

# RAMAN SUKUMAR

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**Education** : Bachelor of Science 1977, University of Madras  
  
Master of Science 1979, University of Madras  
  
Doctor of Philosophy 1985, Indian Institute of Science

**Date of birth** : 3<sup>rd</sup> April 1955

**Positions held** : Professor, Centre for Ecological Sciences, Indian Institute of Science (IISc.) (2003- present). Faculty since 1986 at the same Institute.  
  
Associate Faculty, Divecha Centre for Climate Change, IISc. (2009-)  
  
Adjunct Faculty, Columbia University (2001-present)  
  
Fulbright Fellow, Princeton University (1991-92)

**Specialization** : ECOLOGY AND CONSERVATION BIOLOGY

- *Wildlife Ecology* (Asian elephant ecology and management; Population dynamics; Wildlife-human conflicts)
- *Tropical forest ecology* (Diversity, structure and dynamics of tropical forests; Conservation of tropical forests)
- *Climate change* (Reconstructing Quaternary climate change; Assessing impacts of future climate change on forests and biodiversity)

**Institutional affiliations** : Managing Trustee, Asian Nature Conservation Foundation, Bangalore  
  
Trustee, Wildlife Trust of India, New Delhi

## Research and Conservation Experience

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- 1975 – 1979 : *Research on the flora and fauna of Guindy National Park, Madras*
- I began my natural history pursuits in the city of Madras by studying the ecology of this remnant jungle and contributed in a small way to its eventual recognition as a national park.
- 1980 – 1985 : *Study of the ecology of Asian elephants and elephant-human conflicts in southern India*
- This research was part of the Ph.D programme and focused on elephant-human conflicts in relation to the natural ecology of elephants in the Biligirirangan hills in southern India. It is recognized as not only a pioneering scientific study of wild Asian elephants but also as the first to address in depth the ecological basis of conflict between a large mammal and humans.
- 1985 – 1988 : *Survey and design of the Nilgiri Biosphere Reserve, southern India*
- Carried out field surveys and helped design the Nilgiri Biosphere Reserve, a 5500 sq. km reserve that is the country's first biosphere reserve. As part of this conservation programme I also formulated research programmes and set up an information system pertaining to the Nilgiri Biosphere Reserve for the Department of Environment, Government of India. Several long-term research projects that interface with conservation and management were also set up, some of which are described below.
- 1988 – present: *Monitoring the large mammal populations of Mudumalai*
- Set up a long-term monitoring system using line transects of the population dynamics of large mammals in Mudumalai Sanctuary, a part of the Nilgiri Biosphere Reserve. This includes a study of predation patterns of the dhole (Asiatic wild dog), assessing the population structure and numbers of herbivores (elephants, gaur, spotted deer and sambar) and modelling the dynamics of their interactions.
- 1988 – present: *Dynamics and management of tropical forests*
- Beginning in 1988 a number of permanent plots have been set up in the Nilgiri Biosphere Reserve for long-term monitoring of the dynamics of forest communities in relation to climate, fire, impact of elephants and human disturbances. These plots monitor the fate of about 50,000 individual trees from about 300 species and is the largest and longest running programme of its kind in India. The Centre for Tropical Forest Science of the Smithsonian Institution is a collaborator in this work.

