

Community-Based Conservation of Mangroves in Samoa

Juliet Mavis BOON*

Introduction

One of the explicit things emerging from two decades of debate is that successful nature conservation would be determined on the local community's participation. Empowerment, endogenous development, rapid rural appraisal, and self-reliance number among the many development advocates, including community-based conservation (CBC) (Chambers 1994, Mangaraj 2000-2001, Nel et al. 2000, Little 1994). The approaches asserted to redirect development because top-down approaches were flawed by not trickling down any assumed social prosperity effect, but inevitably creating poverty and environmental degradation among the other development failures highlighted in the last millennium (Korten 1990). The failures attribute to the exclusion of the local communities who are directly involved in the control of the resources.

Parallel to this view is the perceived factors and consequences of mangrove degradation, leading recently to its preservation. Boon (2001) suggests that the problem in assessing the costs of mangrove damages is difficult because the consequences are often geographically and socially remote from the places where the decisions are made and the environmental interventions take place. Hence, development strategies encouraging mangrove destruction through reclamation enhances poverty among those who directly subsist upon the mangrove resources.

Although, there are controversies in the power exerted over the control of resources, in the Samoan islands a hierarchy of chief (*matai*) system still controls about eighty percent of land via customary ownership, including mangrove areas. Therefore, long-term survival of conservation projects may be uncertain, when families face a dilemma in an attempt to maintain conservation aims for mangrove biodiversity as opposed to the daily socio-economic sustainability of the villagers whose livelihood also depends on the mangrove resources. It is indispensable to clarify community-based participation and conservation, along with its spatial development, before detailing the mangroves' CBC project in Samoa.

Community-Based Participation and Conservation

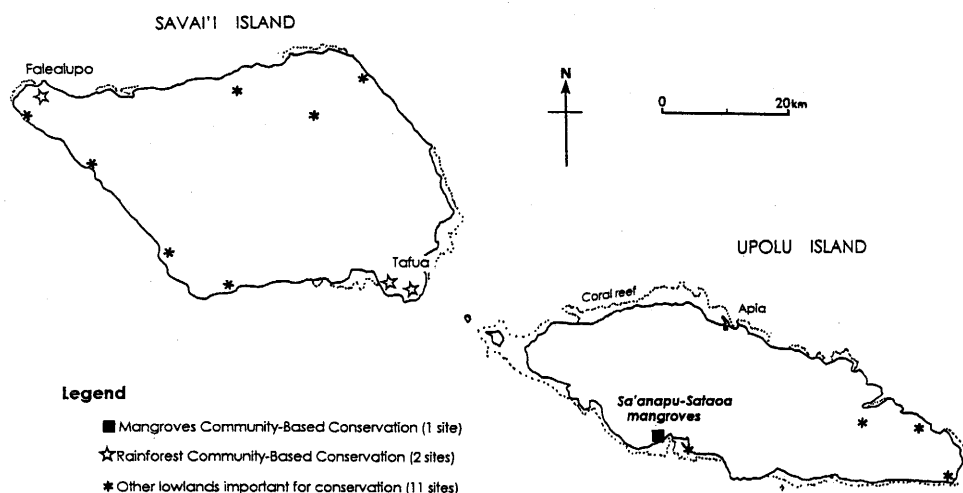
Community-based participation is defined as the "organized efforts to increase control over resources" by Pearse & Stiefel (1979), and Paul (1987) in Little (1994). Therefore, locals should direct and execute any development project that intends to enhance their well-being in terms of income, personal growth, self reliance or other values they cherish. This was observed as to the community-based participation bee-keeping efforts in Zimbabwe (Nel et al. 2000).

Over the past decade, CBC also became fashionable as it spread globally through the management of natural forests in Zimbabwe, Costa Rica, Nepal, and Australia (Donovan 1994, Hill & Press 1994, Metcalfe 1994, Wells 1994). Although CBC is viewed as a new paradigm in human-environment relationships of this era, Little (1994) argued that community or indigenous control over resources had been intact in many traditional Oceanic societies as in Micronesia (Johannes 1982), Samoa (Cox & Elmqvist 1991), and Papua New Guinea (Pearl 1994).

