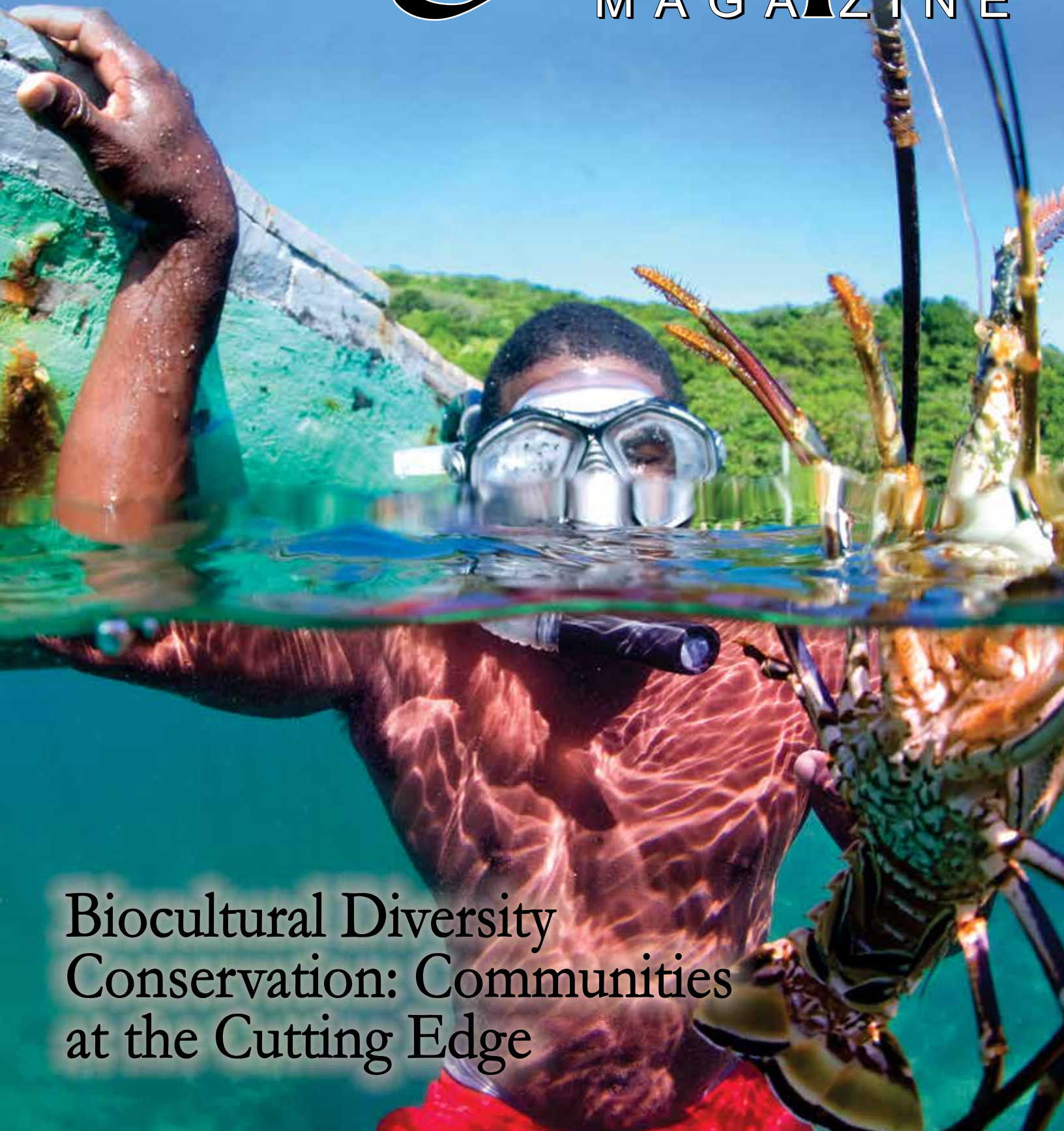


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# Langscape

MAGAZINE



Biocultural Diversity  
Conservation: Communities  
at the Cutting Edge

Langscape Magazine is an extension of the voice of Terralingua.  
It supports our mission by educating the minds and hearts  
about the importance and value of biocultural diversity.  
We aim to promote a paradigm shift by illustrating biocultural diversity through  
scientific and traditional knowledge, within an appealing  
sensory context of articles, stories, and art.

#### ABOUT THE COVER PHOTOS

Front: In Cayos Cochinos, Honduras, Mario Flores Aranda is promoting sustainable fishing, using a line loop for live capture so that undersize lobsters may be released unharmed.

