

**SeyCCAT Project Full Proposal**

**PART 1. NARRATIVE (Maximum 10 pages)**

1. **COVER PAGE**

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| **Title** | Assessment and Valuation of the Parrotfish Fishery to Support an Ecosystem Approach to Fisheries. |
| **SeyCCAT Strategic Objective**  | Empower the fisheries sector with robust science and knowhow to improve governance, sustainability, value and market options. |
| **Name, contact details and status of lead applicant organisation / individual** | Mr. John Nevill. P.O. Box 1299, Central Post Office, Victoria.E-mail: jegn@outlook.comTel: 2717301NIN: 002 0586 6 1 30Naturalised 2002 (Reg No: 50/2002) |
| **Partner organizations** | Seychelles Fishing AuthorityGreen Islands Foundation |
| **Project location** | Mahe, Seychelles. |
| **Duration – start and end dates** | 18 months. 1st March 2019 – 31st August 2020. |
| **Total budget requested** | SR 498,000 |
| **Indicative co-financing** | John Nevill SR 232,500 (in-kind)Seychelles Fishing Authority SR 130,000 (cash and in-kind)Green Islands Foundation SR 120,000 (in-kind) |

1. **SUMMARY**

The issue to be addressed and how it will be tackled. Parrotfish (Scaridae) are keystone species in coral reef ecosystems, essential for maintaining live coral cover and healthy resilient coral reefs. The 1997 severe coral bleaching event resulted in more than 40% of coral reefs on the Mahe plateau shifting to an algal dominated state with significantly reduced fish diversity and populations (1-4[[1]](#footnote-1)). It is likely that the mass bleaching event of 2016 will only serve to exacerbate this situation. Management and research in the Caribbean has shown that protecting parrotfish populations results in improving live coral cover on reefs and enhanced resilience to multiple stressors (6-14). In Seychelles however, there is no baseline data available on the parrotfish fishery, its species make-up, seasonality or economic value. Such information is a fundamental prerequisite to the development of any Scaridae management measure. This project sets out to address this information shortfall.

Site description. The project will be undertaken on Mahe Island. SFA data shows that some 90% of artisanal catch is landed on the main island – so it constitutes the most cost-effective location for catch monitoring.

Overall outcome, objective(s); outputs(s) and activities(s). This project will: i). Develop a monitoring protocol for the parrotfish fishery. ii). Produce species identification materials for parrotfish in Seychelles. iii). Train technical staff in species identification and undertaking the monitoring protocol. iv). Undertake an intensive 12-month monitoring of the trap fishery to assess parrotfish species occurrence, seasonality and overall economic value. v). Produce a report on the parrotfish fishery with recommendations for future management and research. These activities and outputs will provide the information required to enable the informed development of measures to better manage parrotfish populations and in turn the resilience of coral reef ecosystems and their overall fishery productivity.

Beneficiaries. This project will benefit fishery management agencies, fishery technicians and researchers and provide a basis for the development of fishery management measures that would benefit the artisanal fishery and its practitioners as a whole.

Timeline. The project is divided into three phases. The inception phase where there will be preliminary 3-month (March-May 2019) assessment of the parrotfish fishery which will enable the development of a pragmatic monitoring protocol and the identification and inclusion of fisher project partners. Phase 2 will be the 12 month (June 2019 – May 2020) intensive fishery survey and valuation. Phase 3 will be the write up phase where the report will be finalised and submitted to SeyCCAT and SFA and the full database and digital copy of the identification materials provided to SFA.

Alignment with international and national priorities. Internationally this project supports Seychelles’ implementation of Aichi Biodiversity Targets 10, 14, 15, 19 and Sustainable Development Goal 14; and specifically component 14.2. On the national scene the project contributes directly to the Ecological Approach to Fisheries (EAF) management objective of the Seychelles demersal fishery plan. It furthermore supports objectives 2.6. 4.1, 4.2 and 5.3 of the Seychelles National Biodiversity Strategy and Action Plan (NBSAP); and specifically contributes to the realisation of projects 14, 21 and 28 of the NBSAP.

