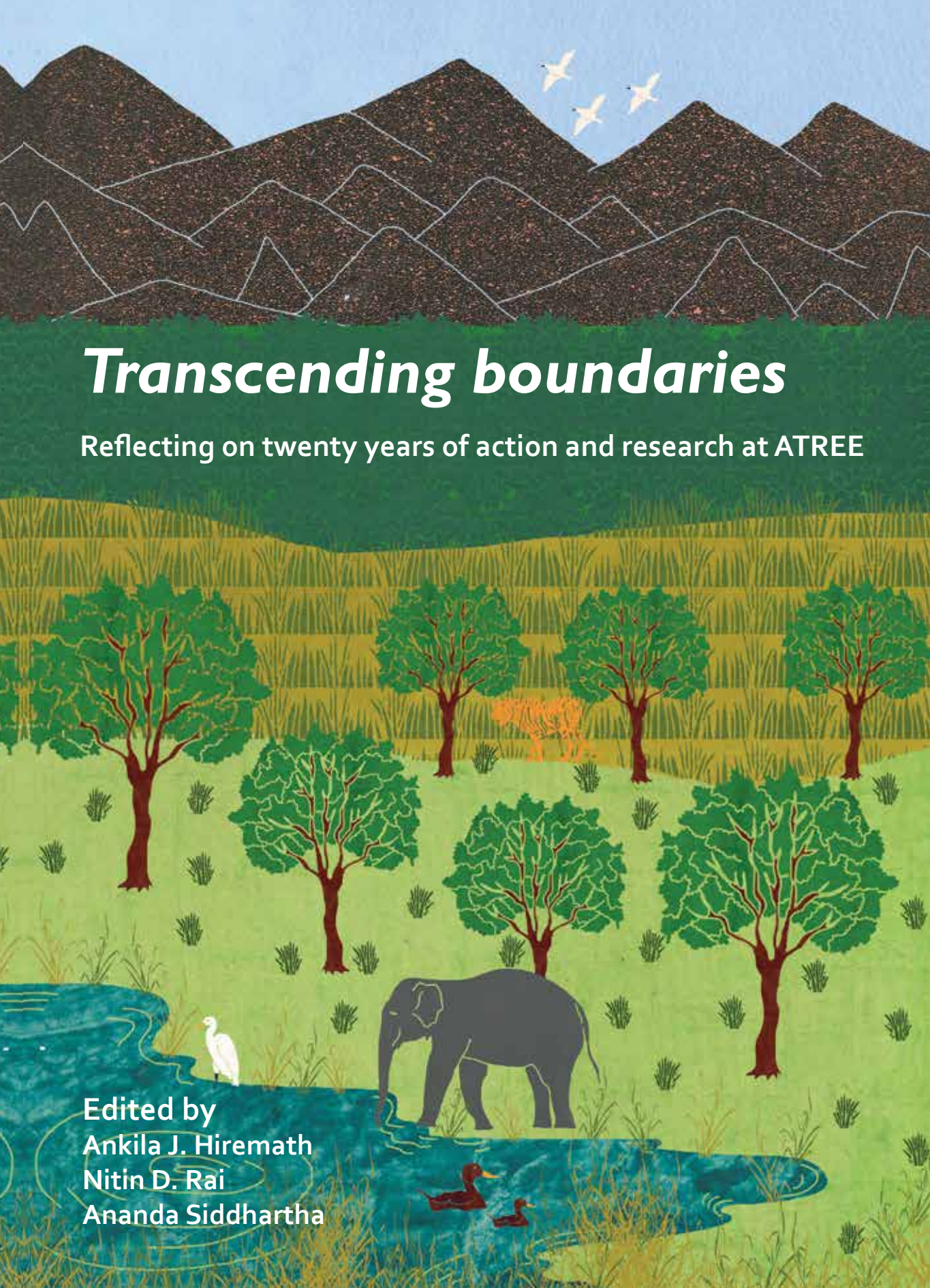

Transcending boundaries

Reflecting on twenty years of action and research at ATREE

Edited by
Ankila J. Hiremath
Nitin D. Rai
Ananda Siddhartha

First published in 2017 by
Ashoka Trust for Research in Ecology and the Environment (ATREE),
Royal Enclave, Srirampura, Jakkur PO.
Bangalore - 560064, Karnataka, India.
Website: www.atree.org
Tel: 91-80-23635555 | Fax: 91-80- 23530070

