

Report of the Seventh Meeting of the Advisory Committee

New Delhi, India
17-21 January 1983



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the Seventh Meeting
of the
Advisory Committee

January 17-21, 1983

New Delhi, India

Executing Agency:
Food and Agriculture Organisation
of the United Nations

Funding Agency:
Swedish International
Development Authority

Development of Small-Scale Fisheries in the Bay of Bengal
Madras, India, March 1983

PREFACE

This document is the report of the seventh meeting of the Advisory Committee of the Project for Small-Scale Fisheries Development of the Bay of Bengal Programme (BOBP). The meeting was hosted by the Government of India and was held in New Delhi, India, January 17-21, 1983.

The report records the deliberations and conclusions of the meeting and was approved by the Committee.

The report includes a summary of progress made by the project in 1982, the fourth year of operation. It also presents a summary of the "Impact Review" of the project conducted in November 1982. The report therefore serves as a source of reference to officials of fisheries agencies of the countries concerned. It may also interest other institutions and individuals engaged in small-scale fisheries development, particularly in the Bay of Bengal region.

"Development of Small-Scale Fisheries in the Bay of Bengal," GCP/RAS/040/SWE, is funded by the Swedish International Development Authority (SIDA) and executed by the Food and Agriculture Organisation of the United Nations (FAO). Five countries are members — Bangladesh, India, Malaysia, Sri Lanka and Thailand. Its aims are to develop, demonstrate and promote appropriate technologies and methodologies to improve the conditions of small-scale fisherfolk and to increase the supply of fish from the small sector in the member countries.

The Advisory Committee is composed of representatives of the five member-countries plus representatives of FAO and SIDA. The committee meets once a year. Earlier meetings were held in Colombo (1976), Madras (1977), Chittagong (1978), Phuket (1979), Penang (1980) and Colombo (1981).

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REPORT OF THE SEVENTH MEETING OF THE ADVISORY COMMITTEE

1 7-21 January 1983, New Delhi, India

1. The meeting was convened at the Lodhi Hotel, New Delhi. A list of the participants is annexed as Appendix 1.
2. Mr. Anura Weeraratne, Secretary, Ministry of Fisheries, Sri Lanka, as the Chairman of the Sixth Advisory Committee, called the meeting to order.
3. Mr. S. P. Mukerji, Secretary, Department of Agriculture and Cooperation, Government of India, welcomed the delegates to India and New Delhi. India was proud to host the Bay of Bengal Programme. He noted with satisfaction the report of the recent Impact Review Mission on the Programme's work and looked forward to continued collaboration by the member countries in the development of small-scale fisheries in the region.
4. Mr. Lars Augustinsson, Deputy Chief, Agriculture Division, SIDA, Stockholm, Sweden, expressed his satisfaction with the achievements of the Programme during the past year. The report of the Impact Review carried out in 1982 had recommended continued funding of the Programme in the future and, based on this report and the interest shown by the participating governments, Sweden was interested in extending future support. From the Swedish point of view, the target group continued to be the small-scale fisherfolk: fish utilisation and people's participation in project implementation were areas of interest. The Programme was presently too dependent financially on one donor and it was hoped that further support from other donors and the member governments themselves would be forthcoming in the future. He regretted the cancellation of the session of the Bay of Bengal Committee which was scheduled to have been held in conjunction with this session of the Advisory Committee, in view of the many problems that needed discussion at the former.
5. Mr. N. Kojima, Director of Operations, Department of Fisheries, FAO, Rome, thanked the Government of India for hosting the meeting. The success of the Bay of Bengal Programme which was the first FAO regional small-scale fisheries project had led to the starting up of several similar projects in other areas. The major thrust of FAO's fisheries programme is now geared to the development of small-scale fisheries on a worldwide basis. He expressed his pleasure at the confirmation of SIDA's intention to extend its support beyond 1983. The small-scale fisheries development needs of the region could not however be met by one funding agency. The meeting should therefore explore additional sources of funding, including other donors and the resources of the participating countries, besides identifying priority areas for the Programme's activities. He emphasized the catalytic and coordinating role of the Programme and noted the need to appreciate the long-term nature of the development process of small-scale fisheries.
6. Inaugurating the session, Mr. R. V. Swaminathan, Union Minister of State for Agriculture and Rural Development, India, noted the great importance of the small-scale sector in the marine fisheries of India and of the other member countries of the Programme. The thrust of the Programme to improve the economic status of the region's small-scale fisherfolk was in accord with the very high priority placed by India on the welfare of the fisherfolk. He referred with appreciation to the work of the Programme in development of improved beachlanding craft suitable for the east coast of India and to the success of the high-opening bottom trawls introduced in the Palk Bay and Gulf of Mannar. He hoped that the tempo built up by the Programme during the last four years would be sustained and strengthened in the future to bring about a lasting impact on the small-scale fisheries of the region. He concluded by wishing the participants a comfortable stay in India and success in their deliberations at the session.

7. A vote of thanks was proposed by Dr. K. C. S. Acharya, Additional Secretary, Department of Agriculture and Cooperation, India.

8. Following the proposal of Sri Lanka, seconded by Bangladesh and Thailand, the Committee unanimously elected Mr. S. P. Jakhanwal, Joint Secretary (FY &T), Department of Agriculture and Cooperation, India, as Chairman of the meeting.

9. The Chairman thanked Mr. Anura Weeraratne, the outgoing Chairman, for his conduct of the initial proceedings and the Committee for the confidence placed in him by electing him Chairman.

10. A drafting committee with one representative from each participating country was appointed to facilitate the preparation of the report of the meeting.

11. The agenda was approved as proposed and is annexed as Appendix 2.

Progress Report

12. The Programme Director presented the Progress Report which, as in the case of the report for the 6th meeting, set out the highlights of activities carried out in the intersessional period as well as the proposed scope of work during 1983 under subject matter areas.

13. There had been no significant deviations from the work programme agreed on at the 6th and earlier meetings. Nearly all the funds allocated from 1982 had been spent. No new activities were contemplated for 1983 until the level of future funding was ascertained. The Progress Report is annexed as Appendix 3.

14. The discussions on each subject matter area were preceded by a short introduction by the Programme Director and an audio-visual illustrating an activity in each of the areas of fishing gear and methods, fishing craft technology, coastal aquaculture and extension methodology.

15. FAO expressed the hope that the meeting would concentrate in its discussions of the items on requirements for future project inputs and follow-up action given, or planned, to available results.

Fishing Gear and Methods

16. Bangladesh gave high priority to further work in improvement of fishing gear and in particular to increased extension effort with regard to results so far achieved in demonstrating large-mesh driftnets and set bagnets. Additional project inputs such as a pilot project to develop the country's net-making industry were requested.

17. Sri Lanka gave high priority to continuing work on introduction of diversified fishing methods aimed at demersal species. Although results in longline and trap fishing were not too positive up to now, these methods should be tried and demonstrated in other areas of the island's coastal waters. High-opening bottom trawls should be introduced to the country and training given to fishermen in their use. In view of available expertise in the region, this latter activity would not require very extensive inputs by the project. Interest was also expressed in experimenting with lift nets, both the Indian and Indonesian type, and it was hoped that this could be the subject of TCDC activities. Project inputs were particularly important in the field of training of extension personnel to enable the progressive introduction of new and improved fishing methods.

18. India required continued project assistance in introducing high-opening trawls in the northern part of the east coast and wished the introduction of trap fishing and fish aggregation devices (FAD) along the east coast, and in the Andaman Islands to be considered. Considerable follow-up had already been given to the high-opening trawl demonstration in the south, and through CIFNET this method was being extended to Gujarat on the west coast, while direct BOBP assistance had started in Orissa.

19. India expressed its readiness to participate actively in TCDC activities with Sri Lanka in the areas indicated by that country.

20. Malaysia and Thailand, while not expressing priority interest in this subject matter area, nevertheless would welcome project assistance particularly in their endeavours to progress from quantity to quality in their inshore fisheries. Malaysia in particular was interested in reducing the existing large number of diverse gears as a contribution to their efforts in improved resources management.

21. The Programme Director informed the Committee of an inevitable slowing down of activities in the sector due to lack of expert staff. He felt that continuation of ongoing activities could be assured through increased Government support in the form of TCDC assistance, while strengthening of direct project assistance would depend largely on the availability of funds after 1983.

22. Sri Lanka expressed the hope that project work in fishing gear and methods would continue as a high priority.

23. The Committee agreed that the monitoring of the resources including the effects of the introduction of new efficient fishing gears was of utmost importance and noted that the regional UNDP project to be implemented shortly in the Bay of Bengal region would be able to assist countries in this respect.

Fishing Craft Technology

24. In summarising project activities in this sector and plans for future activities, the Programme Director indicated that the project's main thrust in beachlanding craft development had resulted in the availability of feasible and suitable prototypes and ancillary technology (engine installations, energy conservation measures, beachlanding systems). Future activities would have to concentrate on close monitoring of operational performance of these craft over an extended period of time, their refinement, introduction of craft to other areas, assistance in implementation of larger-scale construction programmes at the national level, perfection of locally manufactured hardware and equipment, extension training in craft construction, operation and maintenance. Continuation of work in the field of motorization of country craft, particularly in Bangladesh and India, was envisaged, as was assistance in implementing improvements to existing craft mainly in Sri Lanka.

25. Bangladesh informed the Committee of the very encouraging results of the motorization of Chandi boats which had proved economically feasible and resulted in significant increases to fishermen's incomes. Follow-up was ensured through the expected implementation of a motorization programme with UNCDF assistance.

26. Sri Lanka reported good results with the SRL-11 type craft. Project recommendations concerning measures to improve the performance of existing craft and reduce their operational costs were being actively followed up through extension work and information media. More assistance was required from the project in this area as well as in the evaluation of new craft introduced under external funding schemes. To accelerate the introduction of sail as a propulsion auxiliary a 75% subsidy scheme had been introduced.

27. India indicated its continued interest in these activities in view of the crucial importance of suitable and economically feasible beachlanding boats along the east coast. Pilot-scale operations of such craft in different locations need to continue under close observation for an extended period of time. In Tamil Nadu the Government was already implementing a follow-up craft introduction scheme through a Government-financed project aiming at constructing 30 BOBP-developed beach craft. Several thousand such craft would ultimately be required, and the project's assistance in formulating appropriate schemes for external financing would be highly appreciated. It was noted that such schemes were already under active consideration in Andhra Pradesh. Supporting infrastructure and extension personnel would be available to match project inputs. Considering the social structure of its beach fishing communities, India felt management problems may arise after introduction of these new craft. Studies and long-term extension efforts would be required to overcome such problems due to a changing pattern in ownership and much higher demands on maintenance skills.

28. Bangladesh and India emphasised the need to concentrate on using locally available materials and equipment in all aspects of craft development, and it was noted that the project had made successful efforts in this direction.

29. FAO informed the Committee of its considerable involvement in the development of suitable sailing rigs and their introduction to small-scale fisheries in other areas of the world. Good progress had been made in West and East Africa as well as in the South Pacific region. It was felt that the time had come to pool the available expertise in this field and FAO suggested the holding of an Expert Consultation on Sail Power in Small-Scale Fisheries during 1983. Considerable FAO Regular Programme input into such a consultation was programmed (headquarters staff, consultants, documentation) and it was suggested that the BOBP would be an ideal venue for the consultation.

30. The committee appreciated this suggestion and the Programme Director indicated the project's readiness to assist in this venture, particularly since the availability of FAO Regular Programme resources would limit the cost to the project.

31. The Programme Director emphasised that continued project activities in the field of fishing craft technology were of utmost importance, not least in view of the acute shortage in the region of qualified and experienced small craft designers. Although the project could not itself remedy this situation, it was ready to engage in a dialogue with participating Governments and available technical training institutions on ways and means to ensure self-sufficiency in the longer term in this very important subject matter field.

Coastal Aquaculture

32. Thailand reported that the experience gained in technological innovation and community development in their aquaculture demonstration project was being used by the Fisheries Department in other projects. The success achieved by the aquaculture demonstration project, particularly in the development of cage culture, has led the Government to allocate US \$ 700,000 in 1983 for the promotion of cage and cockle culture in five provinces in southern Thailand. Continued assistance from the Programme for demonstration of aquaculture techniques and for handling the problems that may arise in the future in regard to the marketing of cage-cultured fish was requested.

33. Malaysia referred to the successes achieved in solving the problems of acid sulphate soil in the Ban Merbok Project and the use that will be made of the pond-culture work in the training centre to be built, in the vicinity, with a substantial allocation of funds by the government to train fish culturists. Further assistance was requested from the Programme for assessment of the economics of brackishwater pond culture. It would be also desirable in the future to carry out studies on the relationship between the mangrove and the fishery resources dependent on them to determine the optimal utilisation of the mangrove belt for pond culture.

34. In Bangladesh the Satkhira aquaculture project is being started up. Future inputs from the Programme would be required for demonstration projects in other areas such as Patuakhali. The fish farmers who are located in remote areas, need to develop a marketing mechanism for their product and this was also an area in which future involvement of the Programme was needed.

