

Sampling drifting longline fisheries targeting large pelagics (LLD_LPF) protocol

Version: 2 (10/2021)

A disaggregation of LLD_LPF to the regionally agreed métiers at level 7, based on target species, is followed for sampling purposes: drifting longline fishery targeting swordfish and drifting longline fishery targeting albacore.

1. Sampling drifting longline fishery targeting swordfish

Target population: all catches made by the Cyprus licensed vessels operating with drifting longlines targeting swordfish with landings in Cyprus.

Stratum: Vessels operating with drifting longlines targeting swordfish, with landings in Cyprus

Notes: The fishery is closed from 1 January – 31 March, and during summer months the activity is limited, since the vessels are engaged in the albacore fishery.

1.1 Sampling scheme: Sampling at sea

Sampling frame identifier: LLD_LP_SWO \geq 15m

Sampling frame description: List of licensed vessels operating with drifting longlines targeting swordfish, with length at least 15m

PSU: vessel x trip

Planned number of sampled PSUs: 4

Method of PSU selection:

A list of vessels with a minimum length of 15m that are engaged in swordfish fishery is made, based on their fishing license and previous fishing activity from ERS records; this list contains around 10 vessels.

Vessels from this list are randomly ranked, and the first 4 are selected.

Months of swordfish fishing activity are also listed based on previous fishing activity from ERS records, and randomly ranked; the first 4 months are selected.

Pairs of vessels – months are made based on the ranking (e.g. first vessel selected is paired with first month selected). For each combination of vessel – month selected, a further random selection is made for selecting the fortnight; the first convenient (based on vessel availability) trip to sample within the fortnight is sampled.

Sampling aim:

- Concurrent length sampling of catches for all stocks
- Sampling of discards and unwanted catches, including vulnerable species

- Collection of samples for weight, sex and maturity from swordfish, albacore and bluefin tuna when they are gutted at sea

Sampling procedure

During each sampled trip, the following information is collected:

At trip level:

- Departure and arrival port
- Vessel name
- Departure and arrival dates and time
- Total number of fishing operations (hauls)

At fishing operation level:

- Date
- Haul number
- Haul beginning and ending time
- Depth
- Coordinates
- Number (and size) of hooks
- Bait used
- Possible use of pingers
- Quantity (in terms of weight and number) by species caught (retained and discarded); observe for bycatches that may slip out
- In case of discards, information on the state of the discarded individuals (alive, dead, almost dead, not known)
- Photos of any elasmobranch, marine mammal, turtle or bird species caught, with information on the exact haul they are encountered, for species identification.
- Individual length and weight measurements of all individuals caught. Length should be recorded in cm with precision of one decimal. Weight measurements should be recorded in kg with precision of two decimals. Weight should correspond to live weight; in the case this is not possible, the weight presentation should be recorded (e.g. gilled and gutted). Length measurement types are provided in Table 1 of Annex 1.
- Record of sex and maturity stage of swordfish, albacore and bluefin tuna in the case individuals of these species are gutted at sea. Maturity stages adopted by ICCAT are followed (see Table 2 of Annex 1) http://www.iccat.int/Documents/SCRS/Manual/CH4/CH4_8-ENG.pdf.
- Sex identification of any elasmobranch and cetacean individual caught (see Annex 1).

1.2 Sampling scheme: Sampling on shore

Sampling frame identifier: LLD_LP_SWO

Sampling frame description: List of licensed vessels operating with drifting longlines targeting swordfish

PSU: vessel x trip

Planned number of sampled PSUs: 6

Method of PSU selection:

A list of vessels that are engaged in swordfish fishery is made, based on their fishing license and previous fishing activity from ERS records; a vessel from this list is randomly selected with replacement every month the fishery is active (1 vessel selected per month). For selecting the sampled trip, for each month a random selection is made on the fortnight; the first convenient trip (based on vessel availability) within the selected fortnight is sampled.

