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A close-up of a Sulcata Tortoise
(Centrochelys sulcata)

For tortoise, terrapin and turtle care and conservation.

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UPDATE ON HAWKSBILL NESTING ACTIVITIES IN FIJI

by Susanna Piovano
School of Marine Studies, The University of the South Pacific, Suva, Fiji

Fiji, in the south Pacific Ocean, hosts nests from the critically endangered hawksbill sea turtle *Eretmochelys imbricata*. Nesting season occurs in the austral summer and usually starts in November, with the last hatchlings usually emerging from the nest in May. Even though no long-term monitoring program has been put in place in the country, it is known from villagers' and fishery officers' anecdotal records that the number of nests has dramatically decreased year after year. Elders in the villages remember when they were harvesting both eggs and "taku", as hawksbill is locally known, from the beaches closest to the village; the same beaches where people about 40 years old or younger have never seen a nest.

Sea turtles in Fiji are protected under a 10-year Moratorium that ends in December 2018, when management of sea turtles will be reviewed and discussed. This project aims at retrieving two key pieces of information that could allow managers to make scientific-driven decisions:

1) recent information on nesting activities occurring on the two main islands of Viti Levu and Vanua Levu, and

2) genetic characterization of the local population by using mitochondrial DNA.

The project had a steep start in 2014, when targeting nesting females proved to be extremely challenging because of the very low number of nests laid on the twenty-eight sites chosen as reportedly hosting hawksbill nests. About 150-200 adult females were estimated to be part of the Fiji hawksbills population about twenty years ago. With considerable effort, forty-three nests were recorded during the 2014-2015 nesting season. As a consequence, after the low number of nesting females tagged and sampled, and the satisfactory number of nests identified and sampled, the effort was shifted completely towards the nests. Nevertheless, the few nesters found and tagged in this first season provided a great moral boost to the volunteers that were part of the project (Figure 1).

The second nesting season proved to be even more challenging, as it was characterized by strong winds and heavy rains related to tropical depressions and cyclones. A major impact was left by Tropical Cyclone Winston (Figure 2), the strongest tropical cyclone ever recorded in the Southern Hemisphere. The category 5 system, with winds at 280 km/h, moved across Fiji from East to West. Before being destroyed, the weather station of Vanua Balavu island recorded wind gusts of 306 km/h. A nationwide curfew was put in place and all efforts were concentrated in relieving the affected villages. No survey could be done on the ground after TC Winston, but the flooding and erosion caused by the large swells (more than four m in height) made it unlikely that hawksbill nests would have survived. However, the season was not lost, because thirty nests were found and successfully hatched before the cyclone. Patrolling was done in the morning hours (Figure 3).

The survey was resumed in 2017. During this season forty-two nests were recorded. One of them hatched during the daylight (Figure 4).

Despite the challenges, a total of 115 nests were recorded hatching in the three nesting seasons (37.4% in 2015, 26.1% in 2016 and 36.5% in 2017). Hatching success ranged from 72% to 93%. Peak of nesting was recorded in January, and peak in hatching was recorded in February. Five of the study sites hosted nests in all of the three consecutive seasons.

Overall, the quantity and quality of data collected is good enough to genetically characterize the nesting population and to assign it to a Management Unit. Genetic unit identification using mitochondrial DNA is the task we are currently working upon, in collaboration with the US NOAA SWFSC. In addition, genetic analysis done by USP student Shritika Prakash on a subsample of nests during her Master revealed that each of the sampled hatchlings was fathered by a single male, i.e. each nest under analysis had a single parent pair.

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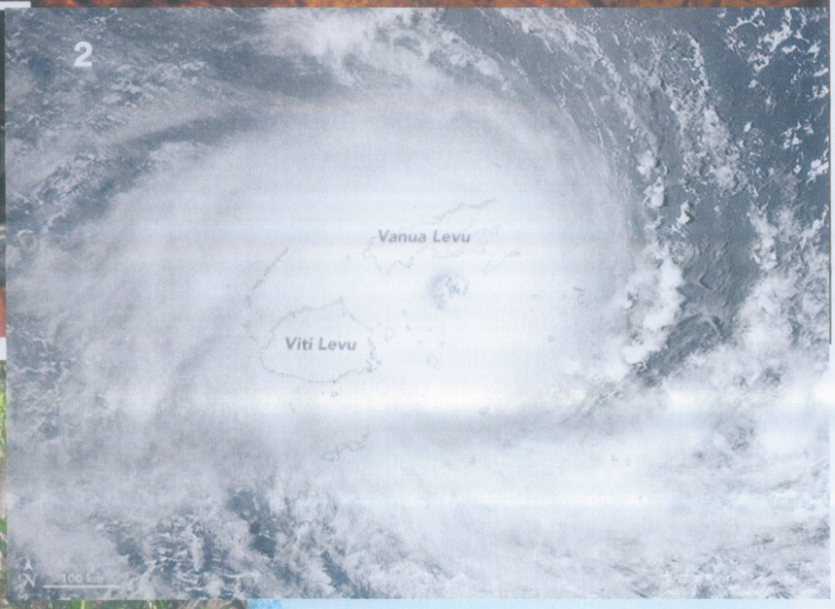
Figure 1. *After several nights spent patrolling the beach under the rain on Katawaqa Island, USP volunteers Shritika Prakash and Ana Ciriyawa are rewarded by finding a hawksbill nesting female. Photo: Shritika Prakash.*

Figure 2. *NASA's Aqua satellite natural-color image of category 5 Tropical Cyclone Winston over Fiji waters, 20th February 2016 (source: https://earthobservatory.nasa.gov/NaturalHazards/view.php?id=87562)*

Figure 3. *The sea turtle team smiling after the discovery of a nest led the previous night in Katawaqa Island. Left to right: Thomas Dunn (Technical Staff, USP SBCS), Dr. Susanna Piovano (Project Coordinator, USP SMS), Ana Ciriyawa (Field Assistant, USP SMS), Emosi Time (Dau ni Vonu,"guardian of turtles"), Shritika Prakash (Field Assistant, USP SMS). Photo: Susanna Piovano.*

Figure 4. *The Yadua island team is following a sea turtle's track under the leadership of Dau ni Vonu ("guardian of turtles") Pita Qarau (in front). Photo: Susanna Piovano.*


Vanua Levu
Viti Levu