Editorial

Two of the papers in the *Fishbyte* section of this issue of *Naga* by Moreno, and by Langi et al. deal with stock assessment issues dear to the heart of Fishbyte readers; these papers are neat and straightforward, and thus advertise themselves.

The other two papers warrant some comments:

(i) the paper by Prein and Gayanilo, presenting a small program for estimating the amount of light falling during any day anywhere on earth, does not present anything that will be new to atmospheric scientists. It might be useful, however, to fisheries scientists (and aquaculturists) who wish to model openwater ecosystems (or pond systems) starting from primary production and hence sunlight. I look forward to an additional routine for Prein and Gayanilo's program, enabling us to calculate changes of sunlight within a day;

(ii) the paper by Dr. Joe Padilla and Ms. de los Angeles deals with an issue often neglected by fishery scientists, i.e., the intentional and unintentional impacts of government *policies* on the development of fisheries, here illustrated in the case of the Philippines.

I am particularly thrilled to see that Dr. Padilla and Ms. de los Angeles have been able to use, for their Fig. 1, the coastal section concept I proposed jointly with Dr. C. Lightfoot in the April 1992 issue of *Naga*, to present precisely the kind of complex interrelations he addresses.

Could it be that this concept may be useful also for fisheries scientists performing stock assessment, e.g., to represent inshore/offshore migrations, or changes in stock density? ***D. Pauly***

Selection Properties of the Baited Hooks Used in the Cuban Longline Fishery of Campeche Bank, Gulf of Mexico

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Abstract

A description of the Cuban set longline fishery on Campeche Bank, Gulf of Mexico is given, with emphasis on the effects of different species of pelagic fishes used as bait. The target species is the red grouper *Epinephelus morio*, with incidental species consisting of other epinephelids (13%), lutjanids (5.4%) and sparids (1.6%).

Introduction

Numerous factors affect use of bait by a longlining fleet - currents, mode of baiting, attractiveness of the bait - and these are important when demersal fishes are targeted because these tend to consume more bait than pelagic fishes.

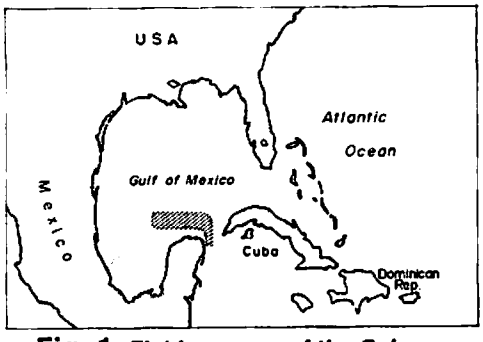

Fig. 1. ***Fishing areas of the Cuban set longline fleet for*** **Epinephelus morio** ***(Fam. Serranidae).***

The Cuban fleet fishing on Campeche Bank (Fig. 1) for red groupers (*Epinephelus morio*, fam. Serranidae) consumed nearly 15 t of bait over the last 10 years, of which 71% consisted of Atlantic thread herring (*Opisthonema oglinum*). This article presents some results of a study aiming at identifying factors affecting bait use by that fishery (Rodríguez and Moreno 1982).

Materials and Methods

The data presented here were obtained on research cruises conducted in 1986-89 and on catch records from the fleet.

These included:

1. Catch/effort (kg/boat/day) of the commercial fleet as a function of fishing depth (25, 45, 54 and 75 m) and bait species;
2. Size composition of the catch.

Standardized fishing operations were conducted from two boats with lines of 350 hooks each, set two to four times at each station.

Gear operations were timed and decomposed into (i) "setting", (ii) "resting", i.e., actual fishing time, and (iii) "hauling".

The hook used in the red grouper fishing described here is a Norwegian hook no. 3, series 2330, with a width of 27 mm (Fig. 2).

Results and Discussion

Fig. 3 shows the length distribution of bay species in the catch. As may be seen, the bulk of the target species

