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PROCEEDINGS OF THE TWENTY-EIGHTH ANNUAL SYMPOSIUM ON SEA TURTLE BIOLOGY AND CONSERVATION



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conserve the remnant hawksbill population on Bocas coast. In addition, the Wildlife Law of 1995 introduced a national prohibition on hunting and fishing of all threatened species. Today the "Parqué Nacional Marina Isla de Bastimentos" serves to protect two of the historically most heavily harvested sea turtle nesting beaches in the area-Playa Larga and the Zapatilla Cays. The park is managed by the Autoridad Nacional del Ambienté (ANAM) and protection of sea turtles during the nesting season, is accomplished in collaboration with the Endangered Wildlife Trust (EWT), the Caribbean Conservation Corporation (CCC) and the Wildlife Conservation Society (WCS). However, limited law enforcement capacity in beach areas and marine habitats continues to threaten sea turtle populations in the park and elsewhere along this coast. Protecting a total of 13,226 ha, the Bastimentos Island National Marine Park includes 11,586 ha of marine habitat. Playa Larga (9.31604N, 82.1227W; 9.33407N, -82.1424W) is located on the northern shore of Bastimentos Island and lies adjacent to private land currently the subject of extensive legal dispute. Despite the relative isolation of this bay, surrounding beaches and adjacent uplands are undergoing rapid tourist development, deforestation and private investment sales. This coastal development will have an immediate detrimental impact to nesting activity, by opening access, increasing vulnerability to egg poachers and by introducing artificial lights that could disorientate adult females and hatchlings. Playa Larga, 3 km in length, is the single most important beach for sea turtles on Bastimentos Island, annually hosting the majority of all documented leatherback, hawksbill and green turtle nests. Monitoring records for March through August of 2007 documented 140 leatherback, 21 hawksbill and 3 green turtle nests. Since the founding of the National Marine Park, a remarkable increase in the number of hawksbill nests located on the nearby Zapatilla Cays, suggests that numbers of critically endangered turtles nesting on Playa Larga could also rise, if protection on Bastimentos Island were fully implemented.

EVALUATING THE POTENTIAL EXTENT OF SEAGULL PREDATION ON TURTLE HATCHLINGS: LOGGERHEAD HATCHLING EMERGENCE TIMES ON ZAKYNTHOS, GREECE

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Sea turtle nests and emerged hatchlings attract a number of terrestrial predators. On the densely populated shores of the Mediterranean for example, populations of foxes and birds are generally high and result in high predator pressure of nests and hatchlings. Foxes are absent on the largest rookery of the region on the island of Zakynthos. However, a landfill site close to Sekania, a densely nested beach accounting for roughly half of the nests on Zakynthos, provides resources for a high population of seagulls. ARCHELON has monitored Sekania beach for over two decades and has witnessed a high number of seagulls visiting the beach and preying on newly emerged hatchlings. The main goal of the study was to evaluate the potential extent of this predation on the hatchlings of Sekania. As seagulls use visual cues for prey detection, we assumed that hatchlings emerging one hour before dawn and in daylight would potentially fall prey to seagulls. We therefore aimed to quantify the proportion of hatchlings emerged during this period. A random sample of nests that were observed being laid (ca. 70% of 545 nests recorded in Sekania in 2007) was included, representing the spatial and temporal nesting distribution. Boxes were placed over the study nests from 40 days of incubation onwards; and checked for emerged hatchlings at half hour intervals from 22:00 h until 6:00 h until the emergence of the first hatchling and during 9 nights thereafter. During these days, hatchling emergences outside the monitored hours were determined from hatchling tracks. However, 'daytime emergence events' were liable to inaccuracies. For example, when hatchlings emerge during a day of strong winds, the hatchling tracks may be erased; making it impossible to determine the exact number of hatchlings emerged during daytime. Post-hatching excavations were used to verify results. 33 nests were included; from which we directly observed 1,754 hatchlings. Visual examination of the night time emergence data revealed a peak in emergence time between 3:00 and 3:30 am with 18.2% of observed hatchlings emerging at this time. 6.2% of all directly observed hatchlings (83 hatchlings) emerged after 5:00 h and were therefore considered to be at high risk of seagull predation. Reliable data on daytime emergences was available from 21 nests. From these data we estimated that 16.7% of hatchlings emerged between 6:00 h and 22:00 h. Hatching showed a typical declining pattern with the first night hatches accounting for 35% of all emergences. Our results show that a large proportion of hatchlings on

