

REPORT ON A VISIT TO FIJI - SUNDAY 20 APRIL TO WEDNESDAY 5 MAY 1976 BY  
J STONEMAN, FISHERIES ADVISER

Itinerary

Sunday 25 April Arrived Nandi 05.30 on TE 561 from Honolulu  
arrived Suva 07.30 FJ 122.  
  
p.m. talks with W.Day Fishery Training Officer.

Monday 26 April With Mr Day to a meeting with Mr W Thompson  
Permanent Secretary Ministry of Agriculture  
Fisheries and Forests and Mr. R. E.Stone Chief  
Fishery Officer. To the fisheries department  
headquarters at Lami for further talks with  
Mr Stone.  
  
Visit to the University of the South Pacific and  
discussions with Dr Neil Bourne CIDA.  
  
Visit to the Laucala Bay oyster culture station  
for discussions with Mr Ted Richie UNDP/FAO  
oyster culturist.  
  
Visit to the British High Commission for  
discussions with Mr A Webb Second Secretary  
(aid/commercial/consular).  
  
Evening dinner party given by Mr and Mrs Day,

Tuesday 27 April Depart for Tonga

Thursday 29 April Return from Tonga 18,30 met by Mr Day to  
Trade Winds Hotel.

Friday 30 April With Mr Day and Dr. Bourne to the grass carp  
culture fish farm at Naduloulou, Discussions  
with Mr David Ferworn Peace Corps engineer and  
Mr D. S. Murty fish culturist of the Indian  
Technical and Economic Co-operation programme.  
  
To Laucala Bay for discussions with Fishery  
Officer S. Tuilaucala and visits to the oyster  
and mussel culture rafts.  
  
Visit to Mr H. Sperling FAO Fisheries Adviser,  
  
To Lami fishery headquarters for a round-up  
meeting with Mr Stone and Mr Day.

Saturday 1 Kay Free day.



/Sunday

Lunch party at house of Mr and Mrs Stone chief fishery officer, discussions with Mr Stone and Mr H Sperling FAO fishery adviser.

To Nausori Airport with Mr Day for final talks, fly to Nadi.

Met by Mr Filimone Mate Senior Fisheries Assistant. To the Lautoka office of the fisheries department. With Mr Mate to fish markets at Lautoka, Ba, and Tavua.

Visits to the fisheries wharf and ice plant, cold store Lautoka.

Visits to the fish farm at Ravi Ravi.

Visits to fish landings in the Nandi area.

Fly Nandi to Honiara. FJ 505

SUMMARY OF RECOMMENDATIONS

Paragraph 5, 6,7		Continued UK support with OSAS and TA staff.
" 10, 11		Support for fisheries training at USP.
" 14		Support for Oyster/Mussel work IDC.
"	19	No support, hut watch developments on Grass Carp work.
" 26, 27		Assistance for study visits by Mr Mate on Milk Fish Culture, and provision of books.
" 33		Assistance with fishing boat building programme.
" 35	Provision,	of statistics expert if requested.

## General

1. My visit was arranged as part of a general familiarisation tour of the Pacific. My arrival in Suva was delayed due to the late departure of the charter flight from Christmas Island and this upset the programme arrangements made for my visit. Nonetheless I was able to cover a good deal of the ground in a revised programme. I was grateful to Mr Day and Mr Stone for enabling me to make the most of my fairly short visit. The last fishery advisory visit to Fiji was that of Dr Hall in November 1972, and his report is referred to below.

## Fisheries Department

2. Since Dr Hall's visit (his paragraph 3) still further changes have taken place in the organisation of the fisheries department. Mr Stone has been appointed Chief Fishery Officer (the title Director of Fisheries is no longer used), the post of Principal Fishery Officer is vacant but is expected to be filled by Dr William Travis under OSAS terms, and the post of Senior Fishery Officer is also vacant. Mr Day remains as FTO until his contract expires in 1977. Four fishery officer posts are all filled by recently appointed Fijian staff and including junior staff there are some 91 established posts and 20 unestablished posts in the department. Mr Stone is also responsible for the operation of the IKA Corporation (see below), with some 32 employees.

3. The current expenditure of the department is approximately 200,000 Fijian dollars annually, capital expenditure in the current year is around 700,000 Fj\$ and the IKA Corporation has an annual expenditure at "the moment of 40,000 per year. An organogram of departmental organisation is attached as an appendix.