35. India described the successful results achieved in the initial trials on the pen culture of shrimp at Killai in Tamil Nadu. The trials had also pinpointed the importance of seed and feed for this form of culture. The need for Programme involvement in the future in the Tamil Nadu State Government project for establishment of a shrimp hatchery with Central Government assistance and in the subject of feed development was indicated.

36. Sri Lanka stated that its marine fishery resources were fast reaching the point of full exploitation and hence there was an urgent need to develop coastal aquaculture. A pen-cum-cage culture project should therefore be started by the Programme as early as possible in 1983 for which the main input required was expertise and some element of funding for equipment. All other support would be provided by Sri Lanka.

37. Referring to the requests by Thailand and Bangladesh for Programme involvement in marketing, FAO was of the view that the Programme with its limited resources would not be able to make an impact on the complex problem of internal marketing. In regard to the request for a coastal aquaculture project by Sri Lanka, FAO suggested that such a project might be handled on the basis of the concept of TCDC by cooperation between Sri Lanka, India and Thailand.

38. SIDA referred to the fact that from the genesis of the project in 1974, the Swedish view had been that the project should not only lead to increased fish production but should also promote economic and social equality e.g. by increasing employment.

39. Responding to an enquiry regarding the relevance of coastal aquaculture to the latter Thailand, Malaysia and India identified the target groups in their countries as small-scale fishermen who had been economically disadvantaged and displaced as a result of the development of marine fisheries in Thailand and Malaysia and as mainly persons belonging to the weaker sections of the population in India.

40. FAO pointed out that in all its small-scale fisheries projects efforts were being made as a matter of principle to involve the project target groups from the planning stage and member countries were endeavouring to select the most depressed areas for project location.

Development Support

41. The committee noted the proposal in the Progress Report to incorporate this subject matter area in the future under Extension.

Extension

42. Representatives of the countries in which projects related to extension methodology were being implemented described their experiences which had generally been positive. While it was noted however that some projects tended to go beyond extension methodology into the area of welfare activities the consensus was that the isolation of many coastal fishing communities made it necessary that extension officers should at least play a coordinating role in regard to matters related to welfare. Assistance in the preparation of training modules and extension material, the training of resource persons and trainers and the mobilization of the extension activities of non-government organisations were recognised by participants as activities suitable for the Programme's involvement.

43. FAO pointed out the need to develop structures within the member countries which would be capable of functioning as continuing sources of new ideas for extension to the beach level fisherfolk, which would in due course take over the function now being performed by the Programme.

44. India and Bangladesh felt that project assistance should be valuable in the preparation of comprehensive small-scale fisheries development schemes and follow-up projects related to project results at national/state level and intended for external or other funding.

Information Service

45. The Committee was of the view that the four audio-visuals shown at the meeting were of excellent quality and the Chairman requested the Programme Director to convey the Committee's appreciation to the persons responsible for their preparation.

46. India requested the Programme's assistance to train and equip officers of the state departments of fisheries in the field of audio-visuals. Sri Lanka suggested that audio-visuals might be used in the future for detailed technical presentations e.g. of specific aquaculture techniques. Malaysia requested that the photographic recording of the work now going on at the Ban Merbok complex be considered.

47. In response to the Programme Director's proposal to use articles in the Bay of Bengal News as substitutes for the working papers issued by the Programme, as a cheaper and faster method of disseminating project information, SIDA and FAO agreed that this was acceptable. FAO however suggested that this should be supplemented by the maintenance of detailed documentation at Programme headquarters which could also be made available to interested persons on request.

48. The Committee noted that the target group for the material issued through the information service consisted of planners, administrators and officials down to the extension worker level. The consensus was that further dissemination of the information down to the beach-level fisherfolk, either through the medium of extension workers or through vernacular publications, was the responsibility of the participating countries. The use of Programme information material by the Sri Lanka monthly fisheries newsletter Fisherman and in Thailand by the Fisheries News and Fisheries Gazette was noted by the Committee. The suggestion was further made that pertinent project publications could be reprinted at the national level.

Project Inputs

49. The Committee noted the detailed information given in regard to project inputs in Tables 2-5 of the Progress Report.

Impact Review

50. The members of the Committee expressed their satisfaction with project activities and noted the results achieved with appreciation. The Committee unanimously endorsed the report and recommendations of the Impact Review Mission. A summary of the mission's report is annexed in Appendix 4.

51. In making the endorsement Sri Lanka wished to further discuss the modus operandi for continuation of support; and India requested that the reintroduction of the subject matter area of fish utilisation be considered. India also stated that the closure of the Royapuram boatyard was only for the construction of old-fashioned wooden boats and that the boatyard is still available for Programme activities.

52. In response to enquiries from SIDA regarding the effect of the report on the work programme for 1983 the Programme Director stated that the activities proposed to be continued in 1983 had been already indicated in the Progress Report. A decision on the disagreements expressed by some countries earlier in the meeting regarding the phasing out of some activities could not be made without information on funding beyond 1983. In response to a further enquiry about the effect of the devaluation of the Swedish Kroner in October 1982 on the 1983 work programme, he stated that planned activities would not be affected.

BOBP beyond 1983

53. The continuation of the Programme beyond 1983 was discussed in detail by the Committee on the basis of a draft request prepared by the Secretariat.

54. Outlining the considerations for continuation of support to the Programme beyond 1983 SIDA stated that it was necessary to have a clear definition of the subject matter areas that would form the content of the Programme; to ascertain the priorities of the member countries in regard to the areas; to determine the organisational set-up needed for implementation; to ascertain the availability of expertise – international or national -and the possibilities of collaboration between the member countries; to determine the best location of the Programme which would facilitate implementation ; and to consider the need for support from other donors. The areas of interest from SIDA's own point of view were development of the rural sector based on the concept of close involvement and participation of the people; extension; training; development support to strengthen the links between the Programme and national development programmes; and the area of fish utilisation. SIDA was however predominantly interested in ascertaining the member countries' own priorities regarding the subject matter areas in which support was required through the Programme.

55. The priorities indicated by the participants were as follows:

- Coastal aquaculture -all countries
- Fishing Craft Technology – Bangladesh and India
- Fishing Gear and Methods – Bangladesh, India and Sri Lanka
- Extension (including Development Support) – Bangladesh and India
- Fish Utilisation – Bangladesh, India, Malaysia and Thailand
- Marine Resources Management – Malaysia.

56. On behalf of ODA, Dr. John Disney informed the Committee that he was authorised to make an offer of United Kingdom funding for the subject matter area of Fish Utilisation concerned with handling, processing and marketing of fish. The funding would amount to \$ 350,000 for a two-year period commencing in April 1984. For procedural reasons, the activities would take the form of a parallel project which would however in practice be integrated with the work of the Bay of Bengal Programme. The concept of the project would be the same as that of the Programme, i.e. to act as a catalyst for the development and extension of technology.

57. In response to Dr. Disney's request for the reactions of the Committee to the ODA offer, Thailand expressed interest in the development and extension of technology in regard to the improvement of fish handling at sea and on shore, prior to processing ; India expressed interest in the rationalisation of the marketing system and in the processing of fish for internal and export markets. Bangladesh and Malaysia expressed interest in new technology for the post-harvest treatment of marine fish. Sri Lanka stated that since sufficient post-harvest expertise and technology was already available in the country, it would rather wish to assist in implementing the project by making available the facilities and expertise of its Institute of Fish Technology.

58. A lively discussion ensued in regard to the framework and modalities for implementing the Programme.

59. At the request of Sri Lanka, the Programme Director provided the Committee with the breakdown of an indicative estimate of yearly expenditure in 1984 on Monitoring/Management/Administration, Information Service and Coastal Aquaculture. (See Annexure). The discussion centred on the cost of Monitoring/Management/Administration and Information Service in relation to the expenditure on the subject matter areas.

60. Sri Lanka computed the administration cost as amounting to about 28% of the total project cost including the FAO service charge of 13% and indicated that the administrative cost was substantial. Sri Lanka was aware that this figure was not negotiable in the present forum. If procedures did not permit a reduction of this charge the option of implementing the project without using FAO as an implementing agency, or payment for FAO services on an ad hoc basis should be considered.

61. In further clarification of its point of view, Sri Lanka stated that all activities on the international plane – whether regional or global – should be viewed in the light of the prevailing political trends. The political framework within which his country, along with developing countries, were working at present, reflected the political maturity that countries such as his had attained in recent years. These countries had also produced first and second generations of experts and administrators who if necessary had sufficient competence to handle projects of the type under consideration.

It was incompatible with the sovereign status and national dignity of his country to have to continue to participate in a project framework which was not in keeping with relevant international trends which alone would lead these countries to self-reliance at an early date. Sri Lanka had strongly supported the SIDA-funded programme and participated in the activities from its very inception. However, Sri Lanka's continued support and participation were dependent on a satisfactory framework within which such activities could be carried on. Satisfactory resolution of the issues of curtailment of costs which Sri Lanka had raised, the need for appropriate budgetary control by participating states and resolution of issues relating to the framework of the project especially in relation to the BOBC would condition Sri Lanka's participation in the

activities of the small-scale fisheries project beyond the current phase. Therefore Sri Lanka reserved its position with regard to all matters connected therewith.

There were three basic issues on which Sri Lanka's participation depended:

First: As Sri Lanka had pointed out, approximately 28% of the funds allocated by its donor were taken up by the 13% service charge and the local administrative costs of the programme. It was important to make the delivery of the project more efficient and to liberate more funds for project activities. This was particularly important in view of growing demands on limited funds which were subject to severe cut-backs. It was unconscionable for Sri Lanka to endorse a continuance beyond 1983 without a serious attempt to reduce these overheads and ensure cost effectiveness. There were several options which could be considered, such as retention of FAO services on a consultancy basis and trimming of local overheads and administrative costs.

Second: It was important for the participating states to have some measure of budgetary control. If the present terms of reference of the Advisory Committee were restrictive they should be reviewed at this point before embarking on another phase of the project. It was however only reasonable that a system of budgetary control by states would be subject to final budget approval by the funding agency if so desired. The existing arrangement if restrictive was incompatible with the sovereign status of the countries which were quite capable of acting in a responsible manner.

Third: The entire structure of the project framework required review, as also the Advisory Committee's position *vis-a-vis* the BOBC, and the issue of membership.

As a matter of principle, Sri Lanka could not be a party to arrangements which neither provided the right climate nor reflected the relationship that ought to exist between international agencies and sovereign states.

Sri Lanka requested the Committee to give adequate consideration to these items and make appropriate adjustments as necessary in order to facilitate Sri Lanka's continued participation.

62. Thailand felt that this meeting should focus on the priorities *inter se* and advise BOBP on what the priority items were for continued implementation. It further felt that in a continuing Project there was hardly any scope for change of modalities and existing arrangements. Any alterations of service charges, etc. should be left for discussion between the donor and the FAO. Restructuring the organisational pattern was also not relevant.

India suggested that the importance was for continuance of the Project and particularly for the items requested as priorities by the member countries. Other arguments, however important, should not come in the way of the continuation of the Project. When resources were restricted and there was no question of a large-scale expansion or introduction of new items it was felt better to continue along existing lines, procedures and arrangements.

Bangladesh, while expressing a hope that FAO service charges could be reduced, agreed with Sri Lanka that the forum could not resolve this issue.

63. The Programme Director pointed out that the issue of 28% administrative costs mentioned by Sri Lanka was common costs and not only administrative costs. They include the Information Service which is an essential component of the project but services all the subject matter areas. They further include the costs of the Programme Director and monitoring activities such as the meetings of the Advisory Committee and review missions. Therefore the actual local administrative costs are only in the order of 4% of the total budget estimate as was seen from the details in the Annexure. The Programme Director further stated that it would of course be possible to trim the expenditures somewhat, and that this should be carefully looked into during preparation of a final budget proposal.

64. FAO took note, with regret, of the position taken by Sri Lanka. It reiterated its view that the Advisory Committee was not the right forum to discuss most of the issues outlined by Sri Lanka. Some of them would not be acceptable to FAO, some might be discussed between the donor agency and FAO while others might be more appropriately discussed by the Bay of Bengal

Committee. With regard to the local administrative costs FAO suggested that these costs be covered by cash contributions in local currency to the project by the country in which this expenditure is incurred. FAO therefore reserved its position until the full implication for the project's future of the Sri Lanka position could be discussed by the appropriate FAO authorities at Headquarters, and invited Sri Lanka to convey its specific views in more detail to FAO for consideration.

65. Bangladesh reacted to the suggestion of FAO regarding the cash contributions by countries by stating that Bangladesh was already making contributions in kind and that an additional contribution in cash was **not** possible.

66. The Committee was unanimous in its view that BOBP type of support at a high level to small-scale fisheries development as discussed earlier in the meeting is a long-term need to which there is presently no end in sight. However, in view of the likelihood of reduced funding support from SI DA from 1984 relative to the current level in 1983 the only option at present for a continuation would be to restructure the work and concentrate on activities of high impact potential. Under these circumstances, a three-year period appeared to **be** a desirable time frame for continuation of the project. During this period the BOBC and its member countries, with support from FAO, should intensify its efforts to enlist support also from agencies other than SIDA to enable the delivery of desirable assistance.

