

Title of the project:

Conserve Bats in the International year of Bats in India

Principal Investigator:

Dr. J. Tagore Derose, M.sc.,Ph.D.,

Director, Chevaliar Roche Society, Thoothukudi, Tamilnadu, India.

Co-Investigator:

Dr. L. Jeyaprabha, M.sc.,M.phil., M.Ed., Ph.D., Asst. Professor,

Department of Zoology, Sarah Tucker College, Palayamkottai, Tamilnadu, India.

Introduction:

Conservation biology in India must always be evaluated in the context of its impact on both wildlife and humans. The challenge of providing basic necessities for this enormous population is daunting, and it is increasingly difficult to justify conservation of natural resources in the face of abject poverty, hunger, and the desperate need for more space. The habitat available for flora and fauna is decreasing at an astonishing rate, leaving many tiny fragments like life rafts adrift in a sea of humanity. Against this backdrop, the future of India's bats and conservation biology in general might seem hopelessly bleak. Yet there is hope. This hope arises not from the nation's leaders and policymakers, but from the people: the non government organizations and the many grassroots groups that champion the cause of sustainable development and the preservation of natural habitats. Bats are unique, elegant and fascinating. They are the only true flying mammals that exhibit sustainable flight. Bats belong to the order Chiroptera, with 1,001 species. Their dietary variation classifies them into sub orders - the Megachiroptera with 167 species and the Microchiroptera with 834 species South Asia has 123 species of bats, and almost all of them reside in India. Being a tropical country, India has a very rich diversity of bat fauna. According to IUCN Criteria Version 3:1 India has 114 species of bats representing 7 families of Microchiroptera (Insectivorous bats) and one family of Megachiroptera (Fruit bats).



They act as "Key stone species" and keep the ecosystem in balance. They are one of the beneficial members of the animal community. The Megachiropterans are of great importance for the maintenance and re-establishments of tropical forest diversity. They contribute to the maintenance of tropical diversity by dispersing pollen and seeds. They are highly mobile and transport seeds over greater distances than other mammals and birds. One bat can consume upto 60,000 seeds of fruits like fig per night and transfer more than a ton seeds from the fruiting trees and do faraway dispersal. So they help in the survival of plants, animals and, thus, of mankind.

Microchiropterans are the important components of agro ecosystem and forest ecosystem as primary consumers of nocturnal insect pests and act as pest control agents. They relatively consume in large volumes upto 100% of body weight per night and travel long distance several kilometers per night. In spite of the high beneficial role of bats, in India they still have a negative public image. They are persecuted because of ignorance about their life history, behaviour and their role in ecosystem. They are highly susceptible to environmental disruption and many species have declined drastically in response to human activity. Bat Conservation is not possible if the present generation is not aware of its importance and the need for conservation. The conservation of their feeding and roosting habitats are vital to conserve these unrecognized beneficiaries of the ecosystem. Support for studies that examine their feeding habits and expand public awareness should be a high priority. Lastly, as always, the government needs to be constantly encouraged to remove fruit bats from its vermin category and to protect these highly beneficial creatures.

By the year 2050, India will have a population of 1.5 billion. The conservation challenges that lie ahead make those of the twentieth century pale by comparison. But we are making progress and the cause is far from lost.

The available bat species in Tirunelveli and Thoothukudi District

Nineteen bat species (3 species of frugivorous bats, 16 species of insectivorous bats) belonging to seven families are available in this area. Three genus of the megachiropteran family Pteropodidae *Rousettus*, *Pteropus* and *Cynopterus* are very common in their distribution.

Among the microchiropteran genus, the members of Megadermatidae (one species), Emballonuridae (three species), Rhinopomatidae (one species), Hipposideridae (Three species) and Molossidae (one species) are distributed. The genus of the Vespertilionidae family has the maximum of seven species representation with wider distribution.

