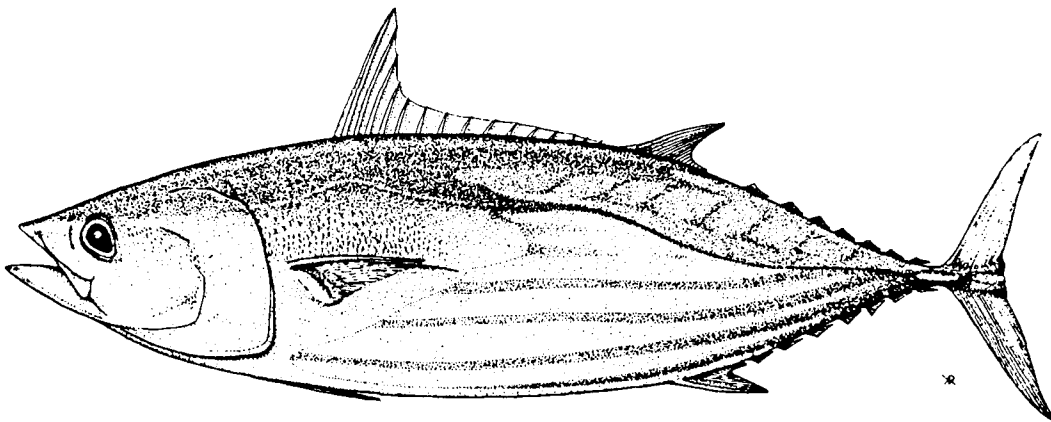



REPORT OF MEETING

PORT SAMPLING WORKSHOP

17-20 January 1994
Weno, Chuuk
Federated States of Micronesia



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Oceanic Fisheries Programme
South Pacific Commission
Noumea, New Caledonia

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1. PRELIMINARIES

1.1 Opening Address

1. Mr Tim Lawson briefly welcomed the participants before turning the chair over to Mr Craig Heberer, who introduced the opening speaker, Mr Myron Hashiguchi, Deputy Director, Chuuk Marine Resources Division. Mr Hashiguchi gave a welcoming address (Appendix 3) stressing the importance of tuna resources to the countries in the region and the necessity of port sampling for research and management.

1.2 Appointment of Chairman and Rapporteurs

2. Mr Tim Lawson, Fisheries Statistician, Oceanic Fisheries Programme (OFP), South Pacific Commission (SPC), assumed the chair.

3. The following rapporteurs were appointed:

Agenda Item 1	Mr Tim Lawson
Agenda Item 2	Mr Peter Williams and Mr Eti Palu
Agenda Item 3	Mr Gordon Yamasaki and Ms Dot Harris
Agenda Item 4	Mr Craig Heberer
Agenda Item 5	Mr Tim Lawson

1.3 Meeting Procedures

4. The report of the meeting will be submitted by the Chairman to the seventh meeting of the Standing Committee on Tuna and Billfish, to be held in Koror, Palau, in August 1994.

2. OVERVIEW OF PORT SAMPLING PROGRAMMES

2.1 Objectives of Port Sampling

5. Mr Tim Lawson gave a presentation on the objectives of port sampling. In a general sense, the objective of port sampling is to collect data in support of research and management of the tuna fisheries in the SPC region (Figure 1). The questions addressed by tuna research programmes concern the impact of fishing on the stocks and interactions between fisheries. The questions addressed by management concern the effects of changes in fishing effort and catch as a result of industry trends or management regimes, particularly on the status of the stocks and the economic value of the fisheries.

6. The two principal types of data collected under port sampling programmes are unloading weights and length frequency data. These data are collected from vessels as they return to port after the completion of their fishing trips. The unloading weights are the total amounts unloaded from the vessel of each species, including target species, by-catch and rejects. The length frequency data are the lengths (usually from the tip of the upper jaw to the fork in the tail) of a sample of the unloaded fish. Species composition data are usually collected in conjunction with length frequency data and consist of the number of fish by species in a sample of the unloaded fish.

7. The most important type of data collected under port sampling programmes are the unloading weights. They are used to estimate total catches by gear type and fishing nation; to verify data reported on catch and effort logsheets, which are submitted by fishing vessels to coastal states under the terms of access agreements; and to raise length frequency samples to estimate the catch by length interval for the fleet. The unloading weights, which are usually summarised by gear type, fishing nation, and month, for each port, can also be used to monitor industry trends, such as changes in fishing and transshipment activity among the ports, if the data are processed in a timely manner. The sources of unloading weights vary among ports; they include cargo manifests, packing lists, customs forms, as well as from weights collected together with length frequency data.

8. Length frequency data are used for stock assessment. The distribution of the catch among length intervals is informative of recruitment and the reproductive potential of that part of the population that is vulnerable to fishing. For example, a decline in the relative proportion of smaller fish may indicate a decline in recruitment of younger fish into the population, which could result in a drop in the reproductive potential of the stocks in the future, when the younger fish become sexually mature.

9. In fisheries in temperate waters, the age of fish can often be determined by examining structures on hard body parts that are correlated with time, such as the daily rings that are laid down on otoliths. In tropical tuna fisheries, however, structures on hard parts are not always reliable indicators of age. Further, the hard parts are expensive to collect and examine. Length data, on the other hand, are relatively inexpensive to obtain. Stock assessment for tropical tunas has therefore been based largely on length frequency data, rather than age data.

10. As an example of how length data can be summarised prior to analysis, Figures 2—4 present histograms of number of fish by length interval for longline fisheries sampled in Majuro, Pohnpei and Yap during 1992. It can be seen that smaller yellowfin have been landed at Majuro than yellowfin landed on Yap. Yellowfin landed on Pohnpei by Taiwanese longliners are larger on average than yellowfin landed by Japanese and Korean longliners, even though the Taiwanese vessels fished in the same area as the Japanese vessels. These examples of differences in length frequency distributions may be explained by targeting or by size-selective discarding. In either case, they show that significant differences exist in length frequencies of landings between areas fished and between fleets.

11. The observation that differences in length distributions exist between ports and between fleets is important with regard to sampling design. Most of the port sampling programmes in the region were established during 1991 and 1992. It has therefore not previously been possible to examine in detail the sampling protocols for most programmes in order to determine if they are optimum. For example, some port samplers currently measure all fish unloaded from almost all vessels; yet, if, on average, there are no differences in the distribution of lengths of fish unloaded from vessels from the same fleet that have fished in the same area, then it may not be necessary to sample all vessels, nor all fish from those vessels that are sampled, since larger samples from more vessels may not provide any new information about the length frequency distribution of the catch. Future studies at SPC will examine variation in length frequency distribution among vessels, among fleets, and among areas fished, with a view to determining the optimal sampling design.

12. In the discussion, Mr Gordon Yamasaki stated that the objectives of the port sampling programme for purse seine and longline vessels in American Samoa were basically identical to those of the SPC. There are, however, differences in the sampling protocol and coverage. In

addition, the target species (i.e. albacore) of the longline vessels unloading in Pago Pago differ from the target species (i.e. bigeye and yellowfin) of longline vessels unloading at most other ports in the region.

13. Ms Dot Harris described the objectives of the Department of Commerce, Guam, in collecting transshipment data. In contrast to the objectives of SPC, its main concerns revolve around the economic aspects of the transshipment operations, that is, direct and indirect benefits of the transshipment operation to Guam and problems generated by these activities, such as the impact of the sale of rejected fish from foreign vessels on the local commercial fisheries. The main priority at the moment is to ensure adequate coverage and management of the data collected, with analyses expected to be done at some stage in the future.

14. Mr Craig Heberer stated that the objectives of port sampling programmes in the Federated States of Micronesia (FSM) are identical to SPC. However, they also provide additional information related to the local economy, such as the volume of rejected fish, some of which is subsequently given away or sold locally.

2.2 Historical Development

15. Mr Tim Lawson briefly outlined the development of port sampling activities in the region. Since 1962, port sampling has been conducted in Pago Pago, American Samoa, where vessels have unloaded tuna for delivery to the Van Camp and Starkist canneries. In the early years, the United States Bureau of Commercial Fisheries (which later became the National Marine Fisheries Service) sampled distant-water longliners, first Japanese vessels, then Taiwanese and Korean vessels. In 1970, at the outset of the purse seine fishery, American purse seiners were also sampled on an opportunistic basis. Troll vessels, or jigboats, have been sampled at Pago Pago since 1986.

16. During the 1989/1990 albacore season, the OFP sampled Japanese driftnet vessels transshipping in Noumea. Since 1990, the OFP sampled the local longline fleet in Noumea, which targets albacore. Responsibility for sampling the local longline fleet in Noumea was assumed by the New Caledonian *Service territorial de la marine marchande et des pêches maritimes* in 1994.

17. Sampling of skipjack and yellowfin caught by the *bonitier* fleet based in Papeete, French Polynesia, has been carried out by the *Institut français de recherche scientifique pour le développement en coopération* (ORSTOM) since at least 1990. More recently, the French Polynesian *Etablissement pour la valorisation des activités aquacoles et maritimes* (EVAAM) has sampled troll vessels transshipping albacore and local longliners unloading yellowfin, bigeye and albacore.

18. In late 1986, offshore Japanese and Taiwanese longliners first began transshipping in the region from Guam, sending chilled sashimi-grade yellowfin and bigeye by air to the Tsukiji market in Japan. Soon afterwards, Japanese and Taiwanese vessels were also transshipping from Koror, Palau, and Pohnpei and Yap, Federated States of Micronesia. In 1991, port sampling programmes covering offshore longliners were implemented in Koror and Pohnpei. In 1992, sampling of offshore longliners was implemented in Majuro, Marshall Islands, and Yap, Federated States of Micronesia.

19. In September 1991, the OFP implemented a programme in Levuka, Fiji, to sample Taiwanese distant-water longliners unloading albacore for the Pacific Fishing Company (PAFCO) cannery. Since February 1992, the local longline fishery based in Lami, Fiji, has been sampled.

20. Following the region-wide ban on high seas transshipment, which came into effect in June 1993, purse seiners and longliners began transshipping in Chuuk and Kosrae. The Micronesian Maritime Authority established sampling programmes in Chuuk and Kosrae soon after the first vessels began transshipping.

2.3 Current Status

21. The participants then presented a summary of the current status of transshipment and sampling activities in their ports. A detailed profile of each port sampling site is included in Appendix 4.

2.3.1 American Samoa: Pago Pago

22. The main activity at Pago Pago during 1993 was the monitoring of the unloadings of American purse seine vessels operating under the United States Multilateral Treaty. Two samplers operate in Pago Pago under the National Marine Fisheries Service. Catch and effort logbooks, unloading weights, and length frequency and species composition data are collected. Coverage for all forms of data collected is 100 per cent.

23. Logbook data, unloading weights and length frequency data were also collected from Taiwanese longliners and American trollers, although less priority was given to these fleets and, hence, some of these data do not provide full coverage. When Korean sashimi longliners unload in Pago Pago, they usually unload only albacore; the Korean sashimi vessels are not sampled.

2.3.2 Federated States of Micronesia: Chuuk

24. Since July 1993, when purse seine transshipments began in Chuuk, most of the unloadings from purse seiners, including Taiwanese, Korean, FSM and American vessels, have been sampled. Three longline fleets were sampled during 1993, namely Taiwanese, mainland Chinese and FSM vessels. Transshipment activity at Chuuk is monitored by staff of the Micronesian Maritime Authority. Two full-time samplers are located in Chuuk and one MMA observer has been sampling on a temporary basis. In the first few months, difficulties were experienced in determining the appropriate length frequency and species composition sampling design for purse seiners due to variations in catch storage practices between fleets; these problems have largely been resolved.

2.3.3 Federated States of Micronesia: Kosrae

25. Transshipment in Kosrae started in June 1993, by Korean and Taiwanese purse seiners, and by two Taiwanese longliners. Two MMA port samplers/observers are stationed in Kosrae, alternating between port sampling and observer work. Length frequency, species composition and unloadings data are collected with full coverage. Rejects are stored in a 30,000 mt capacity cold storage on the island, from which they are then shipped to Taiwan. Currently, there is a ban on transshipment inside the port which resulted after one of the carrier vessels damaged the wharf.

2.3.4 Federated States of Micronesia: Pohnpei

26. Only three purse seiners transhipped in Pohnpei during 1993. Taiwanese longliners dominate the unloading activities, with more than 100 vessels licensed to fish in FSM. Korean and Japanese longliners also transship in Pohnpei. One MMA port sampler is stationed in Pohnpei; length frequency and unloadings data are collected with almost full coverage.

2.3.5 Federated States of Micronesia: Yap

27. Yap is being utilised by both Taiwanese and mainland Chinese longliners as their main transshipment port. There has not been any purse seine transshipment in Yap to date. Port sampling and data collection activities are conducted by MMA; one port sampler is stationed in Yap. Coverage of length frequency and species composition samples and unloadings data is usually about 100 per cent. However, during the peak season, only 50-75 per cent of the fish unloaded from each vessel are sampled. Chinese vessels unloading in Yap have shown a greater amount of by-catch as compared to Taiwanese vessels.

2.3.6 Fiji: Lami

28. The Fiji Fish Company Ltd operates 13 longliners based in Lami, varying in size from 70 to 200 GRT. These vessels target mainly bigeye, but have taken a significant amount of other tuna species and billfish. High-quality catches are air-freighted to Japan, Hawaii and mainland United States. About 40 per cent of the total catch for 1993 was albacore; larger albacore were air-freighted to Japan, while smaller albacore were sold to the PAFCO cannery in Levuka. Port sampling in Lami is under the supervision of the Fiji Fisheries Division, with one port sampler stationed there. Coverage for albacore length frequency samples and unloadings of all species is 100 per cent.

2.3.7 Fiji: Levuka

29. Length frequency data are collected from Taiwanese distant-water longliners unloading mainly albacore at the PAFCO cannery. No sampling has been carried out on purse seiners, which have unloaded at Levuka from time to time, nor from domestic pole-and-liners. Port sampling in Levuka started in 1991 with one port sampler hired by SPC to collect albacore length frequency and unloadings data. Port sampling coverage for the longline fleet is 100 per cent. The majority of unloadings are canned at the PAFCO cannery; however, there has been some transshipment, principally large fish, destined for the canneries of Italy and Spain.

2.3.8 French Polynesia: Papeete

30. Several fleets unload in French Polynesia, including distant-water Japanese and Korean longliners, American albacore trollers (jigboats), the local *bonitier* fleet (skipjack trollers), and the local longline fleet. EVAAM is responsible for monitoring the American trollers and the local longliners, while ORSTOM and the French Polynesian *Service de la mer et de l'aquaculture* monitor the distant-water longliners and the *bonitiers*. EVAAM samples length frequencies from the American trollers and collects daily catch and effort logsheets, from which total unloadings are estimated; coverage is almost 100 per cent. EVAAM also samples length frequencies and collects total unloadings for the local longliners; coverage is currently about 50 per cent, though it should increase in the near future. ORSTOM processes daily catch and effort logsheets received from

distant-water longliners, although coverage is poor for the Korean fleet and good, about 80 per cent, for the Japanese fleet; no length frequency samples or unloading weights are collected for distant-water longliners. ORSTOM samples the *bonitier* fleet for length frequencies and collects unloading weights.

2.3.9 Guam

31. Japanese and Taiwanese offshore longliners have transshipped sashimi-grade chilled bigeye and yellowfin from Guam by air-freight to Japan since 1986. The number of vessels has declined since 1990, when 300 vessels visited Guam, to about 260 in 1993. Unloading weights are provided to the Department of Commerce by the vessel agents, with full coverage. Length frequency sampling may be implemented in 1994, when the SPC South Pacific Regional Tuna Resource Assessment and Monitoring Project (SPR TRAMP) is scheduled to commence.

2.3.10 Kiribati: Kiritimati

32. Japanese distant-water longliners, fishing primarily in the eastern Pacific, transship frozen fish in Kiritimati onto carriers bound for Japan. Some Taiwanese longliners fishing in the Line Islands have also transshipped at Kiritimati. At present, only unloading data are collected by the Fisheries Licensing Unit, but length sampling will be implemented in February 1994, with assistance from the OFP. Coverage for the unloading data is 100 per cent.

