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Rural Community Perceptions and Involvement in Conservation: Case Studies from the Fiji Islands and Southwestern Portugal

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RESUMO

Em muitos países é reconhecido que o envolvimento por parte da comunidade nas áreas protegidas produz benefícios significativos. Desenvolve um sentimento de posse dos recursos e os precessos de decisão e de gestão podem beneficiar da integração do conhecimento local e tradicional levando a uma melhor estratégia de conservação. Este estudo pretende avaliar a eficácia do envolvimento da comunidade nas iniciativas de conservação em dois países diferentes, através da análise do nível de envolvimento, e percepções das actividades de conservação, nomeadamente em relação à conservação da iguana (*Brachylophus vitiensis*) em Yadua (Fiji), em comparação com o Parque Natural do Sudoeste Alentejano e Costa Vicentina (PNSACV) (Portugal). Através da distribuição de questionários e de observações pessoais, foram obtidas informações sobre o envolvimento da comunidade nas actividades de conservação para os dois locais. Os resultados mostraram que, enquanto membros da comunidade, os homens especialmente, mostraram níveis elevados de participação em todas as actividades de conservação no caso das Fiji (88%), este não foi o caso do estudo em Portugal (43%), onde se verificou o oposto. Em ambos os casos, no entanto, o nível de envolvimento da comunidade influencia a percepção dos efeitos dos esforços de conservação sobre a vida das pessoas. O estudo mostrou que nas Fiji a conservação pode ser bem sucedida devido a uma adequada participação das comunidades locais. Isso contrasta com o estudo em Portugal, onde os esforços de conservação não tiveram em conta a opinião da comunidade, muitas vezes levando a conflitos e críticas. Uma abordagem mais holística para a conservação, incluindo uma visão mais ampla de necessidades de subsistência das pessoas e sistemas de conhecimento que capacitam os povos indígenas e comunidades locais e garantir a implementação bem sucedida dos programas de conservação no futuro.

Palavra-chaves:
Conservação, Comunidade, Envolvimento Percepções, Sustento.

ABSTRACT

It is widely acknowledged in many countries that community involvement in conserved areas provides significant benefits, including a sense of ownership of resources and conservation initiatives through integration of traditional and local knowledge into decision-making processes and management activities. This study attempts to assess the effectiveness of community involvement in conservation initiatives in two different countries, through examining the level of involvement in, and perceptions of, conservation activities in relation mainly to the conservation of *Brachylophus vitiensis* in Yadua (Fiji), with comparison to the Natural Park of Southwest Alentejo and Costa Vicentina (PNSACV) (Portugal). Using questionnaire surveys and personal observations, information was obtained on community involvement in conservation activities in the study areas. Results showed that while community members, especially men, showed high levels of involvement in all conservation activities in the Fiji study (88%), this was not the case for the Portugal study (43%), where results support the initial hypothesis but in a converse way. In both cases, however, the level of involvement did influence community perceptions of the impacts of conservation efforts upon people's livelihoods. The Fiji study showed that community-focussed conservation can be successful given appropriate involvement of local communities. This contrasted with the Portugal study where conservation efforts were not community-focused, often leading to conflicts and criticisms. A more holistic approach to conservation, including a broader view of people's livelihood needs and knowledge systems would empower indigenous peoples and local communities and ensure the successful implementation of future conservation programmes.

Keywords:
Conservation, Community, Involvement, Perceptions, Livelihood.

CONTENTS

TABLES AND FIGURES

ACRONYMS

APPSACV - Área de Paisagem Protegida do Sudoeste Alentejano e Costa Vicentina

CBD - Convention on Biological Diversity

CBMRM - Community-based Marine Resource Management

EEZ - Exclusive Economic Zone

FLMMA - Fiji Locally Managed Marine Area

IBA - Important Bird Area

ICNB - Instituto da Conservação da Natureza e da Biodiversidade

ISSG - Invasive Species Specialist Group

IUCN - International Union for the Conservation of Nature

LMMA - Locally Managed Marine Area

MPA - Marine Protected Area

NBSAP - National Biodiversity Strategy and Action Plan

NTF - National Trust of Fiji

PDM - Planos Directores Municipais

PNSACV - Parque Natural do Sudoeste Alentejano e Costa Vicentina

POOC - Sines-Burgau Plano de Ordenamento da Orla Costeira Sines-Burgau

POPNSACV - Plano de Ordenamento do Parque Natural do Sudoeste Alentejano e Costa Vicentina

PROT - Plano Regional de Ordenamento do Território

SIC - Site of Community Interest

SPA - Special Protection Area

SPREP - South Pacific Regional Environment Programme

SVL - Snout Vent Length

TDF - Tropical Dry Forest

UNESCO - United Nations Educational Scientific and Cultural Organisation

WWF - Worldwide Fund for Nature

YCP - Yadua Conservation Project

YTCIS - Yadua Taba Crested Iguana Sanctuary

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CHAPTER 1
INTRODUCTION

1.1 Study Rationale

In most Pacific Island countries and in Portugal, the coastal zone is one of the most environmentally and culturally important, but highly impacted areas. In recent years, local communities have emerged as leaders in the conservation and sustainable use of their natural resources through initiatives such as the establishment of protected areas, with the number of community-based conserved areas increasing annually (Veitayaki 1998). Conserved areas where the local communities are involved provide significant benefits, including provision of a sense of ownership of natural resources and conservation initiatives; integration of traditional and local knowledge into the decision-making process; and direct community involvement in management activities (including planning, restoration, monitoring and enforcement) (Veitayaki 2004). A continuum of community involvement ranges from one extreme, no involvement (as often seen in the management of rare species, where the total conservation of the species or ecosystem with minimal disturbance is needed) to community-based initiatives, where the conservation activity is community-controlled to ensure long-term sustainability. Lack of community involvement is more likely in developed countries, such as in Portugal, where there is public or privately owned land that only can be protected by national or local authorities than in the Pacific Islands, where there is limited government capacity for protected area management while most of the land and resources are owned communally, rather than individually.

It is widely perceived, both in the Fiji Islands (*Appendix B*) and internationally, that the conservation activities, such as the conservation of the endangered *Brachylophus vitiensis* (*Appendix A: Image 1*) on Yadua Taba Island (*Appendix C*), have been successful and the impact on the community largely positive. However, this is generally the

perspective of the conservationists who coordinate these activities. The perceptions of the target communities have often not been fully explored.

Berkes (2004) argues that to improve conservation, we need a better understanding of the nature of people, communities, institutions, and their interrelations at various levels. Although protected areas are clearly a valuable tool for conserving the environment, protected area managers need to consider how the conservation of these areas may impact the people who use them, and how users, in turn, impact those areas. Although historically, most research on protected areas focused on the natural environment, more recent studies have shown how social and cultural factors, rather than biological or physical factors tend to determine the success or failure of a protected area. It follows that applied social science research has come to be seen as a key component in the successful planning, development, management and monitoring of protected areas. Social science research has been used to gauge public perceptions of conservation management and effectiveness while also giving the public the opportunity to suggest management changes, eventually leading to open dialogue between managers and stakeholders. Identifying stakeholder motivations, areas of concern, how the people derive value from their environment and how they perceive management agencies and policies may help reduce, or even prevent conflicts among users, assist managers in making decisions and respond to user perceptions in order to maximize compliance. Studying people's perceptions and values can help managers to: 1) identify what is important to different users in a protected area; 2) determine outreach and education needs; 3) justify management decisions; 4) promote resource protection within a protected area; and, 5) identify potential conflict areas that management might address (NOAA 2009).

In Fiji, coastal communities are still very much dependent on their natural ecosystems and their biodiversity, such as coral reefs, lagoons and coastal forest, for

natural resources and their everyday livelihood and survival. The same can be said for traditional coastal communities in Portugal, which retain a high dependence on their marine, wildland and agricultural resources. In both cases, these resources need to be protected and used wisely to ensure sustainability for future generations. However, this needs to be done in a way that is beneficial for all stakeholders, especially the communities that are heavily reliant on these resources (Thaman, R.R. 1994, 2004, 2008). When the community is involved in conservation activities, the impact is often positive. Community involvement is also necessary because the importance of biodiversity conservation from a Western or modern perspective is often not clearly understood by local resource users, hence the need to raise community awareness about the reasons and requirements for various types of conservation management practices that are to be implemented. As Veitayaki (1998) emphasised, because local communities are likely to be the main long-term beneficiaries of conservation practices, community-based conservation (CBC) is, perhaps, the most practical approach to stemming biodiversity loss in both developing countries, such as the Fiji Islands, as well as in, and some more developed countries, such as Portugal. Since CBC is 'people-centred' and experience with it is relatively new, it is important to know the views of local communities regarding implemented policies and programmes (Mehta & Kellert 1998).

1.2 Overview and Objectives

Using a case study approach, this study attempts to assess the effectiveness of community conservation initiatives in Fiji with a comparison to Portugal through an assessment of the level of involvement, impacts and perceptions of the local community in these conservation initiatives.

In the Fiji islands, Denimanu Village (*Appendix A: Image 2*), on Yadua Island (*Appendix C*), in Bua Province is the case study. This area is special because it is the site for a range of conservation activities, both marine and terrestrial, as part of the Yadua Conservation Project (YCP). The main focus of this project being the conservation of the endemic and critically endangered Fijian crested iguana (*Brachylophus vitiensis*) (Gibbons 1981) (*Appendix A: Image 1*) on the neighbouring uninhabited island of Yadua Taba, in which the community plays an important role in the overall conservation process (Niukula 2007). The YCP is an initiative of the National Trust of Fiji (NTF) and part of its overall goal to preserve Fiji's natural heritage. The Portugal case study assesses community involvement in conservation in the Natural Park of Southwest Alentejo and Costa Vicentina (*Parque Natural do Sudoeste Alentejano e Costa Vicentina*) or PNSACV, in Southwestern Portugal, to provide a comparison with an area with differing levels of development, land tenure and livelihoods.

The overall objective is to examine in-depth and make comparisons of the role of the community at different levels of involvement and their perceptions of the coastal conservation activities in the two study sites. More specifically, the study aims to examine the initial objectives, the effectiveness and impacts of community involvement, and the status of each activity from a community perspective. This is achieved by investigating: 1) what processes have been used to involve communities; 2) the effectiveness of this involvement; and 3) the benefits and drawbacks to communities of their involvement in each conservation activity in relation to their heavy reliance on marine and terrestrial resources as a source of livelihood. This includes an assessment of the limitations placed on communities that come with the conservation activity; the alternatives offered in place of the current resource-use practices and sources of income that have been foregone in the

process of conservation; and an investigation of potential conflicts and how they are resolved.

The expected outcomes of the study include: 1) an assessment of the nature and levels of involvement of the community in different conservation activities in both study areas; 2) an overview of each activity including its current status from the communities' perspectives, which includes the determination of the impact, both positive and negative, that the peoples involvement has had on them and of the effectiveness of the conservation activities; and, 3) the development of a set of recommendations, guidelines or an action strategy for successful local community involvement in conservation activities, taking into account the peoples overall perceptions of the conservation activities.

1.3 Methodology

The overall research methodology is explained in Chapter 4. Generally this study used two case studies, the first, a more in-depth study of a small-scale conservation initiative in the Fiji Islands, and the second, a less in-depth study of a larger-scale conservation initiative in coastal southwestern Portugal The overall study assumed a phenomenological approach in trying to obtain insights into the research participants' perceptions of conservation activities in their area. These perceptions also helped to gain a sense of the realities of the people who live in areas where conservation activities are taking place. The main data collection techniques used were questionnaire surveys, structured interviews as well as document analyses and personal observations.

1.4 Summary of Findings

The results show that effective community involvement clearly leads to greater community understanding and ownership, increased conservation effectiveness, greater perceived benefits to local communities, less conflict, and greater synergy between

conservation and sustainable livelihoods. Additional benefits included the application of local knowledge to conservation and associated nature or cultural tourism initiatives.

1.5 Structure of Report

This report will consist of six chapters, inclusive of this introductory chapter. Chapter 2 will consist of a review of relevant literature on the coastal resources, threats, conservation and management, community involvement and perceptions in the Pacific and Fiji and other analogous areas. Chapter 3 will include a background on the study areas in Fiji and in Portugal. Chapter 4 will be a detailed account of the methodology used during the course of this study. Chapters 5 and 6 will then focus on results and conclusions of this study. Chapter 5 will be a general discussion of results obtained in both case studies, including the role and level of involvement of community in conservation activities, as well as the benefits, negative impacts and conflicts related to community involvement in each activity in Fiji and in general for Portugal. Chapter 6 will discuss in detail the final recommendations and conclusions, making comparisons between the two case studies.

CHAPTER 2

LITERATURE REVIEW

2.1 Importance of Coastal Resources

Coastal resources are integral parts of the livelihoods of people who live in coastal areas. Most indigenous and local communities, including those in the Pacific Islands, and in coastal areas of Europe and elsewhere, live in areas with significant biodiversity resources, upon which their cultures and knowledge systems have been intricately linked for millennia (GEF 2006). Pacific people's sense of attachment to submerged and terrestrial lands is different from Western concepts of ownership, and includes mystical and spiritual dimensions, rooted in their cultures. Over the past 3000 years or so, Pacific Islanders have utilised their natural resources using mainly traditional methods (Carew-Reid 1990, Dahl 1984, Johannes 1982), including hunting and gathering, harvesting the products of trees and forest areas, intermittent gardening near villages, fishing, and "gleaning" or collecting shellfish from the reef. At least 80% of the real income of rural, subsistence communities in the Pacific comes from the relatively sustainable harvest of their biodiversity (Thaman, R.R. 2002, 2009).

Indigenous Fijians have strong connections to their environment, owning 83% of the land and its associated natural resources, and are emotionally attached to them through the **'vanua'**, traditional clans (**yavusa**) and landowning units (**mataqali**). Fijian cultural values and people's perceptions of conservation are therefore central to this study. In Fijian culture, where wealth (**yau**) is not accumulated for its own sake but to share with others, the natural 'wealth' of a place (**yau bula)** is treasured and nurtured because it is shared (Siwatibau *et al.* 2007). It follows, therefore, that Fijian-centred interest in biodiversity is primarily focused on its usefulness to people, which includes, for some plants and animals, a spiritual dimension (Siwatibau *et al.* 2007). Conservation initiatives

are almost always aimed at some practical reason such as safeguarding food supply, or, because of ancestral or cultural links, although interest in biodiversity extends to introduced species of plants and animals that ancestral Fijians brought with them (such as root crops, fruit trees, wild fowl and pigs) as well as to those introduced since European contact (e.g., corn, cassava, mangoes, timber trees, ornamental plants, cows, cats, etc.): all have been incorporated into Fijian traditional resource-use systems (Thaman, R.R. 1994). Biodiversity conservation therefore, from a Fijian perspective, is primarily about managing nature for human use (Siwatibau *et al.* 2007).

2.2 Conservation and Protected Area Management

For most Pacific Island and coastal peoples, the importance of harvesting resources creates a need to involve the community when selecting and managing protected areas, because user groups will not comply with restrictions on their traditional resource harvesting practices if they do not understand and/or support rules related to conservation. A "successful" protected area achieves the purposes for which it was created, and is supported by the community (Gilman 1997). Although the need to create reserves may be justified from economic and ecological perspectives, the restrictions they impose often conflict with the immediate needs of local populations who will have traditional areas and activities closed off to them (Boo 1990).

Century-old management methods are, for example, still used by many Pacific Island countries today, including systems of traditional rights and taboos that have successfully conserved island resources, and are integral parts of Pacific cultures (Gilman 1997). Knowledge of these is passed on to the next generations by elders and many communities are familiar and comply with them. People’s knowledge of their local environments, including plant and animal species, customary ownership and use systems, division of labour, traditional calendars as well as effective institutional support

mechanisms, almost always incorporate a spiritual dimension, manifested through totems and idioms (Veitayaki 1998).

Johannes (2002), using historical and anthropological information, demonstrates how some tropical Pacific Island cultures had employed marine resource management measures centuries before the West did, including limited entry, closed seasons, closed areas, size limits and gear restrictions. For instance, in Fiji, Palau, Yap, and Papua New Guinea, local communities still restrict fishing by closing seasons and areas, establishing size restrictions, creating gear restrictions, taboos, and limiting entry in an effort to avoid depleting fish stocks (Gilman 1997). Many of these customary forms of management are not irrevocably fixed, but evolve successfully as conditions change, although some practices are now seen as being negatively impacted by certain aspects of westernisation such as cash economies, export markets and new technologies.

In Marovo Lagoon, Solomon Islands, Hviding (2006) observes that biodiversity is locally understood by the customary owners and users of these diverse environments have ways that are both compatible and incompatible with more global views, such as the desires of the biologists who measure biodiversity and the environmentalists who wish to conserve it. In Melanesia generally, land, reefs and the sea are managed by kinship-based groups, providing strong local autonomy and cultural diversity in a region where about a quarter of the world's languages are spoken, and posing significant challenges to biodiversity conservation, in terms of the need for a synthesis of local and scientific knowledge and strategies (Hviding 2006). Consequently, the normal Western practice of "conservation", has tended to conflict with traditional rights and practices and has met with some resistance in the Pacific Islands (Carew-Reid 1990).

2.3 Community Involvement in Conservation

The role of community participation in project success, the value of engagement on livelihood issues and a better understanding of how capacity can be developed, are important components of any conservation programme focus, design and implementation in the Pacific, although they are not always applied (Siwatibau *et al.* 2007). The advantages of community involvement in conservation in Pacific Island nations are obvious since the people who use and depend on the resources bring with them a high level of knowledge of their own environment and the natural resources that they have depended on and managed for generations. Community involvement not only offers an alternative to more expensive contemporary methods, but also provides for a more sustainable approach because it necessarily involves long-term engagement with community members. Involving the community is essential to making conservation efforts in the Pacific work (Veitayaki 2009).

Gillman (1997), demonstrated the use of cases studies to show the success of Pacific community-based protected areas. Reasons advanced include creating a perception of equity among interest groups; accounting for local ecological knowledge; enhancing the communicability of results; respect for traditional management systems; participation of all interest groups; education of user groups who take ownership for the protected area; and, effective community based selection, management and enforcement.

The contribution of indigenous and local communities to conservation and sustainable use of biodiversity through their traditional methods and knowledge is well documented (GEF 2006). The United Nations *Convention on Biological Diversity* (CBD) (1993) has also emphasized the importance of working with indigenous peoples to respect, preserve and maintain traditional knowledge relevant for the conservation and sustainable use of biodiversity. In fact successful implementation of conservation projects affecting

indigenous and local communities can only be guaranteed when there is consent from and collaboration with the communities concerned (GEF 2006). This is particularly so for Pacific Island nations because of tenural control by communities over inshore fishing areas; the high dependency (<50%) of communities on the ocean for much of their protein and survival; the sense of identity that the marine environment provides; and their position as primary stakeholders in ocean management giving them a responsibility to ensure that future generations benefit from and enjoy what they will inherit in the future (Tawake 2004). As Fa'asili & Kelokolo (1999:10) suggest, "regardless of legislation or enforcement, the responsible management of marine resources will only be achieved when fishing communities see it as their responsibility". In the Pacific Islands, the establishment of community-based marine protected areas (MPAs) is intensifying because of the notion that MPAs can conserve biodiversity, sustain ecosystem functions and enhance the productivity of fisheries in the region. Community-based marine resource management (CBMRM) may therefore be more widespread in this region today than in any other tropical region in the world (Johannes 2002).

2.4 Community Perceptions and Benefits in Conservation

Cihar and Stankova (2006), in a survey in the territory of the Podyji/Thaya River Basin National Park in the Czech Republic found that without the knowledge of opinions of stakeholders, it was not possible to properly manage nature conservation and development in the protected area. Although a positive evaluation of the national park dominated the results, some negative attitudes and experiences were identified among local people, including negative feedback on conservation tourism, which included environmental degradation, economic inequity and instability, and negative, community-related social, economic and cultural changes. Among some of the criticisms were the administration of the Podyji/Thaya River Basin National Park and communication with

the community. The satisfactory identification of different community attitudes was considered useful in environmental management and sustainable tourism development in the area.

In Indonesia, Walpole and Goodwin (2001) also examined local attitudes towards protected area tourism and the effects of the benefits on local support for Komodo National Park. Results revealed positive attitudes towards tourism and a high degree of support for conservation (93.7%). More positive results were shown for those respondents who economically benefited from tourism while those not benefiting, showed more negative results. This study showed that ensuring local support for protected areas is increasingly viewed as an important element of biodiversity conservation.

In Greece, Trakolis (2001) in a study of the Prespes Lakes National Park, found that poor knowledge of conservation aims and objectives, was often associated with a lack of education and community concerns about conservation activities in the area was mainly about the need for local community participation in the decision-making process. In Uganda, Ransom (1997) suggested that for a nature-based tourism development to be successful, it was essential to understand local community perceptions The research also indicated that the costs borne by various communities were often too much relative to the benefits they received.

In the Philippines, Salas (2004) reported poor people's perceptions of biodiversity values and conservation and suggested the importance of finding alternative livelihood options to complement conservation efforts, reflecting a need to strike a balance between conservation and the needs of stakeholders.

In Nepal, where Mehta and Kellert (1998) examined attitudes of local communities toward community development, ecotourism, forestry, wildlife conservation policies and programmes implemented by a project in the Makalu-Barun National Park and

Conservation Area, an important suggestion was for the project to continue to address local development needs if it wanted to win the support of local communities for long-term biodiversity conservation goals. Similar concerns about stakeholders' concerns of marine harvesting in Florida Keys were also reported by Suman *et al.* (1999).

In Fiji, a study by Mühlig-Hofmann (2005) on the role of Fijian villagers in co-managing a small-scale fishery on the island of Gau showed a generally positive attitude by communities towards implemented management measures although more information for decision-making and more support for empowering the communities in terms of ecological understanding and enforcement of measures were required for continuing local support of the management regime. Moreover, in another study on Navakavu Locally Managed Marine Area (LMMA), Fiji, very strong support for and ownership of, the area was evident revealing community members' belief that the MPA increased their income and food supply. They also understood the restoration effect that the LMMA and the MPA had on marine life and realized that it provided a secure foundation for future generations. Income from fishing of invertebrates also helped fulfil people's traditional obligations, considered to be very important at Navakavu (van Beukering *et al.* 2007).

All of the studies mentioned so far have shown the importance of involving local communities in conservation related activities if such activities are to have a positive and long lasting impact both on the conservation effort as well as the people for whom such efforts are made.

CHAPTER 3

STUDY CONTEXT: YADUA (FIJI) AND THE PNSACV (PORTUGAL)

This chapter introduces the two case study areas, the focus case study being the islands of Yadua and Yadua Taba (*Appendix C*), in the Fiji Islands (*Appendix B*) and the PNSACV in southwestern Portugal (*Appendix D*), providing background information on the geography, cultural context and the nature of the conservation activities.

3.1 THE FIJI ISLANDS

3.1.1 Background Information

The Republic of the Fiji Islands, an archipelago of 332 islands ranging from large volcanic to small raised limestone islets, are located between 15-22°S and 177°W-175°E in the Southwest Pacific Ocean (*Appendix B*). The Fiji Islands have a total land area of 18,333 km^2 spread over an ocean area of 1.29 million km^2 of Exclusive Economic Zone (EEZ). The two main volcanic islands of Viti Levu (10,388 km^2) and Vanua Levu (5,587 km^2) together comprise around 87% of this total land area with most of the remaining islands being small, low-lying, and widely dispersed (SPC 2008).

Fiji has a tropical maritime climate dominated by the southeast tradewinds. Temperatures are fairly uniform due to the influence of the surrounding ocean, ranging from 18°C in the coolest months (June-July) to 32°C in the warmest months (December-January) (FMS 2009a). Rainfall is highly variable, although there is a distinct dry season (May-October) and a wet season (November to April) when convectional showers, thunderstorms and tropical cyclones are common. Annual rainfall in the dry zone averages around 2000mm, and in the wet zone, from 3000-6000mm (FMS 2009a).

A current population of 837,271 (2007 census) inhabit approximately a third of Fiji's islands, although about 80% live on the two main islands of Viti Levu and Vanua

Levu. The capital and largest city, Suva, is located in southeastern Viti Levu. The majority (90%) of a rapidly growing population (0.47% growth rate) inhabit the coastal regions of most islands (FIBS 2008). While there is increasing urbanisation over 54% of the population lives in rural areas (Leslie & Ratukalou 2001) and rely on subsistence utilisation of natural resources for their livelihood, as indigenous Fijian culture is still very strong, being closely linked to the natural environment (Thaman, B. *et al.* 2002).

Fiji has a natural resource-dependent economy dominated by sugar and tourism although private investment has continued in construction, other forms of agriculture, forestry and the garment industry. Coastal areas are of vital importance to Fijian social and economic development. The majority of urban centres, villages and activities associated with agriculture, industry and commerce are located along or near the coast, putting significant pressure on the coastal environment (IMR 2003, Levett *et al.* 2004).

3.1.2 Coastal Resources

Fiji's coastal environment is made up of an assemblage of resources including coral reefs, lagoons, mangroves, estuaries, beaches and coastal forests. These resources form the basis of Fijian culture, employment and food supply for coastal communities and therefore need to be well maintained for future generations (Thaman, B. *et al.* 2002).

Coral reefs are associated with all the islands of Fiji and provide protection to the coast, serve as critical habitats and provide a number of products to the economy and local population, including a wide range of finfish, invertebrate and seaweed resources. Fiji's reefs are considered to be in good condition except those near the large urban centres and villages that are subject to urban pollution, coastal development and subsistence and artisanal fishing, and those affected by *Acanthaster plancii* (crown-of-thorns starfish) outbreaks and coral bleaching (Cumming *et al.* 2002). Fiji's inshore fishery is of vital

importance to the rural sector, with most of Fiji's coastal villages and settlements relying on subsistence fishing for a large part of their protein intake (Thaman, B. *et al.* 2002).

Coastal forests are common in Fiji, but highly impacted by human exploitation and coastal development on the larger islands and some smaller islands. To coastal communities, they serve as a source of firewood, construction material, medicine, and food as well as providing ecological functions such as shade, protection from wind, sand and salt spray, erosion and flood control, soil improvement and the habitat for a wide range of organisms (Thaman, R.R. 1991).

3.1.3 Coastal Jurisdiction

Indigenous Fijians traditionally reside in villages (**koro**) with a defined boundary demarcating land ownership. A group of villages form a district (**tikina**) that has rights of use over a defined area, which extends from the land out through the coastal zone to include a traditional fishing area (**qoliqoli**). A group of districts collectively forms a province (**yasana**). More than 83% of Fiji's land remains under traditional ownership, being registered under the landowning unit (**mataqali**) (Tawake & Tuivanuavou 2004) which has important implications as any outside activity on native land can only occur following negotiations with customary landowners leading to a lease and permission to develop (Levett *et al.* 2004). Historically, resource uses were governed by customary law and informed by traditional ecological knowledge. However, during the British colonial period, the legal system took precedence and consequently local people were stripped of terrestrial and marine tenure. Nevertheless many Fijian customs, practices and customary laws have continued to play an important part in Fijian village life (Kunatuba 1983).

The tension between customary law and English common law is evidenced in the issue of coastal zone ownership. Under customary law, the clan owns the coastal zones, whereas under the British, and current common law of Fiji, the Crown owns the title to the

foreshore and seabed - referred to as Crown land (Kunatuba 1983) and although the law does not allow Fijians to own Crown land, people with customary ties to the coastal zones may use them if allowed by the Crown. The main difference is that while customary law associates ownership of an area and its resources with usage, English common law distinguishes between land ownership and resource utilisation (Techera & Troniak 2009).

Fijian customary law has prevailed throughout all stages of the country's political development and has maintained a certain degree of functional integration with common laws allowing the two to co-exist in a grey space created by the intersection of the two legal systems, making Fiji a legally pluralist country. Although the (now-abrogated) Fijian Constitution did not provide blanket recognition of customary law, it did recognise customary law and traditional rights to terrestrial land, provided they were not inconsistent with any law or governing principle of the state (PacLII 1997).

Certain national laws also demarcate inshore and offshore areas. The *Environment Management Act,* for example, defines the coastal zone as being *'within 30m inland from the high water mark up to the fringing reef or within a reasonable distance from the high water mark.'* This Act also provides for the environmental assessment and approval of development activities that alter the physical nature of the land, including construction, the deposit of wastes or other material, the removal of substances, dredging, filling, land reclamation and mining (PacLII 1997). The Act provides powerful provisions particularly relating to the assessment of the environmental impact of coastal development (Techera & Troniak 2009). The *Fisheries Act,* on the other hand, is a legislation governing the management of marine resources, including the establishment and management of marine protected areas, and sets out the arrangements by which communities may control their coastal marine resources, requiring community consultation prior to the granting of entry permits to enter a traditional fishing area (PacLII 1997).

3.1.4 Conservation and Management of Coastal Areas

A number of important environmental issues within the coastal zone have been identified as serious national concerns, and include: loss of biodiversity; inappropriate solid waste management; mismanagement of chemical wastes; pollution of air and water ways; land and habitat degradation; modification of sensitive habitats; unsustainable exploitation of living and non-living resources; climate change; and increase in invasive plant and animal species (MNP 2001, Watling & Chape 1992). Of particular importance is biodiversity conservation, now widely recognised as a priority issue because it is about people's livelihoods, cultures and economic development as well as the unique biological story that these (Fiji) islands possess (Siwatibau *et al.* 2007).

An increasing number of coastal villages in Fiji have successfully established marine areas for which management plans have been developed by resource owners (Siwatibau *et al.* 2007). The Fiji Locally Managed Marine Areas Network (FLMMA), consists of more than 200 villages spread across the 14 provinces and includes activities such as the closure or no-harvest areas (**tabu**); seasonal bans; restrictions on fishing technology; suspension of commercial fishing licenses; bans on turtle and coral harvesting and the use of fish poisons; community monitoring; and the implementation of a learning framework within the communities (Thaman, B. *et al.* 2002). One successful example is Verata, Tailevu province, where monitoring results have shown a 300% annual increase in *Anadara antiquata* (ark clams) in the no-harvest areas, and a 100% annual increase in nearby harvested areas (Tawake 2004, Thaman, B. *et al.* 2002).

3.1.5 The National Trust of Fiji (NTF) and Conservation in Fiji

The NTF was created in 1970 as a statutory body to provide for the protection of Fiji's natural, cultural and national heritage through establishing and managing conservation reserves (NTF 2002). The NTF is responsible under the Fiji government for

Yadua Taba and has carried out its function to the best of its limited resources and operating funds allocated from the national budget.

Fiji has recently become signatory to three international conventions which oblige it to protect nature and its biodiversity, especially species and ecosystems of international significance. These are the *SPREP Convention* (1989) for the Protection of Natural Resources and Environment of the South Pacific Region; the *Apia Convention* (1989) on the Conservation of Nature in the South Pacific; and the United Nations CBD (1992). Yadua Taba and *B. vitiensis* are clearly a priority in this respect (ECF 1994) and the NTF has undertaken to conserve this species and habitat by designating the island the *Yadua Taba Crested Iguana Sanctuary*, or YTCIS.

3.2 YADUA AND YADUA TABA

The small tropical volcanic islands of Yadua and Yadua Taba (*Appendix C*) are situated in the northwest of the Fiji archipelago (see *Appendix B*). The smaller island of Yadua Taba lies southeast of Yadua, being separated by a shallow 250m channel (NTF 2008). Both islands are comprised of basaltic volcanics dating back to the early Pliocene at 4.8 million years (Rodda 1984) and are surrounded with fringing and barrier coral reef systems, that enjoy the constant flushing by nutrient-rich currents that are channelled through the Bligh Waters between the big islands of Vanua Levu and Viti Levu (Marnane *et al.* 2003). Both islands are rainshadow islands with mean seasonal annual rainfall of approximately 2400mm, with air temperature ranging from 20-31°C (FMS 2009b).

Although Yadua and Yadua Taba are part of Bua province, the inhabitants are not the traditional landowners, and therefore do not possess rights to the islands. According to Native Land Commission records, the islands traditionally belong to the landowning unit of **Nakorolevu** of the clan of **Nabouwalu** that reside in Nabouwalu village, Bua Province, Vanua Levu. Their high chief, the **Buli Raviravi**, is also the traditional chief of the

inhabitants of Yadua. A landowning unit with the same name (**Nakorolevu**) is also present in Denimanu although they too do not have landowning rights to the islands (NTF 2008).

