

Samoa and Japan - concerns over mangrove development¹

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Abstract

The community based conservation (CBC) paradigm predicts that sustainable biodiversity can only be achieved if local people perceive benefits from conservation. Through interviews, the situation in Samoa portrays that the CBC of mangroves was received with apprehension because the mangrove biodiversity was more significant than sustaining the livelihood of the local communities. In contrast, Iriomote Island residents were able to achieve maximum socio-economic benefits but to the extent that they were over commercializing the mangrove ecosystem. More research is imperative to find out how biodiversity conservation can be married with sustainable development objectives to sustain the local communities' livelihood.

Introduction

Local perspectives and the achievement of development objectives are of fundamental importance to any resource management effectiveness or sustainability. Just at the turn of this century, community-based conservation (CBC) has gained much attention as a tool for achieving the twin challenges of biodiversity conservation and sustainable development. It is based on the assumption that by increasing the value of biodiversity to local communities and by empowering them to participate in the development or management of natural resources, local communities will take this as an incentive to conserve "their" biodiversity. Eventually, sustainable type of development will be achieved.

However, in this paper, an evaluation of CBC in mangrove development has shown some mixed results. In the mangrove conservation development at Sataoa-Saanapu the success in putting those concepts into practice has often been well below expectations. On the contrary, the CBC development of mangroves in Iriomote Island of Japan shows some success but also potential disadvantages. Samoa may be able to learn something from the CBC management of the Japanese.

This paper also argues that one of the reasons for some of the failures of CBC in mangrove development is attributed to the flaws and limitations of the sustainable development concept itself. Before dwelling on the results of this study, it will first highlight these limitations and define CBC to understand how these attributes have had mixed results in the CBC development of mangroves.

Sustainable development

Sustainable development seems to be the 'in-thing' of the twenty-first century. It has become so fashionable in the social science disciplines of geography, environmental science, and science that, in fact, the United National University declared January 2005 as the start of the 'decade of education for sustainable development.' In retrospect, the same scholars in these

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disciplines have argued that sustainable development has certain flaws and limitations for instance, in the definition itself.

Sustainable development is defined as the 'sustainable or effective utilization of resources so that its supply can be maintained for the future generation.' In countries like Africa where famine is widespread and resources are meagre, the nation struggles to ensure that the inhabitants can make ends meet with the limited resources at hand. In such a case, how can one ensure that the supply for the future generation is maintained when the needs of the current population are not being met?

Second, sustainable development as opposed to economic development lacks a unit of measurement to ensure its progress. In economic development, the gross national product or GNP is used as a yardstick to measure a country's economic progress. In sustainable development there is none.

Third, since sustainable development does not have any measurement, it does not also have a blueprint or guidelines to show one method or approach on how sustainable development can be achieved. Despite these limitations, development planners has tried to adapt certain approaches such as CBC to try and achieve sustainable development. Sustainable development and CBC has some similarity in its definition as follows.

Community-Based Conservation (CBC)

CBC is defined as the "organized efforts to increase control over resources" (Pearse & Stiefel, 1979; Paul, 1987).² The approach implies a bottom's up approach as opposed to the top-down approach that has been blamed for a lot of the developmental failures within the last two decades. It can happen in four ways, that is: pressure from individuals, sometimes landowners; initiated by private charitable or commercial organizations; grassroots pressure from indigenous people; and direct intervention by central government.³ Most of the CBC programmes imposed upon mangrove environments are directly intervened by the central government. Such has been the case portrayed in the two contextual areas of Samoa and Japan.

CBC of mangroves in Samoa

CBC of mangroves in Samoa has already been examined in Boon (2003).⁴ To reiterate its findings the CBC mangrove project was short-lived because the conservation of the mangroves was at the expense of the socio-economic livelihood of the local dwellers. When the project stipulated a 'no enter no use' approach to the mangroves local people were dissatisfied because the mangrove ecosystem and its surroundings were the basis of the local people's livelihood. They relied on it for: marine products daily not only for food but cash income and family, village and even church obligations occasionally, mangrove wood for construction; firewood daily; domestic activities when water supplies are cut occasionally; recreation such as swimming for the young ones occasionally and decoration for many festivities; and many other uses.⁵

Second, a change of mangrove use for ecotourism was new. Many were not inadequately skilled to pursue it but also the Ministry of Environment conservation area officer as well as the Tourism Authority personnel did not have follow up to ensure ecotourism is sustained and well maintained. It was clearly evident in this case that since the CBC was not initiated by the local people there was very little commitment to ensure its development.

