

North Pacific Albacore Catch in the U.S. Longline Fishery – An Update¹

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Albacore are caught in the North Pacific by U.S. longline vessels based in Hawaii and California. The Hawaii-based part 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 1-3). Albacore are not targeted by the fishery. However, they 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, largely for bigeye tuna. In 2005, there were 125 U.S. longliners active in the fishery, including 124 in Hawaii and a single vessel in California. The total fleet size has remained fairly stable over the past several years (Table 1). The nominal effort by the U.S. fleet was about 35.1 million hooks in 2005. The effort was 32.4 million hooks in 2004. Hawaii-based vessels accounted for nearly all of the effort.

The catch of albacore by the U.S. longline fleet reached its highest levels in the late 1990s, peaking at 1,652 metric tons (t) in 1997. In 2002, the catch declined substantially and has remained at a much lower level (Table 2). The albacore catch in 2005 is estimated at 277 t.

In 2002, a temporary halt to shallow-set operations by the Hawaii-based fleet was imposed to reduce interactions with protected sea turtles in the primary grounds for swordfish, the Subtropical Frontal Zone north of Hawaii. On April 2, 2004, the Hawaii fleet was allowed to resume shallow-set operations under a “model fishery” subject to a reduced number of shallow sets – limited to half the previous effort level – and strict limits on the number of interactions with sea turtles. Vessels targeting swordfish also were required to use circle hooks and mackerel or mackerel-type bait only, among other restrictions. The primary swordfish season is December-May, so only 6 trips with shallow-set gear were completed in 2004; most fishing effort remained directed towards tuna in lower latitudes. The shallow-set fishery was open for all of 2005. Targeting of swordfish by the California-based fleet has been prohibited since May 2004.

Although the large reduction in albacore catch in 2002 coincided with the suspension of shallow-set operations by Hawaii-based vessels, the two events may not be linked. The albacore catch did not rebound when the swordfish fishery resumed, but declined further.

² PIFSC Working Paper WP-06-013
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On March 20, 2006, the shallow-set fishery by Hawaii-based longline vessels was once again closed by the Pacific Islands Regional Office of the National Marine Fisheries Service (NMFS; NOAA Fisheries), this time because the fleet had reached its allowable annual limit of 17 interactions with loggerhead sea turtles. The swordfish fishery will resume again in 2007.

Nominal longline fishing effort and catch are monitored through mandatory Federal logbooks submitted to NMFS by vessel captains after each fishing trip. Logbook data for Hawaii-based vessels are maintained by the NMFS Pacific Islands Fisheries Science Center (PIFSC). Those for California-based vessels are maintained by the Southwest Fisheries Science Center. Captains are required to record the numbers of fish and protected species caught along with information on the number of hooks deployed, set and haul locations, and other data. In both the Hawaii-based and California-based longline fleets, NMFS also places observers on designated vessels. Observers are required on 100% of the trips using shallow-set gear to target swordfish. In 2005, there were 106 swordfish trips departing from Hawaii and 0 from California (none were allowed). Observers are required on at least 20% of the trips using deep-set gear to target tuna. In 2005, there were 1,377 tuna trips by Hawaii-based vessels, 26% carrying observers. There were 2 tuna trips by California-based vessels departing in 2005, one with an observer.

Although their primary task is to collect reliable data on turtle, seabird, and marine mammal interactions, observers also record data on fish catch and effort and measure lengths of tunas, billfishes, and other commercially-important fish species. In 2005, observers on Hawaii-based longline vessels took fork length measurements on 3,577 of the 13,637 albacore they reported being caught (Figure 4). Albacore were also measured on the observed trip of the California-based vessel.

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. A database for the Hawaii dealer data is maintained by the Western Pacific Fisheries Information Network (WPacFIN) at PIFSC. Until recently, most albacore caught by the Hawaii fleet were landed whole. Since December 2004, Federal seafood safety regulations have required that all tunas be landed gilled and gutted. When fish have been landed in a processed form, conversion factors have been applied to estimate whole weight. For landings in 2005, estimated total weight data from a subset of 12,566 albacore was used to update the historical series of HDAR weight frequency distributions (Figure 5). Albacore landings by California-based longline vessels are documented by the California Department of Fish and Game (CDFG) through landings receipts. The receipts include information on the aggregate landed weight (always round weight) and ex-vessel price per pound. CDFG landings data are stored in the Pacific Fisheries Information System (PacFIN) database.