Particular reference to mangroves indicated that community effort to restore them has advanced in Asia (Hong et al. 1996). However, mangrove's CBC had been studied limitedly in Samoa, excepting, brief references made in Boon (2001). Hence, the attempt of this paper is to examine a case in Sa'anapu and Sataoa villages, as the first trial in Samoa as illustrated in Figure 1 (Tiatia 2001, *pers. comm.*). This paper will trace the factors that prompted a CBC project in this area, and discuss the community attitudes toward the project.

Key words : biodiversity, community-based conservation, development, local participation, mangrove environment, Samoa

*平成13年度生 複合領域科学専攻



Source: Adapted from Taule'alo (1993). Falealupo and Tafua rainforest CBC sites were extracted from p. 17, while the other sites were from p. 15.

Establishing a Community-Based Project in Samoa

The CBC project initiative enabled local communities like those in Samoa to partake in mangrove conservation, thus protecting its biodiversity. The idea was influenced by the "Earth Summit" held in Rio de Janeiro, June 1992. Commitments to support this trickled down to the local levels.

International biodiversity convention

Community-based programme began as a commitment to save the world's mangrove ecosystems emphasized in the "Earth Summit". Nine months after the convention, Samoa Government developed an interest in being a Party to three environmental treaties, including the Convention on Biological Diversity (CBD). The absence of an international organization dealing with the preservation of genetic diversity to a large extent provided the impetus to adopt the CBD toward mangrove preservation in Samoa (Peteru 1993: 65). To pursue this, the Summit called upon the developed and developing nations to cooperate in overcoming poverty and land degradation, thus protecting natural habitats including mangrove's biodiversity to support a healthy environment toward sustainable development. In effect, developed countries poured funding to various environmental institutions¹⁾ through grants, which assisted the establishment of the South Pacific Biodiversity Conservation Project (SPBCP) led by the Department of Environment and Conservation (DEC) of Samoa's Department of Lands, Survey and Environment (DLSE) (SPBCP 1993).

National commitment

As a concomitant to saving the environment, Samoa had its own national strategy plan, a vision that social, cultural, and environmental values should be incorporated into various policy reforms to improve socio-economic conditions (GOS 1998: 4). However, even with a low population growth rate of 0.7% due to emigration, Samoa has experienced environmental degradation. Two devastating cyclones in the 1990s, coupled with the taro blight, and alarming environmental issues, including mangrove deforestation through reclamation for urban infrastructures and rubbish dumping, resulted in severe biodiversity loss and socio-economic decline of the country (Taule'alo 1993). Since seventy to eighty percent of Samoans rely on marine protein for their daily diet, overfishing and mangrove destruction have already caused a rapid decrease of marine resources from the urban Vaiusu Bay (Zann 1991). In effect, the DEC created the SPBCP to preserve the remaining mangrove areas with adjoining coral reefs, which are less abundant than other Pacific Islands.

Local commitment

Prior to this commitment, moves for forest protection had progressed. In comprehensive inventory reports by Park et al. (1992) and Pearsall & Whistler (1991), Sa'anapu and Sataoa mangrove was earmarked as one of the important sites to be conserved. The CBC Area Project concept was coined in 1994 by the DEC, whose overall aim was, 'to conserve the biodiversity

of the conservation area through the creation of sustainable management and development practices for the component ecosystems in partnership between customary landowners, government and non-government agencies' (SPBCP 1993: 2).

Sa'anapu-Sataoa Community-Based Conservation Area

Sa'anapu and Sataoa villages are located in Upolu's southern coast and 75 hectares of mangroves demarcated for the CBC project lie within the vicinity of the villages (Figure 2). Three factors led to the prioritization of this site for conservation.