3.2.1 Yadua

Yadua, the larger of the two islands, has an area of 13.6 km^2 (1360ha). Although largely deforested due to agricultural clearance, cutting, burning and grazing by goats, there are extensive mangrove forests along its coastal zone (*Appendix C*) (NTF 2008). It is inhabited by residents of Denimanu (*Appendix A: Image 2*), the only community present in the area, making it the closest community to the nearby YTCIS. As mentioned above, the people of Denimanu have no ownership rights over Yadua Taba.

At the time of the study, Denimanu had a population of 233, consisting of 129 males and 104 females. There were 128 adults (18yrs and above) and 105 youth and children (<18yrs) belonging to 46 households (Davetanivalu 2009). The Denimanu community are the traditional resource users of Yadua Taba for a variety of subsistence purposes, therefore are the most affected by restrictions imposed by the leasing conditions of the island (NTF 2008). The village has two landowning units, **Nakorolevu** and **Nalulu** that have land rights on mainland Vanua Levu, but not on Yadua and Yadua Taba (J. Sukaloa 2009 pers. comm.).

3.2.2 Yadua Taba

Yadua Taba (*Appendix A: Image 3*) is a 0.72 km^2 (72ha) uninhabited island, 1.2 km long and 560m at its widest point with a maximum elevation of 117m (ECF 1994). The island is surrounded by coral reefs with the greater part of the coastline being rocky although the island has four beaches, two of which are over 200m in length (ECF 1994).

Yadua Taba is home to the world's only natural breeding population of *B. vitiensis*. In 1980, in response to the need for conservation, Yadua Taba was established as Fiji's

first wildlife sanctuary by the NTF, which negotiated a management agreement with traditional landowners. Since then, the NTF has focused its efforts on keeping *B. vitiensis* isolated in their natural habitat, as well as ongoing removal and (hopefully) eradication of alien and invasive fauna and flora from the YTCIS (Greenforce 2004).

The NTF employs a sanctuary ranger, chosen from the local community of Denimanu. He is responsible for the day-to-day enforcement of management rules including viewing permits issued to persons who are allowed, from time to time, to visit the YTCIS (NTF 2008). Although not directly funded by government for the purpose, the NTF has continued to focus on raising public awareness of this endangered species and foster international interests in scientific research of *B. vitiensis*. NTF has generally been successful in helping raise public awareness of the importance of *B. Vitiensis* as well as Yadua Taba as an iguana sanctuary (ECF 1994).

In 1990, an agreement was signed between the **Buli Raviravi** and the NTF for the maintenance of Yadua Taba as a crested iguana sanctuary. Since the establishment of the YTCIS, the **Buli Raviravi** has been receiving an informal lease payment, of FJD$2500. Today, Yadua Taba is permanently leased through the Native Land Trust Board as a wildlife sanctuary to the NTF for a period of 30 years from 1st January 2000 (NTF 2008).

Over the last four years, visits to the YTCIS have been restricted to researchers and media personnel, who are required to consult with the NTF and apply for research permits. Distinguished visitors as well as members of the local community may also visit, provided they present valid reasons to the Senior Ranger (NTF 2008). The Denimanu community did not have many reasons to travel to Yadua Taba and there was limited use of the island's timber and marine resources from surrounding reefs, including fish, turtles, shellfish, crustaceans and seaweed. The introduction of goats in the late 1970s increased villagers' interest in the island, but since the establishment of the sanctuary and the

subsequent removal of the goats, the island, has generally been ignored by villagers (ECF 1994). In the past, Yadua Taba was frequently used as a resting point by fishermen from Viti Levu and Vanua Levu while fishing the Bligh Waters to the south and the Great Sea Reef to the north. Today unauthorized landings on the island are prohibited and signboards have been erected around the island informing potential visitors of this rule (NTF 2008).

3.2.3 The Crested Iguana and other Fauna and Flora

Brachylophus vitiensis (*Appendix A: Image 1*) is an herbivorous lizard endemic to Fiji and restricted to tropical dry forest (TDF) habitats. *B. vitiensis* is currently listed under IUCN criteria as Critically Endangered (IUCN 2009), and is the only Fijian reptile listed as endangered in the Fiji National Biodiversity Strategy and Action Plan (NBSAP) (NBSAP 1998). It is a moderately sized iguana (adults 185–236mm SVL) (Morrison *et al.* 2007) and is bright green with white bands.

In the past 20 years, *B. vitiensis* has been extirpated from almost 80% of its original documented range primarily due to extensive destruction of its forest habitat through fire, goat grazing, and by feral cat predation. Surveys in 2000, 2001 and 2003 confirmed the presence of the species on only six islands in Fiji, including Yadua Taba, now the stronghold for the species, with the island currently supporting approximately 98% of all known individuals (estimated to be >12,000 animals) (Morrison *et al.* 2009), and is the only legally protected population in Fiji (Harlow *et al.* 2007).

The community of Denimanu on Yadua and the people on the Bua coast of Vanua Levu have long been aware of *B. vitiensis* of Yadua Taba. The first scientific reference to iguanas on Yadua was in 1970 (Cahill 1970) but it was the late biologist Dr. John Gibbons of the University of the South Pacific who discovered that *B. vitiensis* was distinct from the more common *Brachylophus fasciatus* (Fijian banded iguana) (*Appendix A: Image 4*) and subsequently described in 1979 as a new species (Gibbons 1981).

B. vitiensis has also been recorded in the Yasawa and Mamanuca island groups of western Fiji and on Macuata Island off the north coast of Vanua Levu. The security of *B. vitiensis* on these Islands is questionable because of extensive human activities including tourism, which affect the species ecosystem and survival. Such threats do not affect the YTCIS, making Yadua Taba the last secure natural outpost or refuge for this rare species of iguana (ECF 1994), considered one of the world's rarest and most attractive iguanas. The current population (<12000) is estimated to have an average density on the island of 164-270 iguanas/ha, making the island the highest recorded density for terrestrial iguanas anywhere in the world (Morrison *et al.* 2009).

In terms of its ecology, *B. vitiensis* is a diurnal, strongly arboreal, herbivorous species. Females dig burrows on the forest floor, where 3 to 5 eggs are laid before the burrow is filled. Hatchlings emerge roughly 8 to 9 months later (October–November) at the onset of the wet season (S.F. Morrison 2006 unpubl. data, in Morrison *et al.* 2009). While *B. vitiensis* consumes several plant species on Yadua Taba, it is primarily dependent on only a few species for its dietary requirements (Morrison *et al.* 2007).

Because the Island is separated from neighbouring inhabited Yadua by only 200m of shallow water, the *B. vitiensis* habitat was and is, very vulnerable to predators, such as *Herpestes auropunctatus* (Indian mongoose); *Felis catus* (feral cats); *Canis lupus familiaris* (dogs); *Rattus* spp. (rats); *Candoia bibroni* (Pacific boa); and *Accipiter rufitorques* (Fiji goshawk), which are found elsewhere in Fiji but are absent on Yadua Taba, resulting in such high densities of *B. vitiensis* being able to survive here. However, the introduction or chance arrival of any of these could devastate the *B. vitiensis* population. The only confirmed predators of *B. vitiensis* are *Circus approximans* (swamp harrier) and *Falco peregrinus* (peregrine falcon) (Gibbons & Watkins 1982, Watling & Zug 1998).

The only other notable fauna on the island are hawksbill turtles (*Eretmochelys imbricata*) (*Appendix A: Image 5*) that nest annually on Yadua Taba beaches and a colony of *Pteropus tonganus* (Pacific flying fox) (*Appendix A: Image 5*) that appear to be permanent on the island (J. Niukula 2009 pers. comm.).

Unlike Yadua, Yadua Taba's vegetation is largely intact, and dominated by some of the best remaining stands of tropical dry forest (TDF) (Keppel & Tuiwawa 2007), one of the most threatened vegetation types in the Pacific, and littoral or beach forest (Laurie *et al.* 1987) in Fiji. The most recent estimate (Olson *et al.* 2002) suggests that around 40-50% (28-35 ha) of the island is now covered with beach and dry forest. However, several invasive weeds are abundant, in open areas, slowing the regeneration of forest in some areas. A total of 140 vascular plant species were identified, with indigenous vascular plants making up 79% (110 species), 15 species being endemic to Fiji (Keppel & Tuiwawa 2007).

Currently only small fragments of TDF remain in Fiji, that on Yadua Taba being the only one having some protection as well as the best remaining examples of TDF and coastal strand vegetation in the Pacific (Olson *et al.* 2002). It is therefore important that the dry forests on Yadua Taba be treated as conservation priorities, because not only do they harbour the last viable populations of *B. vitiensis*, they are also relatively intact and extensive TDF stands (Keppel & Tuiwawa 2007).

3.2.4 Invasive Species

Invasive species are a serious problems on islands, and at least 30 plant and animal species have been introduced to, or have arrived naturally on, Yadua Taba in historic and recent times (Olson *et al.* 2002). Several species that are considered to be serious weeds in Fiji and other tropical countries appear to be increasing in abundance on Yadua Taba and include *Samanea saman* (rain tree), *Sphagneticola trilobata* (trailing daisy), *Psidium*

guajava (guava), *Leucaena leucocephala* (**vaivai**) and *Lantana camara* (lantana), all natives of tropical America (Meyer 2000). Wedelia and Lantana are listed among the world's worst 100 invasive species by the Invasive Species Specialist Group (ISSG) of the Species Survival Commission of IUCN (ISSG 2009) and as dominant invaders in Fiji. Rain tree and guava are listed as moderate invaders in Fiji (Meyer 2000). None of these species appears to provide good habitat for *B. vitiensis* (Harlow & Biciloa 2001).

Weed and feral animal eradication has been carried out on the island of Yadua Taba in the attempt to enhance the preservation of *B. vitiensis* through habitat restoration including the unique TDF vegetation that *B. vitiensis* thrive in. It has been aimed at revegetating degraded grassland areas with "dry forest" species for habitat enhancement for *B. vitiensis* populations. The five invasive plant species of most concern mentioned above have been prioritized as being those that require physical methods of invasive species management on the island (Biciloa *et al.* 2005). Goats were introduced to the island in the early 1970s and thereafter burning of the island was regular in order to provide them with fresh grazing. Goats caused serious damage to the *B. vitiensis* environment and threatened the population which in the early days of the YTCIS's establishment, was thought to be low (Gibbons 1984). By 1981, 250 goats were removed after which there has been no fire on the island, although the total eradication of the goat population was not achieved until 2003.

3.2.5 Management of *B. vitiensis*

In 1994, a *B. vitiensis* conservation strategy was formalized in the Yadua Taba Management Plan, which outlined the policy framework and management strategy of the Fiji Government with respect to *B. vitiensis* and Yadua Taba (NTF 2008). Its main aim is the long-term protection and survival of *B. vitiensis* and the dry forest and littoral beach forest of Yadua Taba, the preferred habitat of *B. vitiensis*. Although small, the area on

Yadua Taba is nonetheless of considerable conservation significance. Removing goats, securing legal protection, and developing an effective management regime for Yadua Taba have been important steps for the island's conservation. Habitat restoration is now a critical step to secure the future of *B. vitiensis* (ECF 1994).

More recently, there has been the formulation of the Fijian crested iguana Species Recovery Plan (ISG 2007) by the Iguana Specialist Group of the IUCN Species Survival Commission. This document contains a detailed five-year plan for conservation actions considered essential to reverse the species' population decline and ensure the long-term survival of this Fijian wildlife icon and its natural habitat. This plan identifies areas of future research essential for the conservation of *B. vitiensis* and contains accurate information on distribution and abundance, detailed data on diet, reproduction, population ecology and genetics, forest restoration and other information required to make informed conservation decisions (ISG 2007).

3.2.6 IUCN listing, Greenforce and UNESCO Heritage Site Application

Other conservation activities on Yadua and Yadua Taba include marine monitoring of surrounding coral reef ecosystems and turtle tagging which are part of the NTFs aim to get Yadua Taba listed as a World Heritage Site by UNESCO. In 1991, Yadua Taba was listed in the IUCN Directory of Protected Areas in Oceania. It was given the status of IUCN Management Category IV as a "Managed Nature Reserve". Nineteen ninety seven saw the declaration of Yadua Taba as a National Heritage Site by the Fiji Cabinet. The marine ecosystem surrounding the two islands was also the site of the first Greenforce Volunteer Camp, a United Kingdom-based organisation, which, over an eight-year period, ran ten-week diving expeditions for volunteer divers, in order to conduct biological surveys on the coral reef ecosystem that surrounds the two islands (Wignarajah & Stoker 2004). The NTF and Greenforce signed an agreement in July 1998 for the Marine and

Coral Reef survey of Yadua Taba, whereby at the end of the project, Greenforce was to hand over to the NTF all results obtained from the survey without any payment. It was hoped that this data will be able to assist NTF in its second application to the UNESCO World Heritage Council; in its bid to get Yadua Taba listed as a World Heritage Site (NTF 2008). Data that was collected is currently with the NTF, but a second application to the World Heritage Council, in an attempt to further enhance conservation of *B. vitiensis*, has yet to be submitted (Niukula 2007).

3.3 THE NATURAL PARK OF SOUTHWEST ALENTEJO AND COSTA VICENTINA (PNSACV), PORTUGAL

The PNSACV in Portugal was created in 1995 after a short period as a Protected Landscape Area. It is located along the southwestern coast of Portugal between 37°00'-37°55'N and 8°37'-9°00'W, and extends 110 km from the Morgavel River on the southern Alentejo coast through the western Algarve coast and around Cabo de São Vicente to Burgau, covering a total area of 74,415 hectares (56,953 ha terrestrial and 17,462 ha marine) (ICNB 2010a). The PNSACV represents an area of land-sea interface with specific characteristics and a high landscape and habitat diversity that support a high biodiversity of flora and fauna. Its area incorporates the coastal strip of the municipalities of Sines, Beja, Aljezur, and Vila do Bispo, and offshore area 2 km from the coast (ICNB 2010a). Maximum altitudes in the PNSACV are 324 m in the interior (São Domingos), and 156 m, on the coast (Torre de Aspa). The maximum depths of the adjacent marine environment is 32 m, off the point of Carrapateira (ICNB 2010a). The PNSACV includes the water catchment basin of the Mira River from the mouth to Odemira, which supports a high diversity of flora and fauna, including endemic fish species, riparian habitats that support migratory passerines (**transharianos**), as well as for food and shelter for many species of mammals. Its many estuaries are also an important area, acting as nurseries for

many fish species, and the preferred habitat for feeding, resting and nesting areas for migratory birds. The primary sector, consisting mostly of traditional cultural systems of agriculture and livestock is an important economic aspect of the PNSACV (ICNB 2010a).

The PNSACV area has a Mediterranean climate with a strong maritime influence (ICNB 2008). Temperatures increase from north to south, with a minimum of 6°C in the coldest month and a maximum of 29°C in the warmest month, however, the Sagres peninsula having the lowest temperature range of mainland Portugal. Maximum precipitation occurs in December with the annual average between 400-700mm, with higher rainfall further north and inland (ICNB 2010a).

3.3.1 PNSACV Objectives

The main objective of the PNSACV was to *"preserve its diversity reflected in the presence of a rich flora and fauna, which includes several endemic species, and where avifauna and ichthyofauna hold great importance"*(ICNB 2010a). This meant preserving existing knowledge and values associated with the area by promoting the protection and proper exploitation of its natural and cultural resources through controlling activities and processes that could lead to their degradation and creating conditions suitable for their maintenance and enhancement. In this context, the PNSACV also aims to promote social and economic development of the region, in a balanced and orderly way in order, to improve performance and quality of life of the local residents (DRE 2010, ICNB 2010a). Although the state is responsible for the implementation of necessary management and conservation activities through the Instituto da Conservação da Natureza e da Biodiversidade (ICNB) the PNSACV has been limited in its development due to lack of financial resources and skilled personnel for conducting management and awareness programmes as well as enforcing existing legislation related to PNSACV all of which impact upon the local community (ICNB 2008).

3.3.2 Habitats and Biodiversity

The PSACV contains several types of landscapes and habitats, both natural and semi-natural. The natural habitats have a special value for nature conservation, containing a high biodiversity of flora and fauna with the occurrence of priority wildlife and floristic species found in an extensive area of native forest (ICNB 2008). Major habitats found within the PNSACV include 29,000 hectares of marine reserve (12% of the total PNSACV area) (ICNB 2010b), coastal cliffs, beaches, dunes and heaths (60%) and wetlands (including estuaries, lagoons, streams, temporary ponds, small dams and an extensive coastal wetland and salt marshes) (6%). There are also extensive cereal crops in cultivation (10%), coniferous forests (2%), clerophyllous forests (10%) and marine rock islets. Detailed descriptions of the PNSACV's biodiversity can be found in Beja (1988) and Pinto (1997). In a study of participatory approaches to conflicting land use in the PNSACV conducted by Trigo (2003), it was seen that a high proportion of people interviewed (77.8%), who are residents in the area, are not fully aware of the highly valuable biological diversity that exists in the PNSACV. It was seen that most respondents recognized the importance of biodiversity conservation in the area, however 55.6% were not able to explain why biodiversity is important and should be maintained.

3.3.3 Fauna and Flora

Among the rich fauna of this coast, are birds, with many species breeding in this region in winter or using it as a migration platform between North Africa and Europe. Rare bird species that nest in the coastal cliffs include the osprey (*Pandion haliaetus*) and white stork (*Ciconia ciconia*) (ICNB 2010a). Other species found along the coast include the Bonelli's eagle (*Aquila fasciatus*), peregrine falcon (*Falco peregrinus*), common kestrel (*Falco tinnunculus*), lesser kestrel (*Falco naumanni*), red-billed chough (*Pyrrhocorax pyrrhocorax*), jackdaw (*Corvus monedula*), and common shag

(*Phalacrocorax aristotelis*). Every year in early autumn, near Cabo de São Vicente, thousands of migratory birds from Northern Europe use this area as their last stop, before departing from here to Southern Africa (ICNB 2010a), including Egyptian vultures (*Neophron percnopterus*), booted eagles (*Hieraaetus pennatus*) and black kites (*Milvus migrans*) (Beja 1988, Pinto 1997, Trigo 2003).

The aquatic environment supports a wide range of freshwater fish species, many of which are endemic to Portugal, such as the barbel (*Barbus sclateri*) and Portuguese boga (*Chondrostoma lusitanicum*) and a local endemic cyprinid (*Leuciscus torgalensis*). Marine species are characteristic of species found in the northeast Atlantic (ICNB 2010a).

The PNSACV also supports a wide diversity of mammals, amphibians and reptiles. Important mammals present in the PNSACV area include, Iberian lynx (*Lynx pardinus*), otter (*Lutra lutra*) badger (*Meles meles*), and hedgehog (*Erinaceus europaeus*). This area is unique in Portugal, and the last in Europe, where otters are found in the marine habitat. Caves such as the Monte Cleric and Yellow are important refuges for bat communities (*Chiroptera*). Several species of amphibians breed in temporary ponds in the area including the common toad (*Bufo bufo*), the western spadefoot toad (*Pelobates cultripes*) and the common parsley frog (*Pelodytes punctatus*). Wetlands also support many crustaceans such as tadpole shrimps (*Triops cancriformis mauritanicus*) and other endemics. Reptiles found in the area are the Montpellier snake (*Malpolon monspessulanus*) and southern smooth snake (*Coronella girondica*) (ICNB 2010a).

The vegetation of the PNSACV is predominantly Mediterranean, with some species of North Atlantic and African origin, and includes a high number of priority species and endemics, both local and Portuguese (Pinto 1996, 1997, Pinto *et al.* 1996, Trigo 2003). There are about 750 species, of which over 100 are endemic, rare or localized, 12 endemic to the area and are considered vulnerable species in Portugal, as

well as several protected species in Europe. Among the endemics are, for example, plants such as *Biscutella vicentina, Scilla vicentina, Centaurea vicentina, Diplotaxis vicentina, Hyacinthoides vicentina,* rockrose (*Cistus palhinhae*), and *Plantago almogravensis*. Tree species in the PNSACV are distributed among both natural and artificial habitats, the former being dominated by species such as cork oak (*Quercus suber*) and Portuguese oak (*Quercus faginea*). Other tree species common to the area include maritime pine (*Pinus pinaster*), blue gum (*Eucalyptus globulus*) and the strawberry tree (*Arbutus unedo*) (ICNB 2010a).

3.3.4 The Humanised Landscape

The PNSACV, especially the area of Sagres and Cabo de São Vicente, has a rich and valuable cultural heritage with several archaeological sites monuments and distinctive cultural landscapes, together with their associated products such as festivals, food and well-known handicrafts, including as ceramics, carvings, pottery and basketry. However, poor awareness and destruction of some of the area's archaeological resources and heritage have been a problem (ICNB 2008).

Population density is low in all municipalities covered by the PNSACV, except for those where tourism is more developed, such as Vila Nova de Milfontes, Salema and Sagres. The area has a low literacy rate due mainly to the fact that an aging population have only a primary school education. There is currently a low rate of local job creation resulting in increasing unemployment and structural poverty. The total labour force of towns located within the PNSACV is 10,607 inhabitants, of whom 49% are in the primary sector (agriculture, forestry and fisheries), 27% in the secondary sector (agro-industries) and 24% in the tertiary sector. Although the primary sector is the most predominant in the four counties covered by PNSACV, there is widespread abandonment of such economic activity, including forestry and agriculture, the main sources of livelihoods (ICNB 2008).

The recent increase in the tertiary sector is due largely to the development of tourism (ICNB 2000, Trigo 2003), which has caused some urban populations to periodically increase, up to ten times the normal resident population in some areas (ICNB 2000).

The main agricultural activities include farming of sweet potato, wheat, cattle and sheep ranching and beekeeping, although due to lack of incentives, there is increasing abandonment and/or modification of these agro-livestock practices (ICNB 2008). There has also been lack of promotion of local products and marketing strategies and despite the quality of products produced in the area there are limited facilities for processing agricultural and fisheries products (ICNB 2000, Trigo 2003).

Inshore fishing is an important activity in the municipalities of Sines, Beja and Vila do Bispo, where it still maintains its traditional character with a wide range of fresh fish and assorted seafood (barnacles, clams, mussels, sea urchins and limpets) being sold and consumed (ICNB 2008). However, it is relatively poorly organised, lacking in good infrastructure, but with a high potential for profitability given the high quality of the produce landed. The activity is closely linked to the growth of tourism in the area of PNSACV, where the amount of fish landed and the number of fishermen generally reaches a maximum in during the summer. Fisheries and shellfish also play an important role in complementing the income of many families, mainly in coastal towns (ICNB 2000).

3.3.5 Conservation Status, Jurisdiction and Legislation

The PNSACV is classified at the national level as a natural park, a status similar to IUCN category V (protected landscape) (Trigo 2003) and is governed by the existence of international and national legislation requiring the protection of nature. A number of important legislative measures have been put into place concerning the PNSACV, which is also governed by instruments of land management in the various municipalities.

The PNSACV is managed by a steering committee that has special powers, which include the imposition of fines and sanctions under existing law and the approval of its own local bylaws. The municipalities are represented in this steering committee by their president or a councillor with delegated powers (DRE 2010).

In 1988, the area was designated as the *Protected Landscape Area of Southwest Alentejo and Costa Vicentina* (APPSACV) (*Decree Law No. 241/88, 7 July*). This led, in 1995, to the creation of the PNSACV (*Decree law No. 26/95, 21 September*) and the approval of a PNSACV development plan, to be administered by the ICNB (*Decree Law No. 33/95, 11 December*). In 1997, as part of *Natura 2000*, an ecological network of European protected areas, the southwest coast of the PNSACV was proposed as a *Site of Community Interest* (SIC) (*Resolution of the Council of Ministers No. 142/97, 28 August*). In 1999, this area was designated a *Special Protection Area* (SPA) for wild birds (*Decree law No. 384B/99, 22 July*) (DRE 2010, ICNB 2010a) and later classified as an Important Bird Area (IBA-PT031) by Birdlife International (Birdlife 2010). In 2008, the new Land Management Plan of the PNSACV (POPNSACV) was approved (*Decree Law No. 142/2008, 24 July*) (ICNB 2008). Ponta de Sagres, on the southwest coast is now part of the Network of Reserves of the Council of Europe and has been designated as a Biogenetic Reserve and integrated into the PNSACV as an SPA as part of the *Natura2000* initiative (DRE 2010, ICNB 2010a). Other instruments that help govern the planning and management within PNSACV include: *Decree Law No. 232A/2008, 11 March* that aims to promote the sound management of agricultural systems and forests (DRE 2010, ICNB 2008), while *Ordinance No. 458A/2009, 04 May* defines the regulations in place for recreational fishing in the PNSACV (DRE 2010, ICNB 2010a).

In the PNSACV, the majority of land is privately owned, with only small parcels held by the state and municipalities. However, the right to one's land is not absolute and

therefore still governed to a certain extent by the various instruments of planning present within the PNSACV, including the PROT Alentejo, PROT Algarve, POPNSACV, POOC Sines-Burgau and PDM's for Odemira, Aljezur, Sines and Vila do Bispo (Bastos 2010).

According to the ICNB, the gradual depletion of some resources, notably stalked barnacle or *perceves* (*Pollicipes pollicipes*) and crabs (*Liocarcinus* and *Necora* spp.) which have a considerable social and cultural importance to the residents of the municipalities in the PNSACV, has justified the strict regulations (*Appendix E*) adopted to avoid undue competition with commercial fisheries in order to ensure their sustainable management and conservation. Because fishing is an activity which is of considerable social and cultural importance to local communities, residents of the municipalities within the PNSACV are given special privileges under these restrictions (ICNB 2010b).

3.3.5 The Survey Area: Ponta de Sagres and Cabo de São Vicente (UT5)

This study component was limited to the area of the PNSACV designated UT5 (Unidade Territorial 5) which includes Ponta de Sagres and Cabo de São Vicente. The area displays a system of extensive land use, mainly consisting of traditional systems of extensive dryland mixed farming and pasture. Little environmental disturbance in the past has allowed agriculture to be conducted compatibly with the conservation of natural resources and local biodiversity. However, there seems to be poor planning and management of urban areas by the state, which has resulted in the degradation of old buildings and poor integration of newer buildings (ICNB 2008).

In this chapter, a brief overview of the case studies in Fiji and in Portugal has been provided. The case studies will now be closely assessed to draw attention to the features that need to be addressed to ensure sustainable community-based conservation. The next chapter describes the methodology used to gather information about community perceptions of the conservation activities in the study areas.

CHAPTER 4

METHODOLOGY

4.1 Hypotheses and Research Questions

As indicated in the chapter 1, this study adopted a phenomenological, case study approach using questionnaires and for data gathering purposes. The main underlying assumption of this study was that conservation was likely to be successful if there was well-supported community involvement in all phases leading to a community sense of ownership of, benefit from, and commitment to the objectives of conservation initiatives. Two main hypotheses were used to derive two main research questions. These were:

Research Hypothesis 1: Community involvement (at varying levels in the different activities within the overall project) contributes to the success and perceived community ownership of particular activities of the conservation project.

Research Question 1: *"To what extent is the community involved in each activity within the project and how has this contributed to the perceived benefits, community ownership and success or failure of these activities and the overall project?"*

Research Hypothesis 2: The impacts of a conservation project on a community, community perceptions and sustainability of the project itself would be positive given effective community involvement.

Research Question 2: *"What is the current status of each activity, and how has the nature of community involvement contributed to the impacts of these activities on community perceptions and livelihoods?*

The above questions have guided the case studies of community-based conservation initiatives in Yadua in the Fiji Islands, which will be compared with information obtained from a study of the PNSACV in southwestern Portugal.

4.2 Questionnaire Surveys

Questionnaire surveys (*Appendix F*) were used to gather detailed information from community members on the nature of conservation activities and their perspectives on such activities. Information was obtained from all adult age groups, genders, landowning units (**mataqali**), extended family units (**tokatoka**) and households (**matavuvale**) present to obtain a proper representation of views held and knowledge. These questionnaire surveys were administered over a two-week stay in Denimanu in August 2009.

Key informants, including knowledgeable elders and social group leaders were interviewed. They provided more in-depth and useful information about the main the study area, especially relating to community involvement in, and at different levels of, conservation activities associated with the conservation of *B. vitiensis* in the last ten years. They also provided information about community perceptions of the various activities of conservation projects, mainly to do people's involvement in these activities and the impact of such activities on their livelihoods.

The questionnaires were individually and independently administered in the local Fijian and Portuguese language. Community observation was also carried out in order to try to verify information obtained via questionnaires and in-depth interviews. Questionnaires for the PNSACV case study (*Appendix F*) were also formulated and administered in the same way with the same question structure as that of the main case study at Denimanu, for the purpose of comparison. The only difference was that questions were not presented to respondents with regards to ALL individual conservation activities of the PNSACV, but were aimed at obtaining community perceptions of the overall PNSACV as a whole. The Portuguese questionnaires were administered between February-June 2010.

Structured interviews (also known as standardised or researcher-administered interviews) were employed for questionnaire administration whereby quantitative data was collected by the interviewer, ensuring that each interviewee was presented with exactly the same questions in the same order, so that answers can be reliably aggregated and comparisons made with confidence between sample subgroups (such as gender) or different topics. Most questions were close-ended where the choice of answers to the questions were often pre-set in advance, with these answers being obtained through pilot surveys with key informants (in this case the natural heritage officer of the NTF). However, these answers were not revealed to the respondent during the interview, and were only for the purpose of aiding in the administration of the questionnaire. Most questions, though close-ended, did allow for respondents to make their own views and opinions known which were incorporated into the results obtained from preset answers. A structured interview also standardises the order in which questions are asked, so the questions are always answered within the same context. This is important for minimising the impact of context effects, where the answers given to a survey question can depend on the nature of preceding questions (Kvale & Brinkman 2008).

These types of interviews are best suited for engaging respondent or focus group studies in which it would be beneficial to compare/contrast participant responses in order to answer a research question (Kvale & Brinkman 2008). Prior to administering the questionnaires, the purpose of the research was made clear to the respondents together with the researcher's aims and objectives, the type of information the interviewer was looking for and how the information was going to be used.

Non-random/purposeful sampling was used in order to include key informants within the community Due to the relatively small size of the community, attempts were made to survey all adults (18 and over) thus minimising bias in sampling. In total, 58

questionnaires were administered in Denimanu, accounting for approximately 80% of the total adult population present in the village at the time of the survey (76 adults). A total of 49 questionnaires were administered for the Portuguese component of this study in the municipalities of Vila do Bispo and Sagres.

'Surveymonkey'

Portuguese questionnaire administration included the use of an online questionnaire survey tool of Google called '*surveymonkey*' (www.surveymonkey.com) for online questionnaire administration, which proved to be of great value in data collection, with most of the qualitative information obtained as a result of this online questionnaire format. '*Surveymonkey*' allows for respondents that have been provided with an online link to answer survey questions online in pre-allocated spaces, which is then submitted back to the researcher automatically by clicking on a "submit" button at the end. The main advantages seen with online administration were its translatability between the English and Portuguese languages, the ease at which it could be filled by the respondents and the instant reception of data once the respondent has completed the questionnaire. Out of the 49 questionnaires received in Portugal, 26 came from '*surveymonkey*'.

Questionnaire Analysis

Quantitative data was analysed using *Predictive Analytics Software* (PASW). PASW consists of a set of software tools for data entry, data management, statistical analysis and presentation. PASW can take data and use it to generate tabulated reports, charts, distribution plots and trends and descriptive statistics to identify trends, changes in perceptions by age, gender, occupation, etc (Khan 2009). Qualitative data from questionnaires and participant observations were analysed and presented in the Results and Discussion chapter.

4.3 Preliminary Site Visits and Questionnaire Formulation

Prior to field data collection, numerous visits to the Fiji study site had been made over the recent years, therefore good background knowledge of the community setup was present at the time of eventual data collection. These prior visits were usually as part of a research activity being conducted as part of the overall YCP. The community members were also informed in advance that this master's study was going to be conducted.

