Sea turtles in the Southwest Atlantic region

2021 Marine Turtle Specialist Group regional report

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REGIONAL OVERVIEW

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1. RMU: Loggerhead (Caretta caretta) – Atlantic Southwest

1.1 Distribution, abundance, trends

1.1.1 Nesting sites

All loggerhead rookeries are located in Brazil. There are 22 nesting sites (Table 1; Fig. 1) for the South-West Atlantic loggerhead subpopulation, 13 of them are classified as "major" nesting sites and 9 are as "minor" nesting sites (Table 1). For abundance indexes (e.g., nests, females) please see Table 1. The most recent year for abundance data published across all rookeries was 2013. All except for one nesting site has shown a 70% increase in the number of nests between 2008 - 2013 (see Brazil Chapter [68]).

1.1.2 Marine areas

Loggerhead turtles can be found throughout Southwest Atlantic waters. Foraging grounds of loggerhead nesting females tagged in Praia do Forte, Bahia state, can be found along the north-northeastern coast of Brazil (Fig. 1) but also along the southeastern and southern coast (Brazil [76, 76, 227]). Movement paths and pelagic foraging areas of immature loggerheads in the Southwest Atlantic have been identified throughout coastal and off pelagic waters between the Rio de la Plata (Argentina and Uruguay) and southern Brazil (Fig. 2 and Fig 3) (Brazil [1] and Argentina [6]).

Dispersal patterns and migratory routes of oceanic stage of yearling loggerhead turtles' satellite-tagged in Praia do Forte are shown in Fig. 4 (Brazil [82]).

1.1.3 Other biological data

References for research outputs about growth rates, genetics, stocks defined by genetic markers, satellite tracking, foraging ecology (diet or isotopes), and Capture-Mark-Recapture data please see Table 1.

1.2 Threats

1.2.1 Nesting sites

Hatchlings and especially egg life stages are mainly affected by native and exotic predators such as crab-eating foxes, armadillos, and coatis. These life stages are also threatened by light pollution and erosion. In-water habitat alteration, such as dredging operations during both port construction and operation, also poses a threat for adult loggerhead females with higher reproductive value (Table 1; Brazil [204]).

1.2.2 Marine areas

Fisheries bycatch is considered one of the main threats for both juveniles and adults in neritic and oceanic waters. The trawl and longline fisheries are considered the main sources of mortality for loggerheads in the Southwest Atlantic (Table 1).

1.3 Conservation

Protection status: see Table 1 for national laws and Table 3 in the country chapters for international conventions. National laws for sea turtle protection are available in Brazil, Argentina and Uruguay (Brazil [190]; Argentina [21]; Uruguay [6,7]). Long-term governmental and non-governmental programs are listed in Table 4 for each country chapter.

2 RMU: Leatherback (*Dermochelys coriacea*) - Atlantic Southwest

2.1 Distribution, abundance, trends

2.1.1 Nesting sites

There are 5 nesting sites, hosting a small population (Table 1). Even though they are classified as "minor" nesting sites, they are the only regular nesting areas for the region. In the complete nesting site (that is, for the five sections as a unity), the mean

annual number of nests increased from 26 nests in 1988-1992 to 90 nests in 2013-2017 (Table 1).

2.1.2 Marine areas

Movements of satellite tracking leatherbacks tagged in nesting areas (Gabon and Brazil) and on the foraging grounds in the SWA are shown in Fig 5. In the SWA leatherbacks foraging grounds are located mainly between southern Brazilian waters and the Rio de la Plata estuary.

2.2 Other biological data

Please see Table 1.

2.3 Threats

Please see Table 1.

2.4 Conservation

Protection status: see Table 1 for national laws and Table 3 in the country chapters for international conventions. National laws for sea turtle protection are available in Brazil, Argentina and Uruguay. See Table R in the country chapters (Brazil [190], Argentina [21], Uruguay [6,7]). Long-term governmental and non-governmental programs are listed in Table 4 for each country chapter.

3 RMU: Green turtle (*Chelonia mydas*) - Atlantic Southwest

3.1 Distribution, abundance, trends

3.1.1 Nesting sites

There are 11 nesting sites (Table 1 – Main Table; Fig. 1) for the SWA green turtle RMU, all of them in Brazil. The tree main nesting areas are located on oceanic islands. For abundance indexes (e.g. nests or nesting females per year) please see Table 1. In Trindade Island, the population remained stable between 1991 and 2008 (Brazil [101]). The average annual number in of nests in the Biological Reserve of

Atol das Rocas was approximately the same when comparing the two five-year periods 1990-1994 and 2004-2008 (Brazil [92]).

3.1.2 Marine areas

Green turtle foraging grounds are located throughout coastal waters in the SWA. Brazil host important mixed stock feeding grounds for juvenile, sub-adults and adults green turtles while Uruguay and Argentina also host mixed stock feeding grounds for juveniles (Brazil [63, 163]; Uruguay [34, 33]).

3.1.3 Other biological data

Please see Table 1.

3.2 Threats

3.2.1 Nesting sites

Please see Table 1.

3.2.2 Marine areas

Please see Table 1.

3.3 Conservation

Protection status: see Table 1 for national laws and Table 3 in the country chapters for international conventions. National laws for sea turtle protection are available in Brazil, Argentina and Uruguay. See Table R in the country chapters (Brazil [190], Argentina [21], Uruguay [6,7]). Long-term governmental and non-governmental programs are listed in Table 4 for each country chapter.

4 RMU: Green turtle (*Chelonia mydas*) - Atlantic Southcentral

4.1 Distribution, abundance, trends

4.1.1 Nesting sites

Not apply.

4.1.2 Marine areas

Movement paths and foraging areas of immature green turtles in the SW Atlantic are displayed in Fig. 11 (Uruguay [34]), while distribution of strandings of immature green turtles are showed in Fig. 2 the high concentrations of stranding reflects the coastal foraging areas (Uruguay [33]).

4.1.3 Other biological data

Please see Table 1.

4.2 Threats

4.2.1 Nesting sites

Not apply.

4.2.2 Marine areas

Please see Table 1

4.2.3 Conservation

Protection status: see Table 1 for national laws (Uruguay [6,7]).

4.2.4 Research

Key knowledge gaps about currently bycatch numbers by artisanal and industrial Uruguayan fleet and other international fleet operating in the area.

5 RMU: Hawksbill (*Eretmochelys imbricata*) –Atlantic Southwest

5.1 Distribution, abundance, trends

5.1.1 Nesting sites

There are 15 nesting sites (Table 1; Fig. 1), all of them in Brazil. The five main nesting areas are located in the northeast of Bahia and Rio Grande do Norte, Brazil.

For abundance indexes (e.g. nests or nesting females per year) please see Table 1. All index nesting sites have positive trends (Brazil [135,124]).

5.1.2 Marine areas

Identified foraging grounds and migratory corridors of hawksbill nesting females tagged in Bahia are shown in Fig. 6 (Brazil [78]) and Fig. 7 (Brazil [65]). Reported feeding areas are: Fernando de Noronha National Marine Park, Abrolhos National Marine Park, Biological Reserve of Atol das Rocas and Ilha do Arvoredo. Juveniles tagged in Atol das Rocas were later recorded nesting in Bahia, Brazil (Itacimirim and Ilhéus), Rio Grande do Norte (Pipa) and in Barbados (Fig. 8; Brazil [74]). Records for this specie in Uruguayan waters are rare and sparse. (Uruguay [33]).

5.1.3 Other biological data

Please see Table 1- Main Table.

5.1.4 Threats

Please see Table 1- Main Table.

5.2 Conservation

Protection status: see Table 1 for national laws and Table 3 in the country chapters for international conventions. National laws for sea turtle protection are available in Brazil, Argentina and Uruguay. See Table R in the country chapters (Brazil [190], Argentina [21], Uruguay [6,7]). Long-term governmental and non-governmental programs are listed in Table 4 for each country chapter.

6 RMU: Olive ridley (*Lepidochelys olivacea*) - West Atlantic

6.1 Distribution, abundance, trends

6.1.1 Nesting sites

There are 19 olive ridley nesting sites in Brazil (Table1; Fig. 1), eight of them are classified as "major" nesting areas (Table 1). For abundance indexes (e.g. nests or

nesting females per year) please see Table 1. The most recent season for abundance data published was 2009/2010, showing an average number of nests per year ranging from 8000 to 9000 (Table 1). All index nesting sites have positive trends (Brazil [129,136]).

6.1.2 Marine areas

Telemetry studies reveled that feeding grounds of nesting females tagged in Sergipe are located in neritic areas off the Brazilian coast (from Para in the north to Parana in the south) as well as, off the northwestern African coast, within waters of Cabo Verde, Senegal, Gambia, Guinea-Bissau and Sierra Leone (Fig. 9, Fig. 10; Brazil [83, 223]). Records for this specie in Uruguayan waters are rare and sparse. (UR Table R # 15, 33).

6.1.3 Other biological data

Please see Table 1.

6.1.4 Threats

Please see Table 1.

6.2 Conservation

Protection status: see Table 1 for national laws and Table 3 in the country chapters for international conventions. National laws for sea turtle protection are available in Brazil, Argentina and Uruguay. See Table R in the country chapters (Brazil [190], Argentina [21], Uruguay [6,7]). Long-term governmental and non-governmental programs are listed in Table 4 for each country chapter.

7 RMU: Leatherback (*Dermochelys coriacea*-new Atlantic)

7.1 Distribution, abundance, trends

7.1.1 Nesting sites

There is only one known recently discovered nesting site around the Parnaíba Delta in the states of Piauí and possibly Maranhão, with about 80 km of beach, hosting a small population. There is evidence of regular annual nestings in the area, but no abundance indexes (e.g. nests, females) are available (Table 1; Brazil [203])

7.1.2 Marine areas

Only one nesting female has been so far satellite-tracked for her post nesting movements; this female went northwards up to a point in the North Atlantic close to Nova Scotia in Canada (Brazil [203]).

7.2 Other biological data

Please see Table 1.

7.3 Threats

Please see Table 1.

7.4 Conservation

Protection status: please see Table 1 for national laws (Brazil [190]) and Table 3 for international conventions. Long-term governmental and non-governmental programs are listed in Table 4.

7.5 Research

An article about this population is being written, to be submitted to an international journal for publication.

Table 1

RMU (all RMUs of all species occurring in a Country or Region) add or remove columns on the right according to the RMUs	**C. caretta SW ATL**	Country Chapters from which the info is taken	**D. coriacea SW ATL**	Country Chapters from which the info is taken	**C. mydas SW ATL**	Country Chapters from which the info is taken	**C. mydas SC ATL**	Country Chapters from which the info is taken	**E. imbricata SW ATL**	Country Chapters from which the info is taken	**L. olivacea SW ATL**	Country Chapters from which the info is taken	**D. coriacea new ATL**	Country Chapters from which the info is taken
Occurrence														
Nesting sites	Y	Brazil	Y	Brazil	Y	Brazil	N	Uruguay	Y	Brazil	Y	Brazil	Y	Brazil
Pelagic foraging grounds	Y	Brazil, Argentina, Uruguay	Y	Brazil, Argentina, Uruguay	Y	Brazil, Argentina, Uruguay	Y	Uruguay	N	Brazil	Y	Brazil		

Benthic foraging grounds	Y	Brazil, Argentina, Uruguay	Y	Brazil, Uruguay	Y	Brazil, Uruguay	Y	Uruguay	Y	Brazil	Y	Brazil		
Key biological data														
Nests/yr: recent average (range of years)	7540 (2008/09-2012/13)	Brazil	89,8 (2013 - 2017)	Brazil	3600 (1991/92–2008/09)		n/a	Uruguay	1900 (2009 - 2010)	Brazil	6710 (2009-2010)	Brazil		
Nests/yr: recent order of magnitude	7000 - 8000	Brazil	50 - 100 (2013 - 2017)	Brazil	3000 - 4000	Brazil	n/a	Uruguay	2000 - 2500	Brazil	8000 - 9000	Brazil	< 100	Brazil
Number of "major" sites (>20 nests/yr AND >10 nests/km yr)	13	Brazil	0	Brazil	3	Brazil	n/a	Uruguay	5	Brazil	8	Brazil		
Number of "minor"	9	Brazil	5 *	Brazil	7	Brazil	n/a	Uruguay	10	Brazil	11	Brazil		

sites (<20 nests/yr OR <10 nests/km yr)														
Nests/yr at "major" sites: recent average (range of years)	570 (2010/ 2011-2018/2019)	Brazil	69 (2010/ 2011-2018/2019)	Brazil	1405 (2010/ 2011-2018/2019)	Brazil	n/a	Uruguay	355 (2010/2011-2018/2019)	Brazil	1050 (2010/ 2011-2018/2019)	Brazil		
Nests/yr at "minor" sites: recent average (range of years)	180 (2010/ 2011-2018/2019)	Brazil	3 (2010/ 2011-2018/2019)	Brazil	18 (2010/ 2011-2018/2019)	Brazil	n/a	Uruguay	55(2010/2011-2018/2019)	Brazil	70 (2010/ 2011-2018/2019)	Brazil		
Total length of nesting sites (km)	580	Brazil	160	Brazil	**254	Brazil	n/a	Uruguay	375	Brazil	313	Brazil		
Nesting females / yr	N		N		N		n/a	Uruguay	705 - 791	Brazil	N			
Nests / female	4.1	Brazil	5 - 6	Brazil	5.2 (775)	Brazil	n/a	Uruguay	2.1-2.6	Brazil	N	Brazil		

season (N)														
Female remigration interval (yrs) (N)	2	Brazil	02-Aug	Brazil	3.5 (142)	Brazil	n/a	Uruguay	2.1	Brazil	N	Brazil		
Sex ratio: Hatchlings (F / Tot) (N)	53-94 (27.697)	Brazil	N	Brazil	N	Brazil	n/a	Uruguay	89-96 (5514)	Brazil	N	Brazil		
Sex ratio: Immatures (F / Tot) (N)	N	Brazil	N	Brazil	N	Brazil	n/a	Uruguay	N	Brazil	N	Brazil		
Sex ratio: Adults (F / Tot) (N)	N	Brazil	N	Brazil	N	Brazil	n/a	Uruguay	N	Brazil	N	Brazil		
Min adult size, CCL or SCL (cm)	79,5 CCL	Brazil	125 CCL	Brazil	89 CCL	Brazil	n/a	Uruguay	74 CCL	Brazil	60 CCL	Brazil		
Age at maturity (yrs)	Y	Brazil	N	Brazil	Y	Brazil	n/a	Uruguay	Y	Brazil	Y	Brazil		
Clutch size (n eggs) (N)	127		87.7	Brazil	120.1	Brazil	n/a	Uruguay	140; 143	Brazil	100.1	Brazil		

Emergence success (hatchlings /egg) (N)	73,1% & 63,2%; 79,9% & 67,7; 56,7% to 80,88 %		66.00 %	Brazil	84.40 %	Brazil	n/a	Uruguay	61% &51,7%	Brazil	80,2% & 78,7%	Brazil		
Nesting success (Nests/ Tot emergence tracks) (N)					54%	Brazil	n/a	Uruguay						
Trends														
Recent trends (last 20 yrs) at nesting sites (range of years)	up	Brazil	up (1998 - 2017)	Brazil	stable	Brazil	n/a	Uruguay	up	Brazil	up	Brazil		
Recent trends (last 20 yrs) at foraging	N	Brazil	N	Brazil	up	Brazil	n/a	Uruguay	N	Brazil	N	Brazil		

grounds (range of years)														
Oldest documented abundance: nests/yr (range of years)							n/a	Uruguay						
Published studies														
Growth rates	Y	Brazil, Uruguay	Y	Uruguay	Y	Brazil, Uruguay	Y	Uruguay	Y	Brazil	Y	Brazil		
Genetics	Y	Brazil, Uruguay, Argentina	Y	Brazil, Uruguay, Argentina	Y	Brazil, Uruguay, Argentina	Y	Uruguay	Y	Brazil	Y	Brazil		
Stocks defined by genetic markers	Y	Brazil, Uruguay,	Y	Brazil, Uruguay,	Y	Brazil, Uruguay,	Y	Uruguay	Y	Brazil	Y	Brazil		

		Argentina		Argentina		Argentina								
Origin of mixed stocks	Y	Brazil	Y	Brazil	Y	Brazil	Y	Uruguay	Y	Brazil	N	Brazil		
Remote tracking (satellite or other)	Y	Brazil, Uruguay, Argentina	Y	Brazil, Uruguay, Argentina	Y	Brazil, Uruguay, Argentina	Y	Uruguay	Y	Brazil	Y	Brazil		
Survival rates	N	Brazil, Uruguay, Argentina	N	Brazil, Uruguay, Argentina	Y	Brazil, Uruguay	Y	Uruguay	N	Brazil	N	Brazil		
Population dynamics	Y	Uruguay	N	Uruguay	Y	Brazil, Uruguay	Y	Uruguay	Y	Brazil	N	Brazil		
Foraging ecology (diet or isotopes)	Y	Brazil, Uruguay	Y	Brazil, Uruguay	Y	Brazil, Uruguay, Argentina	Y	Uruguay	Y	Brazil	Y	Brazil		

Capture-Mark-Recapture	Y	Brazil, Uruguay	Y	Brazil, Argentina	Y	Brazil, Uruguay	Y	Uruguay	Y	Brazil	Y	Brazil		
Threats														
Bycatch: presence of small scale / artisanal fisheries?	Y	Brazil, Uruguay, Argentina	Y	Brazil, Uruguay, Argentina	Y	Brazil, Uruguay, Argentina	Y	Uruguay	Y (SN; PN; OTH (corrals))	Brazil	Y (SN; OTH (corrals))	Brazil		
Bycatch: presence of industrial fisheries?	Y	Brazil, Uruguay, Argentina	Y	Brazil, Uruguay, Argentina	Y	Brazil, Uruguay, Argentina	Y	Uruguay	Y (SN)	Brazil	Y (PLL; ST)	Brazil		
Bycatch: quantified?	Y	Brazil, Uruguay	Y	Brazil, Uruguay	Y	Brazil, Uruguay	Y	Uruguay	Y	Brazil	Y (PLL)	Brazil		
Intentional killing of turtles	N	Brazil, Uruguay, Argentina	N	Brazil, Uruguay, Argentina	Y	Brazil	N	Uruguay	N	Brazil	N	Brazil		

Take. Illegal take of turtles	n/a	Brazil, Uruguay, Argentina	n/a	Brazil, Uruguay, Argentina	n/a	Brazil, Uruguay	n/a	Uruguay	n/a	Brazil	n/a	Brazil		
Take. Permitted/ legal take of turtles	n/r	Brazil, Uruguay, Argentina	n/r	Brazil, Uruguay, Argentina	n/r	Brazil, Uruguay, Argentina	n/r	Uruguay	n/r		n/r			
Take. Illegal take of eggs	Y	Brazil	N	Brazil	Y	Brazil	n/a	Uruguay	Y	Brazil	Y	Brazil		
Take. Permitted/ legal take of eggs	n/r	Brazil	n/r	Brazil	n/r	Brazil	n/r	Uruguay	n/r		n/r			
Coastal Development. Nesting habitat degradation	Y	Brazil	Y	Brazil	Y	Brazil	n/a	Uruguay	Y	Brazil	Y	Brazil		
Coastal Developm	Y	Brazil	Y	Brazil	Y	Brazil	n/a	Uruguay	Y	Brazil	Y	Brazil		

ent. Photopollution														
Coastal Development. Boat strikes	N	Brazil, Uruguay, Argentina	N	Brazil, Uruguay, Argentina	Y	Uruguay	Y	Uruguay	N	Brazil	N	Brazil		
Egg predation	Y	Brazil	N	Brazil	Y	Brazil	n/a	Uruguay	Y	Brazil	Y	Brazil		
Pollution (debris, chemical)	Y	Brazil	Y	Brazil	Y	Brazil	Y	Uruguay	N	Brazil	N	Brazil		
Pathogens	Y	Brazil	N	Brazil, Uruguay, Argentina	Y	Brazil, Uruguay	Y	Uruguay	Y	Brazil	Y	Brazil		
Climate change	Y	Brazil	N	Brazil, Uruguay, Argentina	N	Brazil, Uruguay, Argentina	N	Uruguay	Y	Brazil	N	Brazil		
Foraging habitat	N	Brazil,	N	Brazil,	Y	Brazil,	Y	Uruguay	N	Brazil	N	Brazil		

degradation		Uruguay, Argentina		Uruguay, Argentina		Uruguay								
Other	Y	Brazil, Argentina	Y	Brazil, Uruguay	Y	Brazil, Uruguay	Y	Uruguay	N	Brazil	Y	Brazil		
Long-term projects (>5yrs)														
Monitoring at nesting sites (period: range of years)	Y (1982-ongoing)	Brazil	Y (1982-ongoing)	Brazil	Y (1982-ongoing)	Brazil	n/a	Uruguay	Y (1982-ongoing)	Brazil	Y (1982-ongoing)	Brazil	Y (2007-ongoing)	Brazil
Number of index nesting sites	6	Brazil	2	Brazil	2	Brazil	n/a	Uruguay	5	Brazil	3	Brazil		
Monitoring at foraging sites	Y	Brazil, Uruguay,	Y	Brazil, Uruguay,	Y	Brazil, Uruguay,	Y	Uruguay	Y	Brazil	Y	Brazil		

(period: range of years)		Argentina		Argentina		Argentina							
Conservation													
Protection under national law	Y	Brazil, Uruguay, Argentina	Y	Brazil, Uruguay, Argentina	Y	Brazil, Uruguay, Argentina	Y	Uruguay	Y	Brazil	Y	Brazil	Y	Brazil
Number of protected nesting sites (habitat preservation) (% nests)	100%	Brazil	100%	Brazil	100%	Brazil	n/a	Uruguay	100%	Brazil	100%	Brazil	100 %	Brazil
Number of Marine Areas with mitigation of threats	0	Brazil, Uruguay, Argentina	0	Brazil, Uruguay, Argentina	2	Uruguay	2	Uruguay	0	Brazil	0	Brazil		

N of long-term conservation projects (period: range of years)	>1 (1982-ongoing)	Brazil	>1 (1982-ongoing)	Brazil	>1 (1981-ongoing)	Brazil	1	Uruguay	>1 (1982-ongoing)	Brazil	>1 (1982-ongoing)	Brazil	1 (2007-0ngoing)	Brazil
In-situ nest protection (eg cages)	Y	Brazil	Y	Brazil	N	Brazil	n/a	Uruguay	Y	Brazil	Y	Brazil		
Hatcheries	Y	Brazil	Y	Brazil	N	Brazil	n/a	Uruguay	Y	Brazil	Y	Brazil		
Head-starting	N	Brazil	N	Brazil	N	Brazil	n/a	Uruguay	N	Brazil	N	Brazil		
By-catch: fishing gear modifications (eg, TED, circle hooks)	Y	Brazil, Uruguay	Y	Brazil, Uruguay]	N	Brazil, Uruguay, Argentina	N	Uruguay	N	Brazil	N	Brazil		
By-catch: onboard best practices	Y	Uruguay, Argentina	Y	Argentina	Y	Argentina	n/a	Uruguay	N	Brazil	N	Brazil		

By-catch: spatio-temporal closures/reduction	Y	Argentina	Y	Argentina	Y	Argentina	N	Uruguay	N	Brazil	Y	Brazil		
Other														
*Leatherback nesting beaches in Brazil are all considered minor under this criteria.														
** low density green turtle nesting beaches, the 3 main nesting areas of this RMU are located in the oceanic islands														

Figures

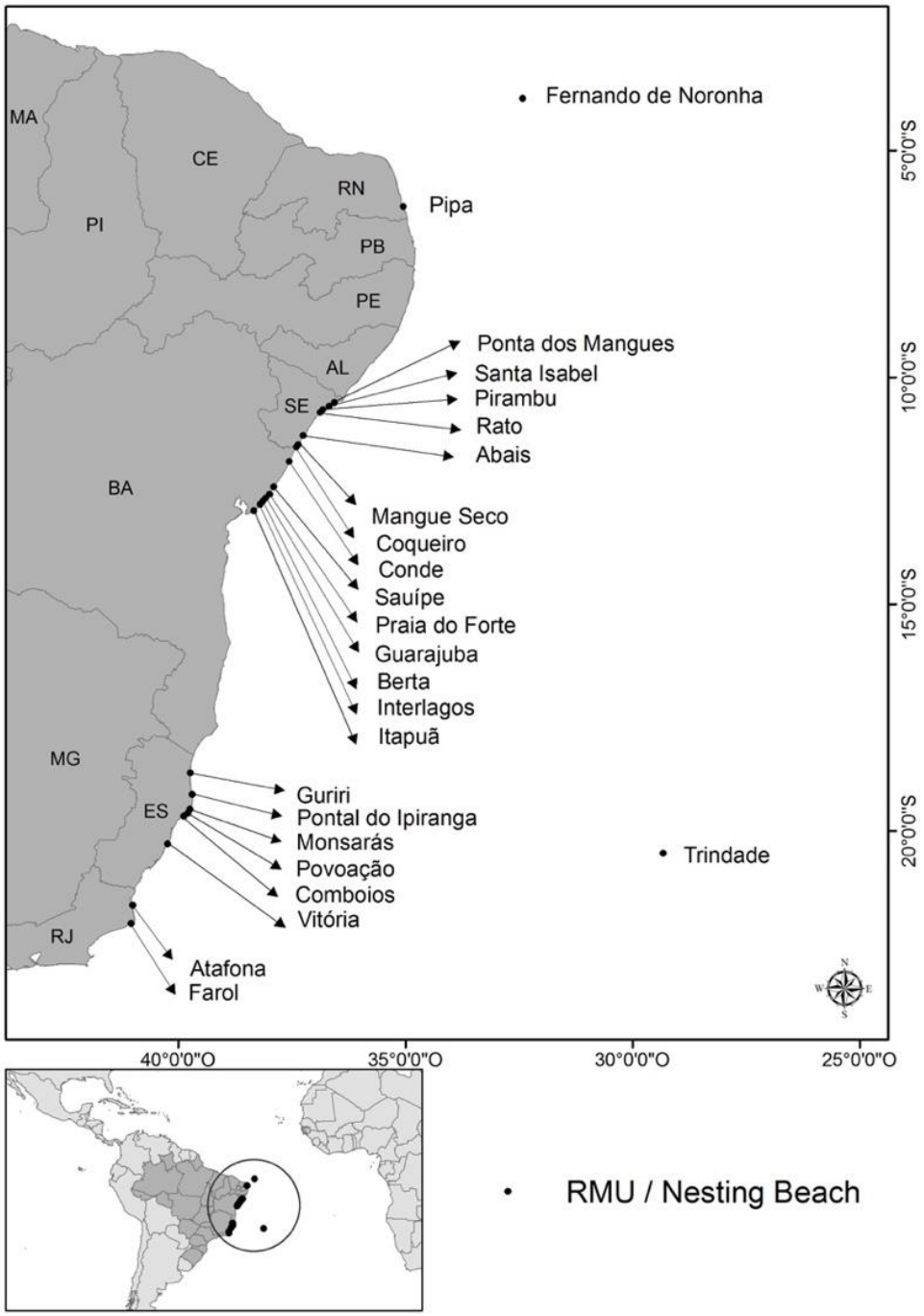

Figure 1. Main nesting areas for sea turtles in Brazil. RN, Rio Grande do Norte; SE, Sergipe; BA, Bahia; ES, Espírito Santo; RJ: Rio de Janeiro.

