

SWG-5

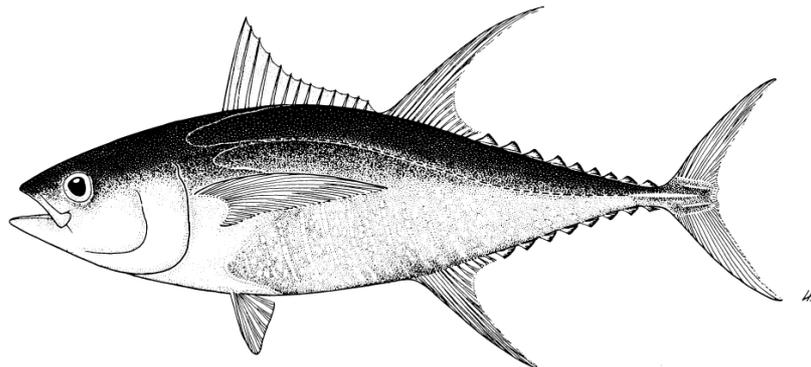


REVIEW OF KOREAN CATCH AND EFFORT LOGSHEETS

Tim Lawson¹ and Al Coan²

¹ Oceanic Fisheries Programme, Secretariat of the Pacific Community, Noumea, New Caledonia

² National Mariune Fisheries Service, La Jolla, California, United States of America



Oceanic Fisheries Programme
Secretariat of the Pacific Community
Noumea, New Caledonia

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INTRODUCTION

The objective of the Statistics Working Group (SWG) of the Standing Committee on Tuna and Billfish (SCTB) is to coordinate the collection, compilation and dissemination of data on tuna fisheries in the western and central Pacific Ocean. In regard to the coordination of data collection, it was agreed at the eleventh meeting of the SCTB, which was held from 28 May to 6 June 1998 in Honolulu, to establish minimum standards for data collection forms and to review data collection forms that are in use in the region (Anon. 1998).

The SWG established minimum standards for catch and effort logsheets at the twelfth meeting of the SCTB, which was held from 16 to 23 June 1999 in Tahiti, French Polynesia (Anon. 1999); the minimum standards are presented in Appendix I.

Logsheets developed by the following agencies have so far been reviewed:

- New Zealand Ministry of Fisheries (Anon. 1999);
- Australian Fisheries Management Authority (Anon. 1999);
- SPC/FFA Tuna Fishery Data Collection Forms Committee (Anon. 2000);
- National Research Institute of Far Seas Fisheries of Japan (Anon. 2001); and
- Overseas Fisheries Development Council of Taiwan (Anon. 2003).

Logsheets maintained by the National Fisheries Research and Development Institute of Korea were reviewed prior to SCTB16 and the results are reported below. Translations of the Korean logsheets for distant-water longline and purse seine are presented in Appendix II.

COMPARISON OF KOREAN LOGSHEETS AND MINIMUM STANDARDS

Appendix III presents a comparison of the Korean logsheets and the minimum standards established by the SWG. The following points are of interest:

“Korea Logbook for Tuna Fishery – Longliner”

- The format is a logsheet, with fields to record information for 31 days on each page, rather than a logbook, which usually consists of one page for vessel attributes and trip information, followed by several pages, each of which is used to record catch and effort data for one set. The Korean longline logsheet consists of (a) boxes containing fields for vessel name, trip number, vessel attributes, ocean area fished, bait used, name of captain, and departure and arrival dates, and (b) 31 rows to record information for each set in 22 fields.
- No instructions were provided with the translated logsheets.
- The forms are used only by vessels registered in Korea; therefore, there is no field for the country of registration. The only vessel identifier is the vessel name; the registration number, call sign and license number are not recorded. It is questionable whether the vessel name alone is sufficient to identify the vessel.
- Data are recorded only for sets and not for other activities. Hence, there is no activity code to indicate that the vessel is in transit or not fishing due to breakdown or bad weather. However, the number of ‘trip days’ and the number of ‘fishing days’ for the trip are recorded.

