Papers on
Malayan Fishing Methods

by

T. W. Burdon, B.Sc., & M. L. Parry, B.A.

(With a note on the local boats employed in sea fishing, by C. A. Gibson-Hill)
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The Malayan Branch of the Royal Asiatic Society dates from 1923. It is the direct successor, by change of title, of the Straits Branch, R.A.S., which was founded in 1878. Its objects are the increase and diffusion of knowledge concerning the territories of the Federation of Malaya, Singapore, Sarawak, North Borneo and Brunei. Membership is open to anyone interested in the Society's activities. The annual subscription is at present $10 a year, and there is no entrance fee. Members receive free one copy of all journals published for the period for which their membership is valid. In addition they may buy single copies of back numbers at reduced rates. The latter include Sir Richard Winstedt's History of Malaya, and his history of Malayan Literature, histories of the majority of the individual states, C. C. Brown's English translation of the Sējolah Melayu and biographies of Yap Ah Loy, Captain Speedy and John Clunies Ross. Indexes to all the publications of the old Straits Branch of the Society (1878–1922) and to the first twenty volumes of the present series (1923–47) are available to members at $2 and $3.50 each.
Introduction

The present number of the *JMBRAS* forms the second in the series of Monographs on Malay Subjects. It is devoted to papers on the sea fisheries of Malaya, and consists of accounts of the fishing methods employed on Singapore Island and in its vicinity by T. W. Burdon, B.Sc. (formerly Deputy Director of Fisheries, Singapore and Malaya), and on the coasts of Kelantan and Trengganu by M. L. Parry, B.A. (Fisheries Officer, North-Eastern Malaya). These are followed by short notes on the local boats used in the sea fisheries on the Malayan coast. Unfortunately no recent work is available on the sea fisheries of the west side of the peninsula, and it has not, therefore, been possible to include a reference to the fishing methods and gear employed in this area in the present publication. In addition no account is given here of the various gears and methods used in rivers and lakes inland, but it is hoped that these may form the subject of a later number of this journal.

The first of the new Monographs on Malay Subjects, an account of the Stone Age in Malaya, by M. W. F. Tweedie, M.A. (Director, Raffles Museum), was published in October, 1953 (*JMBRAS*, 26, pt. 2). Three further numbers are in preparation, by members of the staffs of the Raffles Museum and the University of Malaya, to follow on from Tweedie’s account of the early prehistory of the area. These are: an analysis of the metal age finds by Prince John Loewenstein, Ph.D.; a summary of the information available from these and literary sources, bringing the survey up to the establishment of the Singapore Sultanate, by Paul Wheatley, B.A., and a history of the Singapore and Malacca Sultanates, as far as the occupation of Malacca by the Portuguese in 1511, by P. de Jocelyn de Jong, Ph.D. It is hoped that these three papers will be ready for publication in 1955 and 1956.

C. A. GIBSON-HILL,
Hon. Editor, *JMBRAS*.

1st June, 1954.
The Fishing Methods of Singapore

By T. W. Burdon, B.Sc.

(Received, March 1954)

Introduction

Few of the varied methods of fishing now employed in Singapore were known to the inhabitants during the pre-settlement era. It was the rapid growth of the trading establishment, and the influx of immigrants from other areas, which provided the incentive for the development of the local fishing industry. New methods were introduced, existing appliances were modified to increase their productivity and larger fishing boats were employed in order to obtain supplies from grounds at some distance from the Colony. Nevertheless, the catches of the local fishermen do not satisfy market requirements and the Colony is still dependent upon imports from the adjacent territories. A number of factors are responsible for this, but the most important is the geographical position of Singapore—the very feature which determined the success of its commercial life. The territorial waters of the Colony are small and fully exploited; many of the inshore fisheries of adjacent territories are either closed to Singapore fishermen or subject to restrictions which hamper the growth of our local fishing industry; in other areas the inshore grounds are already heavily fished. The continued development of the Singapore fishing industry appears, in fact, to be dependent upon the discovery and exploitation of off-shore fishing grounds.

A few Singapore fishermen, using powered boats equipped with long-lines or trolling gear, have been working in these fisheries for some time, and during 1952 and 1953 they were joined by long-line and pair trawl units operated by Hong Kong fishermen. It is likely that the subsequent development of these fisheries will be determined by the success of these pioneer efforts. Nevertheless, if other circumstances are favourable, there is hope that the fishing industry will expand until it is in a position to meet the major requirements of this great and growing city. Of course, many of the existing methods of fish capture are not suitable for commercial scale operations and are at present often utilized only for subsistence fishing, that is, the catch is consumed by the fisherman and his family; or utilized as an adjunct to another fishing method. But even these methods illustrate the skill and ingenuity of the local fishermen upon whom the development of the industry is largely dependent.

