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Counting eggs of a hawksbill turtle nesting at Chiriquí Beach, Comarca Ngöbe-Buglé, Panama

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PROGRESS REPORT ON SEA TURTLE MONITORING ACTIVITIES IN THE COMARCA NGÖBE- BUGLÉ AND BOCAS DEL TORO PROVINCE, PANAMA

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EXECUTIVE SUMMARY

The objective of this report is to provide a summary of monitoring activities conducted by the Sea Turtle Conservancy (Formerly the Caribbean Conservation Corporation) and other conservation organizations on nesting populations of hawksbill (*Eretmochelys imbricata*) and leatherback (*Dermochelys coriacea*) sea turtles at key nesting beaches in Bocas del Toro Province and the Comarca Ngöbe-Buglé, Panama from 1 September 2010 – 31 March 2011.

INTRODUCTION

As detailed in the *'Baseline Report on the Status of Sea Turtle Populations in the Bocas del Toro Province and the Comarca Ngöbe-Buglé, Panama'* (Sea Turtle Conservancy, 2011), the Sea Turtle Conservancy (STC) and other conservation organizations conduct sea turtle monitoring programs at several nesting beaches within Bocas del Toro province, and at Red Beach, Escudo de Veraguas Island and Chiriquí Beach in the Comarca Ngöbe-Buglé (See Figure 1).

Four species of sea turtles have been recorded in the region; the green turtle (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), loggerhead (*Caretta caretta*) and leatherback (*Dermochelys coriacea*), and it contains important nesting, migration and foraging sites for various life stages of these different species.

Data collection is focused on hawksbill and leatherback populations, as these are the two most abundant species in the region; however, data on all sea turtle species are recorded during monitoring activities.



Project team members excavate a leatherback nest to determine hatching and emerging success.



Figure 1. Map of Bocas del Toro Province and Comarca Ngöbe-Buglé, showing location of project study sites.



METHODOLOGY

A detailed description of the monitoring protocol is provided in the *‘Baseline Report on the Status of Sea Turtle Populations in the Bocas del Toro Province and the Comarca Ngöbe-Buglé, Panama’* (Sea Turtle Conservancy, 2011); there follows a summary of the different activities conducted during the time period of this report (1 September, 2010 – 31 March, 2011).

Study sites within the Comarca Ngöbe-Buglé are Chiriquí Beach, Escudo de Veraguas Island and Red Beach; monitoring at these locations is conducted by STC. In February 2011, regular monitoring activities were also initiated at Bluff Beach; these are conducted by local community members, supervised by STC staff.



Track surveys of study sites are conducted on foot to record all sea turtle nesting activity. All tracks are identified by species, and recorded as either a successful nesting attempt or a false crawl emergence. All evidence of nest predation, illegal take of eggs and/or female turtles, or erosion by high tides is also noted. At Chiriquí Beach surveys of the entire beach are conducted weekly in December and January, every two days in February and November, and daily from March through October. From May to November, surveys of Escudo de Veraguas Island and Red Beach are also conducted. The frequency of surveys at these latter two localities is dependent on sea conditions and availability of personnel.

At Bluff Beach daily surveys were conducted from 14 February, 2011 by a local community organization (ANABOCA); following orientation and training by STC Research Coordinator, Cristina Ordoñez. Surveys followed the same monitoring protocol as at other study sites.

During track surveys the location of all hawksbill nests is marked using flagging tapes in the vegetation behind the nest. For leatherbacks, nests are also marked during night patrols using flagging tapes, if the turtle is encountered while laying. A GPS location is also recorded for each nest. All marked nests are monitored on subsequent surveys throughout the incubation period to record illegal take, predation or erosion events, and to record the date of hatching. Nest contents are excavated 2-3 days after hatching is observed, to determine hatching and emergence success.

STC conducts nightly patrols to encounter nesting female sea turtles at Chiriquí Beach from March thru October each year.

RESULTS

LEATHERBACK NESTING IN THE COMARCA NGÖBE-BUGLÉ AND BOCAS DEL TORO PROVINCE

Table 1 summarizes leatherback nesting at study sites within the Comarca Ngöbe-Buglé from 1 September, 2010 – 31 March, 2011. It should be noted that the time period of this report includes six months which are outside the leatherback nesting season for the Caribbean coast of Panama, which typically runs from March to July.

From 1 September, 2010 – 31 March, 2011, 130 track surveys were conducted at Chiriquí Beach, 76 at Escudo de Veraguas Island, 63 at Red Beach and 46 at Bluff Beach. No leatherback nesting was recorded at any site from September – December, 2010; the first leatherback nests of the 2011 season were reported at Chiriquí Beach and Bluff Beach in February (See Table 1).