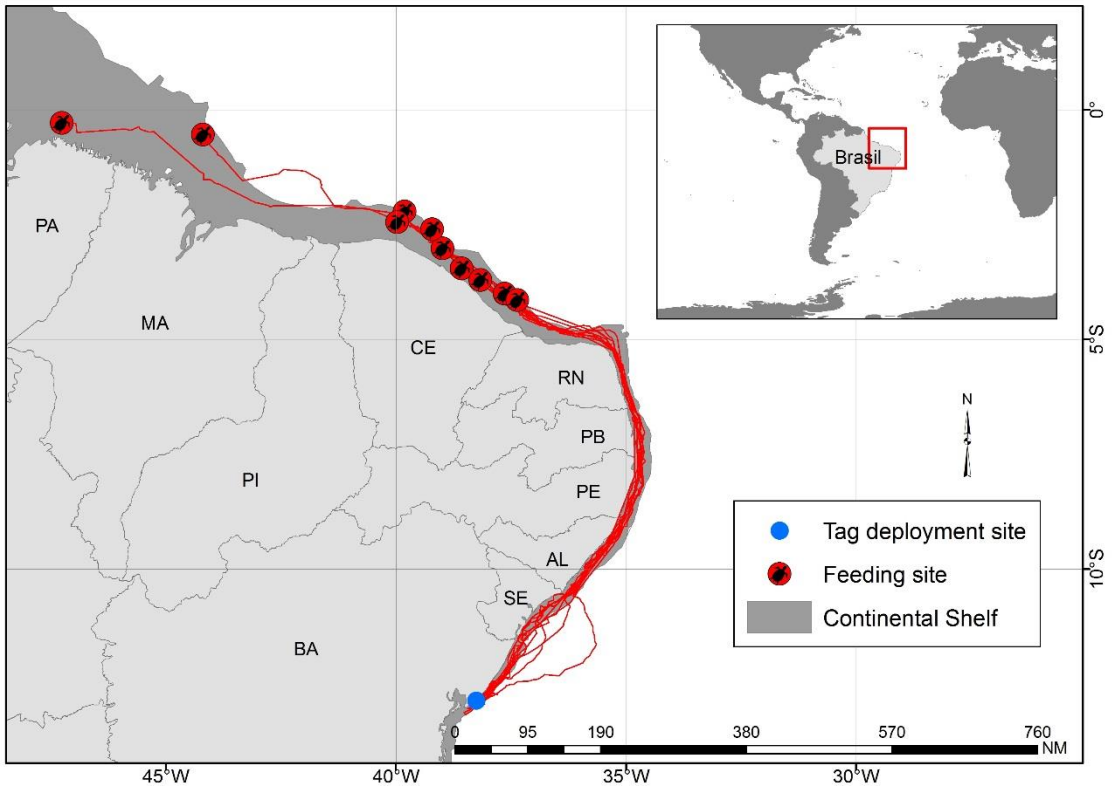

Figure 2. Post-nesting migrations and feeding grounds of 10 loggerhead female turtles satellite-tracked from nesting beaches along the northern coast of Bahia, Brazil [78].

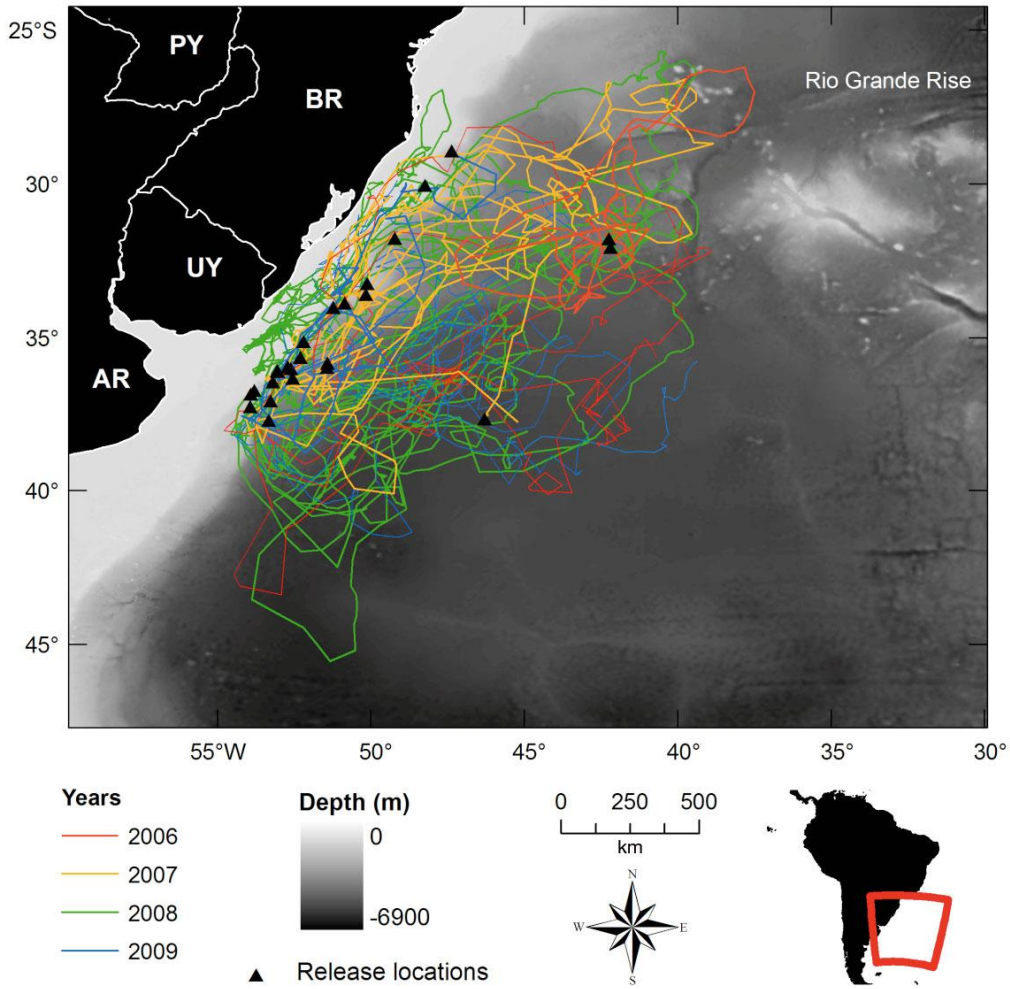

Figure 3. Movement paths of 26 immature loggerheads in the SW Atlantic Ocean between 2006 and 2010 [1].

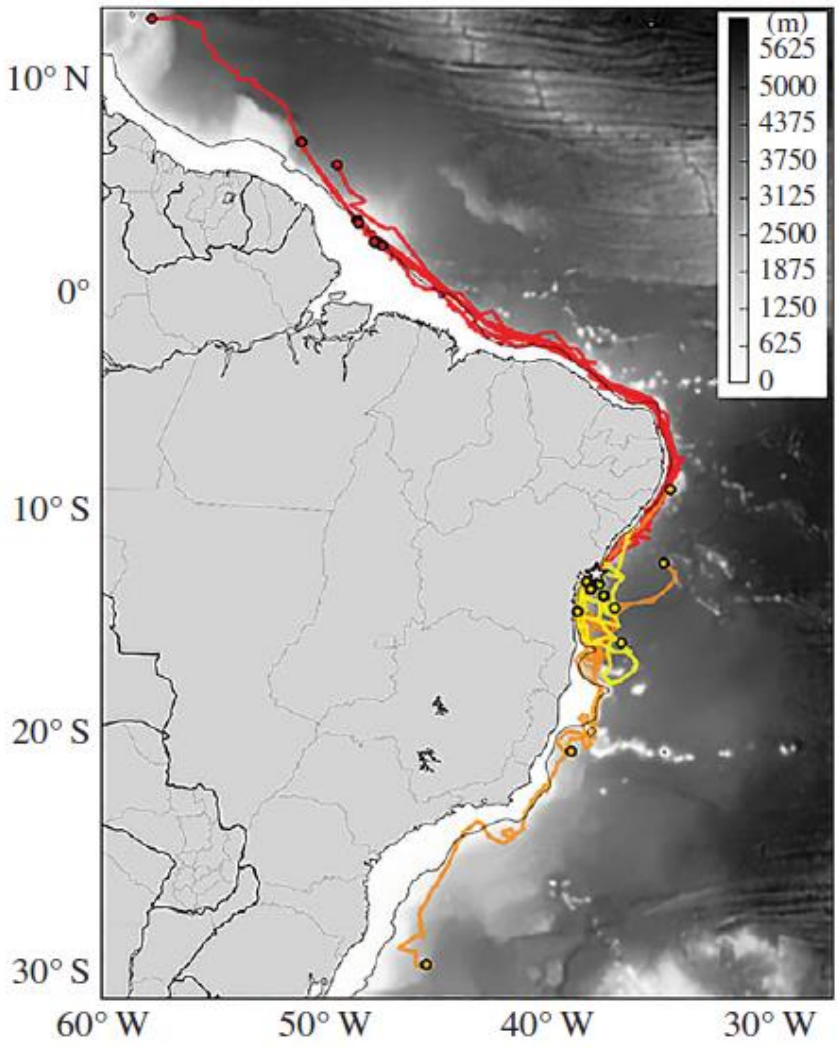

Figure 4. Satellite tracks of 19 yearling loggerhead sea turtles released from Praia do Forte, Bahia, Brazil [82].

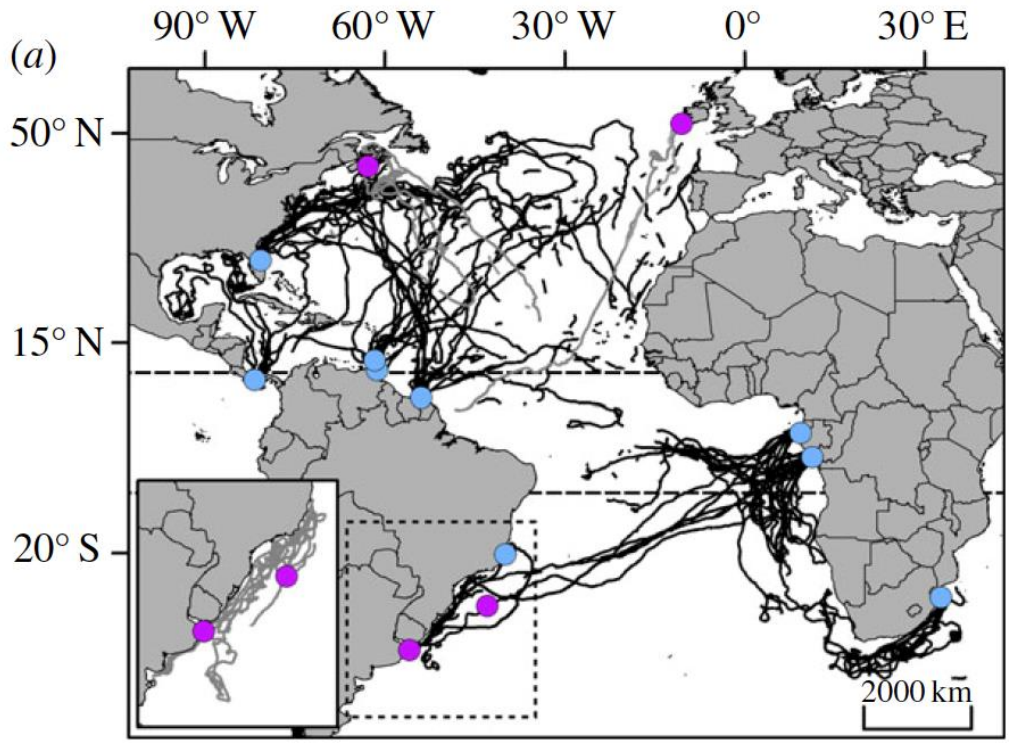

Figure 5. Movements of satellite-tracked leatherbacks during their migration in the Atlantic Ocean, between 1995 and 2010. Black lines: movements of females tagged on the nesting beach. Grey lines: movements of individuals tagged near presumed foraging grounds; Blue dots: deployment from a nesting site; Purple dots: deployment at. Inset: movements of six individuals tagged on their foraging grounds in the southwestern Atlantic. (Brazil [82]; Argentina [5]; Uruguay [13])

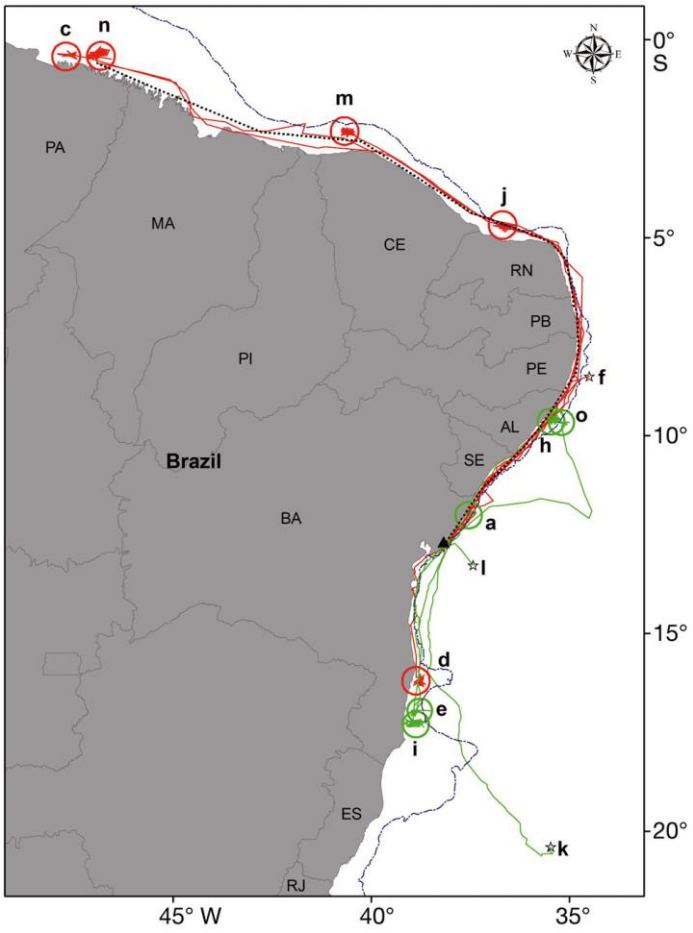

Figure 6. Migratory paths and foraging areas of hawksbill turtles satellite-tracked from nesting grounds in northern Bahia, Brazil (n = 15). Lower case letters: individual turtles; circles: foraging areas (green: hawksbills; red: hawksbill-loggerhead hybrids) [81].

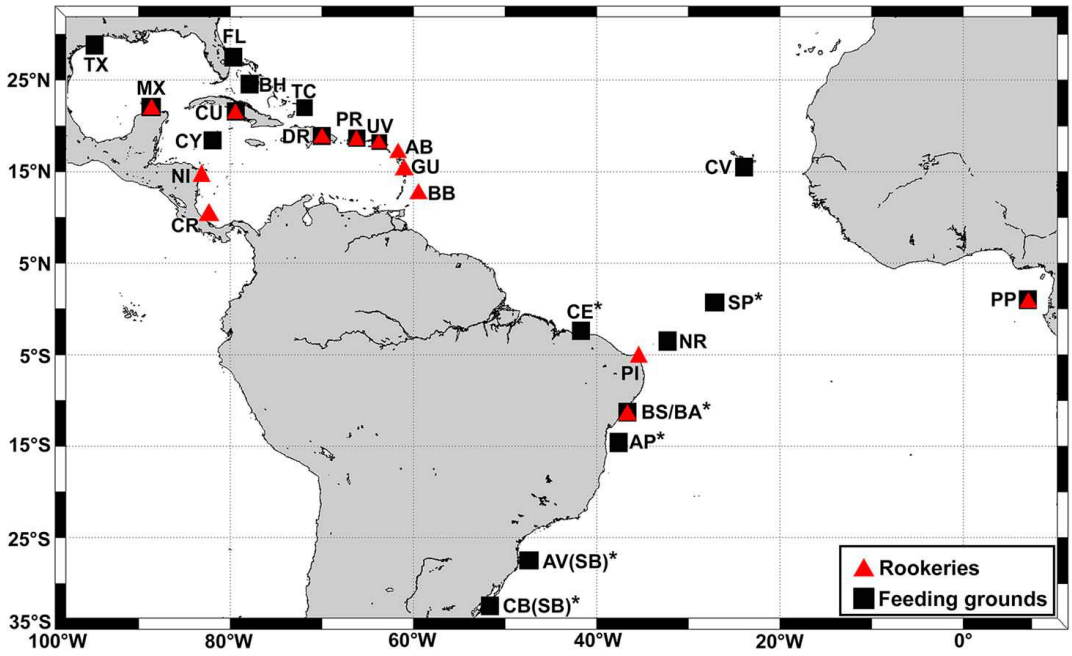

Figure 7. Locations of genetically described hawksbill populations in the Atlantic, rookeries (red triangles) and feeding grounds (black squares) (Brazil [65]).

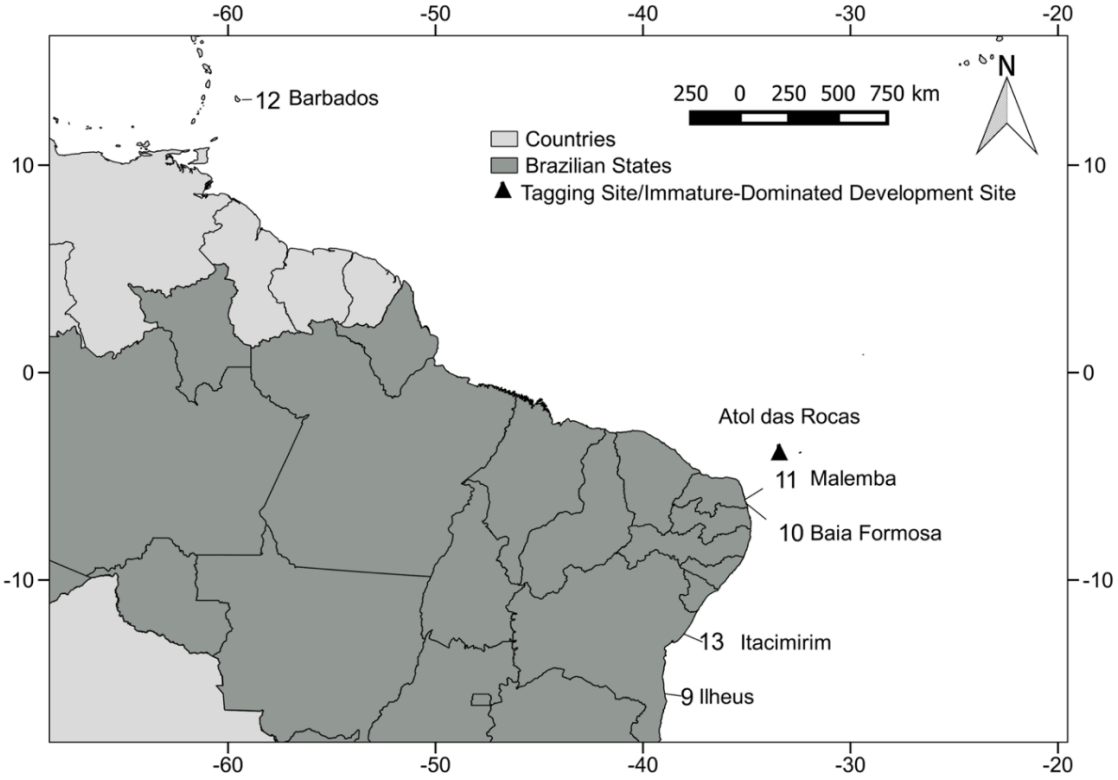

Figure 8. Nesting beach locations for five hawksbills (*Eretmochelys imbricata*) originally tagged as juveniles in Atol das Rocas, Brazil. Numbers correspond to nesting beaches. (Brazil [74])

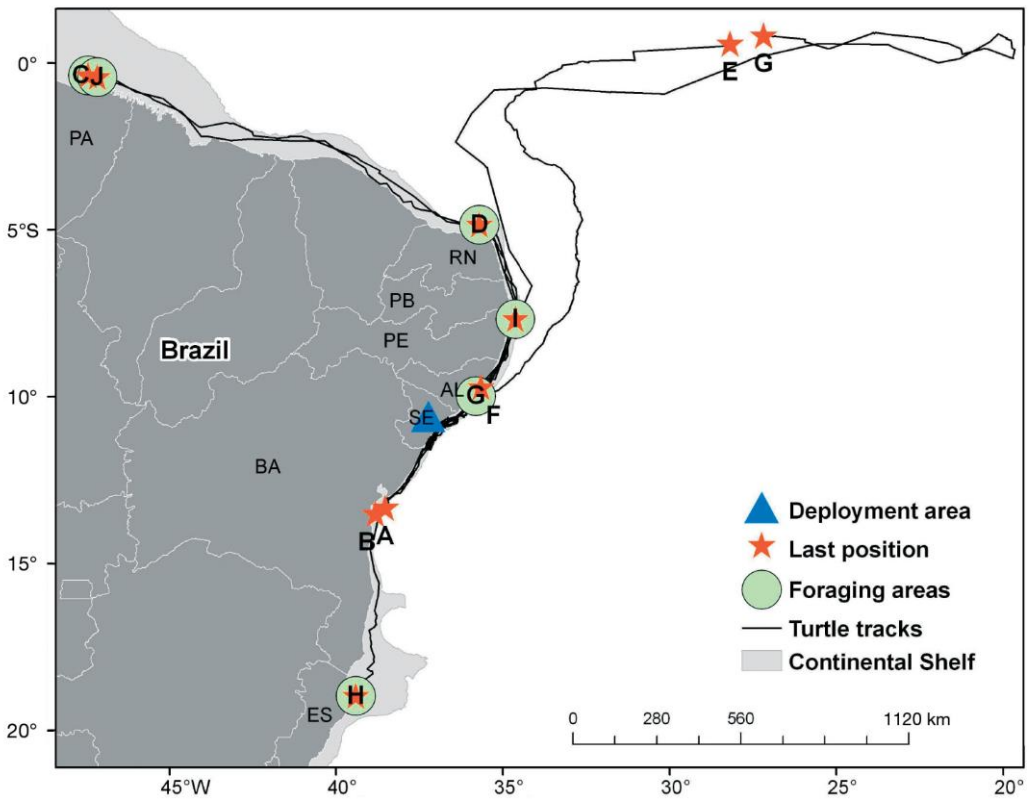

Figure 9. Post-nesting movements of olive ridley turtles satellite tracked from their nesting grounds in Sergipe, Brazil [83].

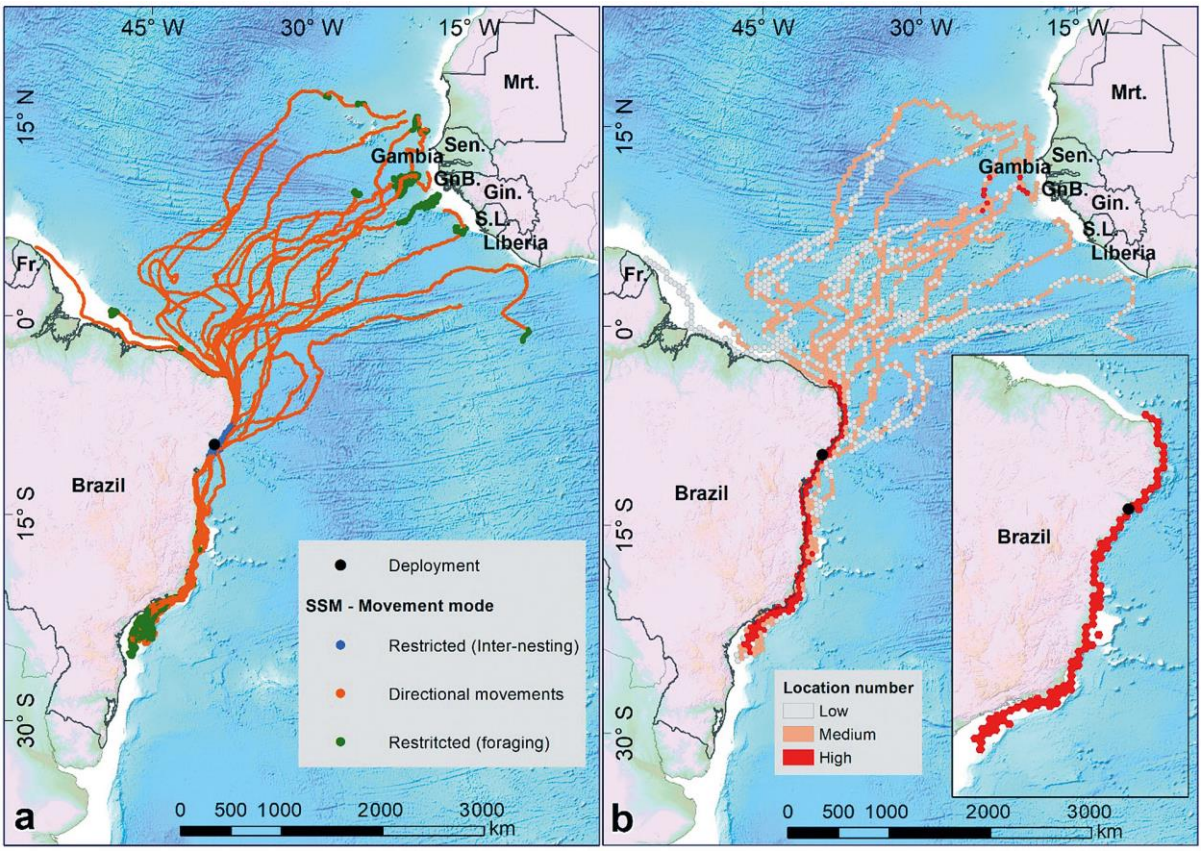

Figure 10. Olive ridley post-reproductive displacement from nesting beaches in Sergipe, Brazil. (a) State-space model predicted behavior; (b) weighted point density per 25 km hexagon [225].