4. I was unable to get as full a picture of state of fishery development in Fiji, the duties and operations of the fisheries department, and the fishery development programme as I would have wished. This was due to some extent to the shortage of time, but I was unable to obtain background information in the form of reports, country statements, policy and planning documents etc., etc., which would have helped to fill in the gaps. None the less, the fisheries department is carrying out a vigorous programme in many fields. In some ways the programme is too complicated and diverse. I understand that Mr Stone, who was only recently appointed, (on his return from a degree course at the University of Rhode Island), has inherited a number of projects which he would not otherwise have wished to implement at the moment.

## Fisheries Aid Programmes

5. Aid plays a relatively small part in fishery development programmes. UK aid is presently limited to the provision of Mr Day, and some training in the UK. Canadian aid is supplying Dr Bourne at the University of the South Pacific (USP) and back-up support for the Diploma in Tropical Fisheries programme, and New Zealand is assisting with barges, ice making and freezing equipment for fish marketing. UNDP programmes in support of oyster culture and tuna survey work have either ended or are ending shortly partly due to the financial crisis in the UNDP, India is providing one expert on grass carp.

6. Mr Stone's main requirements from the UK were provision of expatriate personnel to the PFO post (hopefully Dr. Travis), the SFO post already indentured for under OSAS terms, and further FTO post when Mr Day's current contract ends.

7. Mr Stone also hoped for UK assistance in the provision of a TA fishery officer appointment to assist with the continued in-service training of the

four recently appointed Fijian fishery officers who lack field experience. While in Fiji Mr Stone received an application for the SFO post from Mr McElroy, and understood that a similar application had been sent to the Crown Agents who are recruiting for this post. I told Mr Stone that I did not consider McElroy suitable and that I did not think ODII would support this application.

8. I met some of the newly-appointed Fijian fishery officers, and clearly while good material, these will certainly need considerable in-service training. I would recommend that an experienced expatriate fishery officer be supplied on TA terms to help Mr Stone with this situation, but it should be noted that in common with other British posts abroad, Mr Webb said that he had doubts about his ability to take on further TAOs in Fiji. This question would have to be resolved before accepting the proposal.

### Training

9. The bulk of Mr Day's work is now in support of the USP Diploma in Tropical Fisheries, although he still has responsibility for in-service training and short courses eg public administration. The Diploma course is now well under way under the overall control of Dr. Bourne, and is now centred at USP rather than the Government Agricultural Training College. Some parts of the course are still taken outside USP, for instance at the Derrick Training Institute. A comprehensive syllabus has been worked out by Mr Day and copies are available in London. There are still difficulties with the extra-mural sections of the course and it is hoped that shortly all formal instructions will be taking place at USP.

10. Practical training has been handicapped by the late delivery of the fishery training vessel from Canada, and pending the FTS arrival is carried out from fishery department vessels with the co-operation of the department.

11. Dr Bourne is short of instructors at USP, and relies heavily on Mr Day. He was concerned about the situation should Mr Day not renew his contract and not be replaced. He asked if UK might be able to supply TAOs directly to the USP for help with the Diploma. It appeared that this kind of manpower aid would be arranged through IUC auspices and of course subject to the limitations of the High Commission in administering TAOs. Mr Day would be quite prepared to alter terms of service and there might well be advantages in supporting training in Fiji in this way. Fiji has and is using British facilities at Grimsby for both the fisheries management course and the master fisherman course. The initial reaction to the value of the fishery management course was mixed, but this may have been due to personal considerations rather than the value of the course as such.

12. The USP Diploma course is of course a regional one and will certainly be used to an increasing extent by other Pacific territories in the future. Its value to the development of fisheries in the region as a whole is vital and the programme warrants support.

