

Sea Turtles in the North-West Atlantic & Caribbean Region

MTSG Regional Report 2018

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Summary :

Countries included in this report are French Guiana, Guadeloupe, Martinique, Mexico, St. Eustach, St. Pierre et Miquelon. It is our hope that more countries will be interested in participating in this initiative.

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REGIONAL OVERVIEW

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1. RMU: *Caretta caretta* Æ Northwest Atlantic

1.1. Distribution, abundance, trends

1.1.1. Nesting sites

The rookeries reported for this compilation are located in Mexico, Cuba, Guatemala and Venezuela (Table 1). Only Mexico and Cuba together host a total 65 nesting beaches for this species; because information gaps regarding the number of nesting beaches in Guatemala and Venezuela, they are not included in this report (Figure 1). These countries report nesting beaches with more than 1,000 nests per year for the period 2000 . 2016, with a total of 15 major sites and 4 nesting sites considered minor (<20 nests/yr). The total estimated length of the nesting beaches in these countries is 266 km, where even more than 150 nesting females per year may be recorded (Cuba).

The recent trends (last 20 years) at major nesting sites (Mexico and Cuba) is going up (approximately 6%/year, 2000-2016), with the oldest documented abundance of nests/year of 8 and 58 in 1983 and 1998, respectively, in Cuba.

1.1.2. Marine areas

Pelagic foraging grounds for this species are reported in Grenada and Venezuela (Table 1), and benthic foraging grounds reported in Mexico, Cuba, Grenada and Venezuela. Telemetry tracking of is reported for individuals from Mexico and Cuba, with also data of mark-recapture projects in these same countries plus Venezuela. In Mexico there is long-term monitoring project at foraging sites from 1988 and ongoing.

1.2. Other biological data

Please see Table 1 . Main Table.

1.3. Threats

1.3.1. Nesting sites

Please see Table 1 . Main Table.

1.3.2. Marine areas

Please see Table 1 . Main Table.

1.4. Conservation

This species is protected under national law in all the countries that contributed to this report (Mexico, Cuba, Guatemala, Grenada and Venezuela), and there are more than 10 long-term conservation projects particularly in Mexico, Cuba and Venezuela. See Table 3 in the country chapters for individual conventions and laws applied to sea turtles in each country.

2. RMU: *Dermochelys coriacea* Æ Northwest Atlantic

2.1. Distribution, abundance, trends

2.1.1. Nesting sites

Nine countries in this region report nesting activity of *D. coriacea* in some of their beaches (Cuba, French Guiana, Grenada, Guadeloupe, Guatemala, Martinique, Mexico, St. Eustatius and Venezuela), with more than 15 nesting beaches, of which 2 are considered major sites (Grenada and French Guiana) with more than 800 nests/year (2013 . 2017), and more than 10 minor sites (Cuba, French Guiana, Grenada, Mexico, St. Eustatius and Venezuela) with less than 25 nests/year (Figure 2).

The estimated total length of nesting beach for this species was reported as little more than 55 km, hosting between 100 and 250 nesting females per year, particularly in French Guiana, Grenada and St. Eustatius. The recent trend for these rookeries is positive and considering the oldest documented abundance of 10 nests in 2002 in St. Eustatius and French Guiana.

2.1.2. Marine areas

Pelagic foraging grounds for this species are reported in Cuba, French Guiana, Mexico and Venezuela; and benthic foraging grounds only in French Guiana and Venezuela. There are big information gaps regarding the usage of marine areas this species does in this region, reporting no published information on growth rates, remote tracking, foraging ecology and mark-recapture studies.

In Venezuela there is a long-term monitoring project at foraging grounds that started in 2000 and it is still operating.

2.2. Other biological data.

Please see Table 1 . Main Table.

2.3. Threats

2.3.1. Nesting sites

Please see Table 1 . Main Table.

2.3.2. Marine areas

Please see Table 1 . Main Table.

2.4. Conservation.

Please see Table 1 for national laws and Table 3 in the country chapters for international conventions. The 67% of the countries included in this Report protect *D. coriacea* under national law (6/9).

Together Grenada, St. Eustatius and Venezuela report 4 long-term conservation projects that started in 2002 and are still ongoing.

3. RMU: *Chelonia mydas* Æ Northwest Atlantic.

3.1. Distribution, abundance, trends.

3.1.1. Nesting sites.

Chelonia mydas is also a widely distributed species in this RMU, it was reported by 8 different countries (Cuba, French Guiana, Grenada, Guatemala, Martinique, Mexico, St. Eustatius and Venezuela), and it is certainly the species with the highest nesting abundance in the region with an average of more 5,000 nests/year (2000-2016) in tens of nesting beaches (Table 1). For this RMU there are reported 23 major nesting sites and at least 8 minor sites (<50 nests/yr) (Figure 3).

The total length of the nesting beaches is >400 km in only 5 of the countries, and these littorals receive between 175 and 4200 nesting females per year. The recent trends for Mexico, Cuba and Venezuela is positive, with increases of more than 15% per year (2000-2016), and the oldest documented abundance of 20 nests/yr in Cuba and 200 in Venezuela.

3.1.2. Marine areas.

Venezuela and French Guiana reported pelagic foraging grounds for this species, and five countries more reported to host benthic foraging grounds for adults and juveniles (Table 1). It is reported the availability of studies on several aspects of this species in marine areas, including stocks defined by genetic markers, remote tracking, foraging ecology and mark-recapture.

In at least four countries (Cuba, Guatemala, Mexico, St. Eustatius) exist long-term monitoring projects at foraging sites, all of them started in 2001 and still ongoing.

3.2. Other biological data.

Please see Table 1 . Main Table.

3.3. Threats.

3.3.1. Nesting sites

Please see Table 1 . Main Table.

3.3.2. Marine areas

Please see Table 1 . Main Table.

3.4. Conservation.

In this RMU six countries reported to have protection under national law for this species (Table 1), with at least 10 long-term conservation projects that operate since 1990 and still ongoing (Cuba, Mexico, St. Eustatius and Venezuela).

See Table R in the country chapters for individual conventions and laws applied to sea turtles in each country.

4. RMU: *Eretmochelys imbricata* Æ Northwest Atlantic

4.1. Distribution, abundance, trends

4.1.1. Nesting sites

This species was reported by seven countries in the region (Cuba, Grenada, Guatemala, Martinique, Mexico, St. Eustatius and Venezuela). Reproductive values are reported by these countries having close to 1,000 nests/year (1995 . 2016) with at least 13 important major nesting sites (Cuba, Grenada, Guatemala, Mexico and St. Eustatius) and at least other 12 minor sites in those countries, plus Venezuela (Figure 4).

The total length of the nesting beaches in the countries that reported the presence of this species is more than 400 km, receiving between 90 and even more than 1000 nesting females per year. The recent trend for this species in Cuba is up (1998 . 2016), and for Mexico in slightly going down (1995 . 2010), with the oldest documented abundance between 10 and 300 nests/year in 1983 (Cuba, Mexico, St. Eustatius and Venezuela).

4.1.2. Marine areas

Mexico and Venezuela reported pelagic foraging grounds, and these same countries plus Cuba, Grenada, Guatemala, St. Eustatius and Venezuela also reported benthic foraging grounds). There are several studies for this species in marine areas, including mark-recapture, foraging ecology and remote tracking. In all these countries there are long-term monitoring projects at foraging sites (1992 . ongoing).

4.2. Other biological data

Please see Table 1 . Main Table.

4.3. Threats

4.3.1. Nesting sites

Please see Table 1 . Main Table.

4.3.2. Marine areas

Please see Table 1 . Main Table.

4.4. Conservation.

All the above-mentioned countries reported to have national law to protect *E. imbricata*. There are more than nine long-term conservation projects that have been operating since 1990 and are still ongoing in Cuba, Mexico, St. Eustatius and Venezuela.

See Table R in the country chapters for individual conventions and laws applied to sea turtles in each country.

5. RMU: *Lepidochelys kempii* Æ Northwest Atlantic

5.1. Distribution, abundance, trends

5.1.1. Nesting sites

This species is the most restricted one, it is circumscribed to the Gulf of Mexico. For this report, Mexican littoral in the Gulf of Mexico is recognized to host several nesting sites, with its main beach at Rancho Nuevo, northwest Gulf of Mexico. In recent years the average of nests per year is around 12,000 (2009 . 2015), with three major nesting sites and seven minor ones.

The total length of the nesting beach is 212 km in Mexico, hosting more than 5,000 nesting females per year. The trend is clearly positive (1995 . 2015).

5.1.2. Marine areas

The Gulf of Mexico's waters host important pelagic and benthic foraging areas for this species. It is one of the most studied species in this RMU, existing a huge variety of in-water studies and long-term projects occurring in this area.

The recovery of its populations is one an example of successful multinational collaboration and the capacity of recovery by these species.

5.2. Other biological data

Please see Table 1 . Main Table.

5.3. Threats

5.3.1. Nesting sites

Please see Table 1 . Main Table.

5.3.2. Marine areas

Please see Table 1 . Main Table.

5.4. Conservation

Mexico and U. S. have national law that protect this species all over its distribution range in the RMU. The bi-national conservation project for this species started in 1975 and it is still ongoing.

See Table R in the country chapters for individual conventions and laws applied to sea turtles in each country.

6. RMU: *Lepidochelys olivacea* Æ Northwest Atlantic

6.1. Distribution, abundance, trends

6.1.1. Nesting sites

For this species, only French Guiana and Venezuela reported to have nesting sites along their littoral (Table 1). The recent trend in French Guiana is of almost 3,000 nests/year (2008 . 2016), with 2 major nesting sites and equal number of minor sites.

The estimated average number of nesting females in this country is 1,700 (2009 . 2016), with 1.3 nests per female per season. The recent trend reported for this species is stable, with the oldest documented abundance of for more than 3,000 nests per year in French Guiana.

6.1.2. Marine areas

Both French Guiana and Venezuela reported to have benthic foraging grounds for adults, but only the former reported to host pelagic foraging grounds. There is not much published information regarding the ecology and population features of this species in the RMU.

6.2. Other biological data

Please see Table 1 . Main Table.

6.3. Threats

6.3.1. Nesting sites

Please see Table 1 . Main Table.

6.3.2. Marine areas

Please see Table 1 . Main Table.

6.4. Conservation

At least Venezuela has protection under national law for this species, and this same country has a long-term conservation project that started in 2009.

See Table R in the country chapters for individual conventions and laws applied to sea turtles in each country.

Table 1. Main Table.

RMU	EI-NW-ATL	Country Chapters from which the info is taken	LK-NW-ATL	Country Chapters from which the info is taken	LO-NW-ATL	Country Chapters from which the info is taken	CM-NW-ATL	Country Chapters from which the info is taken	CC-NW-ATL	Country Chapters from which the info is taken	DC-NW-ATL	Country Chapters from which the info is taken
Occurrence												
Nesting sites	Y	Mexico, Cuba, Grenada, Guatemala, St. Eustatius, Venezuela, Martinique	Y	Mexico	Y	Venezuela, FG	Y	Mexico, Cuba, Grenada, Guatemala, St. Eustatius, Venezuela, FG, Martinique	Y	Mexico, Cuba, Guatemala, Venezuela	Y	Mexico, Cuba, Guatemala, Grenada, St. Eustatius, Venezuela, FG, Guadeloup, Martinique
Pelagic foraging grounds	Y	Mexico, Venezuela	Y	Mexico	Y	FG	Y	Venezuela, FG	Y	Grenada, Venezuela	Y	Mexico, Cuba, Venezuela, FG
Benthic foraging grounds	Y	Mexico, Cuba, Grenada, Guatemala, St. Eustatius, Venezuela	Y	Mexico	Y (A)	Venezuela, FG	Y (JA)	Mexico, Cuba, Grenada, Guatemala, St. Eustatius, Venezuela, FG	Y	Mexico, Cuba, Grenada, Venezuela	Y	Venezuela, FG
Key biological data												
Nests/yr: recent average (range of years)	940.1 (1995-2016(MEX), 2010-2015)	Mexico, Cuba, St. Eustatius, Venezuela, Guadeloup	12000 (2009-2015)	Mexico	2997 (2008-2016)	FG	>5000 (2000-2016)	Mexico, Cuba, St. Eustatius, Venezuela, FG, Guadeloup	>1000 (2000-2016)	Mexico, Cuba, Venezuela	847 (GREN, 2010-2014); 3-10 (StEUS, VEN)	Grenada, St. Eustatius, Venezuela, Barbados, FG, Guadeloup

Nests/yr: recent order of magnitude	10->500	Mexico, Cuba, St. Eustatius, Venezuela, Guadeloup	n/a		1586-3955	FG	up to 50; 2,500-5000 (2000-2016)	Mexico, Cuba, Grenada, St. Eustatius, Venezuela, FG	150-1500	Mexico, Cuba, Venezuela	<25	Mexico, Cuba, St. Eustatius, Venezuela, guadeloup
Number of "major" sites (>20 nests/yr AND >10 nests/km yr)	13	Mexico, Cuba, Grenada, Guatemala, St. Eustatius	3	Mexico	2	FG	23	Mexico, Cuba, St. Eustatius, FG	15	Mexico, Cuba	2	Grenada, FG
Number of "minor" sites (<20 nests/yr OR <10 nests/km yr)	12	Mexico, Cuba, St. Eustatius, Venezuela, Guadeloup	7	Mexico	2	FG	8	Mexico, Cuba, St. Eustatius, FG	4	Cuba, Venezuela	13	Mexico, Cuba, Grenada, St. Eustatius, Venezuela, FG
Nests/yr at "major" sites: recent average (range of years)	100-500 (2010-2016)	Mexico, Cuba	12000 (2009-2015)	Mexico	n/a		>3,500 (2000-2016)	Mexico, Cuba	253.5 (2000-2016)	Mexico, Cuba	847 (2013-2017)	Grenada
Nests/yr at "minor" sites: recent average (range of years)	5-10 (2010-2016)	St. Eustatius, Venezuela	n/a		n/a		<50	Mexico, Cuba, St. Eustatius	20 (2010-2015)	Cuba	<20	Mexico, St. Eustatius
Total length of nesting sites (km)	434	Mexico, Cuba, Guatemala, St. Eustatius, Venezuela	212	Mexico	n/a		403	Mexico, Cuba, Guatemala, St. Eustatius, Venezuela.	266.3	Mexico, Cuba, Guatemala, Venezuela	57.9	Guatemala, Grenada, St. Eustatius, Venezuela.
Nesting females / yr	90 - >1000	Mexico, Cuba, St. Eustatius	5000	Mexico	1700 (2009-2016)	FG	175-4200	Mexico, Cuba, St. Eustatius, Venezuela, FG,Guadaloup	167	Cuba	100-250	Grenada, St. Eustatius, FG

