

# North Pacific Albacore Catch in the U.S. Longline Fishery<sup>1</sup>

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Albacore are caught in the North Pacific by U.S. longline vessels based in Hawaii and California. The Hawaii based portion of the fleet is the larger of the two components. The longline fleet operates in a wide region of the eastern and central Pacific between the equator and waters of the North Pacific Transition Zone (Figures 1-2). Albacore are generally not targeted by the fishery, but are an important component of the catch on longline trips using shallow-set gear directed at swordfish or gear deployed deeper in the water column for bigeye tuna or yellowfin tuna. In 2004, there were 125 U.S. longliners active in the fishery. All of these vessels operated out of Hawaii and 17 of them also fished out of California ports. The total fleet size has remained stable over the past 5 years (Table 1). Nominal effort in 2004 by the fleet was 32.0 million hooks, compared with 30.4 million hooks in 2003.

The albacore catch by the U.S. longline fleet has declined substantially in recent years (Table 2); 362 metric tons (t) were caught in 2004 compared to 1,292 t in 2001. The decrease in albacore catch coincided with a 2002 prohibition of shallow-set operations by Hawaii-based longliners targeting swordfish. The temporary ban on swordfish targeting, imposed to reduce interactions with protected sea turtles, also resulted in a redirection of effort by many Hawaii swordfish vessels towards bigeye tuna fishing in the lower latitudes of the central Pacific. On April 2, 2004, the Hawaii fleet was allowed to resume shallow-set fishing operations directed at swordfish, under a “model fishery” subject to strict limits on the number of shallow sets and the number of interactions with sea turtles. Vessels targeting swordfish were required to use circle hooks and mackerel or mackerel-type bait only, among other restrictions. Despite the end of prohibitions on targeting swordfish, most of the fishing effort remained directed at tuna fishing, with only 6 swordfish trips reported throughout 2004. December-May is the primary season for swordfish fishing in the Subtropical Frontal Zone north of Hawaii. Targeting of swordfish by the California-based fleet has been prohibited since May 2004.

Nominal longline fishing effort and catch are monitored through mandatory Federal logbooks submitted to NMFS by vessel captains after each fishing trip. The numbers of fish caught by species are recorded along with information on number of hooks deployed, set and haul positions, and other data. In both the Hawaii-based and California-based longline fleets, NMFS also deploys observers on at least 20% of trips directed at catching tuna and 100% of trips

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using shallow-set gear to target swordfish. Although the primary task of observers is to collect data on turtle, seabird, and marine mammal interactions, they also record data on fish catch and effort and measure lengths of tunas, billfishes, and other commercially-important fish species. In 2004, Hawaii-based observers took fork length measurements on 4,358 of the 17,146 albacore caught (Figure 3). California-based longline observers measured 83 albacore in 2004; these fish are not included in Figure 3. In addition to Federal data collection, the State of Hawaii Division of Aquatic Resources (HDAR) collects data on the number, weight, and ex-vessel price of all albacore landed and sold through wholesale fish dealers in Hawaii (Figure 4). Until recently, most albacore were landed whole. Since December 2004, Federal seafood safety regulations have required that all tunas be landed gilled and gutted. For albacore landed in processed form, conversion factors are used to estimate round weight.

Logbooks for Hawaii-based longliners show that most albacore caught by the fleet are kept for sale. For trips landing in 2004, about 0.7% of the catch by Hawaii-based longline vessels and 21% of the catch by California-based vessels was not kept. The overall percentage of albacore released depends greatly on the level of swordfish targeting, as albacore discarding by Hawaii-based vessels often exceeded 50% on swordfish trips. In 1999, for example, when both the swordfish and tuna fleets were active, the albacore discard rate by Hawaii-based boats was about 8% overall. Size frequency data suggest that in 2004 albacore smaller than about 10kg were the ones released by the Hawaii-based boats (Figure 4).

For official reporting purposes, the 2004 albacore catch (landings) by the Hawaii-based fleet (Table 2) was estimated by multiplying the total number of albacore kept (from logbook data) by the average round weight of fish landed (from dealer records). The logbook data used were for fishing trips reporting a 2004 landing date. California albacore landings by the fleet are documented by the California Department of Fish and Game (CDFG) through landings receipts. The landings data are stored in the Pacific Fisheries Information System (PacFIN) database.