Questionnaires used in data collection were formulated to provide both quantitative and qualitative data on community perceptions. This involved the interviewing of some individuals who have been closely involved with the YCP over the years, including the NTFs Natural Heritage Officer, who is responsible for the overall YCP (from a conservationists perspective) and the Sanctuary ranger for Yadua Taba (from a community perspective). These pre-administration interviews were useful in allowing the formulation of possible answers to the proposed questions for ease of questionnaire administration. Questions were formulated in a way in that it was possible for answers to be quantitatively analysed (i.e. various answers of the same nature could be enumerated), in addition to the option for respondents to add any additional reasons/answers that they may wish to state to the existing set of answers or for qualitative analysis.

4.4 Traditional Protocol and Ethical Considerations

During the course of field data collection and questionnaire administration in Fiji, traditional Fijian village protocol needed to be observed at all times during the stay in Denimanu. Through the observation of protocol, subsequent field studies were able to be conducted with ease in the sense that respect and acceptance within the local community had been attained. One example of traditional protocol observed was ceremony of **sevusevu** (traditional presentation) on arrival in the community. A **sevusevu** needs to be offered to the **vanua** (traditional resource users) in order to seek their blessing and

permission to conduct the research. Generally, permission is granted after a **sevusevu** has been presented, and research activities then proceed without hindrance as they have already been explained to the resource users and thus transparency is attained.

4.5 Constraints and Shortcomings in Methodology

One limitation of this study relates to the absence of some adults in Denimanu during the time of the fieldwork and the reluctance of some to be interviewed. However, the majority of the adult population of the community were sampled, accounting for key informants within the total sample, providing an adequate account of the views of the target population. Another challenge encountered in data collection was to remoteness of the Fiji study area, as travelling to Yadua from Fiji's capital, Suva, takes a whole day and was expensive to get to in terms of cost of transport and logistics. Getting to the islands included a 2-hour bus trip, a 4-hour ferry trip, a 2-hour truck trip and finally a 2-hour trip on the open ocean by open boat. For Portuguese data collection, the main constraint was a difficulty in communication due to language barriers. However, assistance was sought in areas of questionnaire translation and administration. A great assistance in this aspect was "*surveymonkey*", an online-based survey tool, which allowed for respondents to read and answer questions in the Portuguese language, and due to the digital nature of data collected, translation back to the English language was possible before analysis was conducted. Another constraint experienced in Portugal was the reluctance of community members to participate in face-to-face questionnaire administration, possibly due to being seen as opposing the operations of the PNSACV. This reluctance was however, not observed in the online questionnaires obtained, and this may be attributed to anonymous nature of online administration.

The next chapter documents the results of the Fiji and Portugal case studies, together with appropriate discussion.

CHAPTER 5

RESULTS AND DISCUSSION

In this chapter, results of both the Fiji and Portugal case studies will be shown graphically or tabulated and discussed, the Denimanu Fiji Islands study first in section 5.1 and the PNSAVC Portugal study in section 5.2. Opinions of different groups are shown as percentages of the total sample, or in some cases as percentages of a proportion of the total sample's responses to questions put to them.

5.1 THE FIJI CASE STUDY: THE YCP

5.1.1 BACKGROUND STATISTICS

Sample Composition

Community perceptions of conservation in Denimanu were obtained using a questionnaire survey. The sample consisted of 32 men (55%) and 26 women (45%). Young people (18-29 years) made up 29% and elderly people (over 50 years) 33% with the highest proportion of respondents (38%) from the 30-49 years age group (*Table 5.1*).

Table 5.1: Denimanu Respondent Composition

		AGE GROUP			
		18-29 yrs	***30-49 yrs***	***50+ yrs***	***Total***
GENDER	***Female***	5 (*9%*)	11 (*19%*)	10 (*17%*)	**26 (*45%*)**
	Male	12 (*21%*)	11 (*19%*)	9 (*16%*)	**32 (*55%*)**
	Total	**17 (*29%*)**	**22 (*38%*)**	**19 (*33%*)**	**58 (*100%*)**

Educational Level

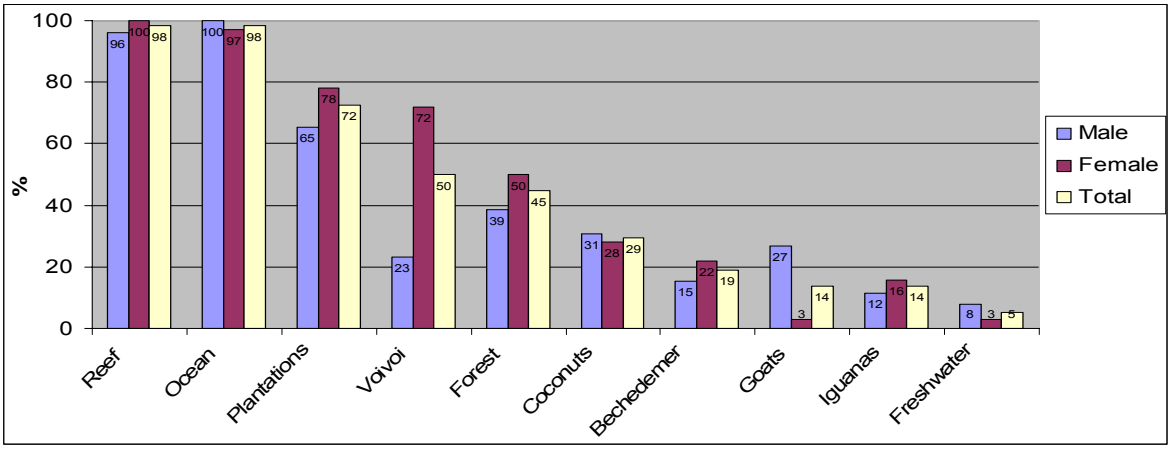
Results showed that in general men have higher levels of education than women with some men (9%) having reached tertiary levels and 38% secondary level education, compared with only 27% of women who had secondary level education. This difference may be due to the traditional belief that many women leave school at the end of primary schooling and the expectation that they should look after children and the home as soon as

they are able. Another possible reason may be the lack of access to secondary and tertiary studies, which requires students to leave the village for secondary education, usually on the main island. The financial burden of secondary education often means that in many families, the priority for schooling is given to boys, who will carry the family name.

Resource Dependency and Source of Livelihood

Figure 5.1 shows the range of resources upon which respondents depend for their livelihoods, with most important resources being the reefs and open seas (98%), followed by plantations (72%), voivoi (Pandanus leaves) (50%), and forests (45%). Lesser-perceived dependence was placed on coconut groves (29%), bêche-de-mer (19%); goats (14%); crested iguanas (14%) and freshwater resources (5%).

Figure 5.1: Community dependency on resources



The perception that the ocean, reefs and plantations were the main sources of food and sustenance for community subsistence and livelihood was expected because the sea is an important source of protein while people's plantations provide root and tree crops, vegetables and other useful products. *Voivoi* (pandanus) plantings, nearby forests and coconut groves, although mentioned less often, are also important sources of handicrafts, medicines and other important products. The surrounding forests, for example, provide important building materials, such as timber for housing and reeds for thatching, firewood,

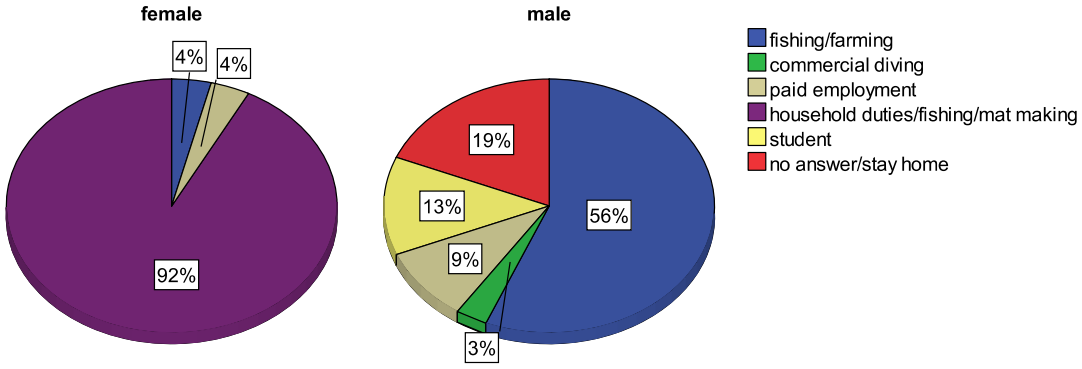
wild foods such as yams and ferns and many traditional medicinal plant resources for treating a variety of illnesses. Coconut groves are important for many Pacific islanders and it is the "tree of life" with nearly all parts of the tree utilised for something. For example, the fresh juice is a nutritious drink, the flesh a source of cream for cooking and coconut oil used as the main skin lotion and cosmetic; the leaves are woven and used as thatch for roofing, baskets, hats, rough mats, brooms and other items; and the timber is used in construction and other parts of the tree are used as medicine and traditional drink.

All resource categories were equally important to both men and women, although pandanus plantings (*voivoi*) are clearly more important to women while goats were important for men. The *voivoi* leaves are processed by women who cook, soak them in sea water, dry, split and weave the leaves into mats, baskets and other important handicrafts, the finer mats (**ibe**), which are among the most important forms of traditional wealth and exchange items for funerals and other ceremonial events. Men on the other hand catch wild goats and sell them on the main islands. Other important resources included bêche-de-mer (sea cucumbers), crested iguanas, and freshwater. Bêche-de-mer (**dri**) are collected, usually by youths and middle-aged men, dried, with the assistance of women, and then sold to middlemen on the mainland for a good price. *B. vitiensis* on the offshore island of Yadua Taba are also an important resource for those who are employed directly or indirectly by the NTF as rangers or casual workers as part of the YTCIS. It was surprising that freshwater was not mentioned more often despite the fact that the island is very dry, receiving much less rainfall in comparison to other parts of Fiji. Much of the income generated from the sale items such as fish, bêche-de-mer, handicrafts, goats and root crops is used to pay children's school fees and other school-related needs.

Figure 5.2 shows a clear division of labour between men and women in Denimanu in relation to the occupations/livelihoods. Women devoted most of their time to household

duties (92%), which include some fishing for subsistence and occasional mat and handicraft making for subsistence use and for sale outside the village. A small number engage in fishing/farming and paid employment such as shopkeepers. Fifty six percent of men were engaged in fishing/farming, mainly for subsistence, although some surplus was sold to people on the mainland on a casual basis. This was the case with bêche-de-mer that fetches a relatively a high price of $40-50 per kg of dried animal (Veitayaki, pers comm.). Other sources of livelihood for men included paid employment as sanctuary rangers, school managers, church reverends and government-appointed village officers (9%), and commercial diving (3%) at the nearby commercial diving centre at Vakasa. Although none of these are full-time jobs, they provide welcome income to some of the households. The rest of the respondents, mainly older men (19%) and students (13%), tend to stay around the village, where they perform less laborious work for the household.

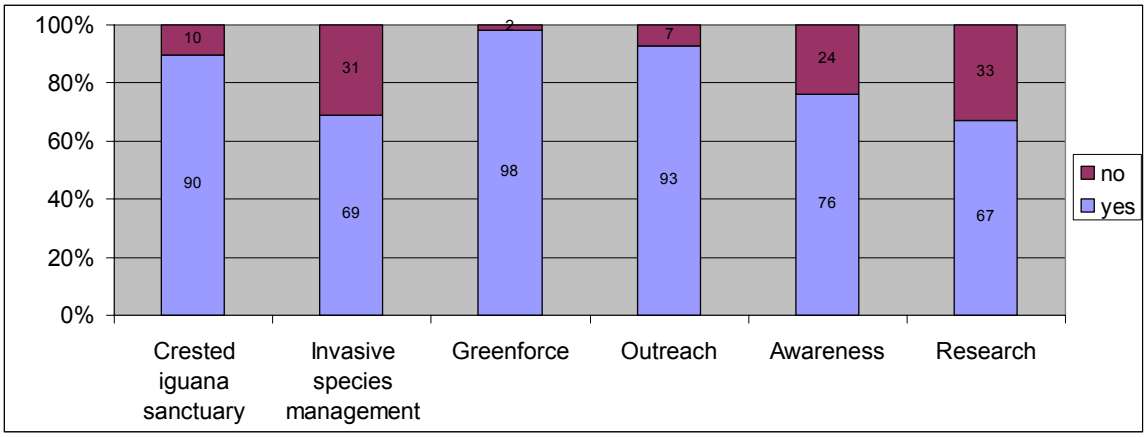
Figure 5.2: Community occupations and livelihoods



Knowledge of Conservation Activities

As *Figure 5.3* shows, respondents had good overall knowledge of conservation activities including those associated with Greenforce (98%), community outreach (93%) and the operation of the YTCIS (90%). A substantial, but not major, proportion of respondents had little knowledge of scientific research (33%), invasive species management (31%) and environmental awareness activities (24%).

Figure 5.3: Community knowledge of the different conservation activities



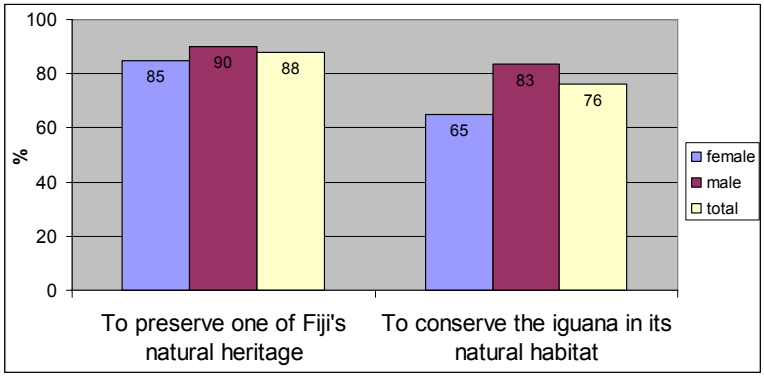
5.1.2 YTCIS OPERATION

Community members were questioned on their involvement in, and perceptions of, the operation of the YTCIS, the main focus of conservation activities in the area by the NTF, which is highly dependent on community support for its success.

Knowledge and Perceived Objectives of the YTCIS

Figure 5.4 shows that both men and women showed good understanding of the objectives of the YTCIS regarding these objectives as important for the preservation of their, and Fiji's, natural heritage, and the conservation of *B. vitiensis* in its natural habitat. It is interesting to note that these objectives are consistent with the objectives set out by the NTF during the initial phase of the YTCIS.

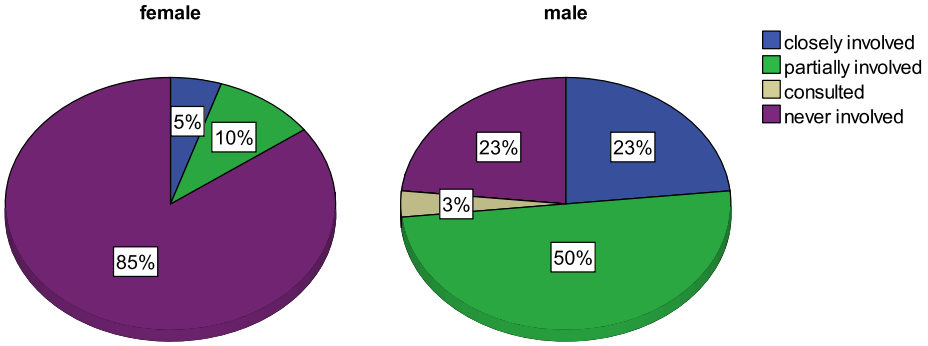
Figure 5.4: Perceived objectives of the YTCIS



Community Involvement in the YTCIS

Figure 5.5 shows that men were more involved in YTCIS operation (76%) compared to only 15% of the women. The degree of involvement by men varied from those who were closely involved (23%) to those who were partially involved (50%) or only consulted (3%), with only 5% of the women having been closely involved.

Figure 5.5: Community involvement in the YTCIS



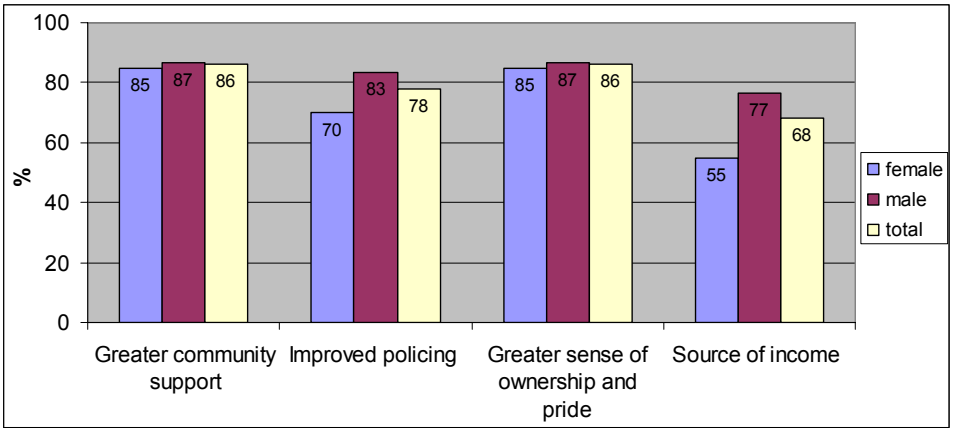
Those who were closely and/or partially involved tended to be associated with caretaking/policing of the YTCIS, a role also generally reserved for men and carried out by fishermen travelling from the village to fishing grounds near the island. Both women and men expressed their desire to be more involved in the operation of YTCIS with the majority of women (65%) expressing this compared to 43% of men. There seemed to be a real sense of pride in being involved with YTCIS as more people wanted to play a greater role in the protection of their natural heritage.

Benefits of Community Involvement in the YTCIS

Figure 5.6 shows that the YTCIS and the community both benefit from the community being involved by creating a sense of pride and ownership of the resource in question (86%), in this case, *B. vitiensis*. Community involvement was also seen as beneficial to the YTCIS as it enhanced community support (86%) and improved policing (78%). Most respondents, also saw community participation as ensuring security of the

YTCIS which many believed to be an important source of income (68%) for some who were directly involved, such as patrol officers and rangers.

Figure 5.6: Benefits of community involvement in the YTCIS



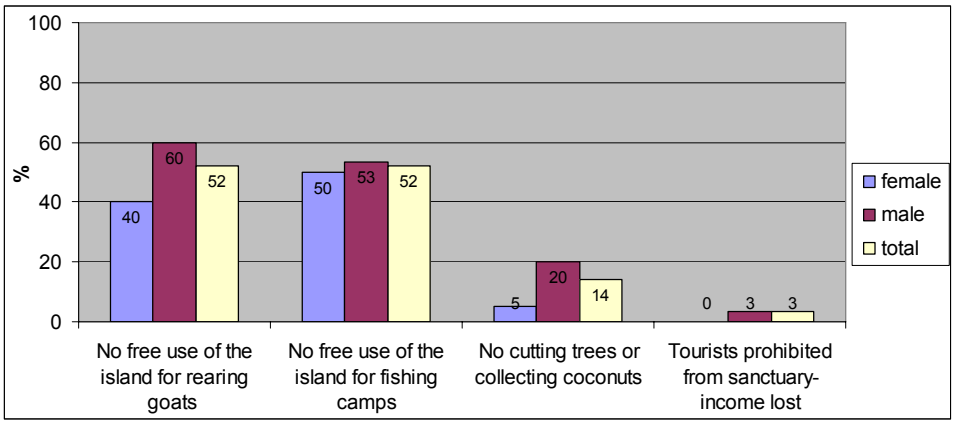
A few respondents also suggested that the YTCIS was an important link between community members and the NTF, which has strongly encouraged community involvement, and shown transparency in their own operations and activities. The YTCIS ranger said he welcomed the policing of the YTCIS by community members, as doing it on his own was a huge task. In his view, there was generally good rapport among NTF, himself and the community, and this contributed to the success of YTCIS operations in the past. Furthermore, working as the ranger, for over ten years, he said, had increased his knowledge of the environment, especially the names and uses of different plants and animals, as well as strategies for their conservation.

Negative Impacts and Conflicts related to the YTCIS

There were some negative impacts of the YTCIS on the community and, as *Figure 5.7* shows, the majority of both men and women (52% each) said that the prohibition of the use of the island for goat rearing or fishing camps under the YTCIS has had some negative impacts on people's livelihoods. Other negative impacts mentioned included disallowing tree cutting or coconut collection on the island (14%) and the prohibition of

tourists visiting the island, something that was perceived by one community member as potentially contributing to a loss of community income.

Figure 5.7: Negative impacts on the community of the YTCIS



Although a majority of the respondents believed that no conflicts had arisen (74%), a good proportion (26%) believed that there had been some conflicts since the establishment of the YTCIS. These conflicts were mainly related to the lease conditions of the island, under which the island is leased by the NTF, and lease money paid directly to, the traditional landowner, Buli Raviravi, who resides in Nabouwalu on mainland Vanua Levu, rather than in Denimanu and doesn't utilize the coastal resources of the area. Consequently, some community members believed that lease benefits have not trickled down to the community and that it was unfair that the landowner received all the benefits when they were the ones who do most of the work in utilizing and protecting the island's resources. Another issue relating to the lease agreement is a lack of transparency, where the community members did not have much knowledge of actual lease agreements and negotiations, as these were carried out with the landowner, with little or no consultation with the Denimanu community. There have also been conflicts over access to the island, without permission, by some community members who argued that they had rights of access under the lease agreement. These disagreements have generally been resolved by

community members asking for forgiveness in the traditional manner from the ranger and the village officer by presenting of a **sevusevu** (traditional offering).

Status of the YTCIS

All respondents regarded YTCIS as a "very successful" (56%) or "successful" (44%) project in terms of the preservation of *B. vitiensis*, and that the venture would continue in the future. The majority said that they were ready to help promote the YTCIS, not only within Fiji but also globally. They also believed that there is an overall positive relationship amongst stakeholders, especially between the community and the NTF, a relationship that would ensure the continued operation of YTCIS.

5.1.3 INVASIVE SPECIES MANAGEMENT

Community members were questioned about their involvement and perceptions of the management of invasive species on Yadua Taba as part of YTCIS, an activity that is highly dependent on community support and involvement.

Knowledge and Perceived Objectives of Invasive Species Management

Figure 5.8 shows that men (91%) had the best awareness and knowledge of invasive species management being carried out compared to women (42%). However both men and women displayed good knowledge (at least 90%) of the objectives, which included both the eradication of invasive species and the promotion of the growth of native dry forest species that are preferred by *B. vitiensis* (*Figure 5.9*).

Figure 5.8: Community knowledge of invasive species management

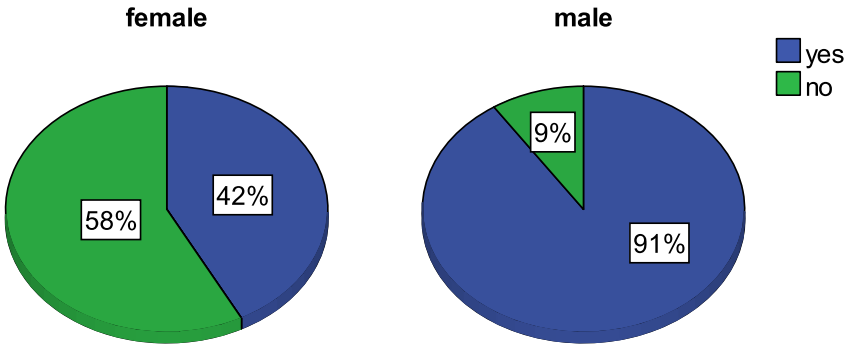
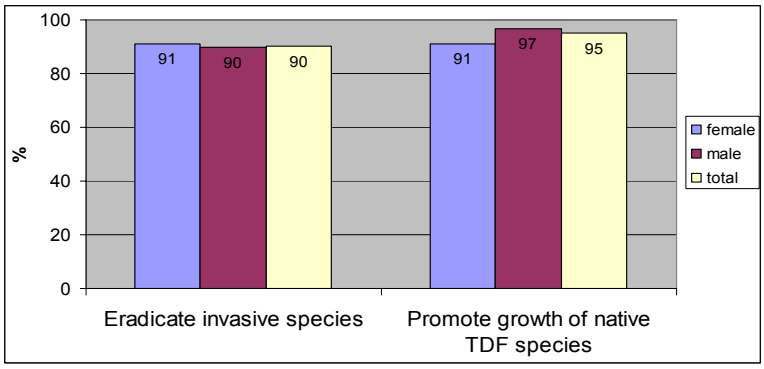


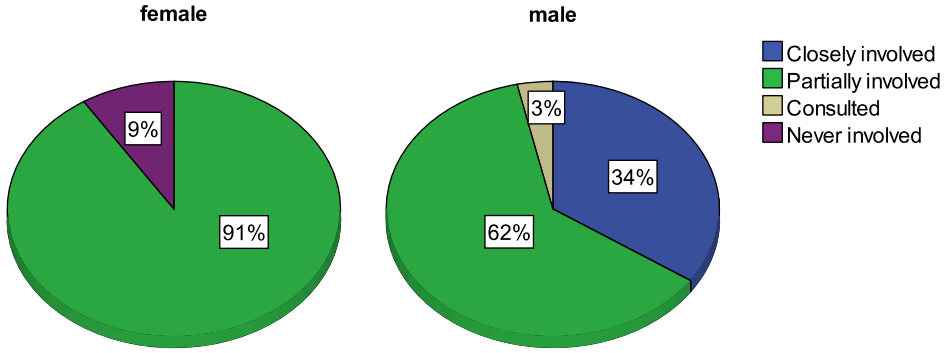
Figure 5.9: Perceived objectives of invasive species management



Community Involvement in Invasive Species Management

As far as community involvement in invasive species management was concerned, all men were involved in some way, 34% of whom said that they were closely involved (*Figure 5.10)* No women reported being closely involved. However, the majority of respondents were observed to be at least partially involved (91% of women and 62% of men) with a small proportion of men (3%) reporting being consulted only and 9% of women reporting no involvement at all. This showed the relative preference for men rather than women in invasive species management activities. This may be a function of the labour intensive, nature of the tasks, such as uprooting and ring-barking of large trees. A number of respondents (98%) did indicate that their role in this particular project was to provide manual labour in the eradication work. This included the ring-barking of large raintrees, weeding out of invasive herbs and bushes and uprooting of other invasive trees.

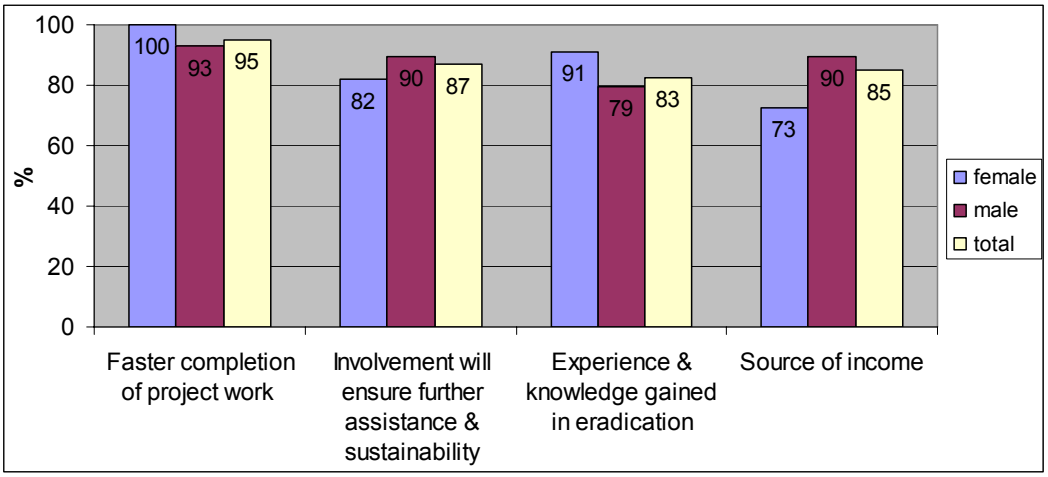
Figure 5.10: Community involvement in invasive species management



Benefits of Community Involvement in Invasive Species Management

As *Figure 5.11* shows, most respondents (>90%) believed that the invasive species management work benefited a lot from their involvement in terms of their time and their knowledge of the area. Furthermore, the majority (80%) believed that their involvement in these activities would ensure the long-term sustainability of the programme. Many respondents (70%) said that the two main benefits of the programme to the community were in the provision of knowledge of, and experience in, the eradication of invasives and secondly in the provision of an important source of income. NTF does not pay individuals directly for their work; rather payment is made to the social group concerned. More men (90%) than women (73%) seemed to notice the economic benefits but this is probably due to the fact that more of them were involved in invasive species management.

Figure 5.11: Benefits of community involvement in invasive species management



Negative Impacts and Conflicts related to Invasive Species Management

Despite the good reports about invasive species management, a few respondents (23%) reported some negative effects of their involvement with the programme, which was related mainly to the hard work expected of individuals and the fact that the monetary reward went to the group. This sentiment was probably due to a minority perception that the YTCIS ranger had too much control and influence over which social group was selected to perform a particular eradication task, and that the distribution of work was not equal among the different social groups, with some groups receiving more than others do. There were also some reports of disagreements among social groups themselves when they were asked to decide which group was to carry out particular assignments. These disagreements might reflect different job requirements. Often men's and youth groups were preferred to women's groups simply because of the nature of the work required, which tended to be uprooting and/or ring-barking trees.

Status of Invasive Species Management

All respondents believed that invasive species management was successful and understood that it was an ongoing activity, conducted when needed, which was necessary for enhancing the dry forest environment on Yadua Taba for *B. vitiensis* survival. They agreed that the venture would continue into the future, given the benefits to the community that it provided much-needed cash income, despite the fact that the activity was carried out only when funds are available. Respondents understood that the presence of invasive species is detrimental to *B. vitiensis* survival, and that their eradication is essential to maintain sustainable *B. vitiensis* populations on Yadua Taba, which in turn ensures the survival of their natural heritage. Some even expressed concern about the arrival of new invasive (exotic) species, and, thus, the need for continuous monitoring and observation.

5.1.4 GREENFORCE

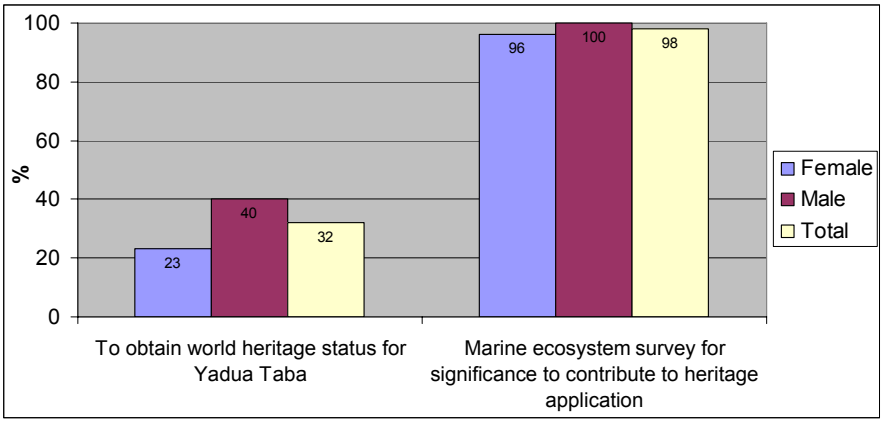
Community members were asked about the operation of Greenforce in conjunction with the NTFs wish to attain UNESCO world heritage status for Yadua Taba. Greenforce has since left the area for a new location within Fiji. Their presence was an opportunity for local community members to be involved in various aspects of their operation.

Knowledge and Perceived Objectives of Greenforce

The majority of community members (98%) had good knowledge of the operation of Greenforce in the area. Unsurprisingly, 100% of women knew of the Greenforce operation as they were heavily involved in support services such as cooking and washing for Greenforce volunteers, sometimes being paid for their services. Furthermore, knowledge of Greenforce was also enhanced because the volunteers made weekly trips, usually on Sundays, to the village for church services and join their hosts for Sunday feasts.

Figure 5.12 shows that most community members (98%) believed that the main objective of Greenforce was to conduct marine ecosystem biological monitoring in the waters and reefs surrounding the two islands. A smaller number (32%), the majority being men, also realised that this monitoring would positively contribute to Yadua Taba's second UNESCO World Heritage listing proposal initiated by the NTF.