Most fishermen make their own equipment and there may be marked variations in the details of similar gear as the result of individual idiosyncrasies as well as in consequence of differing local conditions. Custom exerts a strong influence, while other differences may arise from the use of variable units of measure (e.g., the dépa), in consequence of the dependence upon imported materials for many of the fishing gears, and from the alterations which occur during repair and preservative treatment. Confusion may arise as differing nets sometimes bear the same name, or identical nets may be known by more than one name in different localities. A system of English nomenclature has, therefore, been used here, and for clarity the methods have been classified in accordance with a system suggested by the author elsewhere. The spelling of Malay words is in conformity with Wilkinson's *Malay-English Dictionary* (Mytilene, 1932), and relevant extracts of that work with a commentary on its validity are included as an Appendix. A glossary of the Malayan names of fish appears at the end of this monograph.

**Manual Collection of Fish**

The collection of shellfish, crabs and fish by hand is widely practised in Singapore, and there are few areas uncovered at low tide which are not searched for the shellfish thus rendered accessible. Unlike certain areas on the west coast of Malaya, where the collection of cockles forms an important fishery, manual collecting in Singapore is largely restricted to subsistence fishing as there are no beds capable of supporting commercial operations.

![Figure 1. Collecting equipment. (A) Scrapers. (B) Crab hook.](image-url)
The equipment is simple and usually consists of a knife to dislodge shellfish from the rocks. A scratcher or kais (Fig. 1A) is sometimes employed to facilitate collection in sandy or muddy areas. A somewhat similar instrument, the crab hook or ganchu këtam (Fig. 1B), is occasionally used to extract crabs from the rocky crevices in which they take refuge.

Before the last war Japanese moro ami fishermen operating from Singapore gathered trochas and green snail shells subsidiary to their main fishing operations. Since the war, however, little shell collection was undertaken by Singapore fishermen until the price of both kinds of shell rose sharply. This led to a diversion of a number of vessels to this fishery and between November 1950, and January 1951, nine boats averaging 60 days' absence from port landed 132 tons of shell from the grounds off the Andaman Islands. Subsequent operations in the South China Sea proved less successful and a decline in shell prices led to the virtual cessation of this type of fishing. Collection is normally undertaken in water up to 30 feet in depth, the fishermen diving to the bottom with a weighted basket or netting bag into which the shells are placed. This is hauled to the surface by means of a float-line to which it is attached and the shells are then cleaned with a bale hook. The flesh is usually discarded, but it may be salted and dried for subsequent sale.

A rake or pëngais (Fig. 2) is used for the collection of a green seaweed (Ulva sp.) which occurs in beds below the low water-mark in various parts of the Colony waters. It is utilized as pig and duck food. A number of edible species also occur locally, but none is sufficiently abundant to be of commercial importance.

Figure 2. Seaweed rake.

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Noose Fishing

Devices in which fish are secured in a noose are still to be found in Singapore. The simplest, the crab snare or *panching larat*, consists of a thin bamboo rod to which a simple noose of strong fibre is attached. When this is dangled in front of a crab it attacks pugnaciously and the crab can then be secured when one of its claws passes through the loop. Several species of the genera *Sesarma* and *Metopograpsus* are caught by this method and are pickled for subsequent consumption or used as bait for octopus fishing. This method is largely used by children—as the crabs can be collected in greater quantities at night, using a light as a lure.

A few fishermen on fishing stakes at the western entrance to the Straits of Johore also employ a similar but larger and baited noose for the capture of gar-fish (*Belone* spp.). These fish have long beak-like jaws armed with numerous needle-like teeth which make them particularly vulnerable to loop-fishing. The gear consists of a long bamboo pole with a fishing line of similar length terminating in a running noose of brass wire. A small fish, usually a *tamban*, is threaded onto this noose so that it lies in its natural swimming position when it is lowered into the water. Gar-fish are often attracted to the fishing stakes when the structure is washed down after a night’s fishing and the loop is then lowered into the sea until the bait fish lies a few inches below the surface. As the gar-fish snaps at the bait the operator jerks the line thus closing the loop round its upper jaw. The needle-like teeth prevent the loop from slipping off the jaw and the fish can be drawn up to the stake.

A similar method in which a baited loop is suspended from a kite was in use in Singapore some years ago, but it is now unknown. The terminal loop, which was baited with a prawn, trails over the water in response to the movements of the kite. The bait thus simulates a prawn or small fish seeking to escape from its enemy by a frantic leap out of the water. Gar-fish frequently follow their prey from the water and it is not surprising that they respond to this form of lure. Once the bait is taken the violence of the attack tightens the noose round the jaw of the gar-fish.

Lances, Spears and Harpoons

Winstedt\(^2\) classified Malayan fish-spears and harpoons into four groups as follows:—

1. *Tirok*—an unbarbed fish spear of uniform diameter.
2. *Têmpuling*—a light barbed spear employed especially for spearing scaleless fish.
3. *Sérampang*—a fish trident.
4. *Julir*—a harpoon.

