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Women and Inshore Fisheries in Oceania

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2026

[Link to publication](#)

Citation for published version (APA):

Malm, T. (2026). Women and Inshore Fisheries in Oceania. Humanekologiska avdelningen, Lunds universitet.

Total number of authors:

1

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WOMEN AND INSHORE FISHERIES IN OCEANIA



Working Papers in Human Ecology • 6

Human Ecology Division

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This paper was originally presented at
Islands of the World XII Conference 2012, Tortola, British Virgin Islands

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Front cover: Rough Turban (*Turbo setosus*) from the book *Sea of Shells* by Christer Lindberg and Thomas Malm (Transco-Script, Malmö 2015). Photo by Christer Lindberg.

https://www.indis.se/wp-content/uploads/2015/10/Sea-of-Shells_1st-ed-2015.pdf

Women and Inshore Fisheries in Oceania

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Abstract: Marine invertebrates and seaweeds of the lagoons and reefs have always been an important source of food and raw materials for the people of Oceania. I examine the gathering of these organisms in both contemporary and more ancient contexts, and according to a gender-based division of tasks. It is argued that although men's fishing has been well documented, until recently women's inshore fisheries, or marine gathering, has been overlooked by researchers, even though it is of a major economic significance. The indigenous knowledge concerning the marine environment, the organisms and their uses is vast, but could become partly forgotten in times of rapid economic and cultural change. Reef and lagoon resources on many islands of Oceania are threatened by overexploitation, resulting from population growth and integration into the global economic system. The paper is based on anthropological fieldwork (especially in the Kingdom of Tonga 1994-96, but also in other Pacific islands between 1983 and 2012) and a thorough study of literature and museum material.

Keywords: Oceania; islands; inshore fisheries; marine gathering; indigenous knowledge

Introduction

With the main exception of people in the interior of the largest islands, the bulk of animal protein in Oceania has always been obtained from the marine environment. It was, however, not until 1981 that a monograph on indigenous knowledge related to marine exploitation in a group of Pacific Islands was published (Johannes 1981). Anthropologists had largely ignored fishing adaptations in comparative studies so that the role of fishing seemed to disappear when it came to theory and model-building (Pálsson 1988: 189).

Most studies of marine exploitation in Oceania have been focused on the catching of fish, which is mainly an activity of the *men*, often at the open sea. Much less attention has been paid to the gathering or collecting which is mainly carried out by *women* and children in the lagoons and on the reefs closer to shore. 'Gathering' can refer to the use, in an *irregular* way, of natural resources, whereas 'collecting' is defined as being more developed in the sense that it involves a recurring *regular* use of the natural resources following a planned, seasonal pattern (Braidwood

1960). For contemporary Oceania, irregular as well as recurring regular search for seafood are certainly both of importance, and this was probably the case in ancient times as well (cf. Clark 1991). When I use the term ‘gathering’ in this paper, it should therefore not be interpreted as necessarily implying an irregular activity. It is simply used because it is a well-known term from the literature about ‘hunters and gatherers’, and because it can be generally understood as different from other methods used in inshore fisheries.

For some reason ‘gathering’ often seems to be understood by anthropologists as something which only takes place on *land*, and until quite recently few had found *women’s marine gathering* particularly interesting to study. This is just one of many examples world-wide of how very little attention had been paid to gathering as a primarily *female* subsistence task (e.g., Dahlberg 1981, Matthews 1995). In Palau, for example, it “was widely practiced by women,” according to Johannes (1981: 3, n. 2). His study was, however, focused on *men’s* fishing, and it would take another decade before two female researchers picked up the thread, interviewing 54 women from different parts of Palau. Their study revealed that women “knew quite a lot about the species they gathered: they know when and where to find particular types of seafood and the collection methods they use are usually more involved than the simple and mechanical process of stooping to pick up what they see” (Matthews and Oiterong 1995: 7). Altogether, they documented 13 methods and 34 vernacular names for invertebrates and fish that were procured by women for domestic or commercial purposes.

