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Research

Disproving the inevitable tragedy



Harini Nagendra has had over a decade to absorb the worldview of the late Nobel laureate, Dr Elinor Ostrom, on governance of commons. Commons are resources used by all, owned by none—oceans, rivers, the air we breathe, fish stocks, biodiversity, forests. For the longest time, commons have been viewed from the economist's lens of individual self-interest single-mindedly driving use and depletion, even in the face of long-term unsustainability of resource. This was referred to as the 'tragedy of the commons' (by Garrett Hardin, ecologist), a tenet by which many top-down institutions that manage natural resources still orient themselves when they write the rule book. Discovering real world examples of user-managed resources that had remained sustainable over decades, Ostrom (a political scientist) applied the tools used to study complex systems to understand conditions under which competitive users of common property resources might cooperate for wise use of such resources. Ostrom's contributions have had direct implications for policy and governance of forests, biodiversity, lakes and seas; and have changed the way ownership of stakes is perceived for such spaces, advocating choices other than centralized governance or private ownership.



Harini Nagendra, Ramanujam Fellow at ATREE, who started working with Ostrom in 2000, was awarded the Elinor Ostrom Award on Collective Governance of the Commons in the Senior Scholar category for applying innovative interdisciplinary social-ecological approaches to understand the role of commons in urban and peri-urban areas of Bengaluru—specifically on the role of avenue trees and lakes in the city. Bengaluru readers might have come across her articles in local newspapers; and researchers, in an assortment of scientific journals. According to Harini, “Urban commons constitute a sadly neglected area in Indian policy and research. This needs to change, especially since so many of the poor and vulnerable are dependent on urban and peri-urban commons, which are highly endangered as India is rapidly urbanizing.” The award also recognizes Harini’s work on impacts of institutional approaches—community forestry, joint forest management and national parks on forest conservation in Nepal, India and other parts of the

world such as east Africa and Latin America.

This is the first edition of the award, instituted in the memory of Elinor Ostrom, by a collective of 15 leading institutions working on the commons. These include the Resilience Alliance, the International Association for the Study of the Commons, and UNESCO’s Man and the Biosphere Programme. Two Senior Scholars, two Young Scholars and three practitioner organizations also received the award, given away on 5 June 2013, at the XIV International Association for the Study of the Commons (IASC) Global Conference.

Harini’s student, Hita Unnikrishnan, a doctoral student of the 2009 batch, was selected for the Prof Elinor Ostrom International Fellowship on Practice and Policy on Commons, awarded by the IASC and Foundation for Ecological Security. Travelling on this grant, she presented her paper, *Privatization of the commons: Impacts on traditional*

*users of provisioning and cultural ecosystem services at ‘The commons: Commoners and changing commons: Livelihoods, environmental security, and shared knowledge’ at IASC 2013. She also participated in a panel discussion on governance of water commons. Unnikrishnan is doing her PhD on *The changing nature of ecological and social vulnerabilities within the context of an urban lake social-ecological system in India.**

Green and tasty: Soliga combat monsoon sickness with leafy vegetables

Foods are part of culture—whether they are festival foods, comfort foods, ginger tea, or wild edible plants that are part of the quotidian diet of the Soliga. ATREE came across this undocumented wild cultural heritage of India and Karnataka in its work with the Soliga

community in Male Mahadeshwara hills. The Soliga are an indigenous tribal community of the Western Ghats with remarkable knowledge of local wild greens, fruits and tubers, of which they gather more than 50 varieties from forest and farmland. In most Soliga households, the monsoons are associated with a feast of green leafy vegetables recipes. We share with you a recipe from the Soliga kitchen.

Kaddisoppu (*Jasminum trichotomum*), which belongs to the Oleaceae family, is a shrub found abundantly after pre-monsoon showers in MM hills. It is bitter in taste, rich in iron, magnesium, methanolic alkaloids and phytosterols. The Soliga collect *kaddisoppu* from the forest when gathering fuelwood or non timber forest products, or when grazing cattle, though it is also available in farm lands. They have discovered that *kaddisoppu* is particularly efficacious against cold, cough, flu and stomach infections (especially for dysentery and stomach ache). A recent pharmaceutical study, published in International Journal of Research in Ayurveda and Pharmacy, showed that the methanolic extract of *kaddisoppu* leaves significantly reduces pain, fever and inflammation (Venkata Naresh Babu Achuta *et al.* 2011), validating Soliga use of *kaddisoppu* as a medicine to cure fever, stomach infection, cold and cough.

