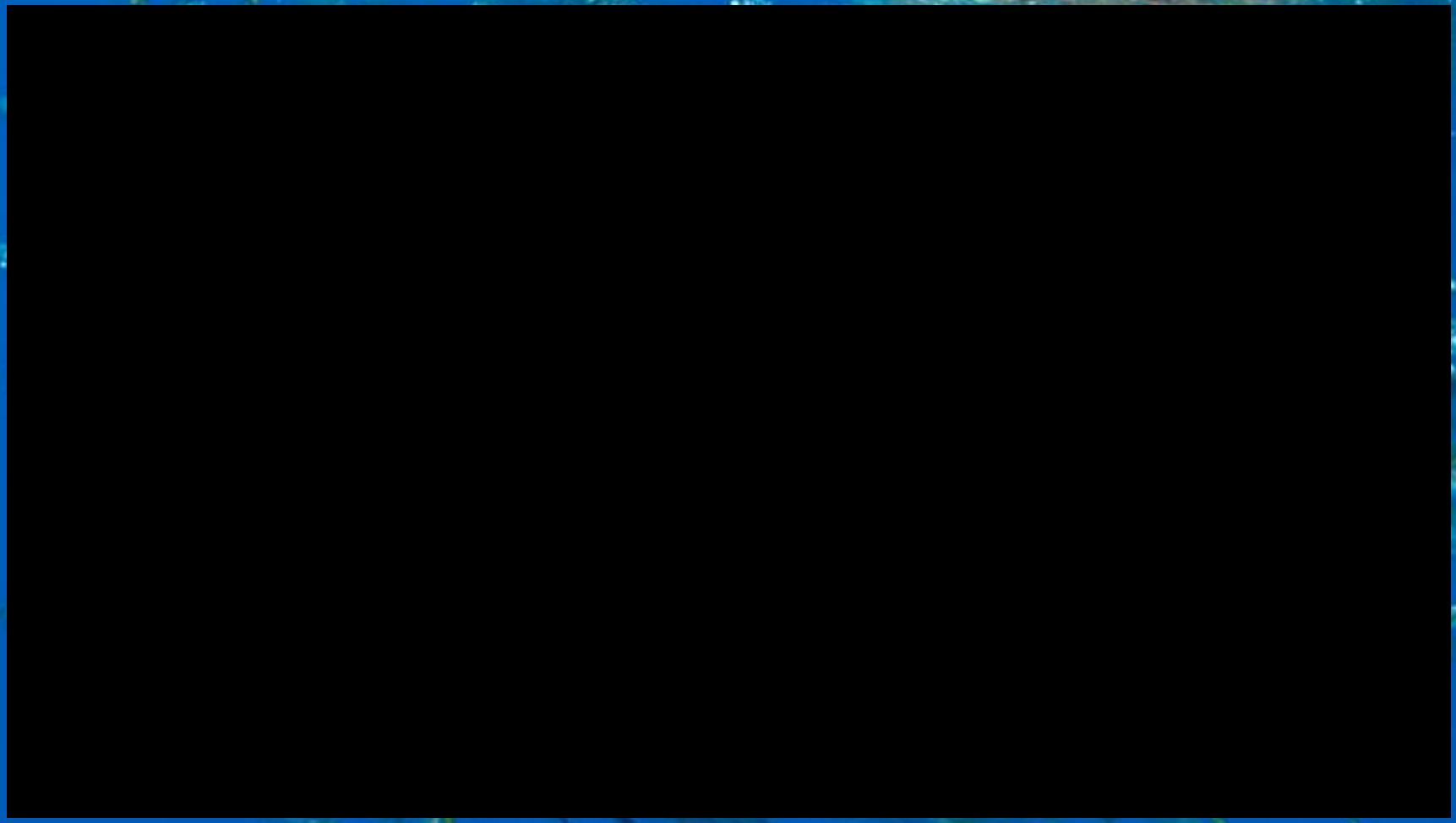
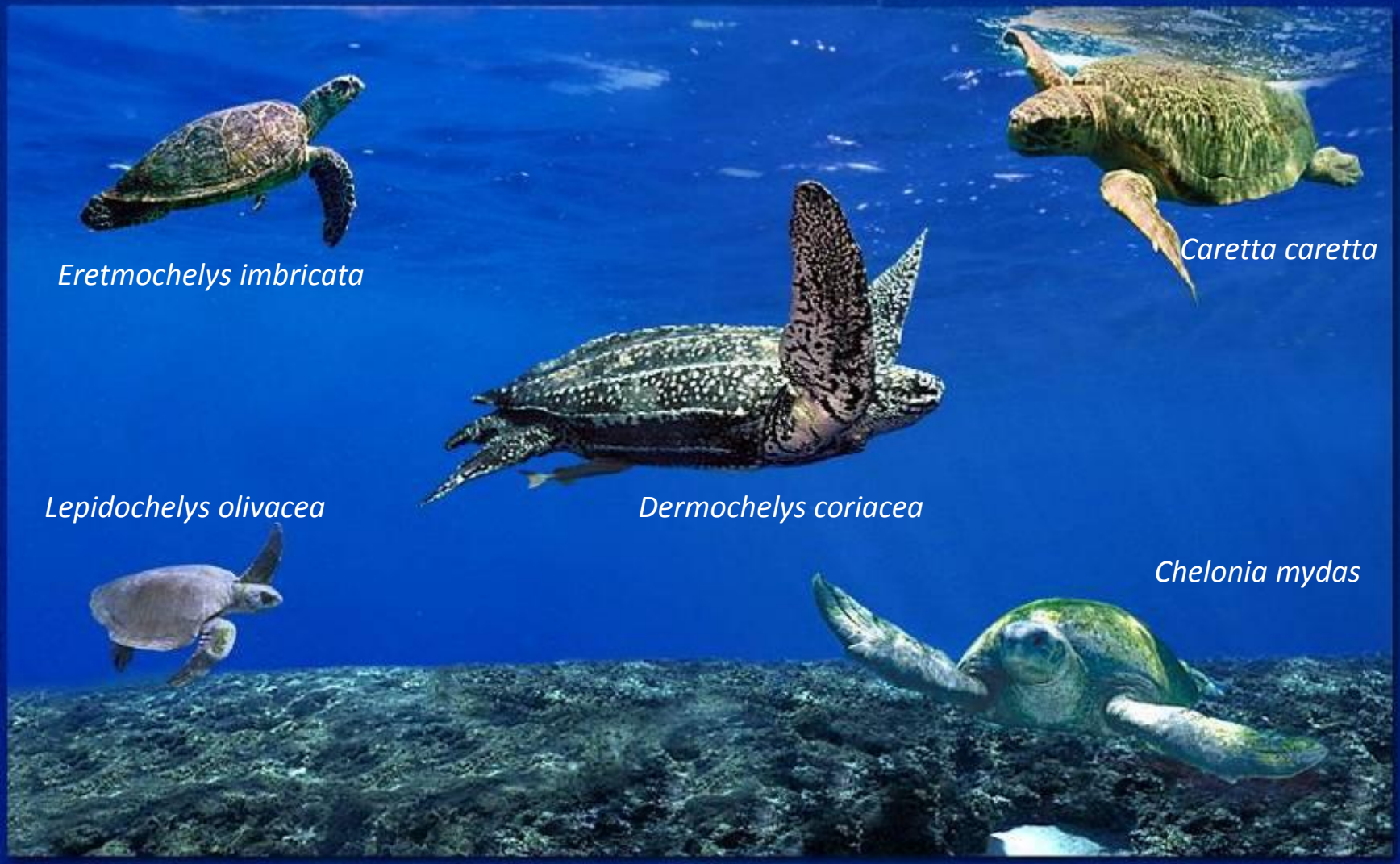
Brazil´s Sea Turtle are Worth More Alive: TAMAR´S Social Production Chain