- Set positions are recorded only to the nearest degree of latitude and longitude and not the nearest minute, as specified in the minimum standards.
- There are fields to record the catches of six species of tuna, five species of billfish and, as a species group, sharks. But all other species are recorded under 'others'. Hence, it is not possible to separately record the catches of other major non-target species, such as wahoo, opah, escolar, lancetfish, etc., nor species of special interest, such as marine turtles.
- If it is intended that the form be printed on A4 size paper, then the space for recording the catches is small.
- For each species or species group, there are two columns for the retained catch in number of fish and kilograms. Discards are not recorded.

“Korea Logbook for Tuna Fishery – Purse seine”

- The format is a logsheet, rather than a logbook. The Korean purse-seine logsheet consists of (a) boxes containing fields for vessel name, call sign, vessel attributes, name of captain, and departure and arrival dates, and (b) 21 rows to record information for each set in 22 fields.
- No instructions were provided with the translated logsheets.
- The forms are used only by vessels registered in Korea; therefore, there is no field for the country of registration. The call sign and license number are not recorded; however, the vessel name and registration number should be sufficient for identifying the vessel.
- The only vessel and gear attributes are 'tons of boat' (i.e. gross registered tonnage), the presence of a helicopter and the number of crew. There is no information on net dimensions, storage capacity, engine power or rated speed.
- Data are recorded only for sets and not for other activities. Hence, there is no activity code to indicate that the vessel is in transit or not fishing due to breakdown or bad weather.
- It is not specified whether the set time should be local time, ship's time or UTC.
- Set positions are recorded only to the nearest degree of latitude and longitude and not the nearest minute, as specified in the minimum standards.
- School association is recorded for 'natural log', 'FAD' and 'free school'; however, there is no code for 'other' together with instructions to explain the 'other' association on the logsheet.
- There are fields to record the catches of three species of tuna, but all other species are recorded under 'others'. Hence, it is not possible to separately record the catches of other major non-target species, such as rainbow runner, shark species, decapodus, etc., nor species of special interest, such as marine mammals or marine turtles. Discards of tuna are recorded as a species group.

REFERENCES

- Anonymous. 1998. Report of the Eleventh Meeting of the Standing Committee on Tuna and Billfish, 28 May – 6 June 1998, Honolulu, Hawaii, United States of America. Secretariat of the Pacific Community, Noumea, New Caledonia.
- Anonymous. 1999. Report of the Twelfth Meeting of the Standing Committee on Tuna and Billfish, 16 – 23 June 1999, Tahiti, French Polynesia. Secretariat of the Pacific Community, Noumea, New Caledonia.
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- Anonymous. 2001. Report of the Fourteenth Meeting of the Standing Committee on Tuna and Billfish, 9 – 16 August 2001, Noumea, New Caledonia. Secretariat of the Pacific Community, Noumea, New Caledonia.
- Anonymous. 2003. Report of the Fifteenth Meeting of the Standing Committee on Tuna and Billfish, 22 – 27 July 2002, Honolulu, Hawaii, United States of America. Secretariat of the Pacific Community, Noumea, New Caledonia.

APPENDIX I. MINIMUM STANDARDS FOR TUNA FISHERY CATCH AND EFFORT LOGSHEETS

The following standards for tuna fishery catch and effort logsheets were determined at the SCTB Statistics Working Group Session on Data Collection Forms, held from 14 to 15 June 1999 in Papeete, French Polynesia, during the Twelfth Meeting of the Standing Committee on Tuna and Billfish.

The minimum standards are considered in the context of scientific research and the monitoring of catch and effort, and not in other contexts, such as management or surveillance. Hence, the minimum standards to be considered are not an exclusive set of data items to be included on logsheets. Other data items may be required for other purposes, but these are not considered here.

The data items are classified into two groups: “essential” and “desirable”. For the purposes here, “essential” data items are those that make up the set of minimum standards for the logsheet, while “desirable” data items are those not included in the minimum standard, but which may nevertheless be useful. The identification of a data item as either “essential” or “desirable” will be subjective, but the following approach may be appropriate.

