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Results of Tagging of Atlantic cod on St. Pierre Bank during February, 1980

by

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INTRODUCTION

During February 10-24, 1980, 2,168 adult Atlantic cod (*Gadus morhua*) were tagged on the northwestern slopes of St. Pierre Bank (Fig. 1). The cod were obtained and released in water depths of 135-154m. Bottom temperatures at the tagging location ranged from -0.1 to 5.6°C. The cod for tagging were obtained by the research vessel A.T. CAMERON using a standard otter trawl with codend mesh size of 130mm. No liner was used in the codend. Generally the sets were of short duration (10-15 minutes) although occasionally the sets were longer, up to 30 minutes duration. The net was taken back slowly (8-10m/minute) to allow the cod to acclimate to the changing pressure and to prevent suffocation from overcrowding in the codend.

Only cod classified to be in excellent condition were tagged. Any fish showing signs of bruising, scars, scale loss, injuries to fins or gills, bleeding, and "pop eye" condition or with distended swim bladders were routinely culled during the tagging procedures. The cod were held in holding tanks, with running sea water. From holding tanks cod were captured with dip nets, measured, examined for the gill parasite *Lernaeocera branchialis*, and tagged. The cod were then placed in tanks filled with running sea water until they fully recovered (i.e. actively swam in the tank) and were released over the side of the ship. The cod were tagged using either Petersen disc and blank, Petersen disc and dangler combination or orange or yellow T-bar tags. These were generally applied in batches of 50 tags to cod randomly selected from the holding tank. Although occasionally cod less than 45 cm long were tagged, only cod  $\geq 45$  cm in length are included in this paper (Table 1).

Recoveries are grouped arbitrarily by seasonal periods corresponding to the offshore fishery season (January-March) and the inshore fishery season (April-December) in NAFO Div. 3Ps. The tag recoveries by all countries are grouped by Fisheries and Oceans unit areas (Fig. 1). The landings of cod by Newfoundland and Labrador fishermen from designated unit areas were obtained for each of the years 1980 to 1983 using comparable seasonal groupings as those used to group tag recaptures. The catches for these unit areas were used to calculate the tags recovered per 1,000t of cod caught by Newfoundland and Labrador fishermen by season. The bracketed values in Table 2 represent the numbers of tags reported/1000t of cod. This assumes that the catch of cod is proportional to effort and is an attempt to standardize the tag recoveries to the unit of effort required to catch 1,000 t of cod. In some cases no catches were reported by Fisheries and Oceans for a few areas from which tags were recovered and reported.

RESULTS

During February-March, 1980 there were 13 tags recovered from the tagging area (Area 303) (Table 1). There was one recovery from St. George's Bay (404) and one from NAFO Division 3Pn. During April-December, 1980 most tag recoveries were inshore, mainly in Placentia Bay (304), along the south coast from Burgeo to Hermitage (302) and within Fortune Bay (303). Also of significance were the high rate of recoveries (13.9/1000t) from depths of 45-195m but mainly 45-55m on the central part of St. Pierre Bank (306). These recoveries were made mainly during the summer (June-August). There were also 6 returns (6.7/1000t) from western St. Pierre Bank and 3 from southwestern and southern St. Pierre Bank. Additionally there were single recoveries from 4Vn, 3Pn, southern Grand Bank and the Virgin Rocks (328). From his 1954 tagging on St. Pierre Bank and the 1963 tagging on NW St. Pierre Bank Templeman (1974, 1979)

found a similar distribution although there was a wider dispersal from the 1963 tagged cod than from those tagged during 1954 possibly a reflection of greater fishing effort and larger catches from Subareas 2 and 3 during the 1960's than during the late 1950's.

During January-March, 1981, most returns were from the tagging areas (302, 303) with the remainder mainly from the western slopes of St. Pierre Bank. There were single recoveries from eastern St. Pierre Bank (305) and the north cape of the Grand Bank (330). There were no Newfoundland cod catches reported from area 303 during January-March, 1981 although 5 tag recoveries were reported from this area by Newfoundland fishermen.

There were 13 tag recoveries from central St. Pierre Bank (306) during April-December, 1981. These were taken mainly in depths of 45-58 m and constituted the highest return rate (46.9/1000t). Five of the 13 tags from area 306 were recovered during November. There were 16 (1.4/1000t) tags recovered in Placentia Bay, 4(0.6) from Fortune Bay and 1(0.2) from St. Mary's Bay (334). There were 9 recoveries from southwestern and southern St. Pierre Bank (308 and 309).

