

WHITE HAKE IN DIVISIONS 3L, 3N, 3O AND SUBDIVISION 3Ps

Background

White hake (*Urophycis tenuis*) belongs to the gadoid or cod family of fishes. It is difficult to distinguish from red hake. However, red hake is primarily found on the Scotian Shelf and it is doubtful that any are caught in Newfoundland waters.

In the Northwest Atlantic, white hake range from Cape Hatteras to southern Labrador. The areas of greatest abundance are the southern Gulf of St. Lawrence, Scotian Shelf and southwestern Grand Banks.

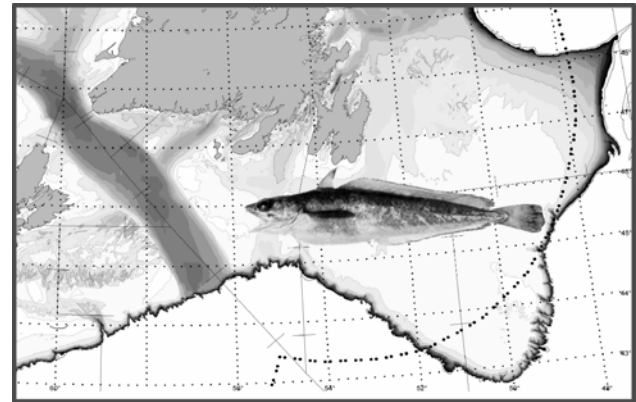
The adults occur over a wide range of depths from 200-1000 meters (110-547 fathoms). They tolerate water temperatures just above 0° to 21°C preferring 5-11°C. This preference for warmer waters restricts their distribution on the Grand Banks to a small part of the south and western edges year round.

White hake are perhaps the most productive of the commercially exploited Northwest Atlantic groundfish species based on egg production. They spawn at different times in different areas. The presence of the 0-group hake in late summer indicates spawning on the Grand Banks occurs in mid-summer. Young hake are pelagic, and do not move to the bottom until they are 8-13 cm (3-5 inches) in length.

White hake are relatively fast growing, reaching about 53 cm (21 inches) by age 5, and 75 cm (30 inches) by age 10. They can reach a very large size; females of greater than 130 cm (51 inches) have been captured. Available evidence indicates that males mature at a smaller size (about 40 cm (16 inches)) than females (about 47 cm (19 inches)).

White hake feed on a variety of prey items including large and small crustaceans, copepods, small fish and squid. Fish seems to be the most important prey of larger hake.

A substantial directed fishery for white hake had existed on the Scotian Shelf and in the southern Gulf of St. Lawrence for years (now reduced or under moratorium). Until recently, in 3LNOPs white hake was mainly taken as a by-catch in other fisheries. With the decline of the more traditional groundfish species however, interest in a directed fishery for white hake has increased. Currently there are no catch limits for white hake, however closures due to excessive by-catch of other species have in effect limited white hake catches.



The Fishery

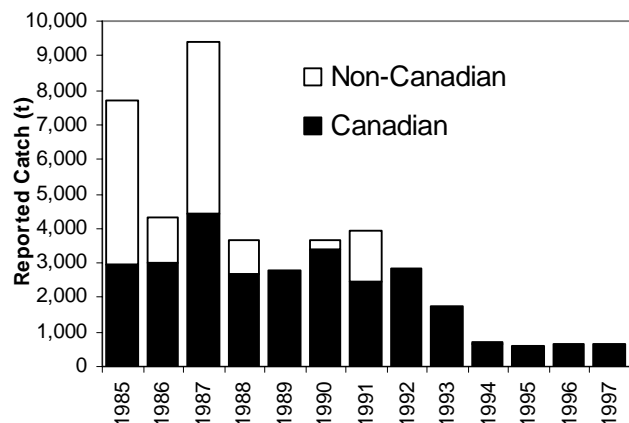
Reported catches of white hake have declined substantially during the last two decades, particularly since 1991.

Landings (thousand metric tons)

Year	77-90 Avg.	1992	1993	1994	1995	1996	1997
Can.	2	2.8	1.8	.7	.6	.7	.6
Others	2	+	+	+	+	+	+
Total	N/A	2.8	1.8	.7	.6	.7	.6