### Oyster and Mussel Cultivation

13. The programme noted in Dr. Hall's report paragraph 5, has been continued with the UHDP/FAO project FU/73/016 Oyster Culture. The project manager Mr Ted Ritchie, left at the end of the project which closed during my visit due to the UNDP financial crisis. I was able to see a draft report of the work to date which concentrated on imported stocks of the Pacific oyster Crassostrea gigas. This gave remarkable growth to some seven or eight months and then an

/equally

equally remarkable decline with retrogressive growth and massive mortalities. This situation is not fully understood but there appears to be no sign of pollution or disease in the dying oysters. In the short growing period oysters did reach marketable size. There has been some natural spatfall and it seems likely that a wild population of C.gigas is now established in mangroves near the field station at Laucala Bay. The programme with imported spat is being repeated to see if the sequence of rapid growth and rapid death is repeated. There is some hope that the naturally acclimatised wild gigas may give rise to a genetically superior line for culture purposes. Other oysters were being used but results are still very tentative.

14. Some work has been done on the Philippine green mussel Mytilus smaragdinus which offers the prospect of much simpler culture techniques, a cheaper product and a larger production of edible protein. This particular programme seems well worthwhile and it should be pursued.

15. With the end of the UNDP programme local funding continues at a reduced level and one of the newly-appointed fishery officers Mr S. Tuilaukala is continuing regular monitoring and sampling of the bivalves. As well as this it seems important to set up hatchery facilities which had been the intention of the PAO project if it had gone on. There have been formal offers of New Zealand assistance for picking up the PAO work and Mr Stone enquired if the UK might be interested in providing a technical assistance officer and possibly some equipment. There would seem to be no objection in principle to the support of this programme as it is entirely in line with ODM policy and offers an excellent chance of success. However it is given low priority by Mr Stone and I do not expect a formal request for some time. There is no doubt that the UK could supply the expertise if necessary.

#### University of the South Pacific

16. Hall noted in his paragraph 16 certificate and diploma courses might be required, but the diploma course is the only one currently run by USP, the certificate training needs being met by in-service training arranged by Mr Bay. There is also some need for graduate level training in fisheries, and as a first step it is hoped to introduce a BSc Zoology with fisheries options.

#### Grass Carp

17. The project noted by Hall in his paragraph 4 came to a halt, with no breeding experiments being carried out but stocks of grass carp being maintained in ponds at Lami. Since then a facility has been constructed at Handroloulou and an Indian expert Mr D S Murty from the Indian Technical and Economic Corporation programme has been in post for some "two months. The ponds at Nadroloulou are being extensively modified to suit Mr Murty's requirements and Mr. David Ferworn Peace Corps volunteer is in charge of this programme. Mr Samsoni one of the Fijian Fisheries officers is counterpart to the project.

18. Once the ponds, which have to be fed by pump from the River Rawa are ready, Mr Murty hopes to carry out induced breeding and expects that the 15 acres of ponds of which probably six acres will be put into production should produce some 50-60,000 eight inch fish a year.

19. The original programme was to produce grass carp for stocking the River Rawa and other rivers to cut down weed growth which was impeding navigation and drainage. It now appears (that an equally important need is to increase fish production for food. Mr Murty also hopes that he will be able to undertake

some general work on pond production of fish for sale and would like to experiment with the complete range of Indian and Chinese carps. I felt that the whole project was suffering from a lack of planning and preparation, and that it was most unlikely that Mr Murty would achieve even limited results in his twelve-month assignment. Certainly subsequent expert attachments will be necessary if the programme is to have any hope of success. There appeared to be no consideration of economic factors nor of the scale of operations which will be necessary to have any real effect on the situation in the Rawa.

20. Mr Stone agreed that the project was not particularly satisfactory, and was one that he had inherited. He would not have initiated such a project now. There appears to be no need nor justification for any UK involvement in this particular project, however it would be interesting to keep track of the results, particularly in view of the current COPR weed" control project under way in Egypt where grass carp are to be used.

#### Ravi Ravi Fish Farm

21. Since the comment by Dr. Hall in paragraph 7 of his report more ponds have been built at Ravi Ravi on an area reclaimed from mangrove swamp and a total of some 20 acres is now under pond culture. Mr Mate the Senior Fisheries Assistant is in charge of operations under the overall control of Mr Charles Evening Technical Officer in charge of fisheries (western division). Until recently the Ravi Ravi work was being carried out by FAO staff (Mr. D Popper) but due to the UNDP financial crisis FAO involvement has now ceased. Mr Mate is continuing a programme of growth and fertilisation trials set up by Mr Popper.