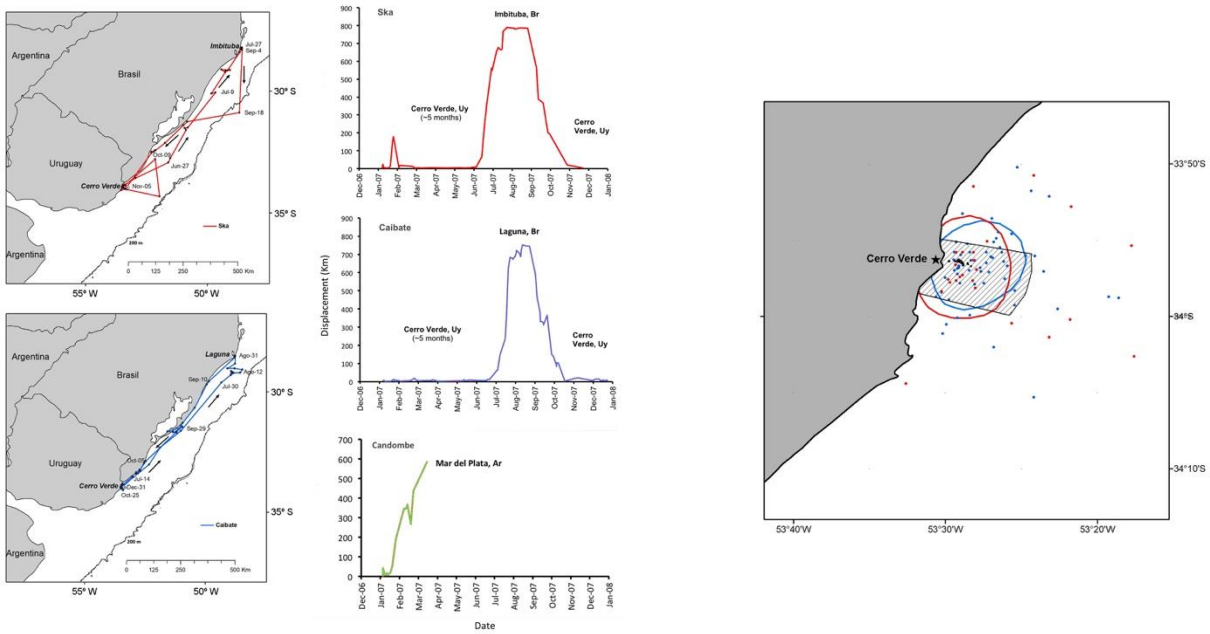

Figure 11. Displacement from released site plot of the three tracked green turtle. The left panels (A and B) show the tracks of those turtles that performed a round-trip migration between summer and winter foraging areas in Uruguay and Brazil respectively. The three right panels (C, D and E) show distance to the release point through time. Phases of migration are represented by rapid changes in displacement distance; summer and winter foraging areas are revealed by plateaus. Left panels: Right Panel: Turtle's positions and core-use areas (50% KDE contours) for the two green turtles that remained for several months at the CMPA of Cerro Verde and Coronilla islands.Taken from Vélez-Rubio et al. (2018).

ARGENTINA

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1 RMU: Loggerhead (*Caretta caretta*) Southwestern Atlantic

The coasts of Argentina are the southernmost feeding areas for the loggerhead turtle (Gonzalez Carman et al. 2011; Prosdocimi et al 2017). The natal origin of the loggerhead turtle aggregation came mainly from Brazilian nesting sites (Prosdocimi et al. 2015).

1.1 Distribution, abundance, trends

This species occupied coastal waters of Argentina and the region, identified by satellite telemetry and strandings (Alvarez et al. 2016; Gonzalez Carman et al 2011, 2012b, 2016a,b).

1.1.1 Nesting sites

Not apply

1.1.2 Marine áreas

Movement paths and pelagic foraging areas of immature loggerheads in Argentinian waters (Fig. 1, Gonzalez Carman et al 2011) and the Fig. 2 show seasonal habitat use of six individuals of immature loggerheads (Gonzalez Carman et al 2016).

1.2 Other biological data

Please see Table 1.

1.3 Threats

The main threats for this species were resumed in Table 1 (Gonzalez Carman et al 2011, López-Mendilaharsu et al. 2020; Marcovaldi et al. 2017; Prosdocimi et al. 2020).

1.3.1 Nesting sites

Not apply

1.3.2 Marine areas

Main threats of the species in Argentina waters are bycatch by industrial fleet. Also interact with artisanal bottom set nets but in lower numbers (Gonzalez Carman et al 2011; Prosdocimi et al. 2020).

Other threats were interaction with marine debris, by ingestion (Gonzalez Carman et al.2014).

Please see Table 1 and Figure 3.

1.4 Conservation

Protection status: see Table 1 for national laws (Prado et al. 2012) and Table 3 for international conventions.

The PRICTMA (Programa Regional de Investigación y Conservación de Tortugas Marinas) has been working on monitoring and conservation since 2003.

1.5 Research

Key knowledge gaps about currently bycatch numbers by artisanal and industrial Argentinian fleet and other international fleet operating in the area.

For information the research conducted in Argentina with this species see Table 1.

2 RMU: Leatherback turtle (Dermochelys coriacea) – Southwestern Atlantic

Adult Leatherback turtles use coastal and oceanic waters of Argentina (Gonzalez Carman et al. 2011; López-Mendilaharsu et al. 2009; Fossette et al. 2010; Prosdocimi et al. 2020). The natal origin of the majority of leatherbacks (85%) in Argentine waters come from the African rookeries, mainly Gabon in West Africa with minimal contribution coming from other Atlantic rookeries (Prosdocimi et al. 2014).

2.1 Distribution, abundance, trends

This species occupied coastal and oceanic waters of Argentina and the region, identified by mark-recapture programs, satellite telemetry and strandings (Alvarez et al. 2016; Billes et al. 2006; Gonzalez Carman et al. 2011; López-Mendilaharsu et al. 2009; Fossette et al. 2010, 2014; Gonzalez Carman et al 2012b, 2016b, Prosdocimi et al. 2016).

2.1.1 Nesting sites

Not apply

2.1.2 Marine áreas

Movement paths and pelagic foraging areas of adult leatherback turtles in the SW Atlantic are displayed in Fig. 1 (López-Mendilaharsu et al. 2009; Fossette et al. 2010; Prosdocimi et al. 2016). The Fig. 4 show density distribution of satellite-tracked leatherbacks and trawl fishing-pressure in the Atlantic Ocean (Prosdocimi et al. 2020).

2.2 Other biological data

Leatherbacks are known to forage seasonally in the Rio de la Plata estuary, a highly productive estuarine system where their preferred prey species, gelatinous macrozooplankton, occur in high densities (López-Mendilaharsu et al. 2009; Prosdocimi et al. 2016).

See more details of biological data in Table 1.

Please see Table 1.

2.3 Threats

The main threats were resumed in Table 1.

2.3.1 Nesting sites

Not apply.

2.3.2 Marine areas

Although not quantified, main threats of the species in Argentinian waters are bycatch by industrial fleet. Also interact with artisanal set nets (Gonzalez Carman et al. 2011; Prosdocimi et al. 2016,2020).

Please see Table 1 and Figure 3.

2.4 Conservation

Protection status: see Table 1 for national laws (Prado et al 2012 and Table 2 for international conventions.

The PRICTMA (Programa Regional de Investigación y Conservación de Tortugas Marinas) has been working on monitoring and conservation since 2003.

2.5 Research

There are key knowledge gaps on the abundance of the species, the number of incidental catches by the Argentine artisanal and industrial fleet and other international fleets operating in the area. For information on the research carried out in Argentina with this species see Table 1.

3 RMU: Green turtle (Chelonia mydas) – Southwestern Atlantic

Immature green turtles use coastal and oceanic waters of Argentina (Gonzalez Carman et al 2011; Prosdocimi et al 2017). The natal origin of the Green turtle aggregation came mainly from Ascension Island nesting beaches, but also haplotypes of other nesting areas were found (Prosdoci8mi et al. 2012).

3.1 Distribution, abundance, trends

This species occupied coastal waters of Argentina and the region, identified by satellite telemetry and strandings (Alvarez et al. 2016; Gonzalez Carman et al. 2012a,b, 2013, 2014, 2016b).

3.1.1 Nesting sites

Not apply.

3.1.2 Marine áreas

Movement paths and pelagic foraging areas of immature green turtle in Argentinian waters Fig. 1 (Gonzalez Carman et al 2011, 2013) and the Fig. 2 show seasonal habitat use (Gonzalez Carman et al. 2012).

3.2 Other biological data

See more details of biological data in Table 1.Please see Table 1.

3.3 Threats

The main threats were resumed in Table 1.

3.3.1 Nesting sites

Not apply.

3.3.2 Marine areas

The main threats affecting green turtles in Argentinian waters include, marine debris ingestion (Gonzalez Carman et al. 2014) and bycatch in artisanal fisheries (Domingo et al. 2006; Gonzalez Carman et al. 2011). Please see Table 1 and Figure 3.

3.4 Conservation

Protection status: see Table 1 for national laws (Prado et al. 2012 and Table 2 for international conventions.

The PRICTMA (Programa Regional de Investigación y Conservación de Tortugas Marinas) has been working on monitoring and conservation since 2003.

3.5 Research

Key knowledge gaps about currently bycatch numbers by artisanal and industrial Argentinian fleet and other international fleet operating in the area.

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Table 1. Biological and conservation information about sea turtle Regional Management Units in Argentina.

RMU	**CC-NW IND**	Ref #	**CM-NW IND**	Ref #	**DC-SW IND**	Ref #
Occurrence						
Nesting sites	N	0	N		n/a	0
Pelagic foraging grounds	JA	1, 6,7,11,12,15, 18	J	1,7, 10,11,12,18	A	1,2,4,7,11, 12,18
Benthic foraging grounds	N	3	N		N	
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)	n/a		n/a		n/a	
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)	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	N		N		N	
Genetics	Y	20	Y	22	Y	21
Stocks defined by genetic markers	Y	20	Y	22	Y	21
Remote tracking (satellite or other)	Y	6,7	Y	7,1	Y	4,7,14
Survival rates	N		N		N	
Population dynamics	N		N		N	
Foraging ecology (diet or isotopes)	Y	12	Y	9,12	Y	12,19
Capture-Mark-Recapture	N		N		Y	2
Threats						
Bycatch: presence of small scale / artisanal fisheries?	Y (DN,SN)	3,12	Y	3,12	Y	3,12,19
Bycatch: presence of industrial fisheries?	Y (PT,MT)	3,12, 17	Y (PT,MT)	3,12,17	Y (DLL, MT, PT)	3,5, 12,17,19

Bycatch: quantified?	N	0	N		N	
Take. Intentional killing or exploitation of turtles	N		N		N	
Take. Egg poaching	n/a		n/a		n/a	
Coastal Development. Nesting habitat degradation	n/a		n/a		n/a	
Coastal Development. Photopollution	n/a		n/a		n/a	
Coastal Development. Boat strikes	N		N		N	
Egg predation	n/a		n/a		n/a	
Pollution (debris, chemical)	Y	11,13,15,18	Y	8,11, 18	N	11, 18,23
Pathogens	N		N		N	
Climate change	N		N		N	
Foraging habitat degradation	N		N		N	
Other	Y	13, 15	N		Y	23
Long-term projects						
Monitoring at nesting sites	n/a		n/a		n/a	
Number of index nesting sites	n/a		n/a		n/a	
Monitoring at foraging sites	Y	1,11,18	Y	1,11,18	Y	1,11,18
Conservation						
Protection under national law	Y	16, 24, 25, 26	Y	16, 24, 25, 26	Y	16, 24, 25, 26
Number of protected nesting sites (habitat preservation)	0		0		0	
Number of Marine Areas with mitigation of threats	0		0		0	
Long-term conservation projects (number)	0		0		0	
In-situ nest protection (eg cages)	n/a		n/a		n/a	

Hatcheries	n/a		n/a		n/a	
Head-starting	N		n/a		n/a	
By-catch: fishing gear modifications (eg, TED, circle hooks)	N		N		N	
By-catch: onboard best practices	Y	25	Y	25	Y	25
By-catch: spatio-temporal closures/reduction	Y	26	Y	26	Y	26
Other	N		N		N	

Table 3. International conventions protecting sea turtles and signed by Argentina.

International Conventions	**Signed**	**Binding**	**Compliance measured and reported**	**Species**	**Conservation actions**	**Relevance to sea turtles**
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (National Law 22.344/82)	Y	Y	Y	CM, CC, DC		
Convention on the Conservation of Migratory Species of Wild Animals (CMS) (National Law 23.918/91)	Y	Y	Y	CM, CC, DC		
Ramsar Convention (Ramsar, 1971) (National Law 23.919/91 and 25.335/00)	Y	Y	Y	CM, CC, DC		

International Conventions	Signed	Binding	Compliance measured and reported	Species	Conservation actions	Relevance to sea turtles
International Convention for the Prevention of Pollution from Ships (MARPOL) (National Law 24.089/92)	Y	Y	Y	CM, CC, DC		
Convention on Biological Diversity (CBD) (National Law 24.375/94)	Y	Y	Y	CM, CC, DC		
United Nations Convention on the Law of the Sea (CONVEMAR) (National Law 24.543/95)	Y	Y	Y	CM, CC, DC		
Inter-American Convention for the Protection and Conservation of Sea Turtle (IAC) (National Law 26.600/10)	Y	Y	Y	CM, CC, DC	National Action Plan for the conservation of sea turtles in Argentina, which include two Programmes: 1) National Action Programme to reduce the interaction of sea turtles with marine litter; 2) National Action Programme to reduce the interaction of sea turtles with the fisheries.	

Figures

Figure 1. Spatial use of sea turtles tracked in the Southwestern Atlantic Ocean between 2006 and 2010. A) *Chelonia mydas*, B) *Caretta caretta* and C) *Dermochelys coriacea* (Table R#11).

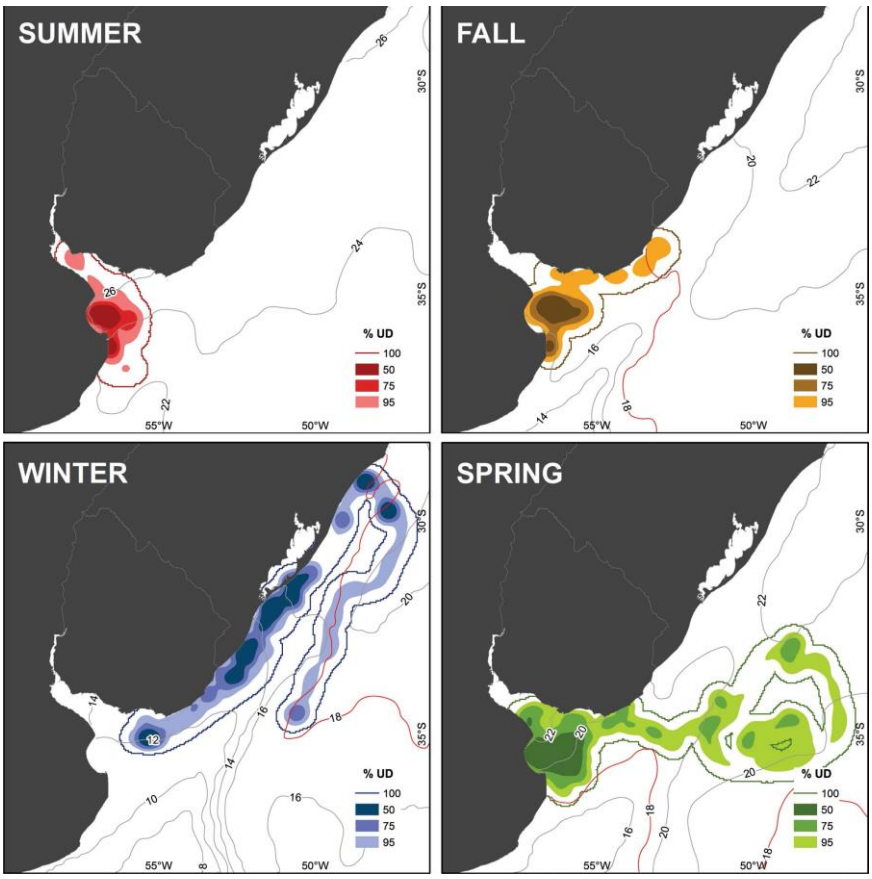

Figure 2. Seasonal habitat use of six individuals of immature loggerheads. The 100 and 50 % utilization distribution (UD) represents the overall home range of the turtle and the core activity areas, respectively. Isotherms of 18 °C are highlighted in red (Table R#6).

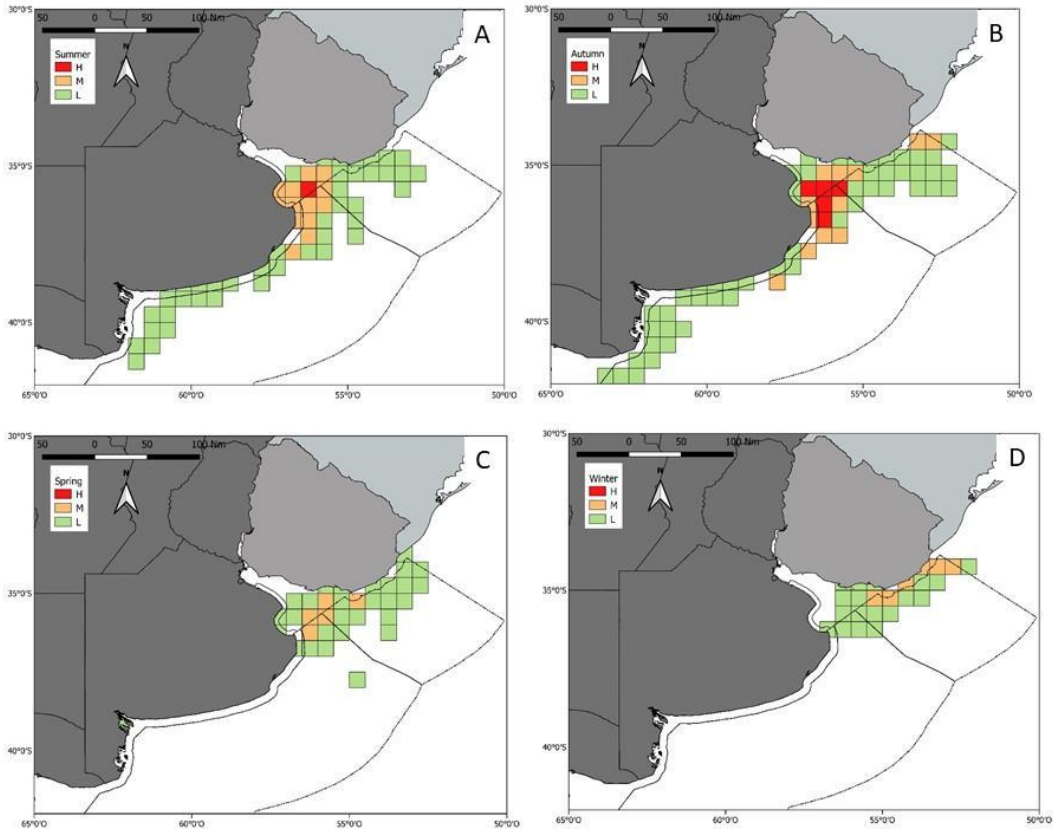

Figure. 3. Susceptibility of sea turtles to bycatch in Argentine and Uruguayan fisheries. These maps show areas of high-fishing-pressure (2006-2017) that overlapped with different sea turtle habitat use (2006-2013) along the CFZ. Dashed grey lines represent the limits of national EEZs. Argentina and Uruguay Exclusive Economic Zones are shown with dashed lines (200 nm) together with State waters shown with full lines (12nm). Dashed areas represent the shared Common Fishing Zone (CFZ). Three density classes were defined: low-, medium- and high-use areas. **A-** Summer; **B-** Autumn; **C-** Winter, **D-** Spring (Table R#19).

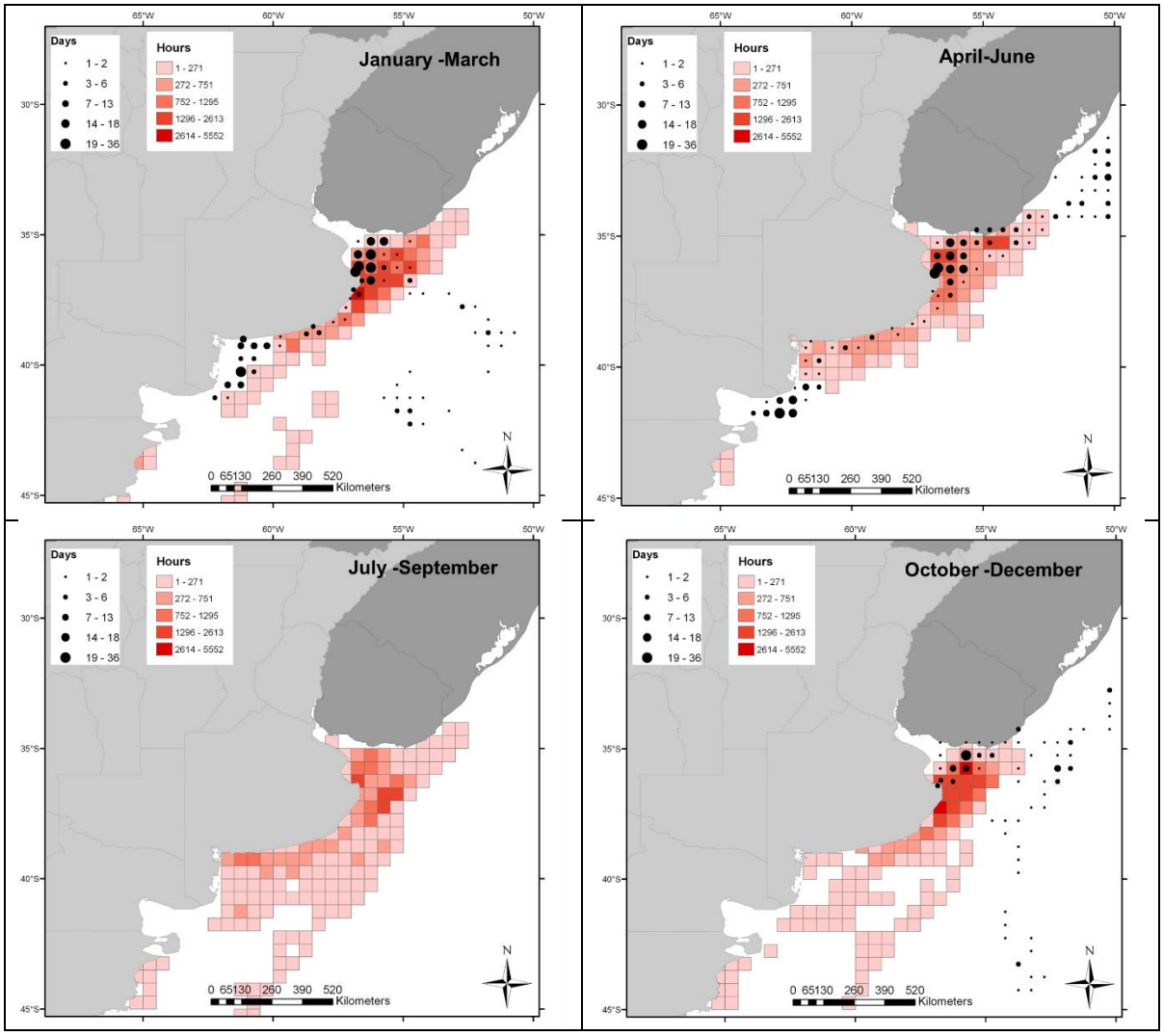

Figure 4. Density distribution of satellite-tracked leatherbacks and trawl fishing-pressure in the Atlantic Ocean. The circles following have time (Days) turtle spent in each cell using a single daily position, reconstructed from their respective routes. The activity of the coastal trawl fleet is represented (red squares) by trawl hour in each cell (Table R#17).

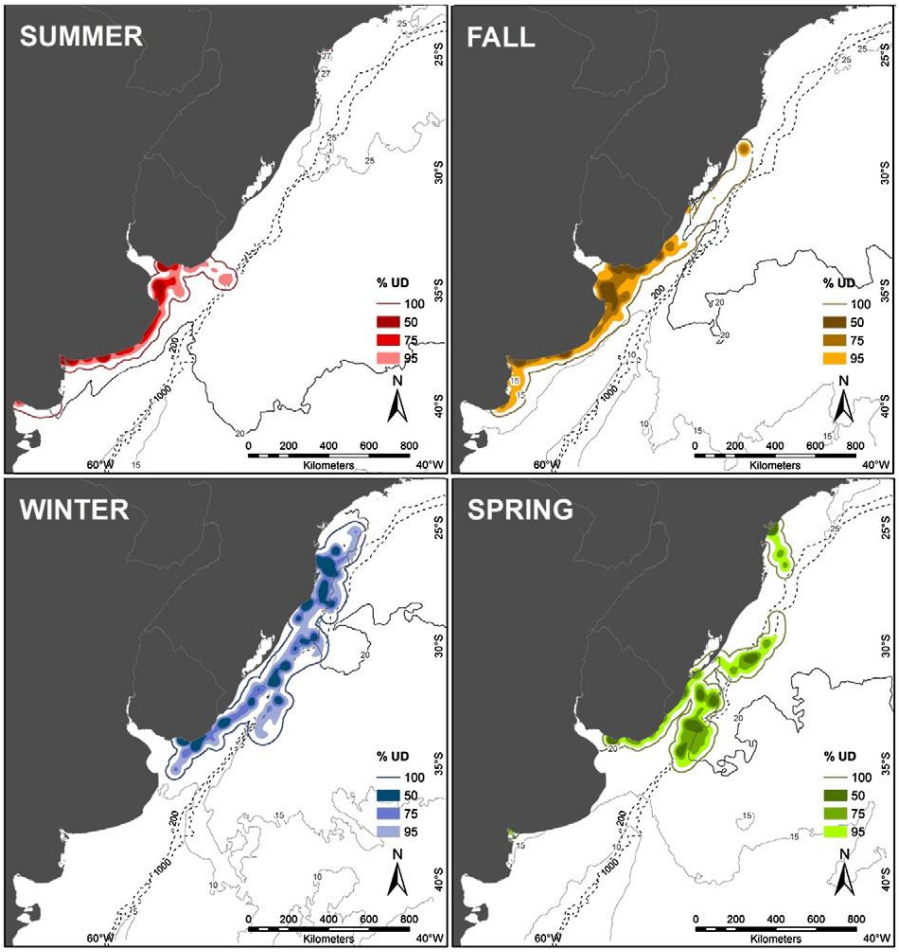

Figure 5. Seasonal habitat use of juvenile green turtles in the SW Atlantic. The 100% and 50% UD represent the overall distribution range of the turtle and the core activity areas, respectively. Gray full lines represent monthly isotherm for February, May, August and November of 2009. The 20 °C isotherm is highlighted (Table R#10).