ATREE regional offices
Eastern Himalaya Office
C/o Theyzong Heem, Near Brahmakumari's
Development Area, Gangtok 737101, India
Tel: 91-3592-206403

New Delhi (Liaison and Development)
C-86, 2nd floor, B.K. Dutt Colony
New Delhi 110003, India.
Tel: 011-24603134

W.Q. Judge Press,
97 Residency Road,
Bangalore - 560 025.
Phone.: 91-80-2221 1168, 2224 0561

Recommended citation:

Hiremath, AJ., Rai, ND., Siddhartha, A. (Eds.) 2017. Transcending boundaries: Reflecting on twenty years of action and research at ATREE. Bangalore: Ashoka Trust for Research in Ecology and the Environment.

Design and Layout: Suneha Mohanty

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Tryst with *Lantana camara**

R. Uma Shaanker and Gladwin Joseph

* The article is dedicated to the memory of the late Dr. Ramesh Kannan, whose untiring work at ATREE built a vibrant research-driven programme around lantana that innovatively bridged conservation concerns with livelihood needs of the Soligas of Malai Mahadeswara Hills of Karnataka, India.

A LONG VOYAGE

The East India Company (EIC) is perhaps the single largest company in the world that can claim the distinction of moving the largest number of plant species across continents, at a time when voyages were relatively few and far between. In one such tranche, the EIC transported some 300 plant species, mostly from the Caribbean Islands and Brazil, via Europe, to the first botanical garden in Calcutta (now Kolkata), in India. The shipment was at the instance of the Court of Directors of the EIC who implored the Agricultural and Horticultural Society of India to naturalize species, many of them useful, both for food and ornamental purposes.

Among the plants was *Lantana camara* (hereafter, lantana). Like many of its co-passengers, it travelled from the New World to Europe in the late 1660s. After a relatively long transit of nearly a century in different European botanical gardens, including Kew Gardens in London, it resumed its journey to India, arriving in 1807[1]. It was probably transported for its perceived medicinal and ornamental values. The plant can be typically classified as a shrub, but often attains alarming proportions, growing into a woody thick-stemmed shrub, bearing innumerable brightly colored flowers. The flowers, with their copious nectar, attract pollinators, especially butterflies. The berry-like fruits of the plant are dispersed by birds and mammals. The plants produce a distinct odour, most likely attributed to some terpenes that deter insects. The plants are hardy, and easily coppice even after being destroyed by fire or clipped manually.

Between, 1800 and 1900, the period during which the EIC was actively expanding its hold on the Indian sub-continent, lantana followed suit, finding its way into all the botanical gardens located in major British cantonments in the country, thanks to the efforts of British horticulturists. Trimmed of its otherwise unruly growth, the plant served as a perfect ornamental and hedge plant.

THE DELUGE

A hundred years into its stay in India, and naturalized, lantana began to explore the neighborhoods of the British cantonments, unobtrusively but steadily, as the British were preoccupied with India's independence movements. It began to be noticed far beyond the cantonments, in open lands, agricultural field, plantations, and in forests. Freed from pruning, the plant lay bare its enormous ability to grow and reproduce, leading to an explosion of its population. Beginning in the last century (early 1900s), the plant laid siege to most of the open landscapes across the length and breadth of the country. In its random march it usurped whole swathes of native vegetation, jeopardized habitats of wildlife, choked forest trails, and had an impact on ecosystem services.