1. **Organizational Background and Capacity**

**Lead Proposer: John Nevill.**

John Nevill is an environmental professional with 25 years of experience in Seychelles working for Government, NGOs and the private sector. He has broad experience in environment/biodiversity project management and implementation see C.V. (**Annex 2**) for further details. John has been studying the shark fishery in Seychelles since 2003, including his MSc in 2004/5, and the broader artisanal fishery since 2012. John authored the 2013 *Species Identification Guide for Commonly Caught Fish in the Seychelles Near-Shore Artisanal Fishery* and the 2015 *Identification Guide for the Sharks of the Seychelles Artisanal fishery*. He was the consultant employed to prepare both Seychelles first and second National Plan of Action of Action for the Conservation and Management of Sharks (2007-2011 and 2016-2020). He was lead consultant in the preparation of Seychelles National Biodiversity Strategy and Action Plan (NBSAP) 2015-2020. He was also employed to compile the first Mauritius NBSAP in 2005.

He was employed by Government in 2013 to develop the Blue Economy Concept and authored the document (<https://sustainabledevelopment.un.org/content/documents/2978BEconcept.pdf>) that was adopted by SIDS at the Third International Conference on Small Island Developing States in Apia, Samoa September 2014. More recently (2017) he authored the Seychelles Marine Spatial Plan Policy and is currently developing proposals for the national MSP Governance structure. Oct 2016 - Feb 2018he was employed as fishery survey consultant on the GEF-Satoyama project: *The development of a co-management plan to minimise the impact of the Seychelles artisanal fishery on threatened species.*

John has worked extensively with local fishers and fishers’ associations including assisting in the registration and establishment of one association and writing the strategic plan for another. He has successfully implemented fishery specific projects such as:

2013-16 GEF SGP Project: Securing traditional livelihoods through sustainable management of the artisanal shark fishery. (Budget: US$ 50,000 Contact person: Ms Lyndy Bastienne lyndy.bastienne@undp.org Tel: 4225914)

2014-16 MFF Project: Assessment of the Scalloped Hammerhead (*Sphyrna lewini*) Shark Population and Fishery to Provide a Basis for its Sustainable Management. (Budget: US$ 20,000 Contact person: Ms Elke Talma, Elke.talma@iucn.org Tel: 4225914)

**Partner Agency: Seychelles Fishing Authority**

The Seychelles Fishing Authority is the national agency legally mandated to promote, organise and develop fishing, fishing industries and fishing resources. See <http://www.sfa.sc/> for more information.

**Partner Agency: Green Islands Foundation**

The Green Islands Foundation is an environmental NGO established and legally registered under the Registration of Associations Act on the 11th April 2006 (Certificate no: A430918)

The Mission Statement of the Association is:

***“To Promote The Mainstreaming Of Sustainable Development In Seychelles.”***

The main objectives of GIF pertinent to this project are:

* To integrate biodiversity concerns into land and sea use regimes.
* To further the conservation and sustainable use of biodiversity.

GIF is overseen by a Board of Directors and employs 3 fulltime and 1 part time staff complemented by volunteers for specific programmes. Since its formation GIF has sought to develop partnerships with the private sector to enable the realisation of its Mission. GIF has conceived, coordinated and implemented a range of projects with a strong marine management component. In the last five years, GIF has expanded its involvement in fishery sustainability, establishing working relationships with fishers and fisher organisations, to the advancement of national conservation and sustainable use objectives. Most recently GIF has worked with fishers and associations in the implementation on SeyCCAT and GEF Satoyama projects to minimise fishery impact on threatened species and assess catch of demography of species of local concern respectively. Pertinent projects are summarised in the table below:

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| Project title | Year | Budget /Donor | Description |
| Assessment and Mitigation of Impact of the Artisanal Fishery on Species of Local Concern | June 2018 to Sep 2019 | SR. 729,500SeyCCAT | Project leader: GIFProject Partners: Bel Ombre Fishers Association, FBOA, ASFA, SFA.Project to assess nature of artisanal catch of species of local concern and the ray fishery to inform fisher led management measures.  |
| The development of a co-management plan, designed by fishers, to minimise the impact of the Seychelles artisanal fishery on threatened species. | July 2016toDec 2018 | US$ 88,000GEF GEF-SatoyamaContact Person:Mr Yoji Natori, Manager GEF-Satoyama Projecte-mail: ynatori@conservation.org | Project Leader: GIFProject Partners: Bel Ombre Fishers Association, FBOA, ASFA, SFA.Project to reduce the artisanal fishery’s impact on threatened species. Developed a baseline dataset of threatened species through an intensive 12-month survey of artisanal catch. Supported fishers’ identification and development of a threatened species co-management plan for submission to SFA. |
| Capacity Building in Artisanal shark fishermen | May2010toNov 2011 | US$ 7,165Mangroves For the FutureContact Person:Ms. Elke TalmaMFF National CoordinatorTel: 4225914 | Project Leader: GIFProject Partners: Shark FishersThe goal was to enable the full and effective participation of artisanal shark fishers in the implementation of the Seychelles' NPOA Sharks. The Artisanal Shark Fishers Association (ASFA) was created, and training of shark fishers to collect catch data. |

1. **Project outcome, Objectives and Expected Results**

**Problem statement**. The coral reefs of Seychelles’ central archipelago are in trouble. The severe bleaching event of 1998 killed approximately 90% of living coral cover on the Mahé plateau (1[[2]](#footnote-2)*,* 2). In the following years a little over 50% of coral reefs showed gradual recovery while the others transitioned to algal dominated ecosystems (2-4). The mass bleaching event of 2016 however has set back the scenario again. There is clear evidence in Seychelles that coral bleaching can lead to regime shift (5), from structurally complex coral reefs with diverse fish communities to structurally limited macroalgae dominated systems supporting depauperate fish communities (4), and raises the concern that there may be limited scope for recovery from the apparently stable macroalgae dominated state (2).

A recent exhaustive region-wide study of Caribbean coral reef data, a region where coral reefs have degraded heavily, with widespread phase shift from the mid-1980s onwards, identifies that overfishing of herbivores, particularly parrotfish, has been the major driver of reef decline in the Caribbean to date (14). This has been borne out in localities and countries in the region where the banning of parrotfish fishing (e.g. Belize, Guatemala, Bonaire, the Bay Islands region of Honduras and Bermuda) has led to increases in parrotfish numbers and consequent improvement in live coral cover, reef health and resilience to major disturbances (14-16).

Management of parrotfish and the parrotfish fishery therefore offers significant scope for enhancing reef resilience to disturbances such as coral bleaching events. No data is available however for the Seychelles parrotfish fishery upon which management measures could be based. This project sets out to address that information shortfall.

**Rationale.** Seychelles cannot unilaterally address global climate change and the occurrence of bleaching events. Seychelles can however seek to increase the resilience of its coral reefs to disturbance events. There is substantive and growing evidence to show that the impact of current climate change is within the tolerance and resilience parameters of coral reef systems provided the populations of certain keystone species, namely herbivorous fish and in particular parrotfish (*Scaridae*) are maintained in the ecosystem (6-13).This project will undertake an intensive and representative survey of the parrotfish fishery to provide the baseline information required to develop an informed management approach. This proposal builds on an existing substantive and successful partnership in artisanal fishery research that the lead proponent has with the Green Islands Foundation (GIF). It also partners with the Seychelles Fishing Authority (SFA) enabling training of fishery technicians such that the monitoring can be continued or periodically repeated in the future.

**Outcome.**The project will provide the information required to enable the informed development of measures to better manage parrotfish populations and in turn the resilience of coral reef ecosystems and their overall fishery productivity. To that end this project will benefit SFA, fishery technicians, researchers, other research agencies and provide a basis for the development of fishery management measures that would benefit the artisanal fishery and its practitioners as a whole.