Nests / female season (N)	1.975 (>500); 4.1(173, Guadelup)	Mexico, Cuba, Guadeloup	2	Mexico	1,3 (2012)	FG	2.9 (>3,500)	Mexico, Cuba, FG, Guadeloup	2.165	Mexico, Cuba	1 to 8	Grenada, FG Guadeloup
Female remigration interval (yrs) (N)	2.805 (>500); 2.47(441, Guadelup)	Mexico, Cuba	n/a		n/a		2.614 (>10,000)	Mexico, Cuba, St. Eustatius, Venezuela, Guadeloup	3.16 (>1000)	Mexico, Cuba	2 to 5	Grenada, Guadeloup
Sex ratio: Hatchlings (F / Tot) (N)	n/a		n/a		n/a		0.8 (34)	Cuba	0.615	Cuba	n/a	
Sex ratio: Immatures (F / Tot) (N)	0.39 (102)	Mexico	n/a		n/a		n/a		n/a		n/a	
Sex ratio: Adults (F / Tot) (N)	0.79 (>5000)	Cuba	n/a		n/a		n/a		n/a		n/a	France
Min adult size, CCL or SCL (cm)	181.45 CCL (77, Guadelupe)	Mexico, St. Eustatius, Guadelup	63.5 CCL	Mexico	n/a		92.5	Mexico, Cuba, St. Eustatius, Venezuela, Guadeloup, Martinique	80-85	Cuba	110-145	Grenada, St. Eustatius, France, Guadeloup, Martinique
Age at maturity (yrs)	15-20	Mexico	14-25	Mexico	n/a		14-30 ys	Mexico, St. Eustatius	n/a		n/a	
Clutch size (n eggs) (N)	142.5 (>1000)	Mexico, Cuba, Guatemala, St. Eustatius, Guadeloup	95	Mexico	n/a		127.83	Mexico, Cuba, St. Eustatius, Venezuela, FG, Guadeloup	113.69	Mexico, Cuba, Guatemala	80 (>300)	Grenada, St. Eustatius, Guadeloup, Martinique
Emergence success (hatchlings/egg) (N)	0.8382 (>5000)	Mexico, Cuba, Guatemala, St. Eustatius, Guadeloup	0.57 (10560)	Mexico	n/a		81.124 (>15,000)	Mexico, Cuba, St. Eustatius, Guadeloup	83.065	Mexico, Cuba, Guatemala	12% (>1500)	St. Eustatius

Nesting success (Nests/ Tot emergence tracks) (N)	0.515(>6500)	Cuba, St. Eustatius	n/a		n/a		0.6-0.7 (17 ys)	Cuba, St. Eustatius	0.67 (18 yr)	Cuba	17% (180)	St. Eustatius
Trends												
Recent trends (last 20 yrs) at nesting sites (range of years)	Slightly Down (MEX,1995-2010); Up (CUB,1998-2016)	Mexico, Cuba	Up (1995-2015)	Mexico	(i) stable		Up ≈19% (2000-2016)	Mexico, Cuba, Venezuela	Up ≈6.7% (2000-2016)	Mexico, Cuba	Up	Grenada, Barbados
Recent trends (last 20 yrs) at foraging grounds (range of years)	n/a		n/a		n/a		n/a		n/a		n/a	France
Oldest documented abundance: nests/yr (range of years)	10-300 (1983)	Mexico, Cuba, St. Eustatius, Venezuela			(iii) 3257	FG	20 (CUB, 1982); 200 (VEN, 1979)	Cuba, Venezuela	8 (1983); 58 (1998)	Cuba	10 (2002)	St. Eustatius, FG
Published studies												
Growth rates	Y	Mexico	Y	Mexico	N	Venezuela	Y	Mexico, Cuba, Martinique	N	Mexico, Cuba	No	St. Eustatius
Genetics	Y	Mexico, Cuba, Guadeloup	N	Mexico	N	Venezuela	Y	Mexico, Cuba, Venezuela, Barbados,FG, Guadeloup, Martinique	Y	Mexico, Cuba	No	St. Eustatius, France, Guadeloup, Martinique
Stocks defined by genetic markers	Y	Mexico, Cuba, Guadeloup	N	Mexico	N	Venezuela	Y	Mexico, Cuba, Venezuela, Barbados,	Y	Cuba	No	St. Eustatius, France, Guadeloup, Martinique

								guadeloup, Martinique				
Remote tracking (satellite or other)	Y	Mexico, Cuba, Guadeloup	Y	Mexico	N	Venezuela, FG	Y	Mexico, Cuba, St. Eustatius, Venezuela, FG, guadeloup, Martinique	Y	Mexico, Cuba	No	St. Eustatius, France, Guadeloup, Martinique
Survival rates	N		N	Mexico	N	Venezuela	Y	Venezuela	N	Mexico, Cuba	No	St. Eustatius
Population dynamics	Y	Mexico, Cuba, Guadeloup	N	Mexico	N	Venezuela	Y	Mexico, Cuba, Venezuela, Guadeloup	Y	Mexico, Cuba	No	St. Eustatius, France, Guadeloup
Foraging ecology (diet or isotopes)	Y	Mexico	Y	Mexico	N	Venezuela	Y	Mexico, Cuba, Venezuela, Barbados, guadeloup, Martinique	N	Mexico, Cuba	No	St. Eustatius, France
Capture-Mark- Recapture	Y	Mexico, Cuba, Venezuela, Martinique	Y	Mexico	N	Venezuela	Y	Mexico, Cuba, St. Eustatius, Venezuela, Barbados, Martinique	Y	Mexico, Cuba, Venezuela	No	St. Eustatius
Threats												
Bycatch: presence of small scale / artisanal fisheries?	Y (PLL, SN, DLL, SN, FP)	Mexico, Cuba, Grenada, Guatemala, St. Eustatius, Venezuela	Y (SN,ST)	Mexico	Y (SN,DN)	Venezuela	Y (PLL, DLL, SN,FP)	Mexico, Cuba, Guatemala, Grenada, St. Eustatius, Venezuela	Y (DLL; SN; DN; Turtle Nets)	Mexico, Cuba, Guatemala, Grenada, Venezuela	Y (DLL; SN; DN; Turtle Nets)	Mexico, Cuba, Guatemala, Grenada, Venezuela

Bycatch: presence of industrial fisheries?	Y (PLL, DLL, ST, MT, FP)	Mexico, Cuba	Y (ST)	Mexico	Y (ST)		Y (PLL, DLL, ST, MT, FP)	Mexico, Cuba, Venezuela	Y	Cuba	Y	Cuba
Bycatch: quantified?	Y	Mexico, Cuba, Guadeloup, Martinique	Y	Mexico	n/a		Y	Mexico, Cuba, Guadeloup	Y	Mexico, Cuba, Saint Pierre et Miquelon	Y	Cuba, Guadeloup
Take. Intentional killing or exploitation of turtles	Y	Mexico, Cuba, Grenada, Venezuela, Guadeloup, Martinique	Y	Mexico	N	Venezuela	Y	Mexico, Cuba, Grenada, Venezuela, guadeloup, Martinique	Y	Mexico, Cuba, Grenada, Venezuela	Y	Grenada, Venezuela
Take. Egg poaching	Y	Mexico, Guatemala, Grenada, Guadelup	Y	Mexico	N	Venezuela	Y	Mexico, Guatemala, Grenada, guadeloup, Martinique	Y	Mexico, Guatemala	Y	Guatemala, Grenada
Coastal Development. Nesting habitat degradation	Y	Mexico, Cuba, Grenada, Guatemala, St. Eustatius, Guadeloup, Martinique	Y	Mexico	Y	Venezuela	Y	Mexico, Cuba, Guatemala, Grenada, St. Eustatius, Guadeloup	Y	Mexico, Cuba, Guatemala	Y	Mexico, Guatemala, Grenada, St. Eustatius, Guadeloup, Martinique
Coastal Development. Photopollution	Y	Mexico, Guatemala, Grenada, St. Eustatius, Guadeloup, Martinique	Y	Mexico	Y	Venezuela	Y	Mexico, Guatemala, Grenada, St. Eustatius, guadeloup, Martinique,	Y	Mexico, Guatemala	Y	Mexico, Guatemala, Grenada, St. Eustatius, Guadeloup, Martinique

Coastal Development. Boat strikes	Y	Mexico, Guatemala, Grenada, St. Eustatius, Guadelup	Y	Mexico	N		Y	Mexico, Guatemala, Grenada, St. Eustatius, guadeloup, Martinique,	Y	Mexico, Guatemala, Grenada, Venezuela	Y	Mexico, Guatemala, Grenada, Venezuela, Guadeloup
Egg predation	Y	Mexico, Cuba, Grenada, Guatemala, Guadeloup, Martinique	Y	Mexico	Y		Y	Mexico, Cuba, Guatemala, Grenada, guadeloup, Martinique,	Y	Mexico, Cuba, Guatemala	Y	Guatemala, Grenada, Guadeloup, Martinique
Pollution (debris, chemical)	Y	Mexico, Grenada, Guatemala, St. Eustatius, Venezuela, Guadeloup, Martinique	Y	Mexico	Y	Venezuela	Y	Mexico, Cuba, Guatemala, Grenada, St. Eustatius, Venezuela, guadeloup, Martinique,	Y	Mexico, Guatemala, Grenada, Venezuela	Y	Mexico, Guatemala, Grenada, St. Eustatius, Venezuela, France, Guadeloup, Martinique
Pathogens	Y	Mexico, St. Eustatius, Venezuela	n/a		n/a		Y	Mexico, Cuba, St. Eustatius, Venezuela, guadeloup, Martinique,	Y	Mexico	Y	St. Eustatius
Climate change	Y	Mexico, Cuba, Grenada, Guatemala, St. Eustatius	Y	Mexico	n/a		Y	Mexico, Cuba, Guatemala, Grenada, St. Eustatius, Venezuela, Barbados	Y	Mexico. Cuba, Guatemala, Grenada	Y	Mexico, Guatemala, Grenada, St. Eustatius

Foraging habitat degradation	Y	Guatemala, St. Eustatius, Venezuela, Guadelup	n/a		N	Venezuela	Y	Mexico, Cuba, Guatemala, Grenada, St. Eustatius, Venezuela, guadeloup, Martinique,	Y		Guatemala, Grenada, Venezuela	Y		Guatemala, Venezuela
Other	Y (see text)	Cuba, Grenada	n/a		n/a		Y (see text)	Cuba	Y (see text)	Cuba		n/a		
Long-term projects (>5yrs)														
Monitoring at nesting sites (period: range of years)	Y (1988-ongoing)	Mexico, Cuba, Grenada, St. Eustatius	Y (1977-ongoing)	Mexico	Y (1999-ongoing)		Y (1988-ongoing)	Mexico, Cuba, St. Eustatius, Venezuela	Y (1988-ongoing)	Mexico, Cuba	Y (1999-ongoing)			Grenada, St. Eustatius
Number of index nesting sites	24	Mexico, Cuba, Grenada, Guatemala, St. Eustatius, Martinique	6	Mexico	>=3		31	Mexico, Cuba, St. Eustatius, Venezuela, Martinique	22	Mexico, Cuba	2			Grenada, St. Eustatius, Martinique
Monitoring at foraging sites (period: range of years)	Y (1992-ongoing)	Mexico, Cuba, Guatemala, St. Eustatius, Venezuela	N	Mexico	N	Venezuela	Y (2001-ongoing)	Mexico, Cuba, Guatemala, St. Eustatius	Y (1988-ongoing)	Mexico	Y(2000-ongoing)			Venezuela
Conservation														

Protection under national law	Y	Mexico, Cuba, Grenada, Guatemala, St. Eustatius, Venezuela, Guadeloup, Martinique	Y	Mexico	Y	Venezuela	Y	Mexico, Cuba, Guatemala, Grenada, St. Eustatius, Venezuela	Y	Mexico, Cuba, Guatemala, Grenada, Venezuela	Y	Mexico, Cuba, Guatemala, Grenada, St. Eustatius, Venezuela
Number of protected nesting sites (habitat preservation) (% nests)	16(71.5%)	Cuba, St. Eustatius, Mexico	50	Mexico	15%		16(85.5%)	Cuba, St. Eustatius, Venezuela	11(43 %)	Cuba, Venezuela	1 (StEUS,100 %); 50% (GREN), 1 (VEN)	Grenada, St. Eustatius, Venezuela
Number of Marine Areas with mitigation of threats	14	Cuba, Grenada, St. Eustatius, Venezuela	0	Mexico	0		13	Cuba, Grenada, St. Eustatius	12	Cuba, Venezuela	3	Grenada, St. Eustatius, Venezuela
N of long-term conservation projects (period: range of years)	>9 (1990-ongoing)	Mexico, Cuba, St. Eustatius, Venezuela	1 (1975-2011)	Mexico	1 (2009-2023)	Venezuela	>10 (1990-ongoing)	Mexico, Cuba, St. Eustatius, Venezuela	>10 (1990-ongoing)	Mexico, Cuba, Venezuela	4 (2002-ongoing)	Grenada, St. Eustatius, Venezuela
In-situ nest protection (eg cages)	Y	Mexico	Y	Mexico	N		Y	Mexico	Y	Mexico	N	Grenada, St. Eustatius
Hatcheries	Y	Mexico, Cuba, Guatemala	Y	Mexico	N		Y	Mexico, Cuba, Guatemala	Y	Mexico, Cuba, Guatemala	N	Grenada, St. Eustatius
Head-starting	Y	Cuba	N	Mexico	?		Y	Mexico	N	Mexico, Cuba	N	Grenada, St. Eustatius
By-catch: fishing gear modifications (eg, TED, circle hooks)	Y	Mexico	Y	Mexico	Y	Venezuela	Y	Mexico	Y	Mexico	Y	Mexico

By-catch: onboard best practices	Y	Mexico, Cuba	Y	Mexico	Y	Venezuela	Y	Mexico, Cuba, Venezuela	Y	Cuba	N	Grenada, St. Eustatius, Venezuela
By-catch: spatio-temporal closures/reduction	Y	Mexico, Cuba	Y	Mexico	N	Venezuela	Y	Mexico, Cuba	Y	Mexico, Cuba	Y	Mexico
Other	Y (see text)	Cuba	N	Mexico	N		Y (see text)	Cuba, Barbados	Y (see text)	Cuba	n/a	