2018 WIDECAST AGM
Matura, Trinidad WI

Paulo H. Lara – 2018 March

Comprehensive 2-year survey of 8,000 km of coastline was carried out between 1980 and 1982.




Eretmochelys imbricata
Caretta caretta
Lepidochelys olivacea
Dermochelys coriacea
Chelonia mydas

Tamar in Brazil

25 localities

1100 km monitored

Standardized data collection

Monitoring & protection

In situ - **>** 85% of the nests

Open-air Hatcheries

Only when extremely necessary

Night Patrols

Monitoring of stranded turtles

Capture-mark-recapture

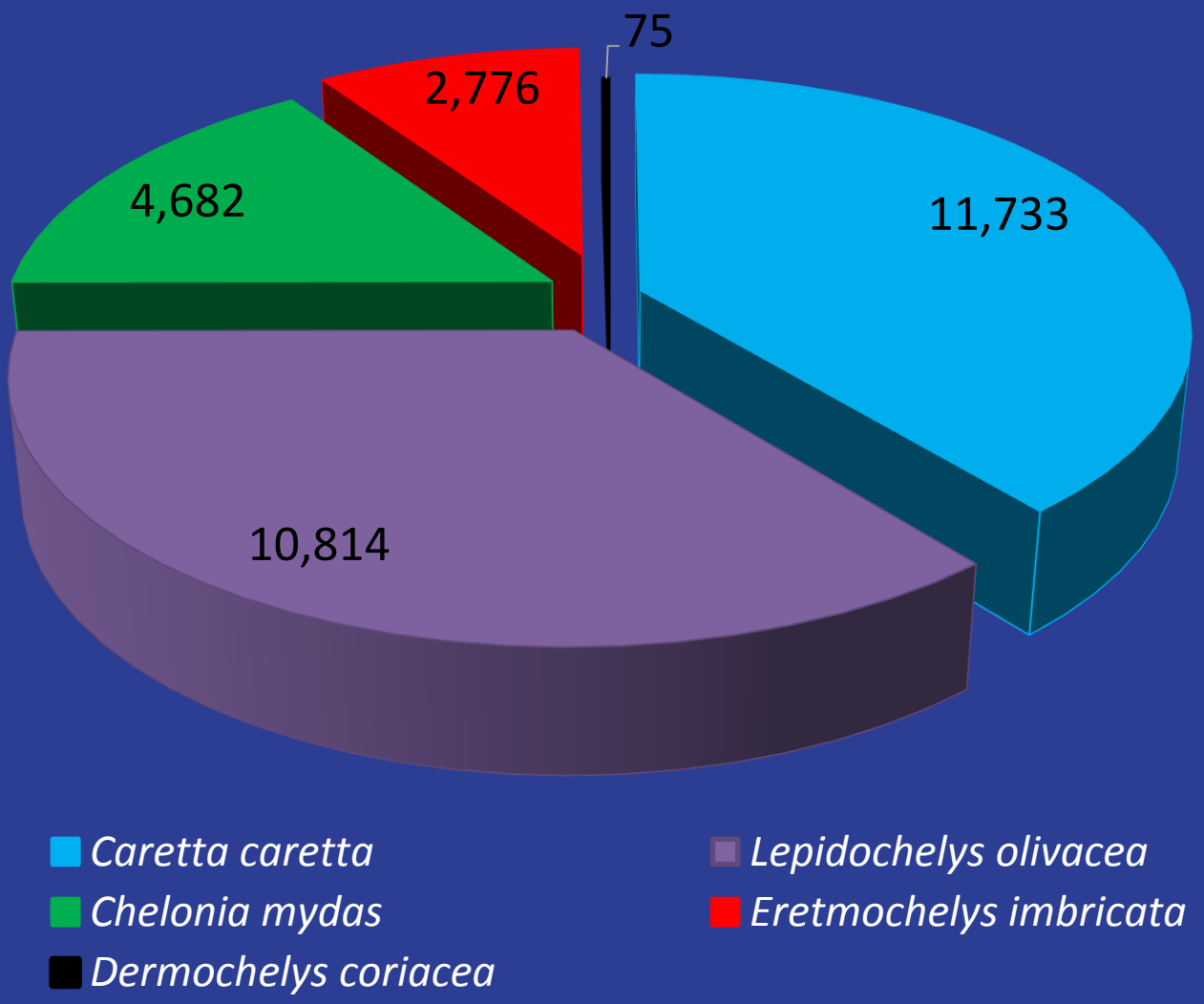
Sand temperature monitoring at main nesting beaches

- Tagging
- Biometrics
- Tissue sampling

- Demographic parameters
- Residency
- Site fidelity

- Satellite telemetry
- Genetics
- Stable isotopes
- Dataloggers

Number of nests /species - 2016/2017



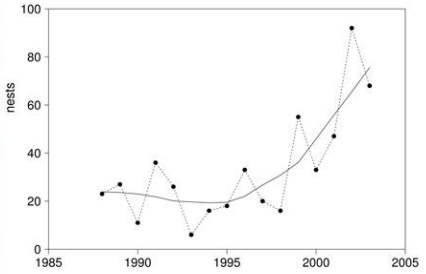
Total number of nests protected = 30.083

Populations are recovering

Main leatherback nesting area.
* 200 people work on sea turtle conservation in Espírito Santo

Leatherback (*Dermochelys coriacea*)

The only area in Brazil where there is known ongoing leatherback nesting is the northern coast of the state of Espírito Santo, around 19ºS latitude. Between 1988/1989 and 2003/2004 the annual number of nests varied from 6 (in 1993/1994) to 92 (in 2002/2003). Between 1995/1996 and 2003/2004, the annual number of nests increased about 20.4% per year on average.



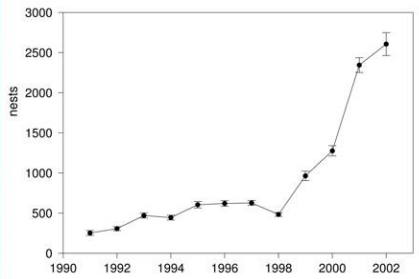
Number of leatherback nests per season, in the state of Espírito Santo, Brazil, from 1988/1989 to 2003/2004 (n = 527). The first year of each season is shown on the horizontal axis, e.g., 1995 = 1995/1996. The dots show the actual data; the solid curve, a loess regression, indicates the trend in the number of nests.

