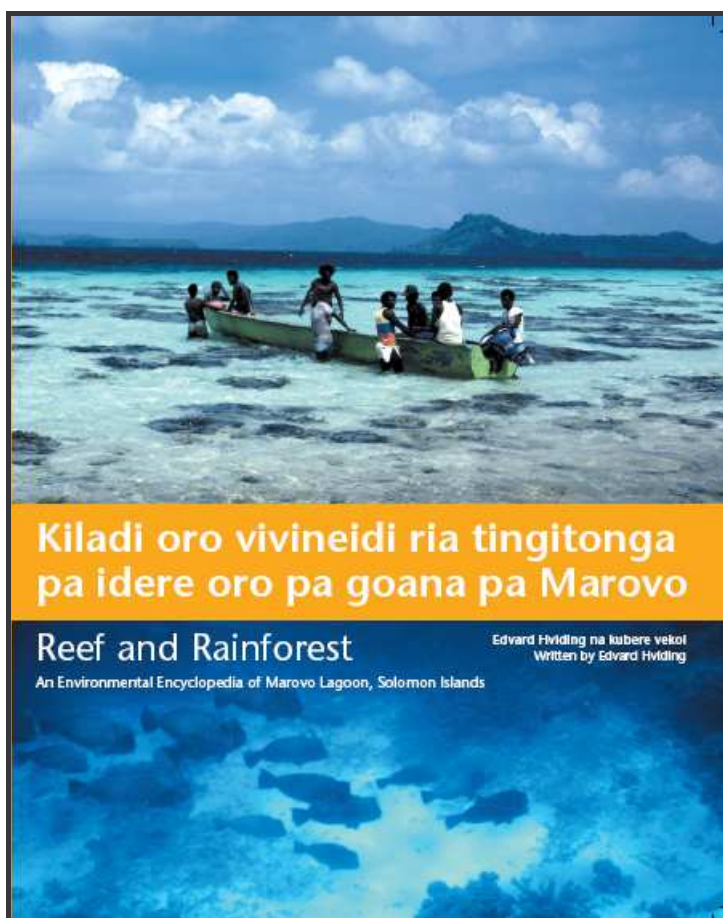


# Reef and Rainforest: An Environmental Encyclopedia of Marovo Lagoon, Solomon Islands



A Pilot Project  
in Vernacular Environmental Education  
for the Pacific Islands

## STUDY GUIDE AND TEACHER'S MANUAL

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View of the Marovo Lagoon from the peak of Marovo Island. (Photo by Edvard Hviding, 1996)



Children at Duvaha Primary School, northern Marovo. (Photo by Edvard Hviding, 2005)

NOTE: Statements and opinions in this document are those of the author, not of UNESCO.

## INTRODUCTION

In January 2005, UNESCO's LINKS programme (Local and Indigenous Knowledge Systems) published the book *Reef and Rainforest: An Environmental Encyclopedia of Marovo Lagoon* (by Edvard Hviding; Knowledges of Nature Series No. 1; 248pp; illustrated introduction; 10 chapters; 1211 entries in Marovo and English languages – many with scientific identifications; indexes of scientific, Marovo, Hoava and Vangunu names; colour photographs; maps – henceforth referred to as the *Encyclopedia*). Further details about the book and its role in the LINKS programme are available at the LINKS website: [www.unesco.org/links](http://www.unesco.org/links).

This **Study Guide and Teacher's Manual** explains the multiple contexts for the *Environmental Encyclopedia of Marovo Lagoon*. The book is a result of an initiative by the Marovo Lagoon people themselves, it is an attempt by UNESCO to provide an example for environmental education carried out in the vernacular languages of the Pacific Islands, and it has rapidly become a cornerstone of present efforts by the Solomon Islands Government to promote a new policy of vernacular education.

Part I, the **Study Guide** (or "Guide to using the *Encyclopedia*") suggests ways in which this book can be used in many different ways in the Pacific Islands region to promote local languages and local ways of knowing and speaking about the environment. A discussion is given of current aspects of national educational policy in Solomon Islands, with a special emphasis on vernacular education. Questions of endangered languages and loss of knowledge, and the importance of environmental knowledge for everyday life in the Pacific Islands, are also addressed.

Part II, the **Teacher's Manual**, discusses in more detail a number of ways of using the book at schools in the Marovo Lagoon, more generally in

the Western Province of Solomon Islands where Marovo is one of the most widespread and well-known languages, in the national educational system of Solomon Islands, and in the Pacific Islands more widely. These suggestions can also be relevant for vernacular environmental education on other parts of the world, particularly in the Indo-Pacific region of which Marovo Lagoon and Solomon Islands are part in global ecological terms. A particular focus of the Teacher's Manual is an explanation of successful approaches to using the book in schools throughout the Marovo Lagoon. Many lessons from these approaches can be transferred to other places.

Part III provides a number of actual **examples of the practical uses of the book in schools**. These examples are written (and sometimes illustrated) contributions by students at primary and secondary schools in the Marovo Lagoon. More than 800 copies of the book have been distributed to fourteen different schools in the area. Pilot projects to test the uses of the book have been carried out by the author on behalf of UNESCO-LINKS in 2005-2007, in the close cooperation with teachers and principals, under the supervision of the Solomon Islands Ministry of Education and Human Resources Development, and in collaboration with the Solomon Islands National Commission for UNESCO.

The author wishes to thank the following for very special contributions to the making of the *Encyclopedia* and to its introduction into the educational system of Solomon Islands: The University of Bergen; Dr. Douglas Nakashima (Head of UNESCO's LINKS Programme); the staff of UNESCO-LINKS; Mr. Hans Thulstrup and other staff of the UNESCO South Pacific Office, Apia; Solomon Islands National Commission for UNESCO; Mr. Aseri Yalangono (Director of Secondary Education in the Solomon Islands Government); Mr. Lawrence Foana'ota (Director of the Solomon Islands National Museum), Hon. Job Duddley Tausinga (Member of Solomon Islands Parliament for North New Georgia, current Minister of Education); Hon. Snyder Rini (Member of Solomon Islands Parliament for Marovo,

former Minister of Education); Mr. Robertson Szetu (IT and logistics manager for Pilot Projects), Mr. Wilson Liligeto and Mr. Vincent Vaguni (field coordinators of Pilot Projects), Hon. Alex Lokopio (Premier of Western Province), and His Grace the Reverend Ikan Rove KBE (Spiritual Authority of the Christian Fellowship Church of Solomon Islands). Very special thanks to Dr. Graham Baines of Brisbane who started this work back in 1985, and to the Marovo people, who have supported and influenced the work from the beginning 22 years ago.

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March 2008



**HINABU TOPA:** catching the bumphead parrotfish.

Illustration from assignment submitted during UNESCO-LINKS Pilot Project trials of the *Encyclopedia* in Marovo (2005), by **Justin Hoala**, Standard 4, Tamaneke Primary School. Note the close attention given to reef organisms and their names.