Since the 1990s, a growing number of researchers have contributed to the documentation of such knowledge, and most fisheries departments in Oceania are nowadays aware that women’s inshore fisheries are important for local communities and involve expertise that has been previously overlooked in development studies. Some aspects of this knowledge have been studied by myself in several Oceanic islands, especially the Kingdom of Tonga where I conducted fieldwork in 1994-96, and I have also studied literature and museum material in search of data on this subject. This has, so far, resulted in one monograph and some articles where I have shown that more than 230 folk taxa of seaweeds and marine invertebrates have been used for some 50 purposes in Tonga (Malm 1999, 2007a-b, 2009a-b, 2010). In this brief paper, I will choose most of my examples from Tonga with the purpose of challenging the prejudiced view of “picking shellfish” as being something uninteresting or culturally insignificant. The major uses are listed in the Appendix.

The Division of Marine Labour in Oceania

Catching fish and other large marine animals is in Polynesia traditionally a part of the masculine gender identity. One could say that men are fishermen by definition, just as they were once also warriors (Schoeffel & Talagi 1989: 9). The open sea is the domain of their maritime work. In Tongan discourse, only men ‘work’ (*ngāue*), whereas the women and children search for food in the lagoon and on the reef, something which is not seen as work. They do the marine gathering, while men do the diving and “real” fishing of which there are several categories for catching fish, turtles and large cephalopods with hooks, nets and harpoons.

In most of Oceania, we find that although men may also do marine gathering it is primarily women and children who have this task. In Hawai‘i, for instance, it was mainly women’s work to gather seaweed and marine invertebrates: “Every day they went out on the reefs and shores in numbers with children searching right along with them for everything edible” (Titcomb 1978: 327). Abbott (1991: 139-140) has suggested that the women’s marine gathering in Hawai‘i might have been a result of the male-dominated religion and its food prohibitions. Hawaiian women were not allowed to eat as much taro as the men, neither any pork, and many fish species were also prohibited to them. Thus, she writes, they had to seek out other types of food in the sea. This may explain why these resources became very important there, but since women do the same thing all over Oceania, the Hawaiian pattern could hardly have evolved in entire isolation.

In some islands, especially in Melanesia, we find that fishing in the general sense of the word is not strictly defined as men’s work, but the women there usually fish with more simple equipment in areas close to the settlement, and one can also note that there is seldom much ritual associated with their fishing (Schoeffel & Talagi 1989: 14-15). In Tonga, women and children pick seaweed and invertebrates, do some simple spearing and use certain trapping methods. They may also participate in some types of group fishing when needed. The men fish with spear, hooks, nets and other traps. It is not common for the men to gather any seafood by hand, except when they dive, although they may do so if they feel like it. Thus, when both groups exploit resources in the same zone, men are associated with tool mediated activities, and women and children with methods that are perceived as more simple and less demanding.

Fishing at the open sea is the potentially most dangerous of all subsistence tasks

and the open sea is the zone in which one is most critically exposed to forces beyond one's own control. This might be a major reason why it has become related to masculinity and power, and the custom of limiting fishing at the open sea to men most likely goes far back in Oceanic history. It would lead too far here to speculate about the reasons for this (see Malm 1999: 144-170; Malm 2007b). It can be noted, however, that in the Society Islands, women used to be regarded as 'common' (*noa*) and able to neutralize the power of the craft, gear and fishermen (Handy 1932: 73-74). The sea is like a jealous woman, the Tongan fishermen told Bataille-Benguigui (1994: 110). If she noticed the presence of another woman, who was accompanying the fishermen, she would hang on to all her possessions and would not let go of a single fish. Very likely, this statement in question expresses a continuity with the mythology in which several gods were associated with the sea. Thus, instead of being seen as controlled by the old gods, who are no longer worshipped, the sea itself is now perceived as behaving like a jealous woman.

Some Methods Used in Tongan Inshore Fisheries

Tongans speak of marine exploitation in four levels of specificity (Dye 1983: 249). At the most inclusive level there is a basic division into male and female domains. *Toutai* refers to men's fishing in general, and *fāngota* to the gathering performed by women and children. Immediately below this level are various strategies, such as diving (*uku*), netting (*kupenga*), and angling (*tau*). At the third level are variant methods of a single strategy, for example *uku vāsua*, diving for giant clams. Individual techniques of a given method are described in everyday language. Here I will limit the description to methods used by women only, and by women and men in cooperation.

