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SOUTH PACIFIC ISLANDS FISHERIES DEVELOPMENT AGENCY

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Please note new postal address effective 24 November 1972.

The South Pacific Islands Fisheries Development Agency is now in its third year, its last under the Plan of Operations, and it is relevant to look beyond its date of termination. The Twelfth South Pacific Conference of the South Pacific Commission, held in Apia from 19 to 29 September, was asked to consider the problems likely to arise. It is comforting to note that, in spite of diverging views as to the work of the Agency, territories concerned were unanimous in wishing to see work already undertaken pursued and developed. They recommended to the South Pacific Commission that investigations be made to see what resources could be found to extend the life of the Agency (see page 3).

Meanwhile, work is continuing in the various demonstration centres sponsored by the Agency in New Caledonia, Palau and in Fiji and we hope to shortly welcome the three experts being recruited to support these projects. The French Administration of New Caledonia have appointed Mr François Fallourd, an experienced oceanographer and diver, to take charge of the general management of the St. Vincent Bay centre. The ferro-cement boat-building programme is nearing completion and we will be sorry at the end of this year to lose the services of the SPIFDA consultant, Mr John Fyson; our best wishes go with him and our thanks for all his hard work and help rendered in the area.

SPIFDA now once again has a Co-Manager in Mr Dick Baird whom we welcome to Noumea; Mr Baird is also South Pacific Commission Fisheries Officer and he looks forward to his dual role taking him to the territories of the Pacific.

Dr Liang, an expert on aquaculture, travelled to Tarawa during November on a two-year FAO Technical Assistance assignment to set up a programme of fish culture in the Gilbert and Ellice Islands.

There have been various technical conference relevant to the Agency's projects which have been attended by SPIFDA representatives and which are reported in this issue. It is clear from these meetings that there is a rapid advance in all fields connected with the development of marine resources and with it an increased awareness of the need for close collaboration between the various territorial services, agencies and advisory and research bodies. SPIFDA's and SPC's role as a clearing house and as the centre of an information network has therefore assumed increased importance.

This issue is brightened by the addition of a coloured reprint of photographs of the various species of spiny lobsters identified and photographed by Dr Ray George, the SPIFDA consultant on crayfish. Publication of these photographs was financed by SPIFDA in the Second Quarter 1972 edition of the South Pacific Bulletin.

We take this opportunity of extending our best wishes to our readers for 1973.

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Extract from the Report of the  
TWELFTH SOUTH PACIFIC CONFERENCE TO THE SOUTH PACIFIC COMMISSION

held in Apia, Western Samoa  
19 - 29 September 1972

AGENDA ITEM V - SOUTH PACIFIC ISLANDS FISHERIES DEVELOPMENT AGENCY

7. The Conference noted that SPIFDA has completed the feasibility study phase and, thanks to the substantial contributions of the territories concerned, has begun practical sub-projects aimed at increasing the productive capacity of marine resources. The Conference further noted that although the Project was suspended and then reviewed by a UNDP Mission, the recommendation of that Mission was that the Project should be supported adequately with funds and personnel. The Conference therefore recommended that the Mission's report be accepted by UNDP and that, if the means to continue the Project cannot be provided by UNDP, the Commission prepare for submission to the next Conference a report on the feasibility of continuing the Project with its own resources and with assistance from such other sources as may be found.

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Extract from the Proceedings of the  
THIRTY-FIFTH SESSION OF THE SOUTH PACIFIC COMMISSION

held at Apia, Western Samoa  
2 - 5 October 1972

RESOLUTIONS ADOPTED:

SOUTH PACIFIC ISLANDS FISHERIES DEVELOPMENT AGENCY  
(Conference Recommendation No. 7)

The Commission strongly supported the Conference Recommendation without taking a firm decision on the continuation of this project until the report of the feasibility study can be made available to the Thirteenth Conference and Thirty-Sixth Session.

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PALAU MARICULTURE DEMONSTRATION CENTRE

Construction work on a laboratory building was started in September; it is to comprise two air conditioned rooms and include four tanks from five to twenty ton capacity for experimental studies, one large tank to be specifically for raising shrimp. Some accommodation facilities are being provided.