ATREE started chronicling the use of wild edible plant species in MM Hills in 2009 when the Soliga returned again and again to the subject of disappearing useful species. Since MM Hills is a reserve forest area, communities have always had legal access to forest land.

Kaddisoppu recipe

Ingredients

Kaddisoppu: One bowl of tender shoots

and green leaves

Garlic (crushed): 4-5 cloves

Onion (chopped): 1 medium

Green or dry chilly 2-3 or to taste

Salt: to taste

Oil: 2 tablespoons

Method

Heat the pan with two tablespoons of oil; add garlic and onion pieces and fry until they become golden yellow. Add spices. Rinse the *kaddisoppu* in water and add to the pan. Add salt and stir for a few minutes, until leaves become a little crispy and seasoned. Now the curry is ready. Serve hot. It can be consumed with rice or ragi balls.

R. P. Harisha, MM Hills CCC

The grazing dilemma

The issue of grazing has often been seen as a controversial topic – the apparent unsustainable practices of pastoralists conflicting with conservationists' attempts to curb such destructive practices. However, numerous scientific studies around the world see the duality of the discourse as an incomplete truth underlining the perplexities involved in interactions within a grazing ecosystem.

Studies now recognize pastoralists as

custodians of variable environments. Grazing is considered to play a critical role in maintaining species diversity through direct consumption of competitively dominant plant species. Research finds that grazing facilitates local colonization of species through dispersion. Furthermore, herbivores create spatial heterogeneity by digging, trampling or through urine deposition, resulting in soil heterogeneity

In 1998, the state government of Sikkim enforced a ban on grazing in most reserve forests, around water sources and plantation areas, reflecting acceptance of the view that grazing is destructive and unsustainable. However the ban was not enforced in Lachen Valley, North Sikkim. This valley is inhabited by two indigenous pastoral communities, the transhumance agro-pastoral Lachenpas and the nomadic yak and sheep herders, the Dokpas. We investigated the impacts of grazing on species diversity and above ground net primary productivity (ANPP) in the sub-alpine and alpine pastures of Lachen valley. Our results indicate higher species diversity and ANPP in grazed treatments as compared to ungrazed treatments. Above ground net primary productivity showed a difference of about 63 percent between the two treatments, with the least difference seen at the highest elevations.





The results of our study signify the useful function of grazing on the biodiversity of the landscape and its indispensable role in the ecosystem, on which basis we recommend the need to re-evaluate policy decisions such as the ban on grazing.

Tenzing Ingti, Sikkim

Academy

Changes and new enrolments in the ATREE PhD programme

ATREE's Academy for Conservation Science and Sustainability Studies appointed Dr Nitin Rai as the new Academy Convenor in April 2013. Nitin has been a Fellow in ATREE since 2004. He will oversee the active efforts underway in improving the quality and structure of a programme that is aimed at integrating the natural and social sciences. The main thrust in the coming year is to provide interdisciplinary coursework for students in the areas of conservation and development. Course work for PhD students will begin on the 12th of August 2013.

We received 112 applications in response to the advertisement for applications to the doctoral programme in Conservation Science and Sustainability Studies. ATREE would like to welcome the final twelve who made it to the list: Soumyajit Bhar, Annesha Chowdhury, Hussain Ebrahim, Yamini Virginia John, Nachiket Kelkar, Rashmi Mahajan, Rahul Muralidharan, Ramya Ravi, Ranjeet Kumar Sahani, Sahiti Sanaka, Roshmi Rekha Sharma, and Sony R K. Staff, students and faculty look forward to having you around in ATREE.

Outreach

Charkha awards

In 2011, ATREE became a sponsor for the Communications for Development and Learning (CDL)-organized Charkha Awards for Excellence in Development Journalism, for articles written on the environment in Kannada. ATREE, which has an outreach objective, was interested in promoting quality in the

writing of environment related issues, that were also possibly development oriented, and importantly, reaching the lay reader through Kannada press. ATREE's role in this CDL-led exercise was that of an award sponsor and subject expert jury member in the evaluation of shortlisted articles. Other jury members were from the fields of media, development, and one representative from CDL.

This year's award went to a non-scribe, Sanjay Gubbi, a researcher who writes in various media on wildlife and nature conservation. His article argued the pros and cons of the decision to declare the Western Ghats a UNESCO World Natural Heritage site. Given the misinformation circulating on this issue post the Karnataka government's opposition to the UNESCO recognition, the article was seen as being immediately informative to a variety of readers, objective and topical.

