South Pacific Regional Fisheries Management Organisation

Data and Information Working Group

Chile, 27-29 October 2010

DIWG-08-06

Standards for the collection, reporting, verification and exchange of data: Editorial Updates

There are a number of items in the current Data Standards that could be corrected or updated to remove small inaccuracies , or where additional refererences/ information could be added to improve the readability of the standards.

The current Data Standards are attached at Appendix 1, and have been amended with suggested corrections and/or updates using the track changes facility.

APPENDIX 1

Standards for the collection, reporting, verification and exchange of data

6 October 2008 (as amended on ##18 OctoberMay 201009)

With regard to the fishing vessels flying their flag and fishing for non-highly migratory fishery resources in the Area -

1. Data on fishing activities and the impacts of fishing

Participants are to develop, implement and improve systems to:

(a) Ensure that data on fishing activities are collected from vessels according to the operational characteristics of each fishing method.
   (i) For trawling methods, Participants are to collect the data described in annex 1;
   (ii) For purse seining methods, Participants are to collect the data described in annex 2;
   (iii) For bottom long lining, methods Participants are to collect the data described in annex 3;
   (iv) For squid jigging, Participants are to collect the data described in Annex 4.
   (v) For potting methods, Participants are to collect the data described in Annex 5.
   (vi) For drop/ dahn lining methods, Participants are to collect the data described in Annex 6.

(b) Ensure that data to assess the impacts of fishing on non-target and associated or dependant species are collected from vessels.

(c) Compile data on fishing activities and the impacts of fishing and provide these in a timely manner to the interim Secretariat of the proposed South Pacific Regional Fisheries Management Organisation (SPRFMO). Such data are to be provided in sufficient detail to facilitate effective stock assessment. Participants will provide by the 30th June, their previous (January to December) year's data on fishing activities and the impacts of fishing.

2. Vessel data

Participants are to:

(a) Establish a national record of vessels authorized to fish in the Area;
(b) Collect vessel related data for standardizing fleet composition and vessel fishing power and for converting between different measures of effort in the analysis of catch and effort data. Participants will collect the data described in annex 7;
(c) Compile vessel data and provide them in a timely manner to the interim Secretariat of the proposed SPRFMO. Participants are to provide data on vessels that they have authorized to fish in the following year, at least 3 months prior to the start of that year. Additionally, Participants are to provide data on vessels that they newly authorize to fish during a year, or when authorizations to fish are revoked during a year, within 1 month of granting or revoking such an authorization.

3. Observer Data

(a) Implementation of Observer Programmes
Participants are to develop, implement and improve Observer Programmes to attain the following objectives:

i) To collect vessel information, effort and catch data for all fisheries and fished species in the Area, including target, by-catch and associated and dependent species.

ii) To collect biological or other data and information relevant to the management of fishery resources in the Area, as specified in these standards, or as identified from time to time by the Science Working Group or through processes identified by the Commission.

iii) To collect relevant scientific information related to the implementation of the provisions of the Interim Measures adopted by the Participants to the negotiations for the formation of a South Pacific RFMO.

iv) To collect representative data, including length-frequency and biological samples, across the Area, distribution of fishing effort, seasons, fishing fleets and fleet types.

(b) Information and Data to be Collected

All national observer programmes operating in the SPRFMO Area should provide the information in Annex 8.

(c) Data Provision

Observer data should be provided to the interim Secretariat of the proposed SPRFMO in a standardised format, to be included in a SPRFMO Observer Database. Specifications and standards for Observer~~this~~ data submissions ~~will~~have been placed on the SPRFMO web site. Until the Interim Secretariat determines a change is needed, observer data will be submitted in Microsoft Excel format. Participants will provide by the 30th September, their previous (January to December) year's data.

(d) Annual Reporting

All SPRFMO participants should provide annual observer implementation reports, which should include sections covering: observer training, programme design and coverage, type of data collected, and any problems encountered during the year. These reports shall be adequate enough to allow the Data & Information Working Group, the Scientific Working Group or the Commission to evaluate the implementation and effectiveness of observer programmes implemented under this standard.

(e) Maintenance of Confidentiality

The interim Secretariat of the proposed SPRFMO is to compile and disseminate accurate and complete observer data to ensure that the best scientific evidence is available, while maintaining confidentiality where appropriate. In doing so, the Interim Secretariat is to follow the procedures specified in Section 8.

4. Vessel Monitoring System data

(a) Implementation of Vessel Monitoring Systems

Participants are to develop, implement and improve systems to:

(i) Ensure that all of their vessels fishing in the Area are fitted with fully operational automatic location communicator (ALC) reporting back to the flag state.

(ii) Ensure that ALC on their vessels remain operational, and report in accordance with this standard, at all times and in all areas while operational in the SPRFMO area.

