South Pacific Regional Fisheries Management Organisation

Data and Information Working Group

Chile, 27-29 October 2010

DIWG-08-05

Data Standards: Potential Use of Standard Codes for Some Data Fields (Follow-up)

Interim Secretariat

1. Introduction

Where practical, it is important to standardise any data submitted to the Interim Secretariat in order to facilitate its interpretation and storage in the SPRFMO database, as well as to improve subsequent data retrieval and reporting capabilities.

The Interim Secretariat presented the paper SPRFMO-VI-DIWG-09: 'Interim Secretariat Report on Specifications of some Fields in the Data Standards', at the Sixth Data and Information Working Group (DIWG) meeting held in Canberra (September – October 2008).

Participants agreed and adopted some of the recommendations in this paper. For the remaining items, a follow-up item was scheduled for the 7th DIWG agenda held in Lima, Peru in May 2009. However, due to time constraints, that item was deferred until the 8th DIWG meeting for further discussion.

The Report of the 6th DIWG noted the following with respect to the paper presented:

> *7.1*
> *The participants agreed to standard formats for the submission of date/time data, positional data and type of trawl. The participants did not have enough information to make a decision regarding the remaining fields and asked the Interim Secretariat to further research what other regional fisheries management organizations use in this regard.*

The "remaining fields" to be further investigated were:

1. Species codes for recording sensitive benthic species and incidental capture species
2. Standard for purse seine fishing activity:
   - school association
   - type of school association (FAD, debris, seabirds, surface, sonar target)
3. Standard for potting methods fishing activity
   - type of pots
   - type of bait used

4. Standard for drop/dahn line fishing activity

- type of hooks used
- type of leader used
- type of bait used

This paper presents the results of the Interim Secretariat's research on these outstanding items.

Other organisations' websites consulted include the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), Coordinating Party on Fisheries Statistics (CWP) of the FAO (Food and Agriculture Organisation of the United Nations), Indian Ocean Tuna Commission (IOTC), Northwest Atlantic Fisheries Organisation (NAFO), and FFA (Forum Fisheries Agency) /Secretariat of the Pacific Community (SPC).

This paper makes frequent references to SPRFMO's current Data Standards document[1].

2. Specifications for the Exchange of Data

Species Codes for Recording Sensitive Benthic Species and Incidental Capture Species

The current specifications for data exchange contain the following data standard for species codes – at Annex 9 of the current Data Standards.

1. a) Species are to be described using the FAO 3-letter species codes[2].

The species/group codes in this FAO species list (updated to 10,900 codes in February 2010) is already being used by SPRFMO, and includes an exhaustive list of fish, benthic, and potential incidental capture species such as birds, mammals and reptiles. Therefore, the current FAO species codes list being used by the Interim Secretariat already includes codes that cater for all potential requirements.

3. Fishing Activity Data Standards for Data Collection and Exchange

3.1 Standard for Purse Seine Fishing Activity

(Annex 2 of the current Data Standards)

The Purse Seine Fishing Activity Data Standard provides some guidelines regarding values to collect and submit for field "(m) school association":

(m) School association
Use for example: "FAD"[3], "debris", "seabirds", "surface", "sonar target", or "other"

[1] Standards for the collection, reporting, verification and exchange of data 6 October 2008 (as amended on 18 May 2009); http://www.southpacificrfmo.org/data/

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

[3] A "FAD" is a Fish Aggregating Device (FAD) and is defined by the FAO as "a permanent, semi-permanent or temporary structure or device made from any material and used to lure fish".

In the corresponding Observer Catch & Effort Data Standard for Purse Seine Fishing Activity, similar guidelines are provided for the field "(k) Type of school association". The "Other" category is not included in this Standard:

k) Type of school association (FAD[3], debris, seabirds, surface, sonar target).

The following material was found with reference to tuna school association types, and has been included here for background information only, as tuna association types may not be applicable to jack mackerel.

The IOTC lists two distinct options for types of school association:

1) free swimming schools (i.e. schools with no association - unassociated) or,

2) schools in association with floating objects [i.e. they are associated with FADs[4]].