“Essential” data items could be thought of as those which are the minimum necessary for (i) monitoring trends in catch and effort in tuna fisheries in the WCPO and (ii) assessing the stocks of tunas. In contrast, “desirable” data items could be considered as those in whose absence monitoring and assessment could still be carried out. Under these guidelines, the number of “essential” data items will be relatively small, while the number of “desirable” data items may be large.

VESSEL IDENTIFICATION

All gear types

The following items were considered to be *essential*:

Name of the vessel, country of registration, registration number: The registration number is the number assigned to the vessel in the country where the vessel is flagged. Each country has standard formats for registration numbers, which may include codes concerning the port of registration and the size class of the vessel. The SWG also considered the vessel’s Lloyds registration number; however, it was felt that it would not be suitable since (a) it is usually difficult to obtain and (b) many smaller vessels are not registered with Lloyds.

The following items were considered to be *desirable*:

International radio callsign, fishing permit or license number: The fishing permit or license number is the number assigned by the government of the country or territory in whose waters the vessel is fishing. The permit or license number is unique to each vessel and can be used for the purposes of vessel identification. It was noted that for purposes of vessel identification, the vessel name, country of registration and the international radio call sign could be considered equivalent to the vessel name, country of registration and the registration number.

Name of the fishing company that owns the vessel and name of the agent that represents the vessel in the port of unloading: These items may be useful in obtaining corrections or additional information concerning the data recorded on the logsheets.

VESSEL, GEAR AND TRIP ATTRIBUTES

All gear types

The following items were considered to be *essential*:

Port of departure, date of departure, port of unloading, date of arrival in port of unloading: These items can be used to cross-check the period covered by logsheet data and the period covered by landings data, such that landings data can be used to verify logsheet data.

The following items were considered to be desirable:

Time of departure, time of arrival: These items can be used to cross-check the period covered by logsheet data.

Longline

The following items were considered to be *essential*:

Gross registered tonnage: Monitoring of catch and effort is sometimes done separately for coastal, offshore and distant-water longline fleets. Vessel size is an important criterion in determining whether the vessel operates in coastal, offshore or distant-water areas. The SWG noted that GRT is calculated differently between nations. The SWG considered that a vessel's length could be considered equivalent to GRT, although it noted that length measurements are often subject to the similar problems of lack of standardisation.

Number of hooks between floats or number of hooks per basket: This measure is a proxy for average hook depth and, hence, is important in determining the effective effort for a given species. Actual baskets are rarely used nowadays; therefore "hooks between floats" may be preferred. The number of hooks between floats may vary within and between sets and so it was considered that more detail should be provided. However, (a) the number of hooks between floats reported for a given trip has been shown to be significant in determining effective effort, even though lacking in detail, and (b) it is perhaps more appropriate to obtain greater detail through observer programmes, rather than on logsheets completed by the crew.

The following items were considered to be *desirable*:

Length of mainline, number of floats or baskets, length of float line, length of branch line: These items can be used to determine the depth of hooks and, hence, effective effort.

Number of hooks per branch line, number of hooks per float: These items can be used to monitor fishing effort and targeting of sharks.

Mainline material, branchline material, presence of line shooter, engine power, rated speed of vessel, name of the captain or fishing master, reel capacity, number of reels, storage capacity: These items are related to fishing effort.

Storage method: Methods used to store the catch (i.e. ice, refrigerated sea water, air coil frozen, air blast frozen, brine frozen) can be used to determine whether the vessel operates in coastal, offshore or distant-water areas and, hence, can be useful for monitoring catch and effort.

Primary target species: This information can be used to interpret catches and catch rates and, hence, can be useful for monitoring catch and effort.

Pole-and-Line

The following item is proposed as *essential*:

Gross registered tonnage: See *longline* above.

The following items were considered to be *desirable*:

Number of crew, number of automatic poling devices, bait capacity, engine power, rated speed of vessel, presence of bird radar, name of the captain or fishing master, bait species, size of bait, number of poles, storage method: These items are related to fishing effort.

Purse Seine

The following item is proposed as *essential*:

Gross registered tonnage: See *longline* above.

The following items were considered to be *desirable*:

Net length, net depth, storage capacity, presence of helicopter, vessel engine power, skiff engine power, rated speed of vessel, name of the captain or fishing master: These items are related to fishing effort. (Additional information for vessels that engage in group seine operation may be needed; however, this was not considered.)

