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**Summary of the Indian Ocean elasmobranch tagging programs**

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## ABSTRACT

A summary of shark tagging experiments conducted by various research organizations in the Indian Ocean is presented.

## Introduction

A summary of shark tagging experiments conducted by various research organizations in the Indian Ocean is developed as a reference documents for further considerations of WPEB and IOTC Secretariat. Research programmes are grouped in alphabetical order of names of respective institutions.

## Summary of tagging efforts

### Australia

#### NSW DPI Game Fish Tagging Program

**Species:** Billfish, Tuna, Sharks, others

**Goal:** -

**Area:** Pacific Ocean, Indian Ocean.

**Period:** 1973-2015-ongoing

**Funding:** NSW Recreational Fishing Trust

**Field operations:**

**Contacts:** Julian Pepperell ([gamefish.tagging@dpi.nsw.gov.au](mailto:gamefish.tagging@dpi.nsw.gov.au))

Table 1. Some tagging activities (tag-recaptures Indian Ocean) incomplete summary.

Species	Latin name	Tagged (recovered) by tag type					Total
		Acoustic	Satellite	SPOT	Archival	Conventional	
Shortfin mako shark	<i>Isurus oxyrinchus</i>					1 (1)	1(1)
Blue shark	<i>Prionace glauca</i>					1 (1)	1(1)
Total						2(2)	2(2)

## References:

1. Anonymous (2010)

## Activities of university programs

**Species:** Sharks

**Goal:** Biological studies

**Area:** Indian Ocean.

**Period:** 2008-2012-ongoing?

**Funding:** -

**Field operations:** See references

**Contacts:** See references

Table 2. Some tagging activities (tag-recaptures Indian Ocean) incomplete summary.

Species	Latin name	Tagged (recovered) by tag type					Total
		Acoustic	Satellite	SPOT	Archival	Conventional	
Dusky shark	<i>Carcharhinus obscurus</i>		3(3)				3(3) <sup>(2)</sup>
Tiger shark	<i>Galeocerdo cuvier</i>			5(5)			5(5) <sup>(3)</sup>
	<i>Carcharhinus melanopterus</i>	2 (2)					2(2) <sup>(4)</sup>
Total		2(2)	3(3)	5(5)			10(10)

### Other species, not included in the table

2. Rogers, et al., 2013; 3. Heithaus et al., 2007; 4. Speed et al., 2013.

## France

### IRD – Project "Connaissances de l'écologie et de l'Habitat de deux espèces de Requins Côtiers sur la côte Ouest de la Réunion" (CHARC)

**Species:** Coastal Sharks

**Goal:** Behavioral ecology of coastal sharks

**Area:** Reunion Island

**Period:** 2011-2014

**Funding:** EU (FEDER), Région Réunion, France (DEAL)

**Field operations:**

Marc Soria, Antonin Blaison, Pascal Cotel. Institut de recherche pour le développement (IRD)

**Contacts:** Marc Soria ([marc.soria@ird.fr](mailto:marc.soria@ird.fr)).

Table 3. Summary of tagging activities

Species	Latin name	Tag type					Total
		Acoustic	Satellite	SPOT	Archival	Conventional	
Bull shark	<i>Carcharhinus leucas</i>	38	3			38	41
Tiger shark	<i>Galeocerdo cuvier</i>	42	3			42	45
Total		80	6			80	86

**References:**

5. Soria et al., 2014.

**IRD – MADE Project****Species:** Tuna, Sharks, small bycatch species**Goal:** Behaviour, post-release survival rate**Area:** Indian Ocean.**Period:** 2008-2012**Funding:** EU**Field operations:** Laurent Dagorn, Pascal Bach, John David Filmalter**Contacts:** Laurent Dagorn ([laurent.dagorn@ird.fr](mailto:laurent.dagorn@ird.fr)), Pascal Bach ([pascal.bach@ird.fr](mailto:pascal.bach@ird.fr))

Table 4. Some of tagging activities (tag pop-up/recaptures Indian Ocean)