- 1988 – present: *Monitoring ivory poaching and the dynamics of Asian elephant populations*
- Long-term monitoring of the population dynamics of Asian elephant populations is being carried out at three sites (Mudumalai, Nagarahole, Periyar) in southern India including two within the Nilgiri Biosphere Reserve, and the impact of ivory poaching is being assessed.
- 1999 – 2005 : *Reconstructing past climate change in southern India*
- The past climate and vegetation of the Nilgiri Hills, going back to the late Quaternary (about 40,000 years before present), has been studied through stable carbon and oxygen isotope analyses of peat bogs on the plateau.
- 1995 – present: *Impact of future climate change on forests and biodiversity in India*
- The potential impact of future climate change on forests in the India is being assessed through models integrating global and regional climate change projections with vegetation change models. The implications of such change during the 21<sup>st</sup> century for protected areas and wildlife conservation is also being assessed.
- 1993 – 1996 : *Survey and conservation of elephants in Myanmar*
- Over a three year period several surveys were carried out of the extensive elephant habitats in the Pegu Yoma and Arakan Yoma range in Myanmar. These surveys provided some of the first objective estimates of the elephant population of the country. As a result of this work the country set up its first elephant sanctuary, the Gwa Elephant Sanctuary, in 1997.
- 2000 – 2001 : *Survey and conservation of elephants in Cat Tien NP, Vietnam*
- During 2000 training in field training methods was provided to staff of the Cat Tien National Park, and a detailed survey of the remnant elephant population of the park carried out during 2001 with a view to providing an action plan for its conservation.
- 1999 – 2005 : *Molecular genetics and phylogeography of Asian elephant populations*
- A comprehensive study of population genetic structure, variation and phylogeography of Asian elephant populations through extracting DNA from dung was carried out for Indian and Myanmar elephants. This study provided the much needed data for the two major populations of this species in order to derive the evolutionary relationships among Asian elephant populations across the continent.
- 2001 – present: *Radio-telemetry and GPS monitoring of elephants in West Bengal, India*
- A detailed study of elephant ecology is being carried out in the state of West Bengal that experiences one of the highest levels of elephant-human conflict in Asia. Under this study eleven elephants have been fitted with radio-collars to

study their movement, use of corridors and patterns of conflict with human settlements across a fragmented landscape. The novelty of this study has been the first “satellite-collaring” of an elephant in the country; three elephants in conflict with villagers now serve as prototypes for an internet-based “early warning” system for field managers of the movement of troublesome elephants.

2008 – present: *Ecology and mitigation of wildlife-human conflicts*

I have been coordinating a multi-institutional and comprehensive research programme on wildlife-human conflicts under a joint Indo-Norwegian initiative. Aspects covered include the ecological and social dimensions of conflict of humans with several species of herbivores (elephant, blackbuck, nilgai, wild pig) and carnivores (leopard, wolf) across the country. The study will also make cross-cultural comparisons of wildlife-human conflicts in India and Norway.

## Teaching, Training and Lectures

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I have taught courses on Ecology and Conservation Biology for graduate students since 1986.

Have also undertaken training programmes for forest/wildlife department personnel from Asian countries including India, Bangladesh, Myanmar, Vietnam, Malaysia, Indonesia and China.

I have also spoken extensively on conservation issues relating to Asian elephants at venues around the world including:

Zoos & Zoological Societies:

San Diego Zoo, Los Angeles Zoo, Oakland Zoo, Minnesota Zoo, Brookfield Zoo, Lincoln Park Zoo, Syracuse Zoo, Bronx Zoo, National Zoo (DC), Philadelphia Zoo, Jacksonville Zoo, Riddle’s Elephant Sanctuary, Rotterdam Zoo, Emmen Zoo, Munster Zoo, Chester Zoo, Zoological Society of London, Melbourne Zoo.

Universities:

University of California at San Diego, Davis and Berkeley, Stanford University, Pasadena Institute of Technology, University of Minnesota, University of Wisconsin, Princeton University, Columbia University, Cornell University, Boston University, University of Massachusetts, University of Florida, University of Oxford, University College-London, University of Zurich, University of Kiel, Yale University, University of Michigan

Congresses & Symposia:

Major international meetings/symposia in which I have made presentations include the Society for Conservation Biology, Association for Tropical Biology, International Congress of Ecology, International Congress of Mammalogy, Elephant Keeper’s Association of North America, and International Elephant Foundation.