Today, except in parts of the Himalayas, the plant occurs everywhere. Thanks to this exceptional spread, not only in India but also in many

A typical inflorescence of Lantana camara, which was brought to India for its ornamental value; lantana has today taken over large sections of forested and non-forested areas. (Photo: Aditya Madhav/Wikimedia)

[1] Kannan, R., CM. Shackleton, and R. Uma Shaanker. 2013. Reconstructing the history of introduction and spread of the invasive species, Lantana, at three spatial scales in India. *Biological Invasions* 15(6):1287–1302.

other parts of the world where it was similarly introduced, lantana is now regarded as one of the top 10 invasive species in the world.

In the face of its marauding growth, a number of efforts, both in India and elsewhere, have been made to stop the spread of lantana. However, all methods, including physical, chemical, biological, and manual, have borne little success. The vain attempts to contain its spread have been thwarted by the sheer scale of its spread, and the exorbitant costs entailed. Today the species covers millions of hectares in the country, an area that is non-trivial for any cost-effective control.

WHEN YOU CANNOT BREAK SOMETHING, AT LEAST BEND IT!

As an organization concerned with biodiversity conservation, ATREE was naturally interested in addressing the consequence of the spread of lantana on biodiversity and its attendant ecosystem services. What could ATREE do, knowing only too well that the control of the species was not a practical proposition?

Several chance observations made by Ramesh Kannan, then a Research Associate at ATREE, during his field trips, articulated our first thoughts on what would later become a major programme on lantana at ATREE. Ramesh noted that several communities in South India, especially in Chittoor, in Andhra Pradesh, and in Natham, in Tamil Nadu, and in a few other places, had for long been using lantana for making an assortment of articles, ranging from chicken pens to baskets for tomatoes. Though crude, they seemed to serve their functions quite well. Back from his field trip, Ramesh argued that if lantana could be used to make baskets, might it also be used to make other products, and perhaps even offer a substitute to the scarce bamboo resources? If it could, then we would have successfully addressed an important issue concerning the conservation of the scarce

Shreyas R. Krishnan

bamboo resources in the forests, without jeopardizing the livelihoods of the artisans who were traditionally dependent on these resources. Also, if it were demonstrated that lantana could indeed substitute for bamboo, it might open up a window of opportunity for many forest dwelling communities, not least the bamboo artisans, the majority of whom have no land tenure, and are dependent on daily wages or the collection of non-timber forest products for their subsistence. An intrinsic advantage, furthermore, in using lantana as opposed to bamboo, is the fact that it is a zero-investment resource being such an abundantly available 'weed'. In theory, one could remove any amount of lantana from the forests, add value, and generate much-needed cash income. This was clearly not possible with bamboo. Thus was born a construct, that if we cannot break lantana, we may at least try to bend it! And bend it we did!

FROM BASKETS TO FURNITURE

With a blueprint in hand, we began to explore funding opportunities. Our first call was at the Development Market Place, World Bank, Washington D.C. No sooner had we started defending our idea of promoting the use of lantana at the Market Place, that we realized we were walking on a very slippery path—that of defending something that sounded quite heretical at that time. For example, the Convention on Biological Diversity stipulates that all signatory countries, including India, identify, control, and eradicate all invasive

alien species and *not promote their use or cultivation* (italics ours). The Global Invasive Species Programme (GISP), a multi-institutional agency, was set up to precisely discharge this function by member countries. In other words, it made perfect sense for the funding agency to oppose our idea and even mock us at our naivety, or may we say, even stupidity. One of the questions most frequently asked by funding agencies, was: *"Aren't you actually encouraging the spread of an invasive species that the entire world wants to get rid of?"* On reflecting, we are not sure what worked and how it worked for us. But one of our common defenses was, does it matter if we promote its utilization, knowing well that the world has given up on this invasive species? If such promotion can rescue human livelihoods that are threatened by dwindling forest resources, surely there must be some merit in our proposal. And so on. In the end our voice and arguments prevailed and we won our first grant. Thus began our tryst with lantana.