67. Some delegates pointed out that there was a little confusion in the documentation as to the use of the terms "project" and "programme". The Committee agreed that the Bay of Bengal Programme (BOBP) should refer to a comprehensive fisheries **support programme under the umbrella** of the BOBC. In this programme the SIDA-funded small-scale fisheries component would constitute one project. Others would **be** the UNDP/FAO project for Resources Management and new projects that may emerge. This concept was already adopted by the Committee in its 6th meeting and it is now suggested that it **be** adhered to in the future.

68. The representative of NORAD informed the Committee that NORAD had benefited from the information material issued by the Project. He also informed the Committee about his agency's positive attitude towards **the project**. The possibility of any contribution on a multi-bilateral basis would have **to be** ascertained from Norway through established channels.

Other Matters

69. The Committee was informed of the holding of informal discussions between the Chairman, member countries of BOBC present and FAO on 20 January 1983. During these discussions the possibility of convening the 2nd session of BOBC during 1983 was considered and it was felt that such a session should if possible be held around mid-year 1983 in India. It was further suggested that a special session of the Advisory Committee might be held at the same time, if required, to discuss any matters arising from the BOBC session and which might affect the project.

Next Meeting

70. The Committee accepted with appreciation the invitation extended by the representative of Bangladesh to hold the eighth meeting in Bangladesh, on dates to be later decided, during the period December 1983 to January 1984.

Adoption of Report

71. The above report was adopted by the Committee.

Concluding Remarks

72. At the concluding session, following the adoption of the report of the meeting, the delegates of Bangladesh, Malaysia, Sri Lanka and Thailand expressed appreciation of the hosting of the meeting, the arrangements made and the hospitality extended **by** the Government of India.

On behalf of FAO, Mr. P. Gurtner expressed gratitude to SIDA which so far constituted the only funding base for the project, and to the Government of India for the excellent hosting arrangements for the meeting.

On behalf of SIDA, Mr. L. Augustinson thanked the Government of India for hosting the meeting and expressed appreciation of the contributions to the discussions made by the delegates and of the work done by the project secretariat during the meeting.

On behalf of India, Dr. B. T. Antony Raja thanked the other member countries, FAO and SIDA for the sentiments expressed.

The chairman in adjourning the meeting, thanked the delegates for their cooperation and wished them a safe return to their countries.

Annexure

Indicative Yearly Costs of Monitoring, Management, Administration and of the Information Service for 1984

				In \$
<i>Monitoring/ Management/Administration</i>				
10	Personnel			
	Programme Director	..	..	85,000
	Consultants (Review)	..	..	15,000
	Admin. support	..	..	35,000
20	Travel (PD, AC, Nat. Liaison)	..	..	30,000
40	Gen. Op. Exp.	..	..	10,000
50	Material supplies	..	..	5,000
60	Equipment	..	..	10,000
				<u>190,000</u>
			+13%	25,000
				<u>215,000</u>
<i>Information Service</i>				
10	Personnel			
	Information Officer	..	..	62,000
	Admin. support	..	..	15,000
20	Travel	..	..	10,000
30	Contracts (printing)	..	..	20,000
40	Gen. Op. Exp.	..	..	10,000
50	Material supplies	..	..	5,000
60	Equipment	..	..	5,000
80	Training	..	..	5,000
				<u>132,000</u>
			+13%	17,000
				<u>149,000</u>

Coastal Aquaculture

10	Personnel				
	Aquaculturist	..	..	..	80,000
	Consultants	..	..	..	72,000
	Admin. support	..	..	..	5,000
20	Travel	..	..	..	10,000
30	Contracts	..	..	..	40,000
40	Gen. Op. Exp.	..	..	..	10,000
50	Material supplies	..	..	..	30,000
60	Equipment	..	..	..	10,000
80	Training	..	..	..	20,000
					<hr/>
					277,000
		Mon./Man./Inf.	..		65,000
					<hr/>
					342,000
			+13%	..	44,000
					<hr/>
					386,000
					<hr/>

Appendix 1

BAY OF BENGAL PROGRAMME

AC7/3 (Rev. 2)

Development of Small-Scale Fisheries

(GCP/RAS/040/SWE)

7th Advisory Committee Meeting, 17-21 January 1983, New Delhi, India

LIST OF PARTICIPANTS

Bangladesh

Mr. A. B. Chaudhury	Joint Secretary Fisheries and Livestock Division
Mr. A. H. A. Jalil	Fish Culturist Directorate of Fisheries

India

Mr. S. P. Jakhanwal	Joint Secretary (FY & T) Ministry of Agriculture, New Delhi
Mr. S. Som	Secretary Fisheries, Forest & Animal Husbandry Department Government of Orissa
Mr. S. Subramani	Secretary Forests & Fisheries Government of Tamil Nadu
Dr. B. T. Antony Raja	Deputy Commissioner (FY) Ministry of Agriculture, New Delhi

Malaysia

Mr. Cheah Eng Kean	Senior Fisheries Officer Fisheries Division
Ms. Badariah Mohd. Ali	Fisheries Officer (International) Fisheries Division

Sri Lanka

Mr. A. Weeraratne	Secretary Ministry of Fisheries
Dr. Hiran W. Jayawardene	Ambassador, Special Adviser, Law of the Sea, Ministry of Foreign Affairs Chairman National Aquatic Resource Agency (NARA)
Mr. C. R. B. Fernando	Director, Planning Et Programming Ministry of Fisheries

Thailand

Mr. Vanich Varikul	Deputy Director General Department of Fisheries
Mr. W. Kachornsak	Chief, Fisheries Economic Section Department of Fisheries

SIDA

Mr. Lars Augustinsson	Deputy Chief Agriculture Division
Mr. I. Sorensen	Head of Department Fisheries Board
Mr. K. Blom	Senior Programme Officer Agriculture Division

FAO

Mr. N. Kojima	Director of Operations Department of Fisheries, Rome
Mr. P. Gurtner	Chief, Fisheries Technology Service Department of Fisheries, Rome
Ms. M. Delmendo	Regional Aquaculture Officer RAPA. Bangkok

OBSER UERS**India**

Mr. V. Sankarasubbaiyan	Director of Fisheries Tamil Nadu
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Norad

Mr. Vidkun Isaksen	Resident Representative in India
Ms. Vigdis Varn	First Secretary Development Cooperation

ODA

Dr. J. G. Disney	Head, Animal Products Et Feeds Department Tropical Products Institute, London
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Secretariat (BOBP)

Mr. L. O. Engvall	Programme Director, Madras
Mr. V. L. C. Pietersz	Development Adviser, Madras
Mr. A. Kashem	Project Officer, Bangladesh
Ms. S. Scurville	Senior Secretary, Madras

Appendix 2

BAY OF BENGAL PROGRAMME

AC7/5

Development of Small-Scale Fisheries

(GCP/RAS/040/SWE)

7th Advisory Committee Meeting, 17–21 January 1983, New Delhi, India

ANNOTATED AGENDA

1. Opening of the Meeting (17/01 at 17.00)
2. Election of Chairman (18/01 a.m.)
3. Adoption of the Agenda (18/01 a.m.)
4. Progress Report (18/01 a.m.)

The Programme's progress report for 1982 is presented in document AC7/6. The report contains major features of the programme implementation and outlines the main foci of work during the coming year.

The highlights of 1982 work are :

Fishing Gear and Methods: Good progress in extension and impact of small boat trawling in India and large-mesh driftnets in Bangladesh. Trials of trap fishing and fish aggregating devices in Sri Lanka.

Fishing Craft Technology: Several beachlanding craft successfully tested and operated in India and Sri Lanka. Motorization of 'Chandi' boats in Bangladesh completed and impact generated.

Coastal Aquaculture: Continued good progress of aquaculture demonstration in Thailand ; initial culture trials in Tamil Nadu and Malaysia; and near-completion of farming complexes in Bangladesh and Andhra Pradesh, India.

Extension Services: Positive experience of training of fisherwomen extension workers in Tamil Nadu and extension officers in Orissa. Encouraging development of income generating activities for fisherwomen in Bangladesh and Sri Lanka.

Development Support: Preparation of investment projects for beachlanding craft in Andhra Pradesh and motorization of Chandi boats in Bangladesh.

Information Service: Preparation of audio-visuals on BOBP in general, extension training and high-opening bottom trawling.

Programme Delivery: The delivery in terms of expenditures is in the order of 90% of the planned target.

Because of the uncertainty about funding support beyond 1983 no new activities will be taken up during 1983. It may also be necessary to scale down or phase out some of the ongoing activities. The Committee's views on priorities among the various activities are therefore important.

5. Impact Review (19/01 a.m.)

The impact review agreed upon in the 6th meeting was undertaken in October/November. The report of the review mission is given in document AC7/7. Comments from the Committee are solicited.

6. BOBP beyond 1983 (19/01 a.m.)

The present programme is scheduled to be terminated by the end of 1983. The funds may not be completely exhausted by that time but the balance would be marginal. Fresh funds are therefore required from 1984 if the programme is to continue. A draft request for further support has therefore been prepared and is presented in document AC7/8.

The proposal is by and large based on the present set-up of BOBP, including funding level, with only smaller adjustments.

It is by no means certain that SIDA will meet this request in full. To maintain the level of operation it might therefore be necessary to enlist support from other agencies. Failing this the programme has to be curtailed since it wouldn't be meaningful to continue all the present subject matter areas at a significantly reduced budget. The question then arises -what to maintain and what to drop ?

The Committee must make firm and specific recommendations on these issues. How can further funds **be** enlisted from other agencies, from bilateral country programmes operated by SIDA and others, or from Government sources? What subjects or activities should be deleted from the programme if required ?

7. Other Matters (19/01 p.m.)

8. Next Meeting (19/01 p.m.)

9. Adoption of Report (21/01 a.m.)

Appendix 3

BAY OF BENGAL PROGRAMME

AC7/6

Development of Small-Scale Fisheries

(GCP/RAS/040/SWE)

7th Advisory Committee Meeting, 17-21 January 1983, New Delhi, India

PROGRESS REPORT - 1982

Introduction

1. This report summarizes and comments on the work carried out during the year. Details of activities can be found in the quarterly progress reports and BOBP publications.
2. There have been no significant deviations in the work programme from what the Committee recommended in its 6th and earlier meetings. Unlike in previous years nearly all the funds allocated for the year have been spent.
3. A notable feature of the progress in 1982 is the expansion of activities in the field of Coastal Aquaculture. Another is that the work of BOBP has started to generate impact, particularly in the areas of Fishing Gear and Methods and Fishing Craft Technology. Reference is made to the report of the impact Review (document AC7/7) for details.
4. Next year (1983) is the last year of operation under the present phase of the Programme. At the present rate of implementation the funds will be exhausted by the end of the year or early 1984. There is hope for further support from SIDA but, should this materialize, the funding level is likely to **be** reduced. Unless support from other agencies can **be** enlisted, which is usually a lengthy procedure, the Programme has to be curtailed. To prepare for such a development, efforts will be made even during 1983 to reduce the number of activities and expenditures as much as possible so as to generate savings to be used in 1984. This implies that no new activities will be taken up and that the work will be limited **to** areas and activities of the highest priority. Particulars are given below under each subject matter.

Fishing Gear and Methods

5. This subject covers all matters related to fishing gear (design and material), methods and fishing aids (fish finders, haulers and other equipment). The following activities have been in progress during the year.

BOB/FAD	—	Fish aggregating devices (review)
BOB/BCF	—	Beachcraft fishing
BOB/LNH	—	Line and net haulers
BGD/CIN	—	Cottage industry net-making
BGD/LMD	—	Large-mesh driftnets
BGD/SBN	—	Set bagnets
BGD/BSL	—	Bottom set longline
BGD/SMG	—	Small-mesh gillnets
IND/HBT	—	High-opening bottom trawling
SRL/DEF	—	Demersal fishing
SRL/FAD	—	Fish aggregating devices (trials).

Activities concerning *training courses* for counterparts and *kattumaram* fishing contemplated for implementation were not pursued primarily for staff capacity reasons. (The Fishing Technologist left the Programme in May 1982 and has not yet been replaced).

6. To explore the possibilities of increasing the productivity of fishermen operating from open beaches, trials have been performed under the heading *Beach Craft Fishing*. The idea was to employ active fishing methods, such as trawling, in small beachlanding craft. The special features of the craft, except for beachlanding capabilities, are high reduction gear (5 : 1), sails and light high-opening bottom trawls. Initial trials over a period of three months off Madras proved that the boats and gear are technically feasible for single and pair trawling -and of course for passive methods like driftnetting and longlining. Arrangements have been made for the boats to be commercially tested in southern Tamil Nadu and northwest Sri Lanka which are suitable areas for small boat trawling.