Amount of fish onboard at start of trip, amount of fish onboard after unloading: These items can be used to verify logsheet data with landings data.

Troll

The following item is proposed as *essential*:

Gross registered tonnage: See *longline* above.

The following items were considered to be *desirable*:

Number of lines, engine power, rated speed of vessel, storage capacity, source of sea surface temperature data, name of the captain, number of skiffs: These items are related to fishing effort.

Sources of sea surface temperature data can include onboard thermometers; weather fax; and real-time satellite transmission

LONGLINE SETS

The following items were considered to be *essential*:

Date of set, time of set, position of set: The date and set time can be local time, ship's time or GMT/UTC, but must be consistent. The set time should refer to the start of setting the longline. The set position should be in at least minutes of latitude and longitude. The use of codes for areas depicted on maps of the fishing grounds, rather than the position in latitude and longitude, may also be appropriate for some fleets. The set position can refer to the start of set, the end of set, or the average position, but should be consistent.

Number of hooks set: This item is a measure of fishing effort.

Number of fish caught per set, by species, total weight or average weight of fish caught per set, by species: The instructions should indicate whether whole weights or processed weights should be used, and for which species, and should be in accordance with the usual practice by the fleet. For example, bigeye and yellowfin are usually gilled and gutted, while albacore are kept whole. All target species and major non-target, associated or dependent (NAD) species, should be recorded. The catch of fish that are discarded dead or in poor condition should also be recorded, in addition to all fish that are retained.

The following items were considered to be *desirable*:

Catch and discards of minor non-target, associated or dependent (NAD) species: These items will allow the estimation of total removals.

Activity: This item can be used to verify the completeness of the data. It should be recorded for each set and for days on which no sets were made. For days on which no sets were made, the date and noon position should also be recorded. Activities can include, for example, "a set"; "no fishing due to gear breakdown"; "no fishing due to bad weather"; "in transit"; "in port", etc.

End of set position, start of haul position, end of haul position (in addition to start of set position): These items can be used to correlate catch rates with oceanographic and bathymetric conditions.

End of set time, start of haul time, end of haul time (in addition to start of set time): These items can be used to determine soak times.

Bait species, use of dead or live bait: These items may affect catch rates.

Sea surface temperature and other oceanographic parameters: These items may affect catch rates.

POLE-AND-LINE DAYS FISHED

The following items were considered to be *essential*:

Activity: This item should be recorded for each day fished or searched and for days on which no fishing or searching took place. This item can be used to distinguish between days on which searching took place, but no fish were caught, and days on which no fishing or searching took place, and to verify the completeness of the data. Activities can include, for example, “a day fishing or searching with bait onboard”; “no fishing due to collecting bait”; “no fishing due to gear breakdown”; “no fishing due to bad weather”; “in transit”; “in port”, etc.

Date, noon position: The date and noon position must be recorded for all days. The noon position should be in at least minutes of latitude and longitude.

Weight of fish caught per day, by species: All target species and major non-target, associated or dependent (NAD) species, should be recorded. The catch of fish that are discarded dead or in poor condition should also be recorded, in addition to all fish that are retained.

The following items were considered to be *desirable*:

Catch and discards of minor non-target, associated or dependent (NAD) species: These items will allow the estimation of total removals.

Amount of bait onboard, hours fished or searched, sighting method: These items are related to fishing effort.

Average weight of fish caught per day, by species: This item may be informative in the absence of sampling by observers or port samplers.

School association: The species composition of the catch and the size of individuals is related to the type of association. All common types of school association should be recorded with specific codes, while uncommon types of association should be recorded with a code for “other” together with instructions to explain the “other” association on the logsheet. Common types of school association may include “drifting log, debris or dead animal”; “drifting raft, FAD or payao”; “anchored raft, FAD or payao”; “live whale or whale shark”; and “free-swimming” or “unassociated” schools.

