

PUNTIVUS JAVANICUS BLKR*
IN MALAYSIA

by

Soong Min Kong
Director of Fisheries
Ministry of Agriculture and Cooperatives,
Kuala Lumpur, Malaysia

ABSTRACT

The growing importance of *Puntius javanicus* as a pond-fish in Malaysia is emphasized. Its potential as a fish for stocking of rivers and lakes is noted. Fish of up to 43.2 cm (17 in.) in total length and of weight up to 2 kg. (4.4 lb) have been recorded from the Perak River in which it was introduced. This must be a record.

In a previous paper (Soong, 1962) a full account of the introduction of *Puntius javanicus* from Indonesia for pond-culture in Malaya has been given. It was shown that the thousands of *P. javanicus* that were being cultured in ponds in Malaya were derived from ten fish, survivors of the original stock imported in 1953.

This fish, which is known to Indonesian farmers as 'tawas' has since been named 'lampam jawa' by the Fisheries Division, Ministry of Agriculture & Cooperatives for two reasons, firstly

because of its close resemblance to one of our popular river fishes known locally as the 'lampam' or *Puntius schwanenfeldii* (Blkr) and secondly to indicate its introduction from the island of Java.

It was also predicted in the previous paper that because of its inherent favourable characteristics as a pond-fish, the culture of *P. javanicus* would assume great importance in the State of Malaya. This has now been borne out by the following statistics:-

*This name is retained in preference to *Puntius gonionotus* (Blkr) since the fish is better known as *P. javanicus* among fish culturists.

TABLE I

Number of species of fry supplied free by the Fisheries Division to farmers in the State of Malaya

Year	<i>Tilapia mossambica</i>	<i>Puntius javanicus</i>	<i>Cyprinus carpio</i>	<i>Osphronemus goramy</i>
1957	15,950	6,240	1,550	800
1958	27,240	4,150	18,800	1,800
1959	20,240	65,750	19,760	-
1960	47,600	137,100	48,000	200
1961	42,350	358,700*	104,300	1,900
1962	27,280	354,470	68,170	1,440
1963	31,180	556,200	103,870	370
Jan.-June 1964	28,880	344,480	44,380	2,170

*Including 6,175 from the Tropical Fish Culture Research Institute, Malacca.

TABLE II

Numbers of Chinese carp fry (mainly *Ctenopharyngodon idellus*, *Aristichthys nobilis* and *Hypophthalmichthys molitrix*)** imported from China via Singapore into the State of Malaya

Year	No. of Fry	Value: Malayan \$
1954	272,670	52,782
1955	78,100	7,859
1956	58,231	5,110
1957	602,067	64,400
1958	490,730	50,547
1959	488,810	63,698
1960	831,266†	54,416
1961	943,060	69,536
1962	1,072,650	78,525
1963++	738,090	55,618

**All three species do not spawn in the State of Malaya and are imported annually as fry for pond-culture.

† This figure was given as 8,312,660 and has been amended by me to 831,266. This should be the correct figure if we take into consideration the declared value.

++Estimated figures compiled from the Imports and Exports of Fish and Fishery Products, Department of Statistics, Kuala Lumpur.

Table compiled from Federation of Malaya Annual Statistics of External Trade.

TABLE III

Total recorded area of ponds under fish culture in the States of Malaya

<u>Year</u>	<u>Recorded Cumulative Area</u>		<u>Annual Area Increase</u>	
	<u>Hectares</u>	<u>Acres</u>	<u>Hectares</u>	<u>Acres</u>
1957	145.96	(360.90)		
1958	217.70	(538.29)	71.74	(177.39)
1959	346.85	(857.61)	129.15	(319.32)
1960	476.49	(1,178.14)	129.64	(320.53)
1961	579.33	(1,432.42)	102.84	(254.28)
1962	704.14	(1,741.02)	124.81	(308.60)
1963	782.39	(1,934.49)	78.25	(193.47)

Thus it will be seen from Table II and III that whilst the total recorded cumulative acreage of ponds in 1963 has increased to more than 500% of that of 1957, the number of Chinese carp fry imported in 1963 has not shown a corresponding increase. In fact that figure for 1963 showed an increase of only about 25% over that of 1957. This short fall has been taken up to a large extent by the increased number of *P. javanicus* supplied free to our farmers from our fry breeding stations. Table I shows the sustained yearly increase in fry of *P. javanicus* distributed to our farmers and is of great significance to us since it will mean that our extension work in fish culture can go ahead without too much reliance on importation of fry from overseas.

