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NOTES ON PACIFIC ISLANDS DECAPTERUS

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Fish of the genus Decapterus are commonly referred to as scads, round scads, and mackerel scads. Pacific Island names include ulihega (Niue), uli (Tokelau), operu (Tahiti), koperu (Cook Islands and Tahiti), bari (Kiribati), atule kau (Tonga), pwayur (Satawal), hachuman (Guam), and opelu (Hawaii). As in other members of the family Carangidae, scutes are present on the posterior lateral surface. The feature that distinguishes these fishes from other carangids is the finlet behind the dorsal and anal fins. Personal correspondence and a review of the recent literature indicate that four species of decapterus are common in the Islands of the South Pacific: Decapterus macarellus, D. macrosoma, D. kurroides, and D. russelli. A key to these species (from Lewis et al 1983) is appended.

The common commercial species in Hawaii, Decapterus macarellus (Figure 1), is found throughout the Pacific Islands. Taxonomic characteristics of this species include dorsal fin VIII, 32-33-I; anal fin II-I, 28-29-I; scutes 20-25; and lateral line scales 100-116 (Shiota 1986). The names D. pinnulatus and D. sanctae-helenae have also been applied to this fish. In addition, Smith-Vaniz (pers.comm.) reports that the name D. macrosoma (a valid species) has frequently been misapplied to D. macarellus.

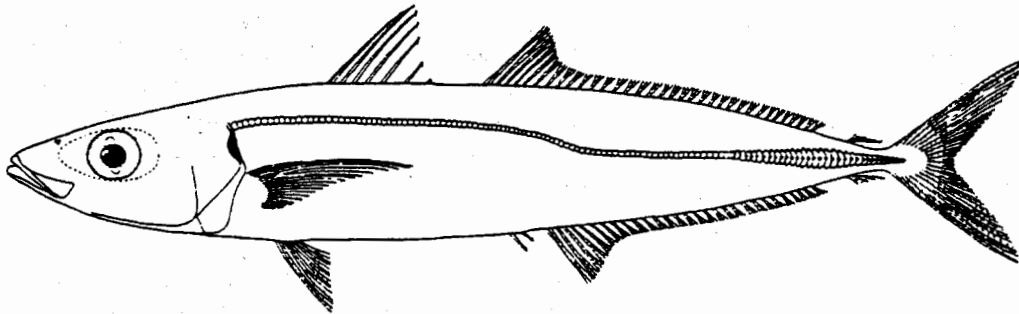
In the Pacific Islands D. macarellus is frequently found over the outer-reef slope in water depths of 10 to 50 metres and in deep bays. The abundance of this species in the various island groups is likely to be related to the length of coastline.

Information concerning decapterus in the South Pacific is extremely fragmented. Various authors (Baldwin 1977, Lewis et al 1983, Skipjack Programme 1983) state that decapterus has occasionally been used as live bait for tuna fishing. Decapterus (specimens subsequently identified as D. macarellus) are often caught hundreds of kilometres from land by tuna purse seine vessels (Gillett 1986a, 1986b). Argue and Conand (1980) show that in the Pacific Islands decapterus is a food item of tuna. Mead (pers.comm.) states that they are often attracted in great numbers to anchored fish aggregating devices and that they are one of the best drop-stone fishing baits. Chapman and Preston (in press) give the results of bottom gill netting in the Cook Islands and state that D. macarellus was a major component of the catch and was the most preferred bait species for trolling. In French Polynesia these fish are caught by nets set in the passes



Figure 1

Decapterus macarellus



(drawing from FAO 1983)

of the reef and large schools occur from August to December (Bagnis et al 1972). SPC (1983) gives evidence that for vertical longlining, decapterus and selar were much more effective than the other baits tested. Hooper (1984) gives a short description of traditional decapterus fishing in Tokelau. Amesbury et al (1986) describe fishing for decapterus in the Mariana Islands during the 1800s and during the 1930s. Preston et al (in press) show several ways in which these fish can be rigged as a trolling bait. Tsubaki and Kawasaki (undated) give details on small scale purse seine fishing at night in Tonga in which D. russelli and D. macrosoma along with two other carangids comprised 38% of the catch. Decapterus fishing trials using the Hawaiian technique are described for Niue in Gillett (1987) and for Tonga in Gillett (1988).

