Environmental Safeguard Document

Date : 1 April 2016

CEPF Grant 65963

Grantee: Wildlife Conservation Society Papua New Guinea Program

Project Title: Saving Sea Turtles and Promoting Food Security and Sustainable Development on Mussau Island in Papua New Guinea

Project Location

Mussau Island, New Ireland Province, Papua New Guinea

Grant Summary

1. Grantee organization: Wildlife Conservation Society (Papua New Guinea program)
2. Grant title: Saving Sea Turtles and Promoting Food Security and Sustainable Development on Mussau Island in Papua New Guinea
3. GEM number (*to be completed by CEPF).* #65963
4. Grant amount (US dollars). $259,994.
5. Proposed dates of grant. 1 July 2016 to 30 Sep 2018
6. Countries or territories where project will be undertaken: Papua New Guinea

Summary of the project: Communities on Mussau have identified that turtles are a major competitor of anedible seaweed (*Caulerpa*) and that feral pigs are a major crop pest. Residents are proposing a turtle cull as a solution and have requested assistance in reducing the damage done by pigs on the island. WCS-PNG is proposing a three-pronged participatory project approach to prevent the turtle cull from taking place, to improve gardening and food security on the island and to increase the effectiveness of pig fencing and investigate short and long-term control options, and to build community capacity to manage these and other natural resource management issues. Food security is an urgent, immediate concern and is threatened by increasingly severe weather events as a consequence of climate change, such as the severe El Niño event currently affecting PNG. The main aims of this project are:

a. Develop and implement a participatory adaptive management plan to reduce the human-turtle conflict. This plan will be developed with local communities on Mussau in order to layout and implement a strategy to: a) identify the agent of declines of the seaweed beds (i.e. estimating the relative impact of turtles on the beds compared to foreshore erosion and over-harvesting by people), b) map the extent of the problem, c) devise alternative interventions (which do not involve turtle culling) which will then be developed with the communities (focusing on the use of cages to protect the seaweed and exclude turtles – here after known as “exclosures”), and d) trial the effectiveness of the interventions through monitoring of seaweed stock and turtle populations.
b. Improve garden productivity and reduce the reliance on seaweed as a food source: By improving soil fertility and by planting new and drought/pest resistant crop varieties, it becomes practical and cost-effective to utilize fencing techniques to limit pig damage in garden areas, whilst at the same time improving food security for communities on Mussau and increasing the community’s resilience to climate change. Additionally, by improving garden productivity the need to clear secondary regrowth for new gardens should reduce over the long-term allowing faster restoration of logged over areas. This work will be led by WCS’s Agricultural Officers, utilizing crops and gardening methods that WCS has successfully implemented in New Ireland and Manus. Drought and pest resistant crop varieties will be purchased from the National Agriculture Research Institute (NARI). Guidance on potential pig control options will be provided by an international eradication expert.
c. Build community and CBO capacity: The severe El Niño-induced drought across PNG has highlighted the importance of community reliance on natural resources. To build long-term capacity on the island the above activities will be undertaken in a participatory manner in order to strengthen the community’s capacity for designing, implementing and managing projects. WCS will work with communities and existing groups/organizations in order to establish a community-based organization (CBO) for natural resource management on

Mussau. Such an organization would likely have a broad focus, ranging from management of marine resources (i.e. near-shore fisheries and seaweed beds) and terrestrial resources (i.e. gardening and forests) and would result in improved community capacity to manage their own natural resources.

7. Date of preparation of this document. 1 April 2016

8. **Status of area to be impacted:** This section should describe the applicant's understanding of the site.

Implementation of improved fencing techniques to prevent pig incursion
The work will be undertaken improving fencing structures around pre-existing garden areas in the villages of Nae and Lolieng, Mussau Island, New Ireland Province, Papua New Guinea. These garden areas are already fenced, or have been used for crop rotation. The total extent of the garden areas has yet to be determined but will likely be in the range of 40–100 ha.

Deployment of temporary portable turtle exclosures
The exclosures (cages to protect *Caulerpa* seaweed and keep turtles out) are portable, and non-permanent, and of metal construction. They will be designed to rest in sandy substrate below the low-tide mark on flanged legs. Each exclosure will enclose 6–9 m^2 of *Caulerpa* bed and associated substrate. Depending on final construction costs 8–12 enclosures will be deployed thereby affecting a total of 48–108 m^2 of marine substrate. The exclosures are entirely portable and may be removed at any time. The study will take place in the bays around the villages of Nae and Lolieng.