Photo: Antonio Busiello, 2015

Back: Rice harvest in a rotational farming field in the Hin Lad Nai community of northern Thailand, at the end of the farming year or *quv*. After harvest, the land will enter *hsgi wa*, the first year of fallow in the rotational farming cycle.

Photo: Nutandai Trakasupakhon, 2016

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## TABLE OF CONTENTS

### EDITORIAL.....4 IDEAS

#### TUNUN KAYUTUKUN:

Words Have Power

Ilarion (Larry) Mercurieff

and Libby Roderick .....6

#### BIOCULTURAL FEATURES OF URBAN GARDENS AND YARDS ENHANCE PLACE-MAKING AND BELONGING IN SOUTH AFRI- CAN TOWNSHIPS

Duncan Haynes, Michelle Cocks,

and Charlie Shackleton .....10

#### INNOVATIONS AS PART OF SUSTAINABLE PRACTICES IN BIOCULTURAL LANDSCAPES:

Experiences from Rotational Farming  
in the Hin Lad Nai Community of  
Northern Thailand

Pernilla Malmer and

Prasert Trakansuphakon .....15

#### DESIGNING BIOCULTURAL PROTOCOLS WITH THE EMBERA PEOPLE OF COLOMBIA

Gabriel Nemogá, Justico Domicó,

and Alejandro Molina .....20

#### A NEW APPROACH TO BILINGUAL MARINE CONSERVATION SCIENCE EDUCATION:

The Collaborative work of Caribbean  
Communities and Marine  
Conservation without Borders

Thomas Dean King .....25

### REFLECTIONS

#### BIOCULTURAL DIVERSITY AS OBSERVED FROM THE HAWAIIAN NATION

Harvy King .....29

#### INTO THIS PROCESSED WOVEN LAND

Momoe Malietoa von Reiche .....34

#### A FEW SHORT JOURNEYS ALONG THE NATURE-CULTURE CONTINUUM:

Reflections on Community-Led  
Conservation

Jessica Brown .....35

### DISPATCHES

#### CAN THE CENOTES BE SAVED?

Biocultural Conservation  
in Yucatán, Mexico

Yolanda López-Maldonado .....42

#### BIOCULTURAL HERITAGE IN FISHING VILLAGES IN THE FAR NORTH OF SWEDEN:

Bringing Traditional Knowledge  
into the Future

Joakim Boström, Anna-Märta Henriksson,  
and Marie Kvarnström .....48

#### THE SWEEPING DANCE:

Cultural Revival, Environmental  
Conservation, and the Art of Broom-  
Making in St. Lucia

Laurent Jean Pierre .....52

#### THERE IS SO MUCH MORE TO A STORY THAN MEETS THE EYE:

Tales from the Dusun of Ulu Papar,  
Malaysia

Marina Aman Sham .....58

#### COMMUNITY AND BIOCULTURAL DIVERSITY CONSERVATION IN ETHIOPIA:

Learning from Each Other

Fassil Gebeyehu Yelemtu .....62

#### AN ANCIENT GAME OPENS THE DOOR TO INNOVATION IN THE FARMA VALLEY, SOUTHERN TUSCANY, ITALY

Andrea Giacomelli .....67

#### THE BIOCULTURAL FABRIC OF RENOSTERVELD:

A Unique Ecosystem at the Heart of  
the Swartland, South Africa

Emmeline Topp .....73

### WEB EXTRAS

#### THE POWER OF PLACE NAMES:

Embedding Bama Local Languages  
into the Australian Landscape

Michaela Jeannaise Carter, <http://bit.ly/2MtAroD>

#### BIOCULTURAL DIVERSITY ON THE BORDER:

The Yaylas of the  
Western Lesser Caucasus

Soner Oruç & Ceren Kazancı, <http://bit.ly/2JW7SBA>



# Innovations as Part of Sustainable Practices in Biocultural Landscapes

Pernilla Malmer and  
Prasert Trakansuphakon

## EXPERIENCES FROM ROTATIONAL FARMING IN THE HIN LAD NAI COMMUNITY OF NORTHERN THAILAND

ROTATIONAL FARMING IS TRADITIONALLY practiced in a variety of biocultural landscapes across the world and contributes to sustainable livelihoods and biodiversity conservation. Despite this, it is sometimes viewed as unsophisticated and even illegal, in particular, by powerful actors who prefer forests be used for exploitation or as “wilderness”—where no people should live. However, rotational farming landscapes have been inhabited and nurtured since time immemorial, and their richness in biodiversity, when applied along with traditional practices and tenure rights, can play an important role for biodiversity conservation. This is why the Hin Lad Nai community, in the Chiang

Rai Province of northern Thailand, decided to document its knowledge, innovations, and learning over generations: first, for the benefit of the community, as a means to mobilize its knowledge; and, second, to help others understand that rotational farming can be sustainable and that it supports a good life, enriching rather than destroying biodiversity.

