



Samoa

Introduction

As the first part of the Community Conservation Resilience Initiative (CCRI) in Samoa, Ole Si'osi'omaga Society Incorporated (OLSSI) conducted community consultations and mangrove surveys in the villages of Toamua, Saina and Vaiusu. Samoan villages have sovereign governance directed by cultural protocols, with the land and sea controlled by the customary tenure system. [1] This has created problems for mangrove management because the government law states that all land under the high water mark is government land. [2]

Many households in these villages still depend on mangrove ecosystem services like fisheries for food, security and income. [3] The mangroves are also home to a range of indigenous bird species. However, the residents claimed that ecosystem services have declined dramatically as a huge part of the mangroves have been destroyed due to urbanisation, industrial activities, population expansion, climate change and over-harvesting. [4] Regrettably, legislation and cultural protocols have been unable to prevent this ongoing disaster. Additionally, a large portion of the community population resides on the



CCRI in Vaiusu community mangrove plantation. OLSSI/CIC

“mangrove denuded low-lying coastal zone,” which is just a few feet above mean sea level. As a result, these people are extremely vulnerable to high swells during stormy weather and in the advent of a tsunami.

Nonetheless, the government and communities have now joined forces to strengthen mangrove conservation and climate change resilience. [5] This is critical in keeping the local population from relocating inland. Such a move, regardless of its appropriateness, can be culturally devastating

because the community will lose touch with its original surroundings that helped mould its cultural identity. Likewise, it will have negative environmental implications since relocation involves land use changes, including the conversion of pristine habitats into residential areas. Hence, government-community partnerships are a move in the right direction and should embrace the development of proper and relevant biodiversity policies.



Community Conservation Resilience in Samoa

The three communities are all committed to the Community Conservation Resilience Initiative (CCRI) and Vaiusu has already taken the next step to implement its commitment. The Vaiusu women's committee has developed a two-acre mangrove plantation in an adjacent mudflat as part of its rehabilitation/conservation long-term plan. They recognise the need to reverse the conditions causing mangroves to decline. Mangroves are necessary not only for livelihood security, but for the health and resilience of the intricate network of interconnected ecosystems including lagoons, mudflats, seagrass beds and coral reefs.

The biodiversity assessment in Vaiusu revealed that

approximately 50% of the mangrove scrubs in the area have been destroyed. The remaining scrubs are mainly the *Rhizophora samoensis* species while the *Bruguiera gymnorrhiza* species constitutes less than 1%. The assessment also indicated an increase and dominance of invasive plant species in fragmented parts of the scrubs. The assessments in the Toamua and Saina communities portray a similar situation and hence these communities are quite aware of the need to reverse the declining mangrove conditions.

Conservation and rehabilitation of mangroves is vital for a resilient ecosystem. It leads to the replenishment of fisheries and secures a safe haven for indigenous bird species, some of which are already extinct [6] while many more are currently threatened. Furthermore, mangroves generate a closed canopy which reduces the presence of invasive species such

and resources. Two major internal threats are wastewater and land reclamation.

Wastewater is discharged directly into the mangroves and lagoons promoting algal bloom, which can smother and kill young trees and seedlings. Additionally, land reclamation enhances siltation in the water, which smothers

pneumatophores, limits nutrient supplies, and kills mangrove trees. This in turn results not only in a reduction in the number of fish, but also threatens the extinction of indigenous birds. Local fisherfolk also cause some damage to young mangrove trees with their canoe hulls when they cross the foreshore at night, and pigs inhibit the growth of young trees

as they forage for food by digging in the mangrove areas.

The mangrove plantations are also prone to external threats including high tides and strong waves that break and uproot young trees. Climate change and rising sea levels have exacerbated these threats. In addition, the nearby Fulu'asou River has destroyed previous plantations when flooded and this is still a potential threat today. Solid waste, in particular plastic pollution from waste dumps and sand dredging are also potential threats that need to be addressed. [7]



as the myna bird (*Acridotheres tristis* & *Acridotheres fuscus*) and the red vented bulbul (*Pycnonotus cafer*). Mangroves improve the health, productivity, and resilience of the intricate network of interconnected ecosystems in the adjacent lagoons, mudflats, seagrass beds and coral reefs. They reduce salinity intrusion into lowland areas, which host a large percentage of community plantations and hence improve the resilience and productivity of inland ecosystems including agriculture.

