



Member's report on activities related to ICRI

Reporting period December 2015 – November 2016

NOTE: TO CHECK A BOX, DOUBLE CLICK ON IT AND TICK 'CHECKED' UNDER 'DEFAULT VALUE' IN THE POP UP WINDOW

1. **Contribution to the ICRI Plan of Action and GM.** *Your responses to the following questions will assist the Secretariat in assessing contributions towards the major themes of the current ICRI Plan of Action (<http://www.icriforum.org/icri-secretariat/current>) and objectives of the general meeting.*

a. Bleaching event

Were you affected by the Third Global Coral Reef event?

Seychelles was affected by the 3rd global bleaching event during 2016. Coral death was recorded at 90% but according to some experts the recent event was not as bad as that of 1998. It is noted that the impact of bleaching occurred at a time that live hard coral cover had almost wholly recovered from the impacts of the 1998 event.

In Seychelles, coral bleaching observations were made in January 2016 around the outer islands of Aldabra and Farquhar (Lat 9° south), and bleaching began in earnest around the inner (granitics - Lat 4° south) in April 2016. Water temperature measured by the Seychelles Fishing Authority within the inner islands at surface and 15 metres showed a sustained rise throughout the period January to August 2016. Maximum temperature recorded was 31.7°C in April 2016. Bleaching intensity was reduced with the commencement of the South east monsoon in August which caused water temperature to drop to seasonal levels, below 27°C. Recent observations indicate high variability in actual damage to coral colonies, and that species composition, depth and location could be factors that influences susceptibility to the two main causal factors, water temperature and insolation.

Did you do some monitoring, if yes what are the results and could you explain what method did you use? Would you like to report during the ICRI Meeting?

Monitoring was done by numerous NGO (Nature Seychelles, SIF, ICS etc) groups that had long term coral monitoring programs around Seychelles, government bodies such as the Seychelles National Parks Authority and Seychelles Fishing Authority as well as independent scientists. For coral monitoring, all organisations utilise standard methods laid down in GCRMN manuals and share data amongst partners. There are some differences in method employed by the different bodies for quantifying coral reef fish.

Below are excerpts from a report compile by K Chong Seng 2016 produced from data gathered in May 2016 *"The mass coral bleaching event in 1998 resulted in over 90% coral mortality around the inner granitics. Recovery has been patchy and slow. Following Graham et al.'s 2011 monitoring period (13 years post-disturbance), 12 of 21 reefs had recovered to pre-bleaching conditions, whereas nine reefs remained coral-poor. With approximately 70% of the corals currently bleached, and 16% already completely dead, this current bleaching event may potentially be equivalent or worse than the 1998 event. However, with water temperatures dropping as the SE trade winds come into effect, we can hope that some corals recover, rather than succumb to the bleaching."*

“Average coral cover across all 17 sites was $38.1 \pm 4.7\%$. Lowest coral cover was found at Praslin SE carbonate (Grand Anse area: $8.0 \pm 3.3\%$), while highest coral cover was found at Mahe W patch (Ile aux Vache: $70.5 \pm 5.5\%$).”

“Between 50-95% of all corals at a site were bleached to a certain extent (mean $70.1 \pm 3.7\%$), with only 1.5-40% remaining healthy (mean $13.3 \pm 2.7\%$). Mahe NW carbonate (Baie Ternay) was the exception, however, where no healthy colonies were observed, and over 60% of the coral colonies were already dead. “

Of the bleached coral colonies, $36.1 \pm 3.3\%$ were completely white, but still alive at the time of surveying, while $17.4 \pm 3.0\%$ were already partially dead. Colonies were also classified as pale, fluorescent and patchy bleached.