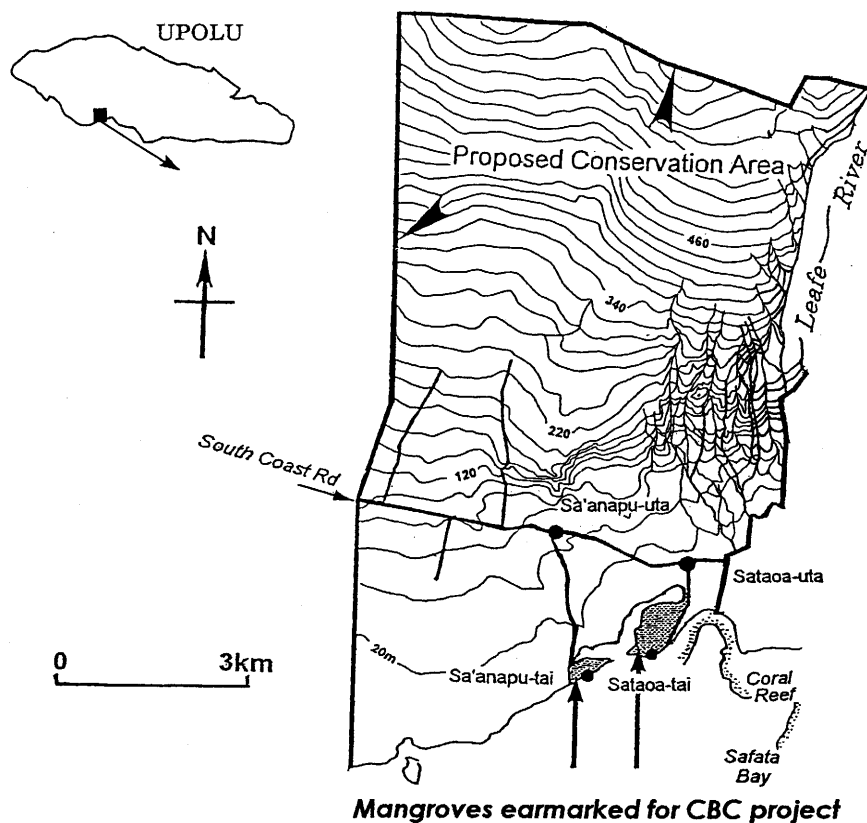


Figure 2: Sa'anapu and Sataoa village mangrove and proposed rainforest CBC site

Source: Adapted from SPBCP(1993). Contours were marked from Topographic Map 2000, Samoa-U1 Upolu West, Apia, Samoa: DLSE

First, Sa'anapu-Sataoa mangrove is one of the five most threatened coastal lowland ecosystems. Globally, the two major mangrove species of Samoa, the *Bruguiera gymnorrhiza* (*togo tane* or the male mangrove) and the *Rhizophora mangle* (*togo fafine* or the female mangrove), are ranked as the 4th most endangered and rare species labeled as *G4*. On Samoan local basis, 2nd or *S2*. The continuous decline of mangrove forest, fish resources and biodiversity throughout Samoa meant a rising value of this site for conservation. A diversified plant species appended in SPBCP(1993) also gave rise to the importance of protecting the areas' biodiversity. For these reasons, Park et al.(1992) declared Sa'anapu-Sataoa mangrove as one of the fourteen key lowland sites of natural ecological significance to be conserved.

Second, mangroves have a key role to sustain lagoon fisheries on which coastal villagers depend, as manifested by Taule'alo (1993), Thaman (1993) and Boon (2001) on mangrove biodiversity's role in providing medicine, ailment, and other products for

the locals' cultural festivities. This provided an opportunity to link ecosystem conservation with sustainable development in support of the Summit's themes.

Third, the villagers involved made a commitment to conservation, increasing the likelihood of the project's success. Considering the fact that mangroves are located on the customary land, DEC had to make negotiations²⁾ with the locals to gain their conservation efforts. Following are the locals' efforts and concerns of the mangrove's CBC project.

Participation Efforts and Concerns of the Mangroves' CBC Project

The first field observations and casual interviews began in December 1995 to ten locals who were mainly fishermen and farmers of Sa'anapu and Sataoa.³⁾ A follow up investigation on the locals' participation efforts and concerns of the mangrove's CBC project was conducted in December 2001 and July 2002, with not only the initial contacts but also CBC project implementation officials (Table 1). The queries included open-ended questions on: i) how the project was introduced and implemented, ii) its advantages and disadvantages, and iii) the concerns emerging from the project. Through the interviews it was indicated that the efforts to support the CBC project were conducted by the villages' top chiefs who established the Tourism Management Committee (TMC) in cooperation with the CBC project officials. By this time, some local family-based enterprises had flourished, as evident by the new occupational status portrayed in Table 1.

