

CONSERVATION OF LEATHERBACK TURTLE NESTING SITES

Done by:
Julia C Parris Bsc,
Genevieve Lee Quay-Gill. Msc. Bsc
Darceuil Duncan.Bsc
Ria Rodriguez. Bsc

- The International Union for Conservation of Nature (IUCN), to date, lists the leatherback turtle, *Dermochelys coriacea*, as being critically endangered in the world since global assessment was carried out in the year 2000, with a decreasing current global trend (Fournillier and Eckert 1998).
- Leatherbacks are the most migratory and most pelagic of all the sea turtle species, ranging from the tropics all the way to sub-arctic waters.



Photograph by Paul McKenna

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- Current global annual nesting estimates presenting at between 26,000 to 43,000 nesting females (Lee Lum 2005) with as many as 6,000 nesting on the beaches at Matura and Grande Riviere (Sarti Martinez 2000).
- Erosion of beaches, be it by natural processes or anthropogenic means, leads to the loss of nesting sites for the leatherback turtle (Lee Lum 2005).



- Wind and wave action are two of the natural causes of beach erosion and contribute to the dynamic nature of turtle nesting beaches and the slope of a beach is the result of the interaction between the particle size, wave action and the relative importance of swash and backwash water (Nybakken & Bertness 2005).
- Gradual sea-level rise as a result of global climate change can also result in gradual coastal erosion, whereas events such as hurricanes and tsunamis can cause sudden and dramatic loss of coastlines around the world



○ 2.0 ACCELERATED BEACH EROSION

- Trinidad and Tobago supports the second largest nesting assemblage of the endangered leatherback turtle (*Dermochelys coriacea*) in the Western Hemisphere.
- However, it is important to note that “as much as [eighty] 80% of the leatherback egg clutches were lost to beach erosion and annual flooding of the Grande Riviere River”. Accelerated beach erosion can result in partial or total loss of suitable nesting habitat for this sensitive turtle species Fournillier, K. and K.L. Eckert. 1998. WIDECAST Sea Turtle Recovery Action Plan for Trinidad and Tobago. CEP Technical Report. United Nations Environment Programme, Kingston, Jamaica.



- Lee Lum, L. Beach dynamics and nest distribution of the leatherback turtle (*Dermochelys coriacea*) at Grande Riviere Beach, Trinidad and Tobago. Institute of Marine Affairs, Hilltop Lane, Chaguaramas.
- Several studies have shown that the increase of nesting sites varies during the nesting season in response to the beaches' instability (Spanier 2010, Lee Lum 2006). Limited beach space or beach narrowing may compromise the intermediate zone where turtles can deposit the eggs (Kamel and Mrosovsky 2003).



- This may result in a loss of the nesting site when the nest is laid too near the tidal zone, this increases the risk of the nest being inundated by waves or washed away by beach erosion.
- In the Caribbean, there are many anthropogenic forces that affect the survival of the leatherback turtle and these include nest erosion, predation and sand temperature. For this migratory species the best means of conservation is by protecting *their* nest.



- However, the nesting sites are at threat due to the increase in the temperature of the sand which is having an adverse effect to the embryonic population of the leatherback turtle.
- Leatherback turtles *Dermochelys coriacea* subject to temperature dependent sex determination as in the case of all other sea turtles (Spanier.2010).
- This is because gonad differentiation is sensitive to temperature at the third incubation stage (Broderick et al 2009).



- At higher temperatures more females will be produced and the estimated critical temperature lies between 29.25 to 29.50 °C (Rimbolt –Balyet al.1987).
- This is not only limited to the leatherback turtle alone but other species whose gender is dependent on the temperature at the embryonic stage.(Hutchinson.2009)



- The Biological Factors that affect the temperature of the nest naturally are Embryonic Consumption of Oxygen, Carbon Dioxide production, and number of eggs per clutch and the temperature of the sand.
- The hatchling success of the leatherback turtle nest is averaged between 40-60%. In research done by Hilterman et al 2002 it showed in Guyana that the temperature of the nest tend to increase towards the end of the season.



RECOMMENDATIONS

- An increase in the amount research done on sand temperature and it's affecting Trinidad and Tobago. It only when the data produced out of this study would conservationist would be able to take a proactive response rather than a reactive.
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- Relocation of nest that is in danger, this however is usually done during patrols by stakeholders. However, where the nest are relocated to should be place on high importance due to the fact that sex determination can become a critical fact for their survival.



- Beach nourishment which is considered an environmental friendly method to enhance the sand presence on eroding beaches, and narrowing beaches. However, further studies and nourishment methods need to be evaluated for its success for nesting site conservation.
- Engineering methods of preventing coastal zone erosion such as offshore breakers, groynes, and fish tail beakwaters but as the design and construction of this is possible and environmental Impact Assessment must be done to ensure that there no possible devastating threats.



- Rebuild rivers and guide them to places with a lack of sand, hoping that they will push the sand back into place.
- Retaining moisture-absorbing vegetation on the bluff
- Out letting rain gutters and diverting surface runoff away from the bluff
- Reducing runoff rate toward the bluff



○ THANK YOU

