

Production of Freshwater Prawns in the Mekong Delta

C. KWEI LIN
CHRISTOPHER LEE

Natural Production

The Mekong River flows through southern Vietnam in two major branches, encompassing a 39,550-km² delta with 14.2 million inhabitants. With open access to vast estuaries, extensively interconnected rivers and canals constitute most of the aquatic environment in the Mekong Delta: an ideal habitat for the native freshwater prawn (*Macrobrachium rosenbergii*) (Fig. 1). The prawns are harvested primarily by a common small-scale method using shelter traps. The shelter traps installed along the edges of rivers and canals are square or rectangular enclosures surrounded with bamboo or wooden frames, within which piles of tree branches and aquatic vegetation (water hyacinth) are placed to attract prawns from the open water. Periodically, fishers surround

the shelters with seine nets and remove prawns from within them. Prawns are harvested all year-round and the larger ones are sold at more than US\$4/kg,

Intensive prawn culture is rare and requires large capital investment for pond construction, high protein feed, large labor and energy inputs, as well as sophisticated farm management skills. The major impediment to large commercial farm development in Vietnam is lack of reliable market demand. Although the potential yields of

Currently, there are two sources of freshwater prawn (*Macrobrachium rosenbergii*) production in Vietnam: natural production from the rivers and canals, and aquaculture production from ponds and ricefields.

either to local markets or government processing plants. Smaller prawns and juveniles are kept alive and sold to prawn farmers at around US\$1.5/kg, which comprises 200 to 300 individuals.

The total annual freshwater prawn production in Vietnam during 1985-90 was reported to vary from 5,000 to 8,000 t, most of it from natural fisheries. Unless the harvest of wild juveniles is managed, it may undermine the sustainability of the natural fisheries.

There have been few efforts to estimate the standing stock of prawns in any given river or habitat. Nor is there information on catch/effort and rate of natural recruitment for the prawn population. Without such data, it will be difficult, if not impossible, to assess their present status and predict the future trend of the prawn fisheries.

Aquaculture Production

Although there are no official statistics on the production of farmed prawns, the amount is believed to be relatively small. The growout system includes intensive monospecies pond culture, and semi-intensive or extensive integrated rice-prawn or vegetable-prawn culture.

intensive farming are up to 1,500 to 2,000 kg/ha/year, the risks are also great.

Most prawn culture systems practised in Vietnam are semi-intensive, found predominantly in An Giang, Hau Giang, Cuu Long and Tien Giang provinces. This type of farm requires modest capital input and less management know-how and has lower risks. The prawns feed on natural food, supplemented with raw farm products, and the yields are usually low at 200-500 kg/ha/year.



Prawn vendor in a local market.

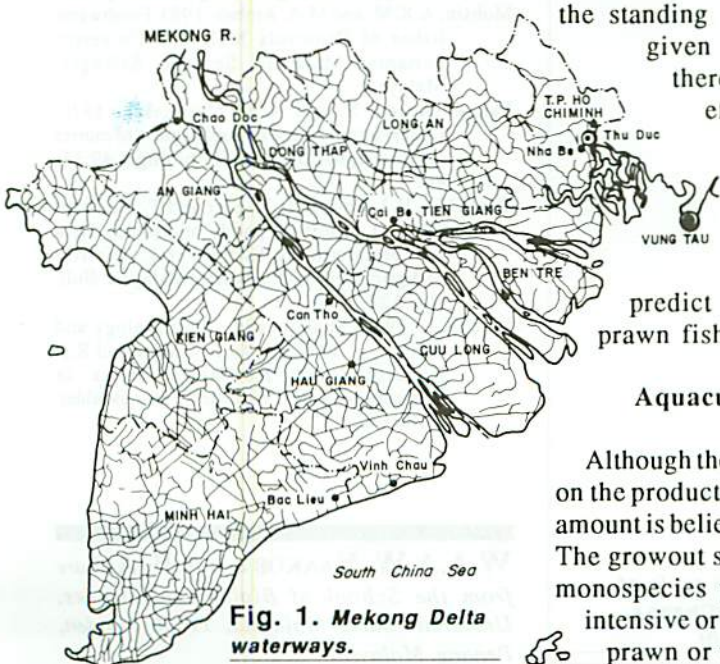


Fig. 1. Mekong Delta waterways.



Shelter trap to capture freshwater prawns.



