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Wider Caribbean Sea Turtle Conservation Network



Sea Turtle Surveys in the Tobago Cays Marine Park

St. Vincent and the Grenadines

Emma Doyle, Project Manager WIDECAST and
Olando Harvey, Marine Biologist TCMP



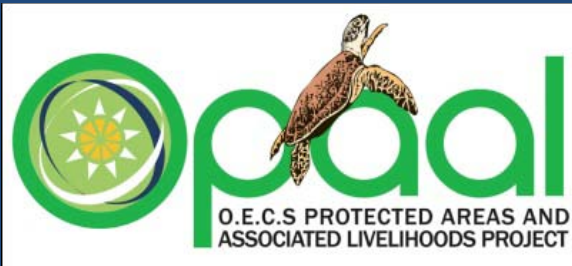
WIDECAST Country Coordinator

Lucine Edwards

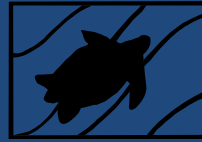


TCMP Marine Biologist, Olando Harvey





Sea Turtle Assessment, Tobago Cays Marine Park (St. Vincent and the Grenadines)



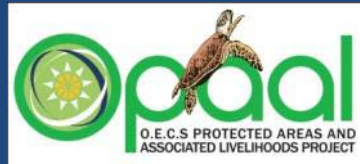
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Approach

- Encouraged and facilitated active participation of existing institutions, programs and expertise in determining research needs and monitoring activities
- Collaboratively developed the field study methodology as a component of the training
- Staff participated alongside the Consultant in the field survey



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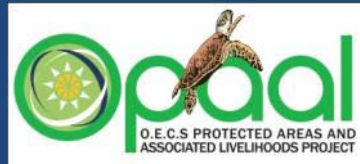
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Training with Barbados Sea Turtle Project

- Preliminary visit
- Selection of participants

Sponsored Trainee	Position, Organisation
Mr Olando Harvey	Marine Biologist, TCMP
Mr Albert Hanson	Ranger and Boat Captain, TCMP
Mr Ian Wilson	Ranger, TCMP
Mr Jason Alexander	Ranger, TCMP
Mr Owen Isaacs	Ranger, Mayreau Patrol, TCMP
Mr Glenroy Adams	Licensed Dive Operator
Ms Raven Hoflund (self-funded)	Volunteer, Mustique Environmental Committee



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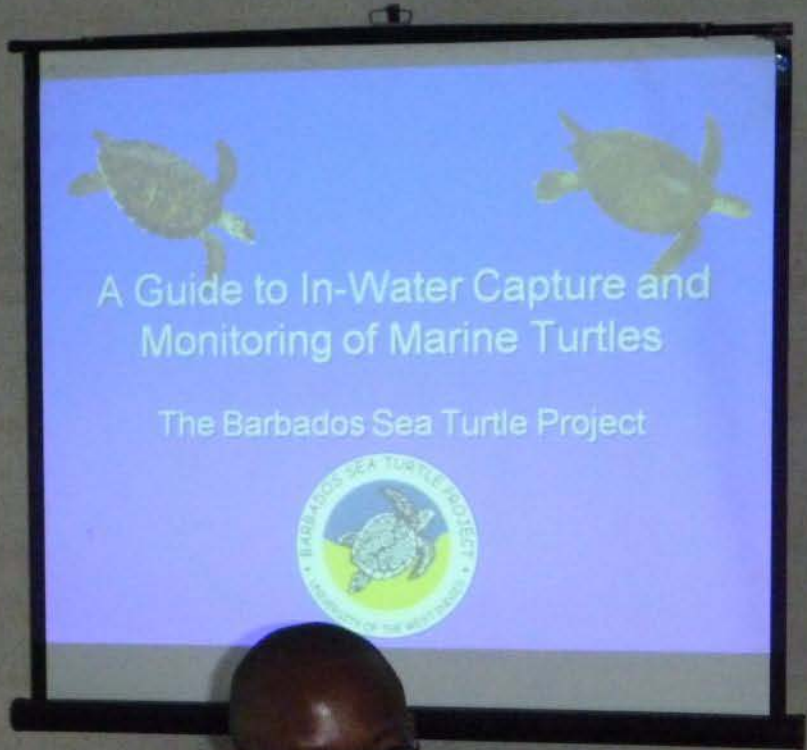
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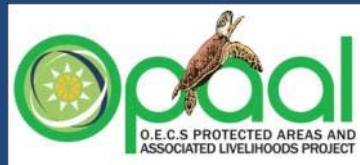


Training with Barbados Sea Turtle Project

- Design of intensive 4-day training agenda
- Classroom sessions for sharing of background and best practices