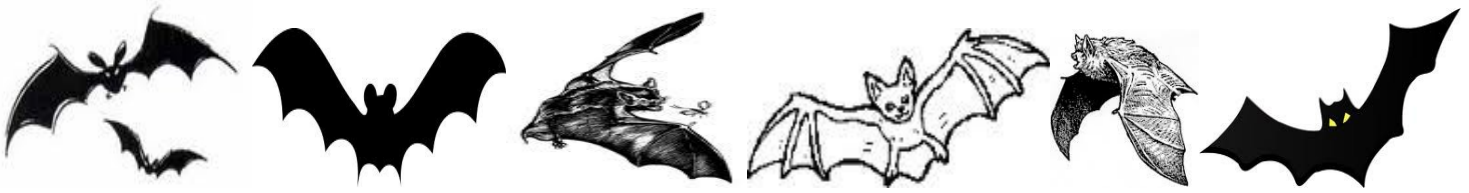


Roosting Sites:

Bats generally prefer to roost during daytime in diversified roosting habitats such as caves, trees and anthropogenic structures.

Sl. No.	Order / Family	Type of Roost
1	Suborder – Megachiroptera Family - Pteropodidae	Temple corridors, Caves, Trees
2	Suborder – Microchiroptera Family - Rhinopomatidae	Caves – Rock crevices
3	Family - Emballonuridae	Temples, Caves - Rock crevices, Dark dungeons of Temples, Trunk of Palmyra palm trees
4	Family - Megadermatidae	Abandoned buildings, Temple Dome, Caves
5	Family - Hipposideridae	Abandoned buildings, Caves, Temples
6	Family - Molossidae	Temple- Crevices
7	Family - Vespertilionidae	Abandoned buildings, Crevices of old buildings, Cracks of wooden switchboard, Crowns of Palmyra palm trees

Roosting place of *Pteropus giganteus* - Thoothukudi District (Athur, Vilathikulam, Eral and Srivaigundam areas and Tirunelveli District (Morapanadu, Melapalayam, V.K. Puram, Nanguneri, Panakudi, Thirupudaimaruthur and Kourtalam), Tamilnadu, India. *R. leschenaulti* are living in Hindu Temples. *C. sphinx* are commonly distributed throughout the area. All other insectivorous bats are distributed throughout the villages of both Districts.



Threats for Bat survival and Conservatory Interventions:

Bats are the primary predators of night-time insects, they are extremely important for the food cycle of the ecosystem. Bat populations are under severe threat in India (CAMP, 2002). The threats to bats are man-made. A decade back, Bats were found abundantly in Thoothukudi & Tirunelveli Districts in Tamilnadu. But now they are on a decline in Thoothukudi and Tirunelveli districts.

The majority of threats are to their roosting sites like removal of older trees for management purpose, which had provided with cracks and holes for bat roosts. Renovation of Hindu temples, old buildings with bat roosts are the noteworthy human interferences, which cause mass killing in this area. Bats face a huge threat from the Scheduled tribe community (Nari kuravar) in Thoothukudi and Tirunelveli Districts. As there is a myth that Bat meat helps to cure respiratory problems (Asthma) bats are shot by Air gun by the Nari kuravar and sold for Rs.1000 (\$20)

In some places bat meat is food for the poor and killing of bats a game for the rich. Culling of dry palm leaves during Tamil Nadu State farmers festival 'Pongal' is a threat to tent makers *Cynopterus* species and a few insectivorous tree roosting bats. Apart from this, electrocution is also a threat for bats near the foraging trees and roosting sites. So we are focussing to bring awareness to the community of the above districts by conducting various conservatory Interventions.

Protecting the bats of South India requires action on multiple fronts and at all levels. Grass root education is vital and needs support. Educational materials distribution to local groups will educate the public about the beneficial role of bats in the ecosystem. By putting up a bat house you are helping them giving a home. Compared to natural hollows, the artificial homes have less humidity. This makes the conditions better for survival, especially for newborn bats.



