

Use of Indigenous Plants as Fish Poisons in Samoa¹

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Polynesian cultures in general have been very adept at discovering and utilizing native plants to provide food, shelter, clothing, transportation, medicine, and articles of cultural or religious value. As a result of the great antiquity of the Samoan culture, the plant lore of the Samoan people has been developed to a high degree. Unfortunately the rapid westernization of the Samoan islands has led to a loss of specialized knowledge of plants and their uses among many members of the general populace; however, a considerable body of plant lore still exists among the aged chiefs and inhabitants of the outer villages and islands of the Samoan group. The objective of the present study has been to investigate and document the use of native plants to poison fish. Interviews and field observations of the actual techniques in use were made in the villages of Taga and Fa'ala on the island of Savaii, and Malaela and Si'usega on the island of Upolu between December 1978 and February 1979.

Some of the early European inhabitants of Samoa directed attention to the plants used as fish poisons in Samoa. Rev. Pratt listed 'Avasa (*Tephrosia piscatoria* Pers.) as a fish poison in his 1862 dictionary of the Samoan language (Pratt, 1862). Reinecke (1898) recorded the use of *T. piscatoria* and *Barringtonia speciosa* Forster. He also recorded the use of *Phyllanthus simplex* Retzius; this, however, is probably an error arising from the fact that both *P. simplex* and *Tephrosia piscatoria* have the same Samoan name: 'avasa. Only the latter is used as a fish poison while the former is used medicinally (Parham, 1972). A. F. Kramer (1903) described in some detail the techniques used with *T. piscatoria* but unfortunately characterized them as being used with *Barringtonia asiatica* rather than *T. piscatoria*. As will be described shortly, the techniques used with these two fish poisons differ significantly.

More recent workers have also directed some attention to the Samoan use of plants as fish poisons. The use of *Barringtonia asiatica* as a fish-stupefying agent is mentioned in one floristic work (Setchell, 1924) while both *B. asiatica* and *T. piscatoria* are mentioned in three other treatises (Lloyd and Aiken, 1934; Christopherson, 1935; Parham, 1972). A brief account of the use of *B. asiatica* may be found in *Samoan Material Culture* (Buck, 1930).

The only plants currently used for fish poisoning in Samoa are *Tephrosia piscatoria* Persoon and *Barringtonia asiatica* (L.) Kurz. One chief on the island of Savaii reported that the fruits of *Meryta* sp. (*lau fagufagu*) were used anciently as fish poison; his report is substantiated by a notation I found on a herbarium sheet of *Meryta capitata* Christopherson (Garber #622) at the Bishop Museum which reads "supposed to be useful for fish poisoning." Other than these two reports, however, I have found no evidence for the use of *Meryta* sp. as fish poison and have been unable to find any native informants who are knowledgeable in the techniques of its use.

¹ Submitted for publication March 24, 1979; accepted for publication June 7, 1979.

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Barringtonia asiatica, or *futu*, is used widely to poison small fish in tidal pools. Observations of these techniques were made in Taga, Savaii. Pata, my informant, first located a tidal pool of the proper size, which was about 4 m². A fruit of *B. asiatica* was then cut transversely and the seed removed from the fibrous mesocarp. The seed was then grated (*olo*) by Pata on a piece of rough lava rock. Water was sloshed upon the rock during the grating and allowed to run back down into the tidal pool. Several of Pata's assistants waited around the edges of the pool, grasping old inflorescences of *Cocos nucifera* L. After a few moments, numerous small fish attempted to escape the poisonous water by jumping out of the pool. Pata and his assistants then used the coconut inflorescences to beat the fish. The fish were small minnows of the genus *Acanthurus* (*manini*); although on other occasions small fish of the genus *Siganus* (*lo*) and the genera *Abudefduf*, *Pomacentrus*, and *Chromis* (*tu'u'u*) are caught by this method. Pata explained that although the poison did not affect the edibility of his catch, he would not eat it but use it for bait to catch *atu* (*Katsuwonus* sp.) outside of the reef.

Barringtonia asiatica is rarely, if ever, used by the Samoans to poison fish outside of tidal pools. For such purposes, *Tephrosia piscatoria* (*avasa*) is used. The plant is dug up and its roots are removed. The roots are then pounded with a round stone and a slight amount of water is added. The resultant mash is then separated into small lumps which are wrapped in leaves of *Kleinhovia hospita* L. (*fu'afu'a*) or *Macaranga harveyana* Muell.—Argau (*lau fatu* or *lau pata*). Several of the leaf-wrapped parcels of *T. piscatoria* are taken at low tide to the fishing spot chosen. Usually this is a large rock or piece of coral. The rock or coral is surrounded by several men who then close in upon the rock while beating the surface of the sea with sticks. This noise and commotion drives all of the enclosed fish to seek refuge underneath the rock or coral. Then one of the fishermen (or two if the rock is large) dive under water and swim around the rock or coral, shaking the parcel of *T. piscatoria* underneath it. During this period, the men surrounding the rock beat the sea frantically with sticks, lest any of the fish sensing the poison attempt to escape. After about 5 min, the dead fish rise to the surface and are gathered in baskets woven from the leaves of *Cocos nucifera*. The poison does not affect the edibility of the fish.

The Government of Western Samoa, fearing damage to the reef and the small reef fish, has enacted legislation banning the use of *Tephrosia piscatoria* as a fish poison, although the use of *Barringtonia asiatica* is still permitted. Although the penalty for violation of the law is imprisonment, the law is rarely honored in the villages on the back side of the island of Upolu and on the island of Savaii.

ACKNOWLEDGMENTS

I thank his Highness Fuiava Ta'alili and Pata of Fa'ala and Taga, Savaii, for their help. Thanks also to Mulivai of Malaela and Ailaoa Si'ilata of Siusega, Upolu, for their assistance. This work was supported by a Danforth Foundation Graduate Fellowship, a National Science Foundation Graduate Fellowship, the Fernald Fund of the Gray Herbarium, the Atkins Fund of Harvard University, and funds from the Arnold Arboretum of Harvard University.

LITERATURE CITED

- Buck, P. H. 1930. Samoan Material Culture. Bull. Bernice P. Bishop Mus. 75.
- Christopherson, E. 1935. Flowering Plants of Samoa. Bull. Bernice P. Bishop Mus. 128.
- Kramer, A. F. 1903. Die Samoa-Inseln. Band II E. Nagele, Stuttgart.
- Lloyd, C. G., and W. H. Aiken. 1934. Flora of Samoa. Lloyd Library Bull. #33, Cincinnati.
- Parham, B. E. V. 1972. Plants of Samoa. New Zealand Dep. Sci. Ind. Res. Information Series No. 85, Wellington, New Zealand.
- Pratt, G. 1862. Pratt's Grammar & Dictionary of the Samoan Language. Malua Printing Press, Apia.
- Reinecke, F. 1895. Ueber die Nutzpflanzen Samoas und ihre Verwendung. Jahresber. Schles. Ges. Vateal. Cult. 73:IIc:22-46.
- Setchell, W. A. 1924. American Samoa: Part I. Vegetation of Tutuila Island; Part II. Ethnobotany of the Samoans. Volume 20. Dept. Marine Bio., Carnegie Inst. Washington.