The Centre is now producing its own Newsletter and will be pleased to disseminate copies to those interested. The following information is extracted from their first issue:

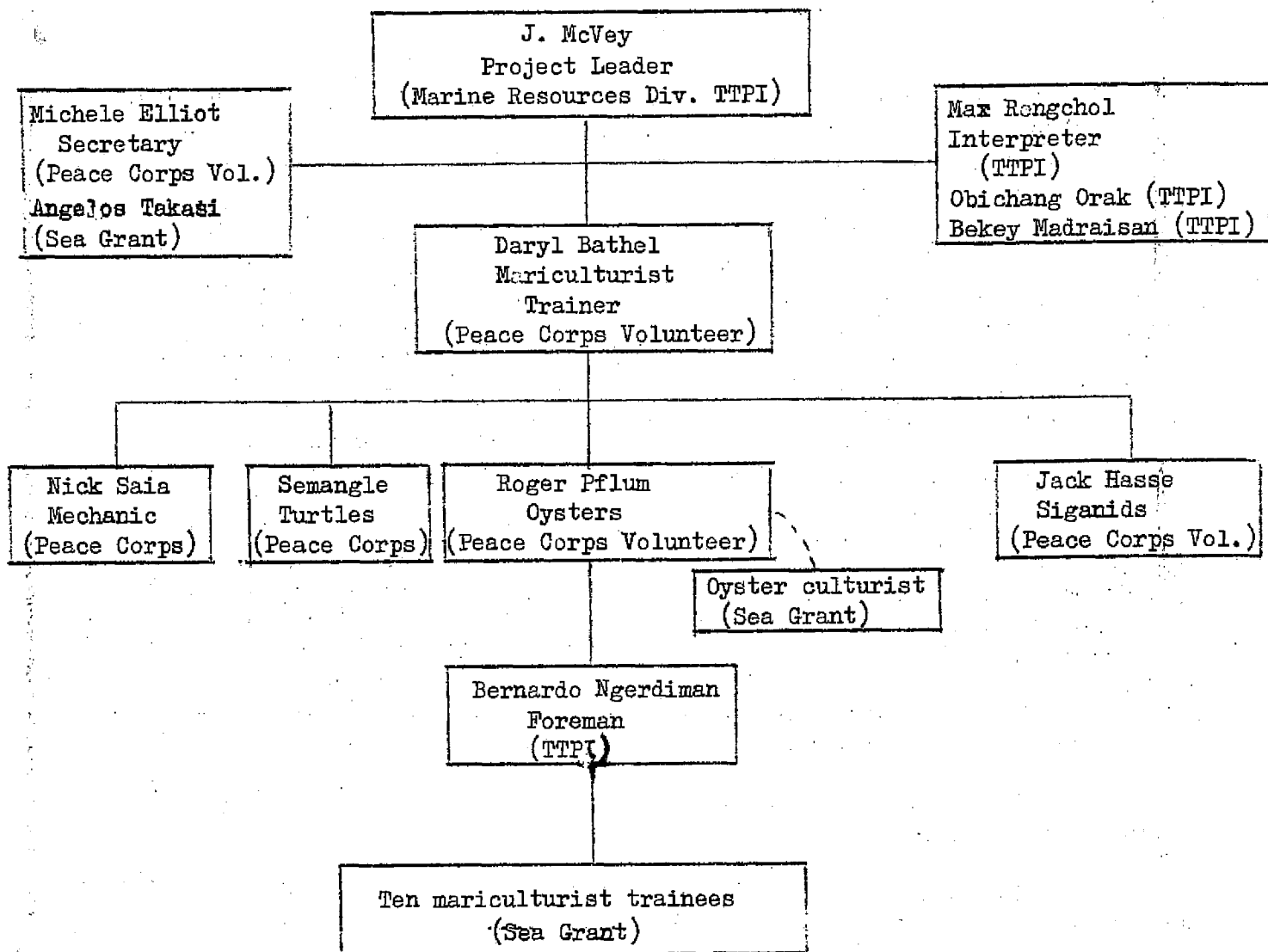
Research is being undertaken on the numerous local species of oyster - spatfall, raft and other methods of culture. On the advice of SPIFDA's Professor Doumenge 100,000 spat of Crassostrea gigas from California have been imported and are being acclimatised. Mortality has been higher than expected - about 27% - but the Centre is optimistic that C. gigas can be raised.