Logbooks of U.S. longliners indicate that most albacore caught are kept for sale. For fishing trips landing in 2005, captains of Hawaii-based vessels reported that 3.6% of their albacore catch was discarded. California-based vessels reported that all albacore were retained. In the Hawaii-based fleet, albacore discarding is noticeably higher on swordfish trips than on trips targeting tuna. A preliminary comparison of aggregated Hawaii observer data and Hawaii logbook data suggests that logbook statistics may underestimate the actual extent of albacore discarding; this matter is being investigated further using paired logbook and observer records from monitored trips and the results will be reported later. Size frequency data collected by

observers on Hawaii-based vessels indicate that on some trips albacore are high graded, i.e., discarded albacore generally are damaged or smaller than those kept for sale.

The “catch” estimates in Table 2 are really landings; they exclude fish caught but discarded by fishermen. The 2005 catch (landings) in weight for Hawaii-based vessels was estimated as the product of the total number of albacore kept by Hawaii-based fishermen (from logbook data) and the average round weight of albacore landed in Honolulu (from dealer records). The calculation used logbook data for fishing trips reporting a 2005 landing date. The albacore catch for California-based vessels was based on landings receipts compiled by CDFG. In addition to the number of albacore caught, logbooks for California-based vessels also have the captain’s estimates of the weight of albacore caught. These weight data were not used in the catch computations.

U.S. longline data for 2006 are being compiled and processed and will be reported later. One of the new developments in the U.S. fishery for 2006 is the reported activity of a longline vessel based in Guam. Logbook data from this vessel are being collected by the PIFSC.



Table 1. Number of active vessels in the Hawaii- and California-based U.S. 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
2005	125

Table 2. Total annual albacore catch (metric tons) by U.S. longline vessels based in Hawaii and California as documented in the ISC database. Catches are quantity of fish landed; discards are not included. Sources: Catches for 1952 through 1986 are from State of Hawaii fishery statistics; catches for 1987 through 1999 are from Ito and Machado 2001³; catches for 2000 through 2005 are from Russell Ito (PIFSC, Honolulu, *pers. comm.*) and Al Coan (SWFSC, La Jolla, *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	1,295
1975	33	2002	525
1976	23	2003	524
1977	37	2004	560
1978	54	2005	(277)

³ 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.