During April-Dec. 1981, there were single recoveries from Trinity Bay (337), the north cape of the Grand Bank, and Notre Dame Bay (339). During January-March, 1982 only 2 tags were recovered, both of them in the area in which they were released. During April-December the highest rate of recovery (30.9/1000t) occurred on the shallow part of central St. Pierre Bank while 2 were recovered during May on the western slope of the bank in 160-170 m depth. There was 1 return (0.2) from inshore Fortune Bay and there were 5 from northern St. Pierre Bank (303). There were 3 recoveries (0.3) from Placentia Bay and 1 inshore recovery from Burgeo-Hermitage area (302). There were 2 returns from inshore along the eastern Avalon Peninsula, 1 offshore from the Avalon Channel, and one inshore in Bonavista Bay.

During January-March, 1983 there were only 2 (1.2/1000 t) recoveries, both of them from the tagging area. During April-December there were 2 recoveries from Placentia Bay, one from a depth of 110 m near Miquelon and one from northern Funk Island Bank. During April-December, 1983 no recoveries were reported from St. Pierre Bank. Total catches during 1983 by Newfoundland fishermen in areas 305, 306, 307, and 308 were mostly low, 470, 342, 68, and 70 t respectively.

#### SUMMARY

Recoveries during January-March of cod tagged on northwestern St. Pierre Bank during February, 1980 were mainly from the area in which they were tagged.

Tag recoveries during April-December were mainly from shallow areas on the central and northern part of St. Pierre Bank and from inshore in Placentia Bay, Fortune Bay, south coast of Newfoundland, and St. Mary's Bay.

Generally most tag recoveries (87%) were within NAFO Div 3Ps. Of the 25 tags recaptured outside 3Ps, 13(52%) were from areas neighboring on 3Ps, especially in 3Pn and 4Rs where there was some intermingling with cod of the northern Gulf of St. Lawrence (4RS3Pn stock) and in St. Mary's Bay (3L) where there was intermingling with cod of the 2J3KL stock complex and other components of the Avalon-Burin stock complex.

The pattern of distribution of cod tagged on northern St. Pierre Bank is essentially similar to that obtained from tagging during 1954 (Templeman 1974) and 1963 (Templeman 1979).

#### REFERENCES

Templeman, W. 1974. Migrations and intermingling of Atlantic cod (*Gadus morhua*) stocks of the Newfoundland area. J. Fish. Res. Board Can., 31: 1073-1092.

1979. Migrations and intermingling of stocks of Atlantic cod, *Gadus morhua*, of the Newfoundland and adjacent areas from tagging in 1962-66. ICNAF Res. BuTT, No. T4: 5-50.

Table 1. Fork length distribution of adult ( $\geq 45$ cm) Atlantic cod tagged at depths of 135-154 m on northwestern St. Pierre Bank during February 10-24, 1980.

Fork Length (cm)	Number
45-47	48
48-50	139
51-53	277
54-56	372
57-59	336
60-62	297
63-65	232
66-68	138
69-71	113
72-74	68
75-77	52
78-80	26
81-83	22
84-86	28
87-89	6
90-92	3
93-95	7
96-98	2
114-116	1
123-125	1
Total	2,168

Table 2. Recoveries from 2,168 adult Atlantic cod tagged on northwestern St. Pierre Bank during February 10-24, 1980. Numbers in brackets indicate tags recovered for each 1,000 t of cod caught by Newfoundland fishermen.