## Awards and Honours

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- National Science Talent Award, National Council for Educational Research and Training, 1973.
- Presidential Award of the Chicago Zoological Society, 1991.
- Order of the Golden Ark, The Netherlands, 1997.
- Fellow of the Indian Academy of Sciences, (elected in 2000).
- Whitley Gold Award for International Nature Conservation, U.K., 2003.
- TN Khoshoo Memorial Award for Conservation, India, 2004 (first recipient of this award).
- Fellow of the Indian National Science Academy (elected in 2005).
- UGC National Swami Pranavananda Saraswati Award in Environmental Science and Ecology, 2006.
- International Cosmos Prize, Japan, 2006.
- Fellow, Geological Society of India (elected in 2006).
- B.P. Pal National Environment Fellowship Award for Biodiversity, India, 2007.
- Commendation by the Prime Minister for contributions to the Intergovernmental Panel on Climate Change (IPCC) that shared the Noble Peace Prize, 2007.
- J.C. Bose National Fellow, Department of Science & Technology, India (2010-15).
- Karuna Award for Contributions to National Development, Karuna Trust, Bangalore, 2010.
- Taru Lalvani Award for Protection of the Environment, Rotary Club of Bombay (2011).
- Doctor of Science (*Honoris causa*), Vidyasagar University, West Bengal, 2012.
- Fellow, The World Academy of Sciences, Trieste, Italy, 2013.
- Doctor of Sciences (*Honoris causa*), St. Olaf College, USA, 2014.

## Membership of Key Professional and Advisory Bodies and Committees

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- Deputy Chair, IUCN/SSC Asian Elephant Specialist Group (1988 -1996), and  
Chair, IUCN/SSC Asian Elephant Specialist Group (1997 - 2004)

As Deputy Chair, I provided key support to the Chair of the group in providing the scientific framework for field methods and organizing training programmes for estimating elephant

populations in forests, and setting up of a field survey project in Myanmar. This was also a period when I lectured extensively worldwide on the plight of the Asian elephant and the urgent need to launch projects for their conservation.

During my chairmanship of the group, some of the key achievements were providing technical inputs to setting up CITES/MIKE (Monitoring the Illegal Killing of Elephants) as mandated by the Conference of Parties to CITES (at Harare in 1997), revising the Asian Elephant Action Plan (along with Deputy Chair, Charles Santiapillai and several members of the group), and organizing a major meeting in Cambodia that brought international focus on the plight of Asian elephants in Indo-China.

- Member, IUCN/SSC Conservation Breeding Specialist Group (1990 - 2003);

As a member of this group I helped carry out several of the early PHVAs (Population and Habitat Viability Analysis) for species such as the Lion-tailed macaque, Sumatran rhino, Asiatic One-horned rhino and Asian elephant (in Sumatra).

- Member, Technical Advisory Group, Monitoring the Illegal Killing of Elephants, CITES (2001-present)

As a member of this group I have provided technical inputs to setting up the monitoring programme, particularly in Asia.

- Contributor, Intergovernmental Panel on Climate Change (1996 - 2007)

I have been part of various exercises of the IPCC including the 2<sup>nd</sup> Assessment Report (1996), the Special Report on Land-use, Land-use change and Forestry (2000), and the ongoing 4<sup>th</sup> Assessment (to be completed in 2008).

- Member, Indian Board for Wildlife, Government of India (1996 - 2003)

The board is the apex policy making body for wildlife conservation in the country and is chaired by the Prime Minister of India. As a member of this board for two terms I have contributed to decision-making on several conservation issues.

- Member, Project Elephant Steering Committee, Government of India (1992-2007, 2012-present)

I was a member of the task force set up in 1989 by the Indian government to prepare the blueprint for the country's Project Elephant, a conservation project that aims to protect elephants and its habitat in eleven landscapes across the country. Since its launch in 1992 I have been a member of the steering committee that sets policies and oversees their implementation. In this capacity I have been the coordinator for the southern Indian region and have worked closely with the forest/wildlife departments of the southern states of Karnataka, Tamilnadu and Kerala in the conservation and management of elephant populations.