DEPLETION OF FISH STOCK IN NATURAL WATERS

The last few years have seen a tremendous upsurge in Malaya in the opening up of thousands of acres of virgin lands for the

cultivation of rubber and oil-palm. This development is spear-headed by the Federal Development Authority and entails the spreading out of our rural population over wide areas in new land settlements. Such a development cannot but have an adverse effect on fish production from our natural waters. Further, industrialisation has also gone ahead and with it the natural consequence of pollution of our waters with industrial effluents.

It is therefore not surprising that there is now a general complaint that our rivers, lakes and swamps are not yielding the quantity of fish as they used to do in the past. This is no doubt due to the changed circumstances. But more harmful still are such practices as intensive fishing by use of nylon nets, illegal fishing with dynamite and insecticides and the pollution of rivers by discharge from rubber factories and palm-oil factories, all of which are on the increase.

Whilst the remedy would appear to be simple enough, namely,

the enforcement of suitable legislative measures on fishing practices and pollution, it will be clear to those engaged in fisheries management work on the ground and particularly in this region that the problem is not so simple. The malpractices may be reduced somewhat by active enforcement work, but certainly cannot be totally eliminated. Educating the public on the devastatingly harmful effects of their illegal operations will help but this is necessarily a long term project in any developing country.

Thus a stage has been reached in the States of Malaya where active steps will have to be taken to stock our natural waters with desirable species of fish if we are to maintain the productivity of our waters.

WHAT FISH SHOULD BE USED FOR RE-STOCKING OUR WATERS?

Hitherto *Tilapia mossambica* which was introduced into Malaya about 1943 has been used for stocking of mining pools, swamps, rivers and lakes. It is easy to breed and thus poses no problem in regard to supply of fry. Our experience thus far has shown that whilst it will do well in our disused mining pools some of which are 5 - 15 hectares in extent and 10 m to 15 m (30 to 45 ft) deep, it has failed to establish as a fishery in our rivers. Neither is it able to hold its own against such predatory fishes as *Ophicephalus striatus* and *Clarias batrachus* both of which are normally present in all our swamps.

Similarly it has been our experience that the common carp *Cyprinus carpio* which is such a pest in temperate waters of the American continent has failed to establish itself when introduced into our natural waters. Fish culturists generally attribute this to the high temperature of our waters normally around 30°C, at which the Common carp is a sluggish fish, thereby falling an easy prey to predatory fishes. So much so that in pond-culture our farmers normally expect only a 10% survival rate of *Cyprinus carpio* when this fish is cultivated in combination with the other species of imported Chinese carp in ponds.

Another fish which has been successfully introduced into Malaya is *Trichogaster pectoralis* or Sepat siam, a fish suitable for stocking of swamps, padi-fields, and reservoirs but not for rivers (Soong 1948).

PUNTIUS JAVANICUS AS A STOCK-FISH FOR NATURAL WATERS IN MALAYA

Many of us who are concerned with fisheries development work in the Indo-Pacific region are familiar with the successes achieved with the introduction of *P. javanicus* into natural waters as well as into impounded waters in Indonesia, the most notable of which is its introduction into Tempe Lake in South Celebes. This raised fish production of the lake from 13,000 tons in 1937 to 25,000 tons in 1943 (Mrs. A. Vass-van Oven, 1960).

P. javanicus is essentially a

river fish. In Indonesia although efficient techniques have been developed over a long period for spawning this fish in ponds, considerable numbers of young are still collected annually from the Solo River in Java for pond-culture (R.O. Ardiwinata, 1960).

However, apart from Indonesian literature there is little else published about its culture or its use as stock-fish for natural waters. It is known that the fish is cultured in ponds in Thailand. The writer visited one of the Department of Agriculture Stations in Chiangmai, Northern Thailand in 1962 and saw fry of *P. javanicus* being bred there for distribution to farmers in the surrounding area. It is not known, however, whether the fish has been used extensively for stocking rivers, lakes, swamps and reservoirs in Thailand, and if so with what results.

In Malaysia as already pointed out, the need for stocking our waters in the States of Malaya is great, and as already indicated *Cyprinus carpio* is unsuitable whilst both *Tilapia mossambica* and *Trichogaster pectoralis* have their limitations.