CEPF-ATREE

April through June have been a productive three months for the CEPF RIT team, starting with the disbursement of funds to the approved grants of the fourth call for proposals by ATREE and CEPF for the Western Ghats Programme. Originally, the programme was scheduled to end in April 2013, but has been extended for a further two years until the end of April 2015, based on strong performance of the grant portfolio. The programme has got a fresh infusion of funds for this extension.

CEPF and RIT undertook a Participatory Assessment workshop from June 28th to July 5th to assess the progress of the past five years towards the goals set out in the programme's Ecosystem Profile. ATREE held three workshops—in Kolhapur, Maharashtra (north Western Ghats); Kotagiri, Tamil Nadu (central) and Periyar Tiger Reserve, Kerala (south) to engage with grantees, civil society



groups and like-minded individuals in biodiversity conservation. The workshops helped strengthen cross-linkages between grantees, share experiences, identify synergies with other donor investments, evaluate gaps in the CEPF portfolio, as well as develop the agenda for the two years of the extended period.

The experiences and feedback resulting from this interaction, especially knowledge of the issues and players involved, will be reworked into the programme, portfolio, progress, priorities, and future plans in the Ghats.

B. Acharya, CEPF RIT

New

Recognition

The Department of Scientific and Industrial Research (DSIR), Ministry of Science and Technology, Government of India has renewed its recognition of ATREE as a Scientific and Industrial Research Organization (SIRO) for the period April 2013 to March 2016. Three faculty have been invited to serve on the editorial boards of prestigious scientific journals. Harini

Nagendra will serve as Associate Editor on the board of Animal Conservation. Abi Tamim Vanak has been accepted on the editorial board of Conservation Biology; he has also been serving as Associate Editor for Animal Conservation. Jagdish Krishnaswamy has been invited onto the editorial board of Biological Conservation.

Sarala Khaling, Regional Director, Eastern Himalayas Programme has been appointed to the Core Group of the IUCN Commission on Ecosystem Management (CEM) for South Asia. CEM is one of IUCN's six scientific Commissions and is a global network of volunteer experts working on ecosystem management related issues.

People

Veena Srinivasan has joined as Fellow in the Land, Water Livelihoods programme in Bengaluru. The programme has recruited two post doc Fellows in Fellow track, **Durba Biswas** and **Nutan Maurya**. **Karthik Madhyastha** and **Kiruba Haran** also join the Land, Water and Livelihoods team— as Research Associate and Senior Research Associate, respectively. **Praveen Urs** has joined the recently set up Water Quality Lab as Lab Analyst.

Janhavi Rajan is a new addition to the CEPF Regional Implementation Team as Communication Assistant.

Indrani Ravi is the new welcoming receptionist at ATREE, Bengaluru.

Venkataramu tends to the campus garden.

Publications

Working paper

Lele, S., V. Srinivasan, P. Jamwal, B.K. Thomas, M. Eswar & T. Md. Zuhail. 2013. Water management in Arkavathy basin: A situation analysis. *Environment and Development Discussion Paper 1*, Bengaluru: ATREE.

Peer reviewed articles

Agarwal, S., L. S. Vailshery, M. Jaganmohan and H. Nagendra. 2013. Mapping urban tree species using very high resolution satellite imagery: comparing pixel-based and object-based approaches. *International Journal of Geo-Information* 2(1): 220-236. doi:10.3390/ijgi2010220

Anand, M., M. Leithead, L. C. R. Silva, C. Wagner, M. W. Ashiq, J. Cecile, I. Drobyshev, Y. Bergeron, A. Das, C. Bulger. 2013. The scientific value of the largest remaining old-growth red pine forests in North America. *Biodiversity and Conservation* 22(8):1847-1861.

Balachander, M., O. K. Remadevi and T. O. Sasidharan. 2013. Dissemination of *Metarhizium anisopliae* infection among the population of *Odontotermes obesus* (Isoptera: Termitidae) by augmenting the fungal conidia with attractants. *Journal of Asia-Pacific Entomology* 16(30): 199-208.

Kannan, R., C. M. Shackleton, R. U. Shaanker. 2013. Reconstructing the history of introduction and spread of the invasive species, *Lantana*, at three spatial scales in India. *Biological Invasions* 15: 1287-1302.