7. For the promotion of cottage *industry net-making* to provide employment and improve local supply of fishing nets, a pilot project of net braiding by manually operated machines has been started. Two machines, being manufactured in India, were acquired together with accessories (bobbin winder, stretching device) and set up in Chittagong in cooperation with the Kalidaha Fishing Project. The machines have been in operation for about six months. Operators (women) and maintenance staff have been trained and nearly full production capacity has been attained. Production was stopped in the last quarter on account of a setback -wrong chemical treatment of the nets which caused the knots to slip when used for fishing. The fault has been detected and rectified but most of the nets produced had to be reprocessed with chemicals.

A comparative study of net braiding by hand, manual machine, and mechanical machine for different twine and mesh sizes has been nearly completed. Preliminary results indicate that the manual machines would be highly competitive for nets of thin twine and small meshes.

On completion of the pilot project around mid-1983 attempts will be made to transfer the machines to a suitable operator for commercial production.

8. Trials and demonstration of *large-mesh driftnets* were continued in Bangladesh during the 1981/82 season ending February 1982. Seven fishing units had been issued with nets of thinner twine recommended by BOBP. The fishing results confirmed the findings from earlier years and furthered the acceptance among the fishermen of this type of net. Also during the current fishing season (1982/83), five fishing units have been issued with nets of 27 and 30 ply twine. The fishing performance is being monitored by the Directorate of Fisheries.

Early in the year a meeting was organised with importers and traders of twine together with fishermen for discussion of thickness of twine and other components of fishing nets. A poster giving factual information about the differences between the nets of thick and thin twine was prepared late in the year and distributed in the Chittagong area.

The fishing trials, which have been conducted since 1980, have created a demand for thinner twine and some importers and traders have responded and are now supplying this material. It is therefore felt that no further concentrated effort is required and that the present season would be the last one under this activity. Continued extension might be required which can be handled competently by the Marine Fisheries Directorate.

9. Trials of *set bagnet (behundi)* fishing in Bangladesh was started by BOBP in 1980. The first attempt was devoted to the change of material from nylon, presently used, to polyethylene which is cheaper. Several nets were manufactured and issued to fishermen. All the operators readily accepted the new material and paid for it at full cost. During the 1981/82 season a new type of net was designed by one of the fishermen after the study tour to Bombay. This net was operated together with traditional nets of nylon and polyethylene. A draft report of this activity was prepared but on a scrutiny of the data it was found that they were highly inaccurate. No quantitative conclusions therefore emerged from those trials. During the current season the trials have been taken up again and in addition to the nets mentioned above a *do/net which is a large behundi net* has been imported from Bombay. Difficulties in collecting data were again encountered during the initial trials. It is clear though from the first two months of operation that the dolnet is superior to the smaller traditional nets. It is hoped that reliable data will be obtained during the last two months of the season i.e. January/February. Alternative rigging and design of nets have been identified during the trials and it is planned to test some of these possibilities during the next season (1982/83).

In order to get a better understanding of the importance of the set bsgnet fishery a survey has been planned and is scheduled to be implemented during the current season.

10. Two other activities in Bangladesh, of less significance, were in progress during the year. Trials of *small-mesh gillnets* over one season were concluded. The results give indications about the catch efficiency of different mesh sizes of nylon nets and suggest that small-mesh nets of polyethylene might be as good as those made of nylon. A working paper (BOBP/WP/28), which details the trials, has been prepared. This activity will not be pursued for staff capacity reasons but further trials with polyethylene nets might be worthwhile.

The other activity is a survey of the *bottom set longline* fishery, mainly operated from Cox's Bazaar. Data were collected during 1981/82 season but large gaps were discovered and the survey will be completed during the current season. The end result will give valuable information about the fishery and may indicate possible avenues for its improvement,

11. The introduction of *high-opening bottom trawling* has generated significant impact in southern Tamil Nadu. A large number of boats (hundreds) have adopted the technique for commercial fishing. The new nets are of three types, i.e., one-boat high-opening bottom trawl, two-boat high-opening bottom trawl and one-boat high-opening fish-cum-shrimp trawl. They are being used during different times of the year depending on the availability of different species. New deck machinery for small trawlers introduced by BOBP has also been adopted (Ref. BOBP/WP/21). Seven newly constructed boats have installed the gantry crane and the tiltable two-drum winch.

The main activity during the year has been extension of earlier findings. The full-time counter-part officers have been stationed in the Tuticorin and the Mandapam areas together with a net-maker to help fishermen to fabricate the nets, rig and operate them. The construction of gantry and winches by private agencies is also being supervised.

Another significant activity during the year has been training of personnel at different levels from different states in India and Sri Lanka. Several master fishermen, net-makers and fishery officers have observed and taken part in gear manufacture or trawling operations for short or long periods. The training of an officer from CIFNET has led to cooperation with CIFNET in extending this technique to other states in India. The Programme has also assisted the CIFNET in making trawl nets for introduction in Gujarat. The result of the BOBP work has thus taken firm root and the extension work appears to have been of adequate strength and duration. The work in Tuticorin has therefore been terminated during the year and it will be phased out during the first quarter of 1983 in Mandapam and Rameswaram. The project has been very successful and high-opening bottom trawling is commonly referred to as a new fishery in Tamil Nadu.

12. The *demersal fishing project* in Sri Lanka has been ongoing since 1979. The results as reported earlier have not been very encouraging from a commercial point of view. The *longlining trials* conducted on the west coast (north and south) and on the east coast did not produce catch rates of commercial value except in Negombo where some promising results were obtained in the 1980/81 season. This fishery was closely monitored during the 1981/82 season and assistance was provided to the fishermen in acquiring suitable lines and hooks. About 25 boats operated longlines regularly. In most cases, the catches covered operational costs, in some others they were entirely feasible commercially. A working paper (BOBP/WP/29) is under issue. Trials were also initiated on the east coast, north of Trincomalee. One month of fishing produced the highest catch rates experienced so far. Unfortunately, because of operational problems-cooperation with fishermen and low prices of demersal fishing in that area — it was necessary to discontinue the trials.

In connection with the longline fishing a simple manual prototype *longline hauler* has been tried out. The hauler was installed on a 28-footer and after demonstration the fishermen have used it regularly. A second improved version is under construction and is expected to be installed shortly. No further direct inputs from the BOBP in this development is envisaged but the cooperating agency in Sri Lanka may continue the demonstration and further introduction of such haulers.

Demersal fishing by means of *traps* was undertaken during the year. Trials were conducted both on the west and east coasts for about four months. A variety of traps were tried out. Some of

them were of a type commercially available in the US; others were home-made but similar to traps proven successful elsewhere in the world ; some traps were made locally, at very low cost, with bamboo and polyethylene netting. The catch results were on the whole very poor. There was no significant difference in catch rates between the different types of traps. Judging by these results there is no potential for trap fishing as a single fishery. It might be possible though that traps could profitably be employed in combination with other fishing methods. In order to further investigate this, arrangements were made late in the year for 28-foot longliners in Negombo to carry a couple of bamboo traps to be set before and retrieved after the line fishing.

The trials undertaken so far indicate a big discrepancy between the high expectations and plans for increased production of demersal fish on the one hand and the poor catch results on the other. This issue is of course of paramount interest for the Ministry of Fisheries, since it is believed that *demersal resources* are perhaps the only resources yet to be fully or heavily exploited. Therefore, a comprehensive review of the fishing effort, earlier fishing trials and resource estimates, has been launched. The review is scheduled to be completed early 1983. Subject to any new significant findings or observations in this review, the demersal fishing project will be phased out during 1983.

13. A worldwide review of the use of fish aggregating devices was undertaken in 1981. This review was supplemented with further material during 1982 and finalised for publication only at the end of 1982 (Working Paper BOBP/WP/23 is under print). On the basis of this review and the experience of a FAD project in the Maldives, an experimental project was launched in Sri Lanka in the last quarter of the year. Six FADS have been deployed on the west coast of Sri Lanka by means of the NARA research vessel Balaya II. Suitable bottom conditions were not found outside the continental shelf within reasonable distance from the coast; if the FADS were located too far from the coast the fishermen would not be able to utilise them. Therefore, the FADS put out so far have been placed on the shelf south of Galle (4) and off the Colombo/Negombo area (2).

The FADS are of low-cost construction, made out of defective tyres filled with polyurethane foam. A concrete anchor is used and chains or rods of iron and polypropylene ropes are used for the anchor cable. The cost of a FAD is only a couple of hundred dollars. Monitoring of the FADS and the fishing activities around them will start early in the year and probably continue for at least six months.

Fishing Craft Technology

14. This subject covers all matters concerning fishing craft i.e. design, construction (methods, material), powering (oars, sails, engines) and landing facilities as they relate to beachcraft. The following activities have been in progress during the year.

BOB/BCD	—	Beachcraft development
BOB/ENG	—	Engine installations
BOB/SAL	—	Sail improvement
BOB/BHD	—	Beach hauling devices
BGD/MCC	—	Motorization of country craft
IND/MCC	—	Motorization of country craft
IND/KAT	—	Kattumaram improvement
SRL/FBD	—	Fishing boat development

The development of beachlanding craft, their engine installations and beach hauling devices has been the major preoccupation of 1982. Most of the work has been carried out from Madras. In the last quarter the work was severely hampered by the closure of the boatyard housing the BOBP activities.

15. The development of beachlanding craft in India and Sri Lanka has made considerable progress in the past year. Several types have been found suitable after technical trials and commercial fishing operations. Interest in introducing some of these craft is growing among govern-

ments. In Tamil Nadu, a scheme for 30 boats has already been sanctioned for implementation during 1983. Several people at various levels -fishermen, officials, technical personnel, institutions — have observed or taken part in the development work, particularly in the fishing trials. The progress under each type of craft is summarized below, and a list of the main particulars of all BOBP craft is attached as Appendix I. (See also “Surf trials at the Marina”, Bay of *Bengal* News, September 1982.)

IND-11: Commercial fishing has been going on from Injambakkam, a village south of Madras. The fishing results, from a commercial point of view, have however been poor. The main reason is the poor performance of the 5 hp engine ; second, the difficulty in finding suitable gear for the different seasons; and third, the lack of will and initiative on the part of the villagers in giving up traditional practices and adopting new ones. One of the boats capsized once and sustained hull damage.

IND-13: The three boats operated from Uppada, Andhra Pradesh, have now completed 24 months of operation with good results but with continuous engine problems. An evaluation of their performance has been made and a report is under issue (BOBP/WP/26).

IND-17: It was found that this craft, driven by sail and oars and being tried for Kerala, didn't have any advantages over the traditional craft. A 6 hp kerosene outboard engine was therefore installed. During the peak fishing season the boats were doing well, in spite of the expenses incurred for fuel.

IND-18: The two craft have operated successfully with large-mesh driftnets in Kerala. The 5 hp engine posed continuous problems and has been replaced by an 8 hp engine. The boats were operated from a harbour in Quilon but at the end of the reporting period transferred to Pulluvila, a village on the beach south of Trivandrum.

IND-20: One craft was completed and tested. During the testing the craft showed a tendency to broach when coming in, and a capsize occurred under such a situation during commercial operations from Injambakkam. The rudder stock and mast were broken, while the engine and hull didn't sustain any damage.

IND-21: This craft is a modified version of IND-11. It has been technically tested and undergone commercial fishing trials from Injambakkam. The new 8 hp engine has performed somewhat better than the 5 hp engine but the other problems encountered with IND-11 are also valid for IND-21. An investigation of substitutes for polystyrene for providing buoyancy produced no better alternative. Complete drawings and specifications have been provided to the Tamil Nadu Government, besides assistance in launching a tender for 30 boats under the state government's scheme.

IND-22: This was a new type of craft based on the buoyancy block principle with lo-inch PVC pipe gunwale and a cheaper engine installation than the pivoting box. The engine installation was not found technically feasible and the boat was not completed.

IND-23: This is the first aluminium craft. During technical trials its performance was excellent, a special advantage was its extreme light weight. The construction itself, however, was not problem-free, particularly with regard to the welding. A second slightly modified aluminium boat is under construction.

SRL-11: This craft has completed 15 months of excellent commercial fishing from Negombo in Sri Lanka, The performance has been evaluated, and the return found to be fully satisfactory — especially so because of the low fuel expenses. Other comments- the sails had been very little used ; there were problems with overheating of the engine; the boat has not been operating from the beach but from the Negombo lagoon.

SRL-12: Two boats of this type were constructed. The special feature is the 5:1 reduction gear on the 14.5 hp engine giving the boat exceptionally high thrust. The craft was tested under fishing conditions for three months and found satisfactory. After maintenance and refitting, arrangements have been made to sail the boats to Sri Lanka for commercial trawling trials in cooperation with a private party.

SRL-14: A new craft very similar to SRL-12 has been designed and lofted and frames have been prepared and shipped to Colombo for manufacturing of plug and mould for production in fibreglass.

The main thrust of work during 1983 will be on the introduction of IND-21, IND-20 and possibly IND-23, and the completion of SRL-14.