2.3.11 Kiribati: Tarawa

33. Since June 1993, two purse seine fleets have transshipped in Tarawa, mostly American purse seiners based in Pago Pago, and some Korean vessels. All transshipment activities are coordinated by the Licensing Unit of the Kiribati Fisheries Division. Unloading data are collected; coverage is 100 per cent. At present, no length frequency sampling is conducted; however, it is anticipated that sampling may commence during 1994. All transshipments are carried out in the Tarawa lagoon.

2.3.12 Marshall Islands: Majuro

34. At present, Marshallese, American and mainland Chinese longliners transship in Majuro. Two Marshallese-American joint venture purse seiners, *Bold Fleet* and *Koorale*, have showed interest in transshipping at Majuro, but, to date, they have not done so. One port sampler is active on Majuro, under the direction of the Marshall Islands Marine Resources Authority. Transshipment usually occurs in the evening, after regular working hours; therefore, in the past, it has not always been possible to maintain 100 per cent coverage. At present, coverage for both length frequency samples and unloading data stand at about 90 per cent.

2.3.13 New Caledonia: Noumea

35. All transshipments, at present, are from two longliners operated by Toho Calédonie, which catch primarily albacore. The majority of tuna and billfish are air-freighted to Japan, while the remainder is sold locally. Port sampling in New Caledonia is conducted by the *Marine marchande*. Length frequency samples are collected with full coverage. Complete unloading data are received from Toho Calédonie on a weekly basis. Two more longliners are expected to join the local fleet this year.

2.3.14 Northern Marianas: Tinian

36. At present, Guam-based American purse seiners transship in Tinian. Some purse seiners from other fleets have transshipped on Tinian in the past. Port sampling in Tinian was attempted in 1992, supervised by NMFS under the United States Multilateral Treaty sampling programme; port sampling on Tinian terminated when the port sampler resigned. NMFS and the Northern Marianas Division of Fish and Wildlife are finalising joint plans to recommence port sampling activities.

2.3.15 Palau: Koror

37. In the past, Taiwanese, mainland Chinese and Japanese offshore longliners have transshipped in Palau. At present, almost all vessels are mainland Chinese. The majority of the catch is air-freighted to Japan for the sashimi market, while rejected fish are stored in cold storage facilities before shipping to Taiwanese canneries. Port sampling in Koror started in June 1991 under the direction of the Palau Maritime Authority. Unloadings data were previously compiled from packing lists provided by the agents, with less than full coverage; however, at the beginning of 1994, the agents began providing unloadings data, with full coverage, on the SPC Longline Unloading Form.

2.3.16 Papua New Guinea

38. There are no transshipment activities in Papua New Guinea at present. However, purse seiners may transship at Rabaul in 1994, as a result of the ban on high seas transshipment. Unloadings at Madang by American purse seiners will commence when the proposed cold storage and cannery are operational.

2.3.17 Solomon Islands: Honiara

39. Korean and Russian purse seiners have transshipped in Honiara following the ban on high seas transshipment in June 1993. The Solomon Islands Fisheries Division has collected unloadings data with full coverage. Length frequency sampling will be implemented during 1994.

2.3.18 Solomon Islands: Noro

40. Pole-and-line vessels operated by Solomon Taiyo Ltd unload skipjack and yellowfin at Noro for delivery to the Solomon Taiyo cannery. The unloadings generally occur one or two days per week. The Fisheries Division may implement port sampling in the near future, possibly through partial funding by the Fisheries Division of a Solomon Taiyo employee.

2.3.19 Solomon Islands: Tulagi

41. Pole-and-line vessels operated by the National Fisheries Development Company unload fish at Tulagi for cold storage prior to transshipment to canneries in the region. In contrast to unloadings at Noro, pole-and-line unloadings at Tulagi can occur any day of the week. American and Taiwanese purse seiners have also transshipped in Tulagi as a result of the ban on high seas transshipment imposed in June 1993. The Fisheries Division may implement port sampling in the near future, possibly with a full-time Fisheries Division employee based in Tulagi.

2.4 Future Developments

42. It was noted that further high seas purse seine transshipment may be redirected to ports in the region as a result of the ban on high seas transshipment. Other important trends are the increase of mainland Chinese vessels in the region and the displacement of offshore Taiwanese longliners from Palau and Yap to ports further to the east.

2.5 Related Issues

43. The issues of pollution and by-catch were largely covered in the presentations by each participant; the following are summaries of these issues.

2.5.1 Pollution

44. Sewerage outflow problems from purse seiners, longliners and carriers have been experienced in Chuuk, Kosrae and Koror. In Chuuk, the problem was more prevalent from the longline vessels. Oil spill and seepage problems were noticed in Kosrae and Majuro. The build up of waste disposal at the wharves in Koror was also a concern. In Guam, regulations enforce the dumping of discharge at sea and not in the port. In Kosrae and Chuuk, some purse seine vessels were dumping rejected fish overboard in port; this has since been prohibited. In Honiara, regulations require that purse seiners must be at least one nautical mile offshore before they are allowed to dump discarded fish.

2.5.2 Distribution of by-catch

45. Problems related to the influx of by-catch onto the local market was experienced in the first few months of purse seine transshipment in Kosrae and Chuuk. Regulations have since restricted this activity and in some cases, locals are allowed to trade for the rejected by-catch. Elsewhere, there appears to be either regulations controlling this situation (e.g. Noumea, Honiara, Koror and Levuka). In some places, the local commercial fishing industry does not exist or is not established enough to be threatened and, hence, there are no perceived problems. In Lami, there are no problems since the entire catch, including by-catch, is sold to Fiji Fish.

3. PORT SAMPLING PROCEDURES

46. Under this agenda item, sampling procedures for each port sampling programme were compared and other issues were examined. The sampling procedures discussed included sampling protocols for length frequency and, where appropriate, species composition, as well as procedures for compiling unloading weights. Other issues that were discussed included data collection forms, conversion factors, species codes and data submission.

3.1 Longline

3.1.1 American Samoa

47. Unloading weights for the distant-water longliners (Taiwanese, some Korean), which usually target albacore, are obtained directly from the canneries, by species, with full coverage;

therefore, species composition samples are not required. Length frequency samples include 50 albacore per unloading. All fish are accepted by the canneries, therefore there are no rejects. Yellowfin, bigeye and skipjack are sampled if time is available; most of the other species are discarded at sea. Individual weights are not recorded. Coverage is estimated at 89 per cent of unloadings.

3.1.2 Federated States of Micronesia: Chuuk

48. Unloading weights for the offshore longliners (Taiwanese, mainland Chinese, Micronesian), which usually target yellowfin and bigeye, are estimated from packing lists and reject lists¹ provided by the vessel agents; coverage by the packing lists and reject lists is less than complete. Length frequency samples attempt to include all fish from all unloadings, including rejects and by-catch. Individual gilled-and-gutted weights are recorded. Coverage of length samples is high.

3.1.3 Federated States of Micronesia: Kosrae

49. Only two unloadings by longliners (Taiwanese) have occurred on Kosrae; the vessels targeted yellowfin and bigeye. Unloading weights are estimated from packing lists and reject lists provided by the vessel agents. Length frequency samples included all yellowfin and bigeye, including rejects, from each of the two unloadings, but no by-catch. Individual gilled-and-gutted weights were recorded.

3.1.4 Federated States of Micronesia: Pohnpei

50. Unloading weights for the offshore longliners (Taiwanese, Korean, Japanese), which usually target yellowfin and bigeye, are estimated from packing lists and reject lists provided by the vessel agents; coverage by the packing lists and reject lists is less than complete. Length frequency samples attempt to include all fish from all unloadings, including rejects and by-catch. In practice, about 50 per cent of fish from most unloadings are measured. Marlin and swordfish are headed-and-tailed, therefore length measurements are taken from the base of the pectoral fin to the fork of the tail. Dorsal fins are examined to distinguish between black marlin and blue marlin. Individual gilled-and-gutted weights are recorded, except for marlin and swordfish, for which headed-and-tailed weights are recorded. Selective unloadings sometimes occur when cargo space on the commercial flights is limited and larger, higher-valued fish are unloaded prior to smaller fish.

3.1.5 Federated States of Micronesia: Yap

51. Unloading weights for the offshore longliners (mainland Chinese, Taiwanese, Micronesian), which usually target yellowfin and bigeye, are estimated from packing lists and reject lists provided by the vessel agents; coverage by the packing lists and reject lists is less than complete. Length frequency samples attempt to include all fish from all unloadings, including rejects and by-catch, except during periods of frequent unloadings, when 50 per cent of fish from

¹ Packing lists are prepared by the vessel agent during each unloading; the packing list records the species, weight and grade of each fish in each carton to be air-freighted. The reject list records the species, and usually the weight, of each fish rejected for air-freighting.

most unloadings is measured. Marlin and swordfish are headed and tailed, therefore length measurements are taken from the base of the pectoral fin to the fork of the tail. Dorsal fins are examined to distinguish between black marlin and blue marlin. Individual gilled-and-gutted weights are recorded, except for marlin and swordfish, for which headed and tailed weights are recorded.

3.1.6 Fiji: Lami

52. Unloading weights for offshore longliners (Fijian, Korean), which target yellowfin, bigeye and albacore, are provided by the Fiji Fish Company; they include all fish unloaded and coverage is complete. Unloading weights for yellowfin and bigeye are gilled-and-gutted; unloading weights for albacore and all other species are whole weight. Length frequency samples include all albacore, yellowfin and bigeye from all unloadings; no by-catch is measured. Individual weights are not recorded during sampling.

3.1.7 Fiji: Levuka

53. Unloading weights for Taiwanese distant-water longliners, which target albacore, are provided by PAFCO; they include all fish unloaded and coverage is complete. Length frequency samples include 200 albacore from every unloading; no other species are measured. Individual weights are not recorded during sampling.

3.1.8 French Polynesia: Papeete

54. Unloading weights for distant-water longliners (Japanese and Korean) transshipping in Papeete, which target yellowfin, bigeye and albacore, are provided to the French Polynesian customs department and to EVAAM by the vessel agents; the unloading weights are not broken down by species. No port sampling is undertaken.

55. Unloading weights for French Polynesian longliners unloading in Papeete, which target yellowfin, bigeye and albacore, are estimated by EVAAM from daily catch and effort logsheets; coverage of logsheets is less than complete. Estimated unloadings are for gilled-and-gutted weight. Length frequency samples include yellowfin, bigeye and albacore from most unloadings; other species are not sampled. Individual gilled-and-gutted weights are recorded.

3.1.9 Marshall Islands: Majuro

56. Unloading weights for the offshore longliners (Marshallese, mainland Chinese, American), which target yellowfin and bigeye, are compiled from individual weights measured during length frequency sampling. When unloadings are not sampled, the vessel agents provide estimates of unloadings; unloadings data provided by the agents do not include rejects. Unloading weights are for gilled-and-gutted fish, except for marlin and fish bound for Hawaii, which are headed-and-tailed. Length frequency samples attempt to include all fish from all unloadings, including rejects and by-catch, although, in practice, coverage is not complete. Length measurements for marlin, which are headed-and-tailed at sea, are taken from the base of the pectoral fin to the fork of the tail. Length measurements for all other fish, including fish bound for Hawaii, which are measured before they are headed-and-tailed, are fork lengths.

3.1.10 New Caledonia: Noumea

57. Unloading weights for the New Caledonian longliners transshipping in Noumea, which target albacore, yellowfin and bigeye, are provided by Toho Calédonie SA on a weekly basis; the unloadings data include rejects and by-catch, and coverage is complete. Unloading weights are for gilled-and-gutted fish, including albacore. Length frequency samples include 50 per cent of all fish from all unloadings, including rejects and by-catch. Length measurements for marlin are taken from the base of the eye to the fork of the tail. Individual weights for fish air-freighted to Japan are recorded during sampling; these include yellowfin and large albacore, which are gilled-and-gutted, and striped marlin.

58. Japanese distant-water longliners transship in Noumea from time to time. However, no unloading weights or length frequency data are collected from these vessels at present.

3.1.11 Palau: Koror

59. Unloading weights for the offshore longliners (mainland Chinese, Taiwanese, Japanese) transshipping in Koror, which target yellowfin and bigeye, are provided by the vessel agents on the SPC Longline Unloading Form; the unloading weights include rejects and by-catch, and coverage is complete. Unloading weights are for gilled-and-gutted fish, except for marlins, which are headed-and-tailed. Length frequency samples include 50 fish, selected in the order that they are unloaded, from two unloadings per day. The sample includes rejects, but not by-catch, which are usually unloaded last. Individual gilled-and-gutted weights are recorded during sampling.

3.1.12 Discussion

60. Longliner by-catch on Kosrae is put into cold storage, prior to transshipment by sea; unloading weights for by-catch, which are not recorded on packing lists or measured during sampling, may be available from records at the cold storage.

61. Unloading weights for vessels transshipping in FSM ports are currently estimated from packing lists and reject lists provided by the vessel agents. In order to reduce the port samplers' work load, improve coverage, and to improve the accuracy of estimates of unloading weights, the vessel agents in FSM ports may be requested to provide unloading weights on the SPC Longline Unloading Form. Since the beginning of 1994, vessel agents in Koror have used the SPC form; Mr Mash Tkel reported that the agents on Koror have found the form useful for their own accounting and that providing information on unloadings on the SPC form is less work for them than copying packing lists.

62. Selective unloading from longliners occurs in Pohnpei. The port sampler must ensure that either (i) the length and weights of all fish are measured in each size/species category, or (ii) total unloadings are obtained for each size/species category, such that the length frequency samples for each size/species category can be raised to the total catch.

63. Fish transshipped on Majuro that are bound for Hawaii are headed and tailed during unloading. The gilled-and-gutted weight could be obtained if the port sampler placed the head and the tail in a plastic bag, and then placed the plastic bag on the scale with the headed-and-tailed fish.

64. Port sampling of Japanese distant-water longliners transshipping in Noumea may be implemented during 1994, when the *Marine marchande* takes on students from the New Caledonia *Ecole des métiers de la mer*.

3.2 Pole-and-Line

3.2.1 Fiji: Levuka

65. Eleven Fijian pole-and-line vessels unload at Levuka to deliver skipjack and yellowfin to the PAFCO cannery. The fishery is seasonal and usually runs from September to June. No port sampling occurs at present.

3.2.2 Kiribati: Tarawa

66. Four Kiribati pole-and-line vessels operated by Te Mautari unload at Tarawa to deliver skipjack and yellowfin to cold storage, prior to transshipment to canneries in the region. No port sampling occurs at present.

3.2.3 Solomon Islands: Noro

67. Ten pole-and-line vessels, which target skipjack and yellowfin, unload to the Solomon Taiyo cannery at Noro. The vessels make weekly trips and unloadings take place one or two days a week. Port sampling is not undertaken at present.

3.2.4 Solomon Islands: Tulagi

68. Fourteen pole-and-line vessels, which target skipjack and yellowfin, unload to the cold storage at Tulagi operated by National Fisheries Development Corp. Port sampling is not undertaken at present.

3.2.5 Discussion

69. No port sampling for pole-and-line is conducted at present. However, Mr Ashok Kumar and Mr Raikon Tumoa stated that they would be able to implement port sampling in Levuka and Tarawa in the immediate future. Mr Manasseh Avicks considered that it would be possible to introduce port sampling programmes in Noro and Tulagi.

70. A port sampling protocol for pole-and-line vessels was discussed. It was considered that since the size range for pole-and-line was limited compared to longline and purse seine, a length frequency sample of 50 skipjack per unloading would probably be sufficient. Yellowfin are usually present in the catch, but sometimes not in large numbers. Therefore, the minimum sample size should be 20 yellowfin; more yellowfin, up to a maximum of 50, should be taken if they are available. Bigeye represent a small proportion of the catch; they should be sampled on an opportunistic basis, only when a minimum sample size of 10 fish is possible. Unloading weights for pole-and-line are available through the canneries and cold storage, therefore species composition samples are not required.

71. Following the workshop, SPC will develop forms to record pole-and-line length frequency data and unloadings data.

3.3 Purse Seine

3.3.1 American Samoa: Pago Pago

72. The objective of length frequency sampling for American purse seiners unloading in Pago Pago is to obtain a minimum of 13 samples per month per species in each of the four statistical sampling areas fished by the American fleet (Figure 5). In the NMFS field office, a status board is maintained which contains a running total of the catch of skipjack, yellowfin and bigeye, and the number of samples taken from each month and area stratum.