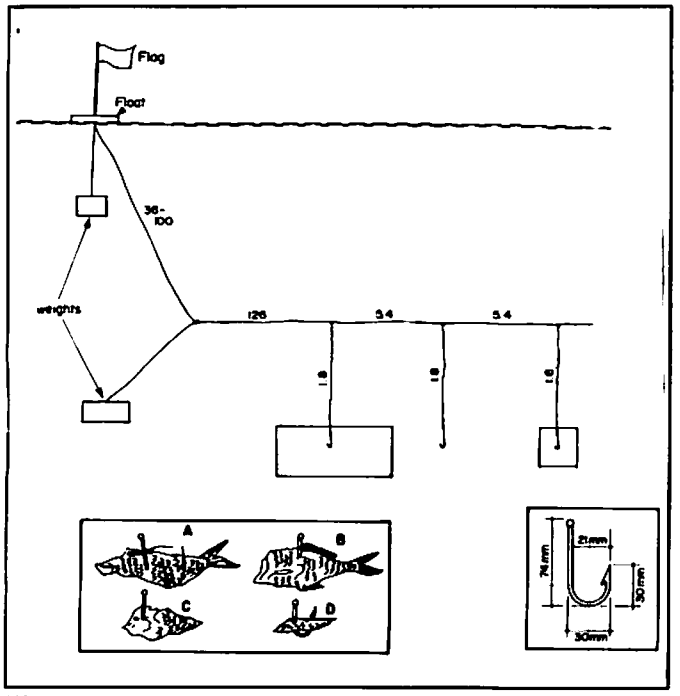

Fig. 2. *Key features of set longline used by the Cuban fleet for red grouper* Epinephelus morio *on Campeche Bank. (Longline measurements in m; hook measurements in mm); different arrangements of bait on hooks are also illustrated.*

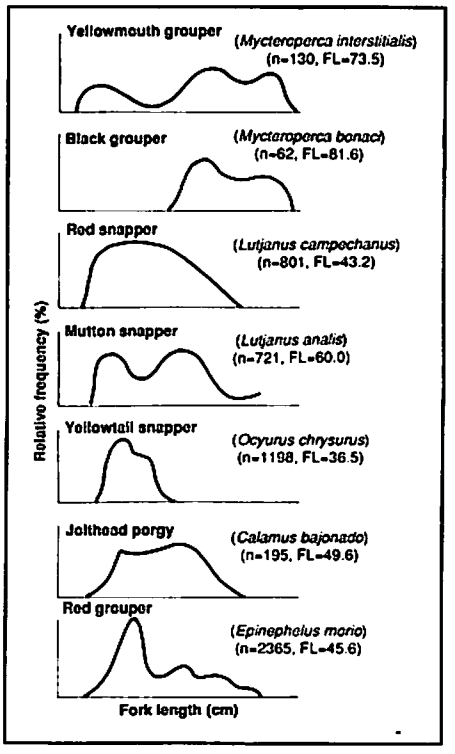

Fig. 3. *Size composition of the catch of Cuban set longlines on Campeche Bank, 1986-88.*

Table 1. Mean times (in minutes) required for various longlining operations by the Cuban fleet on Campeche Bank.

Operation	Depth (m) 27	45	54	72
Setting	11.7	10.4	10.6	10.4
Resting	18.2	19.1	18.0	17.3
Hauling	58.1	49.4	60.3	82.4

Table 2. "Consumption index" and size range of bait species used in Cuban set longline fishery on Campeche Bank.

Species common name	Scientific name	Size range (FL, cm)	Consumption (kg/boat)[a]
Atlantic thread herring	*Opisthonema oglinum*	12-18	45
Chilean pilchard	*Sardinops sagax*	20-26	75
Jack mackerel I	*Trachurus* sp.	16-23	60
Jack mackerel P	*Trachurus* sp.	19-25	60
Jack mackerel M	*Trachurus* sp.	23-30	101

[a]Daily use of bait assuming 7 casts per day.

(*E. morio*) is caught at a length of 30-40 m. Mean length of fish are also given; their contribution to total catch was 13% for serranids other than *E. morio*, 5.3% for lutjanids and 1.6% for sparids. Minimum fish length was for all species about 10 times the hook size (21 mm).

The observed mean setting and resting times for the year's operation showed little change in relation with depth, but hauling did (Table 1); however, oceanographic conditions and bottom structure also affected hauling time.

Fig. 2 shows different ways *(a-d)* hooks are baited. Of these, *(a)* is the most commonly used; it consists of cutting an atlantic thread herring transversally, such that one fish can bait two hooks. The approach in *(b)* is also used in conjunction with *O. oglinum;* in such case, the head is cut off, however. The approach in *(c)* is used mainly for jack mackerel and Chilean pilchard, which are larger than *O. oglinum* (Table 2).

No significant differences of baiting mode or bait species were found in this study, in contradiction to both Fridman (1981) who postulated species effects, and the fishers themselves, who believe that the higher fat content of *Trachurus* and *Sardinops* exert the greatest attraction on *E. morio*. On the other hand, results are in line with Smith (1981), who suggested that this fish responds mainly to a visual stimulus.

Overall, 20% of the hooks were recovered with the bait still on, without any difference as to bait species or fishing depth. This allowed the estimation of an index of consumption (Table 2) which depended linearly on fishing effort; the correlating coefficient involved here (r = 0.88) was higher than that relating consumed bait and catch (r = 0.61).

References

Fridman, A.L. 1981. Teoría y proyección de artes de pesca. Ind. Lig. Alim. Moscú. 226 p.

Rodríguez, A. and S. Moreno. 1982. Características y perspectivas de los palangres en Cuba. Bol. Téc. Cent. Inv. Pesq. 1:1-18.

Smith, C.L. 1981. Synopsis of biological data on groupers (*Epinephelus* and allied genera) of the western north Atlantic. FAO Fish. Synop. Biol. 23:1-61.

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