Analyzing priority areas for conservation Hawksbill Turtle in the Atlantic coast of Colombia

INTRODUCTION

There are only seven known species of sea turtles in the world and it is known that their populations are declining worldwide, mostly due to anthropogenic causes (Alfaro et al 2008; Thierry et al 2013).

Sea turtles are essential for the marine ecosystem, because they act as nutrients recyclers and fertilizers of sea grass, having a huge impact in the ocean biodiversity of plants and animals (Alfaro et al 2008). Five of the seven sea turtle species nest in South America and they are all facing conservation vulnerability (Álvares-Varas et al 2015). All of them are under the "Vulnerable", "Endangered" or "Critically endangered" International Union for Conservation of Nature (IUCN) status (UCN 2016). Four of these species nest and occur in seven protected areas of Colombian Atlantic coast including the critically endangered Hawksbill turtle (*Eretmochelys imbricata*). Amorocho & Zapata 2014. The Hawksbill turtle is seriously affected by human interaction. Its population is declining extensively as a result of over-exploitation of adult females and eggs, nesting habitat degradation, hunt of individuals in foraging areas and incidental mortality due to fisheries and degradation of marine habitats (Mortimer, J.A & Donnelly, M. 2008).

It is urgent to join conservation efforts and health assessments of wild Hawksbill turtle populations in order to avoid the extinction of this species in the wild. Since sea turtles are mostly migratory animals they are difficult to assess (Thierry et al 2013), then defining of important "assessment areas" is critical in order to perform effective conservation strategies. For this specific case I would like to assess important geographical places in the Atlantic Coast of Colombia for the monitoring of Hawksbill turtle.

QUESTIONS & METHODS

Where on the Colombian Atlantic coast are the most important nesting areas for the Hawksbill sea turtle?

Which nesting sites are within protected areas in the Atlantic coast of Colombia?

What are the most common ecosystems for which Hawksbill sea turtles use to nest?

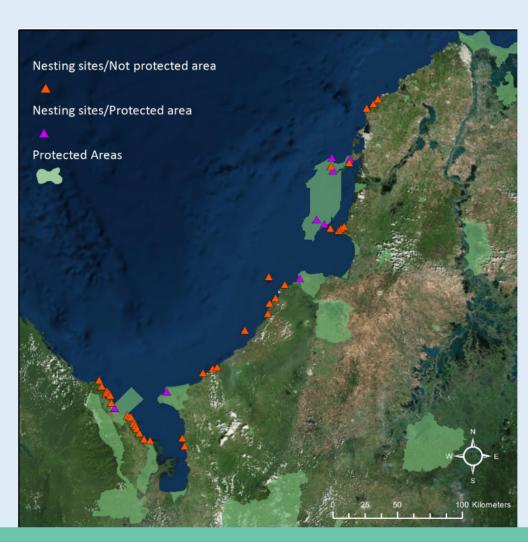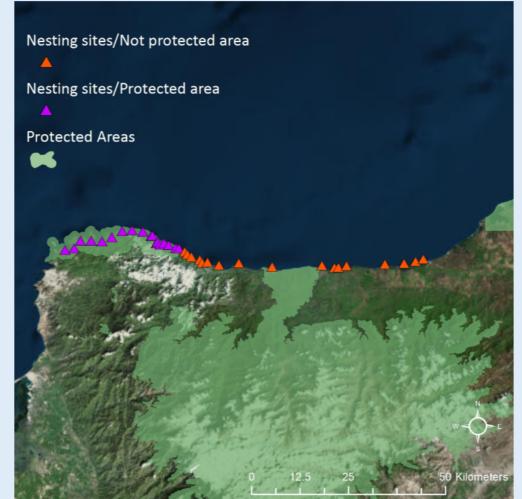Which Hawksbill sea turtle nests are located within 30 Km of petroleum exploitation?

Recorded the GPS coordinates of nesting sites for Hawksbill sea turtle in the Atlantic cost of Colombia from the SWOT website.

