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PAPUA NEW GUINEA FIELD RESEARCH

CONFLICT ISLAND NESTING SEASON 2018-2019



Update # 2: Bring Back the Bills

As an extension to WWF-Australia's (WWF) existing hawksbill tracking work in north Queensland (Australia), and the tracking work undertaken in the Conflict Islands (CI), located in Papua New Guinea (PNG), WWF partnered with the University of the Sunshine Coast (USC), local Milne Bay Province community turtle monitors and the Conflict Island Conservation Initiative (CICI) to deploy more satellite trackers on female hawksbill turtles (*E. imbricata*). Representing both WWF and USC, we participated in a two-week turtle nest monitoring trip (from 28 December 2018 - 11 January 2019) to help determine the migratory routes, feeding grounds and connectivity with other known hawksbill stocks. We also collected morphometrics and other quantifiable measurements for comparison to prior data collected in PNG, northeast Queensland and elsewhere, including genetic samples and incubation temperatures.

Long-term goals of this collaborative effort are to determine the population trends and management options for the recovery of hawksbill turtles within areas of the Pacific. To understand whether the northeast Australian and/or PNG populations are *sinks* and *strongholds*, or targeted sources driving critical population declines, are other important aims for this collaborative research.

Unfortunately, hawksbill turtles are not a protected species in PNG and, although their population status remains unknown, anecdotal evidence suggests they are also declining. This information is urgently needed to inform management, policy and community-based approaches to 'Bring Back the Bills'.



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Similar to Australia, PNG hawksbill populations are threatened by unsustainable legal take - targeted in fisheries and caught as bycatch using modern practices, and threatened by the impacts of climate change, including loss of nesting and feeding habitat and population feminisation. Both Australia and PNG are listed in the top three countries for the highest amount of legally taken turtles in the world. Traded domestically for food and money, anecdotal evidence also suggests illegal international trade is also occurring as a black market in PNG.

Conflict Group of Islands

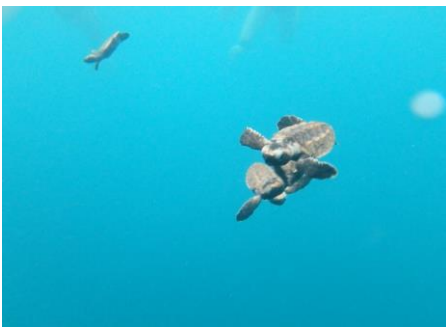
For its second year, the CICI continued its marine turtle nesting beach monitoring survey during 29 October 2018 – 6 February 2019. CICI employs six local community turtle monitors (Rangers) to monitor nesting beaches, tag and sample adult female turtles, relocate “high-risk” nests, undertake poaching surveys, remove marine debris and logs blocking nesting beach access and support a turtle awareness program throughout the Milne Bay Province.

Because of its remoteness, it is thought the Milne Bay Province – primarily made up of the Engineer, Deboyne, Conflict and Jomard Group of Islands – may support one of the highest densities of hawksbill turtles nesting in PNG. Although monitored ad hoc throughout Jomard and only twice in the Conflict Groups historically, there is no current peer reviewed published information on population structure, dynamics or trend estimates to date.

The Conflict Group of Islands lies approximately 80 nautical miles south-east of Alotau in Milne Bay Province. This very remote group of islands is owned and managed by Ian Gowrie-Smith (Australian businessman). The islands are unoccupied, except for a small dwelling on Panasesa and visited by cruise ships intermittently. Other islands in the atoll include: Irai, Gabugabutau, Tupit (Tobiki), Panarakuum, Kolavia, Muniara, Aroroa and the Reef Islands. PNG nationals hunt turtles in the region, where turtles are still a delicacy as food (kai kai) and traded for their carapace.