16. In the field of *engineering* most of the effort has been devoted to perfecting the engine installation of the pivoting type which is a key factor for successful beachlanding craft. The work has now reached a level at which the engine installation can be produced commercially. Additional sturdiness and reliability imparted to the engines have unfortunately raised the costs rather high as compared with the original prototypes. The first 5 hp engine used in the beachlanding craft has been discarded as not suitable because of poor reliability. The second engine (8 hp) performs much better but has the disadvantage of being much heavier. Several modifications have been suggested to the manufacturer. These have been adopted but the engine is still not problem-free. In all engine installations problems of overheating have been experienced. The market for small water-cooled engines is therefore being investigated. These engines will be heavier and more expensive but reliability is the most important criterion without which the boats will not be successful. A worldwide enquiry including quotations have been completed for two types of engines; one larger, in the range of 15-20 hp, suitable for boats of the SRL-14 type; and one smaller of 6-8 hp, suitable for most of the smaller craft. Trials of such engines may be undertaken during 1983.

An engine installation with a V-drive that cuts engine space quite a bit has been constructed but not yet tested. The extremely high reduction gear installed in the SRL-12 boats has been very effective, and demonstrated the fuel economy of high reduction gears. The disadvantage of the installation on the SRL-12 boats is that there is no reverse gear for this high reduction commercially available.

Aluminium, which is a light and non-corrosive material, is ideal for beachcraft and has been used extensively for engine boxes, stern gear, propellers, masts, line haulers, etc. Problems have been encountered with the welding due to a combination of factors i.e. unsatisfactory aluminium alloy, poor welding gas and unskilled welders.

17. All boats built and introduced by BOBP have been equipped with *sails* for supplementary power and for emergency use. Different rigs such as lug, gunter, lateen and bermuda have been experimented with. The common outboard-driven 18-footer in SRL was equipped with a sail and trials conducted. It was not found worthwhile, since the boat's sailing performance was very poor. A suitable cotton material for manufacturing sails has been located in India. The progress has been relatively modest, but some lessons have been learnt.

In Sri Lanka, it seems that the fishermen are not inclined to use the sails as much as in India. One reason is that the fuel consumption of the low-powered boats is so low that the economy introduced by sails isn't much. Another is perhaps the bother of setting up and handling the sail. A third reason may simply be the inexperience of the fishermen. These observations however seem to indicate that what is required is not sailing boats but boats suitable for sailing-with simple rigs for emergencies and for use when the wind blows in the right direction. The matter will be further observed and studied in the coming year.

18. The work on *beach hauling* devices has made significant progress during the year. A prototype winch with a pulling power of 1.2 tonne was installed and tested at Injambakkam and has been used regularly by fishermen operating the beachlanding craft. (The winch has also been used for pulling beach seines.) A new simplified version of the winch with a pulling power of 2 tonne was installed in the village at the end of the reporting period. No problems were experienced in pulling the light boats up the beach even on wet sand while it was very difficult with the large types like SRL-12. Planks and rollers are required and are difficult to handle during the operation. The most serious difficulty was experienced in launching the boat without winch power. The winch cannot be used without anchoring a block out at sea which is not technically feasible.

At the end of the reporting period large inflatable fenders imported from Norway were tried as rollers. They were found to be excellent and the boat moved with very little power on any type of sand. The main advantage is that the boats, when placed on these rollers, can easily be launched with manual power. The fenders are relatively cheap and the investment would only be in the order of 1% of the value of the boat. The durability of the fenders is still to be tested; but as they are made for large ships, they should be long-lasting.

19. The project for *motorization of country craft* in Bangladesh has been successfully completed. In addition to the first two engines used over an extended trial period, four more engines have been issued to fishermen at full cost. An evaluation of the trials over a full year showed that motorization is highly profitable. The gross revenue of motorized craft is twice as high as that of non-motorized ones at very low extra cost. As a result of this the government has proposed a scheme to introduce 250 engines in the Barisal district. A report on this activity (BOBP/REP/1 8) is to be issued. (See also below under Development Support.)

20. A new activity *-motorization of country craft* in India — has been taken up in the last quarter of the year. This is being done in connection with the coastal village development project in Adirampattinam. The technique used is the pivoting engine installation. The engine will be installed in a large canoe now driven by sails and operating from shallow water canals. A new craft has been ordered and the engine installation is under manufacture. Trials are expected to start early 1983.

21. After careful consideration it has been concluded that any *improvement of kattumarams* would be of marginal value and would not in any significant way change the conditions of their operators. The experiments with pressure treatment of logs show that a longer life can be attained but whether this will compensate for the cost of treatment is uncertain. Ideas about new configurations on kattumarams to replace the traditional ones have also been given up; the existing boats are, under the conditions they are operating, ideal. It was therefore decided to discontinue the activity and concentrate efforts on small motorized craft operated from the beaches. A report is to be issued (BOBP/REP/17).

22. The Programme was requested by the Ministry of Fisheries to study *fishing boat development* in Sri Lanka and make recommendations for the future on how to improve the economy of the fleet with particular reference to fuel savings. In response, a techno-economic evaluation was made of all existing commercial boats and prototypes under trials. There were short-term recommendations for fuel savings and long-term recommendations for future craft. (Please see "How to save fuel", *Bay of Bengal News*, September 1982.) The short-term recommendations include fitting of sails to 18-footers, derating of engines and change of propellers on the existing 28-footers, and adoption of the existing 34-footer (extended 28-footer) with low-powered engine, insulated fish hold and crew accommodation. These recommendations were pursued.

Sailing trials with 18-footers were found technically feasible but during trials and subsequent commercial fishing it became clear that the fishermen are reluctant to use the sails as reported above under sail improvement.

The derating of engines with change of propellers showed a fuel saving in the order of 15 to 30% depending on the size of propeller that could be accommodated. During these trials it was also found that some boats were heavily fouled by shells and barnacles. On one of the boats that were tested, a fuel saving of 40% was attained by cleaning the hull. Further investigations later in the year on the extent of fouling also indicated considerable fuel savings through clean hulls. Pending discussions with the government further follow-up actions to implement the engine derating and anti-fouling are being considered for the next year.

A new 34-footer with a 20 hp engine was acquired by the Programme and has been put into commercial operation. The boat is more expensive than the common 28-footer, but has on the other hand better crew accommodation and an insulated fish hold. Furthermore, it consumes less fuel at the same speed with the smaller engine. Although this boat may not be ideal for the future, the experiments should be taken note of in the design of new boats.

The long-term recommendations for boat development follow the lines along which BOBP is working in its beachcraft development.

23. The attempts to replace the Orus of wooden construction in Sri Lanka with similar craft of GRP construction has led to some positive results. One large Oru has been operated for a full year from Negombo and the fishermen operating the craft have found it very comfortable and faster than the traditional boats. Several other fishermen in the areas have announced their interest in purchasing such craft provided they obtain subsidies as given for motorized craft. At the end of the reporting period the Ministry of Fisheries has agreed to launch a pilot scheme of 5 large Orus with support from BOBP. The first Oru was equipped with a traditional outrigger of wood. Subsequently the outrigger was manufactured out of GRP. The second Oru, now under operation, shows even better performance through this improvement.

A small trimaran, made of a seven-metre fibreglass hull and two light outriggers was tried for a short period. It was equipped with 8 hp outboard engine which was found to be too large for this type of craft. A new 4 hp engine has just been taken delivery of and trials will continue next year.

Coastal Aquaculture

24. By coastal aquaculture is meant the farming of fish, crustacea and other living organisms in brackishwaters. The following projects/activities have been in progress.

- BG D/SAP — Satkhira shrimp culture project
- IND/AAP — Pond culture project in Andhra Pradesh
- IND/TAP — Pen culture project in Tamil Nadu
- MAL/CAC — Coastal aquaculture
- MAL/SWC — Seaweed culture
- THA/ACD — Aquaculture demonstration.

Until the beginning of this reporting year the activities in the field of aquaculture, barring the demonstration project in Thailand, were not very extensive. This year however the work in Malaysia has picked up and new activities have commenced in Bangladesh and India.

25. Early in the year the Bangladesh Ministry of Fisheries and Livestock acquired a 20 hectare plot of land in Satkhira for the purpose of setting up a *shrimp culture demonstration farm*. Two counterpart officers and supporting staff have been assigned to the project based at Satkhira. Besides pre-farm activities and the collection of environmental data, they have undertaken a study tour in West Bengal where similar conditions prevail and more advanced shrimp culture practices are applied. All equipment and material needed for the culture work have been delivered. The farm complex was designed with the assistance of a local consultant. The first phase of construction, which includes the main embankments, dykes for 10 ponds and sluice gates for four of the ponds plus a sluice gate for the large paddy basin, was completed at the end of the year. The second phase of construction which consists of a large sluice gate in the outer embankment and sluice gates for the remaining 6 ponds, will be undertaken next year. In the meantime, temporary main sluices are being provided at the end of the reporting period and culture trials are expected to start in February.

26. The shrimp pond culture project at Polekarru was sanctioned by the Andhra Pradesh Government after some delays, and staff assigned to the project were posted at the site in the middle of the year. They have been engaged in preparatory work and in collecting environmental data. A small complex of five ponds has been designed together with engineers of the Directorate of Fisheries. Construction started in the middle of November and is expected to be completed by February when culture trials could start. All equipment needed for the trials have been delivered.

27. A pen culture project for shrimp has been taken up in the backwaters of Killai near Chidambaram in Tamil Nadu. A suitable area has been demarcated for the culture trials and three research officers of the Directorate of Fisheries have been posted at the site. Initially, four pens- two each of 50 x 25 m and two of 25 x 25 m — were constructed, using casuarina poles and nylon webbing. In addition a small lab building has been constructed of indigenous material. After removing predators and other undesirable organisms, the pens were stocked with *Penaeus monodon* and *P. indicus* in July at a rate of 30,000 per ha. In two of the pens supplementary feed was provided. Harvesting was done at the end of September. Growth during this short

period was extremely good. In the pens given supplementary feed of squid offal, the production rate was about 600 kg/ha. In the pens without feed the production was about half of that. (Please see note on "Pen culture of shrimp in Tamil Nadu", *Bay of Bengal News*, September 1982.)

The only serious problem during the culture trials was the attack on the webbing by crabs. The entire pen had to be checked manually every day and holes cut by the crabs mended. Experiments will be undertaken with different pen materials such as tarred bamboo, coated wiremesh and thick high-density polyethylene (HDPE). It is also desirable to identify another material since nylon is quite expensive.

The second experiment started in October when the pens were stocked with *P. indicus* at the rate of about 40,000 per ha; *P. monodon* are not available during this time of the year. The salinity was extremely low during the stocking period, i.e. 2-6 ppt. Sampling in December indicated good survival in spite of the low salinity in the beginning and high fluctuations thereafter, but growth was modest. The harvest is planned for January.

Supplementary feed may be a long-term problem and during the second trial different feed components are being tried out.

The third experiment is expected to start in January-February at which time the seeds of *P. monodon* should be abundant. The pen areas will be enlarged for this experiment by adding two new pens of 0.5 hectare each. The size of the pilot complex will then be close to commercial farm size. The experiences to date have been very positive, and if these could be confirmed, pen culture may offer a viable alternative to pond culture for which conditions are not ideal in most areas of Tamil Nadu.

28. The aquaculture farm at Ban Merbok, Malaysia, was completed. The preparation of ponds and dykes continued during the year. Due to high sulphate and iron content and low pH value of the soil, extensive ploughing of the bottom soil, repeated tidal washing, draining and liming was required. At the end of the year, two nursery ponds and four rearing ponds were ready for culture. One of the ponds has been stocked with *Lates calcarifer*, the others with *P. monodon* and *P. merguensis*. Considering the problems in preparing the ponds, the progress achieved has been satisfactory.

Assistance was also given to the Glugor Fisheries Research Institute, Penang, in hatchery techniques. The spawning of *Lates calcarifer* (for the first time in Malaysia), *P. merguensis* and *P. monodon* was demonstrated and advice was given in the design and operation of hatcheries in general.

29. A new activity aiming at experimental culture of seaweed (*Gracilaria* species) has been taken up in Malaysia. Contract arrangements were finalised with an organisation experienced in seaweed culture. The activities will start early 1983. The counterpart officer assigned to the project has studied the seaweed culture practices, identified suitable areas in Malaysia and undertaken a study tour to India.

30. The aquaculture demonstration project, Thailand, has continued to produce very positive results and has generated a real impact in the area. The most successful activity has been the culture of fish in cages. At the end of the year over 900 cages were in operation in Phang Nga, nearly all of them constructed by the fishermen themselves by their own resources. Fingerlings for seabass are being obtained from the fisheries stations in Phuket and Satul. But farmers have also started to culture groupers which they collect from the wild. The estimated production by the end of 1982 is about 25 tonne at a farm gate value of about Baht 60 per kg. The cage culture trials in Satul have also shown good initial results. Further demonstrations have recently been extended to another village in Satul province, three villages in Krabi province and to two villages in the Trang province.