By way of summary, any development project should come from within the community and if it is initiated by them they will ensure that the beneficial outcomes of the projects will be for them and not to meet international aid stipulations. Local government bodies as well should maintain follow up monitoring of any new project to ensure its sustainability. Park et al. (1992)⁶ distinctively wrote, ‘if you want to protect the Samoan environment you must rely on the villagers to do the job.’ A more effective implementation and follow up programme is imperative to ensure that there is continuous participation, interaction and sustainability of the programme until the villagers are convinced that there is a holistically beneficial effect from the ecotourism project. The case somehow differed in the Iriomote Island case in Japan.

CBC on Iriomote Island, Japan

Iriomote Island, with a population of only about 2000 people, is the second largest island approximately 289 square kilometres in Okinawa Prefecture. Because of its position around the 24°17 north latitude and 123°53 east longitude in the Pacific Ocean, the climate is subtropical with heavy typhoons during the months of June to October. About 90% of the island is state-owned, half of which is a national park with a total mangrove forest area of about 400 hectares (Figure 1).⁷

In the same year when Okinawa was returned to Japan in 1972, the national government designated Iriomote Island as their national park to protect in particular the Iriomote wildcat (*Felis iriomotensis*) as evident in Plate 1. Before 1967, this cat was unknown. In 1996, this wildcat is now proven endemic to the island and it is categorized as an “endangered” species in the International Union for Conservation of Nature’s (IUCN) Red Lists. Later on, in 1998, the Japan’s Environment Agency (JEA) has proven through their annual green survey that there is only about 100 cats survive.⁸



Plate 1: The Iriomote Wildcat⁹

In protecting the wildcat, there was a concern not only to conserve the scenic beauty of forested areas but also protect the mangrove forest and some endangered species including the crowned or crescent serpent eagle (*Spilornis cheela perplexus*), emerald doves, and the

Cuora falbomarginatas. Through the JEA's green survey it was discovered that the endemic flora or plant species is important and rare not only to the island but also in Japan and to other subtropical areas in the world, as Ota eloquently puts it, a 'world treasure-house of untouched nature'.¹⁰ However, the main reason for preserving the mangroves was because during low tide and at night time, the wildcat wanders through these areas to find food as identified through traces of its footprints as found in a research study. By monitoring these footprints, the same sizes and traces of it were also found in the forest areas during the day time when there is high tide.¹¹ Through these research findings, the government controlled the infrastructural developments of the island by using zoning measures. In effect, the Ministry of Environment zoned the park into three areas, known as the *special*, *ordinary* and *marine reserve* park sections.

