# Exercise on Work Protocols and Sampling Strategies for Tuna Purse-seine

## *IOTC ROS SFO TR16.1*

Category: Sampling strategies as a function of the IOTC fishery

*[IOTC ROS SFO TR16]*

# Exercise 1: Estimation of Catch and Catch Composition

## >> PROTOCOL 2 - UNSORTED CATCH / UN-ASSOCIATED SCHOOL

**N° of brails: 3 full + 2 ½ full + 4 ¼ full**

**Brail estimate capacity: 5 tons**

**Estimate fishing event (set):**
- **Target catch**
- **Catch composition (i.e. catch per species)**
- **Total catch**

### Exhaustive Sample of Large Bycatch

| Species | No | Weight | Fate |
|---|---|---|---|
| Black Marlin | 2 | 150Kg | Retained |
| Green Turtle | 1 | 60Kg | Released |
| Oceanic White Tip Shark | 3 | 250Kg | Released |

### Sample of the Catch Obtained by Spill Method

| Species | No | Weight | Fate |
|---|---|---|---|
| YFT | 10 | 100Kg | Retained |
| BET | 1 | 15Kg | Retained |

# Exercise 2: Estimation of Catch and Catch Composition

## >> PROTOCOL 3 - SORTED CATCH/ASSOCIATED SCHOOL - CASE A

### *Proportional sampling of small bycatch*

| Species | N° | Weight (Kg) |
|---|---|---|
| *C. hippurus* | 20 | 60 |
| *A. thazard* | 30 | 150 |
| *E. affinis* | 333 | 500 |
| *C. maculatus* | 150 | 40 |
| *C. falciformis* | 3 | 30 |

### *Exhaustive sampling of large bycatch*

| Species | N° | Weight (Kg) |
|---|---|---|
| Black Marlin | 2 | 200 |
| Stripped Marlin | 3 | 200 |
| Green turtle | 1 | 60 |
| Oceanic White tip shark | 2 | 150 |
| Manta Ray | 1 | 150 |

| Well No | Species | Tons |
|---|---|---|
| 3 | SKJ | 36 |
| 4 | YFT | 22 |
| 5 | YFT | 42 |
| 6 | BET | 10 |

**Estimate fishing event:**

**A. Bycatch species composition**

**B. Fill in set catch composition table**

- **Total estimated bycatch weight given by the Factory manager = 5000Kg**

# Exercise 2 (continued)

## A. Calculate set bycatch species composition

– Calculate % of each species on the sample.

– Raise it to the total bycatch volume using value given by Factory Manager

– Cross-check if correct by adding weight per species. Total should correspond to the total bycatch value given by Factory Manager.

## B. Fill in set catch composition table

| 1. Spp. | 2. Fate | 3. Sampling method | 4. Number | 6. Weight value (√ unit used) | | 7. Weight est. method |
|---|---|---|---|---|---|---|
| | | | | Ton | Kg | |
| | | | | Ton | Kg | |
| | | | | Ton | Kg | |

# Exercise 2: Solution (continued)

## C. Set catch composition

| 1. Spp. | 2. Fate | 3. Sampling method | 4. Number | 6. Weight value (√ unit used) | | 7. Weight est. method |
|---|---|---|---|---|---|---|
| SKJ | RET | Vessel estimates (VES) | NA | 36 | Ton | Vessel logbook |
| YFT | RET | Vessel estimates (VES) | NA | 64 | Ton | Vessel logbook |
| BET | RET | Vessel estimates (VES) | NA | 10 | Ton | Vessel logbook |
| C. hippurus | RET | Proportional (SPS) | NA | 385 | Kg | Calculation |
| A. yhazard | RET | Proportional (SPS) | NA | 962 | Kg | Calculation |
| E. affinis | RET | Proportional (SPS) | NA | 3205 | Kg | Calculation |
| C. maculatus | RET | Proportional (SPS) | NA | 256 | Kg | Calculation |
| C. falciformis | DUS | Proportional (SPS) | NA | 192 | Kg | Calculation |
| Black Marlin | RET | Exhaustive (EXS) | 2 | 200 | Kg | Eye measurement |
| Stripped M. | RET | Exhaustive (EXS) | 3 | 200 | Kg | Eye measurement |
| Green turtle | DUD | Exhaustive (EXS) | 1 | 60 | Kg | Eye measurement |
| White tip S. | DUD | Exhaustive (EXS) | 2 | 150 | Kg | Eye measurement |
| Manta ray | DUD | Exhaustive (EXS) | 1 | 150 | Kg | Eye measurement |

# Exercise 3: Correcting the Discards / Bycatch Composition Estimations following Shifting

*Proportional sampling of small bycatch during shifting*

| Species | N° | Weight (Kg) |
|---|---|---|
| C. hippurus | 5 | 13 |
| A. thazard | 10 | 50 |
| E. affinis | 100 | 150 |
| C. maculatus | 30 | 10 |

**Total estimated bycatch weight given by the Factory manager for the set in question= 5000Kg**

When in possession of this data extrapolate the volume of each species present in the discards/bycatch sample to the total estimated discards/bycatch for the set given by the Factory Manager. Add it to the sample previously taken and estimate set discards/bycatch per species. If the sample is exhaustive, don't extrapolate.

# Exercise 3: Correcting Discards/Bycatch Composition following Shifting

## Proportional sampling of small bycatch

| Species | N° | Weight (Kg) |
|---|---|---|
| *C. hippurus* | 20 | 60 |
| *A. thazard* | 30 | 150 |
| *E. affinis* | 333 | 500 |
| *C. maculatus* | 150 | 40 |
| *C. falciformis* | 3 | 30 |

## Exhaustive sampling of large bycatch

| Species | N° | Weight (Kg) |
|---|---|---|
| Black Marlin | 2 | 200 |
| Stripped Marlin | 3 | 200 |
| Green turtle | 1 | 60 |
| Oceanic White tip shark | 2 | 150 |
| Manta Ray | 1 | 150 |

| Well No | Species | Tons |
|---|---|---|
| 3 | SKJ | 36 |
| 4 | YFT | 22 |
| 5 | YFT | 42 |
| 6 | BET | 10 |

## *Proportional sampling of small bycatch during shifting*

| Species | N° | Weight (Kg) |
|---|---|---|
| C. hippurus | 30 | 80 |
| A. thazard | 10 | 50 |
| C. maculatus | 30 | 10 |

- **Total estimated bycatch weight given by the Factory manager = 5000Kg**

# Exercise 3 (continued)

A. **Re-calculate set bycatch species composition taking into account the sample collected during shifting.**

 – Combine samples

 – Calculate % of each species on the combined sample.

 – Raise it to the total bycatch volume using value given by Factory Manager

 – Cross-check if correct by adding weight per species. Total should correspond to the total bycatch value given by Factory Manager.

| 1. Spp. | 2. Fate | 3. Sampling method | 4. Number | 6. Weight value (√ unit used) | | 7. Weight est. method |
|---|---|---|---|---|---|---|
| | | | | Ton | Kg | |
| | | | | Ton | Kg | |
| | | | | Ton | Kg | |

# ANY QUESTIONS?

*send us a message via Talents LMS*