In addition to the above, there are also other sources of information being compiled on the national and regional situation. Authors I have contacted have indicated that the results of these studies can be shared with ICRI partners throughout the meeting, but some of this information are still being worked on for inclusion in reports by the respective authors. Their release would be through the normal technical networks once they are ready, and access should be free

b. INDCs - *Intended Nationally Determined Contributions* – *Did your national contribution mention ‘marine ecosystems or coral reefs’? Would you be interested in joining an Ad Hoc committee to develop guidelines to integrate coral reefs in the INDC?*

The INDC document mentions marine ecosystems in the context of unaccounted for carbon sinks. The potential for further consideration of marine ecosystem as part of the country’s emission and mitigation equation is further developed in the Seychelles Strategic Plan 2040, a plan that comprehensively addresses key development issues including climate change for the coming.

Integration of coral reef into the INDC would be a plus for Seychelles as it would make visible the value of efforts to protect and rehabilitate coral reef in the country. It should enable a more realistic accounting of carbon fluxes for a country such as Seychelles that has a large marine space. Through the Ministry responsible for Environment and Energy (MEECC) the right people can be nominated to the group.

c. *Nature-based Solutions to address Climate Change* - *Do you have some example(s) of Nature-based (coral reef and related ecosystems) Solutions to address climate change? If yes, could you please provide use some details?*

There are currently three projects in the country that seeks to address coral reef degradation through active restoration efforts. Nature Seychelles applied ‘coral gardening’ techniques to sites adjacent to Cousin island in the granitic islands. This project has been followed by a full training course in coral reef restoration run by the organization. The Seychelles National Parks Authority is currently hosting one project supported by the GEF and World Bank where techniques for coral nursery and re-colonization are being trialed. Community education to get local non governmental partners to apply the techniques developed in zones of ecological or economic importance will be carried out as part of the sustainability strategy. Wise Oceans, an international NGO base at Four Seasons Hotel, Petit Anse, Mahe is also undertaking a project of coral reef rehabilitation for the purpose of improving the environment in a bay adjacent to the hotel. So far they have established nurseries and transplanted to the local environment.

The above measures can be classed as part of nature based approaches as they also seek to integrate restoration efforts with more resilient environments, such as encouraging diversity of species that interact with corals such as grazing fish through protection. The two projects

by Nature Seychelles and SNPA are both marine protected areas, which provide a ready site for getting the benefits of fish-coral interactions. Wise oceans on the other hand is within a normally fished area, which presents some challenges to conservation, but protection of the reef is being done through engaging with users for example through provision of mooring facilities.

Ecosystem integrity is recognized as one of the main determinants of reef health and of recovery post bleaching. In Seychelles steps have been taken to scale up marine ecosystem protection towards EEZ scale protected areas network and a recent decision is to review marine protected areas, composition and coverage through a marine spatial planning (MSP) process. Through the process the country seeks to address not just ecosystem, but also climate change mitigation and marine resources use. The process if successful should enhance the means available for guaranteeing ecosystem protection but the ongoing challenge is to balance the diverse interests of user of the marine space to arrive at equitable outcome that satisfies those interests as well as ecosystem needs.

- d. *UN Sustainable Development Goals*** – *Do you have example(s) showing how coral reefs and related ecosystems address the SDG (SDG 14 but also other related ones such as SDG 1 – End poverty in all its form; SDG 2 – End hunger, achieve food security and improved nutrition...)*

Coral reef and related ecosystems are already big contributors to food security and poverty alleviation in the country. This is evident through statistics on contribution of near shore fisheries to local food supply, and also the economic value of the tourism product in Seychelles, which is intimately linked with the coral reef and associated ecosystem.

A process to evaluate progress on achievement of SDG 14 (government of Seychelles and UNEP) is still in the discussion stage, and reports have so far not been produced. We expect nonetheless that the contribution would be significant in view of the economic base with Seychelles as and the additional opportunities that the marine environment represent.

- e. *Do you have notional measure(s)*** – *existing or in development - to ban the sale and manufacture of cosmetics and personal care products containing plastic microbeads? And plastic bags?*

Plastic carrier bags have now been banned through regulation by the ministry responsible for Environment Energy and Climate Change (MEECC). This shall come into effect in January 2017.