Previous Experience on Conservation Programs by Principal Investigator:

S.NO	Title of the Program	Sanction order Ref	Funded by
1	For conducting Participatory Rural Appraisal survey at Coral Reef Islands	GOM/2004	Govt of Tamilnadu Through Dept of Forest, GOMBRT
2	Marine conservation project	TNSCST/2004	Govt of Tamilnadu through Tamilnadu State council For Science and technology
3	Release of Conservation Awareness quarterly journal	MSSRF/GEF/ UNDP-3.3.99	UNDP/GEF, through MSSRF
4	Community Mobilization for Conservation projects	MSSRF/GEF/ UNDP-2001	UNDP/GEF, through MSSRF
5	For conducting Participatory Rural Appraisal survey at Coral Reef Islands	GOM/2005	Govt of Tamilnadu Through Dept of Forest, GOMBRT
6	Conservation of mangroves	PA-2006	Project aware –Australia
7	Preparation of Disaster Management plans in Coastal Districts of Tamilnadu	UNDP-2008-2010	UNDP through District Collectorate



Previous Experience on Bat Research by Co-Investigator:

Title of Ph.D Dissertation : Diversity, Morphology and Roosting ecology of a few bat species in Kalakad Mundanthurai Tiger Reserve, Southern western Ghats.

Papers published in Referred Journals /Books

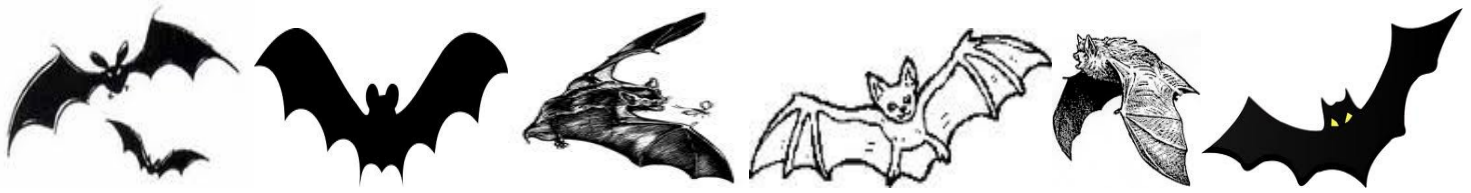
No.	Title of the Papers	Journal / Books	Year
1.	A review of the distribution and status of bats Latidens salimali with new records from the Western Ghats India by By Vanitharani. J, Jeyapraba, Pearch. M and Annamalai. R.	J. Lutra International 47 (1) 21-32 www.vzz.nl/lutra/lutra47	2004
2.	Bat Species Diversity In India.By Jeyapraba, L. and Vanitharani, J.	In: Biodiversity Resources Management and Sustainable Use. Ed. K. Muthuchelian. Pub: Ministry of Environment and Forests, Govt. of India, New Delhi.288-292	2004
3.	The impact of Bat diversity in the conservation of Kalakad Mundanthurai Tiger Reserve Biodiversity by Juliet Vanitharani, L. Jeyapraba	J.Advanced Biotechnology Volume 10 Issue 7 Jan2011 (ISSN NO 0973-0109)	2011
4.	Impact of Bats in the Floral Diversity Conservation at the Hare and Krusadai Island of Gulf of Mannar by Juliet Vanitharani, L. Jeyapraba and Selva Ponmalar	J.Advanced Biotechnology Volume 10 Issue 7 Jan2011 (ISSN NO 0973-0109)	2011



Paper presented - State level / National / International

No.	Seminars / Workshops / Conference	Level	Title of the paper presented	Venue	Duration
1.	27 th Conference of the Ethological Society of India (Sponsored by Dept of Forests and wild life & Government of Kerala)	National	Bat species and their roosting sites in and around Tirunelveli By Jeyapraba and Vanitharani	Arippa, Trivandrum	25.3.2002 – 27.3.2002
2. a	28 th Conference of the Ethological Society of India	National	Roosting ecology and conservation status of bats in Tirunelveli District By Jeyapraba and Vanitharani	Mundanthurai (KMTR) Tirunelveli District	07.02.2003 & 08.02.2003
b.	28 th Conference of the Ethological Society of India		New records and distribution of Salim Alis fruit bat By Vanitharani and Jeyapraba	”	”
3.	Biodiversity Resources Management and sustainable use (Sponsored by Ministry of Environment and Forests, Government	National	Bat species diversity in India. By Jeyapraba and Vanitharani	Madurai Kamaraj University	14.10.04

