chose to participate. The participating vessel was required to carry a WDFW observer, retain all rockfish for the duration of the EFP and comply with bycatch limits for overfished species. The captain was required to declare if a set was a directed dogfish set or a non-directed set (i.e., targeting a species other than dogfish) prior to each set.

In 2003, 82% of the observed sets were directed and, in 2004, 76% of the observed sets were directed. Directed sets during both years were usually inside of the non-trawl Rockfish Conservation Area (RCA) north of Destruction Island. The non-trawl RCA in this area is from the shoreline seaward to 100 fathoms. Canary rockfish and yelloweye rockfish numbers associated with directed sets were minimal. The participating vessel was limited to a bycatch cap of 175 lbs. per month of canary rockfish and 500 lbs. per month of yelloweye rockfish in 2003, but caught a total of 34.6 lbs. of canary rockfish and 124.3 lbs. of yelloweye rockfish in directed sets during the entire 2003 EFP. In 2004, the bycatch limits were 220 lbs. per month of canary rockfish and 275 lbs. of yelloweye rockfish but, again, only 19.3 lbs. of canary rockfish and 124.3 lbs. of yelloweye rockfish were caught in directed sets during the entire 2004 EFP.

INTRODUCTION

The primary objective of the spiny dogfish (*Squalus acanthias*) EFP was to measure the bycatch rates of canary rockfish (*Sebastes pinniger*) and yelloweye rockfish (*Sebastes rubberimus*) associated with the directed longline dogfish fishery.

The spiny dogfish is a gregarious species, which makes it considerably easy to catch in large quantities. They are migratory and are considered to be bottom dwellers but will reside in waters from the surface to 400 fathoms. They are distributed throughout the world in temperate waters.

Spiny dogfish has been an important commercial fish to the Northwest since the early 1900s. Canada's commercial interest in dogfish began prior to the 1900s. Throughout the century the spiny dogfish has had many commercial uses. Its earliest use was as an oil product. Dogfish oil was used in lighthouses, as lamp oil for miners, and even medicinally like cod-liver oil. By the mid-1970s dogfish was recognized as a food fish and marketed as such.

Washington fishers and at least one major processor have worked aggressively to develop and maintain strong markets for this species and are heavily dependent upon spiny dogfish. Longline fishers targeting dogfish are currently constrained by associated catches of yelloweye rockfish and canary rockfish. In 2002, dogfish were prohibited for fixed gear due to the associated bycatch of yelloweye rockfish. (Note: Bycatch information was collected from fish ticket landings when yelloweye and canary catches were allowed, as direct observer information was not available to determine an actual bycatch ratio in an exclusive dogfish fishery.)

Fishers who have historically targeted dogfish have indicated they can pursue a dogfish fishery with a much lower yelloweye and canary rockfish bycatch rate than current data indicate, thereby allowing a dogfish fishery to continue. The current non-trawl RCA extends from the shoreline seaward to 100 fathoms (north of 40° 10'N latitude), and the majority of the dogfish catch occurs just inside this closed area.

The Washington Department of Fish and Wildlife has conducted an EFP for spiny dogfish using longline gear for the past two years (2003 and 2004). In both years, the participants were required to secure contracts with the Department that described the provisions of the EFP program. The participating vessel was required to carry an observer onboard all of its fishing trips for the duration of the EFP, adhere to bycatch caps for overfished species, and retain all of the rockfish caught.

For the first year, the participating vessel was allowed access to the non-trawl RCA to access spiny dogfish. For the second year, fishing within the RCA was restricted to two discrete areas, based upon results from the first year of the EFP.

Throughout the duration of the longline dogfish EFP, the goals of the experiment have been to:

- 1) Measure bycatch rates for canary rockfish, yelloweye rockfish and other rockfish associated with the longline dogfish fishery through an at-sea observer program; and
- 2) Collect data that could be used to augment NMFS groundfish observer program.

Since 1998, the PFMC has initiated rebuilding plans for several species including canary and yelloweye rockfish. Critical to these rebuilding plans and to the overall improvement of groundfish management, is the need for more and better scientific data. Fishery dependent data that is needed includes amount of total catch and catch location, as well as biological data (e.g., age and sex). There are 89 species covered under the Pacific Coast Groundfish Fishery Management Plan, and at present, there is little or no biological data on a large number of these species.

