

EFFECTS OF LIGHT POLLUTION BY CAR HEADLIGHTS IN LOGGERHEAD HATCHLING BEHAVIOUR IN CAPE VERDE

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Abstract

Many sea turtle nesting areas are experiencing a tremendous growth in tourism during the last decades that will likely continue in the near future. Many touristic activities involve light pollution by the increasing presence of vehicles close or even over the beaches. Vehicles can drive towards or along the beaches and even stay with the lights turned on illuminating during prolonged periods of time significant zones with sea turtle nesting activity. Thus, it is important to evaluate the impact of car light pollution on both nesting females and newborns in their search of the sea. Unlike other pollution sources, the artificial light in these animals causes behavioral effects, such as abandonment of the nesting activity on the part of females or the disorientation of the hatchlings on the beaches. The impact of car lights over hatchlings can have a profound influence on their chance of survival. We have assessed the exposure of sea turtles to light pollution and tested the influence of car headlights on hatchling behavior and orientation on pristine undisturbed beaches from Boavista Island (Cape Verde). This eastern Atlantic archipelago hosts the third worldwide most important nesting population of loggerhead turtles (*Caretta caretta*). 90 % of nesting activity occurs on Boavista, an island that is experiencing a fast tourist development over the last five years. During the 2010 nesting season we experimentally studied on the beach the behavioral impact of car headlights on 120 loggerhead hatchlings from different nests incubated in a beach hatchery. Hatchlings were tested once to one of the three types of illumination: white headlights without filter, white headlights fully covered by a red gel filter, natural nocturnal conditions (dark or moon light). This was the only source of artificial light on several kilometers around. Hatchlings were randomly assigned to each of the light treatments. We recorded the first orientation of the turtle, time to arrive to the limit of the circular arena and direction of the turtle when crossing the limit of the arena. We also recorded hatchling behavior and calculated their speed. Several highly significant differences were found among treatments. In the presence of white light virtually all the hatchlings moved quickly toward it. The attraction and speed of hatchlings toward car lights was significantly reduced by red filters. At dark conditions all hatchlings went directly to the sea. Full moon light slightly attracted hatchlings under the dark and red treatments but had no influence under the white treatment. These results are interpreted as a great threat of car lights to hatchlings that move inland, away from the sea, seriously endangering their survival through predation, exhaustion, dehydration, etc. As a preventive measure, during the 2010 season the main turtle watching operator of the island (NATURALIA) covered the headlights of all tourist cars with gel red filters when they approached to the beaches at night. This measure was very well accepted by tourists, tour operators and local drivers at a very low cost.