

**THE SECOND REGIONAL WORKSHOP ON SHARED STOCK  
IN THE SOUTH CHINA SEA AREA**

**Kuala Terengganu, Malaysia, 18 — 20 July 1995**

SEAFDEC / MFRDMD / WS / 95 / CR. 1

**COUNTRY STATUS REPORT  
MALAYSIA**

(1) SARAWAK

**STATUS REPORT:  
ROUND SCADS, MACKERELS AND NERITIC TUNAS  
FISHERY IN SARAWAK,  
MALAYSIA**

**By**

**RICHARD RUMPET**

Fisheries Research Institute of Malaysia  
Sarawak Branch, P.O. Box 2243,  
93744 Kuching, Sarawak,  
Malaysia.

# STATUS REPORT: ROUND SCADS, MACKERELS AND NERITIC TUNAS FISHERY IN SARAWAK, MALAYSIA

## 1. INTRODUCTION

Sarawak's 160,000 km<sup>2</sup> Exclusive Economic Zone (EEZ) stretches across the South China Sea and offers great opportunities for the development of both inshore and offshore fisheries.

Round scads, mackerels and neritic tunas formed part of the 29 fish species group classified as pelagic found in Sarawak waters. Two most common species of round scads found are *Decapterus russelli* and *Decapterus macrosoma*. The mackerels comprised of Barred Spanish mackerel (*Scomberomerus commersonii*), Spotted Spanish mackerel (*Scomberomerus guttatus*), Short-bodied mackerel (*Rastrelliger brachysoma*) and Indian mackerel (*Rastrelliger kanagurta*). Three species of neritic tunas have been found in Sarawak waters namely, kawakawa (*Euthynnus affinis*), long tail (*Thunnus tonggol*) and frigate (*Auxis thazard*).