Spiny dogfish is an extremely important species in Washington groundfish fisheries. Washington fishermen and processors have worked aggressively to develop and maintain strong markets for this species. A number of Washington groundfish longline fishers and at least one major processor are heavily dependent upon spiny dogfish. Fishermen targeting dogfish are currently constrained by their limit of yelloweye and canary rockfish. In 2002, dogfish were prohibited for fixed gear due to the associated bycatch of yelloweye rockfish.

The spiny dogfish EFP was conducted during the months of February through May in 2003 and 2004 which, historically, is the period of time that coastal longliners harvest the most dogfish. This is typically the time of year when dogfish congregate in large schools in shallow waters to feed.

Even though the vessel participating in the EFP (vessel A) was allowed to fish February through May, exigent circumstances like weather or vessel repairs kept vessel A from fishing the months of February and March both years. Most of vessel A's fishing was conducted during the months of April and May.

METHODS

EFP Participants

Participation in the EFP was limited to fishers who met the following criteria:

- 1) Had a 3-year cumulative total of at least 300,000 lbs of spiny dogfish landed into Washington in the following calendar years: 2000, 2001, and 2002 with longline gear;
- 2) Had landed spiny dogfish with longline gear into Washington in all three consecutive years (2000, 2001, and 2002); and
- 3) Were a Washington resident and with a valid Washington delivery permit.

The rationale for these criteria was to ensure that the participants had a recent catch history of significant dogfish landings so the data collected would be applicable to longline fishers targeting dogfish. There were three vessel owners who met these criteria and these vessels represented about 80% of the total longline dogfish landings into Washington for the qualifying period. Only one vessel chose to participate; the other two permit holders have since left the longline fishery. The one participant made up over 40% of the dogfish landings into Washington for the qualifying period.

The purpose of the residency requirement was to justify using federal Disaster Relief funds from Congress, awarded to the state of Washington, to cover the costs associated with the at-sea data collection program.

At-sea Sampling

The participating vessel was required to carry a WDFW observer, retain all rockfish, and comply with bycatch limits for overfished species for the duration of the EFP. Any rockfish retained in excess of the published trip limits were forfeited to Washington State and sold at fair market value.

There were six fishing trips in 2003; the first trip began April 4 and the last trip ended on June 3. In 2004, there were only three trips with the first trip beginning on April 2 and the last trip ending May 4. The observer's main duties were to 1) record whether the set was a directed dogfish set or a non-directed set; 2) record all rockfish on a set-by-set basis; 3) monitor bycatch of overfished species subject to bycatch limits and inform the skipper when any bycatch limits were reached; 4) record the number of halibut and lingcod released and obtain a length estimate of released halibut and; 5) record fork length of rockfish.

Bycatch limits for overfished species of concern were set for the EFP. There was an individual monthly limit of canary rockfish and yelloweye rockfish (Table 1). Once an EFP vessel reached one of the individual limits it was no longer allowed to fish within the

EFP for the remainder of the month. There was also a cumulative limit for the duration of the EFP (Table 2). Once one of the limits was reached, the EFP would be terminated.

Table 1. Monthly bycatch limits of rockfish in the spiny dogfish EFP.

	2003	2004
Canary Rockfish	125 lbs	220 lbs
Yelloweye Rockfish	500 lbs	275 lbs

Table 2. Cumulative bycatch limits of overfished species in the spiny dogfish EFP.

	2003	2004
Canary Rockfish	0.5 mt	0.1 mt
Darkblotched Rockfish	0.4 mt	0.5 mt
Lingcod	2.0 mt	2.0 mt
Pacific Ocean Perch	0.4 mt	0.5 mt
Widow Rockfish	0.4 mt	0.4 mt
Yelloweye Rockfish	2.0 mt	0.5 mt

Shoreside Sampling

Washington Department of Fish and Wildlife personnel sampled 56% of the dogfish EFP landings dockside, collecting species composition data on mixed rockfish categories and recording length and sex. Port sampling staff extracted otoliths (used for aging purposes) of certain species, particularly canary rockfish and yelloweye rockfish. Sampling procedures also included biologically sampling spiny dogfish. Length, sex, and maturity were recorded on 50 random dogfish per trip. In addition, the second dorsal spine was collected for aging in support of a future dogfish stock assessment.

RESULTS

Directed and Non-directed Sets

During the 2003 dogfish EFP, there were 78 longline sets distributed over six trips (Table 3); 64 were directed sets and 14 were non-directed sets. In 2004, there was a total of 29 longline sets distributed over three trips; 22 sets were directed and seven non-directed. In 2003, 82% of the sets were directed and in 2004, 76% of the sets were directed (Table 4).