Harvesting prawns.

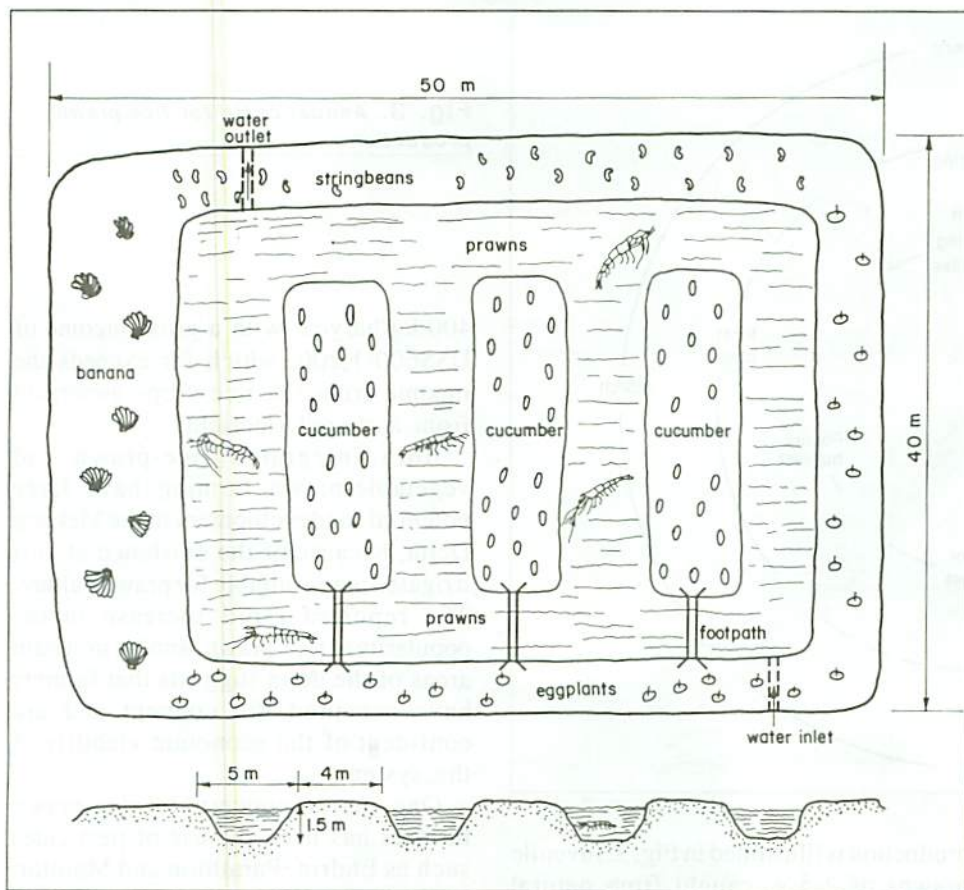


Fig. 2. Vegetable-prawn integrated culture system.

from a 2,000-m² ricefield, consists of ditches for prawn rearing, and platforms and levees for vegetables and fruit trees. As the complex is connected directly to an irrigation canal from the river, the farmer is able to change pond water with tidal cycles. Juvenile prawns, collected from natural waters, are stocked at 4-6 animals/m², and fed twice daily with a mash of rice bran, cassava chips and trash fish. Normally, each crop produces approximately 100 kg of prawns every six months and the estimated gross annual income from prawn culture is US\$300-400, which is three to four times the income derived from a similar sized ricefield. In addition, several varieties of vegetables are planted including cucumber, eggplant, stringbean and banana, to provide supplementary income as well as for domestic consumption.

Such diversification from rice monoculture has been initiated recently and already is popular among farmers. The main constraints to expansion of this farming system are lack of capital to start, shortage of juveniles for pond stocking and inadequate extension services.

This system is suitable for the present socioeconomic and market situation in Vietnam but is relatively recent and has potential for considerable improvement. It relies on the availability of juveniles, most of which still come from natural recruitment. The demand for live juveniles has created a large and important sector of freshwater prawn fisheries. Seed supplies from prawn hatcheries are still

extremely limited, although a couple of government hatcheries have been recently built in Vung Tau and Nha Be.

Integrated Vegetable-Prawn Culture

One type of semi-intensive small-scale prawn culture practised in Vietnam is the vegetable-prawn farming system (Fig. 2). A typical complex, converted



Vegetable-prawn culture system.