(iii) Maintain a record of all vessel position information reported while these vessels are operational in the SPRFMO area, such that this information may be used to document vessel activity in the SPRFMO area, and to validate fishing position information provided by those vessels.

(b) Frequency and Accuracy of VMS Position Reports

Participants are to ensure that:

(i) VMS position reports are reported by each of their vessels:

(1) at least once every 2 hours if fishing using benthic or bentho-pelagic[1] trawling or if operating within 20nm of an EEZ boundary;

(2) at least once every four hours in other circumstances.

(ii) All VMS Position reports are made in accordance with the specification in paragraph (c) of this standard.

(iii) Under normal satellite navigation operating conditions, positions derived from the data reported are to be accurate to within 500[2]m.

(c) Content of VMS Position Reports

Participants are to ensure that all VMS Position Reports made by their vessels include at least the following information:

Category	Data Element	Remarks
Vessel registration	Static unique vessel identifier	For example, country code followed by national vessel registration number
Activity detail	Latitude	Position latitude (decimal degrees, to the nearest 0.01 degree)
Activity detail	Longitude	Position longitude (decimal degrees, to the nearest 0.01 degree)
Message detail	Date	Position date in UTC
Message detail	Time	Position time in UTC

5. Historical data

Participants are to:

(a) Collate pre-2007 data on fishing activities in the Area and provide these to the interim Secretariat of the proposed SPRFMO by 30th September 2007, in sufficient detail to facilitate effective stock assessment and in a format as close as is practical to that described in annexes 1 - 6;

[1] Bentho-pelagic trawling is interpreted here to mean trawling with a mid-water net where the net has a likelihood of coming into contact with the seabed at any time during the trawling operation.

[2] 500m should be adequate for scientific purposes but for compliance purposes a greater accuracy may be required.

(b) Because of the value of such data for stock assessments - at their discretion collate pre-2007 data on fishing activities by vessels flying their flag and fishing within areas under their national jurisdiction, and provide these to the interim Secretariat of the proposed SPRFMO by 30th September 2007 in sufficient detail to facilitate effective stock assessment and in a format as close as is practical to that described in annexes 1 - 6;
(c) Collate pre-2008 vessel data and provide these to the Interim Secretariat of the proposed SPRFMO by 30th September 2007, in a format as close as is practical to that described Annex 7.

6. Data verification

Participants are to ensure that fishery data are verified through an appropriate system. Participants are to develop, implement and improve mechanisms for verifying data, such as:

(a) Position verification through vessel monitoring systems;
(b) Scientific observer programmes to collect verification data on catch, effort, catch composition (target and non-target), discards and other details of fishing operations;
(c) Vessel trip, landing and transshipment reports; and
(d) Port sampling.

7. Data exchange

When Participants provide data to the interim Secretariat of the proposed SPRFMO, they will do so in accordance with the specifications and format described in Aannex 9~~10~~ of this document.

8. Maintenance of confidentiality

The interim Secretariat of the proposed SPRFMO is to compile and disseminate accurate and complete statistical data to ensure that the best scientific evidence is available while maintaining confidentiality where appropriate. Specifically the interim Secretariat is to:

(a) Compile and disseminate on request the following “public domain” data:
    (i) Data on fishing activities, aggregated by flag state and calendar year and 5 degree by 5 degree areas, except in those cases where such data describes the activities of less than 3 vessels (in which case a lower resolution will be used);
    (ii) Data on the number and type of vessels authorized to fish, aggregated by flag state and calendar year;

(b) Operate comprehensive and robust processes to maintain the confidentiality of the non-public domain data that Participants provide to it. These processes will be based on the ISO/IEC27002:2005 (updates ISO/IEC 17799:2005) international standard for information security management[3]. SPRFMO specific data security standards will be developed over time;

(c) Compile and disseminate to Participants or their designates non-public domain data (being any data not described in 8(a)):
   (i) In response to a written request from the collective Parties to the Negotiation, for the purposes documented by those Parties; and
   (ii) In the absence of a written request from the collective Parties to the Negotiation - only with the authorization of the Participant(s) that originally provided that data.

In the case that an Interim Secretariat has not been established, the Convener of the Data and Information Working Group will assume the roles of the Interim Secretariat with regard to the Maintenance of Confidentiality.

These standards will be reviewed periodically to ensure that they are adequate for the current and foreseeable needs of the proposed SPRFMO.