Fish poisoning (*'aukava*) is a fishing method which is still practiced. On the Tongan island of Niuatoputapu, it was widely practiced in the 1970s, and it frequently employed an entire family (Dye 1983). The women were pulverizing stems of plants used for poisoning. Fruit, seeds, bark and leaves from several trees and plants can be used for fish poisoning in Tonga (including *Derris trifoliata*, *D. malaccensis*, *Barringtonia asiatica*, *Pittosporum arborescens*, and *Scaevola sericea*). The grated skin of a sea cucumber (*Holothuria atra*) has also been used for this purpose. The ideal sites for fish poisoning are those that are so shallow and calm that the poison is not quickly washed away by waves or currents. The

poison is thrown directly on the water or is put in small sacks that are shaken, and with care taken that it reaches under overhanging reef rocks where fish may be hiding. Within a few minutes they become stupefied and float up to the surface or come up gasping for air. They are then picked by hand, speared or hit with the knife.

Whereas fish poisoning can be carried out by a small group of people, fish drives – including the once famous *hukilau* of Hawai‘i – have been known to employ far more people. In Savai‘i, Samoa, I have seen it being performed for the benefit of a visiting documentary filmmaker (2003), and it involved several dozens. McKern (n.d.: 276) describes a fish drive in Tonga, 1921, where upwards of a thousand people took active part.

All fish drive methods in Tonga follow the general principle of surrounding large numbers of fish in the lagoon (mostly on sandy bottoms) at high tide with some kind of barrier and catching them during low tide, when the barrier is stopping them from swimming away with the tide. Women have been involved in some of these methods, helping to make the barrier, driving the fish and catching them. They used sharpened sticks, clubs, dip nets and baskets to catch the fish, but spears were mainly used by the men (McKern n.d.: 280-281). The importance of these fishing methods has diminished, one reason being overfishing in the lagoon from a growing population so that the fish drives were no longer worth the effort.

For the *pola* method a rope that could be some kilometres long was used. Upon this rope a high number of split palm leaves were attached to stop the fish from returning with the tide to deep sea. This barrier was placed out in a fixed semi-circular position, with the opening towards the shore and then moved towards it to pen in the fish so that they could be speared, caught with dip nets, hit or just picked by hand. The *faka‘uvea* was the method that continued to be used the longest, at least into the 1980s. In this case the fish were trapped in long cone-shaped hand nets made of the midribs of coconut leaflets, held in the narrow openings of the barrier as the fish, entrapped between the beach and the barrier, tried to escape (Bataille-Benguigui 1994: 127-129).

Tuafeo is a Tongan method of catching small fish with dried, woven coconut frond baskets. The basket is filled with humps of coral and placed among coral formations on the reef or in the lagoon. The women go to each rock where fish can be expected to hide, carrying long sticks and poking the bottom of the rock to scare the fish which then seek refuge in the basket placed next to it and stay there

when it is lifted from the water. Another method, *fakalimu*, is also still practiced and different from the *tuafeo* in that a basket filled with seaweed is used.

The most common of all types of marine exploitation carried out by women is, however, marine gathering by hand or with the help of a knife or simple spear. Anything edible that is found may be taken, including fish that hide among seaweed or in shallow pools where they can be picked, speared or hit with a knife or stone. A common sight in the early morning is children and women who walk out in the lagoon carrying some piece of yam, sweet potato, taro or banana, left over from the evening meal, and look for some tasty seafood that they can eat with it for breakfast. If it is low tide after a dark night, one is likely to see more gatherers than otherwise, because many of the desired animals may then still be out of their hiding places and be easy to find.