- Member, National Tiger Conservation Authority, Government of India (2006-08)
- Chairman, Training, Research and Academic Council, Wildlife Institute of India (2011-2014)
- Member, Western Ghats Ecology Expert Panel, Government of India (2010-2011)

- Chairman, Karnataka Elephant Task Force (appointed by Karnataka High Court), 2012
- Member, Planning Committee for three annual 'SERB-Schools in Chemical Ecology', DST-SERB, 2013.
- Member, Research Council of CSIR-Center for Cellular & Molecular Biology (CSIR-CCMB), Hyderabad, CSIR – Planning & Performance Division, New Delhi (1 August 2013 – 31 July 2016)
- Chairman, Assessment Committees for Normal and Two Year Earlier Assessment of eligible staff in Group III(3) to III(6) of Center for Cellular & Molecular Biology (CCMB), Hyderabad for the year 2012-2013.
- Member, PG Board of Studies in Ecology & Environmental Sciences, Pondicherry University, Puducherry (nov.2013 – 30 nov. 2016).
- Member, Consultative Committee to oversee the capturing operation of 25 elephants in Alur and Arkalagud Ranges of Hassan Division, Karnataka (January 2014-).
- Chairman, Recruitment, Assessment and Promotion Committee (RAPC) of SACON (Aug.2014-).
- Advisory Committee Meeting for the UGC-CAS Phase III Program at our School of Biological Sciences, Madurai Kamaraj University (MKU), Madurai (2015).
- Member, Selection committee on the appointment of Associate Professor in Biology, Indian Institute of Science Education and Research (IISER), Thiruvananthapuram (2015).
- Member, School Board in Life Sciences, Pondicherry University, Puducherry. (30.6.2015-30.6.2018).

Served as a member of various other advisory and selection committees including:

- a) Ecosystem Research Committee (Ministry of Environment and Forests, Government of India 2000-),
- b) Project Advisory Committee for Animal Sciences (Department of Science and Technology, Government of India 1995-1998, 2012-present).
- c) Governing Body of the Wildlife Institute of India, Dehra Dun (2001-present).
- d) Expert Group for Coordinated Research in Eastern & Western Ghats Regions, Ministry of Environment and Forests, Government of India (2003-2006).
- e) Governing Council of the Salim Ali Centre for Ornithology and Natural History, Coimbatore (2004-2012).
- f) Research Advisory Council of Kerala Forest Research Institute, Peechi (2003-present).
- g) Scientific Advisory Committee of Vivekananda Institute of Tropical Mycology (VINSTROM) (2005- present).
- h) Selection Committee for scientist, Salim Ali Centre for Ornithology and Natural History (2009-).
- i) Selection Committee for Director, Salim Ali Centre for Ornithology and Natural History (2009-2012).