The harvest of cockles planted in the previous year was somewhat disappointing; the yield was much lower than anticipated : one of the main reasons appears to be poaching. There is no doubt, though, about the economic viability of cockle culture. An evidence of this is that private parties have invested their own money and received permission from the Government to establish their

own cockle plots. Also, cockle culture has been started in Sstul but no results are available at the end of the reporting period.

After the initial failure to generate and lure sufficient quantities of spat from mussels transplanted earlier, large quantities of new green mussels have been transplanted into Phang Nga bay, to increase the spat fall and luring of the spat. The growth of the mussels has been satisfactory but whether the desired spat fall has been generated is yet to be seen.

Oyster culture did not make any significant progress in the previous year. It has however picked up of late and generated interest among some private parties. They have been assisted in setting up trays for collection of spat and culture in three villages in Phang Nga.

In connection with the demonstration of different culture techniques, many training activities have been organised : study tours for fishermen to observe the culture trials, on-the-spot demonstrations by the staff of the Fisheries Department.

In the Ban Bakan Koei village of Satul province, a community hall has been provided for the project: it serves as workshop/office for the culture trials in that village.

In 1983, the extension of cage culture techniques will continue in Satul, Trang and Krabi provinces, while mussel/cockle/oyster culture trials will be monitored. The project is expected to continue until end September. Some of the activities may continue beyond that date, subject to satisfactory funding for BOBP beyond 1983.

Extension Methodology

31. Under this heading fall all projects and activities involving multi-disciplinary work with large components of social inputs primarily directed toward fisherfolk families. The following projects/activities have been in progress.

- BGD/FWA — Fisherwomen activities
- IND/XTN — Extension training, Tamil Nadu
- IND/CVD — Coastal village development, Adirampattinam
- IND/FEW — Fisherwomen extension workers
- IND/XOR — Extension training, Orissa
- SRL/WOM — Income-earning by women.

Besides these projects of longer duration, assistance was provided to the Ministry of Fisheries, Sri Lanka, in conducting a district workshop in which fisheries field officers and field workers of non-government organisations took part.

32. As a follow-up to the socio-economic survey of fisherwomen in two selected villages of Chittagong district, Bangladesh (Paper BOBP/WP/27 will present the findings), activities for women have started. Groups, five each of 15 women, have been organised and the group leaders have been given short-term leadership training. A voluntary organisation has been engaged for the implementation of the project. The only activity taken up so far is hand braiding of large-mesh driftnets of 27 ply (this is the same twine as recommended in the BOBP large-mesh driftnet project). The hand braiding has worked very well, so well that the Programme has frequently run short of twine to meet the women's requirements.

The groups have agreed to *set* aside 10% of their earnings for a fund to be used for future purchase of material or for other income-generating activities. The supply of twine was first organised through the Kalidaha Fishing Project but was subsequently taken over by the voluntary organisation. This is only a temporary measure taken in the hope that the women groups can in due course obtain their twine directly from traders and importers. Efforts have been made to establish links between the women groups and such traders/importers but it will take a long time before trust can be built up between the two parties and before the women are competent and confident enough to operate on their own.

Other activities being considered are fish farming, fish marketing, kitchen gardening, germination of betel nut seeds and poultry and goat raising. The only activity that has reached the "action

stage" so far is the planting of fruit trees. UNICEF has been contacted for the supply of toilet slabs and tube wells for the villages.

The project shows encouraging albeit slow progress. The overriding problem is to achieve self-reliance in a reasonable time span.

33. Two short-term *training courses in extension methodology* have been conducted for officers of the Tamil Nadu Directorate of Fisheries. One of them was for Assistant Directors, and the other one for field officers responsible for fisherwomen's extension. Further training for the latter category has been planned for 1983. Extensive discussions have been held with the Directorate of Fisheries about ways and means to improve the extension services and about how BOBP could assist by providing training for different categories of staff. It is felt, however, that a lot of the effort would be wasted unless there are definite commitments from the government regarding the terms of service of the personnel being trained. Very often the duties and responsibilities of the officers are such that without changes they cannot make use of new knowledge or skills gained from the training. It also happens that the officers are transferred to completely different assignments shortly after completion of the training. Further training will therefore be subject to satisfactory solution to these problems.

34. In connection with the *coastal village development project* in Adirampattinam, short-term training courses have been conducted for villagers of both sexes with emphasis on village organisation, self-help, utilization of government schemes and facilities and a better fish marketing system for women. During these courses the need for a non-formal education programme emerged. The State Resource Centre for Non-Formal Education was therefore engaged to conduct teacher training for 14 men and women in the methodology of arranging a suitable education programme.

An evaluation has been made of the loans extended to and availed of by fisherwomen under a credit scheme organised by a voluntary agency engaged by BOBP. It was found that the percentage of repayment (80%) was very high, compared with the percentage of repayment in other similar schemes. The loans were in two amounts, Rs. 100 and Rs. 200, repayable over six months. Many fisherwomen have probably benefited by getting low-interest loans under this scheme instead of loans from informal credit sources at exorbitant rates. However, in the long term this scheme may also have produced some negative effects. It appears that most of the loans have been used for consumption and not for maintaining or expanding their trade in fish marketing which was the original idea.

The credit scheme of Rs. 1,000 loans to fishermen for the purchase of nets has not been functioning well. The nets were issued in the previous year, but repayments have been very slow, with many defaulters.

On the whole, the work in Adirampattinam has been much less effective than anticipated. The original idea of achieving improvements in the conditions of fisherfolk with low capital input primarily through education and persuasion, has not yielded the expected results. There are perhaps two reasons for the disappointing results: the time frame was insufficient, a longer time frame was needed ; and the strategy behind the Adirampattinam experiment also needed modification.

Since the Directorate of Fisheries has established fisherwomen cooperatives in Adirampattinam and has a permanent staff stationed in the villages, the direct involvement of BOBP is being withdrawn. Support to the non-formal education will however continue during 1983.

35. A 10-week residential *training course on community organisation* was conducted for fisherwomen extension workers from half a dozen fishing villages in Chingleput district, Tamil Nadu. Twenty-three women participated in the course, which was conducted in four sessions during the period May-September 1982. The idea behind the training was to prepare the fisherwomen to act as link workers between the government and the fisherfolk and to serve in cooperatives and other organisations that might be set up in the villages. The experience of the course was very positive. The women participated actively; their response and their awareness got better and better during the course of the training.

Without follow-up, however, the impact of the training would probably be very limited. The Government is in the process of establishing fisherwomen cooperatives in the six villages in which at least some of the course participants will serve. Pending the sanction of government funds for the cooperatives, BOBP will support them by providing a community hall in each village with water supply and sanitary facilities. Action plans for each village society are also under preparation. If need be, the Programme will provide further specialised training to the fisherwomen in such areas as education, health, cooperative management, etc. Similar training courses for other districts are also contemplated. But all this is subject to government commitments on follow-up action.

36. An *in-service training programme for 15 extension officers* in Orissa has been launched. The programme (approximate duration : 18 months) consists of three major modules-credit, community development and fishing technology. It is further supplemented with surveys of marine fishing communities and introduction of beachlanding craft. Each of the three modules consists of a residential course, an in-service pilot activity and a final workshop for evaluation of progress.

The first module on credit was almost completed during the year. The extension officers acquired better knowledge on banking procedures and feasibility studies. With the help of a bank officer engaged as consultant, bank forms for loan applications by fisherfolk were modified. A pilot credit project was also finalised, involving a few banks, several extension officers and several hundred fisherfolk. The scheme will start early 1983.

The second module on community development was started with a residential course. The pilot activity under this module is non-formal education in fishing villages. Together with Orissa's State Council for Educational Research and Training, a curriculum will be set up for which the vocational part will be supplied by the fisheries extension officers and BOBP.

The third module on fishing technology will start with a residential training course which will be conducted by CIFNET in Cochin. The pilot activities are still to be identified. Later in the coming year it is also anticipated that prototypes of the BOBP beachlanding craft will be brought to Orissa for trials, which will be monitored by the extension officers.

A wide-ranging quantitative and qualitative survey of the social, economic and cultural conditions in fishing villages has been conducted during the year. The report of this work is scheduled to be finalised in the first quarter of 1983. It is believed that this work will be of great value not only to the extension officers who have participated but also to government offices and other agencies.

37. Three pilot projects on *income-earning activities for women* have been taken up in Sri Lanka. In cooperation with the Welfare Division of the Ministry of Fisheries, a coir production centre has been set up in Uthiyawa. In cooperation with a rural women's organisation two other centres (Kudawella and Mirissa) have been set up for lace making and tailoring/sewing. The progress of work in all the pilot centres has been very good. Women have been given basic vocational training in the respective activities and societies have been formed for continuation of the activities on a commercial scale. For the latter purpose, further training might be required in cooperative management. This may be supported by BOBP in the coming year. The Welfare Division has also identified other income-earning activities which will be considered for implementation in 1983.

Development Support

38. This subject covers project preparation activities following from BOBP work. It also deals with promotion and preparation of small-scale fisheries projects in general. The work performed is summarised below :

39. The "general description" documents for small-scale fisheries in the project area, which were produced during the preparatory phase of the Programme in cooperation with the UNDP funded project RAS/77/044, have become outdated ; they are 4 to 5 years old. The documents have been very useful in BOBP work and much appreciated by national and international agencies. They are therefore being updated in collaboration with the respective cooperating agency. The

documents for India and the states in Andhra Pradesh and Tamil Nadu have been completed. (They will be issued as BOBP/INF/3, BOBP/INF/4 and BOBP/INF/5 respectively). Those for Bangladesh, Orissa, Andamans and Sri Lanka are in different stages of preparation. It is expected that most of them will be completed by the end of the first quarter of 1983.

40. The preparation of a perspective plan for introduction of beachlanding craft in Andhra Pradesh has been undertaken in cooperation with the Fisheries Directorate. Different loan schemes are available for the financing of such craft. Some of them might be funded by a World Bank loan. In this connection discussions have been held with World Bank officers concerned with the matter.

41. As a result of the successful motorization of Chandi boats in Bangladesh the UNCDF (United Nations Capital Development Fund) has expressed interest in funding the motorization of 250 boats. A comprehensive project document for this purpose has been prepared and submitted to UNCDF.

42. The Programme collaborated with SIDA and the Government of Andhra Pradesh in developing a proposal for a small-scale fisheries project in the Konaseema area. A critical examination of the project was carried out together with a SIDA consultant. The revised document suggested BOBP's participation in monitoring project implementation. Unfortunately, later in the year the project was not approved by SIDA.

43. Consultations have been held with the Asian Development Bank about suitable boats for introduction under a new fisheries loan to Sri Lanka. Similar discussions were held with the Dutch Agency about suitable craft for the East Coast projects which they support. Consultations were also held with DANIDA regarding a proposed project for small-scale fisheries development in Tranquebar, Tamil Nadu. This resulted in a suggestion by DANIDA to acquire beachlanding boats from BOBP for a trial period.

44. No specific activities are foreseen for 1983 besides completing the ongoing work mentioned above. Instead, effort in the area of development support will focus on tackling practical problems in introducing new craft, gear, aquaculture schemes, etc., which will be covered under Extension Methodology.

Information Service

45. The highlight of the Information Service during the year was the preparation of three *audio-visuals* complete with sound effects and music. One of them related to the BOBP's work as a whole, two others to specific activities — extension training and high-opening bottom trawling. A fourth audio-visual, on the aquaculture demonstration project in Phang Nga, Thailand, was under preparation at the close of the year. Professional assistance was obtained for organizing the first audio-visual, prepared early in the year. The other three audio-visuals were "home-made".

The audio-visuals were shown to a variety of audiences and were found to be a very effective medium to present and disseminate BOBP's work. They generated interest and detailed enquiries, both about audio-visual production and about BOBP's technical activities.

46. Four issues of the newsletter, Bay of Bengal News (March, June, September and December 1982) were produced during the year. The response continues to be excellent. Requests for back copies and regular mailing, enquiries about details of technical activities, letters from consultancy firms in Europe and the U.S. offering expertise to the region, reprinting of newsletter stories by the regional media and by fisheries magazines -these are part of the response.

47. During the year seven working papers, three reports and two information documents were issued. (They are listed in Table 1). Many more papers are at various stages of preparation. The rather painstaking approach adopted so far in the preparation of these documents is responsible for the delay in their publication. It is suggested that in future some activities should be summarized in the newsletter, with technical details in stencil form being made available on request to specialists. Only the most significant papers should be printed.

Also issued during the year was the report "Economics of artisanal and mechanized fisheries in Kerala : a study on costs and earnings of fishing units." The study was undertaken by the FAO/

UNDP project "Small-Scale Fisheries Promotion in South Asia," RAS/77/044 (which wound up December 1981) in cooperation with the Fisheries Research Cell of the Programme for Community Organization, a voluntary agency based in Trivandrum, and completed by the BOBP.

The study was the first systematic one of its kind in South Asia; it collected statistics on over 20,000 fishing trips which produced fish worth over Rs. 5 million and yielded nearly 1.5 million "bits" of information.