PURSE-SEINE SETS

The following items were considered to be *essential*:

Activity: This item should be recorded for each set and for days on which no sets were made. This item can be used to distinguish between days on which searching took place, but no fish were caught, and days on which no fishing or searching took place, and to verify the completeness of the data. Activities can include, for example, “a set”; “a day searched, but no sets made”; “no fishing due to gear breakdown”; “no fishing due to bad weather”; “in transit”; “in port”, etc.

Date, position of set or noon position, time of set: If a set is made, then the date and position must refer to the set. If searching occurs, but no sets are made, then the date and noon position must be

recorded. The date and set time can be local time, ship's time or UTC, but must be consistent. The set time should refer to the time that the skiff was put in the water. The set position should be in at least minutes of latitude and longitude.

School association: The species composition of the catch and the size of individuals is related to the type of association. All common types of school association should be recorded with specific codes, while uncommon types of association should be recorded with a code for "other" together with instructions to explain the "other" association on the logsheet. Common types of school association may include "drifting log, debris or dead animal"; "drifting raft, FAD or payao"; "anchored raft, FAD or payao"; "live whale or whale shark"; and "free-swimming" or "unassociated" schools.

Weight of fish caught per set, by species: All target species and major non-target, associated or dependent (NAD) species, should be recorded. The catch of fish that are discarded dead or in poor condition should also be recorded, in addition to all fish that are retained.

The following items were considered to be *desirable*:

Catch and discards of minor non-target, associated or dependent (NAD) species: These items will allow the estimation of total removals.

Well numbers: This item can be used by port samplers to select wells to sample. Port samplers prefer to sample wells containing fish from sets for which the date, position and school association are similar.

Average weight of fish caught per set, by species: This item may be informative in the absence of sampling by observers or port samplers.

Sea surface temperature and other oceanographic and meteorological measures, such as depth of the thermocline, and wind speed or Beaufort wind scale. These items can affect effort and catch rates.

TROLL DAYS FISHED

The following items were considered to be *essential*:

Activity: This item should be recorded for each day fished and for days on which no fishing took place. This item can be used to distinguish between days fished on which no fish were caught and days not fished, and to verify the completeness of the data. Activities can include, for example, "a day fished"; "no fishing due to gear breakdown"; "no fishing due to bad weather"; "in transit"; "in port", etc.

Date, noon position: The date and noon position must be recorded for all days. The noon position should be in at least minutes of latitude and longitude.

Number of fish caught per day and average weight, by species: All target species and major non-target, associated or dependent (NAD) species, should be recorded. The catch of fish that are discarded dead or in poor condition should also be recorded, in addition to all fish that are retained.

The following items were considered to be *desirable*:

Catch and discards of minor non-target, associated or dependent (NAD) species: These items will allow the estimation of total removals.

Number of lines trolled by vessel, number of lines trolled by skiffs, hours fished: These items can be used to measure fishing effort.

School association: The species composition of the catch and the size of individuals is related to the type of association. All common types of school association should be recorded with specific codes, while uncommon types of association should be recorded with a code for “other” together with instructions to explain the “other” association on the logsheet. Common types of school association may include “drifting log, debris or dead animal”; “drifting raft, FAD or payao”; “anchored raft, FAD or payao”; “live whale or whale shark”; and “free-swimming” or “unassociated” schools.

Sea surface temperature, sea condition, wind speed and other meteorological conditions: These items can affect catch rates.

APPENDIX II. TRANSLATED KOREAN CATCH AND EFFORT LOGSHEETS

“Korea Logbook for Tuna Fishery – Longliner”

“Korean Logbook for Tuna Fishery – Purse seine”

APPENDIX III. COMPARISON OF KOREAN LOGSHEETS AND MINIMUM STANDARDS

“Korea Logbook for Tuna Fishery -- Longliner”

Upper-case = essential. Lower-case = desirable.

