

LARGE PELAGIC LOGBOOK CATCH RATE INDICES FOR SHARKS

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SUMMARY

Indices of abundance for large coastal and pelagic sharks in the combined areas (Atlantic, Caribbean and Gulf of Mexico) were developed using mandatory reports from longline and bottom longline vessels.

RÉSUMÉ

Les indices d'abondance des requins pélagiques et grands côtiers dans les zones combinées de l'Atlantique, de la Mer des Antilles et du Golfe du Mexique, ont été élaborés à partir des déclarations obligatoires des bateaux pêchant à la palangre et à la palangre de fond.

RESUMEN

Se desarrollaron índices de abundancia de grandes tiburones costeros y pelágicos en las zonas combinadas (Atlántico, Caribe y Golfo de México) utilizando los informes obligatorios de los barcos de palangre y palangre de fondo.

Description of data sources used.

Large pelagic logbook (LPL):

U.S. Atlantic, Caribbean and Gulf of Mexico fishing vessels which land swordfish have been required to provide daily records of effort and catch since October 1986. Large coastal and pelagic sharks are caught as bycatch and less frequently as targeted catch by these vessels. Although a variety of gear types are represented, the predominant gear type (90% of vessels reporting) is longline gear. Gear type was limited longline or bottom longline by selecting records reporting use of at least 100 hooks. Ten years of data (1986 to 1995) were available. 1995 data is preliminary.

Shark categories available for the full time span in the LPL included hammerhead, tiger, white, blue, mako, thresher, and unclassified. A high proportion of the catch of sharks was reported as unclassified. For these analyses unclassified sharks were added to the category large coastals. Due to very low catch rates white shark was dropped as a category early in the analyses. In 1992 the logbook was expanded to include more species of sharks. Data for the following species were analysed over the last five years (1992 to 1995): dusky, blacktip, night, silky, sandbar, oceanic whitetip, and porbeagle. Due to very low catch rates potbeagle was dropped as a category early. In all cases sharks caught equal the sum of sharks reported kept, discarded dead and discarded alive.

Shark Logbook:

Commercial vessels which fish for and sell species in the shark management unit have been required to submit logbooks for all

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fishing activity where sharks were caught and sold for the past three years (1993-1995). 189 records of longline or bottom longline sets which targeted swordfish, tuna, or sharks were combined with the data from the large pelagic logbook for these analyses.

Modeling Methods

A delta-lognormal approach was also used to estimate indices of abundance from LPL. This method were described in SB1/9.

Model Variables

Model variables included year (1986 to 1995), area (Caribbean, Gulf of Mexico, Florida East Coast, South Atlantic Bight, Mid Atlantic Bight, Northeast Coastal, Northeast Distant, and Offshore South), quarter, gear type (longline or bottom longline), target (swordfish, tuna, shark, or other), light sticks (presence or absence), tuna catch rate, and swordfish catch rate.

Results

The indices of abundance reported in this document are similar for years 1986 through 1995 to those reported in earlier reports.

blue

1986	6.52233	0.27472	9.16234	4.643
1987	3.81961	0.16763	4.711	3.09688
1988	2.95084	0.17177	3.65812	2.38031
1989	1.97583	0.18193	2.48024	1.574
1990	2.53849	0.16259	3.11148	2.07102
1991	2.42929	0.17528	3.02461	1.95114
1992	1.86272	0.11736	2.15848	1.60748
1993	1.78552	0.12396	2.08612	1.52824
1994	1.65911	0.11951	1.92771	1.42794
1995	1.57696	0.11562	1.82339	1.36384

oceanic white tip

1992	0.21814	0.20256	0.28084
1993	0.13524	0.27204	0.18937
1994	0.11792	0.27528	0.16576
1995	0.08757	0.34387	0.13344

thresher

1986	0.26623	0.3454	0.40641	0.1744
1987	0.38357	0.1883	0.48528	0.30318
1988	0.41622	0.1858	0.52497	0.33
1989	0.37225	0.1884	0.47101	0.2942
1990	0.30518	0.2102	0.39659	0.23484
1991	0.22807	0.2466	0.30976	0.16792
1992	0.28596	0.2033	0.36849	0.22191
1993	0.30106	0.1648	0.37002	0.24495
1994	0.21986	0.2016	0.28273	0.17097
1995	0.21191	0.1981	0.27134	0.1655