The paper has been in constant demand and has generated requests from institutions all over the world.

Documentation work undertaken during the year includes two bibliographies, one on women and development (BOBP/INF/1), another on fish aggregating devices (BOBP/INF/2). Some data have been collected on the use of windmills in farm ponds.

48. Media coverage has continued to be good. BOBP work has been well covered in the daily press of India and Sri Lanka and in European fisheries magazines without any special effort. Besides regular supply of material and response to frequent media requests for information and pictures, the only special media outreach activity was a press conference in Negombo, Sri Lanka, on the evaluation of SRL 1's fishing results. Good television and newspaper coverage resulted.

49. In 1983 more stress will be laid than before on assisting national fisheries agencies in their information work, particularly relating to BOBP activities. It is suggested that the responsibility for the preparation of some routine publications—such as working papers on national BOBP activities—be taken over by the cooperating agency concerned.

Project Inputs

50. The funds available for 1982, including the savings from previous years, have **been** almost fully utilised. A breakdown of the expenditures under the major lines is given in Table 2.

51. The Fishing Technologist, present with the Programme since its inception, departed in May and had not been replaced even at the end of the year. A new incumbent was selected but eventually not recruited for medical reasons. All the four Associate Experts completed their assignments. Two of them have been retained as long-term consultants. A Project Officer has **been** appointed in Thailand. Details of the staffing are given in Table 3.

52. International consultants have been engaged to the extent of about 40 man-months. This includes two long-term consultants—a Fishing Technologist based in Colombo and a master fish farmer assigned to the Ban Merbok project in Malaysia. Table 4 provides the details.

53. The major portion of expenditures under "Duty Travel" refers to travel by international staff who, on an average, have spent 100 days on duty travel. Other travel charged to this component have been undertaken by government representatives and counterparts in connection with the Advisory Committee meeting, Impact Review and occasional consultations.

54. The expenditures for contractual services have exceeded the planned outlays by about 40%. The reason is greater use of national individuals and organisations for implementation of activities. The major subject heads under which expenditures have been incurred are the shrimp culture demonstration farm in Bangladesh; extension projects in Bangladesh, India and Sri Lanka; boatbuilding; fishing trials; and printing of information documents.

55. The major items of materials and supplies for which expenditures have been incurred are fishing gear, boatbuilding material, seeds for aquaculture in Thailand, and office supplies. This budget has also been exceeded. A sizeable stock of fishing gear and boatbuilding material has been built up for use in future years.

56. New equipment purchased during the year are vehicles for Project activities in Bangladesh and India. Other major items are marine engines for fishing craft, an echo sounder and scientific equipment for aquaculture activities. The budget has not been fully utilised.

57. A large number of different training activities were conducted during the year. Details are given in Table 5. The total training effort amounts to about 750 man-weeks which is 14 man years. The bulk of it (520 man-weeks) concerns national training courses of low level in connection with extension activities. The study tours have been rather of a technical and international

nature but primarily undertaken within the Bay of Bengal region. Most of the training activities have therefore been performed at low cost and the budget allocation has been far from fully utilised.

58. The counterpart staff input has continued to be satisfactory, although in some cases one would wish for regular institutional arrangements rather than *ad hoc* staff assignments. In financial terms, the major inputs have been for the Programme's headquarters including boat-building facilities in Madras, aquaculture facilities in Bangladesh, India and Malaysia, fishing trials in Sri Lanka and aquaculture demonstration in Thailand.

Table 1
1982 — Publications — (GCP/RAS/040/SWE)

<i>Reports</i>		
BOBP/REP/13	—	Report of the Sixth Meeting of the Advisory Committee. Colombo, Sri Lanka, 1-5 December, 1981. Madras, India, February 1982.
BOBP/REP/14	—	Report of the First Phase of the "Aquaculture Demonstration for Small-Scale Fisheries Development Project" in Phang Nga Province, Thailand. Madras, India, March 1982.
BOBP/REP/15	—	Report of the Consultation-cum-Workshop on Development of Activities for Improvement of Coastal Fishing Families. Dhaka, Bangladesh, October 27-November 6, 1981. Madras, India May 1982.
<i>Working Papers</i>		
BOBP/WP/14	—	Three Fishing Villages in Tamil Nadu. Edeltraud Drewes. Madras, India, February 1982.
BOBP/WP/15	—	Pilot Survey of Driftnet Fisheries in Bangladesh. M Bergstrom. Madras, India, May 1982.
BOBP/WP/16	—	Further Trials with Bottom Longlines in Sri Lanka. Madras, India, July 1982.
BOBP/WP/17	—	Exploration of the Possibilities of Coastal Aquaculture Development in Andhra Pradesh. Soleh Samsi, Sihar Siregar and Martono of the Directorate-General of Fisheries, Jakarta, Indonesia. Madras, India, August 1982.
BOBP/WP/18	—	Review of Brackishwater Aquaculture Development in Tamil Nadu. Kasemsant Chaloyondeja and Anant Saraya of the Department of Fisheries, Thailand. Madras, India, September 1982.
BOBP/WP/19	—	Coastal Village Development in Four Fishing Communities of Adirampattinam, Tamil Nadu, India. F. W. Blase. Madras, India, December 1982.
BOBP/WP/20	—	Further trials of mechanized trawling for food fish in Tamil Nadu, India. G. Pajot, J. Crockett, S. Pandurangan, P. V. Ramamoorthy. Madras, India, December 1982.
<i>Information Documents</i>		
BOBP/INF/1	—	Women and Rural Development in the Bay of Bengal Region : Information Sources, Madras, India, February 1982.
BOBP/INF/2	—	Fish Aggregating Devices : Information Sources. Madras, India, February 1982.
<i>Newsletters</i>		
March June September December	}	— <i>Bay of Bengal News</i>

Table 2
1982 — Budget and Expenditures — GCP/RAS/040/SWE

(U.S. \$)

Code	Object of Expenditure	Expenditure 1976/1 981	Budget 1982	Expenditure up to 31-10-1982	*Estimated Expenditure up to 31-12-1982	Estimated balance 31-12-1982
10	Personnel services	1598,148	852,500	547,270	700,000	152,500
20	Duty travel	386,944	150,000	122,448	150,000	—
30	Contractual services	205,701	150,000	85,781	212,000	(62,000)
40	General operating expenses	186,285	80,000	56,666	98,000	(18,000)
50	Supplies and materials	347,720	150,000	182,099	223,000	(73,000)
60	Equipment	187,761	150,000	75,768	106,000	44,000
80	Fellowships, grants Et contributions	185,281	150,000	48,460	81,000	69,000
	Sub total	3,097,840	1,682,500	1,118,492	1,570,000	112,500
90	Project servicing cost	433,697	218,725	145,403	204,100	14,625
	Grand total	3,531,537	1,901,225	1,263,895	1,774,100	127,125

* As per FAO Financial Statement, October 1982.

Table 3
1982 — Professional Staff — GCP/RAS/040/SWE

S.No.	Post	Name of incumbent (Nationality)	Date of (month/year)	
			Arr.	Dep.
International Staff (1)				
1.	Programme Director	Engvall L O (Sweden)	11/78	
2.	Development Adviser	Pietersz V L C (Sri Lanka)	1/79	
3.	Fishing Technologist	Pajot G (France)	1/79	5/82
4.	Fishin Craft Engineer	Overa A (Norway)	9/80	
5.	Naval Architect	Ravikumar R (India)	9/79	
6.	Aquaculturist	Karim M (Bangladesh)	1/82	
7.	Sociologist (Women Officer)	Patchanee (Ms) N (Thailand)	8/80	
8.	Socio- Economist (2)	Drewes (Ms) E (Germany FR)	10/80	
9.	Economist (2)	Tietze U (Germany FR)	10/80	
10.	Extension Sociologist (Ass. Exp.)	Blase F W (Netherlands)	12/79	2/82
11.	Fishery Biologist (3) (Ass. Exp.)	Bergstrom M (Sweden)	10/80	12/82
National Staff				
12.	Information Officer	Madhu S R (India)	10/79	
13.	Administrative Officer	Sivaraman N (India)	4/79	
14.	Project Officer- Bangladesh	Kashem A (Bangladesh)	11/79	
15.	Project Officer -Thailand	Tejakomal D (Thailand)	5/82	

(1) Staff with minimum one year contract based at programme headquarters — others are listed under consultants, Table 4.

(2) Associate expert until 10/82.

(3) Assigned as Fishing Technologist (Ass. Exp.) until 10/81.

Table 4
1982 — Consultants — GCP/RAS/040/SWE

S.No.	Name	Nationality	Project	M/M
(a) international Consultants				
1.	O. Gulbrandsen	Norway	SRL/FBD BOB/BCD	3.50
2.	L. Harrison	U.K.	BOB/BCF	3.00
3.	A. K. Rasul	Indonesia	MAL/CAC	8.25
4.	J. G. Broom	U.S.A.	BG D/SAP	1.00
5.	G. C. Eddie	U.K.	BOB/INF	2.00
6.	T. Gestsson	Iceland	SRL/DEF BGD/SBN	9.25
7.	G. P. Gowing	Australia	BCD	1.00
8.	T. Hammerman	U.S.A.	SRL/FTF	1.50
9.	N. Raungpanit	Thailand	MAL/CAC	4.00
10.	Charles Peters	U.S.A.	SRL/FAD	3.25
11.	S. Feldman	U.S.A.	BGD/FWA	0.50
12.	P. Katanuyong	Thailand	BOB/BCD	2.50
(b) TCDC Consultants				
1.	T. Franklin	India	SRL/CAC	1.25
2.	R. Sounderarajan	India	SRL/CAC	1.25
(c) National Consultants				
1.	P. V. Ramamoorthy	India	IND/HBT	6.25
2.	K. Sivasubramaniam	Sri Lanka	SRL/DEF	5.00

Table 5
1982 -Training Activities — GCP/RAS/040/SWE

S.No.	Subject	Duration	Venue	Number of Participants						
				BGD	IND	MAL	SRL	THA		
1.	<i>Consultations/Seminars/ Workshops</i>									
1.1	Bi-Valve culture workshop	1 week	Singapore							
1.2	ESCAP/FAO workshop on socio-economic conditions of women in fisheries	1 week	Fiji							
1.3	Credit, costs and earnings and bank procedures ..	1 week	IND/Cuttack		15					
1.4	Fisheries extension workshop	1 week	SRL/Wennapuwa							
2.	<i>Training Courses</i>									
2.1	Training in nursery and rearing of fish in 3 villages ..	1 week	THA/Kuan Tor Laem Sak Ta Ma Prao							
2.2	Training of cage culture (in-service) practices ..	1 week	THA/Phuket							
2.3	Training and involvement of fishermen leaders ..	1 week	IND/Adirampattinam		16					
2.4	Training and involvement of fisherwomen leaders ..	1 week	IND/Adirampattinam		15					
2.5	Training of field level workers	1 week	IND/Madras		15					
2.6	Training of instructors in non-formal education ..	1 week	IND/Adirampattinam		15					
2.7	Training of female extension workers-community organisation	10 weeks	IND/Madras		23					
2.8	Credit and financial assistance to small-scale fisherfolk for extension officers in Orissa	2 weeks	IND/Bhubaneswar		22					
2.9	Training course for fisheries extension officers on community development in small-scale fisheries	1 week	IND /Orissa		33					
2.10	Training of investigators for socio-cultural fisherfolksurvey	3 weeks	IND/Madras		15					

2.11	Training course for women in souvenir making	..	1 week	THA/Phang Nga			12
2.12	Training course in fish processing for women	..	1 week	THA/Phang Nga			43
3.	<i>Study Tours</i>						
3.1	Large-mesh driftnetting	..	3 weeks	Sri Lanka	1		
3.2	Set bagnets	..	3 weeks	India	7		
3.3	Fish aggregating devices	..	1 week	Fiji			1
3.4	Fish aggregating devices	..	2 weeks	Maldives		3	
3.5	Superintendent/inspector observing high-opening bottom trawling operations	..	3 weeks	IND/Tuticorin		3	
3.6	High-opening bottom trawling	..	3 weeks	IND/Mandapam			1
3.7	Liftnets	..	1 week	IND/Cochin			1
3.8	Fishing craft development	..	2 weeks	India/Sri Lanka		2	
3.9	Trials of beachlanding craft	..	2 weeks	India		1	
3.10	Participation of senior fishery officers, fishermen inspectors and extension officers in beachlanding trials	..	1 week	IND/Madras		16	
3.11	Hatchery techniques	..	5 weeks	Thailand		1	
3.12	Cockle culture practices	..	2 weeks	Malaysia			2
3.13	Coastal aquaculture pond installations	..	1 week	India	2		
3.14	Shrimp seed collection	..	1 week	India	2		
3.15	Oyster culture	..	4 weeks	THA/Surat Thani			10
3.16	Seaweed culture activities	..	1 week	IND/Mandapam			
4.	<i>Fello wships</i>						
4.1	High-opening bottom trawling for CIFNET Asst. Inspector (Operations)	..	20 weeks	IND/Tuticorin		1	
4.2	High-opening bottom trawling operations for master-fishermen from Orissa	..	2 months	IND/Tuticorin		2	
4.3	Fish feed formulation	..	3 months	Seattle/US		1	