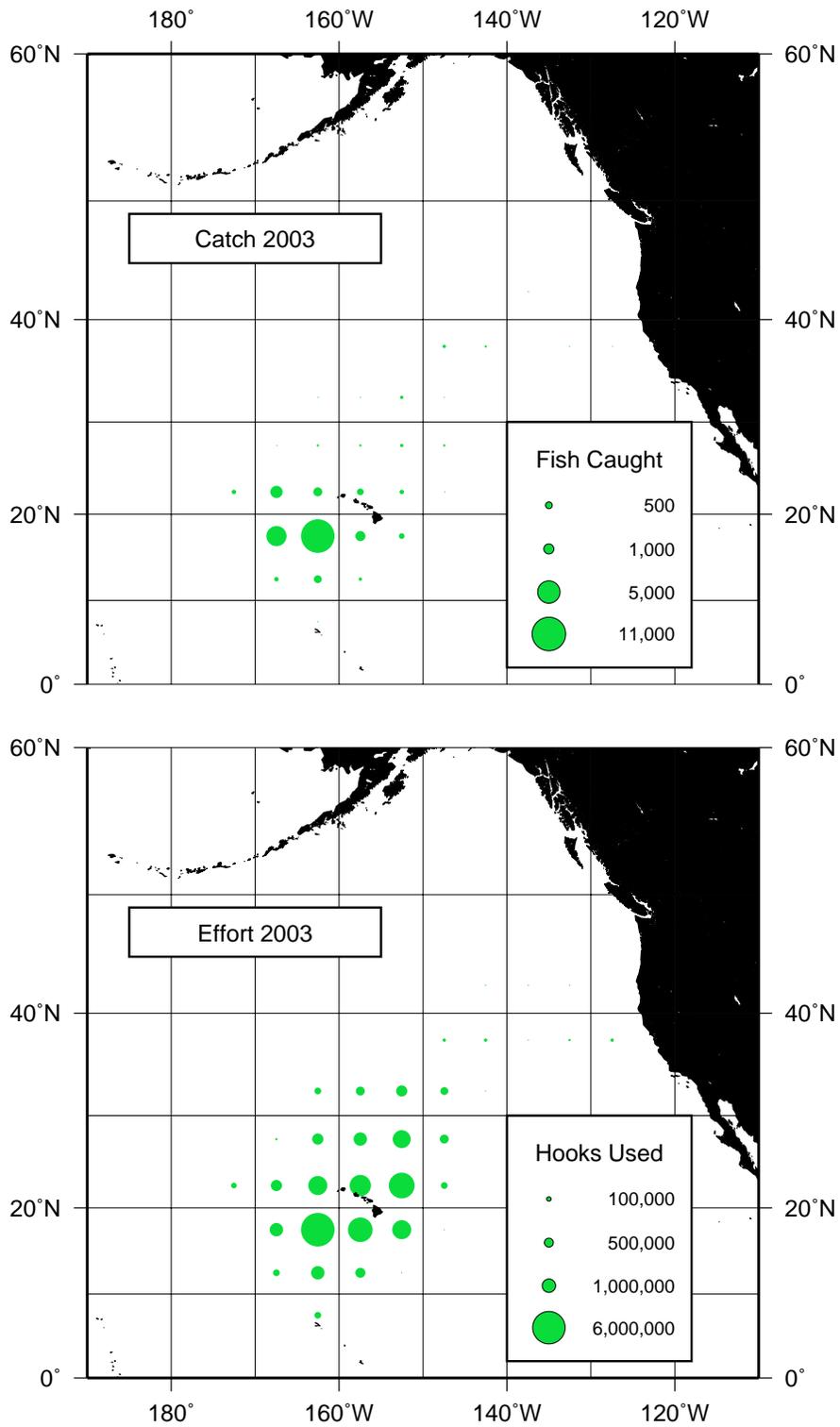


Figure 1. Distribution of albacore catch and nominal effort in the North Pacific Ocean by U.S. longline vessels, 2003. From NMFS logbook data. Only non-confidential data are displayed.