73. Vessels are met as soon as possible after entering port by an NMFS representative to collect and abstract vessel log books from American purse seiners participating in the Multilateral Treaty. Logbook information consists of a Bridge Logbook and a Purse Seine Vessel-Catch Report Form (CRF). The CRF and Bridge Log are verified for accuracy through the completion of a logbook abstract form by the NMFS representative. Dates, positions, catch, well numbers, etc, are compared and corrections are made. CRF forms are copied and the original is forwarded to the Forum Fisheries Agency (FFA). FFA uses this information to confirm compliance with Multilateral Treaty regulations, verify vessel reports, and for the distribution of license fees to the participating island nations.

74. A Well Filling Worksheet (WFW) is prepared after verification of the CRF is complete. Only information from successful sets (sets where fish were caught and retained) are recorded on the WFW. Vessel name, trip number, trip dates, well numbers, set dates, positions, statistical area, and catch by species are listed on the WFW. Only wells that contain catches taken from a single month-area stratum are considered for sampling. Wells that were completely filled in the least amount of time, in the same general area, and by the same type of school, are preferred.

75. Skipjack and yellowfin are separated by size and species at the canneries; yellowfin and bigeye are usually not separated by the canneries, therefore "yellowfin" usually includes some bigeye. The canneries in American Samoa and most purse seiners do not differentiate between yellowfin and bigeye, as the price is the same. By-catch is separated by the vessel crew and stevedores and is not weighed by the cannery; it is eaten by the crew, or taken by the stevedores for food. Some by-catch is taken by the cannery for processing into fishmeal. No information on by-catch is obtained by the port samplers.

76. During offloading operations, the port sampler consults the WFW and samples wells that were pre-selected. A 50 fish length frequency sample for each species and size group is required for each well sampled, excluding any broken and/or misshapen fish. Samples are taken on the wetdeck of the vessel and/or from fish boxes on the dock. If the port sampler encounters bigeye or another species during the 50 fish length frequency sample for skipjack and yellowfin, a 100 fish species composition sample is then required. Length frequency measurements are also taken during species composition samples; after completion of the species composition sample, the lengths of additional fish are measured until a 50 fish length frequency sample for each species has been obtained. Individual weights are not recorded.

77. Purse seiners also transship in Pago Pago, rather than wait to unload at the cannery. During transshipment, skipjack, yellowfin and bigeye are usually mixed together, i.e. they are not separated by species, nor by size. The wells are filled with brine, and the fish are floated to the top and put in cargo nets on the wetdeck. A 100 fish species composition sample is taken from the well and/or the cargo nets. During the species composition sample, the lengths are measured; after completion of the species composition sample, sampling of lengths continues until a 50 fish length frequency sample is obtained for each species, except if either time or the availability of a particular species is limited.

78. Large yellowfin are sometimes separated and placed into different cargo nets for transshipment to another carrier vessel. A separate 50 fish length frequency sample of the large yellowfin is obtained from the cargo net, and a 100 fish species composition sample is taken from the remaining fish. As unloading weight by species and by size are not readily available for transshipped fish, estimates of the amounts transshipped, by species and size group, are taken by the port samplers. A well chart from the vessel navigator or chief engineer is recommended for making these estimates; the well chart lists the approximate tonnage in each well, by species, and, sometimes, by size group.

79. After a vessel has unloaded, a Purse Seine Unloading Logsheet (UL) is completed and obtained from the vessel. Total weights by species unloaded by the purse seiner to the cannery or the carrier vessel are listed on this form. Cannery totals are actual whole weights discharged by the vessel, while transshipment totals are estimates.

80. Another requirement of the Multilateral Treaty is that unloading weights by size and species must be provided by each vessel within a reasonable time period after it completes unloading. A Final Outturn Reports form (FOT) is obtained by NMFS for each American purse seiner and transshipment vessel directly from the canneries in American Samoa. These are computer summaries of total weight by species, size and well number that were received by the cannery from the vessel. In the case of transshipment, the FOT contains total weight by species, size and hatch number for each carrier vessel.

81. For vessels that unload or transship to a cannery in ports outside American Samoa, vessel owners or managers must supply this information to NMFS. After receipt of the UL and FOT, total unloading weight is compared and, if acceptable, forms are copied and forwarded to FFA. Transshipping weights are sometimes incorrect; owners/managers are contacted for explanations in these instances. Copies of the CRF, UL, FOT, length frequency samples, etc, are maintained into the NMFS office in Pago Pago for each vessel and updated upon receipt of forms at the completion of unloading.

3.3.2 Federated States of Micronesia: Chuuk and Kosrae

82. Taiwanese and Korean purse seiners have transshipped in Chuuk and Kosrae since the ban on high seas transshipment in June 1993. Purse seine vessels intending to transship in FSM ports must notify MMA and receive permission to transship before entering port. MMA headquarters in Pohnpei will normally notify port samplers in Chuuk or Kosrae of vessels scheduled to transship in their respective ports. Port samplers are also encouraged to keep in close contact with local agents and the port authority to obtain information about possible transshipments in their area.

83. The port sampler usually accompanies immigration and customs officials to the purse seiner and boards the vessel after clearance is obtained. The fishing master or chief officer is asked to provide an FSM fishing permit, logbook and well loading plan. (At the beginning of the sampling programme, catch and effort logbooks were not available to the port samplers, since under access agreements with the Korean and Taiwanese purse seiners, logbooks are not required until 45 days after the end of the trip. After repeated attempts to obtain logbook information and well loading sequences directly from the seiners, the information is now being made available.) Letters of introduction are provided and official credentials presented if difficulties are encountered or if the vessel is in port for the first time. The Well Loading Form (WLF) is completed using information from the logbook and on wells filled. Information on date, set type, position, catch by species and well filling sequence are recorded on this form; it allows the port sampler to choose the appropriate wells for length frequency sampling. The selected wells usually contain fish from a single set. When a well is selected that contains fish from more than one set, the sets are usually of the same type, either associated or unassociated schools.

84. Length frequency samples of 100 yellowfin and 50 skipjack are required for pure schools of these species. If the well contains a mixture of more than one species, a 100 fish species composition sample is taken randomly from the well. During the species composition sample, length measurements are recorded. After the species composition sample is complete, sampling continues until length frequency samples of 100 yellowfin, 50 skipjack and 50 bigeye are completed, whenever practical. By-catch are not sampled. Individual weights are not recorded.

85. Prior to sampling, the port samplers determine whether the unloading crew are sorting the catch by size. If so, an attempt is made to sample the fish prior to sorting. If the fish cannot be sampled prior to sorting, length frequency samples of 50 yellowfin are taken from each size class.

86. Unloadings weights, by species, excluding by-catch, are recorded on the Cargo Manifest Form (CMF) by the vessel agents or the captain of the carrier vessel. Coverage of the Cargo Manifest Forms is complete.

3.3.3 Solomon Islands: Honiara and Tulagi

87. Korean, Taiwanese and American purse seiners have transshipped in Honiara and Tulagi following the ban on high seas transshipment in June 1993. Unloading weights are collected from the vessel agents. Unloading weights are estimated by Solomon Islands Fisheries Division staff by counting the number of brails and then multiplying by a constant (1.8 mt per brail); significant discrepancies exist between the unloading weights recorded by the agents and those compiled by the Fisheries Division. No length frequency sampling is conducted at present.

3.3.4 Discussion

88. When size-selective unloading of yellowfin from purse seiners occurs, care must be taken to obtain unloading weights broken down by size class, such that the length frequency samples for each size class can be raised to the total catch.

89. The Solomon Islands Fisheries Division is currently planning a sampling programme for purse seiners. The programme should be implemented in the near future. SPC was requested to provide technical assistance.

3.4 Troll

3.4.1 American Samoa: Pago Pago

90. In the past, many American, Canadian and New Zealand trollers (jigboats) participating in the South Pacific albacore fishery have landed their catch in Pago Pago. However, the number of vessels landing at Pago Pago have declined following the 1989/90 season due to poor catches.

91. Logbooks are distributed to trollers by NMFS staff at the beginning of each season. Logbooks are also distributed to vessels in Pago Pago, if vessels call into port in transit to the fishing grounds. NMFS collects the logbook information from vessels upon their return to Pago Pago. Logbooks are sometimes only calendars with positions and catches on the dates.

92. Albacore unloading weights are obtained for each vessel from the canneries; the unloading weights are for whole weight. The length frequency samples are usually taken from the top of the well; thus the sampled fish are usually the last fish caught on the trip. The area where the sampled fish were caught can be determined from the positions recorded in the logbook for the end of the trip. If logbooks are not available, port samplers try to obtain information on fishing areas and total catches through interviews. A 100 albacore length frequency sample is taken from unloading scows at the cannery dock. Only albacore are unloaded, since by-catch is released or discarded at sea; therefore, no species composition samples are required. Individual weights are not recorded.

3.4.2 French Polynesia: Papeete

93. Unloading weights for the *bonitiers*, which target skipjack and yellowfin, are estimated by the samplers; they count all fish unloaded from all vessels, including by-catch, and allocate each fish to a commercial grade on the basis of an approximate size estimate. Rejects are discarded at sea. The area fished is determined from interviews, with reference to a map of half-degree latitude and longitude grids. Random length frequency samples are taken, including skipjack, yellowfin and mahi mahi; the length is measured with a flexible tape placed along the surface of the body from the tip of the snout to the fork of the tail. Individual weights are estimated from weight-length curves.

94. When trollers targeting South Pacific albacore transship in Papeete, port samplers attempt to interview the captain to determine total catch, effort and the area fished. Length frequency samples of at least 200 albacore per unloading are taken. Individual weights are recorded. By-catch and rejects are released or discarded at sea. Coverage of unloading weights and length frequency samples is complete.

3.4.3 Discussion

95. Length frequencies for *bonitier*-caught skipjack and yellowfin in French Polynesia will not be comparable to skipjack and yellowfin caught in other fisheries due to the measurement of the "curved" length with a flexible tape, rather than callipers or a measuring board.

3.5 Data collection forms

96. A working group was formed to discuss the standardisation and improvements to data collection forms. The working group included Mr Craig Heberer, Mr Clay Hedson, Mr Tim Lawson, Mr Mash Tkel, Mr Peter Williams and Mr Gordon Yamasaki.

3.5.1 Longline

97. Mr Peter Williams reported on behalf of the working group, citing recommendations for minor adjustments to the Longline Sampling Form, which is used to record lengths and weights:

- The default grid used for specifying the fishing area is 5° latitude x 5° longitude; however, sometimes the grid may be different. A data field for the size of grid used to determine the area fished, or fields for the northern, southern, eastern and western extremities, should be included.
- An additional column next to "weight" should be added to indicate whether the fish was whole, gilled-and-gutted or headed-and-tailed.
- Some space for comments should be added at the bottom, in order to record information about the sampling protocol (in particular, whether the fish were sorted by size), and about the presence of marlin onboard the vessel that were not unloaded.

98. The following general points regarding the use of the Longline Sampling Form were discussed and agreed upon:

- The vessel's registration number is important in identifying the vessel, particularly for Taiwanese vessels, for which vessel names are not translated from Chinese into the western alphabet with standard rules. The registration number for Taiwanese vessels begins with the letters "CT", e.g. "CT3-1234".
- If sampling is conducted over a two day period, a different form should be used for each day.
- The "Date of Return" must be recorded; this information is used to determine the time and area fished from the catch and effort logbook. The trip dates are also important in this regard.
- If the "Fishing Area" is not available, this could be determined from the catch and effort logbook, if available.
- "Total sampling details by species" is used to verify the data entered on computer at SPC headquarters. This information should be recorded if time permits.

99. The form is currently used in Chuuk, Koror, Kosrae, Majuro, Pohnpei and Yap, but not in Lami, Levuka, Noumea, Pago Pago, nor Papeete. The participants from Lami, Levuka and Noumea agreed to switch to the Longline Sampling Form.

100. The Longline Unloading Form, which records unloading weights, will be revised to provide clearer identification of the data fields, to use standard Food and Agriculture of the United Nations (FAO) species codes, to accommodate another row of data, and to make the instructions clearer.

101. Two points were made regarding the use of the Longline Unloading Form:

- The vessel's registration number is important in identifying the vessel, particularly for Taiwanese vessels.
- If the unloading is conducted over more than one day, the daily totals should be summed and recorded as a single unloading. The "day" recorded for unloadings which spanned more than one day should refer to the first day of unloading.

102. The Longline Unloading Form is used in all longline ports, except Guam, Lami, Levuka, Pago Pago and Papeete. The participants from Lami and Levuka agreed to use the form.

3.5.2 Purse seine

103. Mr Craig Heberer presented more information on the forms currently used to monitor purse seine transshipment by the Micronesian Maritime Authority that he referred to under section 3.3.2; these include the Well Loading Form, the Purse Seine Length Frequency Sheet and the Support Vessel — Cargo Manifest Form. He suggested that a column for "MIXED SKJ+YFT" be added to the Well Loading Form, to cover instances when the amount of skipjack and yellowfin in a set have not been estimated separately.

104. The working group discussed the advantages and disadvantages of modifying the Purse Seine Length Frequency Sheet, such that the lengths could be ticked against a column of numbers ranging from the smallest to the largest lengths usually encountered, rather than writing down each length. The modification would be easier for data entry, since only the number sampled at each length would need to be entered, rather than the length of each sampled fish. On the other hand, the modification would probably require a different sheet for each species, which may be impractical.

105. Data collection forms revised by SPC following the workshop are presented in Appendix 5.

3.6 Conversion Factors

106. Mr Tim Lawson reiterated the problems identified by workshop participants in obtaining estimates of whole weight for fish that are either gilled-and-gutted or headed-and-tailed. For gilled-and-gutted weights, the raising factor currently in general use to convert to whole weight is 15 per cent. It would be useful to collect data to determine conversion factors for gilled-and-gutted to whole weights; these data would have to be collected by observers, since the fish are usually gilled-and-gutted at sea. Participants from MMA agreed to look into having observers measure whole weights and gilled-and-gutted weights onboard longliners.

107. Fish transshipped to Hawaii on Majuro are gilled-and-gutted at sea, then headed-and-tailed on the dock. Unfortunately, it would be impractical to obtain gilled-and-gutted weights for all headed-and-tailed fish transshipped on Majuro; however, it may be possible to collect enough data to determine conversion factors. For example, the head and tail could be placed in a plastic bag, then placed on the scale with the headed-and-tailed fish, after the operator has recorded the headed-and-tailed weight. It was suggested that samples of 20 to 30 fish per species would be required to determine conversion factors for headed-and-tailed weight to gilled-and-gutted weight.

108. It was agreed that the procedure for measuring marlin lengths, from the base of the pectoral fin to the fork of the tail, does not pose any problem at present, since lengths measured from the base of the pectoral fin will probably be sufficient to identify changes in the length composition of the catch over time.

109. Reference was made to the procedure used in Papeete to measure fish caught by the *bonitiers*, wherein the "curved" length, i.e. the length along the surface of the body, is taken with a flexible tape, rather than length measured with callipers or a measuring board. In the event that lengths of *bonitier*-caught fish are compared to fish caught by other fleets, a conversion factor from "curved" length to "straight" length may be necessary.

3.7 Species Codes

110. It was noted that some species codes contained on sampling forms now used in the region either differ from the standard abbreviations used by FAO or are not represented in the FAO codes. The species not represented by FAO codes are generally by-catch species. The FAO system of 3-alpha identifiers, the International Standard Statistical Classification of Aquatic Animals and Plants (ISSCAAP), was initiated at the Ninth Session of the Coordinating Working Party on Atlantic Fishery Statistics, Dartmouth, Nova Scotia, Canada, 17—23 August 1977. Updates of the ISSCAAP codes are currently distributed by FAO on an annual basis. The group agreed that efforts should be made to convert to the FAO codes, when they are available, and that SPC should approach FAO to provide codes for missing species when necessary.

