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U.S. DEPARTMENT OF COMMERCE
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Abstract

Total fish and invertebrate bycatch is estimated for the California set gillnet fishery that currently targets California halibut (*Paralichthys californicus*) and white seabass (*Atractoscion nobilis*). This fishery has had an intermittent observer program from 1990 through 2006 to document catch and bycatch, yet only limited bycatch reporting exists for this fishery from logbook data, which are likely to be negatively biased due to underreporting or non-reporting of bycatch. Using eight years of observer data between 1990 and 2006 covering 8,958 sets in 2,981 vessel trips, the first systematic estimates of fish and invertebrate bycatch (defined as at-sea discards) for 164 species and 17 unidentified taxa are estimated in this fishery using ratio estimators. The most frequently discarded species were spider crabs (*Loxorhynchus spp.*) and bat rays (*Myliobatis californica*). Several prohibited species were observed as bycatch including one white shark (*Carcharodon carcharias*), one basking shark (*Cetorhinus maximus*), and 35 giant sea bass (*Stereolepis gigas*). No giant sea bass were observed discarded after regulations caused the fishery to move further offshore in 1994.

Keywords: bycatch; set gillnet fishery; fishery observer

1. Introduction

The Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006¹ specifies that Fishery Management Plans (FMP) establish a standardized reporting methodology to assess the amount and type of bycatch occurring in U.S. fisheries. The most accurate method to achieve this goal is through at-sea observers. The National Marine Fisheries Service (NMFS), Southwest Regional Office (SWRO) is responsible for the observer program for the California set gillnet fishery which targets California halibut and white seabass. Observers record fishing information (e.g. set location, date, depth, soak time) as well as the number of target and non-target species caught and discarded, including marine mammals, seabirds, sea turtles, sharks, and fish. This type of bycatch information is essential to realizing the NMFS goal of expanding the application of ecosystem principles in fishery conservation and management activities²,

¹ 16 U.S.C. 1853(a)(11)

² 16 U.S.C. 1882(a)

commonly referred to as ‘ecosystem based management’, which takes into consideration aspects and issues beyond the target species.

For the purposes of this paper, bycatch is defined as the at-sea catch and discard of any animal (alive or dead). Although bycatch is commonly defined to also include unobserved mortality (NMFS, 1998; NMFS, 2004), it is not included here because unobserved mortality due to direct encounters with fishing gear before it was retrieved or resulting from lost or abandoned gear could not be determined. No distinction was made between discards of target or non-target species or for the reason of discard.

The set gillnet fishery began in the 1970s off of California, initially targeting angel shark (*Squatina californica*) and California halibut (Herrick and Hanan, 1988). Fishing effort historically ranged from Monterey Bay south to the U.S./Mexico border. Concern over the bycatch of seabirds and marine mammals led to a series of depth restrictions along the central California coast between 1987 and 1991 with set gillnets ultimately being restricted to waters deeper than 55 m (30 fm) (Forney et al., 2001). In 1994, area closures prohibited gillnets within 3 nmi of the mainland south of Point Arguello and within 1 nmi of the Channel Islands.³ A ban on gillnets inshore of 110 m (60 fathoms) in September 2002 closed the fishery in central California between Point Arguello and Point Reyes. Currently, effort is concentrated off Ventura and San Pedro, (Carretta et al., 2007). Due to the area closures, white seabass have replaced angel shark as a targeted species. The fishery operates throughout the year but effort peaks during the summer months.

Set gillnets are usually 366 m (200 fathoms) in length with 21.6 cm (8.5 inch) mesh when targeting halibut and angel shark, and 16.5 cm (6.5 inch) mesh when targeting white seabass and yellowtail (*Seriola lalandi*) (Carretta et al., 2007). The vast majority of sets occur in water depths of 18-64 m (10-35 fathoms). Typically, trips consist of one to four net sets soaked for one to two days.

Bycatch has been reported for the California drift gillnet fishery (Julian and Beeson, 1998; Forney et al., 2001; Carretta et al., 2005; Larese and Coan, 2008) but scant information is published concerning bycatch in the set gillnet fishery. Julian and Beeson (1998) and Forney et al (2001) reported incidental mortality of marine mammals, seabirds, and turtles however, nothing has been reported for other species, especially fin fish. An observer program has intermittently been in place since 1990 that, besides monitoring target species catch, has also recorded bycatch data. This paper identifies and quantifies observed elasmobranch, invertebrate, and fish bycatch from 1990 through 2006 in the California set gillnet fishery, and finally, presents estimates of total bycatch.

2. Materials and Methods

2.1 Data Collection

The National Marine Fisheries Service (NMFS) established an observer program in 1990 to monitor marine mammal interactions. Observer data on bycatch was collected in the set gillnet fishery from 1990 through 1994. There was no observer program in this fishery between 1995 and 1998, largely because California prohibited gillnets within 3

³ California Fish and Game Code 8610.5

nautical miles of the mainland south of Point Conception and 1 nautical mile of the Channel Islands, which resulted in a decline in fishing effort. The observer program resumed in 1999 due to concern over harbor porpoise (*Phocoena phocoena*) mortality in the Monterey area. The California Department of Fish and Game (CDFG) began implementing emergency closures in 2000 in response to high mortality of Common Murre (*Uria aalge*) in set gillnets, at which time the observer program was again halted. Renewed observations in this fishery were in response to requests from the Pacific Scientific Review Group⁴, over concerns that marine mammal mortality was likely continuing in this fishery (as evidenced by stranding and fisher self-report evidence) and that the fishery had not been observed in recent years. Set gillnet fishery trips are monitored as resources allow, secondary to the drift gillnet program, and therefore annual observer coverage varies widely (Table 1). Observers were assigned to vessels randomly, space permitting. Bycatch data recorded by observers includes set location, depth, length, soak time, and gear configuration, the species and number caught, in addition to the status of discarded species: returned alive, returned dead, or returned in unknown condition.

2.2 Effort Estimation

Total effort is measured as the number of days fished, which, for the set gillnet fishery, usually consists of two to four sets per day. The total number of days fished was estimated by the CDFG from observer records, logbook data, and landing receipts until 2003, after which NMFS took over this role. Julian and Beeson (1998) note that effort may be underestimated for two reasons: 1) unobserved effort may not be recorded, particularly for those trips where no marketable target fish are caught and thus, log entries are not made; and 2) if logbook or observer records do not correspond to a landing receipt, effort is estimated assuming that one landing receipt represents one day of fishing effort, which is likely an underestimate of effort for a fishing trip. It is not known how often this occurs. As a result of these uncertainties in total effort, the total quantities of bycatch reported in this paper are underestimated by an unknown amount and should be considered minimum estimates.

2.3 Bycatch Estimation

Mean-per-unit estimators, a type of ratio estimator, were used to estimate bycatch, analogous to previous estimates in the drift gillnet fishery (Julian and Beeson, 1998; Forney et al., 2001; Carretta et al., 2005; Larese and Coan, 2008). Simulations have shown mean-per-unit estimators to provide statistically unbiased estimates whereas ratio estimators relating the catch of two different species tend to overestimate bycatch (Diamond, 2003). The sampling unit used was vessel trips, which ignored any variation

⁴ The Pacific Scientific Review Group is an independent scientific review group, consisting of individuals with expertise in marine mammal biology and ecology, population dynamics and modeling, and commercial fishing technology and practices. The group includes independent researchers, fishermen, conservation group representatives, and regional fishery and wildlife management authorities. The panel is mandated under Section 117 of the Marine Mammal Protection Act (MMPA) to review marine mammal research conducted by NOAA NMFS and to make recommendations on current and future research and management issues.

in catchability between sets within a trip. This was chosen for two reasons. First, for the set gillnet fishery, almost all vessel trips were one day in duration, the unit used to measure effort by the CDFG. Second, for those trips with multiple sets, the assumption was made that sets within a given trip are not independent because generally there is a limited distance that a vessel travels between sets. Data were not stratified seasonally or spatially. Yeung (1999) determined that point estimates of bycatch for marine mammals and turtles were insensitive to stratification, whereas pooling increased estimate precision. The same results would be expected for species with low bycatch rates in the set gillnet fishery. The set gillnet bycatch rate, $\hat{r}_{s,y}$, for species s in year y can be calculated as (Cochran, 1977):

$$\hat{r}_{s,y} = \frac{\sum_i k_{i,s,y}}{\sum_i d_{i,y}} \quad (1)$$

where $k_{i,s,y}$ is the sum of observed bycatch of species s in year y for the i^{th} trip and $d_{i,y}$ is the number of observed days of fishing effort for the i^{th} trip in year y . Bycatch rate may then be used to estimate total bycatch, \hat{b}_y , as:

$$\hat{b}_y = D_y \hat{r}_{s,y} \quad (2)$$

where D_y is the estimated minimum number of days fished in year y . Bootstrap methods, treating a vessel trip as the sampling unit, were used to estimate bycatch rate variance and coefficients of variation (CVs). Trips were selected with replacement until the bootstrap sample contained the same number of trips (effort) as observed for a given year.

3. Results

Observer bycatch data are available for the years from 1990 through 1994, 1999 through 2000, and 2006. A total of 8,958 sets were observed over 2,981 trips with 99.8% of observed trips lasting no more than one day in length (Table 1). The numbers of sets per observed trip ranged from 1 to 11 but 88% of trips were comprised of 4 sets or less. Approximately 69.1% of observed sets soaked for 24 hours or less, 27.2% from 25 to 48 hours, and the remaining 3.7% from 49 to 96 hours. Most sets (80%) were fished at depths of 9 m to 37 m (5 to 20 fathoms). Total estimated fishing gear effort during this period was 32,708 days. Annual rates of observer coverage ranged from a low of 0.9% in 2006 to a high of 15.4% in 1993 and averaged 8.7% in the period from 1990 to 2006 (Table 1).

Area closures since the beginning of the monitoring program dramatically changed fishing effort. Sets from 1990 through 1994 occurred from Monterey Bay south to the Mexican border (Figure 1). Observers from 1999 through 2000 recorded sets only in the Monterey Bay area (Figure 2). In 2006, only 12 sets were observed, all south of Point Arguello (Figure 3).

Bycatch of 163 unique species and 18 unidentified taxa (e.g., shark, ray, fish, and invertebrate) was recorded during the 8 years observers recorded data. Annual observed and estimated bycatch is reported in two formats, sorted by year to display annual bycatch amounts (Table 3) and by species to highlight temporal trends (Table 4). In addition, data is summarized over all years, 1990 through 2006 (Table 5). Many of the estimates suffer from poor statistical precision, with approximately 18% of bycatch CVs higher than 0.9 (Figure 4).

The three most frequently caught species were spider crabs (*Loxorhynchus spp.*), bat rays (*Myliobatis californica*), and pacific mackerel (*Scomber japonicus*). Approximately 17% of the spider crabs were discarded alive, 69% were discarded dead, and 14% were discarded in unknown condition. For bat rays the discard status was 66% alive, 24% dead, and 10% unknown whereas for pacific mackerel it was 4% alive, 88% dead, and 8% unknown.

Several species for which fishing is currently closed, restricted, or prohibited were recorded as bycatch in the set gillnet fishery (Table 2). However, several of these species have not been observed discarded since 1994, when gillnets were banned from near shore southern California waters.

4. Discussion

Bycatch estimates presented here for the California set gillnet fishery should be considered minimal because of probable negative bias due to unrecorded and underestimated effort. It is also noted that these estimates do not include unobserved mortality or catch that is first landed dockside and then discarded. Furthermore, a number of estimates have a large associated CV value, indicating low confidence. Bycatch estimates are principally used to 1) improve stock assessments, 2) direct management decisions if levels are near or over bycatch quotas, and 3) guide actions taken to mitigate bycatch (NMFS, 2004). However, because the set gillnet observer program operated infrequently and often with low coverage, bycatch data is limited, precluding many inferences such as changes in bycatch rates and relative species abundance.

Several prohibited or restricted species were observed discarded in relatively low numbers and all but one has not been observed discarded since 1994 (Table 2). The lack of observations in recent years is most likely due to a combination of area closures and low observer coverage. For example, when California banned gillnets in state waters, it prevented sets from occurring in the near shore environment, habitat occupied by giant sea bass (*Stereolepis gigas*) and garibaldi (*Hypsypops rubicundus*).

Only one white shark (*Carcharodon carcharias*) and one basking shark (*Cetorhinus maximus*) were observed discarded, both in 1991. The white shark was returned dead and the basking shark was returned alive. Both sharks are listed as 'prohibited' in the FMP, and must be released immediately if caught, unless other provisions for their disposition are established, including for scientific study and aquarium display. Although not recently seen by fishery observers, white sharks are still caught in set gillnets as evidenced by the entangled white sharks received by the Monterey Bay Aquarium in 2004 and 2007. The CVs associated with estimates of total bycatch for these species is high (>0.99), which reflects the rarity of these bycatch events.

Increased observer coverage to better detect these rare events involving species of management concern is necessary to obtain informative estimates of bycatch levels.

Several giant seabass were observed discarded in the early years of the observer program; 35 in all years with data (8 in 1991, 19 in 1992, and 8 in 1993). Besides discarded as bycatch, giant seabass may also be retained. California regulations allow one to be possessed or sold if taken incidentally in gillnets⁵. From 1990 through 1994, observers recorded 91 giant seabass kept by fishing vessels. Following the California gillnet ban in 1994, there have been no giant seabass observed either retained or discarded. This reduced mortality has been cited as allowing the recovery of this species (Pondella and Allen, 2008).

Three prohibited species in particular, white sharks, basking sharks, and giant sea bass, have very low reproductive rates, with a minimum population doubling time of more than 14 years.⁶ Although white sharks have been protected since 1994, basking sharks since 1999, and giant sea bass since 1981, the International Union for Conservation of Nature (IUCN) lists white and basking sharks as vulnerable and giant sea bass as critically endangered. Because of their status, reproductive biology, and sparse information about them, these species are candidates for increased observer coverage.

Of the 163 species identified as bycatch in the set gillnet fishery, 30 are listed on the Fish Stock Sustainability Index (FSSI)⁷. The index is a performance measure for the sustainability of 230 U.S. fish stocks selected for their importance to commercial and recreational fisheries (Table 6). Unlike the drift gillnet program, observers do record rockfish to species level and therefore the FSSI status of rockfish bycatch could be determined. For the three categories of fishing status (overfished, overfishing, and approaching overfished), almost all species are either considered unknown or sustainable. Pacific yellowfin tuna (*Thunnus albacares*) is currently the only species designated as experiencing overfishing and bocaccio (*Sebastes paucispinis*) is considered overfished.

Fishery observer coverage can impact discard estimates. Generally, better estimates (i.e. those with lower CVs) can be obtained with increases in the number of days observers collect bycatch data. Many observer programs operate at an observer coverage rate of 20%, which is higher than current rates for this fishery. In order to demonstrate how CVs would increase, three bycatch species were selected and CVs were estimated based on an observer coverage rate of 20% and a total effort of 1,387 days fished (equivalent to 2006 effort). The species were selected to represent species that are frequently discarded, rarely discarded, and moderately discarded in this fishery after the inshore area closure in 1994. Observer data post-1994 was sampled with replacement in order to calculate the CVs. Specifically, observed trips and observed discards (including species returned alive, returned dead, and returned in an unknown condition) were determined for the observed years 1999, 2000 and 2006. Two hundred and seventy-seven observed trips were randomly selected with replacement. For each of these observed trips, observed catch for all sets was summed representing discards for 277 trips. All of the discards from all 277 trips were then summed and divided by 277, the number of sampled trips to calculate a discard rate. This process of randomly selecting

⁵ California Fish and Game Code 8380(a)

⁶ Available from: www.Fishbase.org

⁷ Available from: <http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm> (2nd quarter update, 2008)

277 observed trips with replacement was replicated 1,000 times. From these 1,000 discard rates the variance, standard error, and finally CV was calculated.

Spiny dogfish (*Squalus acanthias*) are one of the more frequently discarded species whose CV would decrease from 0.28 (2000) to approximately 0.17. Rock crab (*Cancer sp.*) is a species that is discarded infrequently whose CVs would decrease from 0.14 (2000) to approximately 0.10 whereas the CV of the spotted ratfish (*Hydrolagus colliei*), discarded in moderate amounts, would decrease from 0.43 (2000) to approximately 0.29. To determine the take of rarely discarded species (i.e. species caught a few times a year) would require 100% observer coverage.

5. Summary

Summarized bycatch data has been presented for the California set gillnet fishery between 1990 and 2006 for years in which there are data. Observer coverage was sporadic over that time period and often at low coverage rates. Reasonable bycatch estimates can be obtained from this fishery for some species. However, estimates with high CVs, must be used with caution. Expanding the set gillnet observer program from one that is intermittent to one with annual observer coverage is critical to obtaining reliable estimates for all species. Bycatch estimates presented in this paper are a critical element in helping NMFS and the Pacific Fishery Management Council achieve stated ecosystem management goals under the FMP for this fishery.

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References

- Carretta, J.V., Forney, K.A., Lowry, M.S., Barlow, J., Baker, J., Hanson, B., Muto, M., 2007. U.S. Pacific marine mammal stock assessments: 2007. NOAA-TM-NMFS-SWFSC-414. 316 p.
- Carretta, J.V., Price, T., Petersen, D., Read, R., 2005. Estimates of marine mammal, sea turtle, and seabird mortality in the California drift gillnet fishery for swordfish and thresher shark, 1996-2002. *Mar. Fish. Rev.* 66, 21-30.
- Cochran, W.G., 1977. *Sampling Techniques*. John Wiley & Sons, New York.
- Diamond, S.L., 2003. Estimation of bycatch in shrimp trawl fisheries: a comparison of estimation methods using field data and simulated data. *Fish. Bull.* 101, 484-500.
- Forney, K.A., Benson, S.R., Cameron, G.A., 2001. Central California gillnet effort and bycatch of sensitive species, 1990-1998. In: Melvin, E.F., Parrish, J.K.s (Eds.), *Seabird bycatch : trends, roadblocks, and solutions*. University of Alaska Sea Grant, Fairbanks, Alaska, p. 206.
- Herrick, S.F.J., Hanan, D.A., 1988. A review of California entangling net fisheries, 1981-1986. NOAA Technical Report. NOAA-TM-NMFS-SWFSC-108. 38 p.
- Julian, F., Beeson, M., 1998. Estimates of marine mammal, turtle, and seabird mortality for two California gillnet fisheries: 1990-1995. *Fish. Bull.* 96, 271-284.
- Larese, J.P., Coan, A.L., 2008. Fish and invertebrate bycatch estimates for the California drift gillnet fishery targeting swordfish and thresher shark, 1990-2006. NOAA Technical Report. NOAA-TM-NMFS-SWFSC-426. 53 p.
- NMFS, 1998. *Managing the Nation's bycatch: priorities, programs and actions for the National Marine Fisheries Service*. 192 p.
- NMFS, 2004. *Evaluating bycatch: a national approach to standardized bycatch monitoring programs*. NOAA-TM-NMFS-F/SPO-66. 108 p.
- Pondella, D.J., Allen, L.G., 2008. The decline and recovery of four predatory fishes from the Southern California Bight. *Mar. Biol.* 154, 307-313.
- Yeung, C., 1999. Estimates of marine mammal and marine turtle bycatch by the U.S. Atlantic pelagic longline fleet in 1992-1997. NOAA-TM-NMFS-SEFSC-430. 26p.

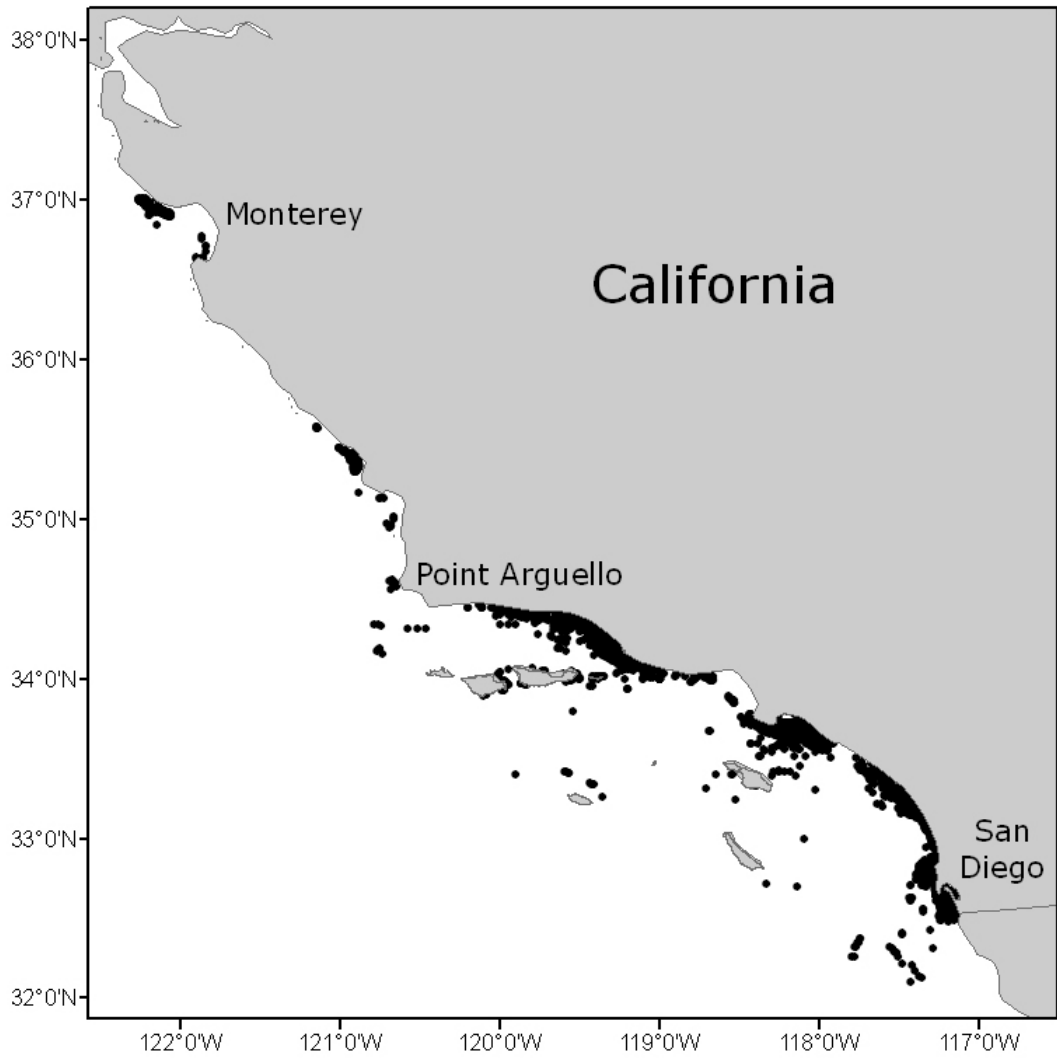


Figure 1. Locations of 8,614 observed sets in the California set gillnet fishery, 1990-1994.



Figure 2. Locations of 332 observed sets in the California set gillnet fishery, 1999-2000.



Figure 3. Locations of 12 observed sets in the California set gillnet fishery, 2006.

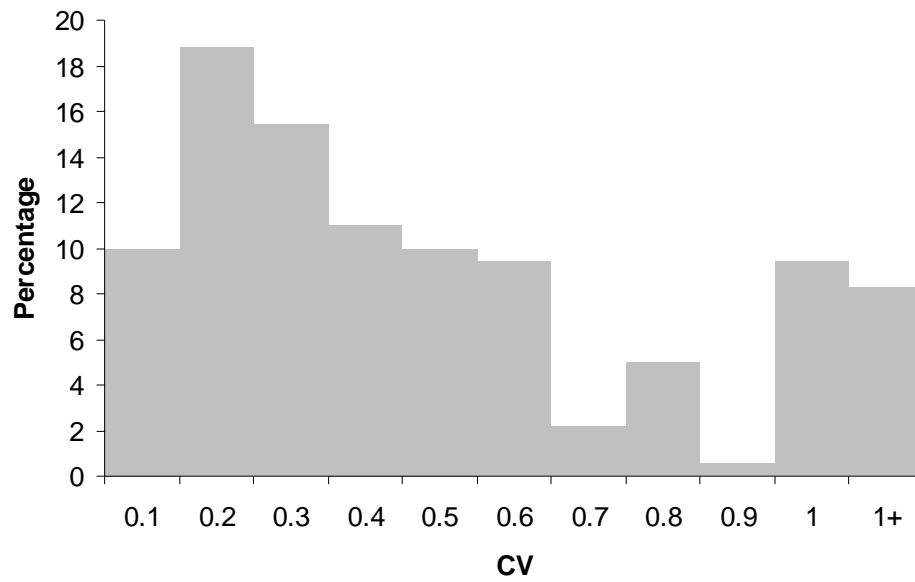


Figure 4. Percentage of bycatch estimate CV values for all species recorded in the set gillnet fishery

Table 1. Yearly summations of the California set gillnet fishery effort, number of trips observed, and coverage.

