IAFN RIFA

Analog Forests #14 – October 2014

Participants in analog forestry workshop,
San Francisco las Flores, Guatemala.
Photo: Eduardo Aguilar

What is a forest?

Ranil Senanayake
Founding member, IAFN

*The following article is a condensed and edited version of an essay that appeared in the September 25, 2014 edition of **The Island**, a Sri Lankan newspaper. **The original article can be found here**.*

What is known by science reveals the forest as an ecosystem of tremendous complexity. But surprisingly, trees constitute only 1 % of its total biodiversity, 99% is organisms other than trees. Thus biodiversity is what gives a forest its identity.

The international response to the loss of natural forest ecosystems can be seen in the massive global investment in forestry. However, a great majority of these revegetation programmes around the world do not seem to provide an environment that is hospitable for sustaining local biodiversity. A situation brought about by neglect of the ecological and biodiverse reality of a forest in planning. There is no excuse to be found in the argument that there was no information. Forest Ecology, as much as Wildlife Biology has had long and distinguished histories in the scientific literature. The result of this neglect was that institutional forestry activity became centered on the growing of even aged monocultures with fast growing trees with no requirement to attend to the rehabilitation of forests.

Monoculture plantation of melina, *Gmelina arborea.* Photo: A. K. Dickinson

In many non-European societies throughout the world the protection or growing of forests often took on different social or religious meanings. A study of various forest formations in northeast India suggests that local 'sacred groves' may be the last refuge for remnant populations of certain species. In Sri Lanka, the concept of sacred groves has generally been associated with Temples or Shrines. The Temple Forest or Aranya has been referred to in Buddhist texts as far back as 200 A.D often it is the best sanctuary for native biodiversity in the whole village area.

Biodiversity is what gives a forest its identity. In this context, a forest must also be appreciated as a constantly changing, growing entity. From the small bushes of an area after a fire to the tall growth fifty years later, the species and architecture goes through many changes, all expressions of the growing, maturing forest.

The identity of a natural forest ecosystem can therefore be established. It has a certain state of complexity, biodiversity, soil quality, stability, ecological identity etc. The most mature or least disturbed providing the measure of best state. The species and patterns of ecosystems within a given natural forest will and does change over time, but all such changes involve species that were original to the area, in patterns that follow the natural seral succession of that forest. Here, seral succession refers to the patterns of change that occur if a patch of forest is cleared and left to natural regeneration processes. Often a progression from grassland, to scrubland to early forest to mature forest is seen.

The identity of an anthropogenic forest, while being defined by exotics and deviation from natural patterns, poses a complex but essential question; especially in the light of the need to manage for sustainable production and for value adding in agriculture. An anthropogenic forest can range from the modified, natural forests of the **Kayapo** of Brazil, which is comprised of a diverse mix of natural species, to pine monocultures in Sri Lanka, which are totally comprised of an exotic species from the Caribbean region. However, as many of these monoculture plantations have been developed and funded as forestry, it is crucial to address the relative values of each type of anthropogenic forest in relation to its performance as a forest.

Anthropogenic forest applying analog forestry and natural succession methods. Photo: A. K. Dickinson

The values that can be ascribed to a forest are manifold and range from social, to ecological to economic. These values have been long discussed on national and international fora and are being summarized by the international convention processes and in intergovernmental discussions. Some examples are: The **Convention on Biological Diversity** (CBD), the **Intergovernmental Panel on Forests** (IPF) or the **Commission on Sustainable Development** (CSD).

One of the primary values that have been ascribed to a forest is the value of extractive products such as timber, medicines, resins, fruits, nuts etc. Although timber has been the highest profile product, emerging markets for and values of the other wide array of products

is now recognized as an area of tremendous future growth. Yet, more important in many ways are the forest services in terms of ecosystem output all of which still needs to be addressed.

In Sri Lanka the restoration of our forest ecosystems is a national priority, but when setting about the task, it will be useful to clarify if we seek to restore natural or anthropogenic ecosystems? If anthropogenic, are we going to invest in even-aged monocultures or high diversity tree cover? To be aware of where we are going is a useful way in which to begin a journey.

Analog forestry and integrated land management in Sri Lanka

Simon Riley

Global Agroecology Alliance

*This article was originally published on the Landscapes **blog of the Global Landscapes Forum** by Simon Riley, an agronomist and independent researcher with the **Global AgroEcology Alliance** and a development reporter for the **Global South Development Magazine**.*

With the **GLF14** approaching and my residence in Sri Lanka drawing to an end, I took the opportunity to visit the **Belipola Arboretum and Forest Garden**, a living laboratory where one integrated landscape approach has been quietly developing for over three decades. Upon my arrival in the Central hills which encircle the remote rural village of Mirihawatta, I was presented a panoramic view of two different systems of land management – and two different models of rural development – presented side-by-side in striking relief. The contrast is utterly remarkable.

Belipola forest garden (right) and conventional land management practices (left) Photo: Sion Zivetz

On the crests of the surrounding hills, the native forests have been entirely removed and pure stands of Eucalyptus have taken their place. Fires are employed to clear the understory of

weeds, leaving nothing but blackened stumps of guinea grass below. Further down on the slopes, the land is entirely consumed by small vegetable plots, cultivated intensively by the villagers who rely heavily on synthetic fertilizers and pesticides for their production. The severity of soil erosion is visible at a distance, as is the lack of proper terracing, contour bunds, or other soil conservation measures. At mid-day, the sun beats down on dry, degraded soil where once-common birds, mammals and reptiles have now become vanishingly scarce.