Through consultations and surveys, community members identified a range of threats to mangrove habitat



Preliminary Conclusions and Recommendations

The three communities are committed to mangrove conservation and have initiated a range of solution-oriented approaches, strategies and policies to counter both internal and external threats. A simultaneous positive attitude change at both the community and household levels has emerged, which underlies the development of a more responsible outlook regarding proper and sustainable resource use. The result is a mangrove management approach anchored in long-term vision and commitment with stronger community participation (by both men and women) in the decision-making process. In this way, practical and meaningful policies and bylaws can be developed to improve the integrity and resilience of mangrove biodiversity in local communities. The three communities have already developed village bylaws focused on protecting the integrity of the habitat. These include a ban on cutting mangroves, unsustainable fishing practices, and dumping rubbish in the mangroves. They have also begun a dialogue with the government and OLSSI to develop mechanisms to realize this focus. [8]

The Vaiusu community, in partnership with OLSSI and the Ministry of Agriculture and Fisheries have produced a fishing guidelines document that focuses on sustainable fishing in the village's traditional marine fishing grounds. [9] Furthermore, OLSSI has worked with the three communities to compile mangrove biodiversity audits, which now form the baseline database used at both the

community and national levels. [10] These indeed will immensely help in developing proper community and national mangrove biodiversity management action plans. The audits are far from being exhaustive and there is a need for further research.

The communities have also requested the government to help implement further changes in a range of areas. The government should improve wastewater treatment and disposal as well as sewage facilities to minimise leachates. This requires developing a robust and durable infrastructure, and legislation and policies that are relevant and meaningful to the communities. Furthermore, existing legislation should be modified to limit mangrove conversion and the use of cultural protocols should compliment legal policies in mangrove rehabilitation and conservation. There also needs to be more legislative control and biodiversity friendly practices around sand mining so that the sedimentation and turbidity of mangrove and lagoon waters are minimised. Finally, the old Vaitoloa rubbish dump needs to be rehabilitated so that the pollution threat is totally removed.

Besides the government, support from donor agencies and NGOs play a pivotal role in enhancing the resilience of the target communities and associated mangrove biodiversity. The three communities do not have the capacity or resources to resolve the threats outlined on their own. External assistance is pertinent and the

communities outlined a range of areas for collaboration with outside actors. The communities need funding and technical assistance to improve mangrove rehabilitation and management, as well as detoxifying the old Vaitola rubbish dump. Though the communities are aware of climate change, they need capacity building in this area, as it is an ongoing process. They need support to enhance their skills and revive traditional knowledge and practices related to mangrove management. In particular, women's knowledge and participation in the decision making process and project implementation needs to be encouraged. Initiatives like the women's conservation project in Vaisu should be replicated. Finally, advocacy and lobbying is crucial and outside actors are important partners who can assist with monitoring and evaluation of the CCRI, giving support to the communities, and sharing the communities' experience with wider audiences. These recommendations will help support local communities in long-term mangrove conservation and resilience in Samoa.



Testimony

"Our once rich mangrove resources supported community livelihood for generations. Legends claim that the mangroves and abundance of fish and edible marine life were part of an award for bravery granted by Tui Manu'a to Malalatea, a renowned warrior from Toamua village. This environment, however, has deteriorated dramatically because we failed to uphold sustainable fish harvesting practices and cut mangroves for firewood. Urbanisation has also contributed significantly to the decline. Our goal now is to restore our mangroves, which will enhance ecosystem resilience and simultaneously strengthen protection from extreme tidal activities."

- Leaoaniu Patolo of Toamua Village



References

- [1] Saifaleupolu 1996, A Framework for Environmental Management; Elisara 2006, Customary Land Tenure Review.
- [2] GoS 1960, Constitution of Independent State of Western Samoa 1960; also in GoS 1997, Lands Survey and Environment Amendment Act 1997.
- [3] GoS 2012a, Population & Housing Census 2011.
- [4] Saifaleupolu & Elisara 2015, Biodiversity Audit for Vaiusu, Vaigaga & Vaitele; 2014, Biodiversity Audit for Toamua.
- [5] Siamomua-Momoemausu 2013, Mangrove Ecosystems for Climate Change Adaptation and Livelihood; GoS 2012b, Strategy for the Development of Samoa.
- [6] For example, the Pacific black/grey duck (*Anas superciliosa*), blue-crowned lorry (*Vini australis*) and the purple-capped fruit dove (*Ptilinopus prphyraceus*).
- [7] SROS 2009, The Effects of Chemical and Microbiological Contamination on Vaitoloa Mangrove and its Ecosystem.
- [8] Saifaleupolu & Elisara 2015, Biodiversity Audit for Vaiusu, Vaigaga & Vaitele; and also in Ellison et al. 2007, Assessment of the Vaiusu Bay Mangroves.
- [9] Vaiusu Village 2006, Tusi Ta'iala mo le Vaia Lelei o l'a ma Figota.
- [10] Saifaleupolu & Elisara 2014, Biodiversity Audit for Toamua; and also 2015 Biodiversity Audit for Vaiusu, Vaigaga & Vaitele.

