SPC/2nd Pacific Community Fish. Mgmt. Workshop/BP 14
12 October 1998

ORIGINAL: ENGLISH

SECRETARIAT OF THE PACIFIC COMMUNITY

SECOND PACIFIC COMMUNITY FISHERIES MANAGEMENT WORKSHOP

(Noumea, New Caledonia, 12–16 October 1998)

ALIA LONGLINE FISHERY DEVELOPMENT IN SAMOA

By

Ueta Fa'asili, Savali Time and Malama Siamomua
Fisheries Division, Apia, Samoa

In March to July 1991, the Fisheries Division with the assistance of the SPC master fishermen Peter Watt undertook trials using the Division's research fishing boat Tautai Matapalapala for vertical longlining around fish aggregating devices (FADs). This trial provided the first information on how to catch albacore tuna by the local fishermen. The gear rigging from the Division's research boat was transferred on to the *alia* fishing boat with modifications. An important modification was the design and fitting of the longline drum.

Results from the vertical longline trials conducted on the Tautai Matapalapala and the *alia* catamaran indicated that a viable commercial fishery could be sustained in Samoa. The first trial conducted on the *Tautai Matapalapala* produced 1900 kg of pelagic fish with an average catch rate of 5 kg per dropline. Results utilising the alia catamaran with modified vertical longline gear far exceeded those of the *Tautai Matapalapala*. The *alia* catamaran trials produced 2819 kg of fish (gilled and gutted) with an average catch of 15 kg per dropline. The main advantage of the vertical longline method compared with surface trolling for the average *alia* fisherman was a 50 % reduction in fuel consumption. It was also realised that the albacore tuna can only be caught at depths around 55 metres or deeper. With these information, the horizontal longline gear and drum were designed taking into account the depths of the target species.

The long line gear

The simple longline gear used on an average alia consists of a mainline (monofilament 1200 lb test) of about 5 miles or more (8 km) in length with snood lines (8 m. of monofilament with 450 lb. test) placed at about 31 m. intervals. At the beginning and end of the main line is a flag, each for identification purpose. Each float of about 55 m. deep comes between every 20 hooks to maintain the constant depth of the main line. With this simple arrangement, the mainline can carry up to 300 hooks wrapped around the iron drum of about 24 inch (60 cms) diameter and 36 inches (90 cms) long. The recent analysis indicated that the catch rate varies from 2.4 to 5.8 fish per 100 hooks with the new average catch of 3.8 fish per 100 hooks.

Normal Operation of Alia Fishing boats

Most *alia* fishing boats fish throughout the weekdays except Sunday. They normally depart at around 4:00 am in the mornings and start arriving back at about 1:00 am to 5:00 am in the following morning. For an ordinary alia, it can only afford one day-fishing trip. It normally takes 3 to 3.5 hours to reach fishing grounds. It takes an average of 2 hours to set a five-mile longline gear. A waiting period of about 7 hours before hauling the line back. Hauling the line back takes about 4 hours. Normally it comes back immediately after the hauling operation completes. It then takes an average of 4 hours to arrive back. In total it takes an average of 20 hours to complete a fishing operation. An ordinary alia fishes from 40 to 55 miles from shore. On average the alia fishes 20 times a month. For larger alias, they fish two to three-day fishing trips.

The *Alia* Catches

The recently calculated catch rate drops from 5 fish per 100 hooks to 3.8. The catch per unit effort (CPUE) accordingly drops from 0.750 kg per hook in 1994 to 0.226 in 1997 (FD/SPC Port sampling). Given this catch rate, an ordinary *alia* can land 3,876 kg of tuna in one month or 46,512 kg a year. With the continued increase of fishing interest, the landing for the alia fleet for 1998 is predicted to be around 9,300 mt. Our statistics

also suggests that the catch composition is 62% albacore, 37% yellowfin and 1% bigeye tuna.

Likely impact of Bigger vessels on the *alia* fleet

While the scientific data produced by SPC suggests that the level of tuna stock in the region is sustainable relative to the volume of stock currently being exploited, the continued introduction of larger fishing boats to Samoa through partnership arrangements could have an impact on the access to the resources by Samoa's *alia* fleet (Faasili 1998). The analysis by Fisheries Division to predict the likely impact by large fishing vessels (23 m) to the alia fleet assumes that, it takes 1 trip for a large fishing vessel to harvest 30 metric tons of tuna while it takes 117 alia (one trip each) to catch the same. This means one fishing trip by an average large fishing vessel denies the opportunity of 117 alia and put 468 fishermen out of work. The same analysis assumes that in order to catch 30 metric tons of tuna, it requires 231 man-days by the large fishing vessel as opposed to 468 man-days by the alia fleet. This again means the alia fleet has a better spread on the value of its resource compared to that of the large vessel. So as long as there is no restriction on large fishing vessels introduced in to Samoa, there is a potential impact by these vessels on the operation of the local alia fleet.