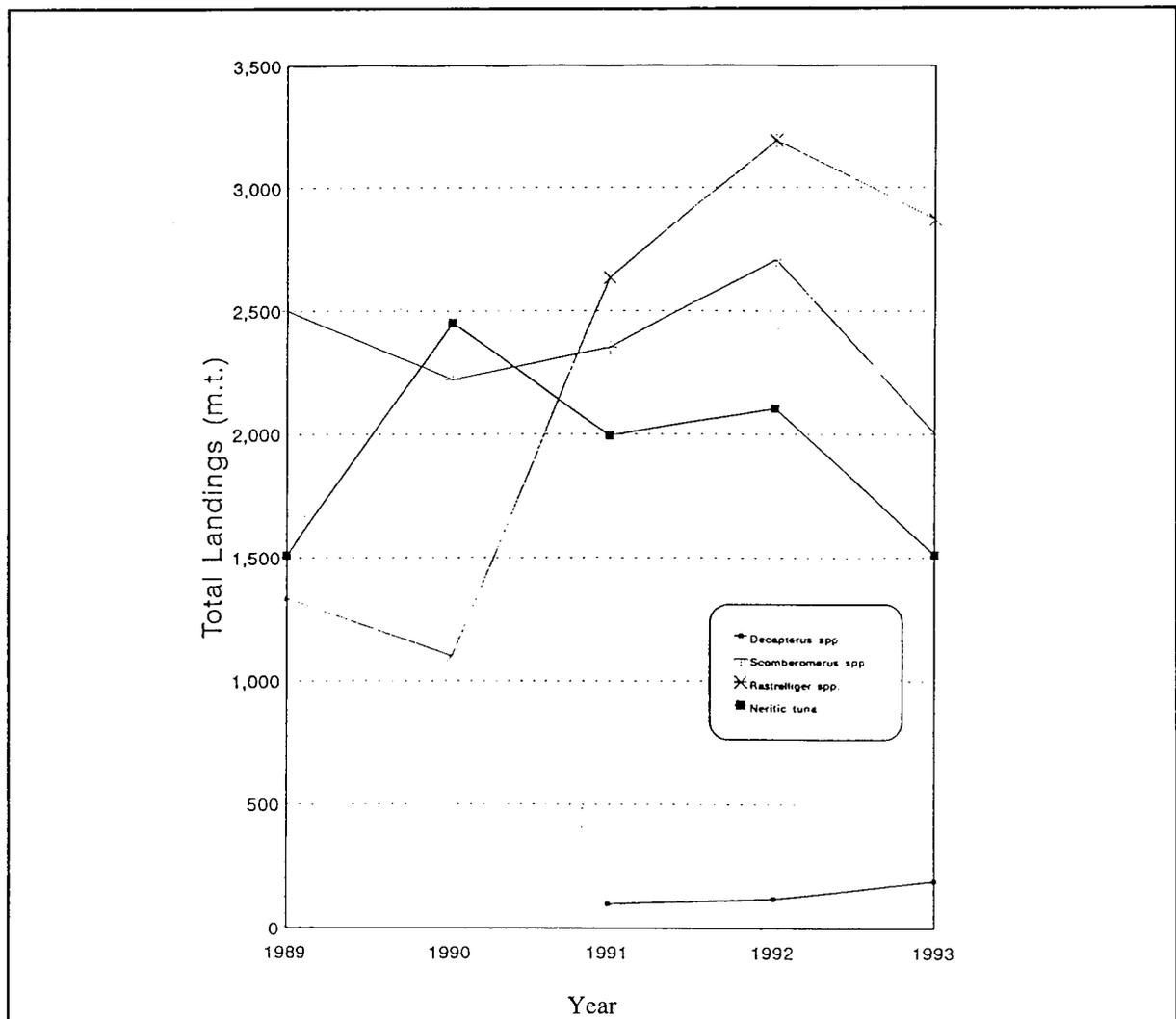
## 2. FISHERY STATUS

### 2.1. Landings trend

The total landings from marine fisheries in Sarawak decreased by 7.16% from 88,247 m.t. in 1992 to 81,924 m.t. in 1993. However, in terms of value, there was an increased of 4.36% from RM0.22 billion in 1992 to RM0.23 billion in 1993.

In 1993, the landings of round scads was 189.6 m.t. and this is very low compared to landings by other pelagics (Table 1). The average annual landing since 1991 is 134.9 m.t..

Fig. 1: Landings Trend of Round Scads, Mackerels and Neritic Tunas (1989 - 1993)



The mackerels have an increasing landings trend from 1990 to 1992 but decline in 1993 as shown in **Figure 1**. The landings of *Scomberomerus* spp. decreased by 25.98% from 2,706.5 m.t. in 1992 to 2,003.2 m.t. in 1993. *Rastrelliger* spp. also shows a decreased in landings by 10.09% from 3,192.6 m.t. in 1992 to 2,870.5 m.t. in 1993. Both mackerels have high average annual landings (1989-1993) of 2,356.8 m.t. and 2,226.5 m.t. respectively compared to round scads and neritic tunas.

The landings of neritic tunas decreased by 28.15% from 2,103.1 m.t. in 1992 to 1,511.3 m.t. in 1993. The average annual landings since 1989 to 1993 is 1,914.9 m.t..

**Table 1: Total Landings (m.t.) of Round Scads, Mackerels and Neritic Tunas in Sarawak by year (1989-1993)**

Fish group/Year	1989	1990	1991	1992	1993	Average
<i>Decapterus</i> spp.	—	—	96.93	118.09	189.6	134.9
<i>Scomberomerus</i> spp.	2,500.11	2,221.85	2,352.36	2,706.50	2,003.18	2,356.8
<i>Rastrelliger</i> spp.	1,335.43	1,099.87	2,633.96	3,192.60	2,870.47	2,226.5
Neritic tunas	1,509.30	2,451.69	1,994.24	2,103.11	1,511.29	1,913.9

Source: Sarawak Annual Fisheries Statistics

## 2.2. Fishing gear

In 1993, a total of 587 units of trawl nets, 26 units of purse seine, 1797 units of gill/drift nets, 68 units of hooks and lines and 26 units of push/scoop nets were in operation in Sarawak.