For tuna fisheries, the IOTC lists four specific types of FADs[5] set by the supply vessel and purse seine fleet (all types monitored by a tracking system):

Description	**Code**
Drifting log or debris	(LG)
Drifting raft or FAD with a net	(RN)
Drifting raft or FAD without a net	(RF)
Other (e.g. Payao[6], dead animal etc)	(OT)

Also for tuna fisheries, the FFA/SPC regional purse seine logsheet lists the following school association codes and descriptions:

School Association Codes

Code	**Description**
1	Unassociated
2	Feeding on baitfish
3	Drifting log, debris or dead animal
4	Drifting raft, FAD or payao[5]
5	Anchored raft, FAD or payao[5]
6	Live whale
8	Other

School Association Type (Purse Seine)

No information was readily found on other Commission or RFMO websites about specific jack mackerel school association types, although some general references were found to jack mackerel associations with jellyfish[7].

[4] A "FAD" is a Fish Aggregating Device (FAD) and is defined by the FAO as "a permanent, semi-permanent or temporary structure or device made from any material and used to lure fish".
[5] IOTC: http://www.iotc.org/English/resolutions/Resolution_10_02.pdf
[6] A "payao" is an anchored bamboo fish aggregating device (FAD).
[7] For example, "Ontogenetic changes in the ecological function of the association behavior between jack mackerel *Trachurus japonicus* and jellyfish", Reiji Masuda, Hydrobiologia (2009), 616: 269 – 277.

Recommendations: School Association Type (Purse Seine)

The Interim Secretariat proposes the following general recommendations:

i) Participants are requested to review/ advise whether the current lists of school association types are appropriate for jack mackerel,

ii) That the standard list of school association types for the Purse Seine Fishing Activity Data Standard, and the Observer Catch and Effort Purse Seine Fishing Activity Data Standard should be consistent. Currently this would require at least the addition of type "Other" to the list of school association types in the Observer Catch & Effort Data Standard for Purse Seine Fishing Activity, or the removal of type "Other" from the Standard for Purse Seine Fishing activity Data,

iii) That consideration should be given to including a school association type of "Unassociated" to the standard list of school association types (for both the Purse Seine Fishing Activity Data Standard, and the Observer Catch and Effort Purse Seine Fishing Activity Data Standard),

iv) The document "Standards for the collection, reporting, verification and exchange", should be updated with any agreed changes at Annex 2 (footnote), and Annex 8 where indicated in Appendix 1 of this paper.

3.2 Standard for Potting Methods Fishing Activity

(Annex 5 of the current Data Standards)

There are currently no guidelines about the kinds of values that should be collected for the two fields in the Potting Method Fishing Activity Data Standard for the fields:

(n) Type of pots
(p) Type of bait used.

3.2.1 Pot Type (Potting)

An FAO technical paper[8] describes potting in the following way:

> *Construction*
> *Typical pot shapes are box, cone, cylinder, sphere or bottle. The size of pots may vary from small crayfish pots (conical: 0.3 m diameter and 0.2 m height) to large king crab pots (box shaped: 2x2x1 m). The pot entrances are usually funnel- or wedge-shaped so that the target organism is led into the pot fairly easily, but with low probability of escaping. Pots may be constructed from various materials like wood, palm leaves, metal frames lined with webbing, wire mesh or plastic materials.*

[8] FAO technical paper #424: A fishery manager's guidebook: Management Measures and Their Application http://www.fao.org/docrep/005/y3427e/y3427e04.htm#bm04.3.2, pp 28 - 29

Operation
Pots are normally set on the bottom, either as single pots with a buoy line to the surface or in strings of several pots connected to a main line at certain intervals. Pot gear is usually soaked overnight, but longer soak times may be used in certain fisheries. The operation cycle is similar to that of longlining, with baiting, setting, fishing and retrieval. The bait is either freely suspended in the middle of the pot, or put in perforated bait containers to prevent it from being eaten by scavengers. As in longlining, different pelagic species like sardines, herring and mackerel are typically used for pot bait, but most kinds of fish and mussels etc. may be used.

On their fine scale catch and effort form, CCAMLR list the following 3 generic pot types:

Pot type 1	number set number lost
Pot type 2	number set number lost
Pot type 3	number set number lost
Other	number set number lost

In their observer logbook for pot fisheries, CCAMLR list pot types 'Pot Type 1' to Pot Type 4. The following additional information (including a drawing showing the construction) is also recorded for each pot type.