**Objectives.** The overarching objective of this project is to provide a baseline on parrotfish occurrence, seasonality, relative abundance and economic value in the trap fishery. This information will provide the basis to develop future management measures and targeted research activities, and ultimately improve the resilience and fishery production of coral reefs on the Mahé plateau. Specific objectives are:

1). Develop a monitoring protocol and species identification materials.

2). Train technical staff in Parrotfish species identification and monitoring.

3). Gather and provide a representative 12-month dataset on the parrotfish fishery.

4). Assess the economic significance of the parrotfish fishery

5). Produce recommendations for management measures and future research to support an ecosystem approach to coral reef fishery management.

**Outputs.** The project will produce: a monitoring methodology and protocol, parrotfish species identification materials and trained fishery technicians in the application and use thereofwhich will enable continued or future periodic standardised monitoring of the parrotfish fishery. It will further produce a scientific baseline and database for scarid species occurrence, abundance, seasonality and economic value in the artisanal fishery and generate management and research recommendations. These outputs combined will provide a basis for an enhanced ecosystem approach to reef fishery management.

**Specific activities.**

1). Initial survey of trap fishery, to identify key landing sites, practitioners and project partner fishers.

2). Development of monitoring methodology and protocol. To provide a standardised, replicable methodology for monitoring the parrotfish fishery.

3). Development of species identification materials. To assist in species identification, awareness and future monitoring.

4). Training of technical staff in species identification and monitoring protocol. To enable continued or periodic monitoring of the parrotfish fishery in the future.

5). Undertake intensive and representative 12-month survey of the parrotfish component of the trap fishery. To provide a baseline for parrotfish species occurrence, seasonality, catch demography and value.

6). Write report of the species make-up, seasonality and economic valuation of the parrotfish fishery, with assessment and recommendations for future management, monitoring/research for consideration by SFA.

**Expected results*.***In addition to that specified in the outputs section above. Technical staff from at least four agencies (including SFA) will be trained in parrotfish species identification and the catch fishery monitoring protocol. The full database and printable electronic version of the identification materials will be transferred to SFA along with recommendations for management measures and possibly additional research priorities.

**Location**. The project will be undertaken on Mahe Island. SFA data shows that approximately 90% of artisanal catch is landed on the main island – so it constitutes the most cost-effective location for catch monitoring. The monitoring method will be sufficiently representative of the national catch that it will not require scaling up.

1. **Description of the Activities and their Effectiveness**

There will be a 3 month inception phase during which time activities 1 and 2 will be undertaken.

***Activity 1. Initial survey of trap fishery, to identify key landing sites, practitioners and project partner fishers.*** Landing sites will be assessed to determine their importance with regard to the trap fishery optimal cost-effective coverage of the monitoring protocol both in terms of geographic location and days of the week and times of the day. During this phase 5 partner fishers will be identified and agreements signed for their project involvement. These fishers will be ones that practice the trap fishery full-time year round. For a monthly fee (Sr 2,500 per fisher, 5 fishers for 12 months = Sr 150,000) they will call the monitoring staff (John Nevill and/or GIF) when they are coming into land with their catch and allow the parrotfish component to be sorted by species, measured and weighed. This will ensure that species length-weight indices can be developed that will enable subsequent fishery valuations.

***Activity 2. Development of monitoring methodology and protocol.*** The findings of ***Activity 1*** will be used to determine the optimal cost-effective coverage of the monitoring protocol in terms of geographic location, days of the week and times of the day. The protocol will also set out the measurements to be taken, which may vary with species, and how the measurements and weight should be recorded on the spreadsheet.

***Activity 3. Development of species identification materials.*** Choice of exemplar photos and layout for parrotfish species identification. Finalisation of digital ID guide and production of sample copies.