+ Catch less than 50 metric tons

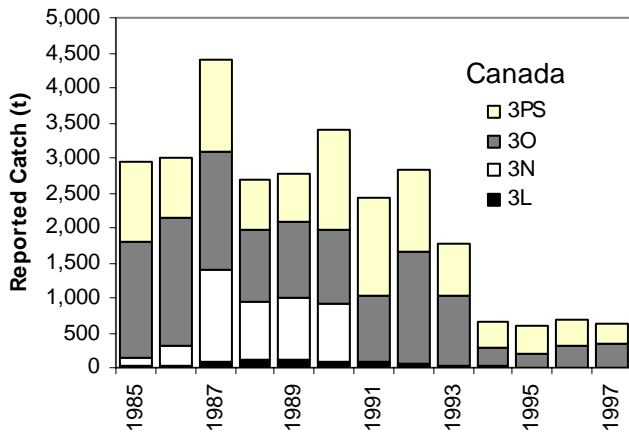
Between 1985 and 1991, reported non-Canadian catches, which occurred primarily in Div. 3N were highly variable. Subsequently, annual non-



Canadian catch has been less than 50 metric tons. Some mis-reporting may have occurred. Since the extension of jurisdiction (1977) until 1993, Canadian catches averaged about 2,000 metric tons annually. Since 1991, these catches

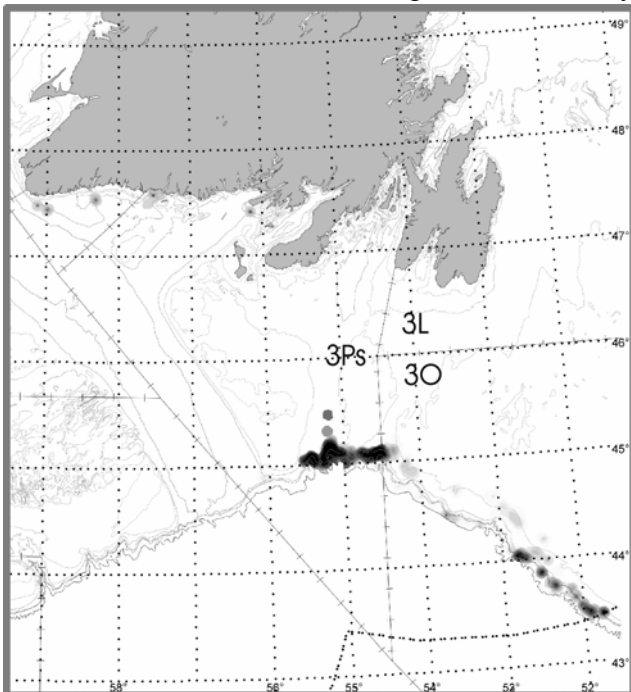
have been taken almost exclusively in Div. 3O and Subdiv. 3Ps, although about 800-1,300 t were reported from 3N in 1987-1990.

A Canadian experimental trawl fishery began in 1993, but closures due to high cod and haddock



by-catch caused catches to drop dramatically in subsequent years.

Observer data (refer to the fishing effort map below, darker shades denoting more intensely

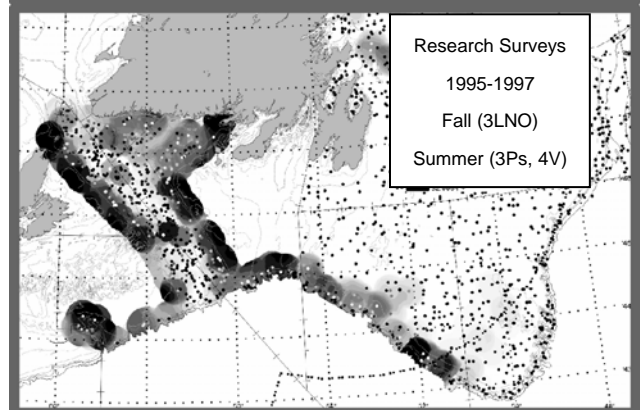
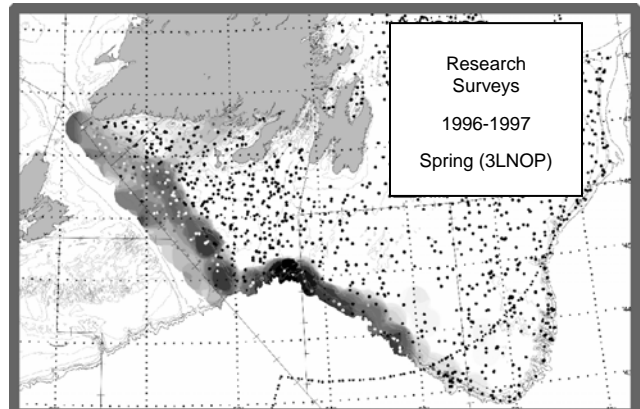


fished areas) indicate that the Canadian fishery directed for white hake occurred primarily along the south-western shelf edge. Much of the effort was concentrated in 3Ps.