Sampling aim: Concurrent length and weight sampling of landings for all stocks

Sampling procedure

For each sampled trip, the following information is collected at trip level:

- Port (departure and arrival port if different)
- Vessel name
- Departure and arrival dates and time
- Total number of fishing operations (hauls)
- Mean depth of hauls
- Total duration of fishing operation (or average duration of each fishing operation)
- Total number of hooks (and size)
- Bait used
- Possible use of pingers
- Quantity (in terms of weight and number) by species landed, with information on the weight presentation (e.g. whole weight, gilled and gutted). In the case a species is landed with different weight presentations, quantities should be recorded by presentation.
- Individual length and weight measurements of all individuals caught. Length should be recorded in cm with precision of one decimal. Weight measurements should be recorded in kg with precision of two decimals; weight presentation should be recorded (e.g. gilled and gutted). Length measurement types are provided in Table 1 of Annex 1.
- Photos of any shark/ray landed for species identification.
- Interview for possible discards, including vulnerable species

2. Sampling drifting longline fishery targeting albacore

Target population: all catches made by the Cyprus licensed vessels operating with drifting longlines targeting albacore.

Stratum: Vessels operating with drifting longlines targeting albacore

Notes: The fishery is seasonal, with a period from June to August and main activity in July.

2.1 Sampling scheme: Sampling at sea

Sampling frame identifier: LLD_LPF_ALB \geq 15m

Sampling frame description: List of licensed vessels operating with drifting longlines targeting albacore, with length at least 15m.

PSU: vessel x trip

Planned number of sampled PSUs: 5.

Method of PSU selection: The target event is 5 trips. The sampling allocation is defined as follows:

A list of vessels with a minimum length of 15m that are engaged in albacore fishery is made, based on their fishing license and previous fishing activity from ERS records.

A single random draw is performed from the relevant list, for selecting the first 5 vessels that will be sampled.

In order to determine the dates for each vessel x trip, a second draw is performed for randomly selecting and assigning the sampled trip.

Sampling aim:

- Concurrent length sampling of catches for all stocks
- Sampling of discards and unwanted catches, including vulnerable species
- Collection of samples for weight, sex and maturity from swordfish, albacore and bluefin tuna when they are gutted at sea

Sampling procedure

During each sampled trip, the following information is collected:

At trip level:

- Departure and arrival port
- Vessel name
- Departure and arrival dates and time
- Total number of fishing operations (hauls)

At fishing operation level:

- Date
- Haul number
- Haul beginning and ending time
- Depth

- Coordinates
- Number (and size) of hooks
- Bait used
- Possible use of pingers
- Quantity (in terms of weight and number) by species caught (retained and discarded); observe for bycatches that may slip out
- In case of discards, information on the state of the discarded individuals (alive, dead, almost dead, not known)
- Photos of any elasmobranch, marine mammal, turtle or bird species caught, with information on the exact haul they are encountered, for species identification.
- Individual length and weight measurements of all individuals caught. Length should be recorded in cm with precision of one decimal. Weight measurements should be recorded in kg with precision of two decimals. Weight should correspond to live weight; in the case this is not possible, the weight presentation should be recorded (e.g., gilled and gutted). Length measurement types are provided in Table 1 of Annex 1.
- Record of sex and maturity stage of swordfish, albacore and bluefin tuna in the case individuals of these species are gutted at sea. Maturity stages adopted by ICCAT are followed (see Table 2 of Annex 1) http://www.iccat.int/Documents/SCRS/Manual/CH4/CH4_8-ENG.pdf.
- Sex identification of any elasmobranch and cetacean individual caught (see Annex 1).

2.2 Sampling scheme: Sampling on shore

Sampling frame identifier: LLD_LPF_ALB

Sampling frame description: List of licensed vessels operating with drifting longlines targeting albacore

PSU: vessel x trip

Planned number of sampled PSUs: 12

Method of PSU selection: The target event is 12 trips, with 4 sampled trips per month of fishing activity (June, July, August), and more specifically 2 sampled trips per fortnight. The sampling allocation is defined as follows:

A list of vessels engaged in albacore fishery is made, based on their fishing license and previous fishing activity from ERS records.

