

aid the socio-economic development of the region. Blue Ventures collaborates with the Marine Turtle Research Group (www.seaturtle.org/mtrg) at the University of Exeter on its turtle research and

conservation program.

For more information please contact Frances Humber (frances@blueventures.org).

Literature cited

Ahamada, S., J. Bijoux, B. Cauvin, A.B. Hagan, A. Harris, M. Koonjul, S. Meunier & J-P Quod. 2008. Status of the Coral Reefs of the South-West Indian Ocean Island State: Comoros, Madagascar, Mauritius, Reunion, Seychelles. In: *Status of the Coral Reefs of the World* (ed. C.R. Wilkinson), pp 73-79.

Nadon, M-O, D. Griffiths, E. Doherty & A. Harris. 2007. The Status of Coral Reefs in the Remote Region

of Andavadoaka, Southwest Madagascar. *Western Indian Ocean Journal of Marine Science* 6: 207–218.

Rakotonirina. 1987. Les Tortues marines dans le Sud de Madagascar: Etude Bibliographique et enquêtes auprès des pêcheurs. Recherche sur la biométrie et l'alimentation de la tortue verte, *Chelonia mydas* Linnaeus. Mémoire de DEA d'Océanographie Appliquée, Université de Toliara, 70p.

NGO Profile

Marine Conservation Society, Seychelles (MCSS): An integrated approach to marine turtle management in the inner islands, Seychelles

Elke Talma, David Rowat & John Nevill

Marine Conservation Society, P.O. Box 1299, Victoria, Mahé, Seychelles

Email: info@mcss.sc

Website: www.mcss.sc

Introduction to the Marine Conservation Society, Seychelles (MCSS)

The Marine Conservation Society, Seychelles (MCSS) is a Non-Governmental Organisation (NGO) that was registered in 1997 in Seychelles, Western Indian Ocean. MCSS was formed by a group of local marine experts to meet the lack of capacity in Seychelles and to address matters of marine biodiversity, conservation and sustainable use. MCSS remains to this day the only Seychelles based NGO dedicated exclusively to the conservation and sustainable use of marine biodiversity.

In 2000, the MCSS successfully obtained funding from the Global Environment Facility for a three year project focused primarily on the management of coral reefs, whale sharks and marine turtles

following the severe bleaching event of 1998.

The MCSS has pioneered conservation actions in Seychelles through a number of highly successful projects including monitoring the whale shark (*Rhincodon typus*), management of the Crown-of-thorns-starfish (*Acanthaster planci*), the installation and maintenance of environmentally friendly moorings systems, a strategic approach to marine turtle management, the development of marine eco-tourism activities and the sustainable use of marine biodiversity in general.

MCSS bases its work on a policy of open engagement of actors in the domain of marine conservation, sustainable use and development. It works closely with local partners, such as the Ministry of Environment, Natural Resources

and Transport (MENRT), the Seychelles Fishing Authority (SFA) and the Seychelles National Parks Authority (SNPA), without compromising its role as an independent NGO.

Background on the MCSS integrated approach to marine turtle management in the inner islands, Seychelles

Seychelles hosts the fifth largest population of the Critically Endangered hawksbill turtle (*Eretmochelys imbricata*) (Meylan & Donnelly, 1999) and a significant population of the Endangered green turtle (*Chelonia mydas*). Historically, turtle populations around the islands of Mahé and Praslin were probably as prolific as any other in Seychelles, but exploitation and loss of nesting habitats over many years has decimated these populations (Mortimer, 2004). While much has been done in recent years to protect these remnant populations and educate the population of Seychelles on turtle conservation, there is still much that can be achieved, especially with targeted and cooperative actions.

With this in mind, MCSS has launched a number of complementary and mutually supportive turtle projects that address the strategic, tactical and local scenarios in an attempt to address turtle conservation in an integrated manner. Given the integrated nature of these projects, turtle monitoring and awareness efforts are ongoing, even though funding from the original donors may have ended.

