

ObServe: Database and operational software for longline and purse seine fishery data

Développement Institut de Recherche pour le

Direction des Pêches Maritimes et de l'Aquaculture

Data Collection Framework
Observatoire Thonier

ObServe
ObServe

PostgreSQL *Java*

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Terres Australes et Antarctiques Françaises

Le Parc Naturel Marin de Mayotte

ObServe

1. Introduction

*Observatoire Thonier Institut de Recherche pour le Développement
Direction des Pêches Maritimes et de l'Aquaculture*

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2. Data model description

2.1. Shared and specific tables for purse-seine and longline in the data model

ObServe

ObServe

SQL

observe_common

observe_seine

observe_longline

2.2. Synchronization between multiple databases

ObServe

topiaid

UNIX

topiaversion

topiaid

topiaid

topiaversion

2.3. Data model for longline data

Trip

observe_longline

Activity

Set

Set

*FloatlinesComposition BranchlinesComposition HooksComposition BaitsComposition LightsticksColor
LightstickesType Section Basket Branchline*

2.3.1. Trip view

*Trip
topiaid*

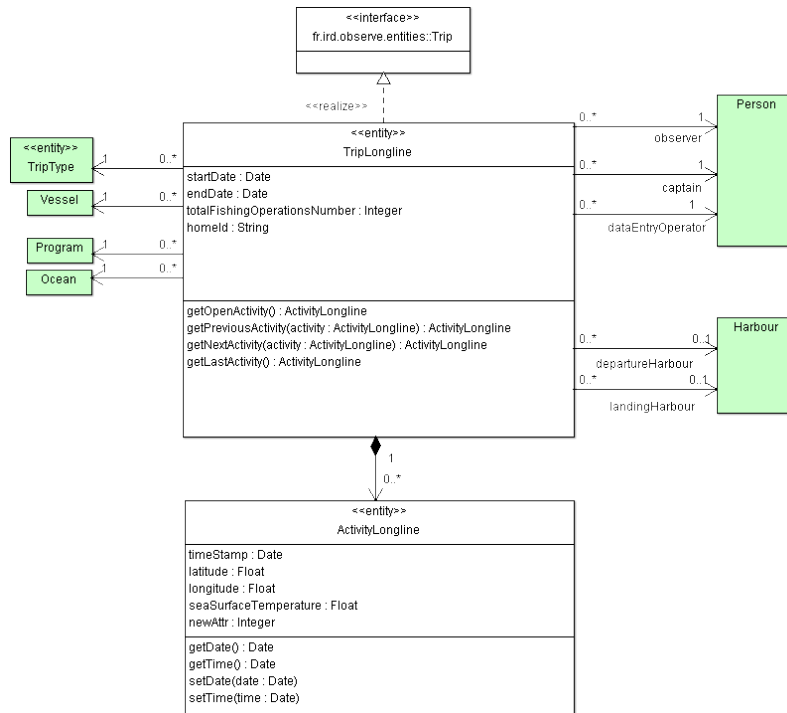


Figure 1. Trip longline view.