***Activity 4. Training of technical staff in species identification and monitoring protocol.*** Undertake training workshop(s) – anticipate 2 workshops but depends on broader stakeholder interest – for SFA technical staff and technical staff from other interested agencies (e.g. MEECC, SNPA, SIF, ENGOs, UniSey, BERI etc…). Training provided on species identification, use of the identification materials, measurements to be taken and how to take and document them as per protocol spreadsheet. SFA will provide the venue and facilities for the workshops as part of their project contribution. This training will enable the institutionalization of this monitoring capacity and its continuation or periodic repetition as required to guide the adaptive management of coral reef fisheries.

***Activity 5. Undertake intensive and representative 12-month survey of the parrotfish component of the trap fishery.*** The lead proponent supported by GIF technical staff will undertake the 12-month survey. GIF and the proponent have already established an effective artisanal fishery monitoring process for previous projects (GEF-Satoyama Threatened species project 2016-2017 and SeyCCAT species of local concern project 2018-2019). The technical staff are proficient in species identification and are equipped with digital cameras so that catch is also photo’d for cross-reference to data gathered and where unknown specimens or those difficult to identify can be photo’d in detail for subsequent species verification. SFA staff as part of their training and whenever else they may be available will accompany and participate in field monitoring activities.

***Activity 6. Write report of the species make-up, seasonality and economic valuation of the parrotfish fishery, with assessment and recommendations for future management, monitoring/research.*** The lead proponent will draft the final report with fishery assessment, valuation and database and circulate to GIF and SFA for comments before Finalisation and submission to SeyCCAT and SFA.

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| **Project title:**  **Assessment and Valuation of the Parrotfish Fishery to Support an Ecosystem Approach to Fisheries.** | **Project start and end dates:**1st March 2019 – 31st August 2020. |
| **Project Outcome: Provision of a baseline for parrotfish occurrence, seasonality, relative abundance and economic value in the trap fishery.** |
| **Specific Objective No. 1. Develop a monitoring protocol and species identification materials.** |
| **Activity** | **Responsibility for implementation** | **Timeline of activity** |
| **Year 1** | **Year 2** | **Notes** |
| **Q1** | **Q2** | **Q3** | **Q4** |
| 1.1 Survey of trap fishery, to identify key landing sites, practitioners and project partner fishers. | John Nevill/GIF |   |   |   |   |   |   |
| 1.2 Development of monitoring methodology and protocol. | John Nevill/GIF |   |   |   |   |   |   |
| 1.3 Development of species identification materials. | John Nevill/GIF |   |   |   |   |   |   |
|  |  |   |   |   |   |   |   |
| **List indicators for each activity:**1.1 Optimal monitoring regime and fisher project partners identified. 1.2 Monitoring protocol established (i.e. priority landing/sale sites covered and timing of monitoring. How measurements, weights to be taken and recorded. How value of catch to be calculated). 1.3 Selection of photos and layout of species identification materials and finalisation of digital version and printing of copies. Finalised electronic printable copy submitted to SFA. |
| **Specific Objective No 2.**  **Train technical staff in Parrotfish species identification and monitoring.** |
| 2.1 Training of technical staff in species identification and monitoring protocol.  | John Nevill/SFA |   |   |   |   |   |   |
|  |   |   |   |   |   |   |   |
| **List indicators for each activity:**2.1. Training workshop(s) undertaken in species identification and monitoring protocol with SFA technical staff and staff from at least 3 other agencies e.g.: ENGOs (MCSS, SIF etc…) UniSey, BERI etc… Number of staff trained.  |