MINIMUM STANDARDS	LOGSHEET	OBSERVATIONS
VESSEL IDENTIFICATION:		
NAME OF THE VESSEL	yes	
COUNTRY OF REGISTRATION	n/a	Only used by Korean vessels, so not applicable.
REGISTRATION NUMBER	no	
International radio call sign	no	
Fishing permit or license number	no	
Name of the fishing company	no	
Name of the agent in the port of unloading	no	
VESSEL, GEAR AND TRIP ATTRIBUTES:		
PORT OF DEPARTURE	no	
DATE OF DEPARTURE	yes	
PORT OF UNLOADING	no	
DATE OF ARRIVAL IN PORT OF UNLOADING	partial	"Date of entry": not necessarily arrival in port of unloading.
Time of departure	no	
Time of arrival in port of unloading	no	
GROSS REGISTERED TONNAGE	yes	
NUMBER OF HOOKS BETWEEN FLOATS	partial	"No. Hooks" and "No. Baskets" recorded for each set.
Length of mainline	no	
Number of floats or baskets	yes	
Length of float line	no	
Length of branch line	no	
Number of hooks per branch line	no	
Number of hooks per float	no	
Mainline material	no	
Branch line material	no	
Presence of line shooter	no	
Engine power	yes	
Rated speed of vessel	no	
Name of captain or fishing master	yes	Name of captain.
Reel capacity	no	
Number of reels	no	
Storage capacity	no	
Storage method	no	
Primary target species	no	
LOGLINE SETS:		
DATE OF SET	yes	
TIME OF SET	no	
POSITION OF SET	yes	Latitude and longitude to nearest degree.
NUMBER OF HOOKS SET	yes	
NUMBER OF FISH CAUGHT PER SET	partial	Columns for 13 species or species groups, including six tunas, five billfish, sharks, and "others". Discards for each species not included.
TOTAL WT OR AVG WT OF FISH CAUGHT PER SET	partial	Total weight for species as above.
Catch and discards of minor NADs	no	One column for shark group. No field for name of other bycatch.
Activity	no	The numbers of "trip days" and "fishing days" for the trip are recorded.
End of set position	no	
Start of haul position	no	
End of haul position	no	
End of set time	no	
Start of haul time	no	
End of haul time	no	
Bait species	yes	"Saury - Squid - Others"
Use of dead or live bait	no	
Sea surface temperature	yes	

“Korean Logbook for Tuna Fishery -- Purse seine”

Upper-case = essential. Lower-case = desirable.

MINIMUM STANDARDS	LOGSHEET	OBSERVATIONS
VESSEL IDENTIFICATION:		
NAME OF THE VESSEL	yes	
COUNTRY OF REGISTRATION	no	Only used by Korean vessels, so not applicable.
REGISTRATION NUMBER	no	
International radio call sign	yes	
Fishing permit or license number	no	
Name of the fishing company	no	
Name of the agent in the port of unloading	no	
VESSEL, GEAR AND TRIP ATTRIBUTES:		
PORT OF DEPARTURE	yes	
DATE OF DEPARTURE	yes	
PORT OF UNLOADING	partial	"Port of entry": not necessarily port of unloading.
DATE OF ARRIVAL IN PORT OF UNLOADING	partial	"Port of entry": not necessarily port of unloading.
Time of departure	no	
Time of arrival in port of unloading	no	
GROSS REGISTERED TONNAGE	yes	
Net length	no	
Net depth	no	
Storage capacity	no	
Presence of helicopter	yes	
Vessel engine power	no	
Skiff engine power	no	
Rated speed of vessel	no	
Name of captain or fishing master	yes	Name of captain.
Amount of fish onboard at start of trip	no	
Amount of fish onboard after unloading	no	
PURSE SEINE SETS:		
ACTIVITY	no	
DATE	yes	Columns for year, month and day.
POSITION OF SET OR NOON POSITION	yes	Resolution of latitude and longitude not specified.
TIME OF SET	yes	Set start time.
SCHOOL ASSOCIATION	yes	Natural log -- FAD -- Free school.
WEIGHT OF FISH CAUGHT PER SET, BY SPECIES	partial	Columns for three species of tuna, 'others' and 'discard'.
Catch and discards of minor NADs	partial	Minor NADs can be potentially recorded under "Other Species".
Well numbers	no	
Average weight of fish caught, by species	partial	Columns for three species of tuna and 'others'.
Sea surface temperature	yes	
Depth of thermocline	no	
Wind speed	no	
Beaufort wind scale	no	