22. The extra ponds built since Dr Hall's visit are all of good design and construction, and can be filled and emptied without pumping as they are at the inter-tidal level. Programmes under way include Chanos chanos (milkfish culture) and Siganus (rabbit fish) culture. There are also Tilapia mossambica in some of the ponds, while Tilapia nilotica and Tilapia aurea have been brought in from Israel for hybrid culture work. Three species of paeneid prawns have been brought in from the Philippines" and stocked in one of the ponds. Little supplementary feeding appears to take place, only mosquito larvae collected and fed to the brood stock of Tilapia. Fertilisation is solely of drained ponds by strewing chicken manure on the dry beds. I was unable to see a report by Mr Popper on the previous work at Ravi Ravi but it seems that the greatest success has been achieved with milk fish where production of some 800 pounds from 3.5 acres of ponds in three months was achieved with natural productivity and chicken manure fertilisation.

23. I understand the purpose of the Ravi Ravi experimental farm is to devise techniques for commercial production of pond fish for food in Fiji. At the moment the most successful line is milkfish culture with inter-tidal ponds where "wild fry can be induced to enter at high tide, where some circulation of sea water can be arranged to enhance natural productivity, and where supplemental feeding and fertilisation with low cost locally-produced products is possible. Ravi Ravi is now well equipped to carry out this work. It should be noted that (as Dr Hall comments in his paragraph 9 in bis report), further clearance of large areas of mangrove swamp is quite possibly an extremely dangerous thing to do. I recommended to Mr Mate that he should consider a more intensive programme with milkfish, and try and work out various feeding trials using coconut pressed cake, ground nut waste, brewers waste etc., etc He should also attempt to manipulate the ponds to get the maximum circulation of sea water at the spring tides.

/Siganus

### Signaus

24. As in other parts of the world Siganus is a locally esteemed food fish its market value promises reasonable prospects for culture techniques, however, at the moment at Ravi Ravi the best use does not seem to be made of ganus ability to browse on epiphytic algae etc and I suggested that trials made with simple cage culture techniques in the larger ponds where Siganus would be held in simple enclosures of polythene netting, fed separately from their fish in the ponds and where almost undoubtedly fouling would occur on the getting which would provide further food for the rabbit fish.

### Tilapia

25. It seemed to me extremely unlikely that very much effective work could be carried out on Tilapia at Raviravi. Freshwater is only obtainable from Lautoka by tanker, and is very expensive. It would seem totally pointless to and duplicate the previous Tilapia hybridisation work in such an unfavorable situation. Tilapia work would much more easily be done at Nandroloulou where only a proportion of existing shallow freshwater ponds are to be used for grass carp work.

### Prawn Culture

26. The present stocks of prawns at Raviravi are derived from juveniles brought in from the Philippines. There has as yet been no attempt to collect wild juveniles from populations in the mangrove swamps near Raviravi, unless such wild caught juveniles can be obtained there seems little prospect of viable prawn culture, at the moment, and the present growth feeding trials are rather premature.

27. If a programme of milkfish culture is to be continued at Raviravi, and there is not to be further expert assistance to this project, it would be worthwhile giving Mr. Mate more experience. This could most easily be gained in Tarawa with the UHDP/FAO bait fish programme and if it is possible to arrange for a one or two-months study tour I would advise that consideration be given to use of ODM funds for travel and subsistence under the new arrangements for third country training.

28. I agreed to provide Mr. Mate with various relevant publications and reprints, and consider that the support of the very small library at Raviravi might be appropriate under the book scheme.

### Artisanal Fishery Development

29. The programme noted by Dr. Hall in his paragraph 10 of his report continues with the fishery department playing an active role in servicing ice plants and collecting fish from outstations for marketing in the main centers. New Zealand aid is to provide barges equipped with ice and storage capacity in various centers which can be moved from place to place as required. The actual collection and marketing operation of fish is now in theory in the hands of the National Marketing Authority, a parastatal body which at the moment relies on fisheries department staff. The new barges will extend the range of the present operation. There is clearly a large and still unsatisfied demand for fresh or iced fish in most of Fiji. Fish are graded and three different price levels set for three grades of fish, the maximum price being in the neighborhood of 50 cents per pound retail for whole, heads on, gutted fish. There is a steady demand at this price.



30. Catching is still largely in the hands of local fishermen, aided by an extensive loans scheme. Much fishing is from fairly small open outboard powered boats, but there are increasing numbers of larger launch or lugger-type vessels some in Ferro cement. It is thought that rather less than half of the catch is marketed through the formal channels and sold in municipal markets.