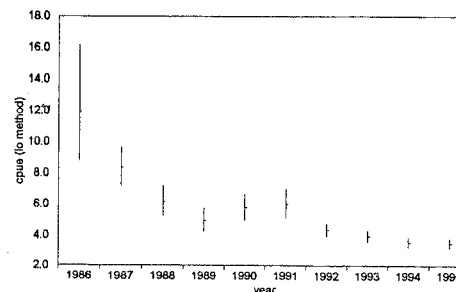
PELAGIC SHARKS

PELAGIC SHARKS

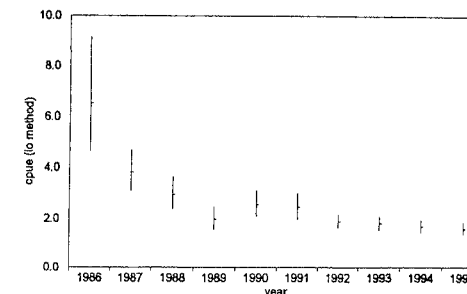
Lo method output

index	cv_i	80% CI		index	cv_i	80% C upper		
		upper	lower					
pelagic				mako				
1986	11.8946	0.24599	16.1431	8.76423	1986	0.95705	0.24145	1.29179
1987	8.3418	0.11864	9.68176	7.18729	1987	0.80268	0.15924	0.9798
1988	6.1727	0.12584	7.22879	5.2709	1988	0.55039	0.19514	0.70219
1989	4.9764	0.12166	5.79755	4.27155	1989	0.57453	0.17913	0.71872
1990	5.7877	0.11809	6.71278	4.9901	1990	0.45208	0.21415	0.59032
1991	6.035	0.1246	7.05663	5.16128	1991	0.54103	0.19121	0.68694
1992	4.3767	0.07182	4.79068	3.9985	1992	0.64345	0.12212	0.75005
1993	3.9703	0.07618	4.36968	3.60742	1993	0.50422	0.15092	0.60917
1994	3.5914	0.07586	3.95108	3.26446	1994	0.42215	0.16402	0.51835
1995	3.5204	0.07118	3.85029	3.21878	1995	0.42597	0.15698	0.51851