- j) Contribution to India's National Communication on the UN Framework Convention on Climate Change (2006-2008).
- k) Assistance to Project Elephant Directorate, Ministry of Environment and Forests, in implementing CITES MIKE (Monitoring the Illegal Killing of Elephants) programme (2006-).
- l) National Board for Wildlife sub-committee for rationalization for National Parks and Wildlife Sanctuaries (2006-2009).
- m) Committee for examining the suggestions made in the Tiger Task Force and the Special Investigation Team of the CBI relating to the Wildlife (Protection) Act (2006-present)
- n) Expert non-official member for suggesting infrastructure enhancement in priority protected areas including tiger reserves for considering in the XI<sup>th</sup> Plan (2006-).
- o) Reconstitution of Career Assessment Panel (CAP), Salim Ali Centre for Ornithology and Natural History, Coimbatore (2006-2012).
- p) Committee for Management Effectiveness Evaluation (MEE) of the Protected Area Network in India (2006-2009).
- q) Working Group on Wildlife, biodiversity, traditional knowledge, and animal welfare for the Environment & Forests Sector for the 11<sup>th</sup> 5-year Plan (2006-present).
- r) Committee for selection of Dr. Salim Ali National Wildlife Fellowship, 2005.
- s) Shri Kailash Sankhla National Wildlife Fellowship, 2006, 2012, 2013.
- t) Expert member in the National Tiger Conservation Authority (2006-2009).
- u) Technical Support Group for framing Rules under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (2007-).
- v) Expert Committee on Climate Change to study the impact of climate change in India, MoEF, New Delhi (2007-2010).
- w) Administrative Committee of the National Tiger Conservation Authority (2006-2009).
- x) Expert Committee of elephant deaths due to train accidents, MOEF, New Delhi. (2008-).
- y) Expert committee on preparing guidelines on ameliorative measures for biodiversity rich areas threatened by overuse, abuse or neglect, National Biodiversity Authority, GoI, Chennai. (2009-2010).
- z) Standing Advisory Committee for Atmospheric Research and Climate Change (SAC-ARCC), MOEF, New Delhi. (2009-2012).
- aa) Expert Committee for finalizing the proposal to converting existing Environmental Protection Training and Research Institute (EPTRI), Hyderabad into National Environmental Protection Training and Research Institute (NEPTRI), MoEF, New Delhi. (2009-).
- bb) Indian National Man and Biosphere (MAB) Committee, MoEF, New Delhi. (2010-2013) (2015-2018).
- cc) Expert Group-B on Conservation and Sustainable Utilization of Natural Resources, MoEF, New Delhi. (2010-2013).
- dd) Research Council of National Botanical Research Institute, Lucknow. (2010-2013).
- ee) Research Advisory and Monitoring Committee, Zoological Survey of India (2010-2012)
- ff) National Committee for India-IIASA Programme (2011- present).
- gg) Constitution of a Working Group on Ecosystem resilience, Biodiversity and Sustainable Livelihood for the 12<sup>th</sup> Five Year Plan, Planning Commission, E&F Division, New Delhi. (2012-2017).
- hh) Constitution of a sub-group on Climate Change under the Working Group and Climate Change for the 12<sup>th</sup> Five Year Plan, Planning Commission, E&F Division, New Delhi. (2012-2017).
- ii) Technical Committee for facilitating organization of the E-50:50 Meet, MoEF, New Delhi. (2011-).
- jj) Search-cum-selection committee for Vice Chancellor of TERI University, New Delhi (2012).
- kk) Expert, Multidisciplinary Expert Panel of the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), MoEF, New Delhi. (2013-).



- ll) High level working group for consideration of recognition/accreditation of institutions with a view to bringing objectivity and efficiency in wildlife management. MoEF, New Delhi. (2013-).
- mm) Expert Member, Technical expert committee for the proposed National Biodiversity Museum to be set up in Hyderabad, MoEF, New Delhi. (2013-2014).
- nn) Task Force on Greening Rural Development. Ministry of Rural Development (Monitoring Division), New Delhi. (2013-).
- oo) Expert Committee on Climate Change, an umbrella thematic scheme on Climate Change Action Programme (CCAP), MoEF, New Delhi (2014-2016).
- pp) Committee to review the implementation of the National Wildlife Action Plan (2002-2016) and to develop a National Wildlife Action Plan 2017-2031 based on the evaluation and the lesson learnt. (2002-2016).
- qq) Member, Expert Committee to study problem of human-elephant conflict in Kolhapur district of Maharashtra. (2015)
- rr) Member, Study Steering Committee for the study on conservation of agro-biodiversity and ecosystem management: a study in Indian agroclimatic sub-zones. (2015-2018)
- ss) Member, Working Group of the Strengthening of the Elephant Reserve/Elephant Corridors (2015-
- tt) Member, Expert group to review the Schedule-I of the Wildlife (Protection) Act, 1972. (2015)
- uu) Member, Search-cum-Selection committee for appointment to the post of Member Secretary, Central Zoo Authority (2015).
- vv) Member of the Departmental Peer Review Committee (DPRC) for considering the cases for Extension of Service of Scientists beyond the age of Superannuation by the Prime Minister's Office (2015).