## **PART I: GUIDE TO USING THE *ENCYCLOPEDIA***

### **Background of the book**

When published in 2005 by UNESCO's Local and Indigenous Knowledge Systems (LINKS) programme, the *Environmental Encyclopedia of Marovo Lagoon* was the outcome of twenty years' privileged engagement for me with the Marovo Lagoon people of the Western Province of Solomon Islands. This richly illustrated book, and its more modest predecessor (*A Dictionary of Environment and Resources of the Marovo Lagoon*, published by the University of Bergen and Western Province, 1995), also provided a response to a long-standing request by the Marovo people and their leaders for a comprehensive book that would document their own knowledge of the spectacular environments of sea and land on which they continue to depend for their well-being and way of life.

Located in the tropical south-western Pacific, the Marovo Lagoon is one of the world's largest coral lagoons. It is formed by a globally unique 100-kilometre long elevated barrier reef which is intersected by passages to the open sea. In its eastern parts this barrier reefs forms a double chain of raised narrow islands, with tall cliffs facing the ocean and dense mangroves fringing the wide deep waters of the lagoon. The lagoon and barrier reef cover an area of about 700 square kilometres, and are backed by a row of forested mountainous volcanic islands with extinct craters and limestone peaks. In 2008, about 13,000 people live in villages scattered throughout the coasts of volcanic islands and barrier reef.

The Marovo people have occupied their lagoon and surrounding lands for thousands of years and have a famous history of overseas canoe travel for warfare and trade. More recently, the Marovo Lagoon has become famous as a "hot-spot" of biological diversity, and a number of international

conservation organizations have worked there to try to counter the environmental challenges posed by the operations since the 1990s of an increasing range of transnational (mainly Asian) resource extraction companies. These challenges relate in particular to widespread logging of the rainforest by logging companies, condoned by customary landowners but often with unexpected environmental devastation as a result, but also to high pressure on certain marine resources exploited for cash, such as through the international trade for live reef fish. Meanwhile the Marovo people have been following their own paths of rural development, which over the years have included a number of local initiatives within forestry, fisheries, conservation and education.

The *Encyclopedia*, as a beautifully produced and richly illustrated large-format book with a highly visible presence in the formal educational system, and provided free of charge to Marovo schools, has come to be seen as a demonstration of respect by the United Nations system towards – and a globally oriented statement of importance of – the environmental knowledge of Marovo people and its relevance in times challenged by a high incidence in the Marovo Lagoon area of non-sustainable resource exploitation.

In its introductory chapter, the *Encyclopedia* gives detailed information on the lagoon and its peoples, including maps, photographs and diagrams of the environment and how the Marovo people view it. As an anthropologist with a determined interest in the coral reef and rainforest environments that form the foundations of the Marovo people's exceptionally diverse and healthy village economy, I have been engaged for many years in various efforts by Marovo people to secure the continued viability of their lifestyle. This has also involved the understanding and appreciation of the ways in which the Marovo people see this lifestyle as being challenged. One particular concern, on which the making of the *Encyclopedia* has been based, is that of the loss of local knowledge about the environments of

sea and land, as old, wise people die and young people spend more and more time absent from the village, in an educational system that pays little attention to local language and locally relevant knowledge.

While being relevant to urgent issues of biodiversity conservation, the *Encyclopedia* is seen by its author, by UNESCO-LINKS and by the Solomon Islands Government as having a wider potential. Recent Solomon Islands Government initiatives towards promoting vernacular education in a nation of about 500,000 people and more than 80 distinct languages require the development of curricular materials in local languages and addressed towards both local and global concerns. The *Encyclopedia* meets such needs for one area of Solomon Islands, while being of wider relevance as example and inspiration for the rest of the nation.

### **The science of the Marovo people**

The extraordinary biological diversity of the Marovo Lagoon is reflected in a rich repertoire of environmental knowledge among the people of the area. That people who live in villages in continuous contact with the surrounding environment on which their everyday lives depend have very detailed knowledge of that environment, is a well-known fact from throughout the world. Much research in recent years has concentrated on the documentation of such local or indigenous environmental knowledge. It is often argued that knowledge of this kind, although usually unwritten, may be equal to Western science or even surpass what scientists know.

For the Solomon Islands, one of the first scientists to make detailed observations there, Dr. H.B. Guppy, expressed this in very clear terms:

“In my botanical excursions in these islands ... I was particularly struck with the familiar knowledge of their trees and plants which these islanders possessed. They have names for not only nearly all the trees, but for several of the grasses; and, in the case of the former, when I was uncertain as to whether I had come upon any



specimen before, they would obtain its flower, or fruit, or foliage, and point out to me its comparative characters. The superior knowledge, which (Solomon Islanders) possess of each plant and its uses, has often led me to reflect on the meagre acquaintance with the commonest trees, shrubs, and herbs, which the ordinary white man can claim."

(Henry Brougham Guppy, 1887. *The Solomon Islands and Their Natives*. London: Swan Sonnenschein, Lowry & Co; page 280)

100 years later, Dr. R.E. Johannes, a leading marine biologist who in his lifetime worked with the fishermen of most Pacific Islands nations, visited a number of villages of the Marovo Lagoon, spent many days and nights in conversations with the experienced fishermen there, and made the following assessment of Marovo people's knowledge of the sea:

"Marovo fishermen probably eat or otherwise use a greater variety of species of marine animals than 99% of the world's fishers. Their knowledge of sea animals is therefore very impressive."

(R.E. Johannes & Edvard Hviding, 2000. "Traditional knowledge possessed by the fishers of Marovo Lagoon, Solomon Islands, concerning fish aggregating behavior." *Traditional Marine Resource Management and Knowledge Bulletin*, No. 12, pages 22-29. Based on a technical report from 1987)

So the Marovo people have truly built up, over many generations, their own rich knowledge of the sea and the land, of the reef and the rainforest. This is Marovo people's own science. And it is partly documented in the *Encyclopedia*.

### **Local knowledge and vernacular education**

In 2003, on a visit to Solomon Islands to prepare for final revisions of the *Encyclopedia*, I had a long conversation with Mr. Ezekiel Padakana, a man from the Vangunu area in Marovo who was approaching retirement after a lifetime career in education. Then the Chief Educational Officer of the Western Province, Mr. Padakana explained to me his strong ambition that school curricula in Solomon Islands should expand to accommodate

perspectives drawn from local knowledge and vernacular language. Pointing to my own previous attempts at providing such materials to primary and secondary schools and villages throughout the Marovo Lagoon, Mr. Padakana pointed to the need for much more material of this kind, particularly as the elders capable of conveying knowledge through oral traditions are passing away. He added that only through bridging local worlds (custom knowledge and language) and global education (science and English) can younger generations learn to appreciate the need for conservation and the continued relevance of the local in modern times.

Mr. Padakana's dedicated philosophy can stand for the essence of concerns expressed by many agents of government, church and tradition in the Western Solomons: **A wish that Solomon Islands education can gain added relevance for modern times with the infusion of wisdom from locally anchored knowledge.** This relates to a concern I have found to be widespread across generations and that has echoes everywhere in today's Melanesia: That **local "custom" knowledge and vernacular language are immediately meaningful in modern times by constituting the conditions for self-sufficient ways of life,** given that the majority of students get no further than secondary school and are likely to return to live their lives in the village. In such a perspective, a lack of attention to local issues in primary and secondary education means that teenage school-leavers experience a sense of deprivation and hopelessness when they return to the village after having grown more and more remote from the local through years away at school.