Locality	Stat. area	1980		1981		1982		1983		1980-1983	
		Feb.- Mar.	April- Dec.	Jan.- Mar.	April- Dec.	Jan.- Mar.	April- Dec.	Jan.- Mar.	April- Dec.	Jan.- Mar.	April- Dec.
St. Georges Bay	404	1(0.2)								1	
Cape Breton (4Vn)	420		1(1.8)								1
Port Aux Basques(3Pn)	301	1(0.9)	1(1.6)		1(0.1)					1	2
Burgeo-Hermitage	302		12(73.6)	2(3.6)	1(0.2)		1(0.3)			2	14
St. Pierre-Fortune Bay	303	13(71.4)	8(1.0)	6	4(0.6)	2(1.1)	6(0.2)	2(1.2)	1	23	19
Placentia Bay	304		30(2.3)		16(1.4)		3(0.3)		2(0.2)		51
Eastern St. Pierre Bank	305		4	1(12.8)						1	4
Central St. Pierre Bank	306		12(13.9)		13(46.9)		5(30.9)				30
Western St. Pierre Bank	307		6(6.7)	2			2			2	8
SW St. Pierre Bank	308		2(1.9)	1	5					1	7
Southern St. Pierre Bank	309		1		4						5
St. Mary's Bay	334		7(0.9)		1(0.2)						8
Southern Grand Bank	313		1								1
Virgin Rocks	328		1								1
Eastern Avalon Peninsula	335						2(0.1)				2
Avalon Channel	332						1(0.3)				1
Trinity Bay	337				1(0.1)						1
Bonavista Bay	338						1(0.1)				1
North Cape of Grand Bank	330			1(1.6)	1					1	1
Eastern Grand Bank	326							1		1	
Notre Dame Bay	339				1(0.1)						1
Northern Furk Island Bank	347								1(0.1)		1

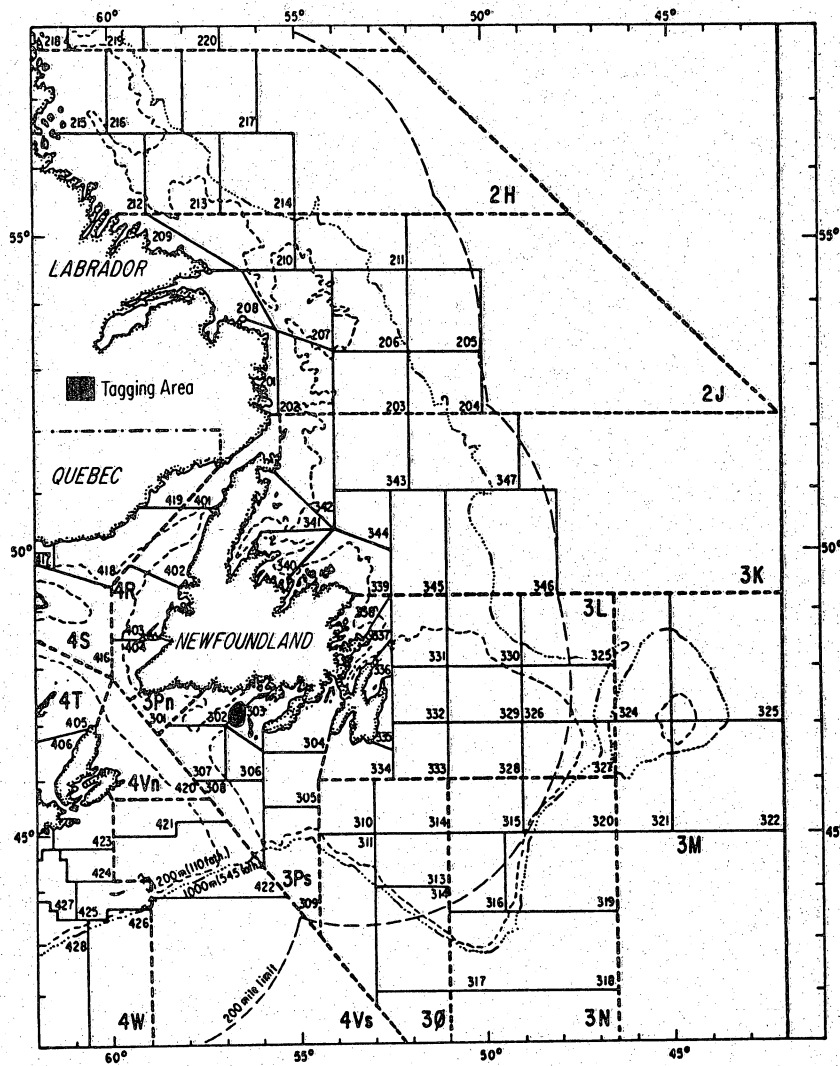


Fig. 1. Area map showing tagging locality on northwestern St. Pierre and Miquelon, NAFO Divisions and Fisheries and Oceans Statistical areas.