Strategic management of turtle populations

MCSS launched its first turtle project in June 2003 with funding from the Foreign and Commonwealth Office through the British High Commission in Victoria, Seychelles. The project on *Strategic Management of Turtle Populations* brought together stakeholders from throughout Seychelles, who currently manage turtle rookeries, into a partnership through which they can share data through an on-line database. This partnership informed the development of a Strategy and Action Plan, adopted by the partners in April 2005, and now supports implementation of the Plan. This should improve the survival status of the Seychelles turtle populations by a clear strategic overview of the status of turtle

rookeries and habitat and by better coordination of communications and activities between the various stakeholders. A Memorandum of Understanding between the partners was developed by open and equitable consultation which clearly sets out the terms and conditions of information provision, sharing and use.

This project instigates long term strategic action to conserve and where possible rehabilitate key marine turtle populations. The strategy will elaborate conservation and eco-tourism plans and thereby develop a real value for the living animal, as well as enhancing their conservation status.

In addition to the e-turtle database, one of the main outputs of this project was the formation of the Turtle Action Group of Seychelles (TAGS) and the web site www.seychellesturtles.org.

Integrated turtle beach management project on Intendance beach, South Mahé

In September 2003, MCSS in partnership with the Banyan Tree Resort, Seychelles, launched an *Integrated Turtle Beach Management Project on Intendance beach, South Mahé*. This project aims to manage the beach, its dune structure and associated vegetation to enhance turtle nesting and mitigate the impacts of tourism activities.

The project functions at various levels: it records turtle nesting activity, manages beach front vegetation and resort activities in a turtle-friendly manner; it incorporates local community involvement particularly through the inclusion of educational activities for school children; and it monitors the dynamics of sand movement on the beach through seasonal change. The project also further incorporates the Resort clients with educational talks, provision of information on turtles in the rooms and in particular information on how tourists should act if they encounter a turtle on the beach.

Over the six years since its inception, this project has expanded to cover neighbouring beaches as turtle tagging by MCSS and Resort staff, has indicated inter-beach nesting.

Conservation of priority turtle rookeries on the Developed Islands

The *Conservation of Priority Turtle Rookeries on the Developed Islands Project* was launched in January 2004 and is funded through voluntary donations from the general public and business community. It focuses on the hawksbill turtle rookeries on the three main islands of Mahé, Praslin and La Digue, which were once the largest rookeries in the Central Seychelles but are now in serious decline (Mortimer, 2004). This project aims to target priority beaches for management intervention which offer the best potential to maintain turtle populations, through community support and participation. From one beach being monitored in 2003, MCSS now monitors twenty turtle nesting beaches on Mahé and manages another three on Praslin.

Integrated turtle beach management project on Lemuria beaches, North Praslin

Constance Lemuria Resort on Praslin has been monitoring turtles since 1999 (Mortimer, 2004) and began working closely with MCSS in November 2006, to implement the *Integrated Turtle Beach Management Project on Lemuria beaches, North Praslin* with the ultimate aim of harmonising the needs of tourism and turtles on the three Lemuria beaches, thus making each beneficial to the other.

As with Banyan Tree Resort project, this project functions at various levels and employs a full time Turtle Manager under MCSS supervision to: record turtle nesting activity, manage beach front vegetation and Resort activities in a turtle-friendly manner; and monitor the dynamics of sand movement on the Lemuria beaches through the seasons.

Movement patterns of nesting and inter-nesting hawksbill turtles on the developed islands of Seychelles

This project was launched in January 2008 with funding from Barclays Bank, Seychelles. It is being implemented by MCSS in association with the Ministry of Environment and Natural Resources and Transport (MENRT), the Wildlife Clubs of Seychelles and various other local and international

sponsors. The aim of the project was to track two nesting hawksbill turtles with satellite relayed GPS tags, so as to expand the limited scientific knowledge available on the movement patterns of the nesting populations on the developed islands of Seychelles and determine where these animals go to forage between nesting seasons. Unfortunately, one turtle was killed by a poacher ten days after tag deployment. The second turtle was named 'Carol' by Jessica Marengo, a local school girl and winner of the 'name-the-turtle' competition; Carol has surprised researchers by swimming all the way to Madagascar. Her tag, which was expected to last three months, is still transmitting some twenty one months after deployment.