Table 6

BOBP fishing craft (as of end 1982) -Some basic facts

	Length and Construction Material	Power	Remarks
<i>India</i>			
IND-10	7.0 m (23') ; Wood and plywood.	5 hp diesel	Unsuitable, scrapped.
IND-11	7.4 m (24.2') ; Wood and buoyancy blocks.	5 hp diesel	Two (2) in commercial trials from Injambakkam.
IND-13	7.4 m (24.2') ; Plywood.	5 hp diesel	Three (3) in commercial trials from Uppada for 24 months.
IND-14	7.2 m (23.6') ; Twin hull plywood.	Sail & 6 hp outboard.	Unsuitable, scrapped.
IND-15	6.5 m (21.3') ; Wood and buoyancy blocks.	Oars & sail	Unsuitable, scrapped
IND-17	7.6 m (25') ; Plywood.	Oars & sail +6 hp outboard	Two (2) in commercial trials from Tangassery Kerala.
IND-18	8.5 m (28') ; Plywood.	8 hp diesel	Longer version of IND-13 Two (2) in commercial trials from Pulluvilla, Kerala.
IND-20	8.5 m (28') ; FRP version of IND-18.	8 hp diesel	On trials at Injambakkam.
IND-21	7.6 m (25') ; Wood and buoyancy blocks.	8 hp diesel	New version of IND-11. One. (1) in commercial trials from Injambakkam.
IND-22	6.5 m (21.3') ; Wood and buoyancy blocks and PVC pipe.	5 hp diesel	Not completed.
IND-23	7.0 m (23') ; Aluminium.	8 hp diesel	One (1) in commercial trials from Injambakkam.
<i>Sri Lanka</i>			
SRL-10	7.0 m (23') ; Wood.	5 hp diesel	Unsuitable.
SRL-11	7.9 m (26') ; Plywood.	12 hp diesel.	One (1) in commercial trials Negombo for 16 months.
SRL-12	8.5 m (28') ; Plywood.	14.3 hp diesel.	Longer version of SRL-11. Two (2) tested for pair and single trawling in Madras. Ready for shipment to Sri Lanka.
SRL-34	10 m (34') FRP.	22 hp diesel	Standard 34-footer fitted with smaller engine, ice-box, small sail and accommodation. On commercial trials Beruwela for 5 months.
SRL-ORU	12 m (40 ') FRP outrigger canoe.	Sail	One (1) with wooden outrigger in commercial trials Negombo for one year.
SRL-TRI	7 m (23') FRP trimaran.	Sail 4 hp outboard	One (1) on commercial trials Negombo.
SRL-CAT	7 m (23') FRP catamaran.	Sail	Unsuitable.

7th Advisory Committee Meeting, 17-21 January 1983, New Delhi, India

REPORT OF IMPACT REVIEW (SUMMARY)

1. The BOBP emanated from an FAO/SIDA mission in 1974, received funding from SIDA in 1978, and became operational in January 1979. The Project is scheduled for a period of five years. Two Advisory Committees have continuously reviewed performance, progress and project orientation, viz. an Advisory Committee where member countries, FAO and SIDA are represented and the Advisory Committee of the Swedish National Board of Fisheries.

2. A mid-term review carried out in 1980 prompted SIDA to approve funding until the end of June 1983.

3. At the request of the 6th BOBP Advisory Committee, an Impact Review Mission was appointed by FAO to assist in determining funding for the project beyond 1983. This Mission was given the following terms of reference :

to review the output of the Programme and to assess

(i) the achievements of the Programme and the impact generated, and

(ii) the relevance of the achievements in relation to the fisheries policies and programmes of participating countries."

4. The Mission comprised Mr. E. H. Nichols, CBE, consultant to FAO (and formerly Director of Agriculture and Fisheries, Hong Kong) and Dr. Lennart Nyman, Director of the Institute of Freshwater Research, Drottingholm, Sweden. The Mission's itinerary is given at Appendix 1 of this report. A list of persons contacted is given at Appendix 2.

5. BOBP has and is undertaking some 54 regional and national projects. Eight major project areas are covered, namely Fishing Gear and Methods, Fishing Craft Technology, Coastal Aquaculture, Extension Services, Fish Utilisation, Development Support, Fisheries Resources and Information Services. A detailed list of projects is given at Appendix 3. A summary analysis of projects is given at Appendix 4; and an annotated evaluation of achievement, impact and relevance is at Appendix 5. A complete list of documents produced in relation to the Programme and its projects is given at Appendix 6.

6. The BOBP is an unusually well managed project. This state of affairs is due, mainly, to the managerial skill and broad experience of the Programme Director and to the high calibre and practical ability of Programme staff, present and past.

7. With certain exceptions, the trawling industry in Thailand and a few industrial ventures elsewhere, the major fisheries issues in member countries concern their small-scale sectors. BOBP thus addresses itself to the main development problem areas of the fisheries administrations in the region.

8. The Project design has had a definite and positive influence on achievements and impact. Programme monitoring carried out annually by an Advisory Committee consisting of representatives of participating countries, SIDA and FAO is efficient and effective. The fact that less than 50% of available funds is spent on personnel is significant.

9. The Programme has made real and lasting contributions to the development of small-scale fisheries in the Bay of Bengal region. These contributions have been made in a number of important subject areas, which are identified in the body of this report.
10. Not only have Programme activities complied with the policies and programme plans of participating countries, but they have contributed greatly by sharpening focus on salient points of those policies and programmes; and have been instrumental in offering alternative strategies and new guidelines to programming, as well as indicating areas for policy and programme re-appraisals.
11. The achievements of the Programme, as indicated in Appendix 5 have been considerable; and demonstrate the magnitude of effort and inputs expended by BOBP staff over the first three years of operation.
12. The degree of confidence in and respect for BOBP staff throughout the Region is a major achievement and should be recognised as such.
13. Despite the fact that, by its very nature, a development project dealing with small-scale fisheries, and the disadvantaged population sector involved therein, should normally expect results and positive impact over a longer term, in practice short-term impact reaction has been unusually positive and high potential impacts have been demonstrated. This reflects credit on the selectivity, flexibility and philosophy underlying Programme activities.
14. Statistically the Programme has been effective. Out of a total of 54 projects positive impact can be identified in 21 projects, of which 13 projects have high future impact potential; 15 projects have a high future potential impact although no immediate impact is discernible due to the relatively short time frame available to date. In 9 projects impact is uncertain ; and dependent upon a variety of external factors in most cases. Only in 9 projects has the impact been limited or negligible. Of the latter at least 3 may prove to be of positive value at a later date, whilst in 4 cases the negative results obtained have value in programming by virtue of redirecting development inputs elsewhere.
15. The Mission recommends that consideration be given to the continued funding of the BOBP to enable it to extend its activities into the future, and for at least a period of further five years.

Publications of the Bay of Bengal Programme (BOBP)

Development of Small-Scale Fisheries (GCP/RAS/040/SWE)

Reports (BOBP/REP/. . .)

1. Report of the First Meeting of the Advisory Committee.
Colombo, Sri Lanka, 28-29 October 1976.
(Published as Appendix 1 of IOFC/DEV/78/44.1, FAO, Rome, 1978)
2. Report of the Second Meeting of the Advisory Committee.
Madras, India, 29-30 June 1977.
(Published as Appendix 2 of IOFC/DEV/78/44.1, FAO, Rome, 1978)
3. Report of the Third Meeting of the Advisory Committee.
Chittagong, Bangladesh, 1-10 November 1978. Colombo, Sri Lanka, 1978.
(Reissued Madras, India, September 1980)
4. Role of Women in Small-Scale Fisheries of the Bay of Bengal.
Madras, India, October 1980.
5. Report of the Workshop on Social Feasibility in Small-Scale Fisheries Development.
Madras, India, 3-8 September 1979. Madras, India, April 1980.
6. Report of the Workshop on Extension Service Requirements in Small-Scale Fisheries.
Colombo, Sri Lanka, 8-12 October 1979. Madras, India, June 1980.
7. Report of the Fourth Meeting of the Advisory Committee.
Phuket, Thailand, 27-30 November 1979. Madras, India, February 1980.
8. Pre-Feasibility Study of a Floating Fish Receiving and Distribution Unit for Dubla Char,
Bangladesh. G. Eddie, M. T. Nathan. Madras, India, April 1980.
9. Report of the Training Course for Fish Marketing Personnel of Tamil Nadu.
Madras, India, 3-14 December 1979. Madras, India, September 1980.
- 10.1 Report of the Consultation on Stock Assessment for Small-Scale Fisheries in the
Bay of Bengal. Chittagong, Bangladesh, 16-21 June 1980.
Volume 1 : Proceedings. Madras, India, September 1980.
- 10.2 Report of the Consultation on Stock Assessment for Small-Scale Fisheries in the
Bay of Bengal. Chittagong, Bangladesh, 16-21 June 1980.
Volume 2 : Papers. Madras, India, October 1980.
11. Report of the Fifth Meeting of the Advisory Committee, Penang, Malaysia,
4-7 November 1980. Madras, India, January 1981.
12. Report of the Training Course for Fish Marketing Personnel of Andhra Pradesh.
Hyderabad, India, 11-26 November 1980. Madras, India, September 1981.
13. Report of the Sixth Meeting of the Advisory Committee.
Colombo, Sri Lanka, 1-5 December 1981. Madras, India, February 1982.
14. Report of the First Phase of the "Aquaculture Demonstration for Small-Scale Fisheries
Development Project" in Phang Nga Province, Thailand. Madras, India, March 1982.

15. Report of the Consultation-cum-Workshop on Development of Activities for Improvement of Coastal Fishing Families. Dacca, Bangladesh, October 27-November 6, 1981. Madras, India, May 1982.
16. Report of the Seventh Meeting of the Advisory Committee. New Delhi, India, January 17-21, 1983. Madras, India, April 1983.

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1. Investment Reduction and Increase in Service Life of Kattumaram Logs. R. Balan. Madras, India, February 1980.
2. Inventory of Kattumarams and their Fishing Gear in Andhra Pradesh and Tamil Nadu. T. R. Menon. Madras, India, October 1980.
3. Improvement of Large-Mesh Driftnets for Small-Scale Fisheries in Sri Lanka. G. Pajot. Madras, India, June 1980.
4. Inboard Motorisation of Small G.R.P. Boats in Sri Lanka. Madras, India, September 1980.
5. Improvement of Large-Mesh Driftnets for Small-Scale Fisheries in Bangladesh. G. Pajot. Madras, India, September 1980.
6. Fishing Trials with Bottom-Set Longlines in Sri Lanka. G. Pajot, K. T. Weerasooriya. Madras, India, September 1980.
7. Technical Trials of Beachcraft Prototypes in India. Gulbrandsen, G. P. Gowing, R. Ravikumar. Madras, India, October 1980.
8. Current Knowledge of Fisheries Resources in the Shelf Area of the Bay of Bengal. B. T. Antony Raja. Madras, India, September 1980.
9. Boatbuilding Materials for Small-Scale Fisheries in India. Madras, India, October 1980.
10. Fishing Trials with High-Opening Bottom Trawls in Tamil Nadu, India. G. Pajot, John Crockett. Madras, India, October 1980.
11. The Possibilities for Technical Cooperation between Developing Countries (TCDC) in Fisheries. E. H. Nichols. Madras, India, August 1981.
12. Trials in Bangladesh of Large-Mesh Driftnets of Light Construction. G. Pajot, T. K. Das. Madras, India, October 1981.
13. Trials of Two-Boat Bottom Trawling in Bangladesh. G. Pajot, J. Crockett. Madras, India, October 1981.
14. Three Fishing Villages in Tamil Nadu. Edeltraud Drewes. Madras, India, February 1982.
15. Pilot Survey of Driftnet Fisheries in Bangladesh. M. Bergstrom. Madras, India, May 1982.
16. Further Trials with Bottom Longlines in Sri Lanka. Madras, India, July 1982.
17. Exploration of the Possibilities of Coastal Aquaculture Development in Andhra Pradesh. Soleh Samsi, Sihar Siregar and Martono of the Directorate-General of Fisheries, Jakarta, Indonesia. Madras, India, August 1982.

18. Review of Brackishwater Aquaculture Development in Tamil Nadu. Kasemsant Chalayondeja and Anant Saraya of the Department of Fisheries, Thailand. Madras, India, September 1982.
19. Coastal Village Development in Four Fishing Communities of Adirampattinam, Tamil Nadu, India. F W Blase. Madras, India, December 1982.
20. Further Trials of Mechanized Trawling for Food Fish in Tamil Nadu. G. Pajot, J. Crockett, S. Pandurangan, P. V. Ramamoorthy. Madras, India, December 1982.

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3. Marine Small-Scale Fisheries of India : A General Description. Madras, India, March 1983.