Setting up base at Malai Mahadeshwara Hills (MM Hills), now Malai Mahadeshwara Wildlife Sanctuary, Karnataka, Ramesh Kannan quickly assembled a field unit with four main objectives, namely: a) to train local artisans, who hitherto had been using only bamboo, in the use of lantana stems; b) to design products from lantana stems; c) to develop market linkages with both rural and regional markets; and d) to set up a lantana craft cooperative.

Knowing that HESCO, an NGO based out of Dehradun in the foothills of Himalayas, was already skilled in converting lantana stems into furniture, Ramesh travelled to Dehradun along with over 12 artisans from MM Hills. These early trainees were to later become master lantana-craftsmen and champion trainers, and to this day they continue to train artisans in other parts of India in the art of lantana craftsmanship. The training was subsidized by various grants, and in a relatively short period of 4–6 years, over 350 people were equipped with the basic skills required to convert lantana into useful products such as baskets, chairs, tables, and the like. The training created palpable enthusiasm amongst the local villagers, each vying with the other to learn the new art. Very soon, it became clear that here was a craft that could stay with the community so long as some backend support was provided.

An important catalyst for people's enthusiasm lay in the market-linkages that were facilitated by Ramesh. Hailing from a business family, he knew well that the market is key to economic development. He explored markets in nearby cities such as Mettur, Kollegal, Mysuru, and Bengaluru. He would personally take samples to furniture retailers, and explain to them at length the virtues of the rustic chairs, tables, and various other products made from lantana. Priced at a third of the cost of comparable rattan products, soon lantana began to be accepted in markets. Artisans now not only were able to make their craft, but sell it too, for profit.

The commodity chain of this cottage industry was now getting well oiled. At one end of the chain were the lantana suppliers, mostly women, who would bring in head loads of lantana stems from the forest. These would then be graded into different girth categories to feed

Lantana thicket. Notice the nearly impenetrable wall of lantana stems. This is very characteristic of the growth of lantana in most of India's national parks and sanctuaries. In this picture the lantana was over 3 metres high. (Photo: Ananda Siddhartha)

Men at work making lantana furniture in Malai Mahadeshwara Hills, Karnataka. (Photo: RP.Harisha)

into different products. The stems would then be processed, one last step before actually being used to make the products. Unlike bamboo, which is naturally pliable, lantana stems are relatively rigid, heavy, and less pliable, but durable, and insect- and pest-resistant. An essential step before they could be used was to debark the stems, to reveal the whitish inner wood. Women would scrape away the bark using knives or sickles. This was very time consuming and was found to be a critical rate-limiting step in developing products.

As we were grappling with this problem, quite fortuitously, ATREE received a couple of young French interns who were trained in wood-processing technologies. The interns proposed an ingenious way of getting rid of lantana bark. The trick lay in immersing lantana stems in hot water for 30 minutes to an hour. The 'cooked' stems were now ready to be de-barked. All it required was to peel the bark off the stem, just as one would the skin of a potato. A spin-off of this method was that the stems became more pliable, nearly as much as those of bamboo, and even rattans. This small trick allowed us to design newer products that artisans could not have done earlier. Engaging with the best of designers, trained at the National Institute of Design, Ahmedabad, over 60 different products were designed and produced. Lantana also began to be used to make the famed Channapatna toys. A lathe was installed and artisans were trained to turn lantana wood into beautiful figurines.

BENDING A 'WEED' AND TRANSFORMING LIVELIHOODS

As we learned to 'bend' the invasive lantana to good use, rather than trying to 'break' it, we realized we could significantly impact livelihoods, one family at a time. While lantana was being transformed into value-added products, so were the lives of the people working on it. We could relate here a number of statistics, but what stands out most poignantly is the story of a woman in Ponnachi village. Before lantana entered her life, she was leading a very frugal existence, as many others still do in India. She was widowed without children and had no access to social safety. Dressed in tatters, doing menial jobs, her next meal would be as uncertain as was her previous one. When we arrived in Ponnachi, she volunteered to be trained to work with lantana, and today is a master trainer. No longer is she a victim of her stars. On the contrary, she runs a decent lantana product business, earning much more than a subsistence income—her self-esteem and dignity in society. She symbolizes the transformation that lantana craft brought to people in her village.

