

# Who's Working on *Epinephelus* Culture?

**M.J.M. VEGA**  
Project Information Officer  
ICLARM

*Epinephelus* is a genus of the family Serranidae. Protogyny (hermaphroditism, female first then male) is common in this genus and its allies. In the wild, groupers lie in wait in coral reefs and ambush passing fish. Some species are long lived and can attain weights of several hundred kg. However, there is considerable confusion in the taxonomy of the species in Southeast Asia, where *E. tauvina* is actually *E. salmoides*, now renamed *E. malabaricus*.

Grouper culture was pioneered in Malaysia and Singapore in the early 1970s. Several techniques such as net cage, raceway, polyculture and pond systems were developed since then.

For this article, the Aquatic Sciences and Fisheries Abstracts (ASFA) covering the period 1971 to 1988, the ICLARM library and professional staff collections were used in the literature survey.

We found 133 items on culture and reproductive biology. The earliest article on culture was from a 1973 seminar. Publications averaged 6.6 per year between 1975 and 1979, 10.4 per year between 1980 and 1984 and 10 per year between 1985 and 1988 (Fig. 1).

About half (48%) of the items were published in journals, 32% as reports, 12% as conference proceedings, and the rest in other formats. The majority of the papers were in English (84%). Other languages used were Chinese (8%), Japanese (4%), Thai (3%) and Arabic (1%). Geographic distribution of the items was: Southeast Asia (36%) Middle East (14%), Chinese, Taiwanese, and Hong Kong studies (13%), and 30% were not specific. The rest came from northern Africa, India, and the West Indies.

Twenty-three species have been investigated, but the focus has been on *E. tauvina*, *E. malabaricus*, and *E. akaara*. Research on the first two species was conducted in the Middle East and Southeast Asia respectively, while the last species was studied in the more temperate areas of Asia (Fig. 2).

The papers were divided into six areas: culture and culture systems (27% of the total); diseases and parasites (4%); feed, feeding and nutrition (20%); biology

(26%); seed (includes induced spawning, breeding, and hatcheries) (18%); and economics (5%).

Among the earliest articles written on grouper culture was T.E. Chua's *Grouper Culture in Penang, West Malaysia*, a paper presented at the IDRC Aquaculture Seminar for Southeast Asia held in 1973 in Malacca, Malaysia. Another early paper was S.K. Teng, T.E. Chua, and H.C. Lai's *Construction and management of floating net-cages for culturing the*

published in 1987 by the Brackishwater Aquaculture Information System (BRAIS). This contains 179 abstracted articles on various aspects of grouper biology, taxonomy and culture.

Among the recent important publications are: *Aspects of the reproductive biology of the grouper Epinephelus tauvina (Forsk.) in Kuwaiti waters* by R. Abu-Hakima (address below) published in vol 30, no.2 of the Journal of Fish Biology. (March 1987 issue); *A comparative study of the parasites found in wild and cultured grouper (Epinephelus malabaricus Bloch et Schneider) in Malaysia* by T.S. Leong and S.Y. Wong (address below) in Aquaculture vol. 68, no. 3 (March 1988); and *The experiment for the development of artificial diet for salmon-like grouper Epinephelus salmoides. Experiment of the nutritional requirement and rearing study by feeding with artificial diet* by T.F. Chen et al. (Chinese text with English abstract) published in the Bulletin of Taiwan Fisheries Research Institute, number 43 (1987).

Among the pioneers in grouper culture are F.Y. Chen of the Primary Production Department, Aquaculture Unit, Changi Fisheries Research Complex, Singapore; S.K. Teng of the School of Biological Science, Universiti Sains Malaysia and T.E. Chua, director of the Coastal Area Management Program, ICLARM. The last two authors produced a large proportion of the early literature.

The centers of research are, for diseases: the School of Biological Science, Universiti Sains Malaysia, 11800 Minden, Penang, Malaysia (contact: T.S. Leong or S.Y. Wong); and culture in general: the Mariculture and Fisheries Department, Kuwait Institute for Scientific Research, P.O. Box 24885, Safat, Kuwait (contact: R. Abu-Hakima).

We can provide more information on groupers. Write to Selective Fisheries Information Service, ICLARM, MC P.O. Box 1501, Makati, Metro Manila, Philippines, for details and costs involved. You should also contact BRAIS, c/o SEAFDEC Library, Tigbauan, Iloilo, Philippines.

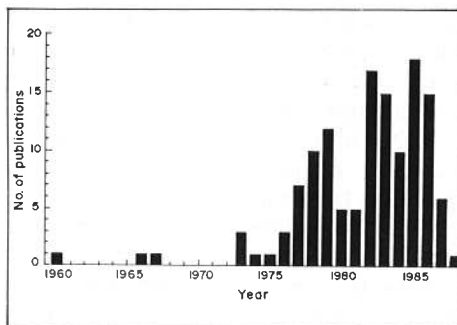


Fig. 1. Growth of *Epinephelus* literature. The drop in 1987-88 is probably an artifact of incomplete coverage.

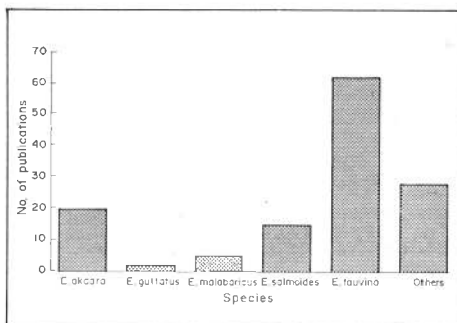


Fig. 2. No. publications by species. Note that many of the *E. tauvina* papers were probably referring to *E. salmoides*. See note on taxonomy, in text.

estuary grouper *Epinephelus tauvina* (Forsk.) in Penang, Malaysia which appeared in the *Joint SCSP/SEAFDEC Workshop on Aquaculture Engineering, Tigbauan, Iloilo, 27 Nov. to 3 Dec. 1977. (Technical Report/ South China Sea Fisheries Development and Coordinating Programme SCS/GEN/77/15)*. An important reference for grouper researchers is *Grouper Abstracts* compiled by M.D.V. Zamora et al. and