[3] www.iso.org/iso/en/prods-services/popstds/informationsecurity.html

Annex 1

Standard for trawl fishing activity data

1. Data are to be collected on an un-aggregated (tow by tow) basis.

2. The following fields of data are to be collected:
   (a) Vessel flag
   (b) Vessel name
   (c) Vessel call sign
   (d) Registration number of vessel
   (e) Tow start date
   (f) Tow start time
   (g) Tow end date
   (h) Tow end time
   (i) Tow start position (1/10th degree resolution)
   (j) Tow end position (1/10th degree resolution)
   (k) Intended target species
   (l) Type of trawl, bottom or mid-water
   (use appropriate bottom or midwater trawl codes from the standard ISCCFG fishing gear standards attached at Annex 10)
   (m) Type of trawl: single, double or triple (S, D or T).
   (n) Height of net opening
   (o) Width of net opening
   (p) Gear depth at start of fishing
   (q) Bottom depth at start of fishing
   (r) Catch retained on board by species in live weight
   (s) An estimation of the amount of living marine resources discarded by species if possible
   (t) Were any marine mammals, seabirds or reptiles caught (yes/no/unknown – Y,N,U)

Annex 2

Standard for purse seine fishing activity data

1. Data are to be collected on an un-aggregated (set by set) basis.

2. The following fields of data are to be collected:
   (a) Vessel flag
   (b) Vessel name
   (c) Vessel call sign
   (d) Registration number of vessel
   (e) Set start date
   (f) Set start time
   (g) Set end date
   (h) Set end time
   (i) Set start position (1/10th degree resolution)
   (j) Net length
   (k) Net height
   (l) Intended target species
   (m) School association[4]
   (n) Catch retained on board by species in live weight
   (o) An estimation of the amount of living marine resources discarded by species if possible
   (p) Were any marine mammals, seabirds or reptiles caught (yes/no/unknown – Y,N,U)

[4] Use for example: “FAD”, “debris”, “seabirds”, “surface”, “sonar target”, or “other”

Annex 3

Standard for bottom long lining fishing activity data

1. Data are to be collected on an un-aggregated (set by set) basis.

2. The following fields of data are to be collected:
   (a) Vessel flag
   (b) Vessel name
   (c) Vessel call sign
   (d) Registration number of vessel
   (e) Set start date
   (f) Set start time
   (g) Set end date
   (h) Set end time
   (i) Set start position (1/10th degree resolution)
   (j) Set end position (1/10th degree resolution)
   (k) Intended target species
   (l) Number of hooks
   (m) Bottom depth at start of set
   (n) Catch retained on board by species in live weight
   (o) An estimation of the amount of living marine resources discarded by species if possible
   (p) Were any marine mammals, seabirds or reptiles caught (yes/no/unknown – Y,N,U)

Annex 4

Standard for squid jigging fishing activity data

1. Data are to be collected on a daily basis

2. The following fields of data are to be collected:
   (a) Vessel flag
   (b) Vessel name
   (c) Vessel call sign
   (d) Registration number of vessel
   (e) Date of fishing activity
   (f) Position at start of drift (1/10th degree resolution)
   (g) Position at end of drift (1/10th degree resolution)
   (h) Echo Sounder (Yes/No)
   (i) Number of crew
   (j) Number of single jig machines
   (k) Number of double jig machines
   (l) Number of jigs per line
   (m) Operating depth
   (n) Total deck light power (kW)
   (o) Total hours fished
   (p) Catch retained on board by species in live weight
   (q) An estimation of the amount of living marine resources discarded by species if possible
   (r) Were any marine mammals, seabirds or reptiles caught (Yes/No/Unknown – Y,N,U)

Annex 5

Standard for potting methods fishing activity data

1. Data are to be collected on an un-aggregated (set by set) basis

2. The following fields of data are to be collected:
   (a) Vessel flag
   (b) Vessel name
   (c) Vessel call sign
   (d) Registration number of vessel
   (e) Set start date
   (f) Set start time
   (g) Set end date
   (h) Set end time
   (i) Start of set position (1/10th degree resolution)
   (j) End of set position (1/10th degree resolution)
   (k) Intended target species
   (l) Depth at start of set
   (m) Depth at end of set
   (n) Type of pots
   (o) Total number of pots set
   (p) Type of bait used
   (q) Catch retained by species in live weight
   (r) An estimate of the amount of living marine resources discarded by species if possible
   (s) Were any marine mammals, seabirds or reptiles caught (Yes/No/Unknown – Y,N,U)

Annex 6

Standard for drop/dahn lining fishing activity data

1. Data are to be collected on an un-aggregated (series by series) basis

2. The following fields of data are to be collected:
   (a) Vessel flag
   (b) Vessel name
   (c) Vessel call sign
   (d) Registration number of vessel
   (e) Set start date
   (f) Set start time
   (g) Set end date
   (h) Set end time
   (i) Start of set position (1/10th degree resolution)
   (j) End of set position (1/10th degree resolution)
   (k) Intended target species
   (l) Depth at start of set
   (m) Depth at end of set
   (n) Total number of hooks in the set
   (o) Number of hooks lost
   (p) Type of hooks used
   (q) Type of leader used
   (r) Total number of line lifts in the set
   (s) Type of bait used
   (t) Catch retained by species in live weight
   (u) An estimate of the amount of living marine resources discarded by species if possible
   (v) Were any marine mammals, seabirds or reptiles caught (Yes/No/Unknown – Y,N,U)

