B-6 Supp E.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Northwest and Alaska Fisheries Center
Resource Assessment and Conservation Engineering
7600 Sand Point Way N.E.
BIN C15700; Building 4
Seattle, WA 98115

May 15, 1985 F/NWC1:GS

TO: R. Marasco, F/NWC2

FROM: G. Stauffer, F/NWC1

SUBJECT: Update on the status of pollock in the Gulf of Alaska.

In the fall of 1984, the Council lowered the OY for pollock in the Gulf of Alaska from 416,600 to 321,600 mt. This decision was based in part on our projected downturn in pollock abundance resulting primarily from the weak recruitment of the 1980 and 1981 year classes. The 1985 joint-venture fishery with Japan, Korea, and Poland harvested 219,500 mt in Shelikof Strait. This is about 45,000 mt more than was taken in 1984 (Fig. 1). Given that the domestic, JV, and foreign fisheries will likely continue through the summer and fall months, it is likely that the 1985 harvest in the Gulf will approach 300,000 mt (equivalent to the 1984 harvest of 306,700 mt).

With the completion of the 1985 fishery and the NMFS hydroacoustic survey in Shelikof Strait conducted by Ed Nunnallee in the RACE Division, a preliminary update on the status of the pollock resource in the Gulf is possible. Given the growing nature of the pollock fisheries, I think that this update on the stock trend provides valuable information to the Council, NMFS, and the industry prior to any planning for the 1986 and 1987 fisheries. Early results from the hydroacoustic survey conducted during late February and March, 1985, provides some qualitative information on the current trend in pollock abundance. Although the 1985 estimate of biomass will not be available until this summer, the biomass appears to be declining as projected last fall. The geographic area covered by the spawning stock appears to be less than half of that observed during the 1981 survey. Unlike the long continuous schools approaching 40 fathoms thick as seen in 1981, the pollock in 1985 were schooled in smaller patches approaching only 20-25 fathoms in vertical height. In addition, the survey found a well-defined layer of juvenile pollock (10-15 cm in length), probably age 1 fish from the 1984 year class (Fig. 2). This group of fish showed up on the echo trace as a continuous band of fish 10-15 m thick at a depth of about 150 m (Fig. 3). This band covered an approximate area of 600 sq.n. miles and extended from the west end of Kodiak Is. to the Semidi Is. A layer of juvenile pollock like this has not been observed in prior years.

This suggests that the 1984 year class may be strong. A second mode of juvenile pollock between 20 and 28 cm in length is most likely the 1983 year clas class. At this time, we are not certain about the relative magnitude of the 1983 year class other than it is probably less than the 84 year class and yet greater than the earlier year classes. Also, the obvious poor showing of fish between 30 and 38 cm strongly suggests that the age 3 fish or 1982 year class is weak. If true then this means that there are three successive weak year classes recruiting to the fishery (1980, 1981, and 1982) being followed by an average 1983 year class and strong 1984 year class.

Given the likelihood of a weak 1982 year class, the stock appears to be tracking somewhere between our earlier forecasts for recruitment scenarios A and C (Fig. 4 and 5), which assumed weak and average recruitment from the 1982 and 1983 year classes. Using this updated measures of relative year class strength, Miles Alton made a second set of forecasts for the 1986 and 1987 levels of exploitable biomass. Figure 5 shows the results for three new scenarios weak (G), average (H), and strong (I) 1983 year class in combination with a strong 1984 year class. These forecasts suggest that the downward trend in spawning biomass will continue with the 1986 level below the 1985 projected biomass. This trend will reverse in 1987 if the 1984 year class is indeed strong as now appears. These forecasts will be updated this summer once the 1985 acoustic estimates and the latest age composition data become available and a reanalysis of the catch-at-age model is complete.

cc: W. Aron, F/NWC
M. Hayes, F/NWC1
E. Nunnallee, F/NWC1
M. Alton, F/NWC1
B. Megrey, F/NWC1
R. McVey, F/AKR
J. Branson, NPFMC
GOA Plan Team