## References

Ito, Russell Y., and Walter A. Machado

2001. Annual report of the Hawaii-based longline fishery for 2000. National Marine Fisheries Service, Southwest Fisheries Science Center Administrative Report, H-01-07, 37 p.

Uchiyama, James H., and Thomas K. Kazama

2003. Updated weight-on-length relations for pelagic fishes caught in the central North Pacific Ocean and bottomfishes from the Northwestern Hawaiian Islands. National Marine Fisheries Service, Pacific Islands Fisheries Science Center Administrative Report, H-03-01, 44 p.

Table 1. Number of active vessels in the Hawaii- and California-based longline fleets.

Year	Total Vessels
1986	39
1987	37
1988	50
1989	88
1990	138
1991	144
1992	125
1993	129
1994	156
1995	132
1996	118
1997	130
1998	147
1999	130
2000	129
2001	125
2002	123
2003	129
2004	125

Table 2. Annual albacore catch (metric tons) by U.S. longline vessels based in Hawaii and California. Sources: Catches for 1952 through 1986 are from State of Hawaii fishery statistics. Catches for 1987 through 1999 are from Ito and Machado 2001; catches for 2000 through 2004 are from Russell Ito (PIFSC, Honolulu, *pers. comm.*) Parentheses indicate preliminary estimate.

Year	Catch (t)	Year	Catch (t)
1952	46	1979	--
1953	23	1980	--
1954	13	1981	25
1955	9	1982	105
1956	6	1983	6
1957	4	1984	2
1958	7	1985	0
1959	5	1986	--
1960	4	1987	150
1961	5	1988	308
1962	7	1989	249
1963	7	1990	177
1964	4	1991	313
1965	3	1992	337
1966	8	1993	440
1967	12	1994	546
1968	11	1995	883
1969	14	1996	1,187
1970	9	1997	1,652
1971	11	1998	1,120
1972	8	1999	1,540
1973	14	2000	940
1974	9	2001	1,292
1975	33	2002	525
1976	23	2003	523
1977	37	2004	(362)
1978	54	---	---