Annex 7

Standard for vessel data

1. Data are to be collected on an un-aggregated (vessel by vessel) basis.

2. The following fields of data are to be collected:
   (a) Current vessel flag
   (b) Name of vessel
   (c) Registration number
   (d) International radio call sign (if any)
   (e) Lloyd's / IMO number (if allocated)
   (f) Previous Names (if known)
   (g) Port of registry
   (h) Previous flag (if any)
   (i) Type of vessel
   (Use appropriate ISSCFV codes, Annex 11)

   (j) Type of fishing method(s)
   (Use appropriate ISSCFG codes, Annex 10)

   (k) When built
   (l) Where built
   (m) Length
   (n) Length type *e.g.* "LOA", "LBP"
   (o) Moulded depth
   (p) Beam
   (q) Gross Tonnage – GT (to be provided as the preferred unit of tonnage)
   (r) Gross register tonnage – GRT –
   (to be provided if GT not available; may also be provided in addition to GT)
   (s) Power of main engine(s)
   (t) Hold capacity
   (u) Name of owner(s)
   (v) Address of owner(s)
   (w) Name of operator(s)
   (x) Address of operator(s)
   (y) Vessel authorisation start date

   (z) Vessel authorisation end date

Annex 8

Standard for Observer Data

A. Vessel & Observer Data to be Collected for Each Observer Trip

1. Vessel and observer details are to be recorded only once for each observed trip.

2. The following vessel data are to be collected for each observed trip:
   a) Current vessel flag.
   b) Name of vessel.
   c) Name of the Captain.
   d) Name of the Fishing Master.
   e) Registration number.
   f) International radio call sign (if any).
   g) Lloyd's / IMO number (if allocated).
   h) Previous Names (if known).
   i) Port of registry.
   j) Previous flag (if any).
   k) Type of vessel.
      (Use appropriate ISSCFV codes, Annex 11)

   l) Type of fishing method(s)
      (Use appropriate ISSCFG codes, Annex 10)

   m) Length (m)
   n) Length type *e.g.* "LOA", "LBP"
   o) Beam (m).
   p) Gross Tonnage – GT (to be provided as the preferred unit of tonnage)
   q) Gross register tonnage – GRT
      (to be provided if GT not available; may also be provided in addition to GT)
   r) Power of main engine(s) (kilowatts).
   s) Hold capacity (cubic metres).
   t) Record of the equipment on board which may affect fishing power factors (navigational equipment, radar, sonar systems, weather fax or satellite weather receiver, sea-surface temperature image receiver, Doppler current monitor, radio direction finder), where practical.
   u) Total number of crew (all staff, excluding observers).

3. The following observer data are to be collected for each observed trip:
   a) Observer's name.
   b) Observer's organisation.
   c) Date observer embarked (UTC date).
   d) Port of embarkation.
   e) Date observer disembarked (UTC date).
   f) Port of disembarkation.

B. Catch & Effort Data to be Collected for Trawl Fishing Activity

1. Data are to be collected on an un-aggregated (tow by tow) basis for all observed trawls.

2. The following data are to be collected for each observed trawl tow:

a. Tow start date.
b. Tow start time (the time gear starts fishing).
c. Tow end date.
d. Tow end time (the time haul back starts).
e. Tow start position (Lat/Lon, 1 minute resolution).
f. Tow end position (Lat/Lon, 1 minute resolution).
g. Intended target species.
h. Type of trawl, bottom or mid-water
(use appropriate bottom or midwater trawl codes from the standard ISCCFG fishing gear standards attached at Annex 10)
i. Type of trawl: single, double or triple (S, D or T).
j. Height of net opening.
k. Width of net opening.
l. Mesh size of the cod-end net (stretched mesh, mm) and mesh type (diamond, square, etc).
m. Gear depth (of footrope) at start of fishing.
n. Bottom (seabed) depth at start of fishing.
o. Catch of all species retained on board, split by species, in live weight (to the nearest kg).
p. Record of the numbers by species of all marine mammals, seabirds or reptiles caught.
q. Record of sensitive benthic species in the trawl catch, particularly vulnerable or habitat-forming species such as sponges, sea-fans or corals.
r. Estimate of the amount (weight or volume) of remaining marine resources discards, split to the lowest known taxon, unless the species is less than 100 kg per tow.
s. Record any bycatch mitigation measures employed.

