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## SCIENTIFIC NOTE

# TAGGING EXPERIMENTS ON THE SPOTTED MACKEREL (*SCOMBER AUSTRALASICUS*) IN TAIWAN[1,2]

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In SCOMBRINAE, the tagging experiments were proceeded with *S. japonica* in Japan[5], and with Pacific mackerel in U. S. A.[4]. The present tagging experiments were designed to make clear the migration and growth of spotted mackerel in Taiwan. There are no earlier tagging experiments on spotted mackerel in Taiwan, and the present report may be regarded as the first attemption to elucidate the movement of spotted mackerel.

## MATERIALS AND METHODS

From Feb. to Apr. and from Aug. to Oct. (Table 1) the tagging experiment was progressed around Fishing Island and waters off Nanfangao. In this experiment, a plastic tagging gun (Fig. 1.) was used, and the tags were made from P. V. C. (Fig. 2.). The tagging gun and numbered tags were produced by Rigosha, Tokyo, Japan

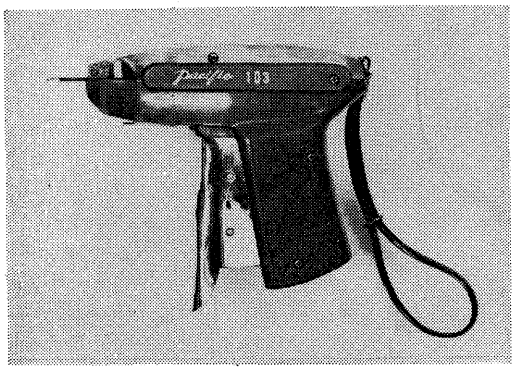

Fig. 1. The plastic tagging gun.

TABLE 1

The traveling speed of spotted mackerel from the tagging experiments

| No. | Date released | Date recaptured | Number of days between Released and Recaptured | Linear distance travel km | Traveling speed km per day |
|---|---|---|---|---|---|
| 1 | 1971-Mar.-25 | 1971-Aug.-27 | 155 | 574 | 3.70 |
| 2 | 1971-Mar.-25 | 1971-Oct. -21 | 210 | 769 | 3.66 |
| 3 | 1971-Mar.-25 | 1972-Feb. -20 | 337 | 885 | 2.60 |
| 4 | 1972-Mar.-9 | 1972-Aug. -8 | 153 | 186 | 1.22 |
| 5 | 1972-Aug.-9 | 1972-Aug. -28 | 19 | 121 | 6.39 |
| 6 | 1973-July-30 | 1973-Aug. -6 | 7 | 11 | 1.59 |

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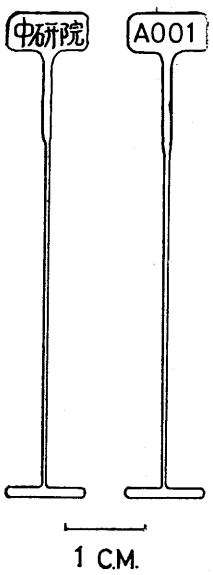


Fig. 2. The floy tag.

and the Pacific tagging and labeling Co., Taiwan respectively. From 1971 to 1973, spotted mackerel caught by Hand-liners were measured, immediately and a numbered tag was applied on to the dorsal part of the body. A total of 5,667 specimens were tagged. We advertised for return of recaptured fish from commercial fisheries.

## RESULTS AND DISCUSSION

Only six tagged fishes were recaptured (Fig. 3.). Four were returned by Seikai Region Fish.

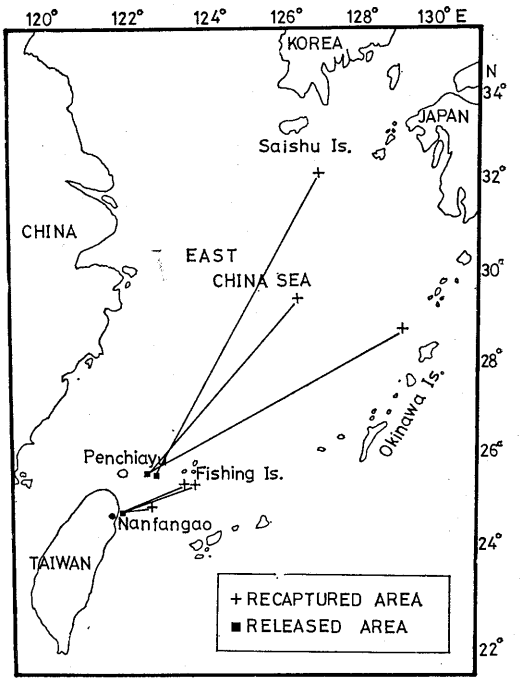


Fig. 3. The route of migration on the spotted mackerel.

Res. Lab., Japan and the other two were sent by Suao Fisherman's Association, Taiwan. The route of spotted mackerel was infered as follows: In the spawning season[1~3], the fishes concentrated at waters around Fishing Island and off Nanfangao, Iland Hsien. After spawning, the fish migrate northward to the East China Sea

TABLE 2

The length increment and growth of the spotted mackerel from the tagging experiments

| No. | Date released | Date recaptured | Number of days between tagging period | Fork length | | Length increment | Growth rate mm per year |
|---|---|---|---|---|---|---|---|
| | | | | released | recaptured | | |
| 1 | 1971-Mar.-25 | 1971-Aug.-27 | 155 | 275 | 300 | 25 | 58.06 |
| 2 | 1971-Mar.-25 | 1971-Oct. -21 | 210 | 300 | 330 | 30 | 51.43 |
| 3 | 1971-Mar.-25 | 1972-Feb. -20 | 337 | 290 | 330 | 40 | 42.73 |
| 4 | 1972-Mar.-9 | 1972-Aug.-8 | 153 | 315 | 335 | 20 | 47.06 |
| 5 | 1972-Aug.-9 | 1972-Aug.-28 | 19 | — | 325 | — | — |
| 6 | 1973-July-30 | 1973-Aug.-6 | 7 | — | 353 | — | — |

and with Kuroshio current.

Assuming that the route of migration is linear, we calculated the traveling speed of spotted mackerel to be from 1.22 to 6.39 km per day (with mean 3.19±1.87 km per day, Table 1). A few papers studied on traveling speed of the spotted mackerel, but Sette (1943) discussed on cruising speed of *S. scombrus* is about 10 and 5.7 km per day[6,7]. Obviously they did not travel in a straight course during migration.

Table 2 shows the length increment (fork length) and growth of the spotted mackerel. From this table, smaller fish seem to grow faster. The growth rate of the spotted mackerel observed in this experiment agrees quite well with that estimated from the length frequency distribution method (unpublished data) and from age and growth study[8]. From Table 2, we also find that the growth of No. 3 is the smallest, because this fish was pass through a winter. Obviously in winter, the growth of fish may be smaller than in summer.

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# 臺灣花腹鯖標幟放流試驗

張崑雄　巫文隆

臺灣花腹鯖標幟放流試驗是從民國六十年開始，分別在魚釣島、彭佳嶼及蘇澳外海一帶利用一支釣所釣獲的花腹鯖，於其背側部打上有編號的標幟，本試驗於民國六十二年結束，總共標幟了 5,667 尾，有 6 尾回收。經過調查發現，花腹鯖於產卵期間有羣集於魚釣島、彭佳嶼及蘇澳外海之可能，產卵過後，則隨着黑潮北上而進入東中國海。