	of India, New Delhi)				
4.	Human values and the emerging problems of science and developments	National	Advancement of science and technology an emerging problem for the existence of bio agents(fruit bats) of forest ecosystem By Jeyapraba and Vanitharani	Sarah Tucker college	10.8.2005 to 11.8.2005
5.	The changing environment (Sponsored by UGC)	State level	Environmental impact Assessment through bat species diversity By Jeyapraba and Vanitharani	Tirunelveli Dakshina Mara Nadar Sangam college, Kallikulam	30.9.2005 to 1.10.2005
6.	30 th Conference of the Ethological Society of India.	National	Bat species diversity and Conservation in KMTR	Sri Padmavathi Mahila Visvavidyalayam Tirupati	04.02.06 & 05.02.06
7.	2 nd International Seminar and Workshop on Sustainable utilization of tropical plant biomass	International	Role of fruit bats in structuring forest plant diversity	Kerala University	14&15.12.2010



Objectives:

- To Raise public awareness on the importance of the protection of bats and their habitats
 - To assure BAT education through camps, field trips, slides projections, workshops, field trips, distribution of IEC materials & awareness campaigns for all ages
 - To publish materials for School kids in which we highlight the necessity & the myths surrounding Bats.
 - To conduct Competition (Puzzles, essays) for school kids (Upto 8th std) on bats and awarding Bat replica's made of fur cloth.
- To carry out Bat restoration process (Making wood blocks)

Activities:

-Community-based outreach, training and education (Documentary on bats for school kids, Workshops for UG students of B.Sc Zoology, Botany and Sociology, field trips for Students of 9th and 11th std to roosting centres, slide projections, distribution of IEC materials & awareness campaigns for all ages). In order to gain technical knowledge for Bat research, college students (B.Sc Zoology, Botany and Sociology) will be taken for training programs. Awareness campaigns will be conducted on a regular frequency.

-Bat Kids Club to be formed in schools, Competitions (Puzzles, essays, Quizzes and games) for school kids to be conducted (Up to 8th std) on bats and awarding Bat replica's made of fur cloth. The overall objective of the program is to provide the basic knowledge, create understanding and generate interest among school children about the roles and importance of bats in the ecosystem. School kids will be taken for exposure visits.

-Publishing IEC materials for School kids in which we highlight the necessity & the myths surrounding Bats. IEC materials and brochures will be given to the general public on the truth behind bats.



Restoration activities (Construction of Bat houses). Vulnerable places have been already identified at specific target sites. We plan to place bat houses in these places for better security of bats.

Impact: Through conservancy efforts, Community will be free of myths which have been there for some time. Through awareness campaigns the community will get to know the role which bats plays in the eco system and understand the role bats play in insect control and pollination. Unnecessary fear and myths about bats will be eradicated. Children's unwanted fear about bats will be cleared and they will be taught on how to protect bats and the steps involved when a bat enters their home.

Budget:

S.NO	PARTICULARS & BREAK-UP	DOLLARS	INDIAN RUPEES
1	Community based outreach (Workshops/Seminars) (100 Students, 3 programs),(Total 300 no's x Rs.125)	\$750	Rs.37,500
2	Field trips for students of 9 th and 11 th (50 No's, 3 Visits),(Total 150 no'sxRs.150)	\$450	Rs.22,500
3	Training programs for research purposes of the college students (20 No's, 3 programs), (Total 60 no'sxRs150)	\$180	9,000
4	Awareness Campaign for Community (500 Individuals, 6 programs), Total(3000x100)	\$600	30,000
5	Bat Kids Club(Quiz, Essay, Drawing & Puzzles) for School Children	\$200	Rs.10,000
6	Exposure visit to Roosting sites for community (500 individuals, 6 programs), Total(3000x100)	\$600	Rs.30,000

7	Publishing IEC Materials & Brochures	\$720	Rs.36,000
8	Construction of Bat Houses (50 No's)	\$1500	Rs.75,000
	Total	\$5000	Rs.2,50,000

Conclusion:

In this context, the proposed project will address awareness on conserving bats, and will provide information to the local communities about the truth behind bats.