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Training with Barbados Sea Turtle Project

- Preliminary visit
- Selection of participants
- Design of intensive 4-day training agenda
- Classroom sessions for sharing of background and best practices
- Extensive field work experience – 14:30 hours in field vs 9:50 hours in class







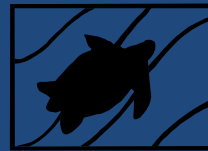
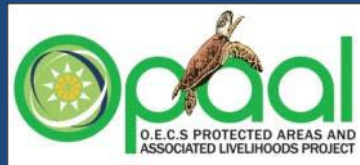












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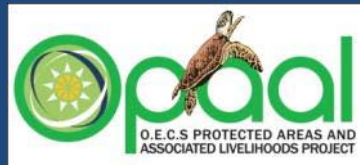


Training with Barbados Sea Turtle Project

- Preliminary visit
- Selection of participants
- Design of intensive 4-day training agenda
- Classroom sessions for sharing of background and best practices
- Extensive field work experience – 14:30 hours in field vs 9:50 hours in class
- Exposure to full range of WIDECAST activities







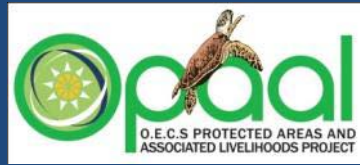
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Training with Barbados Sea Turtle Project

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- Extensive field work experience
- Exposure to full range of WIDECAST activities
- Discussion of field work plans, led by Olando



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Sensitivity to Marine Protected Area

- Speed limits > No turtle rodeos
- Visitor curiosity > Public relations confidence in explaining research work
- Public visibility > Careful and humane treatment of animals
- User pressure > Timing of field work during low-season and on low visitation days
- Local stakeholder relations > Avoidance of problems eg. driving through nets

Boat Captain Albert Hanson
receiving his certificate

















FIRST SEA TURTLE ASSESSMENT IN THE TOBAGO CAYS MARINE PARK

Olando Harvey^a, Karen Eckert^b, Emma Doyle^c

^a Tobago Cays Marine Park, Clifton, Union Island, St. Vincent and the Grenadines

^b Wider Caribbean Sea Turtle Conservation Network (WIDECAST), Ballwin, Missouri, USA

^c Caribbean Marine Protected Areas Management Network and Forum (CaMPAM), Houston, Texas, USA

For more information, contact Emma Doyle emma.doyle@gcfl.org

Photos: E. Doyle

Background

Established in 1997, Tobago Cays Marine Park (TCMP) is located in St. Vincent and the Grenadines in the Eastern Caribbean. Sea turtles were originally identified as "significant biodiversity" in the park's management plan, and were listed as indicator species in the park's monitoring and evaluation plan. However, no research had ever been undertaken to assess the status of the park's sea turtle populations, nor to assess the status of their critical habitat. In 2010, the Wider Caribbean Sea Turtle Conservation Network (WIDECAST) and TCMP undertook the first-ever methodical sea turtle assessment in the park waters.

Methods

The assessment focused on **in-water research**, primarily of green (*Chelonia mydas*) and hawksbill (*Eretmochelys imbricata*) turtles, the most prevalent species, and included an assessment of critical foraging habitat. In this work, TCMP benefited greatly from the accumulated knowledge and the existing strong partnerships offered by the WIDECAST network. **Field training** was provided by WIDECAST in partnership with the Barbados Sea Turtle Project. The participation of a TCMP Biologist in a training course offered by the Bermuda Sea Turtle Project in 2010 was also very helpful. Following the training in Barbados, 96 person-hours were invested in field work. We used the main TCMP patrol boat (a Boston Whaler) with support from an open wooden pirogue.



Snorkelers swam individually and in pairs to hand-capture feeding turtles of all sizes. Netting was done on two occasions using a large-mesh twine turtle net approximately 200m long and 5m deep. **Sightings were made by snorkelers along pre-determined paths and a snorkel-tow was trialed.** **SCUBA was also used** to explore deeper areas and reef systems, and sightings were noted.

Using standardised methodology, captured turtles were measured (curved and straight shell length and width) and weighed, and any health issues or identifying characteristics were noted. Turtles >30cm SCL were **double-tagged** using metal Inconel or Monel flipper tags prior to release. Data analyses utilised database management software provided by WIDECAST.



Results

In total, 92 turtles (65 green and 7 hawksbill turtles) were captured, mostly by hand using snorkel-capture, during 96 person-hours of field work. Catch per unit effort (CPUE=1.1 turtles caught per person hour) and sightings per unit effort (SPUE=4.7 turtles per person hour) were recorded. Findings indicate that the park contains an important foraging aggregation of subadult green turtles, with possible under-representation of hawksbill turtles based on live coral reef cover in the park.

