RESTRICTED

International Commission for the Northwest Atlantic Fisheries

Serial No. 3330
(D.c.4)

ICNAF Res.Doc. 74/94

ANNUAL MEETING - JUNE 1974

Southwesterly migration of Atlantic mackerel, *Scomber scombrus*, tagged off Nova Scotia

by

J. S. Beckett, W. T. Stobo, and C. A. Dickson
Fisheries and Marine Service
Biological Station
St. Andrews, N. B.
Canada

The distribution and migration patterns of mackerel (*Scomber scombrus*) in the Northwest Atlantic indicate that the population consists of a northern and a southern component (Sette 1950). These two contingents have separate spawning grounds and are geographically isolated during the summer, but are not clearly separated during the winter when the fish concentrate along the edge of the continental shelf between 65-73°W longitude (ICNAF Subarea 5, and statistical area 6). The relationship between the two contingents, and the degree of intermixing during the winter has never been established. However, the timing of the fisheries during the year tend to confirm Sette's (op. cit.) conclusion that some degree of intermixing between the two contingents does occur during the winter, in the area south of Cape Cod. The summer fishery on the northern contingent lasts from May to October in Subarea 4 (Stobo and Hunt 1974) and from August to October in Subarea 3 (Moores et al. 1974). In Subarea 5, the fishery is prosecuted throughout the year but there appears to be two periods of increased landings, normally in December and in May, which may correspond to the southward and northward migrations. The fishery in statistical area 6 is most significant during January to April. The winter fishery therefore appears to exploit at least part of the northern contingent, in addition to the southern contingent on which it has been assumed to be based. This note records some recent tagging data of relevance to discussion of the extent of intermixing, a factor essential to any estimates of the population size and structure.

METHODS AND RESULTS

Mackerel were tagged with yellow spaghetti anchor tags of the same type, and in the same manner, as described by Parsons and Moores (1973) during a study of long distance migrational behaviour. The fish were released at two sites; 196 from a purse-seine near Cape Tryon, P.E.I., in the Gulf of St. Lawrence, on October 3, and 1765 from traps in St. Margarets Bay on the Atlantic coast of Nova Scotia, October 23-26 (Figure). The recaptures reported to the end of April 1974 were all of fish tagged in St. Margarets Bay, a total of 95 tags being returned during the period October 26-January 16. The majority (89) of the recaptures were made within 5 kms. of the tagging site and provide little information on migration (Figure). The remaining 6 recaptures were all made at a greater distance to the southwest of the tagging site; three off the coast of Nova Scotia during November 1-15, 1973, between 40 and 97 kms from the site; one 48 kms southwest of Nantucket Island (Subarea 5) on November 12, 1973, approximately 579 kms from the site, only 18 days after release, an average minimum movement of 32 kms/day; and two in statistical area 6A on January 15 and 16, approximately 71 and 72 kms east of Atlantic city, or approximately 820 kms from the release site.

DISCUSSION

These recaptures suggest a general southwest and fairly rapid movement of the northern contingent of mackerel during the autumn, extending into Subarea 5 and statistical area 6A during the winter, rather than to the edge of the Scotian Shelf as has been supposed. This conclusion is supported by the results of other mackerel tagging programmes. Moores et al. (1974) report the recapture in statistical area 6A, during January 1974, of two mackerel tagged in Trinity Bay, Newfoundland, on September 28, 1973, while Parsons and Moores (1973) record a mackerel tagged in the latter locality in September 1972 that was recaptured in statistical area 6A in December of that year.

These six recoveries, in the winter fishery, of mackerel tagged in widely separated locations off Canada, were made from the relatively few releases made in the first programmes designed to tag fish with the potential of being recovered during the winter. Furthermore the recaptures were all made during the periods of peak catches in Subarea 5 and statistical area 6A. There is, therefore, a clear indication that the northern contingent is being exploited during the winter fishery and that, even without further evidence of any genetic relationship on intermixing of stocks, allowance for such exploitation must be included in any assessment of the status of the Northwest Atlantic mackerel stocks.

REFERENCES

Moores, J. A., G. H. Winters, and L. S. Parsons. MS 1974. Some biological characteristics of mackerel (*Scomber scombrus*) in Newfoundland waters. Intern. Comm. Northw. Atlant. Fish. Res. Doc. 74/8, 17 p.

Parsons, L. S., and J. A. Moores. 1973. Long-distance migration of an Atlantic mackerel, *Scomber scombrus*, tagged in Newfoundland waters. Intern. Comm. Northw. Atlant. Fish. Res. Doc. 73/82, 2 p.

Sette, O. E. 1950. Biology of the Atlantic mackerel (*Scomber scombrus*) of North America. Part II. Migrations and habits. U.S.Fish Wildlife Serv. Fish. Bull. 49(51): 251-358.

