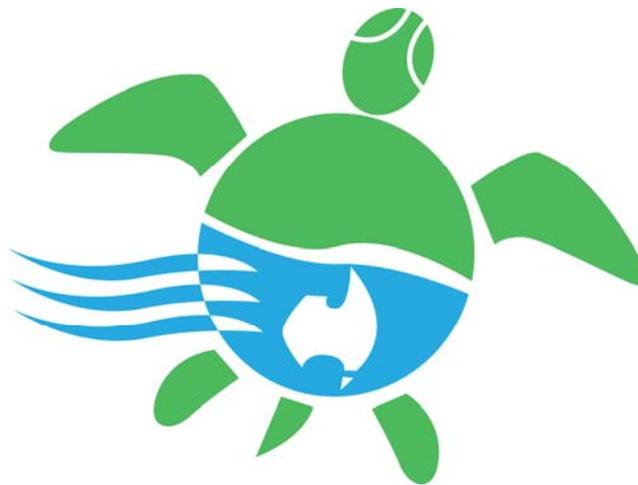




NOAA Technical Memorandum NMFS-SEFSC-630

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



17 to 19 February 2009
Brisbane, Queensland, Australia

Compiled by:

Lisa Belskis, Mike Frick, Aliko Panagopoulou, Alan Rees, & Kris Williams

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NOAA Fisheries Service
Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, Florida 33149

May 2012

moisture conditions. An experimental factorial design 3*2 was done considering three different levels of embryonic development: (first second and last third of incubation) and two different inundation scenarios (a total eight days of inundation for both scenarios, 15% water in sand, gravimetric), but the first inundation scenario was alternated 2 days dry (1% water in sand, gravimetric) and 2 days inundated, while second inundation scenario was eight continuous days inundated. Control condition had no inundation. Four eggs from five different females were pooled in each treatment, with one egg per experimental plastic box. The incubation was at 60 cm depth in an open beach hatchery. Our results highlight that embryonic development is specially sensitive to inundation in the first third of incubation, however the lethal effect is noticeable with 8 continuous days of inundation (Chi-square = 9.66, p = 0.001). Hatching success in control treatment (82.3%) was higher than natural nests (typically 40-50%). Leatherback eggs can tolerate the first inundation scenario, with dry periods between inundations (hatching success in first third = 58.8%, second third = 58.8% and third third = 64.7%). Thus our results show that it is highly likely, that high frequency of tropical storms or continuous high moisture in sand levels as global warming consequences, will affect the reproductive success of leatherback turtles.

HUNTING HATCHLINGS: ASSESSING LOGGERHEAD HATCHLING EMERGENCE AND PREDATION RATES AT A DENSELY NESTED LOGGERHEAD BEACH

Gail Schofield¹, Victoria Saravia², Christopher Dean³, Bronwen Gill³, Laurent Sourbes¹, Kostas A. Katselidis¹, Dimitris Margaritoulis³, and Amalia D. Karagouni¹

¹ National Marine Park of Zakynthos, Greece

² The Hellenic Ornithological Society, Greece

³ ARCHELON, the Sea Turtle Protection Society of Greece, Greece

Predation of sea turtle hatchlings following emergence from nests is a worldwide phenomenon. Zakynthos is the largest known nesting area for loggerhead turtles (*Caretta caretta*) in the Mediterranean, and since 2000 has been protected within the framework of the National Marine Park of Zakynthos (NMPZ). In the NMPZ breeding-area, Sekania beach holds approximately 53% (n=668) of nests, with records of yellow-legged gull predation (*Larus cachinnans michahellis*) dating back to the onset of monitoring. In recent years gull numbers have increased; hence an assessment of the impact of gulls on hatchling survival-rates was deemed necessary to determine appropriate predator management actions. The NMPZ Management Agency in collaboration with ARCHELON and the Hellenic Ornithological Society conducted intensive surveys to determine (i) 24-hour hatchling emergence-rates (ii) gull predation-rates. Hatchling emergence-rates were assessed through trapping and counting hatchlings along an 80m section of beach in nine survey days during the 20-day peak hatching-period (16/08/2008-03/09/2008). Gull activity and predation-rates were assessed throughout the hatching period (06/08/2008-12/9/2008) via six three-day morning (06:00-10:00), four three-day surveys (06:00-20:00) and two night surveys (20:00-06:00) using binoculars and telescopes. Nest hatching information was collected by NMPZ researchers and ARCHELON personnel. Gulls frequented Sekania beach during daylight hours only, i.e. between 06:00 and 20:15, peaking at 07:15-08:30 (peak mean = 130.3 range 10-280) and 13:30-19:30 (peak mean=279, range 210-350). Hatchling emergence rates between 06:00 and 20:30 were 19.5% (n=91, total n=466; sd±6.3), of which 7.5% (n=7) were too weak to reach the sea. Between 06:00-10:00 (i) 72% (n=69, total n=96) of hatchlings were recorded during the emergence study, and (ii) 92.6% (n=176, total n=190) of hatchling predation by gulls was observed in the predation study. On average 45% and 55% of possible and/or definite hatchling predation-rate was beach-based and nearshore (<300m from shore) before 10am, while after 10am it was 83% and 17% respectively. A mean 28 hatchlings were subject to possible/definite predation per day on the beach and/or nearshore area during the core hatching period (i.e. when 3 or more new and/or old nests hatched per day; 24/7-14/9), which represented a 4.7% overall predation rate (assuming 108 eggs/nest and 68% hatchling emergence rate). Potentially up to 20% of hatchlings emerging at Sekania could be subject to predation, however at present combined beach and nearshore predation levels are below 10% (tolerable limit by the Florida Fish and Wildlife Conservation Commission 2002) and predation at other beaches in the rookery is negligible. However, continued monitoring is required to detect and implement an adequate management response in the event of increased predation levels at Sekania, which may negatively impact future population parameters.