These concerns are reflected in recent efforts by the Solomon Islands Government to develop a policy for the promotion of vernacular languages in the schools of the nation. The "Education Strategic Plan 2004-2006" sets out the following observations and aims:

"In planning and taking action to rehabilitate and reform the education system, it is essential to recognise traditional, social and

cultural values, and the important stabilising role of rural, village communities. It is especially important that basic education be re-anchored in the community, and while facilitating development of knowledge and skills needed for economic wellbeing and advancement, basic education should promote and develop positive aspects of village society.” (Page 6)

The “Philosophical Framework” and “Vision” of the Plan include the following statements:

“We believe that traditional knowledge, skills and attitudes are an essential part of education. Education should encourage the student to explore and respect traditional beliefs and ways of thinking, reasoning and understanding as well as Christian ones. Traditional ways of doing things such as tool making, music, art and craft, fishing, growing crops and other useful trades should also be acknowledged and valued. Education should include traditional language, literature (including oral tradition), culture, history, as well as modern technologies, the sciences and arts.” (Page 7)

“Our vision is that all Solomon Islanders will develop as individuals and possess knowledge, skills and attitudes needed to earn a living and to live in harmony with others and their environment.” (Page 8)

And a later section on “Indigenous Education and the Formal Curriculum” expresses some very clear but also very ambitious goals:

The preservation of indigenous knowledge and skills is important for the sustainable development of Solomon Islands. This will be incorporated into the formal and non-formal curriculum where appropriate. Through an appointed task force CDC [Curriculum Development Centre] will facilitate the development of a policy on the teaching of vernacular languages to include a pilot project coordinated with MEHRD ... CDC will also facilitate the development and promotion of indigenous education including traditional knowledge, customs, medicine, music and dance and arts and craft. (p. 31)

The subsequent **DRAFT TERMS OF REFERENCE AND POLICY OBJECTIVES** for the **NATIONAL VERNACULAR LANGUAGE TASK FORCE** (Ministry of Education, 2005) includes the following opening paragraphs:

“Educational research has proven that children learn better if they are taught their first language during their early years of schooling, and with this important finding in mind, the Ministry of Education and Human Resources Development, has included as an activity in its Education Sector Investment and Reform Programme (ESIRP), the introduction of vernacular in its formal education system. The Education Strategic Plan (ESP) 2004-2006 caters for the formation of a Language Policy Committee (Task Force) that is charged with the task of formulating a policy that will govern the implementation of introducing vernacular language in the formal education system.

Solomon Islands is a multilingual society, with around 89 different languages spoken by its inhabitants, hence the need for a committee to be established, that will satisfactorily develop a language policy that will meet the needs of our children.

Our vision for language maintenance and development can be summed up in the following statement:

*We recognize that language is the heart of our culture. Language gives us our identity, integrity, status and sense of belonging to our nation Solomon Islands. We take pride in our languages and will endeavour to promote the use and preservation of our vernacular languages we inherited from our forefathers in all walks of life, to enable us to communicate with one another at present and well into the future. We envision that our languages will continue to be used as a medium of communication to transmit worthwhile information such as knowledge (including indigenous knowledge), skills, values and attitudes from person to person or from generation to generation. Our vision is that all Solomon Islanders will learn to speak, write and read in their mother tongue, and the use of our local languages will help promote literacy in all sectors of our community.”* (original emphasis)

The *Encyclopedia* demonstrates an integrated approach to documenting biological and cultural diversity, and to bridging indigenous knowledge and Western science through the languages of both. Using the *Encyclopedia* in primary, secondary, tertiary and community education in Solomon Islands has lessons for the integration of indigenous knowledge and science in environmental education in the Pacific in general, and for any Pacific Islands national strategy of promoting vernacular education and the transmission of local knowledge. While the *Encyclopedia* is anchored in the

Marovo language (as well as two other lesser vernaculars of the wider Marovo Lagoon area, Hoava and Vangunu), the book and the experiences gained from using it in schools of the Marovo area hold considerable promise for expansion into educational systems and rural communities beyond this immediate linguistic context.

While it is an enormous task to provide curricular materials in all, or even a proportion of, the great number of vernacular languages in Solomon Islands, the *Encyclopedia* is intended as an example and a demonstration of how education in the vernacular language can focus closely on topics that have central importance for the rural lifestyle that still dominates Solomon Islands. In Marovo, it is sometimes said: "Those who cannot name the good things of sea and land, cannot find them, and therefore cannot eat or otherwise benefit from them, nor will they know how to look after them well." This argument from Marovo is like an echo of a statement in Latin made as long ago as 1778 by the Danish natural scientist J.C. Fabritius: *Nomina se pereunt, perit et cognito rerum* ("If the names are lost, our knowledge dies as well").

### **The names and the stories: reading and using the book in Marovo and beyond**

The *Encyclopedia* has more than 1,200 entries, each of which takes as its starting point a known Marovo name for a living organism or an environmental feature. Look at the Marovo title of the book: **Kiladi oro vivineidi ria tingitonga pa idere oro pa goana pa Marovo**. It means "Names and stories of the things of the sea and of the forest in Marovo". It is the names that point to the stories, which for each entry are given in the Marovo language and in English.

The reader must know that the English entries are not translations of the Marovo entries, nor is it the other way round. Instead, the Marovo entries

contain information intended for a local Marovo audience, including items of knowledge that can only be understood through the Marovo language and through the everyday experience of the Marovo environment. The English entries (many of which include tentative scientific identification) are intended to be informative for non-Marovo readers who may be interested in the Marovo Lagoon and Marovo people's knowledge of it, either specifically, or as an example of Indo-Pacific biological diversity and Pacific Islands environmental knowledge. This is in line with the Marovo people's wish that the wider world should be informed about the Marovo Lagoon and about the knowledge about the lagoon and its environments held by its people.

This also raises an issue of **intellectual copyright** that must be mentioned here in the Study Guide. Many of the entries contain local knowledge that may have much wider interest, such as the medical uses of plants, the timber attributes of trees, and the times and locations of coral reef fish to spawn. Marovo people have their own representatives in international diplomacy and organizations, who are well aware that pharmaceutical companies and foreign actors in forestry and fisheries may have interest in these forms of local knowledge. But these representatives also know that the environmental knowledge of Marovo people such as contained in the book is closely connected to similar knowledge held by other people in Solomon Islands, and in the wider Pacific region where many aspects of biological diversity are similar. Hence the statement on page VI of the book that copyright rests with "The People of Marovo and Edvard Hviding". This is first and foremost a statement of copyright over the book as such, but also has the potential to prevent international commercial actors from seeking a patent, for example, of a certain use of a certain plant such as described in the book. This is not to say that the Marovo people in any way insist that they are necessarily the only ones possessing such knowledge.

What this also means, however, is that the book has high and direct relevance for most locations in the Pacific Islands, particularly in the Melanesian island groups of the Western Pacific, where ecological conditions are more or less similar to those of Marovo Lagoon – and where the names in the various languages of fishes, trees, birds, and so forth may also have many similarities, owing to the fact that most languages of Island Melanesia are part of the Austronesian/Oceanic language family. The immediate illustration of such linguistic similarity is shown by the two additional lists in the book of names in the Hoava and Vanunu languages of the wider Marovo area (pages 192-201). The Hoava language is quite close to Roviana, the other major language of the Western Solomons apart from Marovo. Although such direct overlaps of names are likely to decrease the further away from Marovo one gets, there is a definite possibility of using the names listed for Marovo, Hoava or Vanunu as direct bridges over to more remote languages, by working with a knowledgeable local person who has competence in one of these languages of the New Georgia area. Most adult Solomon Islanders are multilingual.