THOMÉ, *et al.* (2007)

Main olive ridley nesting areas.
* 227 people work on sea turtle conservation in Bahia and 96 in Sergipe

Olive ridley (*Lepidochelys olivacea*)

In Brazil, olive ridley nesting occurs almost completely in the state of Sergipe and the northern section of the state of Bahia. The estimated number of olive ridley nests in this region ranged from 252 in 1991/1992 to 2,606 in 2002/2003, an approximately 10-fold increase in 11 years (Da Silva et al. 2007). This increase is of local as well as regional significance.



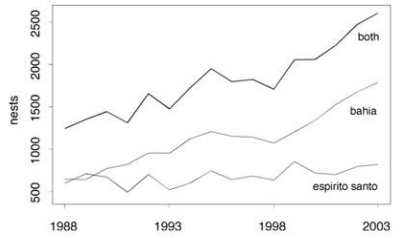
Number of estimated olive ridley nests in the states of Sergipe and Bahia, 1991/1992 to 2002/2003 (n = 10,975). Error bars indicate 95% pointwise confidence intervals. The first year of each season is shown, e.g. 1992 = 1992/1993. See Da Silva et al. (2007) for details on the estimation methodology.

Da Silva *et al*. (2007)

Loggerhead (*Caretta caretta*)

The loggerhead is the species most commonly found nesting along mainland Brazil. Loggerheads nest from the state of Sergipe to the northern part of the state of Rio de Janeiro . Marcovaldi and Chaloupka (2007) presented data obtained between 1988/1989 and 2003/2004 for two of the main loggerhead nesting areas: Espírito Santo and northern Bahia. These two states account for about 75% of the loggerhead nests in Brazil.

In Bahia, the number of nests increased from approximately 700 in 1988/1989 to approximately 1,700 in 2003/2004, a 2.4-fold increase. In Espírito Santo, the number of nests increased at a slower pace, from about 650 in 1988/1989 to approximately 800 in 2003/2004



Estimated annual number of loggerhead nests in the states of Bahia and Espirito Santo between 1988/1989 and 2003/2004 (Marcovaldi and Chaloupka 2007).

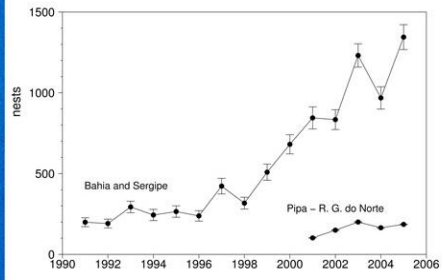
Marcovaldi & Chaloupka (2007)

Main loggerhead nesting areas.
* 227 people work on sea turtle conservation in Bahia and 200 in Espírito Santo

Hawksbill (*Eretmochelys imbricata*)

In Brazil, hawksbills nest mainly on the northern coast of the state of Bahia and in the neighboring state of Sergipe (Fig. 1). Another important area has recently been recognized in the eastern part of the state of Rio Grande do Norte (Fig. 1). There are also other relatively minor hawksbill nesting sites in the country (see Marcovaldi et al. 2007).

In northern Bahia and Sergipe, the estimated number of hawksbill nests laid each year increased from 199 in the 1991/1992 season to 1,345 in the 2005/2006 season, a nearly 7-fold increase. In Rio Grande do Norte, the estimated number of nests laid in the 2005/2006 season was in the range of 185-475 (see Marcovaldi et al. 2007 for methodological details). Adding these results, we estimate that the number of hawksbill nests laid at the two main Brazilian nesting grounds in 2005/2006 was between 1,530 and 1,820. These results place the Brazilian hawksbill nesting population among the largest populations in the Western Atlantic.



Estimated number of hawksbill nests by season. Upper curve: estimated number of nests in the states of Bahia and Sergipe, 1991/1992 to 2005/2006 (n = 8,582). Lower curve: estimated number of nests in the region of Pipa, Rio Grande do Norte, 2001/2001 to 2005/2006 (n = 802). The first year of each season is shown, e.g. 1992 = 1992/1993. Error bars indicate 95% pointwise confidence intervals (note that the error bars for Pipa are very close to the estimated points). See Marcovaldi et al. 2007 for details on the estimation methodology.