3.8 Data Submission

111. Unloadings data and length frequency data were requested to be forwarded to SPC on a quarterly basis. SPC would like to maintain the quarterly data submission schedule, which would require mailings to take place on, or immediately after, the following dates: March 31; June 30; September 30; and December 31. Catch and effort logsheets can also be provided at these times. The timely receipt of forms at SPC on a regular basis was stressed; provision of data on an intermittent basis, i.e. once or twice a year, results in periodic overloads of data entry work at SPC.

112. Mr Mash Tkel commented on the expense of mailing and asked for assistance from SPC to defray this cost. Mr Tim Lawson said that SPC had forwarded a cheque to Palau to this effect in February 1993, but that either the cheque had not reached its destination or the funds had been reallocated within the Palau government. In any case, the participants were encouraged to attempt to incorporate mailing expenses into their annual operating budgets, if they have not already done

so, since the port sampling programmes are expected to continue over the long term, whereas SPC funding could only be provided over the short term.

113. In order to ensure that the port sampling data are not mistaken for private mail to SPC staff, the address should not include the names of SPC staff; rather, the address should read as follows:

Fisheries Statistician
Oceanic Fisheries Programme
South Pacific Commission
PO Box D5
Noumea Cedex
New Caledonia

4. REGIONAL PORT SAMPLING MANUAL

114. Mr Tim Lawson opened the section with some general comments about sampling manuals currently in use in the region. Reference was made to the NMFS Sampling Manual that had been made available to the participants for review. Mr Craig Heberer gave an overview of the MMA Purse Seine Transshipment Manual. The meeting agreed that the OFP should prepare a regional port sampling manual, covering longline, pole-and-line, purse seine and troll. The manual should include examples of data collection forms and explanations for their usage; species identification photos and keys; and examples of introductory letters, in all applicable languages, to enable port samplers to explain the sampling programmes to officers of the fishing vessels. The manual will be a high priority for the Port Sampler and Observer Manager, who will be recruited during 1994, under the Lomé IV-funded South Pacific Regional Tuna Resource Assessment and Monitoring Project (SPR TRAMP).

5. OTHER BUSINESS

5.1 SPC Port Sampling Newsletter

115. The meeting agreed that a newsletter concerning transshipment activity and port sampling programmes would be useful, particularly in providing feedback to the port samplers on the results of their work. Some of the information that could be used in the newsletter include statistical summaries of unloadings by fleet and by port; a list of vessels transshipping in each port; histograms of length frequency data; general information on transshipment and port sampling programmes; staff changes in port sampling programmes; etc. General information could be compiled through contact via Peacesat between SPC staff and port samplers. The meeting agreed that the newsletter should appear on a biannual basis.

5.2 Tag Returns and Tag Seeding

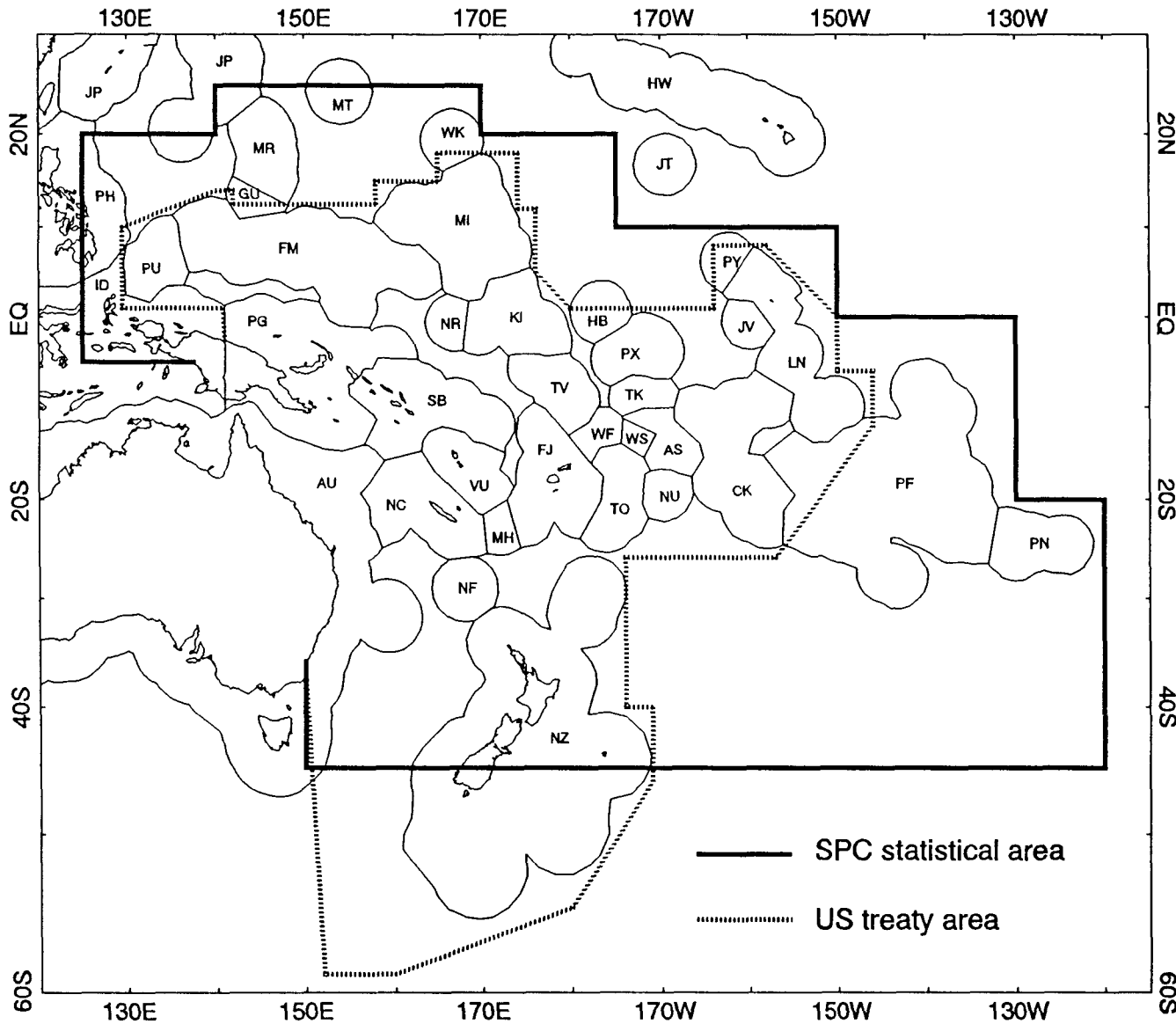
116. Port samplers were encouraged to continue processing tag returns. Some port samplers have been involved in tag seeding experiments; these experiments will cease when the current batch of tag seeding kits has been exhausted.

5.3 SPC Port Sampling and Observer Programme Shirt

117. Several participants suggested that a special shirt should be worn during port sampling and observing in order to distinguish the samplers and observers from general labourers. It was agreed that the shirt should have a collar and bear a distinctive logo. SPC will look into the possibility of designing and producing a shirt.

6. CLOSING

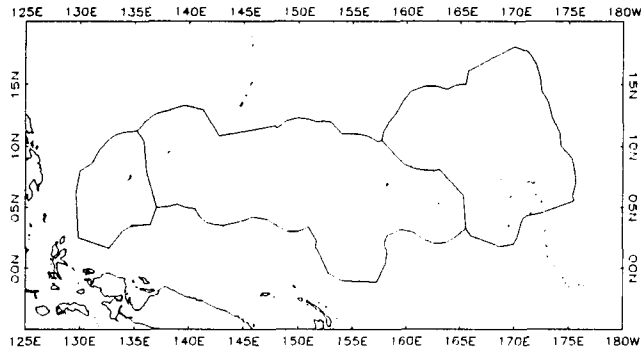
118. The participants acknowledged the work of SPC and MMA in organising the meeting. MMA was further acknowledged for arranging the field trips and for hosting the dinner that was held for the participants on the first evening. The vessel agency, TRANSCO, was acknowledged for facilitating the field trips and for hosting the farewell barbecue. After vigorous applause, the meeting was adjourned.



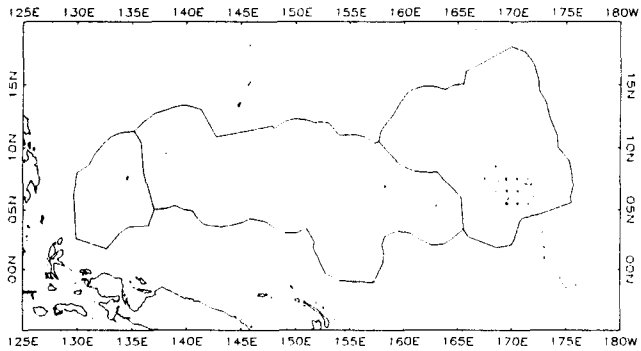
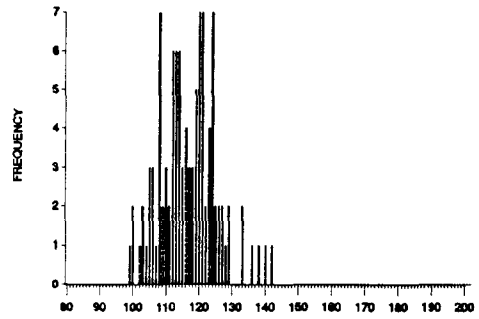
- AS American Samoa
- AU Australia
- CK Cook Islands
- FJ Fiji
- FM Micronesia
- GU Guam
- HB Howland and Baker
- HW Hawaii
- ID Indonesia
- JP Japan
- JT Johnston
- JV Jarvis
- KI Kiribati
- LN Line Islands
- MH Matthew and Hunter
- MI Marshall Islands
- MR Northern Marianas
- MT Minami-tori
- NC New Caledonia
- NF Norfolk
- NR Nauru
- NU Niue
- NZ New Zealand
- PF French Polynesia
- PG Papua New Guinea
- PH Philippines
- PN Pitcairn
- PU Palau
- PX Phoenix
- PY Palmyra
- SB Solomon Islands
- TK Tokelau
- TO Tonga
- TV Tuvalu
- VU Vanuatu
- WF Wallis and Futuna
- WK Wake
- WS Western Samoa

Figure 1. SPC statistical area

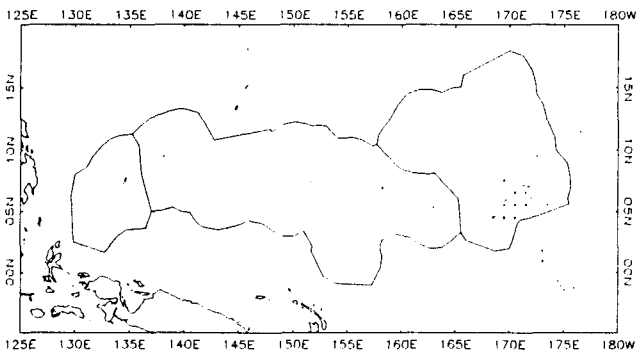
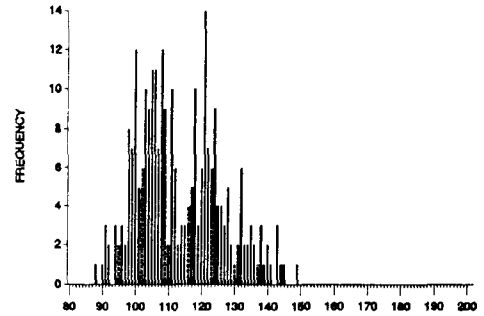
Figure 2. Distribution of yellowfin catch during 1992 and yellowfin length (cm) frequencies for longliners unloading in Majuro



Marshallese fleet



Taiwanese fleet



American fleet

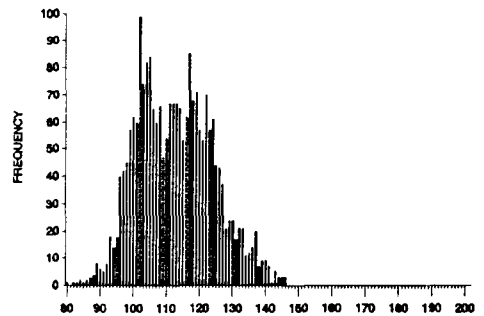
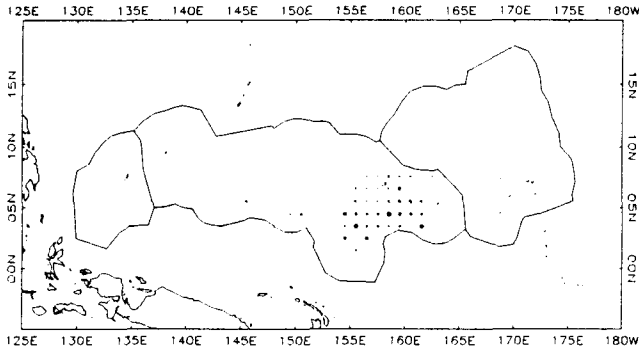
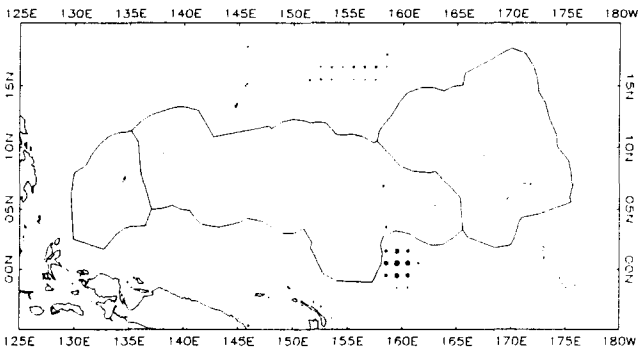
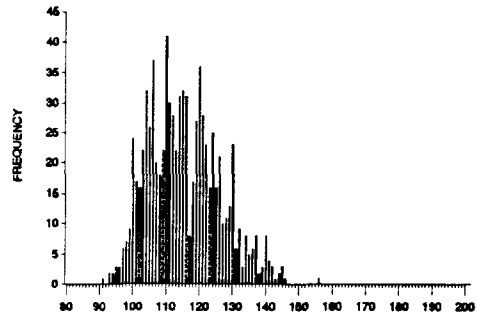


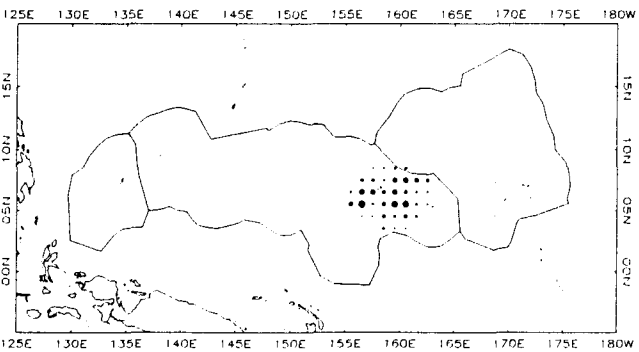
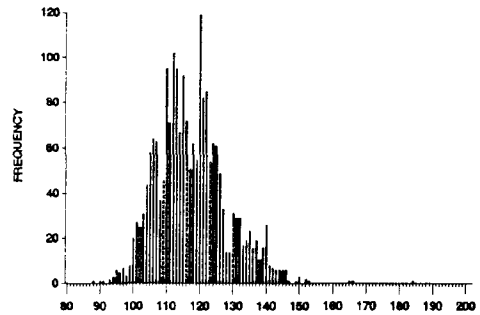
Figure 3. Distribution of yellowfin catch during 1992 and yellowfin length (cm) frequencies for longliners unloading in Pohnpei