The wider usefulness of the *Encyclopedia* outside of the Marovo Lagoon and beyond the Western Solomons is also evident in the photographs that accompany a large number of the entries. It should be quite possible for students in schools where the Marovo language (or another related language of the Western Solomons) is not present to identify species from photographs, and from there record its name and write down a story about the species. In effect, this potential shows that the *Encyclopedia* should be seen as a demonstration example of a way of promoting vernacular education on environmental topics in schools throughout Solomon Islands and beyond.

## Dialogues with science

In yet another approach, those interested in the book as a detailed example of local knowledge of Indo-Pacific biodiversity may consult the index of scientific names (pages 186-191), which directs the reader to the relevant Marovo entries. Note that in many cases one scientific binomial is connected to several Marovo names, and in other cases a number of scientific binomials, or even a whole taxonomic family, connect simply to one Marovo name. One good example of the latter is the Marovo fish name **kepe**, which covers what is in terms of Marovo's probable marine biodiversity is a very large number of "butterflyfishes" of the family Chaetodontidae. An example of the former is that of the skipjack tuna *Katsuwonus pelamis*, an extraordinarily important fish in Marovo, which is referred to by no less than twelve Marovo names, according to growth stage and other criteria (as seen in the Index of Scientific Names, p. 189). While the names used by biologists, botanists and other Western-trained scientists may thus be in varying degrees of convergence with the Marovo repertoire of names for the living things of sea and land, the information in the book provides good opportunities for close dialogue between Western science and Marovo science. This brings us to the next part of this document, which is a Teacher's Manual where a range of approaches to using the *Encyclopedia* in projects of vernacular education are suggested and explained.

To conclude this Guide to Using the *Encyclopedia*, I provide a brief list of selected further readings on the Marovo Lagoon, necessarily with an emphasis on my own publications since most other research work on the Marovo area has been short-term and is not widely available in journals or books.



## **SUGGESTED FURTHER READING ON MAROVO LAGOON**

Bayliss-Smith, T., **E. Hviding** & T.C. Whitmore 2003. "Rainforest composition and histories of human disturbance in Solomon Islands". *Ambio*, 32: 346-352.

Hviding, Edvard 2006. "Knowing and managing biodiversity in the Pacific Islands: challenges of conservation in the Marovo Lagoon." *International Social Science Journal* , 58(1) Issue 187: 69-85.

Hviding, Edvard 2003. "Contested Rainforests, NGOs and Projects of Desire in Solomon Islands". *International Social Science Journal* 55 (4) Issue 178: 439-453.

Hviding, Edvard 2003. "Between Knowledges: Pacific Studies and Academic Disciplines". *The Contemporary Pacific*, 15:43-73.

Hviding, Edvard & Tim Bayliss-Smith 2000. *Islands of Rainforest: Agroforestry, Logging and Ecotourism in Solomon Islands*. Aldershot: Ashgate.

Hviding, Edvard 1998. "Contextual flexibility: present status and future of customary marine tenure in Solomon Islands." *Ocean & Coastal Management*, 40:253-269.

Hviding, Edvard 1996. *Guardians of Marovo Lagoon: Practice, Place, and Politics in Maritime Melanesia*. Pacific Islands Monograph Series, 14. Honolulu: University of Hawai'i Press.

Hviding, Edvard & Graham B.K. Baines 1994. "Community-based fisheries management, tradition and the challenges of development in Marovo, Solomon Islands". *Development and Change*, 25(1):13-39.

Johannes, R.E. & Edvard Hviding 2000. "Traditional knowledge possessed by the fishers of Marovo Lagoon, Solomon Islands, concerning fish aggregating behavior." *SPC Traditional Marine Resource Management and Knowledge Bulletin*, No.12: 22-29.

Liligeto, Wilson Gia 2006. *Babata, our land, our tribe, our people: a historical account and cultural materials of Butubutu Babata, Marovo*. Suva, Fiji: Institute of Pacific Studies, University of the South Pacific.

**NOTE:** At present, work is under way to develop a database on the WWW about research on the Western Solomons. In this database, large numbers of publications by many authors, including a number of my own writings, will be made available for free download. This database should be operative by the end of 2008.

## **PART II: TEACHER'S MANUAL**

### **The *Encyclopedia* in use at schools in the Marovo Lagoon, 2005-2007**

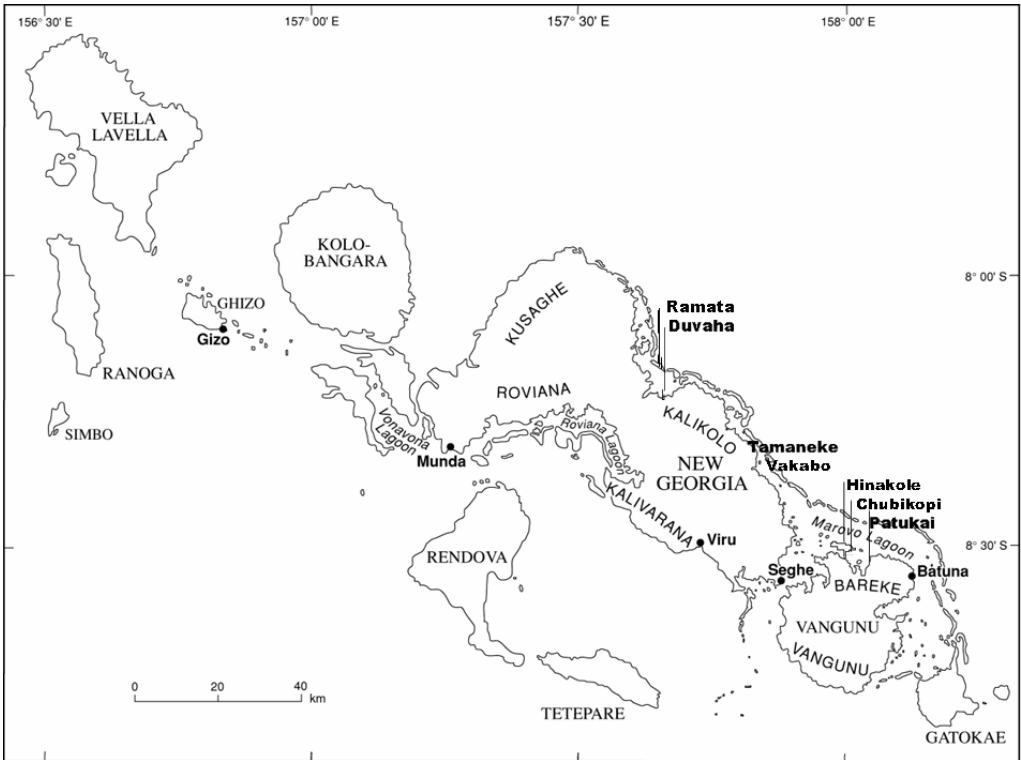
An urgent task facing the educational system of Solomon Islands (and educational systems elsewhere in the Pacific) is to develop new curricular materials that helps knowledge which is locally relevant and economically important (as a basis for the rural subsistence economy) to be communicated across widening gaps between village realities and school curricula. As discussed in Part I, this position is taken by the Solomon Islands Government in its *Education Strategic Plan 2004-2006*, which concludes that “[the] preservation of indigenous knowledge and skills is important for the sustainable development of the Solomon Islands” (p. 31). The *Encyclopedia* is therefore seen by UNESCO-LINKS and its author as a starting point for a process in which students in rural primary and secondary schools, in rural vocational training centres and in provincial secondary schools, throughout the area in the Western Solomons where the Marovo language is spoken as a primary language, can be actively involved in the bridging of generations, knowledges, languages and places – by carrying out assignments of environmental knowledge documentation as part of their ongoing school work.