Research continues on culture of different species of fish including mullet and current work is aimed at raising "mayas" (Siganus canaliculatis).

The programme to replenish populations of Hawksbill turtles continues. The hatchlings are collected from breeding areas at the rock islands located in the southern parts of Koror and raised in ferro-cement tanks for a period of six to seven months before being released back to natural life at sea. About 3,000 turtles have been released during the past four years.

In September a training programme in mariculture techniques was started with an initial ten students. They receive classroom instruction in business mathematics and biology in the morning; in the afternoons they assist the Centre's biologists in the field work for which they are paid. The objective of the programme is to adequately prepare the Palauan students to start a fish farming business.

The following shows the personnel establishment at the Centre:



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## EXPERIMENTAL MARICULTURE STATION AND DEMONSTRATION CENTRE

Baie de Saint-Vincent, New Caledonia

by

Professor F. Doumenge

The constructional work was completed at the beginning of August 1972 and Mr Raoul Dérijard returned to France. The experimental basin was filled during August and September 1972 and the first section of the residential building/laboratory was completed by 15 October.

Mr François Fallourd arrived in Noumea on 2 December to join SPIFDA as New Caledonia counterpart staff and to take responsibility for the general management of the Centre. Mr Fallourd is 29 years old and a top technologist and applied biologist. He was with the research team of deep diving studies of the French Navy (1964-65) working at the Diving Physiology Laboratory as an officer of deep diving. After his military service he left the Navy to join a private company, COMEX, from 1966 to 1968 as chief of their deep sea diving team concerned with surveys and public work engineering in the Mediterranean and in western and equatorial Africa.

Mr Fallourd was in the crew of the experimental diving vessel Physalie IV. He was in October 1968 awarded the credit for the world's deepest dive of 255 metres. In February 1969 Mr Fallourd was recruited by the French Scientific and Technological Marine Fisheries Institute as senior technical oceanographer. His main work from 1969 to 1972 was in connection with artificial reefs, the transfer of crayfish from South Africa to the Gulf of Gascony and building artificial breeding centres for lobsters. During 1971 Mr Fallourd spent five months in Japan working on the marine farming of molluscs and crustaceans.

Mr Fallourd has an air pilots licence and is a parachutist. He speaks fluent English.

It is hoped that an FAO fish culturist will be joining the staff at the Baie de Saint-Vincent early in 1973.

Collaboration is established with the laboratory of CNEEXO, Tahiti, following a visit made to the Baie de Saint-Vincent on 12 October by Mr Yves La Prairie, Director General of CNEEXO, and of Mr de Chazeaux, Director of CNEEXO in Tahiti. Mr Alain Michel, Director of the marine biology laboratory of Tahiti also visited New Caledonia from 8 to 12 December and took with him on his return to Tahiti three female and three male adult Penaeus merguensis, as well as twenty-five juveniles, in order to carry out tests of controlled reproduction and artificial feeding in high density.

#### First Results.

Since being filled with water at the beginning of August 1972 the experimental basin has provided opportunities for observations on the growth of



several species. Water is pumped in order to compensate for evaporation and to ensure additional oxygen. Periodic emptying allows extraction of the bottom water by a system of sluices. To ensure a good water flow sluices are opened while pumping. As the area of the Baie de Saint-Vincent has suffered exceptional drought the water pumped has only partially succeeded in avoiding increased salinity. Sea water pumped in has had an average of 36<sup>o</sup>/oo salinity; the water in the basin reached an average of 37<sup>o</sup>/oo in September, 38<sup>o</sup>/oo in October and 39<sup>o</sup>/oo in November. In December it was between 39.5<sup>o</sup>/oo and 40<sup>o</sup>/oo.