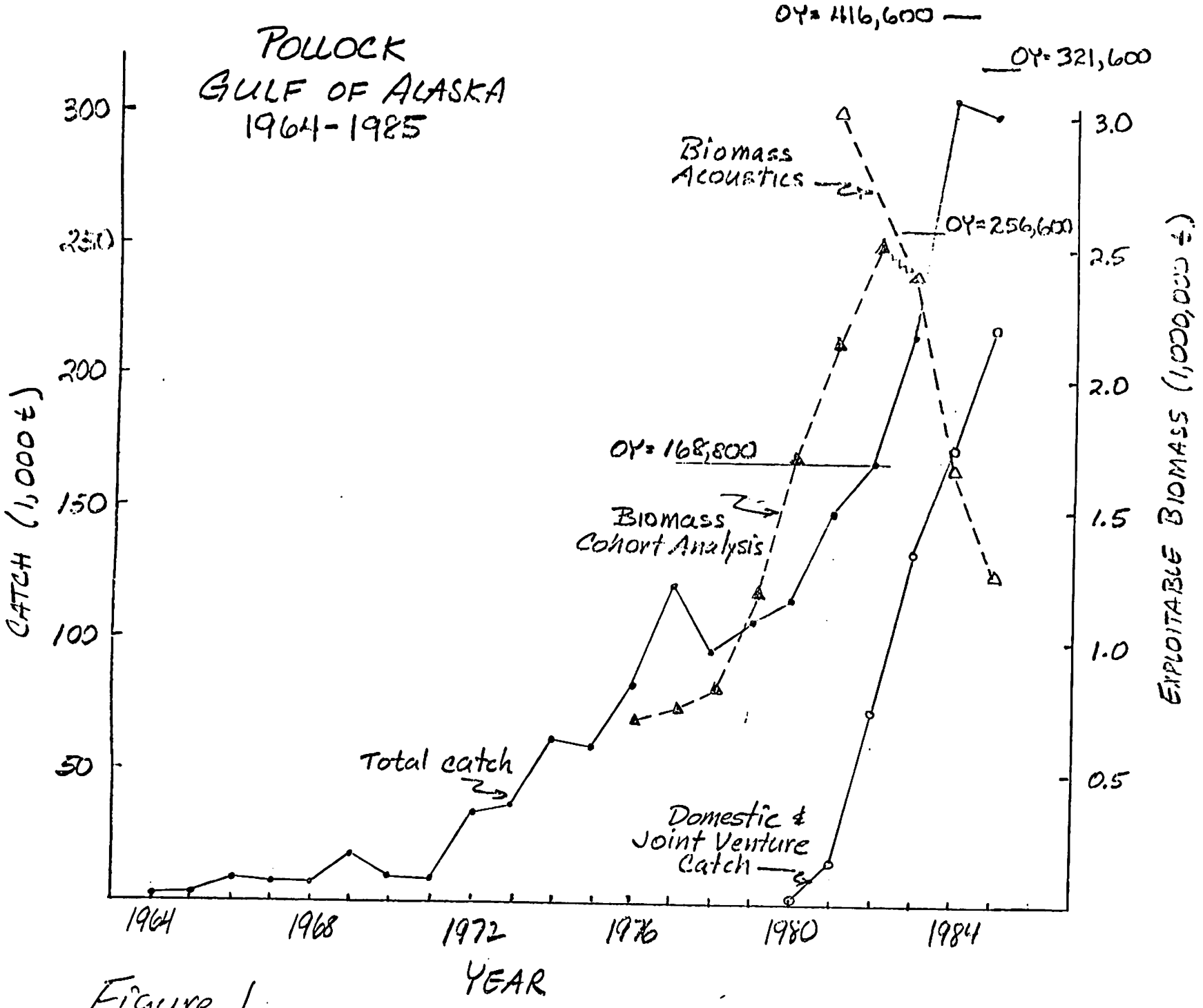

POLLOCK
GULF OF ALASKA
1964-1985
OY= 416,600
OY= 321,600
OY= 256,600
OY= 168,800
Biomass Acoustics
Biomass Cohort Analysis
Total catch
Domestic & Joint Venture Catch
CATCH (1,000 t)
EXPLOITABLE BIOMASS (1,000,000 t)
YEAR
300
250
200
150
100
50
3.0
2.5
2.0
1.5
1.0
0.5
1964
1968
1972
1976
1980
1984

Figure 1.