The specific activities carried out during the Conflict Islands field trips were:

- Supporting local community turtle monitoring and CICI’s nesting monitoring project to document peak nesting and population trends.
- Attaching and deploying six satellite transmitters to help determine previously unknown migration pathways and foraging grounds.
- Collecting genetic (tissue) samples to determine diversity, composition and relatedness to other known hawksbill populations in the Asia-Pacific region.
- Collecting 2018’s sand temperature data loggers to assess nesting beach sand temperature (feminization studies).





- Concurrently, run a subset of the ‘Turtle Cooling Project’ being undertaken on Milman Island, northeast Queensland

The 2018-2019 Nesting Season Field Trip:

28 December 2018 – 11 January 2019

A collaboration of ten local community turtle monitors from Milne Bay Province, CICI, USC and the WWF made up the research team – working together to deliver the trip’s objectives.

With CICI having already conducted four weeks of turtle nesting beach monitoring, we hit the ground running. With an overnight 10-hour boat ride from Alotau, training and safety briefs completed, we planned out our next two weeks– and the monitors next two-month schedule; constant monitoring on three islands (Panacesa, Irai and Tupit) to help determine a peak nesting period.

Three teams of CICI staff and crew walked extensively in the search of nesting turtles each night. The first night of monitoring (Day 2) was a great success – two hawksbill turtles, one on Panasesa and one on Tupit. On Day 3, we helped release turtle hatchlings, gave turtle presentations and kept monitoring in all the weather conditions the Conflict Group of Islands threw at us – a lot of rain and gusty winds! It wasn’t until Day 5 that we found another hawksbill to attach a satellite tracker. Then the turtles came rolling in - Day 7 the turtle monitors found two more, and our final turtle to satellite track was found on Day 8.

On Day 9 we ran training for the new complementary ‘Turtle Cooling Project’, setting out the experiment in the hatchery, and getting ready for hatchling self-righting and crawl tests training the following day.

We also made our way to Irai Island for data logger recovery on Day 9. The rangers were incredible having memorised the locations of the tiny temperature buttons on such a dynamic beach from a year ago. We returned on Day 10 to find the last three turtles and deploy data loggers in the ocean out from the front (south) and back (north) beaches to measure sea surface temperatures.

We attempted a turtle in-water catching trip on Day 7, but the weather made us cut the trip short, only to try again on Day 13 with much success – five juvenile green turtles.

Day 14 we made our way to Tawa Tawa (local Engineer Group island) for CICI to continue its engagement and education with local communities and to leave donations.

Throughout the entire two-week trip, turtle monitors and other staff at CICI regularly monitored the islands for poaching.





The science:

Hawksbill (and green) turtles had been monitored historically on the Conflict Group of Islands in the early 2000's. However, no population status, distribution, dynamics, structure, or trends have been determined. A study in 2003 elucidated however, that the hawksbill population is on a declining trend (Bell et al., 2004). To date, CICI's nesting monitoring program in the Conflicts (2 November 2017 – 06 February 2019) reveals less than 20% of all turtles nesting are hawksbills (n=103 of 623 observed nesting turtles recorded) (CICI EOS Data, 2019). For the 2018-2019 nesting season, there is limited data elsewhere in PNG, except for Jomard, but no data has been published to date.

Along with Purdy Islands in Manus Province, the Conflict Group are considered important nesting aggregations (WWF, 2016). During this trip it was decided that Irai and Tupit would serve as index (or indicator) beaches for PNG marine turtle monitoring and a saturation tagging program instigated. This would mean every turtle that has nested, or attempted to nest, is recorded during a common (or peak) nesting period. Currently, the peak for hawksbill nesting is unknown for PNG, but for the north east Australia stock it is reported to run from 15 January – 15 February. In Solomon Islands however, the nesting season runs from May-September (Hamilton et al., 2015). However, for the 2018-2019 nesting season, the peak month of hawksbills observed on CI beaches was in December (n=27 of 64 Hawksbills), followed by January (19 of 64 Hawksbills) (CICI EOS Data, 2019). Hence, as more data is collected over the CI turtle nesting season, we can establish dates for this peak.

The genetic makeup of the PNG population will also help decipher the peak and which population it may be related to, but this is also currently unknown (see Vargus et al., 2016), and hence a focus of WWF/USC research.

