International Council for
the Exploration of the Sea

C.M. 1980/M:27
Anadromous and Catadromous Fish Committee

Present status of pink salmon (Oncorhynchus gorbuscha) in the Newfoundland region

by

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Abstract

Transplants of pink salmon to the western Atlantic coast are briefly reviewed. Data are presented from subsequent observations carried out at North Harbour River, St. Mary's Bay, Newfoundland, from 1975 to 1978, and on the distribution of known adult returns from 1974 to 1978.

Attempts to establish viable pink salmon (Oncorhynchus gorbuscha) populations in the western north Atlantic have been unsuccessful. Initial introductions occurred in 1906 in the State of Maine when approximately 570 thousand fry and fingerlings were stocked in various coastal streams (Bowers 1907). From 1907 to 1925 in excess of 29 million fry were planted in Maine from brood stocks originating on the Pacific coast and beginning in 1919, from hatchery operations conducted on naturally spawning fish (Bigelow and Schroeder 1953). Artificial propagation was terminated in 1925 as it was felt that the species had become sufficiently established (Neave 1965). However, declining numbers of adults suggested that natural reproduction had failed to maintain the species and few pink salmon were reported after 1927 (Huntsman and Dymond 1940, Bigelow and Schroeder 1953). Two additional transplants were made from eggs received by Maine hatcheries in 1915 and 1916 when 15,000 fry and 18,000 fingerlings were planted in the Potomac River, Washington, D.C. (O'Malley 1917), and in the Egg River, New Jersey (O'Malley 1919), respectively. No returns were reported from these stockings.

Transplants of pink salmon to the province of Newfoundland began in 1959 (Blair 1968). By 1966 over 15 million eggs originating in British Columbia had been planted in the North Harbour River, St. Mary's Bay (Lear 1975). Adult returns from artificially propagated fish totalled 11,614, with approximately 60% of these returning to North Harbour River (Lear 1975). Returns from natural-spawned fish from 1967 to 1976 were 5,751 of which 3,267 (57%) were recorded from the North Harbour River. Paralleling the Maine situation, adult returns rapidly diminished and by 1976 only 8 pink salmon were reported to have returned to the home river (Lear and Day 1977). An evaluation of the introduction of Pacific salmon to Newfoundland and reasons for its apparent failure have been previously reported (Lear 1975).

This paper presents results of additional observations carried out at North Harbour River and comments on the present status of pink salmon in Newfoundland.

Results and Discussion

From 1975 to 1977 natural egg deposition in North Harbour River was estimated at 46,000. This was derived using Lear's (1975) figure of 1,600 eggs per female fish. This represents a drastic reduction in spawning production when compared to the years 1967-70 when natural propagation ranged from 0.9 to 4.4 million eggs annually (Table 1).

Enumeraton of fry migration was terminated in 1976 when 26,000 fry were calculated leaving the river. This, however, represented a survival of 70% from the total eggs deposited in 1975. By applying the mean egg to fry survival for the previous five years (S = 72%, 1972-76), fry migrants for 1977 and 1978 were estimated as 4,000 and 2,000 respectively.

Adult returns of pink salmon in 1977 totalled 6. Two specimens were caught commercially in St. Mary's Bay, while 4 returned to North Harbour River. These fish were apparently produced by 46 adults that had spawned in 1975. No salmon were reported to have returned to North Harbour River in 1978 and 1979 from the 8 and 4 adults which spawned there in 1976 and 1977 respectively. However, 3 pink salmon were caught in 1978 during the commercial Arctic charr fishery in Tikkoatokak Bay, northern Labrador (56°42' Lat., 62°12' Long.).

Figure 1 illustrates the distribution of adult pink salmon returning during 1974-78. The majority of these were caught on the Avalon Peninsula, particularly in the North Harbour River-St. Mary's Bay area. From 1967 to 1970 a large number of pink salmon were reported from the northern peninsula and northeast coast of insular Newfoundland (Lear 1975). By 1971 few salmon were being reported from these regions, with the majority again from the Avalon area. This is consistent with returns during the past several years. The exception, however, is the capture of pink salmon in northern Labrador during 1978.

These latter reports in addition to previous recoveries in northern Labrador in 1973 (Lear 1975) could lead to speculation whether these salmon were strays from North Harbour River or if they could have originated from Russian transplants in the Baltic and White Sea areas. From the Russian stockings which began in 1956 (Kossov et al. 1960) pink salmon have been subsequently reported from Norway (Berg 1961, 1977), Scotland (Sutterlin and Merrill 1978), Sweden (cited in Berg 1977) and Iceland (Gudjónsson 1978). Native fishermen in northern Labrador report catching pink salmon during the late 1960's when fishing for charr in the Saglek Fiord area (58°30' Lat., 63°15' Long.). In Barber's (1978) hypothesis concerning the origin of pink salmon from Arctic charr (Salvelinus alpinus), he noted the close resemblance of the two species. Consequently pink salmon could occassionally be captured in northern Labrador but end up processed along with charr. Although meristic and morphometric data are available for three of the specimens captured in 1973, it is inadequate to confirm origin of these salmon on the basis on comparing these data with known literature values.