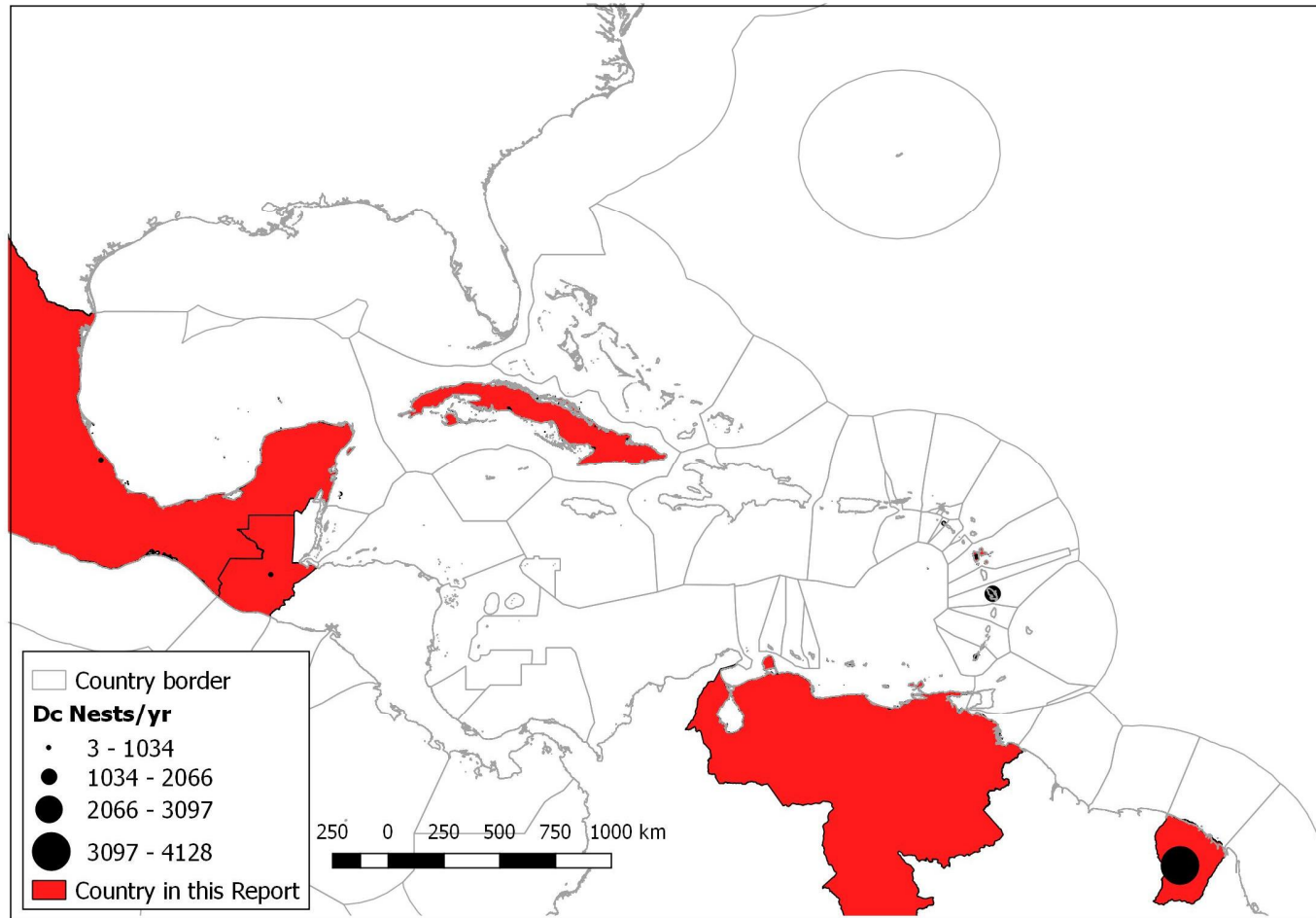


Figure 2. Categorized spatial distribution of the sum of reported average nests per year for leatherback turtles (*Dermochelys coriacea*) in each participant country in the Regional Management Unit Northwest Atlantic.

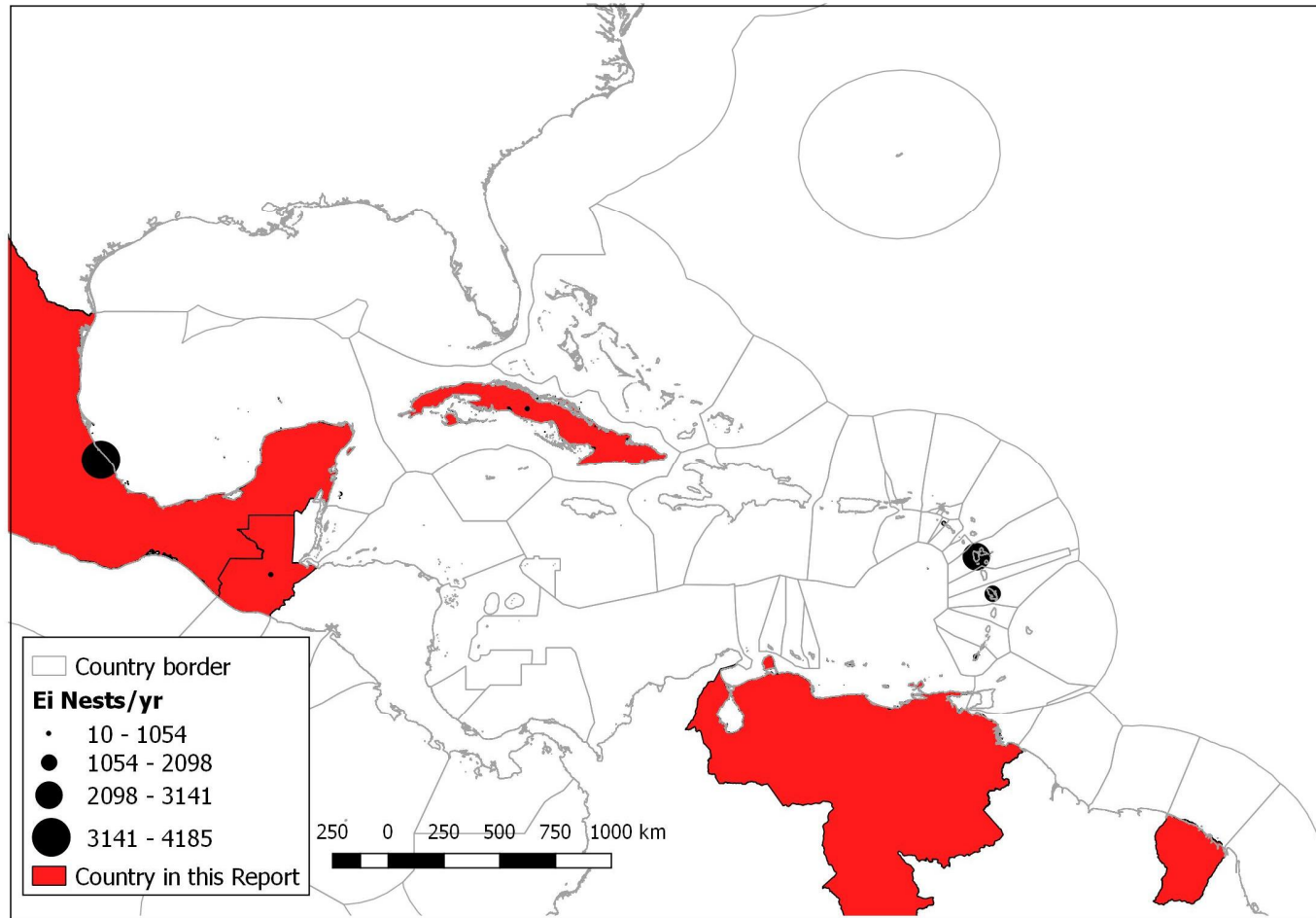


Figure 4. Categorized spatial distribution of the sum of reported average nests per year for hawksbill turtles (*Eretmochelys imbricata*) in each participant country in the Regional Management Unit Northwest Atlantic.

Chapter 1: French Guiana

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Table 1.1. Main biology and conservation aspects of sea turtle Regional Management Units (RMU) occurring in French Guiana.

TOPIC	REGIONAL MANAGEMENT UNIT					
	C. mydas North West Atlantic		D. coriacea North West Atlantic		Lepidochelys olivacea North West Atlantic	
	CM	Ref #	DC	Ref #	LO	Ref #
Occurrence						
Nesting sites	Y	1 to 8; 14	Y	1 to 8; 14; 19	y	1 to 8; 14
Pelagic foraging grounds	N	9;10;11	Y	13;23;21	y	12;16
Benthic foraging grounds	Y	9;10;11	N	13;21;25	y	12;16
Key biological data						
Nests/yr: recent average (range of years)	2530 (2008-2016)	1 to 8; 14	7961 (2008-2016)	1 to 8; 14	2997 (2008-2016)	1 to 8; 14
Nests/yr: recent order of magnitude	809-4634	1 to 8; 14	3244-16309	1 to 8; 14	1586-3955	1 to 8; 14
Number of "major" sites (>20 nests/yr AND >10 nests/km yr)	2	1 to 8; 14	2	1 to 8; 14	2	1 to 8; 14
Number of "minor" sites (<20 nests/yr OR <10 nests/km yr)	2	1 to 8; 14	2	1 to 8; 14	2	1 to 8; 14
Nests/yr at "major" sites: recent average (range of years)						
Nests/yr at "minor" sites: recent average (range of years)						
Total length of nesting sites (km)	20	<i>see note</i>	20	<i>see note</i>	20	<i>see note</i>
Nesting females / yr	886 (2010-2016)	1 to 8; 14	1972 (2009-2016)	1 to 8; 14	1700 (2009-2016)	1 to 8; 14
Nests / female season (N)	2,27 (2012)	5	3,55 (2012)	5	1,3 (2012)	5
Female remigration interval (yrs) (N)	<=3	5;22	2 to 3	22	1.3	<i>see note</i>
Sex ratio: Hatchlings (F / Tot) (N)	n/a		n/a		n/a	
Sex ratio: Immatures (F / Tot) (N)	n/a		n/a		n/a	
Sex ratio: Adults (F / Tot) (N)	n/a		n/a		n/a	

Min adult size, CCL or SCL (cm)						
Age at maturity (yrs)	n/a		n/a		n/a	
Clutch size (n eggs) (N)	n/a		n/a		n/a	
Emergence success (hatchlings/egg) (N)	n/a		n/a		n/a	
Nesting success (Nests/Tot emergence tracks) (N)	n/a		n/a		n/a	
Trends						
Recent trends (last 20 yrs) at nesting sites (range of years)	(iii) decreasing	23	(iii) stable to decreasing (West)	23	(iii) stable	23
Recent trends (last 20 yrs) at foraging grounds (range of years)	n/a		n/a		n/a	
Oldest documented abundance: nests/yr (range of years)	n/a		50 000 (1988;1992)	19	(iii) 3257	18
Published studies						
Growth rates	N		N		N	
Genetics	Y	15	Y	26	Y	30
Stocks defined by genetic markers	N		Y	26	N	
Remote tracking (satellite or other)	Y	9;10;11;14	Y	13;14;20;25	Y	12;16;30
Survival rates	N		N		N	
Population dynamics	N		N		N	
Foraging ecology (diet or isotopes)	N		Y	20;21	N	
Capture-Mark-Recapture	N		N		N	
Threats						
Bycatch: presence of small scale / artisanal fisheries?	Y (SN,DN)	31	Y (SN,DN)	31	Y (SN,DN)	31
Bycatch: presence of industrial fisheries?	Y (ST)	31	Y (ST)	24;31	Y (ST)	31
Bycatch: quantified?	Y ST 0/Yr, N SN DN	31	Y ST 0/Yr, N SN DN	31	Y ST 0/Yr, N SN DN	31
Take. Intentional killing or exploitation of turtles	N		N		N	
Take. Egg poaching	Y	1 to 8	Y	1 to 8	N	

Coastal Development. Nesting habitat degradation	Y		Y		Y	
Coastal Development. Photopollution	Y	1 to 8	Y	1 to 8	Y	1 to 8
Coastal Development. Boat strikes	N		N		N	
Egg predation	Y	1 to 8	Y	1 to 8	Y	1 to 8
Pollution (debris, chemical)	NA		NA		NA	
Pathogens	Y	17	n/a		n/a	
Climate change	n/a		n/a		n/a	
Foraging habitat degradation	n/a		n/a		n/a	
Other	n/a		n/a		n/a	
Long-term projects (>5yrs)						
Monitoring at nesting sites (period: range of years)	Y (1999-ongoing)	1 to 8	Y (1987-ongoing)	1 to 8	Y (1999-ongoing)	1 to 8
Number of index nesting sites	>=3	1 to 8	>=3	1 to 8	>=3	1 to 8
Monitoring at foraging sites (period: range of years)	N		N		N	
Conservation						
Protection under national law	Y	27	Y	27	Y	27
Number of protected nesting sites (habitat preservation) (% nests)	15%	<i>see note</i>	15%	<i>see note</i>	15%	<i>see note</i>
Number of Marine Areas with mitigation of threats	0		0		0	
N of long-term conservation projects (period: range of years)	1 (2009-2023)	28;29	1 (2009-2023)	28;29	1 (2009-2023)	28;29
In-situ nest protection (eg cages)	N		N		N	
Hatcheries	N		N		N	
Head-starting	N		N		N	
By-catch: fishing gear modifications (eg, TED, circle hooks)	Y	32	Y	32	Y	32
By-catch: onboard best practices	Y	33	Y	33	Y	33
By-catch: spatio-temporal closures/reduction	N		N		N	
Other	N		N		N	

Note: **Tab 1 Line 16 Total length of nesting sites** / There is no report which details the length of the beaches. They are evaluated in agreement with the monitoring partners. Moreover, in French Guiana the beaches come back and forth because of the phases of erosion /accretion. So 20km is an approximate size of the nesting beaches

Number of protected nesting sites (habitat preservation - line 67) In theory, the nesting sites located in Amana Natural Reserve are protected

Female migration interval (years) *Lepidochelys coriacea*, 1,3 years > Calculated on data from CMR

Table 1.2. Sea turtle nesting beaches in the French Guiana.

