

AN UPDATE OF CANADIAN LARGE PELAGIC FISH TAGGING

by

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Canadian tag release and tag recapture data for large pelagic fish are brought up to date to 1978. Tagging results for bluefin tuna from 1963 to 1978 are summarized by year of release and year of recapture, by gear used at release and by gear used at recapture. Preliminary conclusions are drawn.

RESUME

Les données canadiennes de marquage et de récupération de marques pour les grands poissons pélagiques ont été mises à jour jusqu'à 1978. Les résultats de marquage du thon rouge, pour les années 1963 à 1978, sont rassemblés par année de marquage et année de recapture, et selon l'engin utilisé lors du marquage et celui employé à la recapture. Des conclusions préliminaires en ont été tirées.

RESUMEN

Se actualizan (a 1978) los datos canadienses de marcado y recuperación de grandes peces pelágicos. Los resultados del marcado de atunes, de 1963 a 1978, se presentan resumidos, por año de marcado y de recaptura y por arte de pesca empleado en ambas ocasiones. Se establecen conclusiones preliminares.

## Introduction

This report is meant to compliment SCRS/76/87 (Burnett, et al, 1977) and Fisheries Research Board of Canada Technical Report 193 (Beckett, 1970), bringing release and recapture data up to date for the Canadian large pelagic fish tagging program. Results presented cover releases and recaptures for 1977 and 1978.

## Releases

During 1977, 10 giant bluefin were tagged and released from rod and reel capture in Canadian waters. Nine (9) were released in the Bay of Chaleur area, one of which was recaptured in 1978 approximately 13 miles from its point of release. The other release was in Atlantic coastal waters east of Halifax, N.S. All 10 bluefin were single tagged with WHOI type "H" tags.

In 1978, 1 giant bluefin was single tagged with a WHOI type "H" tag after rod and reel capture east of Halifax. Five (5) medium size bluefin, estimated weight of 75 kg., were tagged and released after capture in a mackerel trap in St. Margaret's Bay, N.S. All 5 bluefin were tagged with WHOI type "H" tags. Two were double tagged. The capture of at least 43 medium bluefin in the St. Margaret's Bay mackerel traps in 1978 was unusual. Historical records indicate that bluefin of this size have not been captured in the area in any number since the late 1950's. Because of this unusual appearance and the lack of information on medium bluefin in general, it was considered imperative that these fish be tagged.

This brings the total number of Canadian bluefin tuna releases in the Atlantic Ocean from 1963 to 1978 to 1,583. No releases were made for other species in 1977-78.

## Recaptures

Release and recapture data for 10 Canadian recaptures in 1977-78 are presented in Table 1. Five (5) tagged giant bluefin were recaptured in 1977 and 4 bluefin in 1978. The fifth 1978 recapture was a swordfish, tagged on Georges Bank by harpoon in 1970 and recaptured in the same general area after 2965 days at large. It is believed that this may represent a record number of days at large for a swordfish release and recapture.

In 1977, 12 of the 5 bluefin recaptures were from Japanese longlines set in the Gulf of Mexico. A third recapture from the Gulf of Mexico occurred in 1978. These recaptures represent the first Canadian returns recorded from the Gulf of Mexico.

The total number of Canadian tagged bluefin recaptured is now 170 and the number of swordfish recaptured, 25.

## Preliminary Analysis

Summaries of all Canadian bluefin tuna releases and recaptures from 1963-78 are presented in Tables 2-5. Tables 2 and 3 show purse seine releases and releases of giants respectively by year of release and year of recapture. Table 4 summarizes releases and recaptures of giants by year of release and gear used at release. Table 5 summarizes recaptures of giants by year of recapture and gear used at recapture.

Tagging operations from Canadian purse seine vessels have been conducted in 4 years. Of 680 bluefin tuna released, 137 have been recaptured to date, a 20% average return rate. Return rates vary significantly from year to year, ranging from 14 to 27%. Table 2 summarizes purse seine releases by year of release and indicates the number of recaptures per year from each year of release. The longest period at large was 2561 days. No recaptures have been reported from eastern Atlantic waters.

