ASSESSMENT OF *PTEROCAESIO PISANG* (BLEEKER, 1853; FAMILY CAESIONIDAE) AT APO AND SUMILON ISLANDS IN CENTRAL VISAYAS, PHILIPPINES

by

A. Cabanban[a)]
Fisheries Department
University of the Philippines
Diliman, Quezon City
Philippines

In this study, I used the Electronic Length-Frequency Analysis (ELEFAN) I and II programs to analyse length-frequency data collected from March 1982 to April 1983. The estimates are summarised in Table 1.

Table 1. Growth and mortality estimates for *Pterocaesio pisang* at Apo and Sumilon Islands, Philippines.

	Apo	Sumilon
K	1.142	0.967
L_∞	17.64	17.50
Z	2.86	2.60

Pterocaesio pisang recruits throughout the year. At Apo Island, 95.3% of the annual recruitment occurs in 8 months while at Sumilon Island, 92.4% of the annual recruitment occurs in 10 months of the year.

Empirical estimates of the natural mortality coefficient derived from growth parameters and temperature data (Pauly 1982) give values of M = 2.27 for Apo Is. and 2.04 for Sumilon Is. The exploitation rates (E = Z-M/Z) are therefore in the region of E = 0.20 - 0.21 and the exploitation rates at Apo and Sumilon Islands are below the level (E = 0.50) at which yield is optimized (Pauly, 1982) and are therefore underexploited. In addition, the exploitation rates are comparatively lower than most Philippine pelagic and demersal fish stocks (data from Ingles and Pauly, 1982), 52.5% of which are overexploited. The underexploitation of P. pisang stocks at these islands implies two things:

(1) that the marine parks established in these areas (in addition to monsoon-induced fishing limitation at Apo Island) have effectively reduced the fishing mortality (F) and therefore are a good conservation tool; and (2) that these areas might be capable of yielding more than the present estimates of harvests (8.7 t/km^2/yr at Apo Island; Alcala and Luchavez, 1981: 16.5 t/km^2/yr at Sumilon Island; Alcala, 1981) from these reef areas, as P. pisang compose the bulk of the caesionid catch on these reefs (33.2% at Apo and 59.3% at Sumilon). The low exploitation rate of P. pisang stocks at these small islands also suggests that the estimated potential yields by Alcala (1981) and Alcala and Luchavez (1981) are reasonable, but not extremely high (Marshall, 1980), and are comparable to the estimated average yield from the American Samoa reefs (18 t/km^2/yr; Wass, 1980).

a) Present address: Biology Department, Silliman University, Dumaguete City 6501, Philippines.

References

Alcala, A.C. (1981). Fish yield of coral reefs of Sumilon Island, Central Philippines. Nat. Res. Counc. Phils. Res. Bull. 36:1-7.

Alcala, A.C. and T.F. Luchavez. (1981). Fish yield of the coral reef surrounding Apo Island, Negros Oriental, Central Visayas, Philippines. Proc. 4th Int. Coral Reef Symp. 1:69-74.

Ingles, J. and D. Pauly. (1982). Raw data and intermediate results for an atlas on the growth, mortality, and recruitment of Philippine fishes. ICLARM (MS.), 224 p.

Marshall, N. (1980). Fishery yield of coral reefs and adjacent shallow-water environments. pp. 103-109 In S.B. Saila and P.M. Roedel (eds.) Stock Assessment for Tropical Small-scale Fisheries. Int. Cent. Mar. Res. Dev., Univ. Rhode Island, Kingston, Jamaica

Pauly, D. (1982). Studying single-species dynamics in a tropical multispecies context. pp. 33-70 In D. Pauly and G.I. Murphy (eds.) Theory and Management of Tropical Fisheries. ICLARM Conference Proceedings No. 9, ICLARM, Manila and CSIRO, Australia, 360 pp.

Wass, R.C. (1980). The shoreline fishery of American Samoa - past and present. pp. 51-83 In J.L. Munro (ed.) Marine and coastal processes in the Pacific: ecological aspects of coastal zone management. UNESCO-ROSTSEA, Jakarta.

ONCE MORE ON THE COMPARISON OF GROWTH IN FISH AND INVERTEBRATES[a)]

by

D. Pauly and J.L. Munro
ICLARM, P.O. Box 1501, Makati,
Metro Manila, Philippines

We suggested in Fishbyte 1(1)(p. 5-6)[b] that the parameter Ø in the following equation can be used to compare the growth performance of fish and invertebrates (when their growth is of the von Bertalanffy type):

$$\text{Ø} = \log_{10} K + 2/3 \log_{10} W_{oo} \qquad ...1)$$

where K is a growth constant and W_{oo} is the asymptotic weight and Ø has a species- specific value. An additional feature which we should also mention, is that equation (1) can also be formulated to accomodate growth in length, when it can be assumed that $W_{oo} = a\, L_{oo}^3$. thus

$$\text{Ø} = \log_{10} K + 2/3 \log_{10} a + 2 \log_{10} L_{oo} \qquad ...2)$$

or,

$$\text{Ø}' = \log K + 2 \log L_{oo} \qquad ...3)$$

in which

$$\text{Ø}' = \text{Ø} - 2/3 \log a \qquad ...4)$$

a) ICLARM Contribution No. 195

Thus, Ø' will have values different from Ø and is an index for comparing the growth performance of fish in terms of length growth. Table 1 illustrates a case where the use of Ø' values allowed the identification of a biased growth parameter estimate in the mackerel Rastrelliger brachysoma. It must be realized however, that Ø' can be used only to compare the growth performance of fish with similar shapes; in this, Ø' differs from Ø which, being based on weight, can be used to compare the growth performance of fish of different shapes.

Table 1. Values of ϕ' in Southeast Asian stocks of *Rastrelliger brachysoma*.[a]

Area	L_∞[b]	K	ϕ'
Inner Gulf of Thailand	20.9	3.38	3.17
Inner Gulf of Thailand	20.9	4.20	3.26
Gulf of Thailand (10°N, 100°E)	20.0	3.53	3.15
Gulf of Thailand (10°N, 100°E)	19.6	4.14	3.20
Indonesia (Tajung Satai)	22.9	2.28	3.08
Burma coast, uncorrected[c]	27.0	0.965	2.84
Burma coast, corrected[d]	27.0	1.60	3.07

[a]From Pauly and Sann Aung (MS) Population Dynamics of Marine Fishes of Burma, 61 p.

[b]All growth parameter estimates based on length-frequency data, with growth curves fitted by eye by various authors, except in the case of data from Burma, which were fitted with the ELEFAN method.

[c]Raw length-frequency data, growth parameter estimated with ELEFAN I.

[d]Length-frequency data corrected for gear selection, then growth parameters estimated with ELEFAN I.

b) Erratum:

Note that in this paper, we illustrated the use of Ø for estimating K with an example that contained a computational error and thus erroneous conclusions. Instead of the sentence which began with "For example, if we assume that the normal range of Ø for tropical scombrids...", we should have written the following: "For example, applying equation (1) to tropical scombrids, which have an overall Ø range of 2 to 3, the median value of Ø = 2.5 in conjunction with equation (1) will provide a value of K = 1.08 for an asymptotic weight of 5,000 g and of K = 0.233 for an asymptotic weight of 50,000 g."

We thank Network Member J. McManus for pointing out to us the error which we have corrected here.