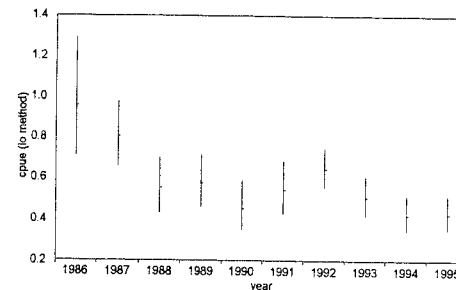
pelagic sharks
CPUE and 80% CI



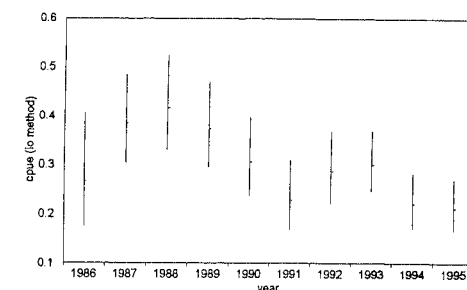
blue sharks
CPUE and 80% CI



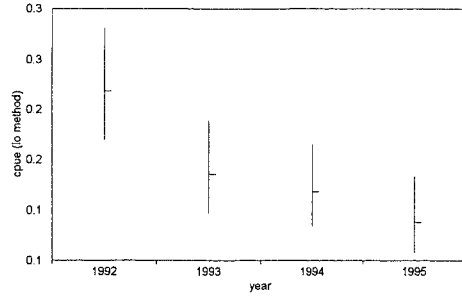
mako sharks
CPUE and 80% CI



thresher sharks
CPUE and 80% CI



oceanic whitetip sharks
CPUE and 80% CI

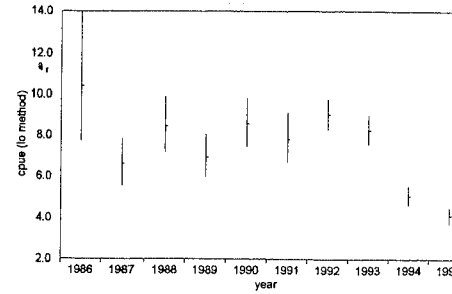


COASTAL SHARKS Lo method output

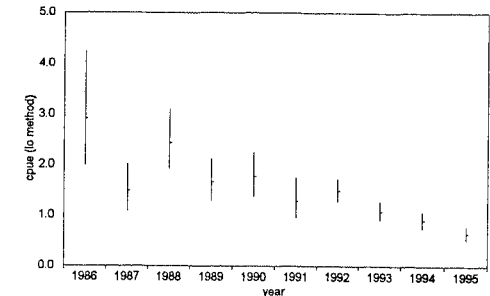
80% CI				80% CI					
index	cv_i	upper	lower	index	cv_i	upper	lower		
coastals				dusky					
1986	10.3909	0.23896	13.9831	7.72152	1992	1.52049	0.24303	2.05622	1.12434
1987	6.6209	0.13889	7.88055	5.5626	1993	1.24712	0.18987	1.58084	0.98385
1988	8.4448	0.12658	9.89875	7.20441	1994	0.88646	0.18019	1.11039	0.70769
1989	6.9566	0.11946	8.08231	5.98768	1995	0.6707	0.23569	0.899	0.50037
1990	8.5789	0.10991	9.84907	7.47254					
1991	7.808	0.12477	9.1317	6.67618					
1992	9.0025	0.06747	9.80035	8.2696					
1993	8.2532	0.0685	8.99627	7.57151					
1994	5.0714	0.0714	5.54816	4.63561					
1995	4.1125	0.07891	4.54171	3.72385					
hammerhead				blacktip					
1986	2.91597	0.30687	4.25542	1.99813	1992	0.48266	0.27051	0.67462	0.34532
1987	1.48131	0.25384	2.02949	1.0812	1993	0.34418	0.14609	0.41334	0.28659
1988	2.44137	0.19251	3.1047	1.91976	1994	0.26687	0.15091	0.32241	0.22089
1989	1.65383	0.2038	2.13245	1.28263	1995	0.2389	0.17849	0.29862	0.19112
1990	1.75727	0.2031	2.26389	1.36402					
1991	1.28215	0.24944	1.74735	0.9408					
1992	1.48078	0.1219	1.72564	1.27067					
1993	1.07298	0.14111	1.28064	0.89899					
1994	0.89836	0.1399	1.07062	0.75382					
1995	0.64162	0.17346	0.79707	0.51649					
tiger				night					
1986	0.41301	0.3672	0.64651	0.26384	1992	0.14214	0.72393	0.32206	0.06273
1987	0.24548	0.4768	0.43419	0.13879	1993	0.22951	0.44527	0.39222	0.1343
1988	0.19488	0.5697	0.38009	0.09992	1994	0.11529	0.71971	0.26021	0.05108
1989	0.29314	0.3584	0.45426	0.18917	1995	0.11352	0.67181	0.24493	0.05261
1990	0.33033	0.2929	0.47418	0.23012					
1991	0.28872	0.3741	0.45554	0.18299					
1992	0.21749	0.2147	0.28419	0.16645					
1993	0.23977	0.1877	0.30312	0.18966					
1994	0.27486	0.1555	0.33396	0.22622					
1995	0.22305	0.2	0.28627	0.17379					
silky									
1992	0.37609	0.17847	0.4701	0.30088					
1993	0.37673	0.14828	0.45366	0.31285					
1994	0.26825	0.16352	0.32918	0.2186					
1995	0.4259	0.1409	0.5082	0.35693					

COASTAL SHARKS

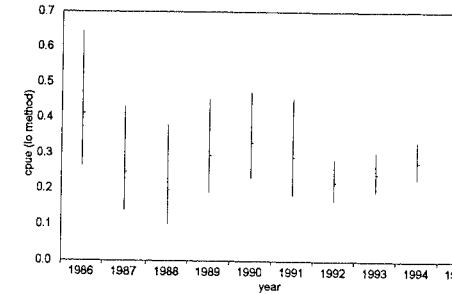
large coastal sharks
CPUE and 80% CI



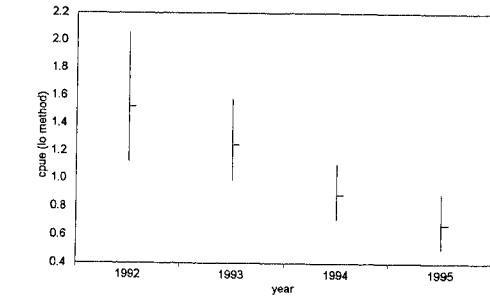
hammerhead sharks
CPUE and 80% CI



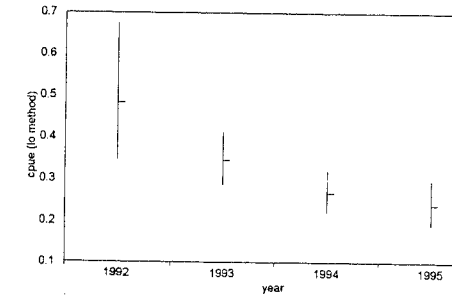
tiger sharks
CPUE and 80% CI



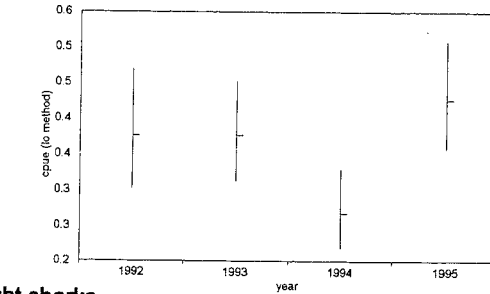
dusky sharks
CPUE and 80% CI



blacktip sharks
CPUE and 80% CI



silky sharks
CPUE and 80% CI



night sharks
CPUE and 80% CI