“Rotational farming can be sustainable, enriching rather than destroying biodiversity.”

In rotational farming, as in all farming systems, new knowledge is continuously innovated, tested, and validated as part of communities’ efforts to maintain and enhance their livelihoods and to adapt to new needs and environmental and societal changes. Validation of knowledge in Indigenous and local communities is often about building evidence for the governance and management decisions for nurturing biological and cultural diversity that are made on a daily basis within territories.

**Above:** Fallow area where P’dav trees have been actively promoted. Hin Lad Nai farmers conduct experiments to maximize the agricultural benefits of P’dav. Photo: Naruchai Sudsearee, 2016

**Left:** Like many rotational farmers in the Hin Lad Nai community, Hsau Weij is an innovator, developing new methods that lighten his workload while increasing the harvest. Photo: Nutdanai Trakansuphakon, 2016





This requires sorting out which aspects of knowledge are useful and legitimate—a process that is specific to each knowledge system and the place where it is operational. All of our diverse cultures and their knowledge systems, including Western science, have their own mechanisms for how validation processes are maintained, with unique institutions, actors, and practices.

A good example is how the Hin Lad Nai farmers innovated a new practice in their use of a common tree, called *P'dav* (*Macaranga denticulata*), growing in their rotational farming areas. Among the Karen communities, P'dav is known for growing in any kind of forest or soil and for contributing to soil regeneration. The leaves of P'dav retain water well when it rains, and they also decay quickly, enriching and fertilizing the soil. The farmers know from practice and continual

observations that the soil has improved because it is soft, black, and full of earthworms.

Thirty years ago, Mr. The Ne, one of the original settlers in Hin Lad Nai, was worried about Hsau Weij, his youngest son. He said to him,

“My son, you can’t work in rotational farming fields like your other brothers and sisters, because you are small and in poor health. But despite this, there is a way to ensure your rice grows well and that your harvest is as good as the others’, but you will work less than them, which is good for you as a small boy.”

The solution was to select a fallow field covered with P'dav trees. The P'dav is a small tree, characterized by a soft trunk and branching roots that spread at shallow depths around the stump. It propagates only from seeds and not with shoots from the trunk.

## Innovations Emerging from Ancestral Knowledge and Practices

Hsau Weij, now fifty-nine years old, acted on what his father had taught him, combined it with the knowledge of the elders, and adapted those teachings in his own experiments on P'dav planting methods, tree caretaking, and seed collection. Hsau Weij selected a fallow area covered with various kinds of plants and grass, particularly some well-known grass varieties that are not good for the soil, such as *Nauf ne si* (the Karen name). (The use of the word “fallow” is an approximation of the Karen agricultural practice of maintaining soil fertility, which involves counting the number of years after a field has been intentionally burned; sowed with rice, vegetables, and root crops; and its recovery observed. Here, “fallow” should be understood as a field that has been intentionally burned and sowed with the traditional food crops, and then seeded with P'dav after the rice harvest.) At first, this fallow looked like any other, but the soil was unsuitable for farming and the rice yield was low. Based on lessons learned from his father, Hsau Weij noticed that P'dav seeds ripen in July and can be collected from August to September after weeding the *nauf moj pgaj* (“Mother of grass”). Hsau Weij collected good seeds from five- to six-year-old P'dav trees in other places and sowed them in the fallow area.

Planting P'dav seeds is often done with the assistance of a knife scabbard with a small hole in the bottom, which allows the seeds to fall to the ground slowly and steadily. Hsau Weij tied the knife scabbard to his waist, and with every step he took, the P'dav seeds fell to the ground along the line where he walked. After a few months, small P'dav seedlings started to sprout along the field. Many farmers now use this method for sowing seeds.

## Farming a P'dav Field and a Normal Fallow Field

Another farmer, Mr. Somboon Siri, received P'dav fallow lands from his uncle, and fourteen years on, he continues experimenting with P'dav; he has six fallow tracts, three with P'dav and three with other trees. In Somboon's experience, farming the P'dav fallow land requires less weeding than farming among other trees. Also, the produce of rice



An example of a young P'dav tree in a rich fallow field. Photo: Naruchai Sudsearee, 2016



P'dav trees shed their leaves, and these keep the soil surface cool, allowing it to hold rainwater and eventually turn into black, fertile soil suitable for farming. Photo: Naruchai Sudsearee, 2016

is higher: land with P'dav trees yielded ten tangs (one tang = ten kg) more rice from the same amount of seeds.