C. Catch & Effort Data to be Collected for Purse Seine Fishing Activity

1. Data are to be collected on an un-aggregated (set by set) basis for all observed purse-seine sets.

2. The following data are to be collected for each observed purse-seine set:
   a) Total search time before this set, since the last set.
   b) Set start date.
   c) Set start time (the time gear starts fishing).
   d) Set end date.
   e) Set end time (the time haul back starts).
   f) Set start position (Lat/Lon, 1 minute resolution).
   g) Net length (m).
   h) Net height (m).
   i) Net mesh size (stretched mesh, mm) and mesh type (diamond, square, etc)
   j) Intended target species.
   k) Type of school and association (FAD, debris, seabirds, surface, sonar target).
   l) Catch of all species retained on board, split by species, in live weight (to the nearest kg).
   m) Record of the numbers by species of all marine mammals, seabirds or reptiles caught.
   n) Estimate of the amount (weight or volume) of remaining marine resources discards, split to the lowest known taxon, unless the species is less than 100 kg per set.
   o) Record any bycatch mitigation measures employed.

D. Catch & Effort Data to be Collected for Bottom Long Line Fishing Activity

1. Data are to be collected on an un-aggregated (set by set) basis for all observed longline sets.

2. The following fields of data are to be collected for each set:

   a) Set start date.

   b) Set start time.
   c) Set end date.
   d) Set end time.
   e) Set start position (Lat/Lon, 1 minute resolution).
   f) Set end position (Lat/Lon, 1 minute resolution).
   g) Intended target species.
   h) Total length of longline set (km).
   i) Number of hooks for the set.
   j) Bottom (seabed) depth at start of set.
   k) Number of hooks actually observed during the haul.
   l) Catch of all species retained on board, split by species, in live weight (to the nearest kg).

m) Record of the numbers by species of all marine mammals, seabirds or reptiles caught.
n) Record of sensitive benthic species in the catch, particularly vulnerable or habitat-forming species such as sponges, sea-fans or corals.
o) Estimate of the amount (weight or volume) of remaining marine resources discards, split to the lowest known taxon, unless the species is less than 100 kg per set.
p) Record any bycatch mitigation measures employed.

E. Length-Frequency Data to Be Collected

Representative and randomly sampled length-frequency data are to be collected for the target species and, time permitting, for other main by-catch species. Length data should be collected and recorded at the most precise level appropriate for the species (cm or mm and whether to the nearest unit or unit below) and the type of measurement used (total length, fork length, or standard length) should also be recorded. If possible, total weight of length-frequency samples should be recorded, or estimated and the method of estimation recorded, and observers may be required to also determine sex of measured fish to generate length-frequency data stratified by sex.

Commercial Sampling Protocol

i) Fish species other than skates, rays and sharks:
- fork length should be measured to the nearest cm for fish which attain a maximum length greater than 40cm fork length
- fork length should be measured to the nearest mm for fish which attain a maximum length less than 40cm fork length;

ii) Skates and rays
- maximum disk width should be measured

iii) Sharks
- Appropriate length measurement to be used should be selected for each species (see FAO technical report 474 on measuring sharks). As a default, total length should be measured.

Scientific Sampling Protocol

For scientific sampling of species length Measurements may need to be made at a finer resolution than specified above.

F. Biological Sampling to be Conducted

1. The following biological data should be collected for representative samples of the main target species and, time permitting, for other main by-catch species contributing to the catch:
   a) Species
   b) Length (mm or cm), with record of the type of length measurement used. Measurement precision and type should be determined on a species by species basis consistent with that defined in Section E above.
   c) Sex (male, female, immature, unsexed)
   d) Maturity stage

2. Observers should collect tissue, otolith and/or stomach samples according to pre-determined specific research programmes implemented by the Scientific Working Group or other national scientific research.

3. Observers are to be briefed and provided with written length-frequency and biological sampling protocols, where appropriate, and priorities for the above sampling specific to each observer trip.

G. Data to be Collected on Incidental Captures of seabirds, mammals, and reptiles (turtles)

1. The following data are to be collected for all seabirds, mammals, and reptiles (turtles) caught in fishing operations:
   a) Species (identified taxonomically as far as possible, or accompanied by photographs if identification is difficult) and size.
   b) Count of the number caught per tow or set.
   c) Life status (vigorous, alive, lethargic, dead) upon release.
   d) If dead, then collect adequate information or samples for onshore identification in accordance with pre-determined sampling protocols. Where this is not possible, observers may be required to collect sub-samples of identifying parts, as specified in biological sampling protocols.