BRAZIL

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1 RMU: Loggerhead (*Caretta caretta*) – Atlantic Southwest

1.1 Distribution, abundance, trends

1.1.1 Nesting sites

Brazil hosts all nesting sites for the Southwest Atlantic population, located along the northeast and southeast coast (Rio de Janeiro, Espírito Santo, Bahia and Sergipe states). There are 22 nesting sites for this population (Tables 1 and 2; Fig. 1), 13 of which are classified as "major" nesting sites and 9 are as "minor" nesting sites (Table 1). The average number of nests per year range from 7000 to 8000 (Table 1).

The most recent year for abundance data published across all rookeries was 2013. All nesting sites, except for one, have shown a 70% increase in the number of nests between 2008-2013 [68].

1.1.2 Marine areas

Foraging grounds of loggerhead nesting females tagged in Praia do Forte, Bahia state, can be found along the north-northeastern coast of Brazil (Fig. 2) [78] but also along the southeastern and southern coast [76, 227]. Movement paths and foraging areas of immature loggerheads satellite-tagged occur in neritic and oceanic habitats in southernmost of the Southwest Atlantic (Fig. 3) [1, 76]. Dispersal patterns and migratory routes of oceanic stage of yearling loggerhead turtles' satellite-tagged in Praia do Forte are shown in Fig. 4 [82].

1.2 Other biological data

References for research outputs about growth rates, genetics, stocks defined by genetic markers, satellite tracking, foraging ecology (diet or isotopes), and Capture-Mark-Recapture data are listed in Table 1.

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1.3 Threats

1.3.1 Nesting sites

Hatchlings and especially egg life stages are mainly affected by native and exotic predators such as crab-eating foxes, armadillos, and coatis. These life stages are also threatened by light pollution and erosion. In-water habitat alteration, such as dredging operations during both port construction and operation, also poses a threat for adult loggerhead females with higher reproductive value (see Table 1) [204].

1.3.2 Marine areas

Fisheries bycatch is considered one of the main threats for both juveniles and adults in neritic and oceanic waters. The trawl and longline fisheries appear to be the main sources of mortality for loggerheads within Brazilian waters and the Southwest Atlantic as well (Table 1) [204].

1.4 Conservation

Protection status: see Table 1 for national laws [190] and Table 3 for international conventions. Long-term governmental and non-governmental programs are listed in Table 4.

1.5 Research

Brazil has a huge, standardized database. We consider updates of population trends as more relevant for conservation. Currently, Brazil has a time series longer than 30 years for loggerhead nesting data (annual number of nests).

2 RMU: Leatherback (*Dermochelys coriacea*) – Atlantic Southwest

2.1 Distribution, abundance, trends

2.1.1 Nesting sites

In the southwestern Atlantic Ocean, leatherback turtles *Dermochelys coriacea* are only known to regularly nest in eastern Brazil, on the coast of the state of Espírito Santo, which hosts a small population [122]. Occasional leatherback nests, possibly by turtles from subpopulations other than the Southwest Atlantic Ocean one, are recorded elsewhere along the Brazilian coast [198].

For operational and management purposes, the main nesting area in Espítito Santo was divided into five sections: Guriri, Pontal do Ipiranga, Monsarás, Povoação and Comboios (Table 2, Fig. 1). The mean number of nests along each section for the past ten years is provided in Table 2. For important biological data, abundance indexes and trends please see Table 1. In the complete nesting site (that is, for the five sections as a unity), the mean annual number of nests increased from 26 nests in 1988-1992 to 90 nests in 2013-2017 (Table 1) [198].

2.1.2 Marine areas

Post-nesting leatherback females tracked from nesting beaches in Brazil migrated to foraging areas located throughout southern Brazilian waters and the Rio de la Plata estuary (Fig. 5) [2]. Satellite-tracking data has shown that leatherbacks leaving their nesting sites in Gabon undergo displacements up to the coast of South America [191]. Recently, through bycatch fishing data, a leatherback pelagic juvenile concentration area was identified in the equatorial central Atlantic [199].

2.2 Other biological data

References for research outputs about genetics, stocks defined by genetic markers, satellite tracking, foraging ecology (diet or isotopes), and Capture-Mark-Recapture data are listed in Table 1.

2.3 Threats

2.3.1 Nesting sites

An extent of the breeding area is located within a Biological Reserve, and indigenous lands protected by law, thus these areas are not subject to disorderly occupation of the coastal zone. However, coastal development and industrial activities in the region could cause the loss or alteration of important nesting habitats [198].

2.3.2 Marine areas

Bycatch in fisheries is one of the biggest threats for leatherbacks in Brazil as well as in the SWA. Juvenile and adults leatherbacks are incidentally captured by gill nets and trawls in neritic waters and by pelagic longline fisheries in oceanic waters (see Table 1).

2.4 Conservation

Protection status: please see Table 1 for national laws [190] and Table 3 for international conventions. Long-term governmental and non-governmental programs, with active since 1982 are listed in Table 4.

2.5 Research

Brazil has a huge, standardized database. An article analyzing 30 years of leatherback nesting data in Brazil has been published in 2019 [198].

3 RMU: Green turtle (*Chelonia mydas*) – Atlantic Southwest

3.1 Distribution, abundance, trends

3.1.1 Nesting sites

There are 10 nesting sites, 3 of which (Atol das Rocas, Trindade Island and Fernando de Noronha) are classified as "major" nesting sites (Table 1 and 2; Fig. 1) The average number of nests per year range from 3000 to 4000 (Table 1). In Trindade Island, the population

remained stable between 1991 and 2008 [101]. The average annual number of nests in the Biological Reserve of Atol das Rocas was approximately the same when comparing the two five-year periods 1990-1994 and 2004-2008 [92].

3.1.2 Marine areas

Brazil host important mixed stock feeding grounds for juvenile, sub-adults and adults' green turtles [63,163]. Capture rates in a non-lethal fishery in southern Brazil increased by 9.2% per year from 1995 to 2016, in line with increasing source populations, particularly the main source contributor which is Ascension Island [189]. Those data in Brazil could indicate increase in size of nesting populations in distant areas (Fig.6).

3.2 Other biological data

References for research outputs about growth rates, genetics, stocks defined by genetic markers, satellite tracking, survival rates, population dynamics, foraging ecology (diet or isotopes), and Capture-Mark-Recapture data are listed in Table 1

3.3 Threats

3.3.1 Nesting sites

Threats to hatchlings and egg are native and exotic predators such as crabs, birds, octopuses and lizards and dogs [145]. Because priority breeding areas are located on isolated and protected oceanic islands, these areas are not subject to disorderly occupation of the coastal zone.

3.3.2 Marine areas

Incidental captures in coastal fishing, intake of solid waste and marine traffic are main threats for Chelonia mydas in Brazil, catching mainly juveniles in neritic area [28, 205, 208, 2010]. Pollution may also be an indirect threat, which negatively affects health and immunosuppression these animals [210]

3.4 Conservation

Protection status: see Table 1 for national laws [190] and Table 3 for international conventions. Long-term governmental and non-governmental programs are listed in Table 4.

3.5 Research

Brazil has a huge standardized database. We consider as more relevant for conservation, the update of population trends: currently, Brazil has a 30+ years time series of green turtle nesting data (annual number of nests), for the 3 main rookeries as followed: Atol das Rocas, Trindade Island and Fernando de Noronha.

4 RMU: Hawksbill (*Eretmochelys imbricata*) - Atlantic Southwest

4.1 Distribution, abundance, trends

4.1.1 Nesting sites

There are 15 nesting sites for this RMU found throughout the northeastern states of Brazil. Five of which are considered major nesting areas, located in Bahia and Rio Grande do Norte states (Table 1 and 2; Fig. 1). All index nesting sites have positive trends [135;124]. Abundance indexes (e.g., number of nests or nesting females per year) are presented in Table 1.

4.1.2 Marine areas

Identified foraging grounds and migratory corridors of hawksbill nesting females tagged in Bahia are shown in Fig. 7 [78] and Fig. 8 [65]. For juveniles, the reported feeding areas are located in the Fernando de Noronha National Marine Park, Abrolhos National Marine Park, Biological Reserve of Atol das Rocas and Ilha do Arvoredo. The linkage of individuals between feeding/growing (juvenile) and nesting areas was observed for juveniles tagged in Atol das Rocas and later recorded nesting in Bahia, Brazil (Itacimirim and Ilhéus), Rio Grande do Norte (Pipa) and in Barbados (Fig. 9) [74].

4.2 Other biological data

Please see Table 1.

4.3 Threats

Please see Table 1.

4.4 Conservation

Protection status: national laws are showed in Table 1 [190] and international conventions at Table 3.

Long-term governmental and non-governmental programs are listed in Table 4.

4.5 Research

Brazil has a huge, standardized database. For conservation, we consider as more relevant the update of population trends and, currently, Brazil has a 30+ years' time series of hawksbill turtle nesting data (annual number of nests).

5 RMU: Olive ridley (*Lepidochelys olivacea)*- Atlantic Southwest

5.1 Distribution, abundance, trends

Although this specie has been registered throughout the Brazilian coast; its occurrence is not common on the southern coast of Brazil

5.1.1 Nesting sites

There are 19 olive ridley nesting sites (Table 1 and 2; Fig. 1) and eight of them are classified as "major" nesting areas (Table 1), distributed along over 300Km, from latitudes 10°51'S (Sergipe state) and 12° 96'S (Bahia state).

The most recent season for abundance data published was 2009/2010, showing an average number of nests per year ranging from 8000 to 9000 (Table 1). All index nesting sites have positive population trends [129,136].

5.1.2 Marine areas

The internesting area used by olive ridleys tagged in Sergipe State comprise a marine region from the south of Alagoas to the north of Bahia, and extended up to 22 Km from the coast, until the isobaths 50 m [223].

Telemetry studies reveled that feeding grounds of nesting females tagged in Sergipe are located in neritic areas off the Brazilian coast (from Para in the north to Parana in the south) as well as, off the northwestern African coast, within waters of Cabo Verde, Senegal, Gambia, Guinea-Bissau and Sierra Leone (Fig. 11) [83, 223]

5.2 Other biological data

References for research outputs about growth rates, genetics, stocks defined by genetic markers, satellite tracking, survival rates, population dynamics, foraging ecology (diet or isotopes), and Capture-Mark-Recapture data are listed in Table 1

5.3 Threats

1.3.1.Nesting sites

Active real estate speculation, illegal occupation of protected areas, and mischaracterization of coastal environments are some of the current threats to sea turtles in terrestrial habitats. Nest predation by wild animals such as the Fox (Cerdocyon thous) and Armadillo (Dasypus novemcinctus and Euphractus sexcinctus) is another threat that has been increasing in recent years, both in Bahia and Sergipe [144]. Another new threat come from domestic dogs attacking females during oviposition, mainly in Sergipe

1.3.2 Marine Areas

Incidental captures in shrimp bottom trawl vessels is the main threats for olive ridleys in Brazil, catching mainly adults in neritic area [83, 223]. In pelagic areas, longline fishery represents the biggest threat [8]

5.4 Conservation

Protection status: see Table 1 for national laws [190] and Table 3 for international conventions. Long-term governmental and non-governmental programs are listed in Table 4.

5.5 Research

Brazil has a huge standardized database. We consider updates of population trends as more relevant for conservation: currently, Brazil has a 30+ years' time series of olive ridley turtle nesting data (annual number of nests).

6 RMU: Leatherback (*Dermochelys coriacea*)-new Atlantic

6.1 Distribution, abundance, trends

6.1.1 Nesting sites

There is only one known recently discovered nesting site around the Parnaíba Delta in the states of Piauí and possibly Maranhão, with about 80 km of beach, hosting a small population (Tables 1, 2). There is evidence of regular annual nestings in the area, but no abundance indexes (e.g. nests, females) are available (Table 1) [275]

6.1.2 Marine areas

Only one nesting female has been so far satellite-tracked for her post nesting movements; this female went northwards up to a point in the North Atlantic close to Nova Scotia in Canada [275].

6.2 Other biological data

Please see Table 1.

6.3 Threats

Please see Table 1.

6.4 Conservation

Protection status: please see Table 1 for national laws [190] and Table 3 for international conventions. Long-term governmental and non-governmental programs are listed in Table 4.

6.5 Research

An article about this population is being written, to be submitted to an international journal for publication.

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Tables

Table 1. Biological and conservation information about sea turtle Regional Management Units in Brazil.

RMU (all RMUs of all species occurring in a Country or Region) add or remove columns on the right according to the RMUs	**CC-SW ATL**	Ref #	**DC-SW ATL**	Ref #	**CM-SW ATL**	Ref #	**EI-SW ATL**	Ref #	**LO-SW ATL**	Ref #	**DC-new ATL**	Ref #
Occurrence												
Nesting sites	Y	131, 279	Y	133, 198	Y	134; 217	Y	123;135; 118; 221	Y	136; 223; 226, 279	Y	275

Oceanic foraging areas	Y	1;12; 200	Y	2	N		N		Y	83		
Neritic foraging areas	Y	78; 200; 233	Y	2	Y	50; 261; 262; 263	Y	81	Y	83; 268		
Key biological data												
Nests/yr: recent average (range of years)	7540 (2008/09-2012/13)	68	89,8 (2013 - 2017)	69; 198	3600 (1991/92–2008/09)	101	1900 (2009 - 2010)	190	6710 (2009-2010)	190		
Nests/yr: recent order of magnitude	7000 - 8000	68	50 - 100 (2013 - 2017)	198	3000 - 4000	101	2000 - 2500	T2	8000 - 9000	T2	< 100	275
Number of "major" sites (>20 nests/yr AND >10 nests/km yr)	13	3;17;34	0	3;122; 133	3	3;17;92;101;134	5	3;4;17; 123;125;135	8	3;17;37 ;129;136		
Number of "minor" sites (<20	9	3;17;34 ;121	5 *	3;122; 133, 198	7	3;17;134	10	3;4;17; 123;125;135	11	3;17;37 ;129;136		

nests/yr OR <10 nests/km yr)												
Nests/yr at "major" sites: recent average (range of years)	570 (2010/ 2011-2018/2019)	3;17;34;121	69 (2010/ 2011-2018/2019)	3;122;133, 198	1405 (2010/ 2011-2018/2019)	3;17;101;134	355 (2010/2011-2018/2019)	3;4;17;123;125;135	1050 (2010/ 2011-2018/2019)	3;17;37;129;136		
Nests/yr at "minor" sites: recent average (range of years)	180 (2010/ 2011-2018/2019)	3;17;34	3 (2010/ 2011-2018/2019)	198	18 (2010/ 2011-2018/2019)	3;17;101;134	55(2010/2011-2018/2019)	3;4;17;123;125;135	70 (2010/ 2011-2018/2019)	3;17;37;129;136		
Total length of nesting sites (km)	580	T2	160	198	**254	T2	375	T2	313	T2		
Nesting females / yr	N		N		N		705 - 791	125	N			
Nests / female season (N)	4.1	102;121	5 - 6	2; 198	5.2 (775)	92; 311	2.1-2.6	187;10;119;125	N			

Female remigration interval (yrs) (N)	2	102;121	02-Aug	198	3.5 (142)	92	2.1	10;119; 125	N	223		
Sex ratio: Hatchlings (F / Tot) (N)	53-94 (27.697)	184; 185	N		N		89-96 (5514)	183	N	251		
Sex ratio: Immatures (F / Tot) (N)	N		N		N		N		N			
Sex ratio: Adults (F / Tot) (N)	N		N		N		N		N			
Min adult size, CCL or SCL (cm)	79,5 CCL	3; T 4.1	125 CCL	T 4.1 ; 198	89 CCL	3; 188; T4.1	74 CCL	3; T4.1	60 CCL	3; T 4.1		
Age at maturity (yrs)	Y	45; 46	N		Y	48	Y	53	Y	54		
Clutch size (n eggs) (N)	127; 14-237 (Mean = 121.7)	128, 279	87.7	122	120.1	101	140; 143	70; 120; 296	100,1; 52- 140 (Mean =94.5)	129, 279; 296		

Emergence success (hatchlings /egg) (N)	73,1% & 63,2%; 79,9% & 67,7; 56,7% to 80,88% ; 5.3 to 98.8%	70; 72; 71; 223; 279	66.00%	122; 198	84.40%	101	61% &51,7%	70; 296	80,2% & 78,7%; 15.9 to 100%	129; 279; 296		
Nesting success (Nests/ Tot emergence tracks) (N)					54%	101						
Trends												
Recent trends (last 20 yrs) at nesting sites (range of years)	up	131, 218	up (1998 - 2017)	122; 198	stable	101;134	up	135;124	up	129;136		
Recent trends (last 20 yrs) at foraging grounds	N		N		up	189	N		N			

(range of years)												
Oldest documented abundance: nests/yr (range of years)												
Published studies												
Growth rates	Y	45; 46	N		Y	47; 48; 49; 50; 51; 84; 216, 269	Y	52; 53; 215, 222	Y	54		
Genetics	Y	55;56; 57; 58; 197, 200; 236; 237,279; 303	Y	59; 60; 61	Y	62; 63; **283**; 308	Y	64; 65; 197; 230; 235, 236	Y	66, 279; 303		
Stocks defined by genetic markers	Y	55; 56; 236, 237	Y	59	Y	62	Y	64; 67; 235; 236	Y	66		

Remote tracking (satellite or other)	Y	76; 77; 78; 79; 80; 82; 227; 297; 303	Y	2; 297	Y	75, 202, 205; 297	Y	81; 225; 228	Y	82; 223; 303		
Survival rates	N		N		Y	84	N		N			
Population dynamics	N	233; 237	N		Y	84; 49; 189	Y	52	N			
Foraging ecology (diet or isotopes)	Y	105; 106; 107; 87; 108; 109; 110; 76; 94; 200, 279; 280; 303	Y	87; 94	Y	50; 85; 86; 87; 88; 89; 90; 91; 30; 93; 94; 95; 96; 97; 98; 99; 100; 263, 274; 280; 281; **284; 289**; 305	Y	53; 103; 104; **284**	Y	111; 112; 113; 266; 268; 279; 280; **285**; 303		
Capture-Mark-Recapture	Y	121	Y	2; 122, 198	Y	84; 47; 49; 50; 24; 115; 116; 117; 310	Y	117; 52; 104; 118; 119; 120;18	Y	37		

								7; 222; 229				
Threats												
Bycatch: presence of small scale / artisanal fisheries?	Y (SN; ST; PN; OTH (corrals))	24; 25; 31; 36; 40; 41; 206, 208; 209; 210, 273	Y (SN; OTH (corrals))	24; 25; 31; 36; 39; 40; 206, 208; 209; 210	Y (SN; ST; PN; OTH (corrals))	24; 25; 28; 29; 30; 31; 36; 40; 41; 205; 206, 208, 209; 210; 213; 214; 265, 273,276, 277; **286; 287**	Y (SN; PN; OTH (corrals))	24; 25; 31; 36; 40; 41; 206; 208; 209; 210, 273	Y (SN; OTH (corrals))	36; 38; 40; 206; 208; 209; 210; 271, 273		
Bycatch: presence of industrial fisheries?	Y (PLL; SN; DN; ST)	5; 6; 7; 8; 9; 11; 12; 13; 14; 15; 16; 18; 19; 20; 21; 22; 27; 32; 35; 43; 203;	Y (PLL; SN; DN; ST)	5; 6; 7; 8; 9; 11; 13; 14; 16; 19; 20; 21; 22; 23; 26; 27; 32; 35; 43, 199; 207;	Y (PLL; SN; DN; ST)	8; 9; 11; 19; 21; 26; 27; 32; 43; 207; 208; 210; 211; 212, 277	Y (SN)	43; 210	Y (PLL; ST)	5; 8; 9; 11; 13; 19; 26; 32; 35; 43; 203; 207; 210; 211; 265		

		204; 207; 210; 211; 212; 295		210; 211; 265								
Bycatch: quantified?	Y (PLL, DN)	6; 8; 11; 13; 14; 15; 16; 18; 19; 21; 24; 27; 203;	Y (PLL; DN)	6; 8; 11; 13; 14; 16; 19; 21; 24; 27, 199; 265	Y (PLL; OTH (pound net); **SN**	8; 19; 21; 24; 27;189;**286**	Y	24	Y (PLL)	8; 19; 203		
Intentional killing of turtles	N		N		Y	T4.3	N	125	N			
Take. Illegal take of turtles	n/a		n/a		n/a		n/a		n/a			
Take. Permitted/ legal take of turtles	n/r		n/r		n/r		n/r		n/r			
Take. Illegal take of eggs	Y	126; 127	N		Y	126	Y	126; 125	Y	126;129		
Take. Permitted/												

legal take of eggs												
Coastal Development. Nesting habitat degradation	Y	130; 131; 132	Y	133, 198	Y	130; 134	Y	130; 135, 272	Y	130; 136		
Coastal Development. Photopollution	Y	130; 131; 137; 138; 139; 232	Y	139; 232	Y	130; 134; 139; 232	Y	135; 137; 232	Y	136; 139; 140, 232		
Coastal Development. Boat strikes	N		N		Y	208	N		N			
Egg predation	Y	141; 142; 143; 144	N		Y	145	Y	141; 144	Y	143; 144		

Pollution (debris, chemical)	Y	42; 146, 201, 208; 209; 210; 231; 243; 244, 280; 301	Y	42, 198, 201, 208; 209; 210; 231 ; 243; 244	Y	42; 147; 148; 149; 150; 151, 201, 208; 209; 210; 231; 243; 244; 238; 239; 240 ; 241; 242; 257; 258; 259; 260; 280; 288; 289;290; 299; 301; 302; 305	Y	201; 208; 209; 210; 231; 243; 244	Y	193, 201, 208; 209; 210; 231; 243; 244; 280; **291;** 298; 301		
Pathogens	Y	181; 182; 245; 208; 250; 255,278; **294**; 306	N	208; 246; 255	Y	147; 152; 153; 154; 155; 156; 158; 160; 161; 162; 163; 164; 165; 166; 167; 168; 169; 170; 171; 172; 173; 174; 175; 176; 177; 178; 179; 180;	Y	181; 208; 255; 256	Y	181; 208; 250; 255		

						47; 208; 247; 248; 249; 250; 252; 253; 254; 255; **292; 293**; 300; 304; 307; 309						
Climate change	Y	184; 185; 218; 219; 220	N		N		Y	183; 196	N			
Foraging habitat degradation	N		N		Y	97; 186; 205	N		N			
Other	Y	44; 214	Y	44; 214; 267	Y	44; 214; 264	Y	214	Y	44; 214		
		234		234		234		234				
Long-term												

projects (>5yrs)												
Monitoring at nesting sites (period: range of years)	Y (1982-ongoing)	3;128	Y (1982-ongoing)	3;122	Y (1982-ongoing)	3;92;101	Y (1982-ongoing)	3;124	Y (1982-ongoing)	3;129	Y (2007-ongoing)	275
Number of index nesting sites	6	see T2	2	see T2	2	see T2	5	see T2	3	see T2		
Monitoring at foraging sites (period: range of years)	2	T4.4; T4.7	1	T4.9	02-Aug	84; 189; T4.2; T4.3; T4.4; T4.5; T4.6; T4.8; T4.10; T4.11; T4.14, 208	2	T4.6	1	T4.4		
Conservation												
Protection under	Y	190	Y	190	Y	190	Y	190	Y	190	Y	190

national law												
Number of protected nesting sites (habitat preservation) (% nests)	100%	190	100%	190	100%	190	100%	190	100%	190	100 %	190
Number of Marine Areas with mitigation of threats	0		0		0		0		0			
N of long-term conservation projects (period: range of years)	>1 (1982-ongoing)	126; T4.1; T4.12	>1 (1982-ongoing)	126; T4.1; T4.9	>1 (1981-ongoing)	126;188;T4.1	>1 (1982-ongoing)	126; T4.1; T4.6	>1 (1982-ongoing)	126;T4.1	1 (2007-0ngoing)	275
In-situ nest protection (eg cages)	Y	126	Y	126	N		Y	126	Y	126		
Hatcheries	Y	126	Y	122	N		Y	126	Y	126		
Head-starting	N		N		N		N		N			

By-catch: fishing gear modifications (eg, TED, circle hooks)	Y	21	Y	21	N		N		N			
By-catch: onboard best practices	N		N		N		N		N			
By-catch: spatio-temporal closures/reduction	N		N		N		N		Y	38		
Other												
* 4 of these 5 areas are considered priority nesting beaches in Brazil. Eventhough they are "minor sites" using this classification they are regular nesting areas.												
** low density green turtle nesting beaches, the 3 main nesting areas of this RMU are located in the oceanic islands												

Table 2. Sea turtle nesting beaches in Brazil

RMU / Nesting beach name	**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)**
CC-SW ATL				Long	Lat	Long	Lat	Long	Lat				
Farol	Y	749 (2010/2011 - 2018/2019)		-41.0933	-21.84628	-40.99783	-21.84628			31	100	#190 #184	1
Atafona	N	387 (2010/2011 - 2018/2019)		-40.9978	-21.31200	-40.96000	-21.31200			31	100	#190 #184	1
Vitoria	N	22 (2010/2011 - 2018/2019)		-40.2197	-20.05600	-40.19200	-20.05600			26	100	#190 #184	1

Comboios	Y	704 (2010/2011 - 2018/2019)		-39.9546	-19.61201	-39.79700	-19.61201			37	100	#190 #184	1
Povoação	Y	439 (2010/2011 - 2018/2019)		-39.797	-19.53032	-39.75867	-19.53032			10	100	#190 #184	1
Monsaras	N	459 (2010/2011 - 2018/2019)		-39.7587	-19.30945	-39.69172	-19.30945			29	100	#190 #184	1
Pontal do Ipiranga	N	292 (2010/2011 - 2018/2019)		-39.6917	-19.02656	-39.72897	-19.02656			28	100	#190 #184	1
Guriri	N	237 (2010/2011 - 2018/2019)		-39.729	-18.58339	-39.73157	-18.58339			55	100	#190 #184	1
Itapuan	N	277(2010/2011 - 2018/2019)		-38.3879	-12.86355	-38.25852	-12.86355			20	100	#190 #184	1