Japanese fleet



Korean fleet



Taiwanese fleet

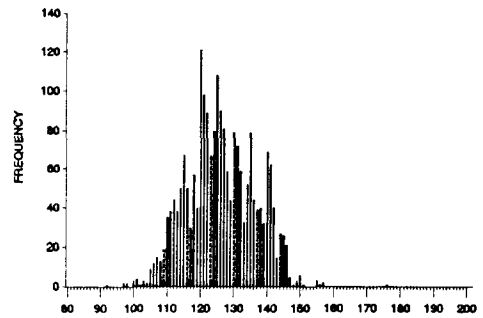
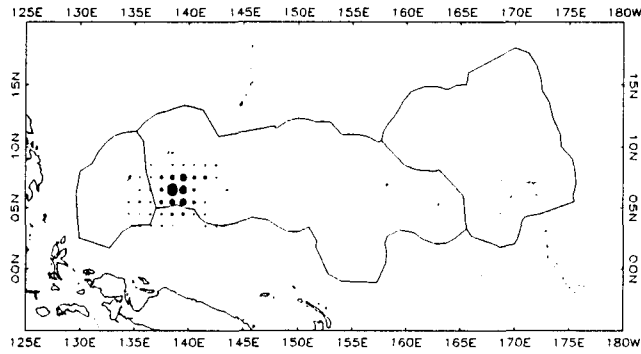
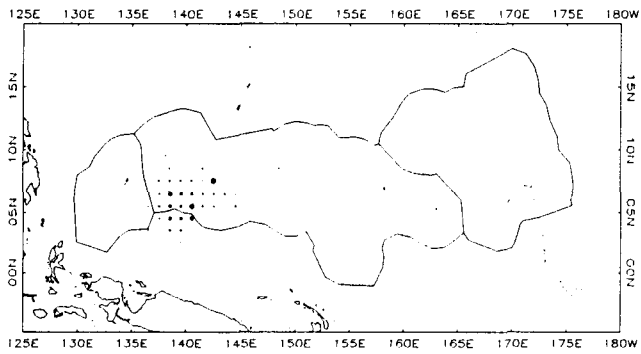
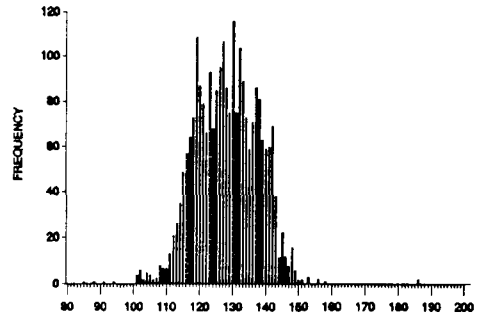


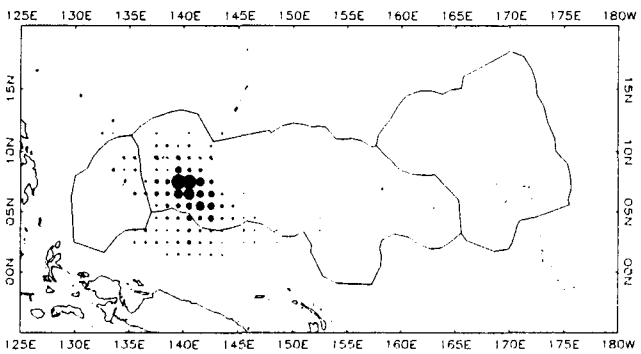
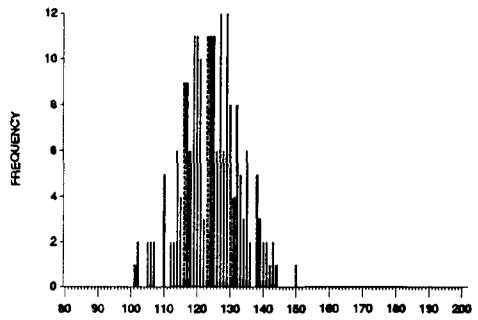
Figure 4. Distribution of yellowfin catch during 1992 and yellowfin length (cm) frequencies for longliners unloading in Yap



Mainland Chinese fleet



Micronesian fleet



Taiwanese fleet

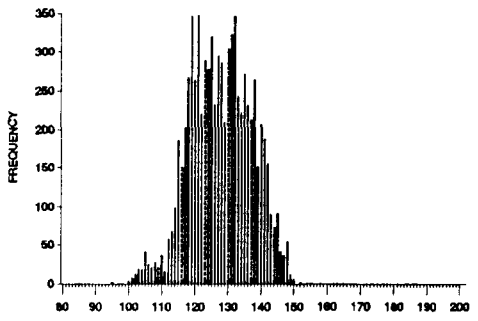
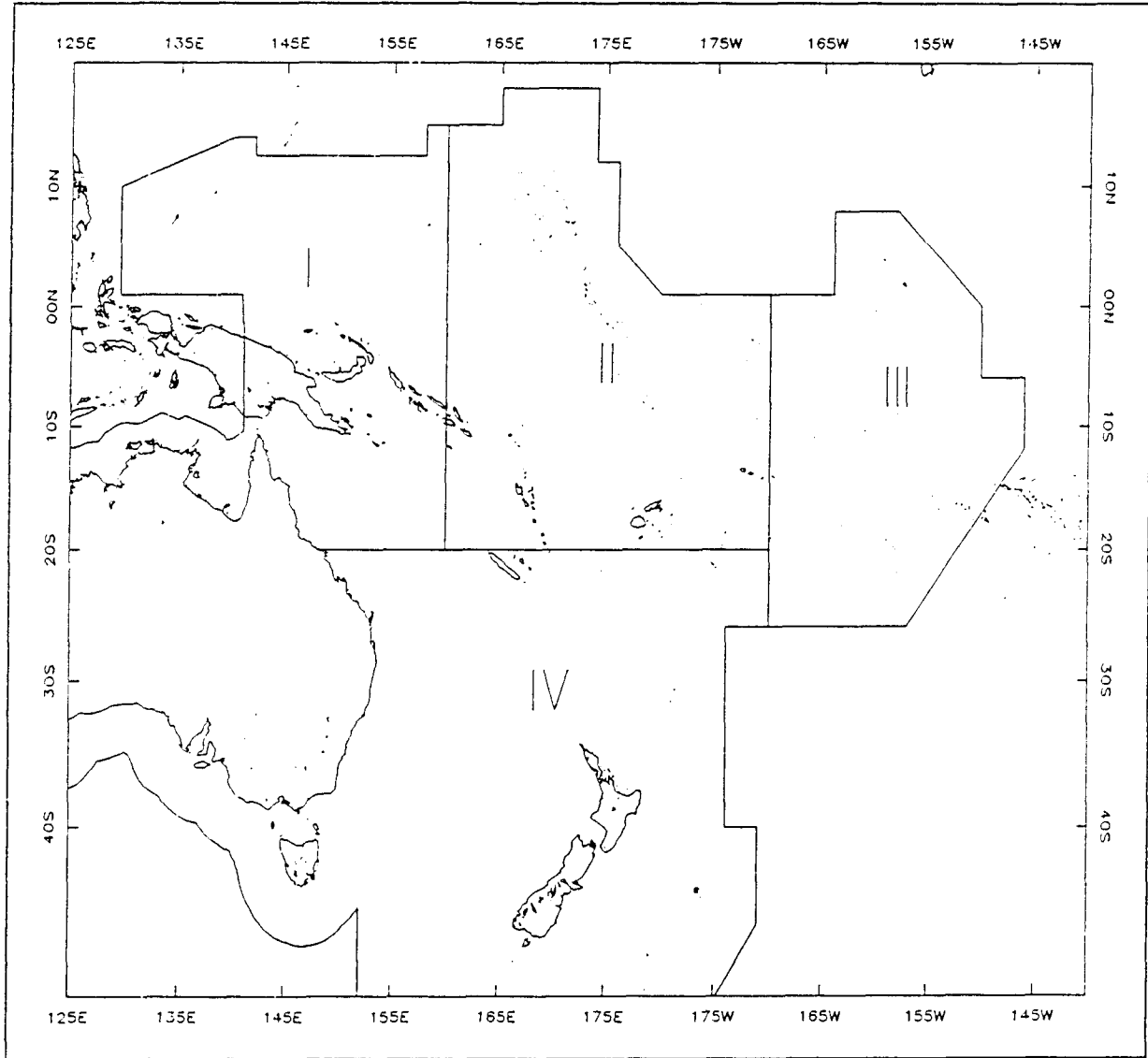


Figure 5. U.S. multilateral treaty areas used for species composition and length frequency sampling



APPENDIX 1
LIST OF PAPERS

- 1 Status of longline port sampling programmes supported by the South Pacific Commission
- 2 Extract from: Gulland and Rosenberg, 1992, A review of length-based approaches to assessing fish stocks, FAO Technical Paper 323.
- 3 MMA Purse Seine Transshipment Sampling Manual
- 4 Fishery Data Collection in French Polynesia: an Overview
- 5 Port Sampling in Noumea, New Caledonia
- 6 Foreign Fishing Vessels Transshipments in Kiribati
- 7 The American Samoa Tuna Fishery: History and Current Status
- 8 Port Sampling in Fiji Islands
- 9 PAFCO/Levuka
- 10 Summary of Transshipment Activities in the Solomon Islands
- 11 Summary Report of the Tuna Transshipment Industry in Guam
- 12 Palau Port Sampling Report
- 13 PNG Department of Fisheries and Marine Resources
- 14 Port Sampling Program, Federated States of Micronesia
- 15 Fisheries Statistics Summary, Kosrae Marine Resources Division

APPENDIX 2

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APPENDIX 3**WELCOMING ADDRESS BY MR MYRON HASHIGUCHI, DEPUTY DIRECTOR,
CHUUK MARINE RESOURCES DIVISION**

On behalf of Governor Gouland and the people of Chuuk, I would like to welcome you all to Weno, Chuuk. We are pleased that this workshop is taking place in Chuuk State in recognition of the heavy volume of transshipment activity that has taken place in FSM ports.

As you are aware, the region-wide ban on high seas transshipment of purse seine-caught tuna has created unique opportunities throughout the region. Chuuk State has witnessed a tremendous surge in tuna transshipment activity during 1993. As such, we are aware of the increased economic benefits that this type of commerce can bring to Chuuk and to the FSM in general. But an equally important benefit to our fledgling nation is the opportunity to increase our monitoring capabilities of foreign fishing vessels that transship their catch in our ports. The information gathered from these monitoring activities will in turn allow us to manage our vital pelagic tuna fisheries on a more reliable and sustainable basis.

In order to take full advantage of the monitoring opportunities presented throughout the region, we must make every effort to ensure that properly trained port samplers are stationed in the various designated ports. This brings us to the reasoning behind this first, of what is hoped to be many, port sampling workshops. You can consider this workshop as spring training for the upcoming season. By the time you all depart to return to your respective islands, you will be operating as a well-trained team. A team that is drawing upon the same set of plans to arrive at one common goal: the long-term sustainability of our regional tuna resources.

I would like to take this time to recognise the excellent work that the South Pacific Commission has undertaken and sponsored throughout the region. Our own Micronesian Maritime Authority has worked very closely throughout the years with the South Pacific Commission in all aspects of port sampling. We have an excellent core of young men dedicated to the task of monitoring both longline and purse seine transshipments. The Authority currently has port samplers in place in all four states of the FSM, and the information these port samplers relay back to MMA headquarters, and ultimately on to SPC headquarters, has been invaluable to us.

The most important point that I would like to make this morning is directed to you young gentlemen sitting before me. You have the onerous but very important task of collecting the necessary fisheries information from the foreign fishing vessels that call to your island ports. I would like to thank each and every one of you for your commitment to this vital endeavour and urge you to work hard for the collective benefits of all Pacific island nations and the tuna resources we so urgently depend on.

Without the proper information on which to base our management decisions, we may risk catastrophic consequences, the least of which could result in overfishing and subsequent depletion of our tuna resources. The information that you provide, such as data on vessel movements and operations, catch and size by species, and the overall catch by vessel, provides the regional fisheries managers with the ammunition needed to assess the state of health of our tuna resources.

You are the eyes and ears on the spot. You are the front line of the action. The ability to properly manage the tuna resources of the region begins and ends with accurate and timely information. And

that information comes from the sweat of your brow. We realise this, and your efforts are not taken lightly. Thank-you again for your commitment to this task and to the region as a whole. Enjoy your stay in Chuuk, and good luck.

While I wish you all every success in this workshop, I also hope that you will find time in your busy schedule to enjoy some of our island hospitalities. Welcome to Chuuk. And *kinisou chapur*.

APPENDIX 4

SUMMARY OF PORT SAMPLING PROGRAMMES DURING 1993

CODE	GEAR TYPE
LL	LOGLINE
PL	POLE-AND-LINE
PS	PURSE SEINE
TR	TROLL

CODE	FISHING NATION
CH	PEOPLES REPUBLIC OF CHINA
FJ	FIJI
FM	FEDERATED STATES OF MICRONESIA
JP	JAPAN
KR	REPUBLIC OF KOREA
MI	MARSHALL ISLANDS
NC	NEW CALEDONIA
PF	FRENCH POLYNESIA
SB	SOLOMON ISLANDS
SU	RUSSIA
TO	TONGA
TW	REPUBLIC OF CHINA (TAIWAN)
US	UNITED STATES OF AMERICA

1. AMERICAN SAMOA: PAGO PAGO • 1993

Personel Gordon Yamasaki (Fisheries Biologist/Supervisor)
Paulo Matanti (Sampling Officer)
Taua Tuumalo (Sampling Officer)

Data Management Purse seine logbook, unloading weights and size/species composition data are processed by NMFS, La Jolla.
Longline logbook, unloading weights and size/species composition data are processed by NMFS, Honolulu.

Organisation National Marine Fisheries Service

Funding United States government

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
PS	US	Ryan Inc (majority) Purse Seiner Services Blue Angel Stevedoring Co Mother Pearl of the Pacific Stephens Distributors	27+	~ 121			~ 75%	~ 25%	~ 190,000 st	Starkist and Van Camp canneries	100%	100%
PS	FM	Purse Seiner Services	4	~ 10						Starkist and Van Camp canneries	100%	Nil
TR	US	Purse Seiner Services	~ 50	~ 50	~ 100%				< 1,000 st	Starkist and Van Camp canneries	~ 100%	100%
LL	TW	FCF (~ 30 vessels) Tong Sheng (~ 20) Taiwan Ming Tai Co (~ 10)	59	~ 180	~ 100%				~ 20,000 st	Starkist and Van Camp canneries; Japan	100% (by fleet only)	87%
LL	TO	Harbor Maritime Services	1	~ 5						Starkist cannery	100%	Nil
LL	KR	Tropac Fisheries	4	~ 12						Starkist cannery	100%	90%
LL	KR	Korea Deep Seas Fisheries Pago Tuna								Van Camp cannery	Nil	Nil

Comments

Monitoring of seiners under the US multilateral treaty is the main priority. Korean sashimi longliners with KDSFA and Pago Tuna are not sampled.

2. FEDERATED STATES OF MICRONESIA: CHUUK • 1993

Personel Petrus Sitan (Sampling Officer - PS)
Isauo Tchiro (Sampling Officer - LL)
Lichner Petrus (Sampling Officer)
Craig Heberer (Tuna Biologist/Supervisor)

Data Management Data forwarded to MMA (Pohnpei) for collation. Unloading weights for longline compiled and processed by Clay Hedson. PS unloading weights compiled by Craig Heberer. Longline size measurements sent to SPC for processing. Purse seine measurements to be processed at SPC. Data processed at SPC are sent to MMA for use in a database reporting system.

Organisation Micronesian Maritime Authority

Funding EDF, MMA, SPC

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
LL	CH	Transco, Ting Won, Ting Hong								Japan; by-catch to Taiwan	100%	100%
	FM		3								100%	100%
	TW									Japan; by-catch to Taiwan	100%	100%
PS	FM	Caroline Fishing Corp										
	FM	Yap Fishing Corp										
	KR	Transco								Korea/Thailand/Puerto Rico	100%	60%
	TW	Transco								Thailand/Puerto Rico	100%	60%

Comments

Purse seine transshipment started in April 1993. Longline transshipment began in 1993. Early port sampling of PS vessels involved determining suitable sampling protocol. There have been problems associated with transport to the carrier vessels.

3. FEDERATED STATES OF MICRONESIA: KOSRAE • 1993

Personel Steve Palik (Sampling Officer)
Loto Ismael (Sampling Officer)
Craig Heberer (Tuna Biologist/Supervisor)

Data Management Data forwarded to MMA (Pohnpei) for collation. Unloading weights for longline compiled and processed by Clay Hedson. PS unloading weights compiled by Craig Heberer. Longline size measurements sent to SPC for processing. Purse seine measurements to be processed at SPC. All data processed at SPC are sent to MMA for use in a database reporting system.

