

Northwest Atlantic



Fisheries Organization

Serial No. N1214

NAFO SCR Doc. 86/89

SCIENTIFIC COUNCIL MEETING - JUNE 1986

Correlations of Silver Hake Abundance Indices

by

Paul Fanning

Department of Fisheries and Oceans, Fisheries Research Branch
Marine Fish Division, Bedford Institute of Oceanography
P. O. Box 1006, Dartmouth, N. S. Canada B2Y 4A2

The correlations and patterns in the four available indices of Silver Hake adult abundance were examined. Table 1 contains the data from the four indices. They are standardized CPUE, July survey numbers, July survey biomass and March survey numbers. The standardized CPUE is from Waldron, Fanning and Parnell (NAFO 1986, this meeting). The survey numbers are from Waldron and Fanning (NAFO 1986, this meeting) with the addition of July numbers for 1970 and 1971 (Figure 1). The July biomass index is from Waldron and Fanning (NAFO SCR Doc. 85/68) with the addition of the 1985 point (Figure 2). Table 2 is the March numbers at age from Waldron and Fanning (NAFO SCR Doc. 85/68). There is no ageing available for the 1985 March cruise as yet and so only total numbers are reported here. The correlation matrix of the four indices for 1979 to 1985 is in Table 3 and the correlation matrix of the July numbers, July biomass and CPUE for 1970 to 1985 is Table 4. Figure 3 is the plot of the July survey numbers and biomass with both variables standardized to a mean of 1.0 and Figure 4 is the July survey numbers and the CPUE with both variables standardized to a mean of 1.0.

Table 1. Silver Hake Abundance Indices.

YEAR	CPUE	JULY NUMBERS	JULY BIOMASS	MARCH NUMBERS
1970	2.295	122591	23519	0
1971	1.733	328755	7879	0
1972	1.888	171095	15387	0
1973	2.476	427116	38187	0
1974	1.676	303217	36154	0
1975	1.476	82050	7496	0
1976	2.146	186186	18610	0
1977	1.946	231132	8164	0
1978	1.599	88318	10965	0
1979	1.764	347897	36288	381469
1980	1.673	84881	10066	192500
1981	1.420	337729	39182	335821
1982	4.198	674408	131707	998784
1983	2.251	299537	56128	964176
1984	3.042	946668	118260	960484
1985	3.263	419493	66755	379573

TABLE 2. SILVER HAKE MARCH SURVEY ABUNDANCE IN THOUSANDS

	1979	1980	1981	1982	1983	1984	1985
1	256456	14057	61534	345431	390796	437416	
2	84668	101844	113543	110382	212362	127641	
3	19323	40070	137086	346088	283186	64797	
4	8497	16457	18286	108476	39223	248823	
5	5444	10337	4238	54960	21855	58462	
6	3442	5657	739	21021	8613	13087	
7	2127	1170	209	8779	4759	6953	
8	780	267	138	1680	2109	2588	
9	323	830	0	1459	959	563	
10	410	1810	48	508	315	166	
1+	381469	192500	335821	998784	964176	960484	379973
2+	125013	178443	274287	653353	573380	523068	
3+	40346	76599	160743	542971	361019	395441	
4+	21023	36529	23658	196883	77833	330644	
5+	12526	20072	5372	88407	38610	81821	
6+	7082	9734	1134	33447	16754	23358	

Table 3. Indices from 1979 to 1985.

CORRELATION MATRIX

	CPUE	JULY	BIOMASS	MARCH
CPUE	1.00000	.67608	.88396	.64544
JULY	.67608	1.00000	.91187	.70279
BIOMASS	.88396	.91187	1.00000	.82081
MARCH	.64544	.70279	.82081	1.00000

Table 4. Indices from 1970 to 1985.

