

Sea turtle development habitats in the South West Indian Ocean: identification, abundance and strategic importance

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ABSTRACT

The Eparses islands are the most important nesting sites for the green turtle (*Chelonia mydas*) in the South West Indian Ocean and these nesting populations are monitored since the 80th by IFREMER and KELONIA teams. Even if nesting turtle are well know in these islands, few data are available on the behaviour of immature (between 25 and 60 cm CCL) in these islands. Recent field trips done in 2005, 2006, 2007, 2008 and 2009 showed that these islands are also important development habitats for green and hawksbill turtles (*Eretmochelys imbricate*). This phase of the development cycle of marine turtle is not well known, but relevant for conservation measures, especially in term of location of these habitats, residence time, population size structure and growth rate. By using tag – recapture method in immatures of green and hawksbill in the mangrove of Europa and the lagoons of Juan de Nova, Grande Glorieuse, we identified and recaptured more than 220 immatures within the last 5 years. This study allowed us to identify differences in the reliance time and average annual growth rate of the immature of green and hawksbill according to the ecology of their habitat in the Eparses islands. This study also allowed us to estimate the population of immatures in these islands and indicates that the Eparses Islands are not also important sites for the reproduction of green, but relevant development habitats for immatures of green and hawksbill too.

Sea turtle development habitats in the South West Indian Ocean: identification, abundance and strategic importance of the Eparses Islands

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How to follow sea turtle in their development habitat?



TURTLE JUMPING: searching, finding and hunting, Jumping and catching sea turtles in their habitat



MONITORING: Measuring, weighting, tagging, sampling and photo identifying



RELEASING the turtle

Immature of green and hawksbill monitoring from 2005 to 2009

The Eparses islands are isolated islands mostly situated in the Mozambique Channel. Those islands are the main important nesting sites for green turtle in the SWIO... but they are also unique development habitat for both green and hawksbill turtles



Year	Island	Number					
		Tagged	Recaptured	Re-tagged	Measured	Weighted	
2006	CM	38	0	0	38	0	
	EI	13	0	0	13	0	
	CM	3	0	0	3	0	
2008	EI	1	0	0	0	0	
	CM	38	4	1	44	43	
2009	EI	15	1	0	16	16	
	Total	108	5	1	114	59	
Juan de Nova	2007	CM	21	0	0	21	0
	EI	2	0	0	2	0	
	CM	34	2	0	38	23	
2009	EI	18	0	0	18	13	
	Total	77	2	0	79	36	
Glorieuse	2005	CM	29	0	0	29	0
	EI	0	0	0	0	0	
	CM	11	4	0	15	0	
2008	EI	0	0	0	0	0	
	CM	29	19	2	48	32	
2009	EI	2	0	0	2	2	
	Total	71	23	2	94	34	

CAPTURE ZONES

EUROPA (22°21'S / 40°21'E)



JUAN DE NOVA (17°03'S / 42°44'E)



GLORIEUSE (11°35'S / 47°18'E)

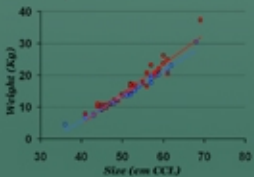


TYPE OF HABITAT: dispersed sea grass mainly in the mangrove

TYPE OF HABITAT: algal and coral reefs very few sea grass available

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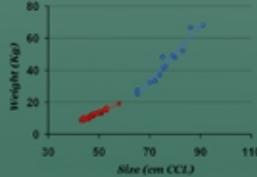
SIZE/WEIGHT RELATION



GROWTH RATE

	EI	CM
Number of recapture	1	3
Monthly growth rate (cm)	0.37	0.09
SD	0	2E-17

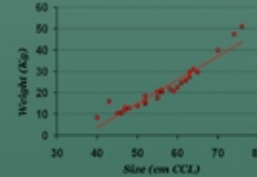
SIZE/WEIGHT RELATION



GROWTH RATE

	CM
Number of recapture	2
Monthly growth rate (cm)	0.97
SD	1E+00

SIZE/WEIGHT RELATION



GROWTH RATE

	CM
Number of recapture	11
Monthly growth rate (cm)	0.23
SD	6.8E-02

Does habitat ecology has a role in sea turtle development?

We found a lot of immature in the three Eparses islands, highlighting the fact that these island are not only important nesting site for green turtle, but also development habitat for immatures, providing both protection and food for them. With its unique mangrove and the high number of immature seen there, Europa is clearly the most important one for immature. Furthermore, it's the only one that shelters a lot of immature of hawksbill that found in the mangrove anemones in large quantity. Juan de Nova also shelters adults of hawksbill that should nest on this island or use it as a feeding habitat. Recapture data are not enough to point out clear conclusions, but it's seems that growth rate are variable according to the development habitat, with higher rate in Glorieuse than in the other two island.