31. Marketing of fish caught either by local fishermen and sold through the cold storage ice municipal market chain is in theory in the hands of the National Marketing Authority, (NMA) although fisheries department staff still carries out all the work. The IKA Corporation is government's para-statal body for fishing operations. The catch of the IKA Corporation is similarly sold through the NMA. As with the NMA, IKA relies entirely on fishery department staff and there are problems with terms of service, hours of work, salaries, etc, etc. Both NMA and IKA are to become fully autonomous and independent agencies.

32. There is a shortfall of fish even in the western division, and very little movement of fish from western division to the Suva area where there is even greater demand. There is need for considerable expansion of production but there does not seem to be any real knowledge of the resource on which to base expansion programmes. Statistics being collected are only total quantity of fish landed, and values, at selected points.

33. Despite the lack of basic knowledge of the resource (see below) the fisheries department consider that it is sufficient to sustain expansion of -this programme and the increase in the small-scale artisanal fishery.

34 An excellent loan fund operates for Fijian fishermen and the main constraint appears to be in the supply of effective fishing vessels. The Perro-concrete boats designed by Fyson (FAO) seem to be well suited to requirements and have great cost advantages over imported fishing boats or boats built locally of timber. The department is continuing to train boat builders and construct small numbers of Perro-concrete craft, but in the long run a considerable boat building capacity will be required in Fiji to meet the demand.

35. While I was in Fiji the High Commission received a letter from the White Fish Authority which I gather had been sent to all British posts abroad, virtually touting for custom. The fishery department was interested in WFA's capability for fishery consultancy work, particularly in design studies for fishing craft. Mr. Stone wished for possible WFA involvement in design work of tuna boats, and I assumed that this would be an appropriate subject for aid financing. I agreed to have discussions with WFA on return to the UK and put them in touch with Mr. Stone direct.

#### Fish Processing

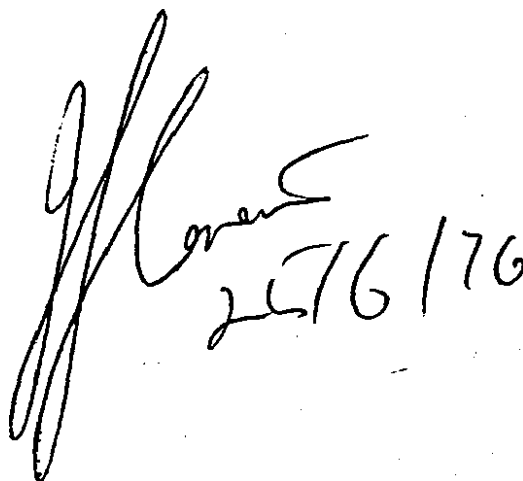
36. The bulk of locally caught fish is sold fresh or on ice, but Mr. Stone is personally carrying out some small-scale experiments on various types of smoking, salting, etc. He is very anxious to attend the Tropical Products Institute Fish Processing and Handling Conference in London in July and it may be possible for him to attend the ODM Natural Resources Officers Meeting which immediately precedes it. While I was in Fiji negotiations were under way between the ministry and the High Commission to arrange if possible for Mr. Stone to attend the meetings. This would be a most useful development. Mr. Stone also hopes to experiment with the Torrey kiln for processing and this sensible idea could be pursued while he is in London.

