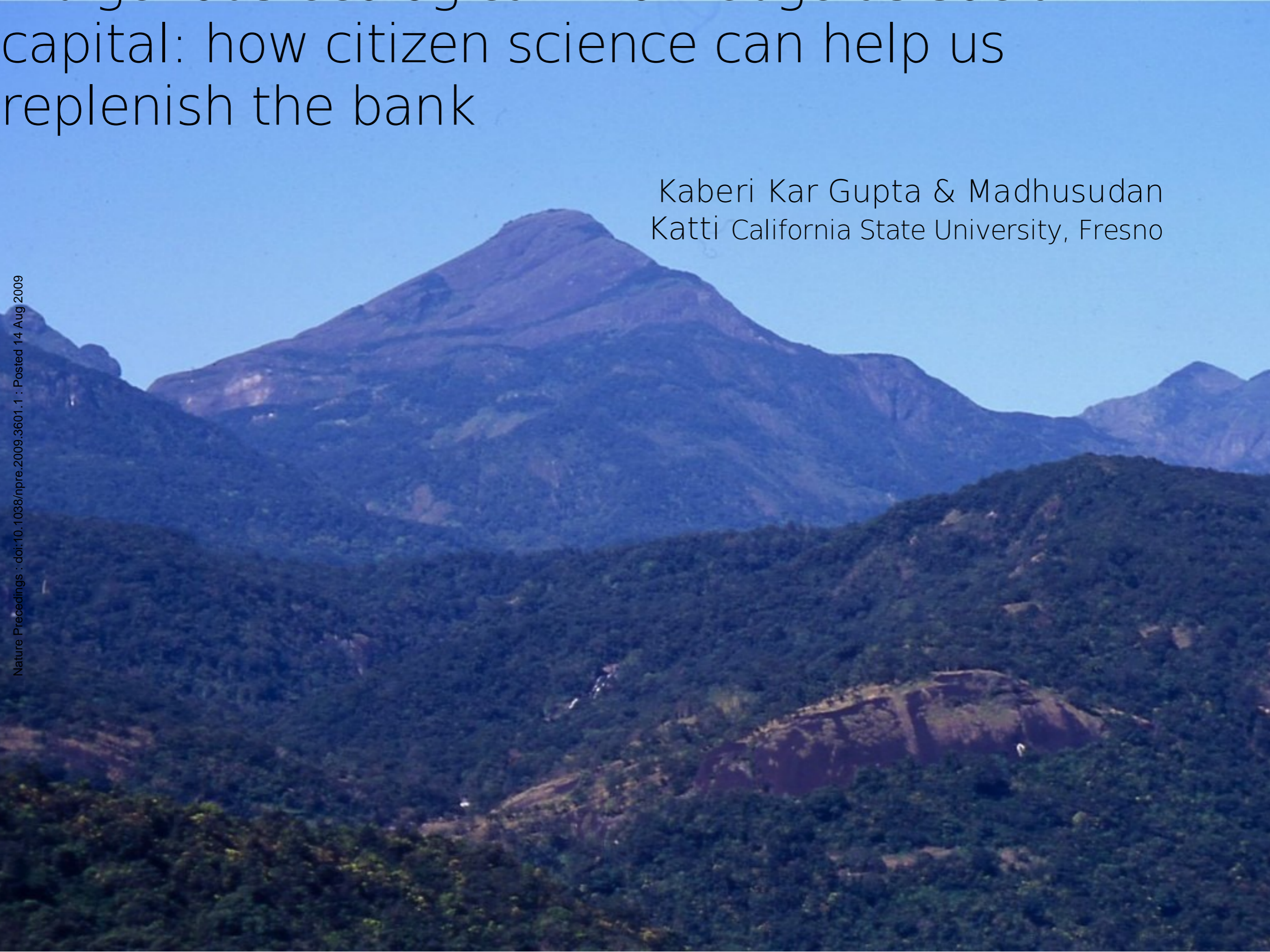


capital: how citizen science can help us replenish the bank

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What is your local ecological knowledge today?

Ecological information for life and death...