Year	Trips observed	Days observed	Estimated days fished	Percent observer coverage
1990	162	158	3,041	5.2%
1991	717	706	7,171	9.8%
1992	751	698	5,577	12.5%
1993	963	875	5,680	15.4%
1994	152	150	1,943	7.7%
1999	165	165	4,173	4.0%
2000	67	67	3,736	1.8%
2006	4	12	1,387	0.9%
all years	2,981	2,831	32,708	8.7%

Table 2. Important bycatch species in the set gillnet fishery and their current fishing status.

Common name	Scientific name	Current fishing status	Total number discarded	Year last observed discarded
Bass, Giant Sea	<i>Stereolepis gigas</i>	prohibited	35	1993
Garibaldi	<i>Hypsypops rubicundus</i>	prohibited	2	1992
Rockfish, Bocaccio	<i>Sebastes paucispinis</i>	restricted take	33	1993
Rockfish, Canary	<i>Sebastes pinniger</i>	closed	3	1994
Rockfish, Cowcod	<i>Sebastes levis</i>	closed	6	1993
Salmon, King	<i>Oncorhynchus tshawytscha</i>	closed	85	2000
Salmon, Other Identified	<i>Oncorhynchus spp.</i>	closed	6	1993
Shark, Basking	<i>Cetorhinus maximus</i>	prohibited	1	1991
Shark, White	<i>Carcharodon carcharias</i>	prohibited	1	1991

Table 3. Observed bycatch, estimated bycatch, and coefficient of variation for the California set gillnet fishery sorted by year.

1990

Species	Individuals				Individuals/ day	Individuals			CV
	observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	
Barracuda, California	6	0	0	1	0.014	42	8	83	0.458
Bass, Barred Sand	90	0	0	1	0.204	621	310	1041	0.307
Bass, Kelp	11	0	0	1	0.025	76	20	148	0.441
Bass, Spotted Sand	3	0	0	1	0.007	21	0	56	0.742
Bonito, Pacific	22	0	0	1	0.050	152	49	284	0.399
Cabezon	10	0	0	1	0.023	69	14	140	0.475
Corbina, California	4	0	0	1	0.009	28	7	58	0.493
Crab, Decorator	36	0	0	1	0.082	249	77	465	0.406
Crab, Dungeness	546	0	0	1	1.238	3766	2025	6007	0.271
Crab, Hermit	39	0	0	1	0.088	269	148	415	0.257
Crab, Marble	16	0	0	1	0.036	111	16	232	0.499
Crab, Northern Kelp	14	0	0	1	0.032	97	8	237	0.624
Crab, Pelagic Red	1	0	0	1	0.002	7	0	21	0.974
Crab, Pointer	71	0	0	1	0.161	490	189	874	0.360
Crab, Rock	725	0	0	1	1.644	5000	2584	8503	0.305
Crab, Sand	4	0	0	1	0.009	28	0	66	0.603
Crab, Southern Kelp	11	0	0	1	0.025	76	0	196	0.703
Crab, Spider	1423	0	0	1	3.227	9813	7064	13107	0.159
Croaker, Spotfin	2	0	0	1	0.005	14	0	44	1.011
Croaker, White	15	0	0	1	0.034	104	29	198	0.423
Crustacean, Unidentified	64	0	0	1	0.145	442	154	816	0.388
Dogfish, Spiny	972	0	0	1	2.204	6703	1374	16581	0.644
Fish, Other Identified	1	0	0	1	0.002	7	0	22	1.014
Fish, Unidentified	81	0	0	1	0.184	559	309	857	0.251
Flatfish, Unidentified	42	0	0	1	0.095	290	108	560	0.415
Flounder, Starry	5	0	0	1	0.011	35	7	75	0.525
Guitarfish, Banded	2	0	0	1	0.005	14	0	44	1.009
Guitarfish, Shovelnose	205	0	0	1	0.465	1414	619	2496	0.341
Hake, Pacific	29	0	0	1	0.066	200	15	465	0.592
Halibut, California	179	0	0	1	0.406	1235	909	1614	0.145
Hare, Sea	1	0	0	1	0.002	7	0	22	1.005
Invertebrate, Unidentified	15	0	0	1	0.034	104	27	209	0.468
Lingcod	34	0	0	1	0.077	235	109	397	0.317
Lizardfish, California	169	0	0	1	0.383	1166	467	2237	0.400
Lobster, California Spiny	127	0	0	1	0.288	876	463	1396	0.273
Mackerel, Jack	1	0	0	1	0.002	7	0	22	1.000
Mackerel, Pacific	529	0	0	1	1.200	3648	1284	6986	0.401
Octopus, Unidentified	10	0	0	1	0.023	69	29	120	0.337
Pipefish Bay	1	0	0	1	0.002	7	0	22	0.988
Queenfish	2	0	0	1	0.005	14	0	35	0.695
Ratfish, Spotted	72	0	0	1	0.163	497	218	844	0.324
Ray, Bat	992	0	0	1	2.249	6841	4278	10189	0.223
Ray, California Butterfly	37	0	0	1	0.084	256	0	757	0.873
Ray, Pacific Electric	5	0	0	1	0.011	35	7	74	0.528
Rockfish, Blue	4	0	0	1	0.009	28	0	87	0.998
Rockfish, Bocaccio	2	0	0	1	0.005	14	0	36	0.696
Rockfish, Brown	7	0	0	1	0.016	49	0	143	0.870
Rockfish, Rosy	3	0	0	1	0.007	21	0	65	0.983
Rockfish, Unidentified	4	0	0	1	0.009	28	7	57	0.489
Rockfish, Vermillion	1	0	0	1	0.002	7	0	22	0.990
Sablefish	1	0	0	1	0.002	7	0	22	0.992
Salmon, King	2	0	0	1	0.005	14	0	36	0.713
Sanddab, Longfin	1	0	0	1	0.002	7	0	22	1.009
Sanddab, Pacific	35	0	0	1	0.079	242	21	671	0.785
Sanddab, Speckled	1	0	0	1	0.002	7	0	22	0.968
Sardine, Pacific	131	0	0	1	0.297	904	229	2118	0.586
Scorpionfish, California	7	0	0	1	0.016	49	14	94	0.425
Sea Cucumber	9	0	0	1	0.020	63	15	118	0.419
Sea Star	358	0	0	1	0.812	2469	1814	3251	0.148

Table 3. (Continued)

1990

Species	Individuals				Individuals/ day	Individuals			
	observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
Sea Urchin	378	0	0	1	0.857	2607	527	5445	0.491
Seabass, White	12	0	0	1	0.027	83	20	170	0.482
Shark, Blue	33	0	0	1	0.075	228	96	401	0.344
Shark, Brown Smoothhound	119	0	0	1	0.270	821	428	1308	0.277
Shark, Gray Smoothhound	7	0	0	1	0.016	49	8	101	0.498
Shark, Horn	49	0	0	1	0.111	338	103	660	0.427
Shark, Leopard	3	0	0	1	0.007	21	0	48	0.562
Shark, Pacific Angel	288	0	0	1	0.653	1986	768	3510	0.356
Shark, Sevengill	2	0	0	1	0.005	14	0	36	0.701
Shark, Sixgill	7	0	0	1	0.016	49	0	113	0.612
Shark, Soupfin	2	0	0	1	0.005	14	0	35	0.689
Shark, Swell	122	0	0	1	0.277	842	484	1253	0.235
Shark, Unidentified	2	0	0	1	0.005	14	0	44	1.020
Sheephead, California	3	0	0	1	0.007	21	0	47	0.565
Skate, Big	131	0	0	1	0.297	904	399	1541	0.323
Skate, California	617	0	0	1	1.399	4255	3088	5541	0.148
Skate, Longnose	24	0	0	1	0.054	166	45	329	0.445
Skate, Starry	25	0	0	1	0.057	173	44	342	0.441
Skate, Unidentified	7	0	0	1	0.016	49	8	102	0.502
Snail, Unidentified	88	0	0	1	0.200	607	242	1054	0.342
Sole, Bigmouth	1	0	0	1	0.002	7	0	22	1.010
Sole, English	1	0	0	1	0.002	7	0	22	1.001
Sole, Fantail	1	0	0	1	0.002	7	0	22	1.003
Sole, Petrale	1	0	0	1	0.002	7	0	21	0.970
Sole, Rock	2	0	0	1	0.005	14	0	36	0.697
Sole, Sand	7	0	0	1	0.016	49	7	108	0.547
Squid, Market	4	0	0	1	0.009	28	0	80	0.797
Stingray, Round	4	0	0	1	0.009	28	0	87	0.986
Surfperch Black	1	0	0	1	0.002	7	0	22	0.979
Surfperch, Pink	1	0	0	1	0.002	7	0	22	0.997
Surfperch, Rubberlip	3	0	0	1	0.007	21	0	48	0.569
Surfperch, Unidentified	2	0	0	1	0.005	14	0	36	0.703
Surfperch, Walleye	1	0	0	1	0.002	7	0	22	1.007
Thornback	612	0	0	1	1.388	4221	1734	8203	0.420
Turbot Hornyhead	9	0	0	1	0.020	63	14	136	0.521
Turbot, Curffin	1	0	0	1	0.002	7	0	22	0.998
Turbot, Diamond	5	0	0	1	0.011	35	0	87	0.658
Whelk	317	0	0	1	0.719	2186	625	4704	0.501
Yellowtail	17	0	0	1	0.039	118	0	340	0.886
Zebraperch	1	0	0	1	0.002	7	0	22	1.000

Table 3. (Continued)

1991

Species	Individuals				Individuals/ day	Individuals			
	observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
Anchovy, Northern	6	0.167	0.833	0	0.003	19	4	44	0.575
Barracuda, California	31	0.161	0.742	0.097	0.014	98	57	146	0.235
Bass, Barred Sand	538	0.470	0.442	0.087	0.236	1690	1411	1983	0.087
Bass, Giant Sea	8	0	0.625	0.375	0.004	26	7	52	0.462
Bass, Kelp	45	0.422	0.533	0.044	0.020	142	75	224	0.269
Bass, Spotted Sand	3	0.333	0	0.667	0.001	10	0	22	0.577
Bonito, Pacific	22	0.091	0.909	0	0.010	70	10	169	0.644
Cabezon	18	0.389	0.444	0.167	0.008	57	25	97	0.332
Corbina, California	14	0.071	0.929	0	0.006	44	10	102	0.546
Crab, California King	10	0.700	0	0.300	0.004	32	0	76	0.616
Crab, Decorator	61	0.148	0.475	0.377	0.027	192	106	293	0.250
Crab, Dungeness	448	0.473	0.040	0.487	0.196	1408	861	2029	0.212
Crab, Hermit	191	0.738	0.042	0.220	0.084	600	463	752	0.123
Crab, Marble	577	0.709	0.237	0.054	0.253	1813	1231	2503	0.179
Crab, Northern Kelp	19	0.684	0.263	0.053	0.008	60	26	100	0.316
Crab, Opossum	7	0.714	0.286	0	0.003	22	4	48	0.515
Crab, Pointer	91	0.319	0.275	0.407	0.040	286	145	465	0.289
Crab, Rock	3413	0.260	0.515	0.225	1.495	10721	9299	12280	0.071
Crab, Sand	22	0.273	0.727	0	0.010	70	20	139	0.444
Crab, Southern Kelp	38	0.658	0.342	0	0.017	120	54	200	0.314
Crab, Spider	7608	0.217	0.628	0.154	3.332	23898	20955	27071	0.066
Croaker, Spotfin	5	0.200	0.800	0	0.002	16	0	47	0.824
Croaker, White	172	0.169	0.657	0.174	0.075	541	411	691	0.132
Croaker, Yellowfin	2	0	0.500	0.500	0.001	7	0	16	0.713
Crustacean, Unidentified	117	0.436	0.282	0.282	0.051	368	204	573	0.259
Dogfish, Spiny	736	0.538	0.379	0.083	0.322	2312	1330	3530	0.247
Echinoderm, Unidentified	19	0.368	0.474	0.158	0.008	60	10	135	0.553
Fish, Other Identified	3	0.333	0.333	0.333	0.001	10	0	22	0.575
Fish, Unidentified	115	0.217	0.574	0.209	0.050	362	255	484	0.159
Flatfish, Unidentified	88	0.625	0.239	0.136	0.039	277	177	396	0.204
Flounder, Starry	1	1	0	0	0.000	4	0	10	1.002
Guitarfish, Banded	1	1	0	0	0.000	4	0	10	1.002
Guitarfish, Shovelnose	882	0.745	0.095	0.160	0.386	2771	2100	3556	0.134
Hagfish Pacific	1	1	0	0	0.000	4	0	10	1.003
Hake, Pacific	174	0.011	0.966	0.023	0.076	547	64	1459	0.780
Halibut, California	1573	0.540	0.218	0.242	0.689	4941	4252	5716	0.075
Hare, Sea	16	0.750	0.125	0.125	0.007	51	23	84	0.315
Herring, Pacific	28	0.500	0.214	0.286	0.012	88	4	251	0.864
Invertebrate, Unidentified	472	0.331	0.481	0.189	0.207	1483	878	2211	0.230
Jacksmelt	1	0	1	0	0.000	4	0	10	0.979
Kelpfish, Giant	1	0	0	1	0.000	4	0	10	1.003
Lingcod	21	0.048	0.143	0.810	0.009	66	19	131	0.439
Lizardfish, California	923	0.049	0.828	0.124	0.404	2900	2477	3362	0.078
Lobster, California Spiny	563	0.819	0.007	0.174	0.247	1769	1417	2200	0.115
Mackerel, Jack	17	0	0.294	0.706	0.007	54	7	139	0.728
Mackerel, Pacific	4736	0.029	0.819	0.152	2.074	14876	10868	19556	0.149
Midshipman, Plainfin	32	0.688	0.125	0.188	0.014	101	56	157	0.259
Midshipman, Specklefin	20	0.800	0.100	0.100	0.009	63	32	103	0.290
Mollusk, Unidentified	36	0.472	0.111	0.417	0.016	114	54	191	0.314
Octopus, Unidentified	65	0.831	0.092	0.077	0.028	205	141	275	0.167
Opaleve	21	0.143	0.857	0	0.009	66	10	143	0.523
Pipefish Bay	2	1	0	0	0.001	7	0	16	0.712
Queenfish	6	0	0.333	0.667	0.003	19	4	38	0.466
Ratfish, Spotted	461	0.315	0.490	0.195	0.202	1449	883	2171	0.228
Ray, Bat	5355	0.713	0.206	0.081	2.346	16821	13156	21139	0.122
Ray, California Butterfly	114	0.675	0.211	0.114	0.050	359	191	583	0.284
Ray, Pacific Electric	43	0.744	0.116	0.140	0.019	136	83	201	0.224
Ray, Unidentified	3	1	0	0	0.001	10	0	22	0.569
Rockfish Yellowtail	1	0	0	1	0.000	4	0	10	1.008

Table 3. (Continued)

1991

Species	Individuals				Individuals/ day	Individuals			
	observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
Rockfish, Bocaccio	3	0.333	0.333	0.333	0.001	10	0	26	0.745
Rockfish, Brown	26	0.692	0.308	0	0.011	82	42	134	0.293
Rockfish, Copper	24	0.792	0.208	0	0.011	76	16	163	0.512
Rockfish, Cowcod	1	0	1	0	0.000	4	0	10	0.996
Rockfish, Gopher	3	0.667	0	0.333	0.001	10	0	26	0.739
Rockfish, Grass	1	0	1	0	0.000	4	0	10	0.995
Rockfish, Kelp	1	0	1	0	0.000	4	0	10	1.000
Rockfish, Unidentified	16	0.500	0.125	0.375	0.007	51	19	93	0.377
Rockfish, Vermillion	3	0.667	0	0.333	0.001	10	0	22	0.576
Salmon, King	5	0	0.600	0.400	0.002	16	4	35	0.529
Salmon, Other Identified	4	0	1	0	0.002	13	0	29	0.607
Sanddab, Longfin	6	0.667	0.167	0.167	0.003	19	7	35	0.407
Sanddab, Pacific	19	0.368	0.474	0.158	0.008	60	28	98	0.299
Sardine, Pacific	336	0.048	0.497	0.455	0.147	1056	593	1680	0.267
Scallop, Unidentified	3	0	0	1	0.001	10	0	22	0.581
Scorpionfish, California	25	0.640	0.240	0.120	0.011	79	44	121	0.255
Sea Cucumber	44	0.500	0.091	0.409	0.019	139	58	237	0.332
Sea Star	2905	0.849	0.003	0.148	1.272	9125	8105	10208	0.059
Sea Urchin	368	0.636	0.245	0.120	0.161	1156	525	1983	0.327
Seabass, White	48	0.271	0.667	0.063	0.021	151	96	214	0.202
Searobin, Lumptail	1	0	1	0	0.000	4	0	10	0.999
Shad, American	35	0.057	0.457	0.486	0.015	110	57	172	0.270
Shark, Basking	1	1	0	0	0.000	4	0	10	0.992
Shark, Blue	5	0.200	0.600	0.200	0.002	16	4	32	0.449
Shark, Brown Smoothhound	227	0.493	0.269	0.238	0.099	714	518	940	0.150
Shark, Gray Smoothhound	49	0.510	0.306	0.184	0.021	154	87	244	0.261
Shark, Horn	202	0.921	0.015	0.064	0.088	635	349	1004	0.265
Shark, Leopard	15	0.600	0.267	0.133	0.007	48	20	81	0.329
Shark, Pacific Angel	908	0.677	0.111	0.211	0.398	2853	1488	4736	0.294
Shark, Sevengill	2	1	0	0	0.001	7	0	16	0.698
Shark, Shortfin Mako	1	1	0	0	0.000	4	0	10	0.999
Shark, Sixgill	22	0.409	0.273	0.318	0.010	70	30	116	0.321
Shark, Soupfin	23	0.043	0.739	0.217	0.010	73	10	163	0.553
Shark, Swell	286	0.836	0.024	0.140	0.125	899	597	1286	0.196
Shark, Unidentified	19	0.263	0.211	0.526	0.008	60	32	95	0.272
Shark, White	1	0	1	0	0.000	4	0	10	0.990
Sheephead, California	15	0.600	0.333	0.067	0.007	48	16	92	0.426
Shrimp, Mantis	2	1	0	0	0.001	7	0	16	0.704
Shrimp, Unidentified	1	1	0	0	0.000	4	0	10	1.008
Skate, Big	144	0.826	0.014	0.160	0.063	453	276	670	0.222
Skate, California	3475	0.697	0.075	0.228	1.522	10916	8936	12950	0.094
Skate, Longnose	115	0.774	0.200	0.026	0.050	362	136	634	0.356
Skate, Starry	23	0.478	0	0.522	0.010	73	7	179	0.633
Skate, Unidentified	111	0.802	0.135	0.063	0.049	349	39	930	0.785
Snail, Moon	115	0.565	0.017	0.417	0.050	362	230	518	0.205
Snail, Unidentified	531	0.499	0.002	0.499	0.233	1668	934	2566	0.255
Sole, Bigmouth	5	0.400	0.200	0.400	0.002	16	4	32	0.443
Sole, Dover	2	1	0	0	0.001	7	0	16	0.709
Sole, English	13	0.538	0.308	0.154	0.006	41	22	65	0.275
Sole, Fantail	15	0.533	0.333	0.133	0.007	48	19	83	0.345
Sole, Petrale	4	0.500	0.250	0.250	0.002	13	4	26	0.498
Sole, Rex	1	1	0	0	0.000	4	0	10	1.014
Sole, Sand	7	0	0	1	0.003	22	0	56	0.650
Squid, Market	1	1	0	0	0.000	4	0	10	1.005
Stargazer Smooth	4	0.750	0	0.250	0.002	13	0	35	0.778
Stingray, Round	15	0.533	0.400	0.067	0.007	48	20	83	0.342
Sturgeon, Green	1	0	1	0	0.000	4	0	10	1.008
Sturgeon, White	1	0	0	1	0.000	4	0	10	1.004
Surfperch Barred	2	1	0	0	0.001	7	0	16	0.703

Table 3. (Continued)

1991

Species	Individuals observed discarded	Proportion alive	Proportion dead	Proportion unknown	Individuals/ day	Individuals estimated discarded	LoCI	HiCI	CV
Surfperch Black	1	0	1	0	0.000	4	0	10	1.000
Surfperch, Rainbow	1	0	1	0	0.000	4	0	10	1.007
Surfperch, Rubberlip	10	0.700	0.200	0.100	0.004	32	13	54	0.342
Surfperch, Silver	1	0	1	0	0.000	4	0	10	1.013
Surfperch, Unidentified	7	0.429	0.429	0.143	0.003	22	4	48	0.513
Surfperch, White	2	0.500	0.500	0	0.001	7	0	16	0.712
Thornback	1151	0.925	0.021	0.054	0.504	3616	2939	4387	0.102
Tonguefish, California	2	0	1	0	0.001	7	0	20	0.994
Turbot Hornyhead	51	0.706	0.118	0.176	0.022	161	113	213	0.159
Turbot, C-O	1	1	0	0	0.000	4	0	10	1.006
Turbot, Curlfin	1	1	0	0	0.000	4	0	10	0.997
Turbot, Diamond	12	0.667	0.083	0.250	0.005	38	17	63	0.309
Turbot, Spotted	3	0.333	0	0.667	0.001	10	0	22	0.576
Whelk	2060	0.773	0.002	0.225	0.902	6471	5195	7873	0.106
Zebraperch	2	0	1	0	0.001	7	0	20	1.005

Table 3. (Continued)