With the availability of *P. javanicus* in great numbers from our fry stations, a programme of stocking the rivers, lakes and irrigation canals in the States of Malaya with *P. javanicus* was initiated in 1959 on the suggestion and advice of Dr. S.W. Ling, FAO Inland Fisheries Biologist. We concentrated on the Perak River on our West Coast and also on Chendroh Lake, an impounded body of water of about 3,200 hectares in extent formed by a hydro-electric dam across the upper reaches of the Perak River.

The following fry were released:

<u>Year</u>	<u>No of fry of <i>P. javanicus</i> Released</u>	<u>Locality of Release</u>
1959	500	Chendroh Lake
1961	10,000	"
1962	27,435	"
1963	8,000	"

In addition, in 1963 a total of 133,800 *P. javanicus* were released into the stretch of the Perak River below the dam.

During August 1964 the surface water from Chendroh Lake and the Perak River showed the following physical and chemical characteristics:

Time	=	12 noon
Temperature	=	29°C
Total Alkalinity	=	24.6 to 26.5 ppm.
pH	=	7.0 - 8.0
C ₂	=	7.0 - 8.2 ppm.
Transparency by Secchi disc	=	0.6 m (2 ft).

Results so far obtained show that *P. javanicus* has successfully established itself in Chendroh Lake and in the Perak River itself. Young fishes of 4 in. as well as fish of 17 in. in total length and up to 4 lbs. each are now being regularly caught by professional fishermen on the lake and in the river. In August 1964 two surveys of three days and four days duration respectively and conducted on fishermen's catches at Chendroh Lake showed that *P. javanicus* formed roughly 1% by weight of the total catches of these fishermen. They were landing from 350 kg. to 400 kg. of fish daily at three landing points namely Changkat Duku, Kuak and Kota Tampan. About 84% of this landing consists of *Thymichthys thymoides* (Blkr.) known locally as 'lomah'. Similarly catches of *P. javanicus* are regularly made from the river. It is therefore felt that with further stocking of the lake and river it should be possible to raise productivity appreciably. Since *P. javanicus* is essentially a herbivore the annual flooding of the lake and river due to monsoon rains should produce conditions favourable to increased production of this fish.

SIGNIFICANCE OF INTRODUCTION OF *P. JAVANICUS* INTO MALAYA

From the foregoing it will be seen that the introduction of *P. javanicus* into Malaya in 1953 has marked an important step in the development of freshwater fisheries in this country. It is comparable in importance to that of the introduction of the common carp (*Cyprinus carpio*)

and the introduction of the culture of the other species of Chinese carp namely *Ctenopharyngodon idellus*, *Aristichthys nobilis* and *Hypophthalmichthys molitrix* into this country by Chinese farmers. Unfortunately the history of these introductions are now lost. *P. javanicus* has also been introduced into our other component State of Singapore, Sabah and Sarawak and from all accounts they are thriving.

It is my firm belief that until such time as we have solved the problem of spawning the three species of Chinese carp mentioned above, *P. javanicus* will continue to be one of our main-stays for culture and for stocking of our waters. At present active research is being carried out on the spawning of the Chinese grass carp at the Tropical Fish Culture Research Institute, Malacca.

LINES OF RESEARCH

Meanwhile the Fisheries Division of the Ministry of Agriculture & Co-operatives will undertake research aimed at improving the technology of fry production of *P. javanicus* in Malaysia. Another important aspect which will receive attention will be the breeding of a fast-growing strain from this imported stock. The fact that fish of up to 2 kg (4.4 lbs) each are being regularly caught in the Perak River and from Chendroh Dam is a good augury for the future, and a pointer to the potential for further development in the culture of this fish in Malaysia.

ACKNOWLEDGEMENT

Acknowledgement is due to both Inche Harun and Inche Somasekaran, member of my field staff

for supplying me with information on the catches from Chendroh Dam and for the physical and chemical data of Chendroh Lake and the Perak River.

REFERENCES

- Soong, M.K. (1962). A Note on the Pond-culture of *Puntius javanicus* (Blkr.) in the Federation of Malaya. IPFC Procs., 10(2): 170-173.
- Soong, M.K. (1948). Fishes of Malayan Padi-fields, I. Sepat siam - *Trichogaster pectoralis* (Regan). Malayan Nat. Journ., 3(2): 87-89.
- Vass-van Oven, A. (Mrs.)(1960). Ecological Appraisal. Lectures at Third International Inland Fisheries Centre, Bogor, Indonesia, Vol. I, FAO Rome.
- Ardiwinata, R.O. (1953). Pemeliharaan Tawes Oleh N.V. Penerbitan, Vorkink-van, Bandung, Indonesia, 101 pp.