CORRELATION MATRIX

	CPUE	JULY	BIOMASS
CPUE	1.00000	.70718	.85744
JULY	.70718	1.00000	.89435
BIOMASS	.85744	.89435	1.00000

Figure 1. SILVER HAKE JULY SURVEY ABUNDANCE

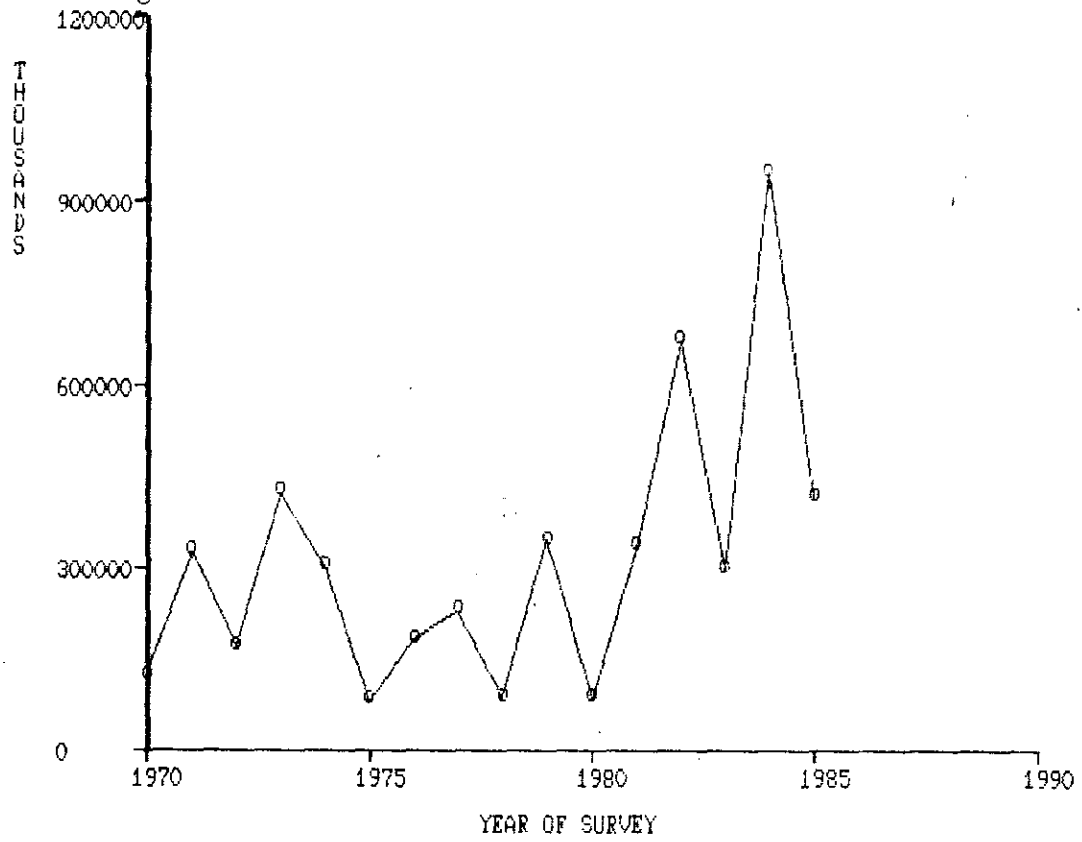