Interlagos	Y	1148 (2010/2011 - 2018/2019)		-38.2585	-12.76501	-38.17058	-12.76501			16	100	#190 #184	1
Berta	N	330 (2010/2011 - 2018/2019)		-38.1706	-12.69677	-38.11299	-12.69677			11	100	#190 #184	1
Guarajuba	Y	717 (2010/2011 - 2018/2019)		-38.113	-12.55049	-37.99060	-12.55049			16	100	#190 #184	1
Praia do Forte	Y	693 (2010/2011 - 2018/2019)		-37.9906	-12.48218	-37.94832	-12.48218			14	100	#190 #184	1
Sauipe	N	798 (2010/2011 - 2018/2019)		-37.9483	-12.06547	-37.66891	-12.06547			56	100	#190 #184	1
Conde	N	399 (2010/2011 -		-37.6689	-11.53528	-37.40609	-11.53528			67	100	#190 #184	1

		2018/2019)											
Coqueiros	N	62 (2010/2011 - 2018/2019)		-37.4061	-11.48089	-37.36747	-11.48089			6	100	#190 #184	1
Mangue Seco	N	46 (2010/2011 - 2018/2019)		-37.3675	-11.45500	-37.35800	-11.45500			8	100	#190 #184	1
Abais	N	284 (2010/2011 - 2018/2019)		-37.314	-11.17400	-37.16700	-11.17400			36	100	#190 #184	1
Rato	N	72 (2010/2011 - 2018/2019)		-36.9642	-10.70920	-36.81259	-10.70920			26	100	#190 #184	1
Pirambu	N	136 (2010/2011 - 2018/2019)		-36.8126	-10.66098	-36.74069	-10.66098			12	100	#190 #184	1

Santa Isabel	N	104 (2010/2011 - 2018/2019)		-36.7407	-10.60659076	-36.640238	-10.60659			13	100	#190 #184	1
Ponta dos Mangues	N	276 (2010/2011 - 2018/2019)		-36.6402	-10.49800	-36.39900	-10.49800			32	100	#190 #184	1
Pipa	N	2(2010/2011 - 2018/2019)		-35.0325	-5.88013	-35.15920	-5.88013			42	100	#190 #184	1
Fernando de Noronha	N	0 (2010/2011 - 2016/2017)						-3.870085	-32.437469		100	#190 #184	1
Trindade	N	0 (2010/2011 - 2016/2017)						-20.50909	-29.32494		100	#190 #184	1
EI- SW ATL													

Farol	N	3 (2010/2011 - 2018/2019)		-41.0933	-21.84628	-40.99783	-21.84628			31	100	#190 #183	1
Atafona	N	2 (2010/2011 - 2018/2019)		-40.9978	-21.31200	-40.96000	-21.31200			31	100	#190 #183	1
Vitoria	N	0 (2010/2011 - 2018/2019)		-40.2197	-20.05600	-40.19200	-20.05600			26	100	#190 #183	1
Comboios	N	2 (2010/2011 - 2018/2019)		-39.9546	-19.61201	-39.79700	-19.61201			37	100	#190 #183	1
Povoação	N	1 (2010/2011 - 2018/2019)		-39.797	-19.53032	-39.75867	-19.53032			10	100	#190 #183	1
Monsaras	N	1(2010/2011 - 2018/2019)		-39.7587	-19.30945	-39.69172	-19.30945			29	100	#190 #183	1

Pontal do Ipiranga	N	1 (2010/2011 - 2018/2019)		-39.6917	-19.02656	-39.72897	-19.02656			28	100	#190 #183	1
Guriri	N	4 (2010/2011 - 2018/2019)		-39.729	-18.58339	-39.73157	-18.58339			55	100	#190 #183	1
Itapuan	N	63 (2010/2011 - 2018/2019)		-38.3879	-12.86355	-38.25852	-12.86355			20	100	#190 #183	1
Interlagos	Y	288 (2010/2011 - 2018/2019)		-38.2585	-12.76501	-38.17058	-12.76501			16	100	#190 #183	1
Berta	Y	281 (2010/2011 - 2018/2019)		-38.1706	-12.69677	-38.11299	-12.69677			11	100	#190 #183	1
Guaraju ba	Y	169 (2010/2011 -		-38.113	-12.55049	-37.99060	-12.55049			16	100	#190 #183	1

		2018/2019)											
Praia do Forte	Y	168 (2010/2011 - 2018/2019)		-37.9906	-12.48218	-37.94832	-12.48218			14	100	#190 #183	1
Sauipe	N	292 (2010/2011 - 2018/2019)		-37.9483	-12.06547	-37.66891	-12.06547			56	100	#190 #183	1
Conde	N	60 (2010/2011 - 2018/2019)		-37.6689	-11.53528	-37.40609	-11.53528			67	100	#190 #183	1
Coqueiros	N	10 (2010/2011 - 2018/2019)		-37.4061	-11.48089	-37.36747	-11.48089			6	100	#190 #183	1
Mangue Seco	N	8 (2010/2011 - 2018/2019)		-37.3675	-11.45500	-37.35800	-11.45500			8	100	#190 #183	1

Abais	N	33 (2010/2011 - 2018/2019)		-37.314	-11.17400	-37.16700	-11.17400			36	100	#190 #183	1
Rato	N	12 (2010/2011 - 2018/2019)		-36.9642	-10.70920	-36.81259	-10.70920			26	100	#190 #183	1
Pirambu	N	9 (2010/2011 - 2018/2019)		-36.8126	-10.66098	-36.74069	-10.66098			12	100	#190 #183	1
Santa Isabel	N	37 (2010/2011 - 2018/2019)		-36.7407	-10.60659	-36.640238	-10.60659			13	100	#190 #183	1
Ponta dos Mangues	N	22 (2010/2011 - 2018/2019)		-36.6402	-10.49800	-36.39900	-10.49800			32	100	#190 #183	1
Pipa	Y	871 (2010/2011 -		-35.0325	-5.88013	-35.15920	-5.88013			42	100	#190 #183	1

		2018/2019)											
Fernando de Noronha	N	0 (2010/2011 - 2016/2017)						-3.870085	-32.437469		100	#190 #183	1
Trindade	N	0 (2010/2011 - 2016/2017)						-20.50909	-29.32494		100	#190 #183	1
LO- WATL													
Farol	N	1 (2010/2011 - 2018/2019)		-41.0933	-21.84628	-40.99783	-21.84628			31	100	#190 #136	1
Atafona	N	0 (2010/2011 - 2018/2019)		-40.9978	-21.31200	-40.96000	-21.31200			31	100	#190 #136	1
Vitoria	N	0 (2010/2011 -		-40.2197	-20.05600	-40.19200	-20.05600			26	100	#190 #136	1

		2018/2019)											
Comboios	N	8 (2010/2011 - 2018/2019)		-39.9546	-19.61201	-39.79700	-19.61201			37	100	#190 #136	1
Povoação	N	13 (2010/2011 - 2018/2019)		-39.797	-19.53032	-39.75867	-19.53032			10	100	#190 #136	1
Monsaras	N	12 (2010/2011 - 2018/2019)		-39.7587	-19.30945	-39.69172	-19.30945			29	100	#190 #136	1
Pontal do Ipiranga	N	25 (2010/2011 - 2018/2019)		-39.6917	-19.02656	-39.72897	-19.02656			28	100	#190 #136	1
Guriri	N	21 (2010/2011 - 2018/2019)		-39.729	-18.58339	-39.73157	-18.58339			55	100	#190 #136	1

Itapuan	N	17 (2010/2011 - 2018/2019)		-38.3879	-12.86355	-38.25852	-12.86355			20	100	#190 #136	1
Interlagos	N	46 (2010/2011 - 2018/2019)		-38.2585	-12.76501	-38.17058	-12.76501			16	100	#190 #136	1
Berta	N	7 (2010/2011 - 2018/2019)		-38.1706	-12.69677	-38.11299	-12.69677			11	100	#190 #136	1
Guarajuba	N	68 (2010/2011 - 2018/2019)		-38.113	-12.55049	-37.99060	-12.55049			16	100	#190 #136	1
Praia do Forte	N	71 (2010/2011 - 2018/2019)		-37.9906	-12.48218	-37.94832	-12.48218			14	100	#190 #136	1
Sauipe	N	473 (2010/2011 -		-37.9483	-12.06547	-37.66891	-12.06547			56	100	#190 #136	1

		2018/2019)											
Conde	N	715 (2010/2011 - 2018/2019)		-37.6689	-11.53528	-37.40609	-11.53528			67	100	#190 #136	1
Coqueiros	Y	386 (2010/2011 - 2018/2019)		-37.4061	-11.48089	-37.36747	-11.48089			6	100	#190 #136	1
Mangue Seco	Y	577 (2010/2011 - 2018/2019)		-37.3675	-11.45500	-37.35800	-11.45500			8	100	#190 #136	1
Abais	N	1955 (2010/2011 - 2018/2019)		-37.314	-11.17400	-37.16700	-11.17400			36	100	#190 #136	1
Rato	N	631 (2010/2011 - 2018/2019)		-36.9642	-10.70920	-36.81259	-10.70920			26	100	#190 #136	1

Pirambu	Y	1434 (2010/2011 - 2018/2019)		-36.8126	-10.66098	-36.74069	-10.66098			12	100	#190 #136	1
Santa Isabel	N	681 (2010/2011 - 2018/2019)		-36.7407	-10.60659076	-36.64023856	-10.60659076			13	100	#190 #136	1
Ponta dos Mangues	N	2026 (2010/2011 - 2018/2019)		-36.6402	-10.49800	-36.39900	-10.49800			32	100	#190 #136	1
Pipa	N	2(2010/2011 - 2018/2019)		-35.0325	-5.88013	-35.15920	-5.88013			42	100	#190 #136	1
Fernando de Noronha	N	0 (2010/2011 - 2016/2017)						-3.870085	-32.437469		100	#190 #136	1
Trindade	N	0 (2010/2011 - 2016/2017)						-20.509099	-29.32494		100	#190 #136	1

DC-SW ATL													
Farol	N	0 (2010/2011 - 2018/2019)		-41.0933	-21.84628	-40.99783	-21.84628			31	100	#190 #133	1
Atafona	N	0 (2010/2011 - 2018/2019)		-40.9978	-21.31200	-40.96000	-21.31200			31	100	#190 #133	1
Vitoria	N	0 (2010/2011 - 2018/2019)		-40.2197	-20.05600	-40.19200	-20.05600			26	100	#190 #133	1
Comboios	Y	39 (2010/2011 - 2018/2019)		-39.9546	-19.61201	-39.79700	-19.61201			37	100	#190 #133	1
Povoação	Y	11 (2010/2011 -		-39.797	-19.53032	-39.75867	-19.53032			10	100	#190 #133	1

		2018/2019)											
Monsaras	N	17 (2010/2011 - 2018/2019)		-39.7587	-19.30945	-39.69172	-19.30945			29	100	#190 #133	1
Pontal do Ipiranga	N	2 (2010/2011 - 2018/2019)		-39.6917	-19.02656	-39.72897	-19.02656			28	100	#190 #133	1
Guriri	N	3 (2010/2011 - 2018/2019)		-39.729	-18.58339	-39.73157	-18.58339			55	100	#190 #133	1
Itapuan	N	0 (2010/2011 - 2018/2019)		-38.3879	-12.86355	-38.25852	-12.86355			20	100	#190 #133	1
Interlagos	N	0 (2010/2011 - 2018/2019)		-38.2585	-12.76501	-38.17058	-12.76501			16	100	#190 #133	1

Berta	N	0 (2010/2011 - 2018/2019)		-38.1706	-12.69677	-38.11299	-12.69677			11	100	#190 #133	1
Guarajuba	N	0 (2010/2011 - 2018/2019)		-38.113	-12.55049	-37.99060	-12.55049			16	100	#190 #133	1
Praia do Forte	N	0 (2010/2011 - 2018/2019)		-37.9906	-12.48218	-37.94832	-12.48218			14	100	#190 #133	1
Sauipe	N	0 (2010/2011 - 2018/2019)		-37.9483	-12.06547	-37.66891	-12.06547			56	100	#190 #133	1
Conde	N	0 (2010/2011 - 2018/2019)		-37.6689	-11.53528	-37.40609	-11.53528			67	100	#190 #133	1
Coqueiros	N	0 (2010/2011 -		-37.4061	-11.48089	-37.36747	-11.48089			6	100	#190 #133	1

		2018/2019)											
Mangue Seco	N	0 (2010/2011 - 2018/2019)		-37.3675	-11.45500	-37.35800	-11.45500			8	100	#190 #133	1
Abais	N	0 (2010/2011 - 2018/2019)		-37.314	-11.17400	-37.16700	-11.17400			36	100	#190 #133	1
Rato	N	0 (2010/2011 - 2018/2019)		-36.9642	-10.70920	-36.81259	-10.70920			26	100	#190 #133	1
Pirambu	N	0 (2010/2011 - 2018/2019)		-36.8126	-10.66098	-36.74069	-10.66098			12	100	#190 #133	1
Santa Isabel	N	0 (2010/2011 - 2018/2019)		-36.7407	-10.60659	-36.640238	-10.60659			13	100	#190 #133	1

Ponta dos Mangues	N	0 (2010/2011 - 2018/2019)		-36.6402	-10.49800	-36.39900	-10.49800			32	100	#190 #133	1
Pipa	N	0 (2010/2011 - 2018/2019)		-35.0325	-5.88013	-35.15920	-5.88013			42	100	#190 #133	1
Fernando de Noronha	N	0 (2010/2011 - 2018/2019)						-3.870085	-32.437469		100	#190 #133	1
Trindade	N	0 (2010/2011 - 2018/2019)						-20.509099	-29.32494		100	#190 #133	1
CM - SW ATL													
Farol	N	0 (2010/2011 -		-41.0933	-21.84628	-40.99783	-21.84628			31	100	#190 #134	1

		2018/2019)											
Atafona	N	0 (2010/2011 - 2018/2019)		-40.9978	-21.31200	-40.96000	-21.31200			31	100	#190 #134	1
Vitoria	N	0 (2010/2011 - 2018/2019)		-40.2197	-20.05600	-40.19200	-20.05600			26	100	#190 #134	1
Comboios	N	0 (2010/2011 - 2018/2019)		-39.9546	-19.61201	-39.79700	-19.61201			37	100	#190 #134	1
Povoação	N	0 (2010/2011 - 2018/2019)		-39.797	-19.53032	-39.75867	-19.53032			10	100	#190 #134	1
Monsaras	N	0 (2010/2011 - 2018/2019)		-39.7587	-19.30945	-39.69172	-19.30945			29	100	#190 #134	1

Pontal do Ipiranga	N	1 (2010/2011 - 2018/2019)		-39.6917	-19.02656	-39.72897	-19.02656			28	100	#190 #134	1
Guriri	N	0 (2010/2011 - 2018/2019)		-39.729	-18.58339	-39.73157	-18.58339			55	100	#190 #134	1
Itapuan	N	1 (2010/2011 - 2018/2019)		-38.3879	-12.86355	-38.25852	-12.86355			20	100	#190 #134	1
Interlagos	N	10 (2010/2011 - 2018/2019)		-38.2585	-12.76501	-38.17058	-12.76501			16	100	#190 #134	1
Berta	N	2 (2010/2011 - 2018/2019)		-38.1706	-12.69677	-38.11299	-12.69677			11	100	#190 #134	1
Guarajuba	N	13 (2010/2011 -		-38.113	-12.55049	-37.99060	-12.55049			16	100	#190 #134	1

		2018/2019)											
Praia do Forte	N	19 (2010/2011 - 2018/2019)		-37.9906	-12.48218	-37.94832	-12.48218			14	100	#190 #134	1
Sauipe	N	20 (2010/2011 - 2018/2019)		-37.9483	-12.06547	-37.66891	-12.06547			56	100	#190 #134	1
Conde	N	25 (2010/2011 - 2018/2019)		-37.6689	-11.53528	-37.40609	-11.53528			67	100	#190 #134	1
Coqueiros	N	1 (2010/2011 - 2018/2019)		-37.4061	-11.48089	-37.36747	-11.48089			6	100	#190 #134	1
Mangue Seco	N	1 (2010/2011 - 2018/2019)		-37.3675	-11.45500	-37.35800	-11.45500			8	100	#190 #134	1

Abais	N	3 (2010/2011 - 2018/2019)		-37.314	-11.17400	-37.16700	-11.17400			36	100	#190 #134	1
Rato	N	1 (2010/2011 - 2018/2019)		-36.9642	-10.70920	-36.81259	-10.70920			26	100	#190 #134	1
Pirambu	N	1 (2010/2011 - 2018/2019)		-36.8126	-10.66098	-36.74069	-10.66098			12	100	#190 #134	1
Santa Isabel	N	1 (2010/2011 - 2018/2019)		-36.7407	-10.60659	-36.640238	-10.60659			13	100	#190 #134	1
Ponta dos Mangues	N	4 (2010/2011 - 2018/2019)		-36.6402	-10.49800	-36.39900	-10.49800			32	100	#190 #134	1
Pipa	N	13 (2010/2011 -		-35.0325	-5.88013	-35.15920	-5.88013			42	100	#190 #134	1

		2018/2019)											
Fernando de Noronha	Y	164 (2010/2011 - 2018/2019)						-3.870085	-32.437469		100	#190 #134	1
Trindade	Y	2365 (2010/2011 - 2018/2019)						-20.509099	-29.32494		100	#190 #134	1
Atol das Rocas	Y	335 (1990 - 2008)						-3.863889	-33.82778			#92	
DC-new ATL													
Delta do Parnaíba	N							2°44' S	41°48' W	80		275	

Table 3. International conventions protecting sea turtles and signed by Brazil.

International Conventions	Signed	Binding	Compliance measured and reported	Species	Conservation actions	Relevance to sea turtles
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	Y	Y	Y	CC, CM, DC, EI, LO		
Convention on the Conservation of Migratory Species of Wild Animals (CMS)	Y	Y	Y	CC, CM, DC, EI, LO		
Ramsar Convention	Y	Y	Y	CC, CM, DC, EI, LO		
International Convention for the Prevention of Pollution from Ships (MARPOL)	Y	Y	Y	CC, CM, DC, EI, LO		
Convention on Biological Diversity (CBD)	Y	Y	Y	CC, CM, DC, EI, LO		
United Nations Convention on the Law of the Sea (CONVEMAR)	Y	Y	Y	CC, CM, DC, EI, LO		
Inter-American Convention for the Protection and Conservation of Sea Turtle (IAC)	Y	Y	Y	CC, CM, DC, EI, LO		

Table 4. Projects and databases on sea turtles in Brazil.

#	RMU	Country	Region / Location	Project Name or descriptive title	Key words	Start date	End date	Leading organisation	Public/ Private	Collaboration with	Reports / Information material
T4.1	CM-SW ATL, CC-SW ATL, DC-SW ATL, EI-SW ATL, LO-SW ATL	Brazil	Southamerica / Brazil	Monitoring and protection of priority nesting beaches in Brazil	nesting females; hatchlings; nests; conservation; Southwest Atlantic	1982	Continue	Projeto TAMAR	Private	ICMBio	
T4.2	CM-SW ATL	Brazil	Southamerica / Southeast Brazil, São Paulo, Ubatuba	Monitoring incidental capture of green sea turtles in pound nets, in Brazil	Conservation, Populational dynamic; Juvenile; Collaborative research; Ubatuba	1991	continue	Projeto TAMAR	Private	ICMBio	Silva, B. M., Bugoni, L., Almeida, B. A., Giffoni, B. B., Alvarenga, F. S., Brondizio, L. S., & Becker, J. H. (2017). Long-term trends in abundance of green sea turtles (Chelonia mydas) assessed by non-lethal capture rates in a coastal fishery. *Ecological Indicators*, *79*, 254-264. Gallo, B. M., Macedo, S., Giffoni, B. D. B., Becker, J. H., & Barata, P. C. (2006). Sea turtle conservation in Ubatuba, southeastern Brazil, a feeding area with incidental capture in coastal fisheries. Chelonian conservation and biology, 5(1), 93-101.
T4.3	CM-SW ATL, CC-SW ATL, EI-SW ATL, LO-SW ATL	Brazil	Southamerica / Northern Brazil, Almofala, Ceará	Monitoring incidental capture of green sea turtles in corrals, in Brazil	Conservation, Populational dynamic; Juvenile; Collaborative research; Almofala	1992	Finished	Projeto TAMAR	Private	ICMBio	

T4.4	CM-SW ATL	Brazil	Southamerica / Southeast Brazil, Espírito santo	Monitoring Juvenile green turtles in the effluent discharge channel of a steel plant in Brazil	Conservation, Population Dynamic, Juvenile, effluent discharge; Espírito Santo	2000	Continue	Projeto TAMAR	Private	Arcelor Mittal Tubarão Steel Company	Torezani, E., Baptistotte, C., Mendes, S. L., & Barata, P. C. (2010). Juvenile green turtles (Chelonia mydas) in the effluent discharge channel of a steel plant, Espírito Santo, Brazil, 2000–2006. *Journal of the Marine Biological Association of the United Kingdom*, *90*(2), 233-246.
T4.5	CM-SW ATL	Brazil	Southamerica / Northeast Brazil, Fernando de Noronha island	Capture-mark-recapture of green turtles at an isolated tropical archipelago in Brazil	Survival dynamics, Juvenile, in-water survey	1988	Continue	Projeto TAMAR	Private	ICMBio	Colman, L. P., Patrício, A. R. C., McGowan, A., Santos, A. J., Marcovaldi, M. Â., Bellini, C., & Godley, B. J. (2015). Long-term growth and survival dynamics of green turtles (Chelonia mydas) at an isolated tropical archipelago in Brazil. *Marine biology*, *162*(1), 111-122.
T4.6	EI-SW ATL	Brazil	Southamerica / Northeast Brazil, Fernando de Noronha island	Capture-mark-recapture of hawksbill turtles at an isolated tropical archipelago in Brazil	Survival dynamics, Juvenile, in-water survey	1988	Continue	Projeto TAMAR	Private	ICMBio	SANTOS, A. J. B.; BELLINI, C.; BORTOLON, L. F. W.; OUTERBRIDGE, B.; SANTOS, A. S.; MARCOVALDI, M. A. In press. Movements of Brazilian hawksbill turtles revealed by flipper tags. In: 36th ANNUAL SYMPOSIUM ON SEA TURTLE BIOLOGY AND CONSERVATION, Lima, Perú.
T4.7	CC-SW ATL	Brazil	Southamerica / South Brazil, Rio Grande do Sul state	Strandings, incidental capture and habitat use by loggerhead turtles in the foraging grounds in southern Brazil	Conservation, bycatch, diet, stable isotopes, onboard observers	2003	Continue	NEMA	Private		Monteiro, D. S., Estima, S. C., Gandra, T. B., Silva, A. P., Bugoni, L., Swimmer, Y., Seminoff, J. A. & Secchi, E. R. (2016). Long-term spatial and temporal patterns of sea turtle strandings in southern Brazil. Marine Biology, 163(12), 247. ; Monteiro, D.S. 2017. Encalhes de tartarugas marinhas e uso do habitat por Caretta caretta no sul do Brasil. Tese de Doutorado (Programa de Pós-Graduação em Oceanografia Biológica), Universidade Federal do Rio Grande – FURG, Rio Grande.
T4.8	CM-SW ATL	Brazil	Southamerica / South Brazil, Rio Grande do Sul state	Strandings, incidental capture and habitat use by green turtles in the foraging grounds in southern Brazil	Conservation, bycatch, diet, onboard observers	2003	Continue	NEMA	Private		Monteiro, D. S., Estima, S. C., Gandra, T. B., Silva, A. P., Bugoni, L., Swimmer, Y., Seminoff, J. A. & Secchi, E. R. (2016). Long-term spatial and temporal patterns of sea turtle strandings in southern Brazil. *Marine Biology*, *163*(12), 247.

T4.9	DC-SW ATL	Brazil	Southamerica / South Brazil, Rio Grande do Sul state	Strandings, incidental capture and habitat use by leatherback turtles in the foraging grounds in southern Brazil	Conservation, bycatch, onboard observers	2003	Continue	NEMA	Private		Monteiro, D. S., Estima, S. C., Gandra, T. B., Silva, A. P., Bugoni, L., Swimmer, Y., Seminoff, J. A. & Secchi, E. R. (2016). Long-term spatial and temporal patterns of sea turtle strandings in southern Brazil. *Marine Biology*, *163*(12), 247.
T4.10	CM-SW ATL	Brazil	Southamerica / Southeast Brazil, São Paulo, Cananéia, Ilha Comprida, Iguape	Projeto Tartarugas	Conservation; Juvenile; diet; debris	2003	continue	IPeC	Private		Bahia, N.C.F. & Bondioli, A.C.V. (2010) Interação das tartarugas marinhas com a pesca artesanal de cerco-fixo em Cananéia, litoral sul de São Paulo. Biotemas, 23, 203-213; Loreto, B.O. & Bondioli, A.C.V. (2008) Epibionts associated with green sea turtles (Chelonia mydas) from Cananéia, Southeast Brazil. Marine Turtle Newsletter, 122, 5-8.; DIAS, R. B. ; BONDIOLI, A. C. V. ; SCHLINDWEIN, M. N. . Tourists and Sea Turtles: A First Evaluation of Tourism Potential and Risks in Cananéia, Brazil. Marine Turtle Newsletter, v. 142, p. 14-17, 2014; Daiana Proença Bezerra. Ingestão de resíduos sólidos por tartarugas marinhas (Chelonia mydas) no Complexo Estuarino Lagunar de Cananeia.. 2012. Dissertação (Mestrado em Ecologia e Conservação) - Universidade Federal do Paraná; Ana Paula Maistro. ESTIMATIVAS DE IDADE E CRESCIMENTO DE TARTARUGAS MARINHAS DA REGIÃO DE CANANÉIA, SP: VALIDAÇÃO DOS MÉTODOS ESQUELETOCRONOLOGICOS DE ANÁLISE ETÁRIA. 2009. Trabalho de Conclusão de Curso. (Graduação em Ciências Biológicas) - Universidade Estadual do Norte do Paraná.
T4.11	CM-SW ATL	Brazil	South America/ Brasil, Rio de Janeiro	Projeto Aruanã	feeding;juvenile; Southwest Atlantic	2010		UFF/ Projeto Aruanã	Public	UFF/ Projeto Aruanã	published articles

T4.12	CC-SW ATL	Brazil	South America/ Brazil, north Rio de Janeiro	Marine turtles monitoring - Nesting Beach Monitoring	Nesting female; southwest Atlantic	2010	2017	Porto do Açu	Private/ Public	Projeto TAMAR	Annual Reports
T4.13	CM-SW ATL	Brazil	South America/ Brasil, Paraná	Marine megafauna and environmental health	juvenile; feeding; Southwest Atlantic	2012	on going	UFPR - CEM	Public	UFPR/UEL	published articles
T4.14	CM-CC-SW ATL	Brazil	South America/ Brasil, Rio Grande do Sul	Caminho Marinho - feeding area monitoring	juvenile; feeding; Southwest Atlantic	2010	ongoing	NGO	Private	Caminho Marinho	Bortolotto, J., Steigleder, K. M. e Martinez-Souza, G. 2012. Projeto Caminho Marinho: monitoramento da frota pesqueira artesanal como conhecimento de tartarugas marinhas em áreas de alimentação no sul do brasil. Anais do III Simpósio Acadêmico de Biologia Marinha SABMAR. ImbéTramandaí/RS. Martinez-Souca, G. CROSSING SPACE AND TIME WITH SEA TURTLES: AN EDUCATIONAL PRODUCT TO RAISE AWARENESS FOR THE CONSERVATION OF SEA TURTLES AND ECOSYSTEM BASED-MANAGEMENT. 2013. Proceedings of the Thirty-Third Annual Symposium on Sea Turtle Biology and Conservation. NOAA Technical Memorandum NOAA NMFS-SEFSC-645: 263 p. Martinez-Souza, G.; BORTOLOTTO, J.; STEIGLEDER, K.; GONCALVES FILHO, P. R. CAMINHO MARINHO EXPEDITION: CONNECTING RESEARCH AND COMMUNITY IN A WAY WHICH CONSERVES THE SEA TURTLES WITH AN ECOSYSTEM-BASED APPROACH. 2013. Proceedings of the Thirty-Third Annual Symposium on Sea Turtle Biology and Conservation. NOAA Technical Memorandum NOAA NMFS-SEFSC-645: 263 p.