Species	Latin name	Tagged (recovered) by tag type					Total
		Acoustic	Satellite	SPOT	Archival	Conventional	
Silky shark	<i>Carcharhinus falciformis</i>	39(5)	53 (2)		4(1)	50(9)	104(15)
Oceanic whitetip	<i>Carcharhinus longimanus</i>	1(1/1)	3(0)				3(1)
Blue shark	<i>Prionace glauca</i>		9(1)**				9(1)
Shortfin mako shark	<i>Isurus oxyrinchus</i>		1				1
Tiger shark***	<i>Galeocerdo cuvier</i>					2(2)	2(2)
<b>Total</b>		<b>40(6)</b>	<b>66 (3)</b>		<b>4(1)</b>	<b>52(11)</b>	<b>119(19)</b>

\*Several sharks were instrumented with multiple tag types. As such, Total shows the total number of individuals tagged, not the total number of tags deployed.

\*\*The tag was recovered from a beach after releasing from the animal. The animal was not recaptured.

\*\*\*Two individuals were tagged in 2010 during longline fishing experiments carried out in Baie de Saint Paul, Reunion Island, within framework of the MADE project. These two individuals have been recaptured close to Reunion Island and off the East coast of Madagascar.

**References:**

6. Filmalter et al., 2011; 7. Filmalter et al., 2010a; 8. Filmalter et al., 2010b; 9. Filmalter et al., 2010c ; 10. Poisson et al., 2014.

**Kenya****African Billfish Foundation****Species:** Billfish, Tuna, Sharks, others**Goal:** -**Area:** Indian Ocean.**Period:** 2005-2014-ongoing**Funding:** -**Field operations:****Contacts:** [info@africanbillfish.org](mailto:info@africanbillfish.org)

Table. 5 Some of tagging activities (tag-recaptures Indian Ocean)

Species	Latin name	Tagged (recovered) by tag type					Total
		Acoustic	Satellite	SPOT	Archival	Conventional	
Silky shark	<i>Carcharhinus falciformis</i>					1 (1)	
Black Tip Shark	?					1 (1)	
Total						2 (2)	

**References:****11.** ABF, 2014.

## Seychelles

### Seychelles Fishing Authority (SFA) – Project "SEYSHA"

**Source:**

**Species:** Coastal Sharks

**Goal:** -

**Area:** Seychelles (no details available)

**Period:** 2011-2013

**Funding:** N/A

**Field operations:**

Name of persons involved: Jude Bijoux, Greg Berke, Vincent Lucas, Laurent Dagorn, Pedro Afonso

**Contacts:** Jude Bijoux ([judebijoux@gmail.com](mailto:judebijoux@gmail.com)) and Gregory Berke ([gregoryberke@gmail.com](mailto:gregoryberke@gmail.com))

Table 6. Summary of tagging activities.

Species	Latin name	Tagged (recovered) by tag type					Total
		Acoustic	Satellite	SPOT	Archival	Conventional	
Bull shark	<i>Carcharhinus leucas</i>	3 (3)	4 (4)			4	4 (4)
Tiger shark	<i>Galeocerdo cuvier</i>	2 (2)	4 (4)	0		4	4 (4)
Total		5	8 (8)			8	8 (8)

#### References:

Berke Gregory, pers. comm, 2014.

## Spain – Tagging Program of the IEO

**Species:** Pelagic sharks, swordfish.

**Goal:** -

**Area:** Worldwide, Indian Ocean.

**Period:** 1984-2004

**Funding:**

**Field operations:**

**Contacts:** ? Jaime Mejuto (IEO, Spain)

Table 7. Summary of tagging activities (elasmobranch only)

Species	Latin name	Tagged (recovered) by tag type					Total
		Acoustic	Satellite	SPOT	Archival	Conventional	
Whaler sharks	<i>Carcharhinus sp.</i>					10	10
Silky Shark	<i>Carcharhinus falciformis</i>					71 (1)	71 (1)
Oceanic whitetip shark	<i>Carcharhinus longimanus</i>					56 (4)	56 (4)
Tiger shark	<i>Galeocerdo cuvier</i>					2	2
Shortfin mako shark	<i>Isurus oxyrinchus</i>					39	39
Porbeagle shark	<i>Lamna nasus</i>					7	7
Blue shark	<i>Prionace glauca</i>					254 (1)	254 (1)
Crocodile shark	<i>Pseudocarcharias kamoharai</i>					3	3
Smooth hammerhead	<i>Sphyrna zygaena</i>					2	2
<b>Total</b>						<b>444 (6)</b>	<b>444 (6)</b>