Figure 2. SILVER HAKE JULY SURVEY BIOMASS

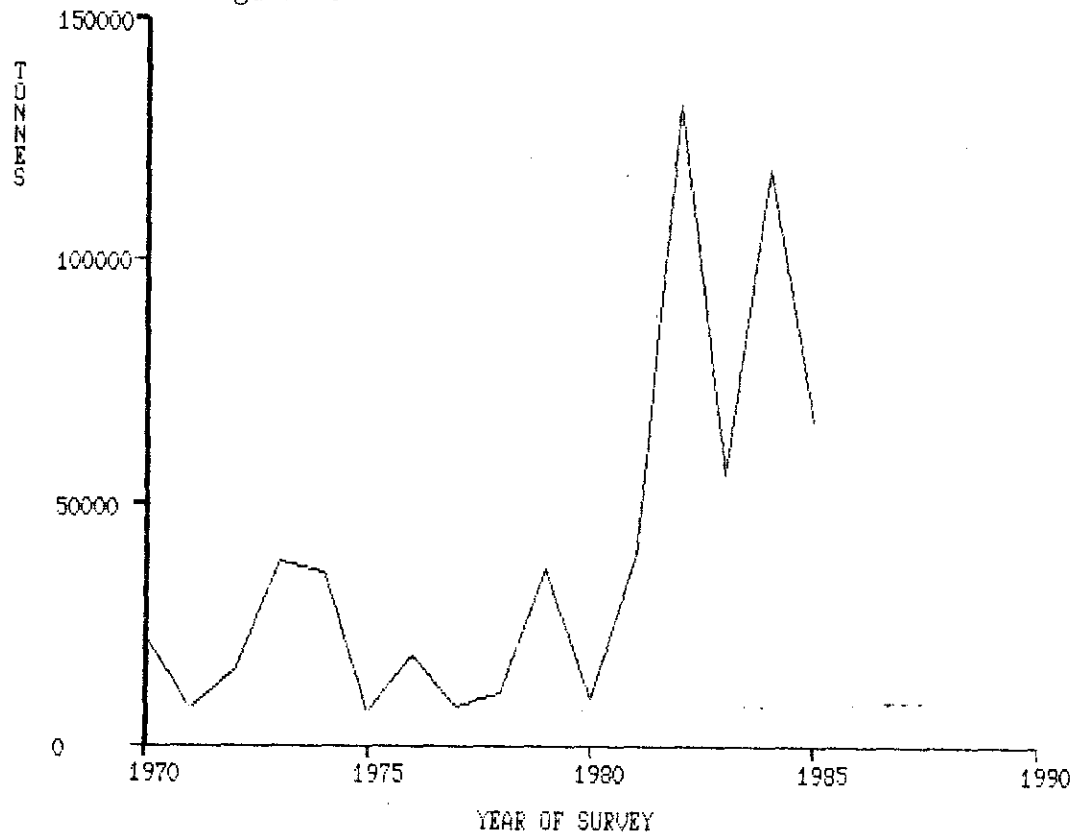


Figure 3. SILVER HAKE JULY SURVEY NUMBERS AND BIOMASS (MEAN=1)

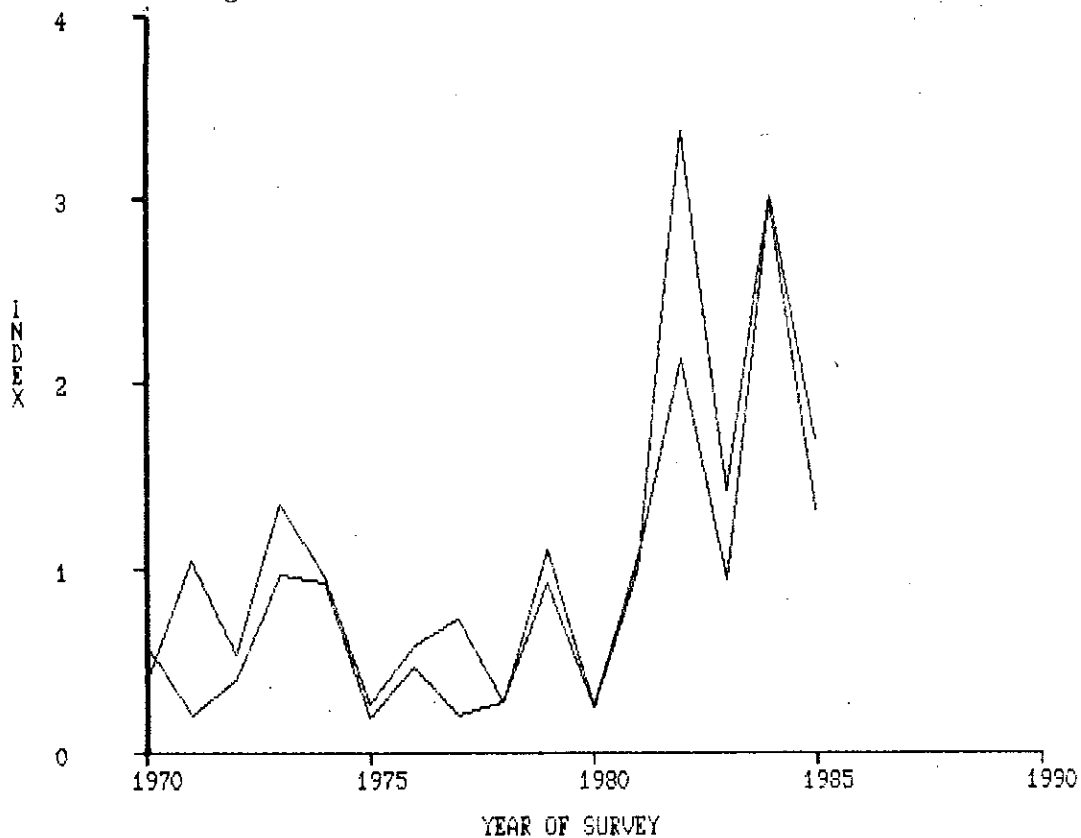


Figure 4. SILVER HAKE JULY SURVEY NUMBERS VS CPUE (MEAN=1)