A total of 903 bluefin have been tagged in Canadian tagging operations between 1963 and 1978. To date, 33 recaptures have been reported, an average return rate of 3.7%. As shown in Table 3, return rates vary widely from year to year, from 0 to 21.4%. In the past several years, it appears that return rates have been higher. Table 4, which shows number of releases and recaptures per year broken down by gear used at tag and release, was drawn up to examine differences in return rates from one operation to another. As one would expect, the pattern of tagging operations reflects the changes in bluefin tuna fisheries in Canadian waters. It is noteworthy that of 7 different areas of tagging activity, recaptures have only been reported from fish released from 2. Of 200 fish tagged from rod and reel in Newfoundland waters, no recaptures have been reported, as compared to 8 recaptures reported by Mason (1975) from 599 releases in New-

Table 1. Canadian Large Pelagic Fish Release and Recapture Data 1977-78

Tag No.	Species	Date	Method	Position	Lgt. (cm)	RECOVERY			WT. (kg)	LGT. (cm)	Days Free
						Date	Method	Position			
B03824	Bluefin	18/VIII/73	R. & R.	48°21'N 64°36'W	-	7/VIII/77	R. & R.	48°08'N 64°50'W	390	277	1451
B04273-74	Bluefin	28/VI/76	Trap	44°38'N 64°00'W	-	11/IV/77	L.I.	25°50'N 90°55'W	-	263	288
B04379	Bluefin	5/VIII/75	R. & R.	48°23'N 64°20'W	-	27/VIII/77	R. & R.	48°02'N 64°20'W	385	279	754
B04197	Bluefin	11/VIII/76	R. & R.	48°05'N 65°03'W	-	9/VI/77	L.I.	27°08'N 89°37'W	-	-	272
B04207	Bluefin	22/IX/76	R. & R.	48°03'N 64°33'W	-	20/VIII/77	R. & R.	48°02'N 64°20'W	306	-	333
B03435-36	Bluefin	24/VI/76	Trap	44°39'N 63°59'W	-	11/IX/78	R. & R.	46°27'N 62°21'W	474	305	810
B03115	Bluefin	23/VI/75	Trap	44°36'N 64°03'W	-	6/III/78	L.I.	26°01'N 87°05'W	-	280	988
B03465-66	Bluefin	25/VI/76	Trap	44°37'N 64°01'W	-	23/IX/78	R. & R.	46°27'N 62°03'W	358	259	790
B04220	Bluefin	4/VIII/77	R. & R.	48°02'N 65°07'W	-	4/IX/78	R. & R.	48°08'N 64°50'W	467	284	397
B01747	Swordfish	13/VII/70	Harp.	41°07'N 66°20'W	-	24/VIII/78	Harp		122	-	2965

foundland waters. Of successful operations, return rates of releases from mackerel traps in St. Margaret's Bay range from 0 to 36%, with an average of 4.2%, while return rates of fish tagged from rod and reel in Bay of Chaleur range from 3 to 18% with an average of 8.6%. On the basis of these observations, the success of tagging operations varies greatly from one area to another as well as from year to year and from one operation to another using the same method of tagging. Return rates reflect the condition of the fish at the time of release as well as the care taken by the tagging crew. The apparent rise in return rates in the past several years is likely a reflection of an increase in the success of particular tagging operations.

Table 5 shows number of recaptures per year broken down by gear used at recapture. Perhaps as a result of the small number of recaptures reported or patterns of bluefin migration, the distribution of recaptures does not reliably reflect the distribution of bluefin fisheries. In 1977, 948 bluefin were landed in St. Margaret's Bay, N.S. but no tag returns were reported while 3 recaptures were reported from 291 fish landed in the Bay of Chaleur area. In the same year, 2 recaptures were reported from an estimated 9000 giant bluefin taken in the Gulf of Mexico.

Because of the great variability in return rates from different bluefin tuna tagging operations and the low number of recaptures, obvious caution should be exercised in using recapture data to estimate changes in bluefin fisheries.

Use of recapture data should be restricted to migration and growth studies until the number of recaptures is increased substantially and more is known of migration patterns.

#### Literature Cited

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- Mason, Jr., J.M. 1975. U.S. Atlantic Bluefin Tuna Tagging, October 1971 through October 1974. ICCAT Coll. Vol. Sci. Papers 4: 133-140.

Table 2. Canadian purse seine bluefin tuna releases by year of release and year of recapture 1963-78.