Manufacturing of cosmetics in the country consists mostly of repackaging and not manufacturing from base materials. Thus, banning of microbeads can only be effected in traded products, something which has not been done yet, whilst prevention of incorporation into products may not be feasible. It must be noted that nanotech issues is not very well appreciated from a regulatory standpoint, and there may be a need at the national level to enhance knowledge to achieve meaningful results.

- f. *Upcoming events*** - *Do you plan to attend:*

- *November 2016 - Marrakech Climate Change Conference / The twenty-second session of the Conference of the Parties (COP 22)*

It has been confirmed that a delegation from Seychelles, headed by HE President Danny Faure will attend the Conference of Parties COP22 in Marrakech. Pre conference discussions are ongoing within government and with relevant partners, the latest of which took place on 31st October 2016.

- December 4, 2016 to December 17, 2016 - Convention on Biological Diversity COP13
There are indications that a delegation from the ministry responsible for Environment (MEECC) will attend the CBD COP 13.

2. **Updates on your activities.** The following table is a summary of ICRI's *Framework for Action* (FFA) and its four cornerstones. (The full text of the FFA is available in English, French, and Spanish at <http://icriforum.org/icri-documents/icri-key-documents/continuing-call-action-2013>).

Integrated Management	Objective	Manage coral reefs and related ecosystems using an ecosystem approach, recognizing place based activity; connectivity within and among ecological, social, economic, and institutional systems; as well as with attention to scale; resilience of ecological and social systems; and long-term provision of ecosystem services.
	General Approach	Integrated management, using a strategic, risk-based, informed approach, provides a framework for effective coral reef and related ecosystem management which supports natural resilience, ecosystem service provision, and enhances the ability to withstand the impacts of climate change and ocean acidification.
	Desired outcome	There is a demonstrable reduction in the threats to coral reefs and related ecosystems through management action.
Capacity Building	Objective	To build capacity in all facets of management of coral reefs and related ecosystems and support dissemination and application of best practices to achieve the widest possible engagement of all stakeholders in planning and management activities.
	General Approach	Continued collaboration, partnerships, outreach, information sharing and education to ensure the uptake of best practices and encourage behavioural change. This can only be successful if the diversity of cultures, traditions and governance among nations and regions are taken into account.
	Desired outcome	Persons who have influence in the management of coral reef and related ecosystems have the knowledge, tools and capital necessary to apply best practices, adapted to the cultural and socio-economic context.
Science & Monitoring	Objective	To support research and citizen science approaches to enable countries and communities assess and report on the status of and threats to their coral reefs and related ecosystems in a coordinated, comparable and accessible manner.
	General Approach	Research and monitoring programs are essential to ensure that management of coral reefs and related ecosystems is based on best available (scientific) information.
	Desired outcome	Knowledge of the status and trends in coral reefs and related ecosystems health is enhanced and used to inform planning and management, improving management outcomes.
Periodic Assessment (Review)	Objective	To engage in periodic review of the impact and effectiveness of all elements of management to enable evaluation and refinement of management measures in an adaptive framework.
	General Approach	Periodic assessments of management effectiveness and evaluation of projects and activities to ensure the efficacy of management tools and systems in tackling the range of pressures affecting coral reefs and related ecosystems and protecting the values associated with them.
	Desired outcome	Management processes and activities are regularly reviewed and improved using a structured approach, to enhance their ability to effectively reduce pressures and threats.

Using the table on the previous page, as well as the detailed descriptors of approaches and strategies available in the full text of the FFA as a reference, please give us an update on an activity/project/program(s) which has been particularly successful in your country/organization during this reporting period.