## Publications

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### **Books**

**Sukumar, R.** (1989). *The Asian Elephant: Ecology and Management*. Cambridge Studies in Applied Ecology and Resource Management. Cambridge University Press, Cambridge, U. K.

**Sukumar, R.** (1994). *Elephant Days and Nights: Ten Years with the Indian Elephant*. Oxford University Press, New Delhi.

**Sukumar, R.** (2003). *The Living Elephants: Evolutionary Ecology, Behavior and Conservation*. Oxford University Press, New York.

**Sukumar, R.** (2011). *The Story of Asia's Elephants*. The Marg Foundation, Mumbai.

### **PAPERS IN PEER-REVIEWED JOURNALS & BOOK CHAPTERS**

#### ***Wildlife Ecology***

**Sukumar, R.** (1986). Elephant-man conflict in Karnataka. In: C.J. Saldanha (ed.) *Karnataka – State of Environment 1984-85 Report*. Centre for Taxonomic Studies, Bangalore.

**Sukumar, R.** (1986). The elephant populations of India: strategies for conservation. *Proceedings of the Indian Academy of Sciences (Animal Sciences/Plant Sciences)* Suppl. November 1986, pp. 59-71.

- Sukumar, R.**, Bhattacharya, S.K. and Krishnamurthy, R.V. (1987). Carbon isotopic evidence for different feeding patterns in an Asian elephant population. *Current Science* **56**: 11-14.
- Sukumar, R.** and Gadgil, M. (1988). Male-female differences in foraging on crops by Asian elephants. *Animal Behaviour* **36**: 1233-1235.
- Sukumar, R.**, Joshi, N.V. and Krishnamurthy, V. (1988). Growth in the Asian elephant. *Proceedings of the Indian Academy of Sciences (Animal Sciences)* **97**: 561-571.
- Sukumar, R.** (1989). Ecology of the Asian elephant in southern India. I. Movement and habitat utilization patterns. *Journal of Tropical Ecology* **5**: 1-18.
- Sukumar, R.** (1990). Ecology of the Asian elephant in southern India. II. Feeding habits and crop raiding patterns. *Journal of Tropical Ecology* **6**: 33-53.
- Sukumar, R.** (1990). The Nagarhole tiger controversy. *Current Science* **59**: 1213-1216.
- Sukumar, R.** (1991). The management of large mammals in relation to male strategies and conflict with people. *Biological Conservation* **55**: 93-102.
- Sukumar, R.** (1991). Ecology. In: Eltringham, S.K. (ed.) *The Illustrated Encyclopedia of Elephants*, Salamander Books, U.K. Pp.78-101.
- Sukumar, R.** (1991). Conservation. In: Eltringham, S.K. (ed.) *The Illustrated Encyclopedia of Elephants*, Salamander Books, U.K. Pp. 158-179.
- Sukumar, R.** and Ramesh, R. (1992). Stable carbon isotope ratios in Asian elephant collagen: Implications for dietary studies. *Oecologia* **91**: 536-539.
- Varman, K.S. and **Sukumar, R.** (1993). Ecology of sambar in Mudumalai Sanctuary. In: Ohtaishi, N. and Shenoy, H.I. (eds.) *Deer of China: Biology and Management*. Elsevier Science Publications. Amsterdam. Pp. 273-284.
- Sukumar, R.** (1994). Wildlife-human conflict in India : an ecological and social perspective. In: Guha, R. (ed.) *Social Ecology*, Oxford University Press, New Delhi. Pp. 303-317.
- Raman, T.R.S., Menon, R.K.G. and **Sukumar, R.** (1995). Decline of blackbuck (*Antelope cervicapra*) in an insular nature reserve: The Guindy National Park, Madras. *Current Science* **68**: 578-580.
- Varman, K.S. and **Sukumar, R.** (1995). The line transect method for estimating densities of large mammals in a tropical deciduous forest : An evaluation of models and field experiments. *Journal of Biosciences* **20**: 273-287.
- Watve, M.G. and **Sukumar, R.** (1995). Parasite abundance and diversity in mammals: correlates with host ecology. *Proceedings of the National Academy of Sciences (USA)* **92**: 8945-8949.
- Sukumar, R.** (1995). Elephant raiders and rogues. *Natural History*, **104**: 52-61.