Table 3. The number of directed and non-directed longline sets by trip and year.

	Directed		Non-directed	
	2003	2004	2003	2004
Trip 1	11	8	0	0
Trip 2	12	8	1	1
Trip 3	17	6	2	6
Trip 4	13		0	
Trip 5	10		0	
Trip 6	1		11	
Total	64	22	14	7

Table 4. The percent of directed and non-directed longline sets by trip and year.

	Directed		Non-directed	
	2003	2004	2003	2004
Trip 1	100%	100%	0%	0%
Trip 2	92%	89%	8%	11%
Trip 3	89%	50%	11%	50%
Trip 4	100%		0%	
Trip 5	100%		0%	
Trip 6	8%		92%	
Total	82%	76%	18%	24%

As a condition of the EFP, all sets made within the non-trawl RCA had to be directed dogfish sets and only sets made seaward of the RCA that did not target dogfish could be considered non-directed. The bycatch limits prescribed in the EFP pertained to directed sets only (i.e., all sets within the non-trawl RCA and all sets targeting dogfish). Most sets, directed and non-directed, basically hugged the RCA line (Figure 1).

The non-trawl RCA was established in 2002 to provide protection for overfished rockfish, primarily yelloweye rockfish, which are susceptible to longline harvest methods. Spatial and bottom habitat information were not available to identify more specific areas to provide rockfish protection; therefore, the RCAs were developed as a proxy, based on depth information from the NMFS trawl survey. In order to measure bycatch associated with the targeted dogfish fishery, the EFP participant was allowed to access the non-trawl RCA.

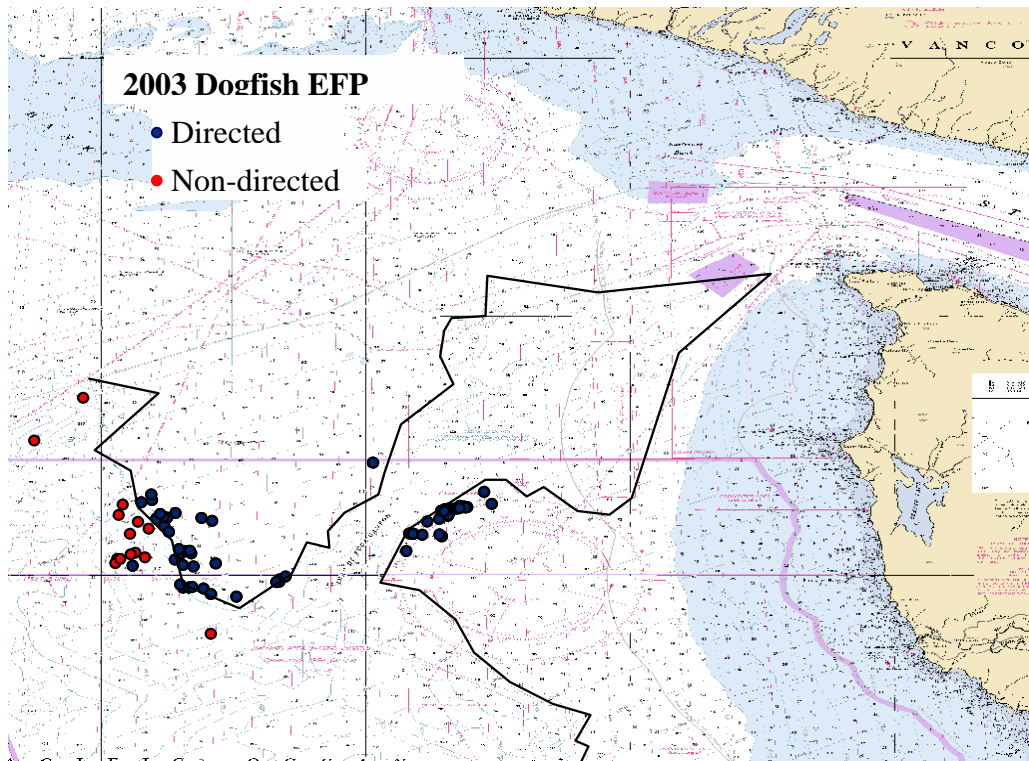


Figure 1. Directed and non-directed 2003 dogfish EFP sets.