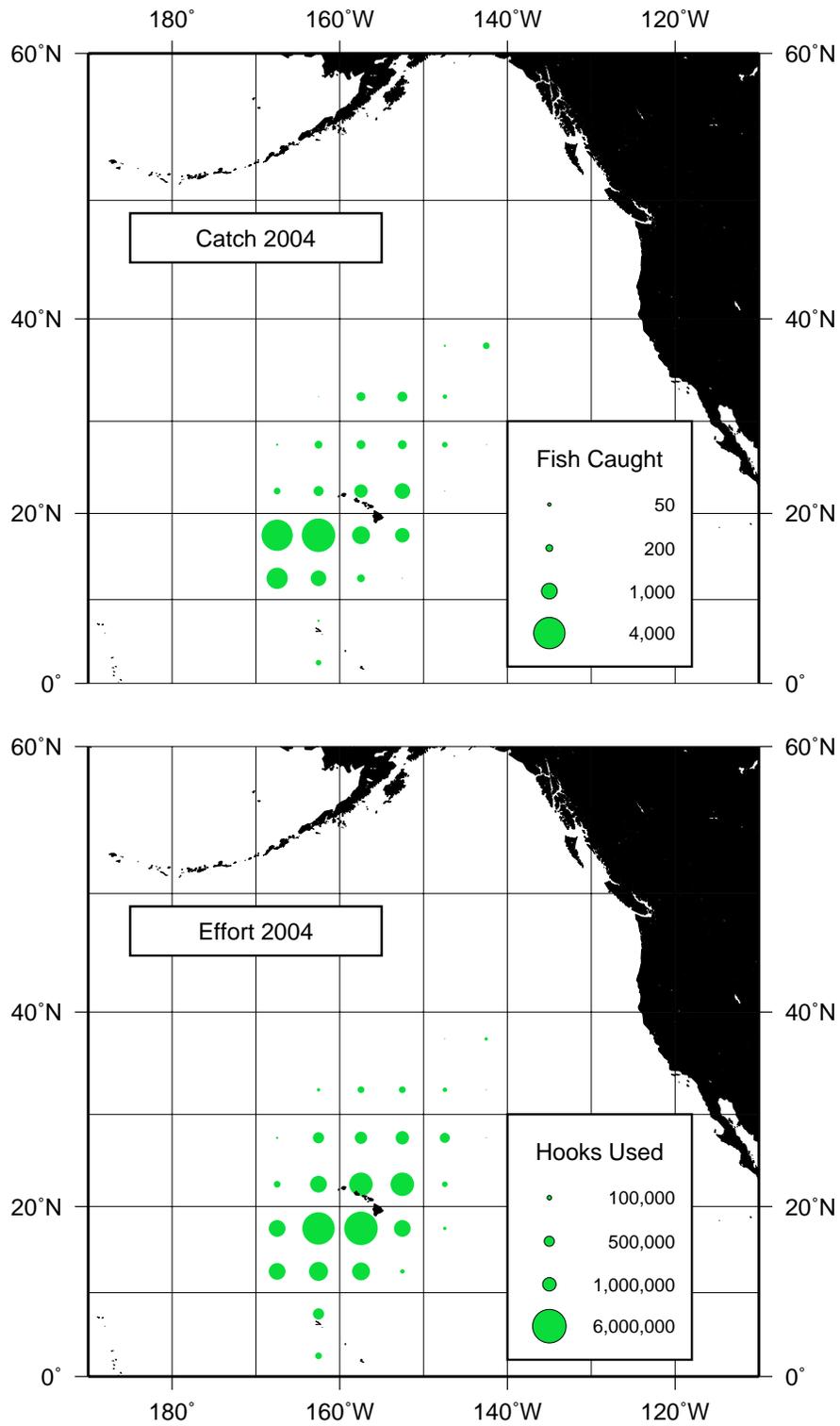


Figure 2. Distribution of albacore catch and nominal effort in the North Pacific Ocean by U.S. longline vessels, 2004. From NMFS logbook data. Only non-confidential data are displayed.