Organisation Micronesian Maritime Authority

Funding EDF, MMA, SPC

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
LL	TW	Ting Hong	2	2		> 50%		< 50%	17 mt	Japan; by-catch to Taiwan	100%	100%
PS	FM	Caroline Fishing Corp	1								100%	100%
	KR	Transco	20+	31+						Korea/Thailand	100%	90%
	TW	Transco	3	4						Thailand	100%	90%

Comments

Purse seine transshipment started July 1993. Longline transshipment began in December 1993. Early port sampling of PS vessels involved determining suitable sampling protocol. Since December, there has been a temporary ban in force preventing PS transshipment in port. PS transshipment now takes place 10 miles offshore; hence, no sampling can be performed.

4. FEDERATED STATES OF MICRONESIA: POHNPEI • 1993

Personel Clay Hedson (Sampling Officer - PS)
Craig Heberer (Tuna Biologist/Supervisor)

Data Management Data forwarded to MMA (Pohnpei) for collation. Unloading weights for longline compiled and processed by Clay Hedson. PS unloading weights compiled by Craig Heberer. Longline size measurements sent to SPC for processing. Purse seine measurements to be processed at SPC. All data processed at SPC are sent to MMA for use in a database reporting system.

Organisation Micronesian Maritime Authority

Funding MMA, SPC

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
LL	CH	Transco Ting Won Ting Hong								Japan; by-catch to Taiwan	100%	100%
	FM	National Fisheries Corp	3								100%	100%
	TW									Japan; by-catch to Taiwan	100%	100%

Comments

Purse seine transshipment started July 1993. The majority of longline transshipment began in 1993. Early port sampling of PS vessels involved determining suitable sampling protocol. There have been problems associated with transport to the carrier vessels.

5. FEDERATED STATES OF MICRONESIA: YAP • 1993

Personel John Tipmai (Sampling Officer - PS)
Craig Heberer (Tuna Biologist/Supervisor)

Data Management Data forwarded to MMA (Pohnpei) for collation. Unloading weights for longline compiled and processed by Clay Hedson. PS unloading weights compiled by Craig Heberer. Longline size measurements sent to SPC for processing. Purse seine measurements to be processed at SPC. All data processed at SPC are sent to MMA for use in a database reporting system.

Organisation Micronesian Maritime Authority

Funding MMA, SPC

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
LL	CH	Ting Hong	~ 75							Japan; by-catch to Taiwan	100%	95%
	FM	National Fisheries Corp										
	TW	Ting Hong								Japan; by-catch to Taiwan	100%	95%

Comments

Seasonal fishing, from March to November. No purse seine transshipment. The majority of longline transshipment began in 1993.

6. FIJI: LAMI • 1993

Personel Faiyaz Sahib (Sampling Officer - PS)
Subodh Sharma (supervisor)

Data Management Length frequency data forwarded to SPC; copied to Fiji Fisheries. Unloading weights for longline compiled and processed by Faiyaz Sahib. Total unloading weights not regularly provided to SPC.

Organisation Fisheries Division

Funding SPC, Fiji Fish Co Ltd

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
LL	FJ	Bay Fisheries	1	2		3		2		Japan; Hawaii; US mainland; Australia; New Zealand	100%	100%
	FJ	Fiji Fish Company Ltd	1	7		17		18		As above	100%	100%
	FJ	Karims Ltd	1	4		5		5		As above	100%	100%
	FJ	Komtech Maritime	2			25		30		As above	100%	100%
	FJ	Saheb Holdings Ltd	1	6		10		15		As above	100%	100%
	FJ	Wasawasa Fisheries	3			40		70		As above	100%	100%
	KR	Jiko Fisheries	4			50		60		As above	100%	75%

Comments

Vessel trip duration is normally 6-7 days. Albacore are air-freighted to Japan from September to December. During other months, they go to the PAFCO cannery. Plans are for six mainland Chinese vessels to commence unloading in April 1994. Fiji Fish is constructing their own port facilities; it is also negotiating to set up a processing factory in Hawaii. Solander II will join operations in 1994.

7. FIJI: LEVUKA • 1993

Personel Ashok Kumar (Sampling Officer - PS)
Subodh Sharma (supervisor)

Data Management Length frequency data are forwarded to SPC, with logbook data, for processing. Unloading weights for longline are compiled and processed by Ashok Kumar; total unloading weights not regularly provided to SPC. Unloading weights and length frequency data are not collected for pole-and-line vessels.

Organisation Fisheries Division

Funding SPC, Pacific Fishing Company Ltd

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
LL	KR	Jiko Fisheries	2								100%	100%
	KR		3								100%	100%
	TW	FCF Fishery Company Ltd	16	38						PAFCO cannery	100%	100%
PL	FJ	Ika Corp								PAFCO cannery	100%	Nil

Comments

Longline by-catch are kept in cold storage; some are used for local consumption and the rest are sent to Japan via carrier vessel. Logbooks collected from foreign longline vessels provide about 80 per cent coverage. Possibility of purse seine transshipment in the future.

8. FRENCH POLYNESIA: PAPEETE • 1992

Personel Steven Yen (Supervising Officer - PS)

Data Management Data collected and collated by EVAAM and ORSTOM.
Albacore length frequency data provided to SPC.

Organisation EVAAM

Funding EVAAM, SPC

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
LL	JP	Custom agent	8	14	4	34		52	108 mt	Export	100%	Nil
	KR	Custom agent	55	31	227	1,271		461	2,196 mt	Export	100%	Nil
	PF		19		174	51		137	540 mt	Papeete market	46%	20%
TR	PF	Bonitiers	111	4977			593	133	772 mt	Papeete market	50%	5%
	PF		2	1	14				14 mt	Pago Pago	100%	2%
	US			26	475				495 mt	Pago Pago	100%	2%

Comments

Data are for 1992; data for Japanese longliners are for six months in 1992 only.

9. GUAM • 1993

Personel Bill Fitzgerald, Chief Planner
Dot Harris, Program Coordinator

Data Management Unloading weights collected and processed by the Dept of Commerce. Individual weights of fish are entered from packing lists. Data summaries are provided to SPC on request. No length frequency sampling at present.

Organisation Department of Commerce

Funding Western Pacific Regional Fishery Management Council
National Marine Fisheries Service
Interjurisdictional Fisheries Act

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
LL	JP	Sanko Bussan Nikki Guam Corp Maruwa Shokai (Guam) Inc Pacific Maritime Agency Zengyoren	74	399	3	2,246		1,358	3,837 mt	Japan; rejects to Korea	100%	Nil
	TW	Polar International Green Globe Shipping Agency	184	569		1,029		1,413	2,517 mt	Japan	100%	Nil

Comments

Rejects account for 13 per cent of unloadings. Normal flow of information is from the vessel to the vessel transshipment agent, to the freight forwarder, to the airline. The Dept of Commerce may implement length frequency sampling during 1994, with financial and technical assistance from SPC.

10. KIRIBATI: KIRITIMATI • 1993

Personel Erua Tekaraba (Transshipment Overseer)
Coordinated by Fisheries Licensing Unit, Tarawa

Data Management Unloading weights are the only data collected at present.

Organisation Fisheries Division

Funding Fisheries Division

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
LL	JP	Fisheries Division	44						4,737 mt	Japan	100%	Nil
	TW	Fisheries Division										Nil

Comments

Longliners transship directly onto carriers. Port sampling commenced in February 1994.

11. KIRIBATI: TARAWA • 1993

Personel Raikon Tumoa (Supervising Officer)**Data Management** Unloading weights are collected on forms designed by the Fisheries Division. Data are processed by the Fisheries Division. No data are submitted to SPC at present.**Organisation** Licensing and Enforcement Section, Fisheries Division**Funding** Fisheries Division

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
PS	KR	Kiribati Shipping Services		10					6,276 mt	Korea	100%	Nil
	US	Kiribati Shipping Services		53					19,424 mt	Thailand; Italy	100%	Nil

Comments

Length frequency sampling will commence in early 1994. The US fleet perform partial transshipments before returning to the fishing grounds; complete unloading takes place in Pago Pago, American Samoa. Rejects have included approximately 2 mt of mackerel and 2-4 mt of undersize or smashed skipjack. Transshipment occurs in the lagoon.

12. MARSHALL ISLANDS: MAJURO • 1993

Personel Xavier Myazoe (Port Sampling Officer)

Data Management Unloadings weights and length frequency data are processed at SPC.

Organisation Marshall Islands Marine Resources Authority

Funding Marshall Islands Marine Resources Authority

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
LL	CH	Zhong Yuan Yu	12	4						Hawaii; Japan	90%	90%
	MI	Marshal Islands Development Agency	5	~ 100						As above	90%	90%
	US	MMAGG Ltd	5	~ 100						As above	90%	90%

Comments

Ting Hong have expressed interest in transshipping at Eniwetok.

13. NEW CALEDONIA: NOUMEA • 1993

Personel Regis Etaix-Bonnin (Supervisor)
Claude Bariller (Sampler)

Data Management Length frequency data are processed at SPC. Unloading weights are not provided to SPC at present.

Organisation Service territorial de la marine marchande et des pêches maritimes

Funding Marine marchande

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
LL	JP	Agence Maritime Ballande	~ 30							Japan	Nil	Nil
	NC	Calédonie Toho	3	~ 94	440	50	—	145	735 mt	Japan	100%	100%
	NC	Megu Calédonie	1	~ 5	315	45	—	242	603 mt	American Samoan; Japan	Nil	Nil

Comments

The local longline fleet may increase by up to 8 additional vessels in the next few years. Some rejects are sold locally. Unloading weights collected during sampling are compared with customs information.

14. NORTHERN MARIANAS: TINIAN • 1993

Personel**Data
Management**

Unloading weights are collected and processed by the Division of Fish and Wildlife. No length frequency sampling at present.

Organisation Fish and Wildlife Division

Funding Fish and Wildlife Division

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
PS	FM		~ 3							Thailand; Peurto Rice; American Samoa; Italy; Spain		Nil
	TW		~ 4							As above		Nil
	US	Z Fishing Company	12							As above		Nil

Comments

Plans to recommence port sampling during 1994 are under discussion between the United States National Marine Fisheries Service and the Northern Marianas Fish and Wildlife Division.

15. PALAU: KOROR • 1993

Personel Masubed Tkel (Sampling Officer)

Data Management Unloading weights are provided by PITI and PMIC. Length frequency data are processed at SPC.

Organisation Palau Maritime Authority

Funding Palau Maritime Authority

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
LL	CH	Palau International Traders Inc	50							Japan	100%	30%
	CH	Palau Marine Industries Corp	74							Japan	100%	30%
	TW	Palau International Traders Inc	8							Japan	100%	30%
	TW	Palau Marine Industries Corp	1							Japan	100%	30%

Comments

Rejected fish from Taiwanese vessels are kept in cold storage, prior to shipment to Taiwan by carrier vessels. Mainland Chinese vessels send their marlin by-catch to Japan.

16. SOLOMON ISLANDS: HONIARA • 1993

Personel Manasseh Avicks (Supervisor)**Data Management** Unloading weights are processed by the Fisheries Division.**Organisation** Fisheries Division**Funding** Fisheries Division

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
LL	JP		1	1					119 mt	Japan	100%	Nil
PS	KR	Tradeco Pacific	13								100%	Nil
	SU		2								100%	Nil

Comments

The Russian purse seiners are registered in Singapore. Transshipment in Honiara started in July 1993.

17. SOLOMON ISLANDS: NORO • 1993

Personel Manasseh Avicks (Supervisor)

Data Management No port sampling at present.

Organisation Fisheries Division

Funding Fisheries Division

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
PL	SB	Solomon Taiyo Ltd	15							STL cannery	Nil	Nil
PS	SB	Solomon Taiyo Ltd	1							STL cannery	Nil	Nil

Comments

Large yellowfin have been transshipped from Noro on the Kiribati carrier, Moa Moa.

18. SOLOMON ISLANDS: TULAGI • 1993

Personel Manasseh Avicks (Supervisor)

Data Management No length frequency sampling at present.

Organisation Fisheries Division

Funding Fisheries Division

Gear	Flag	Clearing Agents	No. of Vessels	No. of Unloadings	Unloading Weights					Destination	Coverage: Unloading Weights	Coverage: Length Frequency
					ALB	BET	SKJ	YFT	TOTAL			
PL	SB	National Fisheries Development Ltd	7							Thailand; American Samoa; Italy	100%	Nil
PS	SB	NFD	2							As above	100%	Nil
	TW	NFD	4							As above	100%	Nil
	US	NFD	2							As above	100%	Nil

Comments

Purse seiners tranship directly to carriers. Pole-and-line vessels unload to cold storage.

APPENDIX 5

SPC DATA COLLECTION FORMS

1. Longline Unloading Form
2. Longline Sampling Form
3. Longline Monthly Catch Form
4. Pole-and-Line Unloading Form
5. Pole-and-Line Sampling Form
6. Purse Seine Carrier Form
7. Purse Seine Unloading Form
8. Well Loading Form
9. Purse Seine Sampling Form
10. Conversion Factor Form



PORT:	YEAR:	MONTH:	COMPLETED BY:	PAGE	OF
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FIRST DAY	VESSEL NAME	FLAG		YFT	BET	ALB	BFT	MAR	BLZ	BLM	MLS	SWO	SAJ	SHK	OTH	TOTAL
LAST DAY	VESSEL REGISTRATION	AGENT														
			T	NO												
				WT												
			R	NO												
				WT												
			T	NO												
				WT												
			R	NO												
				WT												
			T	NO												
				WT												
			R	NO												
				WT												
			T	NO												
				WT												
			R	NO												
				WT												
			T	NO												
				WT												
			R	NO												
				WT												
			T	NO												
				WT												
			R	NO												
				WT												
			T	NO												
				WT												
			R	NO												
				WT												

SPC LONGLINE UNLOADING FORM

INSTRUCTIONS

The Longline Unloading Form is used to record the amounts of fish unloaded from longliners at the end of each trip. Each form contains data for unloadings that began during the same month.

BLOCK 1: GENERAL INFORMATION

PORT	The port of unloading
YEAR	The calendar year
MONTH	The month during which each unloading began
COMPLETED BY	The first and last name of the person who completed the form
PAGE OF	The page number and the number of pages for the month

BLOCK 2: LONGLINE UNLOADING DATA

FIRST DAY	The day on which the longliner began unloading
LAST DAY	The day on which the longliner finished unloading
VESSEL NAME	The name of the longliner
VESSEL REGISTRATION	The registration number of the longliner
FLAG	The vessel nationality
AGENT	The agent for the longliner
T	Transshipped fish
R	Rejected fish
NO	Number of fish
WT	Total weight of fish in kilogrammes
YFT	Yellowfin tuna, <i>Thunnus albacares</i>
BET	Bigeye tuna, <i>Thunnus obesus</i>
ALB	Albacore tuna, <i>Thunnus alalunga</i>
BFT	Bluefin tuna, <i>Thunnus thynnus</i>
MAR	Unspecified marlin
BLZ	Blue marlin, <i>Makaira mazara</i>
BLM	Black marlin, <i>Makaira indica</i>
MLS	Striped marlin, <i>Tetrapturus audax</i>
SWO	Broadbill swordfish, <i>Xiphias gladius</i>
SAI	Indo-Pacific sailfish, <i>Istiophorus platypterus</i>
SHK	Unspecified sharks
OTH	Other species
TOTAL	Total amount unloaded

If a vessel is known to have unloaded, but the amounts are not available, then *the first and last unloading days and the vessel name, registration, flag and agent* should still be recorded.