Another finding from Somboon's experiments is that rice fields with P'dav have fewer damaged plants, pests, and weeds compared with normal fields. Plants in the P'dav field are healthier and stronger than in the "normal" fallow fields. This means that rice or other crops in the P'dav fields have better immunity to disease than in normal fallow fields. Somboon adds that crops from P'dav fallow fields are more reliable because they are less susceptible to damage from rain.

*"Hsau Weij acted on what his father had taught him, combined it with the knowledge of the elders, and adapted those teachings in his own experiments."*

When he accidentally left a part of a P'dav fallow field uncultivated, Somboon noticed how quickly the P'dav trees grew. The big P'dav trees are now a source of seeds to be planted in other places or fallows. He also noticed that wildlife (such as birds and rats) ate the seeds and dispersed them through their dung in near and distant fallows. Therefore, by maintaining this P'dav grove, he can leave the distribution of P'dav to nature instead of having to replant seeds himself.

## Benefits of P'dav Trees

Humans and animals benefit from P'dav forests in myriad ways, from the abundant fruit they bear to the firewood they provide. The large quantities of fruit from P'dav trees attract different animals, both domestic and wild, such as birds, wild chickens, squirrels, rats, buffalos, cows, and bees. This makes for rich foraging for animals and hunting and trapping for humans.

From the scientific literature, it is clear that P'dav provides positive physical attributes, such as shade, that help to control the spread of grasses and weeds that degrade the soil. Two- to three-year-old P'dav trees shed their leaves, and these keep the soil surface cool, hold rainwater, and turn into black, fertile soil suitable for farming sooner than the soil in normal fallows. P'dav trees grow quickly and outcompete other tree species. In addition, the large leaves of P'dav trees make them suitable for growing shade-loving plants such as coffee.

Last but not least, farmers say that P'dav can help recover poor soil after periods of intensive crop cultivation, allowing an area to be regenerated and farmed again in only five years. In summary, this innovation leads to more reliable production in the rotational farming system.





In Hin Lad Nai rotational farming, rituals are celebrated at each stage of cultivation.  
Photo: Pernilla Malmer, 2016

## The Art of Governing Rotational Farming Diversity

The discussion among the rotational farmers continues: each family can see advantages and disadvantages of these methods, depending on the specific location of their rotational areas and their family's circumstances. For one thing, farmers are still struggling to find a balance between grass and tree cover. Cultivation is difficult when there is too much grass, but the grass is good for fodder and for wild animals to hide in. Additionally, different fallow stages provide for different needs for both humans and wildlife. For example, it is easier to cultivate after burning when the grasses have been consumed. In the first year of fallow, the grasses begin to return. In following years, more grasses, along with palm trees, start growing, and these provide fodder for wild animals. Later in the rotation, dense trees provide cover for animals, especially while breeding and raising young, from predators and human hunters. Many of those trees blossom and bear fruit. From the second year and onwards, the fallow is common land; this means that anyone in the community can go and harvest root crops, aubergines, medicinal plants, and all that grows there after the first year's initial sowing and harvest. Without the fallow, there would not be vegetables to collect, and many varieties of seeds would be lost, animals would decrease, and endangered species would become extinct.



A community leader, Chaiprasert Phokha, carefully storing root crops in the field.  
Photo: Pernilla Malmer, 2016

As a poem of Karen communities says, “*htof loo auf taz saf, pgaz k'nyau loo auf bu wa*,” meaning, “birds find fruits, human find white rice.” The knowledge of the Hin Lad Nai community is expressed through memorization and summarized into poetry, stories, and songs called *hta*. These represent a collective knowledge system based on everyday life experiences. Knowledge that is expressed and documented in written form (as in this article) can be seen as a translation that helps us as outsiders grasp the richness of Hin Lad Nai knowledge and practices.

## We Followed the Elders' Steps, We Followed the Old Man's Steps

The Karen elders express ancestral wisdom in a *hta* that says,

*Pgaz mi le plez maz div iz, pgaz pgaj le plez maz div iz  
P' maz paux pgaz mi av hki, P' maz paux pgaz pgaj av hki  
P' meij t' maz taj div iz, lauz maj moj dauv paj av miz*

Loosely translated, this means that the younger generation needs to follow in the steps of their elders, or else they will lose their ancestors' knowledge and way of living.