Figure 5.12: Perceived objectives of Greenforce



Community Involvement in Greenforce

As *Figure 5.13* shows, the majority of community members were involved in some way in Greenforce operations. More men (37%) than women (only 8%) were closely involved, mainly in terms of provision of transportation, building support and participation in diving and monitoring. A large proportion of women (85%) were partially involved in Greenforce operations, through support services such as the hosting of volunteers in the village, providing meals and laundry services. However, a few older men (7%), usually persons of high status in the village such as the clan chief and the chief's spokesman (**mata-ni-vanua**), reported that they were not actively involved although they were sometimes consulted on various issues. Three individuals, although not involved in Greenforce activities in any way, expressed their wish to be.

Figure 5.13: Community involvement in Greenforce

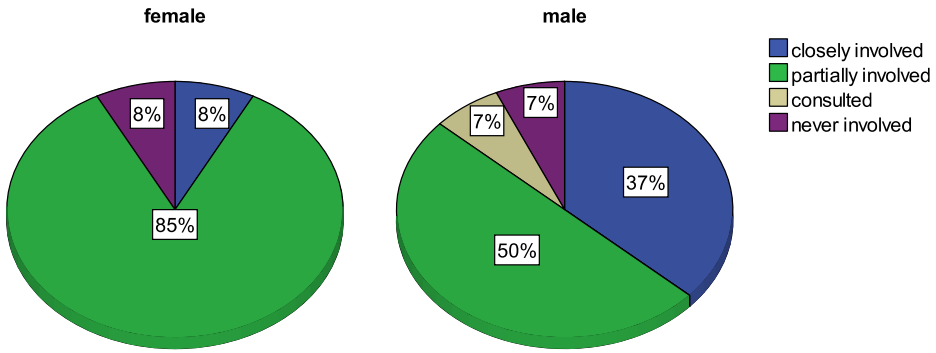
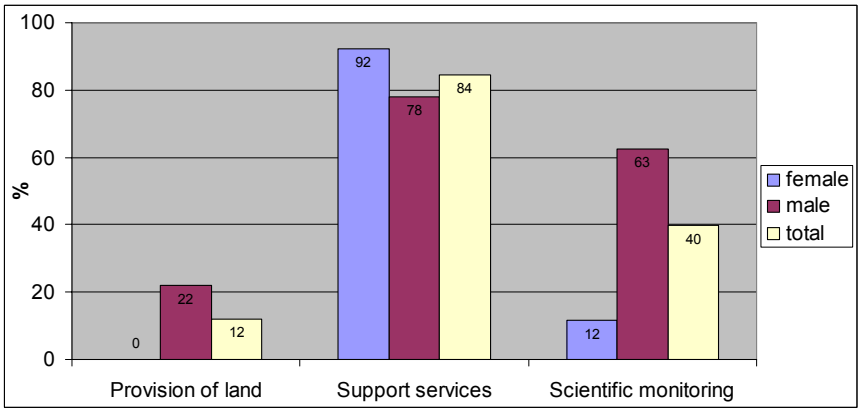


Figure 5.14 summarises the involvement of community members in Greenforce activities. A high level of participation by both men and women (over 75%) was evident in support services although a relatively high proportion (40%) were involved in scientific monitoring that included dive training.

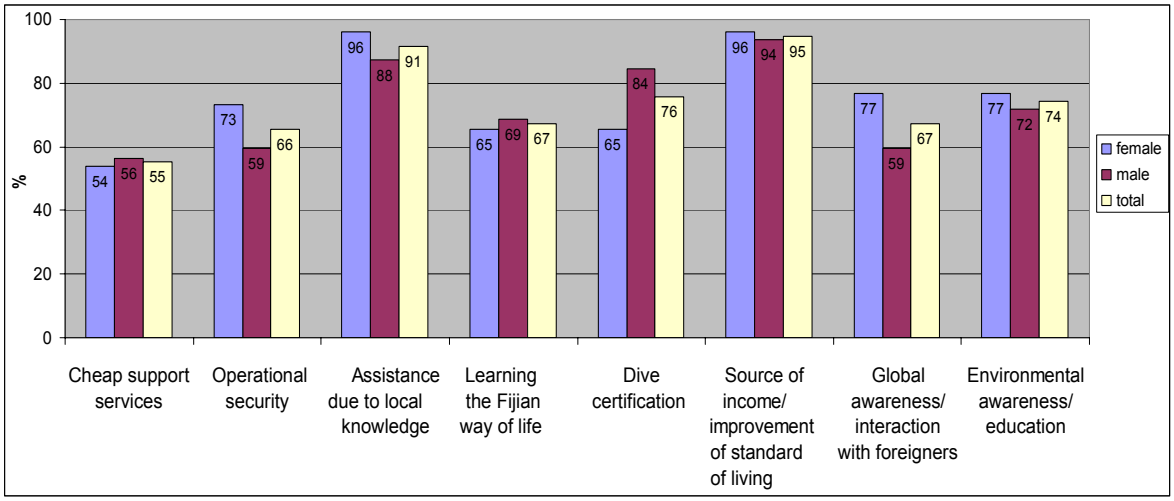
Figure 5.14: Community involvement in Greenforce activities



Benefits of Community Involvement in Greenforce

Figure 5.15 shows perceptions of the benefits of community involvement in Greenforce operations (over 90%) in the provision of information about the environment (reefs, ocean and terrestrial) and associated weather conditions. Similarly, Greenforce was an important source of income, which was useful for improving community living standards. Greenforce always assisted the community through material donations to village projects such as the donation of water tanks and solar powered pumps for the village's first water reticulation system, as well as assistance towards the construction of footpaths and a village hall. Greenforce was also a major contributor to the operation of the village primary school through ongoing donations to the school and individual families both by Greenforce as a whole and by the individual Greenforce volunteers.

Figure 5.15: Benefits of community involvement in Greenforce



Perceived benefits to Greenforce included opportunities to learn and experience the Fijian way of life through regular village visits (67%); operational security (66%); and, the provision of cheap support services (55%) provided by the community, such as transportation, laundry services, construction of houses (**bures**) and provision of foods such as root crops and vegetables, which, would have been more expensive if obtained from offshore sources. Through weekly village visits, Greenforce volunteers were able to experience the traditional Fijian way of life in an island setting through interacting with their host families. This included learning a bit of the Fijian language, tasting local foods, experiencing traditional dances and customary practices, and making important friendships. According to many community members, the special relationships formed with the community during the volunteers' 10-week stays, usually become life-long, with numerous volunteers returning to the island as visitors, after many years and letters and goods also frequently exchanged long after volunteers left the island.

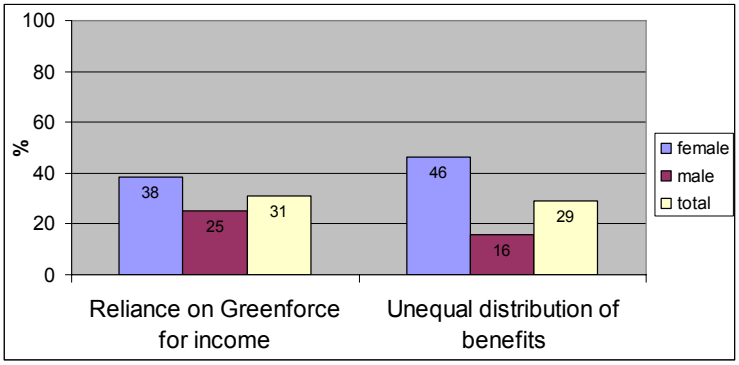
Other perceived benefits to the community of their involvement with Greenforce included the free provision of scuba dive certification (76%), enhancement of community environmental awareness and education (74%), and opportunities to interact with foreigners (67%). Dive certification is often viewed as a significant asset by coastal fishing communities in Fiji as this helps in providing a source of income from the sale of marine resources (obtained from diving). Numerous village talks and awareness sessions that were conducted within the village by Greenforce were regarded as valuable by community members who saw this as enabling them to make wiser use of their natural marine resources. According to some respondents, Greenforce has helped them better understand their living environment, especially in a context where higher education is often not easily accessible. In terms of global awareness and interaction with foreigners, Greenforce has had an impact by allowing community members to interact with people

from other foreign countries and cultures, which would be otherwise impossible in relatively isolated locations. They have also experienced the introduction of new technologies such as the computer (to the village school), exposure to *I-pods* and other types of (personal) entertainment devices.

Negative Impacts and Conflicts of Greenforce

There were some perceived negative impacts associated with the Greenforce operation as shown on *Figure 5.16.* These included unequal distribution of benefits among the different host families in the village (29%) and the heavy reliance of some families on Greenforce as their main source of income (31%), the latter view more evident among women, perhaps because they were more dependent on Greenforce as a source of income, but it also showed the effects that such scientific initiatives have on a rural community.

Figure 5.16: Negative impacts of community involvement in Greenforce



A further impact mentioned by some respondents had to do with an increase in the costs of services such as transport. This was partly because Greenforce commonly paid more than normal costs for some routes, resulting in community service providers raising their prices to unaffordable levels. There has also been some competition among service providers such as boat operators within the community for jobs required by Greenforce, as there was no apparent system for allocating jobs among service providers in the area. This was a cause of dissatisfaction and complaints from host families and households. Only one

person attributed a village conflict to the presence of Greenforce. A landowner, whose land the Greenforce campsite was situated, was criticised for receiving financial benefits from Greenforce, even though he clarified that the land was given to Greenforce on goodwill terms and no monetary payment or any other benefit had been accepted by him. There were also some disputes among families in relation to the distribution of Greenforce volunteers amongst various households although it was generally acknowledged by community members that people's dependence on the individual volunteer differed in different families and volunteers.

Status of Greenforce

The majority of community respondents (73%) were aware that Greenforce was no longer operating in Yadua and had moved to a different location in Fiji. A small proportion still thought that the Greenforce operation was ongoing (26%). The majority of people in the community members wanted Greenforce to return to their village because of the positive impact it had on their community. Volunteers had been widely accepted in the community and people felt a great emptiness upon their departure. The clan chief (**turaga-ni-yavusa)** said that his community was ready and prepared to welcome back Greenforce or any other organisation that wanted to come to the area to conduct similar volunteer operations. Greenforce's success and operational security could therefore be attributed to the strong support that was forthcoming from the local community, which, in the Pacific, is essential for the success of any project or operation.

5.1.5 COMMUNITY OUTREACH

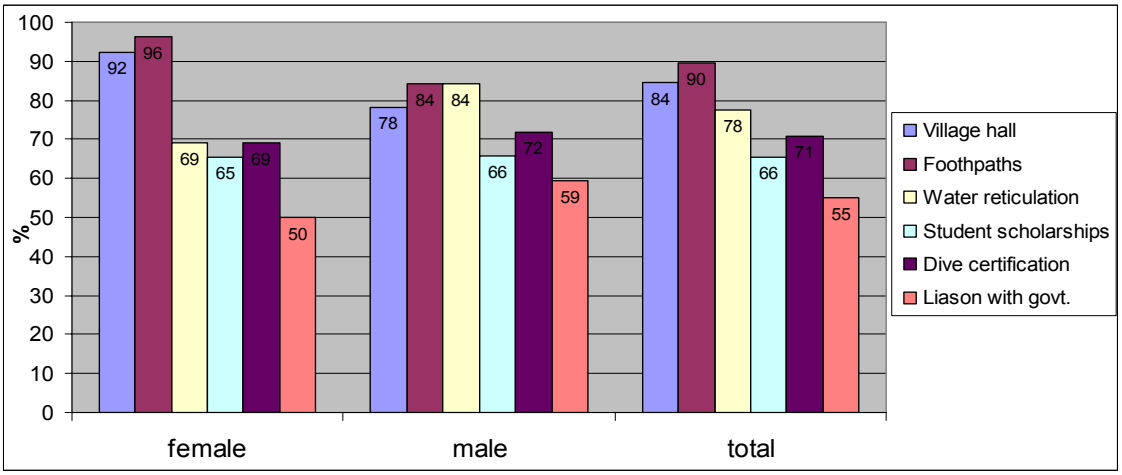
The perceptions of community members on outreach programmes carried out by the NTF were also important since all NTF outreach projects attempt to involve all community members and social groups. Decisions about various projects were usually

made by the village committee in consultation with village elders and the NTF. Although outreach projects were linked to community and village priorities a lot of decisions depended on resources available to NTF (Niukula 2009). Thus, overall project success was very much dependent on the community's own efforts and initiatives.

Knowledge and Perceived Objectives of Outreach

Figure 5.17 shows that most respondents were aware of community outreach programmes conducted by the NTF. The three activities that community members were most aware of were the construction of village footpaths (90%), village hall (84%) and water reticulation systems (78%). Other activities that community members were usually aware of were the provision of free dive certification (71%), student scholarships (66%) and liaison services between the community and government departments and officials (55%). No difference was observed between female and male perceptions in this area.

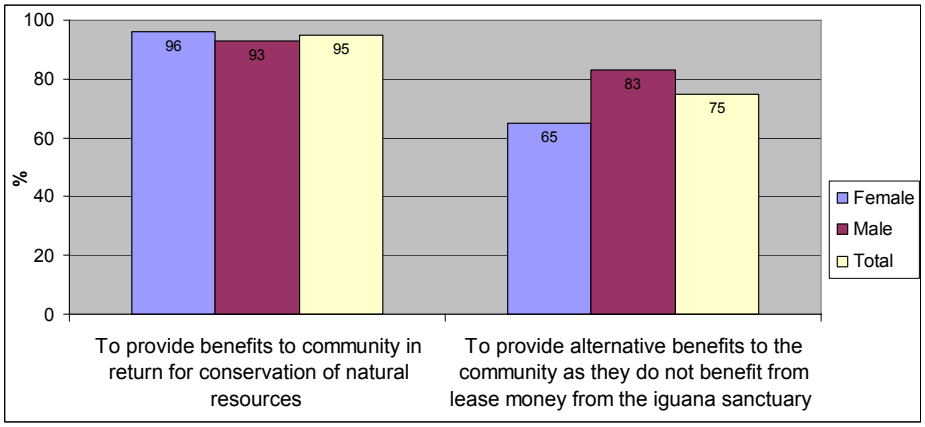
Figure 5.17: Community knowledge of outreach activities



The perceived reasons for NTF facilitating such outreach programmes are shown on *Figure 5.18* Two main reasons were mentioned by respondents. 1) to provide additional benefits to the community in return for their willingness to conserve their natural resources (95%); and, 2) to provide additional benefits to compensate them because they had not benefited from the money paid by the NTF for the lease of YTCIS

(75%). This second objective was mentioned more frequently by men who tended to play a more active role of in the daily administration and decision-making in the village, particularly in matters relating to land.

Figure 5.18: Perceived objectives of outreach



Community Involvement in Outreach

Figure 5.19 and 5.20 show clearly that men were more closely involved (59%) in outreach activities than women (12%), although more women were partially involved (81%). There was a marked division of labour, with men being more involved in the manpower/labour aspect (75%), and are usually relied upon for heavy labour intensive work such as construction, although they are also actively involved in the provision of support services (63%). Women, on the other hand, tended to play a supportive role such as in the provision of catering services and accommodation for labourers (92%), with very few (12%) participating in labour activities. Whereas older men tend to be consulted more in relation to outreach project issues and decision making, due to their relatively higher status within the village, they were rarely expected to participate in labour-intensive tasks. This is especially the case with the clan chief or village elders. Although three expressed their wish to become involved in future activities, two older men, did not wish to participate, stating that they were too old and weak and would not be able to contribute

much. The proportion of community members who were not involved in outreach projects were approximately the same for men and women (10% and 8% respectively).

Figure 5.19: Community involvement in outreach

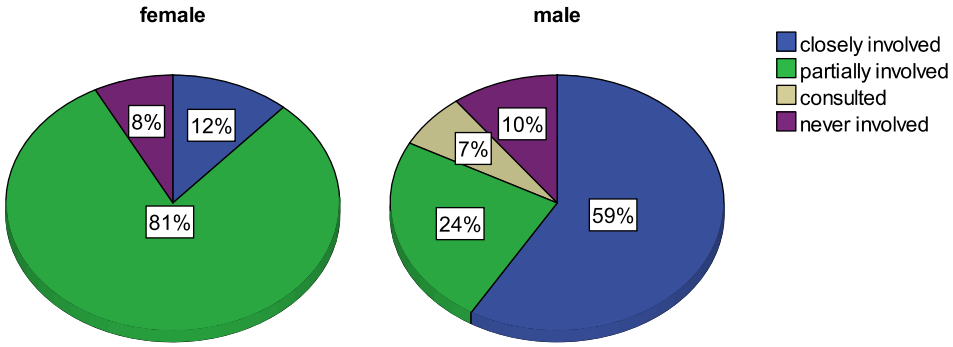
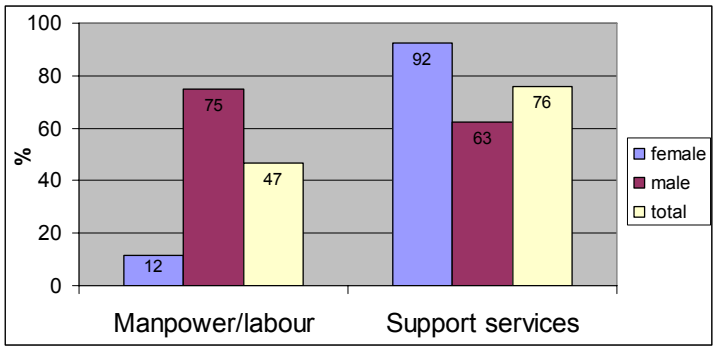


Figure 5.20: Community involvement in outreach activities

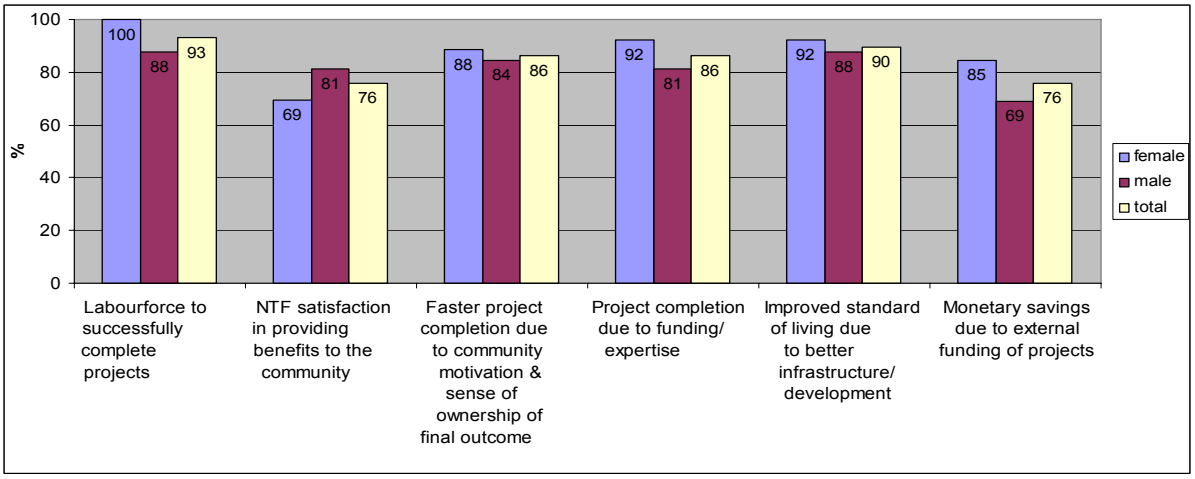


Benefits of Community Involvement in Outreach

The provision of manpower/labour was the most important benefit that community members provided to outreach projects, according to 93% of respondents (see *Figure 5.21*). Other important benefits of community involvement in outreach programmes included ensuring speedy completion of projects (86%); and to a slightly lesser extent (76%), NTF satisfaction in providing benefits to the community through involving them in activities initiated by them. Since funding was usually a major obstacle in Fijian village community projects, the Yadua community benefits immensely from funding received from the NTF through outreach projects. The most important benefit to the community of these outreach projects was the improved standard of living experienced by community

members because of improved infrastructure and general village development (90%). Other important benefits mentioned included faster completion of village projects because of the availability of funding and expertise (86%) and savings because of fewer fund-raising activities by community members (76%).

Figure 5.21: Benefits of community involvement in outreach



Negative Impacts and Conflicts of Outreach

Although 87% of respondents said that there were no negative impacts of outreach projects carried out by the NTF, a small proportion (13%) reported a few negative impacts. One of these was an apparent change in the behaviour of some community members, where, according to a village elder, some people have displayed independent and individualistic behaviour as a result of improved infrastructure and developments and this he surmised, might negatively affect the traditional Fijian way of live in the village, centred around the community working as a coherent group.

Some conflicts also resulted in the past when some community members refused to abide by decisions taken by the village committee, elders and the NTF. This tension resulted from differences in opinions within the community as to what exactly was to be done together with some disagreements with respect to the delegation of tasks. Some

community members also raised their concern over a lack of transparency in the handling and use of funds by village leaders and NTF.

Status of Outreach

Most people (85%) perceived outreach activities as being successful with 40% saying they were highly successful. A few (15%) were not aware of any outreach activities. All respondents, however, agreed that outreach projects needed to continue for the successful implementation of the YTCIP as a whole.

5.1.6 ENVIRONMENTAL AWARENESS

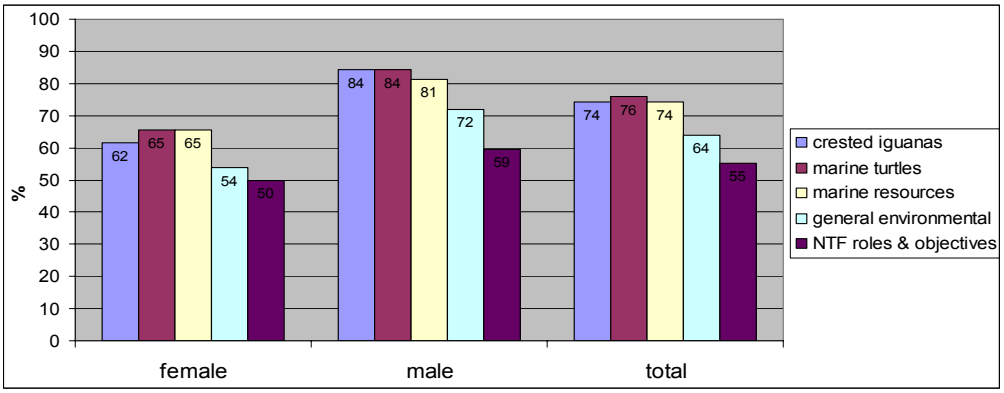
For nearly a decade, the NTF had conducted environment-related awareness activities in the community and respondents were asked about their involvement in and perceptions of these programmes and/or activities. The awareness activities most frequently mentioned were those relating to: *B. vitiensis*, marine turtles, marine resources in general, the community environment, and the role and objectives of the NTF.

Knowledge and Perceived Objectives of Awareness

Most respondents knew about NTFs environmental awareness activities although the proportion of men was higher than women (84% compared to 65%) which might have been a function of a lower level of involvement compared to men. Cultural reasons might have also been a factor where men tend to be the more dominant gender.

This trend is similar to that of respondent's knowledge of individual awareness activities, as *Figure 5.22* shows. All respondents seemed to be aware of the objectives of the awareness activities and said that they aimed at educating the community about the different conservation activities in the hope that this would further extend community support and understanding of the conservation work being carried out.

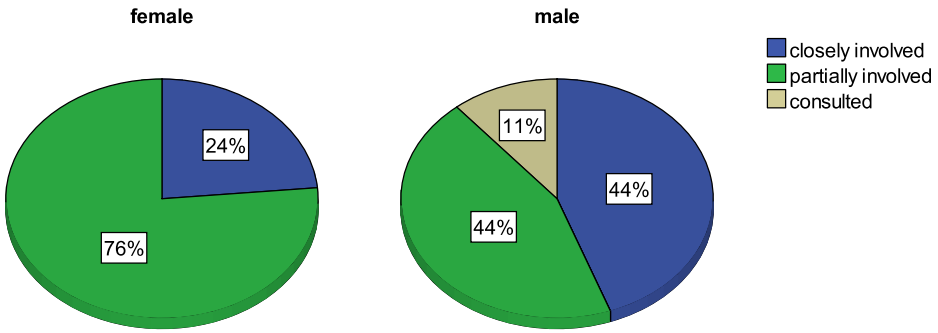
Figure 5.22: Community knowledge of awareness activities



Community Involvement in Awareness

As *Figure 5.23* shows, men were more closely involved (44%) in awareness activities (i.e. attended the activities) compared to women (24%), although all respondents revealed that they were involved in some way. The 76% of women and 44% of men who were only partially involved participated in support services for awareness activities such as the provision of venues and the catering of meals. However, some men (11% of men), again the elderly and persons of status in the village, said they only contributed to such awareness activities through the provision of advisory services.

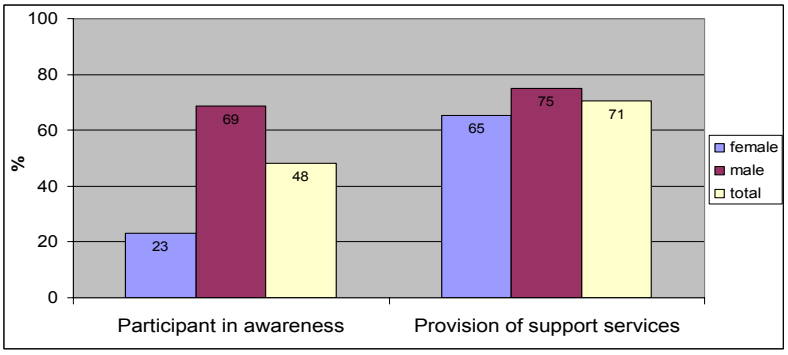
Figure 5.23: Community involvement in awareness



It appears that there is a relationship between level of knowledge of awareness activities and degree of involvement in these programmes, as *Figure 5.24* shows, with only 23% of women compared to 69% of men having participated in actual awareness

activities. Women were more involved in the provision of support services, although some men were also involved in this aspect as well.

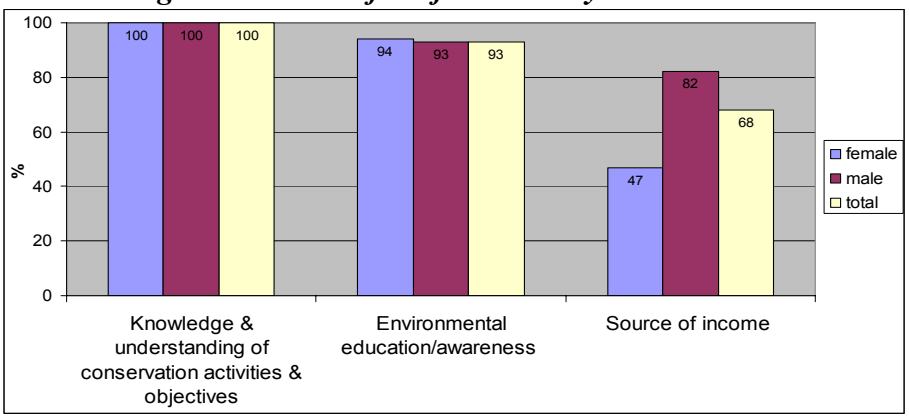
Figure 5.24: Community involvement in awareness activities



Benefits of Community Awareness

Figure 5.25 shows that all respondents who had some knowledge of the awareness activities said that these activities improved their knowledge and understanding of the conservation activities being conducted in Yadua. A very high proportion (93%) said that these activities were educational and helped raise environmental awareness while 68% said that these awareness activities were a source of income for them, since funds were made available to the village for people's services in facilitating and catering during the conduct of these programmes. Again more men (82%) than women (47%) regarded awareness activities as beneficial, which again might have reflected their higher involvement in the programmes as well as control of village and household funds.

Figure 5.25: Benefits of community awareness



Other benefits of awareness activities included the sustainable use of resources. Some examples mentioned by respondents included wiser resource use and consumption; more abundant marine resources (such as fish species which were considered rare in the past returning to the surrounding waters); and becoming more aware of the connection between living and non-living resources. The awareness activities also provided the community members with scientific information relating to *B. vitiensis*, marine turtles and other organisms particularly about their life cycles and habitat preferences - information that was previously not known to many community members.

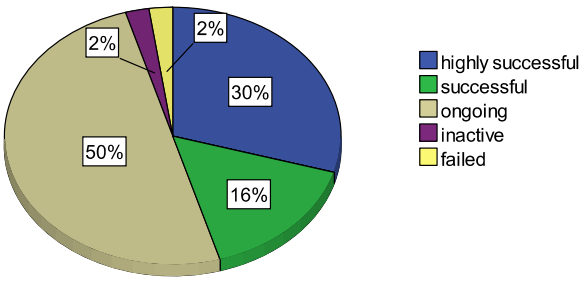
Negative Impacts and Conflicts of Awareness

A small proportion (23%) of respondents reported negative impacts of awareness saying that there were no monetary benefits for people to be involved.

Status of Awareness

Figure 5.26 shows that the majority of respondents (96%) regarded awareness activities as successful and ongoing with only 2% critical of such programmes suggesting that they had failed. 50% of the respondents realised that such programmes were ongoing and that NTF would implement awareness activities when funding was available.

Figure 5.26: Status of awareness



It is important to note that there were a few community members who felt that these awareness activities had failed because they had not observed any change in community members' behaviour concerning sustainable resource use and conservation.

Some felt that community members who participated in awareness activities were not practicing what they had learnt in these programmes as some continue to capture and slaughter marine turtles for their private use and not for ceremonial purposes, currently an acceptable reason for turtle capture in Fiji. All respondents, however, felt a need to continue the awareness activities in the future to enlighten the younger generation about environmental issues and sustainable use of natural resources. This was particularly important for marine turtle tagging programmes as well as *B. vitiensis* conservation.

5.1.7 ENVIRONMENTAL RESEARCH

Community members' views were sought in relation to their perceptions of environmental scientific and socioeconomic research that had been conducted in the area in the last ten years, either as part of the YTCIP or other environment-related project. Most research conducted on the island of Yadua Taba must first be approved by the NTF, inclusive of payment of a research fee before the commencement of research. In addition, on arrival, a **sevusevu** (traditional presentation) needs to be offered to the **vanua** (traditional resource users) in order to seek their blessing and permission to conduct the research. Generally, permission is granted after a **sevusevu** has been presented, and research activities then proceed without hindrance or interference as the research activities have already been explained to the resource users and thus transparency is attained.

Knowledge and Perceived Objectives of Research

Figure 5.27 shows a higher proportion of men (88%) compared to women (42%) had some knowledge of research activities related to *B. vitiensis*, reflecting again the greater involvement of men (*Figure 5.28*). All respondents who had some knowledge of research activities said that their main objective was to study *B. vitiensis* and its habitat and to learn more about them in order to enhance their conservation status.

Figure 5.27: Community knowledge of research

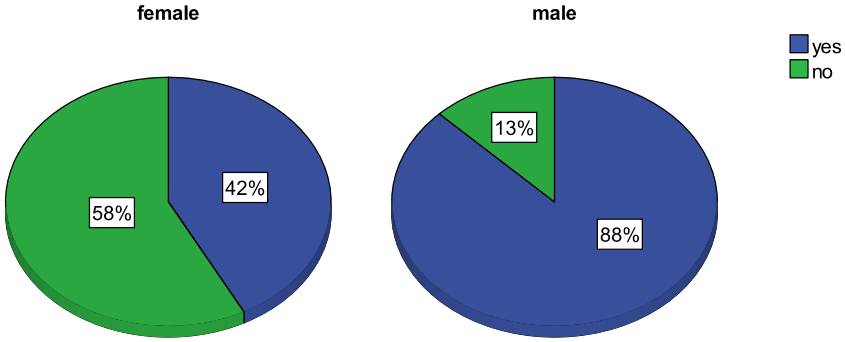
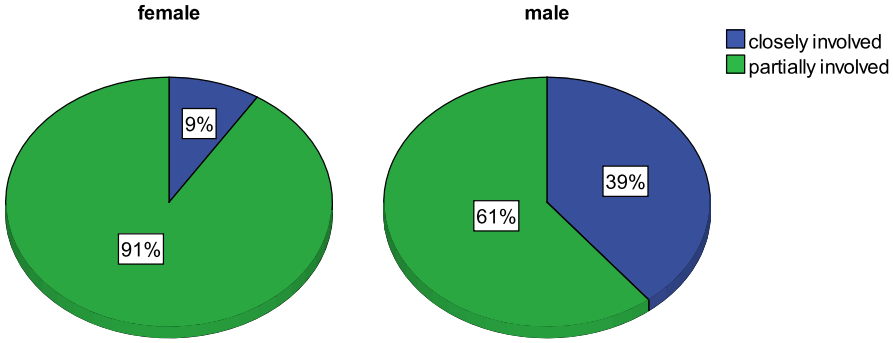


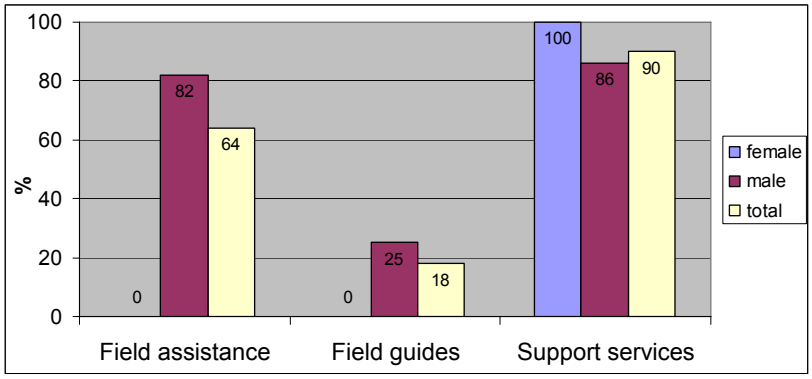
Figure 5.28: Community involvement in research



Community Involvement in Research

Figure 5.29 shows that men featured prominently as field assistants (82%) and field guides (25%) whereas women only provided support services (100%) to research activities, although men also were involved in support services (86%). Support services included the provision of paid accommodation and food to researchers during village stays and boat transport.