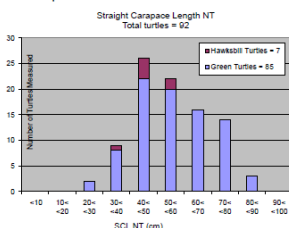


Fig 1 Turtle size histogram – green and hawksbill sea turtles captured in TCMP

Table 1 Recorded scars and marks on sea turtles captured in TCMP

Injury/Health Issue	Total Count
Flesh bite scar	4
Missing flipper/eye	2
Shell damage (cause unknown)	4
Propeller strike	2
Boat strike	2
Shell deformation (cause unknown)	2
Suspected fibropapillomatosis	4
Total	20

Fig 2 Weight vs. Straight Carapace Length (SCL) NT. Total turtles = 92

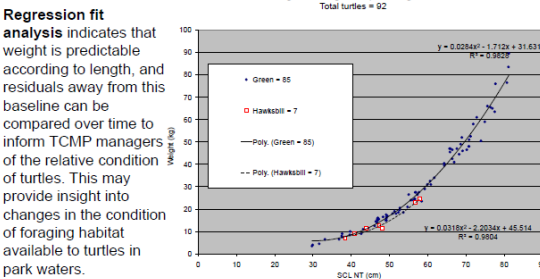


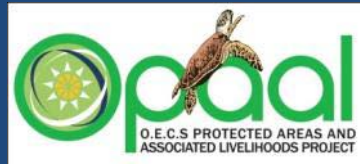
Fig 2 Body condition of turtles captured in TCMP

Discussion

The park contains an **important foraging aggregation of subadult green turtles**, with possible **under-representation of hawksbills**. Further research will help determine whether this reflects historical and contemporary pressure from a **seasonal turtle fishery**, as well as ongoing poaching. CPUE was highest in a small Turtle Watching Reserve within park boundaries, suggesting a positive **correlation between fine-scale protection levels and turtle densities**. As an established and actively managed marine park, TCMP makes for a best-case sea turtle research scenario in a marine protected area. The recommended protocol for long-term monitoring in TCMP is an **annual sampling protocol comprised of two distinct assessment phases** – the first with SPUE only (no sea turtle captures) for the collection of data on population trends over time, and the second CPUE where animals are captured along the same transects used for SPUE. During the second phase, turtles will be captured, weighed/measured, tagged and data analysed according to CPUE statistical estimates. **Transects should preferably be those determined during this initial field work** (which established a baseline) and should take place at the same time each year, ideally in low tourist season when research activities are less restricted by heavy yacht traffic. Other recommendations are **updating of the TCMP management plan**, improved **enforcement**, **monitoring** of user pressure, enhanced **outreach** efforts, and encouragement/facilitation of sustainable **livelihoods**.







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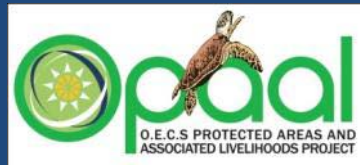
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Benefits, next steps and MPA recommendations

- Increased professionalism, capacity and understanding of MPA staff
- Benefits of getting office staff into the field





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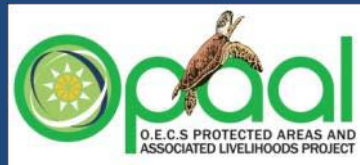


Benefits, next steps and MPA recommendations

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- Benefits of getting office staff into the field
- Involvement in other WIDECAST activities







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Benefits, next steps and MPA recommendations

- Increased professionalism, capacity and understanding of MPA staff
- Benefits of getting office staff into the field
- Involvement in other WIDECAST activities
- **Wider impact of press releases and radio interviews**



Turtle Tagging in the Tobago Cays Marine Park

[Clifton] (OCTOBER 8, 2010) Research and tagging of the sea turtles of the Tobago Cays Marine Park has been going on for the last two weeks, with the sea turtles being measured, weighed and tagged by the park rangers who are working together with WIDECAST, the Wider Caribbean Sea Turtle Conservation Network, in this great effort.

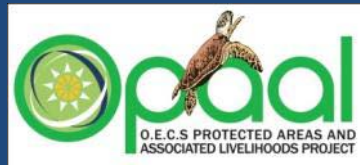
This is the first time that the park's sea turtles have been the subject of such intense research.