Marcovaldi *et. al.* (2007)

Main hawksbill nesting areas.
* 227 people work on sea turtle conservation in Bahia and 96 in Sergipe

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G.C. Hays. 2004. Good news for sea turtles. Trends in Ecology and Evolution 19: 349–351

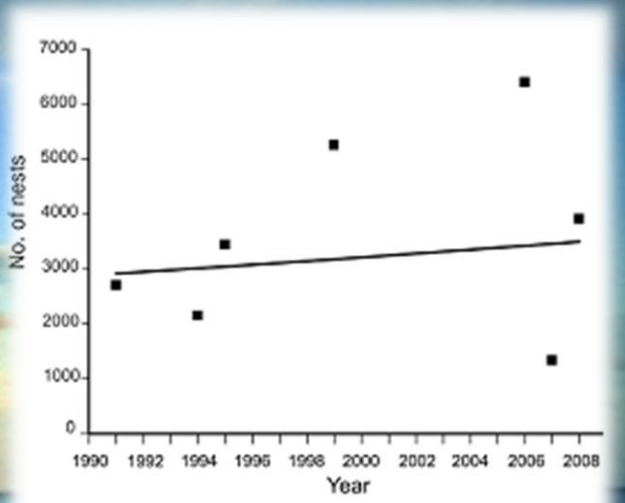


Fig. 3. *Chelonia mydas*. Annual estimates of green turtle nest numbers from all beaches on Trindade Island. Squares are annual estimates; line is the fit of the least squares regression model with a slope not significantly different from 0.

Almeida et al. (2011)

Green turtles are stable
Major rookeries are in MPA

Brazilian National Plan to Reduce the Incidental Capture of Sea Turtle in the Fisheries

Marine Turtle Newsletter

Sea Turtles and Fishery Interactions in Brazil: Identifying and Mitigating Potential Conflicts

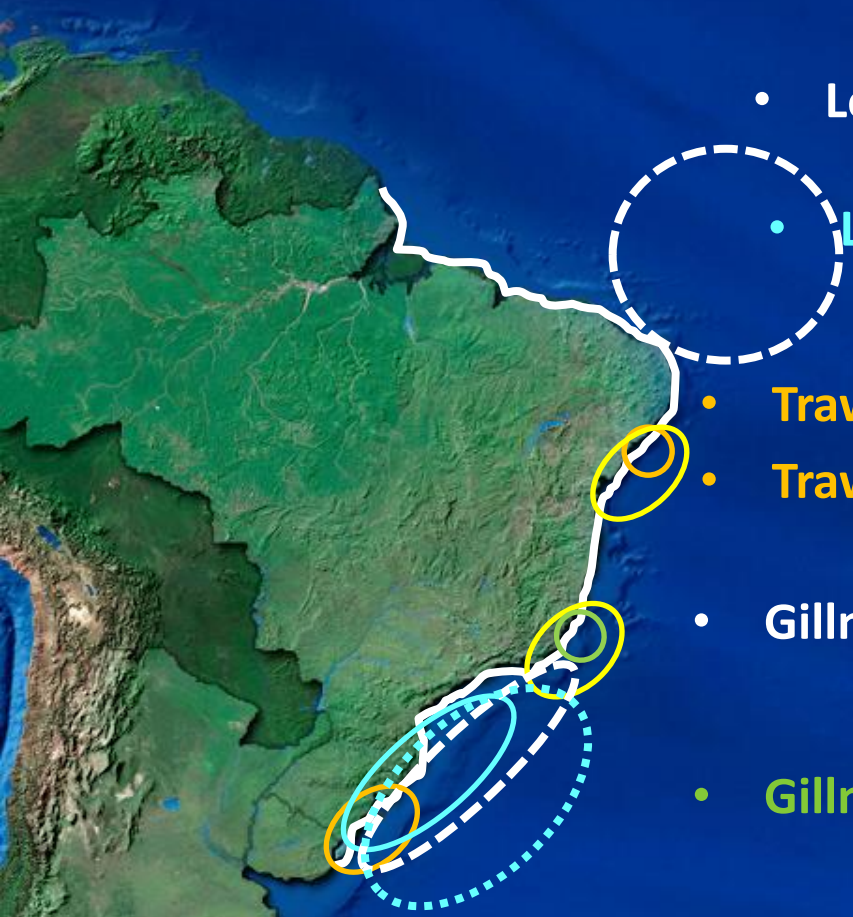
Maria Ângela Marcovaldi[2] *, Gilberto Sales[1] †, João C. A. Thomé[1], Augusto C. C. Dias da Silva[2], Berenice M. G. Gallo[2], Eduardo H. S. M. Lima[2], Eron P. Lima[2], Cláudio Bellini[1]

[1]*Projeto TAMAR-IBAMA. Caixa Postal 2219 Rio Vermelho, Salvador, Bahia, Brazil*

