

Oreochromis niloticus Introduction into Sato'alepai Lake, Savai'i, Western Samoa.

by

Lui A.J. Bell
Principal Fisheries Officer

Research and Management Unit
Fisheries Division
Ministry of Agriculture, Forests, Fisheries and Meteorology
APIA

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Background

A survey conducted in the Sato'alepai Lake by the Fisheries Division on 15 March, 1996 resulted in a recommendation to introduce *O. niloticus* to improve the existing tilapia, *O. mossambicus*, fishery at the time within the lake.

A major concern on this undertaking was the consideration of the result of cross-breeding of *O. mossambicus* and *O. niloticus*. However, after consultation with the Chief Adviser of the South Pacific Aquaculture Development Programme (SPADP II) in Suva, it was confirmed that even though the resulting offspring from *O. mossambicus/O. niloticus* cross-breeding grow to smaller sizes than pure *O. niloticus*, they are nevertheless bigger and better than pure *O. mossambicus*. A similar case happened in Philippines where fish production was improved tremendously by the "accidental" introduction of *O. niloticus*. People there reportedly did not catch tilapia even though *O. mossambicus* was present. Only when it was noticed that the tilapia had increased in size, because of the Nile tilapia, that the people started to utilize tilapia. SPADP (II) has also introduced *O. niloticus* into a lake in Tonga to improve tilapia quality in the lake. Even though *O. mossambicus* was already in the lake, people there do not like eating it because of the taste. Thus the decision was made to introduce the Nile tilapia into the Sato'alepai lake.

Importation of *O. niloticus* fry from Fiji

Due to limited production of *O. niloticus* from the Fisheries Division hatchery, Nile tilapia fry were imported from Fiji for the initial stocking as well as for the cage culture experiment. SPADP (II) arranged and funded the fry supply from Fiji. The shipment was made on Tuesday 9 April, 1996 (Fiji day and date). This was Monday, 8 April, 1996, (Western Samoa day and date), arriving at 9:40 pm.

The shipment consisted of 1,150 Nile tilapia fry which were packed in aerated bags and shipped in boxes. The average fry weight was 1.8 g. There was no mortality experienced during freight and all were alive on arrival. All fry were transferred into an FRP tank and kept there for 10 days prior to shipment to Sato'alepai on 19 April, 1996. There was no mortality during the period the fry were kept at Fisheries Division.

Stocking of *O. niloticus* into Sato'alepai Lake

Chronology of the transfer of *O. niloticus* fry

18 April, 1996	Construct cage (4x4 x 0.6 (h) m) on site (at Sato'alepai).
19 April, 1996, 2:00 am	Start packing <i>O. niloticus</i> fry into plastic bags
5:00 am	Packing 1,200 fry completed @ 100 per bag (16"x24") and bags packed first were re-aerated prior to leaving for the wharf. (Bags were stored into coolers for transportation).
5:30 am	Arrived at Mulifanua Wharf
8:00 am	Ferry left for Savai'i

9:30 am	Arrived at Salelologa, Savaii and travelled to Sato'alepai
10:30 am	Arrived at Sato'alepai and bags were floated in lake Deployed cage at 3 feet of water in the south-eastern near road-way through the Lake
11:00 am	Bags opened and fry released. First bag opened and fry released by Matai'a Samu. Stocked 200 into cage.

Total *O. niloticus* fry packed: 1,200
 Total fry stocked: 1,200 (1 was crushed near the tail, probably from bag-partitioning hard paper. This was still able to swim)
 Average fry weight on release: 1.8 grams and 3.2 g for cage.

The tilapia used for stocking the lake as well as for the cage culture experiment consisted of 1,150 *O. niloticus* fry imported from Fiji and 50 from the Fisheries Division hatchery.

O. niloticus release into the Lake

Of the total 1,200 *O. niloticus* fry taken, 1,000 were released into the wild in the south-western part of the lake. This portion of the lake is separated from the other side by a road constructed across it. Bags containing fry were allowed to float in the water for about 30 minutes to allow acclimatisation. Prior to the release of the fry into the lake, water from the lake was slowly allowed to enter the bags. All the fry released were strong and swam to the bottom and away in schools. There was only one fry that may not have survived as it suffered a bad bruise near the tail. It probably got caught under the partitioning cardboard. It was still able to swim and was still alive when the team left the village.

Cage Culture

Apart from the introduction of the Nile tilapia into the lake to improve the overall fish production from the lake, an experiment was also set up to assess the feasibility of cage culturing the same species. A 4 x 4 x 0.6 (h) m cage was constructed from square mesh coated wire, lined inside with an old bouki-ami fine-mesh net. The cage was constructed the day before stocking and was deployed at a depth of about three feet the same day it was stocked. Two hundred *O. niloticus* fry, averaging 3.2 g, were stocked into the cage on 19 April, 1996 giving an initial density of 20.8 fish per m³.

Other observations

Quite a few *O. mossambicus* fry were observed in the South-western pond at the site where the *O. niloticus* were released as well as other shallow parts of the lake.

Management

The village has placed a "sa" on the lake. This prohibits anyone from fishing within the lake until the Nile tilapia is ready. The use of derris is also prohibited for fishing.

Further Plans

1. Nile Tilapia

O. niloticus stocked into the cage will be fed with locally available food stuff such as coconut scrapings, left-over cooked breadfruit and bananas etc. Length measurements will be taken on a monthly basis.

Two additional stockings of 1,000 *O. niloticus* fry per stocking will be conducted in May and June 1996 making a total of 3,000 Nile tilapia fry to be stocked into the Sato'alepai Lake.

It is planned that measurements will be taken 4 months (i.e. August, 1996) after initial stocking, followed by a second one after 6 months (October, 1996). With permission from the village, a net will be dragged across the lake to collect specimens. All *O. niloticus* specimens caught will be measured and weighed and released back to the lake. Depending on the results from this, the first harvest will be planned for December, 1996, eight months after initial stocking

2. Milkfish fry Stocking

SPADP has confirmed that it will finance costs involved with the importation of 1,000 milkfish fry to be shipped from Kiribati and stocked into Salo'alepai Lake. Dates will depend on availability of fry.