Project 1

Cornerstone(s) implemented through the project	Check all that apply: ☒ Integrated Management ☒ Capacity Building ☒ Science & Monitoring ☒ Periodic Assessment (Review)
Project Title	Nature Seychelles - Reef rescuers project
Location	Cousin island special reserve
Dates	2010 onwards, monitoring ongoing
Main Organizer(s)	Nature Seychelles, with support from Government of Seychelles/GEF, USAID
Main Stakeholder(s)	Marine users especially tourism interests Local community of Praslin and adjacent islands Knowledge community, including government
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	The coral reef restoration project addresses Climate Change and its impact. It has been restoring damaged coral reefs by growing different coral species in nurseries and transplanting them onto degraded sites. The project is piloting the first-ever large scale active reef restoration project in the region using 'coral gardening'. Accomplishments include 50,000 fragments of coral raised in underwater nurseries and a further 15,000 transplanted in degraded areas. Long-term monitoring to gauge the success of this approach ongoing but the project has already had a very positive knowledge-building impact: 30 scientific divers were involved and trained on reef restoration techniques. A tool kit is being put together to highlight the lessons learnt from the project and a Business Plan is being developed to ensure project sustainability. Integrated management: Demonstrating the benefits of preservation of elements of the ecosystem and the value of interventions in facilitating the recovery of coral reefs. The project is being executed within a protected area, the Cousin Island Special reserve Science and monitoring: Contribution towards local and regional knowledge base on coral reef, species interaction and techniques [Additional information required] Capacity building: Training in coral reef restoration of global participants, monitoring techniques, coral ecosystem training, and training materials Periodic assessment: [Additional information required]
Outcome (Expected outcome)	Rehabilitation of a target area of degraded coral reef, building greater resilience and creating ecosystem benefits Development of manuals and training courses Strategy for ensuring long term sustainability
Lessons learned	Further information being sought and will be made available
Related websites (English preferred)	http://natureseychelles.org/what-we-do/coral-reef-restoration

Project 2

Cornerstone(s) implemented through the project	Check all that apply: ☐ Integrated Management ☐ Capacity Building ☒ Science & Monitoring ☒ Periodic Assessment (Review)
Project Title	Petit Anse Reef Restoration Project
Location	Petite Anse, Baie Lazare Mahe, Seychelles
Dates	May 2012 till present
Main Organizer(s)	Four seasons Resort and Wise Oceans (International NGO)
Main Stakeholder(s)	Local Community, Local tourism operators
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	The Project boldly aims to restore 10,000 square metres of degraded limestone reef through the transplantation of 16,000 coral fragments, and to increase knowledge and awareness of coral reefs and the threats they face, believing that education is the way to a better future for our seas. Taking an innovative approach, one which must overcome extreme water dynamics, voracious coral predators and an unstable substrate, the Petite Anse Reef Restoration Project is working with nature to ensure the best outcome for the reef. Integrated management: Demonstrating the benefits of interventions in facilitating the recovery of coral reefs outside of protected areas on reef subject to normal stresses. Also demonstrating private sector engagement in such activities at sites with economic interest Science and monitoring: Contribution towards local knowledge base on coral reef, species interaction and techniques [Additional information required] Capacity building: Training in coral reef restoration of local participants, hotel personnel and monitoring techniques. Periodic assessment: [Additional information required]
Outcome (including expected outcome)	Coral reef rehabilitated and capacity to withstand stresses restored Training of local scientists on marine environment and corals General Education and community engagement program rolled out to educate the population on maintaining the health of the marine environment
Lessons learned	Information available under lessons learned concerns refinement of technical measures for growing coral fragments and transplantation. We have not been able to obtain copies of reports on the project.
Related websites (English preferred)	http://fourseasonsreefaction.com/about/

Project 3

Cornerstone(s) implemented through the project	Check all that apply: ☒ Integrated Management ☒ Capacity Building ☒ Science & Monitoring ☒ Periodic Assessment (Review)
Project Title	Building Capacity for Coastal Ecosystem-Based Adaptation in SIDS – Coral Reef restoration
Location	Curieuse Marine Park & Praslin Island Seychelles
Dates	2015-2018