[2]*Fundação Pró-TAMAR. Caixa Postal 2219 Rio Vermelho, Salvador, Bahia, Brazil*

*(E-mail: *meca@tamar.org.br †gilsales@tamar.org.br)*

Threats – spatial distribution



- **Longline** -> Leatherbacks (foraging) juv and adults
- **Longline ->** Loggerheads (foraging) juv and adults
- **Trawl fishery** in SE -> olive ridelys (breeding grounds)
- **Trawl fishery** in RG-> loggerheads (foraging)
- **Gillnets** throughout the coast -> greens (foraging))
- **Gillnets** in ES **->** leatherbacks (breeding grounds)
- **Coastal Development -** main nesting beaches along the SE/NE coast of Brazil -> Cc, Dc, Lo, Ei adults and hatchlings
- **Pollution** (marine litter/ garbage) -> greens juv

SCRS/2007/168

INTERACCIÓN DE TORTUGAS MARINAS (*Caretta caretta y Dermochelys coriacea*) CON LA PESCA DE PALANGRE PELÁGICO EN EL ATLÁNTICO SUDOCCIDENTAL: UNA PERSPECTIVA REGIONAL PARA LA CONSERVACIÓN

Bruno Giffoni[1]; Andrés Domingo[2]; Gilberto Sales[3]; Fernando Niemeyer Fiedler[1]; Philip Miller[2]

Peer-review papers: 145
Congress and symposia: 420
Thesis: 86

Maria Ângela Marcovaldi[1]*, Gilberto Sales[1,†], João C. A. Thomé[1], Augusto C. C. Dias da Silva[1], Berenice M. G. Gallo[1], Eduardo H. S. M. Lima[1], Eron P. Lima[1], Claudio Bellini[1]
[1]Projeto TAMAR-IBAMA, Caixa Postal 2219 Rio Vermelho, Salvador, Bahia, Brazil
[2]Fundação Pró-TAMAR, Caixa Postal 2219 Rio Vermelho, Salvador, Bahia, Brazil
[*E-mail: mac@tamar.org.br; †gilsales@tamar.org.br]

Sea Turtles and Fishery Interactions in Brazil: Identifying and Mitigating Potential Conflicts

SCRS/2005/071

CAPTURA INCIDENTAL DE TORTUGAS MARINAS CON PALANGRE PELAGICO EN EL ATLANTICO SUR POR LAS FLOTAS DE BRASIL Y URUGUAY

Andrés Domingo[1], Gilberto Sales[2], Bruno Giffoni[3], Philip Miller[1], Martin Laporta[1], Guillerme Maurutto[2]

Col. Vol. Sci. Pap. ICCAT, 59(3): 992-1002 (2006)

'ircle hook effectiveness for the mitigation of se
capture of target species in a Brazilian pelag

GILBERTO SALES[1], BRUNO B. GIFFONI[2], FERNANDO N. FIEDLER[3], VENANCIO YONAT SWIMMER[4] and LEANDRO BUGONI[5]

AQUATIC CONSERVATION: MARINE AND FRESHWATER ECOSYSTEMS
Aquatic Conserv: Mar. Freshw. Ecosyst. 20: 428–436 (2010)
Published online 24 March 2010 in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/aqc.1106

S MARINAS (Caretta caretta y Dermochelys
RE PELAGICO DE BRASIL Y URUGUAY

[1]Bruno Giffoni; [2]Andrés Domingo; [3]Gilberto Sales; [2-4]Maite Pons; [2-4]Philip Miller; [3]Nilamon de O Junior; [1]Mariana de K e Britto; [1]Luiz R Maçaneiro

SCRS/2012/086

ATE OF STANDARDIZED CATCH RATES OF LOGGERHEAD SEA URTLES, CARETTA CARETTA, CAUGHT BY URUGUAYAN AND BRAZILIAN LONGLINE FLEETS (1998-2010).

faite Pons [1,2], Andres Domingo [1], Bruno Giffoni [3], Gilberto Sales [4] and Philip Miller [1,2]

SCRS/2006/134

Col. Vol. Sci. Pap. ICCAT, 60(6): 2094-2109 (2007)

DISTRIBUCIÓN Y COMPOSICIÓN DE TALLAS DE LAS TORTUGAS MARINAS (*CARETTA CARETTA* Y *DERMOCHELYS CORIACEA*) QUE INTERACTUAN CON EL PALANGRE PELAGICO EN EL ATLANTICO SUR

Milagros López-Mendilaharsu[1], Gilberto Sales[2], Bruno Giffoni[2], Philip Miller[3], Fernando Niemeyer Fiedler[2] and Andrés Domingo[3]