- Venkataraman, A.B., Arumugam, R. and **Sukumar, R.** (1995). The foraging ecology of dhole (*Cuon alpinus*) in Mudumalai Sanctuary, southern India. *Journal of Zoology* (London) **237**: 543-561.
- Sukumar, R.** (1995). Minimum viable populations for Asian elephant conservation. In: *A week with elephants*. Eds. J.C. Daniel and H. Datye, Bombay Natural History Society, Bombay and Oxford University Press, New Delhi. Pp. 279-288.
- Varman, K.S., Ramakrishnan, U. and **Sukumar, R.** (1995). Direct and indirect methods of censusing elephants in forests: a comparison from Mudumalai Sanctuary. In: *A week with elephants*. Eds. J.C. Daniel and H. Datye, Bombay Natural History Society, Bombay and Oxford University Press, New Delhi. Pp. 331-339.
- Sukumar, R.** and Ramesh, R. (1995). Elephant foraging: Is browse or grass more important? In: *A week with elephants*. Eds. J.C. Daniel and H. Datye, Bombay Natural History Society, Bombay and Oxford University Press, New Delhi. Pp. 368-374.
- Santosh, J.A. and **Sukumar, R.** (1995). Some solutions to problems in estimation of elephant densities. In: *A week with elephants*. Eds. J.C. Daniel and H. Datye, Bombay Natural History Society, Bombay and Oxford University Press, New Delhi. Pp.394-404.
- Sukumar, R.** and Santiapillai, C. (1996). *Elephas maximus*: status and distribution. Pp.327-331. In: Shoshani, J. & Tassy, P. (eds.) *The Proboscidea : Evolution and Palaeoecology of Elephants and Their Relatives*, Oxford University Press, Oxford. Part VI, Chapter 33.
- Raman, T.R.S., Menon, R.K.G. and **Sukumar, R.** (1996). Ecology and management of chital and blackbuck in Guindy National Park, Madras. *Journal of the Bombay Natural History Society* **93**: 178-192.
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- Shanker, K. and **Sukumar, R.** (1998). Community structure and demography of small mammal populations in insular montane forests in southern India. *Oecologia* **116**: 243-251.
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- Shanker, K. and **Sukumar, R.** (1999). Synchrony in small mammal populations of montane forest patches in southern India. *Journal of Animal Ecology* **68**: 50-59.
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- Rasmussen, L.E.L., Krishnamurthy, V. and **Sukumar, R.** (2005). Behavioural and chemical confirmation of the preovulatory pheromone, (Z)-7-dodecenyl acetate, in wild Asian elephants: its relationship to musth. *Behaviour*, **142**: 351-396.
- Vidya, T.N.C. and **Sukumar, R.** (2005). Amplification success and feasibility of using microsatellite loci amplified from dung to population genetic studies of the Asian elephant (*Elephas maximus*). *Current Science*, **88**: 489-492.
- Vidya, T.N.C., Fernando, P., Melnick, D.J. and **Sukumar, R.** (2005). Population genetic structure and conservation of Asian elephant (*Elephas maximus*) across India. *Animal Conservation*, **8**: 377-388.
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