1992

Species	Individuals				Individuals/ day	Individuals			
	observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
Abalone, Red	1	1	0	0	0.000	3	0	8	1.007
Barracuda, California	92	0.217	0.772	0.011	0.039	217	157	285	0.153
Bass, Barred Sand	618	0.583	0.401	0.016	0.261	1455	1216	1715	0.087
Bass, Giant Sea	19	0.211	0.789	0	0.008	45	19	79	0.351
Bass, Kelp	136	0.434	0.566	0	0.057	321	183	487	0.245
Bass, Spotted Sand	5	0.600	0.200	0.200	0.002	12	3	24	0.445
Blacksmith	1	0	1	0	0.000	3	0	8	0.985
Bonito, Pacific	26	0.077	0.923	0	0.011	62	25	109	0.355
Butterfish, Pacific	1	0	1	0	0.000	3	0	8	0.996
Cabezon	40	0.675	0.300	0.025	0.017	95	33	194	0.453
Cod, Pacific	1	0	1	0	0.000	3	0	8	1.009
Corbina, California	13	0.308	0.692	0	0.005	31	14	52	0.317
Crab, Decorator	24	0.583	0.417	0	0.010	57	24	97	0.327
Crab, Dungeness	86	0.791	0.209	0	0.036	203	116	303	0.238
Crab, Hermit	279	0.814	0.036	0.151	0.118	657	508	817	0.122
Crab, Marble	119	0.555	0.311	0.134	0.050	281	183	390	0.190
Crab, Northern Kelp	10	0.800	0.200	0	0.004	24	3	56	0.596
Crab, Parasol	4	0.250	0.750	0	0.002	10	0	29	1.010
Crab, Pointer	123	0.081	0.886	0.033	0.052	290	54	667	0.577
Crab, Rock	2002	0.228	0.743	0.029	0.845	4712	4196	5264	0.058
Crab, Sand	3	0.333	0.667	0	0.001	8	0	17	0.585
Crab, Southern Kelp	27	0.296	0.704	0	0.011	64	28	107	0.318
Crab, Spider	7473	0.178	0.795	0.027	3.153	17586	15633	19684	0.059
Croaker, Black	2	0	1	0	0.001	5	0	15	1.012
Croaker, White	410	0.068	0.922	0.010	0.173	965	392	1885	0.417
Croaker, Yellowfin	4	0.500	0.500	0	0.002	10	0	29	1.000
Crustacean, Unidentified	222	0.297	0.477	0.225	0.094	523	331	749	0.206
Dogfish, Spiny	659	0.472	0.478	0.050	0.278	1551	1019	2234	0.201
Echinoderm, Unidentified	83	0.542	0	0.458	0.035	196	92	321	0.302
Fish, Other Identified	10	0.700	0.300	0	0.004	24	10	41	0.345
Fish, Unidentified	203	0.113	0.828	0.059	0.086	478	329	649	0.172
Flatfish, Other Identified	1	0	1	0	0.000	3	0	8	1.000
Flatfish, Unidentified	135	0.593	0.400	0.007	0.057	318	162	526	0.297
Flounder, Starry	1	1	0	0	0.000	3	0	8	1.008
Garibaldi	2	0	1	0	0.001	5	0	15	1.002
Guitarfish, Shovelnose	793	0.806	0.148	0.047	0.335	1867	1431	2370	0.129
Hagfish Pacific	1	0	1	0	0.000	3	0	8	1.000
Hake, Pacific	17	0.118	0.882	0	0.007	41	17	70	0.348
Halfmoon	1	1	0	0	0.000	3	0	8	1.003
Halibut, California	1333	0.540	0.447	0.013	0.562	3137	2795	3517	0.059
Hare, Sea	21	0.952	0.048	0	0.009	50	0	144	0.903
Herring, Pacific	1	0	1	0	0.000	3	0	8	1.001
Herring, Round	1	0	1	0	0.000	3	0	8	0.997
Invertebrate, Unidentified	526	0.397	0.207	0.395	0.222	1238	705	1919	0.253
Jacksmelt	1	0	0	1	0.000	3	0	8	0.979
Lingcod	7	0.429	0.571	0	0.003	17	5	31	0.377
Lizardfish, California	615	0.067	0.917	0.016	0.259	1448	994	2129	0.206
Lobster, California Spiny	967	0.977	0.014	0.008	0.408	2276	1645	3102	0.165
Mackerel, Jack	3	0	0.667	0.333	0.001	8	0	17	0.576
Mackerel, Pacific	3407	0.091	0.885	0.024	1.438	8018	4701	12597	0.256
Midshipman, Plainfin	14	0.929	0	0.071	0.006	33	12	62	0.392
Midshipman, Specklefin	27	0.630	0.333	0.037	0.011	64	24	129	0.437
Mollusk, Unidentified	75	0.760	0.187	0.053	0.032	177	73	314	0.352
Octopus, Unidentified	18	0.889	0.056	0.056	0.008	43	22	68	0.279
Opaleve	10	0.300	0.700	0	0.004	24	3	55	0.569
Pipefish Bay	1	1	0	0	0.000	3	0	8	0.997
Ratfish, Spotted	494	0.213	0.745	0.043	0.208	1163	816	1555	0.164
Ray, Bat	4038	0.624	0.342	0.034	1.704	9503	7788	11508	0.100
Ray, California Butterfly	147	0.694	0.279	0.027	0.062	346	182	565	0.284

Table 3. (Continued)

1992

Species	Individuals				Individuals/ day	Individuals			
	observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
Ray, Pacific Electric	45	0.756	0.222	0.022	0.019	106	73	144	0.172
Ray, Unidentified	1	1	0	0	0.000	3	0	8	1.000
Rockfish, Bocaccio	6	0.167	0.833	0	0.003	15	0	38	0.705
Rockfish, Brown	16	0.938	0	0.063	0.007	38	10	77	0.468
Rockfish, Canary	2	0	1	0	0.001	5	0	12	0.706
Rockfish, Copper	6	0.167	0.833	0	0.003	15	3	29	0.470
Rockfish, Flag	1	0	1	0	0.000	3	0	8	0.997
Rockfish, Grass	1	1	0	0	0.000	3	0	8	1.000
Rockfish, Kelp	1	0	1	0	0.000	3	0	8	1.012
Rockfish, Olive	3	0	1	0	0.001	8	0	17	0.583
Rockfish, Other Identified	1	0	0	1	0.000	3	0	8	0.985
Rockfish, Rosy	2	1	0	0	0.001	5	0	15	1.000
Rockfish, Unidentified	9	0.111	0.889	0	0.004	22	10	36	0.331
Rockfish, Vermillion	3	0	1	0	0.001	8	0	17	0.571
Salmon, King	2	0	1	0	0.001	5	0	12	0.705
Salmon, Other Identified	1	0	1	0	0.000	3	0	8	1.002
Sanddab, Longfin	1	1	0	0	0.000	3	0	8	1.004
Sanddab, Pacific	38	0.079	0.921	0	0.016	90	31	175	0.414
Sanddab, Speckled	1	1	0	0	0.000	3	0	8	0.991
Sardine, Pacific	472	0.059	0.939	0.002	0.199	1111	809	1458	0.151
Scallop, Unidentified	4	0.500	0.250	0.250	0.002	10	3	20	0.498
Scorpionfish, California	42	0.476	0.476	0.048	0.018	99	62	143	0.210
Sea Cucumber	88	0.557	0.091	0.352	0.037	208	98	345	0.306
Sea Star	2937	0.887	0.043	0.070	1.239	6912	5395	8761	0.125
Sea Urchin	1127	0.295	0.678	0.027	0.476	2653	1198	4804	0.353
Seabass, White	83	0.145	0.855	0	0.035	196	128	277	0.196
Searobin, Lumptail	2	0.500	0.500	0	0.001	5	0	12	0.698
Senorita	1	0	1	0	0.000	3	0	8	1.001
Shad, American	23	0.043	0.913	0.043	0.010	55	20	103	0.401
Shark, Blue	7	0.571	0.429	0	0.003	17	5	30	0.376
Shark, Brown Smoothhound	467	0.535	0.441	0.024	0.197	1099	472	2166	0.432
Shark, Common Thresher	9	0.111	0.889	0	0.004	22	3	55	0.688
Shark, Gray Smoothhound	76	0.697	0.303	0	0.032	179	100	283	0.265
Shark, Horn	105	0.876	0.114	0.010	0.044	248	159	348	0.197
Shark, Leopard	5	0.200	0.600	0.200	0.002	12	3	24	0.447
Shark, Other Identified	1	0	1	0	0.000	3	0	8	0.998
Shark, Pacific Angel	761	0.859	0.064	0.076	0.321	1791	997	3078	0.308
Shark, Sevengill	3	0.667	0.333	0	0.001	8	0	17	0.574
Shark, Shortfin Mako	2	0.500	0.500	0	0.001	5	0	12	0.715
Shark, Sixgill	17	0.294	0.647	0.059	0.007	41	20	64	0.281
Shark, Soupfin	22	0.773	0.227	0	0.009	52	8	121	0.583
Shark, Swell	233	0.888	0.077	0.034	0.098	549	389	759	0.174
Shark, Unidentified	11	0.091	0.818	0.091	0.005	26	12	43	0.303
Sheephead, California	5	0.200	0.400	0.400	0.002	12	0	31	0.673
Shrimp, Mantis	1	0	1	0	0.000	3	0	8	1.000
Shrimp, Unidentified	1	1	0	0	0.000	3	0	8	1.005
Skate, Big	69	0.942	0.043	0.014	0.029	163	109	223	0.179
Skate, California	1718	0.782	0.175	0.042	0.725	4043	3401	4744	0.084
Skate, Longnose	263	0.905	0.091	0.004	0.111	619	355	960	0.251
Skate, Other Identified	2	1	0	0	0.001	5	0	12	0.703
Skate, Starry	8	0.750	0.250	0	0.003	19	7	36	0.394
Skate, Unidentified	9	0.556	0.333	0.111	0.004	22	5	43	0.459
Snail, Moon	66	0.985	0	0.015	0.028	156	87	241	0.253
Snail, Unidentified	380	0.974	0.011	0.016	0.160	895	617	1209	0.170
Sole, Bigmouth	3	0.667	0.333	0	0.001	8	0	17	0.579
Sole, English	11	0.273	0.727	0	0.005	26	10	48	0.375
Sole, Fantail	7	0.429	0.571	0	0.003	17	5	32	0.429
Sole, Petrale	6	0.667	0.333	0	0.003	15	5	27	0.405
Sole, Rock	2	1	0	0	0.001	5	0	12	0.713

Table 3. (Continued)

1992

Species	Individuals observed discarded	Proportion alive	Proportion dead	Proportion unknown	Individuals/ day	Individuals estimated discarded	LoCI	HiCI	CV
Squid, Market	2	0	1	0	0.001	5	0	12	0.707
Stargazer Smooth	4	1	0	0	0.002	10	0	24	0.708
Stingray, Pelagic	1	0	1	0	0.000	3	0	8	0.994
Stingray, Round	24	0.708	0.250	0.042	0.010	57	24	101	0.351
Sturgeon Unidentified	2	0.500	0.500	0	0.001	5	0	12	0.707
Surfperch Barred	3	1	0	0	0.001	8	0	22	1.014
Surfperch Other Identified	1	0	1	0	0.000	3	0	8	0.993
Surfperch Pile	1	1	0	0	0.000	3	0	8	1.003
Surfperch, Rubberlip	5	0.600	0.400	0	0.002	12	3	24	0.444
Surfperch, Shiner	2	0.500	0.500	0	0.001	5	0	12	0.712
Surfperch, Unidentified	4	0.500	0.500	0	0.002	10	3	20	0.506
Surfperch, White	2	0	1	0	0.001	5	0	12	0.707
Thornback	763	0.900	0.059	0.041	0.322	1796	1346	2421	0.156
Tuna, Yellowfin	2	0	1	0	0.001	5	0	15	0.996
Turbot Hornyhead	58	0.862	0.103	0.034	0.024	137	88	196	0.203
Turbot, C-O	1	1	0	0	0.000	3	0	8	1.005
Turbot, Curlfin	1	1	0	0	0.000	3	0	8	0.993
Turbot, Diamond	19	0.632	0.316	0.053	0.008	45	24	68	0.250
Turbot, Spotted	3	1	0	0	0.001	8	0	20	0.740
Unknown Species	3	0.333	0.667	0	0.001	8	0	20	0.753
Whelk	2182	0.923	0.033	0.045	0.921	5135	3906	6578	0.133
Zebraperch	1	0	1	0	0.000	3	0	8	1.006

Table 3. (Continued)

1993

Species	Individuals				Individuals/ day	Individuals			
	observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
Anchovy, Northern	4	0	1	0	0.001	8	2	16	0.504
Barracuda, California	195	0.231	0.764	0.005	0.066	375	258	515	0.174
Bass, Barred Sand	634	0.623	0.361	0.016	0.214	1219	1028	1431	0.084
Bass, Giant Sea	8	0.125	0.875	0	0.003	16	4	33	0.477
Bass, Kelp	166	0.524	0.464	0.012	0.056	319	231	421	0.152
Bass, Spotted Sand	9	0.556	0.444	0	0.003	18	6	33	0.400
Bass, Striped	3	1	0	0	0.001	6	0	18	0.994
Bonito, Pacific	44	0.023	0.977	0	0.015	85	24	189	0.548
Cabezon	16	0.688	0.313	0	0.005	31	12	55	0.363
Cod, Pacific	1	0	1	0	0.000	2	0	6	0.992
Corbina, California	5	0	1	0	0.002	10	2	22	0.528
Crab, California King	11	0.818	0.091	0.091	0.004	22	6	42	0.435
Crab, Decorator	248	0.149	0.851	0	0.084	477	232	773	0.289
Crab, Dungeness	79	0.886	0.114	0	0.027	152	79	240	0.270
Crab, Hermit	120	0.908	0.083	0.008	0.041	231	153	331	0.198
Crab, Marble	82	0.524	0.463	0.012	0.028	158	99	230	0.212
Crab, Northern Kelp	6	0.167	0.333	0.500	0.002	12	2	27	0.580
Crab, Opossum	2	0	1	0	0.001	4	0	10	0.694
Crab, Pointer	65	0.492	0.508	0	0.022	125	57	211	0.320
Crab, Rock	1423	0.229	0.720	0.051	0.481	2735	2371	3142	0.072
Crab, Sand	4	0.500	0.500	0	0.001	8	0	19	0.619
Crab, Southern Kelp	16	0.375	0.625	0	0.005	31	6	64	0.487
Crab, Spider	4024	0.142	0.850	0.008	1.361	7733	6827	8740	0.063
Croaker, Spotfin	3	0	1	0	0.001	6	0	16	0.743
Croaker, White	455	0.097	0.897	0.007	0.154	875	210	1948	0.530
Croaker, Yellowfin	6	0.167	0.833	0	0.002	12	0	28	0.625
Crustacean, Unidentified	161	0.764	0.205	0.031	0.054	310	177	482	0.251
Dogfish, Spiny	1832	0.582	0.392	0.026	0.620	3521	2618	4554	0.140
Echinoderm, Unidentified	30	1	0	0	0.010	58	0	170	0.897
Fish, Other Identified	10	0	1	0	0.003	20	2	48	0.632
Fish, Unidentified	145	0.138	0.807	0.055	0.049	279	197	372	0.160
Flatfish, Unidentified	35	0.657	0.314	0.029	0.012	68	42	99	0.219
Flounder, Starry	1	1	0	0	0.000	2	0	6	0.996
Greenling, Painted	1	1	0	0	0.000	2	0	6	0.991
Guitarfish, Banded	22	0.864	0.136	0	0.007	43	18	78	0.373
Guitarfish, Shovelnose	543	0.832	0.166	0.002	0.184	1044	792	1321	0.129
Hagfish Pacific	2	0	1	0	0.001	4	0	10	0.705
Hake, Pacific	128	0	1	0	0.043	246	127	384	0.269
Halibut, California	1587	0.669	0.325	0.006	0.537	3050	2687	3437	0.063
Hare, Sea	28	0.893	0.107	0	0.009	54	0	162	0.975
Herring, Pacific	41	0	1	0	0.014	79	6	212	0.766
Invertebrate, Unidentified	238	0.487	0.395	0.118	0.081	458	146	877	0.411
Lingcod	13	0.231	0.769	0	0.004	25	10	44	0.350
Lizardfish, California	366	0.049	0.948	0.003	0.124	704	526	912	0.140
Lobster, California Spiny	1315	0.960	0.040	0.001	0.445	2527	1989	3137	0.116
Mackerel, Pacific	4482	0.029	0.967	0.005	1.516	8613	5228	13382	0.247
Midshipman, Plainfin	29	0.586	0.310	0.103	0.010	56	32	85	0.242
Midshipman, Specklefin	24	0.625	0.333	0.042	0.008	47	25	71	0.256
Mola, Common	1	1	0	0	0.000	2	0	6	1.006
Mollusk, Unidentified	73	0.877	0.096	0.027	0.025	141	69	232	0.299
Mullet, Striped	1	0	1	0	0.000	2	0	6	0.996
Octopus, Unidentified	16	0.813	0.125	0.063	0.005	31	14	52	0.317
Opaleve	6	0.333	0.667	0	0.002	12	2	24	0.463
Queenfish	9	0	0.889	0.111	0.003	18	4	35	0.459
Ratfish, Spotted	705	0.366	0.617	0.017	0.238	1355	833	2117	0.247
Ray, Bat	5887	0.721	0.272	0.007	1.992	11312	9301	13567	0.096
Ray, California Butterfly	86	0.837	0.163	0	0.029	166	107	231	0.195
Ray, Pacific Electric	89	0.865	0.124	0.011	0.030	172	132	213	0.122
Ray, Unidentified	15	0.867	0.067	0.067	0.005	29	14	48	0.308

Table 3. (Continued)

1993

Species	Individuals				Individuals/ day	Individuals			
	observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
Rockfish, Blue	2	1	0	0	0.001	4	0	10	0.709
Rockfish, Bocaccio	22	0	1	0	0.007	43	14	85	0.438
Rockfish, Brown	15	0.733	0.267	0	0.005	29	8	58	0.440
Rockfish, Chilipepper	3	0	1	0	0.001	6	0	14	0.587
Rockfish, Copper	15	0.133	0.667	0.200	0.005	29	8	56	0.419
Rockfish, Cowcod	5	0	1	0	0.002	10	0	26	0.714
Rockfish, Flag	2	0	1	0	0.001	4	0	10	0.702
Rockfish, Gopher	3	1	0	0	0.001	6	0	18	1.012
Rockfish, Kelp	2	0	1	0	0.001	4	0	10	0.713
Rockfish, Olive	1	1	0	0	0.000	2	0	6	1.006
Rockfish, Other Identified	18	0.056	0.889	0.056	0.006	35	8	78	0.531
Rockfish, Unidentified	12	0.333	0.583	0.083	0.004	24	10	39	0.309
Rockfish, Vermillion	7	0.143	0.857	0	0.002	14	4	27	0.428
Sablefish	16	0	1	0	0.005	31	10	60	0.422
Salmon, King	23	0	1	0	0.008	45	24	69	0.269
Salmon, Other Identified	1	1	0	0	0.000	2	0	6	0.992
Sanddab, Longfin	1	1	0	0	0.000	2	0	6	0.996
Sanddab, Pacific	154	0.442	0.552	0.006	0.052	296	74	618	0.483
Sanddab, Speckled	1	0	1	0	0.000	2	0	6	1.003
Sardine, Pacific	95	0.084	0.905	0.011	0.032	183	115	264	0.210
Sargo	11	0.273	0.727	0	0.004	22	6	41	0.416
Scallop, Unidentified	2	0.500	0.500	0	0.001	4	0	10	0.701
Scorpionfish, California	22	0.545	0.364	0.091	0.007	43	22	66	0.266
Sea Cucumber	99	0.687	0.253	0.061	0.033	191	55	402	0.486
Sea Star	2680	0.896	0.060	0.044	0.907	5150	4347	6042	0.083
Sea Urchin	1642	0.247	0.729	0.024	0.555	3156	1907	4633	0.221
Seabass, White	69	0.101	0.884	0.014	0.023	133	86	188	0.193
Searobin, Lumptail	1	0	1	0	0.000	2	0	6	1.002
Shad, American	33	0.091	0.909	0	0.011	64	20	142	0.534
Shark, Blue	7	0.143	0.857	0	0.002	14	4	24	0.375
Shark, Brown Smoothhound	501	0.705	0.259	0.036	0.169	963	587	1443	0.230
Shark, Common Thresher	3	0.333	0.667	0	0.001	6	0	14	0.583
Shark, Gray Smoothhound	50	0.780	0.180	0.040	0.017	97	51	152	0.268
Shark, Horn	260	0.665	0.315	0.019	0.088	500	301	752	0.232
Shark, Leopard	25	0.320	0.640	0.040	0.008	49	20	92	0.393
Shark, Other Identified	1	0	1	0	0.000	2	0	6	0.996
Shark, Pacific Angel	800	0.924	0.066	0.010	0.271	1538	1232	1886	0.110
Shark, Sevengill	7	0.571	0.429	0	0.002	14	4	25	0.375
Shark, Shortfin Mako	1	0	1	0	0.000	2	0	6	1.007
Shark, Sixgill	30	0.500	0.500	0	0.010	58	36	83	0.211
Shark, Smooth Hammerhead	1	0	1	0	0.000	2	0	6	1.011
Shark, Soupfin	17	0.353	0.647	0	0.006	33	12	61	0.382
Shark, Swell	437	0.927	0.059	0.014	0.148	840	653	1062	0.124
Shark, Unidentified	14	0.571	0.429	0	0.005	27	14	43	0.281
Shrimp, Mantis	2	1	0	0	0.001	4	0	10	0.703
Shrimp, Unidentified	2	1	0	0	0.001	4	0	10	0.698
Skate, Big	140	0.943	0.050	0.007	0.047	270	198	351	0.145
Skate, California	1614	0.895	0.092	0.014	0.546	3102	2641	3608	0.080
Skate, Longnose	118	0.805	0.195	0	0.040	227	149	320	0.195
Skate, Other Identified	6	0.833	0.167	0	0.002	12	2	25	0.523
Skate, Starry	26	0.615	0.385	0	0.009	50	16	100	0.438
Skate, Unidentified	36	0.778	0.167	0.056	0.012	70	37	111	0.276
Snail, Moon	57	0.667	0.263	0.070	0.019	110	49	192	0.337
Snail, Unidentified	107	0.981	0	0.019	0.036	206	96	366	0.343
Sole, Bigmouth	1	1	0	0	0.000	2	0	6	1.008
Sole, Dover	13	0.615	0.385	0	0.004	25	0	75	0.926
Sole, English	30	0.967	0.033	0	0.010	58	8	148	0.701
Sole, Petrale	5	0.600	0.400	0	0.002	10	0	23	0.598
Sole, Rex	2	0.500	0.500	0	0.001	4	0	10	0.707

Table 3. (Continued)

1993

Species	Individuals observed discarded	Proportion alive	Proportion dead	Proportion unknown	Individuals/ day	Individuals estimated discarded	LoCI	HiCI	CV
Sole, Rock	2	1	0	0	0.001	4	0	10	0.709
Sole, Slender	1	1	0	0	0.000	2	0	6	1.010
Squid, Market	3	0.667	0.333	0	0.001	6	0	14	0.568
Stargazer Smooth	2	1	0	0	0.001	4	0	10	0.705
Stingray, Pelagic	1	1	0	0	0.000	2	0	6	1.014
Stingray, Round	40	0.900	0.100	0	0.014	77	45	116	0.232
Sturgeon, Green	1	0	1	0	0.000	2	0	6	0.996
Surfperch Barred	2	0.500	0.500	0	0.001	4	0	10	0.712
Surfperch Black	1	0	1	0	0.000	2	0	6	1.001
Surfperch, Silver	1	0	1	0	0.000	2	0	6	1.010
Surfperch, Unidentified	1	0	1	0	0.000	2	0	6	0.987
Thornback	581	0.948	0.038	0.014	0.197	1117	887	1386	0.114
Tuna, Yellowfin	1	0	1	0	0.000	2	0	6	1.001
Tunicates, Pelagic	1	1	0	0	0.000	2	0	6	1.006
Turbot Hornyhead	34	0.882	0.118	0	0.012	66	42	93	0.201
Turbot, Diamond	18	0.889	0.111	0	0.006	35	18	54	0.267
Turbot, Spotted	7	1	0	0	0.002	14	4	26	0.427
Whelk	1457	0.934	0.031	0.035	0.493	2800	2205	3450	0.114
Yellowtail	10	0	1	0	0.003	20	4	44	0.551
Zebraperch	1	1	0	0	0.000	2	0	6	1.012

Table 3. (Continued)