Table 1. Summary of leatherback nesting data from track surveys conducted at study sites from 1 September, 2010 – 31 March, 2011.

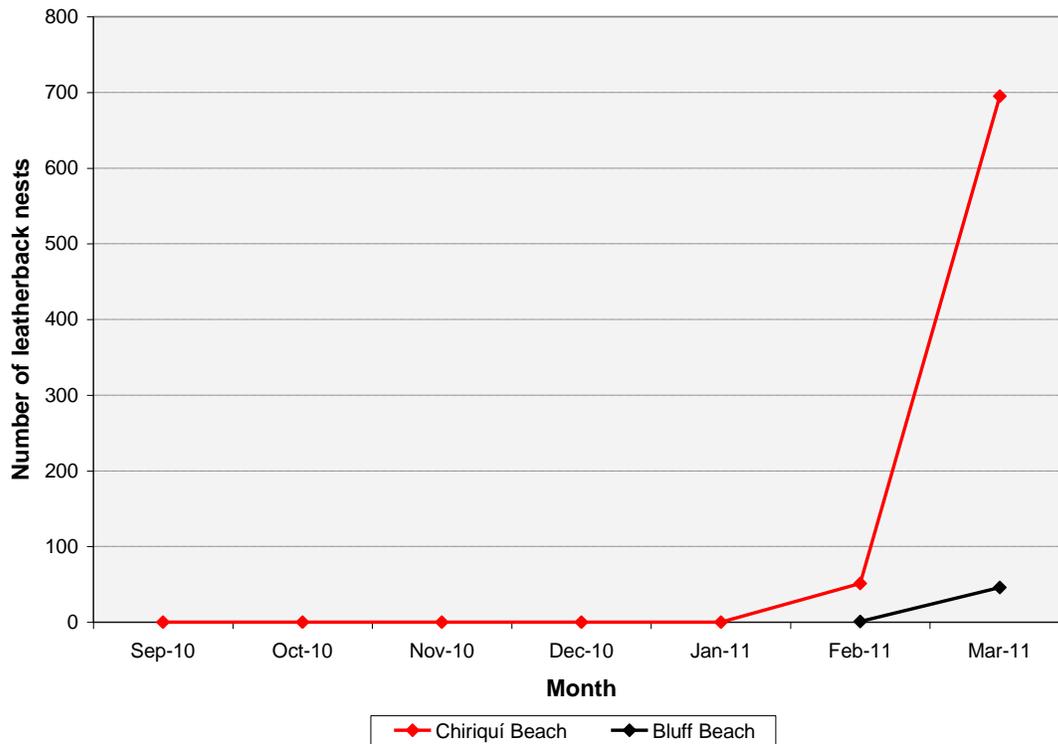
Site	Chiriquí Beach		Escudo de Veraguas Island		Red Beach		Bluff Beach	
	Nests	False crawls	Nests	False crawls	Nests	False crawls	Nests	False crawls
September 2010	0	0	0	0	0	0	NS	NS
October 2010	0	0	0	0	0	0	NS	NS
November 2010	0	0	0	0	0	0	NS	NS
December 2010	0	0	NS	NS	NS	NS	NS	NS
January 2011	0	0	NS	NS	NS	NS	NS	NS
February 2011	51	0	NS	NS	NS	NS	1	0
March 2011	695	100	NS	NS	NS	NS	46	0
TOTAL	746	100	0	0	0	0	47	0

NS = No surveys conducted at the site during this month



Nesting activity increased during March at all monitored sites (See Table 1 and Figure 2). A total of 746 leatherback nests and 100 false crawls were recorded at Chiriquí Beach, and 47 leatherback nests were observed at Bluff Beach.

Figure 2. Summary of leatherback nesting at Chiriquí Beach and Bluff Beach, 1 September, 2010 – 31 March, 2011.



At Chiriquí Beach during March 2011, 10 leatherback nests were recorded as lost due to tidal erosion; one nest was also observed depredated by dogs. At Bluff Beach one leatherback nest was poached on 2 March, 2011.

Only six nest excavations of leatherback nests to determine hatching and emerging success were conducted from 1 September, 2010 – 31 March, 2011; however, one of these was totally destroyed by dogs and so no data could be collected. For the remaining five nests, the excavations were completed successfully and hatching and emerging success were calculated at 67.7% and 67.4%, respectively. It was estimated that from these five nests 237 leatherback hatchlings were produced.

Daily night patrols were conducted at Chiriquí Beach in September and October, 2010; eight additional patrols were also carried out in November. Patrols resumed on 1 March, 2011 at Chiriquí Beach; a total of 100 patrols were recorded at Chiriquí Beach. At Bluff Beach, 31 night patrols were conducted.