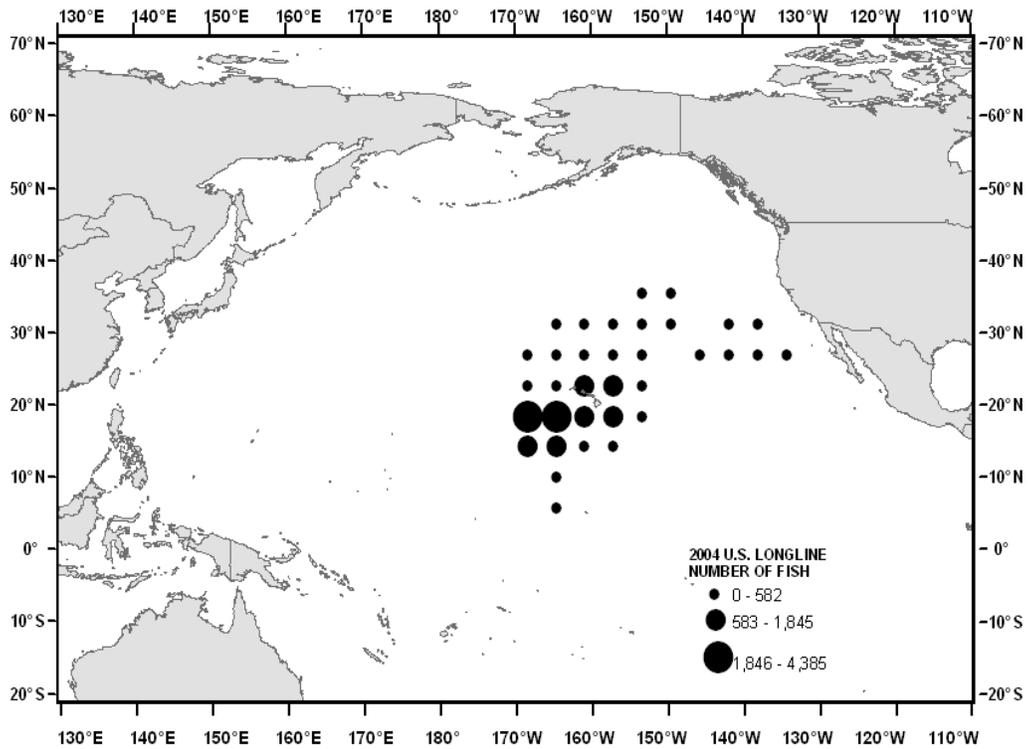
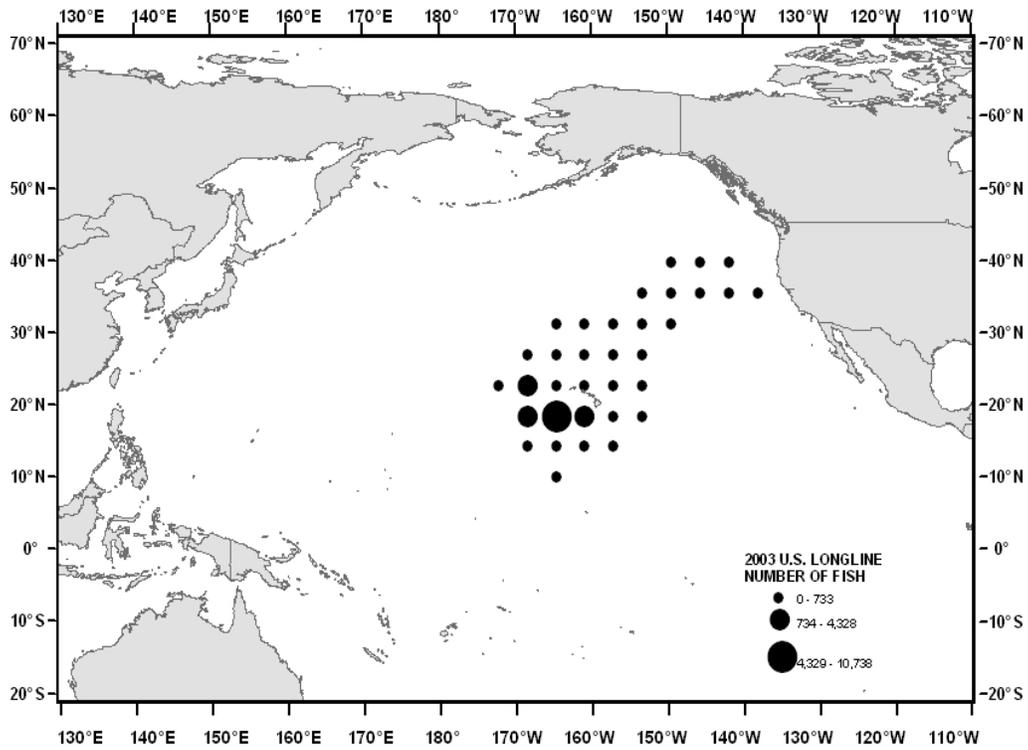


Figure 1. Geographic distribution of albacore catch by U.S. longline vessels in 2003 (top) and 2004 (bottom). From NMFS logbook data.