1994

Species	Individuals				Individuals/ day	Individuals			
	observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
Anchovy, Northern	1	0	1	0	0.002	4	0	11	1.002
Barracuda, California	32	0.063	0.906	0.031	0.057	111	54	188	0.316
Bass, Barred Sand	61	0.344	0.656	0	0.108	211	119	321	0.249
Bass, Kelp	2	0.500	0.500	0	0.004	7	0	18	0.710
Bonito, Pacific	2	0	1	0	0.004	7	0	18	0.692
Crab, Decorator	1	1	0	0	0.002	4	0	11	0.979
Crab, Dungeness	44	0.659	0.341	0	0.078	152	66	264	0.338
Crab, Hermit	107	0.953	0.047	0	0.190	369	243	518	0.194
Crab, Pointer	18	0.889	0.111	0	0.032	63	11	147	0.595
Crab, Rock	388	0.497	0.490	0.013	0.688	1337	1074	1629	0.105
Crab, Spider	249	0.189	0.807	0.004	0.441	858	627	1140	0.152
Croaker, White	47	0.255	0.723	0.021	0.083	162	83	279	0.311
Crustacean, Unidentified	127	0.953	0.039	0.008	0.225	438	256	653	0.235
Dogfish, Spiny	129	0.574	0.411	0.016	0.229	445	262	688	0.247
Fish, Other Identified	16	0.125	0.875	0	0.028	56	0	159	0.836
Fish, Unidentified	14	0	1	0	0.025	49	21	81	0.324
Flatfish, Unidentified	144	0.146	0.035	0.819	0.255	497	10	1394	0.755
Guitarfish, Shovelnose	7	1	0	0	0.012	25	0	60	0.648
Halibut, California	293	0.567	0.416	0.017	0.520	1010	769	1284	0.130
Invertebrate, Unidentified	121	0.355	0.165	0.479	0.215	417	89	894	0.498
Lingcod	2	1	0	0	0.004	7	0	18	0.708
Lizardfish, California	66	0.091	0.909	0	0.117	228	149	317	0.190
Lobster, California Spiny	31	1	0	0	0.055	107	41	214	0.432
Mackerel, Pacific	2822	0.004	0.996	0.000	5.004	9722	3635	17444	0.371
Midshipman, Plainfin	2	0.500	0	0.500	0.004	7	0	18	0.713
Midshipman, Specklefin	14	1	0	0	0.025	49	4	129	0.737
Octopus, Unidentified	7	0.714	0.143	0.143	0.012	25	7	48	0.436
Ratfish, Spotted	743	0.828	0.168	0.004	1.317	2560	1010	4468	0.347
Ray, Bat	585	0.973	0.019	0.009	1.037	2016	1105	3229	0.272
Ray, Pacific Electric	38	0.974	0	0.026	0.067	131	84	186	0.199
Rockfish, Blue	1	1	0	0	0.002	4	0	12	1.004
Rockfish, Brown	5	0.800	0.200	0	0.009	18	0	44	0.671
Rockfish, Canary	1	0	1	0	0.002	4	0	11	0.992
Rockfish, Copper	1	1	0	0	0.002	4	0	12	1.022
Rockfish, Unidentified	4	0.250	0.750	0	0.007	14	4	29	0.495
Salmon, King	11	0.182	0.818	0	0.020	38	11	78	0.463
Sanddab, Longfin	2	1	0	0	0.004	7	0	18	0.694
Sanddab, Pacific	2	0.500	0.500	0	0.004	7	0	18	0.714
Sardine, Pacific	81	0.049	0.938	0.012	0.144	280	63	606	0.514
Scorpionfish, California	3	0.667	0.333	0	0.005	11	0	24	0.572
Sea Cucumber	3	1	0	0	0.005	11	0	28	0.749
Sea Star	619	0.990	0.006	0.003	1.098	2133	1498	2842	0.161
Sea Urchin	1	1	0	0	0.002	4	0	11	0.977
Seabass, White	95	0.074	0.916	0.011	0.168	328	147	596	0.353
Shad, American	7	0.143	0.857	0	0.012	25	8	42	0.357
Shark, Blue	3	0.333	0.667	0	0.005	11	0	24	0.573
Shark, Brown Smoothhound	455	0.615	0.343	0.042	0.807	1568	1064	2216	0.189
Shark, Common Thresher	1	1	0	0	0.002	4	0	11	1.002
Shark, Gray Smoothhound	2	1	0	0	0.004	7	0	18	0.719
Shark, Horn	5	1	0	0	0.009	18	4	34	0.439
Shark, Pacific Angel	149	0.953	0.040	0.007	0.264	514	330	742	0.207
Shark, Prickly	1	1	0	0	0.002	4	0	11	0.990
Shark, Sevengill	3	0.667	0.333	0	0.005	11	0	24	0.578
Shark, Sixgill	11	0.636	0.273	0.091	0.020	38	17	64	0.321
Shark, Soupfin	3	1	0	0	0.005	11	0	25	0.583
Shark, Swell	303	0.944	0.040	0.017	0.537	1044	804	1316	0.126
Shark, Unidentified	1	0	1	0	0.002	4	0	11	1.019
Skate, Big	71	1	0	0	0.126	245	169	332	0.168
Skate, California	498	0.932	0.064	0.004	0.883	1716	1187	2352	0.175

Table 3. (Continued)

1994

Species	Individuals observed discarded	Proportion alive	Proportion dead	Proportion unknown	Individuals/ day	Individuals estimated discarded	LoCI	HiCI	CV
Skate, Longnose	212	0.991	0.009	0	0.376	731	397	1148	0.262
Skate, Starry	5	1	0	0	0.009	18	4	35	0.450
Snail, Moon	92	0.902	0.065	0.033	0.163	317	164	498	0.271
Sole, English	11	0.818	0.182	0	0.020	38	17	64	0.314
Sole, Fantail	2	0.500	0.500	0	0.004	7	0	18	0.705
Sole, Petrale	2	1	0	0	0.004	7	0	18	0.700
Sole, Rock	1	1	0	0	0.002	4	0	11	1.007
Squid, Market	1	0	1	0	0.002	4	0	11	1.012
Surfperch, Unidentified	13	0.462	0.538	0	0.023	45	0	135	0.919
Surfperch, White	2	1	0	0	0.004	7	0	18	0.705
Thornback	5	1	0	0	0.009	18	0	41	0.598
Tonguefish, California	1	1	0	0	0.002	4	0	11	0.997
Tunicates, Pelagic	49	0.367	0.020	0.612	0.087	169	73	288	0.329
Turbot Hornyhead	2	1	0	0	0.004	7	0	18	0.706
Turbot, Diamond	4	0.750	0.250	0	0.007	14	4	29	0.497
Whelk	137	1	0	0	0.243	472	246	745	0.271

Table 3. (Continued)

1999

Species	Individuals				Individuals/ day	Individuals			
	observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
Bass, Kelp	3	0	1	0	0.013	54	0	145	0.739
Crab, Dungeness	772	0.869	0.117	0.014	3.328	13887	11635	16270	0.085
Crab, Northern Kelp	1	0	1	0	0.004	18	0	56	0.996
Crab, Pointer	304	0.572	0.428	0	1.310	5469	3290	8102	0.224
Crab, Rock	311	0.904	0.093	0.003	1.341	5594	4586	6706	0.098
Crab, Spider	7	0.286	0.714	0	0.030	126	19	270	0.507
Croaker, White	27	0.259	0.741	0	0.116	486	129	1113	0.567
Crustacean, Unidentified	314	0.682	0.303	0.016	1.353	5648	3976	7594	0.164
Dogfish, Spiny	704	0.751	0.247	0.001	3.034	12663	9792	15982	0.127
Fish, Other Identified	6	0.833	0.167	0	0.026	108	36	202	0.405
Fish, Unidentified	21	0.095	0.524	0.381	0.091	378	175	623	0.306
Flatfish, Unidentified	2	0.500	0.500	0	0.009	36	0	92	0.709
Flounder, Starry	2	1	0	0	0.009	36	0	112	0.993
Hake, Pacific	1439	0.005	0.994	0.001	6.203	25884	9557	47729	0.384
Halibut, California	100	0.330	0.670	0	0.431	1799	1223	2481	0.180
Invertebrate, Unidentified	520	0.192	0.269	0.538	2.241	9354	5415	14131	0.237
Lingcod	34	0.235	0.765	0	0.147	612	365	895	0.221
Mackerel, Pacific	19	0	1	0	0.082	342	72	824	0.599
Octopus, Unidentified	3	1	0	0	0.013	54	0	124	0.564
Queenfish	2	0	1	0	0.009	36	0	91	0.696
Ratfish, Spotted	350	0.626	0.366	0.009	1.509	6296	3001	10807	0.319
Ray, Bat	5	0.800	0.200	0	0.022	90	19	177	0.443
Ray, Pacific Electric	4	0.750	0.250	0	0.017	72	0	170	0.609
Rockfish, Bank	1	1	0	0	0.004	18	0	56	0.996
Rockfish, Black and Yellow	1	1	0	0	0.004	18	0	57	1.007
Rockfish, Brown	2	1	0	0	0.009	36	0	113	1.009
Rockfish, Copper	2	1	0	0	0.009	36	0	92	0.706
Rockfish, Unidentified	3	1	0	0	0.013	54	0	145	0.734
Salmon, King	32	0	1	0	0.138	576	341	843	0.223
Sanddab, Pacific	85	0.294	0.706	0	0.366	1529	897	2302	0.236
Sanddab, Speckled	1	0	1	0	0.004	18	0	56	0.991
Sardine, Pacific	8	0.125	0.875	0	0.034	144	19	332	0.560
Sea Star	134	0.948	0.015	0.037	0.578	2411	1844	3034	0.126
Sea Urchin	12	0.583	0.333	0.083	0.052	216	104	361	0.311
Seabass, White	1	0	1	0	0.004	18	0	56	1.002
Searobin, Lumptail	1	1	0	0	0.004	18	0	57	1.001
Shad, American	5	0	1	0	0.022	90	19	177	0.438
Shark, Brown Smoothhound	54	0.556	0.444	0	0.233	972	617	1368	0.199
Shark, Common Thresher	1	0	1	0	0.004	18	0	56	0.992
Shark, Leopard	1	1	0	0	0.004	18	0	56	1.001
Shark, Other Identified	4	0.750	0.250	0	0.017	72	0	169	0.610
Shark, Pacific Angel	1	0	0	1	0.004	18	0	56	0.995
Shark, Sevengill	1	0	1	0	0.004	18	0	56	0.983
Shark, Sixgill	18	0.722	0.278	0	0.078	324	183	476	0.233
Shark, Soupfin	4	0.750	0.250	0	0.017	72	0	170	0.607
Shark, Unidentified	7	0	0	1	0.030	126	0	339	0.740
Skate, Big	244	0.869	0.131	0	1.052	4389	3357	5577	0.130
Skate, California	744	0.917	0.079	0.004	3.207	13383	11055	15914	0.094
Skate, Longnose	78	0.846	0.141	0.013	0.336	1403	722	2270	0.281
Skate, Starry	9	1	0	0	0.039	162	53	312	0.418
Skate, Unidentified	65	0.569	0.062	0.369	0.280	1170	545	2008	0.323
Snail, Unidentified	7	0.857	0	0.143	0.030	126	36	241	0.421
Sole, Petrale	2	1	0	0	0.009	36	0	91	0.696
Sole, Rock	3	1	0	0	0.013	54	0	168	0.993
Sole, Sand	1	1	0	0	0.004	18	0	57	0.995
Sturgeon, Green	7	1	0	0	0.030	126	38	227	0.370
Tunicates, Pelagic	31	1	0	0	0.134	558	0	1373	0.645
Unknown Species	4	0	0	1	0.017	72	18	147	0.488

Table 3. (Continued)

2000

Species	Individuals				Individuals/ day	Individuals			CV
	observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	
Anchovy, Northern	3	1	0	0	0.030	113	0	302	0.736
Crab, Dungeness	531	0.904	0.096	0	5.310	19839	14981	25921	0.141
Crab, Pointer	174	0.713	0.282	0.006	1.740	6501	4303	9085	0.190
Crab, Rock	123	0.724	0.244	0.033	1.230	4596	3419	5932	0.140
Crab, Spider	11	0.364	0.636	0	0.110	411	141	814	0.431
Croaker, White	16	0.125	0.875	0	0.160	598	270	1012	0.318
Crustacean, Unidentified	5	0.800	0.200	0	0.050	187	0	427	0.585
Dogfish, Spiny	582	0.553	0.443	0.003	5.820	21744	11282	35001	0.276
Fish, Other Identified	3	0	1	0	0.030	113	0	358	1.005
Flounder, Starry	1	1	0	0	0.010	38	0	117	0.988
Hake, Pacific	920	0	1	0	9.200	34372	14798	59776	0.337
Halibut, California	28	0.464	0.464	0.071	0.280	1047	567	1585	0.246
Hare, Sea	1	0	0	1	0.010	38	0	120	1.006
Invertebrate, Unidentified	18	0.111	0.167	0.722	0.180	673	72	1661	0.650
Lingcod	17	0.294	0.706	0	0.170	636	330	980	0.262
Mackerel, Pacific	19	0	1	0	0.190	710	144	1544	0.518
Mackerel, Unidentified	2	0	1	0	0.020	75	0	242	1.015
Octopus, Unidentified	8	1	0	0	0.080	299	40	662	0.536
Ratfish, Spotted	367	0.071	0.924	0.005	3.670	13712	4377	27484	0.430
Ray, Bat	339	0.575	0.171	0.254	3.390	12666	78	39720	0.979
Ray, Pacific Electric	1	1	0	0	0.010	38	0	116	0.977
Rockfish, Brown	3	1	0	0	0.030	113	0	254	0.562
Rockfish, Chilipepper	1	0	1	0	0.010	38	0	120	1.014
Rockfish, Copper	2	0.500	0.500	0	0.020	75	0	193	0.705
Rockfish, Unidentified	1	0	1	0	0.010	38	0	120	1.011
Sablefish	1	0	1	0	0.010	38	0	118	0.996
Salmon, King	10	0.100	0.900	0	0.100	374	139	692	0.384
Sanddab, Pacific	59	0.034	0.966	0	0.590	2205	1009	3700	0.313
Sardine, Pacific	6	0.333	0.667	0	0.060	225	0	534	0.611
Sea Star	98	0.969	0.020	0.010	0.980	3662	2171	5604	0.242
Sea Urchin	1	1	0	0	0.010	38	0	120	1.011
Seabass, White	2	0.500	0.500	0	0.020	75	0	187	0.681
Shad, American	16	0	1	0	0.160	598	184	1182	0.432
Shark, Blue	1	0	1	0	0.010	38	0	117	0.983
Shark, Brown Smoothhound	64	0.438	0.563	0	0.640	2392	1074	4199	0.339
Shark, Gray Smoothhound	15	0.600	0.400	0	0.150	561	74	1232	0.523
Shark, Leopard	5	0.200	0.800	0	0.050	187	0	472	0.657
Shark, Sevengill	1	0	0	1	0.010	38	0	120	1.005
Shark, Sixgill	12	0.333	0.667	0	0.120	449	178	793	0.353
Shark, Soupfin	7	0.429	0.571	0	0.070	262	36	629	0.604
Shark, Unidentified	1	1	0	0	0.010	38	0	120	1.013
Skate, Big	294	0.935	0.065	0	2.940	10984	7680	14864	0.169
Skate, California	358	0.830	0.170	0	3.580	13375	9668	17658	0.152
Skate, Longnose	51	0.765	0.235	0	0.510	1906	494	3918	0.461
Skate, Starry	10	0.600	0.400	0	0.100	374	109	755	0.457
Skate, Unidentified	11	0.909	0.091	0	0.110	411	0	1197	0.829
Sole, Petrale	2	0	1	0	0.020	75	0	191	0.698
Sole, Sand	3	0	1	0	0.030	113	0	358	1.005
Sturgeon Unidentified	2	1	0	0	0.020	75	0	191	0.696
Sturgeon, Green	1	1	0	0	0.010	38	0	117	0.982
Turbot Hornyhead	1	1	0	0	0.010	38	0	120	1.008

Table 3. (Continued)

2006

Species	Individuals observed discarded	Proportion alive	Proportion dead	Proportion unknown	Individuals/ day	Individuals estimated discarded	LoCI	HiCI	CV
Bonito, Pacific	1	0	1	0	0.083	116	0	232	0.692
Cabezon	1	0	1	0	0.083	116	0	232	0.687
Crab, Hermit	1	1	0	0	0.083	116	0	347	0.939
Crab, Pointer	24	1	0	0	2.000	2774	0	5548	0.552
Crab, Rock	13	1	0	0	1.083	1503	347	3468	0.588
Crab, Spider	11	0.909	0.091	0	0.917	1272	694	3237	0.500
Fish, Unidentified	1	1	0	0	0.083	116	0	232	0.685
Halibut, California	1	0	1	0	0.083	116	0	232	0.693
Lingcod	5	0.600	0.400	0	0.417	578	0	1156	0.691
Mackerel, Pacific	23	0.391	0.609	0	1.917	2659	0	9709	0.965
Ratfish, Spotted	3	0.667	0	0.333	0.250	347	0	2081	1.516
Ray, Bat	21	0.571	0.429	0	1.750	2428	139	4624	0.582
Rockfish, Copper	4	0.250	0.750	0	0.333	463	0	925	0.686
Rockfish, Treefish	2	0	1	0	0.167	232	0	463	0.686
Sardine, Pacific	1	0	1	0	0.083	116	0	694	1.532
Scorpionfish, California	3	0.667	0.333	0	0.250	347	0	694	0.682
Sea Cucumber	13	1	0	0	1.083	1503	0	3584	0.625
Sea Star	7	0.429	0	0.571	0.583	810	0	1619	0.691
Sea Urchin	12	1	0	0	1.000	1387	0	2774	0.686
Shark, Horn	2	1	0	0	0.167	232	0	694	0.753
Shark, Pacific Angel	1	1	0	0	0.083	116	0	232	0.687
Shark, Soupfin	2	1	0	0	0.167	232	0	1387	1.497
Shark, Swell	20	0.800	0.200	0	1.667	2312	694	3468	0.338
Skate, California	6	1	0	0	0.500	694	0	2081	0.852

Table 4. Observed bycatch, estimated bycatch, and coefficient of variation for the California set gillnet fishery sorted by species.

Year	Species	Individuals			Individuals /day	Individuals			CV
		observed discarded	Proportion alive	Proportion dead		Proportion unknown	estimated discarded	LoCI	
1990	Abalone, Red	0			0	0	0	0	
1991	Abalone, Red	0			0	0	0	0	
1992	Abalone, Red	1	1	0	0	0.000	3	0	1.007
1993	Abalone, Red	0			0	0	0	0	
1994	Abalone, Red	0			0	0	0	0	
1990	Anchovy, Northern	0			0	0	0	0	
1991	Anchovy, Northern	6	0.167	0.833	0	0.003	19	4	0.575
1992	Anchovy, Northern	0			0	0	0	0	
1993	Anchovy, Northern	4	0	1	0	0.001	8	2	0.504
1994	Anchovy, Northern	1	0	1	0	0.002	4	0	1.002
1999	Anchovy, Northern	0			0	0	0	0	
2000	Anchovy, Northern	3	1	0	0	0.030	113	0	0.736
1990	Barracuda, California	6	0	0	1	0.014	42	8	0.458
1991	Barracuda, California	31	0.161	0.742	0.097	0.014	98	57	0.235
1992	Barracuda, California	92	0.217	0.772	0.011	0.039	217	157	0.153
1993	Barracuda, California	195	0.231	0.764	0.005	0.066	375	258	0.174
1994	Barracuda, California	32	0.063	0.906	0.031	0.057	111	54	0.316
1990	Bass, Barred Sand	90	0	0	1	0.204	621	310	0.307
1991	Bass, Barred Sand	538	0.470	0.442	0.087	0.236	1690	1411	0.087
1992	Bass, Barred Sand	618	0.583	0.401	0.016	0.261	1455	1216	0.087
1993	Bass, Barred Sand	634	0.623	0.361	0.016	0.214	1219	1028	0.084
1994	Bass, Barred Sand	61	0.344	0.656	0	0.108	211	119	0.249
1990	Bass, Giant Sea	0			0	0	0	0	
1991	Bass, Giant Sea	8	0	0.625	0.375	0.004	26	7	0.462
1992	Bass, Giant Sea	19	0.211	0.789	0	0.008	45	19	0.351
1993	Bass, Giant Sea	8	0.125	0.875	0	0.003	16	4	0.477
1994	Bass, Giant Sea	0			0	0	0	0	
1990	Bass, Kelp	11	0	0	1	0.025	76	20	0.441
1991	Bass, Kelp	45	0.422	0.533	0.044	0.020	142	75	0.269
1992	Bass, Kelp	136	0.434	0.566	0	0.057	321	183	0.245
1993	Bass, Kelp	166	0.524	0.464	0.012	0.056	319	231	0.152
1994	Bass, Kelp	2	0.500	0.500	0	0.004	7	0	0.710
1999	Bass, Kelp	3	0	1	0	0.013	54	0	0.739
2000	Bass, Kelp	0			0	0	0	0	
1990	Bass, Spotted Sand	3	0	0	1	0.007	21	0	0.742
1991	Bass, Spotted Sand	3	0.333	0	0.667	0.001	10	0	0.577
1992	Bass, Spotted Sand	5	0.600	0.200	0.200	0.002	12	3	0.445
1993	Bass, Spotted Sand	9	0.556	0.444	0	0.003	18	6	0.400
1994	Bass, Spotted Sand	0			0	0	0	0	
1990	Bass, Striped	0			0	0	0	0	
1991	Bass, Striped	0			0	0	0	0	
1992	Bass, Striped	0			0	0	0	0	
1993	Bass, Striped	3	1	0	0	0.001	6	0	0.994
1994	Bass, Striped	0			0	0	0	0	
1990	Blacksmith	0			0	0	0	0	
1991	Blacksmith	0			0	0	0	0	
1992	Blacksmith	1	0	1	0	0.000	3	0	0.985
1993	Blacksmith	0			0	0	0	0	
1994	Blacksmith	0			0	0	0	0	
1990	Bonito, Pacific	22	0	0	1	0.050	152	49	0.399
1991	Bonito, Pacific	22	0.091	0.909	0	0.010	70	10	0.644
1992	Bonito, Pacific	26	0.077	0.923	0	0.011	62	25	0.355
1993	Bonito, Pacific	44	0.023	0.977	0	0.015	85	24	0.548
1994	Bonito, Pacific	2	0	1	0	0.004	7	0	0.692
2006	Bonito, Pacific	1	0	1	0	0.083	116	0	0.692
1990	Butterfish, Pacific	0			0	0	0	0	
1991	Butterfish, Pacific	0			0	0	0	0	
1992	Butterfish, Pacific	1	0	1	0	0.000	3	0	0.996
1993	Butterfish, Pacific	0			0	0	0	0	
1994	Butterfish, Pacific	0			0	0	0	0	
1990	Cabezon	10	0	0	1	0.023	69	14	0.475
1991	Cabezon	18	0.389	0.444	0.167	0.008	57	25	0.332
1992	Cabezon	40	0.675	0.300	0.025	0.017	95	33	0.453
1993	Cabezon	16	0.688	0.313	0	0.005	31	12	0.363
1994	Cabezon	0			0	0	0	0	
2006	Cabezon	1	0	1	0	0.083	116	0	0.687
1990	Cod, Pacific	0			0	0	0	0	

Table 4. (Continued)

Year	Species	Individuals observed discarded	Proportion alive	Proportion dead	Proportion unknown	Individuals /day	Individuals estimated discarded	LoCI	HiCI	CV
1991	Cod, Pacific	0				0	0	0	0	
1992	Cod, Pacific	1	0	1	0	0.000	3	0	8	1.009
1993	Cod, Pacific	1	0	1	0	0.000	2	0	6	0.992
1994	Cod, Pacific	0				0	0	0	0	
1990	Corbina, California	4	0	0	1	0.009	28	7	58	0.493
1991	Corbina, California	14	0.071	0.929	0	0.006	44	10	102	0.546
1992	Corbina, California	13	0.308	0.692	0	0.005	31	14	52	0.317
1993	Corbina, California	5	0	1	0	0.002	10	2	22	0.528
1994	Corbina, California	0				0	0	0	0	
1990	Crab, California King	0				0	0	0	0	
1991	Crab, California King	10	0.700	0	0.300	0.004	32	0	76	0.616
1992	Crab, California King	0				0	0	0	0	
1993	Crab, California King	11	0.818	0.091	0.091	0.004	22	6	42	0.435
1994	Crab, California King	0				0	0	0	0	
1990	Crab, Decorator	36	0	0	1	0.082	249	77	465	0.406
1991	Crab, Decorator	61	0.148	0.475	0.377	0.027	192	106	293	0.250
1992	Crab, Decorator	24	0.583	0.417	0	0.010	57	24	97	0.327
1993	Crab, Decorator	248	0.149	0.851	0	0.084	477	232	773	0.289
1994	Crab, Decorator	1	1	0	0	0.002	4	0	11	0.979
1990	Crab, Dungeness	546	0	0	1	1.238	3766	2025	6007	0.271
1991	Crab, Dungeness	448	0.473	0.040	0.487	0.196	1408	861	2029	0.212
1992	Crab, Dungeness	86	0.791	0.209	0	0.036	203	116	303	0.238
1993	Crab, Dungeness	79	0.886	0.114	0	0.027	152	79	240	0.270
1994	Crab, Dungeness	44	0.659	0.341	0	0.078	152	66	264	0.338
1999	Crab, Dungeness	772	0.869	0.117	0.014	3.328	13887	11635	16270	0.085
2000	Crab, Dungeness	531	0.904	0.096	0	5.310	19839	14981	25921	0.141
1990	Crab, Hermit	39	0	0	1	0.088	269	148	415	0.257
1991	Crab, Hermit	191	0.738	0.042	0.220	0.084	600	463	752	0.123
1992	Crab, Hermit	279	0.814	0.036	0.151	0.118	657	508	817	0.122
1993	Crab, Hermit	120	0.908	0.083	0.008	0.041	231	153	331	0.198
1994	Crab, Hermit	107	0.953	0.047	0	0.190	369	243	518	0.194
2006	Crab, Hermit	1	1	0	0	0.083	116	0	347	0.939
1990	Crab, Marble	16	0	0	1	0.036	111	16	232	0.499
1991	Crab, Marble	577	0.709	0.237	0.054	0.253	1813	1231	2503	0.179
1992	Crab, Marble	119	0.555	0.311	0.134	0.050	281	183	390	0.190
1993	Crab, Marble	82	0.524	0.463	0.012	0.028	158	99	230	0.212
1994	Crab, Marble	0				0	0	0	0	
1990	Crab, Northern Kelp	14	0	0	1	0.032	97	8	237	0.624
1991	Crab, Northern Kelp	19	0.684	0.263	0.053	0.008	60	26	100	0.316
1992	Crab, Northern Kelp	10	0.800	0.200	0	0.004	24	3	56	0.596
1993	Crab, Northern Kelp	6	0.167	0.333	0.500	0.002	12	2	27	0.580
1994	Crab, Northern Kelp	0				0	0	0	0	
1999	Crab, Northern Kelp	1	0	1	0	0.004	18	0	56	0.996
2000	Crab, Northern Kelp	0				0	0	0	0	
1990	Crab, Opossum	0				0	0	0	0	
1991	Crab, Opossum	7	0.714	0.286	0	0.003	22	4	48	0.515
1992	Crab, Opossum	0				0	0	0	0	
1993	Crab, Opossum	2	0	1	0	0.001	4	0	10	0.694
1994	Crab, Opossum	0				0	0	0	0	
1990	Crab, Parasol	0				0	0	0	0	
1991	Crab, Parasol	0				0	0	0	0	
1992	Crab, Parasol	4	0.250	0.750	0	0.002	10	0	29	1.010
1993	Crab, Parasol	0				0	0	0	0	
1994	Crab, Parasol	0				0	0	0	0	
1990	Crab, Pelagic Red	1	0	0	1	0.002	7	0	21	0.974
1991	Crab, Pelagic Red	0				0	0	0	0	
1992	Crab, Pelagic Red	0				0	0	0	0	
1993	Crab, Pelagic Red	0				0	0	0	0	
1994	Crab, Pelagic Red	0				0	0	0	0	
1990	Crab, Pointer	71	0	0	1	0.161	490	189	874	0.360
1991	Crab, Pointer	91	0.319	0.275	0.407	0.040	286	145	465	0.289
1992	Crab, Pointer	123	0.081	0.886	0.033	0.052	290	54	667	0.577
1993	Crab, Pointer	65	0.492	0.508	0	0.022	125	57	211	0.320
1994	Crab, Pointer	18	0.889	0.111	0	0.032	63	11	147	0.595
1999	Crab, Pointer	304	0.572	0.428	0	1.310	5469	3290	8102	0.224
2000	Crab, Pointer	174	0.713	0.282	0.006	1.740	6501	4303	9085	0.190
2006	Crab, Pointer	24	1	0	0	2.000	2774	0	5548	0.552