When the women and children go to the lagoon for gathering, they usually only bring a knife and some kind of container with them: a basket, a plastic bottle, a half coconut shell, or a bucket, etc. If they plan to prise up rocks, they bring a wooden stick or a metal bar. They may also bring along some coconut meat. The ideal is to be able to see the protruding eyes or mouths of fish and invertebrates that bury themselves in the sand. If the desired organisms cannot be sighted because the water is too rippled, a special technique, *fakatofu* ('to make calm'), is used. Coconut meat is chewed and spit out in a circle close to where one is standing, so that the surface becomes temporarily calm enough to provide a clear vision. Many molluscs, clams in particular, are however picked without having been previously seen. It is common to see the gatherers not only move their hands over the bottom to feel a protruding shell, but they also search through the bottom with their feet, especially in seagrass where shells cannot be seen.

The Importance of Contemporary Marine Gathering

A nowadays common way to obtain money in Oceania is from relatives who are residing overseas, but many have also become wage earners in the islands. The salaries are usually quite low, and as the prices of everything, imported as well as locally produced, are going up, it is therefore of great help to one's household if one can go to the sea for fishing or gathering. According to one report, over 230 tons of shellfish were gathered in one year by women in 7 villages on Vava'u in Tonga, and almost 11 kilograms were consumed per household and week, 60-70% of which was shell weight (Kunatuba & Uwate 1983).

Compared to the men's gardening and fishing, women's exploitation of marine resources is, however, little to be admired by the men. On Niuatoputapu, lobsters taken by men during nightly fishing are, together with land-dwelling coconut crabs, the only invertebrates considered suitable for presentation at feasts and public meetings, because *fāngota* is looked upon as a lowly task to be relegated to women and children (Kirch & Dye 1979: 68).

The low esteem in which marine gathering is held does not mean that women generally see it as some kind of boring slave labour though. *Fāngota* is something that women and children frequently do at their own initiative, and it is not uncommon for them to spend several hours in and by the sea, but they may also be asked or even ordered by others to do it. They often sit down chatting together in the shallow water or walk along the reef searching under coral rocks. In many ways, it is reminiscent of being in a fertile garden where one tastes the fruit and berries while picking them.

Going to the sea also means that the women, who in general are not supposed to move around as much as the men, get a chance to be away from the house for a while. Maybe someone else can take care of the children back home, or perhaps the children like to come along to the lagoon where they can play in the water, give a helping hand or learn about seafood gathering. From older children and the women, they learn a lot at an early age: the names of seaweeds and animals that can be eaten, how to obtain and eat them, which ones to avoid and, sometimes through painful experience, that they can be cut or burnt by coral if they are not careful.

Well worth mentioning here is, also, that by following the others during *fāngota*, Tongans become acquainted with the sea in their earliest childhood. When I asked my informants how they learned to swim, they often looked at me in surprise and asked what I meant or simply answered: "I have always been swimming" or "I just did it". Swimming seemed to be so natural for them that they did not reflect upon it being the result of a particular learning process.

Whereas fishing is seen as the men's work in Tonga, the women do co-operate with them in selling the fish at the market, as in many other Oceanic islands with small-scale household-based fishing economies. In the outer islands women are often responsible for drying fish and octopuses which will be kept until needed or sent to the capital for sale. Although most of the seafood sold at the market is locally consumed, dried fish and octopus are frequently sent to relatives living

overseas or are brought by Tongans who leave the islands. People on the outer islands are also sending lobsters and shells, especially giant clams, to relatives on the main island, often to be used for feasts. Specimen shells and handicrafts made of shells are sold by the road, at the market or through handicraft centres which are run by the women's association. As aquaculture of seaweeds, giant clams and mussels can be carried out in the lagoons, it has a potential for women and young people to become more involved in income-generating projects.

What we should also realize is that although increasing protein scarcity is known from many rural as well as urban populations (Thaman 1982), people do not have uniform food habits all over the islands. A major nutritional problem is the deterioration of traditional food systems due to factors such as population growth, urbanisation, lack of land, and dependency on money and commercial goods. That rural areas and not the urban centres in Oceania generally enjoy nutritionally superior diets as well as greater dietary variety is known since the 1970s (Clark & Richards 1979). It could hardly be argued that the huge quantities of imported mutton flaps and "turkey tails," which nowadays make up a considerable part of the diet in areas where a lot of food is bought, result in healthier people. As could be expected, edible seaweeds and marine invertebrates are most important on the outer islands, or in rural areas, where there are fewer stores and more limited merchandise.