	Index site	Species	Nests/yr: recent average (2014-2016)	Crawls/ yr: recent average	Western limit		Eastern limit		Central point		Length (km)	% Monitored	Reference #	Monitoring Level (1-2)	Monitoring Protocol (A-F)
					Long	Lat	Long	Lat	Long	Lat					
NW Atlantic	Awala Yalimapo	Chelonia mydas	1333 (2014-2016)						53.947 422	5.7457 61	3.00	100	see note	level 1	Day patrols 3-5 times per week
NW Atlantic	Azteque	Chelonia mydas	160 (2014-2016)						53.742 747	5.6919 44	5.00	100	see note	level 2	Other
NW Atlantic	Kourou	Chelonia mydas	51 (2015-2016)						52.644 328	5.1736 75	5.00	90	see note	level 2	Weekly day patrols
NW Atlantic	Ile de Cayenne	Chelonia mydas	54 ((2014-2016)						52.270 484	4.9227 20	7.50	80	see note	level 2	Daily patrols
NW Atlantic	Awala Yalimapo	Dermochelys coriacea	655 (2014-2016)						53.947 422	5.7457 61	3.00	100	see note	level 1	Day patrols 3-5 times per week
NW Atlantic	Azteque	Dermochelys coriacea	3 (2014-2016)						53.742 747	5.6919 44	5.00	100	see note	level 2	Other
NW Atlantic	Kourou	Dermochelys coriacea	48 (2015-2016)						52.644 328	5.1736 75	5.00	90	see note	level 2	Weekly day patrols
NW Atlantic	Ile de Cayenne	Dermochelys coriacea	4077 (2014-2016)						52.270 484	4.9227 20	7.50	80	see note	level 1	Daily patrols
NW Atlantic	Awala Yalimapo	Lepidochelys olivacea	8 (2014-2016)						53.947 422	5.7457 61	3.00	100	see note	level 1	Night patrols 3-5 times per week

NW Atlantic	Azteque	Lepidochelys olivacea	4 (2014-2016)					53.742 747	5.6919 44	5.00	100	see note	level 2	Other
NW Atlantic	Kourou	Lepidochelys olivacea	35 (2015-2016)					52.644 328	5.1736 75	5.00	90	see note	level 2	Weekly day patrols
NW Atlantic	Ile de Cayenne	Lepidochelys olivacea	2918 (2014-2016)					52.270 484	4.9227 20	7.50	80	see note	level 1	Daily patrols

Tab 1 Line 16 Total length of nesting sites / Tab 2 - Beaches length

There is no report which details the length of the beaches. They are evaluated in agreement with the monitoring partners. Moreover, in French Guiana the beaches come back and forth because of the phases of erosion /accretion. So 20km is an approximate size of the nesting beaches.

Table 1.3. International conventions protecting sea turtles and signed in French Guiana.

International Conventions	Signed	Binding	Compliance measured and reported	Species	Conservation actions	Relevance to sea turtles
CBD: Convention on Biological Diversity (1992).	Y	Y	Y	ALL	To conserve the biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, taking into account all rights over those resources and to technologies, and by appropriate funding.	Marine turtle conservation is relevant to the agreement given the species' importance to overall biological diversity. For example, text in Article 8 states that each contracting party shall: "promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings" (CBD, 1992).
CMS: Convention on the Conservation of Migratory Species of Wild Animals (1979). Also known as the Bonn Convention. CMS instruments can be both binding and non-binding.	Y	Y	Y	ALL	To conserve migratory species and take action to this end, paying special attention to migratory species the conservation status of which is unfavourable, and taking individually or in co-operation appropriate and necessary steps to conserve such species and their habitat.	All seven species of marine turtles are listed within the convention text (CMS, 2014). A specific agreement has been developed for marine turtles under CMS. The Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (IOSEA), for example, to which the UK and France are individual EU country signatories. CMS has a specific resolution on bycatch detailing various

						actions needed to reduce bycatch of migratory species that will include marine turtles (<i>UNEP/CMS/Resolution 9.18 on Bycatch</i>).
Convention on the Conservation of European Wildlife and Natural Habitats (1979). Also known as the Bern Convention and is binding.	Y	Y	Y	ALL	To conserve wild flora and fauna and their natural habitats, especially those species and habitats whose conservation requires the co- operation of several States, and to promote such co-operation.	Conserving European natural heritage is a key element of this convention (CoE, 2014) and this will include marine turtle populations in the Mediterranean, for example. The EU aims to fulfil its obligations under the Bern Convention through its Habitats Directive (a directive designed to ensure the conservation of rare, threatened, or endemic animal and plant species) .
CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora.	Y	Y	Y	ALL	An international agreement between governments, the aim of which is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.	All seven species listed in Appendix I of CITES.
Convention of Carthagene (1986)	Y	Y	Y	ALL	A Caribbean agreement for the protection and enhancement of the Caribbean Sea	

Table 1.4. Sea turtle conservation projects in French Guiana.

#	RMU	Country	Region / Location	Project Name or descriptive title	Key words	Start date	End date	Leading organisation	Public/ Private	Collaboration with	Reports / Information material	Current Sponsors	Primary Contact (name and Email)	Other Contacts (name and Email)
T4.1		France	Guyane	Base de données de pontes tortues marines de Guyane	counting, marking	1987	still going	DEAL Guyane/ ONCFS	Private	8 Signatories of the convention: DEAL, ONCFS, KWATA, CNRS-IPHC, PNRG, Kulalasi, WWF, SEPANGUY			Hélène DELVAUX, helene.delvaux@developpement-durable.gouv.fr	Rachel BERZINS Rachel.berzins@oncfs.gouv.fr
T4.2		France	Guyane	Pépinière Interdisciplinaire Guyane (PIG): ANTIDOT project	satellite tracking, genetic	2014	still going	CNRS-IPHC	Public/ Private	Institut Pasteur Guyane, BGenDiv, Université Fédéral Minas Gerais			Damien Chevallier damien.chevallier@iphc.cnrs.fr	Benoît de Thoisy benoit@kwata.net

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Chapter 2: Guadeloup

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Table 2.1. Main biology and conservation aspects of sea turtle Regional Management Units (RMU) occurring in Guadeloup.

Topic	REGIONAL MANAGEMENT UNIT									
	C. mydas North West Atlantic		D. coriacea North West Atlantic		Eretmochelys imbricata North West Atlantic		Caretta caretta North West Atlantic		Lepidochelys olivacea North West Atlantic	
	CM	Ref #	DC	Ref #	Ei	Ref #	CC	Ref #	LO	Ref #
Occurrence										
Nesting sites	Y	18	Y	18	Y	18	N		N	
Pelagic foraging grounds	Y	13	n/a		Y	13	n/a		n/a	
Benthic foraging grounds	Y	13	n/a		Y	13	n/a		n/a	
Key biological data										
Nests/yr: recent average (range of years)	1315 (2007-2008)	7, Tab 4,1	353 (2007-2008)	7, Tab 4,1	3061 (2007-2008)	7, Tab 4,1	n/a		n/a	
Nests/yr: recent order of magnitude	179 - 2873	7	64 - 870	7	1435 - 6415	7	n/a		n/a	
Number of "major" sites (>20 nests/yr AND >10 nests/km yr)	n/a		n/a		n/a		n/a		n/a	
Number of "minor" sites (<20 nests/yr OR <10 nests/km yr)	n/a		n/a		n/a		n/a		n/a	
Nests/yr at "major" sites: recent average (range of years)	n/a		n/a		n/a		n/a		n/a	
Nests/yr at "minor" sites: recent average (range of years)	n/a		n/a		n/a		n/a		n/a	
Total length of nesting sites (km)	n/a		n/a		n/a		n/a		n/a	
Nesting females / yr	n/a		n/a		n/a		n/a		n/a	
Nests / female season (N)	2,93 (9 populations)	25, 26	6,17 (4 populations)	25, 26	4,5 (212 ind.)	25, 27	n/a		n/a	
Female remigration interval (yrs) (N)	2,86 (9 populations)	25, 26	2,28 (5 populations)	25, 26	2,69 (86)	25, 27	n/a		n/a	
Sex ratio: Hatchlings (F / Tot) (N)	0,71 (55)	16	n/a		0,71 (35)	16	n/a		n/a	
Sex ratio: Immatures (F / Tot) (N)	n/a		n/a		n/a		n/a		n/a	
Sex ratio: Adults (F / Tot) (N)	n/a		n/a		n/a		n/a		n/a	
Min adult size, CCL or SCL (cm)	75 CCL	Tab 4,1	87 CCL	Tab 4,1	73,5 CCL	Tab 4,1	n/a		n/a	
Age at maturity (yrs)	n/a		n/a		n/a		n/a		n/a	

Clutch size (n eggs) (N)	112,8 (24 populations)	22	100	22	155 (93 nests)	25, 27	n/a		n/a	
Emergence success (hatchlings/egg) (N)	0,81 (29)	16	n/a		0,91 (19)	16	n/a		n/a	
Nesting success (Nests/ Tot emergence tracks) (N)	n/a		n/a		n/a		n/a		n/a	
Trends										
Recent trends (last 20 yrs) at nesting sites (range of years)	n/a		n/a		n/a		n/a		n/a	
Recent trends (last 20 yrs) at foraging grounds (range of years)	n/a		n/a		n/a		n/a		n/a	
Oldest documented abundance: nests/yr (range of years)	n/a		n/a		n/a		n/a		n/a	
Published studies										
Growth rates	N		N		N		N		N	
Genetics	Y	9	Y	10	Y	11	N		N	
Stocks defined by genetic markers	Y	9	Y	10	Y	11	N		N	
Remote tracking (satellite or other)	Y	5, 12, 13, 1	Y	15	Y	17	N		N	
Survival rates	N		N		N		N		N	
Population dynamics	Y	7, 17, 16	Y	7, 17	Y	14, 16, 7, 17	N		N	
Foraging ecology (diet or isotopes)	Y	1, 12,13	N		N		N		N	
Capture-Mark-Recapture	Y	1	N		N		N		N	
Threats										
Bycatch: presence of small scale / artisanal fisheries?	Y (SN, FP)	6, 8	Y (SN, FP)	6, 8	Y (SN, FP)	6, 8	Y (SN, FP)	6, 8	Y (SN, FP)	6, 8
Bycatch: presence of industrial fisheries?	N		N		N		N		N	
Bycatch: quantified?	500 (SN, FP)	8, 2, 3, 6	n/a	8, 2, 3, 6	200 (SN, FP)	8, 2, 3, 6	n/a		n/a	
Take. Intentional killing or exploitation of turtles	Y	2, 3	n/a		Y	2, 3	n/a		n/a	
Take. Egg poaching	Y	2, 3	n/a		Y	2, 3	n/a		n/a	
Coastal Development. Nesting habitat degradation	Y	2, 3, 18	Y	2, 3, 18	Y	2, 3, 18	n/a		n/a	
Coastal Development. Photopollution	Y	2, 3, 19	Y	2, 3, 19	Y	2, 3, 19	n/a		n/a	
Coastal Development. Boat strikes	Y	2, 3	Y	2, 3	Y	2, 3	Y	2, 3	Y	2, 3

Egg predation	Y	2, 3, 4	Y	2, 3, 4	Y	2, 3, 4	n/a		n/a	
Pollution (debris, chemical)	Y	2, 3, 21	Y	2, 3, 21	Y	2, 3, 21	Y	2, 3	Y	2, 3
Pathogens	Y	2, 3, 20	n/a		n/a		n/a		n/a	
Climate change	n/a		n/a		n/a		n/a		n/a	
Foraging habitat degradation	Y	2, 3, 23	n/a		Y	24	n/a		n/a	
Other	N		N		N		n/a		n/a	
Long-term projects (>5yrs)										
Monitoring at nesting sites (period: range of years)	Y (1999-ongoing)		Y (1999-ongoing)		Y (1999-ongoing)		n/a		n/a	
Number of index nesting sites	n/a		n/a		n/a		n/a		n/a	
Monitoring at foraging sites (period: range of years)	Y (2003 - 2014)		n/a		Y (2003 - 2014)		n/a		n/a	
Conservation										
Protection under national law	Y	28	Y	28	Y	28	Y	28	Y	28
Number of protected nesting sites (habitat preservation) (% nests)	n/a		n/a		n/a		n/a		n/a	
Number of Marine Areas with mitigation of threats	n/a		n/a		n/a		n/a		n/a	
N of long-term conservation projects (period: range of years)	>1 (1999-2027)	28	>1 (1999-2027)	28	>1 (1999-2027)	28	>1 (1999-2027)	28	>1 (1999-2027)	28
In-situ nest protection (eg cages)	N		N		N		n/a		n/a	
Hatcheries	N		N		N		n/a		n/a	
Head-starting	N		N		N		n/a		n/a	
By-catch: fishing gear modifications (eg, TED, circle hooks)	N		N		N		N		N	
By-catch: onboard best practices	N		N		N		N		N	
By-catch: spatio-temporal closures/reduction	N		N		N		N		N	
Other	N		N		N		N		N	

Note: No idea if increasing or declining, Data not published yet.

Table 2.2. Sea turtle nesting beaches in the Guadeloup.