2.3.2. Activity view

VesselActivity

Encounter

SensorUsed

FpaZone

Set

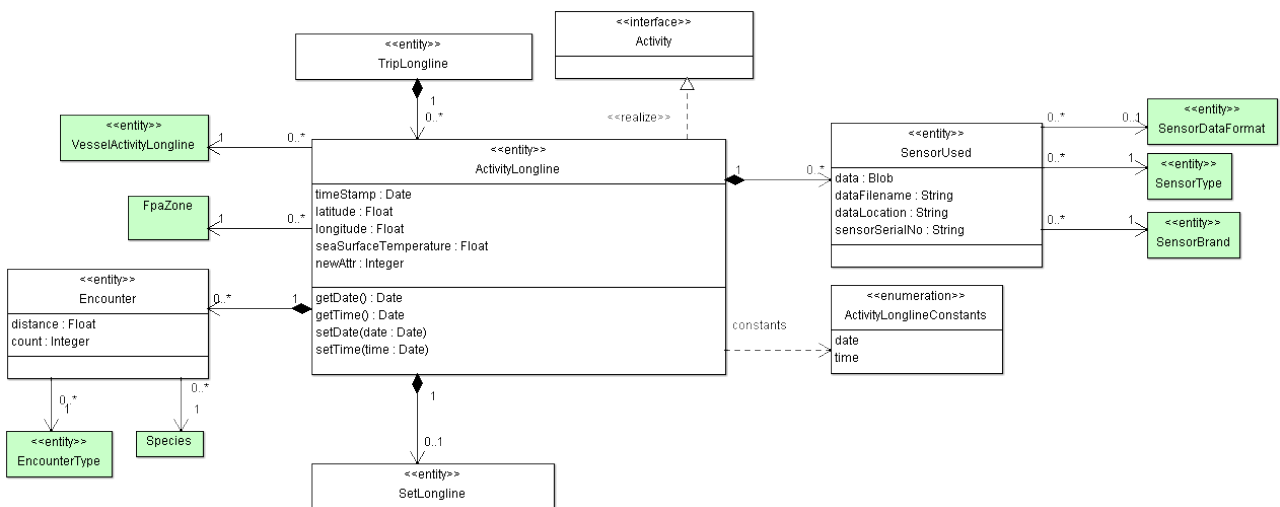


Figure 2. Activity longline view.

2.3.3. Set view

Set

Activity

Set

Set.SettingStartTimestamp

Set.SettingStartLatitude

Set.SettingStartLongitude

Set.SettingEndTimestamp

Set.SettingEndLatitude

Set.SettingEndLongitude

Set

BaitsComposition

BranchlinesComposition

FloatlinesComposition

HooksComposition

BasketsPerSectionCount

TotalSectionsCount

BranchlinesPerBasketCount

2.3.4. Schema view

Section Basket Branchline

Set.BranchlinesPerBasketCount

Set.BasketsPerSectionCount

et.TotalSectionsCount

Section Basket Branchline

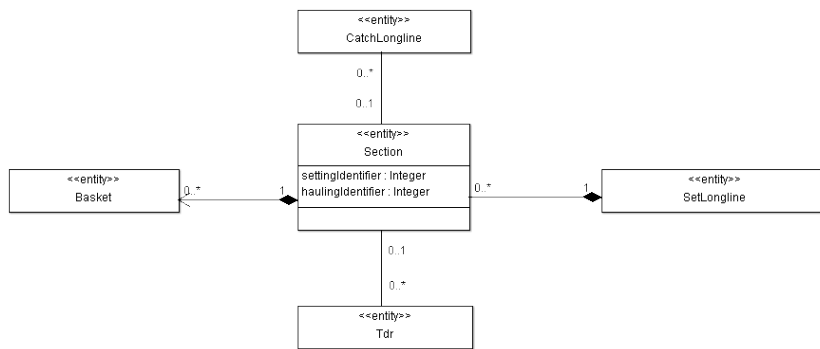


Figure 4. Section view

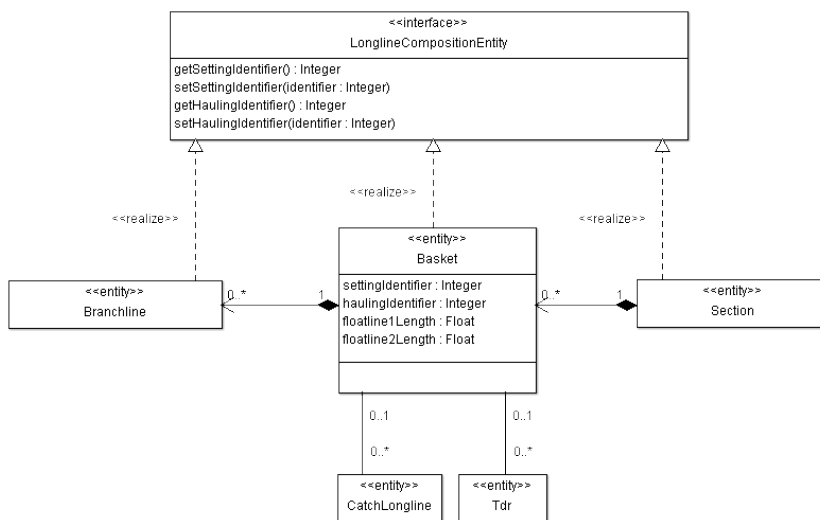


Figure 5. Basket view.