T4.15	EI -SW ATL	Brazil	South America/ Brasil, Alagoas sothern coast	Projeto Biota-Mar	Tracking; Nesting female; southwest Atlantic	2015	2019	Instituto Biota de Conservação	Public	Empreendimento Saint Michel	-
T4.16	EI -SW ATL	Brazil	South America/ Brasil, Alagoas and Maceio northern coast	Projeto para Criação da Área de Relevante Interesse Ecológico das Tartarugas Marinhas	Tracking; Nesting female; southwest Atlantic	2016	2017	Instituto Biota de Conservação	Public	Fundação SOS Mata Atlântica, Ufal, Governo de Alagoas, Prefeitura de Maceió	
T4.17	EI -SW ATL	Brazil	South America/ Brasil,Alagoas	Projeto Biota-Mar	Tracking; Nesting female; southwest Atlantic	2018	2018	Instituto Biota de Conservação	Public	PGS, Fundação Toyota do Brasil, SOS Mata Atlântica, Ufal, Copra Alimentos, Governo de Alagoas, Prefeitura de Maceió	Stefanis, B.S.P.O., Bonfim, W.A.G., Salgueiro, L.C.S., et al. Projeto de monitoramento de praias em Alagoas com esforço sistemático diário: principais resultados e a importância dos PMPs para o fomento da conservação e pesquisa. In: IBAMA e Indústria de Pesquisa Sísmica: em busca do conhecimento e sustentabilidade através do licenciamento ambiental. 1ª Edição. Rio de Janeiro. Mind Duet Comunicação e Marketing. 2020
T4.18	EI -SW ATL	Brazil	America do Sul/Brasil, Nordeste, Alagoas nothern and central coast	Projeto Biota-Mar	Tracking; Nesting female; southwest Atlantic	2016	em andamento	Instituto Biota de Conservação	Public	Fundação Toyota do Brasil, SOS Mata Atlântica, Ufal, Copra Alimentos, Governo de Alagoas, Prefeitura de Maceió	
T4.19	EI -SW ATL	Brazil	South America/ Brasil, Rio Grande do Norte	Universidade do Estado do Rio Grande do Norte - Projeto Cetáceos da Costa Branca	Nesting; stranding ; southwest Atlantic; Eretmochelys imbricata; lepidochelys olivacea, Caretta	2009	2019	Universidade do Estado do Rio Grande do Norte - Proejto Cetáceos da Costa Branca	Public	Petrobrás	

					caretta, Dermochelys coreacea, Chelonia mydas						
T4.20	EI -SW ATL	Brazil	South America/ Brasil, Rio Grande do Norte	Universidade do Estado do Rio Grande do Norte - Projeto Cetáceos da Costa Branca	Nesting; stranding ; southwest Atlantic	2009	2019	Universidade do Estado do Rio Grande do Norte - Proejto Cetáceos da Costa Branca	Public	Petrobras	
T4.21	EI -SW ATL	Brazil	South America/ Brasil, Rio Grande do Norte	Universidade do Estado do Rio Grande do Norte - Projeto Cetáceos da Costa Branca	Nesting; stranding ; southwest Atlantic	2009	Atual	Universidade do Estado do Rio Grande do Norte - Proejto Cetáceos da Costa Branca	Public	Petrobras	
T4.22	EI -SW ATL	Brazil	South America/ Brasil, Rio Grande do Norte	Universidade do Estado do Rio Grande do Norte - Projeto Cetáceos da Costa Branca	Nesting; stranding ; southwest Atlantic	2019	2019	Universidade do Estado do Rio Grande do Norte - Proejto Cetáceos da Costa Branca	Public	SPECTRUM -	Relatório Final de Projeto de Ampliação do Projeto de Monitoramento de Praias da Bacia Potiguar (PMP-BP) , Spectrum.2019.
T4.23	EI -SW ATL	Brazil	South America/ Brasil, Pernambuco, Ipojuca coast	Monitoramento de desovas nas praias do Munícipio do Ipojuca, Pernambuco, Brasil	Eretmochelys imbricata; Meiofauna; Macrofauna; Bioengineering; Facilitation; Biological interactions; Epifaunal recruitment	2010	2011	ONG Ecoassociados	Public	UFPE	

T4.24	EI -SW ATL	Brazil	South America/ Brasil, Pernambuco, Ipojuca coast	Monitoramento de desovas nas praias do Munícipio do Ipojuca, Pernambuco, Brasil	Eggshell; fungi; Fusarium; Hawksbill; testudines	2011	2011	ONG Ecoassociados	Public	UPE/Prefeitura do Ipojuca
T4.25	EI -SW ATL	Brazil	South America/ Brasil, Pernambuco, Ipojuca coast	Monitoramento de desovas nas praias do Munícipio do Ipojuca, Pernambuco, Brasil	Anthropogenic impacts; cheloniidae; conservation; hawksbill turtle; light pollution	2012	2012	ONG Ecoassociados	Public	UESC/Prefeitura do Ipojuca
T4.26	EI -SW ATL	Brazil	South America/ Brasil, Pernambuco, Ipojuca coast	Monitoramento de desovas nas praias do Munícipio do Ipojuca, Pernambuco, Brasil	Ipojuca; Quelônios; Testudines; Eretmochelys imbricata; Caretta caretta.	2000	2008	ONG Ecoassociados	Public	UFRPE/Prefeitura do Ipojuca
T4.27	EI -SW ATL	Brazil	South America/ Brasil, Pernambuco, Ipojuca coast	Monitoramento de desovas nas praias do Munícipio do Ipojuca, Pernambuco, Brasil		2000	2013	ONG Ecoassociados	Public	UFRPE/Prefeitura do Ipojuca
T4.28	EI -SW ATL	Brazil	South America/ Brasil, Pernambuco		Feeding. Trophic Ecology. Herbivorous	2016	2018		Public	

T4.29	EI -SW ATL	Brazil	South America/ Brasil, Pernambuco, Ipojuca coast	Monitoramento de desovas nas praias do Munícipio do Ipojuca, Pernambuco, Brasil		2015	2015	ONG Ecoassociados	Public	UFPE/Prefeitura do Ipojuca	
T4.30	CC-SW ATL	Brazil	South America/ Brasil, Rio Grande do Norte/Nísia Floresta coast/ Búzios beach	Projeto Ponta de Pirangi (linha específica: Monitoramento da Praia de Búzios), Rio Grande do Norte, Brasil	Hawksbill turtle; Nesting female; Conservation.	2018	2020	Oceânica - Pesquisa, Educação e Conservação	Civil Society Organization		Bellini, Claudio; Vieira, Daniel Henrique Gil; Bezerra, Jéssica de Paiva; Santos, Armando José Barsante. TARTARUGAS MARINHAS NO LITORAL SUL DO RIO GRANDE DO NORTE – UMA SÍNTESE. APA RECIFES DE PIRANGI Proposta de Criação de Área Protegida Costeira-Marinha no Rio Grande do Norte. Cap. 5, p. 53, 2020. Disponível em: https://oceanica.org.br/pontadepirangi/ Bezerra e Rocha. Monitoramento da Praia de Búzios: por onde andam tartarugas e veículos? Que litoral queremos? Cap. 4, p. 115-123, 2020
T4.31	DC-new RMU	Brazil	South America/ Brasil, Piauí	Instituto Tartarugas do Delta	Nesting	2007	ongoing		NGO		
T4.32	CM-CC-LO-EI-SW ATL	Brazil	South America/Brasil, samples from several locations	Laboratório de Ecologia Molecular Marinha/Projeto Lixo Marinha, Rio Grande do Sul, Brasil	Population genetics, hybridization, marine litter, Southwest Atlantic	2014	ongoing	Universidade Federal do Rio Grande, FURG	Public university	Projeto Tamar, Caminho Marinho, NEMA	

Figures

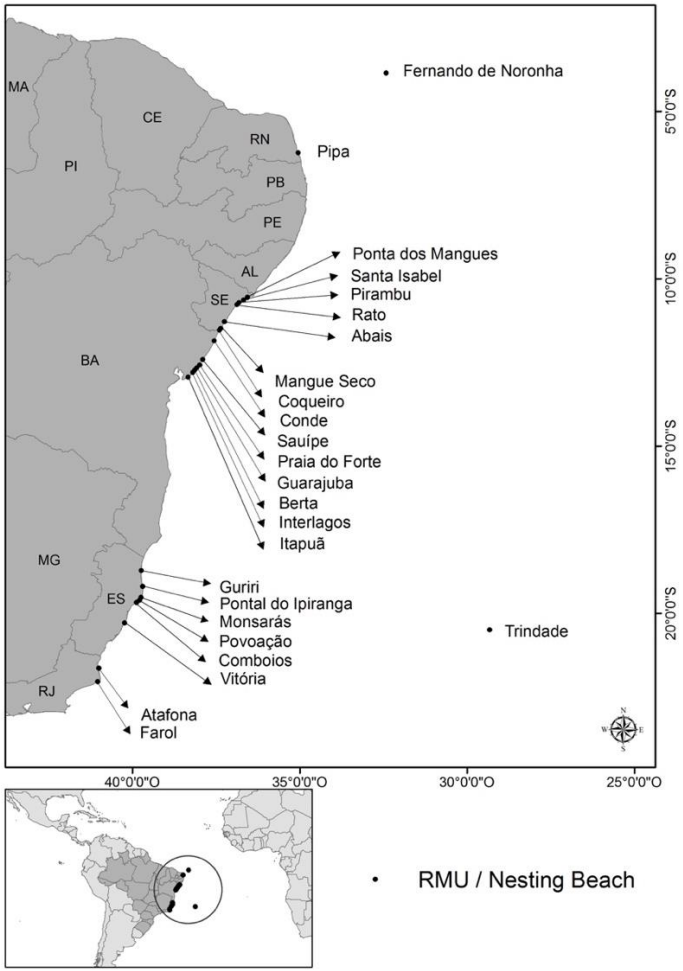

Figure 1. Main nesting areas for sea turtles in Brazil. RN, Rio Grande do Norte; SE, Sergipe; BA, Bahia; ES, Espírito Santo; RJ: Rio de Janeiro.

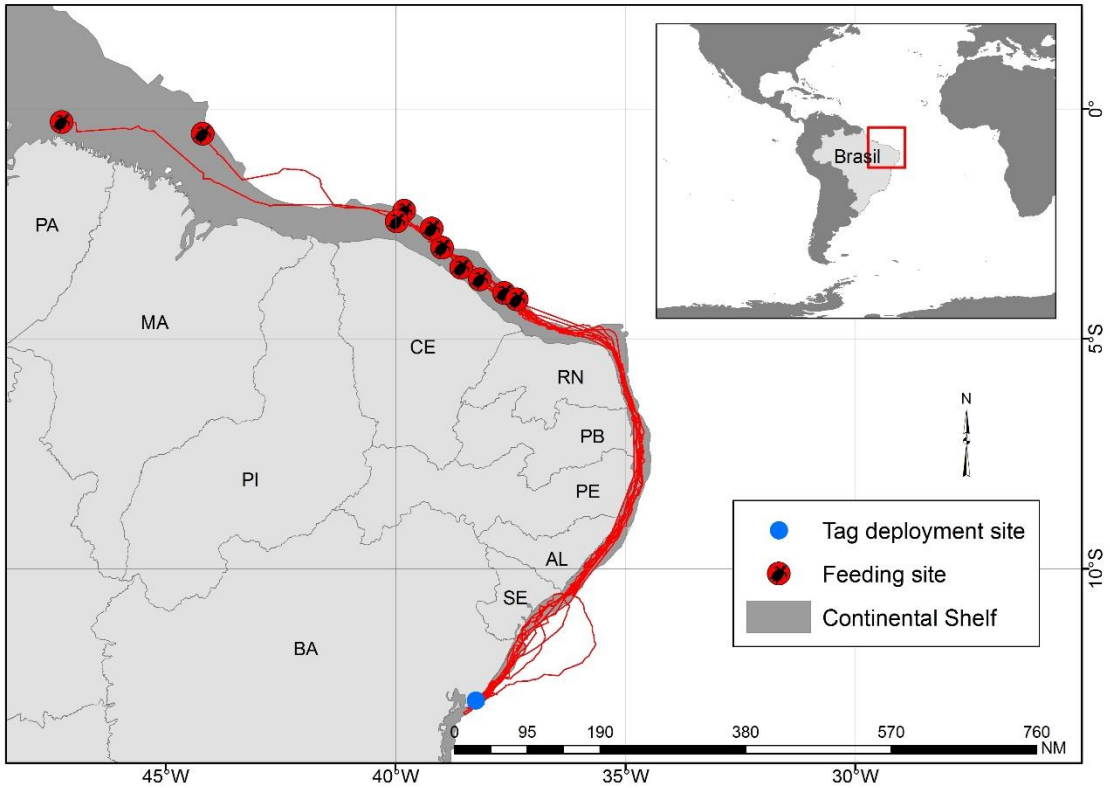

Figure 2. Post-nesting migrations and feeding grounds of 10 female loggerhead turtles satellite-tracked from nesting beaches along the northern coast of Bahia, Brazil [78].

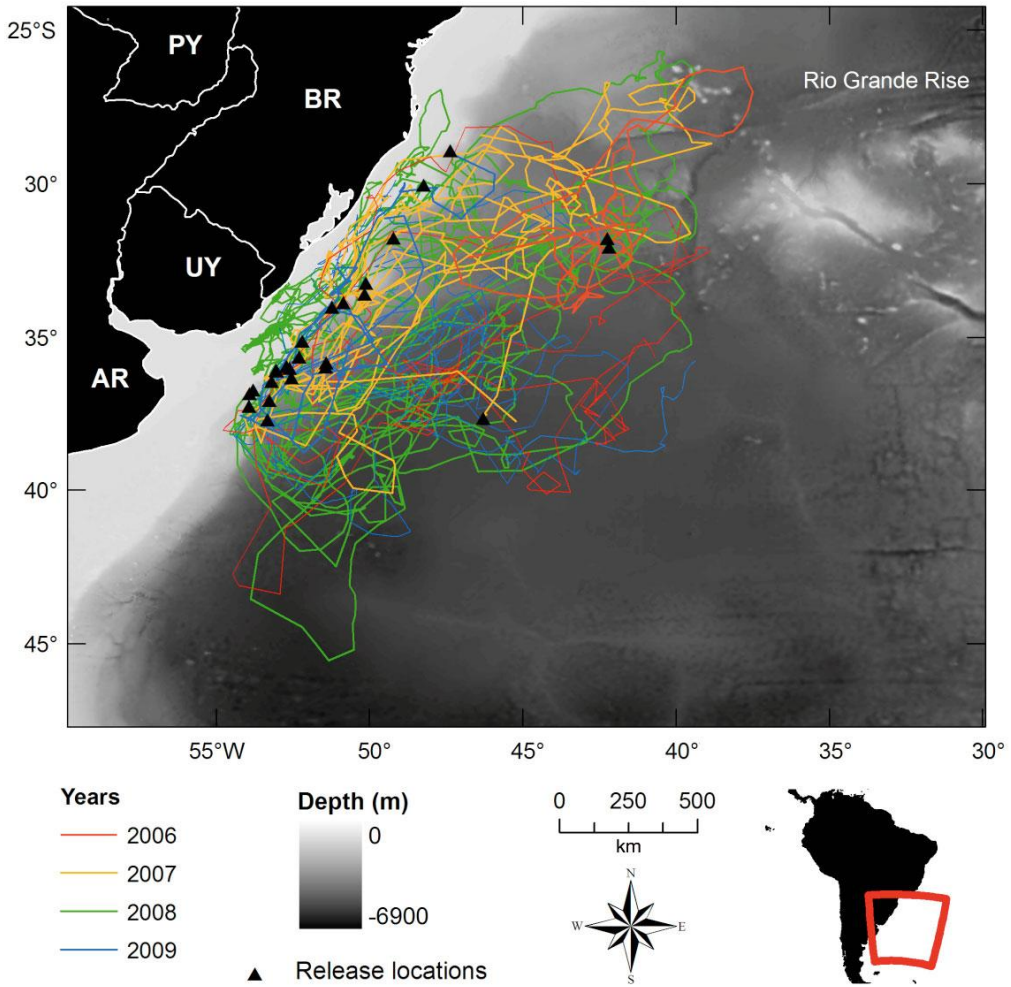

Figure 3. Movement paths of 26 immature loggerheads in the SW Atlantic Ocean between 2006 and 2010 [1].

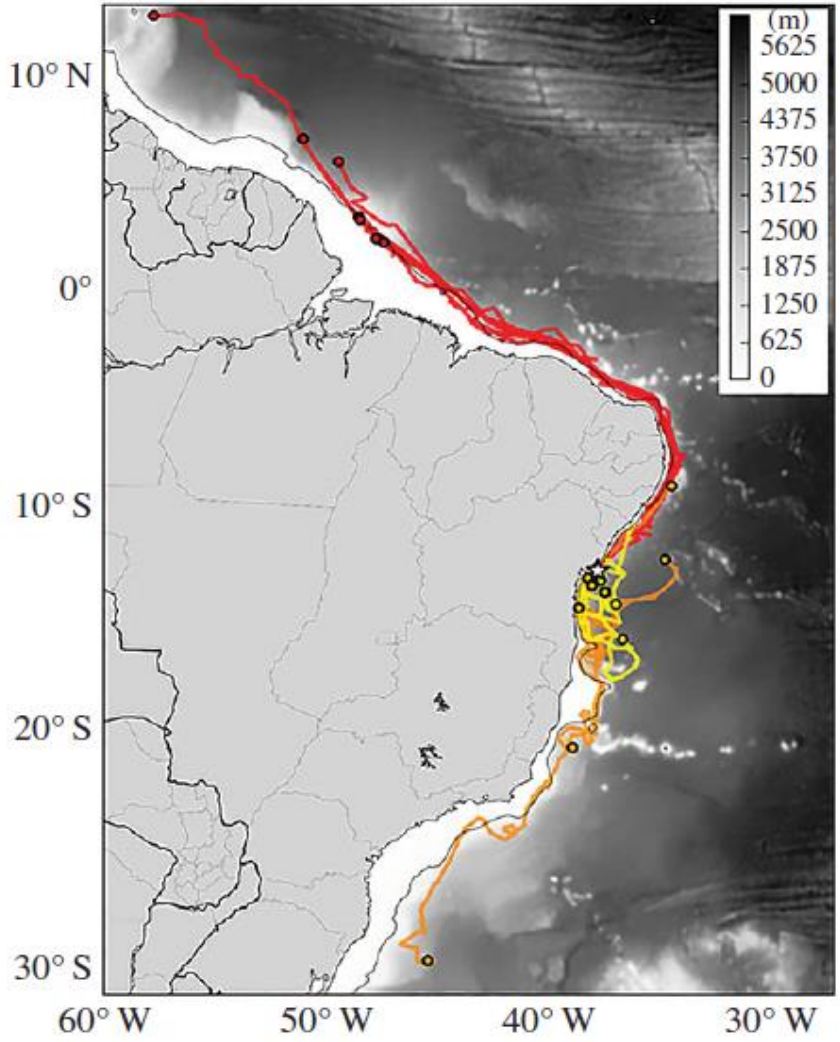

Figure 4. Satellite tracks of 19 yearling loggerhead sea turtles released from Praia do Forte, Bahia, Brazil [82].

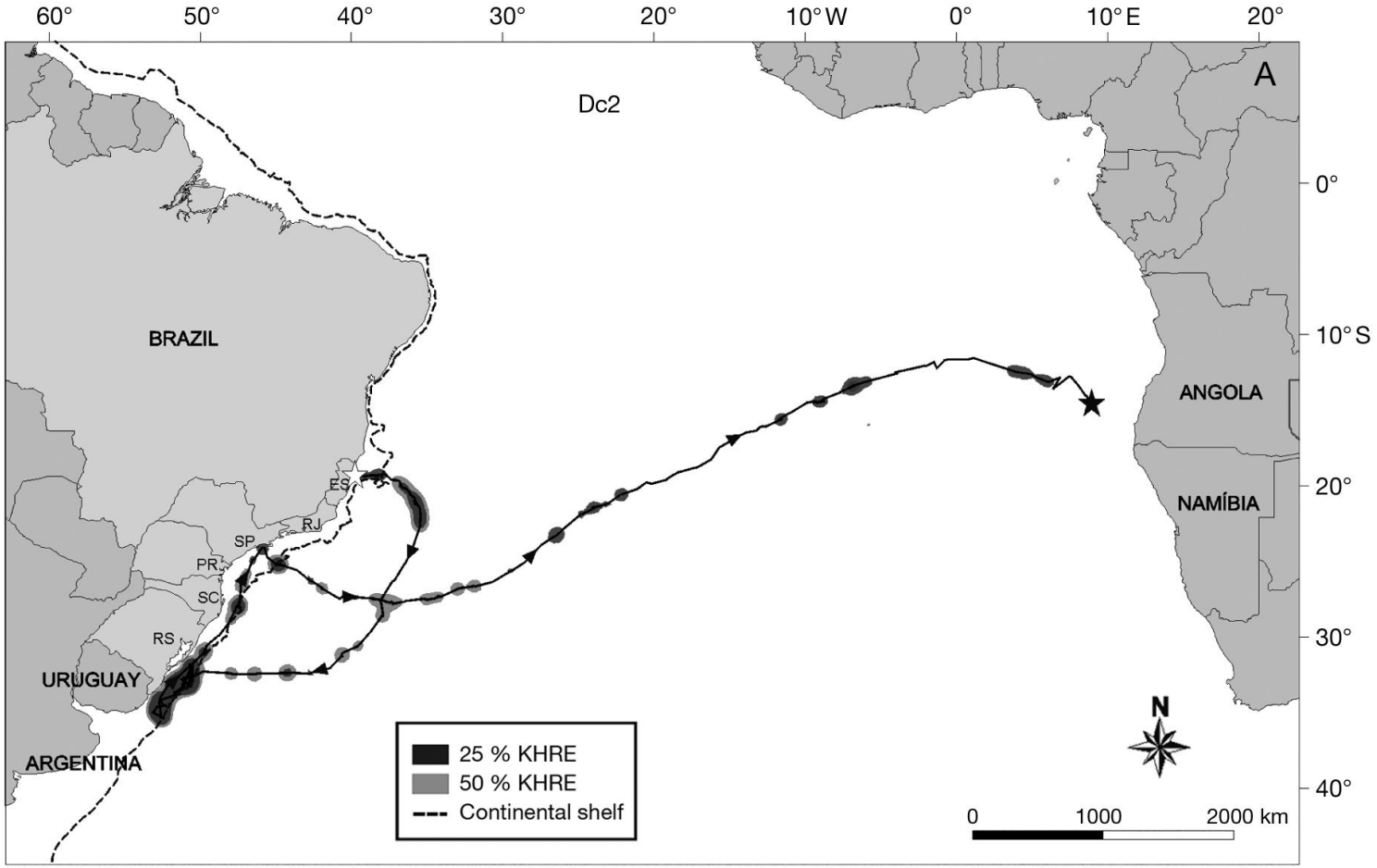

Figure 5. Kernel estimated home range utilization distributions (25 and 50% KHRE) and migratory paths of 2 postnesting female leatherbacks tracked from Espírito Santo, Brazil, and 1 female leatherback caught in a drift net off the State of São Paulo, Brazil. Open stars indicate tracking starting point; black stars show last transmission [122].