Stobo, W. T., and J. J. Hunt. 1974. Mackerel biology and history of the fishery in Subarea 4. Intern. Comm. Northw. Atlant. Fish. Res. Doc. 74/9.

ADDENDUM

In mid-May, four additional recoveries were reported from the winter fishery, but the tags have not yet been returned. Three of these tags were from the St. Margarets Bay releases, one being recaptured on 9 March in Subarea 5Z, another possibly in Subarea 5Z on 25 January, and the third in statistical area 6A on 8 February. The fourth additional recapture was the first to be reported of a fish released in the Gulf of St. Lawrence, and was made on 26 January in statistical area 6A. This recovery, if confirmed, strengthens the conclusion that the winter fishery involves mackerel that summer along the whole Canadian coast.

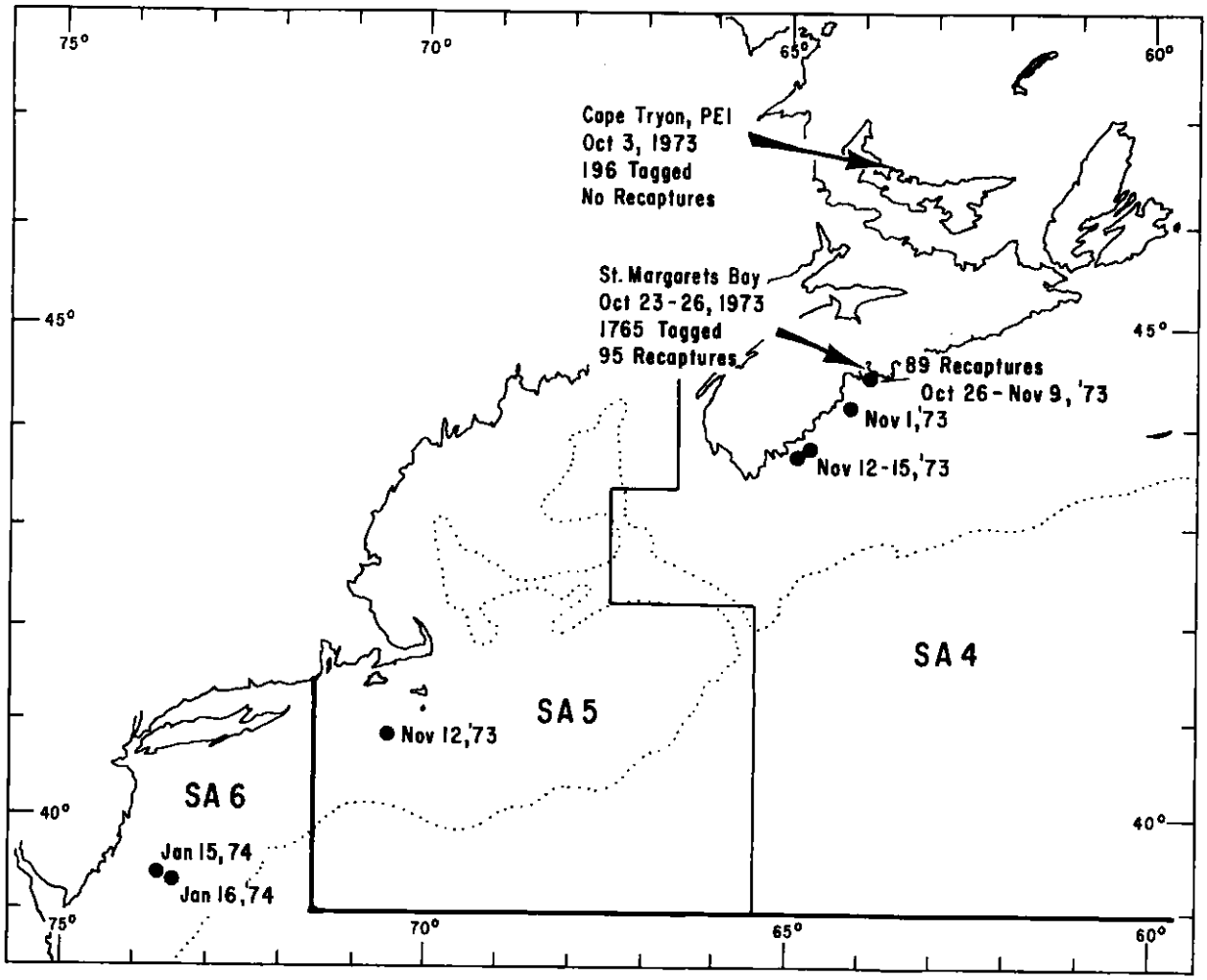

Figure 1. Map of Northwest Atlantic depicting mackerel tagging areas and the dates and locations of recaptures.