Available online at www.sciencedirect.com
ScienceDirect
Fisheries Research 90 (2008) 217–224
FISHERIES RESEARCH
www.elsevier.com/locate/fishres
ELSEVIER

SCRS/2012/089

CAPTURA INCI
coriacea) POR LA

Potential bycatch of seabirds and turtles in hook-and-line fisheries of the Itaipava Fleet, Brazil

Leandro Bugoni[a,b,*], Tatiana S. Neves[b], Nilamon O. Leite Jr.[c], Demétrio Carvalho[b], Gilberto Sales[c], Robert W. Furness[a], Carlos E. Stein[c], Fabiano V. Peppes[b], Bruno B. Giffoni[c], Danielle S. Monteiro[d]

SCRS/2011/068

Collect. Vol. Sci. Pap. ICCAT, 68(5): 1763-1768 (2012)

REVIEW OF ACTIONS BY BRAZIL IN MEETING THE BYC RECOMMENDATION 10-09 AND THE FAO GUIDELINES TO REDUCE SEA TURTLE MORTALITY IN FISHING OPERATIONS

Nilamon de Oliveira Leite, Jr.[1], Bruno Giffoni[2], Fernando Niemeyer Fiedler[3], Gilberto Sales[4]

Aquat. Living Resour. 23, 65–75 (2010)
© EDP Sciences, IFREMER, IRD 2010
DOI: 10.1051/alr/2010001
www.alr-journal.org
Aquatic Living Resources
ICCAT CICTA CICAA

Standardization of CPUE of loggerhead sea turtle (*Caretta caretta*) caught by pelagic longliners in the Southwestern Atlantic

Maite Pons[1,2], Andrés Domingo[1,2,a], Gilberto Sales[3], Fernando [illegible], Bruno Giffoni[5] and Mauricio Ortiz[6]

SCRS/2012/087

ESTIMATING TOTAL BY-CATCH OF LOGGERHEAD SEA TURTLES, *CARETTA CARETTA*, IN THE SOUTHWESTERN ATLANTIC OCEAN.

Maite Pons [1,2], Philip Miller [1,2], Bruno Giffoni [3], Andres Domingo [1] and Gilberto Sales [4]

Vol. 479: 235–250, 2013
doi: 10.3354/meps10222
MA... ...GRESS SERIES
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Published April 8

High-use areas, seasonal movements and dive patterns of juvenile loggerhead sea turtles in the Southwestern Atlantic Ocean

Caren Barceló[1,3,5,*], Andrés Domingo[2], Philip Miller[3], Leonardo Ortega[2], Bruno Giffoni[4], Gilberto Sales[4], Lianne McNaughton[5], Maria Marcovaldi[4], Selina S. Heppell[1], Yonat Swimmer[6]

Journal of the Marine Biological Association of the United Kingdom, 2008, 88(4), 853–864. ©2008 Marine Biological Association of the United Kingdom
doi:10.1017/S0025315408000441 Printed in the United Kingdom

Incidental catch of sea turtles by the Brazilian pelagic longline fishery

GILBERTO SALES[1], BRUNO B. GIFFONI[2] AND PAULO C.R. BARATA[3]

Biodivers Conserv (2012) 21:1913–1931
DOI 10.1007/s10531-012-0227-0
ORIGINAL PAPER

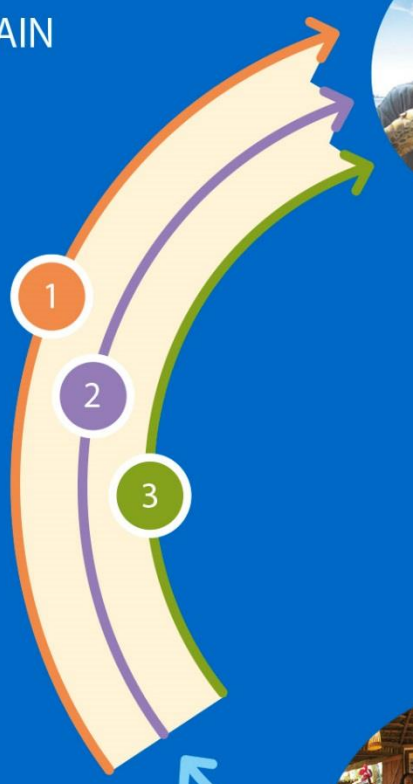
Driftnet fishery threats sea turtles in the Atlantic Ocean

Fernando N. Fiedler · Gilberto Sales · Bruno B. Giffoni · Emygdio L. A. Monteiro-Filho · Eduardo R. Secchi · Leandro Bugoni

Job opportunities, capacity building and cultural valuation

SOCIAL PRODUCTIVE CHAIN

1. Local communities cultural valuation and development
2. Research and monitoring
3. Enviromental educational programs



Maintenance and generation of employment opportunities.