Over the period that ATREE was engaged in the project, the artisans saw a three- to five-fold increase in their annual cash income. The number of person-days employed increased from about 5 to 9 months. The popularity of the lantana craft and enterprise can be gauged by the fact that despite a number of government initiatives such as under the Mahatma Gandhi National Rural Employment Guarantee Act, the public food distribution system, and agriculture labour, lantana craft work has sustained and people have continued to produce products from lantana over the past one and a half decades. Currently, in MM Hills alone, the Soliga community has two Lantana Craft Centres working independently, and about 25 Soliga artisans (10% of people in the two villages) working on lantana crafts and earning an average of Rs.7000/- per month. While the gross income of households using lantana (user) and those not using (non-users) were similar, lantana user groups substituted their loss of income from forest resources (7 %) with income from lantana (46 %)[2].

An invasive species that was otherwise regarded as a nuisance had now become the centre of the household economy. In less than 5 years, the cash flow could be seen to transform houses, with people gaining access to a more comfortable lifestyle, including access to television sets, mobiles, and so on. Yet again, besides these material possessions, was the fact that many of the families involved with lantana began to send their children to school, a sure way out of the cycle of poverty that they had been caught in.

MISSION ACCOMPLISHED

After nearly a decade of successfully working with communities in promoting the use of lantana, we were at a crossroads—to decide whether or not to continue with the programme. The project, funded serially by half-a-dozen national and international funding agencies over the decade, seemed to have lived up to its promises. We had in place a proof-of-principle in promoting the use of a zero-investment resource. Dependence on bamboo over the decade in the sites that we were working on had dwindled, leading to its restoration. People's economy grew. Academically, a point had been made: that it is possible to break the paradigm that invasive species are beyond use. In fact, the work lead to a significant change in paradigm—from an exclusive strategy of only eradicating, to an inclusive management strategy, even if it meant promoting the use of the invasive species[3]. Much ground had been covered. What next?

Clearly, ATREE did not want to be seen as running the lantana enterprise. ATREE was not a business incubator. It was decided, that ATREE should now withdraw from actively promoting the business end of the work, to merely engaging with training and facilitation at newer sites, replicating the model, both in space and time. Requests for advice were

[2] Kannan, R, CM. Shackleton, and R. Uma Shaanker. 2014. Invasive alien species as drivers in socio-ecological systems: local adaptations towards use of lantana in Southern India. *Environment, Development and Sustainability* 16(3): 649–669.

[3] Uma Shaanker, R., G. Joseph, Aravind NA., R. Kannan, and K.N. Ganeshaiah. 2010. Invasive plants in tropical human-dominated landscapes: need for an inclusive management strategy. In: *Bioinvasions and globalization: ecology, economics, management and policy* (eds Perrings, C., H. Mooney and M. Williamson). Pp. 202-219. London: Oxford University Press.

received from several states within the country, and from Sri Lanka and Madagascar, and were acted upon. ATREE continues to provide guidance and plans, based on its success. As for the communities, a good forethought of the programme was the establishment of registered Lantana Craft Cooperatives (LCC). This knitted the artisans into a group that could take up their interests. The LCC gave the artisans and their work an identity. Licenses were issued to members of the LCC by the local forest departments to enter the forest and collect Lantana stems. The LCC was recognized by TRIFED, an organization that caters to tribal art and culture. Subsidized representation of lantana work at local, regional, and national exhibitions were extended to LCC. In short, the communities now were on their own, from collection, to making the products, to marketing them.