### References:

12. Mejuto et al., 2005.



## South Africa

### OCEANOGRAPHIC RESEARCH INSTITUTE (ORI) Tagging Project

**Species:** Coastal Sharks

**Goal:** Linefish management and conservation

**Area:** South Africa

**Period:** 1983-2014-ongoing

**Funding:** Initially from the public sector. More recently we have internal funding from SAAMBR (South African Association for Marine Biological Research- ORI's company name) and from the regional government authority DAEA (Department of Agriculture and Environmental Affairs)

**Field operations:**

Voluntary tagging, Managed by ORI tagging team

**Contacts:** Stuart Dunlop ([oritag@ori.org.za](mailto:oritag@ori.org.za)).

Table 8. Summary of tagging activities elasmobranch only

Species	Latin name	Tag type					Total
		Acoustic	Satellite	SPOT	Archival	Conventional	
Dusky shark	<i>Carcharhinus obscurus</i>					11712	11712
Copper shark	<i>Carcharhinus brachyurus</i>					8816	8816
Spotted raggedtooth shark	<i>Carcharias taurus</i>					4690	4690
Spotted gulleyshark	<i>Triakis megalopterus</i>					7997	7997
Lesser guitarfish/sand shark	<i>Rhinobatos annulatus</i>					6391	6391
Blackspot smooth houndshark	<i>Mustelus mustelus</i>					5679	5679
Giant guitarfish / sandshark	<i>Rhynchobatus djiddensis</i>					4045	4045
Sevengill cow shark	<i>Notorynchus cepedianus</i>					3204	3204
Diamond ray	<i>Gymnura natalensis</i>					2899	2899
Blue / marbled stingray	<i>Dasyatis chrysonota</i>					2653	2653
Hammerhead	<i>Sphyrna</i> spp.					1513	1513

Species	Latin name	Tag type					Total
		Acoustic	Satellite	SPOT	Archival	Conventional	
sharks							
Scalloped hammerhead	<i>Sphyrna lewini</i>					739	739
Smooth hammerhead	<i>Sphyrna zygaena</i>					1391	1391
Sharpnose stingray	<i>Himantura cf gerrardi</i>					1474	1474
Striped catshark	<i>Poroderma africanum</i>					1016	1016
Blacktip shark	<i>Carcharhinus limbatus</i>					907	907
Soupfin shark	<i>Galeorhinus galeus</i>					907	907
Honeycomb stingray	<i>Himantura leoparda</i>					606	606
Longnose blackfin / spinner shark	<i>Carcharhinus brevipinna</i>					603	603
Hardnose smooth houndshark	<i>Mustelus mosis</i>					572	572
Eagleray	<i>Myliobatis aquila.</i>					521	521
Tiger shark	<i>Galeocerdo cuvier</i>					473	473
Great white shark	<i>Carcharodon carcharias</i>					488	488
Leopard catshark	<i>Poroderma pantherinum</i>					439	439
Zambezi shark	<i>Carcharhinus leucas</i>					430	430
Bluntnose spiny dogfish	<i>Squalus megalops</i>					266	266
Flapnose houndshark	<i>Scylliogaleus queckettii</i>					259	259
Elephantfish / St Joseph	<i>Callorhynchus capensis</i>					251	251
Blackspot shark	<i>Carcharhinus sealei</i>					243	243
Brown shyshark	<i>Haploblepharus fuscus</i>					225	225
Spearnose skate	<i>Rostroraja alba</i>					196	196
Puffadder shyshark	<i>Haploblepharus edwardsii</i>					189	189
Whitespotted smooth houndshark	<i>Mustelus palumbes</i>					171	171
Greyspot guitarfish / sandshark	<i>Rhinobatos leucospilus</i>					163	163