Main Organizer(s)	Project team embedded within Seychelles National Parks Authority UNEP,
Main Stakeholder(s)	Management Authority Fishing community Local community deriving benefits from marine environment such as tourism operators.
Description of Project (Please elaborate on how the project implements the FFA cornerstones)	The coral reef restoration projects forms part of a larger UNEP supported programme entitled “Building Capacity for Coastal Ecosystem-Based Adaptation in SIDS”. The programme is focussing on ecosystem-based adaptation to climate change and is currently under implementation in Grenada in the Caribbean and the Seychelles, Indian Ocean. It forms part of UNEP’s EBA Flagship Programme. The objective of the Coral Reef Component of the United Nations Environment Programme (UNEP) Ecosystem Based Adaptation (EBA) to climate change project is to rehabilitate 2 coral reef sites around the island of Praslin which have been affected by climate-driven mass coral bleaching events that occurred between 1998 and 2014 and by doing so demonstrate viability of coral reef restoration. The methods proposed involve building and managing coral nurseries utilising different techniques, and once solid media have been colonised attach these at designated restoration site (2 sites). Integrated management: Demonstrating the benefits of preservation of other elements of the ecosystem such as fisheries management in enhancing the recovery and health of coral reefs. Note that the project shall be executed within and outside of protected areas. Science and monitoring: Contribution towards local and regional knowledge base on coral reef, species preference and techniques through team leaders exchanging with partners, and also SNPA showcasing achievements Capacity building: Training in coastal monitoring techniques, coral ecosystem with school children, and institutional capacity building of the SNPA Periodic assessment: It is foreseen that the project shall form part of the SNPA core program for marine parks management after its completion. Monitoring shall be integrated within the ongoing program which is being developed at the moment under SAM (Science for Active Management) project, a project that seeks to enhance the capacity of staff to actively participate in MPA management.
Outcome (Expected outcome)	Rehabilitated sites in two locations inside and outside protected areas Refinement of techniques and production of guidance document for use by interested groups Local persons/entities trained in coral reef rehabilitation and other programs started at the local level Production of habitat maps and application in management

	Training of SNPA staff and related entities on coastal management with specific emphasis on interactions with and protection of coral reefs
Lessons learned	Bleaching is a risk to such projects. In the particular case, it caused significant loss in the coral nursery. Without proper financial support either from externally or from associated money generating schemes, to cover costs of recovery after bleaching, it would be difficult for small entities to really implement such projects.
Related websites (English preferred)	www.snpa.sc (being updated)

Note: If you have more activities/projects/programs you would like to report on or share with other members, please duplicate the table above and fill it in for as many projects as you wish.

3. **Publications.** Please list relevant publications/reports you have released during this reporting period.

Title (incl. author and date)	Website URL if available	Type of publication (Paper, report, etc.)

4. **General Information.** (Note that this information will be posted on the ICRI website on your member page: <http://www.icriforum.org/about-icri/members-networks>.)

Member type (Country / Organization):	
Focal Point 1:	
Name:	
Title/Organization:	
Email:	
Focal Point 2:	
Name:	
Title/Organization:	
Email:	

Thank you very much for sharing your valuable experiences and information with ICRI.

<http://fourseasonsreefaction.com/about/>

In the late 1990s the coral reefs of Seychelles suffered from extensive bleaching as a result of an El Niño event which caused the surface temperature of the sea to increase by a couple of degrees above the norm and remain that way for several months. The impact of this, in addition to subsequent lesser bleaching events and outbreaks of the coral predator crown-of-thorns starfish, is that some parts of the Petite Anse reef have struggled to grow back fully. So we, WiseOceans and Four Seasons Resort Seychelles, are giving it a helping hand.

The Project boldly aims to restore 10,000 square metres of degraded limestone reef through the transplantation of 16,000 coral fragments, and to increase knowledge and awareness of coral reefs and the threats they face, believing that education is the way to a better future for our seas. Taking an innovative approach, one which must overcome extreme water dynamics, voracious coral predators and an unstable substrate, the Petite Anse Reef Restoration Project is working with nature to ensure the best outcome for the reef.