Spatially Joined nesting sites with protected areas. Analyzed statistically significant clusters of nesting sites within and outside of protected areas. Reported habitat suitability and the presence of nesting sites which are not in protected areas. Calculated the 30km buffers around petroleum exploitation sites and spatially joined nesting sites to the buffers. Spatially joined nesting sites to the Type of Ecosystem.
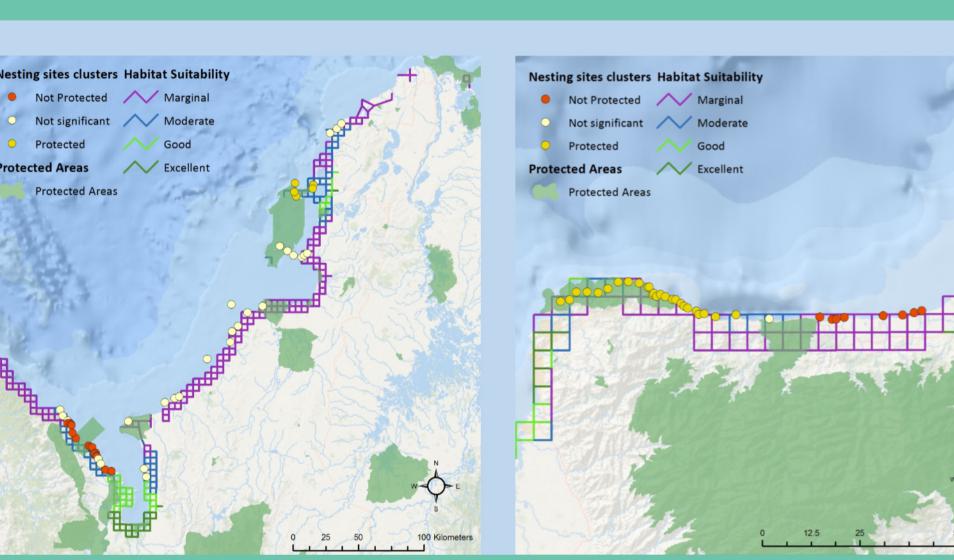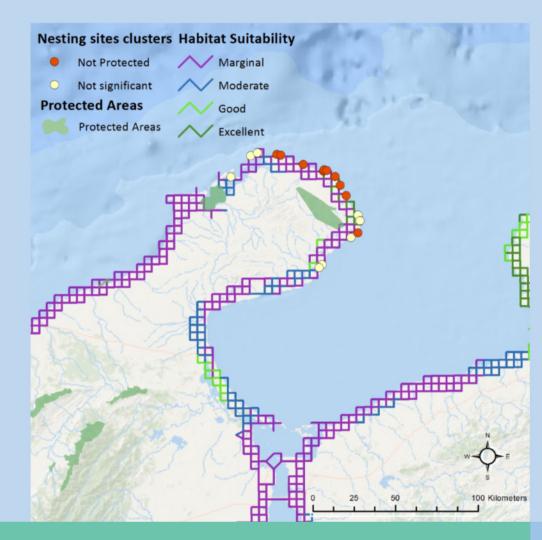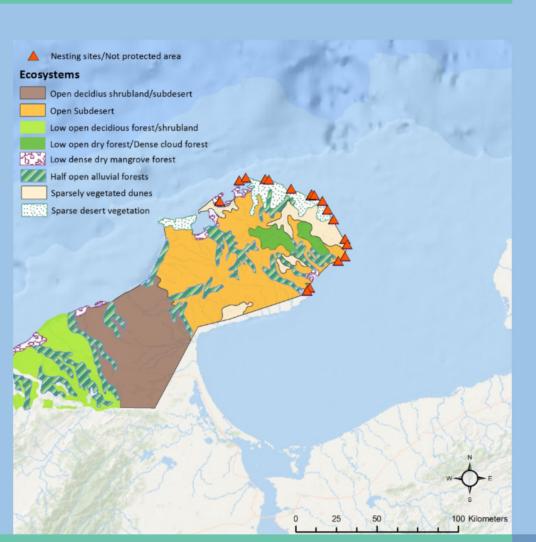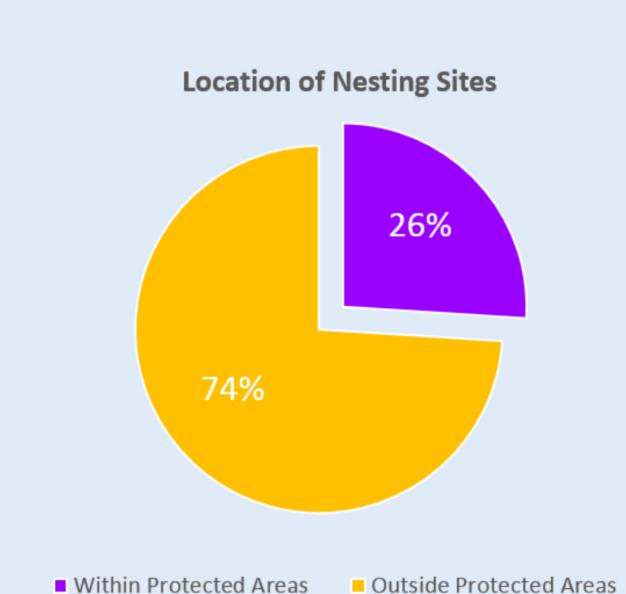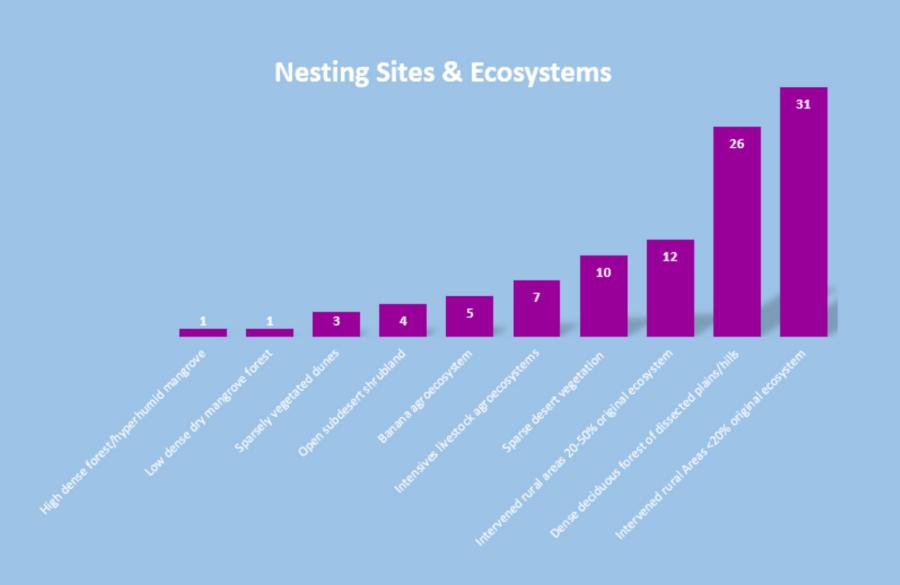
RESULTS & DISCUSSION