One might be led to conclude that a subsistence pattern with marine gathering as an important component is sustainable, healthy and has little environmental impact. Things are, however, not that simple. Many people in contemporary Tonga earn money by selling seafood, shells and jewellery made of shell. Surplus quantities are collected to get as much money as possible. Spear guns, masks, scuba diving gear, outboard motors and other imported equipment associated with fisheries are important for maximising the catch. Highly desired species run the risk of becoming over-exploited as a 'tragedy of the commons' (Malm 2009c). Fewer species will probably be of importance in the future as money, imported food and influences from abroad lead to further changes in the diet and cause people to turn their backs on many former food traditions. "Outsiders" are also becoming involved in the exploitation, both as importers and exporters. Many fishermen complain about the dwindling stocks of fish, and I have often been told that shells picked in the lagoons are neither as plentiful nor as large as they were some decades ago. Another problem is that marine organisms that can accumulate unhealthy substances are in many areas no longer suitable as food (Chesher 1986).

Conclusions

As we have seen, marine gathering comprises several activities and methods. Although both women and men exploit the resources of the lagoons and reefs, they do so in different ways. Women pick seaweeds and invertebrates and use some trapping methods for catching fish. They also participate in fish poisoning and fish drives. When they exploit resources in the same zone, men are associated with what is regarded as skill and more sophisticated methods – nets, spearing, angling, etc. – and women and children with less demanding ones such as picking by hand, catching fish in baskets filled with coral or seaweed, or doing some simple spearing.

The different fishing techniques in which women take part and the methods used (by women and men) in marine gathering involve far more than just bending down to pick up shells. Several specifically named methods are used for spotting and finding the animals, and for poisoning, catching or picking them.

Contemporary marine gathering fills several functions: obtaining food for oneself and relatives and friends, meeting others in or by the lagoon, simply relaxing and having some fun – for example, in learning how to swim – and earning money by selling seafood and shell handicrafts. It is therefore not only an important aspect of food provision but also of social life in the islands.

At the same time, the story about marine gathering in Tonga is a sad one. During travels and fieldwork in Tonga and other parts of Oceania, I have repeatedly noticed a general decline in old traditional practices and a growing appetite for most things from overseas. This, in combination with pollution and other environmental impact lead to the inevitable conclusion that several aspects of the knowledge and practices summarized in this paper may soon become a thing of the past.

Acknowledgements

For research funding, I thank the Swedish Institute, Sida/SAREC, Magnus Bergvall's Foundation, Elisabeth Rausing's Memorial Foundation, Erik Philip-Sörensen's Foundation, and County Governor Per Westling's Memorial Foundation. I also thank Christer Lindberg for permitting me to re-use one of his photos from our e-book *Sea of Shells* (2015).