The main gear use for catching pelagics are trawl nets, drift nets, purse seine and hook and lines as shown in **Table 2**. In 1993, 48.17% (965 m.t.) of *Scomberomerus* spp. were caught using drift nets compared to 44.33% (888 m.t.) by trawl net. The landings of *Rastrelliger* spp. is mostly by drift netters (56.18%) and 34.91% by trawlers. This shows that drift nets and trawl nets are the major fishing gears used for catching mackerels. Neritic tunas are mostly caught using gill nets and hook and lines (47.05% and 23.69% respectively).

**Table 2: Total Landings (m.t.) of Round Scads, Mackerels and Neritic Tunas in Sarawak by gear (1993)**

Fish group/Gear	Trawl net	Purse seine	Drift/Gill net	Hook and lines	Push/Scoop net
<i>Decapterus</i> spp.	22	68	92	—	8
<i>Scomberomerus</i> spp.	888	2	965	148	—
<i>Rastrelliger</i> spp.	1,079	255	1,736	—	20
Neritic tunas	18	424	711	358	—

Source: Sarawak Annual Fisheries Statistics

## 2.3. Catch-effort information

Neritic tunas samplings program in Sarawak waters was carried out in 1991. Information on length frequencies and catch-effort data were collected. Catch-effort data of drift nets catching tuna were collected monthly. It was found that most of the drift nets were between 5.00 g.r.t. and 40.00 g.r.t. and average fishing duration per trip was only one day. The average catch rate of drift nets was found to be 106.45kg/boat/trip. Using this information and the number of gears in operation, the total exploited biomass of neritics tuna in Sarawak waters in 1992 for all gears was estimated to be 2,147 m.t. and are comparable to the total landings i.e. 2,103 m.t. for the same year.

In the case of round scads and mackerels there was no catch-effort data collection for Sarawak waters. From 1994 and until now, data on length frequencies of Spanish mackerel and neritic tunas are being collected from three landings sites i.e. Mukah, Sibiu and Miri.

