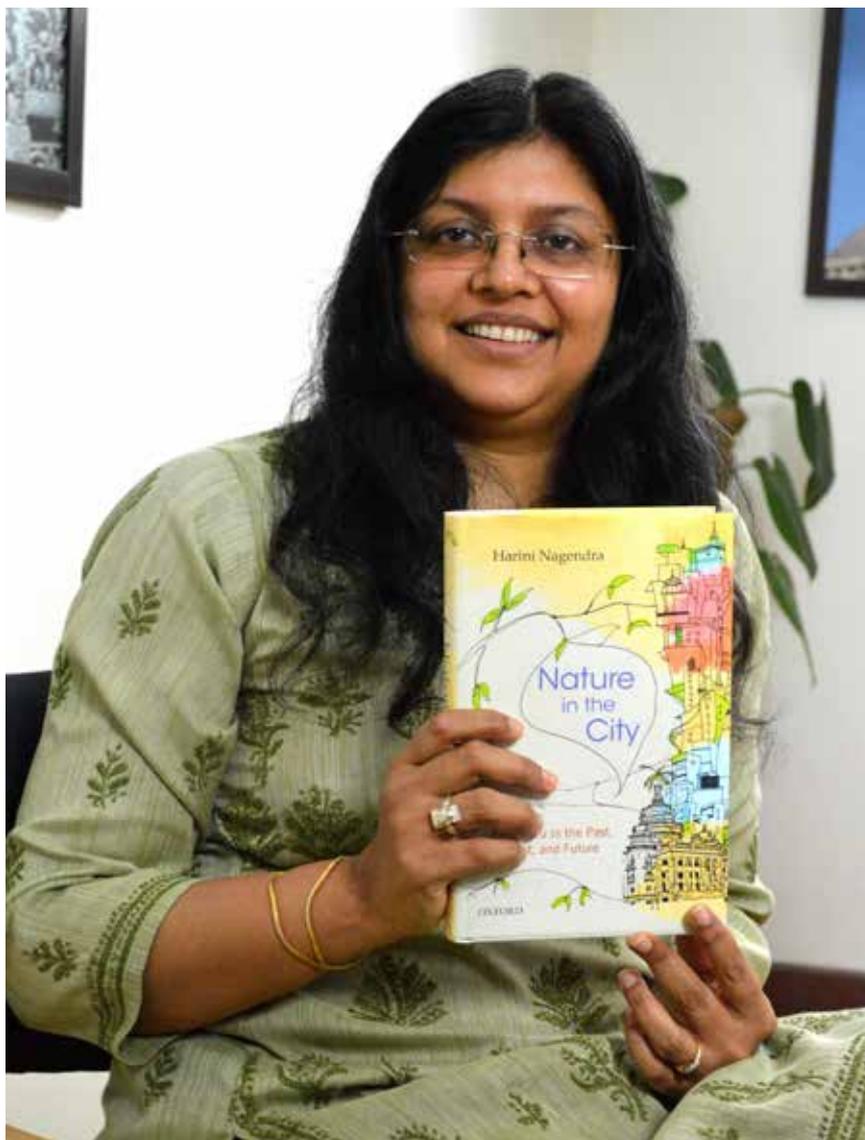




## HARINI NAGENDRA: NATURE IN THE TIME OF URBANIZATION

✍️ BHARTI DHARAPURAM

*Harini Nagendra is Professor of Sustainability at Azim Premji University, Bangalore. She studies the interaction between humans and nature in cities using a mixed bag of research methods drawing from ecology as well as the social sciences. Her book, 'Nature in the City: Bengaluru in the Past, Present, and Future' published by Oxford University Press in 2016, derives from several years of her work on Bangalore. She gave a plenary talk titled 'Urbanization: A New Frontier for Conservation' at the Student Conference in Conservation Science in September 2016, hosted in IISc. Excerpts from a conversation with CONNECT.*



Courtesy: HARINI NAGENDRA

**Q Tell us a bit about your background and what got you interested in ecology?**

I did my BSc in Microbiology and came to IISc in 1992 as part of the first batch of Integrated PhD students in Biology. And I found that I hated being in the lab and spending most of my time

in a closed space. At that time CES [Centre for Ecological Sciences] was celebrating its 10th anniversary with a series of talks, and I landed up there and listened to Madhav's [Madhav Gadgil, then Professor at CES] talk by accident. I really liked what he said, and ended up doing a project with him and staying on for a PhD.



**Q What led to the shift of your research focus to urban landscapes, studying the ecology of cities?**

I moved to ecology to do something that was more meaningful. One of the big attractions for me was working on conservation challenges of direct and immediate relevance. I worked on forests in the Western Ghats for my PhD, then in Nepal, north Bengal and a number of different places. The main shift was in 2005-06 when I started looking at some of the impacts of our work. To see results getting translated to practice while doing policy relevant work is a frustrating exercise. It has worked for some people but it was really not working for me. I started thinking about being located in a place—my place being Bangalore—and doing something meaningful there.

A couple of other things happened that were more personal. We were building a house in Bangalore and I started thinking about creating a new place in the peri-urban city where, for instance, there are very rapid land-use changes which nobody is paying attention to. When my daughter was born in 2007, I started thinking about what kind of experience she would get growing up in the peri-urban city which is full of pollution and filth. At the same time, I became part of this group of people working with BBMP [Bruhat Bengaluru Mahanagara Palike] on restoring a lake near our house—the Kaikondrahalli lake, which was getting degraded. This work satisfied me much more in terms of policy relevance, at which point I said, “Let’s start looking at this city.”