This does not seem to have adversely affected either the planktonic life or the growth of animals. An exceptionally rich plankton has, we believe, contributed to good growth rate in many cases. Several predators entered through the filter during pumping either in larval or in egg form and quickly established themselves in the basin where they found favourable conditions. Among the fish was noted particularly young sea bream (Acanthopagrus berda (Forsskal)) which now measure between 55 and 65 mm and weigh from 9 to 10 g. Another group of 30 to 35 mm is still developing and appear to be younger than the first introduction by four to six weeks. Rearing experiments in 'cages' of this species will be undertaken.

Among the crustaceans which entered are many crabs of Thalamita and several young mangrove crabs, Scylla serrata. Many species of penaeides shrimp and metapenaeides also entered the basin with the pumped water. Four months after introducing water into the pond there are not enough predators to endanger the cultivated species.

The pond is at present stocked by an estimated mullet population of 2,000 Mugil cephalus and 3,000 Mugil scheli and also 40 rabbitfish, all of which have been introduced. Observations and experiments of fish - mullet (Mugil cephalus and Mugil scheli) and rabbitfish (Siganus spp.) will be undertaken as from the beginning of 1973 following the arrival of the FAO/UN fish culturist.

Some interesting observations have already been made on penaeides shrimps, banana prawn (Penaeus merguensis) which follow and a programme has been planned for other species of penaeides shrimps. Observations on growth of a species of lobster, Panulirus ornatus, will be made, a dozen juveniles of which were placed in the pond in late October/early November.

#### Initial results on growth of banana prawn (Penaeus merguensis).

About 500 juveniles were released in the experimental pond at the end of August/beginning of September 1972. They were then an average 5 cm long weighing 2.5 to 3 g., total weight approximately 1,375 g) but it was not possible to determine sex.

Growth was without additional feeding. Initially predators were few, or non-existent, for the pond had been initially dried and treated with Rotenone and pumping of the pond was through a coke filter.

In September/October the pond surface area was approximately 10,000 m<sup>2</sup> and the volume of water 14,000 m<sup>3</sup>. It was increased progressively during November to approximately 13,000 m<sup>2</sup> and a volume of 20,000 m<sup>3</sup>. Salinity progressed from 37 to 40‰ during the period (3½ months). Oxygen supply was maintained by daily pumping.

In addition to Penaeus merguensis, other penaeides and metapenaeides entered the pond in larval or juvenile form through the pump and filter.

Use of a cast net allowed observations to be taken during the various stages of growth; visual observations gave some estimation of development.

In December large samples were taken in order to measure growth. A fine mesh type net 'guangui', as used by the fishermen of the Mediterranean lagoons, was used. The net, consisting of two 'wings' and a funnel, was placed against the dyke, the mouth open towards the flow of sea water and the base of the funnel near the drainage sluice.

Sampling was undertaken on the nights of the 10th and 11th December. Catches were 196 Penaeus merguensis (114 males and 82 females) and 177 Penaeus merguensis (95 males and 82 females). In each catch were also a dozen other penaeides and metapenaeides prawns.

The table which follows shows the homogeneity of the population which was almost at reproduction stage. The greater weight of the females expresses the more or less advanced state of sexual maturity. In the catch of 11 December one female and one male were in a reproductive stage.

These first results are most encouraging in showing possibilities of obtaining individual of commercial size in four to five months, although no figures for mortality are available at present.

Tests with increased density and feeding will be undertaken at the beginning of 1973.

Lengths of Banana prawn (Penaeus merguensis)  
caught in the experimental pond by 'guangui'.

Average length August/September = 5 cm

No. of individuals per 10 mm group

Length in cm from tip of rostrum to tip of telson	11 December 1972		12 December 1972		Total	
	male	female	male	female	male	female
8	1	-	-	-	1	-
9	20	-	17	-	37	-
10	32	-	47	-	79	-
11	61	-	31	-	92	-
12	-	-	-	1	-	1
13	-	3	-	3	-	6
14	-	25	-	16	-	41
15	-	37	-	29	-	66
16	-	16	-	32	-	48
17	-	1	-	1	-	2
<b>Total:</b>	114	82	95	82	209	164

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Average weight August/September = 2.75 g.