H. Detection of Fishing in Association with Vulnerable Marine Ecosystems

1. For each observed trawl, the following data are to be collected for all sensitive benthic species caught, particularly vulnerable or habitat-forming species such as sponges, sea fans, or corals:
   a) Species (identified taxonomically as far as possible, or accompanied by a photograph where identification is difficult).
   b) An estimate of the quantity (weight (kg) or volume (m^3)) of each listed benthic species caught in the tow.
   c) An overall estimate of the total quantity (weight (kg) or volume (m^3)) of all invertebrate benthic species caught in the tow.
   d) Where possible, and particularly for new or scarce benthic species which do not appear in ID guides, whole samples should be collected and suitably preserved for identification on shore.

I. Data to be Collected for all Tag Recoveries

1. The following data are to be collected for all recovered fish, seabird, mammal or reptile tags if the organism is dead, to be retained, or alive:
   a) Observer name.
   b) Vessel name.
   c) Vessel call sign.
   d) Vessel flag.
   e) Collect, label (with all details below) and store the actual tags for later return to the tagging agency.
   f) Species from which tag recovered.
   g) Tag colour and type (spaghetti, archival).
   h) Tag numbers (The tag number is to be provided for all tags when multiple tags were attached to one fish. If only one tag was recorded, a statement is required that specifies whether or not the other tag was missing) If the organism is alive and to be released, tag information should be collected in accordance with pre-determined sampling protocols.
   i) Date and time of capture (UTC).
   j) Location of capture (Lat/Lon, to the nearest 1 minute)
   k) Animal length / size (cm or mm) with description of what measurement was taken (such as total length, fork length, etc).
      Length measurements should be collected according to the criteria defined in Section E above.
   l) Sex (F=female, M=male, I=indeterminate, D=not examined)
   m) Whether the tags were found during a period of fishing that was being observed (Y/N)
   n) Reward information (e.g. name and address where to send reward)

(It is recognised that some of the data recorded here duplicates data that already exists in the previous categories of information. This is necessary because tag recovery information may be sent separately to other observer data.)

J. Hierarchies for Observer Data Collection

1. Recognising that observers may not be able to collect all of the data described in these standards on each trip, a hierarchy of priorities is to be implemented for collection of observer data. Trip-specific or programme-specific observer task priorities may be developed in response to specific research programme requirements, in which case such priorities should be followed by observers.

2. In the absence of trip- or programme-specific priorities, the following generalised priorities should be followed by observers:

   a) Fishing Operation Information
      - All vessel and tow / set / effort information.

   b) Reporting of Catches
      - Record time, weight of catch sampled versus total catch or effort (e.g. number of hooks), and total numbers of each species caught.
      - Identification and counts of seabirds, mammals, reptiles (turtles), sensitive benthic species and vulnerable species.
      - Record numbers or weights of each species retained or discarded.
      - Record instances of depredation, where appropriate.

   c) Biological Sampling
      - Check for presence of tags.
      - Length-frequency data for target species.
      - Basic biological data (sex, maturity) for target species.
      - Length-frequency data for main by-catch species.
      - Otoliths (and stomach samples, if being collected) for target species.
      - Basic biological data for by-catch species.
      - Biological samples of by-catch species (if being collected)
      - Take photos

3. The reporting of catches and biological sampling procedures should be prioritised among species groups as follows:

Species	**Priority (1 highest)**
Primary target species (such as jack mackerel, for pelagic fisheries, and orange roughy for demersal fisheries)	1
Seabirds, mammals, and reptiles (turtles)	2
Other species typically within top 5 in the fishery (such as blue mackerel for pelagic fisheries, and oreos and alfonsino for demersal fisheries)	3
All other species	4

The allocation of observer effort among these activities will depend on the type of operation and setting. The size of sub-samples relative to unobserved quantities (e.g. number of hooks examined for species composition relative to the number of hooks set) should be explicitly recorded under the guidance of member country observer programmes.

K. Coding Specifications to be Used for Recording Observer Data

1. Unless otherwise specified for specific data types, observer data are to be provided in accordance with the same coding specifications as specified in Annex 9 of the SPRFMO Data Standards.

2. Coordinated Universal Time (UTC) is to be used to describe times.

3. Decimal degrees are to be used to describe locations.

4. The following coding schemes are to be used:
   a) Species are to be described using the FAO 3 letter species codes[5].
   b) Fishing methods are to be described using the International Standard Classification of Fishing Gear (ISSCFG - 29 July 1980) codes – Annex 10.
   c) Types of fishing vessel are to be described using the International Standard Classification of Fishery Vessels (ISSCFV) codes – Annex 11.

5. Metric units of measure are to be used, specifically:
   a) Kilograms are to be used to describe catch weight.
   b) Metres are to be used to describe height, width, depth, beam or length.
   c) Cubic metres are to be used to describe volume.
   d) Kilowatts are to be used to describe engine power.