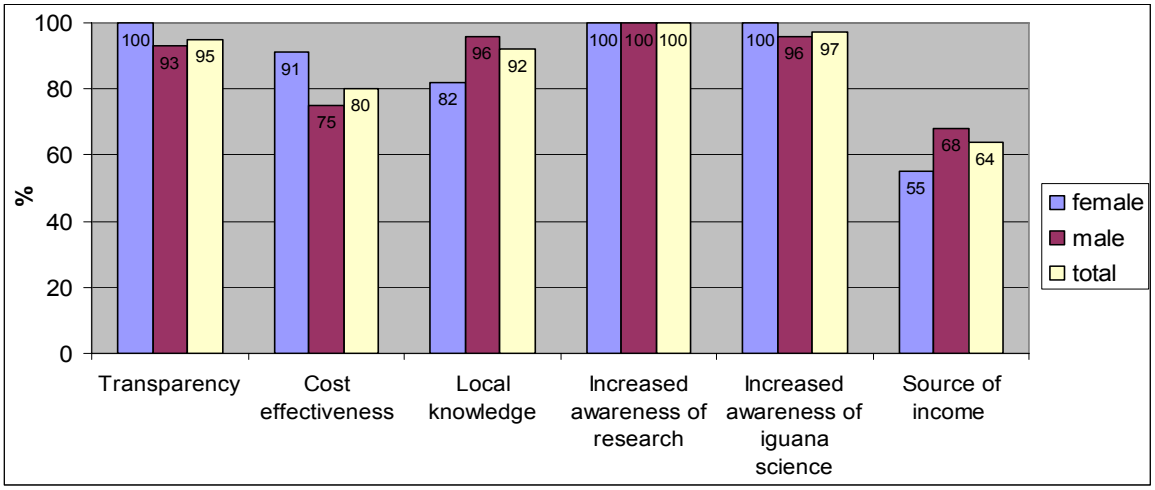
Figure 5.29: Community involvement in research activities



Benefits of Community Involvement in Research

As *Figure 5.30* shows, the majority of respondents saw their involvement in research activities as beneficial in three ways: 1) it ensured transparency of the research being carried out, whereby all stakeholders were well-informed and made aware of the type of research being conducted; 2) community knowledge of the area, terrain and environment made it easier for researchers to carry out their work in a timely manner; and, 3), community assistance made the research activities more cost-effective due to the use of local skills and resources. The community also benefited generally from their involvement in research activities, manifested in their increased awareness of research activities. A large proportion (97%) reported an increase in awareness of the scientific aspects of *B. vitiensis* as well as the added financial benefits of their involvement in various aspects of research activities (64%).

Figure 5.30: Benefits of community involvement in research

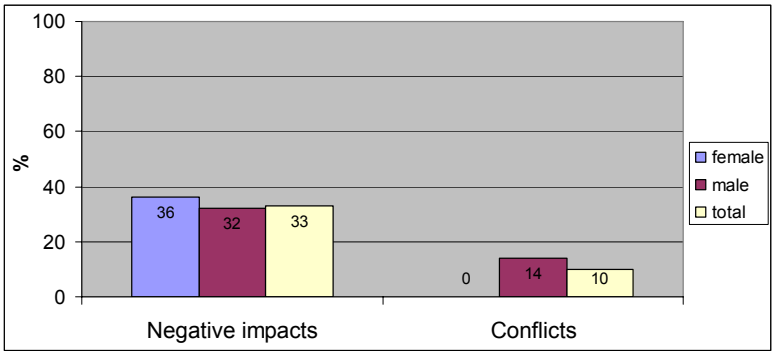


Negative Impacts and Conflicts in Research

Figure 5.31 shows that only a small proportion of respondents (33%) reported negative impacts of research activities perhaps because sometimes the research results conflicted with community and traditional beliefs about the origins of *B. vitiensis* (South America) and their colonisation of the islands. This issue is often debated among

community members, some of whom believe that the iguanas were created by God and have always been present on their island. On the other hand, traditional Fijian folklore regards *B. vitiensis* as a symbol or totem (**icavuti**) of the community, and to suggest that they came from elsewhere sometimes result in heated arguments amongst folks in the community. Another contradictory finding relates to the geological origin of volcanic islands. Such debates usually occur among men during social gatherings or during **yaqona** (traditional drink) sessions. However, these debates are usually civil, although a handful of men (14%) believe that research activities and research results might have some negative impact on the community as they help initiate debates and arguments.

Figure 5.31: Negative impacts and conflicts in research



Status of Research

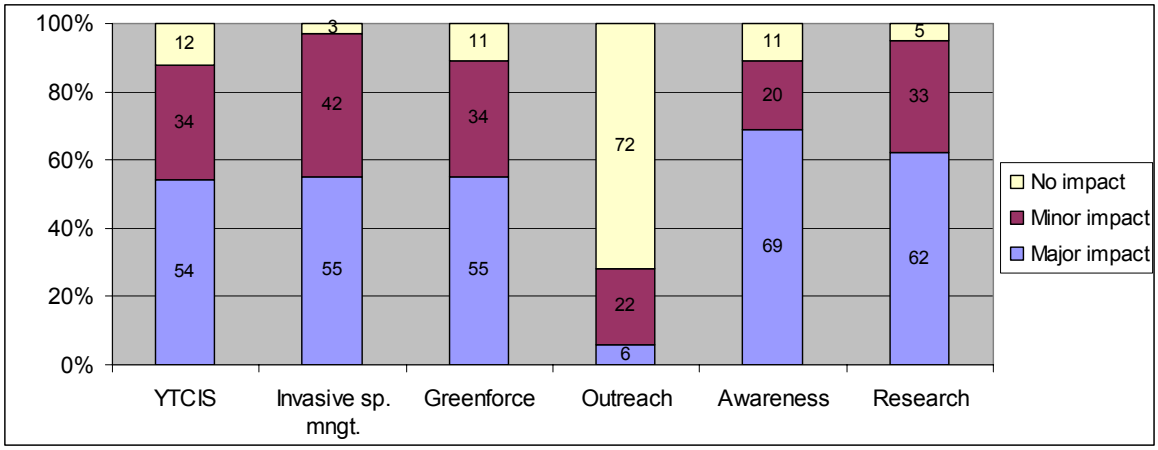
Slightly over half of the respondents (51%) recognised that research was an ongoing process, with a further 46% saying that past research activities had been successful. Only 3% reported a lack of research activities at the time. This mixed reaction was probably due to the fact that researchers themselves needed approval from NTF since they are the holders of Yadua Taba's lease agreement and have full control over rights to the island. All respondents believe that research should continue since there is a lot to learn about the valuable components of their natural heritage, *B. vitiensis* and the island environment as a whole, in order to assure sustainability of their natural resources.

5.1.8 IMPACT OF CONSERVATION ON COMMUNITY LIVELIHOODS

There are three important impacts on community livelihoods that each conservation activity was seen to have: 1) on people's knowledge of the environment and the finite nature of resources (*Figure 5.32*); 2) on people's daily use of living resources (*Figure 5.33*); and, 3) on people's everyday use of the land and sea space (*Figure 5.34*).

As *Figure 5.32* shows, most activities were observed to impact on people's knowledge of the environment and the finite nature of their resources, with the exception of outreach activities. This is understandable as outreach activities are usually conducted with the primary objective of improving living conditions, rather than enhancing environmental knowledge within the community. The highest proportion of respondents reported that community environmental awareness activities had the highest impact on their knowledge of the environment, and the finite nature of their resources.

Figure 5.32: Impacts on the community's knowledge of their environment, resources and their finite nature.



Most respondents agreed that their involvement in these programmes had taught them to conserve all their resources and not just *B. vitiensis* alone, highlighting an increased in awareness of the connectivity between themselves and their environment, including marine creatures such as turtles (**vonu**) and bumphead parrotfish (**dagava**), which are still plentiful in the area although threatened elsewhere. Understanding the

importance of each resource seemed to raise the community's desire to broaden conservation activities to include the wider environment and all the resources within it for the sake of community survival (Baleilabasa, pers comm.). Furthermore, many respondents believed that their participation in invasive species management increased their knowledge on the impact of invasive species. According to some, they have not only learnt about the various invasive species present on their islands, but also about the ones that were harmful to B. *vitiensis* habitats and community food gardens. This and other lessons learnt from invasive species management activities appeared to have contributed to a more efficient use of the community's natural resources, especially in a remote and isolated area such as Yadua. It was also evident from the study that Greenforce have had a huge impact on the Yadua community's and people in raising their awareness and wise use of their living environment and resources., both from the land and the sea.

Figure 5.33 shows the impact of the different activities on the community's everyday use of living resources surrounding them, with most activities having some impact, with the exception of outreach activities.

Figure 5.33: Impacts on the community's everyday use of living resources

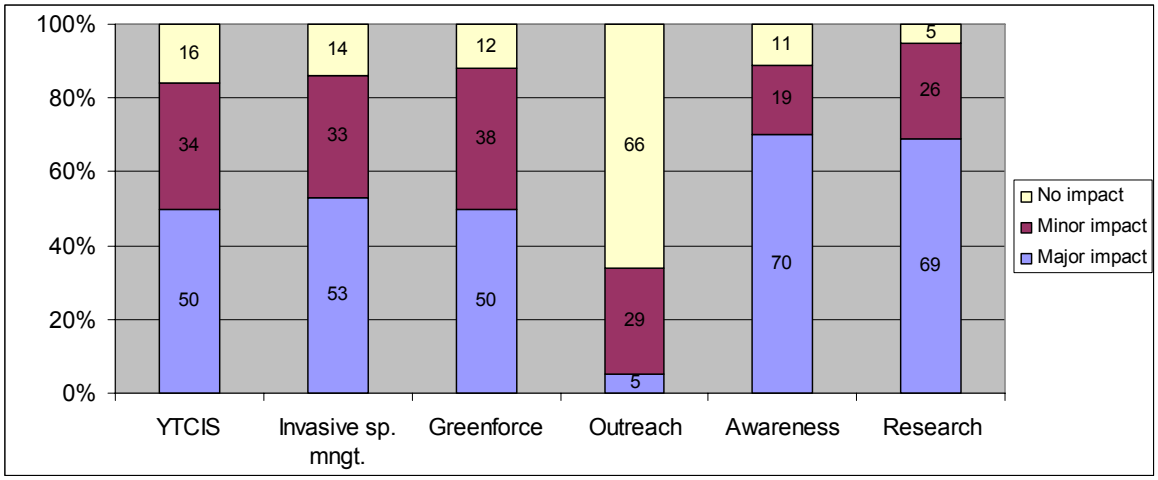
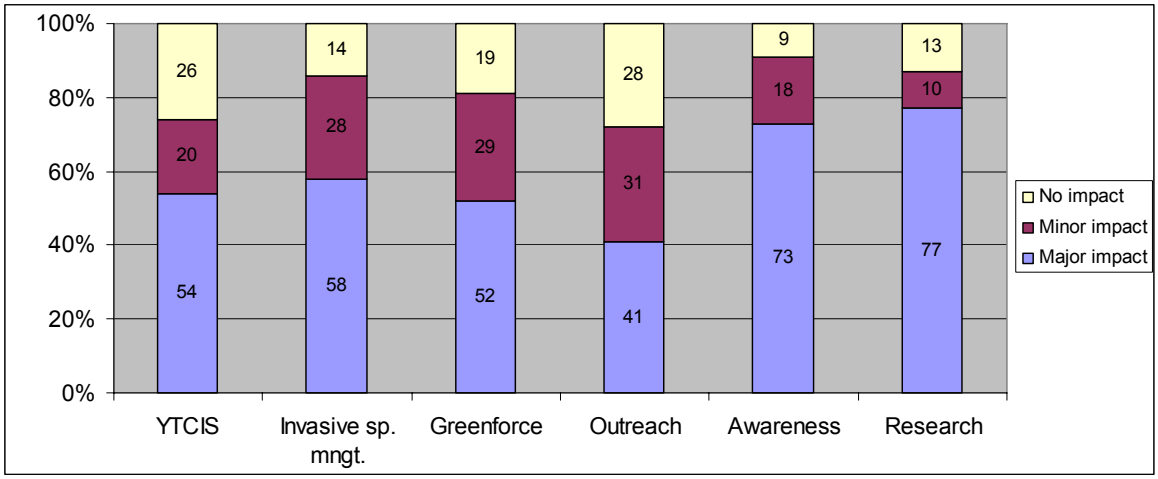


Figure 5.34, on the other hand, shows that outreach activities have served their purpose to some extent, as it was seen to have positive impacts on the communities'

everyday use of land and sea space. This might be attributed to improved infrastructure and village development, such as the construction of footpaths, water systems and a village hall have contributed greatly to this aspect of livelihood.

Figure 5.34: Impact on the community's everyday use of the land/sea space



General Trends and Impacts

The study results showed that the majority of people in Yadua agreed with conservation objectives designed to conserve and protect not just *B. vitiensis* but all marine and terrestrial resources from which they and future generations might benefit. However, while about half of the respondents felt that YTCIS has had a major impact upon their personal lives, the other half did not seem to feel much impact at all. This may reflect the fact that not all the people in the village were involved to the same degree, in the operation of the YTCIS. There was more involvement of men rather than women in many activities often leading to a higher awareness of, and perceived benefits from, conservation activities among men compared to women. The next chapter would draw some conclusions from the study and make recommendations for further action.

5.2 THE PORTUGAL CASE STUDY: THE PNSACV

5.2.1 Background Statistics

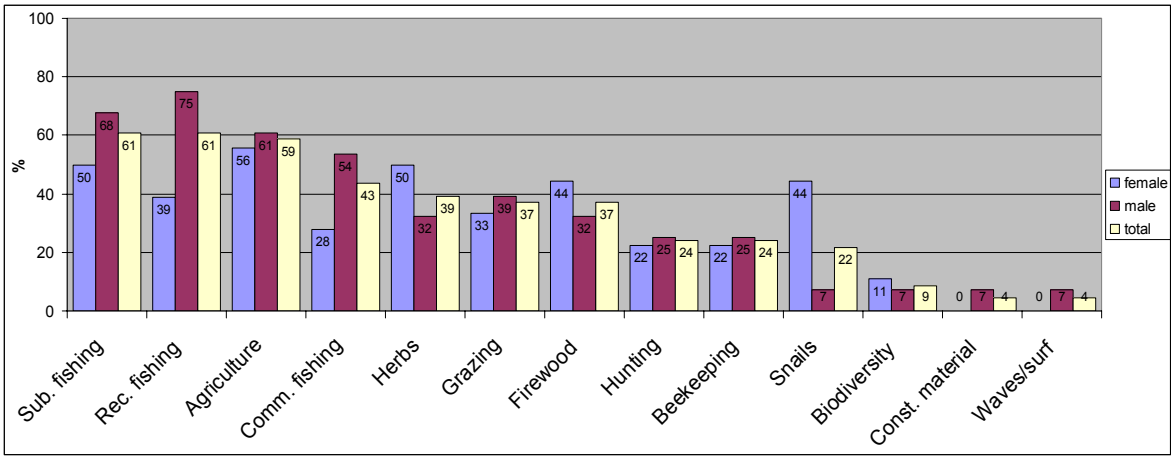
A survey of community perceptions of conservation within the PNSACV was carried out involving 49 individuals, including 18 women (55%) and 28 men (45%). The highest proportion of respondents (48%) were from the 30-49 years age group, 26% were young people (18-29 years of age) and 26% elderly (over 50 years) (*Table 5.2*).

Table 5.2: PNSACV Respondent Composition

		AGE GROUP			
		18-29 yrs	***30-49 yrs***	***50+ yrs***	***Total***
GENDER	***Female***	5 (*25%*)	7 (*35%*)	8 (40%)	**20 (*41%*)**
	Male	7 (*24%*)	15 (*52%*)	7 (*24%*)	**29 (*59%*)**
	Total	**12 (*26%*)**	**22 (*48%*)**	**15 (*26%*)**	**49 (*100%*)**

Figure 5.35 shows the high dependency on local natural resources for livelihoods in the communities being studied in the PNSACV. High on the list of activities were subsistence fishing (61%), recreational fishing (61%) and agriculture (59%). Also of notable importance were commercial fishing (43%), collection of herbs (39%), grazing of cattle 37%) and the collection of firewood (37%). Other minor activities included hunting, beekeeping, collection of edible snails, the reliance on local biodiversity, the use of natural materials for construction and the use of waves/surf.

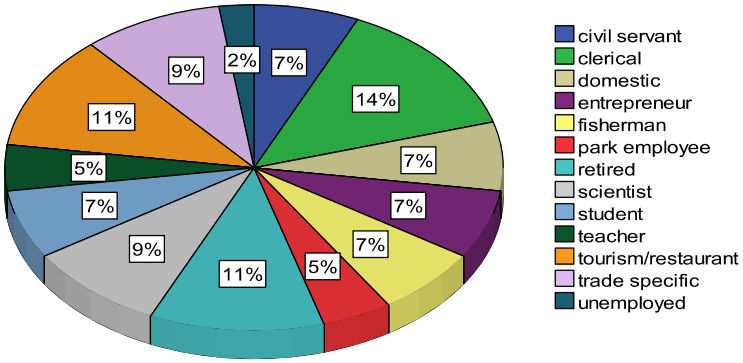
Figure 5.35: Community dependency on resources



While men had a higher dependency on fishing, women were more dependent on the collection of herbs, snails and firewood, showing some gender specificity in the area.

As seen in *Figure 5.36*, a wide range of occupations/livelihoods were present within the sample, however, there was no dominant occupation that people relied upon, with a slightly larger number of respondents in the clerical (secretarial and administration), tourism/restaurants (hospitality) and retired categories.

Figure 5.36: Community occupations and livelihoods

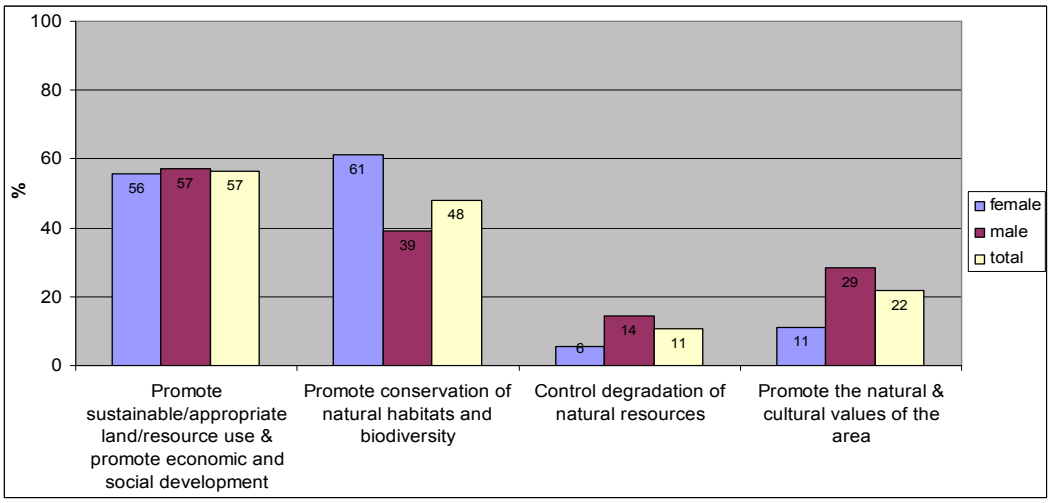


5.2.2 Results

Perceived Objectives of the PNSACV

As *Figure 5.37* shows, most respondents perceived the main objectives of the PNSACV to be the promotion of sustainable and appropriate land and resource use (in order to preserve natural and cultural landscapes) as well as the economic and social development of communities in the area (51%) and to promote the conservation of natural habitats and biodiversity unique to the area (51%). Two other perceived objectives that were also common were the promotion of the natural and cultural values of the area (26%) and the control of activities causing the degradation of natural resources (13%).

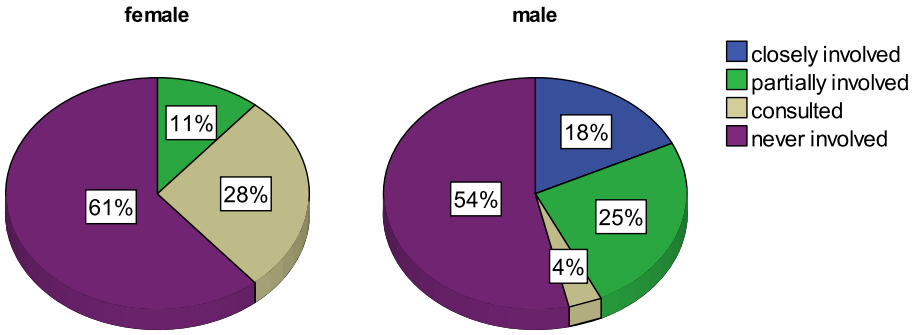
Figure 5.37: Perceived objectives of the PNSACV



Community Involvement in the PNSACV

As *Figure 5.38* shows, more that 50% of respondents said that they were not involved in any way with the PNSACV. Some men were closely involved (20%) and partially involved (24%) as compared to only 14% of women being partially involved, with a higher percentage (29%) being only consulted on issues relating to the PNSACV.

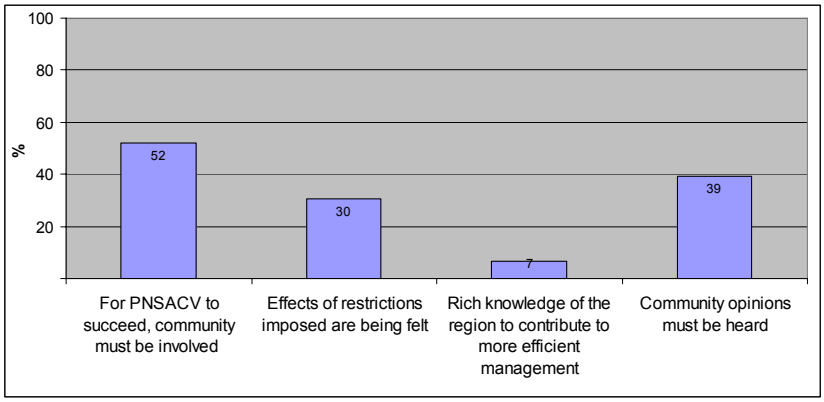
Figure 5.38: Community involvement in the PNSACV



Because most people were not involved in PNSACV, most expressed a wish to become more involved in future activities of the PNSACV, with the exception of 15% of men. Reasons stated for more involvement (*Figure 5.39*) included the view that if the PNSACV was to succeed, the community must be involved (52%), and that the views of all stakeholders in the area (39%) should be solicited so that decision makers could be made aware of their needs. A smaller proportion of respondents (7%) believed that the

local community had a rich knowledge base that could contribute to more efficient and effective management of the PNSACV.

Figure 5.39: Reasons for the need for greater community involvement in the PNSACV



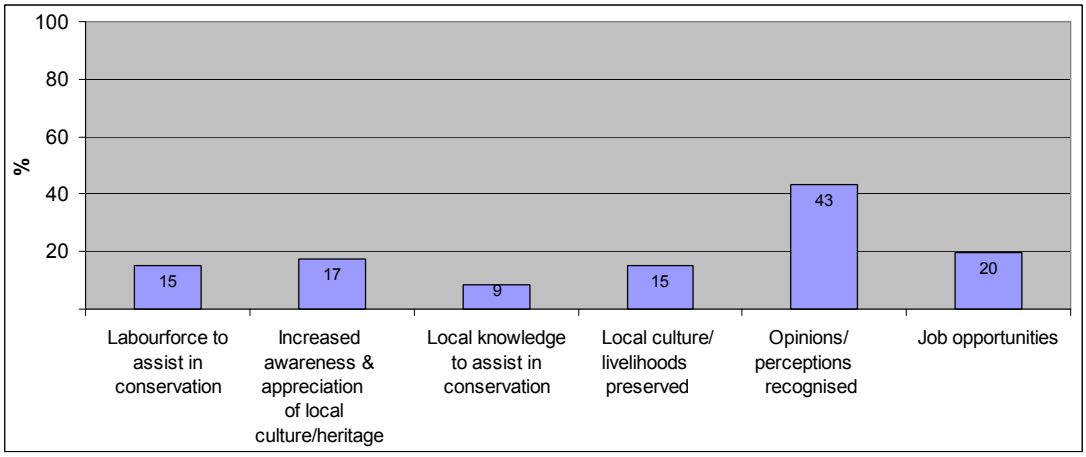
It was also believed that important traditional and local information was available within the local communities especially relating to specific areas and species at risk that needed to be managed and conserved. It was also stated that, without community involvement, newly created laws may conflict with the cultures and traditions of the local communities. According to many respondents, park authorities did not seem to show much interest in involving them in their projects nor did they try to achieve something for the greater good of the local population.

Benefits of Community Involvement in the PNSACV

Some community members perceived their involvement in the PNSACV as having specific benefits to PNSACV operations. As *Figure 5.40* shows, some 17% saw community involvement as an added cultural benefit to the natural heritage aspects of the PNSACV and in the promotion of the area to foreign visitors. A similar proportion (15%) said that their involvement would be beneficial as labour input to assist in park operations. A smaller number (9%) said that local and ethnobiological knowledge of the area would help make conservation efforts more efficient and successful. Increasing community involvement in the PNSACV was also seen by respondents as being beneficial to the local

community in a number of ways including the visible valuing of community opinions (43%) and the provision of much needed income (20%). More job opportunities would also provide incentives for younger people to remain in the area instead of having to move elsewhere for work. Increased awareness of local cultures by outsiders was another bi-product of community involvement, according to other respondents (15%).

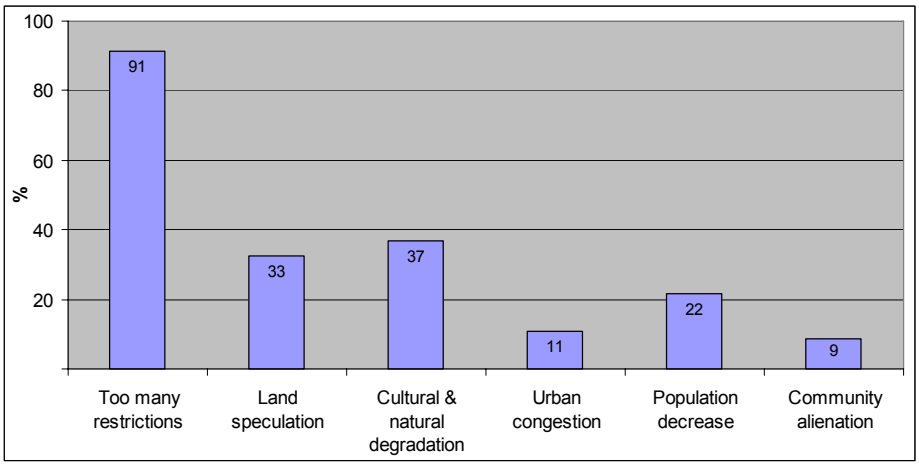
Figure 5.40: Benefits of community involvement in the PNSACV



Negative Impacts and Conflicts related to the PNSACV

Despite the positive perceptions, many people believed that the PNSACV has had negative impacts on their community due to a lack of involvement and consultation. As *Figure 5.41* shows, high on the list of negative impacts (91%) is the large number of restrictions (*Appendix E*) that were imposed and which had negatively impacted people's daily lives because many residents still rely on natural resources for their livelihood. Other significant negative impacts perceived by residents included the degradation of cultural and natural resources and heritage (37%); fluctuation in land prices (land speculation) (33%); a dwindling population (22%) due to out-migration; urban congestion (11%) due to restrictions on construction outside the town boundaries; and, community alienation (9%) from PNSACV decision makers because community opinions were not usually sought.

Figure 5.41: Negative impacts on the community of the PNSACV



Restrictions

The restrictions (*Appendix E*) imposed on local residents' were perceived to impact people's' traditional way of life in areas such as agriculture, pastoralism, fishing and forestry, and some expressed dismay at the lack of consultation before many of these restrictions are put in place. This applied to measures involving the conservation of species populations, restrictions on fishing, use of walking trails, unrestricted development of trailer parks as well as restrictions placed on buildings, measures that were sometimes seen by the community as lacking technical or scientific basis. Many community members felt that the restrictions and laws created by the ICNB were inappropriate and did not take into account the reality of their situations. Consequently, they were very much in favour of a more participatory approach in conservation development, which included them in the discussion and formulation of regulations that affected their livelihoods since they have lived in the area for generations. Many felt that the restrictions and penalties imposed upon them were also leading to less sustainable development in the area, and created conflicts that could only be resolved with more legislation and fines. According to many residents, the PNSACV was perceived as promoting the sustainable use of land, merely to create restrictions on the activities of local residents, hindering their traditional way of life, whether in agriculture, pastoralism, fishing or forestry.

According to some, restrictions placed on community activities within the PNSACV had not markedly increased local flora and faunal populations. According to one community member who is involved in commercial fishing, limitations on recreational fishing (*Appendix E*) were having little conservation impact because this type of fishing currently constitutes only about 1-2% of total fish caught. Finally, some respondents felt that a new landuse plan currently under public discussion would further restrict people's activities in the region.

Land Speculation

Increased interest among foreigners for land within the PNSACV resulted in land speculation, causing inflation in the price of property in some parts within the PNSACV. This has, in turn, prevented people, mainly the local younger generation, from purchasing homes because they are not affordable. Consequently, many young people have left the area for larger urban areas in search of employment, causing depopulation and weakening the community's social fabric. On the other hand, locally owned land within the PNSACV boundary that is not considered attractive for tourism or requires authorization for development (*Appendix E*), even though one may own this land, it value for tourism purposed has fallen since the formation of the PNSACV.