REFLECTIONS

Over two centuries ago, the American poet and philosopher, Ralph Waldo Emerson (1803-1892) quipped, "What is a weed? A plant whose virtues have not been discovered." Our story on the transformation of lantana seems to echo this quip to the letter. From fighting established ideologies that dispelled the notion of using an invasive weed, to fighting our way through to transform the weed to reveal its virtues, in reflection, seems to have been a long haul. Ramesh Kannan's perseverance, endless negotiations with foresters who would rather guard the weed than allow its removal[4], chance observations of an impoverished hamlet in Chittoor that was using lantana sticks to make pens for their chicken, or a reasonably progressive farming community at Natham, near Madurai, using lantana baskets for packing tomatoes, and the pioneering efforts of HESCO, in faraway Dehradun in the foothills of the Himalayas, of converting lantana sticks to chairs, all gravitated into a major effort at ATREE. Lantana had come of age, from the impenetrable thicket that it still is in the forests, to the rustic yet elegant table at which we write this article. Besides approving Emerson's quip, the story of lantana at ATREE has helped lay a strong proof-of-principle that, in time, any resource, in this case an invasive species, can be allowed to crank and creak. Whether this by itself is sufficient to manage the invasive is a debatable proposition. However, as in the case of any calamity of gargantuan proportion, the choice is between doing nothing and doing something, even if doing that something, is not going to lower the scale of the calamity. The transformation of lantana has probably not dented even a tiny bit the lantana-scapes of our forests and landscapes. But, it has unequivocally transformed the life-scapes of people who, even in the 21st century, have limited recourse to cash income, and diminishing access to forests that sustain them.

[4] Kannan, R., CM. Shackleton, and R. Uma Shaanker. 2013. Playing with the forest: invasive alien plants, policy and protected areas in India. *Current Science*, 104(9): 1159-1165.

Acknowledgement

The work reported here has been shaped by interactions with a large number of colleagues, fellow scientists across the world, students, and of course the artisans in far flung regions in India and abroad. We would like to thank all of them for taking time off and helping us in this voyage. The captain of the voyage, Dr. Ramesh Kannan, unfortunately is not with us anymore. To him and his family, we owe our heartfelt thanks and gratitude; but for Ramesh's enthusiasm, we doubt if this story would ever have seen the light of day. We also acknowledge all funding agencies, Department of Biotechnology, Government of India, New Delhi; The Development Market Place, World Bank, Washington; Blumoon Foundation, USA; The Rainforest Concern, UK; Rhodes University, Grahamstown, South Africa; and The Asia Pacific Federation of Environment and Development, Japan, for generously supporting the work at different stages of its development.

IN MEMORY OF OUR FRIEND AND COLLEAGUE, RAMESH KANNAN (1976-2014)

Ramesh Kannan explaining the lantana craft at one of the interaction meetings. (Photo credit: Hillary Crabb)

Ramesh Kannan will be remembered for many reasons, but possibly most of all for his innate courtesy, immense generosity and unflappable demeanor. He significantly contributed to ATREE in so many ways. He started by managing ATREE's library database and web-based outreach activities, and went on to then take charge of the livelihoods and conservation programme at MM Hills. He then obtained a PhD in Environmental Science from Rhodes University, South Africa. He was deeply driven by a desire to learn, both from literature, and his own immersion in the field amongst local communities. During his PhD he was a Senior Research Associate at ATREE, and a principal investigator on many projects, as well as the coordinator for the MM Hills Community-based Conservation Centre. It was his unique capacity to work across the academy-field divide, and across the research-action divide, shaped at ATREE, that made him a model of a 'thinking practitioner' par excellence.

He, with other colleagues, and Soliga master craftsmen, shaped the lantana-craft phenomenon that developed in MM hills and spread to various other locations in South India. He worked at it for almost a decade, travelling and visiting so many people, and locations, trying this, trying that, experimenting, cajoling, encouraging, leading, that he became synonymous with the lantana phenomenon! This work won several international and national awards, but we are sure more important to him than awards was the satisfaction of making a difference in people's lives. Ramesh was to everyone who knew him, an especially committed researcher and human being. He was deeply committed to everything he did, whether to his family, to his institution, to his friends, or to understanding what made lantana tick. As one of his friends at ATREE said, he accomplished a lifetime's work in a short span of 10 years!

Further Reading

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