Year released	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	Total
Total released	0	17	236	0	0	0	0	0	271	0	156	0	0	0	0	0	680
% recaptured	-	23.5	16.5	-	-	-	-	-	26.6	-	14.1	-	-	-	-	-	20.1
Total recaptures	-	4	39	-	-	-	-	-	72	-	22	-	-	-	-	-	137
Year re-captured	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22
	65	-	4	18	-	-	-	-	-	-	-	-	-	-	-	-	13
	66	-	-	13	-	-	-	-	-	-	-	-	-	-	-	-	6
	67	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-
	68	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	71	-	-	-	-	-	-	-	27	-	-	-	-	-	-	-	27
	72	-	-	1	-	-	-	-	36	-	-	-	-	-	-	-	37
	73	-	-	-	-	-	-	-	8	-	17	-	-	-	-	-	25
	74	-	-	-	-	-	-	-	1	-	4	-	-	-	-	-	5
	75	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3. Canadian giant bluefin tuna releases by year of release and year of recapture 1963-78.

Year released	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	Total
Total releases	18	6	60	74	196	26	44	20	100	82	16	49	168	28	10	6	903
% recaptured	0	0	5.0	2.7	3.6	0	4.5	0	3.0	0	6.3	2.0	4.2	21.4	10.0	0	3.7
Total recaptures	-	-	3	2	7	-	2	-	3	-	1	1	7	6	1	-	33
Year re-captured	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
	65	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	66	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	8
	67	-	-	2	6	-	-	-	-	-	-	-	-	-	-	-	-
	68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	69	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	2
	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	74	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	2
	75	-	-	-	-	-	-	-	1	-	1	3	-	-	-	-	5
	76	-	-	-	-	-	-	-	1	-	-	2	1	-	-	-	4
	77	-	-	-	-	-	-	-	-	1	-	1	3	1	-	-	5
	78	-	-	-	-	-	-	-	-	-	-	1	2	1	-	-	4

Table 4. No. of Canadian giant bluefin tuna releases (and recaptures) by release method and year of release 1963-78.

Year released	Trap	Release method				LL	Harp	Total	
		RR							
		1	2	3	4				
63	18	-	-	-	-	-	-	18	
64	6	-	-	-	-	-	-	6	
65	60 (3)	-	-	-	-	-	-	60 (3)	
66	69 (2)	-	-	-	-	3	2	74 (2)	
67	193 (7)	-	-	-	-	3	-	196 (2)	
68	-	24	-	-	-	2	-	26	
69	15 (2)	29	-	-	-	-	-	44 (2)	
70	3	17	-	-	-	-	-	20	
71	45 (3)	55	-	-	-	-	-	100 (3)	
72	12	70	-	-	-	-	-	82	
73	-	4	11 (1)	1	-	-	-	16 (1)	
74	8	1	36 (1)	4	-	-	-	49 (1)	
75	148 (4)	-	20 (3)	-	-	-	-	168 (7)	
76	11 (4)	-	17 (2)	-	-	-	-	28 (6)	
77	-	-	9 (1)	-	1	-	-	10 (1)	
78	5	-	-	-	1	-	-	6	
		593 (25)	200 (0)	93 (8)	5 (0)	(2 (0)	8 (0)	2 (0)	903 (33)
				300 (8)					

Trap - St. Margaret's Bay, N. S.

Rod and reel

1. Newfoundland
2. Bay of Chaleur
3. Prince Edward Island
4. Atlantic coastal waters, east of Halifax, N. S.

Longline - Atlantic offshore, Georges Bank to Grand Banks

Harpoon - Halifax, N. S.

Table 5. No. of Canadian giant bluefin tuna recaptures by recapture method and year of recapture 1963-78.

Year released	Trap	Release method				Harp	LL	Total
		RR						
		1	2	3	4			
63	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-
65	1	-	-	-	-	1	-	2
66	-	-	-	-	-	1	-	1
67	6	-	-	-	1	1*	-	8
68	-	-	-	-	-	-	-	-
69	2	-	-	-	-	-	-	2
70	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-
74	-	-	-	1	-	1*	-	2
75	-	-	2	3	-	-	-	5
76	1	-	1	2	-	-	-	4
77	-	-	3	0	-	-	2	5
78	-	-	1	2	-	-	1	5
	10	0	7	8	1	4	3	33
			16					

Trap - St. Margaret's Bay, N. S.

Rod and reel

1. Newfoundland
2. Bay of Chaleur
3. Prince Edward Island
4. Atlantic coastal waters, off Wedgeport, N. S.

Harpoon - St. Margaret's Bay or \*Gulf of Maine

Longline - Gulf of Mexico