Cultural and Natural Degradation

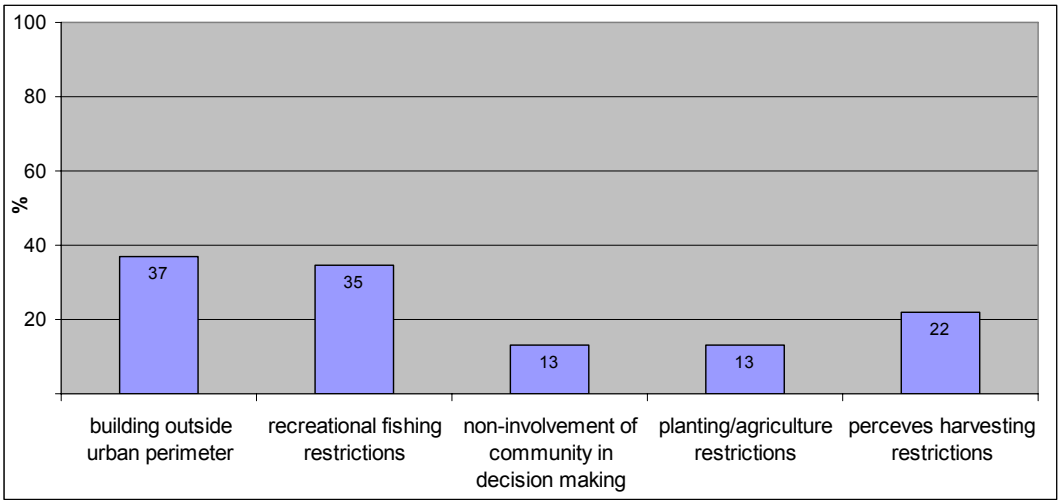
The increase in tourism activities in the PNSACV since its formation was not welcomed by many community members who saw the increase in low-cost tourism (such as camping) as not beneficial to their community, but was in fact disturbing their traditional peaceful way of life as well as having a negative effect on the environment. The community felt that rowdy campers and tourists often fail to show respect for the natural and cultural significance of the area, considered by them as its main attraction hence the

need for all to work together to protect this. The community felt that it was important to raise tourist awareness about the importance of protecting and improving the PNSACV's natural and cultural environments.

Conflicts

There exists a perception that the lack of community involvement in the PNSACV resulted in numerous conflicts between the community and PNSACV authorities, as *Figure 5.42* shows. These included conflicting views on construction within the national park (37%), recreational fishing regulations (35%), restrictions on the harvesting of *perceves* or stalked barnacle (*P. pollicipes*) (22%), planting of household crops and agriculture (13%) and the lack of active involvement of the community in decision making (13%). Many people in the local communities believe that such conflicts, have not been resolved, but shelved or brushed aside by park authorities. Conflicting views on the harvest of *perceves* have not been resolved due to a lack of understanding between the harvesting associations and PNSACV. In addition, the shortening of the bream- fishing period has never been justified or explained to the local community, resulting in a lack of understanding, by many, of the rationale for the associated legislation.

Figure 5.42: Conflicts arising within the PNSACV involving the community

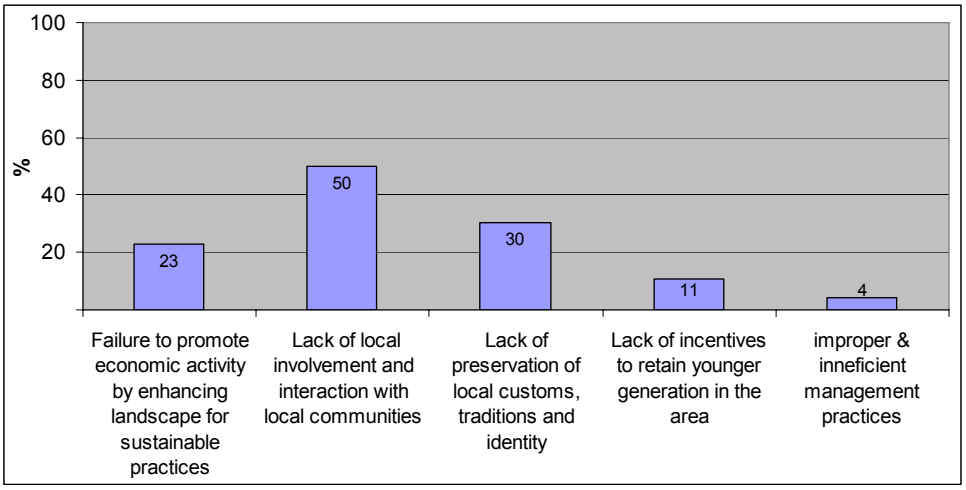


Status of the PNSACV

Given many of the above concerns, the majority of community members (69%) surveyed felt that the PNSACV had failed in its initial objectives;. nearly a third (26%) believed that PNSACV had been inactive in its operation; and only 5% felt that it has had some success.

As *Figure 5.43* shows, many saw this failure as the result of many things. The first two compelling reasons were the apparent lack of local involvement and interaction with local communities (50%) and the absence of measures for the conservation of local customs, traditions and identity (30%). Other important reasons included the failure of PNSACV authorities to promote economic activity by enhancing existing landscapes through sustainable practices (23%), the lack of incentives for younger people to stay in the area (11%) and, to a lesser extent, inappropriate and inefficient management practices by PNSACV authorities (4%).

Figure 5.43: Reasons for the perceived failure of the PNSACV



Some community members perceive management activities as inappropriate particularly in the areas of species protection, for which little scientific basis was provided. Furthermore, Park authorities have not yet, identified areas of significance in terms of floral and faunal value that could provide the focus of nature tourism that could benefit the

local community. Because of this, many visitors to the area was not well informed about the natural and cultural value of the local landscape. Some community members also felt that there was a lack of monitoring of the conservation of wildlife populations. Fishing companies, for example, they were required to submit a list of species observed in number and location, but there seemed to be little if any coordination among various authorities on how the information can be more effectively used in conservation efforts.

Despite all these reservations, the majority (77%) of respondents felt that the PNACV was a good idea and ought to continue with its operations since it was an important community asset, both in terms of the conservation of natural resources and cultural values. However, people felt that the area's management should be carried out with, and not against, the local population. Some people felt that this was due to a lack of government investment in PNSACV, which meant that technical, human and financial resources needed for the proper management were not forthcoming, resulting in weak governance, with negative consequences in relation to nature conservation and the achievement of stated objectives.

Some respondents felt that the PNSACV was also good for controlling urban sprawl and expansion, in the hope that the area would not become heavily urbanised with development, as was the case in nearby Albufeira. The PNSACV was generally seen as important for maintaining the natural beauty of the area and, given more involvement by the community in defining goals for the PNSACV and identifying protective measures for conserving the area's natural and cultural resources, the PNSACV could have a more positive effect upon the local community. This meant that fewer people would associate the PNSACV with punitive, restrictive and even "castrating" development.

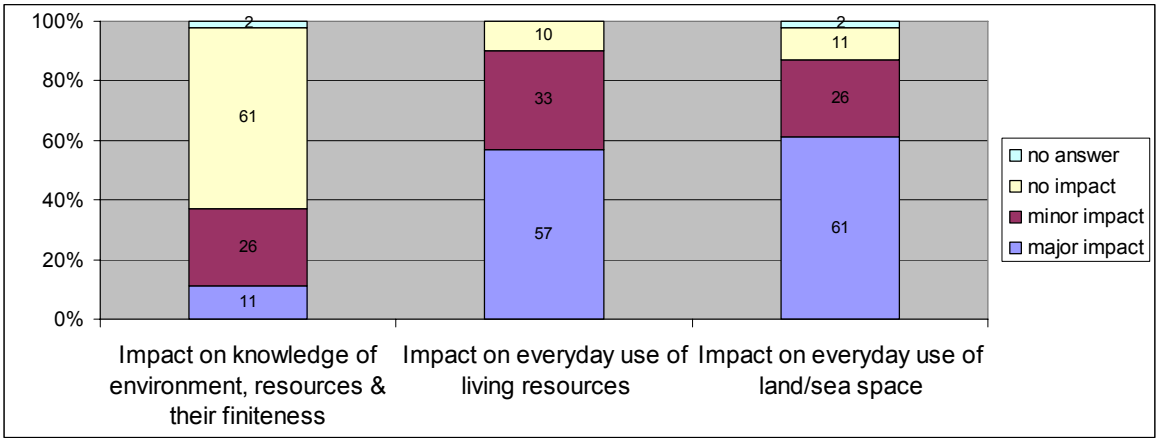
Many people felt that community involvement in PNSACV development should be mandatory, because if people were not involved from the beginning, they would not

respect rules instigated by outsiders and there would be no feeling of local ownership. There was a perceived need for PNSACV to promote the welfare of the resident community in harmony with their material and non-material cultural heritage and that there should be an appreciation of the need for peaceful co-existence between authorities, park users and residents. At the time of the survey, this appeared not to be the case.

5.2.3 Impact of the PNSACV on Community Livelihoods

It was evident from the study, as *Figure 5.44* shows, that the PNSACV had a major impact on community livelihoods, especially their use of natural resources (50-60%). The survey also indicated that the PNSACV had minimal impact on the community's knowledge of the environment, resources and their finite nature, perhaps because the PNSACV community awareness strategies were not working or because the community's knowledge of the environment was already sufficient, and that the PNSACV did not add anything significantly new to what people already knew.

Figure 5.44: Impact of the PNSACV on community livelihoods



Conclusions and recommendations from both the Fiji and Portugal case studies are now discussed in the next chapter together with comparisons between the two.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the cases studies of community involvement in conservation initiatives in the Fiji Islands and southwestern Portugal, conclusions and recommendations are presented, first for the Fiji case study and then for the Portugal study, followed by a summary comparative analysis of the two studies.

6.1 FIJI CASE STUDY: THE YCP

Based on the initial research questions and hypotheses for this study, we can conclude that the research hypotheses can be accepted. In relation to research hypotheses 1, a high level of community involvement (an average of 88%) was evident at most levels of all conservation activities in the case of the Yadua and Yadua Taba conservation project in Fiji, but not in the case of the PNASCV (an average of 43%) in southwestern Portugal. In both cases the involvement, or lack thereof, seems to be perceived as significant in terms of the success or lack of success and community ownership of the projects. In relation to research hypotheses 2, the impact on the community and their perceptions of the positive or negative impacts on their livelihoods and sustainability of the project were also seen to be closely linked to the degree and effectiveness of community involvement.

The comparative studies clearly show that community-focussed conservation can be successful given appropriate involvement of the local communities. As stated earlier, community involvement in conservation has many advantages including engendering local environmental and natural resource knowledge, cost effectiveness of operations, and positive and quick results, and well as sustainability, community ownership and positive impacts of community livelihoods. However, to involve people requires sustainable effort therefore long-term strategies and engagement are necessary.

Table 6.1 summarises community involvement in each conservation activity. It can be seen that the level of community involvement in each activity is very high with the exception of women in the case of YTCIS operation (15%). The differences between men and women's involvement are also evident.

Table 6.1: Levels of Community Involvement in Each Activity

Activity	*Closely involved (%)*		*Partially involved (%)*		*Consulted (%)*		*TOTAL (%)*	
	F	***M***	***F***	***M***	***F***	***M***	***F***	***M***
YTCIS operation	5	23	10	50	0	3	**15**	**77**
Invasive species management	0	34	91	62	0	3	**91**	**100**
Greenforce operations	8	37	85	50	0	7	**92**	**92**
Community outreach	12	59	81	24	0	7	**92**	**90**
Environmental awareness	24	44	76	44	0	11	**100**	**100**
Environmental research	9	39	91	61	0	0	**100**	**100**

Out of the different activities, Greenforce operations seem to have the most beneficial impact on the communities. YTCIS, community outreach, environmental research and invasive species management also provided many benefits although environmental awareness seemed to be seen as a benefit from the community's perspective only. Some negative impacts of community involvement were perceived for the YTCIS operation with Greenforce operations, community outreach, environmental awareness and research having only minor negative impacts. It was also seen that men overall have more opportunities for their involvement in activities than women, especially in environmental research, and Greenforce operations.

6.1.1 YTCIS Operation

From the results of the community survey, it is evident that men have greater knowledge of the YTCIS and its objectives, reflecting their greater involvement in the YTCIS operation in activities such as policing and caretaking, which are also viewed by all as being highly beneficial to the YTCIS. Most of those who know about the YTCIS but

are not involved greatly expressed their wish to become involved in the future, as they have a great sense of pride and ownership for the island sanctuary. Negative impacts and past conflicts of the YTCIS are related to it being out of bounds to community members. The majority of respondents believe that the YTCIS has been a successful venture that should continue in future due to an overall positive relationship amongst stakeholders as well as being part of the ongoing conservation of *B. vitiensis*.

It is difficult to make recommendations concerning the YTCIS aspect of the conservation process, as its operation is a delicate process, where in order to be successful, requires minimal interaction with humans in order to assure ecological harmony. However, it is recommended that the NTF find ways to involve the community more, especially women, in activities relating to YTCIS operation in order to take advantage of this great sense of pride and ownership present, and also to ensure that the whole community is aware of the operation. In relation to the negative impacts, it is recommended that further awareness programmes be conducted in order to fully inform the community on the nature of the lease agreement and benefits so that no misunderstandings are encountered in the future.

6.1.2 Invasive Species Management

For this section, the results showed that again men have greater knowledge of and are more involved in invasive species management, with the majority of women having no knowledge or involvement about this activity. It can be concluded that men are heavily relied upon for invasive species management by the NTF due to the labour-intensive nature of the work. This greatly benefits sanctuary management through the provision of much needed labour and local knowledge. The community also benefit from being involved by acquiring knowledge about invasive species and as a source of income for services provided. There have been conflicts in the past, however, relating to the allocation

of eradication work to the different social groups but these are usually small disagreements that have successfully been resolved.

From these results, it is recommended that invasive species management be strongly supported in the future and that local quarantine and monitoring programmes be maintained to ensure continued control and engagement of the community in such activities. However, there is the need for the greater involvement of women in this activity in order to instil a sense of contribution from all genders and social groups within the community. This will in turn lead to greater community support and increased awareness for the activity as a whole. An unbiased way of selecting assistants and the provision of support services to sanctuary management should also be pursued to decrease the opportunity for conflict.

6.1.3 Greenforce Operation

The majority of community members displayed good knowledge of the operation and objectives of Greenforce in the area and were involved in some way in the Greenforce operations. Greenforce had benefited immensely through community involvement, mostly through the provision of a valuable source of local information, experiencing the Fijian way of life, operational security and provision of cheap support services. The community had benefited from Greenforce mainly through the provision of an important source of income together with an apparent improvement to their standard of living. There is a strong desire within the community for a return of Greenforce to their village due to their perceived positive impact on the community. However, it is obvious that although the community knew that Greenforce was conducting marine survey within the area, a great proportion (68%) do not know of the initial objective of Greenforce's operation in the area, to provide valuable data to the NTF to assist in its re-application to UNESCO in the declaration of the YTCIS as a world heritage site. It is also evident that some families have

become heavily reliant on Greenforce as their main source of income in addition to an increase in operating costs of services such as transport, resulting from the higher prices that Greenforce were willing to pay.

Since Greenforce's departure from Yadua, it is difficult to make any recommendations on their operation in the area. However, the NTF can try to conduct informative sessions in order to inform the community on the initial objectives, the nature of Greenforce's tenure in the area and the status of Greenforce in Fiji in order to address some unanswered questions prevalent in the community as to why they left. Another option would be to arrange for Greenforce (or a similar organisation) to return to Yadua to carry out similar activities, seeing that the effects of such an operation were highly beneficial and well received by the local community. It is also recommended that any similar organisation follow the process that Greenforce established itself in Yadua since it was very beneficial, for example the involvement of the community in its operation. Greater involvement of women again would probably see more benefits to the activity. In relation to negative impacts, it is recommended that a standard way of selecting families for provision of services be agreed upon. It should also be made clear that the activity is not long-term and that payment for services not be more than the normal operating costs.

6.1.4 Community Outreach

Most respondents are aware of community outreach programmes conducted by the NTF in the area, with good knowledge on the different outreach activities. It is clear that the community views these outreach projects as reinforcing and rewarding their willingness to participate in conservation, especially as they do not receive any form of monetary benefits from lease payments from the YTCIS. However, the small proportion of people who stated that no outreach was currently being conducted, and that this was an unsuccessful status, may indicate that some are becoming too reliant on outreach activities

to provide funding for improving their livelihood. Both genders played a role in outreach activities, with men involved more in labour intensive roles and women playing a supportive role such as the preparation of meals and other catering services, roles that they seem to be content with and see it as their contribution to the overall outreach activity. The contribution that these outreach activities has on the community and their livelihood has been great especially in terms of improving infrastructure and village development with many village projects being completed in such a short timeframe, a rare occurrence in a traditional Fijian village setting. As a result, the continuance of outreach activities was overwhelmingly supported by the community, as these were seen as tangible benefits from *B. vitiensis* conservation.

From these results, it is recommended that outreach activities be continued, and combined with awareness raising activities, to maximize the tangible benefits and synergies between the conservation and community development activities that act as an incentive to conservation. It also is an example that may be followed by other conservation initiatives elsewhere in Fiji in order to provide tangible community benefits.

6.1.5 Environmental Awareness

Most respondents had good knowledge of the existence of awareness programmes and their objectives, although a large difference was seen between men and women, the latter having a lower knowledge and involvement in awareness activities. This is one aspect which the NTF may want to address to ensure that the community as a whole is included in any awareness programme conducted, therefore it is recommended that women are encouraged to become more involved in the actual awareness programmes and not only in support services, as has been the case in the past. It can be said that community awareness is working reasonably well in enhancing community environmental knowledge, as there are signs of changing behaviour within the community.

There were some complaints, however, that awareness raising has not had the desired impact on some community members, with some people continuing unacceptable and unsustainable environmental practices, something that can be addressed in the future. In this regard, it is recommended that NTF monitor and assess the methods used in awareness activities in order to find the best ways of bringing about improved behavioural changes within the community.

6.1.6 Environmental Research

A higher proportion of men than women showed knowledge of research activities again reflecting their level of involvement in actual research. Women were notably excluded in the roles of field guides and field assistants. Overall it can be concluded that increased community involvement would be beneficial to the research, because not only is it seen as a valuable opportunity to ensure transparency in the conservation efforts, but also for community members to learn more about the scientific aspects of *B. vitiensis* conservation.

It is therefore recommended that NTF and other organisations wanting to work in Yadua to emphasise more on community involvement as part of their research, with a great effort being placed on targeting the involvement of women. Researchers should also tread carefully with their results and always have an open discussion with the villagers about the results of research conducted, as results obtained may have an impact on traditional beliefs and religion.

6.2 PORTUGAL CASE STUDY: THE PNSACV

Based on the research questions and hypotheses for this study, we can see that the results from the Portugal study supports, in a converse way, both hypotheses: 1) that community involvement contributes to the success and perceived ownership in the project,

and, 2) that with effective community involvement there would be more perceived benefits accruing to local communities and greater long-term sustainability. In contrast to the Fiji study where there seemed to have been effective community involvement, this did not seem to be the case in the case of the PNSACV in which community involvement seemed to be lacking at most levels of park operation (an average of 43%). This lack of community engagement was perceived as a main contributing factor, in addition to improper management and a lack of economic incentives, to the people's perception that the PNSACV had failed not only in conservation, but was perceived as undermining their traditional livelihoods and the sustainable use of biodiversity within the area.

Basically, the impacts on the community and their perceptions of the conservation project have been largely negative and critical of park operations. High on this list was the large number of restrictions imposed by park authorities. Conflicts arising from the existence of the PNASCV have not been resolved but brushed aside by park authorities. The PNSACV was therefore seen to have little positive impact upon community livelihoods, especially people's use of natural resources or their environmental knowledge, a negative result that was perceived as being closely related to a lack of consultation and community involvement in most phases of the conservation initiative.

6.3 COMPARISON BETWEEN THE TWO CASE STUDIES

6.3.1 Dependency on Resources

As seen in both case studies, communities had been using their surrounding resources for generations, and their cultures and knowledge were deeply rooted in the environment upon which they depend. This should make them primary stakeholders in conservation and therefore should be closely involved in conservation efforts. This was the case in Fiji but not for Portugal. A major difference between the two case studies was seen

in the occupation/livelihoods specified by respondents, with those from Fiji having occupations/livelihoods more related to the everyday utilisation of their natural resources, and those from Portugal indicating occupations/livelihoods of a more modern nature such as paid employment in towns and cities.

The community of Denimanu may seem to be relatively undeveloped compared to Vila do Bispo/Sagres, which can be seen as a relatively developed rural community. The location of the two different communities also played an important role in their development with Denimanu, located on an island, away from a major urban area and development, is isolated and relatively inaccessible, with no access to modern utilities (electricity and piped water) while Vila do Bispo/Sagres, located in the Algarve region of mainland Portugal, had better infrastructure (roads and airports), and was more developed and heavily influenced by the tourism industry. Largely due to their relative location and development stage, Denimanu community members tend to lead a more subsistence livelihood, and heavily dependent on their natural resources, with hardly any paid employment. Most income was generated from the sale of natural resources on a random basis in order to meet urgent needs such as payment of school fees and church donations. Vila do Bispo/Sagres community members on the other hand were more exposed to paid employment although subsistence living was still a major part of many peoples lives, and some were still dependent on their natural resources. The different level of modern development might have also influenced social interactions in each community. Finally, the isolation and great dependency on natural resources of the Denimanu community are factors that may contribute to their highly communal nature whereas, the more developed residents of Sagres/Vila do Bispo might have led to a more individualistic outlook and existence.

6.3.2 Community Involvement

The main difference between the two study sites was evident in the level of community involvement in conservation efforts, with greater involvement being seen in Fiji compared to minimal involvement in Portugal. This may be attributed to differing situations of land tenure existing in the two regions. In Fiji, substantial portions of land (83%) and associated natural resources are owned by local communities and this makes the values and views of indigenous Fijians towards conservation central to any discussion on this subject. However, in PNSACV, land is under state control, with local communities having little or no control over land and resource use, hence, there seemed to be no real need for authorities to consider local communities views and opinions.

6.3.3 Spiritual Links with Nature and Traditional Conservation Practices

Another difference that was observed in this study relates to the widespread use of traditional conservation practices by the local community to safeguard against excessive resource use in Fiji, whereas in Portugal, the only conservation practices in use were those governed by legislation and enforced by the park authorities. The Fijian interest in biodiversity because of its usefulness together with its close association with cultural identity and the spiritual world (**vanua**) was not evident in Portugal. Biodiversity conservation from a Fijian perspective is primarily about managing cultural and natural resources for human use therefore traditional conservation methods have very practical and spiritual purposes, including nurturing the environment and safeguarding food supply objectives that were quite different from those stated for the PNSACV. These successful, empirically proven, traditional conservation methods were already known to many people in Fiji and these governed by traditional compliance methods and protocol. Within this protocol is a strong community involvement aspect. Therefore, in Fiji the involvement of

communities in conservation efforts is absolutely essential if these activities are to work effectively.

This comparison seem to show some aspects of effectiveness of community-focused conservation in Fiji, compared to non-community-focused conservation in Portugal. The PNSACV area is of major importance to conservation priorities, not only for its rich biodiversity, but also for the cultural richness of the local communities. This study reveals that the ICNB, which is responsible for the administration and operation of the PNSACV, has, in the past ignored local communities, which, as far as the community is concerned has had a detrimental effect on the local economy and people's livelihoods. They saw the activities of PNSACV as dictatorial, with little regard for the local populations that have inhabited the area and lived in harmony with nature for many generations. Many were of the view that the PNSACV was not achieving its initial objectives and had served only to delay their area's socio-economic development and thus negatively impacting the people. Members of the communities expressed their view that as key stakeholders they form an integral part of the PNSACV, therefore in order for the PNSACV's objectives to be fulfilled, the park authorities needed to involve them so that they, as park inhabitants, could benefit from the park activities since they rely on the resources within it for their livelihood. There also seems to be a general desire among community members that the PNSACV's new management plan (POPNSACV) should include a strong local community participation aspect to assist in the maintenance of people's sustainable livelihoods as well as create new environmentally sustainable opportunities for people who have, and are positively contributing to the environmental value of the PNSACV since the previous strategy has not been successful from a community perspective.

It is therefore recommended here that the authorities concerned with the operation of the PNSACV to capture the local point of view and perceptions on landscape and natural resources, and the local priorities in terms of development, land use and land tenure. More capacity building within the local communities is also necessary for conservation in the PNSACV, essentially an extension to the local community's way of life. Understanding the natural biophysical factors that play a major role in the high biodiversity and value of the PNSACV area is of great importance if the area is to be conserved, however understanding the local communities and involving them in any decisions to be made regarding their cultural territories is also of equal importance and a definite prerequisite to any attempt to protect this natural and cultural landscape.

6.3.4 Summary of Recommendations and Final Words

The main recommendations in relation to the Fiji case study are:

1) That the NTF or any other organisation wanting to work in the YCP continue to involve the community more in activities relating to the YCP, with effort placed on targeting the involvement of women, in order to take advantage of this great sense of pride and ownership present within the community.
2) That invasive species management, outreach and awareness activities be continued to maximize the tangible benefits and synergies between the conservation and community development activities that act as an incentive to conservation.
3) That NTF monitor and assess the methods used in environmental awareness activities in order to find the best ways of bringing about improved behavioural changes within the community.

The main recommendations in relation to the Portugal case study are:

1) That the authorities concerned with the operation of the PNSACV capture the local point of view and perceptions on landscape and natural resources, and the local priorities in terms of development, land use and land tenure.
2) More capacity building within the local communities is also necessary for conservation in the PNSACV, essentially an extension to the local community's way of life.

On a broader level, this research study has shown the close interconnections between people and communities and their physical environment, reflecting what Fikret (2004) says about the need to incorporate the dynamic interactions between societies and natural systems. Hence a more complete information base would therefore consist of a local community's knowledge and understandings and the results of scientific studies (Berkes *et al.* 2000). This synthesis also helps both parties better understand the need to conserve resources, as communities feel more empowered and have a stronger sense of ownership of what is being done on their behalf (Adams 1999, Berkes *et al.* 2000, Blann & Musumeci 2003, Kates *et al.* 2001, Olsson & Folke 2001). In relation to this, PNSACV authorities must view the opportunity to involve the community as a way of harnessing the vast local knowledge of natural resources and the labour force to help in conservation efforts and sustainable use of these resources. Key elements of successfully involving communities in conservation include the sharing of management power and responsibility, as opposed to token consultation and passive participation and creating a context that encourages learning and stewardship and builds mutual trust (Berkes 2004). Boissière *et al.* (2007) shows how local people's participation and control over the resources is possible in conservation in the Mamberamo watershed of New Guinea.

A more holistic perception of conservation, which includes a broader view of the livelihood needs of local people and their knowledge systems, may be necessary for conservation programmes in order to balance the western separation of humans and nature, that often lead to weak support of conservation efforts in many countries because people see them as elitist and insensitive to their needs (Berkes 2004). In fact, there is a lot to learn from indigenous and local knowledge systems, which regard people as part and parcel of the environment rather than the common perception of owners. In many indigenous and local communities the world over, equity and empowerment are often more important than monetary incentives therefore a workable conservation project helps implement decision making processes that are legitimate, accountable and inclusive and that take into account multiple stakeholders and interests (Agrawal & Gibson 1999). As Brosius & Russell (2003) have suggested, conservationists and communities need to come together in order to build what they call 'constituencies for conservation'. The attitude that "*we respect the land because we use it*" is common in many indigenous societies in many parts of the world. However this ethic does not fit in well with the conventional western conservation ethic (Berkes 2004). Therefore, there is a need to move from a western scientific definition of conservation to a more cross-cultural, inclusive and pluralistic definition that encompasses time-tested, indigenous and local perceptions of people and their environments. This is the challenge for conservationists in the 21st century.

Harvesting resources in any community needs to involve the community concerned, especially when selecting and managing protected areas, because user groups will not comply with restrictions on their traditional resource harvesting practices if they do not understand or support the rules. A "successful" protected area achieves the purposes for which it was created, and is supported by the community (Gilman 1997). Although the need to create reserves may be justified from economic and ecological perspectives, the

restrictions imposed by reserves often conflict with the immediate needs of local populations who will have areas and activities to which they traditionally have had access closed off to them (Boo 1990). Gillman's (1997) review of case studies and examples from the Pacific demonstrated that, when establishing protected areas, community-based decision making results in success due to many reasons. These include creating a perception of equity among interest groups; accounting for local ecological knowledge; enhancing the communicability of results; respect for traditional management systems; participation of all interest groups; education of user groups who take ownership for the protected area; and effective community based selection, management and enforcement. Perhaps this process needs to be introduced in Portugal.

This is because this research study has also shown the strong local concerns related to the use of the PNSACV. Building effective conservation in the PNSACV, including deciding which areas to strictly protect and which can be used to support local livelihoods, can only be successful if all the different local perceptions and needs are taken into account. The solution will be found locally, through the consideration of the different agendas and priorities in the different communities and groups. The CBD clearly states that one of its objectives is to *"Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements"*. In order to achieve this objective it is important to empower indigenous peoples and local communities. This will, in turn, requires a rights-based approach to ecosystem management, environmental conservation and community development. As Griffiths suggests, without secure rights, full and effective participation and tangible benefits, indigenous peoples and local communities are inevitably marginalised by development and conservation policies and programmes (Griffiths 2003:1).

