



Net-fishing in the lagoon off the northern coast of New Guinea

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FISHING IN OCEANIA

SINCE very early times, the sea has been a source of food for peoples fortunate enough to live along its margins. In many areas, fishing, the gathering of shellfish, the hunting of different kinds of sea mammals, and the capture of turtles have furnished important supplements to a diet of terrestrial plants and animals.

The earliest firm evidence for the use of food from the sea comes from the Mousterian site of Devil's Tower in Gibraltar, where limpets and mussels were recovered from nearly all levels of the excavation. Even earlier evidence of the use of fish is said to come from Africa, and fish remains have also been found below a dated level of 40,000 years ago at Niah Cave in Borneo. These remains, however, apparently refer to fresh-water varieties of fish and indicate that at this early time the sea had yet to become an important source of food. At later periods, beginning in the Mesolithic, large shell mounds are known from many areas of the world. These mounds contain many kinds of shellfish, fish bones, and the remains of other aquatic animals from both fresh and salt water, which indicate an increasing utilization of the aquatic resources of man's environment.

In addition to faunal remains, the archaeologist also finds tools indicating the importance of the aquatic environment as a source of food. These finds—although rare in the early

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periods—begin in the Upper Paleolithic. By Mesolithic and Neolithic times, they include nearly the entire range of fishing and sea hunting equipment: harpoons, gorges, stone net and line sinkers, fishhooks, net fragments, traps, hook-making implements, and many others.

From the simplest shoreline gathering (sometimes called strand-looping) to the more highly complicated techniques for sea mammal hunting and fishing, methods for taking food from the sea were developed gradually over a long period of time. Probably the earliest was to take fish or shellfish by hand, or, at most, to use a simple pointed or sharpened stick to spear or prize the quarry from the rocks or water. Sea mammals and turtles which periodically came ashore could also be taken quite easily with simple implements such as clubs, knives, ropes, and spears.

Among these early foods from the sea, shellfish has continued to play an important part in the diet of many peoples. However, as a staple food source, shellfish collecting is generally associated with a relatively low level of cultural attainment. Among primitive groups that actively fished or hunted sea mammals, shellfish played only a minor dietary role.

To exploit more fully the inshore areas of the sea, more highly developed technological devices were needed. In many cases, these were probably not new inventions, but were applied to the sea by simple transfer from land-oriented hunting activities. Examples of such devices are nets of various types, spears, arrows, clubs, traps, and perhaps the gorge. All of these implements could be used without a great deal of modification, simply requiring the addition of weights or floats to counteract or utilize the buoyancy of the water. Once these inventions or transfers had been made, primitive man gained a reliable supplement to his diet without having to leave the shallow waters of the reef or the shoreline.

Still greater utilization of the sea required two further advances: the use of some form of boat or raft, and the invention of the fishhook. With the first, man was no longer confined to the beaches and shallow inshore waters, but was able to exploit offshore areas for new foods or to capture animals that used the water as a means of escape. With the second device, the fishhook, man no longer needed to limit his exploitation to the sea's surface waters, but was now able to explore and utilize the sub-surface levels and successfully capture mid- and deep-water fish.

In Europe, neither the boat nor the fishhook appears in the archaeological record until the end of the Mesolithic period. Offshore or deep-sea fishing in Europe did not really become effective until after the advent of the Neolithic and the beginning of farming. With the growth of towns and large populations, the demand for products of the sea resulted in a more efficient fishery, which included deep-sea fishing, as well as whale and other sea mammal hunting.

THIS general sequence of events in world prehistory can also be traced in the archaeological records of localized cultures. When men enter a new area having access to the sea, they will generally make increasing use of this aspect of their environment once it is recognized as a potential source

of food. Any lessening of available food supplies from the land can also stimulate this turning to the sea, and in Oceania we have an example of this. As groups migrating out from the Asian mainland left behind the large islands of Indonesia and New Guinea and began to populate the smaller Oceanic isles, they found that the abundance of land flora and fauna decreased from west to east. Hunting and the gathering of wild plants yielded less and less food. On the low atolls, the possibilities for horticulture were restricted to tree and root crops. The difficulties of maintaining adequate supplies of pig, dog, and chicken were such that, by the time the easternmost areas of Polynesia were settled, man's dependence upon the sea as a source of protein had become very great. In eastern Polynesia the number of sea fishing and hunting techniques employed testifies to the importance of sea food to these islanders.

The wide variety of implements used by the primitive Oceanian in his quest for food included nets of all kinds, permanent stone and portable basketry traps of different shapes and sizes, weirs and fish fences, spears and fish arrows, the harpoon, fish poisons, and, in most areas, the fishhook. If we divide the potential fishing area of an Oceanic island or atoll into two major zones—inshore and offshore—and further divide these zones according to the layers of the water in which the various fishing implements are used—surface and sub-surface—we may then analyze the fishing techniques and implements used at each level of each zone (Fig. 1.) Such an

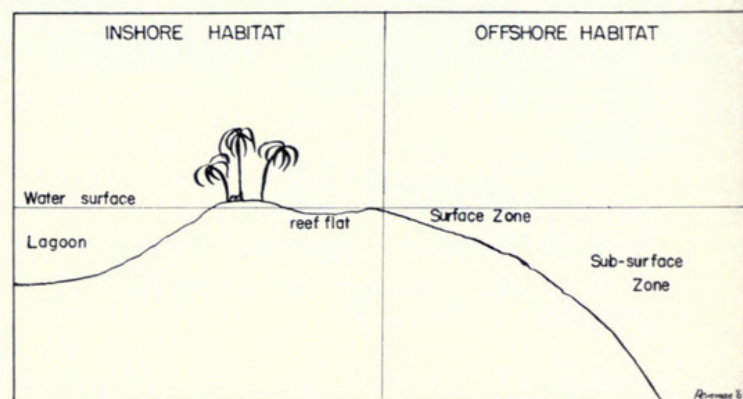


Fig. 1. Schematic cross-section of atoll.

analysis soon makes clear that the prime target of the Oceanic fisherman was the surface waters of inshore reefs and lagoons. This area produced most of the sea food the islanders used.