In 2004, the dogfish EFP participant was only allowed to fish inside the non-trawl RCA within two smaller areas (Figure 2). As in 2003, the majority of directed sets hugged the RCA line. Fishing sets within the two RCA areas were concentrated in one general location in Area B while the few sets made in Area A were dispersed over a larger area. Dogfish sets in Area A averaged 1,280 lbs. of dogfish per set and sets in Area B averaged 4,299 lbs. of dogfish per set. Detailed catch information is contained in Appendix A (Area A) and Appendix B (Area B).

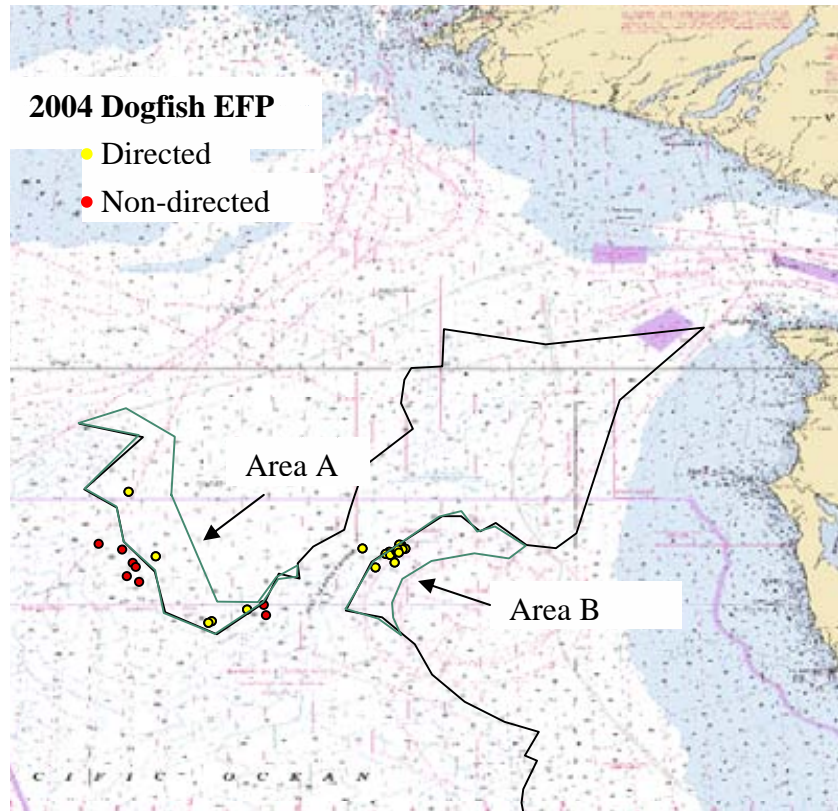


Figure 2. Directed and non-directed 2004 dogfish EFP sets.

Dogfish

In 2003, there were a total of 192,879 lbs. of dogfish landed in the EFP (Table 5). Approximately 185,342 lbs. were directed dogfish while about 7,537 lbs. of dogfish were caught in non-directed sets. In 2004, there were 91,537 lbs. of dogfish landed in the EFP. Approximately 81,776 lbs. of dogfish were landed in directed sets and 9,761 lbs. were landed in non-directed sets.

Table 5. Pounds of dogfish landed in the 2003 and 2004 EFP.

	2003			2004		
	Directed (lbs.)	Non-directed (lbs.)	Total	Directed (lbs.)	Non-directed (lbs.)	Total
Trip 1	37,637	0	37,637	36,770	0	36,770
Trip 2	32,401	2,817	35,218	40,216	4,970	45,186
Trip 3	34,334	4,243	38,577	4,791	4,791	9,581
Trip 4	41,104	0	41,104			
Trip 5	39,826	0	39,826			
Trip 6	41	476	517			
Total	185,342	7,537	192,879	81,776	9,761	91,537

Rockfish

None of the bycatch limits for rockfish, monthly or cumulative, were reached in 2003 or 2004. The total directed canary catch was 34.6 lbs. in 2003 and 19.3 lbs. in 2004, for the duration of the EFP (Table 6). In non-directed sets, the bycatch of canary rockfish and yelloweye rockfish was minimal.

Table 6. Amount of canary rockfish and yelloweye rockfish in directed and non-directed EFP sets.