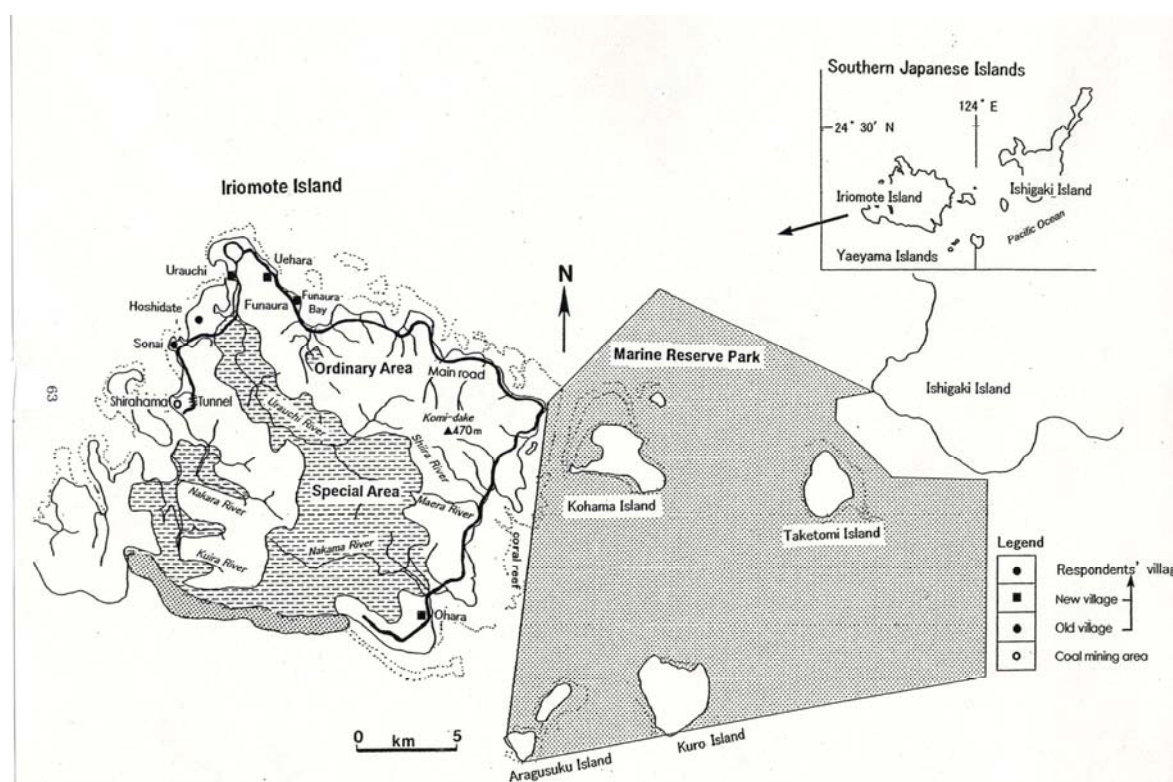


Figure 1: Iriomote Island Park Zones, Okinawa, southwest Japan¹²

In the special and marine park areas almost no developments are pursued while the mangrove areas, the Sekisei Lagoon as well as the entire settlement villages are ordinary areas. Development activities can progress in the ordinary areas with the Ministry of Environment's approval. All mangroves are national forest managed by the Forestry Department whilst construction activities are controlled and managed by the Ministry and the Taketomi Town Office. The approved infrastructure constructions support nature-based activities in particular ecotourism. For example, only one main road surrounds the island with limited footpaths. Travelers to Iriomote Island can only be reached via a 45-minute ferry from Ishigaki Island where the main airport is located, the only other evident constructions are the ship transport and mooring facilities. Picnic areas and related facilities are sparsely found in the area to serve the ecotourism industry while the locals are given fishing permits only to fish far out in the sea within October to March for the sake of regeneration in summer..

Interestingly, through interviewing, those who were monitoring these controlled development on the Iriomote Island national park had introduced another type of industry which was somehow in its embryonic form but could perhaps be an appropriate model for sustainable development to achieve, that is an education based industry.

Education-based industry in Japan

Within the last three decades, the Faculty of Agriculture of the Ryukyu University set up an Iriomote Station to utilize the area as a ‘living laboratory’ to conduct research on subtropical animals and plants in the region, building a research base amidst the abundant surroundings. Since 1994, it has been renamed as the Tropical Biosphere Research Centre. The Centre has extended its affiliations to the Ministry of Education who assists in promoting research via funding provisions.

As a living laboratory, the Director of this Tropical Biosphere Research Centre has promoted vast research not only in mangroves but in all other flora and fauna. The studies are numerous. Mangrove ecosystems dynamics in all aspects – human and physical – have been researched published for instance in the *Galaxea* journal, which is dedicated just on mangroves. The GLOMIS – Global Mangrove Information System – websites are filled with many other articles on mangroves. This goes to say that many who have interaction with mangroves are mainly researchers.