**Q Why are there so few urban ecologists?**

They just don’t exist—there are very few in India and also globally. I think it is partly the



*I started thinking about being located in a place—my place being Bangalore—and doing something meaningful there*



fascination ecologists have for forests; I have that too. [In my forest research] I worked in places where communities manage forests and I heard a lot of comments early on saying, “These are not real forests, so you can’t be answering questions of real ecological importance here.” I hear less and less of that now. I think people are realizing that even in the most pristine of areas, humans are there and are doing positive things.

Ecologists don’t look at cities and people who study cities do not look at ecology. There is a lot of very rich urban work but they think nature in cities doesn’t really exist. Now we have some people working on Bangalore, Delhi, Pune, Bombay, Calcutta—larger cities, but nothing from our small cities. That’s such a huge gap. The ecology of cities has to be a part of their resilience, especially under climate change.

**Q What were the challenges you faced while starting out—especially because your work is at an intersection of various disciplines?**

When I started looking at urban ecology, I thought it would be a side project, something that would help us quickly assess what the changes are taking place in Bangalore. And then I realized that there is no baseline data, and we spent years getting baselines of various kinds. We realized that baselines in Bangalore are so driven by social context that you need a baseline for home gardens, parks, streets—each is different in nature. Documentation is important. If we need



*The interdisciplinarity was woven into the heart of this project because when I started, it was to do something which was a mix of research, outreach and practice. Every new method was prompted by how to engage with people. I found that if you have a little bit of history in the beginning of a story it gets people interested.*



to know what is wrong with certain changes and how to fix them, we need to know how they were in the past and why they were that way.

The interdisciplinarity was woven into the heart of this project because when I started, it was to do something which was a mix of research, outreach and practice. Every new method was prompted by how to engage with people. I found that if you have a little bit of history in the beginning of a story it gets people interested. That started us off, but then we found that there is so much in history which explains why we do what we do in the present. So we looked at archival work—we didn't know how to access the archives, didn't know where the archives were or how to read archival material. We had to really train ourselves along the way. There have been a number of studies we have discarded because the methods weren't quite right and we didn't have conclusive answers.

**Q How was the history of Bangalore shaped by ecology?**

I started looking at the oldest information we

have on the city from inscriptions and started seeing how the city turns out to be two kinds of places. If you are looking at the topography of the city, there is one part to the east which is the *maidan* or the *bayalu*—grassy, rolling plains where the soil is fertile. Early settlements started off here and inscriptions tell you that people were creating tanks and using that for irrigated agriculture here. The area to the west is rocky, undulating and they call this the *malnad* area. It has granite rocks and the soil is very thin, with thorny scrub forest and a lot of wildlife. The inscriptions talk about cattle herding, wildlife attacks and cattle raid fights here.

It is these inscriptions that made me aware of the fact that the city has two ecologies coming together. It has disappeared from our popular imagination. People don't see the topography except that the underlying ecology is still there. All the low-lying areas that get flooded during the monsoons are basically wetlands that were built on, and if you had the drought mapping of the city, I suspect many of these areas are in rocky places in the west.

**Q In the same context, what was the importance of lakes in Bangalore's past?**

Bangalore is an unusual old city because it is distant from a large water source. We have clear evidence that Bangalore was a settled city and a centre of trade a very long time ago. How did they do that in the absence of water from a large water resource? They built tanks and we have some evidence from inscriptions which talk about clearing the jungle, scooping off the sand in the depression and basically creating a rainwater harvesting reservoir. Around that would be this system—the lake, *kalyanis* [temple tanks], very



tiny pools called *kuntas* and large open wells. They were used for various purposes—irrigation, drinking, washing cattle or clothes. They were spatially and temporally variable. The small ones would dry out in the summer and you would take the silt and use that in the fields. Irrigation was an overflow system—you would open the sluice gate and the entire overflow area became your rice or sugarcane field or whatever else you grew. When the water receded you had these indigenous fish species which would flop around in the mud. When that went away you had these greens—you would harvest and cook them or cows would graze them. This landscape had a continuous system of some kind of ecological use.

**Q How has Bangalore's relationship with its lakes changed now?**

You have a very different system now—there is a fence and a boundary and everything within that is lake. But the wetlands around it, which used to clean away a lot of the pollutants, are being completely lost. There is sewage coming in, no slow absorption, a lot of soil runoff and the lakes silt up very fast. You have high levels of nitrogen and phosphorous, and eutrophication. All this put together means that there is a complete change in the ecology and social use of lakes over time. You have sewage-filled areas; even when the lakes are clean, eutrophication is a big challenge, and all you can do there is bird-watching, jogging and some fishing contracts go out.

We can really trace when this shift happened. Bangalore faced a drought in 1891-92 when the



*If you are looking at the topography of the city, there is one part to the east which is the maidan or the bayalu—grassy, rolling plains where the soil is fertile. Early settlements started off here and inscriptions tell you that people were creating tanks and using that for irrigated agriculture here. The area to the west is rocky, undulating and they call this the malnad area. It has granite rocks and the soil is very thin, with thorny scrub forest and a lot of wildlife*



city was running out of water, but couldn't find space to build any more tanks. Following this, the Arkavathy river was dammed and they pumped water into the city. As a result, the entire city began to get piped water, and as soon as that happens, we see a complete decay in the way lakes, wells and *kalyanis* are treated and conserved. They now start talking of them as cesspools of sewage and the cause of malaria, plague and cholera. They drain the water because they say lakes are sources of flooding. They become waste space that gets absorbed by the city. The whole narrative around water changes completely.

