

RESULTS OF UNITED STATES COOPERATIVE TAGGING OF
ATLANTIC BLUEFIN TUNA, OCTOBER 1975 THROUGH OCTOBER 1976

by

J. M. Mason, R. E. Baglin

SUMMARY

Releases and recoveries of Atlantic bluefin tuna are discussed. These data are from work conducted by the Woods Hole Oceanographic Institution (WHOI) and the National Marine Fisheries Service (NMFS) during the summer of 1976.

In a joint effort WHOI and NMFS tagged and released 2,211 small bluefin tuna and WHOI tagged four giants (> 122 kg) from purse seine catches off the northeastern U.S. Sport fishermen cooperating in the tagging program also tagged and released 160 small fish in this area and 35 giant bluefin in the Bahamas and in the waters off New England.

The 1976 recaptures of tagged bluefin provided valuable data. There were 195 returns reported from tagged school tuna, some which had been at large for up to three years. Four winter recoveries expand our information as to the location of this size group during January and February. Three tagged giants were also recovered.

RESUME

Le présent document fait état du relâchage et de la recapture de thon rouge marqué dans l'Atlantique. Ces données proviennent d'une étude menée par la "Woods Hole Oceanographic Institution (WHOI)" et le "National Marine Fisheries Service (NMFS)" au cours de l'été 1976.

Les efforts conjugués WHOI-NMFS ont permis le marquage et relâchage de 2.211 petits thons rouges, ainsi que de quatre poissons de taille géante (> 122 kgs) de la part de la WHOI, pris à la senne au large des côtes nord-est des Etats-Unis. Les pêcheurs sportifs qui collaborent au programme de marquage ont également marqué et relâché 160 petits spécimens dans ce même secteur, ainsi que 35 de taille géante aux Bahamas et dans les eaux au large de la Nouvelle-Angleterre.

Les recaptures de 1976 de thon rouge marqué ont fourni une information intéressante. Des récupérations de marques sur des poissons en provenance de bancs ont été signalées au nombre de 195. Certains d'entre eux avaient été marqués jusqu'à trois années auparavant. Quatre récupérations effectuées au cours de l'hiver nous ont permis de localiser de façon plus précise ce groupe de taille au cours des mois de janvier et février. Trois spécimens de taille géante ont également été repris.

RESUMEN

Trata de marcados y recuperaciones de atún (BF) en el Atlántico. Los datos proceden de trabajos realizados por el "Woods Hole Oceanographic Institution (WHOI) y el "National Marine Fisheries Service" (NMFS) durante el verano de 1976.

En operación conjunta, WHOI y NMFS marcaron y soltaron 2.211 atunes pequeños y WHOI marcó 4 peces de talla gigante (> 122 kgs.) capturados por cerqueros frente a la costa Noroeste de Estados Unidos. Los pescadores deportivos colaboraron en el programa, marcando 160 peces pequeños en esa misma zona, y 35 atunes (BF) de talla gigante en Las Bahamas y frente a Nueva Inglaterra.

En 1976, la captura de atunes marcados aportó datos valiosos. Se comunicó la recuperación de 195 ejemplares procedentes de bancos, algunos de los cuales habían sido marcados hasta tres años antes. Cuatro recuperaciones realizadas durante el invierno permitieron fijar con más exactitud la situación de ese grupo de talla durante los meses de enero y febrero. Se capturaron también tres ejemplares marcados, de talla gigante.

Results of United States Cooperative Tagging of Atlantic Bluefin Tuna -
October, 1975 through October, 1976

by

J. M. Mason, Jr., F. J. Mather, III and R. E. Baglin, Jr.

This paper updates the last report (SCRS/75/98) presented on United States tagging of Atlantic bluefin tuna, *Thunnus thynnus thynnus*. The data presented are from results obtained by the Woods Hole Oceanographic Institution (WHOI)-National Marine Fisheries Service (NMFS) Cooperative Game Fish Tagging Program during the period October 1975 through October 1976. This and the previous reports also include the bluefin tuna results of the shark tagging program of NMFS through the courtesy of John Casey, Narragansett, R.I.

During the 1976 fishing season, 2,379 small bluefin (ages I-IV) were tagged and released between Cape Hatteras, North Carolina, and Cape Cod, Massachusetts, and 39 giant bluefin were tagged and released off the Bahamas and in New England coastal waters. These efforts bring the total U.S. tagging program on bluefin to about 16,300 releases.