*Journal Malayan Branch* [Vol. XXVII, Pt. 2]
The terms *tirok* and *julir* are no longer in use in Singapore, and *serampong* is rapidly becoming a generic name for any sharp pointed instrument used for impaling fish. On the other hand, *tempuling* is applied to a spear with a single, hinged barb and, more rarely, to harpoons. It has, therefore, been found necessary to disregard the vernacular nomenclature. A preliminary distinction can be made between lances in which the point is unbarbed, spears which are barbed and harpoons in which the head is detachable.

**Lances**

The *séligi* of the pre-settlement era was undoubtedly a simple wooden lance, but this type is no longer found in Singapore. The only lances now in existence are the *Tilapia* lance (Fig. 3A), the octopus trident or *serampong kéréta* and the related *topang kéréta*. The former was recently devised by a prawn pond owner for the capture of the non-indigenous *Tilapia mossambica* which, during the night, frequents the shallows near the prawn ponds in the West Coast Road area at high tide. When the fish is illuminated by torchlight it remains momentarily still, thus presenting an excellent target. The operator has found that the unbarbed tines hold the catch and cause the least damage to the fish.

The *octopus trident* consists of three 1½ inch nails set into a wooden handle about one foot long. This is used to impale octopuses which are enticed from rocky crevices in the reefs they frequent by means of a few crab legs secured on a piece of split rattan. A modification of this, the *topang kéréta*, bears a hook at the reverse end. This is used to dislodge the octopus from the hole it occupies, and the fisherman then reverses the instrument and impales the animal with the trident. Both methods are restricted to fishing for bait owing to the damage which is caused to the catch.

**Spears**

A variety of spears are seen in Singapore, but they are mainly used for subsistence fishing or as an adjunct to other fishing methods. Unident forms include a *single barbed throwing spear* (Fig. 3b), which is employed on a fishing stake off Pulau Mürambong, and the *single hinged-barb spear* (Fig. 3c) which is locally known as *tempuling Pulau Kélapa*, in a mistaken tribute to its origin. This spear was introduced in 1940 by a fisherman from North Borneo and is now employed by a single unit of two fishermen who use a light to attract fish to their *kolek*. One fisherman rows the boat and the other stands ready with the spear impaling any large fish which may come within range. If the fish is not disabled at once the spear is released and the fish is played out on a retaining line. No specific braking device is fitted to the line but the shaft of the spear acts as a drag and facilitates capture. Rays and *kérapu* up to 60 lb. in weight are caught by this unit which operates at irregular intervals.

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Figure 3. Lances, spears and harpoons. (A) *Tilapia* lance. (B) throwing spear. (C) hinged-barb spear. (D) throwing trident. (E) crab trident. (F) five-pronged spear. (G) single-barb harpoon. (H) kelong harpoon.

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Several forms of barbed tridents are also in use. The traditional pattern, the cuttle-fish trident, carries three tines, two of which curve outwards into a position parallel with the shaft. Each of these bears a single internal barb whereas the central tine, which is much shorter than the outer ones, is armed with a double barb. This spear is used in the cuttle-fish fishery, but it is not as popular as is the five tined form. A throwing trident (Fig. 3D), which is used on some fishing stakes in the East Coast Road area, is similar in design except that the tines are equal in length. Another lighter but similar type, the crab trident or sërampong këtam, has a shorter central tine and is used in the inter-tidal zone for the capture of crabs. (Fig. 3E).

The most usual form of spear in use is probably the five pronged spear which is known as the sërampong lima mata or sërampong sotong. (Fig. 3F). This is used in the islands to the south of Singapore for the capture of cuttle-fish, but it may also be utilized for shore collection or for securing fish which escape from drift nets during hauling. It consists of four sharp tines about 4 inches in length, which are set at 90 degrees to each other and are curved slightly inwards towards the base and the apex. These are armed with a single internal barb whereas there is a double barb on the shorter central tine. The gear is used in conjunction with a powerful light which lures the cuttle-fish into the range of the spear.

Harpoons

There are two types of harpoon in use in Singapore although they are not now used in independent fishing operations. The single-barb harpoon (Fig. 3G) was, however, an effective implement in the hands of orang laut who used it for the capture of large fish and turtles. It consists of an iron head about 5 inches in length, set into a slightly shorter wooden holder which fits into a shaft of variable length. A line is attached to the head of the harpoon and this permits the catch to be played when necessary. The few examples still in use in Singapore are employed to spear any large fish which enter the shallow water fishing stakes after other methods of removal have failed.

A larger double barbed harpoon (Fig. 3H) is commonly employed on kelongs for a similar purpose. The head of the harpoon is about 2 feet in length and consists of an iron rod which is expanded and hollowed at one end to take a wooden shaft and which carries a strong double barbed point at the other. Between these points the head is bent round to form a loop into which a coir rope is spliced. Should a large shark enter the kePong enclosure, the harpoon is used and the retaining rope is secured to the central cross-piece of the trap. It is usual to gaff the fish at the same time with an implement which is similar to the harpoon except that the barbed head is replaced by a sharp unbarbed hook (Fig. 4A).