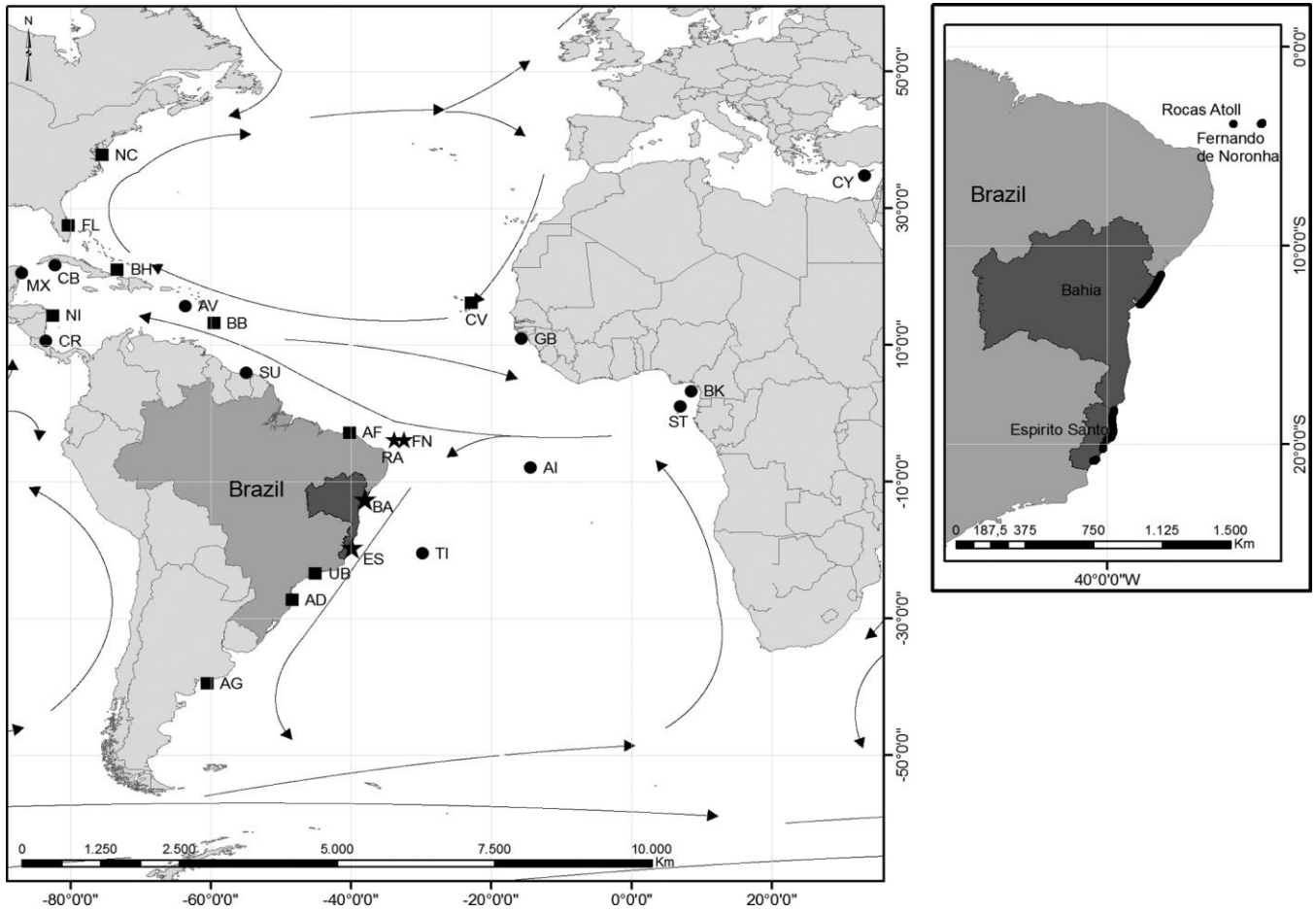

Figure 6. Location of the Rocas Atoll (RA), Fernando de Noronha (FN), Bahia (BA), and Espirito Santo (ES) study sites(symbolized by stars) with respect to general oceanic circulation patterns shown as arrows, and other *Chelonia mydas* groups previously subject to genetic analysis [192].

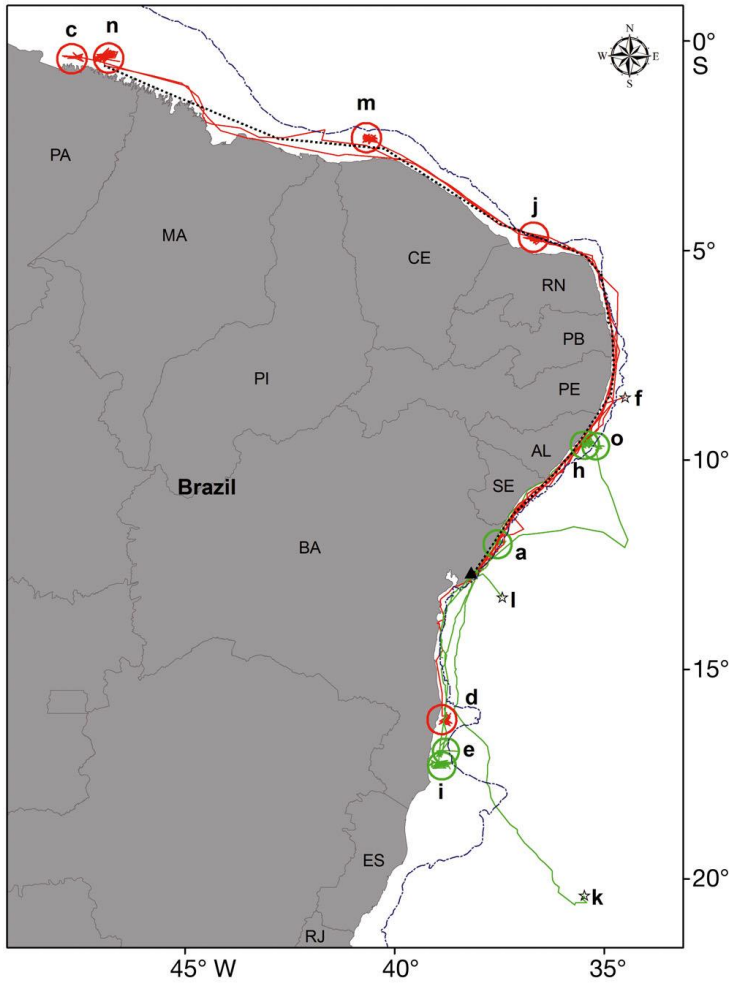

Figure 7. Migratory paths and foraging areas of hawksbill turtles satellite-tracked from nesting grounds in northern Bahia, Brazil (n = 15). Lower case letters: individual turtles; circles: foraging areas (green: hawksbills; red: hawksbill-loggerhead hybrids) [81].

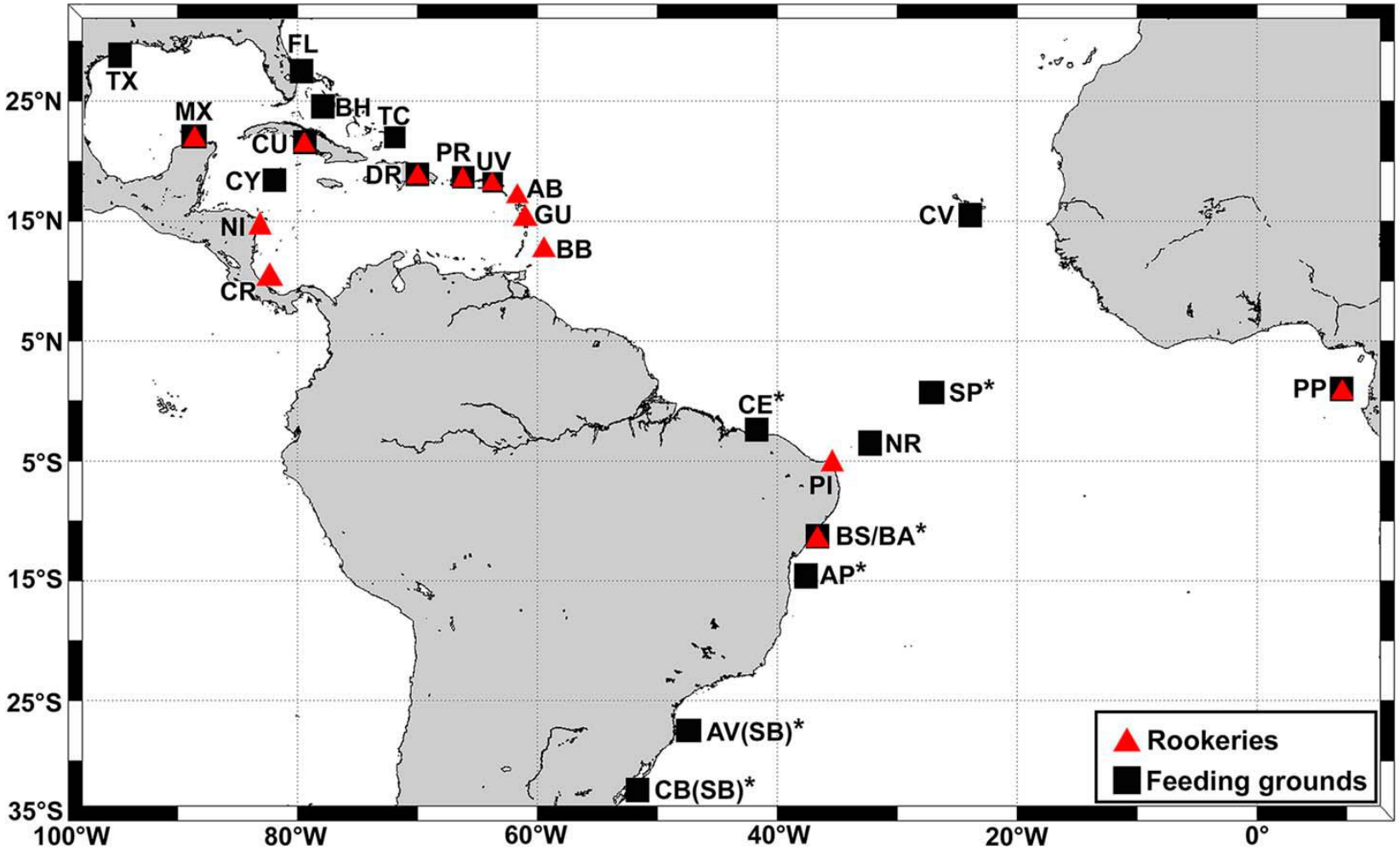

Figure 8. Locations of genetically described hawksbill populations in the Atlantic; map shows rookeries (red triangles) and feeding grounds (black squares) [65]

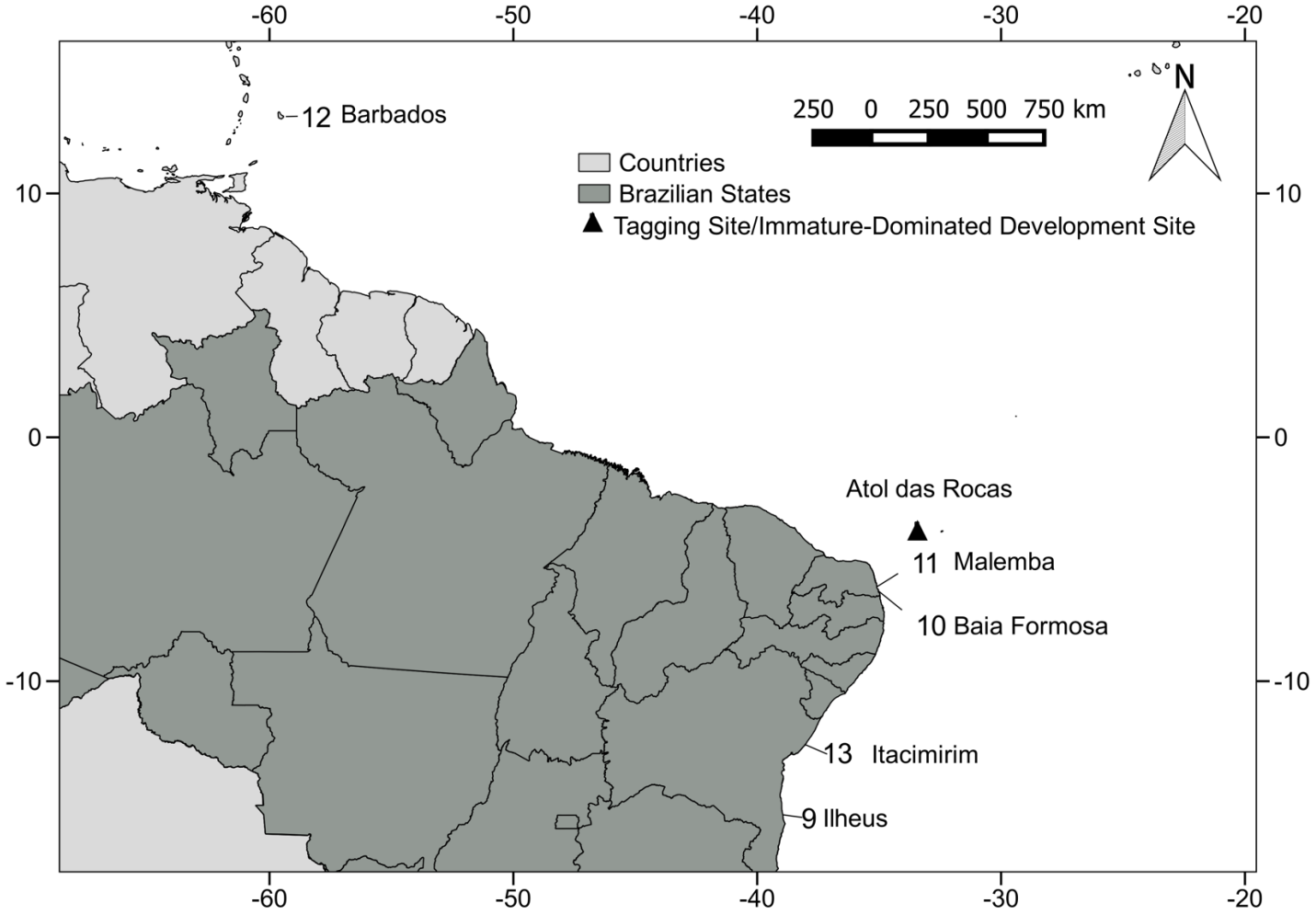

Figure 9. Nesting beach locations of five hawksbills (*Eretmochelys imbricata*) originally tagged as juveniles in Atol das Rocas, Brazil. Numbers correspond to nesting beaches [74].

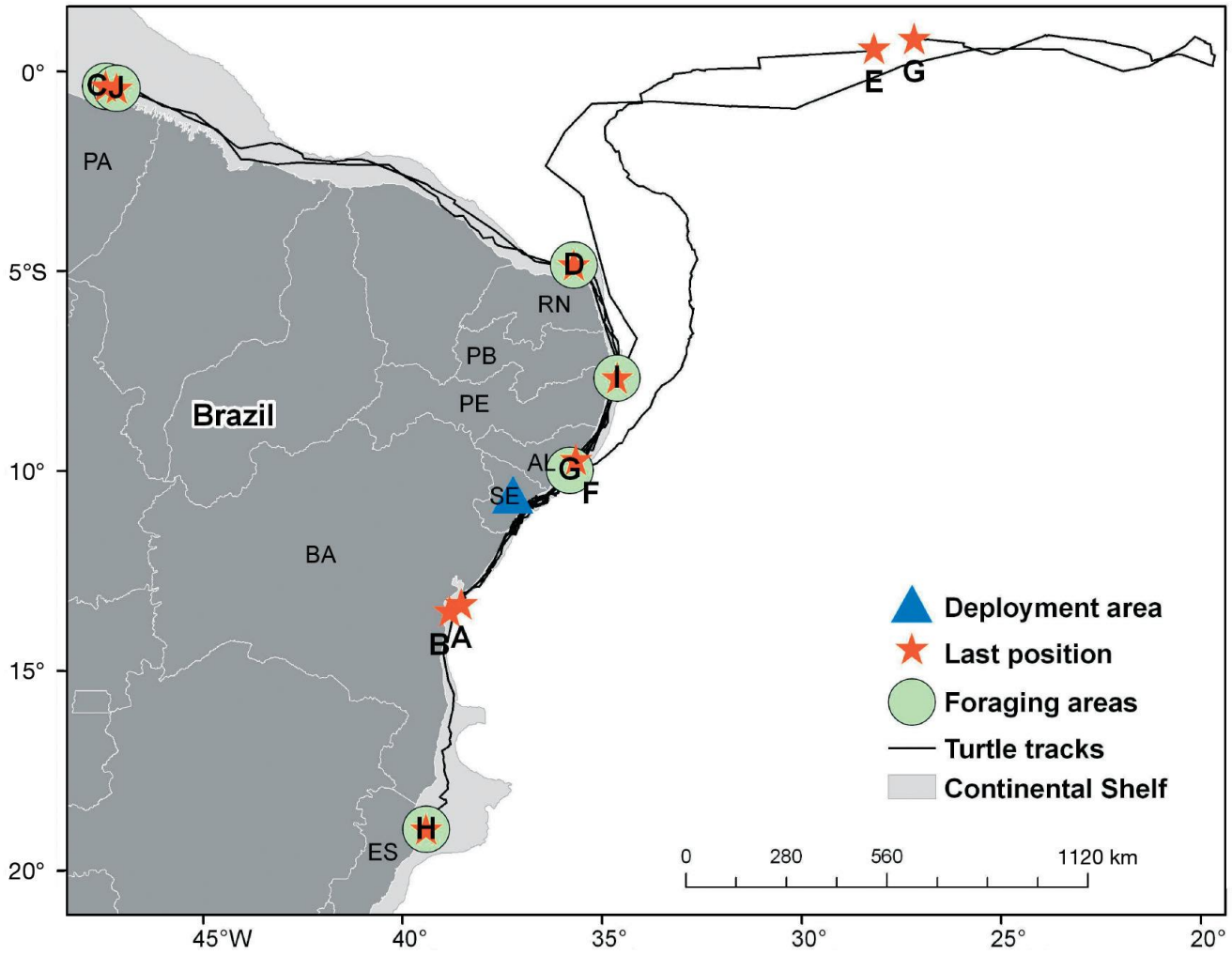

Figure 10. Post-nesting movements of olive ridley turtles satellite tracked from their nesting grounds in Sergipe [83]

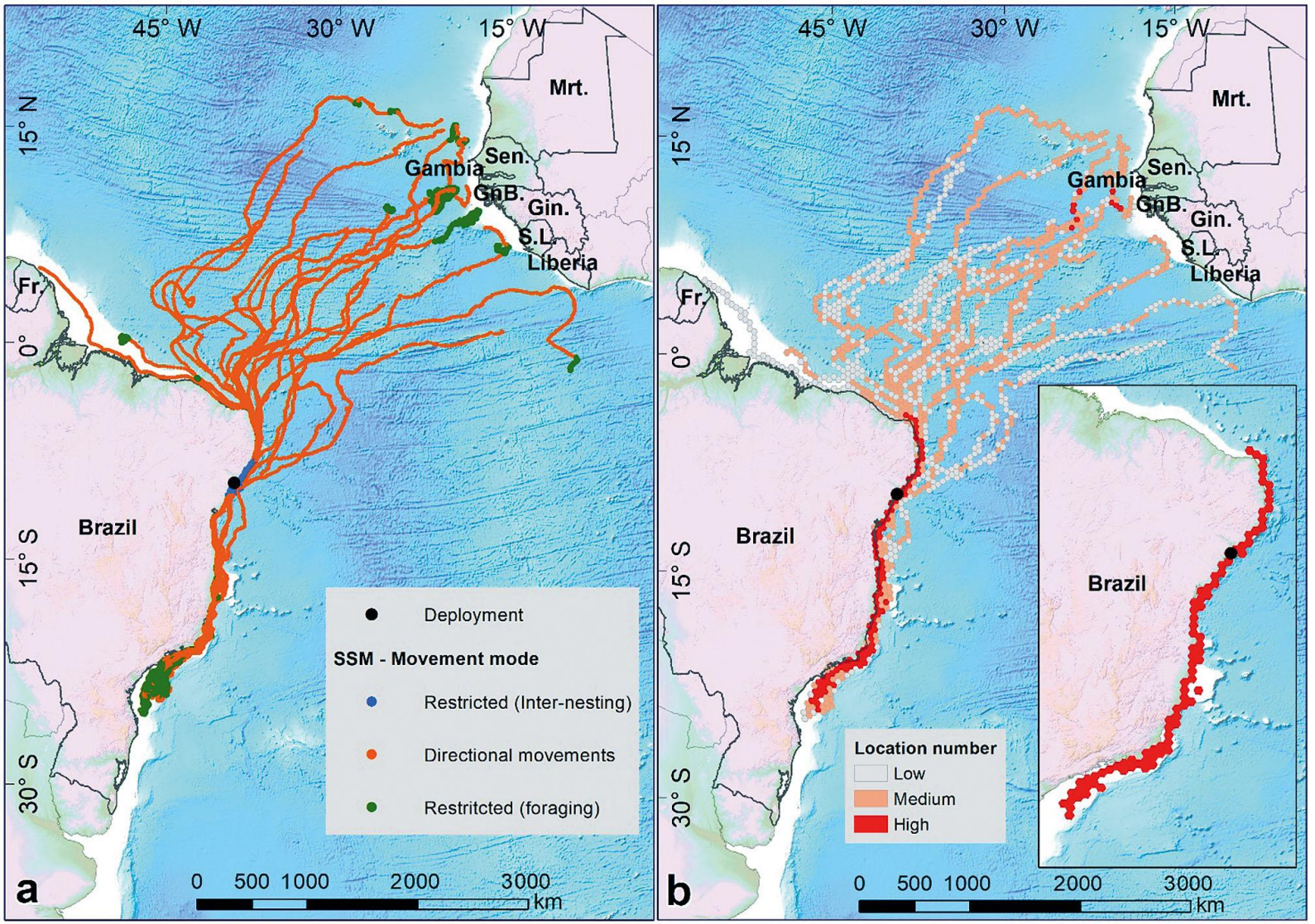

Figure 11. Olive ridley post-reproductive displacement. (a) State-space model predicted behavior; (b) weighted point density per 25 km hexagon [225].

URUGUAY

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1. RMU: Loggerhead (*Caretta caretta*) Southwestern Atlantic

Immature and adult Loggerhead turtles use coastal and oceanic waters of Uruguay (Laporta et al. 2012, Barcelo et al. 2013). The natal origin of the Loggerhead turtle aggregation came mainly from Brazilian nesting sites (Caraccio et al. 2008, Cardozo 2012); few haplotypes of distant nesting areas were found in turtles bycaught in oceanic waters (Caraccio et al. 2008).

1.1. Distribution, abundance, trends

This species occupied coastal and oceanic waters of Uruguay and the region, identified by mark-recapture programs, satellite telemetry and strandings (Laporta & López 2003; López-Mendilaharsu et al. 2006, Barceló et al. 2013, Vélez-Rubio et al. 2013).

1.1.1. Nesting sites

Not apply

1.1.2. Marine areas

Movement paths and pelagic foraging areas of immature loggerheads in oceanic waters of SW Atlantic (Fig.1; Barceló et al. 2013; Gaube et al. 2017). While distribution of strandings showed a higher concentration of stranding of large

juvenile and adult loggerhead turtles (Figure2), reflecting a higher use of coastal foraging areas for these phases of their life cycle (Vélez-Rubio et al. 2013).

1.2. Other biological data

Please see Table 1.

1.3. Threats

The main threats for this species (López-Mendilaharsu et al. 2020) were resumed in Table 1.

1.3.1 Nesting sites

Not apply

1.3.2. Marine areas

Main threats of the species in Uruguayan waters are bycatch by industrial fleet, mainly bottom trawlers in coastal waters (Laporta et al. 2006; Laporta & Miller 2012) and with pelagic longline in oceanic waters (Giffoni et al. 2008). Also interact with artisanal bottom set nets but in lower numbers (Viera 2012).

Other threats were interaction with marine debris, by ingestion (Martinez Souza 2009) and by entanglement, and boat strikes (Vélez-Rubio et al. 2013).

1.4. Conservation

Protection status: see Table 1 for national laws (Carreira & Estrades 2013, Carreira & Maneiro 2015, Vélez-Rubio et al. 2019) and Table 3 for international conventions. Long-term governmental and non-governmental programs are listed in Table 4.

In coastal fisheries (trawlers and artisanal set nets) there is a collaborative fishers network aimed to help mitigate the bycatch of these species. Fishermen report the incidental capture of sea turtles and also perform first aid to bycaught turtles.

1.5. Research

For information the research conducted in Uruguay with this species see Table 1.

Key knowledge gaps about abundance and trends of this species in Uruguay. Also an update of bycatch numbers by artisanal and industrial Uruguayan fleets and other international fleets operating in the area are needed.

2. RMU: Leatherback turtle (Dermochelys coriacea) – Southwestern Atlantic

Immature and adult Leatherback turtles use coastal and oceanic waters of Uruguay (López-Mendilaharsu et al. 2009, Fossette et al. 2010). The natal origin of the majority of Leatherbacks (75%) in Uruguayan waters come from the African rookeries, mainly Gabon in West Africa with minimal contribution coming from other Atlantic rookeries (Vélez-Rubio et al. 2019).

2.1. Distribution, abundance, trends

This species occupied coastal and oceanic waters of Uruguay and the region, identified by mark-recapture programs, satellite telemetry and strandings (López-Mendilaharsu et al. 2009, Fossette et al. 2010, Vélez-Rubio et al. 2013).

2.1.1. Nesting sites

Not apply

2.1.2. Marine áreas

Movement paths and pelagic foraging areas of immature and adult leatherback turtles in the SW Atlantic are displayed in Figure3 (López-Mendilaharsu et al. 2009), while distribution of strandings of large juvenile and adult leatherback turtles are shown in Figure2 the high concentrations of stranding reflect the coastal foraging areas (Vélez-Rubio et al. 2013).

2.2. Other biological data

Leatherbacks are known to forage seasonally in the Rio de la Plata estuary, a highly productive estuarine system where their preferred prey species, gelatinous macrozooplankton, occur in high densities (Estrades et al. 2007; López-Mendilaharsu et al. 2009).

See more details of biological data in Table 1.

2.3. Threats

The main threats were resumed in Table 1.

2.3.1. Nesting sites

Not apply

2.3.2. Marine areas

Main threats of the species in Uruguayan waters are bycatch by industrial fleet, mainly bottom trawlers in coastal waters (Laporta et al. 2006a,b; Laporta & Miller 2012) and pelagic longline in oceanic waters (Giffoni et al. 2008). Also interact with artisanal bottom set nets but in lower numbers (Rivas 2012, Viera 2012). Other threats of this species in the area include debris entanglement and boat strikes (Vélez-Rubio et al. 2013; Karumbe unpublished data).

2.4. Conservation

Protection status: see Table 1 for national laws (Carreira & Estrades 2013, Carreira & Maneiro 2015, Vélez-Rubio et al. 2019) and Table 3 for international conventions. Long-term governmental and non-governmental programs are listed in Table 4.

In coastal fisheries (trawlers and artisanal set nets) there is a collaborative fishers network aimed to help mitigate the bycatch of these species. Fishermen report the incidental capture of sea turtles and also perform first aid to bycaught turtles.

2.5. Research

For information the research conducted in Uruguay with this species see Table 1.

There are key knowledge gaps about abundance and trends of this species in Uruguay. Also an update of bycatch numbers by artisanal and industrial Uruguayan fleets and other international fleets operating in the area are needed.

3. RMU: Green turtle (*Chelonia mydas*) – Southwestern Atlantic

Immature green turtles use coastal and oceanic waters of Uruguay (López-Mendilaharsu et al. 2006, 2016; Vélez-Rubio et al. 2018a). The natal origin of the Green turtle aggregation came mainly from Ascension Island nesting beaches, but also haplotypes of other nesting areas were found (Caraccio 2008).

3.1. Distribution, abundance, trends

This species occupied coastal and oceanic waters of Uruguay and the region, identified by mark-recapture programs, satellite telemetry and strandings (López-Mendilaharsu et al. 2006; Vélez-Rubio et al. 2013;López-Mendilaharsu et al. 2016; Vélez-Rubio et al. 2018a).

