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Intercalibration of Silver Hake Abundance Estimates from

Research Vessel Surveys by Different Vessels

by

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Introduction

Since 1970 the Marine Fish Division has conducted a time series of summer (July) stratified random groundfish surveys. While the time series is continuous to the present the fishing unit conducting the survey has changed several times. From 1970 to 1977 the survey was done by the A.T. Cameron alone, using a Yankee 36 trawl. In anticipation of the eventual retirement of the A.T. Cameron a series of comparative fishing experiments was begun in 1978. In that year the Lady Hammond, using a high-life Engel 145 trawl fished comparative sets with the A.T. Cameron. For the 1979 survey the Engel trawl was deemed unsuitable for surveys and replaced with the Western IIA trawl. The data from the 1978 experiment were not considered further since the Engel trawl would not be used subsequently. A preliminary discussion and analysis of the 1979 to 1981 comparative experiments was given by Koeller and Smith (1983). After the 1981 survey the A.T. Cameron was retired and the 1982 survey was conducted by the Lady Hammond alone.

Comparative experiments between the Lady Hammond and the Alfred Needler were run in October 1982 and July 1983 as appendages to the regularly scheduled groundfish survey programs. Descriptions of all three survey vessels and gears are in table 1.

Part of the Lady Hammond-Alfred Needler data has already been analyzed (Fanning 1984) and indicated that no conversion was necessary. The same analysis has been applied to the complete Lady Hammond-Alfred Needler data set as well as the A.T. Cameron-Lady Hammond comparative data (Fanning, 1985). Results in Fanning (1985) confirm the earlier partial results that no conversion was necessary for Lady Hammond-Alfred Needler comparisons, i.e. conversion factor is 1.0.

A silver hake conversion factor for A.T. Cameron-Lady Hammond was not recommended in Fanning (1985). This was because significant differences in relative catch indices existed when calculated for different length groups (figure 1). Further investigation showed that only 2.0% of fish in the RV length frequencies were greater than 42 cm in length. For this reason it was concluded that impact of the length effect was negligible. It was also concluded that the available levels of precision precluded more than 1 decimal place accuracy and hence the conversion factor to be used was 2.3

References

- Fanning, L.P. 1984. Preliminary Analysis of Alfred Needler-Lady Hammond Comparative Fishing Experiments (Silver Hake, 1983). NAFO SCR Doc. 84/VI/82.
- Fanning, L.P. 1985. Intercalibration of Research Survey Results Obtained by Different Vessels. CAFSAC Res. Doc. 85/3.
- Koeller, P. and S.J. Smith. 1983. Preliminary analysis of A.T. Cameron - Lady Hammond comparative fishing experiments 1979-81. CAFSAC Res. Doc. 83/59.

Table 1. Summary of vessel and trawl characteristics of the three vessel-gear units used in comparative fishing experiments from 1979 to 1983.

	<u>A.T. Cameron</u>	<u>Lady Hammond</u>	<u>Alfred Needler</u>
Vessel type	Side trawler	Stern trawler	Stern trawler
B.H.P.	1000	2500	2000
Tonnage	753	897	925
Length	53 m	58 m	50 m
Trawl	Yankee 36	Western IIA	
Footrope	7" (outer sections) and 14" (inner sections) rubber disc spacers + 17 lb iron spacers	18" (inner) and 21" (outer) bobbins and 6 3/4" diameter 7" long spacers, all rubber	
Liner			
Belly extension	n/a		1 1/2"
Lengthening piece	1 1/4"		1 1/4"
Codend	3/4"		3/4"
Headline length (ft)	60		75
Footrope length (ft)			
overall	80		106
with netting	80		68
Netting panel lengths (ft)			
top wings	25		27
square & bunt	14		21
bellies & 1' piece	30		41
codend	47		38
total	116		127
Door type	Steel bound wood	Portugese (all steel)	
weight	1000 lb	1800 lb	
area	31 ft ²	47 ft ²	
Mouth opening (ft)			
headline height	9		15
wing spread	35		41