### 3. STATUS OF EXPLOITATION AND POTENTIAL YIELD OF THE STOCKS

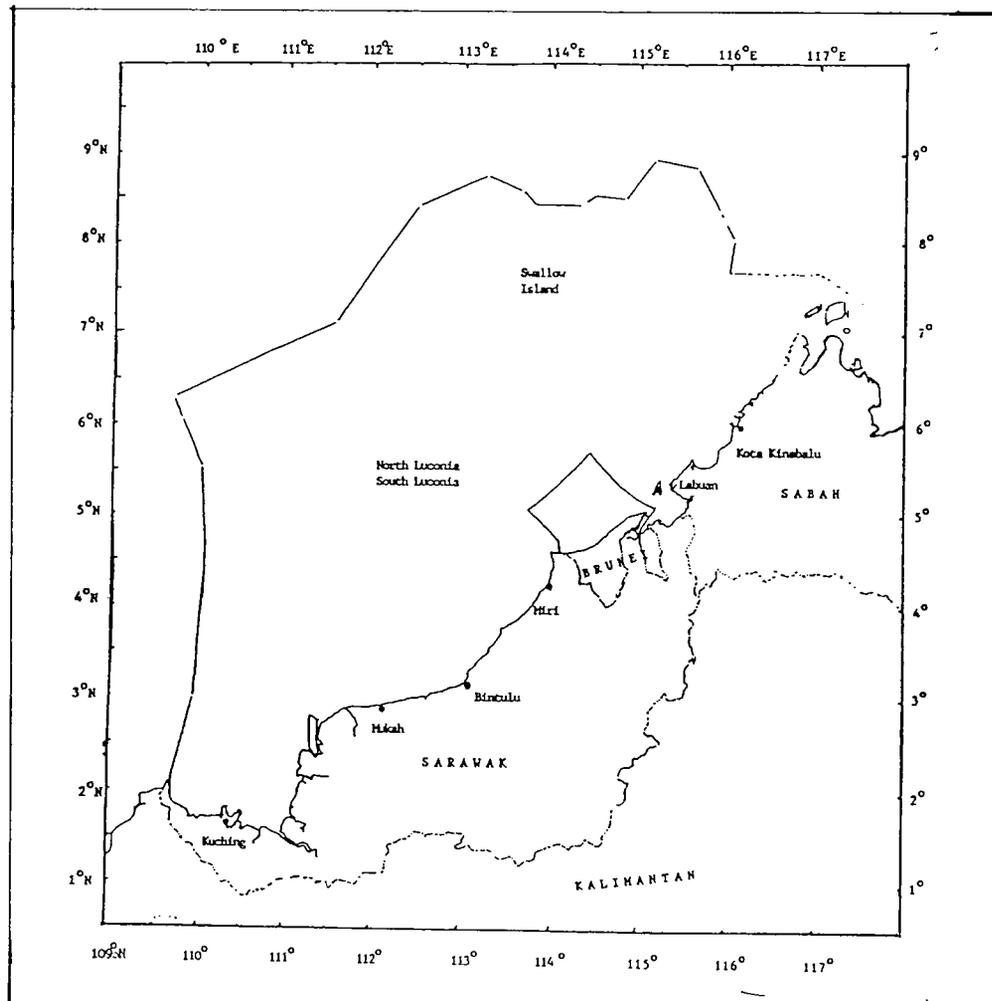
At present there is no estimates of total biomass of round scads, mackerels and neritic tunas for Sarawak waters. However, efforts are being made to estimate the biomass using the surplus production model with data obtained from Sarawak Annual Fisheries Statistics.

### 4. BIOLOGICAL INFORMATION

Results of an experimental surveys in the offshore (>60 n.m. from the coastline) waters of Sarawak showed that *Decapterus russelli* have a length range of 15.1 - 19.1 cm and a mean size of 16.9 cm (Hadil and Richard, 1991). The mean size is similar to the length at first maturity of scads found in Pahlawan waters i.e. 16.6 cm (Magnusson, 1970, Tiew *et al.*, 1970 and Ronquillo, 1974). This indicates that *Decapterus russelli* could also have attained its length at first maturity. *Decapterus macrosoma* caught offshore in areas around Swallow reef are of bigger size (31.7 cm) compared to those (17.1 cm) found in inshore waters off Kuching (Fig. 2). The length-weight relationship for *Decapterus macrosoma* were found to be  $W=0.01118L^{2.9532}$  ( $n=186$ ,  $r^2=0.9684$ ).

Preliminary result of the 1994 samplings of Spanish mackerel showed that *Scomberomerus commersonii* have a size range of 19 cm to 103 cm and there were found inshore. In the case of *Scomberomerus guttatus*, the size ranged from 12 cm to 75 cm. In offshore areas around Swallow reef the size of *Scomberomerus commersonii* ranging from 58.5 cm to 86.0 cm were comparatively bigger than those found inshore. The fish might be already matured compared to *Scomberomerus commersonii* caught in the Gulf of Thailand having size at first maturity of 58.6 cm (Chullason *et al.*, 1973 and Supongpan and Chaayakul, 1979).

Fig. 2: Major Fishing Towns and Areas of Sarawak



In 1992, a study on the reproductive biology of kawakawa off the coast of Sarawak was conducted. The length at first maturity was estimated at 39.0 cm (Richard, 1993). This was comparable to the size of kawakawa caught in the Philippines waters which attained the first maturity stage at 38.5 cm (Ronquillo, 1963). In the Gulf of Thailand the size at maturity for kawakawa was found to be 37.5 cm (Klinmuang, 1978 and 1981; Cheunpan, 1984) which was a bit smaller compared to those found in Sarawak waters.