Table 4. (Continued)

Year	Species	Individuals				Individuals /day	Individuals			
		observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
1990	Crab, Rock	725	0	0	1	1.644	5000	2584	8503	0.305
1991	Crab, Rock	3413	0.260	0.515	0.225	1.495	10721	9299	12280	0.071
1992	Crab, Rock	2002	0.228	0.743	0.029	0.845	4712	4196	5264	0.058
1993	Crab, Rock	1423	0.229	0.720	0.051	0.481	2735	2371	3142	0.072
1994	Crab, Rock	388	0.497	0.490	0.013	0.688	1337	1074	1629	0.105
1999	Crab, Rock	311	0.904	0.093	0.003	1.341	5594	4586	6706	0.098
2000	Crab, Rock	123	0.724	0.244	0.033	1.230	4596	3419	5932	0.140
2006	Crab, Rock	13	1	0	0	1.083	1503	347	3468	0.588
1990	Crab, Sand	4	0	0	1	0.009	28	0	66	0.603
1991	Crab, Sand	22	0.273	0.727	0	0.010	70	20	139	0.444
1992	Crab, Sand	3	0.333	0.667	0	0.001	8	0	17	0.585
1993	Crab, Sand	4	0.500	0.500	0	0.001	8	0	19	0.619
1994	Crab, Sand	0				0	0	0	0	
1990	Crab, Southern Kelp	11	0	0	1	0.025	76	0	196	0.703
1991	Crab, Southern Kelp	38	0.658	0.342	0	0.017	120	54	200	0.314
1992	Crab, Southern Kelp	27	0.296	0.704	0	0.011	64	28	107	0.318
1993	Crab, Southern Kelp	16	0.375	0.625	0	0.005	31	6	64	0.487
1994	Crab, Southern Kelp	0				0	0	0	0	
1990	Crab, Spider	1423	0	0	1	3.227	9813	7064	13107	0.159
1991	Crab, Spider	7608	0.217	0.628	0.154	3.332	23898	20955	27071	0.066
1992	Crab, Spider	7473	0.178	0.795	0.027	3.153	17586	15633	19684	0.059
1993	Crab, Spider	4024	0.142	0.850	0.008	1.361	7733	6827	8740	0.063
1994	Crab, Spider	249	0.189	0.807	0.004	0.441	858	627	1140	0.152
1999	Crab, Spider	7	0.286	0.714	0	0.030	126	19	270	0.507
2000	Crab, Spider	11	0.364	0.636	0	0.110	411	141	814	0.431
2006	Crab, Spider	11	0.909	0.091	0	0.917	1272	694	3237	0.500
1990	Croaker, Black	0				0	0	0	0	
1991	Croaker, Black	0				0	0	0	0	
1992	Croaker, Black	2	0	1	0	0.001	5	0	15	1.012
1993	Croaker, Black	0				0	0	0	0	
1994	Croaker, Black	0				0	0	0	0	
1990	Croaker, Spotfin	2	0	0	1	0.005	14	0	44	1.011
1991	Croaker, Spotfin	5	0.200	0.800	0	0.002	16	0	47	0.824
1992	Croaker, Spotfin	0				0	0	0	0	
1993	Croaker, Spotfin	3	0	1	0	0.001	6	0	16	0.743
1994	Croaker, Spotfin	0				0	0	0	0	
1990	Croaker, White	15	0	0	1	0.034	104	29	198	0.423
1991	Croaker, White	172	0.169	0.657	0.174	0.075	541	411	691	0.132
1992	Croaker, White	410	0.068	0.922	0.010	0.173	965	392	1885	0.417
1993	Croaker, White	455	0.097	0.897	0.007	0.154	875	210	1948	0.530
1994	Croaker, White	47	0.255	0.723	0.021	0.083	162	83	279	0.311
1999	Croaker, White	27	0.259	0.741	0	0.116	486	129	1113	0.567
2000	Croaker, White	16	0.125	0.875	0	0.160	598	270	1012	0.318
1990	Croaker, Yellowfin	0				0	0	0	0	
1991	Croaker, Yellowfin	2	0	0.500	0.500	0.001	7	0	16	0.713
1992	Croaker, Yellowfin	4	0.500	0.500	0	0.002	10	0	29	1.000
1993	Croaker, Yellowfin	6	0.167	0.833	0	0.002	12	0	28	0.625
1994	Croaker, Yellowfin	0				0	0	0	0	
1990	Crustacean, Unidentified	64	0	0	1	0.145	442	154	816	0.388
1991	Crustacean, Unidentified	117	0.436	0.282	0.282	0.051	368	204	573	0.259
1992	Crustacean, Unidentified	222	0.297	0.477	0.225	0.094	523	331	749	0.206
1993	Crustacean, Unidentified	161	0.764	0.205	0.031	0.054	310	177	482	0.251
1994	Crustacean, Unidentified	127	0.953	0.039	0.008	0.225	438	256	653	0.235
1999	Crustacean, Unidentified	314	0.682	0.303	0.016	1.353	5648	3976	7594	0.164
2000	Crustacean, Unidentified	5	0.800	0.200	0	0.050	187	0	427	0.585
1990	Dogfish, Spiny	972	0	0	1	2.204	6703	1374	16581	0.644
1991	Dogfish, Spiny	736	0.538	0.379	0.083	0.322	2312	1330	3530	0.247
1992	Dogfish, Spiny	659	0.472	0.478	0.050	0.278	1551	1019	2234	0.201
1993	Dogfish, Spiny	1832	0.582	0.392	0.026	0.620	3521	2618	4554	0.140
1994	Dogfish, Spiny	129	0.574	0.411	0.016	0.229	445	262	688	0.247
1999	Dogfish, Spiny	704	0.751	0.247	0.001	3.034	12663	9792	15982	0.127
2000	Dogfish, Spiny	582	0.553	0.443	0.003	5.820	21744	11282	35001	0.276
1990	Echinoderm, Unidentified	0				0	0	0	0	
1991	Echinoderm, Unidentified	19	0.368	0.474	0.158	0.008	60	10	135	0.553
1992	Echinoderm, Unidentified	83	0.542	0	0.458	0.035	196	92	321	0.302
1993	Echinoderm, Unidentified	30	1	0	0	0.010	58	0	170	0.897
1994	Echinoderm, Unidentified	0				0	0	0	0	

Table 4. (Continued)

Year	Species	Individuals				Individuals /day	Individuals			
		observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
1990	Fish, Other Identified	1	0	0	1	0.002	7	0	22	1.014
1991	Fish, Other Identified	3	0.333	0.333	0.333	0.001	10	0	22	0.575
1992	Fish, Other Identified	10	0.700	0.300	0	0.004	24	10	41	0.345
1993	Fish, Other Identified	10	0	1	0	0.003	20	2	48	0.632
1994	Fish, Other Identified	16	0.125	0.875	0	0.028	56	0	159	0.836
1999	Fish, Other Identified	6	0.833	0.167	0	0.026	108	36	202	0.405
2000	Fish, Other Identified	3	0	1	0	0.030	113	0	358	1.005
1990	Fish, Unidentified	81	0	0	1	0.184	559	309	857	0.251
1991	Fish, Unidentified	115	0.217	0.574	0.209	0.050	362	255	484	0.159
1992	Fish, Unidentified	203	0.113	0.828	0.059	0.086	478	329	649	0.172
1993	Fish, Unidentified	145	0.138	0.807	0.055	0.049	279	197	372	0.160
1994	Fish, Unidentified	14	0	1	0	0.025	49	21	81	0.324
1999	Fish, Unidentified	21	0.095	0.524	0.381	0.091	378	175	623	0.306
2000	Fish, Unidentified	0				0	0	0	0	
2006	Fish, Unidentified	1	1	0	0	0.083	116	0	232	0.685
1990	Flatfish, Other Identified	0				0	0	0	0	
1991	Flatfish, Other Identified	0				0	0	0	0	
1992	Flatfish, Other Identified	1	0	1	0	0.000	3	0	8	1.000
1993	Flatfish, Other Identified	0				0	0	0	0	
1994	Flatfish, Other Identified	0				0	0	0	0	
1990	Flatfish, Unidentified	42	0	0	1	0.095	290	108	560	0.415
1991	Flatfish, Unidentified	88	0.625	0.239	0.136	0.039	277	177	396	0.204
1992	Flatfish, Unidentified	135	0.593	0.400	0.007	0.057	318	162	526	0.297
1993	Flatfish, Unidentified	35	0.657	0.314	0.029	0.012	68	42	99	0.219
1994	Flatfish, Unidentified	144	0.146	0.035	0.819	0.255	497	10	1394	0.755
1999	Flatfish, Unidentified	2	0.500	0.500	0	0.009	36	0	92	0.709
2000	Flatfish, Unidentified	0				0	0	0	0	
1990	Flounder, Starry	5	0	0	1	0.011	35	7	75	0.525
1991	Flounder, Starry	1	1	0	0	0.000	4	0	10	1.002
1992	Flounder, Starry	1	1	0	0	0.000	3	0	8	1.008
1993	Flounder, Starry	1	1	0	0	0.000	2	0	6	0.996
1994	Flounder, Starry	0				0	0	0	0	
1999	Flounder, Starry	2	1	0	0	0.009	36	0	112	0.993
2000	Flounder, Starry	1	1	0	0	0.010	38	0	117	0.988
1990	Garibaldi	0				0	0	0	0	
1991	Garibaldi	0				0	0	0	0	
1992	Garibaldi	2	0	1	0	0.001	5	0	15	1.002
1993	Garibaldi	0				0	0	0	0	
1994	Garibaldi	0				0	0	0	0	
1990	Greenling, Painted	0				0	0	0	0	
1991	Greenling, Painted	0				0	0	0	0	
1992	Greenling, Painted	0				0	0	0	0	
1993	Greenling, Painted	1	1	0	0	0.000	2	0	6	0.991
1994	Greenling, Painted	0				0	0	0	0	
1990	Guitarfish, Banded	2	0	0	1	0.005	14	0	44	1.009
1991	Guitarfish, Banded	1	1	0	0	0.000	4	0	10	1.002
1992	Guitarfish, Banded	0				0	0	0	0	
1993	Guitarfish, Banded	22	0.864	0.136	0	0.007	43	18	78	0.373
1994	Guitarfish, Banded	0				0	0	0	0	
1990	Guitarfish, Shovelnose	205	0	0	1	0.465	1414	619	2496	0.341
1991	Guitarfish, Shovelnose	882	0.745	0.095	0.160	0.386	2771	2100	3556	0.134
1992	Guitarfish, Shovelnose	793	0.806	0.148	0.047	0.335	1867	1431	2370	0.129
1993	Guitarfish, Shovelnose	543	0.832	0.166	0.002	0.184	1044	792	1321	0.129
1994	Guitarfish, Shovelnose	7	1	0	0	0.012	25	0	60	0.648
1990	Hagfish Pacific	0				0	0	0	0	
1991	Hagfish Pacific	1	1	0	0	0.000	4	0	10	1.003
1992	Hagfish Pacific	1	0	1	0	0.000	3	0	8	1.000
1993	Hagfish Pacific	2	0	1	0	0.001	4	0	10	0.705
1994	Hagfish Pacific	0				0	0	0	0	
1990	Hake, Pacific	29	0	0	1	0.066	200	15	465	0.592
1991	Hake, Pacific	174	0.011	0.966	0.023	0.076	547	64	1459	0.780
1992	Hake, Pacific	17	0.118	0.882	0	0.007	41	17	70	0.348
1993	Hake, Pacific	128	0	1	0	0.043	246	127	384	0.269
1994	Hake, Pacific	0				0	0	0	0	
1999	Hake, Pacific	1439	0.005	0.994	0.001	6.203	25884	9557	47729	0.384
2000	Hake, Pacific	920	0	1	0	9.200	34372	14798	59776	0.337
1990	Halfmoon	0				0	0	0	0	

Table 4. (Continued)

Year	Species	Individuals observed discarded	Proportion alive	Proportion dead	Proportion unknown	Individuals /day	Individuals estimated discarded	LoCI	HiCI	CV
1991	Halfmoon	0				0	0	0	0	
1992	Halfmoon	1	1	0	0	0.000	3	0	8	1.003
1993	Halfmoon	0				0	0	0	0	
1994	Halfmoon	0				0	0	0	0	
1990	Halibut, California	179	0	0	1	0.406	1235	909	1614	0.145
1991	Halibut, California	1573	0.540	0.218	0.242	0.689	4941	4252	5716	0.075
1992	Halibut, California	1333	0.540	0.447	0.013	0.562	3137	2795	3517	0.059
1993	Halibut, California	1587	0.669	0.325	0.006	0.537	3050	2687	3437	0.063
1994	Halibut, California	293	0.567	0.416	0.017	0.520	1010	769	1284	0.130
1999	Halibut, California	100	0.330	0.670	0	0.431	1799	1223	2481	0.180
2000	Halibut, California	28	0.464	0.464	0.071	0.280	1047	567	1585	0.246
2006	Halibut, California	1	0	1	0	0.083	116	0	232	0.693
1990	Hare, Sea	1	0	0	1	0.002	7	0	22	1.005
1991	Hare, Sea	16	0.750	0.125	0.125	0.007	51	23	84	0.315
1992	Hare, Sea	21	0.952	0.048	0	0.009	50	0	144	0.903
1993	Hare, Sea	28	0.893	0.107	0	0.009	54	0	162	0.975
1994	Hare, Sea	0				0	0	0	0	
1999	Hare, Sea	0				0	0	0	0	
2000	Hare, Sea	1	0	0	1	0.010	38	0	120	1.006
1990	Herring, Pacific	0				0	0	0	0	
1991	Herring, Pacific	28	0.500	0.214	0.286	0.012	88	4	251	0.864
1992	Herring, Pacific	1	0	1	0	0.000	3	0	8	1.001
1993	Herring, Pacific	41	0	1	0	0.014	79	6	212	0.766
1994	Herring, Pacific	0				0	0	0	0	
1990	Herring, Round	0				0	0	0	0	
1991	Herring, Round	0				0	0	0	0	
1992	Herring, Round	1	0	1	0	0.000	3	0	8	0.997
1993	Herring, Round	0				0	0	0	0	
1994	Herring, Round	0				0	0	0	0	
1990	Invertebrate, Unidentified	15	0	0	1	0.034	104	27	209	0.468
1991	Invertebrate, Unidentified	472	0.331	0.481	0.189	0.207	1483	878	2211	0.230
1992	Invertebrate, Unidentified	526	0.397	0.207	0.395	0.222	1238	705	1919	0.253
1993	Invertebrate, Unidentified	238	0.487	0.395	0.118	0.081	458	146	877	0.411
1994	Invertebrate, Unidentified	121	0.355	0.165	0.479	0.215	417	89	894	0.498
1999	Invertebrate, Unidentified	520	0.192	0.269	0.538	2.241	9354	5415	14131	0.237
2000	Invertebrate, Unidentified	18	0.111	0.167	0.722	0.180	673	72	1661	0.650
1990	Jacksmelt	0				0	0	0	0	
1991	Jacksmelt	1	0	1	0	0.000	4	0	10	0.979
1992	Jacksmelt	1	0	0	1	0.000	3	0	8	0.979
1993	Jacksmelt	0				0	0	0	0	
1994	Jacksmelt	0				0	0	0	0	
1990	Kelpfish, Giant	0				0	0	0	0	
1991	Kelpfish, Giant	1	0	0	1	0.000	4	0	10	1.003
1992	Kelpfish, Giant	0				0	0	0	0	
1993	Kelpfish, Giant	0				0	0	0	0	
1994	Kelpfish, Giant	0				0	0	0	0	
1990	Lingcod	34	0	0	1	0.077	235	109	397	0.317
1991	Lingcod	21	0.048	0.143	0.810	0.009	66	19	131	0.439
1992	Lingcod	7	0.429	0.571	0	0.003	17	5	31	0.377
1993	Lingcod	13	0.231	0.769	0	0.004	25	10	44	0.350
1994	Lingcod	2	1	0	0	0.004	7	0	18	0.708
1999	Lingcod	34	0.235	0.765	0	0.147	612	365	895	0.221
2000	Lingcod	17	0.294	0.706	0	0.170	636	330	980	0.262
2006	Lingcod	5	0.600	0.400	0	0.417	578	0	1156	0.691
1990	Lizardfish, California	169	0	0	1	0.383	1166	467	2237	0.400
1991	Lizardfish, California	923	0.049	0.828	0.124	0.404	2900	2477	3362	0.078
1992	Lizardfish, California	615	0.067	0.917	0.016	0.259	1448	994	2129	0.206
1993	Lizardfish, California	366	0.049	0.948	0.003	0.124	704	526	912	0.140
1994	Lizardfish, California	66	0.091	0.909	0	0.117	228	149	317	0.190
1990	Lobster, California Spiny	127	0	0	1	0.288	876	463	1396	0.273
1991	Lobster, California Spiny	563	0.819	0.007	0.174	0.247	1769	1417	2200	0.115
1992	Lobster, California Spiny	967	0.977	0.014	0.008	0.408	2276	1645	3102	0.165
1993	Lobster, California Spiny	1315	0.960	0.040	0.001	0.445	2527	1989	3137	0.116
1994	Lobster, California Spiny	31	1	0	0	0.055	107	41	214	0.432
1990	Mackerel, Jack	1	0	0	1	0.002	7	0	22	1.000
1991	Mackerel, Jack	17	0	0.294	0.706	0.007	54	7	139	0.728
1992	Mackerel, Jack	3	0	0.667	0.333	0.001	8	0	17	0.576

Table 4. (Continued)

Year	Species	Individuals			Proportion unknown	Individuals /day	Individuals			CV
		observed discarded	Proportion alive	Proportion dead			estimated discarded	LoCI	HiCI	
1993	Mackerel, Jack	0				0	0	0	0	
1994	Mackerel, Jack	0				0	0	0	0	
1990	Mackerel, Pacific	529	0	0	1	1.200	3648	1284	6986	0.401
1991	Mackerel, Pacific	4736	0.029	0.819	0.152	2.074	14876	10868	19556	0.149
1992	Mackerel, Pacific	3407	0.091	0.885	0.024	1.438	8018	4701	12597	0.256
1993	Mackerel, Pacific	4482	0.029	0.967	0.005	1.516	8613	5228	13382	0.247
1994	Mackerel, Pacific	2822	0.004	0.996	0.000	5.004	9722	3635	17444	0.371
1999	Mackerel, Pacific	19	0	1	0	0.082	342	72	824	0.599
2000	Mackerel, Pacific	19	0	1	0	0.190	710	144	1544	0.518
2006	Mackerel, Pacific	23	0.391	0.609	0	1.917	2659	0	9709	0.965
1999	Mackerel, Unidentified	0				0	0	0	0	
2000	Mackerel, Unidentified	2	0	1	0	0.020	75	0	242	1.015
1990	Midshipman, Plainfin	0				0	0	0	0	
1991	Midshipman, Plainfin	32	0.688	0.125	0.188	0.014	101	56	157	0.259
1992	Midshipman, Plainfin	14	0.929	0	0.071	0.006	33	12	62	0.392
1993	Midshipman, Plainfin	29	0.586	0.310	0.103	0.010	56	32	85	0.242
1994	Midshipman, Plainfin	2	0.500	0	0.500	0.004	7	0	18	0.713
1990	Midshipman, Specklefin	0				0	0	0	0	
1991	Midshipman, Specklefin	20	0.800	0.100	0.100	0.009	63	32	103	0.290
1992	Midshipman, Specklefin	27	0.630	0.333	0.037	0.011	64	24	129	0.437
1993	Midshipman, Specklefin	24	0.625	0.333	0.042	0.008	47	25	71	0.256
1994	Midshipman, Specklefin	14	1	0	0	0.025	49	4	129	0.737
1990	Mola, Common	0				0	0	0	0	
1991	Mola, Common	0				0	0	0	0	
1992	Mola, Common	0				0	0	0	0	
1993	Mola, Common	1	1	0	0	0.000	2	0	6	1.006
1994	Mola, Common	0				0	0	0	0	
1990	Mollusk, Unidentified	0				0	0	0	0	
1991	Mollusk, Unidentified	36	0.472	0.111	0.417	0.016	114	54	191	0.314
1992	Mollusk, Unidentified	75	0.760	0.187	0.053	0.032	177	73	314	0.352
1993	Mollusk, Unidentified	73	0.877	0.096	0.027	0.025	141	69	232	0.299
1994	Mollusk, Unidentified	0				0	0	0	0	
1990	Mullet, Striped	0				0	0	0	0	
1991	Mullet, Striped	0				0	0	0	0	
1992	Mullet, Striped	0				0	0	0	0	
1993	Mullet, Striped	1	0	1	0	0.000	2	0	6	0.996
1994	Mullet, Striped	0				0	0	0	0	
1990	Octopus, Unidentified	10	0	0	1	0.023	69	29	120	0.337
1991	Octopus, Unidentified	65	0.831	0.092	0.077	0.028	205	141	275	0.167
1992	Octopus, Unidentified	18	0.889	0.056	0.056	0.008	43	22	68	0.279
1993	Octopus, Unidentified	16	0.813	0.125	0.063	0.005	31	14	52	0.317
1994	Octopus, Unidentified	7	0.714	0.143	0.143	0.012	25	7	48	0.436
1999	Octopus, Unidentified	3	1	0	0	0.013	54	0	124	0.564
2000	Octopus, Unidentified	8	1	0	0	0.080	299	40	662	0.536
1990	Opaleve	0				0	0	0	0	
1991	Opaleve	21	0.143	0.857	0	0.009	66	10	143	0.523
1992	Opaleve	10	0.300	0.700	0	0.004	24	3	55	0.569
1993	Opaleve	6	0.333	0.667	0	0.002	12	2	24	0.463
1994	Opaleve	0				0	0	0	0	
1990	Pipefish Bay	1	0	0	1	0.002	7	0	22	0.988
1991	Pipefish Bay	2	1	0	0	0.001	7	0	16	0.712
1992	Pipefish Bay	1	1	0	0	0.000	3	0	8	0.997
1993	Pipefish Bay	0				0	0	0	0	
1994	Pipefish Bay	0				0	0	0	0	
1990	Queenfish	2	0	0	1	0.005	14	0	35	0.695
1991	Queenfish	6	0	0.333	0.667	0.003	19	4	38	0.466
1992	Queenfish	0				0	0	0	0	
1993	Queenfish	9	0	0.889	0.111	0.003	18	4	35	0.459
1994	Queenfish	0				0	0	0	0	
1999	Queenfish	2	0	1	0	0.009	36	0	91	0.696
2000	Queenfish	0				0	0	0	0	
1990	Ratfish, Spotted	72	0	0	1	0.163	497	218	844	0.324
1991	Ratfish, Spotted	461	0.315	0.490	0.195	0.202	1449	883	2171	0.228
1992	Ratfish, Spotted	494	0.213	0.745	0.043	0.208	1163	816	1555	0.164
1993	Ratfish, Spotted	705	0.366	0.617	0.017	0.238	1355	833	2117	0.247
1994	Ratfish, Spotted	743	0.828	0.168	0.004	1.317	2560	1010	4468	0.347
1999	Ratfish, Spotted	350	0.626	0.366	0.009	1.509	6296	3001	10807	0.319