The *Encyclopedia* was launched in Paris by UNESCO-LINKS on 27 January 2005 immediately after the workshop *Biological and cultural diversity: The challenge of local knowledge, practice and worldviews*, organized by UNESCO-LINKS as part of the International Conference *Biodiversity: Science and Governance* (24-28 January 2005). Following this, plans were developed by LINKS staff and the *Encyclopedia's* author to carry out explorative field trials of the book through a Pilot Project in relevant school

and community situations in Solomon Islands. The Pilot Project was intended as a demonstration and testing of new educational material in vernacular language, for promoting the transmission local environmental knowledge through dialogue across generations, from a foundation in the school system which highlights the connections between local knowledge and science. In September 2005, the *Encyclopedia* was launched for use in Solomon Islands and rapidly tested for practical use at six primary schools and one secondary schools:

- Chubikopi Primary School
- Hinakole Primary School
- Vakabo Primary School
- Tamaneke Primary School
- Duvaha Primary school
- Ramata Primary school
- Patukai Community High School.

The schools that participated in the Pilot Project are shown on this map:



These schools represent the range of educational institutions in the Marovo area, also in terms of covering the three long-established church denominations of the area (Seventh-day Adventist at Hinakole and Ramata, United Church [Methodist] at Chubikopi and Vakabo, Christian Fellowship Church [CFC] at Tamaneke and Duvaha). Patukai CHS is an inter-denominational government school. Class sets of the *Encyclopedia* were presented to all seven schools, accompanied by assignment sheets, basic writing materials and introductory talks in the Marovo language to gatherings of each school's students and teachers by author Professor Edvard Hviding and the Director of Secondary Education in the Solomon Islands Government, Mr. Aseri Yalangono. The participation of Mr. Yalangono underlined the role of the Pilot Project in terms of national educational strategy.

In addition, informal approaches to using the book were tried out at the village level in selected locations. Students were given assignments that were based on using the book as a starting point for practical outdoor exercises and conversations with old men and women and other local experts. By the end of the trial period in 2005, a total of 191 assignments, most in the Marovo language and some in the other local languages of the Marovo area, had been contributed by students at these seven schools. Most participating students had never before written a substantial text in their own language. Thus the Pilot Project was a remarkable success.

The Pilot Project was strongly supported in the participating villages, with parents and grandparents contributing particularly well to a spontaneous intensification of study by schoolchildren of their own people's indigenous environmental knowledge as represented in the vernacular language. Moreover the collected assignments range beyond the Marovo language, a proportion of them being written in Hoava, Bareke, Kusaghe and Roviana by students who are primary speakers of these other New Georgian languages. The varied and independent strategies chosen by schools and

individual students concerning the *Encyclopedia* are likewise remarkable, in that virtually no assignments reproduce text from the book, but instead rely on the book as example and inspiration. Indeed, a number of assignments expand on the book by pursuing information gaps and missing entries.

When completed assignments were collected from the seven schools by the UNESCO-LINKS team in September 2005, teachers and principals were encouraged to build on the lessons learned and to take advantage of the sets of books that had been provided to the school. When, after two years, I returned to the Marovo area in August-September 2007, I once more visited the seven schools, again in the company of Mr. Yalangono of the Ministry of Education and the field coordinators of the Pilot Project in 2005. Some interesting results were found at participating schools, as these examples show (with particular lessons highlighted in **bold**):

**HINAKOLE PRIMARY SCHOOL:** The principal and teachers have been using the *ENCYCLOPEDIA* consistently since 2005. **They have promoted the notion that the book presents “the science of Marovo people”, and schoolchildren engage with the book in intensive sessions at the school library under teacher’s supervision.** These sessions are used as foundations for discussions in class about local environment and resources. It was noted how **school-children are good at recognizing both places and organisms from the book’s illustrations;** for example, students actively identified plants from photographs, then consult the Marovo/English entries of the book. Teachers had also experimented with **taking a copy of the book along on class excursions to the forest, in order to name and discuss the plants encountered on the way.** The general impression is that the book fulfils its role as a tool that connects vernacular education and environmental studies.

**CHUBIKOPI PRIMARY SCHOOL:** The book continues to be used for environmental education, in ways similar to those of Hinakole Primary School. But unlike the Seventh-day Adventist (SDA) villages of Marovo where people use Bible, hymn book etc. in their own language (the Marovo language is an official language of the SDA church throughout the Solomons), United Church (UC) villages like Chubikopi depend on Bible and other church materials in the neighbouring language of Roviana. This pattern is widely believed to be a cause of erosion of Marovo language in the UC villages of the area. The principal of Chubikopi Primary School explained that since the arrival there in 2005 of the *ENCYCLOPEDIA* there has been a gradual reversal of the domination of Roviana over Marovo in this village: **the ENCYCLOPEDIA has become a source-book on proper**

**Marovo language**, which is important given that the SDA Marovo Bible has long been out-of-print. The *ENCYCLOPEDIA* was in fact (as is noted in its vernacular introduction) written in a rather traditional Marovo language, after strong encouragement in the 1980s and 1990s from school principals and other influential Marovo persons of all church denominations. **In the context of potential language loss and of the high local value placed on linguistic diversity, the unexpected role of the ENCYCLOPEDIA as source-book on “proper” Marovo language is noteworthy.**

**DUVAHA PRIMARY SCHOOL:** The school principal explained that since the initial activities in 2005, his school had carried out several exercises in which **the ENCYCLOPEDIA is used by schoolchildren in carrying out (individually or in small groups) their own “research programmes” with a focus on a particular fish, plant or other environmental phenomena.** The linguistic context at Duvaha is particularly interesting and challenging, as schoolchildren are from a range of CFC villages and speak one of the three vernaculars of Marovo, Hoava or Kusaghe – while the everyday language in much of the educational and church-related activities of the CFC is Roviana. At Duvaha, thus, **the ENCYCLOPEDIA with its multiple vernacular indexes fulfils an important role in bridging vernaculars, as well as in inspiring Roviana speakers to carry out similar documentation of local environmental knowledge in their own language.**

It was noted at all the schools that every teacher should have a personal copy of the *Encyclopedia*, so that he or she can work intensively with it, take notes in it, and so forth. **School principals are encouraged to make a personal copy available to every teacher.**

During the follow-up visit, class sets at the participating schools were supplemented, and new sets were provided to seven additional schools. At the new Community High Schools of Eucalyptus and Gerasi, college-trained science teachers made it possible to make **immediate use of the *Encyclopedia* in science studies through having students do field research and practical assignments**, including some activities to be carried out over the long Christmas break when students return to their home villages. At Bekabeka Community High School, where there is a newly established Distance Learning Centre, a facility with satellite broadband, internet access and computers, **plans have been made for a web-based version of the *Encyclopedia*** (see below).