Fishery Statistics

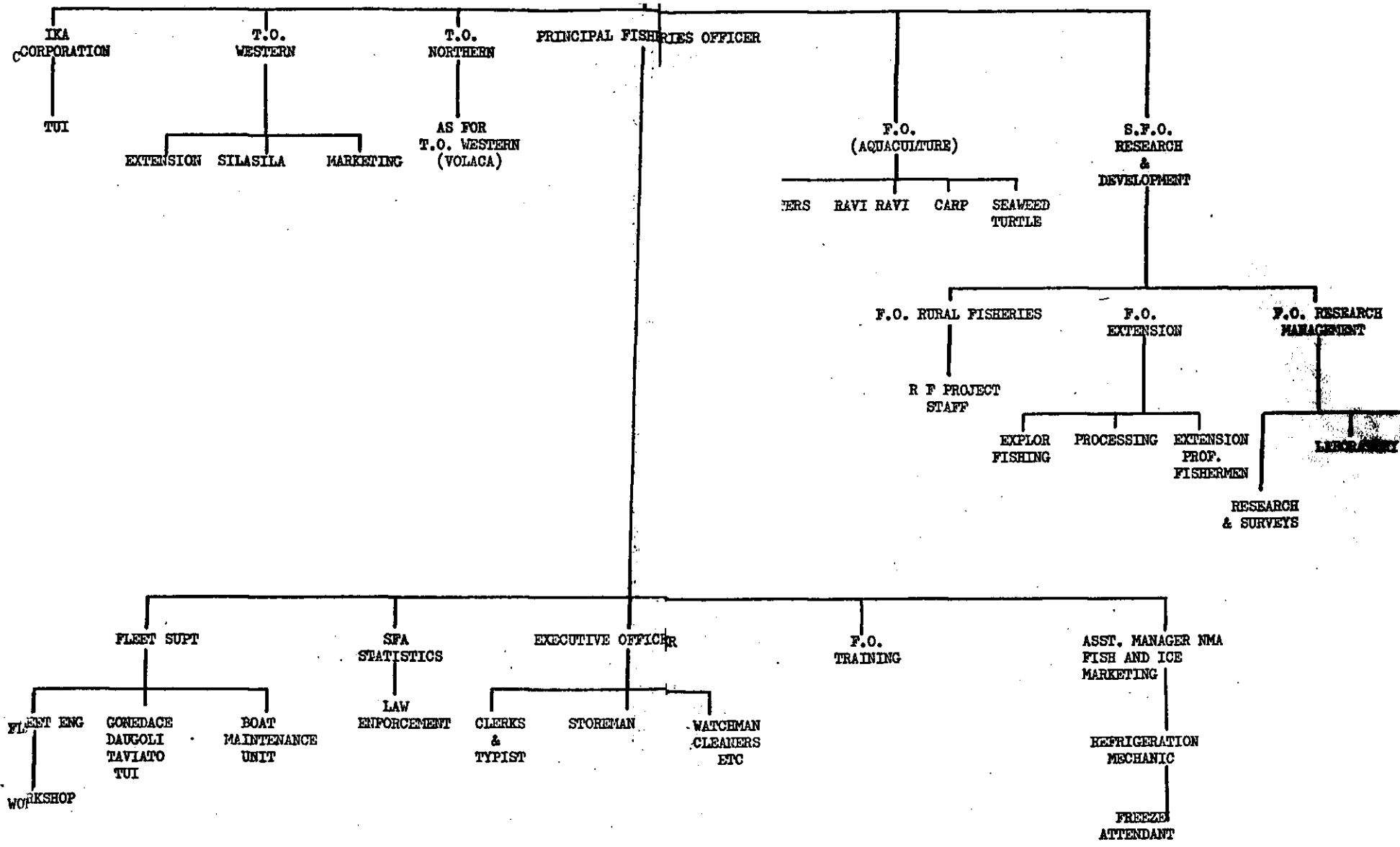
37. This point was stressed by Dr. Hall in his 1972 report paragraph 3 but little has been done since the, Mr Stone maintained the difficulty and complexities of obtaining catch statistics, let alone figures for effort, and I was unable to obtain even an estimate of total production in Fiji, It remains true that eventually all fishery development planning, fisheries conservation and management, and control measures, depend on an adequate knowledge of the situation, and this will be essential in Fiji in the not too distant future. Some start should be made now to collecting information and setting up a system of statistical collection and analysis. Use should be made of modern methods of accurate sampling and sub-sampling, aerial surveying, and the like. A consultancy visit by an expert in this field would be well worthwhile, and UK could provide a suitable man if requested.

UNDP/FAO - Local Tuna Survey

This survey noted by Dr Hall in his paragraph 14 has continued with increasingly useful results. Unfortunately this again is one of the projects affected by UNDP financial crisis and will have to close in the next few weeks.



A handwritten signature, possibly 'J. Stone', is written in black ink. To the right of the signature, the date '26/6/76' is written in a similar cursive style.



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TUI

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T.O. NORTHERN  
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PRINCIPAL FISHERIES OFFICER

F.O. (AQUACULTURE)  
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