The location data from Carol's tag was used as an awareness tool and shared with teachers at local schools via the Wildlife Clubs and through the internet via the facilities of www.seaturtle.org. The Seaturtle.org Satellite Tracking Program provides a unique opportunity to engage students in a fun and exciting way. Satellite tracks were used to develop lesson plans covering a number of subject areas, including biology, mathematics and geography. Special interest groups, such as the Wildlife Clubs, were also able to focus on a specific 'projects' competition which was judged in October 2008. This is the first time that this sort of high-tech co-operative educational project has been tried in Seychelles and it is hoped that the teachers will use this opportunity to motivate youngsters to the needs of turtles.

A further two tags funded by private donations and the local business community, will be deployed during the 2009-2010 nesting season.

Tracking turtles within the Western Indian Ocean through photo-identification

This project was launched in May 2009 in collaboration with Kelonia Marine Turtle Observatory, Reunion, following an agreement between Seychelles and Reunion for Regional Corporation in turtle research and conservation. The aim of the project, as described by Jean *et al.* (2010) and Ciccione *et al.* (2009), is to use photo-identification to track tagged and untagged turtles at their foraging sites.

Individual animals are identified using photographs of their left and right facial profiles, with scales being coded based on their location and number of sides. MCSS submitted over 80 images of nesting and foraging turtles in the waters around Seychelles, allowing researchers at Kelonia to validate this new photo-ID method on Hawksbill turtles (Jean *et al.*, 2010). MCSS has since started a national campaign to encourage SCUBA divers, as well as other turtle researchers in Seychelles, to contribute to this project.

Conservation of turtle rookeries on the developed island of Mahé

This is the most recent of the MCSS turtle projects, which started in September 2009 with funding from Mangroves For the Future (MFF). The primary objective of this project is the conservation and rehabilitation of the few remaining viable nesting colonies on Mahé and the overall reduction in anthropogenic disturbance to turtles on nesting beaches. This will be achieved through the identification, monitoring and rehabilitation of priority turtle nesting beaches on Mahé under collaborative programmes with local communities and stakeholders and by raising public awareness in both residents and tourists about turtle conservation in Seychelles.

Literature cited

Ciccione, S., C. Jean, K. Ballorain & J. Bourjea. Submitted. Photo-identification method of marine turtles: an alternative method to mark recapture studies. 29th Symposium on Sea Turtle Biology and Conservation, Brisbane 2009. International Sea Turtle Society.

Hutchinson, A., B.J. Hutchinson & K. Koenig. 2007. The Global Hawksbill Nesting Map. In: Volume III: State of the World's Sea Turtles, 46 pages. Data source (Seychelles): record no. 97 – Talma, E.

Jean, C., S. Ciccione, E. Talma, K. Ballorain & J. Bourjea. Submitted. Photo-identification method for green and

Project outputs and public awareness about turtle conservation in Seychelles

Nesting data from all of these projects is being submitted to the State of the Worlds Turtles (SWOT) to help to generate a Global Hawksbill Nesting Map (Hutchinson *et al.*, 2007).

MCSS has produced a number of documents during the implementation of these projects, aimed at raising awareness about turtles within the general population, as well as with visitors to our shores. This includes newsletters, codes of conducts for watching turtles and guidelines for turtle friendly beach development. MCSS recently set up a turtle blog (<http://seychelles-turtles.blogspot.com>) and also contributes to <http://www.ioseaturtles.org/> and <http://www.seaturtle.org>.

Several activities have also been organised with school children and local community groups aimed at rehabilitating nesting beaches through beach clean-ups and replanting of dune vegetation.

For more information on MCSS activities: Tel/Fax: (00248) 261511 or write to info@mcss.sc or visit www.mcss.sc. Contact MCSS at P.O. Box 1299, Victoria, Mahé, Seychelles.

hawksbill turtles and first results from Reunion. *Indian Ocean Turtle Newsletter* 11: 8-13.

Meylan, A.B. & M. Donnelly. 1999. Status justification for listing the Hawksbill turtle (*Eretmochelys imbricata*) as Critically Endangered on the 1996 IUCN Red list of threatened Animals. *Chelonian Conservation and Biology* 3 (2): 200-224.

Mortimer, J.A. 2004. Seychelles Marine Ecosystem Management Project (SEYMEMP): Turtle Component. GEF Final Report, Vol 1: Text, 243 pages. Vol 2: Appendix 1-11, 158 pages.