RMU / Nesting beach name	Index site	Species	Nests/yr: recent average (range of years)	Crawls/yr: recent average (2012, 2013, 2014)	Western limit		Eastern limit		Central point		Length (km)	% Monitored	Reference #	Monitoring Level (1-2)	Monitoring Protocol (A-F)
					Long	Lat	Long	Lat	Long	Lat					
North West Atlantic	Secteur 1 : Grand Cul-de-Sac Marin	Eretmochelys imbricata		1105.3					61.535331	16.332888		89	T4.2	1	
North West Atlantic	Secteur 1 : Grand Cul-de-Sac Marin	Dermochelys coriacea		85.0					61.535331	16.332888		89	T4.2	1	
North West Atlantic	Secteur 1 : Grand Cul-de-Sac Marin	Chelonia mydas		38.2					61.535331	16.332888		89	T4.2	1	
North West Atlantic	Secteur 2 : Basse Terre - Côte sous le vent	Eretmochelys imbricata		515.3					61.774859	16.151056		90	T4.2	1	
North West Atlantic	Secteur 2 : Basse Terre - Côte sous le vent	Dermochelys coriacea		59.6					61.774859	16.151056		90	T4.2	1	
North West Atlantic	Secteur 2 : Basse Terre - Côte sous le vent	Chelonia mydas		47.9					61.774859	16.151056		90	T4.2	1	
North West Atlantic	Secteur 3 : Basse Terre - Côte au vent	Eretmochelys imbricata		126.3					61.564317	16.031895		69	T4.2	1	
North West Atlantic	Secteur 3 : Basse Terre - Côte au vent	Dermochelys coriacea		82.2					61.564317	16.031895		69	T4.2	1	
North West Atlantic	Secteur 3 : Basse Terre - Côte au vent	Chelonia mydas		22.6					61.564317	16.031895		69	T4.2	1	
North West Atlantic	Secteur 4 : Façade littorale nord-est de Grande Terre	Eretmochelys imbricata		126.3					61.370591	16.219534		82	T4.2	1	
North West Atlantic	Secteur 4 : Façade littorale nord-est de Grande Terre	Dermochelys coriacea		0.6					61.370591	16.219534		82	T4.2	1	
North West Atlantic	Secteur 4 : Façade littorale nord-est de Grande Terre	Chelonia mydas		0.7					61.370591	16.219534		82	T4.2	1	
North West Atlantic	Secteur 5 : Façade littorale sud-est de Grande Terre	Eretmochelys imbricata		52.5					61.374918	16.340537		67	T4.2	1	

North West Atlantic	Secteur 5 : Façade littorale sud-est de Grande Terre	Dermochelys coriacea		0.0				61.3749 18	16.34053 7		67	T4.2	1
North West Atlantic	Secteur 5 : Façade littorale sud-est de Grande Terre	Chelonia mydas		157.8				61.3749 18	16.34053 7		67	T4.2	1
North West Atlantic	Secteur 6 : la Désirade et Petite Terre	Eretmochelys imbricata		398.7				61.0966 39	16.28912 4		100	T4.2	1
North West Atlantic	Secteur 6 : la Désirade et Petite Terre	Dermochelys coriacea		42.2				61.0966 39	16.28912 4		100	T4.2	1
North West Atlantic	Secteur 6 : la Désirade et Petite Terre	Chelonia mydas		701.1				61.0966 39	16.28912 4		100	T4.2	1
North West Atlantic	Secteur 7 : Marie-Galante	Eretmochelys imbricata		1975.8				61.3275 70	15.92918 7		67	T4.2	1
North West Atlantic	Secteur 7 : Marie-Galante	Dermochelys coriacea		0.3				61.3275 70	15.92918 7		67	T4.2	1
North West Atlantic	Secteur 7 : Marie-Galante	Chelonia mydas		5.3				61.3275 70	15.92918 7		67	T4.2	1
North West Atlantic	Secteur 8 : Iles des Sainte	Eretmochelys imbricata		32.6				61.6032 23	15.92918 7		85	T4.2	1
North West Atlantic	Secteur 8 : Iles des Sainte	Dermochelys coriacea		0.3				61.6032 23	15.85385 8		85	T4.2	1
North West Atlantic	Secteur 8 : Iles des Sainte	Chelonia mydas		4.3				61.6032 23	15.85385 8		85	T4.2	1
North West Atlantic	Secteur 10 : île de Saint Martin	Eretmochelys imbricata		107.4				63.0520 71	18.10727 9		88	T4.2	1
North West Atlantic	Secteur 10 : île de Saint Martin	Dermochelys coriacea		0.0				63.0520 71	18.10727 9		88	T4.2	1
North West Atlantic	Secteur 10 : île de Saint Martin	Chelonia mydas		257.4				63.0520 71	18.10727 9		88	T4.2	1

Table 2.3. International conventions protecting sea turtles and signed in Guadeloupe.

International Conventions	Signed	Binding	Compliance measured and reported	Species	Conservation actions	Relevance to sea turtles
CBD: Convention on Biological Diversity (1992).	Y	Y	Y	ALL	To conserve the biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, taking into account all rights over those resources and to technologies, and by appropriate funding.	Marine turtle conservation is relevant to the agreement given the species' importance to overall biological diversity. For example, text in Article 8 states that each contracting party shall: "promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings" (CBD, 1992).
CMS: Convention on the Conservation of Migratory Species of Wild Animals (1979). Also known as the Bonn Convention. CMS instruments can be both binding and non-binding.	Y	Y	Y	ALL	To conserve migratory species and take action to this end, paying special attention to migratory species the conservation status of which is unfavourable, and taking individually or in co-operation appropriate and necessary steps to conserve such species and their habitat.	All seven species of marine turtles are listed within the convention text (CMS, 2014). A specific agreement has been developed for marine turtles under CMS. The Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (IOSEA), for example, to which the UK and France are individual EU country signatories. CMS has a specific resolution on bycatch detailing various actions needed to reduce bycatch of migratory species that will include marine turtles (UNEP/CMS/Resolution 9.18 on Bycatch).
Convention on the Conservation of European Wildlife and Natural Habitats (1979). Also known as the Bern Convention and is binding.	Y	Y	Y	ALL	To conserve wild flora and fauna and their natural habitats, especially those species and habitats whose conservation requires the co-operation of several States, and to promote such co-operation.	Conserving European natural heritage is a key element of this convention (CoE, 2014) and this will include marine turtle populations in the Mediterranean, for example. The EU aims to fulfil its obligations under the Bern Convention through its Habitats Directive (a directive designed to ensure the conservation of rare, threatened, or endemic animal and plant species).
CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora.	Y	Y	Y	ALL	An international agreement between governments, the aim of which is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.	All seven species listed in Appendix I of CITES.
Convention of Carthage (1986)	Y	Y	Y	ALL	A Caribbean agreement for the protection and enhancement of the Caribbean Sea	

Table 2.4. Sea turtle conservation projects in Guadeloupe.

#	RMU	Country	Region / Location	Project Name or descriptive title	Key words	Start date	End date	Leading organisation	Public/Private	Collaboration with	Reports / Information material	Current Sponsors	Primary Contact (name and Email)
T4.1	North West Atlantic	France	Guadeloupe et Saint Martin	Base de données de pontes tortues marines de Guadeloupe et Saint Martin	Database, crawls, monitoring beaches	2000	still going	Reseau Tortues Marines de Guadeloupe (actually ONF)	Public				Caroline CREMADES, caroline.cremades@onf.fr
T4.2	North West Atlantic	France	Guadeloupe et Saint Martin	Swot database	Nesting Data, crawls	2012	2014	SWOT	Public				

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Chapter 3: Martinique

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Table 3.1. Main biology and conservation aspects of sea turtle Regional Management Units (RMU) occurring in Martinique

	REGIONAL MANAGEMENT UNIT					
	C. mydas North West Atlantic		D. coriacea North West Atlantic		Eretmochelys imbricate North West Atlantic	
Topics	CM	Ref #	DC	Ref #	Ei	Ref #
Occurrence						
Nesting sites	Y	8	Y	8	Y	8
Pelagic foraging grounds	NA		n/a		NA	
Benthic foraging grounds	NA		n/a		NA	
Key biological data						
Nests/yr: recent average (range of years)	n/a		n/a		n/a	
Nests/yr: recent order of magnitude	n/a		n/a		n/a	
Number of "major" sites (>20 nests/yr AND >10 nests/km yr)	n/a		n/a		n/a	
Number of "minor" sites (<20 nests/yr OR <10 nests/km yr)	n/a		n/a		n/a	
Nests/yr at "major" sites: recent average (range of years)	n/a		n/a		n/a	
Nests/yr at "minor" sites: recent average (range of years)	n/a		n/a		n/a	
Total length of nesting sites (km)	n/a		n/a		n/a	
Nesting females / yr	n/a		n/a		n/a	
Nests / female season (N)	n/a		n/a		n/a	
Female remigration interval (yrs) (N)	n/a		n/a		n/a	

Sex ratio: Hatchlings (F / Tot) (N)	n/a		n/a		n/a	
Sex ratio: Immatures (F / Tot) (N)	n/a		n/a		n/a	
Sex ratio: Adults (F / Tot) (N)	n/a		n/a		n/a	
Min adult size, CCL or SCL (cm)	70.00	T 4,1	105 CCL	T 4,1	70 CCL	T 4,1
Age at maturity (yrs)	n/a		n/a		n/a	
Clutch size (n eggs) (N)	110 to 130	6	100	6	110 to 180	6
Emergence success (hatchlings/egg) (N)	n/a		n/a		n/a	
Nesting success (Nests/ Tot emergence tracks) (N)	n/a		n/a		n/a	
Trends						
Recent trends (last 20 yrs) at nesting sites (range of years)	n/a		n/a		n/a	
Recent trends (last 20 yrs) at foraging grounds (range of years)	n/a		n/a		n/a	
Oldest documented abundance: nests/yr (range of years)	n/a		n/a		n/a	
Published studies						
Growth rates	Y	5	N		N	
Genetics	Y	10	N	11	Y	12
Stocks defined by genetic markers	Y	10	Y	11	Y	12
Remote tracking (satellite or other)	Y	5	N		Y	3
Survival rates	N		N		N	
Population dynamics	N		N		N	

Foraging ecology (diet or isotopes)	Y	2,3,4,5	N		N	
Capture-Mark-Recapture	Y	3.5	N		Y	3.5
Threats						
Bycatch: presence of small scale / artisanal fisheries?	Y (SN, FP)	19.2	Y (SN, FP)	19.2	Y (SN, FP)	19.2
Bycatch: presence of industrial fisheries?	N		N		N	
Bycatch: quantified?	500 (SN, FP)	9,19,20	n/a		200 (SN, FP)	9,19,20
Take. Intentional killing or exploitation of turtles	Y	T4.3	n/a		Y	T4.3
Take. Egg poaching	n/a		n/a		n/a	
Coastal Development. Nesting habitat degradation	Y	8	Y	8	Y	8
Coastal Development. Photopollution	Y	8.15	Y	8.15	Y	8.15
Coastal Development. Boat strikes	n/a		n/a		n/a	
Egg predation	Y	21	Y	21	Y	21
Pollution (debris, chemical)	Y	16	Y	16	Y	16
Pathogens	n/a		n/a		n/a	
Climate change	n/a		n/a		n/a	
Foraging habitat degradation	Y	2.5	n/a		n/a	
Other	N		N		N	
Long-term projects (>5yrs)						
Monitoring at nesting sites (period: range of years)	Y (2004-2015)	T 4.1	Y (2004-2015)	T 4.1	Y (2004-2015)	T 4.1
Number of index nesting sites	Y	8	Y	8	Y	8
Monitoring at foraging sites (period: range of years)	Y (2013/2017)	3.4	n/a		n/a	

Conservation						
Protection under national law	Y	23	Y	23	Y	23
Number of protected nesting sites (habitat preservation) (% nests)	n/a		n/a		n/a	
Number of Marine Areas with mitigation of threats	n/a		n/a		n/a	
N of long-term conservation projects (period: range of years)	>1 (1999-2027)	23	>1 (1999-2027)	23	>1 (1999-2027)	23
In-situ nest protection (eg cages)	N		N		N	
Hatcheries	N		N		N	
Head-starting	N		N		N	
By-catch: fishing gear modifications (eg, TED, circle hooks)	N		N		N	
By-catch: onboard best practices	N		N		N	
By-catch: spatio-temporal closures/reduction	N		N		N	
Other	N		N		N	

Table 3.2. Sea turtle nesting beaches in the Martinique.

RMU / Nesting beach name	Index site	Species	Nests/yr: recent average	Crawls/yr: recent average (2011, 2013, 2014)	Western limit	Eastern limit	Central point	Length (km)	% Monitored	Reference #	Monitoring Level (1-2)
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			(range of years)											
					Long	Lat	Long	Lat	Long	Lat				
North West Atlantic	Secteur 1 : Le Diamant	Eretmochelys imbricata		282.745	2.58				61.030619	14.477817		100	T4.2	1
North West Atlantic	Secteur 1 : Le Diamant	Dermochelys coriacea		26.6	2.58				61.030619	14.477817		100	T4.2	1
North West Atlantic	Secteur 1 : Le Diamant	Chelonia mydas		9.8	2.58				61.030619	14.477817		100	T4.2	1
North West Atlantic	Secteur 2 : Le Prêcheur-Anse à Voile	Eretmochelys imbricata		155.7	0.25				61.215379	14.847575		100	T4.2	1
North West Atlantic	Secteur 2 : Le Prêcheur-Anse à Voile	Dermochelys coriacea		33.6	0.25				61.215379	14.847575		100	T4.2	1
North West Atlantic	Secteur 3 : Le Prêcheur-Anse Lévrier	Eretmochelys imbricata		200.2	0.19				61.218319	14.845833		100	T4.2	1
North West Atlantic	Secteur 3 : Le Prêcheur-Anse Lévrier	Dermochelys coriacea		21.3	0.19				61.218319	14.845833		100	T4.2	1
North West Atlantic	Secteur 3 : Le Prêcheur-Anse Lévrier	Chelonia mydas		21.5	0.19				61.218319	14.845833		100	T4.2	1
North West Atlantic	Secteur 4 : Lorrain-Crabière	Eretmochelys imbricata		84.7	0.25				61.062900	14.839132		100	T4.2	1
North West Atlantic	Secteur 4 : Lorrain-Crabière	Dermochelys coriacea		200.5	0.25				61.062900	14.839132		100	T4.2	1
North West Atlantic	Secteur 5 : Lorrain-Grande Anse Lorrain	Eretmochelys imbricata		39.8	0.93				61.059124	14.835802		100	T4.2	1
North West Atlantic	Secteur 5 : Lorrain-Grande Anse Lorrain	Dermochelys coriacea		107.5	0.93				61.059124	14.835802		100	T4.2	1

North West Atlantic	Secteur 6 : Sainte-Marie Anse Charpentier	Eretmochelys imbricata		20.18	0.35				61.018503	14.809475		100	T4.2	1
North West Atlantic	Secteur 6: Sainte-Marie Anse Charpentier	Dermochelys coriacea		145.0	0.35				61.018503	14.809475		100	T4.2	1
North West Atlantic	Secteur 7 :Sainte-Anne Anse-à-Prune	Eretmochelys imbricata		94.4	0.51				60.865665	14.396859		100	T4.2	1
North West Atlantic	Secteur 7 :Sainte-Anne Anse-à-Prune	Dermochelys coriacea		110.3	0.51				60.865665	14.396859		100	T4.2	1
North West Atlantic	Secteur 8: Sainte-Anne Anse Four à Chaux	Eretmochelys imbricata		200.5	0.36				60.813481	14.475579		100	T4.2	1
North West Atlantic	Secteur 8 : Sainte-Anne Anse Four à Chaux	Dermochelys coriacea		79.3	0.36				60.813481	14.475579		100	T4.2	1
North West Atlantic	Secteur 9 : Sainte- Anne Anse Grosse Roche	Eretmochelys imbricata		113.915	0.92				60.813505	14.483792		100	T4.2	1
North West Atlantic	Secteur 9 : Sainte- Anne Anse Grosse Roche	Dermochelys coriacea		252.385	0.92				60.813505	14.483792		100	T4.2	1
North West Atlantic	Secteur 10 : Sainte-Anne Anse Meunier	Eretmochelys imbricata		45.115	0.8				60.885675	14.413924		100	T4.2	1
North West Atlantic	Secteur 10 : Sainte-Anne Anse Meunier	Dermochelys coriacea		45.395	0.8				60.885675	14.413924		100	T4.2	1
North West Atlantic	Secteur 10 : Sainte-Anne Anse Meunier	Chelonia mydas		4.61	0.8				60.885675	14.413924		100	T4.2	1
North West Atlantic	Secteur 11 : Sainte-Anne Anse Trabaud	Eretmochelys imbricata		220.48	1.5				60.849511	14.410617		100	T4.2	1
North West Atlantic	Secteur 11 : Sainte-Anne Anse Trabaud	Dermochelys coriacea		113.29	1.5				60.849511	14.410617		100	T4.2	1
North West Atlantic	Secteur 12: Sainte-Anne Grande Terre	Eretmochelys imbricata		325.7	0.56				60.871888	14.396360		100	T4.2	1

North West Atlantic	Secteur 12: Sainte-Anne Grande Terre	Dermochelys coriacea		116.0	0.56				60.871888	14.396360		100	T4.2	1
North West Atlantic	Secteur 13 : Sainte-Anne Grande Anse Salines	Dermochelys coriacea		150	1.3				60.878734	14.403352		100	T4.2	1
North West Atlantic	Secteur 13 : Sainte-Anne Grande Anse Salines	Eretmochelys imbricata		150	1.3				60.878734	14.403352		100	T4.2	1
North West Atlantic	Secteur 14 : Vauclin Grand Macabout	Eretmochelys imbricata		25.9	1.47				60.823730	14.497353		100	T4.2	1
North West Atlantic	Secteur 14 : Vauclin Grand Macabout	Dermochelys coriacea		268.46	1.47				60.823730	14.497353		100	T4.2	1

Table 3.3. International conventions protecting sea turtles and signed in Martinique.