As of early 2008, about 800 copies of the *Encyclopedia* have been distributed to the following 14 schools in Marovo (schools that received class sets in 2007 are marked with \*):

**9 Primary Schools:**

Sobiro\*, Batuna\*, Chubikopi, Hinakole, Vakabo, Tamaneke, Duvaha, Ramata, Viru Harbour (Tobe/Tetemara)\*

**4 Community High Schools:**

Bekabeka\*, Patukai, Eucalyptus (Kohio)\*, Gerasi\*

**Batuna Adventist Vocational School\***

The **Assignment Sheet** prepared for the Pilot Project in 2005 is included below. These assignments can be used by teachers at any other school in Marovo or elsewhere in Western Province, and can easily be adapted for use by teachers in other places.

**Making practical use of the *Encyclopedia*: advice to teachers**

In the Pilot Project carried out at seven Marovo schools in 2005, assignments were addressed in different ways at different schools, by different teachers and by different students. These are some examples of the approaches taken and the lessons learned, both during the Pilot Project and later:

- **Assign one topic to each student**, to cover as many different topics as possible. Ask students to do their assignment overnight, or in a couple of days, so that they can take their work home and get information from old people or other experts.

- **Arrange students in groups**, each with one resource person (elder or other expert) attached to it. The group will then carry out several assignments that cover the area of expertise of the resource person. **Let the resource persons visit the school.**
- Let students work in groups with **each group choosing one topic from each of the 5 lists of assignments.**
- **Let students write in their own language and their own handwriting, and avoid corrections by teachers.** The main thing is to allow students to develop their ability to write in their own language about local things that mean something to them.
- **Students should be allowed to work closely with the class sets of the *Encyclopedia* and be encouraged to take notes while studying,** to take the notes home with them for discussions with parents, and grandparents, and others.
- **Encourage students to bring to school samples of, for example, the leaves, flowers or seeds of plants, sea shells, or fishing gear.** This can then be used together with the *Encyclopedia* to promote discussion in class.
- **Encourage students to do their own small research programmes,** by collecting information on and writing about a particular fish, bird, plant or something else.
- **Ask students to try to find out about something that is not described in the *Encyclopedia*.** This assignment can result in new documentation of local environmental knowledge that is so far unwritten.
- **Have students present their completed assignments in class, in their own language, not in English.**

The original **Assignment Sheet** from 2005 is now presented, to provide inspiration for continuing work with the *Encyclopedia*. The Assignment Sheet is presented over 2 pages for easy photocopying or for saving as a separate file.



# UNESCO-LINKS

## Village-level Documentation and Transmission of Local Environmental Knowledge

### ASSIGNMENT SHEET FOR TEACHERS AND SCHOOLS IN THE MAROVO AREA

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Resource Book: *Reef and Rainforest/An Environmental Encyclopedia of Marovo Lagoon*, by Edvard Hviding. Knowledges of Nature 1, UNESCO-LINKS, 2005.

Assignment reports should be written in Marovo, Hoava or another language of the area, but if this is not possible, English can be used. Students should seek help with the language from parents or other adults. The main intention is to focus on knowledge rather than language, but the fullest knowledge is grounded in the language of the place.

#### **Assignment 1.**

#### **KATIGA TINGITONGA PA IDERE BA PA KAVO**

#### **Things of the sea and the river**

Write a one-page story, with drawings if you wish, about one of the following topics. You can go and ask men and women who know these things well to help you. Most of these topics are not directly described in the book, but by looking at the first four chapters you will get many ideas for doing these assignments about different living things in the sea, mangroves and rivers, and some of the special Marovo ways used catch them. Assignment G allows you to write more about anything from sea, mangrove or river that you have read about in the book.

- A. VIVINEINA KURA MAKOTO: The story of the basketwork trap for triggerfish
- B. VIVINEINA MORUMORU: The story of the large woven net for catching sea turtles
- C. VIVINEINA KUARAO: The story of the long circle of vines used to trap large numbers of fish on the reef
- D. VIVINEINA RUMU: The story of the dugong
- E. VIVINEINA DEO: The story of the mangrove mussel
- F. VIVINEINA KAMEJE: The story of the freshwater prawn
- G. VIVINEINA MEKA TINGITONGA PU OMIA HOI PA BUKA: The story of something you have read about in the book

#### **Assignment 2.**

#### **RIA HAE NA ROKOROKO ARILAEDI**

#### **The important trees and leaves**

Take a group walk from the seashore up into the forest. Ask a man or woman who knows about this to come with you. Find and talk about some of the useful plants listed below. Bring back to the village leaves, flower or fruit of the plants you find. Then find the plants in the book and talk about them. If you speak Hoava or Vaunu, use the book's name lists in those languages.

The resource person from the Team, or yourself, will write a brief report about your work.

(All these names of plants are found in Chapter 7 of the book)

BOI  
BICHEBICHERE  
IJOKO  
KURUVETE  
JILATONGO  
TANGOVO  
MUDU  
RIHE

NGOETE  
MARIA  
BUNI  
TALISE

BA MEKA HAE PU TA OMI PA  
TANIA INENE (or any other tree  
that you have seen on your walk  
in the forest)

**Assignment 3.**  
**VIVINEINA CHINABA IHANA**  
**Stories of ways of catching fish**

Teacher makes ten small groups, and allocates one of the following fishes to each group. First, each group reads about the fish in the book. Then, each group goes and talks to a man or woman who knows the ways to catch the fish. Each group writes a report of at least one page.

MAROGO  
CHAMUHU  
MAKOTO  
TOPA  
GHALUSU  
MEDARAE

LIPA  
IHANA ORAVA  
GHOHI

MEKA IHANA PU KO PA BUKA  
(a fish in the book)

**Assignment 4.**  
**RIA VAHU**  
**The fruit bats**

Write a short story about the different types of VAHU – fruit bat or “flying fox” – in Marovo. What are their names, what do they look like, where can you find them, and what do they eat?

**Assignment 5.**  
**VIVINEI MALIVI**  
**Custom stories / tales of before**

Write down a short custom story about anything which is named in the book.

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Finally, I move to a brief discussion of new ways of using the *Encyclopedia* in the educational system of Solomon Islands, again with ideas that can have Pacific-wide relevance.

### **New ways of using the *Encyclopedia***

In 2007, in meetings at the Bekabeka Community High School and Distance Learning Centre in southern Marovo, **suggestions were made for the making of a web-based version of the printed *Encyclopedia* for use in the SchoolNet system.** A web-based version can assist active environmental education in the vernacular of the area where the Distance Learning Centre is located. Participating students may carry out their own field research in their home villages, and use this to expand and revise the web-version of the *Encyclopedia* through a system with user name and password, a solution already offered by the SchoolNet website (<http://www.peoplefirst.net.sb/DLCP/default.htm>). The development of distance learning connections of Solomon Islands with the University of the South Pacific (USP) will also **make it possible for Marovo-speaking students at the USP main campus in Suva, Fiji to participate** in this dialogue about local environmental knowledge in the vernacular.