Sekania emerged during or just before daylight hours and are thus vulnerable to predation. As this is a large proportion of hatchlings, it is likely that the population could be significantly affected by the increased bird numbers. Although we only speculate on the effect of this increased mortality rate at the hatching stage on the population, the high number of hatchlings potentially being predated is certainly of concern and thus offers justification to take action to reduce the predation pressure. Acknowledgements: The author wishes to thank Project GLOBAL, Disney Animal Kingdom, Western Pacific Regional Fisheries Management Council, U.S. National Marine Fisheries Service, U.S. Fish and Wildlife Service (Marine Turtle Conservation Fund), David and Lucille Packard Foundation, and the Sandler Family Foundation, as well as two generous individuals: Carlos Peralta Quintero and Robert N. Allen, Jr and the Symposium for making this presentation possible.

CARETTA.CAT PROJECT: PRELIMINARY REPORT ON THE STATUS OF MARINE TURTLE POPULATION ON THE CATALONIAN COAST (WESTERN MEDITERRANEAN, SPAIN)

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Some nests of loggerhead turtles (*Caretta caretta*) were found on the western shore of the Mediterranean in the summer of 2006, even though this is not considered a common nesting habitat. More precisely, two nests were found in Spain (Premià de Mar/Barcelona and Puçol/València) and one in France (St. Tropez). The *Caretta.cat* Project started off in 2007, led by the Albera Tortoise Reproduction Centre and financed by the Territory and Landscape Foundation. The purpose of the project is to search for tracks of marine turtles that might appear on the Catalan beaches (about 600 km of beaches on the northeast of the Iberian Peninsula), to discover if there is a population that nests on these beaches and if so, to promote and work for their stabilization and conservation. The method applied consisted in a series of track surveys taken daily between the end of June until September. Most of the surveys were taken by the cleaning operators working on the greater part of the Catalan beaches. The operators were previously instructed in the detection of tracks of marine turtles on the sand. Several random surveys were taken on the few beaches that do not dispose of cleaning services. No tracks of marine turtles were found throughout this time. In addition, the project includes environmental education and physical studies of the beaches with lesser human impact. Seven temperature sensors were buried on the beach, which registered temperatures too low for the incubation of marine turtle eggs in the northern part of the area and more sufficient temperatures in the south. Some references of occasional egg laying on the Peninsula shores were found in an exhaustive bibliographic search and one author even suggested that nesting could have been important about 150 years ago. A first hand conclusion is that nesting of marine turtles on the Catalan beaches is sporadic. We recommend continuing the track surveys in the following years because of the annual variations and in order to obtain more reliable data. Also, temperatures should continue to be taken, especially since summer 2007 was cooler than the previous ones. We encourage the publication of this kind of "negative" results to serve as basic information that might be useful in the future, for example in the case that egg laying observations becomes more common, caused maybe by a behavioural change due to the climate change or for improving conservation policies of the species. Acknowledgements: AH gratefully acknowledges travel support from Project GLOBAL, Disney Animal Kingdom, Western Pacific Regional Fisheries Management Council, U.S. National Marine Fisheries Service, U.S. Fish and Wildlife Service (Marine Turtle Conservation Fund), David and Lucille Packard Foundation, Sandler Family Foundation, Carlos Peralta Quintero and Robert N. Allen, Jr., provided through the Symposium Travel Committee.