PORT:	SAMPLER:	ASSISTANT:
VESSEL NAME:	VESSEL NATIONALITY:	VESSEL REGISTRATION:
DATE OF DEPARTURE:	DATE OF ARRIVAL:	DATE OF SAMPLE:
FISHING AREA: LATITUDE FROM _____ ° N / S TO _____ ° N / S LONGITUDE FROM _____ ° E / W TO _____ ° E / W		

NO	SPECIES	LENGTH		WEIGHT			REJ	NO	SPECIES	LENGTH		WEIGHT			REJ
		CM	CODE	KG	LB	CODE				CM	CODE	KG	LB	CODE	
1								26							
2								27							
3								28							
4								29							
5								30							
6								31							
7								32							
8								33							
9								34							
10								35							
11								36							
12								37							
13								38							
14								39							
15								40							
16								41							
17								42							
18								43							
19								44							
20								45							
21								46							
22								47							
23								48							
24								49							
25								50							

<input type="checkbox"/>	COMPLETE UNLOADING	<input type="checkbox"/>	COMPLETE, EXCEPT FOR MARLIN LEFT ONBOARD	<input type="checkbox"/>	PARTIAL UNLOADING
<input type="checkbox"/>	SORTING BY SPECIES	<input type="checkbox"/>	SORTING BY SIZE	<input type="checkbox"/>	SORTING BY BOTH SPECIES AND SIZE
<input type="checkbox"/>	ALL FISH UNLOADED WERE SAMPLED	<input type="checkbox"/>	NOT ALL FISH UNLOADED WERE SAMPLED	<input type="checkbox"/>	DID YOU ENJOY SAMPLING? (Y/N)

	YFT	BET	ALB	BFT	BLZ	BLM	MLS	SWO	SAI	OTH
NUMBER										
Σ LENGTHS										
Σ WEIGHTS										

SPC LONGLINE SAMPLING FORM

INSTRUCTIONS

The Longline Sampling Form is used to record the lengths of fish unloaded from longline vessels at the end of a trip.

If more than 50 fish are sampled from a single unloading, use additional Longline Sampling Forms. Block 1, Block 3 and Block 4 can be left blank on the additional pages (since they will have been completed on the first page), *except for port, vessel name and date of sample*, which must be re-entered exactly as they appear on the first page.

All dates should be recorded using the first three letters of the month, e.g. 26 Jul 94 or Jul 26/94.

BLOCK 1: GENERAL INFORMATION

PORT	The port of unloading
SAMPLER	The first and last name of the person measuring the fish
ASSISTANT	The first and last name of the person recording the measurements, if different from the sampler
VESSEL NAME	The name of the fishing vessel
VESSEL NATIONALITY	The county of registration
VESSEL REGISTRATION	The national registration number of the fishing vessel
DATE OF DEPARTURE	The date the vessel left port at the beginning of the trip
DATE OF ARRIVAL	The date the vessel returned to port at the end of the trip
DATE OF SAMPLE	The day the sample was taken
FISHING AREA	The northern, southern, western and eastern boundaries of the fishing area, recorded to the nearest degree of latitude and longitude

The vessel registration should be recorded whenever possible; it is particularly important for identifying *Taiwanese* vessels.

BLOCK 2: SAMPLING DATA

For species other than billfish, length measurements should be taken from the tip of the upper jaw to the fork of the tail. If the tail is missing, see code "F" below.

For billfish, measure from the tip of the lower jaw to the fork of the tail. If the lower jaw is missing, see code "O" below. If the head is missing, see code "P". If the tail is missing, see code "E".

Weights can be measured in either kilogrammes or pounds; record the weight in the appropriate column. The weight measurement will usually be the gilled-and-gutted weight. If the fish has not been gilled-and-gutted, use code "W". If the fish has been gilled-and-gutted, but the head is

missing, use code "H". If the fish has been gilled-and-gutted, but the tail is missing, use code "T". If the fish has been gilled-and-gutted, but both the head and the tail are missing, use code "N".

SPECIES	The following species codes are used:
	YFT Yellowfin tuna, <i>Thunnus albacares</i>
	BET Bigeye tuna, <i>Thunnus obesus</i>
	ALB Albacore tuna, <i>Thunnus alalunga</i>
	BFT Bluefin tuna, <i>Thunnus thynnus</i>
	BLZ Blue marlin, <i>Makaira mazara</i>
	BLM Black marlin, <i>Makaira indica</i>
	MLS Striped marlin, <i>Tetrapturus audax</i>
	SWO Broadbill swordfish, <i>Xiphias gladius</i>
	SAI Indo-Pacific sailfish, <i>Istiophorus platypterus</i>
	OTH Other species
LENGTH • CM	The length, in centimetres, rounded to the nearest centimetre
LENGTH • CODE	If the length of species other than billfish is not from the tip of the upper jaw to the fork of the tail, or from the tip of the lower jaw to the fork of the tail for billfish, use the following length codes:
	F Tip of the upper jaw to the most posterior ventral or anal finlet, e.g. 5F, if the most posterior ventral or anal finlet is the fifth finlet, or 6F, if the most posterior ventral or anal finlet is the sixth finlet
	O Back of the eye orbit to the fork of the tail
	P Anterior base of pectoral fin to the fork of the tail
	E Back of the eye orbit to the anterior base of the most posterior dorsal fin
WEIGHT • KG	The weight, in kilogrammes
WEIGHT • LB	The weight, in pounds
WEIGHT • CODE	If the weight is not the gilled-and-gutted weight, including both the head and the tail, use the following weight codes:
	W Whole weight
	H Gilled-and-gutted, head missing
	T Gilled-and-gutted, tail missing
	N Gilled-and-gutted, head and tail missing
REJ	If the fish has been rejected for transshipment, put "R" or "✓" in the REJ column

BLOCK 3: COMMENTS

Tick the appropriate boxes in Block 3. Choose either "complete unloading" or "complete, except for marlin onboard" or "partial unloading". If sorting is occurring, choose either "sorting by species" or "sorting by size" or "sorting by both species and size". Choose either "all fish unloaded were sampled" or "not all fish unloaded were sampled". Comments can be included at the bottom of Block 3.

BLOCK 4: SUMS OF LENGTHS AND WEIGHTS

This information is used to verify the sampling data during data entry. Specify the total number of fish sampled for each species, the sum of the lengths for each species, and the sum of the weights for each species.

SPC LONGLINE MONTHLY CATCH FORM

INSTRUCTIONS

The Longline Monthly Catch Form is used to determine the most appropriate shifts for sampling, when distant-water longline vessels transship their catch to carrier vessels. The fish caught by distant-water longliners, and then loaded into the holds on a carrier vessel, where sampling takes place, are conserved by freezing. The stevedores must work in shifts of fixed duration, due to the low temperatures in the holds. The most appropriate shifts for sampling are those during which the fish that are unloaded were caught in the same month and area. The fish are unloaded at a constant rate, usually starting with the fish caught most recently and ending with the fish caught at the beginning of the trip. By checking the fishing vessel's logbook, which records the date, the position and the amount caught for each set, it is possible to determine approximately where and when the fish unloaded during each shift were caught.

This form should be completed prior to the commencement of the transshipment, when the captain and fishing master of the longliner are available to explain the information contained in their logbook. *It is important that you verify with the captain of the longline vessel that the unloading process will be the reverse order of loading the fish in the holds during the trip.* If there were variations to the loading of holds during the trip, these should be recorded in Block 4.

After the form has been completed, the sampler must decide which months, and therefore which shifts, he should sample. The best shifts to sample will be those in which the catch was taken during the same month, in the smallest geographic area; shifts for which the catch was taken over several months and a large area should be avoided.

If entering a hold after a shift has started does not disrupt the transshipment operation, then the sampler will be able to begin sampling at exactly the time when the fish caught during a particular month are unloaded. *However, entering a hold during a shift should be attempted only if it does not disrupt the transshipment operation.*

All dates should be recorded using the first three letters of the month, e.g. 26 Jul 94 or Jul 26/94.

All times should be recorded using the 24 hour method, e.g. 5:13 pm should be recorded as 17:13.

BLOCK 1: GENERAL INFORMATION

PORT	The port of unloading
SAMPLER	The first and last name of the person measuring the fish
ASSISTANT	The first and last name of the person recording the measurements, if different from the sampler
VESSEL NAME	The name of the fishing vessel
VESSEL NATIONALITY	The county of registration
VESSEL REGISTRATION	The national registration number of the fishing vessel
DATE OF DEPARTURE	The date the vessel left port at the beginning of the trip

DATE OF ARRIVAL	The date the vessel returned to port at the end of the trip
DATE OF SAMPLE	The day the sample was taken

BLOCK 2: STEVEDORING INFORMATION

ACTUAL START TRANSSHIP TIME	The time of day when transshipment for this vessel began
ACTUAL END TRANSHIP TIME	The time of day when transshipment for this vessel was completed
TIME FOR STOPPAGES	The total time when transshipment was not taking place due to meal breaks, changing holds, etc
TOTAL TIME FOR TRANSSHIPMENT	The total time for transshipment after taking into account the time for stoppages
ESTIMATED RATE OF TRANSSHIPMENT	The estimated amount of catch (metric tonnes) transshipped per hour. This is usually available from the captain of the carrier vessel and must be determined prior to transshipment.
ACTUAL RATE OF TRANSSHIPMENT	The actual amount of catch (metric tonnes) transshipped per hour. This is calculated after transshipment has been completed.
TOTAL CATCH TRANSSHIPPED	The total catch (in metric tonnes) that will be transshipped can be obtained from the captain of the fishing vessel; note that this is the total of all species. This will be used to estimate the total time expected to complete the transshipment of this vessel.
SHIFT TIME	This is the time spent by the stevedores during each shift in the holds of the carrier vessel.

BLOCK 3: CATCH MONTH AND AREA DATA

The information in this block can be obtained from the fishing vessel logbook, with assistance from the captain and fishing master of the fishing vessel. One line should be completed for each month of the trip.

MONTH	Month of fishing
LATITUDE MOST NORTHERN	For each month of fishing, record the most northern position fished
LATITUDE MOST SOUTHERN	For each month of fishing, record the most southern position fished
LONGITUDE MOST WESTERN	For each month of fishing, record the most western position fished

**LONGITUDE
MOST EASTERN**

For each month of fishing, record the most eastern position fished

TOTAL CATCH (MT)

Enter the total catch (in metric tonnes) during the month

**ESTIMATED TIME OF
UNLOADING: START**

Enter the estimated start time of unloading of each month's catch. Note that the catch in the last month of fishing will be unloaded first and the catch in the first month of fishing will be unloaded last.

The start time of transshipment for the last month of fishing will be the actual start transship time recorded in Block 2.

For months other than the last month of fishing, use the formula below to determine the start time.

$$\text{Start time for month} = B + (C / R) + S$$

where B is the actual start transship time, i.e. the time when transshipment for this vessel began;
 C is the catch unloaded for months following the month in question;
 R is the estimated rate of transshipment;
and S is the amount of time of work stoppages.

For example, if the vessel fished from February to June (catching 30 mt in February, 34 mt in March, 40 mt in April, 32 mt in May and 28 mt in June) and the estimated rate of transshipment is 20 mt per hour, then the estimated start time for unloading of the fish caught in *April* is the catch in May plus the catch in June, $32 + 28 = 60$ mt, divided by the estimated rate of transshipment, 20 mt per hour, i.e. $60 \div 20 = 3$ hours, after the actual start of transshipment. If transshipment actually starts at 09:30, then unloading of fish caught in April will begin at 12:30, i.e. 09:30 plus 3 hours.

The estimated start time should be revised to account for work stoppages. If there was a stoppage at 10:30 for 15 minutes due to a change to a new carrier hold, then the new estimated start time of unloading of fish caught in April will be 12:45 (i.e. 12:30 plus 15 minutes).

**ESTIMATED TIME OF
UNLOADING: END**

The estimated end time of unloading of the month's catch is the start time for the month plus the time taken to unload that month's catch:

$$\text{End time for month} = \text{Start time for month} + (C / R) + S$$

where C is the catch unloaded for the month in question;
 R is the estimated rate of transshipment;
and S is the amount of time of work stoppages.

Continuing with the example, if 40 mt were caught in April, and the rate of transshipment is 20 mt per hour, then it will take $40 \div 20 = 2$ hours to unload the fish caught in April. If the estimated start time of unloading of fish caught in April is 12:45, the estimated end time will be 14:45, i.e. 12:45 plus 2 hours.

The estimated end time should be revised to account for work stoppages. If there was a stoppage at 13:00 for 30 minutes due to change a shift, then the new estimated end time of unloading of fish caught in April will be 15:15 (i.e. 14:45 plus 30 minutes).

ACTUAL TIME OF
SAMPLING: START

Enter the time when sampling of the month's catch actually started

ACTUAL TIME OF
SAMPLING: END

Enter the time when sampling of the month's catch actually ended

BLOCK 4: COMMENTS

Record any comments in Block 4.



PORT:	YEAR:	MONTH:	COMPLETED BY:	PAGE	OF
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NO	FIRST DAY	LAST DAY	VESSEL NAME	VESSEL REGISTRATION	VESSEL NATIONALITY	SKJ	YFT	BET	OTH	TOTAL
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
TOTAL										

SPC POLE-AND-LINE UNLOADING FORM

INSTRUCTIONS

The Pole-and-Line Unloading Form is used to record the amounts of fish unloaded by pole-and-line vessels after each trip. Each page contains unloading data for a given month.

BLOCK 1: GENERAL INFORMATION

PORT	The port of unloading
YEAR	The calendar year
MONTH	The month during which unloading took place
COMPLETED BY	The first and last name of the person who filled out the form
PAGE OF	The page number and the number of pages for the month

BLOCK 2: POLE-AND-LINE UNLOADING DATA

FIRST DAY	The first day on which unloading occurred
LAST DAY	The last day on which unloading occurred
VESSEL NAME	The name of the fishing vessel
VESSEL REGISTRATION	The national registration number of the fishing vessel
VESSEL NATIONALITY	The county of registration
SKJ	The amount (metric tonnes) of skipjack unloaded
YFT	The amount (metric tonnes) of yellowfin unloaded
BET	The amount (metric tonnes) of bigeye unloaded
OTH	The amount (metric tonnes) of all other species unloaded
TOTAL	The total amount (metric tonnes) unloaded

Each line represents a single port of call by a vessel. If a vessel unloads all its catch in one day, then the first day and last day will be the same. If a vessel unloads during more than one day, the amounts unloaded should be the *total* amounts unloaded, from the first day to the last day.

If a vessel is known to have unloaded, but the amounts unloaded are not available, the *dates, vessel name, registration number and nationality* should still be recorded on the form.

If more than 25 unloadings take place during a month, then additional pages should be used and numbered appropriately.



PORT:	SAMPLER:	ASSISTANT:
VESSEL NAME:	VESSEL NATIONALITY:	VESSEL REGISTRATION:
DATE OF DEPARTURE:	DATE OF ARRIVAL:	DATE OF SAMPLE:
FISHING AREA: LATITUDE FROM _____ ° N / S TO _____ ° N / S LONGITUDE FROM _____ ° E / W TO _____ ° E / W		

LENGTH	SKJ	TOTAL	YFT	TOTAL	BET	TOTAL
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						
64						
65						
66						
67						
68						
69						
	TOTAL		TOTAL		TOTAL	

SPC POLE-AND-LINE SAMPLING FORM

INSTRUCTIONS

The Pole-and-Line Sampling Form is used to record the lengths of fish unloaded from pole-and-line vessels at the end of a trip.

All dates should be recorded using the first three letters of the month, e.g. 26 Jul 94 or Jul 26/94.

BLOCK 1: GENERAL INFORMATION

PORT	The port of unloading
SAMPLER	The first and last name of the person measuring the fish
ASSISTANT	The first and last name of the person recording the measurements, if different from the sampler
VESSEL NAME	The name of the fishing vessel
VESSEL NATIONALITY	The country of registration
VESSEL REGISTRATION	The national registration number of the fishing vessel
DATE OF DEPARTURE	The date the vessel left port at the beginning of the trip
DATE OF ARRIVAL	The date the vessel returned to port at the end of the trip
DATE OF SAMPLE	The day the sample was taken
FISHING AREA	The northern, southern, western and eastern boundaries of the fishing area, recorded to the nearest degree of latitude and longitude

BLOCK 2: POLE-AND-LINE LENGTH DATA

SKJ YFT BET	Length measurements for skipjack — yellowfin — bigeye. Tick the appropriate row for each fish measured.
TOTAL	After the sample has been completed, the total number of fish measured should be recorded for each species and for each length in the columns labelled TOTAL. The total number of fish measured for each species can be recorded in the bottom row of each column labelled TOTAL.

Length measurements should be taken from *the tip of the upper jaw to the fork of the tail*.

Lengths should be measured in *centimetres*, rounded to the nearest centimetre.

If a fish smaller than 30 cm or larger than 69 cm is encountered, record the new length in one of the blank rows at the top and the bottom of the form by writing the length in the LENGTH column, then ticking the adjacent species column.

SPC PURSE SEINE CARRIER FORM

INSTRUCTIONS

The Purse Seine Carrier Form is used to record the amounts transshipped from purse seiners to a carrier vessel.