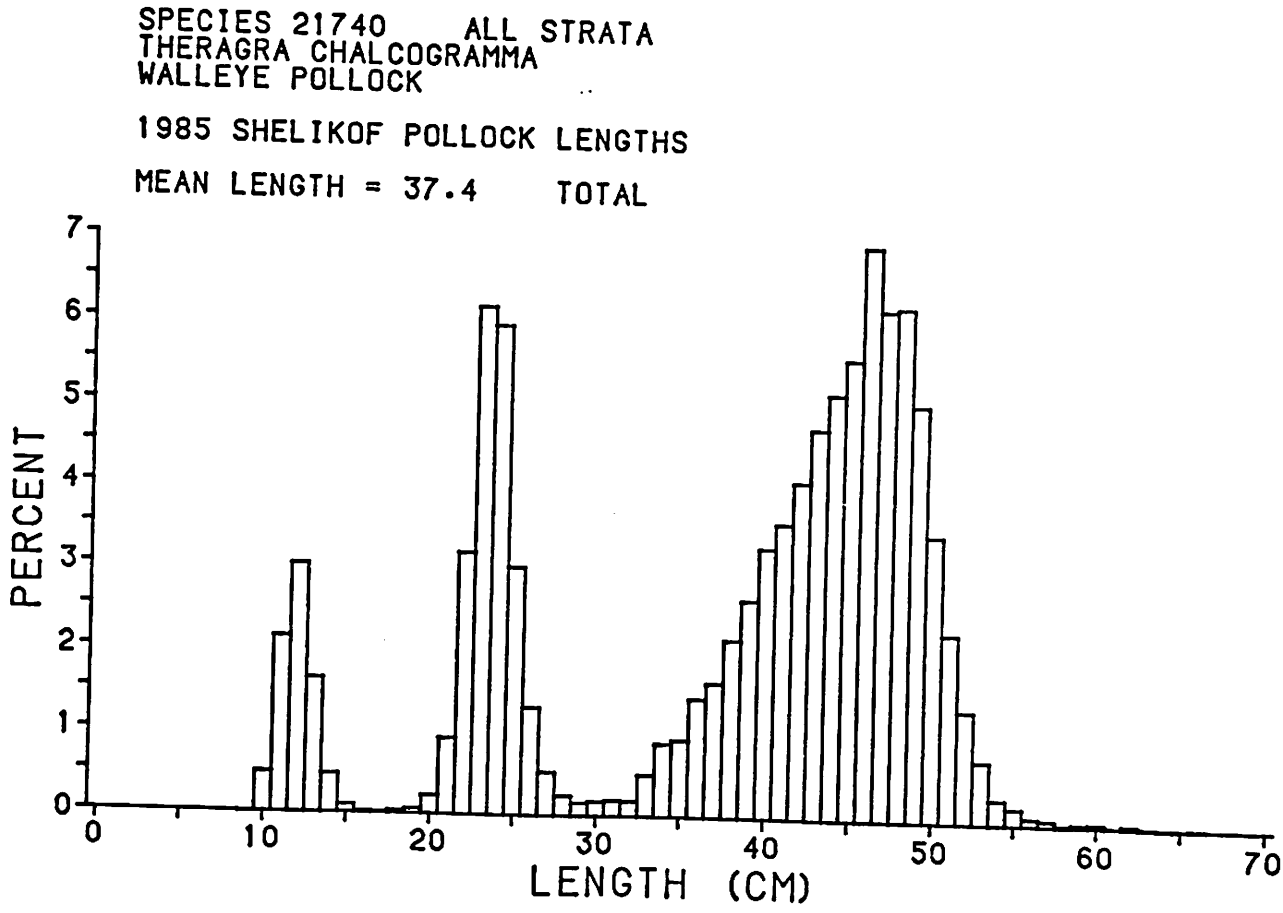

SPECIES 21740 ALL STRATA
THERAGRA CHALCOGRAMMA
WALLEYE POLLOCK
1985 SHELIKOF POLLOCK LENGTHS
MEAN LENGTH = 37.4 TOTAL
PERCENT
0
1
2
3
4
5
6
7
0
10
20
30
40
50
60
70
LENGTH (CM)

Fig 2 A.