	Directed (lbs.)				Non directed (lbs.)			
	Canary		Yelloweye		Canary		Yelloweye	
	2003	2004	2003	2004	2003	2004	2003	2004
Trip 1	2.0	5.4	7.5	8.8	0.0	0.0	0.0	0.0
Trip 2	11.0	2.4	6.1	40.3	0.0	0.0	0.0	0.0
Trip 3	2.1	11.5	27.1	7.1	0.0	3.8	0.0	5.2
Trip 4	8.0		0.0		0.0		0.0	
Trip 5	7.2		77.0		0.0		0.0	
Trip 6	4.3		6.6		0.0		4.6	
Total	34.6	19.3	124.3	56.2	0.0	3.8	4.6	5.2

Redbanded rockfish (*Sebastes babcocki*), greenstriped rockfish (*Sebastes elongatus*), roughey rockfish (*Sebastes aleutianus*) and yellowtail rockfish (*Sebaste flavidus*) made up the majority of rockfish caught in 2003 and 2004 EFPs (Table 7). In 2003, redbanded rockfish made up the majority of the rockfish catch, but in directed sets, greenstriped rockfish were the most common (Figure 3). A total of 869.8 lbs. of redbanded rockfish were caught with 11.8 lbs. caught in directed sets and a total of 297.9 lbs. of greenstriped rockfish were caught with the majority (289.3 lbs.) caught in directed sets.

In 2004, yellowtail rockfish made up the majority of the rockfish catch. A total of 142.4 lbs. of yellowtail rockfish were caught with 84.5 lbs. caught in directed sets (Figure 4). Greenstriped rockfish, redbanded rockfish, roughey rockfish, and yellowtail rockfish made up 85% of the rockfish catch in 2003 and 82% of the rockfish catch in 2004. In the directed portion, these rockfish made up 23% of the rockfish catch in 2003 and 40% in 2004.

Table 7. Rockfish caught in directed and non-directed EFP sets.

	Directed (lbs.)		Non-directed (lbs.)		Total (lbs.)	
	2003	2004	2003	2004	2003	2004
Canary	34.6	19.3		3.8	34.6	23.1
Darkblotched			2.9		2.9	
Greenstriped	289.3	80.6	8.6	36.0	297.9	116.6
Redbanded	11.8	20.2	858.0	61.2	869.8	81.4
Redstripe	2.2				2.2	
Rosethorn	1.4	2.8	2.0	4.2	3.4	7.0
Rougheye			196.1	33.3	196.1	33.3
Shortspine	0.4		75.7	15.9	76.1	15.9
Silvergray	9.0		6.0		15.0	
Widow	3.0				3.0	
Yellowmouth			5.5		5.5	
Yelloweye	124.3	56.2	4.6	5.2	128.9	61.4
Yellowtail	115.6	84.5	46.1	57.9	161.7	142.4

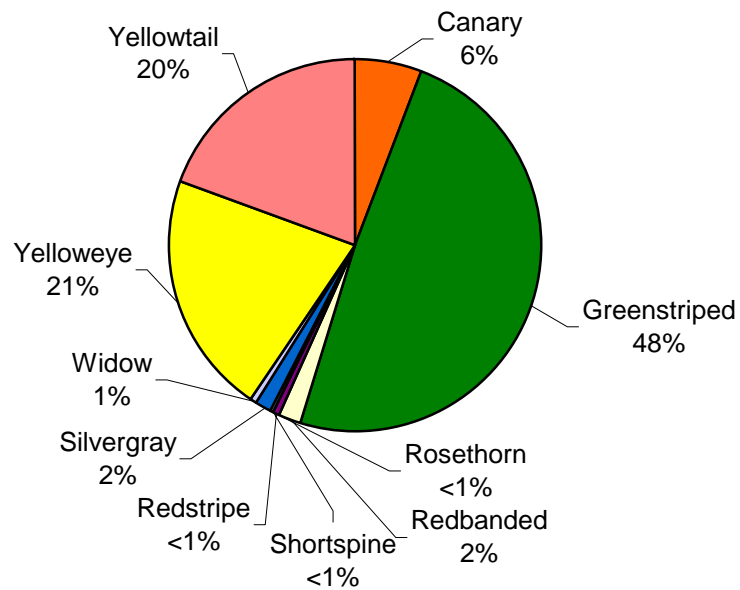


Figure 3. Composition of rockfish in 2003 directed sets.