In 1971 a double tagging experiment was initiated (SCRS/72/31) to observe tag shedding and the efficiency of the two most commonly used tags on bluefin - WHOI type "H" (Akyüz, 1970, p. 85) and WHOI type "D" (Akyüz, 1970, p. 79). Personnel from WHOI were able to continue this effort in 1976. Of the small fish tagged and released 535 were double tagged-267 with "D" tags and 268 with "H" tags.

In 1976 we returned to tagging from purse seine vessels in order to obtain a significant number of releases. The 535 double tagged fish and an additional 676 single tagged small fish were released from purse seine catches. Representatives of WHOI and NMFS went aboard four purse seiners in July, 1976, to tag and release as many fish as possible under a specified United States allocation. This operation was conducted after the commercial season closed and provided an additional catch of 182 metric tons.

The continuing cooperation of sport fishermen who tag and release some of their catches accounted for the remaining 168 small fish released.

The tagging effort on small bluefin tuna was distributed between age I, II and III year old fish. There were 723 age I fish tagged and released, 1,025 age II and 630 age III. There was one report of an age 0 fish being tagged and released but it is uncertain.

Recaptures of small bluefin in 1976 have provided us with most interesting information. Of the 195 recent returns one was released in 1973, 41 in 1974, 22 in 1975 and 131 in 1976. All but four of the recaptures occurred in the general area of release in the coastal waters off the northeastern United States. There were 20 additional recoveries reported from 1975 bringing that year's total to 155 and four from 1973 bringing that year's total to 110 (Table 1).

The four fish not recaptured in the summer coastal fishery were taken in the winter of 1976: three were recaptured in January and one in February by Japanese longliners. The January recaptures came from two fish tagged

and released from purse seine catches in August, 1974, off central New Jersey, and one sport release in July, 1975, off Cape Henry, Virginia. These were caught at approximately $41^{\circ}\text{N } 67^{\circ}\text{W}$, about 200 miles off the coast of the United States. The fish recaptured in February at $40^{\circ}\text{N } 66^{\circ}\text{W}$ was tagged and released in July, 1973, from a purse seine catch off southern New Jersey. These data together with the two January, 1974 recoveries in this same area (SCRS/74/36) would appear to be significant indications of the wintering grounds for young (< age VI) bluefin tuna.

Three giant (> 122 kg) tuna were recaptured in 1976 but unfortunately only one had an identifiable legend to determine release data. This fish was tagged in the Bahamas in June, 1969 and recaptured off the coast of Norway, north of Bergen, in August, 1976. This brings the recorded migrations from the Bahamas to Norway to nine (Table 2). The two fish taken with tags that could not be identified were both caught in September by purse seiners in Cape Cod Bay, but unfortunately there is no way to even estimate where or by whom these fish were tagged. Tagging in this area has increased in recent years (Table 3).

During the purse seine fishing for giants in Cape Cod Bay, WHOI personnel were invited to tag these bigger fish. This invitation was accepted as extensive tagging of these fish is necessary for a complete understanding of the relationships of the New England summer fishery with other western and eastern Atlantic fisheries. In this first attempt, Mason was able to tag and release only five giants (one was harpooned 30 seconds after being released) but having gained valuable practical experience in this area, WHOI has arranged to continue this work during the next season.

Tagging remains one of the more satisfactory methods for identifying stocks and estimating growth rates and fishing mortality. In the unanswered question of degree of mixing of fish between the western Atlantic, eastern Atlantic and Mediterranean, tagging seems to be the most readily available technique requiring the least amount of specialized, costly equipment. It has been repeatedly demonstrated that important data is collected from tagging efforts. We must seriously consider intensifying these efforts to significant levels in all the bluefin fisheries to obtain timely data, necessary for proper management of the species.

Table 1

Releases of young bluefin tuna in coastal waters between Cape Hatteras, North Carolina, and Cape Ann, Massachusetts, by years, and returns in percent of releases by region of recapture, and by time at large for local returns. Bay of Biscay returns were after from 11 to 60 months at large.