Table 4. (Continued)

Year	Species	Individuals				Individuals /day	Individuals			
		observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
2000	Ratfish, Spotted	367	0.071	0.924	0.005	3.670	13712	4377	27484	0.430
2006	Ratfish, Spotted	3	0.667	0	0.333	0.250	347	0	2081	1.516
1990	Ray, Bat	992	0	0	1	2.249	6841	4278	10189	0.223
1991	Ray, Bat	5355	0.713	0.206	0.081	2.346	16821	13156	21139	0.122
1992	Ray, Bat	4038	0.624	0.342	0.034	1.704	9503	7788	11508	0.100
1993	Ray, Bat	5887	0.721	0.272	0.007	1.992	11312	9301	13567	0.096
1994	Ray, Bat	585	0.973	0.019	0.009	1.037	2016	1105	3229	0.272
1999	Ray, Bat	5	0.800	0.200	0	0.022	90	19	177	0.443
2000	Ray, Bat	339	0.575	0.171	0.254	3.390	12666	78	39720	0.979
2006	Ray, Bat	21	0.571	0.429	0	1.750	2428	139	4624	0.582
1990	Ray, California Butterfly	37	0	0	1	0.084	256	0	757	0.873
1991	Ray, California Butterfly	114	0.675	0.211	0.114	0.050	359	191	583	0.284
1992	Ray, California Butterfly	147	0.694	0.279	0.027	0.062	346	182	565	0.284
1993	Ray, California Butterfly	86	0.837	0.163	0	0.029	166	107	231	0.195
1994	Ray, California Butterfly	0				0	0	0	0	
1990	Ray, Pacific Electric	5	0	0	1	0.011	35	7	74	0.528
1991	Ray, Pacific Electric	43	0.744	0.116	0.140	0.019	136	83	201	0.224
1992	Ray, Pacific Electric	45	0.756	0.222	0.022	0.019	106	73	144	0.172
1993	Ray, Pacific Electric	89	0.865	0.124	0.011	0.030	172	132	213	0.122
1994	Ray, Pacific Electric	38	0.974	0	0.026	0.067	131	84	186	0.199
1999	Ray, Pacific Electric	4	0.750	0.250	0	0.017	72	0	170	0.609
2000	Ray, Pacific Electric	1	1	0	0	0.010	38	0	116	0.977
1990	Ray, Unidentified	0				0	0	0	0	
1991	Ray, Unidentified	3	1	0	0	0.001	10	0	22	0.569
1992	Ray, Unidentified	1	1	0	0	0.000	3	0	8	1.000
1993	Ray, Unidentified	15	0.867	0.067	0.067	0.005	29	14	48	0.308
1994	Ray, Unidentified	0				0	0	0	0	
1990	Rockfish Yellowtail	0				0	0	0	0	
1991	Rockfish Yellowtail	1	0	0	1	0.000	4	0	10	1.008
1992	Rockfish Yellowtail	0				0	0	0	0	
1993	Rockfish Yellowtail	0				0	0	0	0	
1994	Rockfish Yellowtail	0				0	0	0	0	
1999	Rockfish, Bank	1	1	0	0	0.004	18	0	56	0.996
2000	Rockfish, Bank	0				0	0	0	0	
1999	Rockfish, Black and Yellow	1	1	0	0	0.004	18	0	57	1.007
2000	Rockfish, Black and Yellow	0				0	0	0	0	
1990	Rockfish, Blue	4	0	0	1	0.009	28	0	87	0.998
1991	Rockfish, Blue	0				0	0	0	0	
1992	Rockfish, Blue	0				0	0	0	0	
1993	Rockfish, Blue	2	1	0	0	0.001	4	0	10	0.709
1994	Rockfish, Blue	1	1	0	0	0.002	4	0	12	1.004
1990	Rockfish, Bocaccio	2	0	0	1	0.005	14	0	36	0.696
1991	Rockfish, Bocaccio	3	0.333	0.333	0.333	0.001	10	0	26	0.745
1992	Rockfish, Bocaccio	6	0.167	0.833	0	0.003	15	0	38	0.705
1993	Rockfish, Bocaccio	22	0	1	0	0.007	43	14	85	0.438
1994	Rockfish, Bocaccio	0				0	0	0	0	
1990	Rockfish, Brown	7	0	0	1	0.016	49	0	143	0.870
1991	Rockfish, Brown	26	0.692	0.308	0	0.011	82	42	134	0.293
1992	Rockfish, Brown	16	0.938	0	0.063	0.007	38	10	77	0.468
1993	Rockfish, Brown	15	0.733	0.267	0	0.005	29	8	58	0.440
1994	Rockfish, Brown	5	0.800	0.200	0	0.009	18	0	44	0.671
1999	Rockfish, Brown	2	1	0	0	0.009	36	0	113	1.009
2000	Rockfish, Brown	3	1	0	0	0.030	113	0	254	0.562
1990	Rockfish, Canary	0				0	0	0	0	
1991	Rockfish, Canary	0				0	0	0	0	
1992	Rockfish, Canary	2	0	1	0	0.001	5	0	12	0.706
1993	Rockfish, Canary	0				0	0	0	0	
1994	Rockfish, Canary	1	0	1	0	0.002	4	0	11	0.992
1990	Rockfish, Chilipepper	0				0	0	0	0	
1991	Rockfish, Chilipepper	0				0	0	0	0	
1992	Rockfish, Chilipepper	0				0	0	0	0	
1993	Rockfish, Chilipepper	3	0	1	0	0.001	6	0	14	0.587
1994	Rockfish, Chilipepper	0				0	0	0	0	
1999	Rockfish, Chilipepper	0				0	0	0	0	
2000	Rockfish, Chilipepper	1	0	1	0	0.010	38	0	120	1.014
1990	Rockfish, Copper	0				0	0	0	0	
1991	Rockfish, Copper	24	0.792	0.208	0	0.011	76	16	163	0.512

Table 4. (Continued)

Year	Species	Individuals			Individuals /day	Individuals			CV	
		observed discarded	Proportion alive	Proportion dead		Proportion unknown	estimated discarded	LoCI		HiCI
1992	Rockfish, Copper	6	0.167	0.833	0	0.003	15	3	29	0.470
1993	Rockfish, Copper	15	0.133	0.667	0.200	0.005	29	8	56	0.419
1994	Rockfish, Copper	1	1	0	0	0.002	4	0	12	1.022
1999	Rockfish, Copper	2	1	0	0	0.009	36	0	92	0.706
2000	Rockfish, Copper	2	0.500	0.500	0	0.020	75	0	193	0.705
2006	Rockfish, Copper	4	0.250	0.750	0	0.333	463	0	925	0.686
1990	Rockfish, Cowcod	0				0	0	0	0	
1991	Rockfish, Cowcod	1	0	1	0	0.000	4	0	10	0.996
1992	Rockfish, Cowcod	0				0	0	0	0	
1993	Rockfish, Cowcod	5	0	1	0	0.002	10	0	26	0.714
1994	Rockfish, Cowcod	0				0	0	0	0	
1990	Rockfish, Flag	0				0	0	0	0	
1991	Rockfish, Flag	0				0	0	0	0	
1992	Rockfish, Flag	1	0	1	0	0.000	3	0	8	0.997
1993	Rockfish, Flag	2	0	1	0	0.001	4	0	10	0.702
1994	Rockfish, Flag	0				0	0	0	0	
1990	Rockfish, Gopher	0				0	0	0	0	
1991	Rockfish, Gopher	3	0.667	0	0.333	0.001	10	0	26	0.739
1992	Rockfish, Gopher	0				0	0	0	0	
1993	Rockfish, Gopher	3	1	0	0	0.001	6	0	18	1.012
1994	Rockfish, Gopher	0				0	0	0	0	
1990	Rockfish, Grass	0				0	0	0	0	
1991	Rockfish, Grass	1	0	1	0	0.000	4	0	10	0.995
1992	Rockfish, Grass	1	1	0	0	0.000	3	0	8	1.000
1993	Rockfish, Grass	0				0	0	0	0	
1994	Rockfish, Grass	0				0	0	0	0	
1990	Rockfish, Kelp	0				0	0	0	0	
1991	Rockfish, Kelp	1	0	1	0	0.000	4	0	10	1.000
1992	Rockfish, Kelp	1	0	1	0	0.000	3	0	8	1.012
1993	Rockfish, Kelp	2	0	1	0	0.001	4	0	10	0.713
1994	Rockfish, Kelp	0				0	0	0	0	
1990	Rockfish, Olive	0				0	0	0	0	
1991	Rockfish, Olive	0				0	0	0	0	
1992	Rockfish, Olive	3	0	1	0	0.001	8	0	17	0.583
1993	Rockfish, Olive	1	1	0	0	0.000	2	0	6	1.006
1994	Rockfish, Olive	0				0	0	0	0	
1990	Rockfish, Other Identified	0				0	0	0	0	
1991	Rockfish, Other Identified	0				0	0	0	0	
1992	Rockfish, Other Identified	1	0	0	1	0.000	3	0	8	0.985
1993	Rockfish, Other Identified	18	0.056	0.889	0.056	0.006	35	8	78	0.531
1994	Rockfish, Other Identified	0				0	0	0	0	
1990	Rockfish, Rosy	3	0	0	1	0.007	21	0	65	0.983
1991	Rockfish, Rosy	0				0	0	0	0	
1992	Rockfish, Rosy	2	1	0	0	0.001	5	0	15	1.000
1993	Rockfish, Rosy	0				0	0	0	0	
1994	Rockfish, Rosy	0				0	0	0	0	
2006	Rockfish, Treefish	2	0	1	0	0.167	232	0	463	0.686
1990	Rockfish, Unidentified	4	0	0	1	0.009	28	7	57	0.489
1991	Rockfish, Unidentified	16	0.500	0.125	0.375	0.007	51	19	93	0.377
1992	Rockfish, Unidentified	9	0.111	0.889	0	0.004	22	10	36	0.331
1993	Rockfish, Unidentified	12	0.333	0.583	0.083	0.004	24	10	39	0.309
1994	Rockfish, Unidentified	4	0.250	0.750	0	0.007	14	4	29	0.495
1999	Rockfish, Unidentified	3	1	0	0	0.013	54	0	145	0.734
2000	Rockfish, Unidentified	1	0	1	0	0.010	38	0	120	1.011
1990	Rockfish, Vermillion	1	0	0	1	0.002	7	0	22	0.990
1991	Rockfish, Vermillion	3	0.667	0	0.333	0.001	10	0	22	0.576
1992	Rockfish, Vermillion	3	0	1	0	0.001	8	0	17	0.571
1993	Rockfish, Vermillion	7	0.143	0.857	0	0.002	14	4	27	0.428
1994	Rockfish, Vermillion	0				0	0	0	0	
1990	Sablefish	1	0	0	1	0.002	7	0	22	0.992
1991	Sablefish	0				0	0	0	0	
1992	Sablefish	0				0	0	0	0	
1993	Sablefish	16	0	1	0	0.005	31	10	60	0.422
1994	Sablefish	0				0	0	0	0	
1999	Sablefish	0				0	0	0	0	
2000	Sablefish	1	0	1	0	0.010	38	0	118	0.996
1990	Salmon, King	2	0	0	1	0.005	14	0	36	0.713

Table 4. (Continued)

Year	Species	Individuals				Individuals /day	Individuals			
		observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
1991	Salmon, King	5	0	0.600	0.400	0.002	16	4	35	0.529
1992	Salmon, King	2	0	1	0	0.001	5	0	12	0.705
1993	Salmon, King	23	0	1	0	0.008	45	24	69	0.269
1994	Salmon, King	11	0.182	0.818	0	0.020	38	11	78	0.463
1999	Salmon, King	32	0	1	0	0.138	576	341	843	0.223
2000	Salmon, King	10	0.100	0.900	0	0.100	374	139	692	0.384
1990	Salmon, Other Identified	0				0	0	0	0	
1991	Salmon, Other Identified	4	0	1	0	0.002	13	0	29	0.607
1992	Salmon, Other Identified	1	0	1	0	0.000	3	0	8	1.002
1993	Salmon, Other Identified	1	1	0	0	0.000	2	0	6	0.992
1994	Salmon, Other Identified	0				0	0	0	0	
1990	Sanddab, Longfin	1	0	0	1	0.002	7	0	22	1.009
1991	Sanddab, Longfin	6	0.667	0.167	0.167	0.003	19	7	35	0.407
1992	Sanddab, Longfin	1	1	0	0	0.000	3	0	8	1.004
1993	Sanddab, Longfin	1	1	0	0	0.000	2	0	6	0.996
1994	Sanddab, Longfin	2	1	0	0	0.004	7	0	18	0.694
1990	Sanddab, Pacific	35	0	0	1	0.079	242	21	671	0.785
1991	Sanddab, Pacific	19	0.368	0.474	0.158	0.008	60	28	98	0.299
1992	Sanddab, Pacific	38	0.079	0.921	0	0.016	90	31	175	0.414
1993	Sanddab, Pacific	154	0.442	0.552	0.006	0.052	296	74	618	0.483
1994	Sanddab, Pacific	2	0.500	0.500	0	0.004	7	0	18	0.714
1999	Sanddab, Pacific	85	0.294	0.706	0	0.366	1529	897	2302	0.236
2000	Sanddab, Pacific	59	0.034	0.966	0	0.590	2205	1009	3700	0.313
1990	Sanddab, Speckled	1	0	0	1	0.002	7	0	22	0.968
1991	Sanddab, Speckled	0				0	0	0	0	
1992	Sanddab, Speckled	1	1	0	0	0.000	3	0	8	0.991
1993	Sanddab, Speckled	1	0	1	0	0.000	2	0	6	1.003
1994	Sanddab, Speckled	0				0	0	0	0	
1999	Sanddab, Speckled	1	0	1	0	0.004	18	0	56	0.991
2000	Sanddab, Speckled	0				0	0	0	0	
1990	Sardine, Pacific	131	0	0	1	0.297	904	229	2118	0.586
1991	Sardine, Pacific	336	0.048	0.497	0.455	0.147	1056	593	1680	0.267
1992	Sardine, Pacific	472	0.059	0.939	0.002	0.199	1111	809	1458	0.151
1993	Sardine, Pacific	95	0.084	0.905	0.011	0.032	183	115	264	0.210
1994	Sardine, Pacific	81	0.049	0.938	0.012	0.144	280	63	606	0.514
1999	Sardine, Pacific	8	0.125	0.875	0	0.034	144	19	332	0.560
2000	Sardine, Pacific	6	0.333	0.667	0	0.060	225	0	534	0.611
2006	Sardine, Pacific	1	0	1	0	0.083	116	0	694	1.532
1990	Sargo	0				0	0	0	0	
1991	Sargo	0				0	0	0	0	
1992	Sargo	0				0	0	0	0	
1993	Sargo	11	0.273	0.727	0	0.004	22	6	41	0.416
1994	Sargo	0				0	0	0	0	
1990	Scallop, Unidentified	0				0	0	0	0	
1991	Scallop, Unidentified	3	0	0	1	0.001	10	0	22	0.581
1992	Scallop, Unidentified	4	0.500	0.250	0.250	0.002	10	3	20	0.498
1993	Scallop, Unidentified	2	0.500	0.500	0	0.001	4	0	10	0.701
1994	Scallop, Unidentified	0				0	0	0	0	
1990	Scorpionfish, California	7	0	0	1	0.016	49	14	94	0.425
1991	Scorpionfish, California	25	0.640	0.240	0.120	0.011	79	44	121	0.255
1992	Scorpionfish, California	42	0.476	0.476	0.048	0.018	99	62	143	0.210
1993	Scorpionfish, California	22	0.545	0.364	0.091	0.007	43	22	66	0.266
1994	Scorpionfish, California	3	0.667	0.333	0	0.005	11	0	24	0.572
2006	Scorpionfish, California	3	0.667	0.333	0	0.250	347	0	694	0.682
1990	Sea Cucumber	9	0	0	1	0.020	63	15	118	0.419
1991	Sea Cucumber	44	0.500	0.091	0.409	0.019	139	58	237	0.332
1992	Sea Cucumber	88	0.557	0.091	0.352	0.037	208	98	345	0.306
1993	Sea Cucumber	99	0.687	0.253	0.061	0.033	191	55	402	0.486
1994	Sea Cucumber	3	1	0	0	0.005	11	0	28	0.749
2006	Sea Cucumber	13	1	0	0	1.083	1503	0	3584	0.625
1990	Sea Star	358	0	0	1	0.812	2469	1814	3251	0.148
1991	Sea Star	2905	0.849	0.003	0.148	1.272	9125	8105	10208	0.059
1992	Sea Star	2937	0.887	0.043	0.070	1.239	6912	5395	8761	0.125
1993	Sea Star	2680	0.896	0.060	0.044	0.907	5150	4347	6042	0.083
1994	Sea Star	619	0.990	0.006	0.003	1.098	2133	1498	2842	0.161
1999	Sea Star	134	0.948	0.015	0.037	0.578	2411	1844	3034	0.126
2000	Sea Star	98	0.969	0.020	0.010	0.980	3662	2171	5604	0.242

Table 4. (Continued)

Year	Species	Individuals				Individuals /day	Individuals			
		observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
2006	Sea Star	7	0.429	0	0.571	0.583	810	0	1619	0.691
1990	Sea Urchin	378	0	0	1	0.857	2607	527	5445	0.491
1991	Sea Urchin	368	0.636	0.245	0.120	0.161	1156	525	1983	0.327
1992	Sea Urchin	1127	0.295	0.678	0.027	0.476	2653	1198	4804	0.353
1993	Sea Urchin	1642	0.247	0.729	0.024	0.555	3156	1907	4633	0.221
1994	Sea Urchin	1	1	0	0	0.002	4	0	11	0.977
1999	Sea Urchin	12	0.583	0.333	0.083	0.052	216	104	361	0.311
2000	Sea Urchin	1	1	0	0	0.010	38	0	120	1.011
2006	Sea Urchin	12	1	0	0	1.000	1387	0	2774	0.686
1990	Seabass, White	12	0	0	1	0.027	83	20	170	0.482
1991	Seabass, White	48	0.271	0.667	0.063	0.021	151	96	214	0.202
1992	Seabass, White	83	0.145	0.855	0	0.035	196	128	277	0.196
1993	Seabass, White	69	0.101	0.884	0.014	0.023	133	86	188	0.193
1994	Seabass, White	95	0.074	0.916	0.011	0.168	328	147	596	0.353
1999	Seabass, White	1	0	1	0	0.004	18	0	56	1.002
2000	Seabass, White	2	0.500	0.500	0	0.020	75	0	187	0.681
1990	Searobin, Lumptail	0				0	0	0	0	
1991	Searobin, Lumptail	1	0	1	0	0.000	4	0	10	0.999
1992	Searobin, Lumptail	2	0.500	0.500	0	0.001	5	0	12	0.698
1993	Searobin, Lumptail	1	0	1	0	0.000	2	0	6	1.002
1994	Searobin, Lumptail	0				0	0	0	0	
1999	Searobin, Lumptail	1	1	0	0	0.004	18	0	57	1.001
2000	Searobin, Lumptail	0				0	0	0	0	
1990	Senorita	0				0	0	0	0	
1991	Senorita	0				0	0	0	0	
1992	Senorita	1	0	1	0	0.000	3	0	8	1.001
1993	Senorita	0				0	0	0	0	
1994	Senorita	0				0	0	0	0	
1990	Shad, American	0				0	0	0	0	
1991	Shad, American	35	0.057	0.457	0.486	0.015	110	57	172	0.270
1992	Shad, American	23	0.043	0.913	0.043	0.010	55	20	103	0.401
1993	Shad, American	33	0.091	0.909	0	0.011	64	20	142	0.534
1994	Shad, American	7	0.143	0.857	0	0.012	25	8	42	0.357
1999	Shad, American	5	0	1	0	0.022	90	19	177	0.438
2000	Shad, American	16	0	1	0	0.160	598	184	1182	0.432
1990	Shark, Basking	0				0	0	0	0	
1991	Shark, Basking	1	1	0	0	0.000	4	0	10	0.992
1992	Shark, Basking	0				0	0	0	0	
1993	Shark, Basking	0				0	0	0	0	
1994	Shark, Basking	0				0	0	0	0	
1990	Shark, Blue	33	0	0	1	0.075	228	96	401	0.344
1991	Shark, Blue	5	0.200	0.600	0.200	0.002	16	4	32	0.449
1992	Shark, Blue	7	0.571	0.429	0	0.003	17	5	30	0.376
1993	Shark, Blue	7	0.143	0.857	0	0.002	14	4	24	0.375
1994	Shark, Blue	3	0.333	0.667	0	0.005	11	0	24	0.573
1999	Shark, Blue	0				0	0	0	0	
2000	Shark, Blue	1	0	1	0	0.010	38	0	117	0.983
1990	Shark, Brown Smoothhound	119	0	0	1	0.270	821	428	1308	0.277
1991	Shark, Brown Smoothhound	227	0.493	0.269	0.238	0.099	714	518	940	0.150
1992	Shark, Brown Smoothhound	467	0.535	0.441	0.024	0.197	1099	472	2166	0.432
1993	Shark, Brown Smoothhound	501	0.705	0.259	0.036	0.169	963	587	1443	0.230
1994	Shark, Brown Smoothhound	455	0.615	0.343	0.042	0.807	1568	1064	2216	0.189
1999	Shark, Brown Smoothhound	54	0.556	0.444	0	0.233	972	617	1368	0.199
2000	Shark, Brown Smoothhound	64	0.438	0.563	0	0.640	2392	1074	4199	0.339
1990	Shark, Common Thresher	0				0	0	0	0	
1991	Shark, Common Thresher	0				0	0	0	0	
1992	Shark, Common Thresher	9	0.111	0.889	0	0.004	22	3	55	0.688
1993	Shark, Common Thresher	3	0.333	0.667	0	0.001	6	0	14	0.583
1994	Shark, Common Thresher	1	1	0	0	0.002	4	0	11	1.002
1999	Shark, Common Thresher	1	0	1	0	0.004	18	0	56	0.992
2000	Shark, Common Thresher	0				0	0	0	0	
1990	Shark, Gray Smoothhound	7	0	0	1	0.016	49	8	101	0.498
1991	Shark, Gray Smoothhound	49	0.510	0.306	0.184	0.021	154	87	244	0.261
1992	Shark, Gray Smoothhound	76	0.697	0.303	0	0.032	179	100	283	0.265
1993	Shark, Gray Smoothhound	50	0.780	0.180	0.040	0.017	97	51	152	0.268
1994	Shark, Gray Smoothhound	2	1	0	0	0.004	7	0	18	0.719
1999	Shark, Gray Smoothhound	0				0	0	0	0	

Table 4. (Continued)