References

- Abbott, I.A. (1991) Polynesian Uses of Seaweed. In P.A. Cox & S.A. Banack (eds.), *Islands, Plants, and Polynesians: An Introduction to Polynesian Ethnobotany*, pp. 135–145. Portland OH: Dioscorides Press.
- Bataille-Benguigui, M.-C. (1994) *Le côté de la mer: Quotidien et imaginaire aux îles Tonga, Polynésie occidentale*. Bourdeaux: CRET.
- Braidwood, R.J. (1960) Levels in Prehistory: A Model for the Consideration of the Evidence. In S. Tax (ed.), *Evolution after Darwin*, Vol. II, pp. 143–151. Chicago IL: University of Chicago.
- Chesher, R. (1986) *Pollution Sources Survey of the Kingdom of Tonga*. Nouméa: SPREP.
- Clark, R. (1991) Fingota/Fangota: Shellfish and Fishing in Polynesia. In A. Pawley (ed.), *Man and a Half: Essays in Pacific Anthropology and Ethnobiology in Honour of Ralph Bulmer*, pp. 78–83. Auckland: The Polynesian Society.
- Clark, W.F. & M.L. Richards (1979) Tongan Nutrition Study Gives an Unexpected Result. *South Pacific Bulletin*, Vol. 29, No. 1, pp. 13–16.
- Dahlberg, F. (ed.) (1981) *Woman the Gatherer*. New Haven CT: Yale University Press.
- Dye, T. (1983) Fish and Fishing on Niuatoputapu. *Oceania*, Vol. 53, No. 3, pp. 242–271.
- Handy, E.S.C. (1932) *Houses, Boats and Fishing in the Society Islands*. Honolulu HI: Bernice P. Bishop Museum (Bulletin 90).
- Johannes, R.E. (1981) *Words of the Lagoon: Fishing and Marine Lore in the Palau District of Micronesia*. Los Angeles CA: University of California Press.
- Kirch, P.V. & T.S. Dye (1979) Ethno-archaeology and the Development of Polynesian Fishing Strategies. *Journal of the Polynesian Society*, Vol. 80, No. 1, pp. 53–76.
- Kunatuba, P. & K.R. Uwate (1983) *Vava'u Housewife Survey of Tidal Area Usage*. Honolulu HI: Pacific Islands Development Program, East-West Center.
- McKern, W.C. (n.d., c. 1929) Tongan Material Culture. Manuscript, Bernice P. Bishop Museum, Honolulu HI.
- Malm, T. (1999) *Shell Age Economics: Marine Gathering in the Kingdom of Tonga, Polynesia*. Lund: Department of Sociology, Lund University.
- Malm, T. (2007a) Mo'ui: Tongan Names for Plants and Animals. *Working Papers in Human Ecology* (Human Ecology Division, Lund University), No. 4.
- Malm, T. (2007b) Bendable Facts: A Note on the Division of Labour in Tonga. *Women in Fisheries Information Bulletin*, No. 16, pp. 3–9.

- Malm, T. (2009a) Women of the Coral Gardens: The Significance of Marine Gathering in Tonga. *Traditional Marine Resource Management and Knowledge Information Bulletin*, No. 25, pp. 2–15.
- Malm, T. (2009b) Searching for Clues in the Lagoon: Is Marine Gathering a Reflection of Our Evolutionary Past? *Women in Fisheries Information Bulletin*, No. 20, pp. 10–16.
- Malm, T. (2009c) The Tragedy of the Commoners: The Decline of the Customary Marine Tenure System of Tonga. *Asia-Pacific Forum*, No. 44, pp. 82–108.
- Malm, T. (2010) Why is the Shark not an Animal? On the Division of Life-form Categories in Oceania. *Traditional Marine Resource Management and Knowledge Information Bulletin*, No. 27, pp. 17–22.
- Matthews, E. (ed.) (1995) *Fishing for Answers: Women and Fisheries in the Pacific Islands*. Suva: Women and Fisheries Network.
- Matthews, E. & E. Oiterong (1995) Marine Species Collected by Women in Palau, Micronesia. *Micronesica*, Vol. 28, No. 1, pp. 77–90.
- Pálsson, G. (1988) Hunters and Gatherers of the Sea: In T. Ingold, D. Riches and J. Woodburn (eds.), *Hunters and Gatherers*, Vol. 1, pp. 189–204. Oxford: Berg.
- Schoeffel, P. & S. Talagi (1989) *The Role of Women in Small-Scale Fisheries in the South Pacific: Report of Case Studies in Cook Islands, Papua New Guinea, Solomon Islands, Tonga, Vanuatu and Western Samoa*. London: Food and Rural Development Division, Commonwealth Secretariat.
- Thaman, R.R. (1982) Deterioration of Traditional Food Systems, Increasing Malnutrition and Food Dependency in the Pacific Islands. *Journal of Food and Nutrition*, Vol. 39, pp. 109–121.
- Titcomb, M. (1978) Native Use of Marine Invertebrates in Old Hawaii. *Pacific Science*, Vol. 32, No. 4, pp. 325–386.

APPENDIX

Major uses of seaweeds and marine invertebrates in Tonga (described in Malm 1999). Obsolete (or almost obsolete) uses are marked with an asterisk (*).