[5] www.fao.org/fi/statist/fisoft/asfis/asfis.asp

Annex 9

Specifications for the exchange of data

1. Coordinated Universal Time (UTC) is to be used to describe times, using the following submission format:

   YYYY-MON-DDThh:mm:ss

   Where:

   YYYY - *represents a 4-digit year e.g. "2007"*
   MON - *represents a 3-character month abbreviation e.g."APR"*
   DD - *represents a 2-digit day e.g. "05"*
   T - *is a space separator*
   hh - *represents hours based on the 24hr clock (length = 2 digits) e.g. "16"*
   mm - *represents minutes (length = 2 digits) e.g. "05"*
   ss - *represent seconds (length = 2 digits) e.g. "00"*

   Example
   2003-JUL-17T13:10:00 1.10pm (1310h), 17 July 2003

2. Decimal degrees (WGS84) are to be used to describe locations.

   The following standard should be used for the submission of latitudinal/ longitudinal information:

   - Northern latitudes and eastern longitudes should be indicated by the use of [un-signed] positive decimal degree values
   - Southern latitudes and western longitudes should be indicated by the use of negative decimal degree values

Latitude	• Degrees: Represented as positive (unsigned) or negative numbers from 0 to 89.99 E.g. If value = 83.2, this means 83.2° **N** E.g. if value = -83.2, this means 83.2° **S**
Longitude	• Degrees: Represented as positive (unsigned) or negative numbers from 0 to 179.99 E.g. If value = 83.2, this means 83.2° **E** E.g. if value = -83.2, this means 83.2° **W**

3. The following coding schemes are to be used:
   (a) Species are to be described using the FAO 3 letter species codes[6]
   (b) Fishing methods are to be described using the International Standard Classification of Fishing Gear (ISSCFG - 29 July 1980) codes[7] - Annex 10
   (c) Types of fishing vessel are to be described using the International Standard Classification of Fishery Vessels (ISSCFV) codes[8] - Annex 11

4. Metric units of measure are to be used, specifically:
   a. Kilograms are to be used to describe catch weight
   b. Metres are to be used to describe height, width, depth, beam or length
   c. Cubic metres are to be used to describe volume
   d. Kilowatts are to be used to describe engine power

[6] www.fao.org/fi/statist/fisoft/asfis/asfis.asp

[7] http://www.fao.org/fishery/cwp/handbook/M - see "Annex M I"

[8] http://www.fao.org/fishery/cwp/handbook/L -see "Annex L.II"

ANNEX 10

ISSCFG Codes

INTERNATIONAL STANDARD STATISTICAL CLASSIFICATION OF FISHING GEAR (ISSCFG) (29 July 1980)

Gear Categories Abbreviation Code	Standard Abbreviations	ISSCFG
SURROUNDING NETS		01.0.0
With purse lines (purse seines)	PS	01.1.0
- one boat operated purse seines	PS1	01.1.1
- two boats operated purse seines	PS2	01.1.2
Without purse lines (lampara)	LA	01.2.0
SEINE NETS		02.0.0
Beach seines	SB	02.1.0
Boat or vessel seines	SV	02.2.0
- Danish seines	SDN	02.2.1
- Scottish seines	SSC	02.2.2
- pair seines	SPR	02.2.3
Seine nets (not specified)	SX	02.9.0
TRAWLS		03.0.0
Bottom trawls		03.1.0
- beam trawls	TBB	03.1.1
- otter trawls[9]	OTB	03.1.2
- pair trawls	PTB	03.1.3
- nephrops trawls	TBN	03.1.4
- shrimp trawls	TBS	03.1.5
- bottom trawls (not specified)	TB	03.1.9
Midwater trawls	03.2.0	
- otter trawls[1]	OTM	03.2.1
- pair trawls	PTM	03.2.2
- shrimp trawls	TMS	03.2.3
- midwater trawls (not specified)	TM	03.2.9
Otter twin trawls	OTT	03.3.0
Otter trawls (not specified)	OT	03.4.9
Pair trawls (not specified)	PT	03.5.9
Other trawls (not specified)	TX	03.9.0

[9] Fisheries agencies may indicate side and stern bottom, and side and stern midwater trawls, as OTB-1 and OTB-2, and OTM-1 and OTM-2, respectively