## Weight in grams

Weight in grams	11 December 1972		12 December 1972		T o t a l			
	male	female	male	female	male		female	
					no.	weight	no.	weight
8	4	-	4	-	8	64	-	-
9	11	-	6	-	17	153	-	-
10	7	-	23	-	30	300	-	-
11	15	-	38	-	53	583	-	-
12	39	-	24	-	63	756	-	-
13	37	-	-	-	37	481	-	-
14	1	-	-	-	1	14	-	-
15	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-
19	-	1	-	1	-	-	2	38
20	-	3	-	4	-	-	7	140
21	-	4	-	3	-	-	7	147
22	-	9	-	3	-	-	12	164
23	-	6	-	-	-	-	6	138
24	-	3	-	5	-	-	8	192
25	-	5	-	3	-	-	8	200
26	-	2	-	3	-	-	5	130
27	-	7	-	2	-	-	9	243
28	-	1	-	6	-	-	7	194
29	-	13	-	4	-	-	17	497
30	-	9	-	6	-	-	15	450
31	-	1	-	7	-	-	8	248
32	-	5	-	5	-	-	10	320
33	-	8	-	10	-	-	18	594
34	-	1	-	4	-	-	5	170
35	-	2	-	3	-	-	5	175
36	-	-	-	3	-	-	3	108
37	-	2	-	4	-	-	6	222
38	-	-	-	1	-	-	1	38
39	-	-	-	1	-	-	1	39
40	-	-	-	2	-	-	2	80
41	-	-	-	-	-	-	-	-
42	-	-	-	1	-	-	1	42
Total	114	82	95	81	209	2351	163	4469

CYCLONE BEBE

Worst hit of the Pacific islands during the October cyclone were the Gilbert and Ellice Islands, more particularly Funafuti and Fiji, where Lautoka suffered most.

GEIC: At Funafuti damage to boats and shipping was devastating and the entire Van Camp fishing fleet was lost; six people died and only two homes were left intact. The following are extracts from a letter from Mr Sam Rawlins - the descriptions of the physical changes and subsequent biological phenomena will be of interest to all.

"It was certainly a stiff breeze but interesting aspects included the intense cold brought about by the admixture of horizontal rain and spray, possibly travelling at over 130 knots! I cannot remember feeling so chilled before, not even in the ice-bound areas of the north Atlantic.

"The destruction could be felt as the island was swept by seas, ripped by winds and rent apart in places. The southern end was totally inundated, first by a tidal wave or waves and then by hurricane-lashed seas from across the lagoon.

Boulders, from less than the size of a hen's egg to mammoths weighing over two tons, were churned out of the ocean to form a 'beach' or atoll-island, commencing at the south-east passage and thence stretching northwards to a point just beyond the northern end of the air strip. This 'new' land, varying from 25 yards to over 100 yards wide and about 15 feet high, is separated at high tide from the east side of Funafuti by a 'new' lagoon of 25 to 150 yards wide, six or seven feet deep! This new structure lies unbroken from the passage, joining three former islets to Funafuti - a distance of about 6 nautical miles. South of the passage the 'storm-beach' occurs in patches but a further unbroken stretch a couple of miles long lies along the extreme southerly aspect of the atoll. The total weight is roughly estimated as between 3 and 4 million tons.

"On the day subsequent to the storm I found crayfish, moray eels and various reef fish dead on the airstrip and close to my house; by contrast, I found tilapia swimming haphazardly along the fringing reef! Large Caranx (trevally) are uncommon here but they became abundant following the storm and, to judge by limited fishing trips (I lost my boat), the tuna and other pelagics are abundant.

"Additionally, there are abundant 'Maiava' (rabbitfish) and, by the use of three salvaged Van Camp skiffs and Japanese monofilament drive-nets, we have caught up to 1,000 lbs in a morning's fishing.

"I am intending to get as many hurricane and post-hurricane biological notes into shape as possible so as to give SPIFDA a record of interest."

And a report from Tom Lichatowich of the Fisheries Service in FIJI:

"Hurricane Bebe caused irreparable damage to one Fisheries Division vessel and the ice-making plant machinery in the Western Division but inflicted only moderate damage to the small unit fisheries schemes and aquaculture facilities.