In a study conducted on fifteen Iriomote Island residents, six mangrove-related activities (MRA) were identified by simply asking *what do you do when you enter the mangroves?*¹³ Figure 2 portrays these type of activities which includes: research/education, kayaking, sightseeing, leisure, food extraction, and dyeing. The study also showed that not all those who had interaction with mangroves were inhabitants. Four groups of people were identified. They were the: 1) Iriomote Island indigenous (or inhabitants), 2) second-generation residents of earlier migrants to Iriomote Island before it became a National Reserve, 3) newly established immigrants to Iriomote Island after it became a national reserve, and the 4) seasonal visitors. These people were all Japanese and although came from different places within Japan. Although they had diverse Japanese origins they all had a bearing on the maintenance of these activities on Iriomote Island in general.

Education based industry relies on the information and results of the research studies conducted in the Iriomote Island flora and fauna. The idea is that when a group of researchers have completed their researches, the Centre will then publicize a seminar on the website. Hopefully, the results will attract interest from other researchers all over the world and within Japan. When the recipients are intrigued about the results and are encouraged to visit Iriomote Island, they will attend and participate and would have to pay registration. When these seminars are held, local inns will have guests. Those involved in the primary agriculture will be able to supply the local inns with fruits, vegetables, and meat or marine products while transport tours will be arranged and the socio-economic status of the people will improve. With this type of industry, there are only footprints within the ecosystems. As long as the island is used in this way, the environment is maintained and preserved for further research.

In this sense, the education based industry is based on information and by sharing it via seminars it becomes like a business where you pay registration, accommodation and food like a business venture. Such a type of industry aims to strengthen the local people’s knowledge on their environment as well, by disseminating these research results and findings. In this way, the education based industry ensures that it has a multiplier effect to all other sectors.

Already there are local people of the second generation on the Island who are conducting kayaking, ecotour guiding, sight-seeing and self-guided tours as indicated by Figure 2 findings. Within the Urauchi River (see location in Figure 1) where there are mangroves, a motorboat sightseeing with a self-guided tour in the mangroves cost an adult 1,500 yen (~\$15USD), while the child half of this (750 yen or \$7.50 USD). According to the owner, the Urauchi River Ecotour Company receives an average of 300 visitors a day. On a yearly basis, 50,000 was reported, a number that has tripled since it begun. Compared to the national statistics of 1998, there are 250,000 tourist arrivals to Iriomote Island which means one fifth visits the Urauchi River mangroves for either sightseeing or kayaking to this company.¹⁴ A more accurate reporting on the statistics for those visiting the island for such seminars and sightseeing for these flora and fauna will manifest the success of this venture.