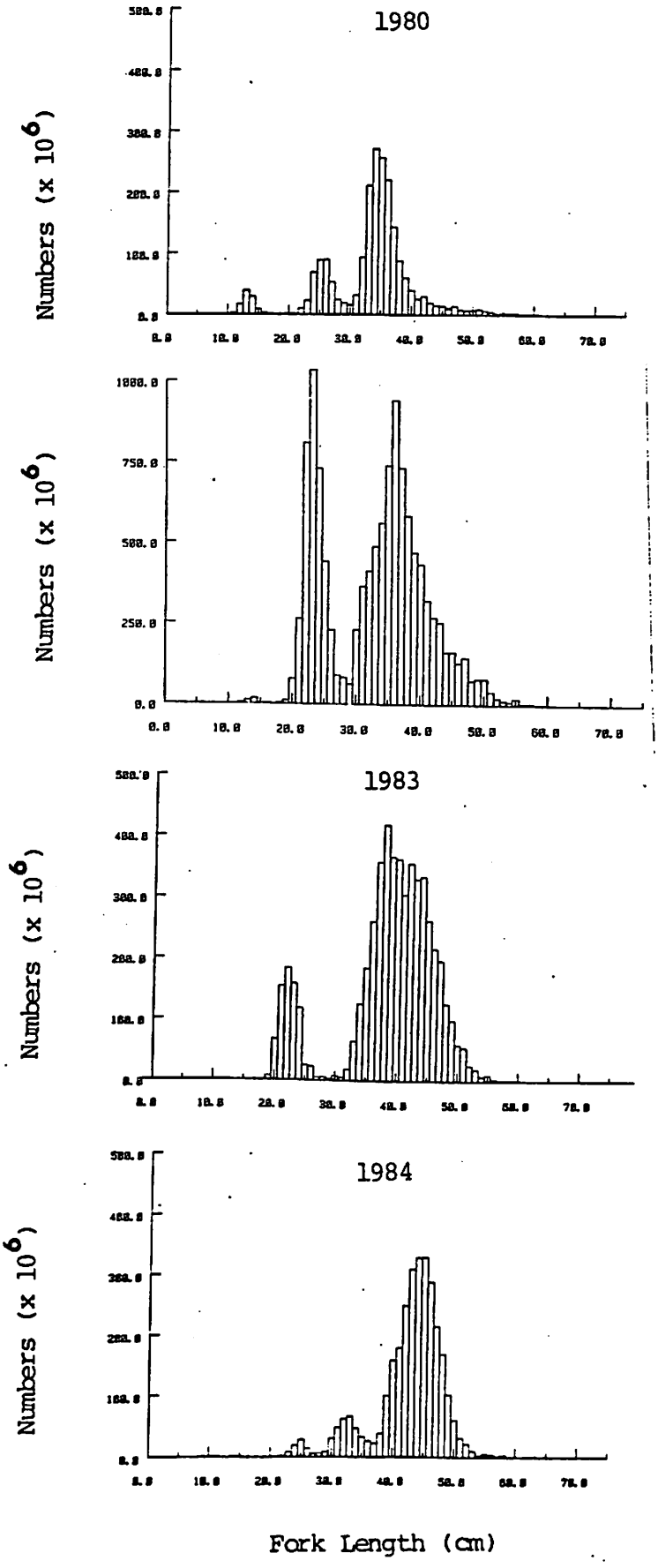


Figure 2B --Length distributions of Shelikof Strait pollock determined from 1980, 1981, 1983, and 1984 acoustic-midwater trawl surveys. The 1981, 1983, and 1984 length distributions are for stock size estimates determined by averaging estimates from selected surveys

1985 SHELIKOF STRAIT HYDROACOUSTIC SURVEY

Echo trace between Halibut Bay (K.I.) and Puale Bay (A.P.),
March 4, 1985 about 11:00 am