No leatherbacks were encountered during night patrols from September thru November, 2010; the first nesting leatherbacks were encountered in March 2011. During night patrols a total of 140 leatherback encounters were recorded at Chiriquí Beach during March 2011, and nine encounters were reported at Bluff Beach.

HAWKSBILL NESTING IN THE COMARCA NGÖBE-BUGLÉ AND BOCAS DEL TORO PROVINCE

Table 2 and Figure 3 summarize hawksbill nesting at study beaches from 1 September, 2010 – 31 March, 2011. It should be noted that the timeframe of this report covers the months at the end of the 2010 hawksbill nesting season and the start of the 2011 season; typically hawksbills nest from April thru November in the region.

From 1 September, 2010 – 31 March, 2011, 130 track surveys were conducted at Chiriquí Beach, 76 at Escudo de Veraguas Island, 63 at Red Beach and 46 at Bluff Beach. A total of 296 hawksbill nests were recorded at Chiriquí Beach, 99 at Escudo de Veraguas Island and 24 at Red Beach; no hawksbill nests were reported in 2011 from Bluff Beach. At all sites, peak hawksbill nesting was



Hawksbill turtle nesting at Chiriquí Beach, Comarca Ngöbe-Buglé, Panama.

observed during September, and then decreased steadily each month. It was interesting to note, however, that hawksbill nesting activity was observed in all months at Chiriquí Beach, though at very low levels from December, 2010 thru March, 2011 (See Table 2 and Figure 3).

Only two hawksbill nests were recorded as poached from any of the study sites during the time period of this report; both were taken from Chiriquí Beach. However, at both Escudo de Veraguas Island and Red Beach nesting hawksbill females were killed in 2010 (one and three turtles, respectively).

On Escudo de Veraguas Island, 38 hawksbill nests were lost due to erosion, which was caused by extremely high tides during November, 2010.

Unfortunately predation by domestic dogs remained a concern during 2010; 141 hawksbill nests, and four green turtle nests were depredated from September thru January at Chiriquí Beach, despite anti-predation measures having been implemented at this beach.



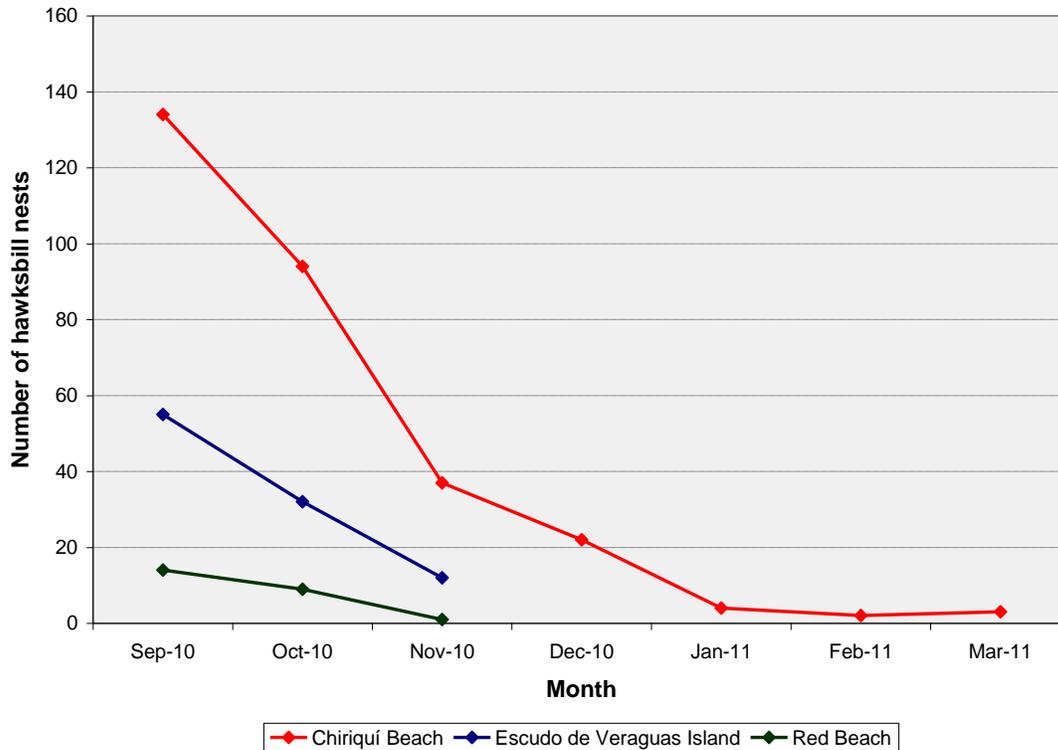
Table 2. Summary of hawksbill nesting data from track surveys conducted at study sites from 1 September, 2010 – 31 March, 2011.