Table 1: Characteristics of the respondents before and after the Sa'anapu-Sataoa mangrove's CBC project was established in 1995

	Respondent	Sex	Occupation status	
			Pre-CBC	Post-CBC
Sa'anapu	I	M	Pn, Fs, Fm	TMC
	II	M	Fs, Fm	PM, IO, EG, CG
	III	F	Hw, Sg, W, H, L	
	IV	F	Hw, Sg, W, H, L	
	V	M	Fs, Fm	EG
Sataoa	VI	M	Fs, Fm	PoS, EG, IO
	VII	F	Hw, L	Store Proprietor
	VIII	F	Hw, H, W, L	BFP, Pp
	IX	M	Fs, Fm	
	X	M	Fs, Fm	EG, CG
<i>Others</i>				
DEC representative	XI	M	-	CASO ¹⁾
SPREP representative	XII	M	SPREP	SPREP

Source: Field survey in December 1995, and follow up in 2001 and 2002.

Pn - *Pulenu'u* (mayor); Fs - Fisherman; Fm - Farmer; Hw - Housewife; Sg - Shellfish gathering; W - Weaving fine-mats, hats, fans, etc.; H - Handicraft, L - Lei making, TMC - Tourism Management Committee; PM - Project Manager; IO - Information Officer; EG - Eco-tour Guide; CG - Canoe Guide; PoS - Principal of School (Wesley College) School; BFP - Beach *fale* Proprietor; Pp - Pot plant; CASO - Conservation Area Support Officer

Note:

1) CASO had two officers in succession and the author interviewed both, the recent one being Iteli Tiatia.

Recognizing the importance of mangroves for both their livelihood and the environment, the village council of the two villages called upon their chiefs for a meeting to establish rules and sanctions regarding the sustainable uses of the mangroves-related products. In effect, regulations set required the locals to prohibit the catch-and-sale of young crabs, fishes and other marine animals. To reinforce this, an appointed chief watches and accuses anyone who breaches this rule to the village council. If caught, a

fine will be imposed upon one's family through money, fine mats, livestock, tin-fish cartons, or other form of payments determined by the council. In case of repeated offence the relatives will also be fined, and this assures the effectiveness of the project.

There are other cooperative efforts. Since the establishment of the mangrove's CBC area, foreign tourists have been attracted to the area, giving multiplying effect on some locals. Villagers, for instance, have built a traditional thatched house (*fale*) as the Information Center, which has been run by a manager and an information officer appointed by the council. As explicit in Table 1, some of the respondents, who had been originally fishermen and farmers usual in Sa'anapu, became TMC members to administer the CBC project. Others became the project managers and/or information officers, ecotour and canoe guides. On the tourists' request, the knowledgeable local ecotour guide takes them on a canoe tour for sightseeing and investigation of various species living in mangrove swamps. According to the villagers, up to now, there is an average of three to four visitors per week to the CBC area.

Along with the canoe tour service, trail walks have been designed and operated. Other locals are trying to become proprietors of general store and private traditional beach *fale*,⁴⁾ as illustrated by the secondary occupational status of the two Sataoan women respondents in Table 1. Some have made souvenir textiles and handicrafts available for the tourists. These services have yielded additional income that contributes toward the Common Fund (CF) for each of the local communities' tourism business. As shown in Table 2a, if two visitors pay ST\$37 (US\$11.21) each to visit the Sataoa mangrove, 10% of its total will be allocated to the tourist firm who promoted the area for tourism, while the rest of the amount is added to the community's revenue. This is to be paid to the project manager on term basis agreed by the village council as within every three months in the case of the Sa'anapu's project manager, and on a daily basis to the guide, canoe owners (ST\$8=US\$2.42 as in 1995), and for the coconuts cultivated for the tourists' beverage. The rest is for the CF and the Sataoa community tourism business. According to the local mayors and CBC project managers, if they obtain more funds in the future, there is a long-term plan to renovate the village schools.