- Kannan, R., C. M. Shackelton, R. U. Shaanker.** 2013. Playing with the forest: invasive alien plants, policy and protected areas in India. *Current Science* 104 (9): 1159-1165.
- Lele, S. and V. Srinivasan.** 2013. Disaggregated economic impact analysis incorporating ecological and social trade-offs and techno-institutional context: A case from the Western Ghats of India. *Ecological Economics* 91: 98-112.
- Lyngdoh, N., G. Joshi, G. Ravikanth, R. Vasudeva and R. U. Shaanker.** 2013. Changes in genetic diversity parameters in unimproved and improved populations of teak (*Tectona grandis* L.f.) in Karnataka state, India. *Journal of Genetics* 92 (1):141-145.
- Mairota, P., B. Cafarelli, L. Boccaccio, V. Leronni, R. Labadessa, V. Kosmidou, H. Nagendra.** 2013. Using landscape structure to develop quantitative baselines for protected area monitoring. *Ecological Indicators* 33: 82-95.
- Nagendra, H, R. Lucas, J. P. Honrado, R. H. G. Jongman, C. Tarantino, M. Adamo, P. Mairota.** 2013. Remote sensing for conservation monitoring: Assessing protected areas, habitat extent, habitat condition, species diversity and threats. *Ecological Indicators* 33: 45-59.
- Nagendra, H., B. Reyers and S. Lavorel.** 2013. Impacts of land change on biodiversity: Making the link to ecosystem services. *Current Opinions in Environmental Sustainability* DOI 10.1016/j.cosust.2013.05.010.
- Nagendra, H., R. Ghate and J. Rao.** 2013. Governing the commons. *Seminar India* 641: 88-93.
- Rai, N. D. and K. S. Bawa.** 2013. Inserting politics and history in conservation. *Conservation Biology* 27(2): 425-428.
- Ramesha, B. T., H. K. Suma, U. Senthilkumar, V. Priti, G. Ravikanth, R. Vasudeva, T. R. Santhosh Kumar, K. N. Ganeshiah, R. U. Shaanker.** 2013. New plant sources of the anti-cancer alkaloid, camptothecin from the Icacinaceae taxa, India. *Phytomedicine* 20: 521- 527.
- Singh, S., B. R. Gurumurthy, G. Ravikanth, R. U. Shaanker and M. B. Shivanna.** 2013. Endophytic fungi from *Miquelia dentata* Bedd., produce the anti-cancer alkaloid, Camptothecin. *Phytomedicine* 20: 337- 342.
- Smitha, S. G., T. O. Sasidharan, O. K. Remadevi and J. Bhattacharya.** 2013. Microsporidian infection in wild and captive-bred populations of butterflies in South India. *Biosystematica* 6(2): 39-45.
- Tomaselli, V., P. Dimopoulos, C. Marangi, A. S. Kallimanis, M. Adamo, C. Tarantino, M. Panitsa, M. Terzi, G. Veronico, F. Lovergine, H. Nagendra, R. Lucas, P. Mairota, S. Mùcher and P. Blonda.** 2013. Translating land cover/land use classifications to habitat taxonomies for landscape monitoring: A Mediterranean assessment. *Landscape Ecology* DOI 10.1007/s10980-013-9863-3.
- Vailshery, L. S., M. Jaganmohan and H. Nagendra.** 2013. Effect of street trees on microclimate and air pollution in a tropical city. *Urban Forestry and Urban Greening* DOI 10.1016/j.ufug.2013.03.002.

Popular press

Lele, S. 2013. Buying our way out of environmental problems? *Current Conservation* 6(1): 9-13

Jesudasan, A. and R. Goswami. Invasion of tiger reserve. *Down to Earth*. 15 July 2013.

Datta-Roy, Anirban. Death in the hills. The Indian Express. 8 June 2013.
Goswami, Rajkamal. Hills of despair and hope. *Down to Earth*. 30 April 2013.

Seshadri, K. S. The vanishing voices of our cities. *Sanctuary Asia*. April 2013.

Conferences

Nagendra, H. Human-nature interactions: towards sustainability in urban and rural settings. In *Being Social: An Interdisciplinary Conference on Social Behavior*, Indian Institute of Science, Bengaluru. 26 June 2013.

Nagendra, H. *Multi-level governance and adaptation to climate change and urbanization: lake commons in Bengaluru*, India. International Association for Study of the Commons, Mount Fuji, Japan. 4 June 2013.