9. **Approach**: This section will describe proposed actions during the project. Specifically, what do you intend to do and how will you do it?

Implementation of improved fencing techniques to prevent pig incursion
The work will be undertaken to improve fencing structures around pre-existing garden areas. This will involve minor localized ground disturbance around the fence perimeter coming as a result of spadework to put in place improved fencing structures. The impacts will be temporary and any disturbed soil will be packed around the foundations of the fence. Live fencing techniques will be preferentially undertaken (e.g. using *Gliricidia sepium*). In some instances concrete maybe used to strengthen existing fence post foundations in order to provide a temporary barrier against pigs while the live fencing plants take form around the garden perimeter.

Deployment of temporary portable turtle exclosures
Once community ownership has been identified and agreement has been reached regarding the study the near-shore environment for the study will be mapped by GPS. Within these mapped areas exclosures will be randomly assigned. The exclosures will only be placed in areas where wave action is negligible. The exclosures will then be hand lifted over sections of the *Caulerpa* beds. Every effort will be taken to avoid disturbing the *Caulerpa* bed and associated substrate. The exclosure legs (which will be flanged) will then be wiggled into the substrate to temporarily secure them. On occasion steel fence posts may be used to provide additional corner support should the exclosure show signs of lifting from the substrate.

10. **Anticipated impact:** this section will describe the impact and how this impact has been determined.

Design phase:

- WCS agricultural staff and local community members will be involved in selecting the gardens in which the improved fencing is to be trialed, including identification of garden areas to be left as controls (so as to quantify the difference in the rate of pig incursion between the invention and control sites). No impacts are expected during this phase.

Construction phase:

- Minimal ground disturbance will occur during the erection of the fences. The disturbance will be no greater than of normal fencing procedures the communities already undertake. In some instances concrete maybe used to strengthen existing fence posts in order to provide a temporary barrier against pigs while the live fencing plants take form around the garden perimeter. No adverse impacts are expected.

Operation phase:

- No adverse or long-term negative consequences are expected.
- Over the long term the improved fencing should result in lower rates of pig incursion and therefore lower rates of environmental disturbance.

Deployment of temporary portable turtle exclosures

Design phase:

- Local community members will identify areas for the *Caulerpa* study. The WCS science team will then map the area and determine sub-sites into which the exclosures will be randomly assigned. The exclosures will be constructed off-site and shipped in. No impacts are expected during this phase.

Construction phase:

- The exclosures will be constructed off-site by a commercial manufacturer in Kavieng and shipped in. No impacts are expected during this phase.

Operation phase:

- Substrate impacts caused by the deployment of turtle exclosures over *Caulerpa* beds should be minor and extremely short lived. The exclosures are portable and will be designed to sit in the substrate on flanged legs. The coastal shallows in which *Caulerpa* grows are subject to tidal forces so erosion and accretion occur on a daily basis. We expect the impact of the exclosures on the substrate disturbance to be minor by comparison, with the substrate around the exclosure legs likely fully recovering from disturbance within 3 days.
- Should, after sometime the exclosure show signs of lifting from the substrate steel fence posts may be used to provide additional corner support. Such steel fence posts are non-permanent and removable.
- Storm disturbance represents the greatest threat in that in a severe event exclosures may be repositioned and form a submerged hazard. This threat will be minimized by putting the exclosures in areas where normal wave action is minimal. However, during initial deployment 1 exclosure will be put temporarily (several hours) in a high wave area to understand what wave heights are required to constitute a hazard. Local community members will be present at the trial to advise on whether such wave action will be encountered at the deployment locations. Final sub-site selection will be based on the outcome of the wave trail.

- At the end of the study the exclosures will be handed over to the community in which they will likely be used as part of ongoing *Caulerpa* management. Such management will likely see the exclosures used in an adaptive fashion to protect high value *Caulerpa* beds.

11. **Mitigation measures**: Describe measures that will be taken to mitigate negative impacts.

Implementation of improved fencing techniques to prevent pig incursion
- No mitigation measures are necessary.

Deployment of temporary portable turtle exclosures
- No mitigation measures are necessary.