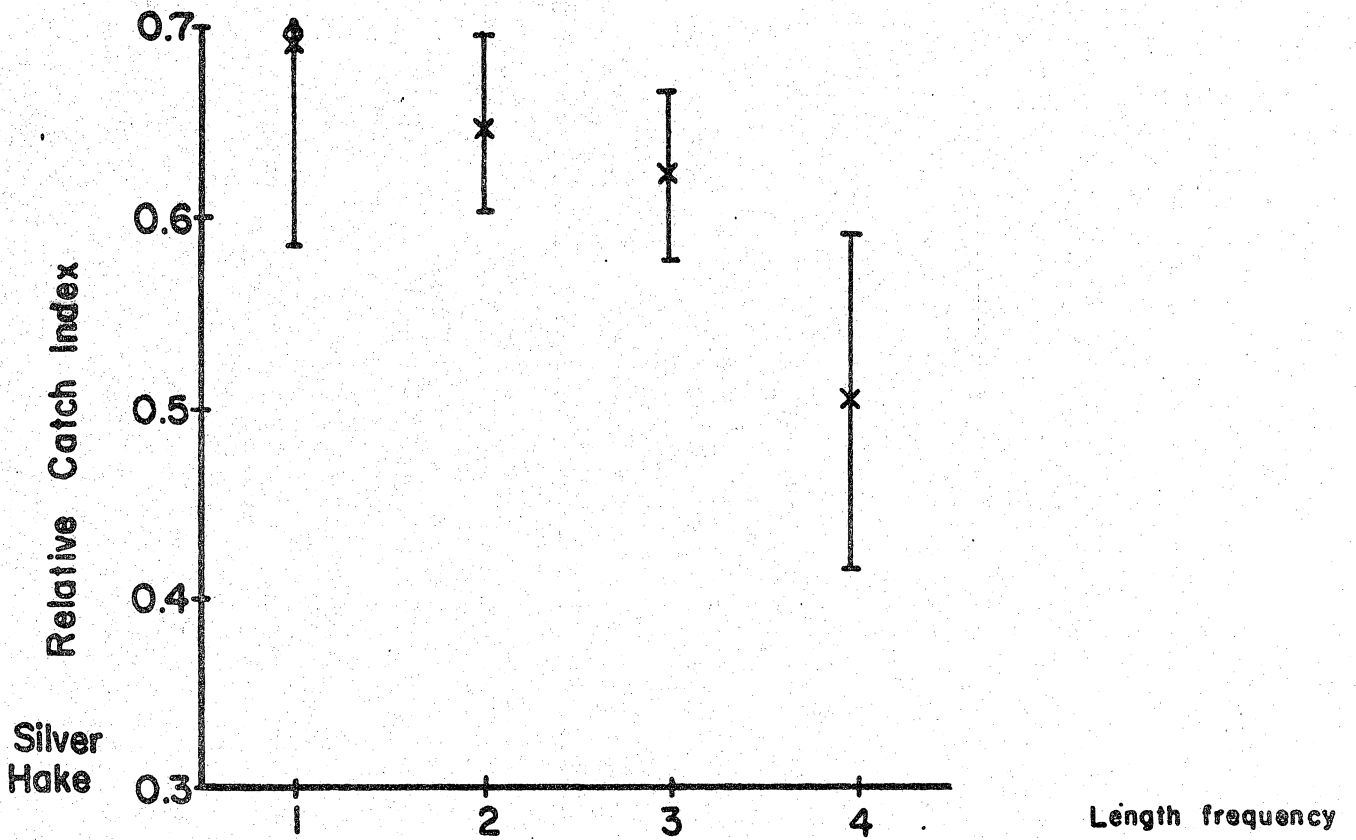


Figure 1. Relative catch index (with 95% confidence intervals) for silver hake between Alfred Needler-Lady Hammond.

Length frequency intervals

- 1 0.5 - 14.5 cm
- 2 14.5 - 28.5 cm
- 3 28.5 - 42.5 cm
- 4 42.5+ cm