3.1.1. Nesting sites

Not apply

3.1.2. Marine areas

Movement paths and foraging areas of immature green turtles in the SW Atlantic are displayed in Figure4 (Vélez-Rubio et al. 2018a), while distribution of strandings of immature green turtles are shown in Figure2. The high concentrations of strandings reflect the coastal foraging areas of this species (Vélez-Rubio et al. 2013).

3.2. Other biological data

Immature green turtles feed on seaweed species present on the rocky outcrops along the Uruguayan coast (Vélez-Rubio et al. 2016; Gonzalez-Etchebehere et al. 2017). Recent studies of seasonal habitat use demonstrate the residence all year round of part of the aggregation in Uruguayans waters (Vélez-Rubio et al. 2018a). During the winter the green turtle performs the brumation strategy to avoid the low sea water temperature (Reyes et al. 2019).

See more details of biological data in Table 1.

3.3. Threats

The main threats were resumed in Table 1.

3.3.1. Nesting sites

Not apply

3.3.2. Marine areas

The main threats affecting green turtles in Uruguayan waters include, marine debris ingestion (Velez-Rubio et al. 2018b), debris entanglement (Vélez-Rubio et al. 2013), and bycatch in artisanal fisheries (Domingo et al. 2006; Laporta et al. 2006; Lezama 2009; Laporta et al. 2012; Rivas 2012; Viera 2012).

Other threats registered in Uruguayan waters are the interaction with the invasive snail Rapana venosa (Lezama et al. 2012), cold-stunning or hypothermic shock due to cold waters during the winter (Vélez-Rubio et al. 2017), impact of port dredging (Martinez-Souza et al. 2012) and tumors associated with water quality (López-Mendilaharsu et al. 2016).

3.4. Conservation

Protection status: see Table 1 for national laws (Carreira & Estrades 2013, Carreira & Maneiro 2015, Vélez-Rubio et al. 2019) and Table 3 for international conventions. Long-term governmental and non-governmental programs are listed in Table 4.

In coastal fisheries (trawlers and artisanal set nets) there is a collaborative fishers network aimed to help mitigate the bycatch of these species. Fishermen report the incidental capture of sea turtles and also perform first aid to bycaught turtles.

3.5. Research

Key knowledge gaps about current bycatch numbers by artisanal and industrial Uruguayan fleets and other international fleets operating in the area.

4. RMU: Green turtle (*Chelonia mydas*) – Southcentral Atlantic

Immature green turtles use coastal and oceanic waters of Uruguay (López-Mendilaharsu et al. 2006, 2016; Vélez-Rubio et al. 2018a). The natal origin of the Green turtle aggregation came mainly from Ascension Island nesting beaches), but also haplotypes of other nesting areas were found (Caraccio 2008).

4.1. Distribution, abundance, trends

This species occupied coastal and oceanic waters of Uruguay and the region, identified by mark-recapture programs, satellite telemetry and strandings (López-Mendilaharsu et al. 2006; Vélez-Rubio et al. 2013;López-Mendilaharsu et al. 2016; Vélez-Rubio et al. 2018a).

4.1.1. Nesting sites

Not apply

4.1.2. Marine areas

Movement paths and foraging areas of immature green turtles in the SW Atlantic are displayed in Figure4 (Vélez-Rubio et al. 2018a), while distribution of strandings of immature green turtles are shown in Figure2 the high concentrations of stranding reflect the coastal foraging areas of this specie (Vélez-Rubio et al. 2013).

4.2. Other biological data

Immature green turtles feed on seaweed species present on the rocky outcrops along the Uruguayan coast (Vélez-Rubio et al. 2016; Gonzalez-Etchebehere et al. 2017). Recent studies of seasonal habitat use demonstrate the residence all year round of part of the aggregation in Uruguayas waters (Vélez-Rubio et al. 2018a). During the winter the green turtle performs the brumation strategy to avoid the low sea water temperature (Reyes et al. 2020). See more details of biological data in Table 1.

4.3. Threats

The main threats were resumed in Table 1.

4.3.1. Nesting sites

Not apply

4.3.2. Marine areas

The main threats affecting green turtles in Uruguayan waters include, marine debris ingestion (Velez-Rubio et al. 2018b), debris entanglement (Vélez-Rubio et al. 2013), and bycatch in artisanal fisheries (Domingo et al. 2006; Laporta et al. 2006; Lezama 2009; Laporta et al. 2012; Rivas 2012; Viera 2012).

Other threats registered in Uruguayan waters are the interaction with the invasive snail Rapana venosa (Lezama et al. 2012), cold-stunning or hypothermic shock due to cold waters during the winter (Vélez-Rubio et al. 2017), impact of port dredging (Martinez-Souza et al. 2012) and tumors associated with water quality (López-Mendilaharsu et al. 2016).

4.4. Conservation

Protection status: see Table 1 for national laws (Carreira & Estrades 2013, Carreira & Maneiro 2015, Vélez-Rubio et al. 2019) and Table 3 for international conventions. Long-term governmental and non-governmental programs are listed in Table 4.

In coastal fisheries (trawlers and artisanal set nets) there is a collaborative fishers network aimed to help mitigate the bycatch of these species. Fishermen report the incidental capture of sea turtles and also perform first aid to bycaught turtles.

4.5. Research

Key knowledge gaps about current bycatch numbers by artisanal and industrial Uruguayan fleets and other international fleets operating in the area.

5. RMU: Hawksbill turtle (*Eretmochelys imbricata*) – Southwestern Atlantic

The Hawksbill turtle presents a sporadic presence in Uruguayan waters.

5.1. Distribution, abundance, trends

5.1.1. Nesting sites

Not apply

5.1.2. Marine areas

Distribution of strandings of hawksbill turtles are shown in Figure2 (bottom panel) (Vélez-Rubio et al. 2013).

5.2. Other biological data

Please see Table 1.

5.3. Threats

One of the threats registered in Uruguayan waters is the presence of hybrid specimens (Brito et al. 2020).

5.3.1. Nesting sites

Not apply

5.3.2. Marine areas

Please see Table 1.

5.4. Conservation

Protection status: see Table 1 for national laws (Carreira & Estrades 2013, Carreira & Maneiro 2015, Vélez-Rubio et al. 2019) and Table 3 for international conventions. Long-term governmental and non-governmental programs are listed in Table 4.

In coastal fisheries (trawlers and artisanal set nets) there is a collaborative fishers network aimed to help mitigate the bycatch of these species. Fishermen report the incidental capture of sea turtles and also perform first aid to bycaught turtles.

5.5. Research

Key knowledge gaps about the habitat utilization, movements and threats in this area.

6. RMU: Olive Ridley (*Lepidochelys olivacea*) – Southwestern Atlantic

The Olive Ridley presents a sporadic presence in Uruguayan waters.

6.1. Distribution, abundance, trends

6.1.1. Nesting sites

Not apply

6.1.2. Marine areas

Distribution of strandings of olive Ridley turtles are shown in Figure2 (bottom panel) (Vélez-Rubio et al. 2013; Gonzalez-Paredes et al. 2018).

6.2. Other biological data

Please see Table 1.

6.3. Threats

Please see Table 1.

6.3.1. Nesting sites

Not apply

6.3.2. Marine areas

Please see Table 1.

6.4. Conservation

Protection status: see Table 1 for national laws (Carreira & Estrades 2013, Carreira & Maneiro 2015, Vélez-Rubio et al. 2019) and Table 3 for international conventions. Long-term governmental and non-governmental programs are listed in Table 4.

In coastal fisheries (trawlers and artisanal set nets) there is a collaborative fishers network aimed to help mitigate the bycatch of these species. Fishermen report the incidental capture of sea turtles and also perform first aid to bycaught turtles.

6.5. Research

Key knowledge gaps about the habitat utilization, movements and threats in this area.

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Table 1. Biological and conservation information about sea turtle Regional Management Units in Uruguay.

RMU (all RMUs of all species occurring in a Country or Region) add or remove columns on the right according to the RMUs	**C.caretta-SW A**	Ref #	**C. mydas -SW A**	Ref #	**C. mydas -SC A**	Ref #	**D. coricea-SW A**	Ref #	**E. imbricata-SW A**	Ref #	**L. olivacea-W A**	Ref #
Occurrence												
Nesting sites	n/r		n/r		n/r		n/r		n/r		n/r	
Oceanic foraging areas	J,A	1, 26, 50	J	27, 33, 34, 42	J	27, 33, 34, 42	J,A	13, 22	U	33, 34	U	15, 33, 34
Neritic foraging areas	J,A	26, 33, 34	J	24, 27, 33, 34, 42	J	24, 27, 33, 34, 42	J,A	13, 33, 22	J	33, 34	J,A	15, 33, 34
Key biological data												
Nests/yr: recent average (range of years)	n/r		n/r		n/r		n/r		n/r		n/r	
Nests/yr: recent order of magnitude	n/r		n/r		n/r		n/r		n/r		n/r	

Number of "major" sites (>20 nests/yr AND >10 nests/km yr)	n/r		n/r		n/r		n/r		n/r		n/r	
Number of "minor" sites (>20 nests/yr OR >10 nests/km yr)	n/r		n/r		n/r		n/r		n/r		n/r	
Nests/yr at "major" sites: recent average (range of years)	n/r		n/r		n/r		n/r		n/r		n/r	
Nests/yr at "minor" sites: recent average (range of years)	n/r		n/r		n/r		n/r		n/r		n/r	
Total length of nesting sites (km)	n/r		n/r		n/r		n/r		n/r		n/r	
Nesting females / yr	n/r		n/r		n/r		n/r		n/r		n/r	
Nests / female season (N)	n/r		n/r		n/r		n/r		n/r		n/r	
Female remigration interval (yrs) (N)	n/r		n/r		n/r		n/r		n/r		n/r	
Sex ratio: Hatchlings (F / Tot) (N)	n/r		n/r		n/r		n/r		n/r		n/r	
Sex ratio: Immatures (F / Tot) (N)	n/r		n/r		n/r		n/r		n/r		n/r	
Sex ratio: Adults (F / Tot) (N)	n/r		n/r		n/r		n/r		n/r		n/r	
Min adult size, CCL or SCL (cm)	n/r		n/r		n/r		n/r		n/r		n/r	
Age at maturity (yrs)	n/r		n/r		n/r		n/r		n/r		n/r	

Clutch size (n eggs) (N)	n/r		n/r		n/r		n/r		n/r		n/r	
Emergence success (hatchlings/egg) (N)	n/r		n/r		n/r		n/r		n/r		n/r	
Nesting success (Nests/ Tot emergence tracks) (N)	n/r		n/r		n/r		n/r		n/r		n/r	
Trends												
Recent trends (last 20 yrs) at nesting sites (range of years)	n/r		n/r		n/r		n/r		n/r		n/r	
Recent trends (last 20 yrs) at foraging grounds (range of years)	U		U		U		U		U		U	
Oldest documented abundance: nests/yr (range of years)	n/r		n/r		n/r		n/r		n/r		n/r	
Published studies												
Growth rates	Y	23	Y	2, 21, 27	Y	2, 21, 27	Y	23	N		N	
Genetics	Y	4,5,44	Y	3	Y	3	Y	36	Y	44	Y	15
Stocks defined by genetic markers	Y	5	Y	3	Y	3	Y	36	Y	44	N	
Remote tracking (satellite or other)	Y	1, 50	Y	42	Y	42	Y	13,22	N		N	
Survival rates	N		Y	21	Y	21	N		N		N	

Population dynamics	Y	33	Y	21, 33	Y	21, 33	Y	33	N		N	
Foraging ecology	Y	26	Y	24, 32, 34, 42	Y	24, 32, 34, 42	Y	11	N		N	
Capture-Mark-Recapture	Y	16	Y	21, 27	Y	21, 27	N		N		N	
Threats												
Bycatch: presence of small scale / artisanal fisheries?	Y J,A (SN)	17, 25, 37, 45	Y J (SN)	17, 19, 30, 37, 48	Y J (SN)	17, 19, 30, 37,48	Y J, A (SN)	33, 37	U		U	
Bycatch: presence of industrial fisheries?	Y J,A (PLL, MT)	8, 14, 17, 18, 23, 25, 29, 45	Y J (MT)	8, 17, 18	Y J (MT)	8, 17, 18	Y J, A (MT, PLL)	8, 12, 14, 17, 18, 29	U		U	
Bycatch: quantified?	PLL (3778), MT(99), SN(2)	37, 45	MT(21), SN(21/68/4)	18, 19, 30, 37	MT(21), SN(21/68/4)	18, 19, 30, 37	MT(17), SN(1)	18, 37	U		U	
Intentional killing of turtles	N		N		N		N		U		U	
Take. Illegal take of turtles	n/r		n/r		n/r		n/r		n/r		n/r	
Take. Permitted/legal take of turtles	n/r		n/r		n/r		n/r		n/r		n/r	
Take. Illegal take of eggs	n/r		n/r		n/r		n/r		n/r		n/r	
Take. Permitted/legal take of eggs	n/r		n/r		n/r		n/r		n/r		n/r	

Coastal Development. Nesting habitat degradation	n/r		n/r		n/r		n/r		n/r		n/a	
Coastal Development. Photopollution	n/r		n/r		n/r		n/r		n/r		n/r	
Coastal Development. Boat strikes	Y J,A	33,45	Y	33	Y	33	Y	33	U		U	
Egg predation	n/r		n/r		n/r		n/r		n/r		n/r	
Pollution (debris, chemical)	J,A	26	Y J	43	Y J	43	U		U		U	
Pathogens	U		J	21	J	21	U		U		U	
Climate change	U		J	35	J	35	U		U		U	
Foraging habitat degradation	U		J	47	J	47	U		U		U	
Other (see text)	J,A	44	J	20, 49	J	20, 49	n/r		J	44	n/r	
Long-term projects (>5yrs)												
Monitoring at nesting sites (period: range of years)	n/r		n/r		n/r		n/r		n/r		n/r	
Number of index nesting sites	n/r		n/r		n/r		n/r		n/r		n/r	
Monitoring at foraging sites (period: range of years)	Y (1999-present)	17, 33	Y (1999-present)	17, 21, 27, 33	Y (1999-present)	17, 21, 27, 33	Y (1999 - present)	17, 33	Y (1999 - present)	17, 33	Y (1999 - present)	17, 33

Conservation												
Protection under national law	Y	6,7, 46	Y	6,7, 46	Y	6,7, 46	Y	6,7, 46	Y	6, 7, 46	Y	6,7, 46
Number of protected nesting sites (habitat preservation) (% nests)	n/r		n/r		n/r		n/r		n/r		n/r	
Number of Marine Areas with mitigation of threats	0		2	21	2	21	0		0		0	
N of long-term conservation projects (period: range of years)	>1 (1999-Present)	Table 4	>1 (1999-Present)	Table 4	>1 (1999-Present)	Table 4	>1 (1999 - Present)	Table 4	>1 (1999 - Present)	Table 4	>1 (1999 - Present)	Table 4
In-situ nest protection (eg cages)	n/r		n/r		n/r		n/r		n/r		n/r	
Hatcheries	n/r		n/r		n/r		n/r		n/r		n/r	
Head-starting	n/r		n/r		n/r		n/r		n/r		n/r	
By-catch: fishing gear modifications (eg, TED, circle hooks)	N		N		N		N		N		N	
By-catch: onboard best practices	Y	41	Y	41	Y	41	Y	41	Y	41	Y	41
By-catch: spatio-temporal closures/reduction	N		N		N		N		N		N	

Other (fishermen collaborative work)	Y (see text)	41	Y (see text)	41	Y (see text)	41	Y (see text)	41	N		N	

Table 3. International conventions protecting sea turtles and signed by Uruguay.

International Conventions	Signed	Binding	Compliance measured and reported	Species	Conservation actions	Relevance to sea turtles
CITES	Y	Y	Y	CC, DC, CM, Ei, LO		
Convenio RAMSAR	Y	Y	Y	CC, DC, CM, Ei, LO		
CMS	Y	Y	Y	CC, DC, CM, Ei, LO		
CONVEMAR	Y	Y	Y	CC, DC, CM, Ei, LO		
CDB	Y	Y	Y	CC, DC, CM, Ei, LO		
CIT	Y	Y	Y	CC, DC, CM, Ei, LO		

Table 4. Projects and databases on sea turtles in Uruguay.

Region / Location	Project Name or descriptive title	Key words	Start date	End date	Leading organisation
all the country	Karumbe Stranding network and Mark-Recapture program	Stranding, Mark-Recapture	1999	Prese nt	Karumbe
all the country	Karumbe Stranding network and Mark-Recapture program	Stranding, Mark-Recapture	1999	Prese nt	Karumbe
all the country	Karumbe Stranding network and Mark-Recapture program	Stranding, Mark-Recapture	1999	Prese nt	Karumbe
all the country	Karumbe Stranding network and Mark-Recapture program	Stranding, Mark-Recapture	1999	Prese nt	Karumbe
all the country	Karumbe Stranding network and Mark-Recapture program	Stranding, Mark-Recapture	1999	Prese nt	Karumbe
all the country	Karumbe Stranding network and Mark-Recapture program	Stranding, Mark-Recapture	1999	Prese nt	Karumbe
Uruguayan territorial sea, CFZ (Common Fishing Zone) and international waters	National Program of Onboard Observers in the Uruguayan Comercial Fleet	Bycatch	1998	Prese nt	Aquatic Resource National Direction (DINARA-MGAP)
Uruguayan territorial sea, CFZ (Common Fishing Zone) and international waters	National Program of Onboard Observers in the Uruguayan Comercial Fleet	Bycatch	1999	Prese nt	Aquatic Resource National Direction (DINARA-MGAP)

Uruguayan territorial sea, CFZ (Common Fishing Zone) and international waters	National Program of Onboard Observers in the Uruguayan Comercial Fleet	Bycatch	2000	Present	Aquatic Resource National Direction (DINARA-MGAP)
Uruguayan territorial sea, CFZ (Common Fishing Zone) and international waters	National Program of Onboard Observers in the Uruguayan Comercial Fleet	Bycatch	2001	Present	Aquatic Resource National Direction (DINARA-MGAP)
Uruguayan territorial sea, CFZ (Common Fishing Zone) and international waters	National Program of Onboard Observers in the Uruguayan Comercial Fleet	Bycatch	2002	Present	Aquatic Resource National Direction (DINARA-MGAP)
Uruguayan territorial sea, CFZ (Common Fishing Zone) and international waters	National Program of Onboard Observers in the Uruguayan Comercial Fleet	Bycatch	2003	Present	Aquatic Resource National Direction (DINARA-MGAP)

Figures

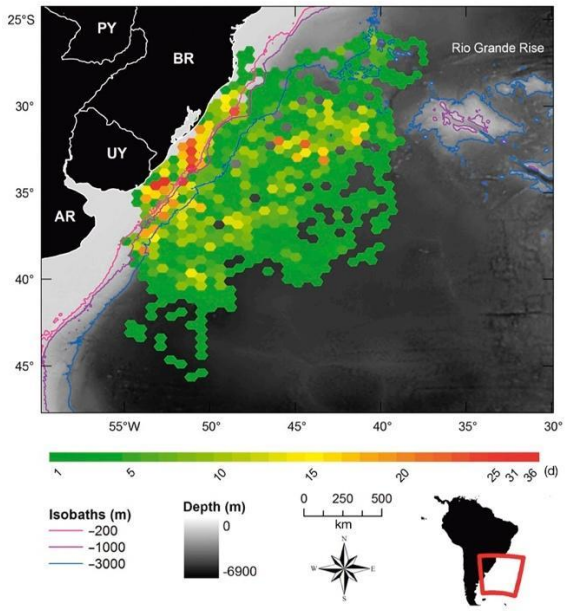

Figure 1. Spatial use of 26 immature loggerhead turtles tracked in the Southwestern Atlantic Ocean between 2006 and 2010. Color denotes the number of days a turtle spent within each hexagonal bin. Taken from Barcelo et al. 2013

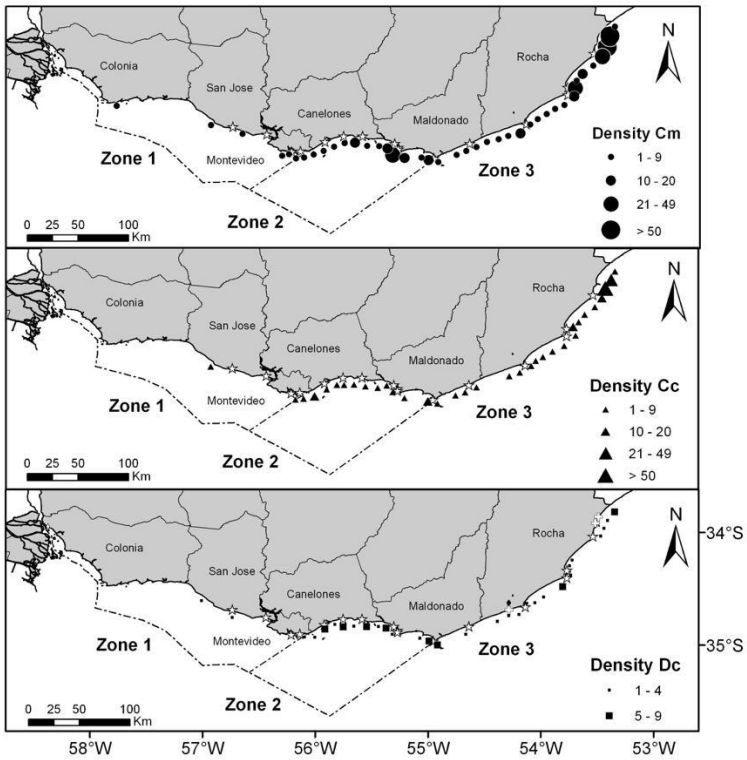

Figure 2. Stranding density (number of marine turtles stranded per 10 km sector) maps showing the Network records between 1999 and 2010. Each map shows the

stranding density of the three most frequent species: a green (Cm, filled circle); b loggerhead (Cc, filled triangle); and c leatherback turtles (Dc, filled rectangle). In C, the white crosses indicate the stranding of the three hawksbill turtles and the black diamond indicates the one olive Ridley turtle. The stars indicate the main fishermen settlements and ports. Note the different ranges in density for the leatherback. Taken from Vélez-Rubio et al. 2013

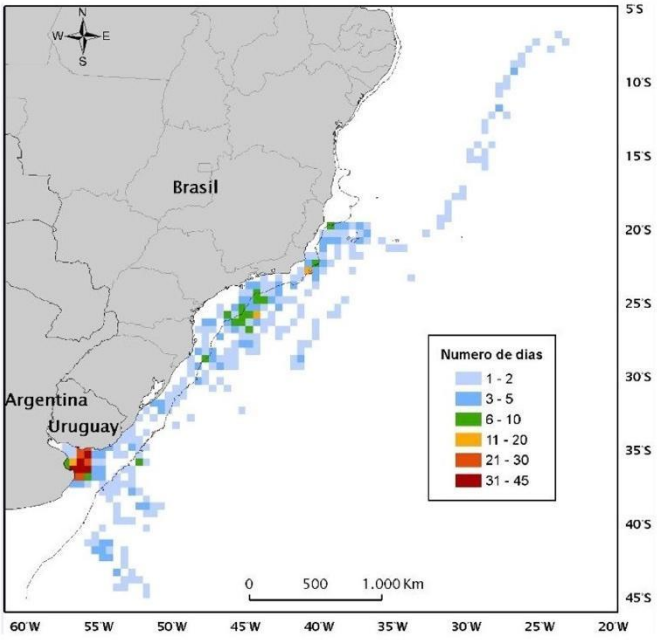

Figure 3. Habitat utilization by tracked leatherback turtles (n=4), using a single daily position, from their respective reconstructed routes. The legend indicates total time (days) turtles spent in each cell. Dashed black line indicates 200 m bathymetric contour.Taken from López-Mendilaharsu et al. 2009

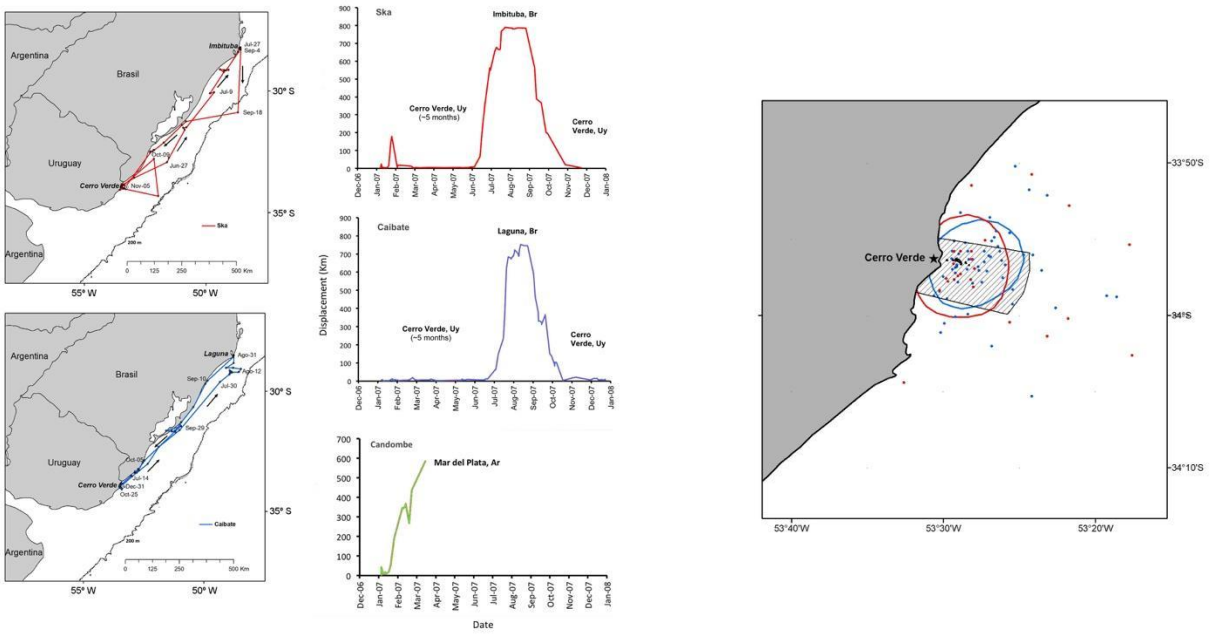

Figure 4. Displacement from released site plot of the three tracked green turtle. The left panels (A and B) show the tracks of those turtles that performed a round-trip migration between summer and winter foraging areas in Uruguay and Brazil respectively. The three right panels (C, D and E) show distance to the release point through time. Phases of migration are represented by rapid changes in displacement distance; summer and winter foraging areas are revealed by plateaus. Left panels: Right Panel: Turtle's positions and core-use areas (50% KDE contours) for the two green turtles that remained for several months at the CMPA of Cerro Verde and Coronilla islands. Taken from Vélez-Rubio et al. 2018.