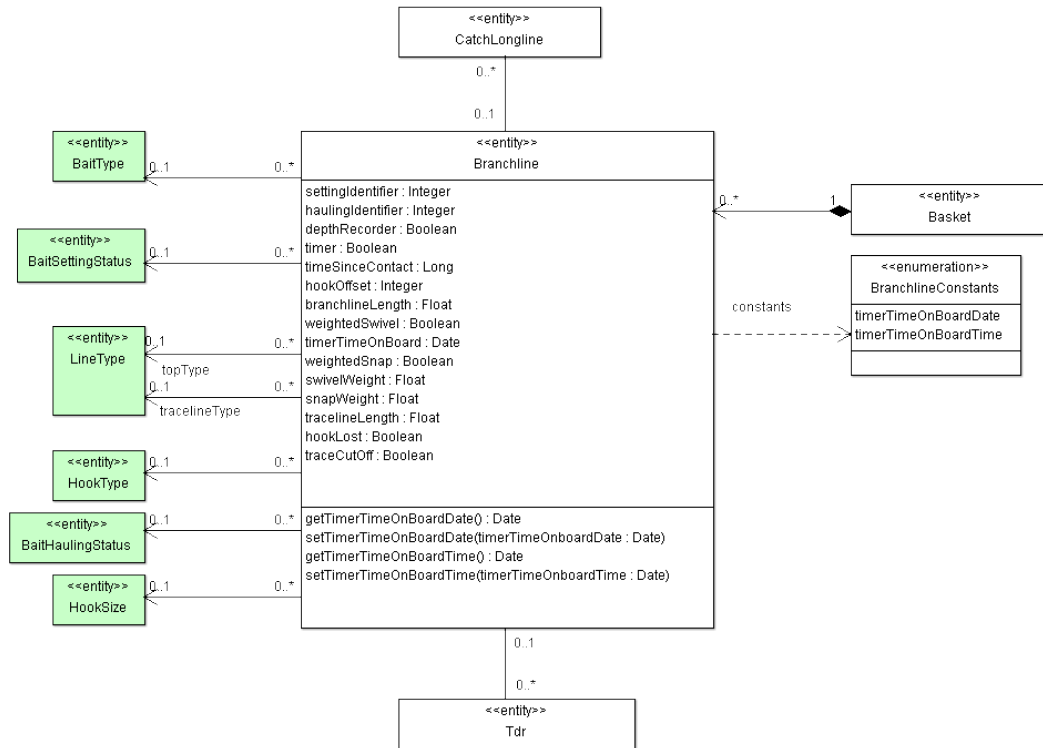


Figure 6. Branchline view.

