

# STATUS OF AQUACULTURE AND STOCK ENHANCEMENT RESEARCH AND DEVELOPMENT IN SAMOA

by

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## 1. Introduction

This is a brief report summarising the development of aquaculture initiatives and constraints that hindered the extension of such effort. Furthermore, the report is also briefed the necessary requirements for the successful promotion and development of aquaculture in Samoa.

## 2. Background

Although aquaculture was not a traditional practice in Samoa, however, some form of traditional ranching of giant clams had been practiced by coastal villages by placing giant clams in a rock-fenced off area in lagoons for later use or for use in special traditional occasion. Accordingly, the idea of true aquaculture in Samoa was initiated in 1954 when an SPC investigation was conducted to assess the possibility of developing fish farming. Tilapia (*Oreochromis mossambicus*) was recommended as the best fish and were imported released to most river system in Samoa.

Followed on was a further investigation in 1971 (sponsored by FAO) conducted to determine the technical and economic possibilities of culturing selected fish and invertebrates under local conditions. Farming trials of selected fresh-water and marine species were carried out resulting in the establishment of a *Macrobrachium* joint-venture by the Fisheries and a landowner/businessman. The exercise was later discarded due to poor support from the Landowner and poor management.

In the 1980s, several aquaculture developments were again revitalised with the trial farming and restocking of giant clams, green mussels, *euchema* seaweed and trochus. In summary, of the Fisheries Division's initiative efforts of assessing the viability of aquaculture in Samoa:

- 13 new aquatic species have been introduced into Samoa specifically for aquaculture purpose;
- 1 specie was introduced for mosquito control but later used for aquaculture purposes;
- 1 specie was re-introduced as it is believed that this specie became locally extinct (*Hippopus hippopus*);
- 1 specie was imported even though the species existed locally (*Tridacna squamosa*)

## 3. Current situation

The recent National Statement of Economic Strategy states that the development of aquaculture via commercial farming and stock enhancing of selected and suitable species will facilitate the expansion of the fisheries sector.

The current development of aquaculture in Samoa is focused primary on providing new/alternative source of fish thus alleviating pressure on the over-exploited nearshore resources, and establishing an additional means of employment/income generation for the local population. The current development is also capitalizing principally on the participation of many rural coastal communities in the collaborative effort of fisheries management with the Fisheries Division.

The current development strategy pertaining to aquaculture and resources enhancement adopted by the Fisheries Division (FD) involve the:

- farming of tilapia (*Oreochromis niloticus*), a more preferable of the available species and extended into rural areas through the Fisheries Extension Programme;
- re-introduction of giant clams species and extended to suitable location, preferably in declared fish reserves; and
- translocation of both the green snail and trochus at desired sites, preferably in established fisheries reserves.

In complimenting the FD plan, the AusAid sponsored Village Fisheries Extension and Training Project (VFTEP) has implemented aquaculture activities under the Alternative Seafood Development component. Objectively, the project facilitated the construction of one village tilapia fish farm, purchases of giant clam seedlings and materials required for the establishment of giant clam grow-outs in reserves.

#### 4. Current aquaculture activities

##### *a. Tilapia fish farms*

Under the SPADP (II) and the assistance provided by VFTEP, three additional demonstration fish farms were constructed in 1996 at easily accessible areas and were stocked with tilapia (*O. niloticus*). Through the VFTEP, three community fish farms of man-made pools and 22 natural lakes, streams, and fenced part of rivers have been stocked with tilapia. A total of about 25,000 fry have been introduced and re-introduced at the mentioned locations.

##### *b. Giant clams village grow-outs*

Of the 52 villages have participated in the Fisheries Division fisheries management programme, more than 80% had giant clam grow-outs where giant clams of various species are placed in their declared reserves. Ideally, the establishment of these fish reserves provided a network of refuge areas required for un-interrupt breeding and nursery needs of the cultured giant clams. Currently, there are approximately 50,000 juveniles and baby giant clams have been introduced and cultured in 50 village fishery reserves in Samoa.

##### *c. Mullet fish farm*

Further assistance was also provided through the VFTEP to construct a marine fish demonstration pond at Satapuala in 1997. Close to 200 mullet fry have been stocked in the pond and it is currently monitor and manage by both the community and the FD.

##### *d. Trochus and green snail*

A total of 128 *T.niloticus* was imported from Fiji in 1990 under the SPADP. Eighty were released at Namu'a and Nu'utele islands while the rest was kept at the FD. Reported sighting of individuals animals near Namu'a island indicated rapid growth and at present the fate of the rest of the released trochus is not known.

Further assistance via the SPADP was provided for assessing the feasibility of introducing of *T.niloticus* and *T.mamorata* in 1996. 21 sites have been surveyed and six sites were recommended for initial introduction. At present, arrangement for importing trochus and green snail spats is being made with the Tonga Fisheries.

##### *e. Hatchery*

The FD has re-activated its hatchery for giant clams and tilapia through kind assistance given by SPADP. Spawning of *H.bippopus* imported earlier was conducted in 1997 and 1998 was unsuccessful. At present, the hatchery is only utilised for tilapia spawning programme while discontinues on giant clam propagation due to poor intake water quality. It is planned that an Off-Apia hatchery will be constructed soon (mid-1999) with funding kindly provided by AusAid.

## 6. Constraints

There are many factors contributed to the slow development and expansion of aquaculture activities in Samoa. It is apparent that all the past and current development efforts are generally restricted to the researching phase with very little success in translating it into a more full-scale implementation, i.e. semi or full commercial ventures. However, the following are some of the notable factors that maybe contributed to slowness in aquaculture development:

- Lacks of interest and enthusiasm of local groups and individuals in developing aquaculture activities as semi or full commercial ventures.
- Generally lacks of long-term management and commitments shown by communities and individuals in expanding their existing effort without inputs from the FD.
- Lacks of effective Government policies relating to aquaculture development.
- Highly vulnerable and risk investment, especially in giant clams, trochus, seaweeds, etc., culturing.
- Generally restricted ideal marine sites and lands with adequate freshwater supply.
- Generally limited or lacking existing lending avenues for aquaculture investments.
- Currently limited production of culturing seedlings, frys, etc.
- Interested people and communities are poorly or insufficiently advised on necessary requirements relating to aquaculture development.
- Lacks of technical know-how and understanding of aquaculture farming techniques by FD personnel

## 7. Future requirements

The achievement of targeted objectives concerning the aquaculture development in Samoa will accomplish through collective, collaborative and supportive effort of both the Fisheries Division and the participating communities.

It is anticipated that future activities relating to aquaculture will sustain through:

- Continue advising villages or communities on various monitoring and maintenance systems to ensure minimum mortalities, proper feeding requirements from available materials, expanding into a semi-commercial venture.
- Promote the existing farms as semi-commercial enterprises through financial assistance provided by local lending institution given the institutions are readily understand of the feasibility and potentials of such investment.
- Continue supplying culturing frys and seedlings for communities needing for subsistence production and stock enhancement.
- Promote awareness and understanding among lending institutions and interested parties pertaining to the feasibility and potential of aquaculture activities.
- Continue promoting subsistence and semi-commercial aquaculture through the VFETP.
- Utilising existing village declared and new established fishery reserves for stock enhancement motive.

## 8. Acknowledgement

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