Species	Latin name	Tag type					Total
		Acoustic	Satellite	SPOT	Archival	Conventional	
Spotted eagle ray	<i>Aetobatus narinari</i>					125	125
Sliteye / tope shark	<i>Loxodon macrorhinus</i>					86	86
Thorntail stingray	<i>Dasyatis thetidis</i>					83	83
Spotted spiny dogfish	<i>Squalus acanthias</i>					74	74
Blackfin reef shark	<i>Carcharhinus melanopterus</i>					72	72
Short-tail stingray	<i>Dasyatis brevicaudata</i>					65	65
Banded catshark	<i>Halaelurus lineatus</i>					65	65
Java shark	<i>Carcharhinus amboinensis</i>					57	57
Thintail thresher shark	<i>Alopias vulpinus</i>					45	45
Brown catshark	<i>Haploblepharus fuscus</i>					45	45
Marbled electric ray	<i>Torpedo marmorata</i>					43	43
Shortfin mako shark	<i>Isurus oxyrinchus</i>					42	42
Manta ray	<i>Manta birostris?</i>					33	33
Round ribbontail ray	<i>Taeniura melanospilos</i>					30	30
Blue shark	<i>Prionace glauca</i>					28	28
Green sawfish	<i>Pristis zijsron</i>					52	52
Thornback skate	<i>Rajella barnardi</i>					24	24
Blackspot catshark	<i>Poroderma marleyi</i>					23	23
false thornback	<i>Raja straeleni</i>					21	21
Bluespotted stingray	<i>Neotrygon kuhlii</i>					20	20
Tiger catshark	<i>Halaelurus natalensis</i>					20	20
Devilray	<i>Mobula mobular</i>					18	18
Grey reef shark	<i>Carcharhinus amblyrhynchos</i>					23	23
African angel shark	<i>Squatina africana</i>					12	12
Stingray: roundnose	<i>Himantura fai</i>					12	12
Flapnose ray	<i>Rhinoptera javanica</i>					11	11

Species	Latin name	Tag type					Total
		Acoustic	Satellite	SPOT	Archival	Conventional	
Galapagos shark	<i>Carcharhinus galapagensis</i>					11	11
Bluespotted ribbontail ray	<i>Taeniura lymma</i>					10	10
Bluntnose guitarfish	<i>Rhinobatos blochii</i>					10	10
Great hammerhead shark	<i>Sphyrna mokarran</i>					8	8
Zebra shark	<i>Stegostoma fasciatum</i>					8	8
Whale Shark	<i>Rhincodon typus</i>					7	7
Lemon shark	<i>Negaprion acutidens</i>					6	6
Oceanic whitetip shark	<i>Carcharhinus longimanus</i>					6	6
Guitarfish: bowmouth	<i>Rhina ancylostoma</i>					5	5
Total		0	0	0	0	73328	73328

## References

**13.** Diemer et al., 2011 ; **14.** Dunlop et al., 2013.

## UK-Switzerland-Australia-USA

### Chagos Archipelago – Bertarelli Foundation

**Species:** Tuna, Billfish, Sharks,

**Goal:** Researchers from Stanford University, the University of Western Australia and the Zoological Society of London use electronic tag technology to study the residency and connectivity of pelagic fish, sharks and mantas, within and around the Chagos Archipelago.

**Area:** Chagos Archipelago

**Period:** 2013-2015

**Funding:** Bertarelli Foundation

**Field operations:** TK Chapple, A Carlisle, JD Dale, R Schallert & BA Block, Hopkins Marine Station of Stanford University; D Tickler, Centre for Marine Futures, Oceans Institute, University of Western Australia

**Contacts:** Barbara Block ([bblock@stanford.edu](mailto:bblock@stanford.edu)), Taylor Chapple ([tchapple@stanford.edu](mailto:tchapple@stanford.edu))

Table 9. Summary of tagging activities (elasmobranch only)