International Conventions	Signed	Binding	Compliance measured and reported	Species	Conservation actions	Relevance to sea turtles
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CBD: Convention on Biological Diversity (1992).	Y	Y	Y	ALL	To conserve the biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, taking into account all rights over those resources and to technologies, and by appropriate funding.	Marine turtle conservation is relevant to the agreement given the species' importance to overall biological diversity. For example, text in Article 8 states that each contracting party shall: "promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings" (CBD, 1992).
CMS: Convention on the Conservation of Migratory Species of Wild Animals (1979). Also known as the Bonn Convention. CMS instruments can be both binding and non-binding.	Y	Y	Y	ALL	To conserve migratory species and take action to this end, paying special attention to migratory species the conservation status of which is unfavourable, and taking individually or in co-operation appropriate and necessary steps to conserve such species and their habitat.	All seven species of marine turtles are listed within the convention text (CMS, 2014). A specific agreement has been developed for marine turtles under CMS. The Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (IOSEA), for example, to which the UK and France are individual EU country signatories. CMS has a specific resolution on bycatch detailing various actions needed to reduce bycatch of migratory species that will include marine turtles (<i>UNEP/CMS/Resolution 9.18 on Bycatch</i>).
Convention on the Conservation of European Wildlife and Natural Habitats (1979). Also known as the Bern Convention and is binding.	Y	Y	Y	ALL	To conserve wild flora and fauna and their natural habitats, especially those species and habitats whose conservation requires the co-operation of several States, and to promote such co-operation.	Conserving European natural heritage is a key element of this convention (CoE, 2014) and this will include marine turtle populations in the Mediterranean, for example. The EU aims to fulfil its obligations under the Bern Convention through its Habitats Directive (a directive designed to ensure the conservation of rare, threatened, or endemic animal and plant species).
CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora.	Y	Y	Y	ALL	An international agreement between governments, the aim of which is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.	All seven species listed in Appendix I of CITES.
Convention of Carthage (1986)	Y	Y	Y	ALL	A Caribbean agreement for the protection and enhancement of the Caribbean Sea	

Table 3.4. Sea turtle conservation projects in Martinique.

#	RMU	Country	Region / Location	Project Name or descriptive title	Key words	Start date	End date	Leading organisation	Public/Private	Collaboration with	Reports / Information material	Current Sponsors	Primary Contact (name and Email)
T4.1		France	Martinique	Base de données de pontes tortues marines de Martinique	Database, crawls, monitoring beaches	2004	2015	Reseau Tortues Marines de Martinique (actually ONF)	Public				Caroline CREMADES, caroline.cremades@onf.fr
T4.2		France	Martinique	Swot database	Nesting Data, crawls	2011	2014	SWOT	Public				
T4.3		France	Martinique	tableau récapitulatif des menaces avérées entre 2004 et 2015	poaching, predation, disturbance, crawls	2004	2015	ONCFS	Public				

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- 2 Kiszka et al, 2016. Rapport intermédiaire, Ecologie intermédiaire de la tortue verte *Chelonia mydas* dans les Antilles Françaises : implications pour la dynamique des écosystèmes et l'invasion à *Halophila stipulacea*
- 3 Chevalier, 2013/2014. Suivi télémétrique des tortues marines s'alimentant dans les Antilles
- 4 Chevalier, 2014/2015. Ecologie trophique de la tortue verte dans les Antilles Françaises : impact de la colonisation des herbiers indigènes par une phanérogame invasive (*Halophila stipulacea*)
- 5 Aquasearch, 2015. Mise au propre et analyse de la base de données tortues marines de Martinique
- 6 Delcroix et al, 2008. Découverte d'un nid de tortue verte, *Chelonia mydas*, en Martinique
- 7 Giraudou, 2015. Photo-identification des tortues vertes et son application dans l'indice d'abondance ou de fidélité au site de ponte, rapport de stage ONCFS-Aquasearch
- 8 Heim, 2015. diagnostic des sites potentiels de ponte des tortues marines en Martinique et mobilisation des acteurs locaux autour d'actions de conservation, rapport de stage, ONCFS
- 9 Claro F. et al, 2010. Interactions entre pêcheries et tortues marines en France métropolitaine et d'Outre-mer, Rapport SPN, MNHM.
- 10 Juliana Costa Jordao, Ana Cristina Vigliar Bondioli, Lurdes Foresti de Almeida-Toledo, Karin Bilo, Rachel Berzins, Yvon Le Maho, Damien Chevallier & Benoit de Thoisy (2015) Mixed-stock analysis in green turtles *Chelonia mydas*: mtDNA decipher current connections among west Atlantic populations, *Mitochondrial DNA Part A*, 28:2, 197-207, DOI: 10.3109/19401736.2015.1115843
- 11 Molfeti et al, 2013. Recent Demographic History and Present Fine-Scale Structure in the Northwest Atlantic Leatherback (*Dermochelys coriacea*) Turtle Population
- 12 Leroux et al, 2012. Re-examination of Population Structure and Phylogeography of Hawksbill Turtles in the Wider Caribbean Using Longer mtDNA Sequences
- 13 Synthèses des échouages et captures accidentelles observés en Martinique de janvier 2007 à décembre 2010, RTMM
- 14 Horrocks et al, 2016. International movements of adult female leatherback turtles in the Caribbean: results from tag recovery data (2002–2013)
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- 17 Bouchon et al., 2004. Critères d'évaluation de la dégradation des communautés coralliennes dans la région caraïbe
- 18 RTMM, 2015. Suivi satellite des déplacements des tortues marines après leur ponte sur des plages en Martinique, rapport d'activité ONCFS
- 19 Louis-Jean, 2013. Etude de la pêche artisanale côtière aux filets de fond aux Antilles françaises afin de réduire les captures accidentelles de tortues marines et obtenir une activité plus durable, travaux de thèse
- 20 Delcroix E., 2003. Etude des captures accidentelles de tortues marines par la pêche maritime dans les eaux de l'archipel guadeloupéen, rapport de stage, ONCFS

- 21 ONF, 2007/2013. Projet d'action de lutte contre les espèces exotiques envahissantes, piégeage des rats et des mangoustes, compte-rendu technico-financier
- 22 Arrêté du 14 octobre 2005 fixant la liste des tortues marines protégées sur le territoire national et les modalités de leur protection
- 23 Plan d'action pour les tortues marines de la Martinique 2008/2012

Chapter 4: Mexico

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Section 1. RMU: Northeast Atlantic.

4.1. Distribution, abundance, trends.

4.1.1. Nesting sites.

In this Regional Management Unit (RMU) we have nesting activity of hawksbill (*Eretmochelys imbricata*), Kemp's ridley (*Lepidochelys kempii*), green (*Chelonia mydas*), loggerhead (*Caretta caretta*) and leatherback (*Dermochelys coriacea*) (1, 2, 36, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 40, 41, 42, 43, 44, 45, 52, 53, 58, 59).

The nesting beaches are located all over the Mexican littoral in the Gulf of Mexico (GoM) and Caribbean Sea, with hawksbills presenting the highest nesting intensity in the Yucatan Peninsula (Figure 1a), the of Kemp's ridleys in northwestern GoM (Figure 1b), greens having the widest distribution in the GoM and Caribbean (Figure 1c), and loggerheads mainly restricted to the Caribbean Sea (Figure 1d).

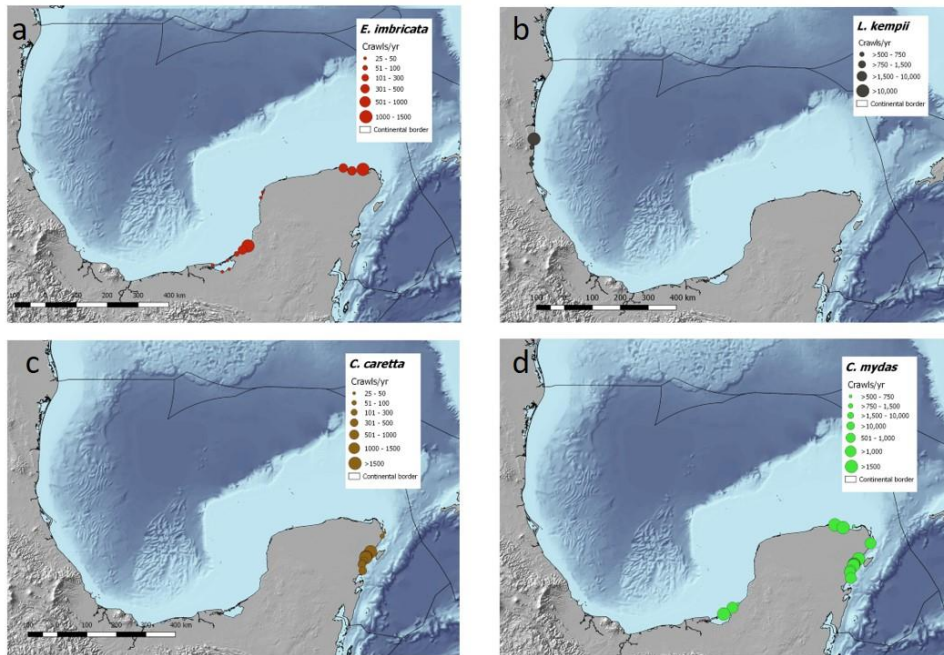


Figure 4.1. Main sea turtle nesting beaches for four species in Mexican littoral in the Gulf of Mexico.

Western GoM is underrepresented in these maps, there are very important Kemp's Ridley and green turtles nesting beaches, as well as some peculiar hawksbill nesting zones in islands of a reef system in front of Veracruz, and minor nesting beaches for this same species in the south-central littoral in GoM.

Some of the nesting beaches in the map are considered Index nesting beaches in the region, representing general trends for these species in Mexico. The range of crawl/year activity in the region is highly variable, going from 25 to more than 1,500, and in the case of Kemp's Ridley to even more than 15,000 crawls/yr (Table 1).

Also, the length of the nesting beaches is highly variable, going from some hundreds of meters to several dozens of kilometers, but all of them with Monitoring level 1, and protocol B.

Table 4.1. Nesting activity (clutches and crawls) for the compiled sea turtle nesting beaches for four species (*L. kempii* (Lk), *E. imbricata* (Ei), *C. mydas* (Cm), *C. caretta* (Cc)) in the Mexican littoral in the Gulf of Mexico and Caribbean Sea. We also include the length of the beaches, the coordinates and the monitoring level and protocol implemented.

Nesting beach name	Index site	Average number of Crawls per year				Central point		Length (km)	% Monitored	Reference #	Monitoring Level (1-2)	Monitoring Protocol (A-F)
		Lk	Ei	Cm	Cc	Long	Lat					
LK-NW-ATL												
Rancho Nuevo	Y	>10000				-97.7703	23.3332	30	100	36	1	B
Barra del Tordo	Y	>1500				-97.83755	23.055269	45	100	36	1	B
Altamira	Y	>750				-97.840297	22.6705944	19	100	36	1	B
Miramar	Y	>500				-97.856527	22.49375	20	100	36	1	B
EI-NW ATL												
San Lorenzo	Y		100-300			-90.453814	20.702917	1.8	100	8	1	B
Punta Xen			1001-1500			-90.845167	19.232956	30	100	8	1	B
Chenkan	Y		501-1000			-91.013167	19.107806	18	100	8	1	B
Sabancuy			301-500			-91.188833	18.991528	24.5	100	8	1	B
Isla Aguada	Y		301-501			-91.466387	18.792072	28.2	100	8	1	B
Chacahito			50-100			-91.419386	18.524425	9	100	8	1	E
Xicalango			50-101			-91.9167	18.6489	9	100	8	1	E
Victoria			50-102			-91.625689	18.446986	14	100	8	1	E
Celestun	Y		100-300			-90.39771	20.86853	24	100	13,14,15,16,17,18	1	B
Las Coloradas	Y		501-1000			-87.94328	21.60462	21.5	100	13,14,15,16,17,18	1	B
El Cuyo	Y		501-1000			-87.67949	21.51783	25	100	13,14,15,16,17,18	1	B
Holbox	Y		1001-1500			-87.34255	21.563952	24	100	13,14,15,16,17,18	1	B
CM-NW-ATL												
Chenkan	Y			25-50		-91.013167	19.107806	18	100	8	1	B
Sabancuy				1001-1500		-91.188833	18.991528	24.5	100	8	1	B