Nagendra, H., P. Blonda, P. Mairota, C. Marangi, D. Torri, R. Lucas, P. Dimopolous, J. P. Honrado, M. Niphadkar, S. Mùcher, V. Tomaselli. *Using remote sensing for identification and monitoring of anthropic pressures on habitats and biodiversity in protected areas: A multi-nation study*. Association of American Geographers annual meeting 2013, Los Angeles. 12 April 2013.

Setty, S. Long-term monitoring of *Apis dorsata* colonies. National conference on beekeeping and honey industry, Guwahati. 22 May 2013.

Unnikrishnan, H. *A choice between the cultural consumptive and the recreational: The impacts of privatization on lake systems in Bangalore City*. Water in the Anthropocene Conference, Bonn, Germany. The conference focused on access to freshwater in the current age that is dominated by the human presence, hence dubbed the Anthropocene. The scholarship was provided by the Global Water System Project (GWSP).

Unnikrishnan, H. *Privatization of the commons: Impacts on traditional users of provisioning and cultural ecosystem services*. The commons: Commoners and changing commons: Livelihoods, environmental security, and shared knowledge, IASC 2013. Organized by the International Association for the Study of the Commons. 3-7 June 2013.

Invited talks

Lele, S. Keynote and presidential address. *How should a mining company think about 'Sustainable Development'?* Training programme on Sustainable Development. Royal Dutch Shell. Bengaluru, 9 April 2013.

Lele, S. *Ambhari: Panel discussion on elephant conservation.* TV9 (Kannada). 30th June 2013.

Lele, S. Interview on elephant conservation. News9 (English). 30th June 2013.

Nagendra, H. and H. Unnikrishnan. *Heterogeneity in access to benefits: Fine scale challenges for ecosystem service valuation and prioritization.* Diversitas EcoServices Meeting, Paris, France. 28 March 2013.

Nagendra, H. *Collective action: Innovation in the context of conservation.* Fidelity India, Bengaluru, 4 and 5 February 2013.

Nagendra, H. *Education and conservation.* Keynote address, National Conference on Green Wealth – A Strategy for Health, Mount Carmel College, Bengaluru, 27 February 2013.

Nagendra, H. *Human-nature interactions: drivers and outcomes of land change in India.* Macalester College, Saint Paul, Minnesota, 3 April 2013.

Nagendra, H. *Human-Nature interactions: Impact on sustainability in cities and forests.* Azim Premji University, Bengaluru, 26 April 2013.

Nagendra, H. *Mapping and community efforts in saving lakes.* Save Bengaluru's Lakes - The Alternative and Korkai, Bengaluru, 10 May 2013.

Nagendra, H. *The challenge of collective action: Ecological restoration by people in forests and cities.* Nehru Memorial Museum and Library, Delhi, 24 May 2013.

Setty, S. Three talks on environment protection to Panchayat Secretary, Presidents and Panchayat Development Officers at Mahatma Gandhi Institute of Rural Energy and Development, Bengaluru in June 2013.

Thomas, B. *Problem oriented development research: illustrations and learnings from Southern India.* National Institute of Advanced Studies, Bengaluru. 8 May 2013.

Grants received

Avik Ray. DST grant on *Population genetics of few species of Rhododendron with varied distributional regimes to elucidate their colonization, historical demography and diversification.* He has joined as a Post doc with G. Ravikanth.

Ravikanth G and Siddappa Setty received a \$ 4000 grant from Chicago Botanic Garden to work on *Diversity and Origins of Jackfruit (Artocarpus heterophyllus, Lam.) in the Western Ghats of India.*

Ravikanth, G. Research and development of an herbal product authentication service using DNA barcoding. Funded by Department of Biotechnology (DBT) New Delhi. 2 Years 2013-2015 Amount Rs. 24.12 lakhs

Sasidharan, T. O. Project sanctioned: *Occurrence and diversity of the entomopathogenic fungus, Metarhizium in the soils of varied eco-climatic forest habitats of South India.* Funded by Dept. of Biotechnology. Total grant received: Rs. 30.76 lakh Date of initiation: 01-07-2013

Siddappa Setty received a \$ 4000 grant from GE to undertake a study on impact of restoration at Lokkere forest near Bandipur national park.

Siddappa Setty coordinated an ATREE team which offered a 6-week study abroad programme to students from the University of Kansas (Rs.16.8 Lakhs)





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