2.3.5. Catch view

Catch

Catch.count

Catch.totalWeight

Set.HookPosition
 Catch.count Catch.totalWeight

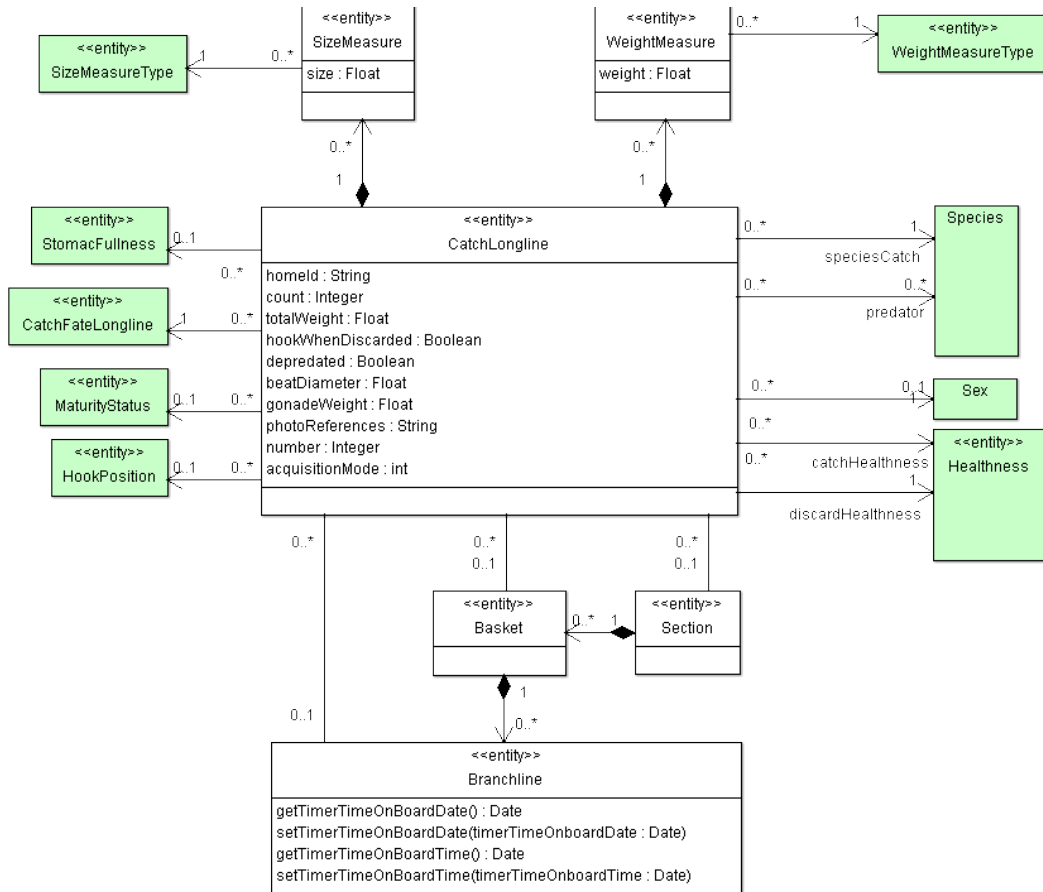


Figure 7. Catch longline view.

2.3.6. Time-Depth Recorder (Tdr) view

Tdr

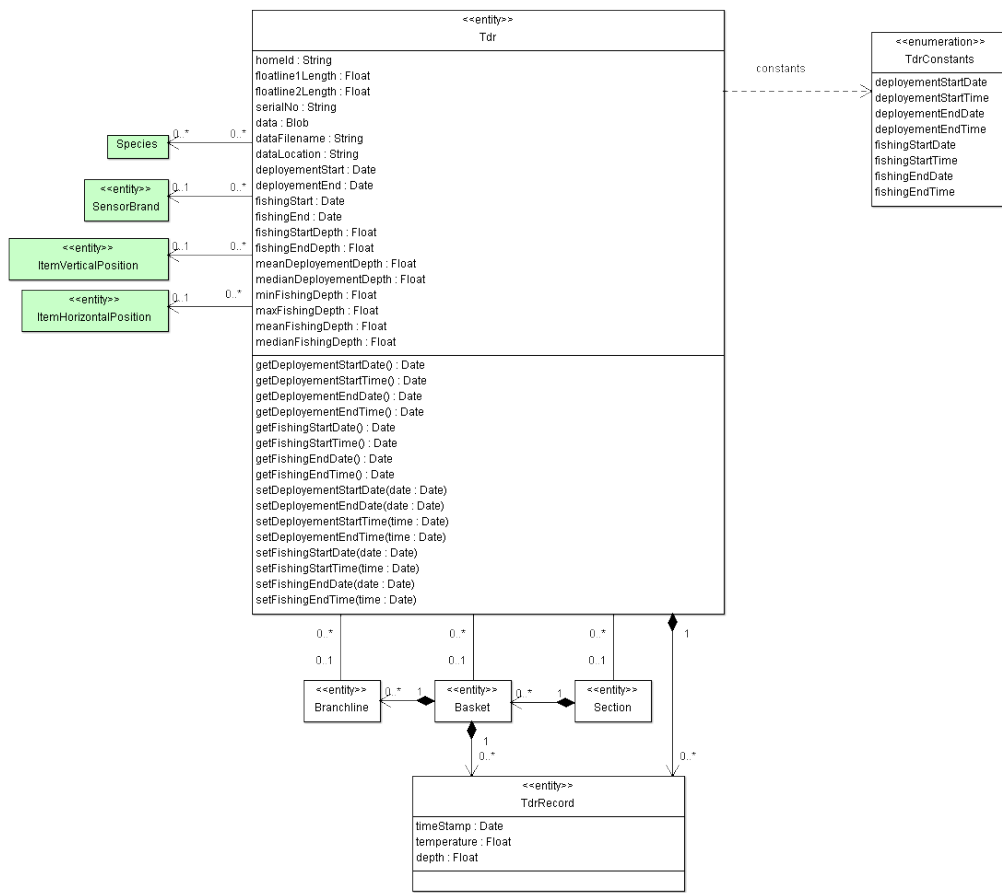


Figure 8. Tdr view.