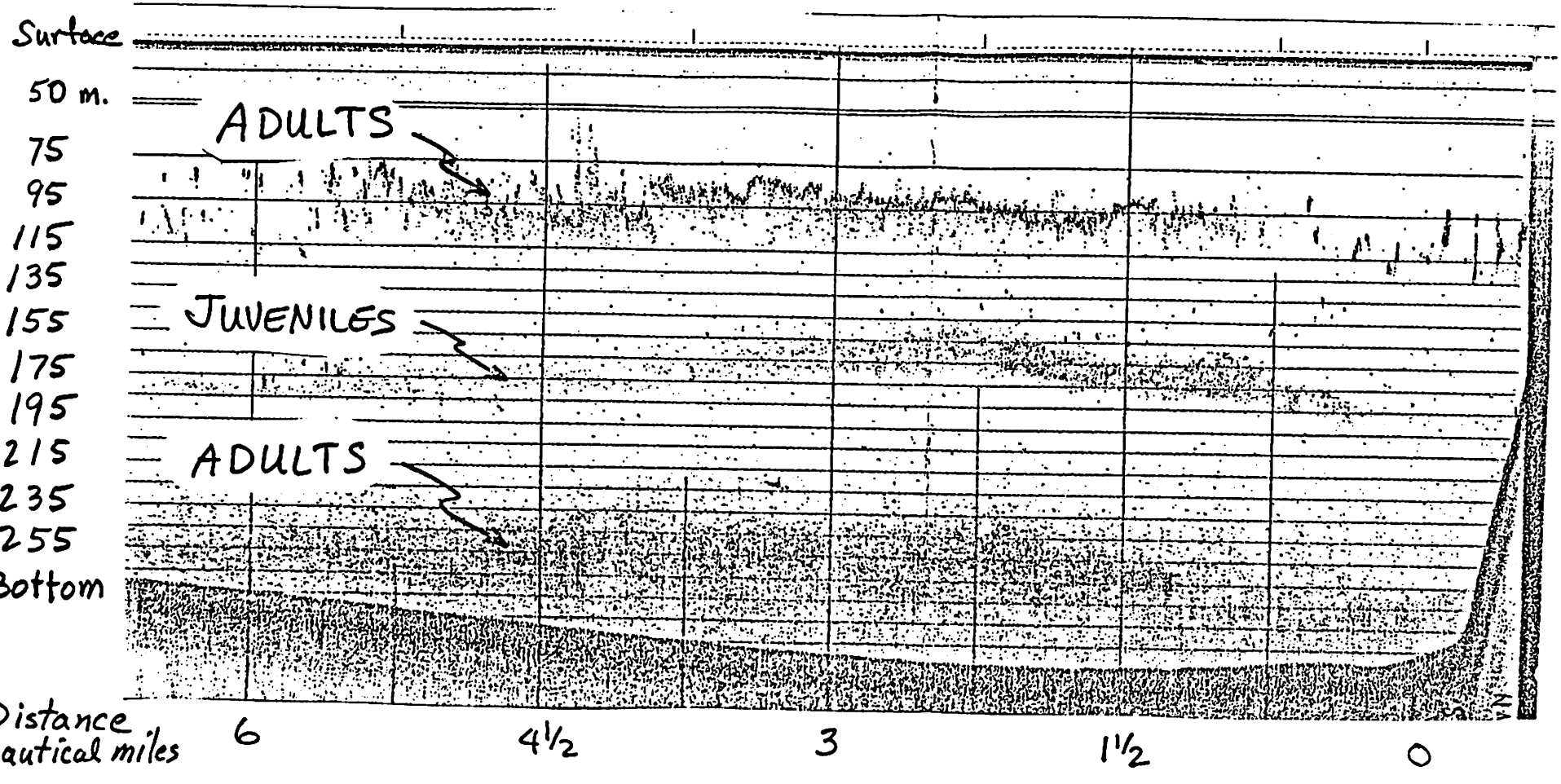


Figure 3