Site	Chiriquí Beach		Escudo de Veraguas Island		Red Beach		Bluff Beach	
	Nests	False crawls	Nests	False crawls	Nests	False crawls	Nests	False crawls
September 2010	134	22	55	6	14	1	NS	NS
October 2010	94	11	32	7	9	2	NS	NS
November 2010	37	6	12	7	1	0	NS	NS
December 2010	22	3	NS	NS	NS	NS	NS	NS
January 2011	4	1	NS	NS	NS	NS	NS	NS
February 2011	2	0	NS	NS	NS	NS	NS	NS
March 2011	3	2	NS	NS	NS	NS	0	0
TOTAL	296	45	99	20	24	3	0	0

NS = No surveys conducted at the site during this month



Figure 3. Summary of hawksbill nesting at project study sites, 1 September, 2010 – 31 March, 2011.



Results from 418 hawksbill nest excavations conducted in 2010 revealed that 141 were partially predated by dogs at Chiriquí Beach; 277 nests were undisturbed. Hatching and emerging success for undisturbed nests was calculated at 85.9% and 73.1%, respectively and it was estimated that 33,358 hawksbill hatch were produced from these 277 nests. For the 141 nests depredated by dogs, hatching and emerging success was reduced to just 22.1% and 21.5%, respectively; from these nests only 3,079 hatchlings were estimated to have emerged.

During January 2011, 27 hawksbill nests were excavated, of which two were completely destroyed by dogs. For the 25 nests that were undisturbed hatching and emerging success were calculated at 24.4% and 22.6%, respectively. From these nests it was determined that approximately 941 hatchlings emerged. The very low hatching and emerging success observed for these nests in 2011 was presumed to have resulted from the extreme climatic conditions during November, December and January, which meant that the majority of these nests were subject to tidal inundation during much of the incubation period.

Sixty-eight hawksbill nests from Escudo de Veraguas Island were excavated between September – December, 2010. Hatching and emerging success were



calculated at 61.4% and 61.3%, respectively, and 7,065 hatchlings were estimated to have been produced. At Red Beach, 54 hawksbill nests were excavated, with hatching and emerging success determined at 75.3% and 51.3%, respectively. At this beach hatchling production was estimated at 5,327 hawksbills.

Thirty-six encounters with nesting hawksbill females were recorded during 100 night patrols conducted at Chiriquí Beach in September, October, and November, 2010. During 31 patrols conducted in March, 2011 no nesting hawksbills were encountered at Chiriquí Beach Bluff Beach.

OTHER SEA TURTLE SPECIES NESTING IN THE COMARCA NGÖBE-BUGLE

Occasionally, other species of sea turtle are recorded nesting at Chiriquí Beach; from 1 September 2010 – 31 March 2011 two green turtle (*Chelonia mydas*) nests were recorded during monitoring activities. However, seven green turtle nests (laid previously during the season) were excavated in 2010; of these three were completely depredated by dogs. Hatching and emerging success of the four remaining nests were calculated at 89.1% and 88.3%, respectively; this equated to an estimated 327 hatchlings.

CONCLUSIONS

The data presented are part of an on-going, long-term project being conducted by STC and other organizations to study sea turtle populations in Bocas del Toro province and the Comarca Ngöbe-Buglé. Sea turtle monitoring activities were conducted at study sites according to the established protocol from 1 September, 2010 thru 31 March, 2011.

Minimal leatherback nesting activity was recorded during this time period; nesting was reported from February, 2011, which is in accordance to the timing of the nesting season for this species previous for the region. Hawksbill nesting was observed to decline from September – December, 2010 at all study sites; in 2011 minimal nesting was recorded at Chiriquí Beach January thru March. Again, these data reflect the typical nesting season for this species in the Bocas del Toro region.

Illegal poaching of leatherback and hawksbill nests was minimal, although four hawksbill turtles were killed while nesting. Erosion of hawksbill nests was observed only at Escudo de Veraguas Island during November, 2010. At Chiriquí Beach leatherback nests were subjected to increased tidal inundation in March, 2011.



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Predation of nests by domestic dogs continued to be a problem at Chiriquí Beach; a dedicated nest protection program established at this site needs to be reviewed to assess the level of effectiveness, to reduce this impact in future years.

Hatching and emerging success of leatherback nests were calculated at 67.7% and 67.4%, respectively. For hawksbill nests not predated by dogs, hatching success ranged from 24.4% - 85.9% and emerging success from 22.6% - 73.1%. Nests predated by dogs showed a significant decline in hatching and emerging success to 22.1% and 21.5%, respectively.

An estimated 237 leatherback and 49,770 hawksbill hatchlings were produced in the Comarca Ngöbe-Buglé and Bocas del Toro Province from 1 September, 2010 – 31 March, 2011.

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