WIDECAST representative Ms. Emma Doyle said "Most of the turtles tagged so far are green turtles, and we've found a smaller number of hawksbill turtles. The Tobago Cays Marine Park is an important feeding area for sea turtles. As visitors to the park will know from snorkeling among them, turtles can be seen in the park feeding on its protected sea grass and coral reefs."

Turtles travel great distances across the Caribbean Sea and beyond, visiting specific feeding, mating and nesting areas. Being highly migratory animals, the park's sea turtles might travel from as far afield as Central America, the Dutch Antilles or Puerto Rico especially to feed in the Tobago Cays Marine Park.

With metal tags on their flippers now showing individual numbers for each turtle (and in some cases the turtles having been named after local friends and supporters), WIDECAST scientists in more than 40 countries across the Caribbean, South and Central America will be on the look-out for the newly tagged turtles as they travel to feed and nest in other countries.

The public can report sightings of tagged turtles to the park's Marine Biologist, Mr. Orlando Harvey. He commented "Sea turtles are in danger of extinction and they face many survival challenges over their lifetimes. Our mission is to protect the turtles in the park but we also care very much about what happens to them when they travel away from us. Soon we hope to know more about where they go at different stages in their lives."



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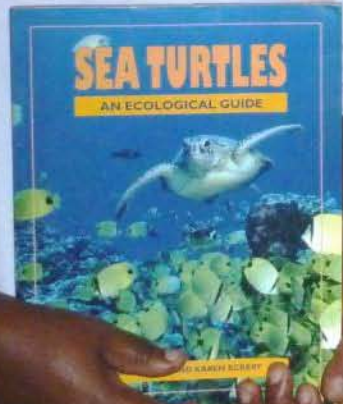


Benefits, next steps and MPA recommendations

- Increased professionalism, capacity and understanding of MPA staff
- Benefits of getting office staff into the field
- Involvement in other WIDECAST activities
- Wider impact of press releases and radio interviews
- Contact with hotels, hatchling release with school students







SEA TURTLES

AN ECOLOGICAL GUIDE

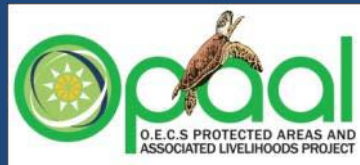
SARAH ROBERTS

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Benefits, next steps and MPA recommendations

- Increased professionalism, capacity and understanding of MPA staff
- Benefits of getting office staff into the field
- Involvement in other WIDECAST activities
- Wider impact of press releases and radio interviews
- Contact with hotels, hatchling release with school students
- Opportunity to speak with government representatives, agencies

KEY MANAGEMENT RECOMMENDATIONS

Management Planning and Implementation

The TCMP Management Plan¹ and TCMP Monitoring and Evaluation Plan² should be regularly reviewed, evaluated, and updated as needed in order to ensure cohesive framework for staff duties, habitat protection, biodiversity monitoring, compliance monitoring, and so on.

Review TCMP Management Plan to reflect the findings of the sea turtle assessment (turtles):

(i) Add that TCMP is an important foraging habitat for green sea turtles (*Chelonia mydas*) in the Eastern Caribbean region, and that the turtles appear to be using TCMP as developmental habitat; (ii) Comment on the lower than expected densities of hawksbill sea turtles (*Eretmochelys imbricata*) found in the sea turtle assessment; (iii) Clarify that the presence in the park of leatherback sea turtles (*Dermochelys coriacea*) and loggerhead sea turtles (*Caretta caretta*) needs to be confirmed.

Review TCMP Management Plan to reflect the findings of the sea turtle assessment (critical habitat):

(i) Clarify that seagrass beds are important foraging habitat for green sea turtles (*Chelonia mydas*) and that habitat protection measures should be enforced and improved; (ii) Add the implications of lower than expected densities of hawksbill sea turtles (*Eretmochelys imbricata*) for coral reef habitat protection from illegal fishing, pollution and development pressure, and add that there needs to be a focus on increasing coral reef resilience to impacts of climate change.

Review TCMP Monitoring and Evaluation Plan to reflect the recommendations of the sea turtle assessment about ongoing and future research related to sea turtles (see below).

Use the existing WIDECAS database software to record sea turtle monitoring information, including sightings reported by the public, strandings, hatching events, etc., as explained in training and as demonstrated in field work with the Consultant.

Detailed Recommendations

Enforcement and Compliance

Enforcement regulations by running spot-check patrols at variable hours, especially at night during the sea turtle nesting season. Ensure Mayreau Patrol is fully able to conduct patrols.

Work with government bodies, universities and NGOs, and with stakeholders in the area to report turtle sightings, as well as illegal activities, are reported in a timely fashion; or "Hotline" cell phone to facilitate public reporting.