Resource Status

Groundfish research survey biomass indices indicate that white hake are found mostly in Div. 3O and Subdiv. 3Ps. In spring, fall and summer (3PS only) research surveys, white hake were distributed almost exclusively along the southwestern edge of the Grand Banks and the Laurentian Channel.

Based on spring surveys, hake biomass in both



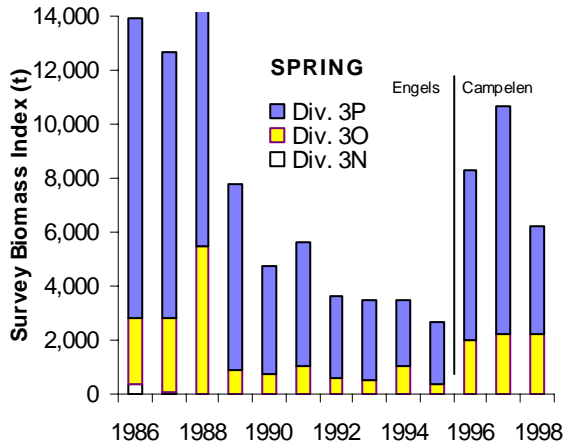
3O and 3Ps had declined to an all time low by 1990, remaining at low levels through 1995. A change in gear from Engels to Campelen in fall 1995 likely affected catchability of white hake in research surveys. Hence, the two periods are not comparable. Consequently, trends since 1995 cannot be interpreted.

Fall biomass indices for Div. 3O are greater than those from spring surveys but had a similar trend over time. Seasonal differences in 3Ps are unknown as the area is not surveyed in the fall.

Concurrent with declining biomass was a decrease in the mean length and weight of hake.

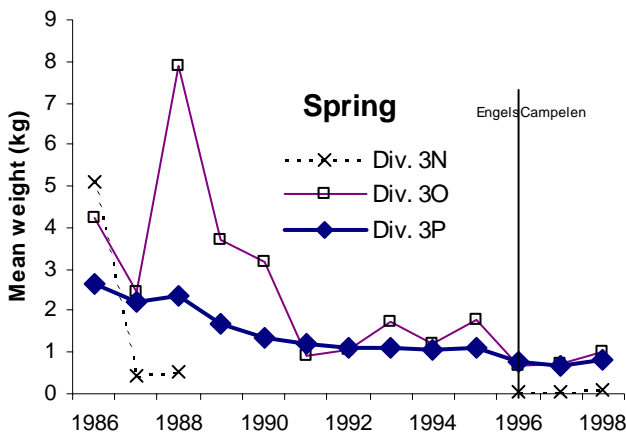
Although hake larger than 85 cm were

consistently caught in earlier years, subsequent to 1990 they have been captured infrequently. This truncation in length composition is a contributing factor to the decrease in mean fish weight observed in survey catches.



Sources of Uncertainty

Little is known about white hake in the 3LNOPs area as there has been no directed research on this species. Ages are not available, and data on length, individual weights, and maturity of fish in research survey catches is incomplete. There has been almost no sampling of commercial catches, and no information on stock affiliation is available.



Current biomass levels cannot be compared to previous years due to the change in research survey gear. Likewise, comparisons of size over

time are difficult as length information has not been collected routinely.

Statistics of bycatch from earlier years may be incomplete. Current catch records may not be adequate for separating landings originating from by-catch and those from any directed fishery. Also, it is likely that some hake landed in Newfoundland waters and reported as red hake, are actually white hake.

Outlook

Since recent biomass indices cannot be related to those of previous years, the current state of the stock cannot be properly assessed. However, the declining trend in the survey biomass observed prior to the change in research gear, and declines in the numbers of large fish captured in research surveys are reasons for concern. In contrast, the distributional range of the species has not changed, as has been observed in some depleted groundfish stocks.

White hake landings occur both as bycatch and from a directed fishery. Catches are currently below historical averages. However, it is not known whether these low catches reflect a change in abundance or whether it is a result of limited effort possibly due to bycatch restrictions.

At present, closures due to bycatch of other species are the only limit on directed fishery effort. If this constraint was removed, catches could increase beyond acceptable levels. Given the uncertainty of current stock abundance, a precautionary TAC should be considered.

For More Information

Research Documents: Kulka, D.W., E. DeBlois and B. Davis. 1996. Non-traditional groundfish species on the Labrador Shelf and Grand Banks - wolffish, monkfish, white hake and winter (blackback) flounder. DFO Atl. Fish. Res. Doc. 96/97.

Kulka, D.W. and F. K. Mowbray. 1998. The status of White Hake (*Urophycis tenuis*), a non-traditional species in NAFO Divisions 3L, 3N, 3O and Subdivision 3Ps. DFO Atl. Fish. Res. Doc. 98/132.

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