DREDGES		04.0.0
Boat dredges	DRB	04.1.0
Hand dredges	DRH	04.2.0
LIFT NETS	05.0.0	
Portable lift nets	LNP	05.1.0
Boat-operated lift nets	LNB	05.2.0
Shore-operated stationary lift nets	LNS	05.3.0
Lift nets (not specified)	LN	05.9.0
FALLING GEAR		06.0.0
Cast nets	FCN	06.1.0
Falling gear (not specified)	FG	06.9.0
GILLNETS AND ENTANGLING NETS		07.0.0
Set gillnets (anchored)	GNS	07.1.0
Driftnets	GND	07.2.0
Encircling gillnets	GNC	07.3.0
Fixed gillnets (on stakes)	GNF	07.4.0
Trammel nets	GTR	07.5.0
Combined gillnets-trammel nets	GTN	07.6.0
Gillnets and entangling nets (not specified)	GEN	07.9.0
Gillnets (not specified)	GN	07.9.1
TRAPS		08.0.0
Stationary uncovered pound nets	FPN	08.1.0
Pots	FPO	08.2.0
Fyke nets	FYK	08.3.0
Stow nets	FSN	08.4.0
Barriers, fences, weirs, etc.	FWR	08.5.0
Aerial traps	FAR	08.6.0
Traps (not specified)	FIX	08.9.0
HOOKS AND LINES		09.0.0
Handlines and pole-lines (hand-operated)[10]	LHP	09.1.0
Handlines and pole-lines (mechanized)[11]	LHM	09.2.0
Set longlines	LLS	09.3.0
Drifting longlines	LLD	09.4.0
Longlines (not specified)	LL	09.5.0
Trolling lines	LTL	09.6.0
Hooks and lines (not specified)	LX	09.9.0

[10] Including jigging lines
[11] Code LDV for dory-operated line gears will be maintained for historical data purposes

GRAPPLING AND WOUNDING		10.0.0
Harpoons	HAR	10.1.0
HARVESTING MACHINES		11.0.0
Pumps	HMP	11.1.0
Mechanized dredges	HMD	11.2.0
Harvesting machines (not specified)	HMX	11.9.0
MISCELLANEOUS GEAR[12]	MIS	20.0.0
RECREATIONAL FISHING GEAR	RG	25.0.0
GEAR NOT KNOW OR NOT SPECIFIED	NK	99.0.0

[12] This item includes: hand and landing nets, drive-in-nets, gathering by hand with simple hand implements with or without diving equipment, poisons and explosives, trained animals, electrical fishing

ANNEX 11

ISSCFV Codes

INTERNATIONAL STANDARD STATISTICAL CLASSIFICATION OF FISHERY VESSELS BY VESSEL TYPES (approved by CWP-12, 1984)

Code	VesselType		Standard Abbreviation	Code
FISHING VESSELS				
01.0.0 TRAWLERS			TO	
		Side trawlers	TS	01.1.0
		Side trawlers wet-fish	TSW	01.1.1
		Side trawlers freezer	TSF	01.1.2
		Sterntrawlers	TT	01.2.0
		Sterntrawlers wet-fish	TTW	01.2.1
		Sterntrawlers freezer	TTF	01.2.2
		Sterntrawlers factory	TTP	01.2.3
		Outrigger trawlers	TU	01.3.0
		Trawler nei	TOX	01.9.0
02.0.0 SEINERS			SO	
		Purse seiners	SP	02.1.0
		North American type	SPA	02.1.1
		European type	SPE	02.1.2
		Tuna purse seiners	SPT	02.1.3
		Seiner netters	SN	02.2.0
		Seiner nei	SOX	02.9.0
03.0.0 DREDGERS			DO	
		Using boat dredge	DB	03.1.0
		Using mechanical dredge	DM	03.2.0
		Dredgers nei	DOX	03.9.0
04.0.0 LIFT NETTERS			NO	
		Using boat operated net	NB	04.1.0
		Lift netters nei	BOX	04.9.0
05.0.0 GILL NETTERS			GO	
06.0.0 TRAP SETTERS			WO	
		Potvessels	WOP	06.1.0
		Trap setters nei	WOX	06.9.0
07.0.0 LINERS			LO	
		Handliners	LH	07.1.0
		Longliners	LL	07.2.0
		Tuna longliners	LLT	07.2.1
		Pole and line vessels	LP	07.3.0
		Japanese type	LPJ	07.3.1
		American type	LPA	07.3.2
		Trollers	LT	07.4.0
		Liners nei	LOX	07.9.0
08.0.0 VESSELS USING PUMPS FOR FISHING			PO	

11.0.0 MOTHERSHIPS		HO	
	Salted-fish motherships	HSS	11.1.0
	Factory motherships	HSF	11.2.0
	Tuna motherships	HST	11.3.0
	Motherships for two-boat purse seining	HSP	11.4.0
	Motherships nei	HOX	11.9.0
12.0.0 FISH CARRIERS		FO	
13.0.0 HOSPITAL SHIPS		KO	
14.0.0 PROTECTION AND SURVEY VESSELS		BO	
15.0.0 FISHERY RESEARCH VESSELS		ZO	
16.0.0 FISHERY TRAINING VESSELS		CO	
99.0.0 NON-FISHING VESSELS nei		VOX	

Source: CWP Handbook of fishery statistical standards (p.206). FAO, Rome. 2004.