Initial interest in the pink salmon project and efforts generated to obtain accurate information regarding distribution of adult returns has diminished. It is possible, therefore, that additional pink salmon have been captured in recent years but are not reported. In any event, despite the failure of the North Harbour River project to establish a commercially viable population it is conceivable that small populations of pink salmon have become established and are naturally reproducing in certain areas of the province.

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Table 1. Review of pink salmon transplants from British Columbia to North Harbour River, Newfoundland, estimates of natural egg deposition, subsequent fry migrants, and adult returns.

Transplant no.	Eggs		Fry migrants			Adult returns		
	Year	No. millions	Year	No. millions	% of eggs	Year	North Harbour River	Total
1	1959*	0.25	1960	0.10	38	1961	1	1
2	1962*	2.5	1963	2.15	87	1964	25	49
3	1964*	3.4	1965	2.86	83	1966	419	638
		(0.02)						
4	1965*	3.3	1966	3.00	91	1967	5334	8500
5	1966	5.9*	1967	5.10	82	1968	1353	2426
		(0.5)						
	1967	(4.4)	1968	3.80	87	1969	1116	2603
	1968	(1.1)	1969	0.86	76	1970	1489	2091
	1969	(0.9)	1970	0.67	72	1971	468	624
	1970	(1.2)	1971	0.87	70	1972	58	117
	1971	(0.4)	1972	0.27	72	1973	60	174
	1972	(0.05)	1973	0.04	79	1974	18	22
	1973	(0.05)	1974	0.04	71	1975	46	103
	1974	(0.014)	1975	0.010	67	1976	8	8

(Data from Lear (1975) and Lear and Day (1977))

* *

	1975	(0.037)	1976	0.026	70	1977	4	6
	1976	(0.006)	1977	0.004	-	1978	-	3
	1977	(0.003)	1978	0.002	-			