Isla Aguada	Y		>1500		-91.466387	18.792072	28.2	100	8	1	B
Las Coloradas	Y		>1500		-87.94328	21.60462	21.5	100	13,14,15,16,17,18	1	B
El Cuyo	Y		>1500		-87.67949	21.51783	25	100	13,14,15,16,17,18	1	B
Cancun			100-300		-86.741667	21.138889	0.3	100	40,41,42,43,44,45	1	B
Tamul			1001-1500		-86.81336	21.02236	9	100	40,41,42,43,44,45	1	B
Paamul	Y		>1500		-87.1878	20.5281	2.5	100	61,62,63,64,65	1	B
Aventuras DIF	Y		>1500		-87.3325	20.3681	1.5	100	61,62,63,64,65	1	B
Chemuyil	Y		>1500		-87.3386	20.3517	0.3	100	61,62,63,64,65	1	B
Xcacel	Y		>1500		-87.3436	20.3408	2.5	100	61,62,63,64,65	1	B
Xel-Ha	Y		>1500		-87.3519	20.3189	0.3	100	61,62,63,64,65	1	B
Kanzul	Y		1001-1500		-87.4511	20.1669	4	100	61,62,63,64,65	1	B
Cahpechen	Y		1001-1500		-87.4664	20.1225	8.5	100	61,62,63,64,65	1	B
San Juan	Y		1001-1500		-87.4364	19.9264	5	100	61,62,63,64,65	1	B
Holbox	Y		100-300		-87.34255	21.563952	24	100	13,14,15,16,17,18	1	B
CC-NW-ATL											
Cancun				<25	-86.741667	21.138889	0.3	100	40,41,42,43,44,45	1	B
Tamul				50-100	-86.81336	21.02236	9	100	40,41,42,43,44,45	1	B
Paamul	Y			301-500	-87.1878	20.5281	2.5	100	61,62,63,64,65	1	B
Aventuras DIF	Y			301-500	-87.3325	20.3681	1.5	100	61,62,63,64,65	1	B
Chemuyil	Y			301-500	-87.3386	20.3517	0.3	100	61,62,63,64,65	1	B
Xcacel	Y			301-500	-87.3436	20.3408	2.5	100	61,62,63,64,65	1	B
Tankah	Y			100-300	-87.4072	20.2464	0.3	100	61,62,63,64,65	1	B
Kanzul	Y			100-300	-87.4511	20.1669	4	100	61,62,63,64,65	1	B
Cahpechen	Y			100-300	-87.4664	20.1225	8.5	100	61,62,63,64,65	1	B
San Juan	Y			100-300	-87.4364	19.9264	5	100	61,62,63,64,65	1	B

Regarding the abundances of nesting females, the smallest number is for hawksbill turtles with some more individuals than 1,000 each year in the past 21 years for all this RMU, the green turtle rookeries are the next with more than 4,000 individuals per year, and the highest number is of course the Kemp's Ridley nesting populations up to 5,000 individuals per year in the whole RMU (table 2).

Table 4.2. Summary of the abundance levels for nesting populations in this RMU. (Ei: *E. imbricata*; Lk: *L. kempii*; Cm: *C. mydas*; Cc: *C. caretta*).

Parameter	Ei	Lk	Cm	Cc	References
Nesting females/yr	>1,000	5,000	4,220	n/a	8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 37, 40, 41, 42, 43, 44, 45
Nests/female/yr	2.5	2	3.85	2.33	8, 10, 11, 12, 19, 37, 38, 52, 54, 57, 60
Female remigration interval	3.21	n/a	2.27	2.63	8, 19, 37, 38, 52

After almost three decades of nesting beach monitoring and conservation efforts, almost the four species present clear increasing trends. In a long term period of evaluation (20 years) the trend of the number of registered nests for hawksbill turtles is slightly down (8,9,10,11,12,13,14,15,16,17,18), it is going up for Kemp's Ridleys (36,37), up ($\approx 19\%$) for green turtles (8,9,10,11,12,13,14,15,16,17,18,40,41,42,43,44,45,61,62,63,64), and also going up ($\approx 6.7\%$) for loggerhead turtles (40,41,42,43,44,45,61,62,63,64,65,66).

4.1.2. Marine areas.

Derived from several satellite tracking projects for the four-dominant species in this RMU, the main feeding and migratory grounds for post-nesting individuals are well known (Figure 2). There is a close link between north and south Gulf of Mexico, particularly between the peninsulas of Florida and Yucatan, sharing important nesting rookeries.

There is also a reported link between the nesting beaches inside the Mexican littoral of the GoM and some feeding grounds in the Caribbean, fact that supports the need of multinational conservation efforts for restoring these populations.

As in many parts of the world, the costs of doing in-water monitoring and research are higher than those for the nesting beaches, provoking big information gaps for the marine life stages and for their habitats.

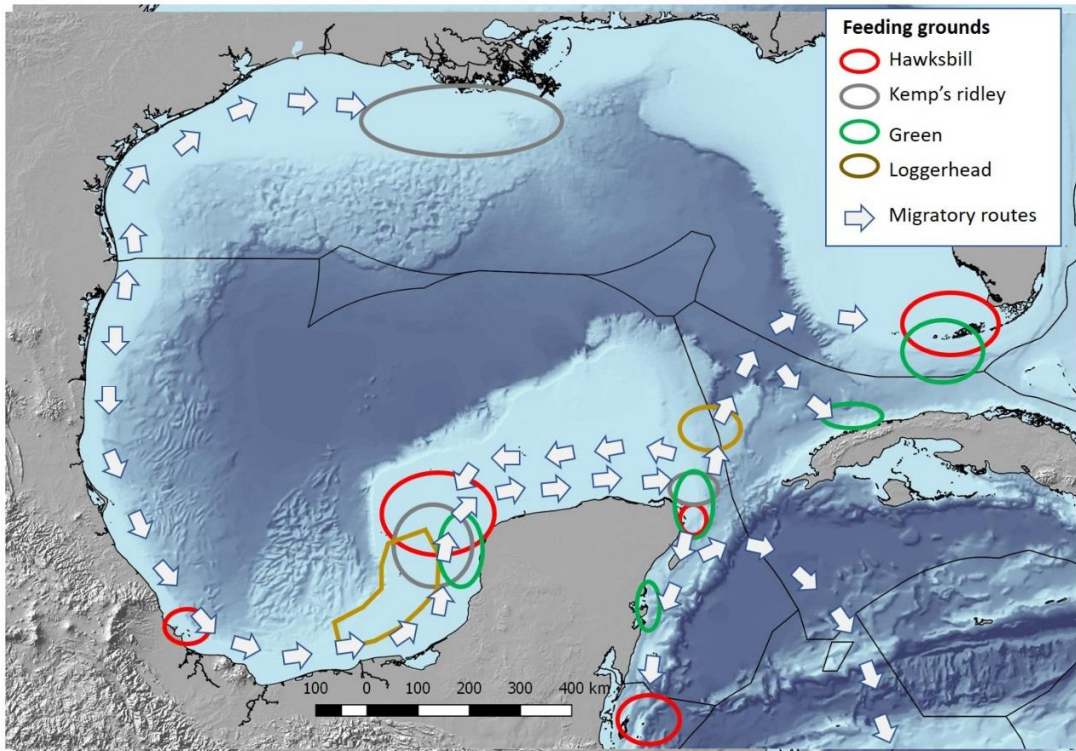


Figure 4.2. Schematic representation of the location of main feeding grounds per species and their main migratory routes from nesting beaches in the Mexican territory, and inside the Northwest Atlantic RMU.

4.2. Other biological data

Some key information for population recovery is the success of incubation periods, with reported values of emergence success for hawksbills close to 78% (8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18), 57% for Kemp's Ridley (36), 80% for green turtles (8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 40, 41, 42, 43, 44, 45), and 82% for loggerheads (54).

4.3. Threats.

4.3.1. Nesting sites.

4.3.2. Marine areas.

In land, one of the main threats to sea turtles and their habitats in Mexico is the coastal development, including all the variants and different factors associated with it. It is the result of gaps in federal laws, as well as a lack of a strategic planning for urbanization that considers the natural capital in our country. And in-water, one of the main threats is the bycatch, there are illegal fishing gears that are used close to sea turtle aggregations (feeding and reproductive) and every year cause hundreds of dead in this region.

Table 4.3. Reported threats for nesting beaches and in-water habitats in the Mexican territory of the northwest Atlantic RMU (With or without direct evidence of turtle bycatch. Codes for fishing gears: PLL: Pelagic Longlines; DLL: demersal longlines; SN: Set Nets; DN: Drift Nets; ST: Shrimp Trawls; MT: Multispecific bottom Trawls; PT: Pelagic Trawls; FP: Fish/Crustacean Pots/Traps; PN: Pound net) (Y: Yes, N: No).

Threat	Ei	Reference	Lk	Reference	Cm	Reference	Cc	Reference
Bycatch: presence of small scale / artisanal fisheries?	Y (PLL, DLL, SN,FP)	26	Y (SN,ST)	37	Y (PLL, DLL, SN,FP)	26	Y	54
Bycatch: presence of industrial fisheries?	Y (PLL, DLL, ST, MT, FP)	27	Y (ST)	37	Y (PLL, DLL, ST, MT, FP)	26	N	54
Bycatch: quantified?	Y	26	Y		Y	26	Y	54
Take. Intentional killing or exploitation of turtles	Y		Y		Y		Y	54
Take. Egg poaching	Y	8,9,10,11,12	Y	37	Y		Y	54
Coastal Development. Nesting habitat degradation	Y	8,9,10,11,12,28	N		Y		Y	54
Coastal Development. Photopollution	Y	29	N		Y		Y	54
Coastal Development. Boat strikes	Y		Y		Y		Y	54
Egg predation	Y	8,9,10,11,12	Y		Y		Y	54
Pollution (debris, chemical)	Y	29,30,31,32	Y	37	Y		Y	54
Pathogens	Y	33	n/a		Y		Y	54
Climate change	Y	34,35	Y	37	Y		Y	54
Foraging habitat degradation	n/a		Y		Y		n/a	54
Other	n/a		n/a		n/a		n/a	54

4.4. Conservation

The four species have shown in different moments their resilience for recovery in the long term, and there are now several indicators suggesting that the conservation efforts that have been continuously implemented to protect nesting beaches and hatchlings are the reason why populations such as the green turtles are exponentially increasing in this RMU.

Mexico has already signed different international conventions to protect the sea turtles, banning their hunting and contributing to diminish the pressures over their critical habitats through distinct strategies (Table 4).

Besides these conventions and legal tools, sea turtles in Mexico are protected by two laws, the Mexican Official Norms 059 and 162 by the Ministry of Environment and Natural Resources (SEMARNAT in Spanish). The first one lists all the flora and fauna species considered endangered in Mexico, and it is the key law for endangered species protection.

In the other hand, the Norm 162 specifies the technical criteria that must be complied about sea turtle beach monitoring and how guided visits to nesting beaches must be done. This is a law that was born to standardize and regulate the conservation and protection activities that are done for sea turtle recovery in Mexico.

Regarding the conservation programs, the Sea Turtle Conservation Program in Mexico has recently achieved 50 years of continuous activities. The Mexican littoral where sea turtles nest, as well as the in-water where they stay, are monitored and studied by dozens, or maybe hundreds, of projects that have contributed from different points of view to build these half century of conservation actions in this RMU.

In terms of conservation priorities, the Federal Government, through different strategies for bringing together all the stakeholders that collaborate in sea turtle conservation, built the Action Programs for Species Conservation (PACE in Spanish), equivalent to a national recovery strategy, and every sea turtle species (6) in Mexico has its own instrument.

In these documents the participants who contributed to build them identified several actions to implement in terms of knowledge, management, restoration, protection, culture, lobbying, and climate change. These documents are the nowadays reference for priorities in sea turtle restoration in Mexico.

Table 4.4. International Conventions that Mexico has signed for sea turtle conservation and recovery.

International Conventions	Signed	Binding	Compliance measured and reported	Species	Conservation actions
CBD: Convention on Biological Diversity (1992).	Y	Y	Y	ALL	To conserve the biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, taking into account all rights over those resources and to technologies, and by appropriate funding.
CMS: Convention on the Conservation of Migratory Species of Wild Animals (1979). Also known as the Bonn Convention. CMS instruments can be both binding and non-binding.	Y	Y	Y	ALL	To conserve migratory species and take action to this end, paying special attention to migratory species the conservation status of which is unfavorable, and taking individually or in co-operation appropriate and necessary steps to conserve such species and their habitat.
CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora.	Y	Y	Y	ALL	An international agreement between governments, the aim of which is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.
UNCLOS: The United Nations Convention on the Law of the Sea. Came into force in 1994.	Y	Y	Y	ALL	An international treaty that defines the rights and responsibilities of nations with respect to their use of the world's oceans and establishes guidelines for the management of marine natural resources (Wikipedia, 2015).
Ramsar Convention	Y	Y	Y	ALL	Is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.
Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC)	Y	Y	Y	ALL	The Convention promotes the protection, conservation and recovery of the populations of sea turtles and those habitats on which they depend, based on the best available data and taking into consideration the environmental, socioeconomic and cultural characteristics of the Parties (Article II, Text of the Convention). These actions should cover both nesting beaches and the Parties' territorial waters.

4.5. Research.

The conservation projects in the Mexican territory in this RMU do big efforts to publish and make public all the knowledge regarding sea turtles and their habitat in this region. However, as most of the projects that collect the data needed for generating the information are not run by scientific entities, and the resources are scarce, the scientific research is not the main priority in the sea turtle conservation programs, and in several cases, it is not even a priority for many national and international funding agencies.

With this said, the research that is done in the Mexican territory very frequently comes from opportunities with students to attend some of the information gaps, which are a lot, using the resources implemented for conserving, managing or monitoring the sea turtle populations and their habitats.

However, with huge efforts and very productive and strong alliances with national and international partners, in this RMU we have research efforts and publications regarding growth rates (4, 46, 47, 56), genetics (21, 22, 48, 49), stocks defined by genetic markers (22, 49), remote tracking (23, 24, 50, 51), population dynamics (25), foraging ecology (), capture-mark-recapture (25, 38), among others.

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Chapter 5: Saint Eustach

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Table 5.1. Main biology and conservation aspects of sea turtle Regional Management Units (RMU) occurring in Saint Eustach.