Releases		Returns							Total	Bay of Biscay
Year	Number	Local, by months at large					Total			
		0-5.9	6.0-17.9	18.0-29.9	30.0-41.9	42.0-53.9		66.0-77.9		
1954	169	0.6	0	0	0	0	0	0.6	1.2	
1955	215	0	0	0	0	0	0	0	0	
1956	58	0	0	0	0	0	0	0	0	
1957	34	0	2.9	0	0	0	0	2.9	0	
1958	38	0	0	0	0	0	0	0	0	
1959	25	0	0	0	0	0	0	0	0	
1960	15	0	0	6.7	0	0	0	6.7	0	
1961	150	0	1.3	2.0	1.3	0	0	4.7	0	
1962	77	0	5.2	0	0	0	0	5.2	0	
1963	29	24.1	6.9	0	0	0	0	31.0	0	
1964	465	21.3	6.9	0	0	0	0	28.2	0	
1965	1672	9.8	2.9	1.9	0	0	0	14.5	1.1	
1966	3959	13.4	14.4	1.3	0.2	0.1	<0.1	29.4	0.4	
1967	628	15.4	9.4	2.4	2.1	0	0	29.3	0.3	
1968	260	33.8	7.3	3.1	0	0	0	44.2	0	
1969	336	3.6	24.4	3.6	0.6	0.3	0	32.4	0	
1970	458	10.9	25.8	2.0	1.5	0.2	0	40.4	0	
1971	342	3.2	17.3	2.6	0	0	0	23.1	0	
1972	193	4.7	27.5	2.6	0	0	0	34.7	0	
1973	351	12.0	5.4	2.0	0.3	0	0	19.7	0	
1974	1713	4.2	7.2	2.3	0	0	0	13.7	0	
1975	309	7.1	7.1	0	0	0	0	14.2	0	
1976	2379	5.5	0	0	0	0	0	5.5	0	

Table 2

Releases and returns for giant bluefin tuna (over 120 kg.) tagged off the Bahamas by year of release, months at large, and area of recapture

Year	Releases Number	Returns Months at large					Total
		0-5.9	6.0-17.9	18.0-29.9	30.0-41.9	42.0-53.9	
1954	21	0	0	0	0	0	0
1955	14	0	0	0	0	0	0
1956	41	0	0	0	0	0	0
1957	0	0	0	0	0	0	0
1958	0	0	0	0	0	0	0
1959	25	0	0	0	0	0	0
1960	13	0	0	2 N	0	0	2 N
1961	34	2 N	0	0	0	0	2 N
1962	45	1 N	0	0	0	0	1 N
1963	147	0	0	1 B	0	0	1 B
1964	41	0	0	0	0	0	0
1965	55	0	0	0	0	0	0
1966	105	0	0	0	0	1 A	1 A
1967	82	1 N	0	0	0	0	1 N
1968	57	0	0	0	0	0	0
1969	50	0	0	0	0	1 B	1 B
1970	182	1 A	0	0	0	0	1 A
1971	49	0	0	1 A	0	0	1 A
1972	32	0	1 N	0	0	---	1 N
1973	47	0	1 A, 1 N	0	---	---	2 AN
1974	31	0	0	---	---	---	0
1975	18	0	---	---	---	---	0
1976	5	0	---	---	---	---	0

* Areas: A = Northeastern North America
B = Brazil and Argentina
N = Norway

Table 3

Releases and returns for giant (>122 kg) bluefin tuna, *Thunnus thynnus*, tagged in New England coastal waters, by years of release and time at large.

RELEASES		RETURNS BY MONTHS AT LARGE				TOTAL	%
Year	Number	0 - 5.9	6 - 17.9	18 - 29.9	30 - 41.9		
1966	2	0	0	0	0	0	
1967	0	0	0	0	0	0	
1968	6	0	0	1	0	1	16.7
1969	1	0	0	0	0	0	
1970	4	0	0	0	0	0	
1971	10	0	0	1	0	1	10.0
1972	17	1	1	0	2	4	23.5
1973	15 ^a	5	1	1	0	7	46.6
1974	9 ^b	2	2	0		4	44.4
1975	19	0	0			0	
1976	34	0				0	

Footnotes:

^aIncludes 6 releases of, and 4 1973 and 1 1975 returns from, fish tagged while free swimming.

^bIncludes 3 releases of, and 3 returns from, fish tagged while free swimming.

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