Year	Species	Individuals				Individuals /day	Individuals			
		observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
2000	Shark, Gray Smoothhound	15	0.600	0.400	0	0.150	561	74	1232	0.523
1990	Shark, Horn	49	0	0	1	0.111	338	103	660	0.427
1991	Shark, Horn	202	0.921	0.015	0.064	0.088	635	349	1004	0.265
1992	Shark, Horn	105	0.876	0.114	0.010	0.044	248	159	348	0.197
1993	Shark, Horn	260	0.665	0.315	0.019	0.088	500	301	752	0.232
1994	Shark, Horn	5	1	0	0	0.009	18	4	34	0.439
2006	Shark, Horn	2	1	0	0	0.167	232	0	694	0.753
1990	Shark, Leopard	3	0	0	1	0.007	21	0	48	0.562
1991	Shark, Leopard	15	0.600	0.267	0.133	0.007	48	20	81	0.329
1992	Shark, Leopard	5	0.200	0.600	0.200	0.002	12	3	24	0.447
1993	Shark, Leopard	25	0.320	0.640	0.040	0.008	49	20	92	0.393
1994	Shark, Leopard	0				0	0	0	0	
1999	Shark, Leopard	1	1	0	0	0.004	18	0	56	1.001
2000	Shark, Leopard	5	0.200	0.800	0	0.050	187	0	472	0.657
1990	Shark, Other Identified	0				0	0	0	0	
1991	Shark, Other Identified	0				0	0	0	0	
1992	Shark, Other Identified	1	0	1	0	0.000	3	0	8	0.998
1993	Shark, Other Identified	1	0	1	0	0.000	2	0	6	0.996
1994	Shark, Other Identified	0				0	0	0	0	
1999	Shark, Other Identified	4	0.750	0.250	0	0.017	72	0	169	0.610
2000	Shark, Other Identified	0				0	0	0	0	
1990	Shark, Pacific Angel	288	0	0	1	0.653	1986	768	3510	0.356
1991	Shark, Pacific Angel	908	0.677	0.111	0.211	0.398	2853	1488	4736	0.294
1992	Shark, Pacific Angel	761	0.859	0.064	0.076	0.321	1791	997	3078	0.308
1993	Shark, Pacific Angel	800	0.924	0.066	0.010	0.271	1538	1232	1886	0.110
1994	Shark, Pacific Angel	149	0.953	0.040	0.007	0.264	514	330	742	0.207
1999	Shark, Pacific Angel	1	0	0	1	0.004	18	0	56	0.995
2000	Shark, Pacific Angel	0				0	0	0	0	
2006	Shark, Pacific Angel	1	1	0	0	0.083	116	0	232	0.687
1990	Shark, Prickly	0				0	0	0	0	
1991	Shark, Prickly	0				0	0	0	0	
1992	Shark, Prickly	0				0	0	0	0	
1993	Shark, Prickly	0				0	0	0	0	
1994	Shark, Prickly	1	1	0	0	0.002	4	0	11	0.990
1990	Shark, Sevengill	2	0	0	1	0.005	14	0	36	0.701
1991	Shark, Sevengill	2	1	0	0	0.001	7	0	16	0.698
1992	Shark, Sevengill	3	0.667	0.333	0	0.001	8	0	17	0.574
1993	Shark, Sevengill	7	0.571	0.429	0	0.002	14	4	25	0.375
1994	Shark, Sevengill	3	0.667	0.333	0	0.005	11	0	24	0.578
1999	Shark, Sevengill	1	0	1	0	0.004	18	0	56	0.983
2000	Shark, Sevengill	1	0	0	1	0.010	38	0	120	1.005
1990	Shark, Shortfin Mako	0				0	0	0	0	
1991	Shark, Shortfin Mako	1	1	0	0	0.000	4	0	10	0.999
1992	Shark, Shortfin Mako	2	0.500	0.500	0	0.001	5	0	12	0.715
1993	Shark, Shortfin Mako	1	0	1	0	0.000	2	0	6	1.007
1994	Shark, Shortfin Mako	0				0	0	0	0	
1990	Shark, Sixgill	7	0	0	1	0.016	49	0	113	0.612
1991	Shark, Sixgill	22	0.409	0.273	0.318	0.010	70	30	116	0.321
1992	Shark, Sixgill	17	0.294	0.647	0.059	0.007	41	20	64	0.281
1993	Shark, Sixgill	30	0.500	0.500	0	0.010	58	36	83	0.211
1994	Shark, Sixgill	11	0.636	0.273	0.091	0.020	38	17	64	0.321
1999	Shark, Sixgill	18	0.722	0.278	0	0.078	324	183	476	0.233
2000	Shark, Sixgill	12	0.333	0.667	0	0.120	449	178	793	0.353
1990	Shark, Smooth Hammerhead	0				0	0	0	0	
1991	Shark, Smooth Hammerhead	0				0	0	0	0	
1992	Shark, Smooth Hammerhead	0				0	0	0	0	
1993	Shark, Smooth Hammerhead	1	0	1	0	0.000	2	0	6	1.011
1994	Shark, Smooth Hammerhead	0				0	0	0	0	
1990	Shark, Soupfin	2	0	0	1	0.005	14	0	35	0.689
1991	Shark, Soupfin	23	0.043	0.739	0.217	0.010	73	10	163	0.553
1992	Shark, Soupfin	22	0.773	0.227	0	0.009	52	8	121	0.583
1993	Shark, Soupfin	17	0.353	0.647	0	0.006	33	12	61	0.382
1994	Shark, Soupfin	3	1	0	0	0.005	11	0	25	0.583
1999	Shark, Soupfin	4	0.750	0.250	0	0.017	72	0	170	0.607
2000	Shark, Soupfin	7	0.429	0.571	0	0.070	262	36	629	0.604
2006	Shark, Soupfin	2	1	0	0	0.167	232	0	1387	1.497
1990	Shark, Swell	122	0	0	1	0.277	842	484	1253	0.235

Table 4. (Continued)

Year	Species	Individuals				Individuals /day	Individuals			
		observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
1991	Shark, Swell	286	0.836	0.024	0.140	0.125	899	597	1286	0.196
1992	Shark, Swell	233	0.888	0.077	0.034	0.098	549	389	759	0.174
1993	Shark, Swell	437	0.927	0.059	0.014	0.148	840	653	1062	0.124
1994	Shark, Swell	303	0.944	0.040	0.017	0.537	1044	804	1316	0.126
2006	Shark, Swell	20	0.800	0.200	0	1.667	2312	694	3468	0.338
1990	Shark, Unidentified	2	0	0	1	0.005	14	0	44	1.020
1991	Shark, Unidentified	19	0.263	0.211	0.526	0.008	60	32	95	0.272
1992	Shark, Unidentified	11	0.091	0.818	0.091	0.005	26	12	43	0.303
1993	Shark, Unidentified	14	0.571	0.429	0	0.005	27	14	43	0.281
1994	Shark, Unidentified	1	0	1	0	0.002	4	0	11	1.019
1999	Shark, Unidentified	7	0	0	1	0.030	126	0	339	0.740
2000	Shark, Unidentified	1	1	0	0	0.010	38	0	120	1.013
1990	Shark, White	0				0	0	0	0	
1991	Shark, White	1	0	1	0	0.000	4	0	10	0.990
1992	Shark, White	0				0	0	0	0	
1993	Shark, White	0				0	0	0	0	
1994	Shark, White	0				0	0	0	0	
1990	Sheephead, California	3	0	0	1	0.007	21	0	47	0.565
1991	Sheephead, California	15	0.600	0.333	0.067	0.007	48	16	92	0.426
1992	Sheephead, California	5	0.200	0.400	0.400	0.002	12	0	31	0.673
1993	Sheephead, California	0				0	0	0	0	
1994	Sheephead, California	0				0	0	0	0	
1990	Shrimp, Mantis	0				0	0	0	0	
1991	Shrimp, Mantis	2	1	0	0	0.001	7	0	16	0.704
1992	Shrimp, Mantis	1	0	1	0	0.000	3	0	8	1.000
1993	Shrimp, Mantis	2	1	0	0	0.001	4	0	10	0.703
1994	Shrimp, Mantis	0				0	0	0	0	
1990	Shrimp, Unidentified	0				0	0	0	0	
1991	Shrimp, Unidentified	1	1	0	0	0.000	4	0	10	1.008
1992	Shrimp, Unidentified	1	1	0	0	0.000	3	0	8	1.005
1993	Shrimp, Unidentified	2	1	0	0	0.001	4	0	10	0.698
1994	Shrimp, Unidentified	0				0	0	0	0	
1990	Skate, Big	131	0	0	1	0.297	904	399	1541	0.323
1991	Skate, Big	144	0.826	0.014	0.160	0.063	453	276	670	0.222
1992	Skate, Big	69	0.942	0.043	0.014	0.029	163	109	223	0.179
1993	Skate, Big	140	0.943	0.050	0.007	0.047	270	198	351	0.145
1994	Skate, Big	71	1	0	0	0.126	245	169	332	0.168
1999	Skate, Big	244	0.869	0.131	0	1.052	4389	3357	5577	0.130
2000	Skate, Big	294	0.935	0.065	0	2.940	10984	7680	14864	0.169
1990	Skate, California	617	0	0	1	1.399	4255	3088	5541	0.148
1991	Skate, California	3475	0.697	0.075	0.228	1.522	10916	8936	12950	0.094
1992	Skate, California	1718	0.782	0.175	0.042	0.725	4043	3401	4744	0.084
1993	Skate, California	1614	0.895	0.092	0.014	0.546	3102	2641	3608	0.080
1994	Skate, California	498	0.932	0.064	0.004	0.883	1716	1187	2352	0.175
1999	Skate, California	744	0.917	0.079	0.004	3.207	13383	11055	15914	0.094
2000	Skate, California	358	0.830	0.170	0	3.580	13375	9668	17658	0.152
2006	Skate, California	6	1	0	0	0.500	694	0	2081	0.852
1990	Skate, Longnose	24	0	0	1	0.054	166	45	329	0.445
1991	Skate, Longnose	115	0.774	0.200	0.026	0.050	362	136	634	0.356
1992	Skate, Longnose	263	0.905	0.091	0.004	0.111	619	355	960	0.251
1993	Skate, Longnose	118	0.805	0.195	0	0.040	227	149	320	0.195
1994	Skate, Longnose	212	0.991	0.009	0	0.376	731	397	1148	0.262
1999	Skate, Longnose	78	0.846	0.141	0.013	0.336	1403	722	2270	0.281
2000	Skate, Longnose	51	0.765	0.235	0	0.510	1906	494	3918	0.461
1990	Skate, Other Identified	0				0	0	0	0	
1991	Skate, Other Identified	0				0	0	0	0	
1992	Skate, Other Identified	2	1	0	0	0.001	5	0	12	0.703
1993	Skate, Other Identified	6	0.833	0.167	0	0.002	12	2	25	0.523
1994	Skate, Other Identified	0				0	0	0	0	
1990	Skate, Starry	25	0	0	1	0.057	173	44	342	0.441
1991	Skate, Starry	23	0.478	0	0.522	0.010	73	7	179	0.633
1992	Skate, Starry	8	0.750	0.250	0	0.003	19	7	36	0.394
1993	Skate, Starry	26	0.615	0.385	0	0.009	50	16	100	0.438
1994	Skate, Starry	5	1	0	0	0.009	18	4	35	0.450
1999	Skate, Starry	9	1	0	0	0.039	162	53	312	0.418
2000	Skate, Starry	10	0.600	0.400	0	0.100	374	109	755	0.457
1990	Skate, Unidentified	7	0	0	1	0.016	49	8	102	0.502

Table 4. (Continued)

Year	Species	Individuals				Individuals /day	Individuals			
		observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
1991	Skate, Unidentified	111	0.802	0.135	0.063	0.049	349	39	930	0.785
1992	Skate, Unidentified	9	0.556	0.333	0.111	0.004	22	5	43	0.459
1993	Skate, Unidentified	36	0.778	0.167	0.056	0.012	70	37	111	0.276
1994	Skate, Unidentified	0				0	0	0	0	
1999	Skate, Unidentified	65	0.569	0.062	0.369	0.280	1170	545	2008	0.323
2000	Skate, Unidentified	11	0.909	0.091	0	0.110	411	0	1197	0.829
1990	Snail, Moon	0				0	0	0	0	
1991	Snail, Moon	115	0.565	0.017	0.417	0.050	362	230	518	0.205
1992	Snail, Moon	66	0.985	0	0.015	0.028	156	87	241	0.253
1993	Snail, Moon	57	0.667	0.263	0.070	0.019	110	49	192	0.337
1994	Snail, Moon	92	0.902	0.065	0.033	0.163	317	164	498	0.271
1990	Snail, Unidentified	88	0	0	1	0.200	607	242	1054	0.342
1991	Snail, Unidentified	531	0.499	0.002	0.499	0.233	1668	934	2566	0.255
1992	Snail, Unidentified	380	0.974	0.011	0.016	0.160	895	617	1209	0.170
1993	Snail, Unidentified	107	0.981	0	0.019	0.036	206	96	366	0.343
1994	Snail, Unidentified	0				0	0	0	0	
1999	Snail, Unidentified	7	0.857	0	0.143	0.030	126	36	241	0.421
2000	Snail, Unidentified	0				0	0	0	0	
1990	Sole, Bigmouth	1	0	0	1	0.002	7	0	22	1.010
1991	Sole, Bigmouth	5	0.400	0.200	0.400	0.002	16	4	32	0.443
1992	Sole, Bigmouth	3	0.667	0.333	0	0.001	8	0	17	0.579
1993	Sole, Bigmouth	1	1	0	0	0.000	2	0	6	1.008
1994	Sole, Bigmouth	0				0	0	0	0	
1990	Sole, Dover	0				0	0	0	0	
1991	Sole, Dover	2	1	0	0	0.001	7	0	16	0.709
1992	Sole, Dover	0				0	0	0	0	
1993	Sole, Dover	13	0.615	0.385	0	0.004	25	0	75	0.926
1994	Sole, Dover	0				0	0	0	0	
1990	Sole, English	1	0	0	1	0.002	7	0	22	1.001
1991	Sole, English	13	0.538	0.308	0.154	0.006	41	22	65	0.275
1992	Sole, English	11	0.273	0.727	0	0.005	26	10	48	0.375
1993	Sole, English	30	0.967	0.033	0	0.010	58	8	148	0.701
1994	Sole, English	11	0.818	0.182	0	0.020	38	17	64	0.314
1990	Sole, Fantail	1	0	0	1	0.002	7	0	22	1.003
1991	Sole, Fantail	15	0.533	0.333	0.133	0.007	48	19	83	0.345
1992	Sole, Fantail	7	0.429	0.571	0	0.003	17	5	32	0.429
1993	Sole, Fantail	0				0	0	0	0	
1994	Sole, Fantail	2	0.500	0.500	0	0.004	7	0	18	0.705
1990	Sole, Petrale	1	0	0	1	0.002	7	0	21	0.970
1991	Sole, Petrale	4	0.500	0.250	0.250	0.002	13	4	26	0.498
1992	Sole, Petrale	6	0.667	0.333	0	0.003	15	5	27	0.405
1993	Sole, Petrale	5	0.600	0.400	0	0.002	10	0	23	0.598
1994	Sole, Petrale	2	1	0	0	0.004	7	0	18	0.700
1999	Sole, Petrale	2	1	0	0	0.009	36	0	91	0.696
2000	Sole, Petrale	2	0	1	0	0.020	75	0	191	0.698
1990	Sole, Rex	0				0	0	0	0	
1991	Sole, Rex	1	1	0	0	0.000	4	0	10	1.014
1992	Sole, Rex	0				0	0	0	0	
1993	Sole, Rex	2	0.500	0.500	0	0.001	4	0	10	0.707
1994	Sole, Rex	0				0	0	0	0	
1990	Sole, Rock	2	0	0	1	0.005	14	0	36	0.697
1991	Sole, Rock	0				0	0	0	0	
1992	Sole, Rock	2	1	0	0	0.001	5	0	12	0.713
1993	Sole, Rock	2	1	0	0	0.001	4	0	10	0.709
1994	Sole, Rock	1	1	0	0	0.002	4	0	11	1.007
1999	Sole, Rock	3	1	0	0	0.013	54	0	168	0.993
2000	Sole, Rock	0				0	0	0	0	
1990	Sole, Sand	7	0	0	1	0.016	49	7	108	0.547
1991	Sole, Sand	7	0	0	1	0.003	22	0	56	0.650
1992	Sole, Sand	0				0	0	0	0	
1993	Sole, Sand	0				0	0	0	0	
1994	Sole, Sand	0				0	0	0	0	
1999	Sole, Sand	1	1	0	0	0.004	18	0	57	0.995
2000	Sole, Sand	3	0	1	0	0.030	113	0	358	1.005
1990	Sole, Slender	0				0	0	0	0	
1991	Sole, Slender	0				0	0	0	0	
1992	Sole, Slender	0				0	0	0	0	

Table 4. (Continued)

Year	Species	Individuals				Individuals /day	Individuals			
		observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
1993	Sole, Slender	1	1	0	0	0.000	2	0	6	1.010
1994	Sole, Slender	0				0	0	0	0	
1990	Squid, Market	4	0	0	1	0.009	28	0	80	0.797
1991	Squid, Market	1	1	0	0	0.000	4	0	10	1.005
1992	Squid, Market	2	0	1	0	0.001	5	0	12	0.707
1993	Squid, Market	3	0.667	0.333	0	0.001	6	0	14	0.568
1994	Squid, Market	1	0	1	0	0.002	4	0	11	1.012
1990	Stargazer Smooth	0				0	0	0	0	
1991	Stargazer Smooth	4	0.750	0	0.250	0.002	13	0	35	0.778
1992	Stargazer Smooth	4	1	0	0	0.002	10	0	24	0.708
1993	Stargazer Smooth	2	1	0	0	0.001	4	0	10	0.705
1994	Stargazer Smooth	0				0	0	0	0	
1990	Stingray, Pelagic	0				0	0	0	0	
1991	Stingray, Pelagic	0				0	0	0	0	
1992	Stingray, Pelagic	1	0	1	0	0.000	3	0	8	0.994
1993	Stingray, Pelagic	1	1	0	0	0.000	2	0	6	1.014
1994	Stingray, Pelagic	0				0	0	0	0	
1990	Stingray, Round	4	0	0	1	0.009	28	0	87	0.986
1991	Stingray, Round	15	0.533	0.400	0.067	0.007	48	20	83	0.342
1992	Stingray, Round	24	0.708	0.250	0.042	0.010	57	24	101	0.351
1993	Stingray, Round	40	0.900	0.100	0	0.014	77	45	116	0.232
1994	Stingray, Round	0				0	0	0	0	
1990	Sturgeon Unidentified	0				0	0	0	0	
1991	Sturgeon Unidentified	0				0	0	0	0	
1992	Sturgeon Unidentified	2	0.500	0.500	0	0.001	5	0	12	0.707
1993	Sturgeon Unidentified	0				0	0	0	0	
1994	Sturgeon Unidentified	0				0	0	0	0	
1999	Sturgeon Unidentified	0				0	0	0	0	
2000	Sturgeon Unidentified	2	1	0	0	0.020	75	0	191	0.696
1990	Sturgeon, Green	0				0	0	0	0	
1991	Sturgeon, Green	1	0	1	0	0.000	4	0	10	1.008
1992	Sturgeon, Green	0				0	0	0	0	
1993	Sturgeon, Green	1	0	1	0	0.000	2	0	6	0.996
1994	Sturgeon, Green	0				0	0	0	0	
1999	Sturgeon, Green	7	1	0	0	0.030	126	38	227	0.370
2000	Sturgeon, Green	1	1	0	0	0.010	38	0	117	0.982
1990	Sturgeon, White	0				0	0	0	0	
1991	Sturgeon, White	1	0	0	1	0.000	4	0	10	1.004
1992	Sturgeon, White	0				0	0	0	0	
1993	Sturgeon, White	0				0	0	0	0	
1994	Sturgeon, White	0				0	0	0	0	
1990	Surfperch Barred	0				0	0	0	0	
1991	Surfperch Barred	2	1	0	0	0.001	7	0	16	0.703
1992	Surfperch Barred	3	1	0	0	0.001	8	0	22	1.014
1993	Surfperch Barred	2	0.500	0.500	0	0.001	4	0	10	0.712
1994	Surfperch Barred	0				0	0	0	0	
1990	Surfperch Black	1	0	0	1	0.002	7	0	22	0.979
1991	Surfperch Black	1	0	1	0	0.000	4	0	10	1.000
1992	Surfperch Black	0				0	0	0	0	
1993	Surfperch Black	1	0	1	0	0.000	2	0	6	1.001
1994	Surfperch Black	0				0	0	0	0	
1990	Surfperch Other Identified	0				0	0	0	0	
1991	Surfperch Other Identified	0				0	0	0	0	
1992	Surfperch Other Identified	1	0	1	0	0.000	3	0	8	0.993
1993	Surfperch Other Identified	0				0	0	0	0	
1994	Surfperch Other Identified	0				0	0	0	0	
1990	Surfperch Pile	0				0	0	0	0	
1991	Surfperch Pile	0				0	0	0	0	
1992	Surfperch Pile	1	1	0	0	0.000	3	0	8	1.003
1993	Surfperch Pile	0				0	0	0	0	
1994	Surfperch Pile	0				0	0	0	0	
1990	Surfperch, Pink	1	0	0	1	0.002	7	0	22	0.997
1991	Surfperch, Pink	0				0	0	0	0	
1992	Surfperch, Pink	0				0	0	0	0	
1993	Surfperch, Pink	0				0	0	0	0	
1994	Surfperch, Pink	0				0	0	0	0	
1990	Surfperch, Rainbow	0				0	0	0	0	

Table 4. (Continued)

Year	Species	Individuals				Individuals /day	Individuals			
		observed discarded	Proportion alive	Proportion dead	Proportion unknown		estimated discarded	LoCI	HiCI	CV
1991	Surfperch, Rainbow	1	0	1	0	0.000	4	0	10	1.007
1992	Surfperch, Rainbow	0				0	0	0	0	
1993	Surfperch, Rainbow	0				0	0	0	0	
1994	Surfperch, Rainbow	0				0	0	0	0	
1990	Surfperch, Rubberlip	3	0	0	1	0.007	21	0	48	0.569
1991	Surfperch, Rubberlip	10	0.700	0.200	0.100	0.004	32	13	54	0.342
1992	Surfperch, Rubberlip	5	0.600	0.400	0	0.002	12	3	24	0.444
1993	Surfperch, Rubberlip	0				0	0	0	0	
1994	Surfperch, Rubberlip	0				0	0	0	0	
1990	Surfperch, Shiner	0				0	0	0	0	
1991	Surfperch, Shiner	0				0	0	0	0	
1992	Surfperch, Shiner	2	0.500	0.500	0	0.001	5	0	12	0.712
1993	Surfperch, Shiner	0				0	0	0	0	
1994	Surfperch, Shiner	0				0	0	0	0	
1990	Surfperch, Silver	0				0	0	0	0	
1991	Surfperch, Silver	1	0	1	0	0.000	4	0	10	1.013
1992	Surfperch, Silver	0				0	0	0	0	
1993	Surfperch, Silver	1	0	1	0	0.000	2	0	6	1.010
1994	Surfperch, Silver	0				0	0	0	0	
1990	Surfperch, Unidentified	2	0	0	1	0.005	14	0	36	0.703
1991	Surfperch, Unidentified	7	0.429	0.429	0.143	0.003	22	4	48	0.513
1992	Surfperch, Unidentified	4	0.500	0.500	0	0.002	10	3	20	0.506
1993	Surfperch, Unidentified	1	0	1	0	0.000	2	0	6	0.987
1994	Surfperch, Unidentified	13	0.462	0.538	0	0.023	45	0	135	0.919
1990	Surfperch, Walleye	1	0	0	1	0.002	7	0	22	1.007
1991	Surfperch, Walleye	0				0	0	0	0	
1992	Surfperch, Walleye	0				0	0	0	0	
1993	Surfperch, Walleye	0				0	0	0	0	
1994	Surfperch, Walleye	0				0	0	0	0	
1990	Surfperch, White	0				0	0	0	0	
1991	Surfperch, White	2	0.500	0.500	0	0.001	7	0	16	0.712
1992	Surfperch, White	2	0	1	0	0.001	5	0	12	0.707
1993	Surfperch, White	0				0	0	0	0	
1994	Surfperch, White	2	1	0	0	0.004	7	0	18	0.705
1990	Thornback	612	0	0	1	1.388	4221	1734	8203	0.420
1991	Thornback	1151	0.925	0.021	0.054	0.504	3616	2939	4387	0.102
1992	Thornback	763	0.900	0.059	0.041	0.322	1796	1346	2421	0.156
1993	Thornback	581	0.948	0.038	0.014	0.197	1117	887	1386	0.114
1994	Thornback	5	1	0	0	0.009	18	0	41	0.598
1990	Tonguefish, California	0				0	0	0	0	
1991	Tonguefish, California	2	0	1	0	0.001	7	0	20	0.994
1992	Tonguefish, California	0				0	0	0	0	
1993	Tonguefish, California	0				0	0	0	0	
1994	Tonguefish, California	1	1	0	0	0.002	4	0	11	0.997
1990	Tuna, Yellowfin	0				0	0	0	0	
1991	Tuna, Yellowfin	0				0	0	0	0	
1992	Tuna, Yellowfin	2	0	1	0	0.001	5	0	15	0.996
1993	Tuna, Yellowfin	1	0	1	0	0.000	2	0	6	1.001
1994	Tuna, Yellowfin	0				0	0	0	0	
1990	Tunicates, Pelagic	0				0	0	0	0	
1991	Tunicates, Pelagic	0				0	0	0	0	
1992	Tunicates, Pelagic	0				0	0	0	0	
1993	Tunicates, Pelagic	1	1	0	0	0.000	2	0	6	1.006
1994	Tunicates, Pelagic	49	0.367	0.020	0.612	0.087	169	73	288	0.329
1999	Tunicates, Pelagic	31	1	0	0	0.134	558	0	1373	0.645
2000	Tunicates, Pelagic	0				0	0	0	0	
1990	Turbot Hornyhead	9	0	0	1	0.020	63	14	136	0.521
1991	Turbot Hornyhead	51	0.706	0.118	0.176	0.022	161	113	213	0.159
1992	Turbot Hornyhead	58	0.862	0.103	0.034	0.024	137	88	196	0.203
1993	Turbot Hornyhead	34	0.882	0.118	0	0.012	66	42	93	0.201
1994	Turbot Hornyhead	2	1	0	0	0.004	7	0	18	0.706
1999	Turbot Hornyhead	0				0	0	0	0	
2000	Turbot Hornyhead	1	1	0	0	0.010	38	0	120	1.008
1990	Turbot, C-O	0				0	0	0	0	
1991	Turbot, C-O	1	1	0	0	0.000	4	0	10	1.006
1992	Turbot, C-O	1	1	0	0	0.000	3	0	8	1.005
1993	Turbot, C-O	0				0	0	0	0	

