

# TEN YEARS SURVEY OF GREEN SEA TURTLE NESTING ON TETIAROA ATOLL IN FRENCH POLYNESIA



The Polynesian non profit organization **Te mana o te moana** («spirit of the ocean») created in 2004 is working on research, education and conservation of the marine environment. In addition to setting up a dedicated sea turtle care center on the island of Moorea, and providing educational programs for the local schools -over 75.000 children raised- one of its major achievement is the green turtle nesting, long term monitoring on Marlon Brando's atoll : Tetiaroa, conducted since 2007.

#### Tetiaroa atoll specificity

The atoll of Tetiaroa (17° 0.585' South, 149° 33.653' West) lies 30 miles north from the main island of Tahiti and is comprised of 12 islets or "*motu*" surrounding a sparkling lagoon. Its reef barrier extends over 25 kilometers and its inside lagoon cover 27 km 2 for 6 km 2 of land area. Nesting sites vary from fine sand to very rough coral debris.

#### Material and method

 Typical beach surveys with night and day observation. 2 biologists/survey
 Sampling effort varies from once a week to daily surveys depending on the year and *motu*.
 Data parameters taken : GPS position, false crawls, distance to sea, sand

parameters, solar exposition, depth of nests, number of nesting attempts, female CCL, eggs count...



Nesting season's progress from 2007 to 2017



Monthly distribution of nesting events 2007-2016

Turtle tracks parameters

Tracks on *S* of out 12 motu

- *3* main sites (*motu*) on Tiaraunu, Oroatera and Onetahi.
   Total: *10* km of linear beaches
- Nesting attempts record on same track: // times
- The average width of the tracks observed is 97,5 cm







Jemale charateristics

- 49 female identified and tagged since 2010
  17 identified in 2016-2017
- CCL from 85 to 118 cm
- From *3* to *10* tracks per female per season
- Nesting intervals: from 10 to 17 days with on average: 12,57 days
- Only one female observed nesting on 2 different *motu*, Onetahi and Tiaraunu
- Photo identification of each female with TORSOII method
- Satellite tracking in partnership with NOAA

and George Balazs/Denise Parker

 7 tracking programs showing direct tracks to the west and mainly around Fiji from 2011 to 2015



Vaimiti turtle reaching out the lagoon after satellite tagging March 2<sup>nd</sup> 2012 CCL 85 cm – weight 98 kg



## Female charateristics the example of « Remu »



« Remu turtle » (algae in Tahitian) nesting event

- Curved carapace length: 102.4 cm
- Curved carapace width: 93 cm
- 10 tracks during 2016-2017 season

confirmed nests + / single track with no attempt on a total beach distance of 800 meters from October 24<sup>th</sup> 2016 until February 16<sup>th</sup> 2017

- A total of 652 hatchlings
- Average alive babies observed per nest: 82.1



Finding on nests and hatchlings

- 79,0 hatched eggs/nest
- ♦ 94,95 % of hatchling success
- 4,2 unhatched eggs/nest
- Average depth of nest: 61,3 cm
- Incubation from 51 days to 80 days
- Main predators: crabs and hermit crabs

Thermologgers in partnership with Dr. Jacques Olivier Laloe. Thermologgers have been deployed for the 3rd season and parameters are currently analyzed



Minimum numbers of live hatchlings per year (based on empty egg shells and live hatchlings observation)





Nesting season 2016-2017

 More than 2 350 kilometers have been travelled during 702 surveys

- On *601* crawls : 252 are false crawls
  - 295 are real nest event with eggs
  - 64 are not verified
- ◆ *3* main *motu* : Tiaraunu, Oroatera and Onetahi

Motu	Number of surveys	Effort (km)
Onetahi	576	1728
Honuea	19	43,7
Tiaraunu	45	342
Oroatera	27	156,6
Rimatu	12	57,6
Tahuna Iti	7	9,1
Tahuna Rahi	8	3,44
Reiono	8	16
TOTAL	702	2356,44





Number of tracks per motu

Nesting season 2016-2017



- More than **24 579** eggs hatched
- ♦ 94% hatching success
- ◆ *5* albino hatchlings, only 1 survive and is still at the



Hatchlings of this seasons

*186* emergent were found blocked in their nest
 *26* of them are actually in our rehabilitation center at Moorea

	Number of eggs laid	Number of hatched eggs	Number of unhatched eggs
Digged nest	26 126	24 573	1 553
Not verified nest	4 539	4 335	204
Total	30 665	28 908	1 757
Percentage	100%	94%	6%



The Brando Resort on motu Onetahi

• Uninhabited from 2004 to 2013, this atoll is now welcoming The Brando Resort that opened in July 2014

- The Resort has been specially pushed far back from the beaches
- In addition, the resort has set up particular light policies for turtle nesting season
- Surprisingly, the nesting events are concentrated, this year, in front of the villas on the west coast
- The number of tracks have been multiplied by **7** since the hotel opened. Annual variability is taken into consideration also as well as poacher dissuation
- Season 2016-2017: 118 tracks and 64 confirmed nests: 54 % of nesting success
- ◆ *4920* empty shell found for *5259* eggs layed: *93.55* % of hatchlings success













Teihotu



Rebecca





Manea





Reva



Miko

Tumi

### Acknowledgment and funding





Mireille and Richard Bailey