- Finding food is important for fitness
- Knowledge about food resources - what, where, when - has benefits
- Acquiring knowledge also carries costs - e.g., information processing, memory, social costs of sharing.
- The amount of ecological information as a resource that is processed and retained is therefore a matter of balancing these costs and benefits



photo: Kalyan Varma

... and beyond

- Humans are more curious about their environment in ways not directly related to their actual survival
 - example: bird watching, star gazing, mushroom watching, fishing, trainspotting





As humanity becomes urban and more disconnected from "nature"

we do not need to know where the food comes from, how it is grown or how it is processed

losing ecological knowledge of our surrounding environment

even when we talk about ecology, it is from a far away place shown on TV or read in a book

the loss of ecological knowledge from this extinction of experience is a hidden dimension of loss of

biodiversity that we seldom recognize!

What is indigenous ecological knowledge?

- Local communities' ecological knowledge pool contains information about:
 - uses of species, products, and habitats
 - taxonomy of local species
 - distribution & abundance of species in space and time
 - phenology - when and where which species is found



Ecological Knowledge as Social Capital

- Ecological knowledge in a community or culture is a dynamic entity:
 - it changes with the availability of resources and demands within local communities
 - it is acquired over time and through accumulation of experience and experiments and understanding of the environment
 - it can be a shared resource to govern natural resources to achieve individual and community goals
- Ecological knowledge is a type of social capital that may be understood by applying economic principles
 - the amount of ecological knowledge in a given community is a dynamic outcome of how much that community invests in acquiring and retaining that knowledge
 - therefore, a cost-benefit analysis may help understand why we know what we know about our environments

Benefits of ecological knowledge...

- Benefits of indigenous knowledge are thus well known, but
- Little attention is paid to the costs of acquiring and retaining that knowledge!
 - conservation projects can themselves change the previous cost/benefits resulting in loss of knowledge
- Ecological knowledge can be developed and applied more effectively if we understand costs and benefits for local people



Indigenous communities and ecological knowledge

- Conservation projects rely upon ecological knowledge, which may come from expert sources, as well as non-expert indigenous sources
- We often rely upon local knowledge for, e.g.,
 - research - e.g., finding rare species, trapping
 - ecotourism
 - using local people for guarding/managing natural resources in their community



Case study

- Ecological knowledge and its application within the existing bureaucracy:
- Kani tribe in Kalakad-Mundanthurai Tiger Reserve, southern India in 10 years
 - jobs in forest department
 - absorbed in the existing institutional structure
 - their retention of knowledge of the forest changed
 - survival no longer dependent upon knowing the forest, but simply cashing a paycheck
 - few incentives to spend time paying attention to ecological cues
 - attraction of market forces and outside culture taking youngsters away from forest
- On the other hand, Kani and non Kani locals who are working with researchers in KMTR have retained and enhanced their ecological knowledge



Another example

- Keoladeo Ghana National Park in Bharatpur
 - World Heritage site for migratory waterfowl wintering in northern India
 - Outside the government bureaucracy
 - Cycle rickshaw pullers know the locations of birds, scientific names and the habitats
 - better the knowledge of birds, more tourists they get, more income
 - recent development of ecological knowledge specific to the area which may disappear if not used



Conservation Tool: Citizen Science and Ecological Knowledge

- Citizen science approach in conservation
 - not so new in the west with birders doing christmas count for monitoring bird populations
 - becoming more quantitative and used by researchers as we will hear later in the session
 - taps into some people's curiosity about nature, and desire to make and share observations
 - provides new social incentives and benefits to acquiring and retaining ecological knowledge

Information technology, globalization, ecological knowledge and citizen science....

Are we all cyberborg?!!

- modern TV, cable network and internet
- cell phones and GPS
- digital cameras
- All of these have produced a new breed of amateur naturalist in urban areas
- Lower costs of acquiring, retaining, and sharing ecological information



How to replenish the ecological knowledge bank

- The challenge is to bring together the energy of citizen science driven by amateurs with traditional knowledge acquired and retained for survival reasons
- How do we change the incentives for people to pay more attention to ecological cues when their lives don't depend upon it?
 - make ecological knowledge directly beneficial
 - ecotourism, sustainable harvest, other market incentives
 - make ecological knowledge “cool”
 - tap into innate curiosity, drive to know
 - provide new social “status” benefits of participating in citizen science to acquire ecological knowledge

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