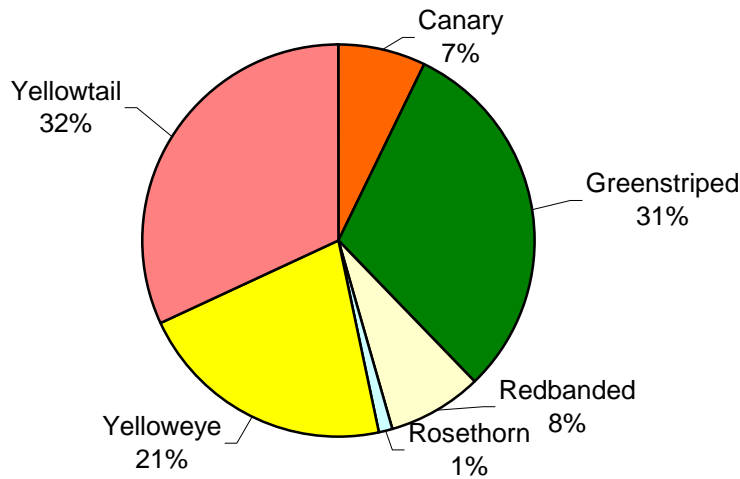


Figure 4. Composition of rockfish in 2004 directed sets.

Using a combination of the 2003-04 EFP data for Areas A and B, bycatch rates for canary rockfish and yelloweye rockfish were developed on an area-specific basis (Table 8); then, catches for the two areas were combined to come up with a single average bycatch rate.

Table 8. Bycatch rates for canary rockfish and yelloweye rockfish in 2003 and 2004 EFP.

	Area A	Area B	Total
# Sets	37	45	82
Dogfish (lbs)	82,150	162,680	244,830
Canary (lbs)	30.3	20	50.3
Yelloweye (lbs)	31.6	142.3	173.9
Canary rate	0.000369	0.000123	0.00020557
Yelloweye rate	0.000385	0.000875	0.00071037

Halibut and Lingcod

Pacific halibut (*Hippoglossus stenolepis*) was a prohibited species during much of the EFP and, therefore, required to be released unharmed. However, retention of halibut caught incidentally in the primary sablefish fishery north of Pt. Chehalis, Washington, is allowed subject to a landing ratio of 100 lbs. of halibut per 1000 lbs. of sablefish (*Anoplopoma fimbria*). The participating EFP vessel also has a primary sablefish permit and retained less than 1000 lbs. of halibut while participating in the 2003 EFP and less than 500 lbs. in the 2004 EFP.

During the 2003, EFP vessel A released around 2,915 halibut with an estimated total weight of 22,467 lbs. In 2004, vessel A released 618 halibut with an estimated total weight of 8,606 lbs.

Few lingcod (*Ophiodon elongatus*) were encountered during the 2003 and 2004 dogfish EFP. Every lingcod caught was larger than the minimum size limit (24 inches) and was retained for commercial sales. Less than 75 lbs. and less than 25 lbs. of lingcod were retained during the 2003 and 2004 EFPs, respectively.

CONCLUSIONS

Overall, the results of the EFP demonstrated success. Fishers were able to target spiny dogfish and avoid any significant catch of canary and yelloweye rockfish, and none of the individual bycatch caps were reached. The EFP was conducted during the months that encompassed the longline dogfish “season.” Dogfish tend to concentrate in the months of February through mid-May and are not clearly targetable after mid-May.

In 2004, the non-trawl RCA EFP fishing area was limited to two discrete areas. For the purposes of this proposal, these areas were further narrowed to areas just inside the 100-fathom non-trawl RCA boundary. Two areas with higher concentrations of dogfish and very low bycatch rates of canary and yelloweye rockfish were identified (Table 9). Area 1 is approximately 11.2 square nm and Area 2 is 2.4 square nm.

Table 9. EFP catch results for Area 1 and Area 2.

	Total Catch		Bycatch Rates	
	Area 1	Area 2	Area 1	Area 2
Canary (lbs)	2	14	0.00008	0.00011
Yelloweye (lbs)	7.5	113.8	0.00030	0.00090
Dogfish (lbs)	24,650	126,700		
Number of Sets	16	34		

Proposal

Using these data, the Washington Department of Fish and Wildlife is proposing to incorporate these dogfish “hotspots” into the non-trawl RCA boundary for the months of February through May to provide for a limited entry longline dogfish fishery (similar to the approach taken for the petrale spots in the winter trawl fishery).

We are proposing that these areas be open to limited entry longline permit holders only (not open access) because: 1) limited entry permit holders are currently required to carry VMS, so fishing effort in these areas could be monitored; 2) limited entry longline vessels are expected to receive a higher level of federal observer coverage resulting in updates to the EFP data with the federal observer data; and 3) there is a growing concern about the spiny dogfish population and the Department advocates conducting a formal

assessment on the dogfish stock (tentatively scheduled for the 2007 assessment process) before allowing additional harvest opportunities.