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APPENDICES

APPENDIX A – *Colour Images*

Image 1 - Denimanu Village (*B. Thaman*)

Image 2 - Yadua Taba with Yadua in the background (*B. Thaman*)

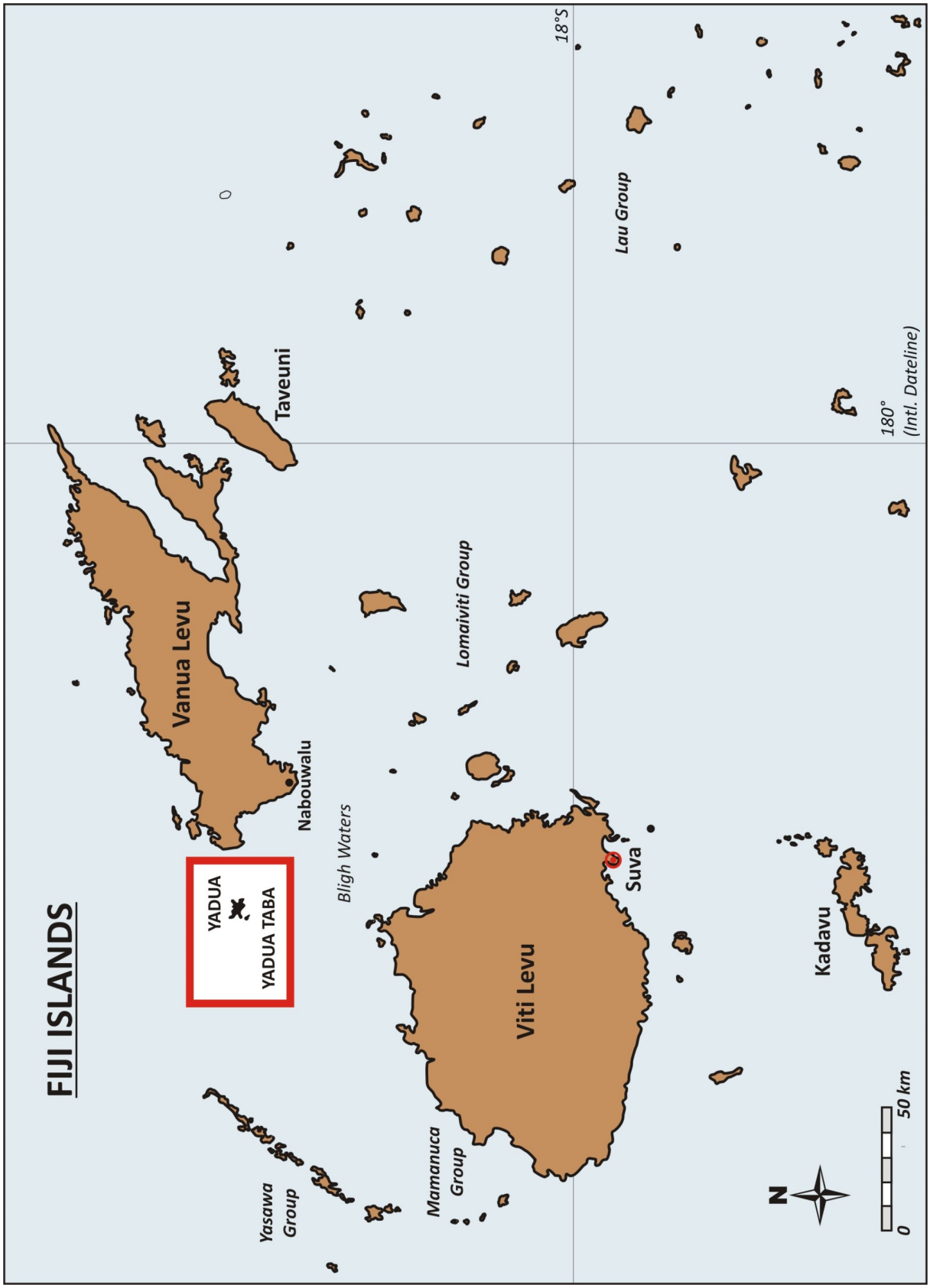
Image 3 - The Fijian Crested Iguana, *Brachylophus vitiensis* (*B. Thaman*)

Image 4 - (left) *B. fasciatus* (*M. Claveau*); (right) *B. vitiensis* (*B. Thaman*)

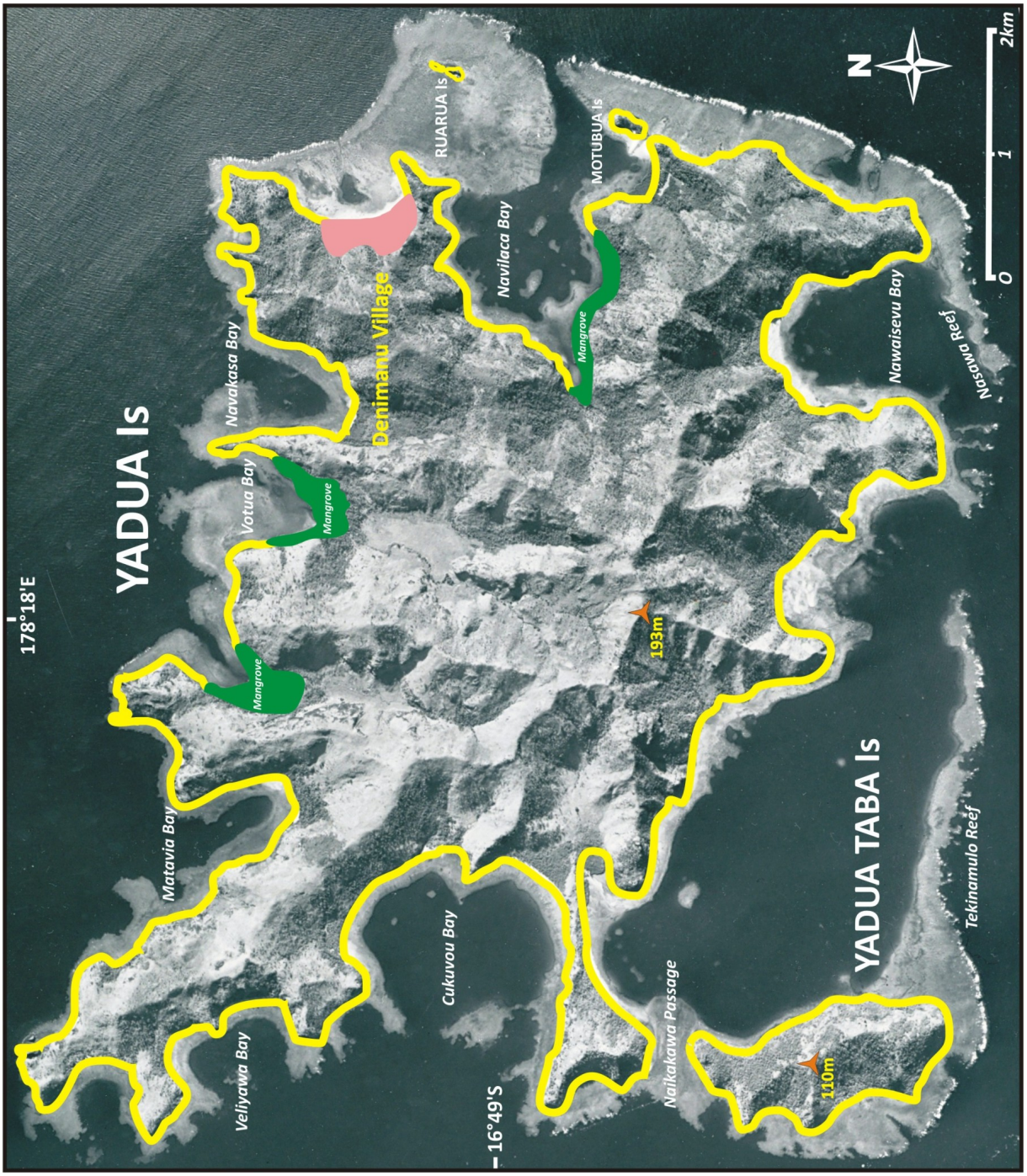
Image 5 - (left) *E. imbricata* (hawksbill turtle) (*B. Thaman*); (right) *P. tonganus* (Pacific flying fox) (*B. Thaman*)

APPENDIX B - *The Fiji Islands*

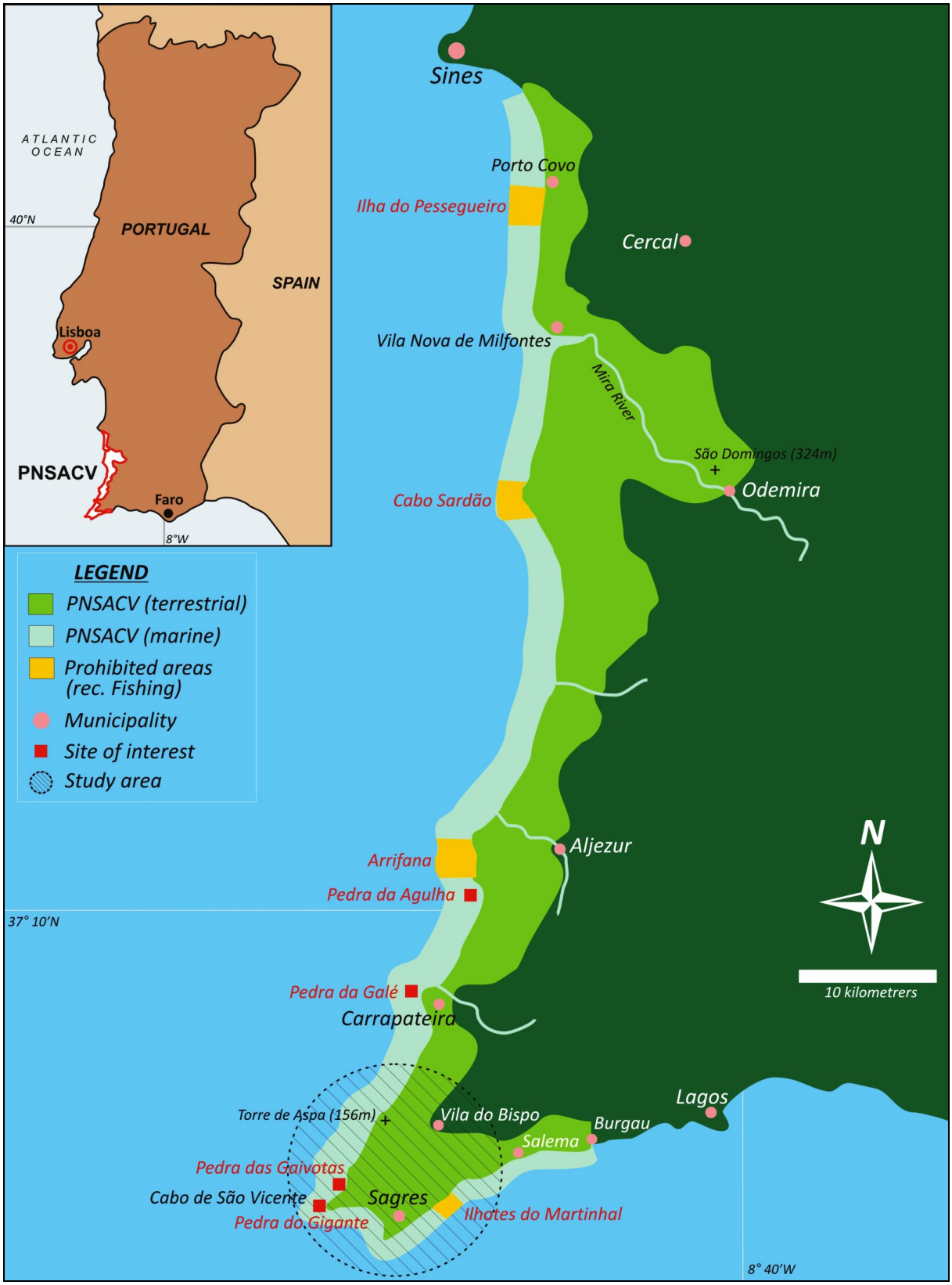
(B. Thaman)



APPENDIX C - *Yadua and Yadua Taba Islands*
(*B. Thaman, Adapted from: FDLS (1994)*)



APPENDIX D – *The PNSACV Area*
(*B. Thaman*)



APPENDIX E – *Restrictions of the PNSACV*
(DRE 2010, ICNB 2008, 2010b)

1. PROHIBITED ACTIVITIES

Decree Laws No. 241/88 and 33/95

a) The discharge of sewage and pollutants that fail to meet quality standards defined in legislation.
b) The leakage of rubble, debris, garbage, scrap or any waste outside the areas allocated for that purpose.
c) The practice of sporting activities that cause pollution or noise likely to disrupt or degrade the natural values of the park, with the exception of hunting.
d) Camping outside specified sites allocated.
e) The use of any vehicle off existing roads and paths, except those used in the context of farming, forestry, bee-keeping, monitoring and surveillance operations and firefighting.

2. RESTRICTED ACTIVITIES

Subjected to approval by the management committee & Director of Protected Landscape

a) Construct, extend, alter, renovate or demolish and rebuild any buildings or structures outside existing municipal urban areas defined in the management plan.
b) Establish or install new agricultural activities, industrial, recreational, tourism or others that may have a negative environmental impact or exist outside municipal urban areas defined in the management plan.
c) Changes to the morphology of soil or vegetation.
d) Launching industrial wastewater or household or any other wastewater pollutants.
e) Cut remove uncultivated plant species and introducing exotic plant species.
f) Hunting, fishing and introduction of exotic faunal species, except those resulting from approved plans.
g) Camping outside the assigned areas.
h) Forestry activities, agricultural or livestock, and cutting of trees.

3. MARINE PROHIBITED ACTIVITIES

Subject to permission by the harbour master and the National Research Institute for Fisheries

a) Launch sewage, industrial or household, which, by their nature, are damaging to aquatic flora and fauna or public health.
b) Abandon or dump trash, debris , scrap and other solid waste pollutants.
c) Extracting any mineral or inert materials.
d) Landfills or dig and make changes to the seabed.
e) Acts or activities that undermine the conservation of flora and fauna and its existing habitats.

4. RESTRICITIONS ON RECREATIONAL FISHING

Ordinance No. 458-A/2009 **(gathering, linefishing, spearfishing, deep sea fishing of finfish, cephalopods, molluscs, crustaceans, sea urchins and polychaetes)**

a) Harvesting within park boundaries is permitted only to holders of recreational fishing license obtained from the Directorate General for Fisheries and Aquaculture (DGPA).

b) Harvesting may be conducted on only four days a week, at piers, beaches (within 300 m from the coastline) and the rocky coast in a specific fishing season.
c) Harvesting may not be done in prohibited areas which are Ilha do Pessegueiro, Cabo Sardão, Arrifana, Pedra da Agulha, Pedra da Galé, Pedra das Gaivotas, Pedra do Gigante, Ilhotes do Martinhal and includes an area 100 m around each of these islets.
d) There is a closed season (**ao candeio**) corresponding to times of great importance relating to survival and reproduction in a species life cycle when harvesting is not permitted.
e) Fishing is not permitted during sunset and sunrise in order to assist in spawning, juvenile growth, refuge and protection from predators.
f) There is a ban on fishing in ecologically important areas such as areas of spawning and juvenile growth, refuge, protection from predators and feeding of numerous marine species.
g) Some species are prohibited under recreational fishing regulations however, all species permitted may be fished according to their minimum size and maximum catch limits established for commercial fishing, except within the closed season for particular species.
h) The maximum daily total weight allowed for recreational fishing is 7.5 kg, excluding the largest specimen with the exception wrasse (*L. bergylta*) which is limited to two specimens per species per day per angler.
i) Only a seafood knife is permitted in the harvest of sea urchins and shellfish, hooks in the non-selective capture of fish and the shovel or hoe in the gathering of polychaetes for bait.
j) Linefishers must maintain a distance of 5 m between each other and may use a maximum of two rods or hand lines per angler.
k) Hooks used must be limited to a maximum of three per line with hook gap size equal to or greater than 9 mm.
l) Commercial tour and recreational fishing operators must be registered with the DGPA.

5. PERMITTED AND PROHIBITED SPECIES FOR RECREATIONAL FISHING

Scientific Name	Common name	Size/weight limit	Prohibited/ Closed season
PROHIBITED SPECIES			
Acipenser spp.	sturgeon (esturjão)		Prohibited
Alosa spp.	shad (sável, savelha)		Prohibited
Carcharodon carcharias	white shark (tubarão-branco)		Prohibited
Epinephelus spp.	grouper (meros)		Prohibited
Galeorhinus galeus	Tope shark (perna de moça)		Prohibited
Hippocampus spp.	seahorse (cavalo-marinho)		Prohibited
Lamna nasus	porbeagle shark (tubarão-sardo)		Prohibited
Mola mola	sunfish (peixe-lua)		Prohibited
Palinurus spp.	spiny lobsters (Lagostas)		Prohibited
Petromyzon marinus	lamprey (lampreia)		Prohibited
Salmo salar	salmon (salmão)		Prohibited
All species	marine turtles (tartarugas marinhas)		Prohibited
All species	marine mammals (mamíferos marinhos)		Prohibited
CEPHALOPODS			
Sepia officinalis	cuttlefish (choco vulgar)	100mm	
Loligo spp.	squid (lulas)	100mm	
Octopus vulgaris	octopus (polvo vulgar)	0.75 kg	
FINFISH			
Argyrosomus regius	Meagre (corvina legítima)		
Balistes spp.	Triggerfish (cangulos, pampo de sines)		
Belone belone	garfish (agulha)		
Boops boops	Bogue (boga do mar)		
Carcharhinus obscurus	dusky shark (tubarão-faqueta)		
Chelidonichthys, Trigla, Aspitrigla spp. & *Dactylopterus volitans*	Gurnard (ruivos, cabras)		
Conger conger	conger eel (safio)		
Coryphaena hippurus	Donphinfish (dourado)	100cm	
Dentex spp.	Dentex (dentões)		
Dicentrarchus labrax	European seabass (robalo legítimo)	360 mm	
Dicentrarchus punctatus	Spotted seabass (robalo baila)	200 mm	
Diplodus spp.	White seabream (sargos)	150 mm	15 Jan-15 Mar
Halobatrachus didactylus	toadfish (charroco)		
Istiophorus albicans	sailfish (veleiro)		
Katsuwonus pelamis	Skipjack tuna (bonito)		
Labrus bergylta	Ballan wrasse (bodião)		01 Mar-31 May
Lithognathus mormyrus	Striped seabream		

	(ferreira)		
Lophius spp.	anglerfish (tamboris)		
*Mullus surmuletus (*Mugilidae)	mullet (salmonete legítimo, tainhas)	200 mm	
Muraena helena	Moray eel (moreia)		
Mustelus spp.	dogfish (cações)		
Mycteroperca rubra	Comb grouper (garoupa chumbo)		
Oblada melanura	Saddled seabream (dobradiça)		
Pagrus spp.	snapper (pargos)		
Phycis phycis	forkbeard (abrótea da costa)		
Plattichthys flesus	flounder (solha das pedras)		
Plectorhynchus mediterraneus	rubberlip grunt (pombo, pargo mulato)		
Pleuronectes platessa	plaice (solha legítima)		
Pollachius pollachius	Pollock (juliana)		
Polyprion americanus	Atlantic wreckfish (cherne legítimo)		
Pomatomus saltatrix	anchovy (anchova)		
Psetta maximum	Turbot (pregado)		
Pseudocaranx dentex	White trevally (encharéu)		
Raja spp.	skate (raias)		
Sarda sarda	atlantic bonito (sarrajão)		
Sarpa salpa	Bream (salema)		
Sciaena umbra	Brown meager (roncadeira preta, cobra)		
Scomber japonicus	Chub mackerel (cavala)		
Scomber scombrus	Atlantic mackerel (sarda)		
Scorpaena scrofa	Scorpionfish (rascasso)		
Scyliorhinus spp.	Cat shark (pata roxas)		
Seriola spp.	Amberjack (charuteiros, lírios)		
Solea spp.	sole (linguados)	240 mm	
Sparus auratus	Gilthead seabream (dourada)	190 mm	
Spondyliosoma cantharus	Black Seabream (choupa)		
Tetrapturus belone	marlin (espadim águia)		
Thunnus alalunga	Albacore tuna	85cm	
Thunnus thynnus	bluefin tuna	100cm	
Trachinus spp.	Weeverfish (peixes aranha)		
Trachurus spp	Jack mackerel (carapaus)		
Trisopterus luscus	Bib (faneca)		
Trisopterus minutus	Poor cod (fanecão)		
Xiphias gladius	Swordfish (espadarte)	250cm	
Zeus faber	Dory (peixe galo)		
INVERTEBRATES			
Liocarcinus, Necora spp.	crabs	3kg (cumulatively with sea urchins, molluscs, polychaetes, mussels), 6 cm, max. width of	

		carapace.	
Mytillus spp.	mussels	3kg, 6.5cm max. dimension of left valve.	
Paracentrotus lividus, *Echinus, Spharechinus* spp.	sea urchins	3kg (cumulatively with molluscs, crabs, polychaetes, mussels), 5cm diameter of carapace.	
Patella, Burrier, Gibulla, Monodonta, Littorina spp.	other molluscs	3kg (cumulatively with sea urchins, crabs, polychaetes, mussels), 1.5cm, total length/height, 3.5 cm, max. distance between edges of shell.	
Pollicipes pollicipes	Stalked barnacle (perceves)	1kg	01 Oct-31 Dec

APPENDIX F – *Sample Community Questionnaires*

(English Version – Denimanu village)

DENIMANU VILLAGE COMMUNITY QUESTIONNAIRE ON PERCEPTIONS AND IMPACTS OF CONSERVATION ACTIVITIES RELATED TO THE CRESTED IGUANA CONSERVATION PROJECT

Name _____Age____ Male☐ Female☐
level of education_____ Occupation/livelihood_____
Mataqali_____Tokatoka_____ Years in village_____
Residential history (past 10 years)_____
Status in the village_____
Do you belong to any social groups?
Men's☐ *Women's*☐ W*omen's church*☐ *Mothers*☐ *Village youth*☐ *Church youth*☐
*Others*_____

I. LIVELIHOOD AND USE OF NATURAL RESOURCES

1. What are the five (5) most important terrestrial, marine or freshwater resources for your livelihood found on the land owned by the mataqali/village?

a)_____ Explain_____
b)_____ Explain_____
c)_____ Explain_____
d)_____ Explain_____
e)_____ Explain_____

II. CONSERVATION ACTIVITIES

2. What conservation activities are you aware of that have been carried out within the last 10 yrs on Yadua/Yaduataba as part of the Crested Iguana Conservation Programme? (tick the boxes if mentioned and list any additional activities)

a) ☐ Crested iguana sanctuary
b) ☐ Invasive animal & plant eradication
c) ☐ Application for world heritage listing/Greenforce
d) ☐ Community outreach
e) ☐ Community awareness
f) ☐ Research on crested iguanas
g)_____
h)_____
i)_____

PLEASE ANSWER THESE QUESTIONS FOR EACH ACTIVITY THAT YOU ARE AWARE OF (If activity is not mentioned in (4.) & (5.), please skip that whole set of questions)

A. CRESTED IGUANA SANCTUARY

3. What do you think is the objectives of this activity?

a) ☐ To conserve the critically endangered crested iguana in its natural habitat
b) ☐ To preserve one of Fijis natural heritage
c)_____
Explain_____
d)_____
Explain_____

4. How much were you involved in this activity?

Closely involved ☐ Partially involved ☐ Consulted ☐ Never involved ☐

How were you involved in this activity?

a) ☐ Caretaker role (ranger & volunteers are from the community and general policing by community members)
b) ☐ Consultation on management issues and planning
c)_____
Explain_____

5. What process was followed in involving the community?

a) ☐ Traditional protocol request for assistance
b) ☐ Consultation on management issues through dialogue
c)_____
Explain_____

6. If not involved, do you think you should have been involved? YES ☐ NO ☐
Explain why_____

7. What have been some benefits/positive impacts to this project through community involvement?
a) ☐ Greater community support
b) ☐ A greater sense of ownership and pride for the iguanas
c) ☐ Improved policing of the sanctuary
d)_____
Explain_____
e)_____
Explain_____

8. What have been some benefits/positive impacts to the community of this conservation activity?
a) ☐ A greater sense of ownership and pride for the iguanas
b) ☐ Source of income (how? _____)
c)_____
Explain_____
d)_____
Explain_____

9. What have been some negative impacts to the community of this conservation activity?
a) ☐ No free use of the island for rearing goats
b) ☐ No free use of the island for fishing camps
c)_____
Explain_____
d)_____
Explain_____

10. Have there been conflicts related to this conservation activity? Were they resolved?, if so, how?
a)_____
Resolved? ☐ Explain_____
b)_____
Resolved? ☐ Explain_____

11. What is the current status of this conservation activity in terms of the initial objective? (tick more than one option if necessary)
Highly successful ☐ Successful ☐ ongoing ☐ Inactive ☐ Failed ☐
Reason/Explanation_____

12. Do you see this activity will be able and should continue in the future? YES ☐ NO ☐
Reason/Explanation_____

13. What is your personal view about this activity in terms of the impact on:
-knowledge of your environment and resources and their finiteness?
Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____
-your everyday use of the living resources? Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____
-everyday use of the land or sea space? Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____

B. INVASIVE SPECIES MANAGEMENT

14. What do you think is the objectives of this activity?
a) ☐ To eradicate introduced goats and invasive plant species from the island sanctuary

b) ☐ To promote the growth of native dry forest plant species, essential for iguana survival
c)_____
Explain_____
d)_____
Explain_____

15. How much were you involved in this activity?

Closely involved ☐ Partially involved ☐ Consulted ☐ Never involved ☐

How were you involved in this activity?

a) ☐ manpower/labour force in eradication work
b)_____
Explain_____
c)_____
Explain_____

16. What process was followed in involving the community?

a) ☐ Traditional protocol request for assistance
b)_____
Explain_____

17. If not involved, do you think you should have been involved? YES ☐ NO ☐

Explain why_____

18. What have been some benefits/positive impacts to this project through community involvement?

a) ☐ manpower/eradication work in eradication process
b) ☐ Faster completion of the project work due to familiarity & knowledge of the area/terrain/work to be done
c) ☐ Involvement from the start will ensure further assistance and sustainability of the activity
d)_____
Explain_____
e)_____
Explain_____

19. What have been some benefits/positive impacts to the community of this conservation activity?

a) ☐ Experience and knowledge gained in eradication techniques/invasive species
b) ☐ Source of income (how? _____)
c)_____
Explain_____
d)_____
Explain_____

20. What have been some negative impacts to the community of this conservation activity?

a) ☐ Hard work individually but benefits go to community as a whole
b)_____
Explain_____
c)_____
Explain_____

21. Have there been conflicts related to this conservation activity? Were they resolved?, if so, how?

a)_____
Resolved? ☐ Explain_____
b)_____
Resolved? ☐ Explain_____

22. What is the current status of this conservation activity in terms of the initial objective? (tick more than one option if necessary)

Highly successful ☐ Successful ☐ ongoing ☐ Inactive ☐ Failed ☐
Reason/Explanation_____

23. ***Do you see this activity will be able and should continue in the future?*** YES ☐ NO ☐
Reason/Explanation_____

24. ***What is your personal view about this activity in terms of the impact on:***
-your knowledge of your environment and resources and their finiteness?
Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____
-your everyday use of the living resources? Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____
-everyday use of the land or sea space? Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____

C. APPLICATION FOR WORLD HERITAGE LISTING/GREENFORCE MARINE MONITORING

25. ***What do you think is the objectives of this activity?***
a) ☐ To get Yaduataba listed as a world heritage site
b) ☐ To survey marine ecosystem around Yaduataba for significance to contribute to proposal to heritage council
c)_____
Explain_____
d)_____
Explain_____

26. ***How much were you involved in this activity?***
Closely involved ☐ Partially involved ☐ Consulted ☐ Never involved ☐
How were you involved in this activity?
a) ☐ Provision of land for Greenforce operations
b) ☐ Support services for Greenforce (accommodation/food/transport)
c) ☐ Participation in scientific monitoring
d)_____
Explain_____
e)_____
Explain_____

27. ***What process was followed in involving the community?***
a) ☐ Traditional protocol request for assistance
b)_____
Explain_____

28. ***If not involved, do you think you should have been involved?*** YES ☐ NO ☐
Explain why_____

29. ***What have been some benefits/positive impacts to this project through community involvement?***
a) ☐ Cheap support services for Greenforce operation
b) ☐ Operational security for Greenforce
c) ☐ Assistance in operation due to knowledge of area/dive sites/reefs/safety
d)_____
Explain_____
e)_____
Explain_____

30. ***What have been some benefits/positive impacts to the community of this conservation activity?***
a) ☐ Dive certification in order to participate in monitoring activities
b) ☐ Source of income/improvement of standard of living
(how? _____)
c) ☐ Global awareness/ new relationships formed with foreigners
d) ☐ Environmental awareness/education
e)_____
Explain_____
f)_____
Explain_____

31. What have been some negative impacts to the community of this conservation activity?

a) ☐ Reliance on Greenforce as source of income
b) ☐ Unequal distribution of benefits among families
c)_____
Explain_____
d)_____
Explain_____

32. Have there been conflicts related to this conservation activity? Were they resolved?, if so, how?

a)_____
Resolved? ☐ Explain_____
b)_____
Resolved? ☐ Explain_____

33. What is the current status of this conservation activity in terms of the initial objective? (tick more than one option if necessary)

Highly successful ☐ Successful ☐ ongoing ☐ Inactive ☐ Failed ☐
Reason/Explanation_____

34. Do you see this activity will be able and should continue in the future? YES ☐ NO ☐
Reason/Explanation_____

35. What is your personal view about this activity in terms of the impact on:
-your knowledge of your environment and resources and their finiteness?
Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____
-your everyday use of the living resources? Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____
-everyday use of the land or sea space? Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____

D. COMMUNITY OUTREACH PROGRAMMES (VILLAGE HALL, FOOTPATH, WATER SYSTEM, EDUCATION SCHOLARSHIPS)

36. What other forms of assistance/outreach have been offered to you/community in return for your willingness to help conserve their natural resources?

a) ☐ Funding for village hall
b) ☐ Funding for footpath
c) ☐ Funding for water reticulation system
d) ☐ Scholarships for students
e) ☐ Diving certification for commercial divers
f) ☐ Acting as liaison role between community and government on issues
g)_____
Explain_____
h)_____
Explain_____

37. What do you think is the objectives of this activity?

a) ☐ To provide alternative benefits to the community for their willingness to conserve their natural resources
b) ☐ To provide alternative benefits to the community as they do not benefit from lease money from the iguana sanctuary
c)_____
Explain_____
d)_____
Explain_____

38. How much were you involved in this activity?

Closely involved ☐ Partially involved ☐ Consulted ☐ Never involved ☐

How were you involved in this activity?

a) ☐ Main beneficiaries from the outreach programmes
b) ☐ Dive certification for commercial divers and future community monitoring programmes
c) ☐ manpower/labour force in community construction projects
d)_____
Explain_____
e)_____
Explain_____

39. What process was followed in involving the community?

a) ☐ Traditional protocol request for assistance
b) ☐ Consultation and request for approval on various projects
c) ☐ Divers chosen by community elders
d) ☐ NTF decision based on non-benefit of lease payments
e)_____
Explain_____
f)_____
Explain_____

40. If not involved, do you think you should have been involved? YES ☐ NO ☐
Explain why_____

41. What have been some benefits/positive impacts to this project through community involvement?

a) ☐ Provision of manpower/workforce to successfully complete projects
b) ☐ NTF satisfaction in providing benefits to the community
c) ☐ Projects completed faster as villagers motivated to work due to sense of ownership of final outcome
d)_____
Explain_____
e)_____
Explain_____

42. What have been some benefits/positive impacts to the community of this conservation activity? Explain why they were positive?

a) ☐ Village projects can be completed due to available funding/expertise
b) ☐ Improved standard of living due to better infrastructure/development
c) ☐ Saving valuable money due to outside funding of village projects
d)_____
Explain_____
e)_____
Explain_____

43. What have been some negative impacts to the community of this conservation activity?

a)_____
Explain_____
b)_____
Explain_____

44. Have there been conflicts related to this conservation activity? Were they resolved?, if so, how?

a)_____
Resolved? ☐ Explain_____
b)_____
Resolved? ☐ Explain_____

45. What is the current status of this conservation activity in terms of the initial objective? (tick more than one option if necessary)

Highly successful ☐ Successful ☐ ongoing ☐ Inactive ☐ Failed ☐
Reason/Explanation_____

46. ***Do you see this activity will be able and should continue in the future?*** YES ☐ NO ☐
Reason/Explanation_____

47. ***What is your personal view about this activity in terms of the impact on:***
-your knowledge of your environment and resources and their finiteness?
Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____
-your everyday use of the living resources? Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____
-everyday use of the land or sea space? Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____

E. COMMUNITY ENVIRONMENTAL AWARENESS

48. ***What forms of environmental awareness have been conducted in the community?***
a) ☐ Crested iguana project
b) ☐ Marine turtles and tagging
c) ☐ Marine resources
d) ☐ General Environmental (Biological)
e) ☐ National Trust Roles and Objectives
f)_____
Explain_____
g)_____
Explain_____

49. ***What do you think is the objectives of this activity?***
a) ☐ To educate the community for their support and understanding of conservation work being carried out
b)_____
Explain_____
c)_____
Explain_____

50. ***How much were you involved in this activity?***
Closely involved ☐ Partially involved ☐ Consulted ☐ Never involved ☐
What role do you think you played by being involved in this activity?
a) ☐ Participants in awareness
b) ☐ Provision of support services (venue, food)
c)_____
Explain_____
d)_____
Explain_____

51. ***What process was followed in involving the community?***
a) ☐ Traditional protocol request for conducting awareness and their time to participate
b)_____
Explain_____

52. ***If not involved, do you think you should have been involved?*** YES ☐ NO ☐
Explain why_____

53. ***What have been some benefits/positive impacts to this project through community involvement?***
a) ☐ Ensuring successful awareness activities
b)_____
Explain_____
c)_____
Explain_____

54. ***What have been some benefits/positive impacts to the community of this conservation activity? Explain why they were positive?***

a) ☐ Greater knowledge and understanding of different conservation activities being carried out and their objectives
b) ☐ Better environmental education/awareness
c) ☐ Source of income (how? _____)
d)_____
Explain_____
e)_____
Explain_____

55. What have been some negative impacts to the community of this conservation activity?
a) ☐ Sacrificing their time with no monetary benefits
b)_____
Explain_____
c)_____
Explain_____

56. Have there been conflicts related to this conservation activity? Were they resolved?, if so, how?
a)_____
Resolved? ☐ Explain_____
b)_____
Resolved? ☐ Explain_____

57. What is the current status of this conservation activity in terms of the initial objective? (tick more than one option if necessary)
Highly successful ☐ Successful ☐ ongoing ☐ Inactive ☐ Failed ☐
Reason/Explanation_____

58. Do you see this activity will be able and should continue in the future? YES ☐ NO ☐
Reason/Explanation_____

59. What is your personal view about this activity in terms of the impact on:
-your knowledge of your environment and resources and their finiteness?
Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____
-your everyday use of the living resources? Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____
-everyday use of the land or sea space? Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____

F. CRESTED IGUANA RESEARCH

60. What do you think is the objectives of this activity?
a) ☐ To study iguana and its habitat to learn more
b)_____
Explain_____
c)_____
Explain_____

61. How much were you involved in this activity?
Closely involved ☐ Partially involved ☐ Consulted ☐ Never involved ☐
What role do you think you played by being involved in this activity?
a) ☐ Field assistance
b) ☐ Field guides
c) ☐ Support services (accommodation/food during village stays)
d)_____
Explain_____
e)_____
Explain_____

62. What process was followed in involving the community?

a) ☐ Traditional protocol request for assistance
b)_____
Explain_____

63. If not involved, do you think you should have been involved? YES ☐ NO ☐
Explain why_____

64. What have been some benefits/positive impacts to this project through community involvement?
a) ☐ Transparency of research (to other community members)
b) ☐ cost effective as community members readily available & willing
c) ☐ Knowledge of the area/terrain
d)_____
Explain_____
e)_____
Explain_____