2.4. Data model for purse-seine data

2.4.1. Set view

Set

Activity Set

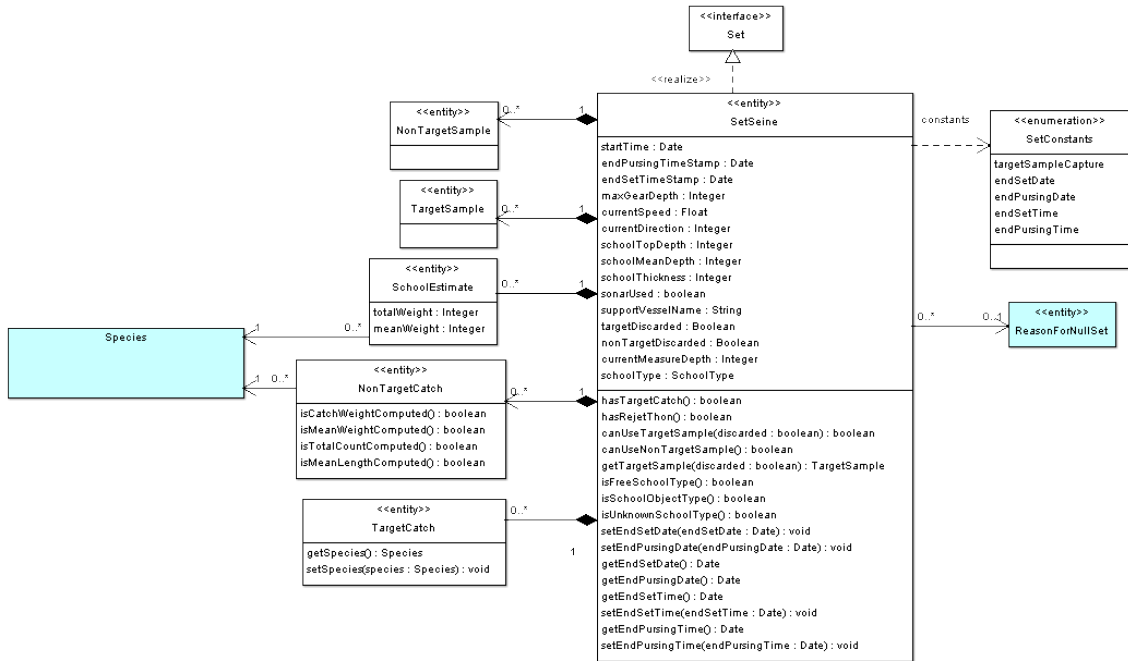


Figure 9. Set view (for purse-seine).

2.4.2. FloatingObject view

FloatingObject

FloatingObject TransmittingBuoy

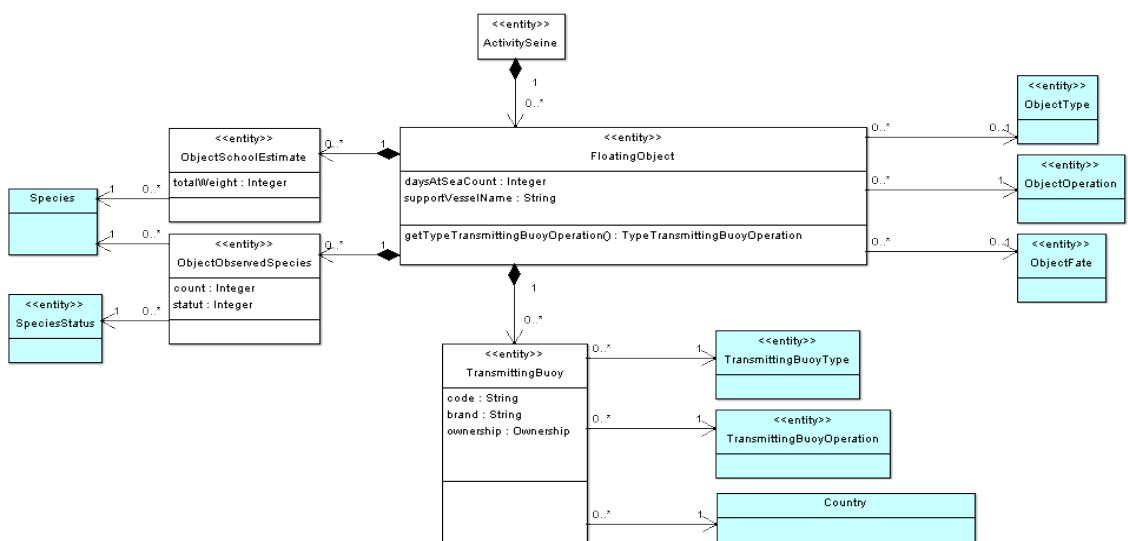


Figure 10. FloatingObject view.