A. SEAFOOD

1. Subsistence: seaweeds, jellyfish, sea anemones, mantis shrimps, prawns, shrimps, crabs, spiny lobsters, chitons, gastropods, bivalves, squids, octopuses, sea urchins, and sea cucumbers.
2. Mutual assistance among relatives and friends: any seafood.
3. Gifts 'in kind' to church conferences and ceremonial occasions: especially spiny lobsters, giant clams, and octopuses.

B. GENERATION OF INCOME

1. Sale of food, within Tonga: any seafood.
2. Sale of jewellery, handicrafts, and souvenir shells, within Tonga: precious corals, crab shells, gastropods, bivalves, and large spines from sea urchins.
3. Export of seafood: especially seaweeds, lobsters, giant clams, octopuses, and sea cucumbers.
4. Export of jewellery: black coral, gastropods, mother-of-pearl, and cultured pearls.
5. Export of specimens for marine aquaria: corals, sea anemones, crustaceans, and molluscs.

C. DECORATIONS AND JEWELLERY

1. Grave decorations: coral sand, crushed coral, red gorgonians, gastropods, and bivalves.
2. Jewellery, small carvings: precious corals, gastropods, and bivalves.
3. Inlay in wood carvings and jewellery: mother-of pearl.
4. *Exchange valuables: gastropods and bivalves.
5. Dress decorations: gastropods and bivalves.
6. *Decorations on baskets: gastropods and bivalves.
7. Decorations in houses, churches, and gardens: red gorgonians, gastropods, and bivalves.

D. USE OF CORAL LIME

1. *Permanent-wave, stiffen or bleaching hair.
2. *Dyeing hair.
3. *Keeping the hair clean from lice.
4. Treating skin ailments.
5. Dyeing waist mats.

E. SEAFARING AND FISHING

1. Scrubbing boats: seaweeds.
2. *Decoration on canoes: common egg shells.
3. Anchors: coral rocks.
4. Octopus lure: tiger cowrie.
5. Fishhooks: gastropods* and bivalves (only pearl oysters still used).
6. *Sinkers for dip nets: pieces of coral, money cowrie, and ark shells.

7. Weights for palm fronds used in fish drives: pieces of coral.
8. Fish bait: seaweeds, shrimps, crabs, mollusc meat, and sea urchins.
9. Catching fish in baskets: seaweeds and stony coral.
10. Fish poisoning: *loli* sea cucumber (*Holothuria atra*).

F. UTENSILS

1. Scrubbing hands: soft coral/sponge* and globular coral.
2. *Files and abrasive instruments: coral, clam shells, and spines from sea urchins.
3. *Knives: gastropods and bivalves.
4. *Chisels, gouges, and drills: gastropods and bivalves.
5. *Scrapers and graters: gastropods and bivalves.
6. Smoothen and straighten pandanus leaves: bivalves.
7. *Shaving: bivalves.
8. *Adzes: bivalves.
9. Cracking coconut shells: bivalves.
10. *Impression in ceramics: bivalves.
11. Signalling device: triton's trumpet.
12. Bowls, trays, and ashtrays: large bivalves.
13. Weights on screen nets used for covering food/drink: gastropods.
14. *Drawing boils: bivalves.
15. Markers in games: gastropods and bivalves.
16. *Self-mutilation at funerals: gastropods and bivalves.

G. OTHER USES

1. *Reading auguries: tiger cowrie.
3. Revealing virginity: eggshell.
4. *Strengthening the fist of a fighting man: cone shells.



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2. Per-A. Johansson: *Evolution, Ecology, and Society. A Heuristic Ontological Framework*. 1997.
3. Mikael Kurkiala: *Cosmology, Social Change, and Human-Environmental Relations Among the Lakota in the 18th and 19th Centuries*. 2002.
4. Thomas Malm: *Mo'ui. Tongan Names for Plants and Animals*. 2007.
5. Rikard Warlenius: *In Defense of Climate Debt Ethics: A Response to Olivier Godard*. 2013.
6. Thomas Malm: *Women and Inshore Fisheries in Oceania*. 2026.



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