Table 2

a) Example of tour costing allocation to the Sa'anapu-Sataoa mangrove's CBC area

Source: *Terra Firma (1999: 11)*

b) Family-based beach *fale* revenue allocation to the Sataoa mangrove's CBC area

Source: *Sataoa Female Respondent VIII as in Table 1, July 2002, Sataoa.*

a)	1995 ¹⁾	<p>If two tourists do the canoe tour at Sataoa, where would the money go?</p> <p>ST\$37 x 2 tourists ST\$74</p>	<p>10% goes to Tour Agent who sells the tour ST\$7.40 (commission)</p> <p>ST\$66.60 goes to Sataoa community tourism business</p> <p>ST\$18 ecotour guide ST\$8 canoe owner ST\$8 Sataoa CF ST\$8 Sa'anapu CF ST\$2 coconuts</p> <p>The rest - ST\$22.60 is revenue for the Sataoa community tourism business of which 10% of ST\$66.60 (\$6.60) is paid to the Project manager (on term basis agreed by the village council)</p>
b)	1998 ²⁾	ST\$50.00 per night	<p>ST\$5 ecotour guide</p> <p>ST\$15 canoe owner</p> <p>ST\$30.00 is revenue for beach <i>fale</i> proprietor (inclusive three meals, coconut drinks, bedding and mosquito net)</p>

Notes:

ST *Samoa tala* CF Common fund

1) Initial costing when the project was proposed and operated in 1995

2) Reported costing based on a follow up to Sataoa, July 2002.

As for the family-based enterprises, an average of one tourist per fortnight accommodates the beach *fales*. For the families, the amount of ST\$50 (US\$15.15) per night accommodation, ST\$5 (US\$1.51) is allocated to the ecotour guide and ST\$15 (US\$4.54) to the canoe owner, while the rest is their revenue (Table 2b). The up-going socio-economic status of some villagers illustrate their potential to be involved in another area of employment other than a fisherman, farmer or a chief's wife. Another village proj-

ect has been established where the mullet is farmed and then thrown back into the sea for their consumption. In these cases, the mangrove's CBC scheme has proven to possess a myriad of socio-economic benefits.

On the contrary, uncertainty and misunderstandings also arise amongst other chiefs. Some locals doubted the CBC project, since they believe it was discouraging that the shellfish, crab and fin-fish fishing and lei making utilized from mangrove products were to be ceased. Other negated attitudes stemmed from misconceptions that moneys offered in the project negotiations were unequally distributed and shared amongst a few high chiefs. Also, dwellers are prohibited from subsisting on mangrove marine products for daily consumption and income, but asked to proceed only once a week or fortnightly to preserve the mangroves and its products in the area.

For those who have become private beach *fale* proprietors, tourists' occupancy is quite low. According to a respondent, currently, there is two to three guests' occupancy per month on the average. However, it takes two or three months before the next tourist comes, since only those with mangrove research interests are attracted to the site. Low frequency of occupancy rates will discourage the locals' interests, which is a potential obstacle to the long-term survival of the mangrove's CBC project.

Moreover, not all locals became proprietors as exemplified by only two women respondents in Table 1. Many subsist daily on fin-fish, and occasionally on shellfish and crabs for consumption and cash. Some collect firewood for domestic cooking, too. Since the prohibition, community members had improvised by clearing inland forests on their customary land situated away from the coast, in order to cultivate banana, coconut, yam, taro and other agricultural crops for consumption and cash (Boon 2001). These families argue that, crops take about six months to harvest and cannot meet their daily needs. For these reasons, not all community members support the conservation project. So far, there is ambivalence in the justification of the conservation programme when basic needs cannot be satisfied within such circumstances.

Conclusion

In Samoa, networking with external bodies to pursue CBC within, for, and by the community is a recent phenomenon. Its popularity within the last decade is highlighted by the proliferation of declared reserves, local based beach *fales*, mangrove rainforest visits ranging from forest trekking to swamp canoeing in mangrove reserves. Although, CBC was initiated as an ongoing SPBCP towards mangrove ecosystems, local communities are becoming the project beneficiaries. The CBC approach is also appropriate given that Samoa is not well-endowed with mangroves which are regarded *critically threatened*.