Tuna tagging project was carried out off Sarawak in July 1992. As of October 1993, a total of 3,985 fishes were tagged and released. The breakdown of species and figures are as follows:

Species	No. of fish tagged
<i>Euthynnus affinis</i>	1,139
<i>Thunnus tonggol</i>	2,731
<i>Auxis thazard</i>	114
<i>Katsuwonus pelamis</i>	1

The tagging returns are very poor because until now only seven tagged fishes were recaptured and returned to Fisheries Research Institute, Sarawak. Preliminary results showed that the average growth rate was 0.13 cm/day for kawakawa and 0.16 cm/day for long tail tuna.

## 5. ACKNOWLEDGEMENT

The author wish to thank Y. Bhg. Dato' Haji Shahrom bin Haji Abdul Majid, the Director General of Fisheries Department of Malaysia, for his permission to present this paper. Thanks are also due to Mr. Henry Opang Luhah, the Chief of Fisheries Research Institute of Malaysia, Sarawak Branch, Kuching for his supports and comments in preparing the paper. Appreciation also goes to Mr. Albert Chuan Gambang and Mr. Hadil Rajali for their critical comments on the paper.

## 6. REFERENCES

- Cheunpan, A. (1984) Sexual maturity, size at first and spawning season of longtail tuna (*T. tonggol*), eastern little tuna (*E. affinis*) and frigate mackerel (*A. thazard*) in the Gulf of Thailand. *Tech. Rep. Pelagic Fish Sub-Div. Mar. Fish. Div., Bangkok (4)*: 25p.
- Chullasorn, S., K. Chotiyaputta and Chayakul (1973) Preliminary studies on the narrow-barred Spanish mackerel *Scomberomerus commerson* (Lacepede, 1802) in the Gulf of Thailand. *Tech. Rep. Pelagic Fish. Unit Fish. Div. Bangkok, (1973) 47p* (in Thai).
- Hadil, R. and Richard, R. (1991) Distribution and biological status of pelagic resources off Sarawak, Malaysia. *Fisheries Bulletin No. 68*: 23p.
- Klinmuang, H. (1978) Preliminary studies on the biology of tunas in the west of the Gulf of Thailand and off the east coast of Peninsular Malaysia. *Tech. Rep. Pelagic Fish Unit. Mar. Fish. Div. Bangkok (1978)*: 27p.
- Klinmuang, H. (1981) Length frequency distribution and length-weight relationship of tunas in the Gulf of Thailand. *Tech. Rep. Pelagic Fish Unit. Mar. Fish. Div., Bangkok (24)*: 33p.
- Magnusson, J. (1970) Report on assignment as marine biologist with the UNDP (SF) FAO Deep-Sea Fishing Development Project in the Philippines (January 1966-June 1969). *Rome, FAO UNFP/SF Project PHI/11*: 90p.
- Richard, R. (1993) Aspects of reproductive biology of kawakawa (*Euthynnus affinis*) off the coast of Sarawak. *Persidangan Penyelidikan Perikanan Ke 4, Kuala Terengganu, 4-6 Oktober, 1993*.
- Ronquillo, I.A. (1974) A review of the round scad fishery in the Philippines. *Proc. IPFC, 15(3)*: 351-75.
- Spongpan, S. and R. Chaayakul (1979) Population bioeconomics of the Spanish mackerel, *Scomberomerus commerson* (Lacepede, 1802) in the Gulf of Thailand, *Tech. Rep. Pelagic Fish. Unit Mar. Fish. Div. Bangkok, (9)*: 31p.
- Tiews, K., I.A. Ronquillo and P. Caces-Borja (1970) On the biology of round scads, *Decapterus* Bleeker in the Philippines waters. *Proc. IPFC, 13(2)*: 82-106.