Marine Turtles and Jaguars

Two mystical species coexisting on the coast of Quintana Roo, México:

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The arrival of marine turtles to their coastal nesting grounds continues to be an amazing yearly ritual in which these magnificent creatures surpass numerous obstacles to ensure the continuation of their species, as they have done for millions of years.

Upon hatching, marine turtles have an extremely high mortality rate due to the ease with which many of their predators are able to pick them off. However, having reached maturity, marine turtles become much less susceptible to most predators, with the notable exception of sharks and human beings.

However, nesting females are at a particularly high risk of attack from feral dogs, jaguars and other predators when coming out to beach for nesting. Costa Rica has the highest level of jaguar attacks on nesting marine turtles (Tröeng,2000; Verissimoet al., 2012).

The jaguar (*Panthera onca*) is the largest feline on the American continent, and the the largest tropical terrestrial predator. It is well known for being a solitary and opportunistic predator with a diet based on a great variety of different animal species which inhabit its home range. As turtle shells are no obstacle for jaguars, turtles remain vulnerable to their attack and being consumed by them. (Tröeng, 2000).

Given their dwindling populations and the many threats which they face, marine turtles and jaguars are both protected under Mexican law through : NOM-059-SEMARNAT-2010, and are officially listed as endangered species.

Marine turtles and jaguar in the Yucatan peninsula

The Yucatan peninsula is a highly important region for marine turtles as it offers many different habitats for nesting, mating, feeding and migration of at least five different species to here by be identified in order of their annual average registered nest populations: the Green turtle (*Chelonia mydas*), Hawksbill turtle (*Eretmochelys imbricata*), Loggerhead turtle (*Caretta caretta*), Leatherback turtle (*Dermochelys coriacea*) and Kemp´s ridley turtle (*Lepidochelys kempi*).

In Quintana Roo, there are on average over 5,000 registered Green turtle nests which span the entire coastline of the state, being thus amongst the five most important nesting areas for this species in the entirety of the Caribbean (Spotila, 2004); and is the only region in México which receives nesting Loggerhead female turtles (Arenas-Martínez, 2005).

On the other hand the Hawksbill turtle is also known to mate and nest on the coasts of Quintana Roo, primarily on the northern coast (Holbox and Contoy Islands). When considered together, the three Mexican states which make up the Yucatan peninsula represent the largest nesting ground for Hawksbill turtles in the western Atlantic, and the peninsula is amongst the top ten most important areas in the world for this species. (Mortimer y Donnelly, 2007).

An average male Jaguar on the Yucatan peninsula possesses a territory of around 25 – 50 km square (Ceballos et al., 2005; Faller *et al*., 2007). Currently the species inhabits only about 30% of its original historic territory in Mexico and according to the first national wildlife census, there could exist only around 4,000 adult jaguars in all of Mexico, 45% of which are to be found in the Yucatan peninsula (Ceballos et al., 2002). Particularly, in Quintana Roo there could be around 850 adult jaguars living in the jungle (Ceballos et al. in preparation).

Marine turtles in the diet of Jaguar at Sian Ka´an

Within the Sian Ka´an Biosphere there is an area known as Punta Pajaros, in which the Casa Blanca hotel has, since 2010, taken on the initiative to install photographic traps to aid in the documentation of the fauna, with a focus on the search for felines which are photographed using Reconyx ©, model RC55 Rapidfire 3.1 MpxColor IR-

On the 4th of August, 2011 a Green turtle (*Chelonia mydas*) was found dead. The evidence of the wounds on the neck showed that the turtle was apparently attacked by some kind of animal as it nested. In order to discern what type of animal had attacked the turtle, it was decided to place cameras close to the corpse in order to catch an image of the hunter. On the first day the camera caught images of a jaguar consuming the turtle. From the wounds on the neck and the fact that the jaguar ate the turtle, it is inferred that the feline was responsible for the death of the turtle. This was the first hard evidence of attacks on marine turtles in Mexico by jaguars (Image 2).

In August of 2011, in the same area, the register shows that while nesting, four more female turtles were attacked along an approximately five mile long segment of the beach. That brought the total count to five attacked female nesting turtles (three Green turles and two Hawksbill turtles) attacked by jaguars in a period of 26 days.

Two of the attacks were documented photographically (on August 4th and 31st). The photographs show that the attacks were perpetrated by two different jaguars (Image 3), and from their physical characteristics, it seems both jaguars were female.

This is the first documented and published report of the hunting of marine turtles by jaguars in Mexico. This is very relevant, given the efforts expended towards the conservation of both hunter and prey as protected species. This also infers that the functional and structural attributes of the vegetation in that area are in good health, in that it supports more than one jaguar in a relatively small area.

The feeding studies of jaguars carried out in Mexico have been mainly localized and documented in jungle areas such as the Calakmul Reserve in Campeche and the Chamela Cuixmala Reserve in Jalisco (Amín *et al*., 2006; Estrada-Hernández, 2008). No reports exist that mention marine turtles being part of the diet of jaguars, not even incidentally.

However, Leopold (2000) mentions: "*in a few places along the coasts it seems that jaguars like to look for nesting turtles at night in order to find their eggs which they dig up and consume,"* but he does not offer further evidence of this. In Michoacan, Jalisco, Nayarit and in the north of Yucatan (in the region of Ria Lagartos) it is mentioned "*in the past, during the nesting period, the jaguars used to eat them*." (R. Núñez, com. pers.); and yet he does not give details, nor proof to back up his claim.

The rainy season is a more difficult time for the jaguars to find prey because their principal strategy is to hunt in bodies of water within their habitual environment. During the dry season the prey are forced to concentrate around the main source of the water within the jaguars' territory. But during the rainy season there are many bodies of water and the prey easily locate more areas for drinking water, thus reducing the preys´ density in a single water source, forcing the jaguar to invest more energy to find and hunt their prey.

This premise infers that the nesting marine turtles are an opportune food option for the jaguar during the rainy season. They offer a source of protein and energy (rich in fat), that is easy to catch and widely available, and close to their home range environment.

This fact also emphasizes the need to have a regional, integral, inter-disciplinary vision and an ecosystemic approach to provide for the conservation of the species such as jaguars and marine turtles within and outside of protected reserves.

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