All dates should be recorded using the first three letters of the month, e.g. 26 Jul 94 or Jul 26/94.

BLOCK 1: CARRIER VESSEL INFORMATION

CARRIER VESSEL	The name of the carrier vessel
SHIPPING COMPANY	The company that owns the carrier vessel
CAPTAIN	The captain of the carrier vessel
PERMIT	The permit issued to the carrier by the port country
PORT	The name of the port where the transshipment took place
ARRIVAL DATE	The date the carrier vessel arrived
DEPARTURE DATE	The date the carrier vessel departed

BLOCK 2: FISH ONBOARD ON ARRIVAL

If the carrier arrives in port with fish onboard, the following information must be provided:

PORT OF LOADING	The port where the fish already onboard were loaded
ARRIVAL DATE	The date the carrier arrived in the port of loading
DEPARTURE DATE	The date the carrier departed the port of loading
SKJ	The amount (metric tonnes) of skipjack onboard
YFT	The amount (metric tonnes) of yellowfin onboard
MIXED SKJ + YFT	The amount (metric tonnes) of mixed skipjack and yellowfin onboard

BLOCK 3: PURSE SEINE UNLOADING DATA

The following information must be provided for each purse seiner that transships to the carrier:

NAME OF PURSE SEINER	The name of the purse seiner transshipping to the carrier
FLAG	The nationality of the purse seiner
FIRST DAY OF UNLOADING	The day the purse seiner started unloading
LAST DAY OF UNLOADING	The day the purse seiner stopped unloading

SKJ	The amount (metric tonnes) of skipjack unloaded from the purse seiner
YFT	The amount (metric tonnes) of yellowfin unloaded from the purse seiner
MIXED SKJ + YFT	The amount (metric tonnes) of mixed skipjack and yellowfin unloaded from the purse seiner
TOTAL	The total amount (metric tonnes) of fish unloaded from the purse seiner
FULL OR PARTIAL	Write "FULL" if the purse seiner unloaded all of its catch. Write "PART" if the purse seiner did not unload all of its catch.

Each line represents a single transshipment by a purse seiner. If a vessel transships all its catch in one day, then the first day of unloading and the last day of unloading will be the same. If a vessel transships during more than one day, the amounts unloaded should be the *total* amounts unloaded, from the first day to the last day of unloading.

The amounts unloaded should be recorded in metric tonnes, rounded to the nearest metric tonne.

If a vessel is known to have unloaded, but the amounts unloaded are not available, the name of purse seiner, flag, first day of unloading and last day of unloading should still be recorded on the form.

BLOCK 4: GENERAL INFORMATION

COMPLETED BY	The first and last name of the person who completed the form
TITLE	The job title, and company or government agency or transport agency, of the person who completed the form
DATE:	The date the form was completed



PORT:	YEAR:	MONTH:	COMPLETED BY:	PAGE	OF
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NO	FIRST DAY	LAST DAY	VESSEL NAME	VESSEL REGISTRATION	VESSEL NATIONALITY	SKJ	YFT	BET	OTH	TOTAL
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
TOTAL										

SPC PURSE SEINE UNLOADING FORM

INSTRUCTIONS

The Purse Seine Unloading Form is used to record the amounts of fish delivered to canneries or cold storage by purse seine vessels after each trip. Each page contains unloading data for a given month.

All dates should be recorded using the first three letters of the month, e.g. 26 Jul 94 or Jul 26/94.

BLOCK 1: GENERAL INFORMATION

PORT	The port of unloading
YEAR	The calendar year
MONTH	The month during which unloading took place
COMPLETED BY	The first and last name of the person who filled out the form
PAGE OF	The page number and the number of pages for the month

BLOCK 2: PURSE SEINE UNLOADING DATA

FIRST DAY	The first day on which unloading occurred
LAST DAY	The last day on which unloading occurred
VESSEL NAME	The name of the fishing vessel
VESSEL REGISTRATION	The national registration number of the fishing vessel
VESSEL NATIONALITY	The county of registration
SKJ	The amount (metric tonnes) of skipjack unloaded
YFT	The amount (metric tonnes) of yellowfin unloaded
BET	The amount (metric tonnes) of bigeye unloaded
OTH	The amount (metric tonnes) of all other species unloaded
TOTAL	The total amount (metric tonnes) unloaded

Each line represents a single port of call by a vessel. If a vessel unloads all its catch in one day, then the first day and last day will be the same. If a vessel unloads during more than one day, the amounts unloaded should be the *total* amounts unloaded, from the first day to the last day.

The vessel registration should be completed whenever possible; it is particularly important for identifying *Taiwanese* vessels.

The amounts unloaded should be recorded in *metric tonnes*, rounded to the nearest metric tonne.

If a vessel is known to have unloaded, but the amounts unloaded are not available, the *dates, vessel name, registration number and nationality* should still be recorded on the form.

If more than 25 unloadings take place during a month, then additional pages should be used and numbered appropriately.

SPC WELL LOADING FORM

INSTRUCTIONS

The Well Loading Form is used to record information about purse seine sets and the wells in which the catch was stored in order to determine the appropriate wells for species composition and length frequency sampling.

All dates should be recorded using the first three letters of the month, e.g. 26 Jul 94 or Jul 26/94.

BLOCK 1: GENERAL INFORMATION

PORT	The port of unloading
COMPLETED BY	The first and last name of the person who completed the form
DATE	The date the form was completed
VESSEL NAME	The name of the fishing vessel
VESSEL NATIONALITY	The county of registration
PERMIT	The permit issued to the purse seiner by the port country
PREVIOUS PORT OF ENTRY	The port from which the vessel the began trip
DATE OF DEPARTURE	The date the vessel left the previous port at the beginning of the trip
DATE OF ARRIVAL	The date the vessel returned to port at the end of the trip
FISHING AREA	The northern, southern, western and eastern boundaries of the fishing area, recorded to the nearest degree of latitude and longitude

BLOCK 2: WELL LOADING DATA

Block 2 should be completed for all successful sets (i.e., not for sets from which no fish were caught). The information used to complete Block 2 is recorded in the catch and effort logbook, which should be made available by the captain or the fishing master.

If the catch from a set is stored in more than one well and the amounts stored in each well are available, then the amounts stored in each well should be recorded on separate lines, one line for each well in which the catch was stored. For example, if the catch from a set is stored in three wells, and the amounts stored in each well are available, then the catch from the set should be recorded on three lines, one line for each well. If the catch is stored in more than well, but the amounts stored in each well are not available, then use a single line and, in the well column, list all the wells that were used.

SET	The set number
DATE	The date the set was made
LATITUDE	The latitude at which the set was made, to the nearest minute, e.g. 2°23'S

LONGITUDE	The longitude at which the set was made, to the nearest minute, e.g. <i>149°46'E</i>
SET TYPE	Use the following codes: <ol style="list-style-type: none">1 Free-swimming school2 Log3 Free-floating FAD or raft or payao4 Anchored FAD or raft or payao5 Whale or shark6 Other
SKJ	The amount (metric tonnes) of skipjack caught
YFT	The amount (metric tonnes) of yellowfin caught
SKJ + YFT	The amount (metric tonnes) of mixed skipjack and yellowfin caught, if they are not estimated separately
OTH	The amount (metric tonnes) of other species caught
WELL	The number of the well in which the catch was stored, e.g. <i>P2</i> (for well number 2, port side). If the catch from the set was stored in more than one well, and the amounts stored in each well are <u>not</u> available, then list all the wells in which the catch was stored; e.g. <i>P2, S2</i> (for port well number 2 and starboard well number 2).



PORT:	SAMPLER:	ASSISTANT:
VESSEL NAME:	VESSEL NATIONALITY:	VESSEL REGISTRATION:
DATE OF DEPARTURE:	DATE OF ARRIVAL:	DATE OF SAMPLE:

SET	DATE	LATITUDE	LONGITUDE	SET TYPE	SKJ	YFT	SKJ + YFT	OTH	WELL

LENGTH FREQUENCY SAMPLE ONLY	SPECIES COMPOSITION SAMPLE AND LENGTH FREQUENCY SAMPLE
SIZE-SORTED SAMPLE: RECORD THE SIZE CLASS, AND THE AMOUNT OR PROPORTION OF THIS SIZE CLASS IN THE SET, IN THE SPACE BELOW 	

NO	SPECIES	LENGTH	NO	SPECIES	LENGTH	NO	SPECIES	LENGTH	NO	SPECIES	LENGTH
1			26			51			76		
2			27			52			77		
3			28			53			78		
4			29			54			79		
6			30			55			80		
6			31			56			81		
7			32			57			82		
8			33			58			83		
9			34			59			84		
10			35			60			85		
11			36			61			86		
12			37			62			87		
13			38			63			88		
14			39			64			89		
15			40			65			90		
16			41			66			91		
17			42			67			92		
18			43			68			93		
19			44			69			94		
20			45			70			95		
21			46			71			96		
22			47			72			97		
23			48			73			98		
24			49			74			99		
25			50			75			100		
Σ			Σ			Σ			Σ		

SPC PURSE SEINE SAMPLING FORM

INSTRUCTIONS

The Purse Seine Sampling Form is used to record the lengths of fish unloaded from purse seiners at the end of a trip.

If more than 100 fish are sampled from a single unloading, use additional Purse Seine Sampling Forms. Block 1, Block 2 and Block 4 can be left blank on the additional pages, *except for port, vessel name and date of sample*, which must be re-entered exactly as they appear on the first page.

All dates should be recorded using the first three letters of the month, e.g. 26 Jul 94 or Jul 26/94.

BLOCK 1: GENERAL INFORMATION

PORT	The port of unloading
SAMPLER	The first and last name of the person measuring the fish
ASSISTANT	The first and last name of the person recording the measurements, if different from the sampler
VESSEL NAME	The name of the fishing vessel
VESSEL NATIONALITY	The county of registration
VESSEL REGISTRATION	The national registration number of the fishing vessel
DATE OF DEPARTURE	The date the vessel left port at the beginning of the trip
DATE OF ARRIVAL	The date the vessel returned to port at the end of the trip
DATE OF SAMPLE	The day the sample was taken

The vessel registration should be recorded whenever possible; it is particularly important for identifying *Taiwanese* vessels.

BLOCK 2: WELL LOADING DATA

Block 2 should be completed for all sets that were stored in the well that was sampled. This information should be taken from the Well Loading Form. See the Well Loading Form for instructions.

If the catch from a set was also stored in other wells, in addition to the well that was sampled, and if the amounts that were stored in each well are available from the Well Loading Form, then one line should be completed in Block 2 for each well in which the catch was stored, i.e. one line for the well that was sampled and one line for each of the other wells in which the catch from the same set was stored.

BLOCK 3: COMMENTS

If the school was a pure skipjack or a pure yellowfin school, and the sample was for length frequency only and not for species composition, then tick "length frequency sample only".

If the school was a mixed school, and both a species composition sample and a length frequency sample were taken, then tick "species composition sample and length frequency sample".

If the fish were sorted by size, and then a length frequency sample only was taken, and not a species composition sample, tick both "length frequency sample only" and "size-sorted sample". Record both the size class that was sampled, and an estimate of either the tonnage or the proportion of this size class in the set, at the bottom of Block 3.

If the fish were sorted by size, and then both a species composition sample and a length frequency sample were taken, tick both "species composition sample and length frequency sample" and "size-sorted sample". Record both the size class that was sampled, and an estimate of either the tonnage or the proportion of this size class in the set, at the bottom of Block 3.

If discards were sorted, and a sample of the discards was taken, tick both "species composition sample and length frequency sample" and "size-sorted sample". Record that discards were sampled, and give an estimate of either the tonnage or the proportion of discards in the set, at the bottom of Block 3.

Any other comments can also be included at the bottom of Block 3.

BLOCK 4: SAMPLING DATA

SPECIES	The following species codes are used:
SKJ	Skipjack, <i>Katsuwonus pelamis</i>
YFT	Yellowfin tuna, <i>Thunnus albacares</i>
BET	Bigeeye tuna, <i>Thunnus obesus</i>
ALB	Albacore tuna, <i>Thunnus alalunga</i>
OTH	Other species
LENGTH	The length, in centimetres, rounded to the nearest centimetre
Σ	The sum of the lengths in the column

Length measurements should be taken from *the tip of the upper jaw to the fork of the tail*.

The sum of lengths in each column is used to verify the sampling data during data entry.



PORT:	SAMPLER:	ASSISTANT:
VESSEL NAME:	VESSEL NATIONALITY:	VESSEL REGISTRATION:
DATE OF DEPARTURE:	DATE OF ARRIVAL:	DATE OF SAMPLE:
FISHING AREA: LATITUDE FROM _____ ° N / S TO _____ ° N / S LONGITUDE FROM _____ ° E / W TO _____ ° E / W		

NO	SPECIES	MEASURE 1		MEASURE 2		MEASURE 3		MEASURE 4		MEASURE 5	
		CODE		CODE		CODE		CODE		CODE	
		UNITS		UNITS		UNITS		UNITS		UNITS	
1											
2											
3											
4											
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6											
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30											
	Σ										

SPC CONVERSION FACTOR FORM

INSTRUCTIONS

The Conversion Factor Form is used to record two or more measurements of length and/or weight from each fish in order to determine conversion factors. For example, measurements of gilled-and-gutted weight and headed-and-tailed weight might be taken for each fish, in order to determine the factor for converting headed-and-tailed weight to gilled-and-gutted weight.

If more than 30 fish are sampled from a single unloading, use additional Conversion Factor Forms. Block 1 and Block 3 can be left blank on the additional pages (since they will have been completed on the first page), *except for port, vessel name and date of sample*, which must be re-entered exactly as they appear on the first page.

All dates should be recorded using the first three letters of the month, e.g. 26 Jul 94 or Jul 26/94.

BLOCK 1: GENERAL INFORMATION

PORT	The port of unloading
SAMPLER	The first and last name of the person measuring the fish
ASSISTANT	The first and last name of the person recording the measurements, if different from the sampler
VESSEL NAME	The name of the fishing vessel
VESSEL NATIONALITY	The county of registration
VESSEL REGISTRATION	The national registration number of the fishing vessel
DATE OF DEPARTURE	The date the vessel left port at the beginning of the trip
DATE OF ARRIVAL	The date the vessel returned to port at the end of the trip
DATE OF SAMPLE	The day the sample was taken
FISHING AREA	The northern, southern, western and eastern boundaries of the fishing area, recorded to the nearest degree of latitude and longitude

BLOCK 2: SAMPLING DATA

Two to five measurements of length and/or weight can be taken for each fish. Record the code for each measurement in the top of Block 2 using the codes listed below:

LENGTH CODES

- A Fork length: tip of the upper jaw to the fork of the tail
- E Back of the eye orbit to the anterior base of the most posterior dorsal fin
- F Tip of the upper jaw to the most posterior ventral or anal finlet, e.g. 5F, if the most posterior ventral or anal finlet is the fifth finlet, or 6F, if the most posterior ventral or anal finlet is the sixth finlet

- O Back of the eye orbit to the fork of the tail
 P Anterior base of pectoral fin to the fork of the tail

WEIGHT CODES

- G Gilled-and-gutted
 H Gilled-and-gutted, head missing
 T Gilled-and-gutted, tail missing
 N Gilled-and-gutted, both head and tail missing
 W Whole weight

Record the units for each measurement in the top of Block 2 using the codes listed below:

- CM Centimetres
 LB Pounds
 KG Kilogrammes

For each fish that is sampled, record the species using the codes listed below:

- YFT Yellowfin tuna, *Thunnus albacares*
 BET Bigeye tuna, *Thunnus obesus*
 ALB Albacore tuna, *Thunnus alalunga*
 BFT Bluefin tuna, *Thunnus thynnus*
 BLZ Blue marlin, *Makaira mazara*
 BLM Black marlin, *Makaira indica*
 MLS Striped marlin, *Tetrapturus audax*
 SWO Broadbill swordfish, *Xiphias gladius*
 SAI Indo-Pacific sailfish, *Istiophorus platypterus*

The last row in Block 2, denoted " Σ ", is used to verify the sampling data during data entry; record the sum of the measurements in each column.

BLOCK 3: COMMENTS

Record any comments in Block 3.