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| **Specific Objective No. 3.**  **Gather and provide a representative 12-month dataset on the parrotfish fishery.** |
| **Activity** | **Responsibility for implementation** | **Timeline of activity** |
| **Year 1** | **Year 2** | **Notes** |
| **Q1** | **Q2** | **Q3** | **Q4** |
| 3.1 Undertake intensive and representative 12-month survey of the parrotfish component of the trap fishery. | John Nevill/GIF |   |   |   |   | **Yr 2 Q1** |   |
|  |   |   |   |   |   |   |   |
| **List indicators for each activity:**3.1 Monthly datasheets June 2019-May 2020 (Excel format), detailed catch records from partner trap fishers. Completed database submitted to SFA. |
| **Specific Objective No 4.**  **Assess the economic significance of the parrotfish fishery** |
| 4.1 Assess and calculate value of parrotfish fishery.  | John Nevill/GIF |   |   |   |   | **Yr 2 Q1** |   |
|  |   |   |   |   |   |   |   |
| **List indicators for each activity:**4.1Length weight relationships by species, weight value indices by species, overall sale value estimates.All data submitted to SFA. |
| **Specific Objective No. 5.**  **Produce recommendations for management measures and future research to support an ecosystem approach to coral reef fishery management.** |
| **5.1** Write report on the species make-up, seasonality and economic valuation of the parrotfish fishery, with assessment and recommendations for future management, monitoring/research. | John Nevill |  |  |  |  | **Yr2 Q1&2** |  |
| **5.2** |  |  |  |  |  |  |  |
| **List indicators for each activity:**5.1 Draft report. Final report submitted to SeyCCAT and SFA. Full database on parrotfish fishery submitted to SFA.  |

**F. RISKS TO SUCCESSFUL IMPLEMENTATION AND MITIGATION MEASURES**

Identify and list the major risk factors that could result in the project not producing the expected results.

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| **Risk/Factors** | **Risk category** | **Potential level of impact** | **Risk mitigation measures** |
| The complexity of monitoring the fishery. At least 20 species are covered, the majority of which have distinct initial and terminal phases. Furthermore the initial phases of some species are hard to distinguish.  | Technical | Medium | The project commences with a 3-month trial assessment to enable the design of a pragmatic and representative monitoring methodology. The proponent and GIF technicians are familiar with the species and have a standard protocol for species identification when in doubt. The long term sustainability and replicability of the monitoring is addressed by documentation of the protocol, ID materials and the training in the use thereof, of *inter alia* SFA staff  |
| Parrotfish are typically sold in a string of fish that may include multiple species of parrotfish and/or other unrelated species. Determining the value of parrotfish is therefore complicated.  | Technical  | Medium | The project therefore includes a budget for 5 key partner trap fishers who will allow examination of their catch at the landing site before it is tied into “packets”. This way species measurements and value per Kg can be calculated. This will enable the development of suitable value indices. |

**G. EVALUATION AND INDICATORS**

The project will be assessed as per the timely realisation of its indicators. i.e. by the end of the inception phase (May 2019) the monitoring protocol will have been formalised, partner fishers identified and their sub-contracts signed. Data gathering in phase 2 will be assessed at the end of each calendar month with spreadsheets for each species stating date of capture, size/weight and valuation indices as appropriate. Production of species identification materials and undertaking of training workshops will likewise be recorded. Finally in phase 3 the report will be drafted and circulated to partners for comment before finalisation and then submission to SeyCCAT and SFA. SFA will also receive the full 12-month database and digital copy of identification materials by the end of the project. Financial reporting will be undertaken as per SeyCCAT format at 6 month intervals through the 18-month project duration.

**H. SUSTAINABILITY AND REPLICATION**

The project has been designed with sustainability specifically in mind. It will: i) develop and document a standardised monitoring protocol for the parrotfish fishery, ii) produce and disseminate a parrotfish species identification guide, and iii) will train technicians from SFA and at least 3 other agencies in species identification and catch monitoring. This will enable continued or future periodic assessment of the fishery and adaptation of management measures. Social media platforms and the local media will be utilised to keep the public informed of the project. The monitoring protocol will be sufficiently representative of the national catch to not require upscaling however the availability of the protocol and ID materials will enable agencies and individuals to contribute to monitoring more broadly should they wish.

1. For references see **Annex I** [↑](#footnote-ref-1)
2. For references see **Annex I** [↑](#footnote-ref-2)