While mangrove conservation is important for long-term biodiversity goals, daily livelihood of the local dwellers should also be considered. Otherwise, there is a danger of the scheme to be short-lived and ironically defeating its sustainable purpose. If this will be the case, CBC is potentially flawed and remains controversial.

Acknowledgement

I am grateful to the support of the anonymous Sa'anapu-Sataoa villagers, and the efforts of the mangrove's CBC project officials', who made this article possible. I am also indebted to the endless support of my supervisor, Professor T. Sugitani for the provision of his time, patience and constructive critiques of an earlier draft of this paper. *Fa'afetai tele lava, Soifua.*

Notes

1) For instance, the Overseas Development Assistance, through the Global Environment Facility, provides funds to set up biodiversity status databases. The South Pacific Regional Environment Programme located in Apia, the capital of Samoa, manages these, which are transmitted through the United Nation Development Programme and Australia International Development Assistance Bureau, before distributing to the local institutions. About 5 million dollars were provided to establish South Pacific Biodiversity Conservation programmes (SPBCP 1993).

2) This was through a *fefā'ataua'iga* (trading) and *feutaga'iga* (negotiation) process whereby the DEC approached the Village Council (Fono) to trade the mangroves for preservation, while they assisted the communities initially through ginger farming. Although, it was impermanent, other measures were developed such as technical training of some locals to become project managers, ecotour guides, and family-based tourist entrepreneurs. The *Fono* is the supreme decision-making body in the village and there is a separate one for each of the villages concerned (Tiatia 2001 *pers. comm.*).

3) Refer to an earlier study by the author - Boon's (2001) paper on "A socio-economic analysis of mangrove degradation in Samoa."

4) According to a Sataoa respondent, her traditional beach fale's are reported in the *Lonely Planet* book series on Samoa: *Lanu's beach fale's*. When her family built the fale's in 1995, overnight charge was ST\$37 (US\$11.21). From 1998, it was raised to ST\$50.00 (US\$15.15) including three meals (Table 2b). In Sa'anapu there is *Manuia's beach fale's*.