Longline fishery as future prospect for Samoa's economy

The success of the longline fishery has provided substantial incomes for fishermen and boat owners and the industry has created over 1000 employments both men and women.

Official figures published by the Central Bank of Samoa show that fish exports increased from WS$70,000 in 1992 to WS$2,287,000 in 1996. However, an estimate by the Fisheries Division based on information from the canneries in Pago Pago suggests a level of WS$5.88 million for 1996. In 1997, port sampling has indicated an estimate of 6,000 mt landed from longline fishery valued to about $23.35 million. Of the 6,000 mt landed in 1997, about 90% were exported and 10% were consumed locally.

With the expectation that a new generation of larger *alias* will be built in the near future, the longline fishery will continue to be one of the top foreign exchange earners for Samoa in future. It is therefore essential for the Government to pay close attention to this development, and assist in the safety of fishermen while engaged in fishing operation.

Problems

Congestion in the restricted area.

At present, there is over 200 *alia* fishing boats active in the longline fishery, and over 90 are based in Apia. The number of fishing boats is too large to be operated in the small fishing grounds within their reach. The FAO alia can only operate within a certain distance (55 miles) given the limited fuel capacity. In the case of the fishing boats based in Apia, longlines are often set across each other, and lines have been cut by competing fishermen. Loosing a longline gear can cost up to WS$7,000, and in some cases, violence has cropped up amongst fishing crews and boat owners as a result of crossed lines.

As an interim solution, boat owners and fishermen were advised to adopt a same setting approach (North/South) so that line sets can drift parallel to each other. Fishermen have

been educated that if there is a cross-line picked by any boat, they have to advise through the fishermen communication net work, that they will cut and join the line. This has assisted a lot in reducing disputes between fishermen.

The main reason that constitutes for the overcrowding at the Apia area is due to the market access for fishermen. All the fish exporters are centered in Apia and it would be easier for fishermen to base their fishing boats for marketing purposes. There is only one fish exporter in Savaii Island.

Fisheries is presently negotiating other potential fish exporters to operate from Savaii and other areas of Upolu.

Uncertified larger alia design

In order to try and extend fishing grounds for the local fleet, a number of *alia* fishing boats have been built in excess of the recommended size. These larger boats have been designed by local boat builders, or on request of fishermen themselves. These new larger versions of the original FAO design were built not only to enable fishing boats to fish further out, but to carry sufficient ice for a two-day fishing trip. Fisheries Division is concerned that a number of these larger fishing boats have been lost without trace involving the loss of about 21 lives since 1997. It is believed that the designs may not be safe, given the unavailability of a naval architect to advise on the suitability of the new expanded version of the FAO design.

The Government is seeking assistance for a properly design larger version of the present alia to enable performance of other needed activities during longline fishing.

While the FAO design of the current *alia* is quite appropriate for the purpose it was designed for, it has limitations to be considered a proper fishing boat for the tuna longline fishery. The requirement for ice to be carried on the alia in order to maintain the good quality of fish limits the carrying capacity of the boat especially when they have good catches. Spaces available on the deck for keeping fish are not ideal for fish targeted for export markets especially for fresh fish. The amount of labour required to haul an average 5 mile line is very high.

Lack of training for alia skippers and fishing crew

Few incidents identified to cause loss of lives at sea was due to the lack of training of skippers and fishing crew. As the longline fishery was developed so fast and boat owners were just grabbing any young man available to be part of the fishing team not knowing that training is important for the crew safety. Several attempts by the Fisheries Division to run short courses for skippers of alia and their crew was not too successful although there were high participation. Most participants were mainly boat owners themselves who normally do not go out fishing. So hardly these training did not filter down to the skipper and fishing crew level. As a result many easy problems which could have been resolved by the skippers themselves while at sea were not done hence the loss of lives.