12. **Actions to ensure health and safety**: Describe actions that will be taken to ensure the health and safety of workers as well as the site. Include a description of waste management and/or disposal.

Health and safety for workers
All workers under WCS supervision will have access to safety boots and protective gloves during the construction and deployment phases of the fencing, gardening, and exclosure related activities. They will also be instructed in safe tool handling. Physical activities will be scheduled for morning or late afternoon to avoid the tropical sun. Additionally, water and sun cream will be on hand to prevent heat exhaustion and sunburn. First aid kits will be on hand at all times.

Waste management and disposal
- Organic waste from agricultural activities (plant material) will be composted and used as fertilizer.
- Non-organic waste will be collected and shipped back to Kavieng for disposal through regular municipal garbage disposal.

13. **Permission of the landowner**: Please verify permission of the landowner to undertake actions on the site, and verify that you have the required permits to undertake this work.

Local landowner permission is a prerequisite for the project and will be gained during the first field trip to the island in which WCS will seek to gain preliminary free and prior informed consent (FPIC). The continuation of the project is entirely dependent on the acquisition of FPIC and will terminate if it cannot be gained. Consent will be obtained through open community meetings, and documented through signed confirmation from ward councilors and clan leaders.

14. **Consultation**: This section aims to outline the range of informed consultations that the grantee has had both with experts to optimize the potential for success, and with stakeholders, particularly local communities, who are potentially affected by the proposed actions. Include dates of consultations.

This project developed from a participatory rural appraisal activity sponsored by the CEPF 2014-2015 involving the communities of Nae and Lolieng (CEPF grant 64357) in which the communities identified their key environmental concerns (i.e. turtle herbivory on *Caulerpa* seaweed and pig damage to crops (with final workshops occurred in March 2015)). Due to the remote nature of Mussau island which has no telephone towers or land lines WCS has since communicated letters to

the community of our intention to develop a project with the CEPF to help address their concerns. Further input from the landowners will only be able to be gained during a field trip scheduled to take place in July 2016 to gain the free and prior informed consent of the Nae and Lolieng communities.

WCS PNG has two agricultural officers who contributed to the project proposal and are currently undertaking similar food security projects in Manus and New Ireland. Dr James Reardon a New Zealand based scientist with the Department of Conservation who has been heavily involved in invasive species eradication and control was consulted to identify the leading ungulate (pig) control specialists to provide technical advice on this project. Dr Reardon identified Norm MacDonald of Native Range (http://nativerange.com/) as the world's leading ungulate eradication specialist. WCSPNG has undertaken preliminary talks with Mr MacDonald regarding the aims and goals of our project proposal and Mr MacDonald has verbally agreed undertake the consultancy aspect of the project.

15. **Disclosure**: CEPF requires that safeguard documents are disclosed to affected local communities and stakeholders prior to project implementation. Please describe efforts to disclose this impact assessment and environmental management plan and provide dates.

This will be undertaken with the communities of Nae and Lolieng during the initial island field trip as part of the wider free and prior informed consent (FPIC) process which is scheduled for July 2016.

17. Monitoring and Evaluation: This section aims to outline what steps the proponent will take to monitor and evaluate the impact of the proposed intervention.

a. Design phase:

For both components WCSPNG will record the names of the consenting landowners (with their signatures) involved in the interventions (both marine and terrestrial) and map the spatial extent of the planned intervention GPS.

b. Construction phase:

WCSPNG will monitor site disturbance (through photo-points) , to ensure that there is no unnecessary damage to the surrounding area, and that health and safety measures are followed by the community and WCS staff - consistent with CEPF standards.

c. Operation phased:

WCSPNG will monitor all interventions throughout the project during each island trip for unintended effects and will advise the community and CEPF should any such effects appear. In the unlikely event of any deleterious effects the offending project activity would be immediately stopped and mitigation measures identified and implemented.

WCSPNG will arrange for the composting of agricultural (vegetable) waste and will ensure non-organic waste is shipped back to Kavieng for garbage disposal unless the community have made a specific request for items which can be safely reused (e.g. non-toxic plastic containers for holding water).

d. Written project updates (and repatriation of monitoring and evaluation results via community meetings) will be undertaken by WCS with each island visit. WCS will also provide with CEPF quarterly environmental safeguard reports. Should any negative

incidents occur they will be described in the reports, including the effectiveness of the subsequent mitigation measures undertaken by WCS.