## Cultivation and economics of pearl oysters in the Sudan: requirements for strengthening local technological and management capabilities

*Source: Dr. Sayed Mohamed Ali, Oyster Culture Research Project, Port Sudan, Sudan*

The improvement of management capabilities is essential in Sudan. The Fisheries Research scientists believe that most of the mass mortalities that have occurred since 1969 were due to mismanagement. Scientists (who conduct research) and fisheries administrators (who will supervise large-scale cultivation) must also be able to travel more easily between Port Sudan, Dongonab and other cultivation centres. Some of them must be permanently positioned in some of the cultivation sites. It must again be stressed that unless there is proper supervision of cultivated oysters and cultivation structures and proper maintenance and storage of cultivation materials after each season, an anticipated cost analysis will be invalid. Adequate supervision must be ensured by all means, even by paying a percentage out of cultivation profits to supervisors.

Without an awareness of the traditional way of living and socio-economic conditions of coastal natives, communication and mutual understanding may be difficult. It is important that studies on the socio-economic conditions and lifestyle of native fishermen be initiated as quickly as possible.

The transfer of technology from scientists to fisheries administrators and native fishermen must be initiated through joint projects and studies.

A transition stage, involving the establishment of pilot projects or farms jointly run by fisheries scientists, fisheries administrators and native fishermen, is essential as an introduction to large-scale cultivation. The profit from these farms must go to the owner-fishermen. During this period a system for providing capital to cultivators on the basis of long-term loans must be worked out.

In Dongonab Bay, the healthiest mother of pearl oysters are found at a depth of less than 5 fathoms, with very few found beyond a depth of 15 fathoms. Shells from deeper than 7 fathoms are usually infested with such parasites as mud worms (*Polydora*), boring sponges (*Cliona* spp.) and boring bivalve (*Lithophaga*).

### Uses

The tradition of fishing for mother-of-pearl oysters in Dongonab Bay is a very old one. Heaps of ancient shells are occasionally found buried in sand on the shores of the Bay and on some of the nearby islands. One such heap was estimated to contain 3,000 tons of shells. Radiocarbon dating has shown that these heaps are 1,500 years old.

### History of cultivation

In 1904 the late Dr Cyril Crossland made a study of pearl fisheries of the Sudanese Red Sea. He was subsequently employed as a marine biologist with the Government of the Sudan and directed a marine biological station and pearl shell farm at Donganab from 1905 to 1922. He was able to devise methods for the profitable large-scale cultivation of mother-of-pearl oysters from spat to commercial size. However in 1923, the Sudanese Government stopped all cultivation activities because prices had fallen to uneconomic levels. But the time the farm was closed in 1923, it was producing an annual crop of more than 300 tons.

In 1955 the Government requested FAO to help in developing its marine fisheries. In 1958 Mr. William Reed was assigned by FAO to investigate the shell fisheries of the Sudan. He carried out a survey of the natural stock and concluded that further development of shell fisheries would be better achieved through cultivation of mother-of-pearl oysters than by attempting to increase fishing of wild oysters that could result in over-exploitation of the resources. Reed improved and simplified the cultivation procedures used by Crossland. In 1961 he became an employee of the Sudanese Government. In 1961 he established four private family farms in Dongonab Bay. When his service was terminated in 1965 the number of family farms had risen to 65, with 130 native beneficiaries. Pearl culture (half and rounded) utilising the Sudanese oyster was first tried by Reed in 1964, but more professionally and successfully in 1968 by technicians sent by a Japanese firm under contract to the Sudanese Government.

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*Excerpts from an article in* Acquisition of Marine Surveying Technologies, *Report of the Expert Group Meeting on Acquisition of Marine Surveying Technologies in Addis Ababa, 19–23 October 1987. Department of International Economic and Social Affairs, United Nations, New-York. 1988. pp. 94–116.*