2.5. Databases technologies

PostgreSQL

H2 H2

PostgreSQL

Windows Linux Mac

2.5.1. Acquisition and management software

ObServe

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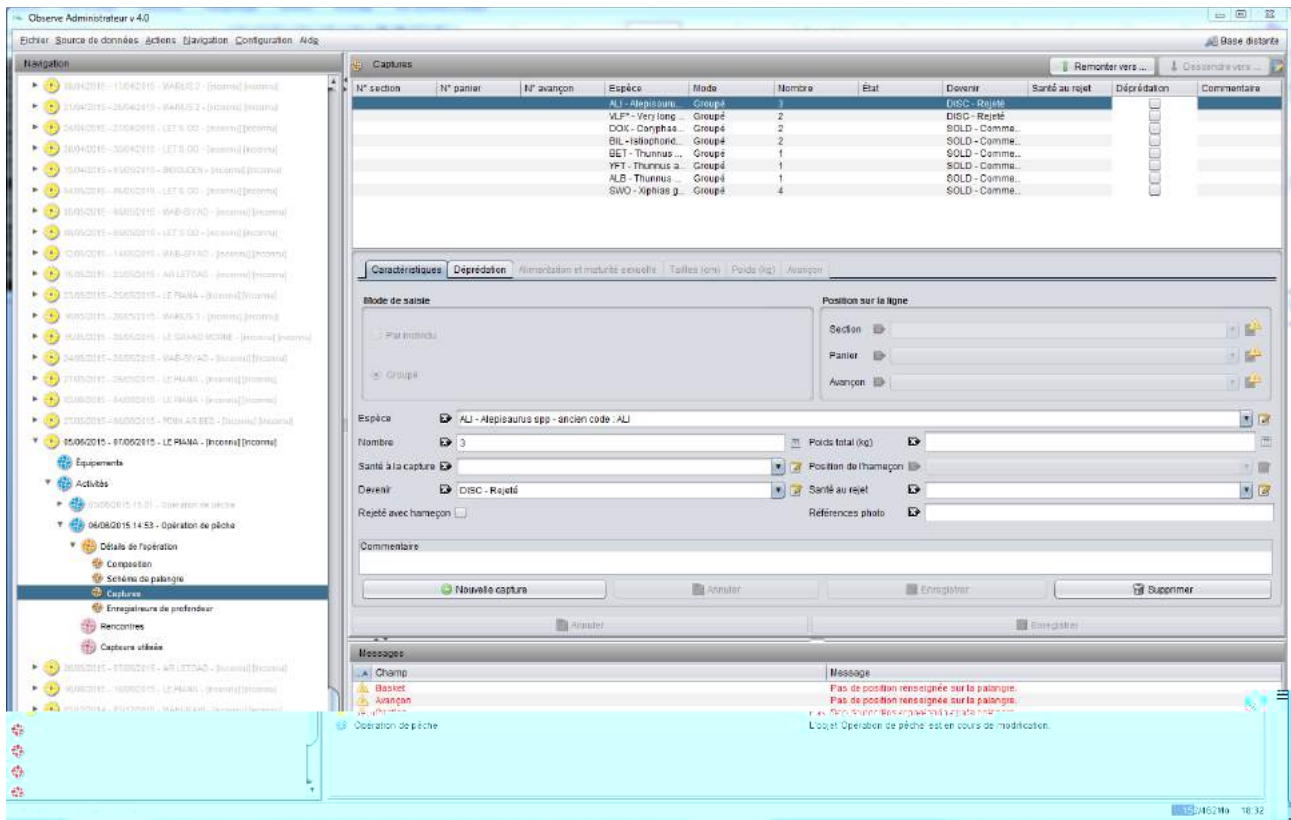


Figure 11. Screenshot of ObServe software, catch screen.