The Washington Department of Fish and Wildlife is working with the Pacific Fishery Management Council and NMFS to provide for this fishery through federal regulations, as part of the 2007-08 management cycle.

Longline Dogfish EFP Catch (lbs.) in Area A by Set

Appendix A

Overfished Species and Other Rockfish ¹

Dogfish	Lingcod	Canary	Yelloweye	Other Rockfish ²
3,000	0	0	0	4
3,500	0	0	0	18
2,800	0	0	0	26
2,500	0	2	2.5	15.1
2,700	0	0	0	4
2,000	0	0	0	14
1,700	0	0	0	2
4,000	0	0	5	18.4
5,000	0	0	0	1
2,800	0	0	0	39.5
2,500	0	0	0	0
1,500	0	0	0	15
800	0	0	0	4.4
500	0	6.9	6.1	23.3
1,300	0	0	0	2.2
1,400	0	0	0	9.11
1,700	0	0	0	0
4,000	0	0	0	5.12
4,500	0	0	0	0
3,500	0	0	0	0
3,500	0	0	0	0
4,500	0	0	0	6.9
4,000	0	0	0	22.6
3,500	0	0	2.12	27.32
1,800	0	2.13	0	26.3
1,200	0	0	0	5.35
800	0	0	0	26.25
150	0	0	0	6.4
1,800	0	0	0	9.9
800	0	0	0	12.45
1,500	0	0	0	23.5
500	0	0	0	17.4
1,200	0	7.8	8.8	19.2
800	26.5	0	0	14.9
300	0	5.9	0	13
2,500	53	0	3.3	18.4
1,600	0	5.6	3.8	13.9
82,150	79.5	30.33	31.62	464.9

¹ Darkblotched, Pacific ocean perch, and widow rockfish did not appear in the catch in area A.

² Other rockfish consists of greenstriped, redbanded, redstripe, silvergray, and yellowtail rockfish and shortspine thornyhead, in area A.

* Note: There were approximately 400 lbs. of sablefish caught in area A in 2003 and 2004 combined.

Longline Dogfish EFP Catch (lbs.) in Area B by Set
Overfished Species and Other Rockfish ¹