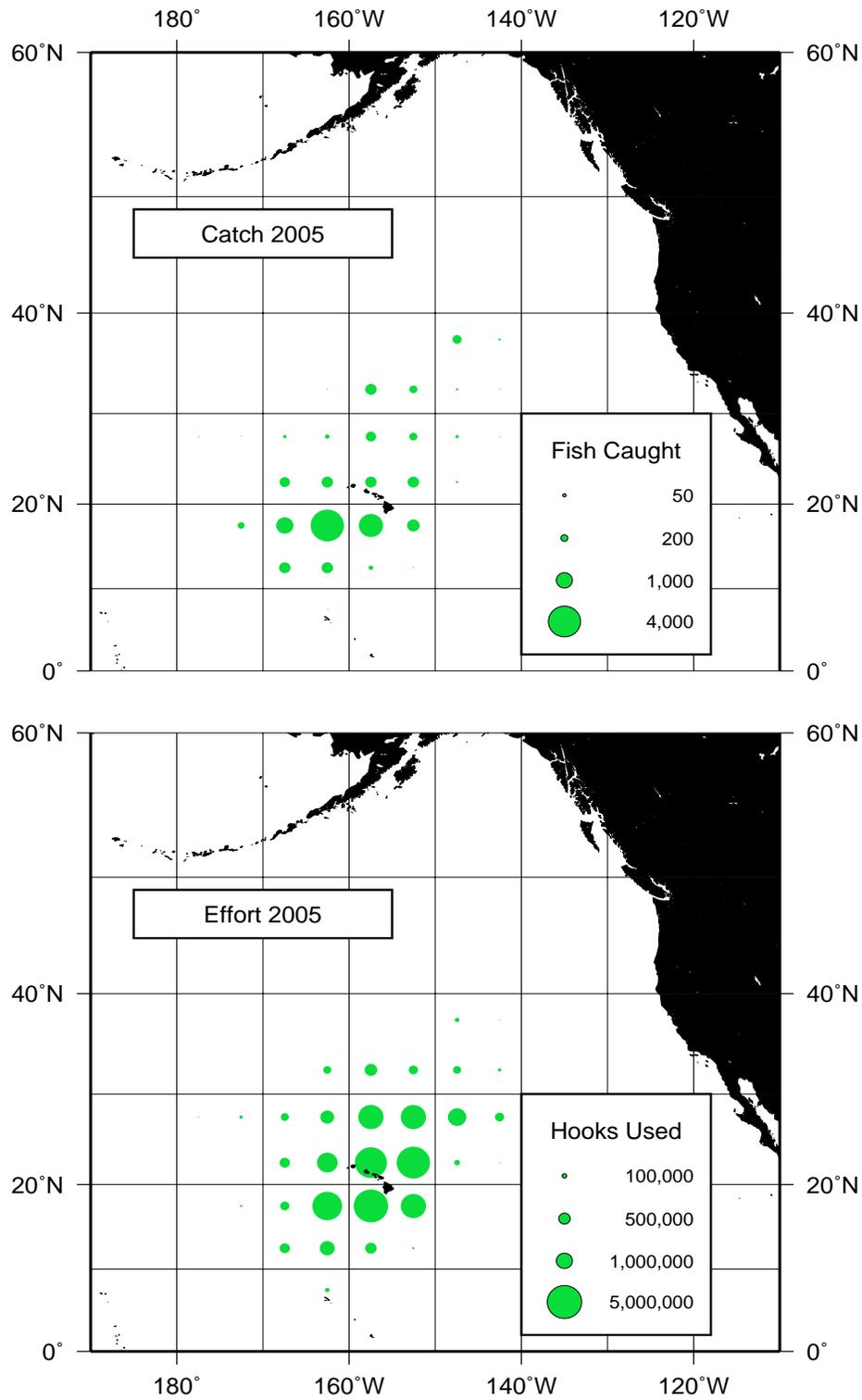


Figure 3. Distribution of albacore catch and nominal effort in the North Pacific Ocean by U.S. longline vessels, 2005. From NMFS logbook data. Only non-confidential data are displayed.

