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Canadian Research Cruise on Salmon to
West Greenland in 1967

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Canadian Atlantic salmon research programs in 1967 included a cruise (Sept. 14-Oct. 9) to the West Greenland area in the research vessel *A.T. CAMERON*. The purpose was to gather information on the distribution and biology of, and the fisheries for, Atlantic salmon, and to collect specimens for study and tagging.

The general course of the cruise is indicated in Table I. Heavy winds, encountered throughout the cruise, hindered open-sea operations, so advantage was taken of Greenland permission to fish inshore waters on four nights.

Procedure

Procedure on fishing stations was to set out approximately 1000 m of drift-net (about 100-m shackles) of stretched mesh size varying from 6 to 16 cm, starting about 2 hours before dark. The net was marked with a direction-finder radio beacon and left overnight. At dusk, about 3 miles from the drift-net, 10 skates (each 100 m long and with 49 hooks) of Japanese salmon longline gear were run out, then hauled after about 1 hour of fishing. The longlines were set again just before dawn and hauled about 1 hour after daylight. Then the drift-net was taken aboard. When in fjords, several 200-m gill-nets (2 shackles each) were set from shore outward, overnight. Surface water samples and temperatures were taken and a bathythermograph cast made (250 m) at each fishing station. When fishing in fjords, short plankton tows were made after evening fishing operations were completed.

Results

Catches by the fishing gear are given in Table I. None of the 53 salmon taken in the gill-nets (mostly from inshore waters), nor the single specimen taken on longline were in sufficiently good condition to warrant tagging and liberation.

The Japanese salted anchovy bait obtained for the longlines was soft and did not stay well on the hooks. Frozen capelin, cut in pieces about 7-10 cm long, was only a little better. Similar sized pieces of frozen squid stayed on hooks well but seemed less attractive, judging by the few fish and sea birds taken. The most satisfactory bait appeared to be small, frozen sand lance obtained in Godthaab.

When lying-to in fjords at night great numbers of small shrimp, sea worms, capelin, and sand lance were seen in the beam of the ship's lights. Possibly this great abundance of food organisms was a handicap to bait-fishing for salmon.

Of the 54 salmon taken, 39 were returned to St. Andrews for study of parasites, food, scales, etc. Most were taken in 11- to 16-cm mesh, only 2 in 9-cm mesh, and none in 6-cm mesh. Weights varied from 1.5 to 9.4 kg (average, 3.8 kg). Approximately 75%, including the 1.5-kg fish, had either 2 or 3 years of river life and were in their second sea year; the 2 largest fish had spawned once, after a little over 2 years of sea growth, and were well mended. All specimens were in fat condition (mean $K = 1.192$, using centimetres, grams, and fork length).

Information from high-seas fishermen

In addition to informative and helpful visits with representatives of Government and Industry in Greenland, scientists from the *CAMERON* exchanged visits with two high-seas drifters of Faeroese and Norwegian registry.

Senior officers of both vessels gave us useful opinions. Our Pacific Coast type drift-nets were about twice as deep as those found effective in the Greenland area, and were hung with somewhat more gather on the footrope than the Greenland nets. We gave a net each to two vessels for testing against their own. In one test with an FRB 100-m net mounted in a string of Greenland nets, the average catch was about 6 salmon per 100 m, with none in the FRB net despite its greater depth. Greenlanders, like Maritime salmon drifters, fasten their nets to the ship while fishing, thus keeping them more or less straight. FRB nets were put adrift, with radio beacons, using West Coast research fishing techniques. Overnight they often drifted into many-folded shapes. This was considered inimical to best fishing, an opinion also held by Canadian Maritime salmon drifters. Effectiveness of vessels drifting in Greenland is perhaps indicated by one night's fishing reported to us by radio the following day: 7 vessels fishing about 3-8 miles of net each, off Holsteinsborg and north to Disko Bay, took an average of 250 salmon on the night of September 30. Rates of capture per unit net length fall within the ranges experienced by Maritime drifters.

One of the needs for high-seas salmon investigation in the area appears to be better acquaintance with locally successful techniques of capture.

High-seas drifters expressed interest in, and intention of, exploratory salmon drifting in waters offshore from Baffin Island and Ungava in 1969. One vessel officer had acquaintance with research literature on salmon movements, kept up to date on available marine temperature and water movement information for the area, and had recourse to a thermometer when planning fishing operations. Such imaginative and aggressive attitudes could lead to expansion of high-seas fisheries for Atlantic salmon.

Table I. A.T. CAMERON Cruise No. 137; Sept. 14-Oct. 9, 1967; summary of trip and salmon fishing operations in West Greenland area. Gear: 500-fathom drift-net, set overnight; 1000-metre longline, usually set at dusk and dawn; 100-fathom gill-net set from shore outward, overnight. (N.B. 1 fathom = 1.8 m)

Dates	Places	Latitude N	Longitude W	Surface temp. °C	Gear	Salmon	Cod	Tomcod	Lumpfish	Other
Sept. 14-17	St. John's to Cape Farewell	59° 34'	44° 45'	1.9	Drift-net					1 herring
17-18	Cape Farewell (offshore)									
20-23	Godthaab								2	
23-24	Napassoq (offshore)	64 53	52 40	3.1	Drift-net Longline	10				
24-25	Itivdleq (fjord)	66 32	52 59	4.3	Drift-net Longline	1	2			
25-26	Itivdleq (fjord)	66 33	53 17	3.9	Gill-net (3) Drift-net Longline	8 5	4 1	2		6 sculpins
26-27	Itivdleq (fjord)	66 33	53 17	3.9	Gill-net (3)	6		1	3	1 4 1
27-28	Ikertoq (fjord)	66 53	52 50	5.5	Drift-net Gill-net (2) Drift-net	3 4 14	7 4 91	4		1 sculpin 1 Arctic Char
29-30	Holsteinsborg and Egedesminde									1 turbot
Sept. 30- Oct. 1	Disko Bay (offshore)	68 54	52 43	3.5	Drift-net Longline	1 1				
Oct. 2-4	Godthaab and Faeringehavn								1	
4-5	Fiskenaes (offshore)	62 53	52 00	1.8	Drift-net	1				
7-8	Davis Strait (offshore)	52 23	52 18	5.9	Drift-net				1	
9	St. John's									