The twenty-nine foot vessel "Davui" was crushed when another vessel broke away from its mooring during the storm and pinned the wooden-hulled "Davui" against a barge. The "Davui" was stationed in Lautoka and aided the small unit fisheries scheme of Viwa island in the Yasawa group.

The fisheries ice-making plant on the Lautoka wharf had machinery ruined by salt water; new machinery will be required to make the plant operational again.

Details of damage to all outer island fishing schemes is not yet available but it is reported that the ice silo at Viwa had the roofing iron ripped off and Kia Island's ferro-concrete cutter was holed when its anchors failed.

Although the oyster rafts near Division Headquarters in Lami were tossed about by the storm winds, no major loss or damage is evident. The fact that Bebe's main force was centred in the Nadi - Lautoka area and that the rafts were securely anchored in a protected bay explains the moderate damage to the oyster rafts. Within a few weeks all of the damage to the oyster facilities were righted and experiments are back to normal.

The Lami freshwater fish ponds used in the grass carp breeding programme were not damaged. The new system of sluice gates installed early this year easily controlled the pond water levels during the storm. With reference to the aquaculture demonstration centre on the western side, a close inspection of the brackish water ponds near Raviravi was not possible but reports from that area indicate only slight damage to the sluice gates. These ponds were very near completion when the hurricane struck and as it will be weeks before the Public Works Department in the Western Division can resume work, a disheartening delay in completion is expected.

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## NEWS FROM THE BRITISH SOLOMON ISLANDS.....

who report that a Fisheries Officer, Mr J. Gregory, has now been appointed. A UNA Volunteer, Mr S. McElroy, a marine biologist, will act as his assistant but will also be doing a research project on local river and mangrove swamp prawns with a view to possible cultivation possibilities in the future.

And we are asked to give publicity to a Proclamation dated 12 October 1972 declaring the fishery limits of the country as being the seas surrounding the Protectorate to a distance of twelve miles from the baselines from which the breadth of the Territorial Seas are measured.

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## SECOND INTERNATIONAL OCEAN DEVELOPMENT CONFERENCE AND EXHIBITION

Tokyo, Japan

4 - 9 October 1972

Report by Professor François Doumenge

SPIFDA was represented at this meeting by Professor François Doumenge, Project Manager; Mr Peter Wilson, Chairman of the 1972 meeting of the Consultative Committee, also attended and both followed the work of the Conference and also took the opportunity of visiting the related Exhibition devoted to development of ocean resources.

The Conference attracted several hundred participants from scientific, and industrial sectors interested in research and development of marine resources. The main subjects concerned -

Marine environment  
 Techniques of research and exploration of the ocean - in particular underwater vehicles  
 Civil marine engineering  
 Exploitation of marine resources

The papers presented were printed in two large volumes, each comprising more than 1,000 pages, and a third publication presented special papers devoted to particular aspects of current interest (marine pollution, shallow marine environment, aquaculture in Japan and in equatorial and tropical Pacific, underwater research and environment protection).

The following were delivered personally by the authors and were published in full:

Basic studies on method of farming oysters,  
Grassostrea gigas thunberg, with special reference  
 to spat collection Yoshimitsu Ogasawara

Recent advances in scallop culture in Mutsu Bay  
 Bunryu Tsubata, Susumu Itoh and  
 Hiroki Kanno

The study of management and distribution of  
 the scallop aquaculture in Japan in relation to  
 the method of ground use Yutaka Hirasawa



- Biological studies concerning the mass production of young abalone Tadashi Shibui
- Experimental studies on the cultivation of discoloured 'Nori' (Porphyra) Yusho Aruga and Kozo Iwamoto
- Studies on food consumption of fishes Naonori Ishiwata
- Water management in the closed culture system Isamu Morishita and Hiroaki Matsui
- The foraging project: Resource utilization by people at lower socio-economic level Edgar Werner, James Harris and Joseph Y. Peary
- Genetic polymorphism in enzymes and its research application in fisheries biology Ken-ichi Numachi
- A review and applications discussion of artificial reefs as an integral part of an ocean resource utilization programme Edgar Werner and Francisco B. Guell