There are many plans now in the Marovo area for computer-based learning, including the “One Laptop Per Child” project at the Batuna Adventist Vocational School, which from 2007 is also a participating school in the UNESCO-LINKS *Encyclopedia* project. All this will require new approaches by teachers and students, and **the fast development of Internet access even in rural locations in Solomon Islands and elsewhere in the Pacific can open up entirely new ways of using the *Encyclopedia*.** What is certain is that many of the new digital teaching systems are in desperate need of locally relevant content. This is where a digital version of the *Encyclopedia* can be significant for the

Western Solomons and beyond. UNESCO's South Pacific Office and the UNESCO-LINKS office in Paris are looking into possibilities for making the *Encyclopedia* available in digital form on the World Wide Web.

A very different development in the Western Solomon Islands in 2007 resulted in another new use for the *Encyclopedia*. **About 40,000 people of the Western and Choiseul Provinces of Solomon Islands were directly affected by a major earthquake and tsunami on April 2, 2007.** Although the number of human fatalities was not so large, a large number of village houses, schools and other structures were destroyed and almost a year after have not yet been rebuilt. The Western Province capital of Gizo was severely damaged by the earthquake and directly hit by the tsunami. Relief efforts by government and international agencies include attempts at addressing the destruction of much educational infrastructure in large parts of the Western Solomons including the island of Choiseul. For example, **by August-September 2007 UNICEF was beginning to send out a large number of school kits (called School-in-a-Box) to tsunami-affected schools of Western and Choiseul provinces.** For some time yet, village-level education in the most heavily affected areas will have to take place without the usual facilities of buildings, libraries, and even schoolbooks.

Since the School-in-a-Box is for use anywhere in the world it does not include curricular materials. Therefore, **in September 2007 it was arranged for a copy of the *Encyclopedia* to be included in all school kits sent out from Gizo to disaster-affected areas.** For teachers, the book should provide an immediately available and locally well-adapted platform – in English and in Marovo which is the second-largest vernacular of the Western Province – for carrying out village-based environmental studies and vernacular education throughout the Western Solomons. Given the post-disaster lack in affected areas of educational infrastructure (including buildings and books) the access to even one copy of the

*Encyclopedia* can allow for **education which is practical, hands-on, and field-based, taking place largely outdoors and using the surrounding environments of rainforest and coral reefs.** Teachers at disaster-affected schools can take the Assignment Sheet included above as a starting point, and then adapt their approach to the situation.

## **The way ahead**

There are many possible uses for the *Encyclopedia* in Pacific Islands education. Some of the reasons, and suggested approaches, have been presented in Part I (Study Guide) and Part II (Teacher's Manual). Other uses are for the teachers and students of schools in Marovo, the Western Solomons, Solomon Islands, and other Pacific locations to explore.

The author of the *Encyclopedia* and of this document is more than happy to discuss the book and the many aspects of vernacular education with teachers and students engaged in this work. I can be contacted over the following e-mail address: [edvard.hviding@sosantr.uib.no](mailto:edvard.hviding@sosantr.uib.no).

TO all teachers and students: thank you – or as we say in Marovo, **leana uka** – for your interest in the *Encyclopedia* and for your contribution to promoting Pacific Islands languages and the science of Pacific Islands peoples.

The final section of this document is a selection of students' assignments from schools in the Marovo Lagoon. These examples show some of the types of work that can be done. There is a plan by UNESCO to compile many of these assignments from Marovo students, with translations by me, in a book that can also be made available in digital form.

# PART III

## STUDENTS' ASSIGNMENTS:

### EXAMPLES FROM MAROVO

#### EXAMPLE 1:

PATUKAI COMMUNITY HIGH SCHOOL, Assignment 3:  
**VIVINEINA CHINABA IHANA** / STORIES OF WAYS OF CATCHING FISH

#### **PAJARA TINONI**

Rino Ronta, Form 2.

Meka pajara orava mani chichinoko oro ko ria vinahilahila bumadi tania pu chura pa kolokolo tahona ba ta va legu. Doridori chikuna. Ko gone pa binubinuani oro moko ko va soku via pa sangava pa toba, mani gura keli va soku via pula kaduvu nana kolokolo kovukovuru, talavuni pa paleke Feburuari na ni kaduvu pa Mei, pa kikilakalana paleke ia nana kolokolo ta omi via. Meka ihana pu ta hivae na via tadi ria na tinoni holuholu ihana pu ene liloro pa buruburu siangavulu choda pa Marovo pa vaka chaba. Meka ihana binaso gete ta hami tinoni pa Marovo, roche va lea na via na borana pu la ta raro oro ta motu. Moko ta titisi va la gona soliti na borana pa kolokolo vavae. Soku via tunga na tinoni pu kani vaena oro kahivangania ia ihana pia. Ado gone hua nia noki katigae ria pu kahivanganina ia ihana pia.

Omijongana, na lumochona inomina tinina ia ihana pia. Pa Marovo pa tuari gura ta vae via pa rarusu idere oro pa saghauru, mana pa hua pia sana via pa ta ta chaba vae ia ihana pia pa tutupeka pa Kogu Marovo. Pa hua pia pula hiva nia hoi oro raka ia ihana pia ieda ngina tera via poata pa petorole oro mabo linada pa vinalu la pa toba, nada ngina vera va hele pa ngino ta nia ihana pia, ia hua sinana na vinaena ia ihana pia pa kolokolo da koe hita pia.

(English translation, by Edvard Hviding)

A red coral trout which is dark in colour and has blue marks that disappear if it is shot or when it is dead. The tail is square-shaped. It lives in areas of staghorn coral and may be plentiful in passages at the barrier reef, and rises in large numbers when it is time for it to spawn, beginning in the month of February and continuing until May, and the last quarter of the moon is when it can be seen in abundance. It is a fish that is well liked by the people who purchased fish and travelled around in Marovo in the 1990s on a fishing vessel [*refers to the live reef fish trade*]. It is a favourite food fish for us people of Marovo, its flesh is soft and nice if boiled in a saucepan or baked in a stone oven. It is good to sprinkle salt on the flesh when eating it. Then there are many people who do not catch it and do not like to eat this fish. The reason is that this fish sometimes likes to eat snakes.

It is beautiful, the colourful shine of the body of this fish. In Marovo before it could be caught in plenty at the seashore and on reefs, but now it is very hard to catch this fish near the mainland of Marovo Lagoon. Today, if you or I want this fish we will waste a lot of money on petrol or be tired from paddling to the barrier reef, and we will have to wait for this fish to bite, this is how hard it has become to catch this fish in the times we live in.