The most significant fishery for decapterus in the Pacific Islands is in Hawaii. Aspects of this fishery are discussed in Yamaguchi (1953), Powell (1968), Rizzuto (1983), Paulo (1986), and Shiota (1986). In some years over 200 tonnes of D. macarellus are captured in Hawaii, the average in recent years being about 122 tonnes, most of which is harvested by hand lines and hoop nets. A diagram of Hawaiian hoop gear is given in Figure 2.

Although there is a fair amount of stock assessment information on the genus Decapterus, much of which is from Southeast Asia, its applicability to the Pacific Islands is limited by the taxonomic uncertainties in the literature and statistical summaries. Tiews et al (1970) and SCSP (1978) recognize four species of decapterus in Southeast Asia, none of which is D. macarellus. FAO (1983) and NMFS (pers.comm. 1987) indicate, however, that they are found in the Southeast Asian area.

Despite the taxonomic difficulties, generalizations concerning the genus Decapterus can be made. In Southeast Asia they are one of the most economically important species and are caught by bag nets, purse seines, gill nets, ring nets and trawls (BOBP 1984, Calvelo and Dalzell 1987). Hongskul (1980) presumes that decapterus stocks undergo mixing between various countries in Southeast Asia. The annual catch of these fishes in the South China Sea area was reported to be 413,000 tonnes in 1975, with an estimated potential of 540,000 tonnes (SCSP 1978). This is probably several orders of magnitude greater than the total South Pacific landings of decapterus.

The only available stock assessment work specifically on Pacific Island decapterus is that done by Yamaguchi (1953). He studied D. macarellus (although referred to as D. pinnulatus) in Hawaii and showed that its characteristics include a fairly rapid growth rate, sexual maturity at 18 cm standard length, and spawning in pelagic waters. Although juveniles were found offshore, adults were seen only in nearshore areas.