Draw each type of pot used and indicate dimensions, funnel position and orientation and escape port. If you are unable to supply a digital/scanned or drawn image with this form, please forward a hand drawn picture to your Technical Coordinator.	
Pot type: 1	Mesh size (mm)
	Funnel position
	orientation
	aperture (cm)
	Number of chambers
	Escape port present
	dimensions (cm)

No additional information was found about standard pot type descriptions or codes commonly used by other Regional Fishery Management Organisations (RFMOs).

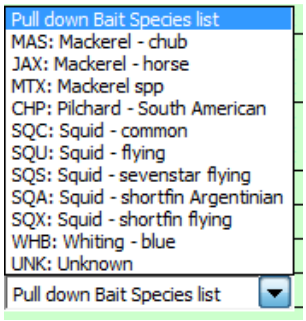
Recommendations: Pot Type (Potting)

- That no standard list of pot types is currently defined because there is not enough information is available about the potential pot types that could be used within the SPRFMO area,
- Until more information becomes available, accept any text descriptions (up to a maximum of 12 characters) describing the types of pots deployed. Twelve characters is the length of pot type description currently catered for in the SPRFMO database.

3.2.2 Bait Type (Potting)

The field "type of bait used" is part of both the Potting and the Drop/Dahn Lining Fishing Activity Standard (see Section 4.1 below). Any agreed proposals for the "type of bait" field for the Potting Methods Standard should ideally also be applied to both fishing activity standards in order to ensure consistency between different fishing activity method data sets.

CCAMLR include the following standard list of 11 bait types (3-letter species codes) on their fine scale catch and effort form for pot fisheries:



Most of these codes are standard FAO 3-letter species codes[7] - with the exception of 'MTX', 'SQX', and 'UNK'.

Recommendations: Bait Type (Potting)

- That a standard FAO 3-letter species code[7] is used to denote the "type of bait used" in the Pot Fishing Activity Data Standard,
- That the document "Standards for the collection, reporting, verification and exchange", is updated accordingly at Annex 5 (see Appendix 1 for proposed amendment).

3.3 Standard for Drop/Dahn Lining Fishing Activity

(Annex 6 of the draft consolidated data standards)

The current Data Standards do not provide any specific guidelines on the kinds of values that should be collected and stored in the Drop/Dahn Line Fishing Activity Standard for the fields:

(p) Type of hooks used,

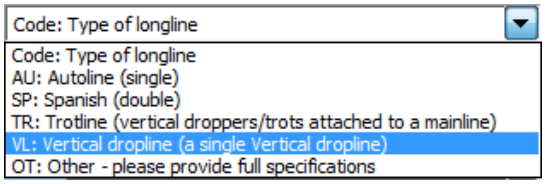
(q) Type of leader used,

(s) Type of bait used.

It would be useful to provide some guidelines on the kinds of values to be collected and submitted to the Interim Secretariat.

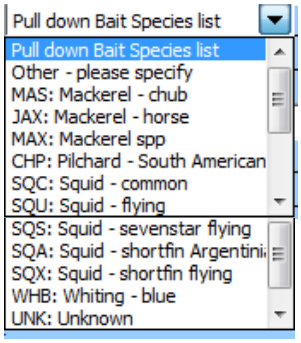
[7] www.fao.org/fi/statist/fisoft/asfis/asfis.asp

On their fine scale catch and effort form for longline fisheries, CCAMLR provide the following list of longline types – droplines are included in this list.



3.3.1 Bait Type (Drop/Dahn Lining)

For the lining types listed above, CCAMLR provide a dropdown list of 12 standard pre-defined bait types on their fine scale catch and effort form for longline fisheries:



"MAX" is the only additional bait type provided in this list compared to the list of bait types available on the CCAMLR Potting catch and effort form. "MAX" is a standard FAO 3-alpha species code[8].