	<i>Regional Management Unit</i>					
	RMU C. mydas St Eustatius		RMU E. Imbricata St Eustatius		RMU D. coriacea St Eustatius	
	CM-St Eustatius	Ref #	EI-St Eustatius	Ref #	DC-St Eustatius	Ref #
Occurrence						
Nesting sites	Y	#1-#5	Y	#1-#5	Y	#1-#5
Pelagic foraging grounds	N	#1-#5	N	#1-#5	N	#1-#5
Benthic foraging grounds	Y	#1-#5	Y	#1-#5	N	#1-#5
Key biological data						
Nests/yr: recent average (range of years)	26 (2010-2014)	#1-#5	8.4 (2010-2014)	#1-#5	3 (2010-2014)	#1-#5
Nests/yr: recent order of magnitude	0 -50	#1-#5	0 - 25	#1-#5	0 - 25	#1-#5
Number of "major" sites (>20 nests/yr AND >10 nests/km yr)	1	#1-#5	1	#1-#5	n/a	#1-#5
Number of "minor" sites (<20 nests/yr OR <10 nests/km yr)	1	#1-#5	1	#1-#5	1	#1-#5
Nests/yr at "major" sites: recent average (range of years)	26 (2010-2014)	#1-#5	4.5 (2010-2014)	#1-#5	n/a	#1-#5
Nests/yr at "minor" sites: recent average (range of years)	5 (2010 -2014)	#1-#5	5.25 (2010-2014)	#1-#5	3 (2010-2014)	#1-#5
Total length of nesting sites (km)	1.6	#1-#5	1.6	#1-#5	1.6	#1-#5
Nesting females / yr	175 (2010 -2014)	#1-#5	90 (2010-2014)	#1-#5	24 (2010 - 2014)	#1-#5
Nests / female season (N)	n/a	#1-#5	n/a	#1-#5	n/a	#1-#5
Female remigration interval (yrs) (N)	2-3 (1)	#1-#5	n/a	#1-#5	n/a	#1-#5
Sex ratio: Hatchlings (F / Tot) (N)	n/a		n/a		n/a	
Sex ratio: Immatures (F / Tot) (N)	n/a		n/a		n/a	
Sex ratio: Adults (F / Tot) (N)	n/a		n/a		n/a	
Min adult size, CCL or SCL (cm)	105.00	#1-#5	91.5	#1-#5	145	#1-#5
Age at maturity (yrs)	25-30		n/a		n/a	
Clutch size (n eggs) (N)	109.5 (104)	#1-#5	120 (42)	#1-#5	100 (15)	#1-#5

Emergence success (hatchlings/egg) (N)	0.82 (11,394)	#1-#5	0.68 (5051)	#1-#5	0.12 (1504)	#1-#5
Nesting success (Nests/ Tot emergence tracks) (N)	63% (6134)	#1-#5	68% (683)	#1-#5	17% (180)	#1-#5
Trends						
Recent trends (last 20 yrs) at nesting sites (range of years)	n/a		n/a		n/a	
Recent trends (last 20 yrs) at foraging grounds (range of years)	n/a		n/a		n/a	
Oldest documented abundance: nests/yr (range of years)	7 (2002)	#1-#5	6 (2002)	#1-#5	10 (2002)	#1-#5
Published studies						
Growth rates	N		N		N	
Genetics	N		N		N	
Stocks defined by genetic markers	N		N		N	
Remote tracking (satellite or other)	Y		N		N	
Survival rates	N		N		N	
Population dynamics	N		N		N	
Foraging ecology (diet or isotopes)	N		N		N	
Capture-Mark-Recapture	Y		N		N	
Threats						
Bycatch: presence of small scale / artisanal fisheries?	Y		N		N	
Bycatch: presence of industrial fisheries?	N		N		N	
Bycatch: quantified?	N		N		N	
Take. Intentional killing or exploitation of turtles	N		N		N	
Take. Egg poaching	N		N		N	
Coastal Development. Nesting habitat degradation	Y		Y		Y	
Coastal Development. Photopollution	Y		Y		Y	
Coastal Development. Boat strikes	Y		Y		N	

Egg predation	N		N		N	
Pollution (debris, chemical)	Y		Y		Y	
Pathogens	Y		Y		Y	
Climate change	Y		Y		Y	
Foraging habitat degradation	Y		Y		N	
Other	N		N		N	
Long-term projects (>5yrs)						
Monitoring at nesting sites (period: range of years)	Y (2002-ongoing)	#1-#5	Y (2002-ongoing)	#1-#5	Y (2002-ongoing)	#1-#5
Number of index nesting sites	1	#1-#5	1	#1-#5	1	#1-#5
Monitoring at foraging sites (period: range of years)	Y (2007-ongoing)	#1-#5	Y (2007-ongoing)	#1-#5	N	#1-#5
Conservation						
Protection under national law	Y	#1-#5	Y	#1-#5	Y	#1-#5
Number of protected nesting sites (habitat preservation) (% nests)	6 (100%)	#1-#5	6 (100%)	#1-#5	1 (100%)	#1-#5
Number of Marine Areas with mitigation of threats	1	#1-#5	1	#1-#5	1	#1-#5
N of long-term conservation projects (period: range of years)	>1 (2002-ongoing)	#1-#5	>1 (2002-ongoing)	#1-#5	>1 (2002-ongoing)	#1-#5
In-situ nest protection (eg cages)	N		N		N	
Hatcheries	N		N		N	
Head-starting	N		N		N	
By-catch: fishing gear modifications (eg, TED, circle hooks)	N		N		N	
By-catch: onboard best practices	N		N		N	
By-catch: spatio-temporal closures/reduction	N		N		N	
Other	N		N		N	

Table 5.2. Sea turtle nesting beaches in the Saint Eustach.

RMU / Nesting beach name	Index site	Index site	Nests/yr: recent average (range of years)	Crawls/yr: recent average (range of years)	Western limit		Eastern limit		Central point		Length (km)	% Monitored	Reference #	Monitoring Level (1-2)	Monitoring Protocol (A-F)
					Long	Lat	Long	Lat	Long	Lat					
North West Atlantic	Zeelandia Beach	CM	26 (2010-2014)	52 (2010-2014)	17 30 365	062 58 835	17 30 060	062 58 255	17 30 129	062 58 388	1.4	100	#1 - #5	1	B
North West Atlantic	Zeelandia Beach	Ei	5.4 (2010-2014)	20.6 (2010-2014)	17 30 365	062 58 835	17 30 060	062 58 255	17 30 129	062 58 388	1.4	100	#1 - #5	1	B
	Oranjebay		3 (2010-2014)	14 (2010-2014)							1.5	100	#1 - #5	1	B
North West Atlantic	Zeelandia Beach	Dc	3 (2010-2014)	7.4 (2010-2014)	17 30 365	062 58 835	17 30 060	062 58 255	17 30 129	062 58 388	1.4	100	#1 - #5	1	B

Table 5.3. International conventions protecting sea turtles and signed in Saint Eustach.

International Conventions	Signed	Binding	Compliance measured and reported	Species	Conservation actions	Relevance to sea turtles
Inter-American Convention for the protection of sea turtles	Y	Y	Y	ALL	Protection, Monitoring and tagging	Covers Sea turtles in the Caribbean
SPAW protocol	Y	Y	Y	ALL	Protection, Monitoring and tagging	Covers Sea turtles in the Caribbean

Table 5.4. Sea turtle conservation projects in Saint Eustach.

#	RMU	Country	Region / Location	Project Name or descriptive title	Key words	Start date	End date	Leading organisation	Public/Private	Collaboration with	Reports / Information material	Current Sponsors	Primary Contact (name and Email)	Other Contacts (name and Email)
T4.1	CM-EUX	St Eustatius	Caribbean Netherlands	St Eustatius Sea Turtle Conservation Program	Tracking; Nesting female; Caribbean Netherlands; Zeelandia	2002	Ongoing	St Eustatius National Parks Foundation	Public	DCNA,	www.statiapark.org	n/a	Jessica Berkel, research@statiapark.org	Clarisse Buma manager@statiapark.org
T4.2	EI-EUX	St Eustatius	Caribbean Netherlands	St Eustatius Sea Turtle Conservation Program	Tracking; Nesting female; Caribbean Netherlands; Zeelandia	2002	Ongoing	St Eustatius National Parks Foundation	Public	DCNA,	www.statiapark.org	n/a	Jessica Berkel, research@statiapark.org	
T4.3	DC-EUX	St Eustatius	Caribbean Netherlands	St Eustatius Sea Turtle Conservation Program	Tracking; Nesting female; Caribbean Netherlands; Zeelandia	2002	Ongoing	St Eustatius National Parks Foundation	Public	DCNA,	www.statiapark.org	n/a	Jessica Berkel, research@statiapark.org	Clarisse Buma manager@statiapark.org

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Chapter 6: Saint Pierre et Miquelon

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Table 6.1. Main biology and conservation aspects of sea turtle Regional Management Units (RMU) occurring in Saint Pierre et Miquelon.

	C. caretta North-West atlantic		D. coriacea North-West atlantic	
Topic	CC-NW ATL	Ref #	DC-NW ATL	Ref #
Occurrence				
Nesting sites	N		N	
Pelagic foraging grounds	N/A		Y	2,3,5,6,7
Benthic foraging grounds	Y	7	Y	2,3,5,6,7
Key biological data				
Nests/yr: recent average (range of years)	n/a		n/a	
Nests/yr: recent order of magnitude	n/a		n/a	
Number of "major" sites (>20 nests/yr AND >10 nests/km yr)	n/a		n/a	
Number of "minor" sites (<20 nests/yr OR <10 nests/km yr)	n/a		n/a	
Nests/yr at "major" sites: recent average (range of years)	n/a		n/a	
Nests/yr at "minor" sites: recent average (range of years)	n/a		n/a	
Total length of nesting sites (km)	n/a		n/a	
Nesting females / yr	n/a		n/a	
Nests / female season (N)	n/a		n/a	
Female remigration interval (yrs) (N)	n/a		n/a	

Sex ratio: Hatchlings (F / Tot) (N)	n/a		n/a	
Sex ratio: Immatures (F / Tot) (N)	n/a		n/a	
Sex ratio: Adults (F / Tot) (N)	n/a		n/a	
Min adult size, CCL or SCL (cm)	n/a		n/a	
Age at maturity (yrs)	n/a		n/a	
Clutch size (n eggs) (N)	n/a		n/a	
Emergence success (hatchlings/egg) (N)	n/a		n/a	
Nesting success (Nests/ Tot emergence tracks) (N)	n/a		n/a	
Trends				
Recent trends (last 20 yrs) at nesting sites (range of years)	n/a		N/A	
Recent trends (last 20 yrs) at foraging grounds (range of years)	n/a		n/a	
Oldest documented abundance: nests/yr (range of years)			n/a	
Published studies				
Growth rates	N		N	
Genetics	N		N	
Stocks defined by genetic markers	N		N	
Remote tracking (satellite or other)	N		N	
Survival rates	N		N	
Population dynamics	N		N	

Foraging ecology (diet or isotopes)	N		N	
Capture-Mark-Recapture	N		N	
	N			
Threats				
Bycatch: presence of small scale / artisanal fisheries?	NA	7	N	
Bycatch: presence of industrial fisheries?	Y		N	
Bycatch: quantified?	Y		N	
Take. Intentional killing or exploitation of turtles	N		N	
Take. Egg poaching	N		N	
Coastal Development. Nesting habitat degradation	N		N	
Coastal Development. Photopollution	N		N	
Coastal Development. Boat strikes	N		Y/N	7
Egg predation	N		N	
Pollution (debris, chemical)	NA	7	NA	7
Pathogens	N		N	
Climate change	n/a		n/a	
Foraging habitat degradation	n/a		n/a	
Other	Y (see text)		N	
Long-term projects (>5yrs)				
Monitoring at nesting sites (period: range of years)	N		N	
Number of index nesting sites	N		N	

Monitoring at foraging sites (period: range of years)	N		N	
Conservation				
Protection under national law	Y	7	Y	7
Number of protected nesting sites (habitat preservation) (% nests)	NA		NA	
Number of Marine Areas with mitigation of threats	N		N	
N of long-term conservation projects (period: range of years)	N		N	
In-situ nest protection (eg cages)	NA		NA	
Hatcheries	NA		NA	
Head-starting	N		N	
By-catch: fishing gear modifications (eg, TED, circle hooks)	N		N	
By-catch: onboard best practices	N		N	
By-catch: spatio-temporal closures/reduction	N		N	
Other				

Table 6.2. Sea turtle nesting beaches in the Saint Pierre et Miquelon
Non occurring.

Table 6.3. International conventions protecting sea turtles and signed in Saint Pierre et Miquelon

International Conventions	Signed	Binding	Compliance measured and reported	Species	Conservation actions	Relevance to sea turtles
CBD: Convention on Biological Diversity (1992).	Y	Y	Y	ALL	To conserve the biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, taking into account all rights over those resources and to technologies, and by appropriate funding.	Marine turtle conservation is relevant to the agreement given the species' importance to overall biological diversity. For example, text in Article 8 states that each contracting party shall: "promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings" (CBD, 1992).
CMS: Convention on the Conservation of Migratory Species of Wild Animals (1979). Also known as the Bonn Convention. CMS instruments can be both binding and non-binding.	Y	Y	Y	ALL	To conserve migratory species and take action to this end, paying special attention to migratory species the conservation status of which is unfavourable, and taking individually or in co-operation appropriate and necessary steps to conserve such species and their habitat.	All seven species of marine turtles are listed within the convention text (CMS, 2014). A specific agreement has been developed for marine turtles under CMS. The Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (IOSEA), for example, to which the UK and France are individual EU country signatories. CMS has a specific resolution on bycatch detailing various actions needed to reduce bycatch of migratory species that will include marine turtles (<i>UNEP/CMS/Resolution 9.18 on Bycatch</i>).
Convention on the Conservation of European Wildlife and Natural Habitats (1979). Also known as the Bern Convention and is binding.	Y	Y	Y	ALL	To conserve wild flora and fauna and their natural habitats, especially those species and habitats whose conservation requires the co-operation of several States, and to promote such co-operation.	Conserving European natural heritage is a key element of this convention (CoE, 2014) and this will include marine turtle populations in the Mediterranean, for example. The EU aims to fulfil its obligations under the Bern Convention through its Habitats Directive (a directive designed to ensure the conservation of rare, threatened, or endemic animal and plant species) .

CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora.	Y	Y	Y	ALL	An international agreement between governments, the aim of which is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.	All seven species listed in Appendix I of CITES.
Convention of Carthagene (1986)	Y	Y	Y	ALL	A Caribbean agreement for the protection and enhancement of the Caribbean Sea	

Table 6.4. Sea turtle conservation projects in Saint Pierre et Miquelon.

#	RM U	Country	Region / Location	Project Name or descriptive title	Key words	Start date	End date	Leading organisation	Public/Private	Collaboration with	Reports / Information material	Current Sponsors	Primary Contact (name and Email)
T4.1	North east atlantic	France	French fishing zones	OBSMER	At sea observer work,	2003	still going	DPMA	Public	IFREMER, MNHN, CNRS		State	DPMA

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