

SEA TURTLE DERMAL SCUTE VARIATIONS FROM RESCUED INDIVIDUALS IN THE GULF OF VENEZUELA

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Species from the Cheloniidae family: *Chelonia mydas*, *Caretta caretta*, *Eretmochelys imbricata*, *Lepidochelys olivacea*, *Lepidochelys kempii* and *Natator depressus*, presents as a distinctive feature the presence of an osseous carapace covered with skin and scutes. In the Gulf of Venezuela (GV) four of the six species belonging to this family are present; this area is a well-known foraging location for Caribbean populations of marine reptiles. The number and arrangement of these scutes or scales are specific to each species, the presence of supernumerary dermal shields or scales could lead to confusion at the moment of correctly identify these species. This variation has been associated with altered dermal environmental conditions during embryonic development. Based on the review of sea turtles individuals rescued and included in the database of the Workgroup on Marine Turtles in the Gulf of Venezuela (GTTM-GV, by its Spanish Acronym) a total of 19 individuals with presence of supernumerary scales were analyzed; 89% of individuals belonged to the species *Chelonia mydas* and 11% of the species *Caretta caretta*. Several variations in dermal shields agreements of both species' carapace were observed, with a range from one to four "extra" scales or scutes. This phenomenon (called "Dovetail Syndrome") does not affect the survival of the individuals; it is known to be an anomaly related with either a genetic or embryogenesis condition and a poorly understood phenomenon. All records and photographs of sea turtle individuals may have different uses in sea turtle populations' management and conservation programs. In foraging areas, such as the Gulf of Venezuela, this data can complement the morphometric and meristic database with a standardized photo-identification of individuals; such identification might be used in areas of illegal consumption and trade of carapace and other products for a better control for these unlawful acts with endangered species.

PRELIMINARY EVALUATION OF MINIMALLY INVASIVE SEXING TECHNIQUES FOR IN-WATER STUDIES OF LEATHERBACK SEA TURTLES

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Sea turtles do not contain heteromorphic sex chromosomes, precluding the use of genetic methods to confirm sex of individuals. Common alternative techniques used to confirm sex include laparoscopy, gonad histology and ultrasound of the inguinal region to view the reproductive organs. These techniques are not practical for in-water studies of leatherback sea turtles that depend on humane and short handling protocols. For large sub-adult and adult leatherbacks, tail length is a secondary sexual characteristic that can accurately identify sex. However, unless phallus eversion occurs during handling or tag recapture data can link individuals to nesting beaches, sex cannot be confirmed with absolute certainty. We explored the use

of three techniques for identifying sex of leatherbacks live-captured off of Nova Scotia, Canada: ultrasound of the tail to view the phallus, digital palpation of the phallus through the cloacal opening, and blood sampling followed by testosterone radioimmunoassay (RIA) to analyze sex hormone levels. Digital palpation was performed on two live adult male turtles and tail ultrasounds were performed on three live adult turtles (two females and 1 male) and one stranded, dead adult turtle. For the latter, ultrasound was promising as the phallus was identifiable using a 7.4cm field depth, especially when the phallus was manipulated. Ultrasound on the live adult male turtle was inconclusive, possibly due to boat and animal movement. Digital palpation of the phallus through the cloacal opening was unsuccessful in the two live male turtles. Using 600pg/mL as the cutoff value between males and females, we found that testosterone levels of 22 of 26 turtles agreed with their sex assignment based on tail length. The sexes of 9 of the 22 individuals were confirmed based on tag recapture data or phallus eversion. Three of four turtles for which testosterone levels were discrepant with sex assignment based on tail length were visually determined to be males with testosterone levels more typical of females. This may have been resulted from stress-induced increases in cortisol, which can decrease testosterone levels.

FLOW CYTOMETRY OF MYCOBIOTA ISOLATED FROM NESTS, EGGS, AND STILLBIRTHS OF THE SEA TURTLE *ERETMOCHELYS IMBRICATA* (LINNAEUS, 1766)

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The hawksbill sea turtle, *Eretmochelys imbricata*, was a subject of trade due to the collection of its eggs, consumption of the female's meat, and fishing activities in coastal areas. Besides human impacts, pathogens have also led to high rates of mortality, especially fungi that can kill embryos and cause cutaneous mycosis. Flow cytometry, a highly robust and fast technique, has become widely used in the last couple of decades to estimate the genome size of living organisms, including fungi. This can be very useful for biosystematics purposes. This study used this technique to quantify the genome size of fungal species isolated from soil, stillbirths and hawksbill turtle eggs, and then to evaluate the usefulness of this character to complement previous morphological identification of fungal species. Nuclear suspensions were obtained after chopping the fungal tissue in 1 mL of lysis buffer, subsequent filtering of the solution through a 80 µM nylon filter and staining with propidium iodide. The stained samples were then analysed in the flow cytometer and data was acquired in the form of histograms. Using this method, the genome sizes of *Fusarium solani*, *Aspergillus terreus*, and *A. niger* were estimated as 1C=95 Mbp, 35 Mbp and 40 Mbp. Consistent estimates among different replicates aided in the complementary identification of the fungal species. Using this method, the genome size of *Fusarium solani*, *Aspergillus terreus* and *A. niger* was estimated as 1C = 95 Mbp, 35 Mbp and 40 Mbp. The detection of *Fusarium solani* is particularly important as this species is known to be the cause of mortality in embryos of some species of sea turtles. Further studies related to the size of the fungal genome, its possible variations, and other inferences on gene mutations in differentiation of species or subspecies are necessary to investigate their pathogenicity and strengthen studies on the ecology and conservation of sea turtles.



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Compiled by:

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