Table 4. (Continued)

Year	Species	Individuals observed discarded	Proportion alive	Proportion dead	Proportion unknown	Individuals /day	Individuals estimated discarded	LoCI	HiCI	CV
1994	Turbot, C-O	0				0	0	0	0	
1990	Turbot, Curlfin	1	0	0	1	0.002	7	0	22	0.998
1991	Turbot, Curlfin	1	1	0	0	0.000	4	0	10	0.997
1992	Turbot, Curlfin	1	1	0	0	0.000	3	0	8	0.993
1993	Turbot, Curlfin	0				0	0	0	0	
1994	Turbot, Curlfin	0				0	0	0	0	
1990	Turbot, Diamond	5	0	0	1	0.011	35	0	87	0.658
1991	Turbot, Diamond	12	0.667	0.083	0.250	0.005	38	17	63	0.309
1992	Turbot, Diamond	19	0.632	0.316	0.053	0.008	45	24	68	0.250
1993	Turbot, Diamond	18	0.889	0.111	0	0.006	35	18	54	0.267
1994	Turbot, Diamond	4	0.750	0.250	0	0.007	14	4	29	0.497
1990	Turbot, Spotted	0				0	0	0	0	
1991	Turbot, Spotted	3	0.333	0	0.667	0.001	10	0	22	0.576
1992	Turbot, Spotted	3	1	0	0	0.001	8	0	20	0.740
1993	Turbot, Spotted	7	1	0	0	0.002	14	4	26	0.427
1994	Turbot, Spotted	0				0	0	0	0	
1990	Unknown Species	0				0	0	0	0	
1991	Unknown Species	0				0	0	0	0	
1992	Unknown Species	3	0.333	0.667	0	0.001	8	0	20	0.753
1993	Unknown Species	0				0	0	0	0	
1994	Unknown Species	0				0	0	0	0	
1999	Unknown Species	4	0	0	1	0.017	72	18	147	0.488
2000	Unknown Species	0				0	0	0	0	
1990	Whelk	317	0	0	1	0.719	2186	625	4704	0.501
1991	Whelk	2060	0.773	0.002	0.225	0.902	6471	5195	7873	0.106
1992	Whelk	2182	0.923	0.033	0.045	0.921	5135	3906	6578	0.133
1993	Whelk	1457	0.934	0.031	0.035	0.493	2800	2205	3450	0.114
1994	Whelk	137	1	0	0	0.243	472	246	745	0.271
1990	Yellowtail	17	0	0	1	0.039	118	0	340	0.886
1991	Yellowtail	0				0	0	0	0	
1992	Yellowtail	0				0	0	0	0	
1993	Yellowtail	10	0	1	0	0.003	20	4	44	0.551
1994	Yellowtail	0				0	0	0	0	
1990	Zebraperch	1	0	0	1	0.002	7	0	22	1.000
1991	Zebraperch	2	0	1	0	0.001	7	0	20	1.005
1992	Zebraperch	1	0	1	0	0.000	3	0	8	1.006
1993	Zebraperch	1	1	0	0	0.000	2	0	6	1.012
1994	Zebraperch	0				0	0	0	0	

Table 5. Observed bycatch, estimated bycatch, and coefficient of variation for the California set gillnet fishery summarized over the years 1990-1994, 1999-2000, and 2006.

Species	Individuals observed discarded	Proportion alive	Proportion dead	Proportion unknown	Individuals/ day	Individuals estimated discarded	LoCI	HiCI	CV
Abalone, Red	1	1	0	0	0.000	7	0	20	1.005
Blacksmith	1	0	1	0	0.000	7	0	20	1.007
Butterfish, Pacific	1	0	1	0	0.000	7	0	20	1.005
Crab, Pelagic Red	1	0	0	1	0.000	7	0	20	0.991
Flatfish, Other Identified	1	0	1	0	0.000	7	0	20	1.002
Greenling, Painted	1	1	0	0	0.000	7	0	20	0.999
Halfmoon	1	1	0	0	0.000	7	0	20	1.010
Herring, Round	1	0	1	0	0.000	7	0	20	0.989
Kelpfish, Giant	1	0	0	1	0.000	7	0	20	1.007
Mola, Common	1	1	0	0	0.000	7	0	20	0.998
Mullet, Striped	1	0	1	0	0.000	7	0	20	0.997
Rockfish Yellowtail	1	0	0	1	0.000	7	0	20	1.006
Rockfish, Bank	1	1	0	0	0.000	7	0	20	0.989
Rockfish, Black and Yellow	1	1	0	0	0.000	7	0	20	1.009
Senorita	1	0	1	0	0.000	7	0	20	0.991
Shark, Basking	1	1	0	0	0.000	7	0	20	1.011
Shark, Prickly	1	1	0	0	0.000	7	0	20	1.006
Shark, Smooth Hammerhead	1	0	1	0	0.000	7	0	20	0.989
Shark, White	1	0	1	0	0.000	7	0	20	0.995
Sole, Slender	1	1	0	0	0.000	7	0	20	1.004
Sturgeon, White	1	0	0	1	0.000	7	0	20	1.005
Surfperch Other Identified	1	0	1	0	0.000	7	0	20	0.987
Surfperch Pile	1	1	0	0	0.000	7	0	20	0.987
Surfperch, Pink	1	0	0	1	0.000	7	0	20	0.990
Surfperch, Rainbow	1	0	1	0	0.000	7	0	20	0.992
Surfperch, Walleye	1	0	0	1	0.000	7	0	20	0.996
Cod, Pacific	2	0	1	0	0.000	13	0	32	0.702
Croaker, Black	2	0	1	0	0.000	13	0	39	0.993
Garibaldi	2	0	1	0	0.000	13	0	39	1.008
Jacksmelt	2	0	0.500	0.500	0.000	13	0	32	0.708
Mackerel, Unidentified	2	0	1	0	0.000	13	0	39	1.009
Rockfish, Grass	2	0.500	0.500	0	0.000	13	0	32	0.699
Rockfish, Treefish	2	0	1	0	0.000	13	0	39	0.990
Stingray, Pelagic	2	0.500	0.500	0	0.000	13	0	32	0.708
Surfperch, Shiner	2	0.500	0.500	0	0.000	13	0	33	0.705
Surfperch, Silver	2	0	1	0	0.000	13	0	33	0.715
Turbot, C-O	2	1	0	0	0.000	13	0	32	0.701
Bass, Striped	3	1	0	0	0.000	20	0	58	0.997
Rockfish, Canary	3	0	1	0	0.000	20	0	45	0.577
Rockfish, Flag	3	0	1	0	0.000	20	0	45	0.578
Sole, Rex	3	0.667	0.333	0	0.000	20	0	45	0.574
Surfperch Black	3	0	0.667	0.333	0.000	20	0	45	0.572
Tonguefish, California	3	0.333	0.667	0	0.000	20	0	52	0.742
Tuna, Yellowfin	3	0	1	0	0.000	20	0	52	0.751
Turbot, Curlfin	3	0.667	0	0.333	0.000	20	0	45	0.581
Crab, Parasol	4	0.250	0.750	0	0.000	26	0	78	1.016
Hagfish Pacific	4	0.250	0.750	0	0.000	26	7	52	0.499
Pipefish Bay	4	0.750	0	0.250	0.000	26	7	52	0.499
Rockfish, Chilipepper	4	0	1	0	0.000	26	7	52	0.504
Rockfish, Kelp	4	0	1	0	0.000	26	7	52	0.503
Rockfish, Olive	4	0.250	0.750	0	0.000	26	7	52	0.504
Sanddab, Speckled	4	0.250	0.500	0.250	0.000	26	7	52	0.495
Shark, Shortfin Mako	4	0.500	0.500	0	0.000	26	7	52	0.500
Shrimp, Unidentified	4	1	0	0	0.000	26	7	52	0.496
Sturgeon Unidentified	4	0.750	0.250	0	0.000	26	7	52	0.508
Rockfish, Rosy	5	0.400	0	0.600	0.001	32	0	83	0.722
Searobin, Lumptail	5	0.400	0.600	0	0.001	32	7	64	0.444
Shrimp, Mantis	5	0.800	0.200	0	0.001	32	7	64	0.441
Zebra-perch	5	0.200	0.600	0.200	0.001	32	7	70	0.531
Rockfish, Cowcod	6	0	1	0	0.001	39	0	94	0.630
Rockfish, Gopher	6	0.833	0	0.167	0.001	39	0	90	0.621

Table 5. (Continued)

Species	Individuals observed discarded	Proportion alive	Proportion dead	Proportion unknown	Individuals/ day	Individuals estimated discarded	LoCI	HiCI	CV
Salmon, Other Identified	6	0.167	0.833	0	0.001	39	7	77	0.471
Shark, Other Identified	6	0.500	0.500	0	0.001	39	7	77	0.473
Surfperch, White	6	0.500	0.500	0	0.001	39	13	71	0.408
Rockfish, Blue	7	0.429	0	0.571	0.001	45	7	109	0.622
Surfperch Barred	7	0.857	0.143	0	0.001	45	7	96	0.517
Unknown Species	7	0.143	0.286	0.571	0.001	45	13	89	0.430
Skate, Other Identified	8	0.875	0.125	0	0.001	51	13	97	0.430
Crab, Opossum	9	0.556	0.444	0	0.001	58	19	114	0.433
Scallop, Unidentified	9	0.333	0.222	0.444	0.001	58	26	96	0.332
Croaker, Spotfin	10	0.100	0.700	0.200	0.001	64	13	134	0.507
Sole, Bigmouth	10	0.500	0.200	0.300	0.001	64	26	108	0.317
Sole, Rock	10	0.800	0	0.200	0.001	64	20	121	0.397
Stargazer Smooth	10	0.900	0	0.100	0.001	64	13	127	0.447
Sturgeon, Green	10	0.800	0.200	0	0.001	64	26	107	0.316
Flounder, Starry	11	0.545	0	0.455	0.001	70	26	123	0.354
Sanddab, Longfin	11	0.727	0.091	0.182	0.001	70	32	115	0.299
Sargo	11	0.273	0.727	0	0.001	70	20	133	0.412
Squid, Market	11	0.273	0.364	0.364	0.001	70	26	128	0.376
Croaker, Yellowfin	12	0.250	0.667	0.083	0.001	77	19	154	0.468
Turbot, Spotted	13	0.846	0	0.154	0.001	83	38	141	0.319
Anchovy, Northern	14	0.286	0.714	0	0.002	90	39	154	0.335
Rockfish, Vermillion	14	0.214	0.643	0.143	0.002	90	45	142	0.287
Shark, Common Thresher	14	0.214	0.786	0	0.002	90	26	190	0.472
Sole, Dover	15	0.667	0.333	0	0.002	96	7	266	0.806
Sablefish	18	0	0.944	0.056	0.002	115	39	211	0.386
Sole, Sand	18	0.056	0.167	0.778	0.002	115	39	208	0.380
Surfperch, Rubberlip	18	0.556	0.222	0.222	0.002	115	64	177	0.250
Queenfish	19	0	0.632	0.368	0.002	121	64	192	0.280
Ray, Unidentified	19	0.895	0.053	0.053	0.002	121	64	190	0.267
Rockfish, Other Identified	19	0.053	0.842	0.105	0.002	121	32	266	0.512
Shark, Sevengill	19	0.526	0.316	0.158	0.002	121	70	178	0.228
Bass, Spotted Sand	20	0.450	0.250	0.300	0.002	128	70	196	0.254
Crab, California King	21	0.762	0.048	0.190	0.002	134	46	246	0.376
Mackerel, Jack	21	0	0.333	0.667	0.002	134	32	310	0.587
Sole, Petrale	22	0.591	0.318	0.091	0.002	140	83	209	0.230
Sheephead, California	23	0.435	0.304	0.261	0.003	147	65	249	0.318
Guitarfish, Banded	25	0.800	0.120	0.080	0.003	160	70	279	0.341
Sole, Fantail	25	0.480	0.400	0.120	0.003	160	89	244	0.248
Surfperch, Unidentified	27	0.407	0.481	0.111	0.003	172	57	365	0.478
Yellowtail	27	0	0.370	0.630	0.003	172	26	408	0.594
Crab, Sand	33	0.273	0.606	0.121	0.004	210	96	356	0.321
Rockfish, Bocaccio	33	0.061	0.848	0.091	0.004	210	95	358	0.328
Bass, Giant Sea	35	0.143	0.771	0.086	0.004	223	127	339	0.244
Corbina, California	36	0.139	0.750	0.111	0.004	230	128	362	0.260
Opaleve	37	0.216	0.784	0	0.004	236	97	413	0.347
Fish, Other Identified	49	0.306	0.653	0.041	0.005	312	154	532	0.316
Rockfish, Unidentified	49	0.347	0.429	0.224	0.005	312	212	427	0.175
Crab, Northern Kelp	50	0.440	0.200	0.360	0.006	319	179	490	0.254
Rockfish, Copper	54	0.500	0.444	0.056	0.006	344	184	553	0.276
Shark, Leopard	54	0.370	0.500	0.130	0.006	344	214	510	0.221
Shark, Unidentified	55	0.273	0.364	0.364	0.006	350	243	475	0.168
Shark, Blue	56	0.125	0.268	0.607	0.006	357	217	532	0.223
Turbot, Diamond	58	0.672	0.172	0.155	0.006	369	266	482	0.149
Sole, English	66	0.727	0.227	0.045	0.007	420	216	745	0.337
Hare, Sea	67	0.851	0.090	0.060	0.007	427	101	901	0.497
Herring, Pacific	70	0.200	0.686	0.114	0.008	446	64	1013	0.562
Rockfish, Brown	74	0.716	0.176	0.108	0.008	471	307	665	0.196
Midshipman, Plainfin	77	0.688	0.169	0.143	0.009	490	347	652	0.158
Shark, Soupfin	80	0.438	0.475	0.088	0.009	509	284	787	0.251
Tunicates, Pelagic	81	0.617	0.012	0.370	0.009	516	229	871	0.323
Stingray, Round	83	0.735	0.193	0.072	0.009	528	365	715	0.171

Table 5. (Continued)

Species	Individuals observed discarded	Proportion alive	Proportion dead	Proportion unknown	Individuals/ day	Individuals estimated discarded	LoCI	HiCI	CV
Cabezon	85	0.529	0.306	0.165	0.009	541	328	831	0.241
Midshipman, Specklefin	85	0.729	0.224	0.047	0.009	541	344	784	0.210
Salmon, King	85	0.035	0.918	0.047	0.009	541	397	697	0.141
Crab, Southern Kelp	92	0.424	0.457	0.120	0.010	586	369	836	0.203
Scorpionfish, California	102	0.510	0.353	0.137	0.011	649	495	819	0.128
Skate, Starry	106	0.500	0.151	0.349	0.012	675	414	979	0.215
Bonito, Pacific	117	0.043	0.769	0.188	0.013	745	413	1179	0.268
Shark, Sixgill	117	0.453	0.410	0.137	0.013	745	583	921	0.116
Shad, American	119	0.059	0.790	0.151	0.013	758	500	1079	0.193
Octopus, Unidentified	127	0.780	0.079	0.142	0.014	808	635	1000	0.116
Echinoderm, Unidentified	132	0.621	0.068	0.311	0.015	840	416	1363	0.291
Lingcod	133	0.188	0.429	0.383	0.015	847	633	1096	0.141
Turbot Hornyhead	155	0.768	0.103	0.129	0.017	987	788	1210	0.109
Mollusk, Unidentified	184	0.750	0.136	0.114	0.021	1171	760	1644	0.194
Shark, Gray Smoothhound	199	0.643	0.266	0.090	0.022	1266	929	1650	0.146
Ray, Pacific Electric	225	0.818	0.120	0.062	0.025	1432	1206	1680	0.084
Skate, Unidentified	239	0.707	0.121	0.172	0.027	1521	719	2888	0.383
Sea Cucumber	256	0.605	0.145	0.250	0.029	1629	999	2454	0.229
Seabass, White	310	0.129	0.816	0.055	0.035	1973	1504	2531	0.134
Snail, Moon	330	0.761	0.070	0.170	0.037	2100	1593	2657	0.129
Barracuda, California	356	0.202	0.764	0.034	0.040	2265	1794	2784	0.110
Bass, Kelp	363	0.457	0.501	0.041	0.041	2310	1803	2888	0.120
Crab, Decorator	370	0.165	0.676	0.159	0.041	2354	1483	3348	0.201
Ray, California Butterfly	384	0.654	0.206	0.141	0.043	2443	1715	3293	0.166
Sanddab, Pacific	392	0.270	0.630	0.099	0.044	2494	1559	3651	0.214
Flatfish, Unidentified	446	0.404	0.206	0.390	0.050	2838	1661	4518	0.262
Fish, Unidentified	580	0.122	0.648	0.229	0.065	3690	3083	4352	0.088
Shark, Horn	623	0.735	0.156	0.109	0.070	3964	2980	5064	0.135
Crab, Hermit	737	0.787	0.045	0.168	0.082	4689	4053	5381	0.073
Crab, Marble	794	0.652	0.267	0.081	0.089	5051	3806	6511	0.136
Skate, Longnose	861	0.856	0.110	0.034	0.096	5478	4244	6856	0.122
Crab, Pointer	870	0.470	0.400	0.130	0.097	5535	4225	7144	0.134
Crustacean, Unidentified	1010	0.573	0.270	0.156	0.113	6425	5273	7649	0.094
Skate, Big	1093	0.800	0.058	0.143	0.122	6953	5851	8161	0.084
Snail, Unidentified	1113	0.670	0.004	0.325	0.124	7081	5217	9220	0.144
Sardine, Pacific	1130	0.052	0.694	0.254	0.126	7189	5497	9201	0.132
Croaker, White	1142	0.107	0.847	0.046	0.127	7265	4088	11401	0.257
Shark, Swell	1401	0.823	0.048	0.129	0.156	8913	7699	10241	0.073
Shark, Brown Smoothhound	1887	0.558	0.325	0.117	0.211	12004	9246	15585	0.136
Invertebrate, Unidentified	1910	0.328	0.310	0.362	0.213	12151	9251	15361	0.129
Bass, Barred Sand	1941	0.530	0.389	0.081	0.217	12348	11199	13567	0.049
Lizardfish, California	2139	0.051	0.811	0.137	0.239	13607	11663	15882	0.079
Guitarfish, Shovelnose	2430	0.722	0.120	0.158	0.271	15459	13196	17900	0.077
Crab, Dungeness	2506	0.611	0.080	0.309	0.280	15942	13312	18920	0.089
Hake, Pacific	2707	0.004	0.983	0.013	0.302	17221	9871	26331	0.247
Shark, Pacific Angel	2908	0.740	0.072	0.188	0.325	18499	14220	23781	0.132
Lobster, California Spiny	3003	0.899	0.023	0.078	0.335	19104	16417	22120	0.077
Thornback	3112	0.742	0.029	0.229	0.347	19797	16308	24361	0.104
Ratfish, Spotted	3195	0.429	0.507	0.064	0.357	20325	15675	25549	0.125
Sea Urchin	3541	0.281	0.580	0.139	0.395	22526	16034	30133	0.161
Halibut, California	5094	0.558	0.325	0.116	0.569	32405	30225	34743	0.036
Dogfish, Spiny	5614	0.481	0.320	0.199	0.627	35713	27959	45915	0.130
Whelk	6153	0.830	0.020	0.151	0.687	39142	34000	44715	0.071
Crab, Rock	8398	0.267	0.538	0.195	0.937	53423	49071	58296	0.044
Skate, California	9030	0.737	0.096	0.167	1.008	57444	52338	62715	0.046
Sea Star	9738	0.853	0.031	0.116	1.087	61947	56207	68245	0.049
Mackerel, Pacific	16037	0.037	0.879	0.084	1.790	102018	79605	127718	0.120
Ray, Bat	17222	0.660	0.242	0.099	1.923	109556	96972	123219	0.061
Crab, Spider	20806	0.174	0.690	0.136	2.323	132355	122976	142222	0.037

Table 6. Species that are both bycatch in the California set gillnet fishery and listed in the 2008 second quarter Fish Stock Sustainability Index (FSSI) and their status.

Common name	Scientific name	Overfishing?	Overfished?	Approaching overfished conditions?
Anchovy, Northern	<i>Engraulis mordax</i>	No	Undefined	Undefined
Cabazon	<i>Scorpaenichthys marmoratus</i>	No	No	No
Cod, Pacific	<i>Gadus macrocephalus</i>	Unknown	Unknown	Unknown
Dogfish, Spiny	<i>Squalus acanthias</i>	Unknown	Unknown	Unknown
Flounder, Starry	<i>Platichthys stellatus</i>	Unknown	No	No
Lingcod	<i>Ophiodon elongatus</i>	No	No	No
Mackerel, Jack	<i>Trachurus symmetricus</i>	No	Undefined	Undefined
Mackerel, Pacific	<i>Scomber japonicus</i>	No	No	No
Rockfish, Bank	<i>Sebastes rufus</i>	No	No	No
Rockfish, Blue	<i>Sebastes mystinus</i>	Unknown	No	No
Rockfish, Bocaccio	<i>Sebastes paucispinis</i>	No	Yes	N/A
Rockfish, Brown	<i>Sebastes auriculatus</i>	Unknown	Unknown	Unknown
Rockfish, Canary	<i>Sebastes pinniger</i>	No	No-rebuilding	No
Rockfish, Chilipepper	<i>Sebastes goodei</i>	No	No	No
Rockfish, Cowcod	<i>Sebastes levis</i>	No	Yes	N/A
Rockfish, Gopher	<i>Sebastes carnatus</i>	Unknown	No	No
Rockfish, Vermillion	<i>Sebastes miniatus</i>	Unknown	Unknown	Unknown
Sablefish	<i>Anoplopoma fimbria</i>	No	No	No
Sanddab, Pacific	<i>Citharichthys sordidus</i>	Unknown	Unknown	Unknown
Sardine, Pacific	<i>Sardinops sagax</i>	No	No	No
Scorpionfish, California	<i>Scorpaena guttata</i>	Unknown	No	No
Shark, Blue	<i>Prionace glauca</i>	No	No	No
Skate, Longnose	<i>Raja rhina</i>	Unknown	No	No
Sole, Dover	<i>Microstoma pacificus</i>	No	No	No
Sole, English	<i>Parophrys vetulus</i>	No	No	No
Sole, Petrale	<i>Eopsetta jordani</i>	No	No	No
Sole, Rex	<i>Glyptocephalus zachirus</i>	Unknown	Unknown	Unknown
Sole, Sand	<i>Psettichthys melanostictus</i>	Unknown	Unknown	Unknown
Squid, Market	<i>Loligo opalescens</i>	Unknown	Unknown	Unknown
Tuna, Yellowfin	<i>Thunnus albacares</i>	Yes	No	No

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