The P'dav experience is one among many innovations emerging from farmers' traditional knowledge and practices in Hin Lad Nai that

strengthen the existing evidence of the sustainability and positive effects of their rotational farming system on wildlife, biodiversity, and biocultural and spiritual values.

Hin Lad Nai is part of a network of volunteering communities in different parts of the world, piloting a “multiple evidence-based approach” in which Indigenous, local, and Western scientific knowledge systems are seen as equally valid, legitimate, and useful for sustainable development. A multiple evidence-based approach emphasizes the value of letting each knowledge system speak for itself, within its own context, and the validity of knowledge that occurs within, rather than across, knowledge systems. It is often argued that for knowledge to be valid it needs to be tested through scientific experiments. However, in many Indigenous and local knowledge systems, knowledge may be tested and evaluated through everyday practice or approved by an elder or other experts, such as a shaman, representing the recognized institutions and expertise within that knowledge system. Bringing knowledge together, mobilized from a diversity of knowledge systems, on their own terms, creates an enriched picture from different perspectives.

In the case of Hin Lad Nai, innovations also include diversifying and cultivating new crops and new products originating from other knowledge systems, such as bamboo and honey, that have provided new sources of income. However, Hin Lad Nai has never taken for granted the appropriateness of any new knowledge: they bring in innovations that appear relevant from different sources and test them. If they are

not useful, they are not adopted. The community members trust their own validation of new information, through their own unique knowledge system.

The process of documentation and research have brought new insights to the fallow system of Hin Lad Nai. It has made the elders realize the need to articulate the dual contributions of the rotational farming system

“A multiple evidence-based approach emphasizes the value of letting each knowledge system speak for itself, within its own context.”

to food production and wildlife conservation. “We have to take up the challenge to present the evidence we have from our Indigenous and local knowledge to outsiders who think that fallow systems are destroying the environment and forest,” says Prasert Trakansuphakon, from the Pgakenyaw Association for Sustainable Development, who has partnered with Hin Lad Nai on its community research. This evidence from Indigenous knowledge can contribute to better policy- and decision-making. Trakansuphakon also insists that policies for development and conservation must be endogenous in order to be sustainable and not destructive for the communities and their belief systems and practices. “Self-governance is part of the right to self-determination,” he concludes.

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*Prasert Trakansuphakon belongs to the Karen people in Thailand. He has been a leader and practitioner of social development among Indigenous peoples in Thailand and Southeast Asia for over twenty years. His expertise comprises Indigenous knowledge; natural resource management, in particular rotational farming; Indigenous education; and Indigenous peoples' rights. He holds a PhD in Sociology.*

## Further Reading

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# Langscape

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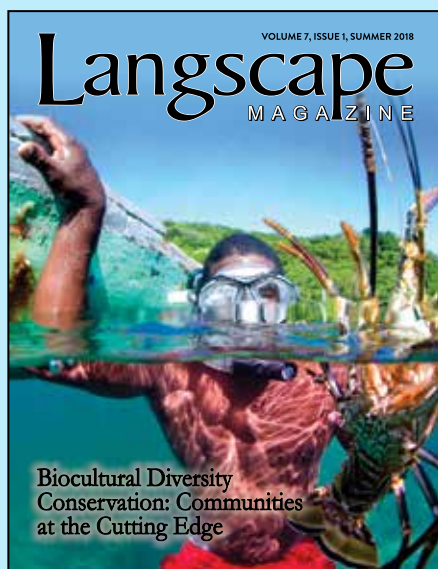
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Unity in Biocultural Diversity

**Terralingua n 1:** the languages of the Earth, the many voices of the world's diverse peoples. **2:** the language of the Earth, the voice of Mother Nature. **3:** an international non-governmental organization (NGO) that works to sustain the **biocultural diversity of life** – a precious heritage to be cherished, protected, and nurtured for generations to come. ¶ From Italian *terra* 'earth' and *lingua* 'language'



*"A growing critique from civil society, not least Indigenous peoples, also underlines the need to shift from heritage as an exclusive expert domain towards one building on local community perspectives and values that often defy narrow nature–culture distinctions. Where nature conservation just a few decades ago was dominated by natural scientists and management experts, it today includes Indigenous and local community voices often stressing interlinkages through local knowledge, livelihood practices, and age-old landscape connections."*

*—Peter Bille Larsen and Gamini Wijesuriya, as cited by Jessica Brown*