Action by Government to resolve current problems

Government has already developed a fishermen radio communication network where every fishing boat is required under legislation to carry a two-way radio. As the domestic fishing fleet is growing so fast, fishermen are forced to hunt further and further out into new fishing grounds. The need to communicate to shore should any problem arises particularly where rescue is required is vitally important. The putting in place of the fishermen radio communication network has assisted the fishermen in monitoring their fishing activities.

As for the appropriate alia boat design, Government is advocating a larger version of the current FAO alia design. The aim is to have a properly designed larger version of the *alia* so that it is sea worthy at all types of weathers. The new version should be capable of performing the following:

- Build-in fish boxes with the carrying capacity of about 2 tons. Fish boxes should be properly insulated to keep ice up to 3-day fishing trip.
- Strong boat design that can withstand rough weather including the placement of foam so that the boat can not sink even if full with water
- Cabin designed to mount compass, two way radio, and a safe keeping of charts.
- Development of a new long line hauling system (hydraulic or others) which reduces labour forces as in current practice.
- Development of a proper system of mounting outboard motors with placement of steering wheel.
- Advice on the proper engine to be used by the fishermen, including the type, model and strength / horse power.

It is felt that if a new generation of *alia* fishing boats can fulfill the above particulars, the fishermen will be able to go further out from their normal restricted area, thus preventing the major problem of line crossing. The fishermen will also be able to stay out for longer fishing trips and carry ice to ensure good quality of fish for overseas markets. But most important of all is a design that is safe for all fishermen and can withstand rough weather conditions thus minimising loss of fishermen at sea.

Appropriate training scheme which involve short courses are developed by the Ministry of Transport to certify alia Skippers and fishing crew. Certification of alia skippers and fishing crew will be soon required under legislation.

Other assistance to fishermen

Government also provides fishermen and fish exporters the following additional assistances:

- Free training on fish handing
- Free training on fishing gear and methods.
- Rebate on fuel (Fishermen fuel subsidy) where custom duty on fuel is exempted *(now ceased)*
- Training for fish exporters on HACCP plans.
- Provision of information on productive fishing grounds.

Future development

The Fisheries Division is determined to shortly introduce a new management approach to the managing of the commercial tuna industry. This will allow fishermen, fish exporters and boat owners to deal more directly in the management of commercial fisheries, in a similar manner to that of the our community-base management system (Faasili & King 1997). It is realized that all parties involved in the tuna industry development play a role in the managing of the industry or the development itself will not be sustainable.

As close to 50% of the alia fleet is based in Apia, it causes problems in competition for mooring spaces. As a result, Cabinet has approved construction of a new marina to cater for over 300 fishing alias. Construction is due to begin very shortly.

On request, Government of Samoa has approved StarKist to operate in Apia . Basically, this will provide fishermen with better price of canned fish.

References

Fa'asili U. 1997. Financial, Economic, Marketing and Management Evaluation of the Samoa Longline Fishery. A project proposal submitted for funding assistance from UNDP/FFA.

Fa'asili U. 1997. Review, Redesigning, and Construction Demonstration of Alia Fishing Boats in Samoa. A project proposal submitted for funding assistance under FAO TCP

Fa'asili, U. 1997. The use of village by-laws in marine conservation and fisheries management. Paper presented at Pacific Science Association Intercongress, July 1997, Fiji.

Faasili, U. 1998. Suspension of licenses for foreign fishing vessels brought into Samoa through partnership arrangements: Policy paper submitted for Cabinet approval

Horsman, N. and Mulipola, A. 1995. Catch data and collection from market surveys in Western Samoa. South Pacific Commission and Forum Fisheries Agency Workshop on the management of South Pacific Inshore Fisheries. Integrated Coastal Fisheries Management Project Technical Document. South Pacific Commission, New Caledonia. 17 p.

King M. and Fa'asili U.1997. Fisheries in Western Samoa. Fisheries Situation Report.

King, M. and Faasili, U. 1997. Community-based management of fisheries and the marine environment. Pacific Science Association Intercongress, July 1997, Fiji.

King, M. 1989. Fisheries research and stock assessment in Western Samoa. FAO Terminal Report TCP/SAM/8852. 24 p.

Mulipola A. 1997. An overview of activities implemented by the Research and Management Section in 1996/97 and proposed activities for 1997/98 period. Section report to form part of Fisheries Annual Report for the period 1996/1997.

Watt P. G. 1991. Report on Vertical Longline Fishing in Western Samoa. Report prepared by the South Pacific Commission Deep Sea Fisheries Development Project.