References

- Boon, J.M. 2001. A socio-economic analysis of mangrove degradation in Samoa. *Geographical Review of Japan* (Ser. B) 74(2): 159-186.
- Chambers, R. 1994. Participatory rural appraisal (PRA) : Challenges, potentials and paradigm. *World Development* 22(10): 1437-1454.
- Cox, P.A. & Elmqvist, T. 1982. Indigenous control of tropical rainforest reserves: An alternative strategy for conservation. *Ambio* 20(7): 317-321.
- Donovan, R. 1994. BOSCOA: Forest conservation and management through local institutions (Costa Rica). In *Natural connections: Perspectives in community-based conservation*. Western, D., Wright, R.M.(eds.) & Strum, S.C.(Assoc. ed.), Washington D.C. and Covelo, California: Island Press, pp. 215-233.
- GOS - Government of Samoa. 1998. *Strengthening the partnership: A statement of economic strategy 1998-1999*. Apia, Samoa: Economic and Planning Policy Division, Treasury Department.
- Hill, M.A. & Press, A.J. 1994. Kakadu National Park: An Australian experience in comanagement. In *Natural connections: Perspectives in community-based conservation*. Western, D., Wright, R.M.(eds.) & Strum, S.C.(Assoc. ed.), Washington D.C. and Covelo, California: Island Press, pp. 135-160.
- Hong, P.H., Ishwaran, N., Hoang, T.S., Tri, H.N. & Tuan, M.S.(eds.). 1996. *Community participation in conservation, sustainable use and rehabilitation of mangroves in Southeast Asia*. Proceedings of the Ecotone V, 8-12 January, Hochi Minh City, Vietnam.
- Johannes, R.E. 1982. Traditional conservation methods and protected marine areas in Oceania. *Ambio* 11(5): 258-261.
- Korten, D. 1990. *Getting to the 21st century: Voluntary action and the global agenda*. Kumarian: West Hartford.
- Little, P.D. 1994. The link between local participation and improved conservation: A review of issues and experiences. In *Natural connections: Perspectives in community-based conservation*. Western, D., Wright, R.M.(eds.) & Strum, S.C.(Assoc. ed.), Washington D.C. and Covelo, California: Island Press, pp. 347-372.
- Mangaraj, B.K. 2000-2001. Management of development in the framework of culture. In *Compass: A Journal of Thought, Quest and Analysis* Archives: <http://www.expage.com/gacompass46/> (Accessed July 26, 2002).
- Metcalfe, S. 1994. The Zimbabwe communal areas' management programme for indigenous resources (CAMPFIRE). In *Natural connections: Perspectives in community-based conservation*. Western, D., Wright, R.M.(eds.) & Strum, S.C.(Assoc. ed.), Washington D.C. and Covelo, California: Island Press, pp. 161-192.
- Nel, E., Illgner, P.M., Wilkins, K. & Robertson, M.P. 2000. Rural self-reliance in Bondolfi, Zimbabwe: The role of beekeeping. *The Geographic Journal* 166(1): 26-34.
- Park, G., Hay, R., Whistler, A. & Lovegrove, T. 1992. *The national ecological survey of Western Samoa: The conservation of biological diversity in the coastal lowlands of Western Samoa*. New Zealand: Department of Conservation.
- Pearl, M. 1994. Local initiatives and the rewards for biodiversity conservation: Crater mountain wildlife management area, Papua New Guinea. In *Natural connections: Perspectives in community-based conservation*. Western, D., Wright, R.M. ,(eds.) & Strum, S.C.(Assoc. ed.), Washington D.C. and Covelo, California: Island Press, pp. 193-214.
- Pearsall, S.H. & Whistler, W.A. 1991. *Terrestrial ecosystem mapping for Western Samoa: Summary, project, report, and proposed national parks and reserves plan*. Prepared for the Government of Western Samoa. Apia, Samoa: South Pacific Regional Environment Programme, East-West Center, Environment and Policy Institute, Hawaii.
- Peteru, C. 1993. *Environmental legislation review*. Apia, Western Samoa: South Pacific Regional Environment Programme.
- SPBCP – South Pacific Biodiversity Conservation Programme, 1993. *Sa'anapu-Sataoa conservation area: Western Samoa project preparation document (PPD)*. Apia, Samoa: South Pacific Regional Environmental Programme (SPREP) and United Nations Development Programme (UNDP).
- Taule'alo, T.I. 1993. *Western Samoa: State of the environment report (SOE)*. Apia, Samoa: South Pacific Regional Environment Programme.
- Thaman, R. 1993. *Land, plants, animals and people: Community-based biodiversity conservation (CBBC) as a basis for ecological, cultural and economic survival in the Pacific Islands*. Paper presented at the Corail Conference, October 28-30, Kone, New Caledonia.
- Tiatia, I. 2001. *Personal communication*, Apia, Samoa.
- Wells, M.P. 1994. A profile and interim assessment of the Annapurna conservation area project, Nepal. In *Natural connections: Perspectives in community-based conservation*. Western, D., Wright, R.M.(eds.) & Strum, S.C.(Assoc. ed.), Washington D.C. and Covelo, California: Island Press, pp. 261-281.
- Zann, L. 1991. *The inshore resources of Upolu, Western Samoa: Coastal inventory and fisheries database*. Field Report No.5, Apia, Samoa: FAO/UNDP.

サモアにおける地域に根差したマングローブ林の保全

ブーン・ジュリエット・メイビッツ

サモアでは、二十年わたる議論の結果、マングローブ林の保全を成功させるためには、地域共同体の参与が不可欠となった。もし、プロジェクトが地域共同体の経済・社会福祉の維持に貢献できれば、保全戦略は効果が期待できる。理論的には、地域に根差した保全は、その共同体内部で、共同体によって、共同体のために、なされなければならない。しかしながら、現地観察と、住民、プロジェクト・マネージャー、そのプロジェクトに携わった環境省職員やNGOスタッフへの聞き取り調査によると、プロジェクトは地域共同体の日常経済や社会的要求を支えるためと言うよりも、むしろ国際的な環境条約にうたわれた「生物多様性維持」という目的を追求しているように思える。受益者が少数である場合には、利害対立や誤解が生まれ、地域密着型の保護計画に、あいまいな態度をとる地域住民もいる。地域密着型の保護プロジェクトは、いまだ論争の渦中にある。