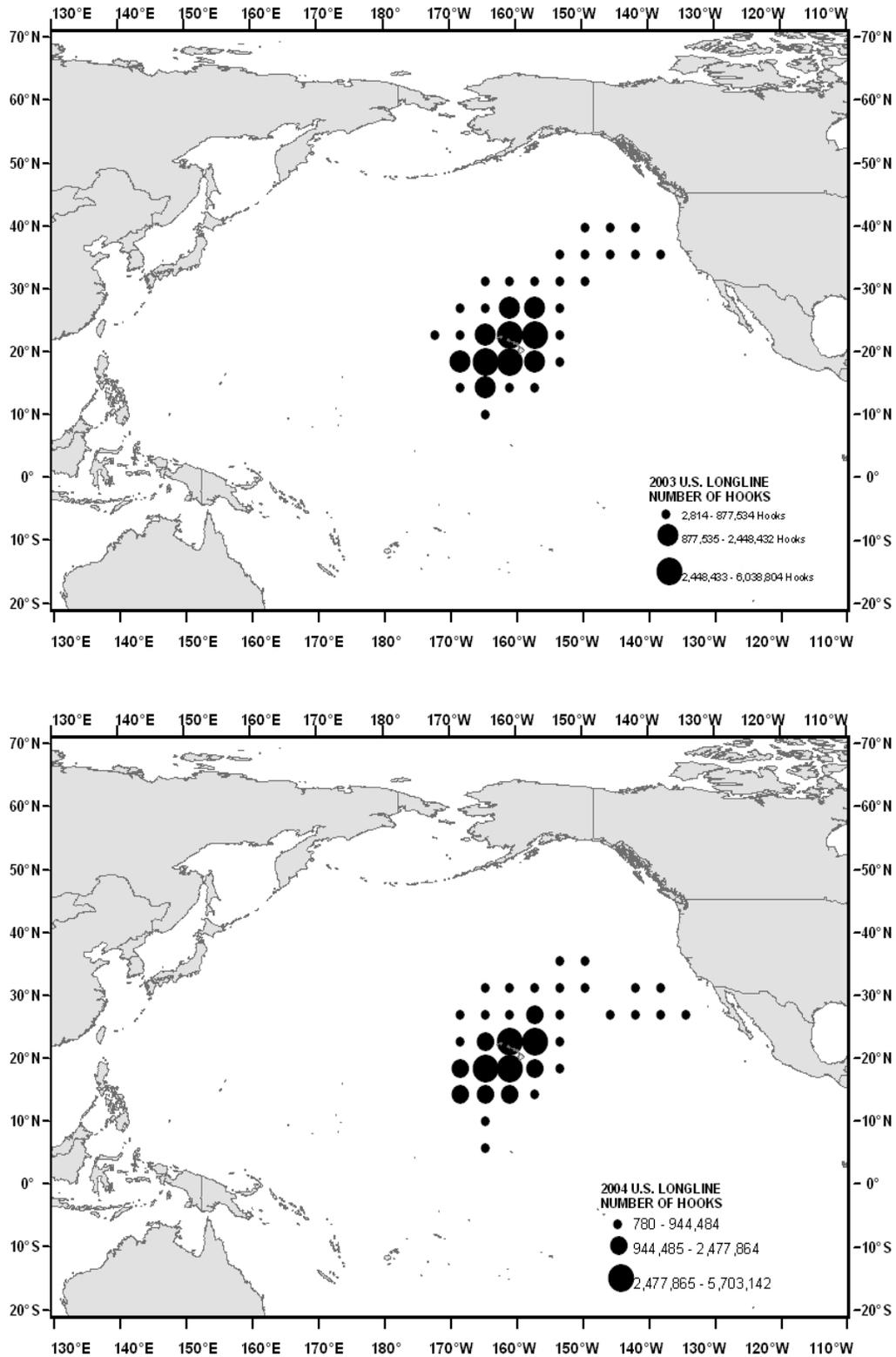


Figure 2. Geographic distribution of nominal effort by U.S. longline vessels in 2003 (top) and 2004 (bottom). From NMFS logbook data.