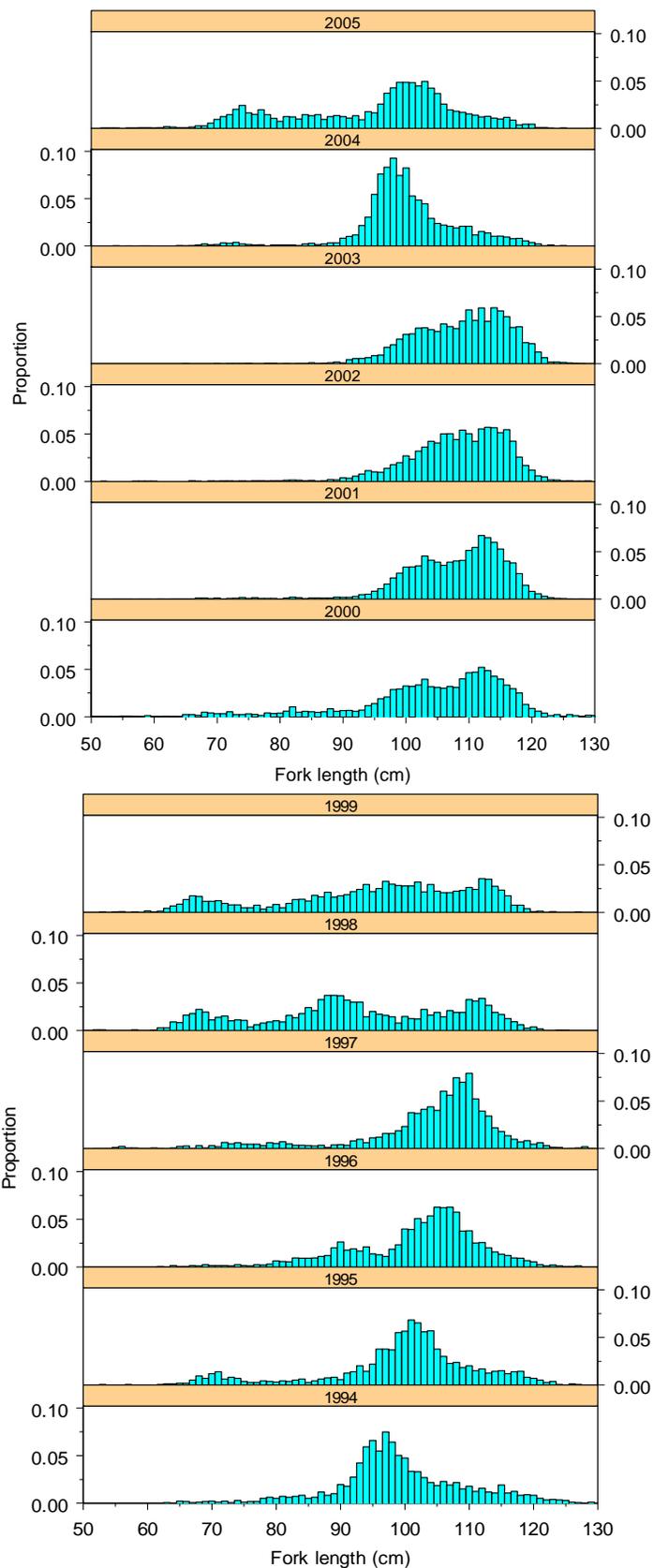


Figure 4. Fork length distributions of albacore caught by Hawaii-based longline vessels and measured by NMFS observers.

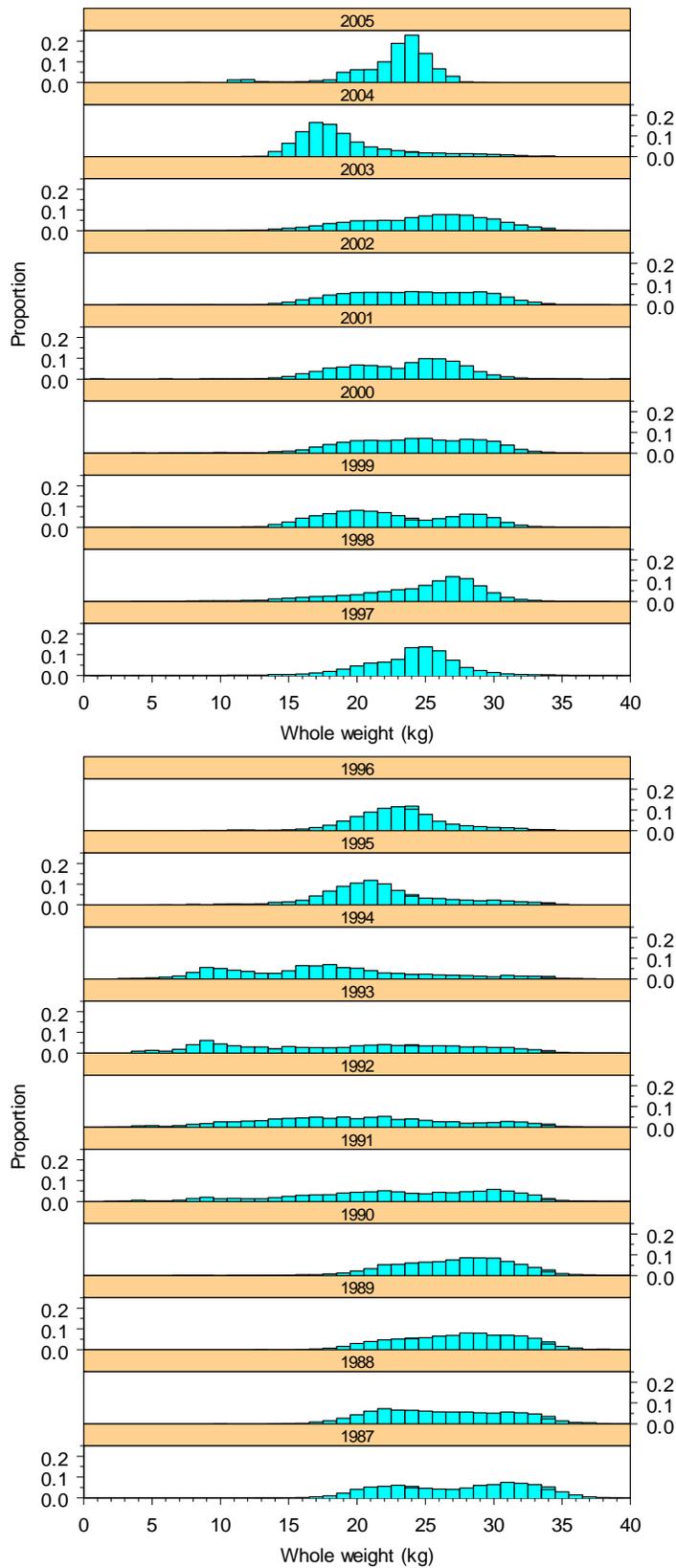


Figure 5. Whole weight distributions of albacore landed in Honolulu by Hawaii-based longline vessels and reported to HDAR by wholesale fish dealers.