Rice-prawn culture system.

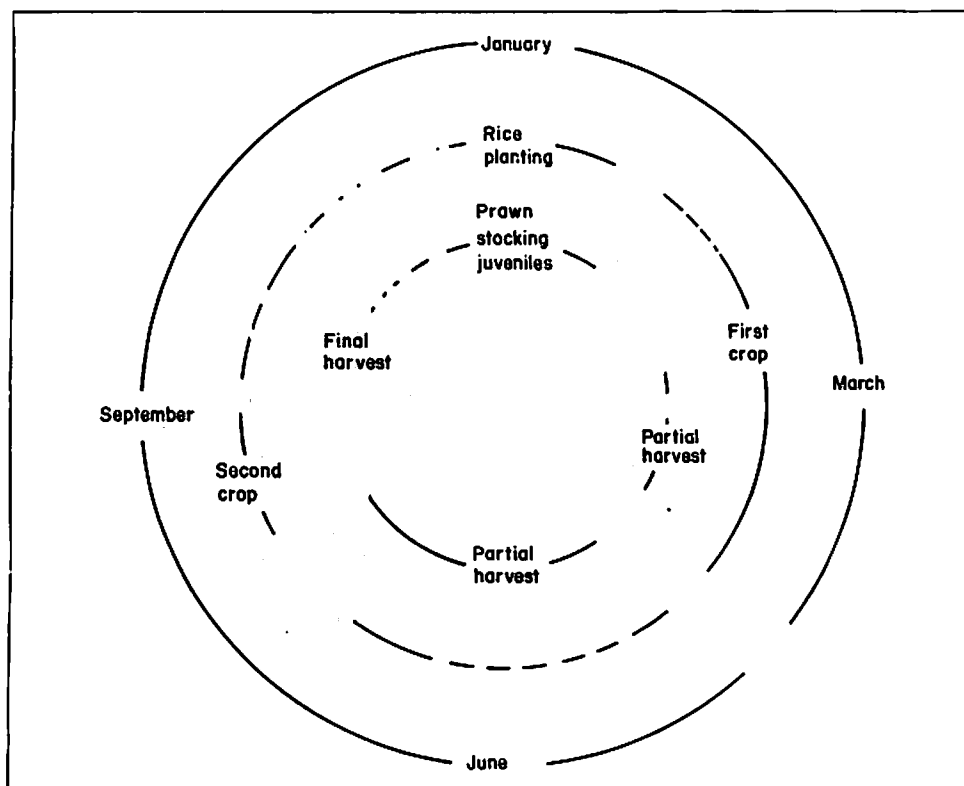


Fig. 3. Annual cycle for rice-prawn production.

Integrated Rice-Prawn Culture

Rice-fish integrated culture is an age-old practice in the country, but rice-prawn culture *per se* was not introduced until early 1980. In common with the rice-fish culture system, the rice-prawn farms have peripheral trenches of 2-3 m wide and 1 m deep. In larger fields, diagonal or transverse ditches are also dug to connect the peripheral trenches.

A typical annual cycle of rice-prawn

production is illustrated in Fig. 3. Juvenile prawns of 2-5 g, caught from natural waters, are stocked at 1-2 animals/m² during the first rice crop in the early part of the year, when juveniles are more abundant. Whereas most prawns are normally raised for eight months to reach market size, some are harvested earlier. The major growth takes place during the rainy season from May to October. In addition to natural food, prawns are fed with rice bran mash. The prawn production ranges from 200 to

400 kg/ha/year with a gross income of US\$600-1,200, which far exceeds the income from the rice crops generated from a shared ricefield.

Both integrated rice-prawn and vegetable-prawn farming have large potential for development in the Mekong Delta, because of the existence of vast irrigated areas suitable for prawn culture. The reported rapid increase in the popularity of rice-prawn farming in certain areas of the delta suggests that farmers have accepted the concept and are confident of the economic viability of the system.

One major concern to rice-prawn farmers has been the use of pesticides such as Endrin, Parathion and Monitor. Freshwater prawn farming is a relatively new activity in Vietnam and research on pond management is needed to improve the production and income of the farmers.



C.K. LIN is from the Asian Institute of Technology, P.O. Box 2754, Bangkok, Thailand, and **C. LEE** is from the Queensland Department of Primary Industries, Brisbane, Queensland, Australia.