A random selection is performed each month to determine the 4 vessels for which dedicated landing events will be sampled.

An additional draw is made for each fortnight, for selecting 2 dates for each fortnight.

As a fixed design, the first vessel to be drawn will be linked with the sampling of the first landing event of that month. Each subsequent selected vessel will be matched with the next landing event.

Sampling aim:

- Concurrent length and weight sampling of landings for all stocks
- Collection of biological samples from *Thunnus alalunga*

Sampling procedure

For each sampled trip, the following information is collected at trip level:

- Port (departure and arrival port if different)
- Vessel name
- Departure and arrival dates and time
- Total number of fishing operations (hauls)
- Mean depth of hauls
- Total duration of fishing operation (or average duration of each fishing operation)
- Total number of hooks (and size)
- Bait used
- Possible use of pingers
- Quantity (in terms of weight and number) by species landed, with information on the weight presentation (e.g., whole weight, gilled and gutted). In the case a species is landed with different weight presentations, quantities should be recorded by presentation.
- Individual length and weight measurements of all species caught (subsample of albacore of around 35 individuals caught, all individuals for all other species). Length should be recorded in cm with precision of one decimal. Weight measurements should be recorded in kg with precision of two decimals; weight presentation should be recorded (e.g. gilled and gutted). Length measurement types are provided in Table 1 of Annex 1.
- Photos of any shark/ ray landed for species identification.
- Interview for possible discards, including vulnerable species

Following on-board and port sampling, records are electronically saved, with each trip receiving a unique id and each individual sampled receiving a code connecting it with the relevant trip.

ANNEX 1

Table 1: Length measurement types (Osteichthyes, Elasmobranchs, Cetaceans, Turtles)

Species	Length type
Albacore (<i>Thunnus alalunga</i>), Bluefin tuna (<i>Thunnus thynnus</i>), Tuna-like species	Fork Length
Swordfish (<i>Xiphias gladius</i>), Mediterranean spearfish (<i>Tetrapturus belone</i>)	Low Jaw Fork Length
Other Osteichthyes	Total Length
<i>Sharks</i>	Total Length, Fork Length, Precaudal Length
<i>Rays</i>	Total Length, Disc Length, Disc Width
<i>Cetaceans</i>	Total body length (TBL), Girth in front of dorsal fin (GFD)
<i>Turtles</i>	Curved carapace length, Straight carapace length (SCL), Curved carapace width, Straight carapace width (SCW)

Table 2: Maturity stages for visual examination of large pelagic gonads (ICCAT Manual)

Stage	Criteria	
	Males	Females
1	Gonads small ribbon-like, not possible to determine sex by gross examination	Gonads small ribbon-like, not possible to determine sex by gross examination
1	Immature ; testes extremely thin, flattened and ribbon-like, but sex determinable by gross examination	Immature ; gonads elongated, slender, but sex determinable by gross examination
2	Enlarged testes, triangular in cross section, no milt in central canal	Early maturing ; gonads enlarged but individual ova not visible to the naked eye
3	Maturing ; milt flows freely if testes pinched or pressed	Late maturing ; gonads enlarged, individual ova visible to the naked eye
4	Ripe ; testes large, milt flows freely from testes	Ripe ; ovary greatly enlarged, ova translucent, easily dislodged from follicles or loose in lumen of ovary
5	Spent ; testes flabby, bloodshot, surface dull red, little or no milt in central canal	Spawned ; includes recently spawned and postspawning fish, mature ova remnants in various stages of resorption, and mature ova remnants about 1.0mm in diameter