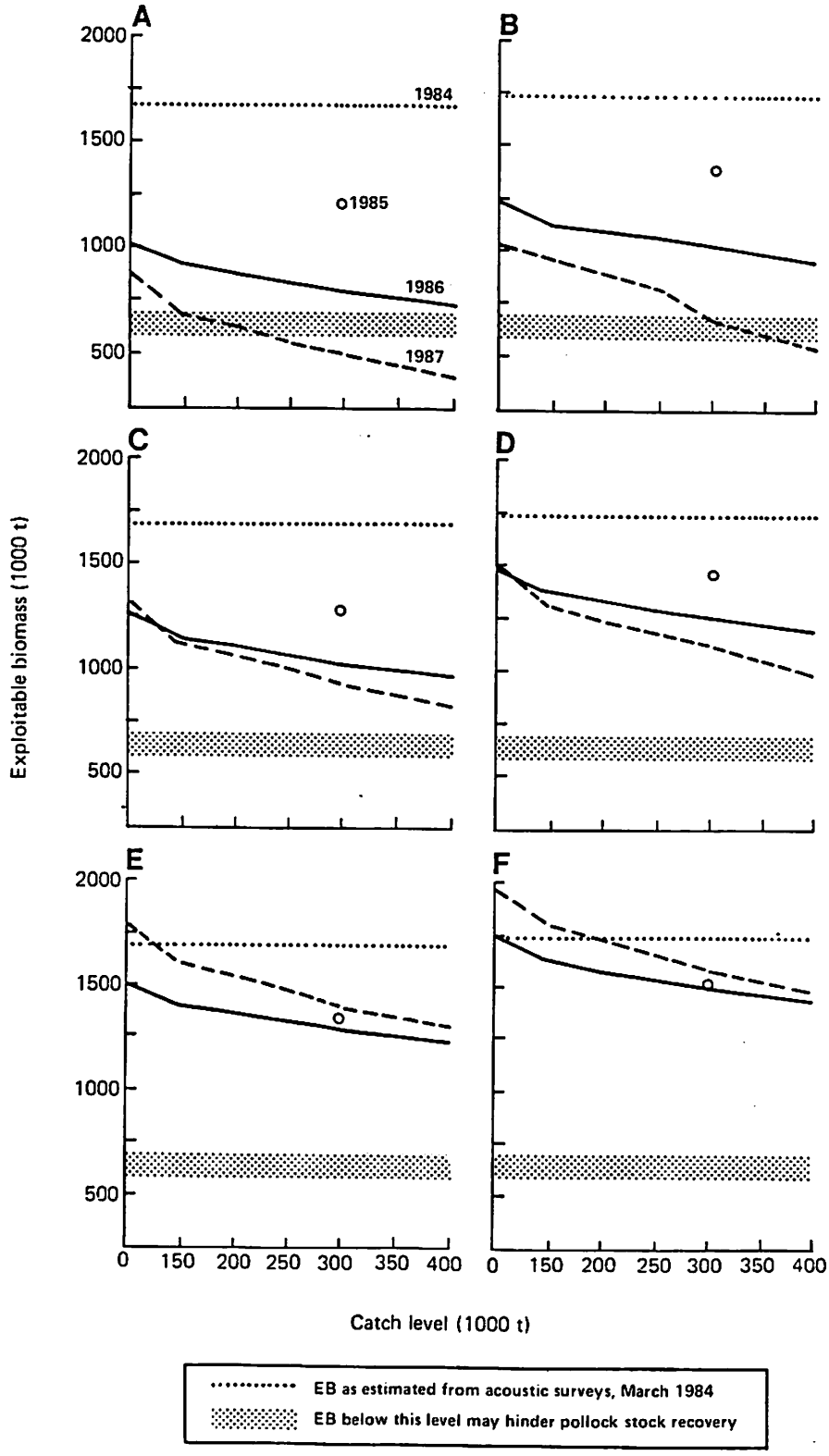
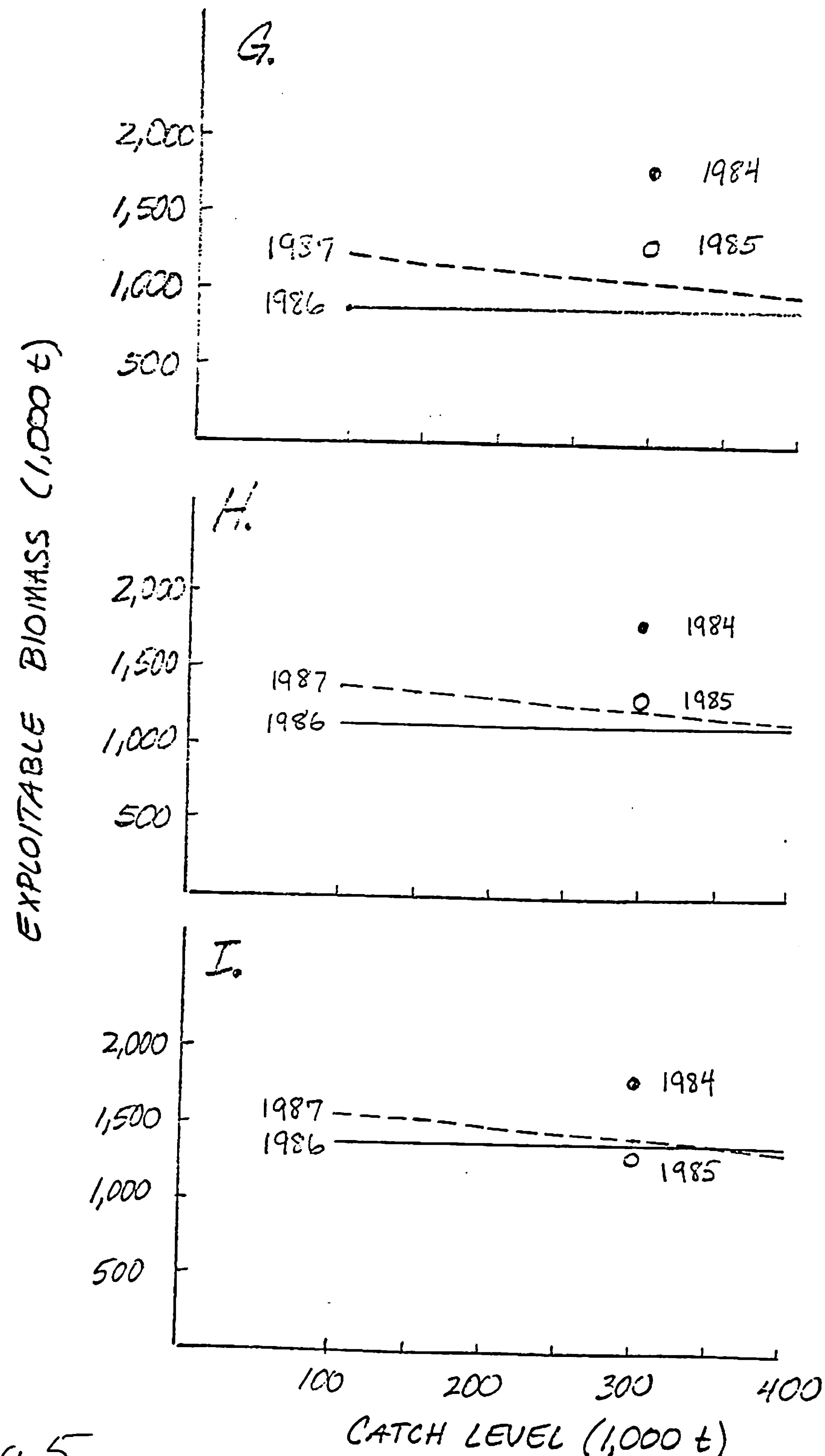