2.5.2. *A short workflow*

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2.5.3 *Checking and completing data*

xworks

2.5.4. *Sustainable developments*

ObServe

ArgoUML



PostgreSQL H2

PostgreSQL

Java

Windows Mac Linux

ObServe

2.5.5. Ergonomics

3. Reunion Island longline fishery data in ObServe

3.1. Migration process

SEALOR Microsoft Access

AutoSampLL

PostgreSQL

ObServe

R

R

PostgreSQL

RPostgreSQL

SQL

SEALOR

mbtools

Microsoft Access

AutoSampLL

PostgreSQL

SQL

ObServe

ObServe

3.2. Longline statistics

3.2.1. Reference data

3.2.2. Observation data

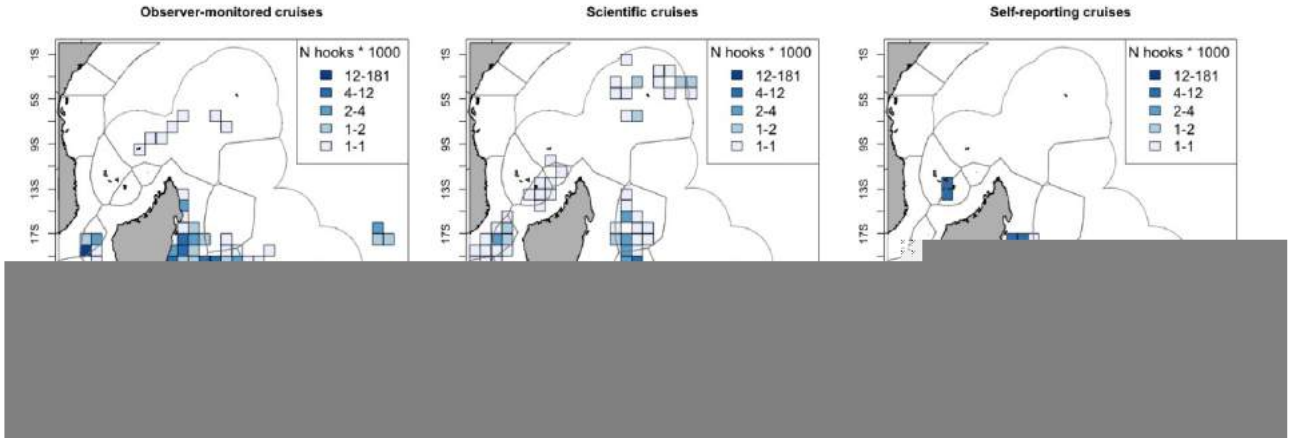


Figure 12. Fishing effort distribution (in number of hooks set) for commercial trips monitored by observers, scientific trips and self-reporting trips.

Year	Scientific trips			Observer-monitored trips			Self-reported trips		
	N trips	N sets	N hooks	N trips	N sets	N hooks	N trips	N sets	N hooks
Total	14	128	68 577	72	580	758 448	266	1 237	1 554 900

Table 1. Yearly number of monitored trips, fishing operations and effort per trip type between 2002 and 2014.

3.2.3. Species composition

<i>Thunnus obesus</i>	<i>Thunnus alalunga</i>	<i>Thunnus albacares</i>
	<i>Prionace glauca</i>	<i>Xiphias gladius</i>
<i>Chelonia mydas</i>	<i>Dermochelys coriacea</i>	<i>Caretta caretta</i>
<i>Eretmochelys imbricata</i>		<i>Lepidochelys olivacea</i>
	<i>Grampus griseus</i>	<i>Natator depressus</i>
<i>Globicephala macrorhynchus</i>		<i>Tursiops spp</i>
<i>Megaptera novaeangliae</i>		

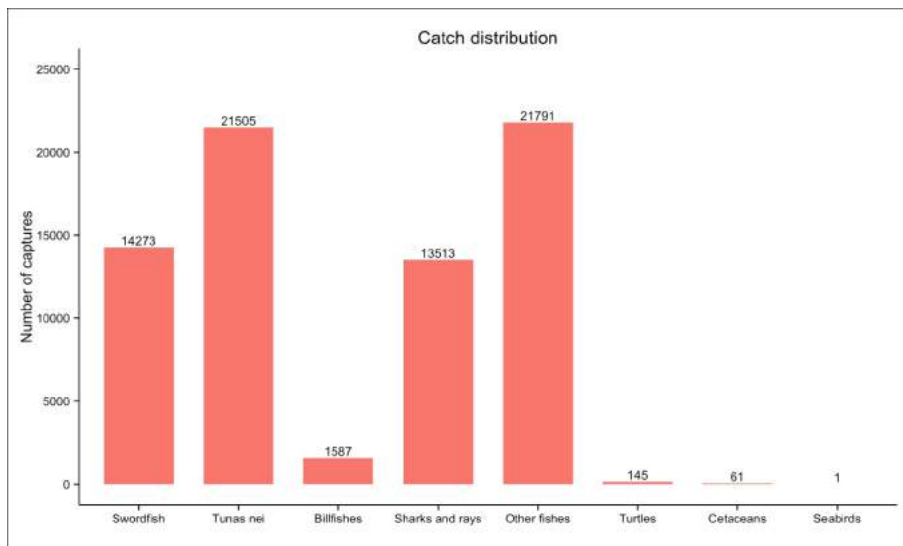


Figure 13. Species composition by species group.