First we created a coral nursery comprising lengths of steel bent into arcs and fixed to the sea floor. Now we collect fragments of coral: the actions of waves, fish, snorkellers and boat anchors result in broken coral fragments; we use these pieces and also snip fragments from live donor colonies in order to propagate corals of certain species to maintain genetic diversity, or colonies that are resilient to stressors.

The coral fragments are taken to our Coral Cabana on land and carefully ‘doctored’ to be of the right size, free of algae, disease and bleaching, and then fixed to a solid surface, such as a small piece of steel. Next they are placed in the coral nursery where they are safe from predators and grazers, and can grow bigger and stronger, attaching themselves securely onto their mobile home. In a few months the coral fragments are strong enough to transplant out to the reef and are attached to bare areas of reef, where they will forever remain, growing big and strong as part of a thriving reef community

Meet the staff



Georgina Beresford | Project Officer

As Reef Restoration Project Officer, Georgina is responsible for all aspects of delivery of our exciting Project. Georgina has loved the sea from her first dip at the age of two. Now with an MSc. in Tropical Coastal Management, and experience of working on marine projects around the world, Georgina is ideally placed to run the Project, and loving every minute!

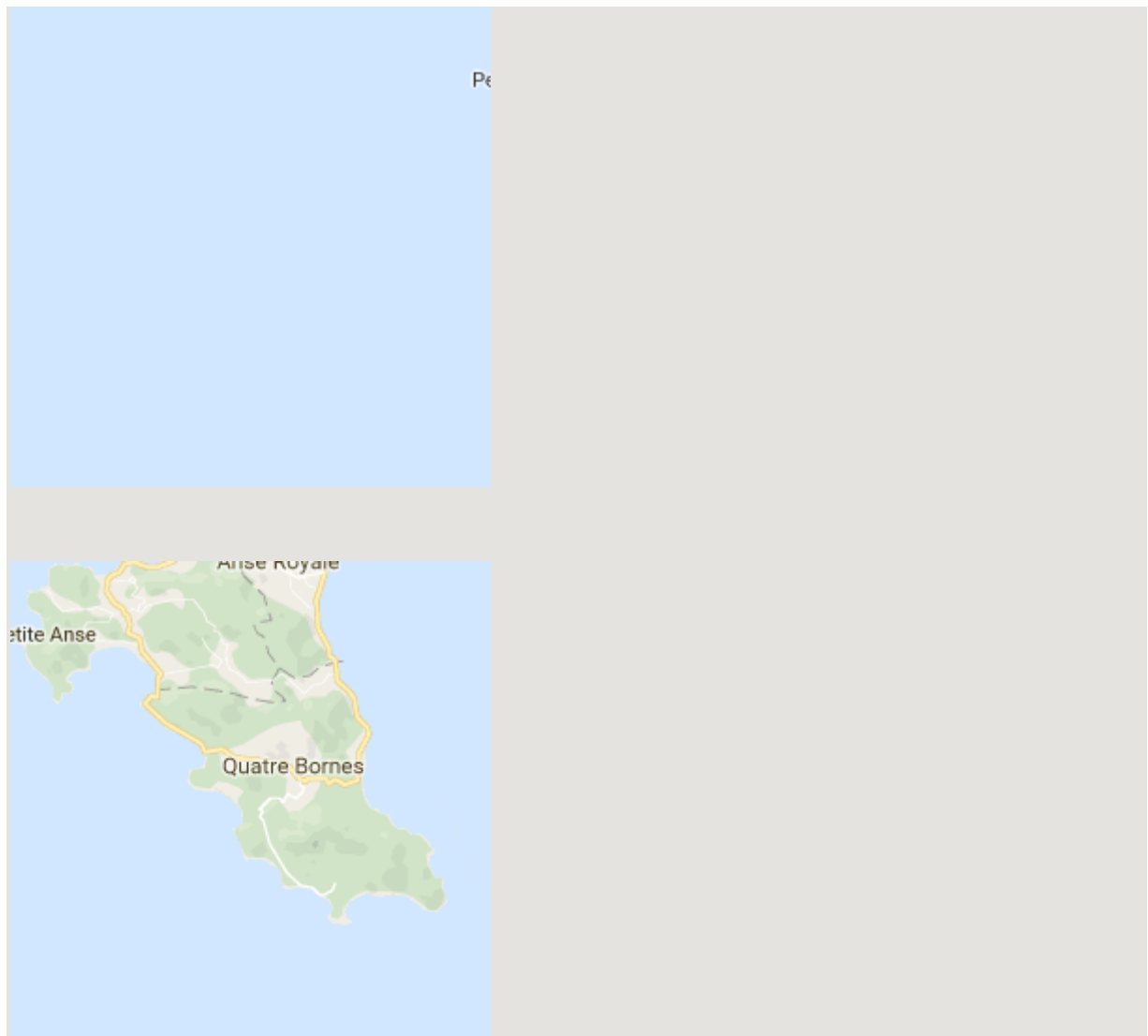
Find out more about Georgina on the [WiseOceans website](#).