Relatively few types of fishhooks were used to exploit these shallow waters. The Oceanic spinner hook (Fig. 2), especially designed for taking bonito and closely related surface feeding fish, and the gorge (Fig. 3), were the main implements. The Oceanic spinner hook varied only in detail over the whole area of its use. It consisted of a shank, fish-like in form, made from some type of pearl or other shiny shell material. In areas where pearl shell was scarce, other materials, such as bone, wood, or stone, were used; in such cases a thin layer of pearl or other shell was usually affixed to the shank, presumably to act as a lure. Attached to the shank was a point made of bone, pearl, turtle, or other shell (later metal), which was

unbarbed for easy removal of the fish. The spinner hook was used without bait and trolled behind a moving canoe.

In Oceania the gorge, like the spinner, was primarily used in the surface layer of the sea. The gorge is a very old but effective catching and holding device, which archaeologically precedes the fishhook and which has been retained in many areas where fishing with hooks is also done. It consists of a slender wooden stick or bone splinter, pointed at each end, with a line attached to its center. When baited, the gorge is set so that it lies closely parallel to the line. When the fish swallows the bait, the tension on the line pulls the gorge cross-wise in the fish's stomach, piercing its sides and effectively preventing the fish's escape. Gutting is usually required to remove the gorge, and the fish is rarely able to pull himself free. Since the gorge is more effective than the hook in holding the catch it would seem to be the best choice for devices that are left unattended, such as the lines of floats used to take flying fish. This is its greatest use in Oceania.

To catch fish that fed in the sub-surface layer of the lagoon and in the deep waters of the offshore zone, many types of fishhooks were made from pearl, turtle, and coconut shell, or from bone, wood, and occasionally teeth (Fig. 4). Such hooks were baited, and generally used with a hand-held line rather than a pole. Either permanent or temporary sinkers were added to get the hooks to the proper depth for fishing. Differences in the size and shape of these hooks suggest that their makers had rather specific ideas about the types and sizes of fish that could be taken with each.

A still more specialized instrument is the ruvettus hook (Fig. 5), named for the deep-dwelling species, *Ruvettus*, which it was designed to catch. The ruvettus hook was made in a range of sizes from about six inches to over a foot in length. A U- or V-shaped forked branch of a tree forms the shank and point leg of the hook. Fastened to this is a V-shaped point of wood which forms a barb directed back toward the shank, reducing the clearance between point and shank to less than an inch in the larger hooks. The ruvettus is set in depths of up to 2,000 feet, with bait and a sinker attached to the line. In attempting to remove the bait, which is affixed to the point leg, the fish works his jaw between the point and the shank and is firmly secured. Similar hooks were used to take sharks.

A knowledge of the kinds of fishing equipment used by prehistoric fishermen, the zones in which these implements were used, and the kinds and amounts of fish taken with them, is important for the Oceanic prehistorian. Fishing equipment constitutes an important category of implements recovered from the archaeologist's excavations. It is necessary to have some idea of how such equipment functions in a culture in order to make valid inferences about the diet, social organization, and general economic conditions of the makers of the equipment. More specifically, analysis of different types of fishhooks contributes evidence as to the way in which the marine habitat was exploited in Oceania, and, taken in conjunction with the rest of the fishing complex, will enable the archaeologist to make more precise interpretations of the role of fishing in the Oceanic economy. ■



Fig. 2 (above): Oceanic spinner hooks. Sizes range from 3 to 4 inches.

Fig. 3 (right): Gorge. The slender bone splinters swallowed by the fish are at the bottom of the photograph. These splinters are 1½ to 2 inches long. Larger ones may approach 6 inches.

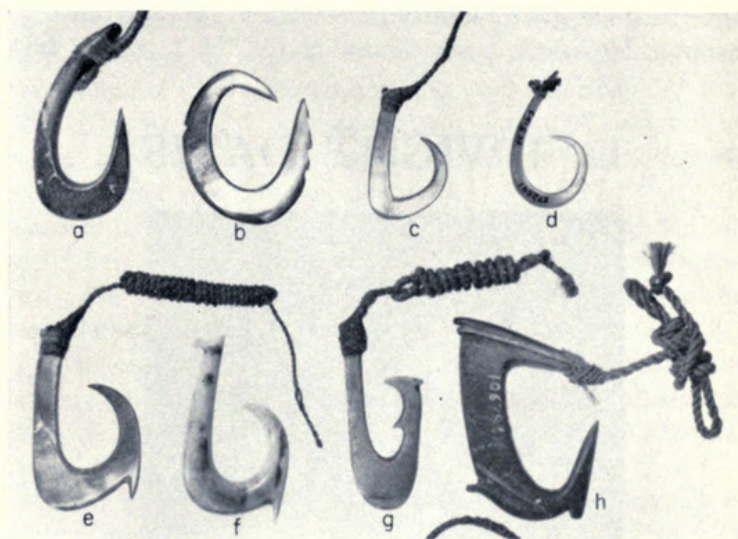


Fig. 4 (above): Fishhooks used below the surface of the lagoon or in deep offshore waters. Sizes range from 2 to 3 inches.

Fig. 5 (right): Ruvettus hook.





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