3.3. Working tables and automated reports

3.3.1. Implementation of views and working tables

R

R
CSV

SQL
CSV

3.3.2. Automated generation of report outputs

R

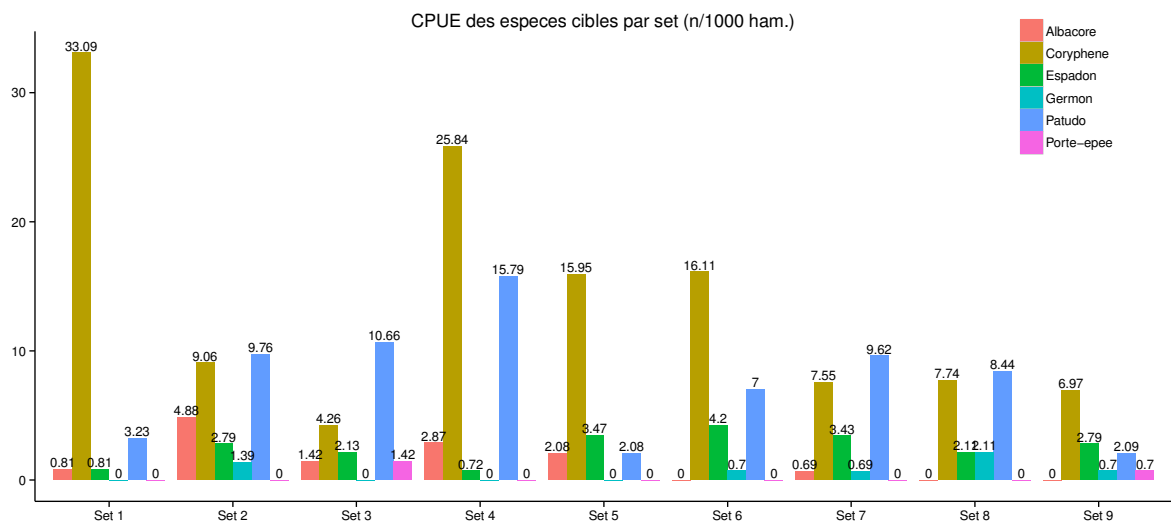


Figure 14. CPUE of target species per set calculated for an observer-monitored commercial trip (SEALOR46).

Groupe	Nom scientifique	Nom commun	Code FAO	Total N captures	N conserves	% conserves	N rejetés	% rejetés	N depredates	% depredates	Poids conserve (kg)
	<i>Xiphias gladius</i>										
	<i>Makaira nigricans</i>										
	<i>Makaira indica</i>										
	<i>Tetrapturus angustirostris</i>										
	<i>Istiophorus platypterus</i>										
	<i>Tetrapturus audax</i>										
	<i>Very long fish nei</i>										
	<i>Alepisaurus spp</i>										
	<i>Lepidocybium flavobrunneum</i>										
	<i>Ruvettus pretiosus</i>										
	<i>Coryphaenidae</i>										
	<i>Mola spp</i>										
	<i>Acanthocybium solandri</i>										
	<i>Dasyatis violacea</i>										
	<i>Prionace glauca</i>										
	<i>Carcharhinus spp</i>										
	<i>Carcharhinus longimanus</i>										
	<i>Sphyrna spp</i>										
	<i>Galeocerdo cuvier</i>										
	<i>Mobulidae</i>										
	<i>Isurus spp</i>										
	<i>Thunnus alalunga</i>										
	<i>Thunnus albacares</i>										
	<i>Thunnus obesus</i>										
	<i>Chelonia mydas</i>										
Total				1366	637		729		16		17280

Table 2. Catch fate distribution per species for self-reported trips (Jan-Mar 2015).

4. Perspectives

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5. References

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