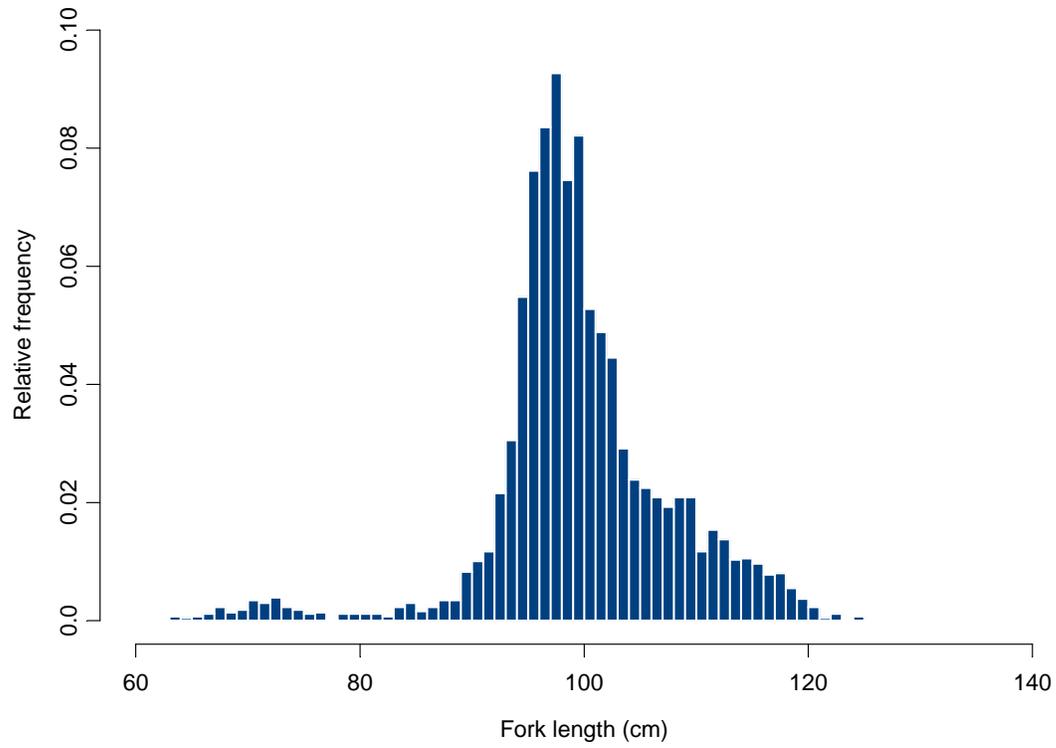


Figure 3. Fork-length frequency distribution of albacore caught by Hawaii-based longline vessels in 2004. From NMFS observer data.

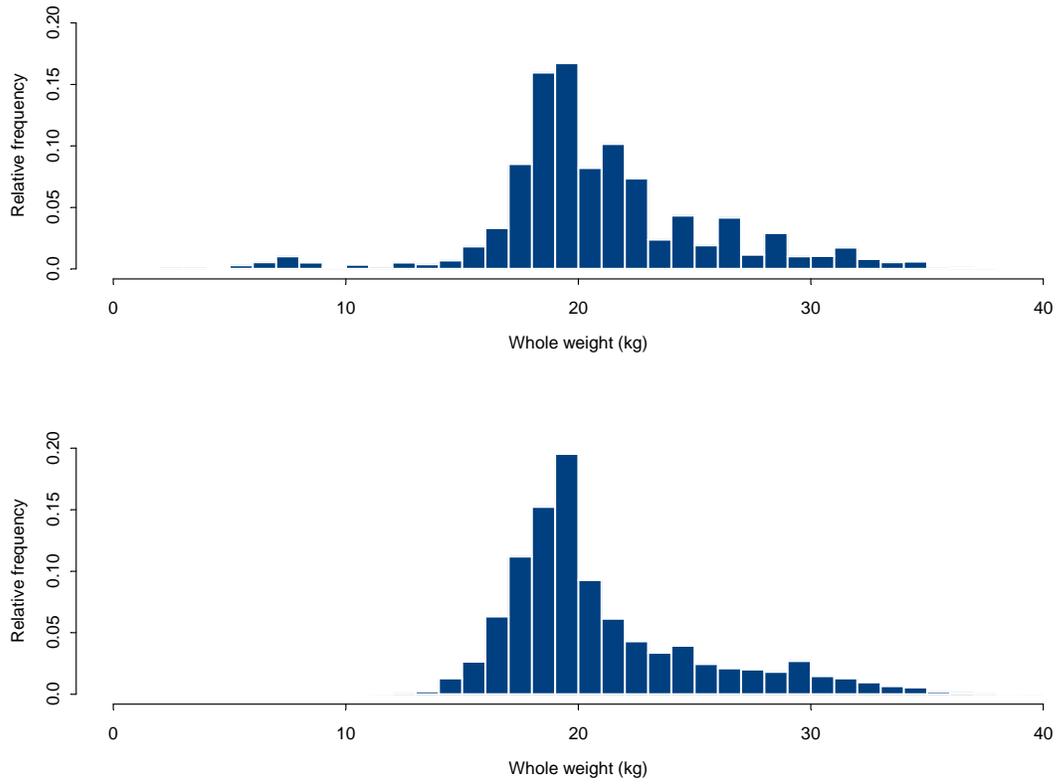


Figure 4. Weight frequency distribution of albacore caught by Hawaii-based longline vessels in 2004. *Top graph:* weights of 4,358 fish derived from fork length measurements taken at sea by NMFS observers, using weight-length relationship of Uchiyama and Kazama (2003). *Bottom graph:* weights of 16,366 landed fish as recorded by fish dealers and reported to HDAR.