65. What have been some benefits/positive impacts to the community of this conservation activity? Explain why they were positive?
a) ☐ Increased awareness of research activities
b) ☐ Increased awareness of iguana science
c) ☐ Source of income (how? _____)
d)_____
Explain_____
e)_____
Explain_____

66. What have been some negative impacts to the community of this conservation activity?
a) ☐ Research findings are sometime contrary to traditional/religious beliefs
b)_____
Explain_____
c)_____
Explain_____

67. Have there been conflicts related to this conservation activity? they resolved?, if so, how?
a) ☐ Breaking village protocol (working on Sunday etc.)
Explain_____
b)_____
Resolved? ☐ Explain_____
c)_____
Resolved? ☐ Explain_____

68. What is the current status of this conservation activity in terms of the initial objective? (tick more than one option if necessary)
Highly successful ☐ Successful ☐ ongoing ☐ Inactive ☐ Failed ☐
Reason/Explanation_____

69. Do you see this activity will be able and should continue in the future? YES ☐ NO ☐
Reason/Explanation_____

70. What is your personal view about this activity in terms of the impact on:
-knowledge of your environment and resources and their finiteness?
Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____
-your everyday use of the living resources? Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____
-everyday use of the land or sea space? Major impact ☐ minor impact ☐ no impact ☐
Reason/Explanation_____

(Fijian Version - Denimanu village)

NA VEI TARO VEI IRA NA LEWE NI VANUA KO DENIMANU - NA VAKADIDIKE ME BALETA NA NODRA RAI KEI NA I REVUREVU NI VEIMATAQALI CAKACAKA, OKATI KINA NA MAROROI NI VOKAI E YADUA TABA

Yacamu _____Yabaki_____Tagane☐Yalewa☐
Vakatagedegede ni vuli_____ Cakacaka/Bula ni vei siga_____
Mataqali_____Tokatoka_____Yabaki ni tiko e na koro_____
Vei vanua e so o vakaitikotiko kina na 10 na yabaki sa oti_____
Tutu vakavanua_____
O lewena e so na mata bose e na koro?
Turaga☐marama (vanua)☐marama(lotu)☐Tina (koronivuli)☐Tabagone ni koro☐Mataveitokani☐
*E so tale*_____

I. BULA NI VEI SIGA KEI NA VAKAYAGATAKI NI YAUBULA

1. Na cava e 5 na mataqali yaubula/yau-ni-vanua e bibi ka kune e vanua/vei uciwai/waitui e taukena na mataqali/koro ka vakayagataki e na nomu bula ni vei siga?

a)_____ Vakamacala_____
b)_____ Vakamacala_____
c)_____ Vakamacala_____
d)_____ Vakamacala_____
e)_____ Vakamacala_____

II. CAKACAKA NI MAROROI NI YAUBULA

2. Na cakacaka cava soti e so ko ni kila e sa qaravi oti (e na loma ni 10 na yabaki) e na kena maroroi na i yaubula e Yadua, oqo e okati talega kina na kena maroroi na Vokai? (tick the boxes if mentioned and list any additional activities)

a) ☐ Na taqomaki na yanuyanu o Yadua Taba
b) ☐ Na kena kau tani na manumanu kei na kau ca
c) ☐ Greenforce
d) ☐ Veivuke ki na koro
e) ☐ vuli ni yaubula kei na veika e vakawavolivoliti keda
f) ☐ Vakadidike baleta na vokai
g)_____
h)_____
i)_____

MO SAUMA NA VEITARO OQO BALETA NA VEI CAKACAKA O SA TOQA OTI E NA (2.) E CAKE (If activity is not mentioned in (2.), please skip that whole set of questions)

A. NA TAQOMAKI NI YANUYANU O YADUA TABA

3. Na cava na i naki bibi ni cakacaka oqo?

a) ☐ Me maroroi na kena yali tiko vakayauyau mai na vanua e bula tiko kina na vokai
b) ☐ Me maroroi e dua na yaubula bibi kei Viti
c)_____
Vakamacala_____
d)_____
Vakamacala_____

4. Na cava na levu ni gauna o vakai tavitaki iko kina e na cakacaka oqo?

Vakalevu sara ☐ E na so na gauna ☐ Soli vakasama kina ☐ Sega ni vakai tavi ☐

Na cava e so na i tavi ko vakayacora e na vuku ni cakacaka oqo?

a) ☐ veivuke e na kena yadravi na vanua e maroroi kina na vokai (ranger & volunteers are from the community and general policing by community members)
b) ☐ Soli vakasama e na kena maroroi kei na tuvanaki ni cakacaka
c)_____
Vakamacala_____

5. ***Na cava e so na i tuvatuva e vakamuri e na kena vakayagataki na lewe ni koro?***
   a) ☐ Vakamuri na gaunisala vakavanua ni kerekere
   b) ☐ Taro i vakasala kei na veitalanoa e na vuku ni vei gaunisala e so me maroroi kina na vokai
   c)_____
   Vakamacala_____

6. ***Ke iko a sega ni vakai tavi, ko nanuma beka ni dodonu mo ni vakai tavi kina?*** YES ☐ NO ☐
   Vakamacala_____

7. ***Na cava e so na vinaka se revurevu yaga e sa mai vakilai ki na cakacaka oqo e na nomuni cakacaka vata va koro?***
   a) ☐ E vakalevu taka na cakacaka vata kei na veitokoni ki na cakacaka oqo
   b) ☐ E vakalevu taka na nomudou vakataukenitaki kei na i sakisaki ni vokai
   c) ☐ E vakavinaka taka na kena yadravi na vanua e maroroi kina na vokai
   d)_____
   Vakamacala_____
   e)_____
   Vakamacala_____

8. ***Na cava e so na vinaka se revurevu yaga e sa mai vakilai e na koro e na vuku ni cakacaka oqo?***
   a) ☐ E vakalevu taka na nomudou vakataukenitaki kei na i sakisaki ni vokai
   b) ☐ Vurevure ni lavo (Vakamacala? _____)
   c)_____
   Vakamacala_____
   d)_____
   Vakamacala_____

9. ***Na cava e so na revurevu ca sa mai vakilai e na koro e na vuku ni cakacaka oqo?***
   a) ☐ E sa vakatabui na susu me e Yadua Taba
   b) ☐ E sa tabu na keba/moce vakailoa vei ira na dauqoli e Yadua Taba
   c)_____
   Vakamacala_____
   d)_____
   Vakamacala_____

10. ***E a bau yaco e so na veileti se duidui e na vuku ni cakacaka oqo? E a vakameautaki se sega? ke io, vakamacala.***
    a)_____
    E a vakameautaki? ☐ Vakamacala_____
    b)_____
    E a vakameautaki? ☐ Vakamacala_____

11. ***E sa yaco tiko e vei na vaiqaravi ni cakacaka oqo me laurai vata kei na kena i naki e a tauyavu kina? (more than one option if necessary)*** Qaravi vakavinaka sara☐ Qaravi vakavinaka toka☐ toso tiko ga ☐
    Sega na cakacaka e caka tiko ☐ Sega ni vakavotukana ☐
    Vuna/Vakamacala_____

12. ***E na rawa me na tomani tiko na cakacaka oqo e na veigauna mai muri?*** YES ☐ NO ☐
    Vuna/Vakamacala _____

13. ***E vakacava na levu ni revurevu ni cakcaka oqo e na nomu:***
    -kilaka me baleta na yaubula kei na veika e tu vakawavolivoliti iko kei na kena levu?
    Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐
    Vuna/Vakamacala_____
    -vakayagataka e na vei siga na veikabuka ka tu wavolivoliti iko?
    Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐
    Vuna/Vakamacala_____
    -vakayagataka e na vei siga na qele kei na waitui?

Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐
Vuna/Vakamacala_____

B. NA KENA KAU TANI NA MANUMANU KEI NA KAU CA

14. Na cava na i naki bibi ni cakacaka oqo?

a) ☐ Me vakakawabokotaki mai Yadua Taba na manumanu kei na kau ca
b) ☐ Vakabulabulataka na tubu ni veikau dina; wili kina na kedra kakana ken a nodra I tikotiko na vokai
c)_____
Vakamacala_____
d)_____
Vakamacala_____

15. Na cava na levu ni gauna o vakai tavi iko kina e na cakacaka oqo?

Vakalevu sara ☐ E na so na gauna ☐ Soli vakasama kina ☐ Sega ni vakai tavi ☐

Na cava e so na i tavi ko vakayacora e na vuku ni cakacaka oqo?

a) ☐ liga ni veivuke ni vakautani na manumanu kei na kau ca
b)_____
Vakamacala_____
c)_____
Vakamacala_____

16. Na cava e so na i tuvatuva e vakamuri e na kena vakayagataki na lewe ni koro?

a) ☐ Vakamuri na gaunisala vakavanua ni kerekere
b)_____
Vakamacala_____

17. Ke iko a sega ni vakai tavi, ko nanuma beka ni dodonu mo ni vakai tavi kina? YES ☐ NO ☐
Vakamacala _____

18. Na cava e so na vinaka se revurevu yaga e sa mai vakilai ki na cakacaka oqo e na nomuni cakacaka vata va koro?

a) ☐ Totolo ni cakacaka baleta na kilai ni vanua kei na cakacaka
b) ☐ Na veivuke e na gauna qo e na rawa ni vakadeitaka na veitokoni mai muri
c)_____
Vakamacala_____
d)_____
Vakamacala_____

19. Na cava e so na vinaka se revurevu yaga e sa mai vakilai e na koro e na vuku ni cakacaka oqo?

a) ☐ Kilaka kei na vakatovolei ni veimataqali cakacaka e vakayagataka me kautani na manumanu kei na kau ca
b) ☐ Vurevure ni lavo (Vakamacala? _____)
c)_____
Vakamacala_____
d)_____
Vakamacala_____

20. Na cava e so na revurevu ca sa mai vakilai e na koro e na vuku ni cakacaka oqo?

a) ☐ Dredre na cakacaka, ka sega ni vakilai na kena (revurevu) yaga vei ira yadua
b)_____
Vakamacala_____
c)_____
Vakamacala_____

21. E a bau yaco e so na veileti se duidui e na vuku ni cakacaka oqo? E a vakameautaki se sega? ke io, vakamacala.

a)_____
E a vakameautaki? ☐ Vakamacala_____

b)_____
E a vakameautaki? ☐ Vakamacala_____

22. ***E sa yaco tiko e vei na vaiqaravi ni cakacaka oqo me laurai vata kei na kena i naki e a tauyavu kina?(more than one option if necessary)*** Qaravi vakavinaka sara ☐ Qaravi vakavinaka toka ☐ toso tiko ga ☐ Sega na cakacaka e caka tiko ☐ Sega ni vakavotukana ☐
Vuna/Vakamacala_____

23. ***E na rawa me na tomani tiko na cakacaka oqo e na veigauna mai muri?*** YES ☐ NO ☐
Vuna/Vakamacala _____

24. ***E vakacava na levu ni revurevu ni cakcaka oqo e na nomu:***
-kilaka me baleta na yaubula kei na veika e tu vakawavolivoliti iko kei na kena levu?
Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐
Vuna/Vakamacala_____
-vakayagataka e na vei siga na veikabuka ka tu wavolivoliti iko?
Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐
Vuna/Vakamacala_____
-vakayagataka e na vei siga na qele kei na waitui?
Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐
Vuna/Vakamacala_____

C. GREENFORCE

25. ***Na cava na i naki bibi ni cakacaka oqo?***
a) ☐ Me okati o Yadua Taba e na I vola ni World Heritage listing
b) ☐ Me dikevi na sasalu kei na veikabula e waitui
c)_____
Vakamacala_____
d)_____
Vakamacala_____

26. ***Na cava na levu ni gauna o vakai tavi iko kina e na cakacaka oqo?***
Vakalevu sara ☐ E na so na gauna ☐ Soli vakasama kina ☐ Sega ni vakai tavi ☐
Na cava e so na i tavi ko vakayacora e na vuku ni cakacaka oqo?
a) ☐ Soli ni qele me cicivaka na Greenforce
b) ☐ Veivuke (vakaicilitaki/kakana/veilakoyaki)
c) ☐ Veivuke e na vakadidike
d)_____
Vakamacala_____
e)_____
Vakamacala_____

27. ***Na cava e so na i tuvatuva e vakamuri e na kena vakayagataki na lewe ni koro?***
a) ☐ Vakamuri na gaunisala vakavanua ni kerekere
b)_____
Vakamacala_____

28. ***Ke iko a sega ni vakai tavi, ko nanuma beka ni dodonu mo ni vakai tavi kina?*** YES ☐ NO ☐
Vakamacala _____

29. ***Na cava e so na vinaka se revurevu yaga e sa mai vakilai ki na cakacaka oqo e na nomuni cakacaka vata va koro?***
a) ☐ Sau rawarawa vei Greenforce
b) ☐ Vakadeitaki ni tiko kei na cicivaki ni cakacaka
c) ☐ Veivuke e na veiqaravi e na vuku ni kilaka e sa tiko rawa me baleta na vanua/veicakau/lawa ni vanua
d)_____
Vakamacala_____
e)_____
Vakamacala_____

30. Na cava e so na vinaka se revurevu yaga e sa mai vakilai e na koro e na vuku ni cakacaka oqo?

a) ☐ Rawati ni i vola tara ni nunu
b) ☐ Vurevure ni lavo / vakatoroicaketaki ni bula e na koro
(Vakamacala _____)
c) ☐ Vulici ni veika mai vanua tani / vure na veikilai kei ira mai vanua tani
d) ☐ Vuli ni yaubula kei na veika e vakawavolivoliti keda
e)_____
Vakamacala_____
f)_____
Vakamacala_____

31. Na cava e so na revurevu ca sa mai vakilai e na koro e na vuku ni cakacaka oqo?

a) ☐ Vakanuinui vei Greenforce me i vurevure ni lavo
b) ☐ Duidui na veika e rawata e dua na matavuvale
c)_____
Vakamacala_____
d)_____
Vakamacala_____

32. E a bau yaco e so na veileti se duidui e na vuku ni cakacaka oqo? E a vakameautaki se sega? ke io, vakamacala.

a)_____
E a vakameautaki? ☐ Vakamacala_____
b)_____
E a vakameautaki? ☐ Vakamacala_____

33. E sa yaco tiko e vei na vaiqaravi ni cakacaka oqo me laurai vata kei na kena i naki e a tauyavu kina? (more than one option if necessary) Qaravi vakavinaka sara ☐ Qaravi vakavinaka toka ☐ toso tiko ga ☐ Sega na cakacaka e caka tiko ☐ Sega ni vakavotukana ☐
Vuna/Vakamacala_____

34. E na rawa me na tomani tiko na cakacaka oqo e na veigauna mai muri? YES ☐ NO ☐
Vuna/Vakamacala _____

35. E vakacava na levu ni revurevu ni cakcaka oqo e na nomu:
-kilaka me baleta na yaubula kei na veika e tu vakawavolivoliti iko kei na kena levu?
Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐
Vuna/Vakamacala_____
-vakayagataka e na vei siga na veikabuka ka tu wavolivoliti iko?
Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐
Vuna/Vakamacala_____
-vakayagataka e na vei siga na qele kei na waitui?
Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐
Vuna/Vakamacala_____

D. VEIVUKE KI NA KORO (VALE VA KORO, GAUNISALA SIMEDE, WAI, CURUCURU NI VULI)

36. Na cava e so tale na mataqali veivuke e soli se sa caka oti/caka tiko, I nomudou koro, ka me i dole ni nomuni lomasoli kina maroroi na nomudou yau/veikabula?

a) ☐ Vakailavo taka na vale va koro
b) ☐ Vakailavo taka na gaunisala simede
c) ☐ Vakailavo taka na paipo kei na taqe-ni-wai
d) ☐ Sauma na curucuru ni vuli na gonevuli
e) ☐ Vola tara ni nunu vei ira na dau nunu saumi
f) ☐ Gusu ni vanua ki na matanitu kei na veisoqosoqo tale e so
g)_____
Vakamacala_____
h)_____
Vakamacala_____

37. Na cava na i naki bibi ni cakacaka oqo?

a) ☐ Veivuke ki na koro me i dole ni nomuni lomasoli kina maroroi ni i yaubula?
b) ☐ Veivuke ki na koro me vaka ni sega ni tauri kina na lisi ni yanuyanu o Yadua Taba
c)_____
Vakamacala_____
d)_____
Vakamacala_____

38. Na cava na levu ni gauna o vakai tavi iko kina e na cakacaka oqo?

Vakalevu sara ☐ E na so na gauna ☐ Soli vakasama kina ☐ Sega ni vakai tavi ☐

Na cava e so na i tavi ko vakayacora e na vuku ni cakacaka oqo?

a) ☐ liga ni cakacaka (construction)
a) ☐ veivuke (cater/accommodation)
b)_____
Vakamacala_____
c)_____
Vakamacala_____

39. Na cava e so na i tuvatuva e vakamuri e na kena vakayagataki na lewe ni koro?

a) ☐ Vakamuri na gaunisala vakavanua ni kerekere
b) ☐ Veitalanoa kei na kerekere e na vakadonui na cakacaka me lai qaravi
c) ☐ Digitaki e na bose ni koro na liga ni cakacaka
d) ☐ Vakatulewa nei NTF me vaka ni sega ni tauri kina na lisi ni yanuyanu o Yadua Taba
e)_____
Vakamacala_____
f)_____
Vakamacala_____

40. Ke iko a sega ni vakai tavi, ko nanuma beka ni dodonu mo ni vakai tavi kina? YES ☐ NO ☐

Vakamacala _____
_____

41. Na cava e so na vinaka se revurevu yaga e sa mai vakilai ki na cakacaka oqo e na nomuni cakacaka vata va koro?

a) ☐ liga ni veivuke me vakaoti kina vakavinaka na cakacaka
b) ☐ na marautaki ni NTF ni soli veivuke ki na koro
c) ☐ na kena vakaoti totolo na cakacaka ni ra valika na lewe ni koro na bibi ni cakacaka ki vei ira
d)_____
Vakamacala_____
e)_____
Vakamacala_____

42. Na cava e so na vinaka se revurevu yaga e sa mai vakilai e na koro e na vuku ni cakacaka oqo?

a) ☐ vakaoti na cakacaka ni tiko na I lavo e vakarautaki/kila ni cakacaka
b) ☐ vakatorocaketaki na bula va koro baleta na veivakatorocaketaki e caka oti
c) ☐ na kena maroroi na I lavo e na vuku ni veivakalavotaki ni cakacaka e lako mai taudaku
d)_____
Vakamacala_____
e)_____
Vakamacala_____

43. Na cava e so na revurevu ca sa mai vakilai e na koro e na vuku ni cakacaka oqo?

a)_____
Vakamacala_____
b)_____
Vakamacala_____

44. ***E a bau yaco e so na veileti se duidui e na vuku ni cakacaka oqo? E a vakameautaki se sega? ke io, vakamacala.***

a)_____

E a vakameautaki? ☐ Vakamacala_____

b)_____

E a vakameautaki? ☐ Vakamacala_____

45. ***E sa yaco tiko e vei na vaiqaravi ni cakacaka oqo me laurai vata kei na kena i naki e a tauyavu kina? (more than one option if necessary)*** Qaravi vakavinaka sara ☐ Qaravi vakavinaka toka ☐ toso tiko ga ☐ Sega na cakacaka e caka tiko ☐ Sega ni vakavotukana ☐

Vuna/Vakamacala_____

46. ***E na rawa me na tomani tiko na cakacaka oqo e na veigauna mai muri?*** YES ☐ NO ☐

Vuna/Vakamacala _____

47. ***E vakacava na levu ni revurevu ni cakcaka oqo e na nomu:***

-kilaka me baleta na yaubula kei na veika e tu vakawavolivoliti iko kei na kena levu?

Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐

Vuna/Vakamacala_____

-vakayagataka e na vei siga na veikabuka ka tu wavolivoliti iko?

Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐

Vuna/Vakamacala_____

-vakayagataka e na vei siga na qele kei na waitui?

Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐

Vuna/Vakamacala_____

E. VULI NI YAUBULA KEI NA VEIKA E VAKAWAVOLIVOLITI KEDA

48. ***Na cava e so na mataqali vuli ni yaubula e sa vakayacori oti e na nomudou koro?***

a) ☐ Vokai

b) ☐ Vonu kei na kena makataki

c) ☐ yaubula e waitui

d) ☐ Veikabula wavoliti keda

e) ☐ na i tavi kei na i nakinaki ni NTF

f)_____

Vakamacala_____

g)_____

Vakamacala_____

49. ***Na cava na i naki bibi ni cakacaka oqo?***

a) ☐ me vakatavulici na lewe ni koro me ra tokona ka vakabauta na cakacaka ni maroroi yaubula e sa vakayacori tiko

b)_____

Vakamacala_____

c)_____

Vakamacala_____

50. ***Na cava na levu ni gauna o vakai tavi iko kina e na cakacaka oqo?***

Vakalevu sara ☐ E na so na gauna ☐ Soli vakasama kina ☐ Sega ni vakai tavi ☐

Na cava e so na i tavi ko vakayacora e na vuku ni cakacaka oqo?

a) ☐ Vakai tavi e na vuli e caka

b) ☐ veivuke kei na veitokoni (kakana, vale ni vuli)

c)_____

Vakamacala_____

d)_____

Vakamacala_____

51. ***Na cava e so na i tuvatuva e vakamuri e na kena vakayagataki na lewe ni koro?***

a) ☐ vakamuri na gaunisala vakavanua ni kerekere e na vuku ni vuli kei na nodratou gauna

b)_____

Vakamacala_____

52. ***Ke iko a sega ni vakai tavi, ko nanuma beka ni dodonu mo ni vakai tavi kina?*** YES ☐ NO ☐
Vakamacala _____

53. ***Na cava e so na vinaka se revurevu yaga e sa mai vakilai ki na cakacaka oqo e na nomuni cakacaka vata va koro?***
a) ☐ vakataudeitaki na Qaravi vakavinaka toka e na vuku ni vuli ni vakararamataki na cakacaka ni maroroi ni yaubula
b)_____
Vakamacala_____
c)_____
Vakamacala_____

54. ***Na cava e so na vinaka se revurevu yaga e sa mai vakilai e na koro e na vuku ni cakacaka oqo?***
a) ☐ toroicake ni kila kei na kena coqoma na veimataqali cakacaka e na kena maroroi ni yaubula kei na kena i naki
b) ☐ toroicake ni vuli ni yaubula kei na veika e vakawavolivoliti keda
c) ☐ Vurevure ni lavo (Vakamacala? _____)
d)_____
Vakamacala_____
e)_____
Vakamacala_____

55. ***Na cava e so na revurevu ca sa mai vakilai e na koro e na vuku ni cakacaka oqo?***
a) ☐ solia nodra gauna ka ra sega ni saumi vakailavo kina
b)_____
Vakamacala_____
c)_____
Vakamacala_____

56. ***E a bau yaco e so na veileti se duidui e na vuku ni cakacaka oqo? E a vakameautaki se sega? ke io, vakamacala.***
a)_____
E a vakameautaki? ☐ Vakamacala_____
b)_____
E a vakameautaki? ☐ Vakamacala_____

57. ***E sa yaco tiko e vei na vaiqaravi ni cakacaka oqo me laurai vata kei na kena i naki e a tauyavu kina? (more than one option if necessary)*** Qaravi vakavinaka sara ☐ Qaravi vakavinaka toka ☐ toso tiko ga ☐ Sega na cakacaka e caka tiko ☐ Sega ni vakavotukana ☐
Vuna/Vakamacala_____

58. ***E na rawa me na tomani tiko na cakacaka oqo e na veigauna mai muri?*** YES ☐ NO ☐
Vuna/Vakamacala _____

59. ***E vakacava na levu ni revurevu ni cakcaka oqo e na nomu:***
-kilaka me baleta na yaubula kei na veika e tu vakawavolivoliti iko kei na kena levu?
Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐
Vuna/Vakamacala_____
-vakayagataka e na vei siga na veikabuka ka tu wavolivoliti iko?
Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐
Vuna/Vakamacala_____
-vakayagataka e na vei siga na qele kei na waitui?
Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐
Vuna/Vakamacala_____

F. VAKADIDIKE BALETA NA VOKAI

60. ***Na cava na i naki bibi ni cakacaka oqo?***

a) ☐ Na kena dikevi na vokai kei na vanua e bula kina

b)_____

Vakamacala_____

c)_____

Vakamacala_____

61. Na cava na levu ni gauna o vakai tavi iko kina e na cakacaka oqo?

Vakalevu sara ☐ E na so na gauna ☐ Soli vakasama kina ☐ Sega ni vakai tavi ☐

Na cava e so na i tavi ko vakayacora e na vuku ni cakacaka oqo?

a) ☐ Veivuke e na vanua ni vakadidike

b) ☐ I liuliu ni qaravi ni vakadidike

c) ☐ veivuke e na koro (kakana/vakaicili)

d)_____

Vakamacala_____

e)_____

Vakamacala_____

62. Na cava e so na i tuvatuva e vakamuri e na kena vakayagataki na lewe ni koro?

a) ☐ Vakamuri na gaunisala vakavanua ni kerekere

b)_____

Vakamacala_____

63. Ke iko a sega ni vakai tavi, ko nanuma beka ni dodonu mo ni vakai tavi kina? YES ☐ NO ☐

Vakamacala _____

64. Na cava e so na vinaka se revurevu yaga e sa mai vakilai ki na cakacaka oqo e na nomuni cakacaka vata va koro?

a) ☐ na kena raici vakararama na vakadidike mai vei ira na lewe ni koro, ka e sega ni dua na ka me vunitaki

b) ☐ vakayagataki vakavuku na i lavo me vaka ni sa tiko vakarawarawa na lewe ni vanua kei na nodra veitokoni

c) ☐ kilai ni vanua/veicakau

d)_____

Vakamacala_____

e)_____

Vakamacala_____

65. Na cava e so na vinaka se revurevu yaga e sa mai vakilai e na koro e na vuku ni cakacaka oqo?

a) ☐ na vakararamataki e na vuku ni veimataqali vakadidike

b) ☐ na vakararamataki e na vuku ni kila ni vokai vaka science

c) ☐ Vurevure ni lavo (Vakamacala? _____)

d)_____

Vakamacala_____

e)_____

Vakamacala_____

66. Na cava e so na revurevu ca sa mai vakilai e na koro e na vuku ni cakacaka oqo?

a) ☐ na veka e kunei e na vakadidike e veicoqacoqa kei na vakabauta vakavanua/vakalotu

b)_____

Vakamacala_____

c)_____

Vakamacala_____

67. E a bau yaco e so na veileti se duidui e na vuku ni cakacaka oqo? E a vakameautaki se sega?

a) ☐ na kena voroki na gaunisala vakavanua/lawa buli ni koro (working on Sunday etc.)

E a vakameautaki? ☐Vakamacala_____

b)_____

E a vakameautaki? ☐ Vakamacala_____

c)_____

E a vakameautaki? ☐ Vakamacala_____

68. ***E sa yaco tiko e vei na vaiqaravi ni cakacaka oqo me laurai vata kei na kena i naki e a tauyavu kina? (more than one option if necessary)*** Qaravi vakavinaka sara ☐ Qaravi vakavinaka toka ☐ toso tiko ga ☐ Sega na cakacaka e caka tiko ☐ Sega ni vakavotukana ☐
Vuna/Vakamacala_____

69. ***E na rawa me na tomani tiko na cakacaka oqo e na veigauna mai muri?*** YES ☐ NO ☐
Vuna/Vakamacala _____

70. ***E vakacava na levu ni revurevu ni cakcaka oqo e na nomu:***
-kilaka me baleta na yaubula kei na veika e tu vakawavolivoliti iko kei na kena levu?
Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐
Vuna/Vakamacala_____
-vakayagataka e na vei siga na veikabuka ka tu wavolivoliti iko?
Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐
Vuna/Vakamacala_____
-vakayagataka e na vei siga na qele kei na waitui?
Vakalevu saraga ☐ Vakalevu toka ☐ sega na revurevu ☐
Vuna/Vakamacala_____

PNSACV Community questionnaire (Portuguese version)

Nome _____ ***Idade*** _____

Masculino ☐ ***Feminino*** ☐ ***Ocupação*** _____

Cidade _____ ***nível de escolaridade*** _____

1. *Por favor, indique cinco (5) recursos terrestres, marinhos ou ribeirinhos que são mais importantes para o seu sustento, dos quais faz uso na área do Parque Natural (PNSACV)?*

a) ☐ Pastorícia (bovinos/caprinos/ovinos)
b) ☐ Mel (Apicultura)
c) ☐ Caça (Coelho/Lebre/Perdiz)
d) ☐ Ervas (aromáticas/medicinais)
e) ☐ Lenha
f) ☐ Agricultura
g) ☐ Pesca comercial
h) ☐ Pesca/Apanha de subsistência
i) ☐ Pesca/Apanha recreativa
j) ☐ Material construção (calcário areia/ cascalho/Madeira)

Outros (especifar):

k)_____
l)_____
m)_____

2. *Qual acha que é a finalidade/objectivo do Parque Natural (PNSACV)?*

a) ☐ promover o uso sustentável e adequado da terra e recursos na área, a fim de preservar as paisagens naturais os valores culturais da região e promover o desenvolvimento social e econômico das comunidades humanas na região
b) ☐ promover a conservação dos habitats naturais e da biodiversidade (plantas e animais) da área
c) ☐ monitorizar as actividades que levam à degradação dos recursos naturais na area
d) ☐ promover a participação activa de todos os interessados que tenham uma conexão com o Parque Natural, em estreita colaboração com as comunidades locais da área

Outros (especifar):

e)_____
f)_____

3. *Qual o seu nível de envolvimento nas actividades do Parque Natural (PNSACV)?*

Bastante envolvido☐ Parcialmente envolvido☐ Consultado☐ Nenhum envolvimento☐

4. *De que forma esteve envolvido?*

a)_____
b)_____
c)_____

5. *Se não esteve envolvido, acha que o envolvimento/participação da comunidade (por exemplo, através de opiniões) seria importante?* SIM ☐ NÃO ☐

Explique porquê _____

6. *Quais têm sido os benefícios/impactes positivos para o Parque Natural (PNSACV) do envolvimento da comunidade?*

a)_____
b)_____
c)_____
d)_____
e)_____

7. *Quais têm sido alguns benefícios/impactes positivos para a comunidade da existência do Parque Natural (PNSACV)?*

a) ☐ aumento do valor da terra e habitação na área do Parque
b) ☐ aumento do Turismo na área do Parque

Outros (especifar):

c)_____
d)_____
e)_____

8. *Quais têm sido alguns impactes negativos sobre a comunidade do Parque Natural (PNSACV)?*

a) ☐ Demasiadas restricoes na area do Parque

Outros (especifar):

b)_____
c)_____
d)_____
e)_____

9. *Tem havido algum tipo de conflitos em relação ao Parque Natural (PNSACV)? Foram estes conflitos resolvidos de alguma forma? Em caso afirmativo, indique quais e de que forma?*

a)_____
Resolvidos? ☐ *Explique*_____
b)_____
Resolvidos? ☐ *Explique*_____
c)_____
Resolvidos? ☐ *Explique*_____
d)_____
Resolvidos? ☐ *Explique*_____
e)_____
Resolvidos? ☐ *Explique*_____

10. *Como vê o estado actual do Parque Natural (PNSACV) em relação ao seu objectivo inicial/finalidade?*

Bem sucedido ☐ Sucedido ☐ Inactivo ☐ Falhado ☐
Motivo/Explicação _____

11. *Acha que o Parque Natural (PNSACV) poderá e deverá continuar no futuro?* SIM ☐ NÃO ☐

Motivo/Explicação _____

12. *Qual é sua opinião pessoal sobre o Parque Natural (PNSACV) em termos de impacte sobre:*

-O seu conhecimento do ambiente e dos seus recursos?

Grande impacto ☐ Menor impacto ☐ Nenhum impacto ☐
Motivo/Explicação _____

-Do seu uso diário dos recursos naturais?

Grande impacto ☐ Menor impacto ☐ Nenhum impacto ☐
Motivo/Explicação _____

-Do seu uso diário da terra ou do mar?

Grande impacto ☐ Menor impacto ☐ Nenhum impacto ☐
Motivo/Explicação _____