Belipola, on the other hand, is a 17 acre oasis in this otherwise troubled landscape, where lush vegetation rises high above the forest floor. The massive broadleaved evergreens, stately palms and various fruit trees support an array of vines, lianas, orchids and other epiphytes, while a host of herbs, shrubs and cycads crouch below. The air is cool and humid; the earth is soft and damp. Majestic Hornbills can be seen perched among the branches. Although it was founded relatively recently, the area very nearly resembles an old-growth tropical rainforest. And this, I am told, is precisely the point.

Sion Zivetz, who joined the project in late 2012, explained during a tour of the estate that when it was first established in 1981 by Dr. Ranil Senanayake and the NeoSynthesis Research Centre, the intention was to develop, test and refine the practices which would later be known as Analog Forestry. Briefly, the method consists of selecting forest species – both native and introduced – which are economically valuable while at the same time analogous, in physical structure as well as ecosystem function, to those present in a naturally occurring forest at various stages of succession (in this case, the climax profile of an upland tropical rainforest). In this way, the land serves to support biodiversity and maximize ecosystem services while at the same time bolstering rural livelihoods and promoting food security.

Bearing all this in mind, I began to take a mental inventory of the species present as we walked along the trails. Some of those not recognizable to me as indigenous were introduced to me by Sion, and I gradually came to recognize for myself the striking number fruits, nuts, beverages, spices, timber, fuel, medicines, cut flowers, and other valuable articles which this forest yields. Moreover, I arrived at a time when the need for more sustainable land management practices was particularly vivid: nine months of drought and the near total degradation of the catchment basin's forests had so depleted the water table that many of the already impoverished surrounding communities had lost access to drinking water.

When I met with Dr. Senanayake at his home in Colombo, this situation was in no way a surprise to him: he explained that he has been warning for years about the likely environmental impacts which would result from the policies of the nation's forestry and agriculture departments, and how these would in turn harm the local residents. With a combination of wit and fury which made for some highly entertaining conversation, he relayed his frustration with the situation in Sri Lanka. "You visited Belipola?" he remarked with mock surprise, "No one from the forestry department has ever visited. None of the big NGOs has ever visited, either".

Still, he seemed hopeful – in his own way – at the prospect that today's generation was increasingly mobilized in support of a landscape level approach to land management, that a

holistic approach was gaining greater credence within the development community and that the movement to enact supportive policy frameworks was gaining momentum. When asked for his opinion on "why now?", the answer was simple:

"It's about time!"

A Visit to La Pedregoza Natural Reserve, Colombia

Athina Koutouleas

Sustainable Agriculturalist

Athina Koutouleas is a sustainable agriculturalist from Australia. Starting in May 2014, she and her partner embarked on a bike tour across Latin America, visiting sustainable agriculture and analog forestry sites across the continent. Reports from her journey will appear on IAFN's site periodically.

Nursery with Copaifera pubiflora seedlings. Photo: Tina Koutouleas

Athina Koutouleas is a sustainable agriculturalist from Australia. Starting in May 2014, she and her partner embarked on a bike tour across Latin America, visiting sustainable agriculture and analog forestry sites across the continent. Reports from her journey will appear on IAFN's site periodically.

As we fly over the great Orinoco River, we begin to sense that something special is happening in this unique and seemingly isolated part of Colombia. It is the rainy season and we are on our way to visit Reserva Natural La Pedregoza, a reforestation project run by Canadian Dexter and Kochurani Dombro, a lawyer and dentist, respectively, who have turned their skills to conservation. We are told that during this time of year the roads can often be flooded by the heavy rains that fill the Orinoco and Río Bita, so the sense of adventure is heightened as we speedily bump our way down the 67 kilometres of gravel road to get to the property. We get twilight glimpses of the surrounding vastness, but arrive in the black of the night. The next morning we are awoken by the sounds of migrating birds and step out to witness a spectacular view of the farmland. The property is reminiscent of outback Australia with its deep hues of red earth and pale blue skies.

We spend the days visiting sections of the huge 2800-hectare site, sometimes by foot, other times by car and yet others by my favourite mode: canoe! There is a wide variety of plantation sites, which include production of eucalyptus and acacia, which are grown alongside African honeybees. Other products include flor de jamaica (hibiscus), marañon (cashew), tamarind, mandarin, lemon, oranges, guava, neem, moringa, melina, and jatropha (used as a biofuel). Along with this commercial plantation, Dexter and Kochurani are dedicated to saving important native species which are becoming more and more scarce each year due to the loss of local knowledge about seed collecting.

Morichal vegetation in Vichada, Colombia. Photo: Tina Koutouleas

The focus on conservation, reforestation and productivity is not only present but well organised. The organisation offers a “CO2 Tropical Trees” program which plants native and tropical trees for the purposes of carbon sequestration. Thus, environmentally conscious companies and individuals looking offset their emissions back home can contribute to the cause by investing in wood plantations. They also conduct an annual river turtle rescue program including an egg hatchery and juvenile turtle release area.

After spending a few days on-site, we dig some token holes for some seedlings – drops in the ocean, as over 1 million trees have been planted since 2006. Staring into the clear night sky as the nocturnal inhabitants come to life, you really begin to understand the magnitude, importance and impact that La Pedregoza has on the local and greater community.

IAFN thanks all authors for their contributions. Photos are by the author of the respective articles, except where noted. To contribute to a future IAFN bulletin, please contact Adam Kabir Dickinson, Knowledge Management Officer at kabir@analogforestry.org