Communities with lesser tourism potencial: cottage industries, hand crafts, paper recycling workshops, etc

Transfer of products

Communities with greater tourism potencial: visitor centers, shops, ecotourism tours, etc.

Transfer of economic resources

Special environmental education programs

Tamar at school and the school at Tamar

- ✓ Tamar at school

Special environmental education programs

- ✓ **Visitors Center attendance**

Job opportunities, capacity building and cultural valuation

1884 people involved

- ✓ Direct colaborators
- ✓ Tartarugueiros
- ✓ Productive groups
- ✓ Capacity building courses
- ✓ Internship and training program
- ✓ Permanent support to socio-educational institutions
- ✓ Support to events and cultural groups

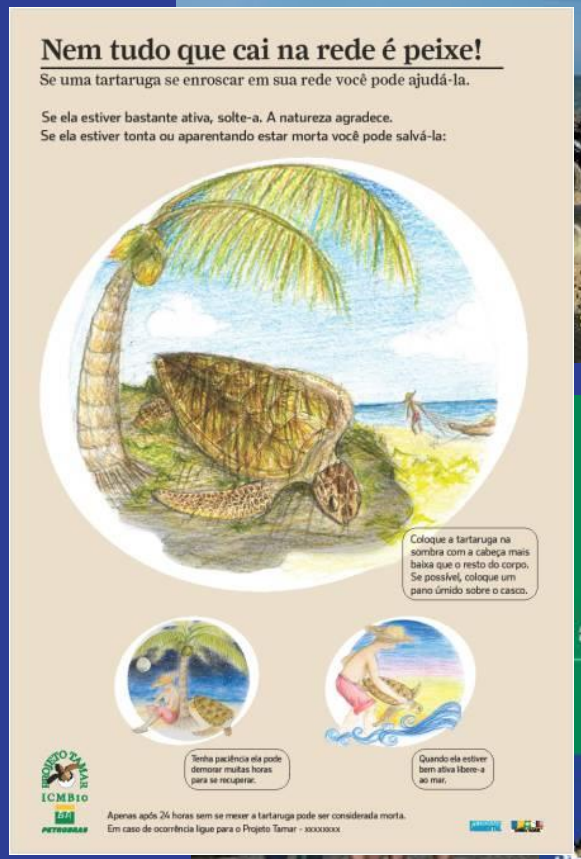
Visitors Centers (9)

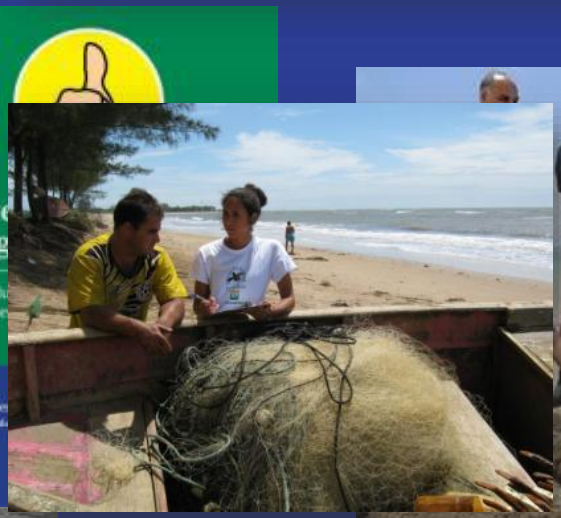
Promote environmental education and awareness, capacity building and rehabilitation of sea turtles; generate hundreds of jobs and revenue for the region where they operate and serve as a tool for raising funds for conservation ….

Stores (11)

Environmental awareness

“Not Everything Caught in the Net is Fish” Campaing
Beach Campaign oriented to beach users





In 2010, we included the music as a strategy for environmental awareness ...

The initiative had a positive impact, various events spread the message, artists engaged, bands were formed at Tamar's cultural spaces and new lyrics were created for the conservation of turtles, seas and oceans


SOS
TARTARUGAS MARINHAS
PROJETO TAMAR
SOS
TARTARUGAS MARINHAS
PROJETO TAMAR

Metrics and demonstrated success

- All 5 sea turtle species recovering (increasing trends for 4 spp. and 1 stable)
- 100% coverage of main nesting beaches (1100 km)
- Around 30.000 nests protected each yr
- 1800 job opportunities created
- Standardized data collection for more than 35 yr (SITAMAR)
- Systematic and standardized data recording on community involvement (SIGRE)
- 15 million visitors at the Visitors Centers
- 50 – 60% of the total budget generated by sustainable activities

Thank you all

Paulo H. Lara
paulo.lara@tamar.org.br