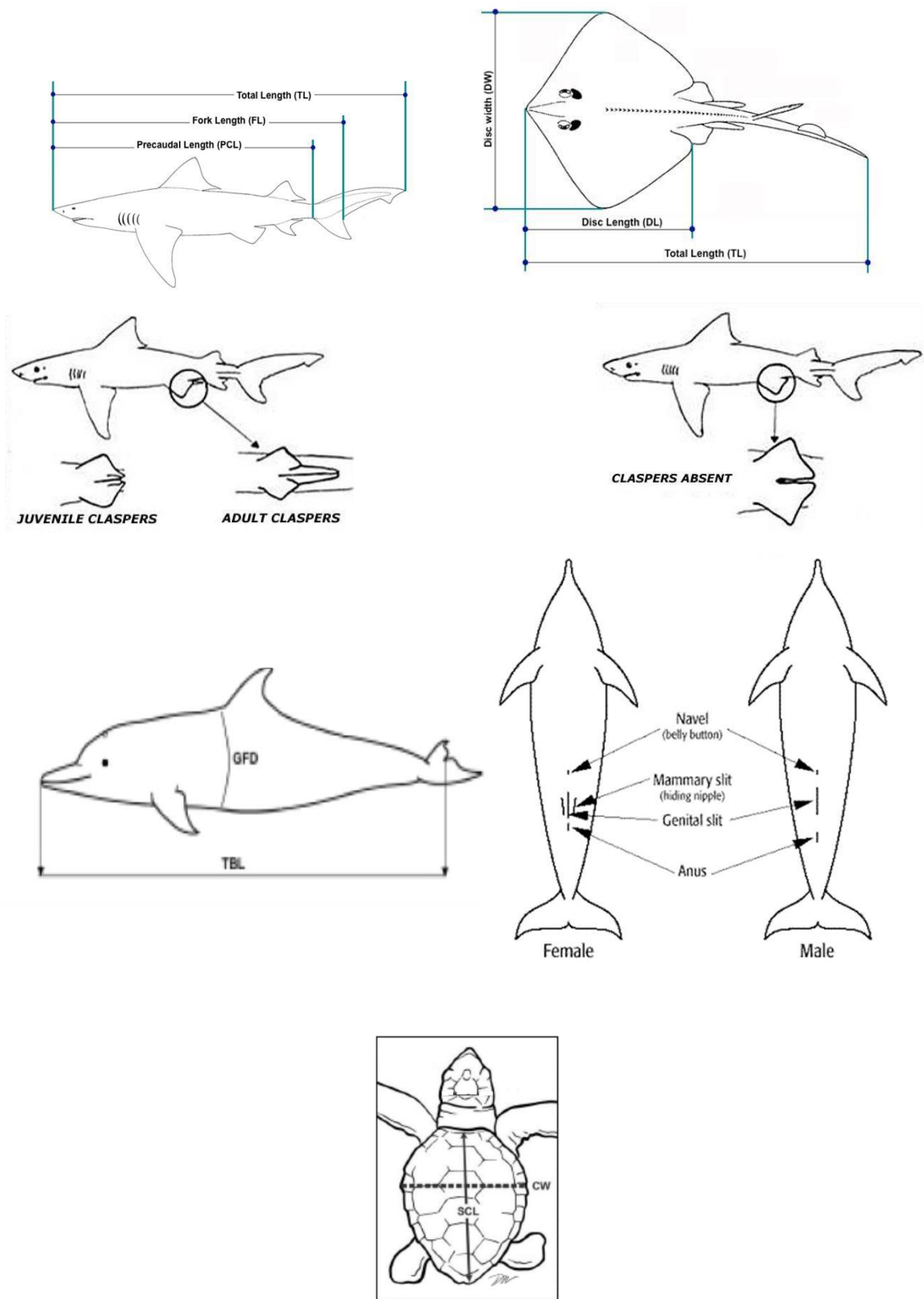


Figure 1. Details of biological information for sharks, rays, cetaceans and turtles (from GFCM manual on monitoring incidental catch of vulnerable species and MARE/2016/22 Deliverable 4.3)