* Transplanted; ( ) deposited naturally

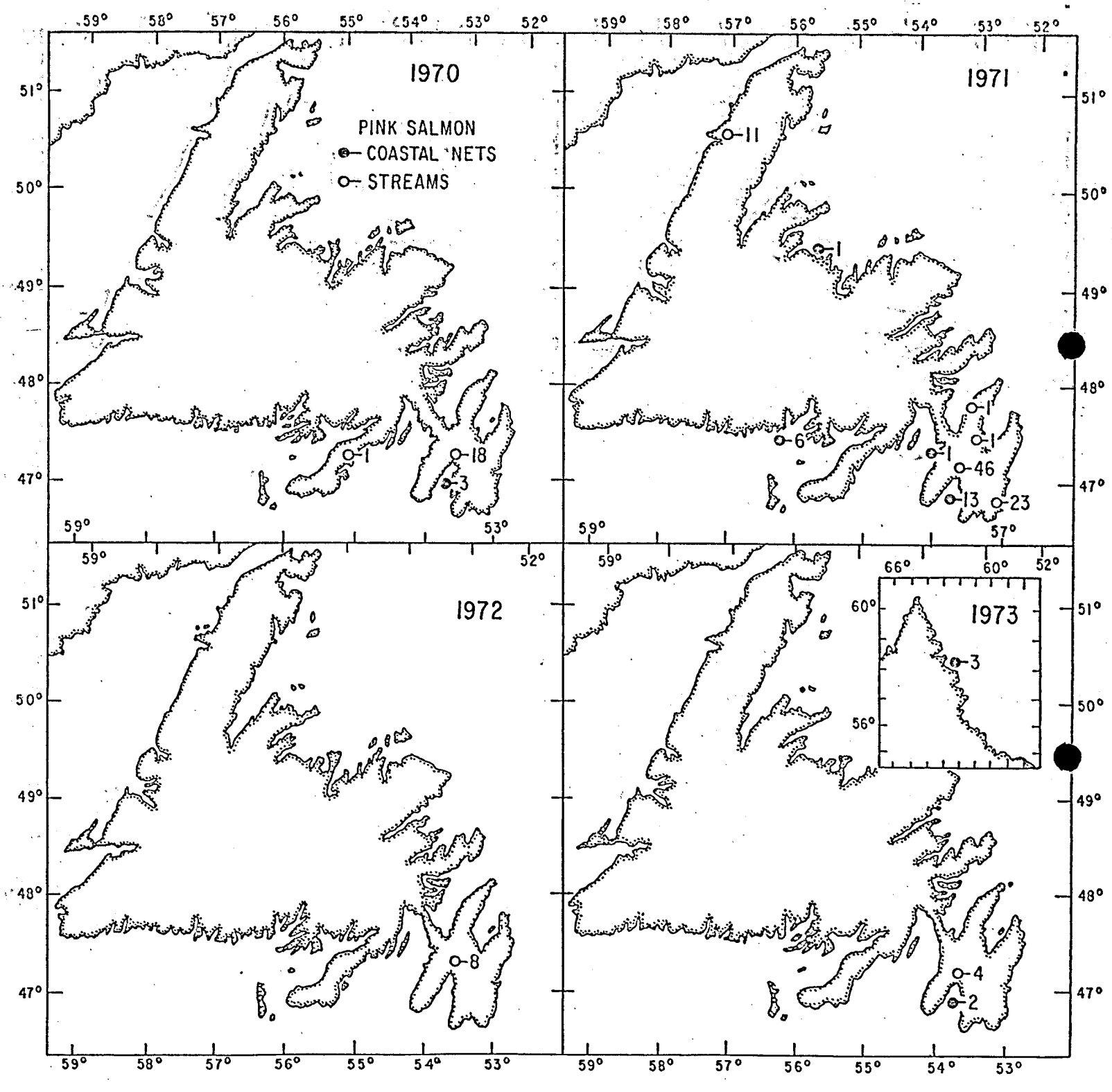
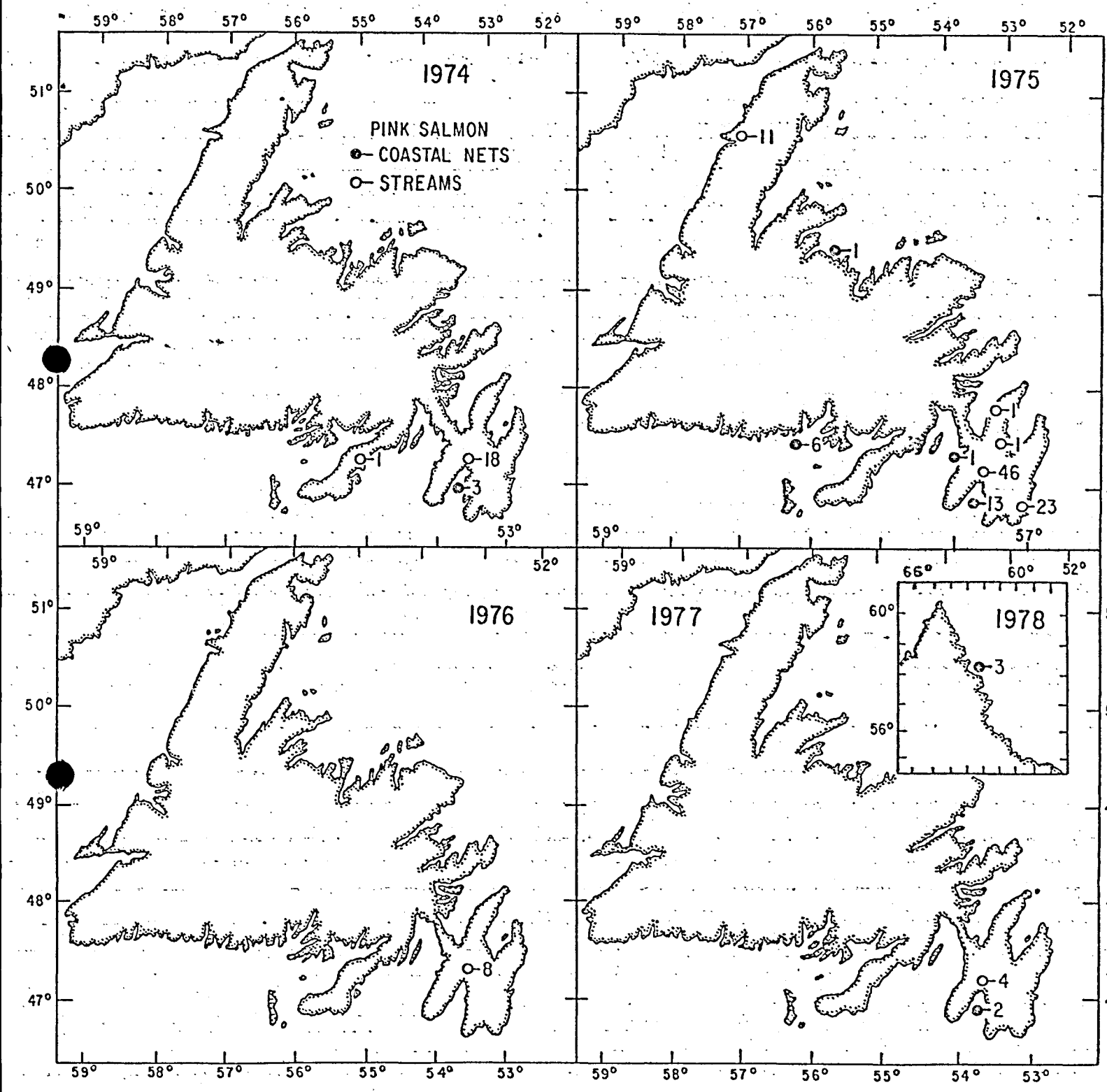


Fig. 1. The distribution of adult pink salmon returns in Newfoundland and Labrador, 1970-73.



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