The Science of Saving Tigers, K. Ullas Karanth. Universities Press (India) Private Ltd, 3-6-747/1/A and 3-6-754/1, Himayatnagar, Hyderabad 500 029. 2011. 340 pp. Price: Rs 550.

Ullas Karanth has today evolved from a naturalist into one of world's finest experts on tiger behaviour and population dynamics. Over the last two decades of patience and hard work, he has contributed to our better understanding of the ecology and behaviour of tigers and their prey species dynamics. Some of Karanth's best papers are compiled in this book aptly titled, *The Science of Saving Tigers*. An important aspect of this book is his achievement to replace speculations and anecdotal evidences in Indian wildlife biology with scientific observations using the latest possible technologies. The first paper in this book introduces the evolutionary history, ecology and behaviour of tiger. It highlights the resilience of the tiger despite a drastic loss in its habitat and prey, and relentless persecution. The paper concludes that in order to ensure continued survival of the tiger in its last few habitats, we must explore ways to protect and increase its prey populations.

The next four papers are systematic studies to understand prey species densities and dynamics, and how they in turn control and influence tiger population dynamics and numbers. The scene of action was the Nagarhole National Park, Karnataka, and was the first attempt in an Indian forest to determine prey densities in different ecological niches by direct observations and statistical-based sampling methods, replacing the more inaccurate total count method. Studies were also undertaken to understand how the tiger and its co-predators, leopard and dhole, hunt different prey species in the same habitats and facilitate their co-existence through ecological separation. These studies subsequently helped in predicting how habitat richness and differences drive prey densities and compositions, which in turn drive large carnivore numbers and composition in tropical forests, leading to the paper 'Prey depletion as a critical determinant of tiger population viability'.

Chapters 6–9 are studies on non-invasive methods of estimating abundance, occupancy and other population parameters in a solitary and secretive animal like the tiger living at low densities in tropical forests. These studies demonstrate that tiger densities can be accurately estimated by both the photographic capture–recapture method and by estimating prey abundances. Photographic capture data of several years can also be used to understand demographic parameters like survival, migration and recruitment, as presented in the paper 'Assessing tiger population dynamics using photographic capture–recapture sampling'. Through all these papers, Karanth tries to repeatedly emphasize the importance of protecting prey species by efficient park management as an effective way to save the tigers.

The next chapter, 'Local hunting and the conservation of large mammals in India' is an attempt to understand who is killing prey species despite protection. In addition to local consumption, there is a growing urban market for wild meat, and many times wild animals are killed in retaliation to crop damage. Three papers also address the issue of increasing human–tiger conflicts in human–dominated landscapes, and explore viable options and policies to mitigate these conflicts by educating people living in and around reserves about the importance of wild animals, by changing their livelihood practices like agriculture and cattle rearing, by providing financial compensation and incentives, and by strict law-enforcement. In 'An ecology-based policy framework for human–tiger co-existence in India', Karanth and Gopal envisage to increase healthy tiger habitats in India to at least 100,000 sq. km, having 50–100 connected wild tiger populations with an overall population size of 5000–15,000 tigers. This is definitely going to increase the incidence of human–tiger conflicts when transient animals move into human landscapes.

There is no single solution to human–tiger conflicts. 'Long-term monitoring of tigers: lessons from Nagarhole' is exemplary in showing what is possible in other protected areas. This study also highlights the fact that small tiger populations can be recovered and stabilized by improving densities of large ungulates. Karanth next expresses his scepticism on major eco-development initiatives taken up by the Government and World Bank projects, which are more corruption-prone and do not help in the recovery of the tigers. 'A tiger in your bank' is a strong critique against the involvement of the World Bank in tiger conservation in India, and was first published in *Down to Earth* in 2008.

'Science deficiency in conservation practice: the monitoring of tiger populations in India' again addresses the problem of monitoring tiger populations and herein the traditional pugmark census method is strongly criticized by Karanth and co-authors. In this paper they identify three goals in monitoring tiger populations: distribution mapping, tracing relative abundance and estimating absolute abundance. In the following two papers, Karanth analyses the report entitled 'Joining the dots' published by the Tiger Task Force in 2005. The Task Force recommended 37,000 sq. km of inviolate tiger habitat which could support a maximum of 3700 tigers in India. This he feels is too low and should be instead 100,000 sq. km to ensure the future of tigers in India forever. Finally 'Defragmenting nature' critically examines the premise of the Tribal Act that the forest supports the forest-dwellers and they in turn will look after the forest and not degrade it. This is a myth, and habitat fragmentation is the greatest factor today disrupting wildlife viability. Forest land-use and exploitation should be strictly prohibited to save India's tigers forever.

ANURADHA REDDY
S. SHIVAJI*

*Centre for Cellular and Molecular Biology,
Uppal Road,
Hyderabad 500 007, India
e-mail: shivas@ccmb.res.in