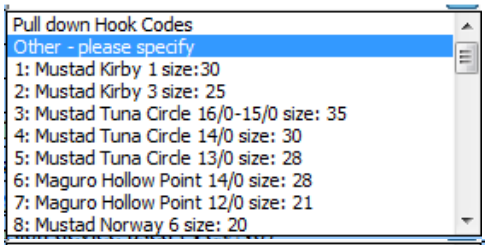
Recommendations: Bait Type (Drop/Dahn Lining)

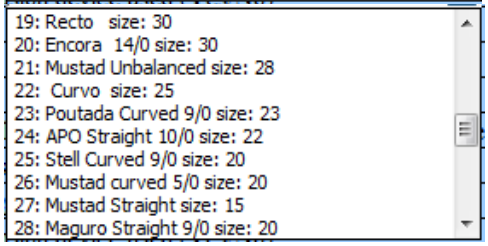
- That a standard FAO 3-letter species code[8] is used to denote the "type of bait used" in the Drop/Dahn Lining Fishing Activity Data Standard,
- The document "Standards for the collection, reporting, verification and exchange", is updated accordingly at Annex 6 (see Appendix 1 for proposed amendment).

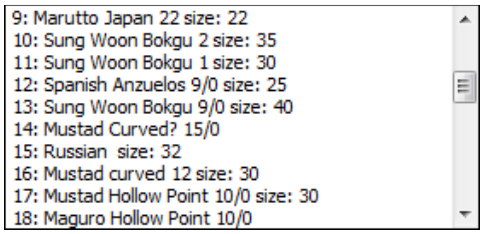
[8] www.fao.org/fi/statist/fisoft/asfis/asfis.asp

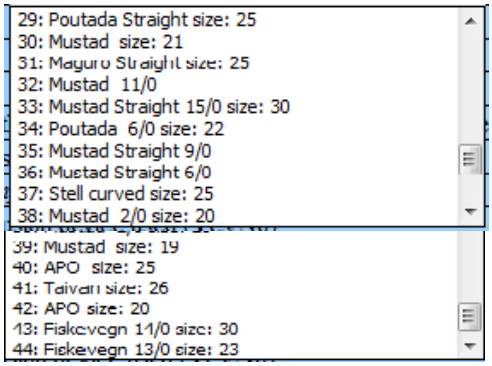
3.3.2 Hook Type (Drop/Dahn Lining)

The following dropdown list of standard hook codes/ descriptions is provided on the CCAMLR fine scale catch and effort form for longline fisheries:









No additional information was located regarding any specific hook type codes or descriptions employed by other organisations.

Recommendations: Hook Type (Drop/Dahn Lining)

Given the potentially large number of hook types available, it is proposed:

- That no standard list of hook types is currently defined because there is not enough information available regarding hook types that may be used within the SPRFMO area,
- Until more information becomes available, accept any text descriptions (up to a maximum of 12 characters) describing the hook types used. Twelve characters is the length of hook type description currently catered for in the SPRFMO database.

3.3.3 Leader Type (Drop/Dahn Lining)

No information regarding standard types of fishing leader was found on the various organisations' websites searched.

1. Some anecdotal information[9] about fishing leaders notes:

   A leader is a stronger section of monofilament or wire that protects the fishing line from damage. Sometimes a leader may also be used to reduce the visibility of the fishing line. Leaders can range from 3 inches to 10 or more feet in length, depending on the species targeted and the fishing conditions. Monofilament leaders are normally used, except for toothy fish where a wire leader may be called for.

The most common types of reference to leader types were based on:
i) the length of the leader, and
ii) the construction material.

Construction materials were generally listed as one of the following four types:

- Monofilament
- Fluorocarbon
- Steel (wire)
- Hybrid.

There does not currently appear to be enough information available to develop a list of standard leader types for drop/dahn lining fishing activity data within the SPRFMO Area.

Recommendations: Leader Type (Drop/ Dahn Lining)

- That no standard list of leader types is currently defined - not enough information is available regarding the leader types that could be used within the SPRFMO area,
- Until more information becomes available, accept any text descriptions of leader type up to a maximum of 12 characters. Twelve characters is the length of leader type description currently catered for in the SPRFMO database.

[9] How to Make a fishing leaderhttp://www.ehow.com/how_4493464_make-fishing_leader.html#ixzz0yFP6UWUk

APPENDIX 1: Proposed Amendments to Data Standards

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

Comment [si1]: Footnote may need to be updated if there are any agreed changes to school association types

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

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 (FAO 3 letter species codes[5])
   (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)

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

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 (FAO 3 letter species codes[6])
   (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

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

Annex 8

Standard for Observer Data

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.

Comment [si2]: List may need to be updated if there are any agreed changes to school association types