Appendix B

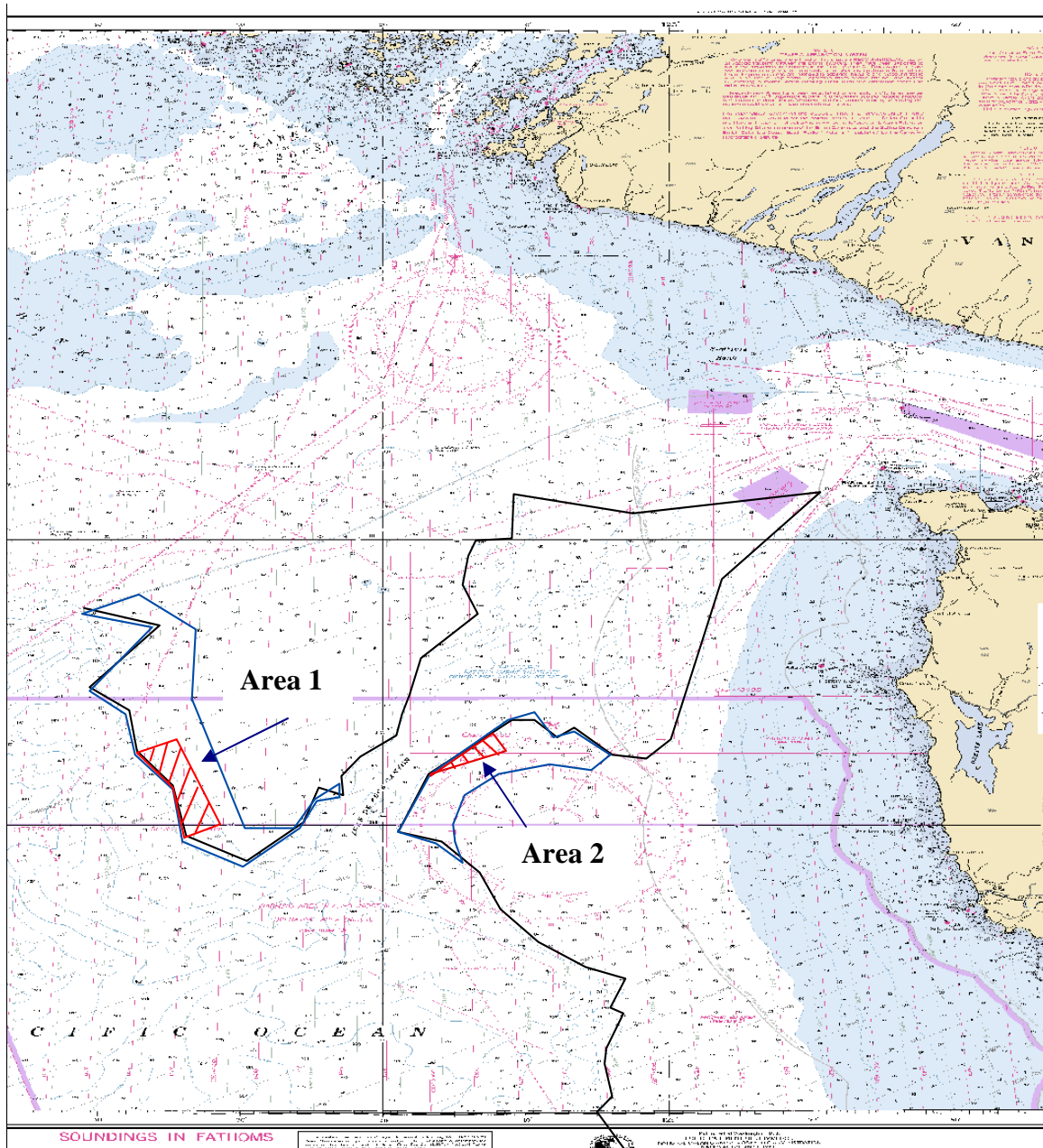
Dogfish	Lingcod	Canary	Widow	Yelloweye	Other Rockfish ²
4,500	0	0	0	0	0
6,000	0	0	0	10.2	3.2
2,500	0	0	0	14.8	17.43
1,500	0	0	0	0	3.7
3,000	0	0	0	0	3.7
3,500	0	0	0	0	3.9
3,500	0	0	0	0	4.5
3,500	0	0	0	0	6.12
2,500	0	0	0	0	0
4,000	0	0	0	0	0
3,000	7.2	0	0	0	9
3,500	0	0	0	0	0
2,600	0	0	0	0	0
1,900	0	3.8	0	0	0
3,500	0	0	0	0	0
2,500	7.6	0	0	0	28.3
2,500	0	0	0	0	3.7
3,000	0	0	0	0	8.2
4,500	0	0	0	0	1
4,200	0	4.2	0	0	0
3,800	0	0	0	0	0
3,800	0	0	0	0	0
3,800	0	0	0	0	8.1
3,600	0	0	0	67	14.2
5,000	0	0	0	0	0
2,500	0	0	0	0	0
2,500	0	0	0	0	0
3,000	0	0	0	0	7
2,500	0	7.2	2.5	10	28.3
2,000	0	0	0	0	0
2,500	0	0	0	0	5
4,200	0	0	0	0	0
5,500	0	2.4	0	0	26.9
4,000	0	0	0	0	0
5,500	0	0	0	0	0
3,500	0	0	0	0	32.9
4,000	0	0	0	0	3.4
5,500	0	0	0	3.3	3.7
6,000	0	0	0	0	3
3,000	0	2.4	0	28.5	4.7
6,500	0	0	0	0	8.4
5,500	0	0	0	0	5.7
5,000	0	0	0	8.5	8.3
3,500	0	0	0	0	0
280	0	0	0	0	3
162,680	14.8	20	2.5	142.3	255.35

¹ Darkblotched and Pacific ocean perch rockfish did not appear in the catch in area B.

² Other rockfish consists of greenstriped, rosethorn, and yellowtail rockfish in area B.

* Note: There were approximately 200 lbs. of sablefish caught in area B in 2003 and 2004 combined.

Proposed Dogfish Areas



Latitude/Longitude Coordinates for Proposed Areas

<u>Area 1</u>		<u>Area 2</u>	
48°05.00'	125°37.25'	48°03.45'	125°16.66'
48°02.60'	125°34.70'	48°05.20'	125°11.40'
47°59.00'	125°34.00'	48°06.25'	125°12.30'
48°00.00'	125°31.50'		
48°06.00'	125°34.50'		