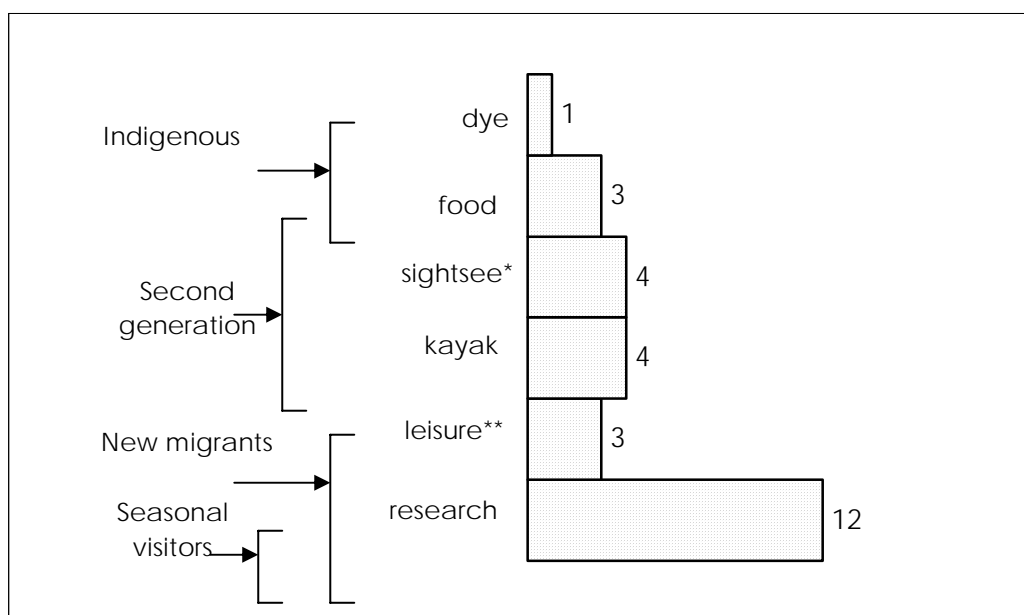


Figure 2: Iriomote Island respondents MRA

*includes motorboat rides and nature trekking; **leisure includes bird watching, nature walks, wildlife photography

Conclusion

In conclusion, those who have interaction with the Iriomote Island mangroves were mainly the academics who were grouped as seasonal visitors in particular the researchers. The residents do not rely solely on this ecosystem for a subsistence livelihood as the Samoans. Therefore, the balance in maintaining their socio-economic status as well as preserving the biodiversity of the area seems to have some success in such a CBC. In Figure 2, there is evidence that Iriomote Island people maintains the aesthetic and leisure way of lifestyle which assures the quasi-naturalness of the local ecosystems and are deemed appropriate for what is left of Japan's wetlands in the context of an overcrowded and congested mainland already environmentally polluted and destroyed. However, Shackley (1996) has noted that if the number of tourists increases to more than a 100,000, they will eventually develop the 'Galapagos effect' where the ecosystem will be destroyed because too many will tramp on the various ecosystems. More research is therefore needed to strike the right balance on maintaining environment and socio-economic status of the locals concerned to attain sustainable development.

Notes

1. This presentation at the Green Forum is a relic of the author's doctorate thesis submitted to the Department of Geography at the Ochanomizu University of Tokyo, Japan in March, 2004.
2. Little, P.D. 1994. The link between local participation and improved conservation: A review of issues and experiences. In *Natural connections: Perspective in community-based conservation*. Western, D., Wright, R.M. (eds.) & Strum, S.C. (Assoc.ed.). Island Press, Washington D.C. and Covelo, California, pp. 347-372.
3. Shackley, M. 1996. *Wildlife tourism*. International Tourism Business Press, London, p. 83
4. Boon, J.M. 2003. Community-based conservation of mangroves in Samoa. *Journal of the Graduate School of Humanities and Sciences* 5: 441-448.
5. Boon, J.M. 2001. A socio-economic analysis of mangrove degradation in Samoa. *Geographical Review of Japan (Ser. B)* 74 (2): 159-186.
6. Park, G., Hay, R., Whistler, A., Lovegrove, T. and Ryan, P. 1992. The national ecological survey of Western Samoa: The conservation of biological diversity in the coastal lowlands of Western Samoa. Report compiled by the Department of Conservation of New Zealand.
7. Fujimoto, K. and Ohnuki, Y. 1995. Developmental processes of mangrove habitat related to relative sea-level changes at the mouth of the Urauchi River, Iriomote Island, southwestern Japan. *Annals of the Tohoku Geographical Association Quarterly Journal of Geography* 47: 1-12.
8. Izawa, M., Sakaguchi, N. and Doi, T. 2000. Recent conservation programs for the Iriomote cat *Felis iriomotensis*. *Tropics* 10 (1): 79-85.
9. Source: <http://eco.goo.ne.jp/wnnz/files/data/japan/japan.html>
10. Ota, M. 1999. Iriomote: Mangrove Island, *Pacific Friend* 26 (12): 2-8.
11. Izawa, et al. (ibid).
12. Boon, J.M. 2004. *Sustainability of socio-economic activities in the community-based conserved mangroves*. Unpublished PhD thesis, Department of Geography, Graduate School of the Humanities, Ochanomizu University, Tokyo, Japan.
13. Author's survey, 2002, 2003 compiled in Boon, 2004 (see note 10 above).
14. Yaeyama Town Office, 2001. *Yaeyama survey 40 (Yaeyama Yoran)*. Yaeyama Town Office, Okinawa Prefecture, Japan. (Japanese text only).