Figure 4.--Changes in exploitable biomass of pollock for various catch and recruitment levels: a. below average recruitment in 1984-87; b. average recruitment in 1984 and below average recruitment in 1985-87; c. below average recruitment in 1984 and average recruitment in 1985-87; d. average recruitment in 1984-87; e. below average recruitment in 1984 and above average recruitment in 1985-87; f. average recruitment in 1984 and above average recruitment in 1985-87. (Recruitment refers to the population of 3-year-old fish.)



G.
2,000
1,500
1,000
500
1987
1986
1984
1985
H.
2,000
1,500
1,000
500
1987
1986
1984
1985
I.
2,000
1,500
1,000
500
1987
1986
1984
1985
EXPLOITABLE BIOMASS (1,000 t)
100
200
300
400
CATCH LEVEL (1,000 t)

Fig 5

Fig 6

Pollock Biomass Projections for Recruitment Scenarios

Scenario	Year Class (age 3)			Season	Projected Biomass
A.	80	W		83	
	81	W	(proj)	84	1.7-1.8 million t
	82	W	"	85	1.2-1.3 " "
	83	W	"	86	↘
	84	W	"	87	↘↘
C.	80	W		83	
	81	W	(proj)	84	1.7-1.8 million t
	82	A	"	85	1.25 " "
	83	A	"	86	>1.0 " "
	84	A	"	87	>0.8 " "
G.	80	W		83	
	81	W		84	1.7-1.8 million t
	82	W		85	1.2-1.3 " "
	83	W	(proj)	86	0.9 " "
	84	S	"	87	>1.0 " "
H.	80	W		83	
	81	W		84	1.7-1.8 million t
	82	W		85	1.2-1.3 " "
	83	A	(proj)	86	1.1 " "
	84	S		87	>1.2 " "
I.	80	W		83	
	81	W		84	1.7-1.8 million t
	82	W		85	1.2-1.3 " "
	83	S	(proj)	86	1.4 " "
	84	S		87	>1.4 " "