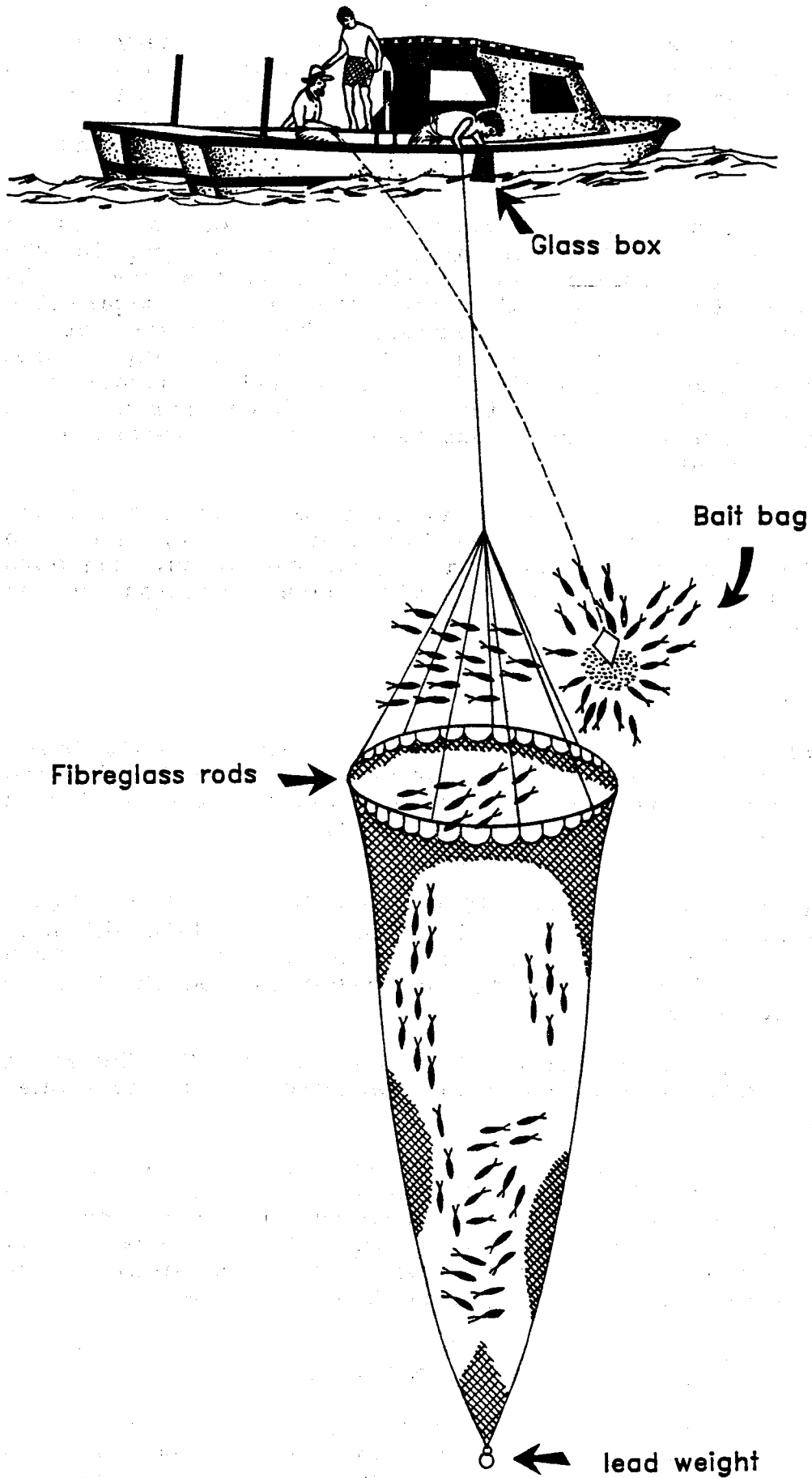


Figure 2
The Hawaiian technique for capturing

Yamaguchi reviewed the Hawaiian decapterus fishery during the previous half-century and showed that in some years over 200 tonnes were captured, with the average catch per boat day at the height of each season about 73 kilos. He stated that there was no significant downward trend in this catch rate during the previous half-century.

It is uncertain how applicable the Hawaiian study is to other areas. The lack of work on D. macarellus in the South Pacific reduces stock evaluation on the species to the intuitive level. The presence of D. macarellus throughout the island groups, the absence of a significant fishery, the amount habitat in many island countries exceeding that of Hawaii, and a significant appearance of the species in offshore purse seine catches, supports the contention that the resource is under-utilized.

The value of D. macarellus as both food and a baitfish, its vulnerability to small-scale fishing gear, and the need to relieve pressure on lagoon resources, suggests that the species may be receiving more attention in the South Pacific in the future.

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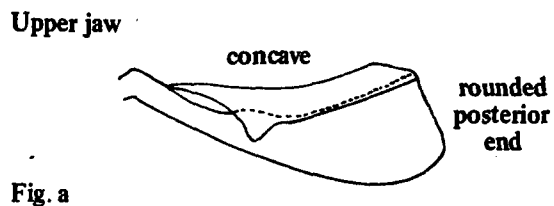
Appendix

Key to Pacific Island Decapterus Species

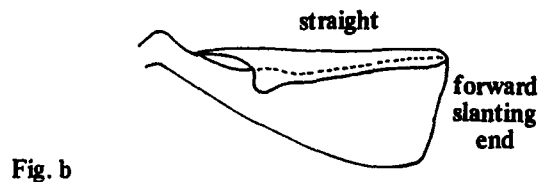
(from Lewis, Smith and Ellway 1983)

1a. Straight part of lateral line with 14-35 scales and 46-68 total scales and scutes; upper jaw without teeth; pectoral 58-75 per cent of head length

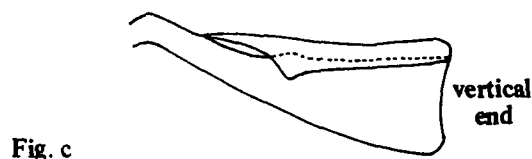
2a. Posterior end of upper jaw concave above, rounded and produced below (Fig. a); oral valve (membrane) at symphysis of upper jaw, dusky or transparent *macrosoma*



2b. Posterior end of upper jaw straight above, moderately rounded to slanting antero-ventrally; oral valve white in life (Fig. b) *macarellus*



1b. Straight part of lateral line with 0-4 scales and 46-48 total scales and scutes; upper jaw with minute teeth; pectoral fin 71-105 per cent of head length; posterior end of upper jaw vertical (Fig. c)



3a. Caudal fin tinged red in life; lower gill rakers usually 26-32, segmented anal rays (including finlet) 22-26 (rarely 26) *kurroides*

3b. Caudal fin not red, lower gill rakers usually 32-39, anal rays (including finlet) 25-29 (rarely 25) *russelli*