Species	Latin name	Tag type					Total
		Acoustic	Satellite	SPOT	Archival	Conventional	
Grey Reef Shark	<i>Carcharhinus amblyrhynchos</i>	73	2				75
Silvertip Shark	<i>Carcharhinus albimarginatus</i>	67	9	3			79
Silky Shark	<i>Carcharhinus falciformis</i>	1	3	2			6
Manta Ray	<i>Manta alfredi</i>	8	9				17
Blacktip Reef Shark	<i>Carcharhinus melanopterus</i>	1					1
Nurse Shark	<i>Nebrius ferrugineus</i>	2					2
<b>Total</b>		<b>152</b>	<b>23</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>180</b>

#### References:

**15.** Schallert et al., 2013; **16.** Chapple et al., 2015.

**Species:** Manta rays

**Goal:** Opportunistic during reef expedition

**Area:** Egmont Atoll, Chagos Archipelago

**Period:** 2014

**Funding:** Darwin/Bertarelli Foundation

**Field operations:** David Curnick, PhD Student, UCL / ZSL

**Contacts:** David Curnick and Matthew Gollock

Table 10. Summary of tagging activities (elasmobranch only)

Species	Latin name	Tag type					Total
		Acoustic	Satellite	SPOT	Archival	Conventional	
Manta Ray	<i>Manta birostris</i>		2				2
Total			2				2

**USSR****Southern Scientific Research Institute of Marine Fisheries and Oceanography (YugNIRO), former AzCherNIRO****Species:** Pelagic Sharks**Goal:** General biological studies**Area:** Indian Ocean**Period:** 1972**Funding:** Ministry of Fisheries of the USSR.**Field operations:**

Name of persons involved: Evgeny Gubanov

**Contacts:** Evgeny Romanov ([prosper.arda@orange.fr](mailto:prosper.arda@orange.fr))

Table 11. Summary of tagging activities. Format: 'No of shark tagged (Number of tags recovered or reported for pop-up, spot)'

Species	Latin name	Tag type					Total
		Acoustic	Satellite	SPOT	Archival	Conventional	
Common thresher shark ? (probably pelagic thresher)	<i>Alopias vulpinus?</i> ( <i>Alopias pelagicus</i> )					1 (1)	1 (1)
Sharks nei	12 species					224	224
Total						225 (1)	225 (1)

**References:**

17. Gubanov, 1976.

## Whale shark tagging – various programs

**Species:** Whale shark

**Goal:** -

**Area:** Indian Ocean: Mozambique.

**Period:** 2006

**Funding:**

**Field operations:**

**Contacts:** see references.

Table 12. Summary of whale shark tagging activities.

Species	Latin name	Tagged (recovered) by tag type					Total
		Acoustic	Satellite	SPOT	Archival	Conventional	
Whale shark	<i>Rhincodon typus</i>		2 (2)				2 (2) <sup>(18)</sup>
Whale shark	<i>Rhincodon typus</i>		6 (5)	3 (3)			9 (8) <sup>(19)</sup>
Whale shark	<i>Rhincodon typus</i>		19 (12)				19 (12) <sup>(20)</sup>
Whale shark	<i>Rhincodon typus</i>		2 (2)	1 (1)			3 (3) <sup>(21)</sup>
Whale shark	<i>Rhincodon typus</i>			8 (8)			8 (8) <sup>(22)</sup>
Whale shark	<i>Rhincodon typus</i>			1 (1)			1 (1) <sup>(23)</sup>
Whale shark	<i>Rhincodon typus</i>		5(4)				5(4) <sup>(24)</sup>
Whale shark	<i>Rhincodon typus</i>		49(37)	10(10)			59 (47) <sup>(25)</sup>
Total			83(62)	23(23)			106(85)

### References:

**18.** Brunnschweiler et al., 2009; **19.** Rowat, Gore, 2007; **20.** Wilson et al., 2007; **21.** Wilson et al., 2006; **22.** Gleiss et al., 2013; **23.** Rowat et al., 2007; **24.** Escalle et al., 2014; **25.** Berumen et al., 2014.

### Acknowledgements

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