Limited titanium flipper tagging data suggests northeast Australia nesting hawksbills have been caught or reported by Papa New Guineans and nesting PNG hawksbills caught and reported by Australians within their foraging range – meaning we may in fact share our hawksbill turtles. But we don't know to what extent, how far they migrate, which feeding grounds they travel to and so on. The satellite tracking program in northeast Australia and at the Conflict Group of Islands will help answer some of these questions.



Hawksbill Turtle Stats (28 December 2018 - 11 January 2019):

- A total of 33 turtles caught, tagged and measured: 26 green turtles, seven hawksbill turtles
 - four primary (first time) hawksbill turtles caught.
 - three within-season recaptured hawksbill turtles caught (tagged during the season).



Because of poachers and the inability to mark nests, no nests were assessed for hatchling emergence. Season long presence at an index beach (2018-2019) may enable this assessment in the future.

During the two-week survey, no poachers were approached by CICI monitors.

Table 1. Islands monitored and hawksbill encounters during the two-week nesting sampling period (28 December – 11 January 2019).

| Study site (Island) | Nights surveyed | Number of nesting hawksbills encounters |
|----------------------------|---|---|
| Irai | 04/01/19 | two |
| Panasesa | N/A | |
| Unknown | 06/01/19 | one |
| Panarakuum | N/A | |
| Tupit | 05/01/19, 07/01/19, 08 /01/19, 09/01/19 | four |
| Total | 6 survey nights | seven encounters (six satellite tracked) |

Next steps:

The monitoring data will be stored by CICI and at the end of the long-term monitoring program these data will be analysed to determine the population trend.

Migration data will be shared with WWF/USC to support the satellite tracking program and all genetic samples will be analysed by WWF/USC with the help of Griffith University.

Given northeast Australian hawksbill turtle's downward trajectory, continuing to monitor hawksbills at Milman Island and the Conflict Group of Islands will be crucial in documenting future population trends and the effectiveness of management actions. As the program develops, and saturation tagging at two index nesting beaches (e.g. Irai and Tupit) has begun, the next step is to set up a more permanent camp and run the monitoring program from November 2019 through to February 2020 to determine the peak nesting period. With constant presence during this nesting period, nests could then also be marked for hatchling emergence assessment.

Including measurements and the type of logs washing ashore for comparison to other sites, may be something CICI consider in future programs. As a turtle expends a lot of energy to nest, a straight path to a suitable nesting location is key. Given the amount of erosion on each island, continuing to remove logs from the Conflict Group of Islands will be imperative so that that optimal nesting habitat is available to increase nesting success.

Expanding WWF/USC migration and foraging ground identification to other PNG and north Queensland sites, to not only help determine critical habitat but also their extent of distribution, will be important to understand what threats they are facing and how to manage and mitigate them.

In the immediate future, we hope to help secure funding for Conflict Group of Islands turtle monitors to undertake community-based poaching surveys (2019-2020).

Highlights from the trip:

- Turtle in-water catching and working in the hatchery
- Snorkelling and diving with hawksbill and green turtles, eagle rays, sharks and a healthy reef
- Releasing turtle hatchlings

Collaborative project partners of the *'Bring Back the Bills'* project include WWF-Australia, USC, local Milne Bay Province community turtle monitors, CICI, and the volunteers: Coen Madden Hof, Amaya Madden Hof, Brian Seccombe, Blake Seccombe. The field trip and satellite transmitters were supported by WWF-Australia and Isaacson Davis Foundation, and USC.

In continuing to unravel the mystery of where hawksbill turtles migrate and feed, and what threats they are facing in the place they call home, I'm signing off – Chris Hof.



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WWF-Australia National Office

Level 1/1 Smail Street,
Ultimo NSW 2007
GPO Box 528
Sydney NSW 2001

Tel: +1800 032 551
enquiries@wwf.org.au
[@WWF_Australia](https://www.facebook.com/WWF_Australia)
wwf.org.au