The following were also delivered personally but only summaries appeared in print:

- Studies on the experimental hybridization of Haliotis Toshio Oba, Tadatsugu Toyama and Shinichi Kaneko
- Studies on the experimental hybridization of freshwater shrimps, Macrobrachium nipponense and M. formosense Yutaka Uno and Masao Fujita
- Undaria culture in Japan Kazuo Akiyama
- A biological study on the deep scattering layer in the Indian Ocean Tatsuyoshi Masuda
- The population control and the utilization of the fishery resources - with an example of the utilization of the Antarctic Minke whale Seiji Ohsumi and Masaharu Nishiwaki
- Fish development and problem on the high sea Kieizo Nasu
- International fisheries regulation Fukuzo Nagasaki

Authors of the following papers were not actually present at the Conference to deliver them personally but they were published in full:

New technical aspect on the cultivation of prawn

Penaeus japonicus

Kunihiko Shigeno

Reproduction, larval development and cultivation of

suppc, Penaeus monodon fabricus

Domiciano K. Villaluz

Studies on the seasonal variations of plankton

organisms and suspended particulate matter in the

coastal area of Ko-ri

Sang Choe

Unitized load shipping as a means of raising the fishing

fleet productivity

V.I. Terpugov

Copies of papers may be obtained from -

The Secretariat

International Ocean Development Conference

c/o Japan Management Association

25 Shiba-Park, Minato-Ku

TOKYO 105

Japan.

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SEMINAR ON DESIGN AND CONSTRUCTION OF  
FERRO-CEMENT FISHING VESSELS

Wellington, New Zealand

9 - 13 October 1972

Report by Mr J. Fyson

The first four days of the Seminar consisted of the technical meeting in Wellington with the fifth day devoted to a study tour of ferro-cement boat building in Auckland.

The papers presented at the meeting were divided into four main sections:

- I Material properties
- II Scantlings and regulations
- III Construction methods and costs
- IV Service experience

Nine papers were presented in Section I, two in Section II, eleven in Section III and three in Section IV.

Considerable discussion of points raised in the various papers was contributed from the floor and this was recorded and will form a part of the final report of the meeting which will be published, after editing, in Rome.

It is interesting to note that the general consensus of participants to the discussion tended to confirm the conclusions made in the FAO paper with regard to plastering techniques and construction methods; these methods are those being used on the 35 foot boat being built in Fiji.

The New Zealand Government arranged a tour after the meeting of a number of fishing ports in the North Island for the three FAO members of the Seminar. Visits were made to shipyards, fishing boats and processing plants in Auckland, Wangarei, Tauranga and Gisborne.

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FAO INDO-PACIFIC FISHERIES COUNCIL  
15th Session

Wellington, New Zealand

18 - 27 October 1972

Report by Mr R.H. Baird

The IPFC is a FAO sponsored body concerned with international co-operation and exchange of information in fisheries matters among the maritime states in its region and makes recommendations to member governments.

Member governments represented by delegates were, in alphabetical order: Australia, France, India, Indonesia, Japan, Khmer, Korea, Malaysia, New Zealand, Philippines, Sri Lanka, Thailand, United Kingdom and the United States of America.

Observers from the following governments attended: Bangladesh, Fiji and the U.S.S.R. There were observers from twenty-five organisations.

More than one hundred and forty people attended the Session.

There were more than thirty-five working papers, forty-six symposium papers and fifteen reference papers contributed to the proceedings of the Session.

In his speech of welcome the New Zealand Minister of Agriculture and Fisheries, the Hon. D.J. Carter, remarked that New Zealand enjoyed a high standard of living and, in some spheres such as social legislation and in some aspects of agricultural research and practice, was among the leaders of the world. However, he thought that in commercial fisheries New Zealand might be considered to be a developing country. He expressed great interest in possible developments in mariculture and saw that it could make major contributions to both the economics and food production of New Zealand. He concluded by observing that New Zealand had a dual role at the conference - that of host and pupil. There is no doubt that in the first role New Zealand achieved an outstanding success. With regard to the second role the Minister perhaps indulged in excessive modesty.