Annie Vidot | Project Assistant

Annie joined the WiseOceans team after completing her studies at the Seychelles Maritime Centre last year, and now assists Georgina on the Project, spending several hours each week in her in-water office – our coral nursery! Annie says “Giving a second chance of living to hundreds of tiny coral fragments, which would otherwise die, literally thrills me. My enthusiasm never gets old, as the efforts made are well rewarded, and being able to see the changes and the growth of the baby corals it’s all an achievement!”

Follow Georgina and Annie’s progress on our [blog page](#).





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Petite Anse

Petite Anse, a small bay in south-west Mahe, is the home of Four Seasons Resort Seychelles and the office for a lucky WiseOceans team.

WiseOceans is a marine conservation and education organisation raising awareness of our fragile oceans and the fantastic creatures that live within them.

At Four Seasons Resort Seychelles we are deeply committed to conservation of the marine environment on our doorstep and we have been working in partnership with WiseOceans since May 2012, establishing environmental projects to help protect the precious marine life here in Petite Anse.

These projects include the study and protection of coral, monitoring nesting and hatching turtles, and marine education programmes for staff, guests and the local community. Our work with WiseOceans is just one of many projects around the resort which promote sustainability and education on the environment for staff guests, and the local community.

Our coral reef restoration project addresses Climate Change and its impact. The marine environment is under severe threat from Climate Change, identified as the single most palpable threat to marine ecosystems. Its impact on coral reefs has been devastating. Corals in the Seychelles and the region have been destroyed by ocean warming and coral bleaching events, threatening the livelihoods of millions of coastal peoples in Eastern Africa and the Western Indian Ocean islands.

Coral bleaching interferes with reef's health and resilience capacity, harms coral's ability to regenerate, affects reproductive performances and increases disease prevalence. Our reef restoration project has been restoring damaged coral reefs by growing different coral species in nurseries and transplanting them onto degraded sites.

The project began [in 2010 with the financial support of United States Agency for International Development \(USAID\)](#). Further financial support was received under the [Government of Seychelles-Global Environment Facility \(GEF\)-United Nations Development Project \(UNDP\) Protected Area Project](#) in 2011.

Through the project we are piloting the first-ever large scale active reef restoration project in the region using 'coral gardening'. Coral gardening involves collecting small pieces of healthy coral, raising them in underwater nurseries and then transplanting them to degraded sites that have been affected by coral bleaching. 50,000 fragments of coral have been raised in underwater nurseries and a further 15,000 transplanted in degraded areas. The long-term "success" of this mass transplantation is yet to be monitored but the project has already had a very positive knowledge-building impact: 30 scientific divers were involved and trained on reef restoration techniques. A tool kit is currently being put together to highlight the lessons learnt from the project and a Business Plan will be developed to ensure project sustainability.

<http://www.natureseychelles.org/what-we-do/coral-reef-restoration>