Post signs related to the "Hotline" so that visitors can report illegal activity concerning sea turtles; provide this number on all visitor receipts and park brochures.

Provide training to TMCP staff and partners in proper crime scene investigations and chain-of-custody protocols. Mr. Jason Alexander, who has attended the Coral Reef CSI Workshop, can help train his peers; consider sending a representative of the Mayreau Patrol to the next Coral Reef CSI Workshop.

Strongly pursue test case prosecutions of sea turtle (and egg) poaching related to TCMP environs.

Work with federal agencies and other partners to better enforce licensing regulations for tour operators and increase education of international charter companies and their staff about regulations relating to sea turtles and conservation of the park in general.

User Pressure

Prohibit development within or adjacent to TCMP in order to ensure the highest level of protection of critical habitat for sea turtles, both sea grass and coral reefs.

Review speed limits in the park with a view to reducing the permitted maximum boat speed in Mayreau Gardens and around Mayreau in order to better reflect the importance of these areas as habitat to critically endangered hawksbill turtles. Continue the current good level of enforcement of speed limits in the cays area of the park.

Education/Outreach

Engage the staff's new awareness of sea turtles to educate other staff and the public about sea turtles in TCMP and threats to their population and habitat, including boat strikes, poaching, and illegal activities, and the judiciary. Encourage boat operators, law enforcement officers, and the judiciary to increase ranger oversight of visitor interaction with sea turtles in the park, particularly on Baradel, adjacent to the Turtle Watching Area. This would be best if also considered as an activity for a licensed vendor or tour operator. Encourage local businesses, such as Mr. Glenroy Adams, to develop a database of sightings (using a map and display a map in his dive shop (and possibly on his website) showing the sightings by his staff and customers.

Encourage alternative livelihoods related to sea turtle conservation, for example through ecotourism (e.g., turtle watching) but not using sea turtle products. Local people from Union Island can be trained in ecotourism and/or sell art and craftwork and other souvenirs would be developed through WIDECAS. This is in line with the TCMP strategy: 'If the TCMP is to be promoted as an ecotourism destination, such as ecotourism (e.g., turtle watching) should be encouraged, and the development of alternative, locally made crafts supported.'

Given their close proximity to TCMP and the migratory nature of sea turtles, communicate with local hotel operators and island administration (on Union and Mayreau, plus Palm Island and Petit Saint Vincent) about the issue of hatching disorientation and appropriate methods for handling and release of disorientated hatchlings in place of the illegal keeping of hatchlings for headstarting.

KEY RESEARCH RECOMMENDATIONS

Continue to monitor sea turtles in TCMP via an annual capture-recapture programme conducted during two sampling periods, ideally timed in the low tourist season, where a predominantly hand-capture protocol (using snorkel) results in the tagging of new turtles and comprehensive recording of data.

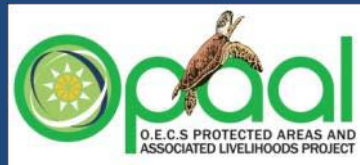
Develop a sampling protocol comprised of two distinct assessment phases – the first on transect only (no captures) for data related to population trend, and the second on transect where animals are captured and data analysed according to CPUE estimates (see subsection 3.3, page 13)

Utilise other biodiversity monitoring (e.g., ReefCheck) as an additional opportunity to record turtle sightings. Incorporate these sightings into TCMP data managed using the WIDECAS Database.

Analyse growth rates of tagged turtles recaptured in the park, compare measures of body condition over time, and continue to monitor incidence of signs of fibropapillomatosis and other disease or injury.

Conduct future research into the movements, home range, residency patterns, genetic origins, dietary habits, and growth rates of sea turtles in TCMP (with further training from WIDECAS, as needed) and in collaboration with UWI and other local and regional experts.

Thursday 8:50am!



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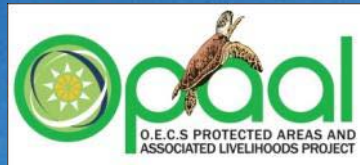
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The Morals of the Story...

1. Work in partnerships
2. Adequately trained park rangers can contribute to monitoring and data collection
3. Involve MPAs and seek training opportunities with WIDECAST and CaMPAM





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Thanks to...

- **Karen Eckert, Turtle Ambassador Extraordinaire!**
- **Lucine Edwards**
- **Julia Horrocks, Darren Browne, Julian Walcott**
- **Olando, Albert, Jay-Jay, TaiChi, Owen, Aaron, Althea, Lesroy, Hyron, Keniel, Glenroy**

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Photos: Raven Hoflund, SusGren