Mr F.E. Popper, Assistant Director-General (Fisheries), FAO, Rome, in his address said that he was pleased to remark upon the change in the work of the Council from a mere forum for the exchange of views and information to an action-orientated body. He noted with approval the setting up of the Committee for the management of Indo Pacific tuna and of the IPFC/IOFC\* working party on stock assessment of tuna. He also referred to the co-operative programme of

\* Indian Ocean Fisheries Council

research on coastal aquaculture approved by the last Session and hoped that it would contribute towards the removal of constraints to further development.

Mr Brian Cunningham, Director of New Zealand Fisheries and Chairman of the IPFC, noted the success of the recent seminar on the design and construction of ferro-cement fishing vessels and the value of the guideline definitions for ferro-cement construction. He also stressed the very high value of the co-operative work of the member nations.

It can be seen that, with nearly one hundred papers presented for study, a wide range of ground was covered. The papers fell, however, into three broad categories:

1. Management and stock assessment of pelagic resources, which included standardized and satisfactory collection of statistics.
2. Coastal aquaculture, which included effects of pollution and discussion of the best economic use of coastal and reclaimed land.
3. Trawl fisheries in the South China seas.

In the Report of the First Meeting of the IPFC Working Party on Coastal Aquaculture and Environment, the following points are of particular note:

1. At the 14th Session the Council had recommended that member governments should take necessary steps to ensure that appropriate provision be made for aquaculture development in national planning.
2. A co-operative research programme should be instituted immediately and a six-monthly newsletter be issued.
3. Japan had offered to host a training centre on coastal aquaculture but, unfortunately, it had not yet been possible to find a source of funding for organizational expenses and participation of candidates from developing countries. Approaches were being made to Colombo Plan donor countries.

Because of the large number of papers available at this conference the titles are not being published in this issue of the Newsletter but a copy of the list may be obtained from the Publications Officer, South Pacific Commission, P.O. Box D5, Noumea, New Caledonia. It is regretted that actual copies of the papers will not be available but could possibly be obtained from FAO, Rome.

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COURSE IN THE MAINTENANCE AND REPAIR  
OF SMALL FISHING BOATS, TONGA

21 August - 1 September 1972

This course was given by Mr John Fyson (SPIEDA consultant) and Mr N. Nirmalalingam (ILO instructor on diesel engines) at Nuku'alofa, Kingdom of Tonga.

The course was conducted at the farm and workshops of the Department of Agriculture at Tokomololo. Hand tools were available but no machine tools. Twenty-six participants from the three island groups of the Kingdom attended. Mr Semisi Fakahau from the Department of Agriculture was seconded for the duration of the course for translation services. Assistance was also given by Mr Taniela Koloa and Mr Tevita Fusimalohi, both fisheries instructors from the Department of Agriculture.

The interest of the participants of the course was directed particularly toward the construction and repair of small wooden clinker and carvel built boats of 18 to 25 feet as these were the types of boats mainly operated by the participants and of a type evolved from the original whaling boats used in the Kingdom.

All persons attending the course elected to take both the engine maintenance section and the boat and repair section; it had been originally expected that half the participants would take the engine course and the other half the boat repair course. This decision on the part of the participants effectively reduced the teaching time on each section to half and so the course had to be substantially trimmed. However, it was considered that, in spite of this reduction in the effective time of the course, the participants felt that they had gained a very valuable addition to their knowledge.

The care and maintenance of diesel engines could not be taught in depth in the time available but it is hoped that the basic principles of diesel operation were appreciated. Both instructors emphasized that any future courses should be of at least two weeks duration in each section (boats and engines) to allow sufficient time for, in the case of boats, the complete construction of one small boat and, in the case of engines, complete dismantling and re-assembly of a small diesel engine.

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"SHADOWS BEFORE"  
- a diary of forthcoming meetings

<u>1973</u>		<u>Language</u>
January 22 - 26	SPC: Regional Conference of Heads of Agriculture, Fisheries and Forestry Departments Noumea, New Caledonia	E/F
June 19 - 22	SPC: SPIFDA Fourth Consultative Committee Meeting Noumea, New Caledonia	E/F

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