## EXAMPLE 2:

CHUBIKOPI PRIMARY SCHOOL, Assignment 2:

**RIA HAE NA ROKOROKO ARILAEDI** / THE IMPORTANT TREES AND LEAVES

### ROKE

Roke meka hae pu to pa tusu Huleo pa tuari. Kani hae getena via. Leleana via rokona ia mani ngira via hinana. Hina hua puta burengi chiri. Ia rokona oro korena ia iedi meka tonu hinadi. Ia hae pia ieni binorue te meka tinoni boruborue pa tuari, e Kitione Lipu na kilana. Totovenia ia tania meka koburu tania mana kani va omi nia ia mani legu. Raka omia hae pa Huleo pa tuari. Kagu atei nia raka be to pa goana gete, mana ngochangocharaini pa Huleo ieni to ia. Kani buma via na rokona mana huana orava. Huhua pula roko choba chiri inomina. Pula hou ia are ngina ta hina nia nga tinoni hinana.

(English translation, by Edvard Hviding):

**Roke** is a tree that grew on Huleo Island before. It is not a big tree. Its leaves are nice and have a strong smell. The smell is like that of parrot droppings. Leaves and bark smell the same. This tree was a medicine of a healer in the past, his name was Kitione Lipu. He told a child of his about this, but did not show it to him, and then he died. I used to see the tree at Huleo in the old days. I do not know whether it grows in the forest, but it certainly grows in the coconut grove at Huleo. Its leaves are not very green but reddish. They look like leaves of the **choba chiri** tree. If the wind is strong, people smell the fragrance of this tree.



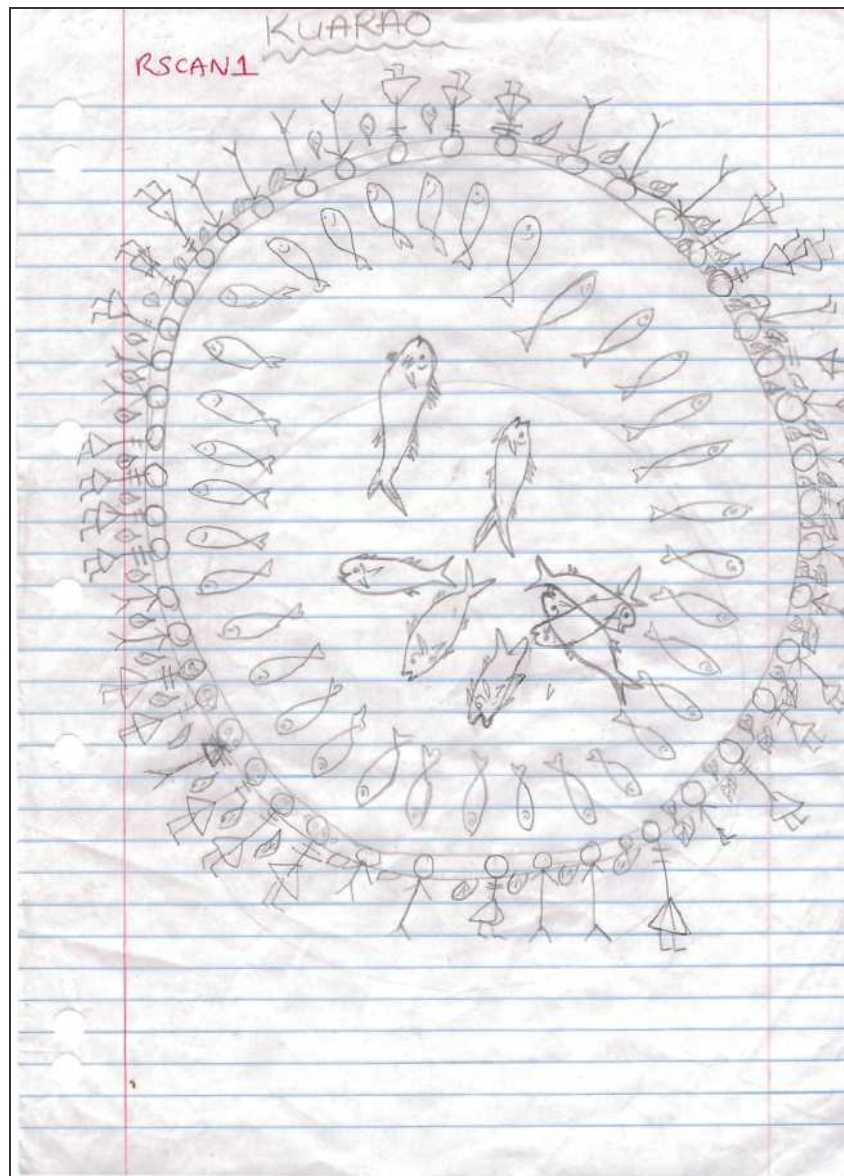
Mr. Defence Raja, Principal of Chubikopi Primary School, with a branch of the forgotten **roke** tree taken from the abandoned island of Huleo near Chubikopi. The assignment was written in response to a challenge from Edvard Hviding to "write about something which is NOT in the book". The chief of Chubikopi, Mr. Aaron Nonga, quickly established that the **roke** tree was not included in Chapter 5, and so sent some students off to the long-abandoned village site on the small island of Huleo to find it, and then to write an assignment about it based on his recollections of this once important tree. From 2005, **roke** trees have been growing again in the village of the Chubikopi people.

**EXAMPLE 3:**

RAMATA PRIMARY SCHOOL, Assignment 1:

**KATIGA TINGITONGA PA IDERE BA PA KAVO** / THINGS OF THE SEA AND THE RIVER

AN ILLUSTRATION TO ACCOMPANY A DESCRIPTION OF THE FAMOUS KUARAO FISHING (a long circle of vines handled by many people to trap large numbers of fish on the reef)





#### EXAMPLE 4:

#### TAMANEKE PRIMARY SCHOOL, Assignment 4: RIA VAHU / THE FRUIT BATS OR "FLYING FOXES"

An assignment structured in a table. English translations by Edvard Hviding (column headings are originally in English).

DIFFERENT TYPES OF VAHU	WHERE CAN YOU FIND THEM	WHAT DO THEY EAT
(1) NUNE or PUPULU	<b>PA KAURU RIKIROKO</b> (eg. <b>Edeve, kepu</b> , etc.) Under large leaves (eg. sago palm, <i>Epipremnum</i> climbers, etc.)	<b>ure lozi</b> <b>ure apuchu</b> <b>ure buni</b> <b>bonubonu</b> <b>ngochara</b> <b>ure edeve</b> <b>ure ngoete</b> <b>ura maria</b> <b>ure tiqe</b> <b>ure tatalise</b> <b>ure quava</b> <b>ure batia</b> <b>ure manioko</b>
(2) VAHU ISU	<b>HUHUA PUPULU PU MUCHA PA KAURU RIKI ROKO</b> Like <b>pupulu</b> , it sleeps under large leaves	
(3) LAGISO	<b>PA GOVARA HAE</b> In hollows in banyans and other large trees	
(4) SARUMU	<b>PA ROGA PETUPETUANI ORO ROGA PA TUTUPEKA</b> In tangled branches in the mangroves and tangled bush on the mainland	They all eat fruits of all these trees
(5) QIRAVE	<b>MUCHA LILORO / VASINA TA KADUVU RANE</b> Sleeps all around / in places reached by daylight	
(6) VAHU IDAKA	<b>PA TOBA, PA QOVARA IDAKA</b> In the barrier island, in stone caves	