The majority (74%) of the registered nesting areas along the Atlantic coast of Colombia are not located in protected areas. One significant cluster of unprotected nesting sites is located in marginal habitat of the Alta Guajira region (Zone 3), which is also within 30 km of the reported petroleum exploitation locations in the Atlantic Ocean. This is one particular cluster of nesting sites that would benefit from increased conservation efforts.

Although the hawksbill sea turtle is reported to nest in a wide variety of ecosystems, the majority (31%) of reported nesting sites are within non-differentiated intervened rural areas with less than 20% of the original ecosystem remaining.

These findings show the need for increased, continuous monitoring of Hawksbill sea turtle nesting sites in order to establish new protected areas which benefit the species.

ZONE 1   ZONE 2   ZONE 3

NESTING SITES AND PROTECTED AREAS

NESTING SITES CLUSTERS AND HABITAT SUITABILITY

NESTING SITES CLUSTERS AND ECOSYSTEMS

NESTING SITES CLUSTERS AND PETROLEUM EXPLOITATION

Location of Nesting Sites

26%   74%

Within Protected Areas   Outside Protected Areas

Nesting Sites & Ecosystems

1 1 3 4 5 7 10 12 26 31

Nesting sites & Proximity to Petrolium Exploitation

53%   47%

Within 30 KM   Greater than 30km

Nesting Sites within 30 Km of Petrolium Exploitation

38%   62%

Not protected   Protected

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Projected Coordinate System:

GAUSS_BTA_MAGNA

Data sources:

SWOT website

ESRI Arc Map 10.3