

## **The Rufford Maurice Laing Foundation**

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### Updates And Photographs - From April 2005 To March 2006

## Recipient

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### **Title of the Project**

"Conservation status of bats in the Agasthiyar Hill Range in the Western Ghats, India, with particular reference to Salim Ali's fruit bat (*Latidens salimalii*). Study Site and the work update

Agasthiyar Hill Range of Southern Parts of Western Ghats bordering the hills of Kerala state in the west and the plains of Tirunelveli District in the east (between 08° 20' N, 77° 31' E and 09° 30' N, 77° 08' E) Map 1.It is domicile for multi-species and multi-aged trees as dominant community. These forests endow with imperative resources of both ecological and economical value. Being a hotspot they provide habitat for Wildlife, prevent drought, provide womb for river Thamirabarani and maintains purity of atmosphere. Recent human interference, indiscriminate felling of trees and misused estate management cause damage to this ecosystem. Restoration is the only step for the reconstruction of various tropical forest types. The available bat diversity in this ecosystem is importance in restoration by controlling insect pests, dispersing seeds and pollinating flowers. The lack of knowledge about these key stone species availability and their distribution created the most imperative need for the study of bats in this part of the world. Without knowing these incredible partners conservation measures cannot be taken.

The unexplored bat survey in this part of the country encouraged the applicant (Dr. Juliet Vanitharani) to formulate a request to the Rufford Maurice Laing Foundation for financial assistance through the Rufford small grant to work under the title "Conservation status of bats in the Agasthiyar Hill Range in the Western Ghats, India, with particular reference to Salim Ali's fruit bat (Latidens salimalii)"... The work has received the grant support from 2002 onwards (for consecutive 3 years).

Now documented, the Agasthiar Biosphere Reserve parts of southern Western Ghats are an abode for a wide variety of bat species. The seven research sites (suggested under the methodology) incorporated eleven forest types; bat species distribution varies in accordance to the elevation and the forest types. Surveys reports were the first record for bats in this area and resulted in a collection of 33 bat species belonging to 8 families. This signifies the first published bat data for this area. (Plate I and 2) Out of available 33 bat species two Microchiropteran bats *Rhinolophus beddomei*, and *Kerivoula lenis* reached the NT (Near Threatened) state. The collection of *K. lenis* was the first record of the taxon since its original description from Calcutta in 1916 and represents a range extension for the species of over 1950 km.The four representatives of endemic bat species of South Asia Magachiropteran, *Latidens salimalii* (Endangered) and the 3 Microchiropterans, *Rhinolophus beddomei* (Near Threatened), *Hipposideros speoris* (Least Concerned) and *Pipistrellus dormeri* (Least Concerned) are the valuable representatives.

#### **Activities Accomplished**

1. Conservation status assessment in seven research stations (1. Agasthiyar Hill Range, 2. Pothigai Hill Range, 3. Servalar Hill Range, 4. Upper Kodayar hill complex, 5. Kalakkad Hill Range, 6. Coutallam Hill Range, 7. Sivagiri hill complex and the Kadayam Hill Range, Mahandrgiri hill range) of Agasthiyar Hill Range for intensive bat studies incorporates the following achievements (Map 1).

**Ia)** Ongoing Survey and Identification of caves, cavities, crevices, trees and anthropogenic structures exploited by bats as roosts. The assessed conservation possibilities are given in (**Plate A,B,C**).

**Ib)** The bat team under the leadership of Dr. Juliet Vaitharani has documented 33 bat species and their distribution (**Plate I,I a**)

# I c) Conservation status assessment made with particularly reference to Salim Ali's

#### fruit bat (Latidens salimalii).

The fruit bat Latidens salimalii is Endemic to South India especially to the southern

#### Western Ghats of Tamilnadu. Augmented data about the roosting sites,

distribution and foraging behaviour of L.salimalii (The Endangered bat).

The bat research team documented the first Record of 7 locations of *Latidens salimalii*'s diurnal roost and 10 night roosts in the Aguthiyarhill Range. **(Table 1, Plate 2)** 

Name of the Bat IUCN Status	Location Details in Agasthiyamalai Biosphere Reserve	Located habitat	Earlier Reports in Tamilnadu
Latidens salimalii Salim Ali's fruit bat Endemic to South India Endangered (EN)	Kodamadi (Pothigai hills) Ele : 1080 ft, N: 8°43.083', E: 77°41.354' Karuthali pudavu (Pothigai hills ) Ele : 1200 ft, N: 8°42.603', E: 77°35.394' Ambalampudavu (Pothigai hills ) Ele : 1460 ft, N: 8°36.42', E: 77°18.38' Udumbukal (Servalaru hils) Ele : 1804 ft, N: 8°43.936', E: 77°16.556' Ingikuli (Pothigai hills ) Ele : 1960 ft, N: 8°37.242', E: 77°16.782' Therkumalai (Courtallam hills) Ele : 2412 ft, N: 8°32.030', E: 77°16.782' Sengaltheri (Kalakad hills) Ele : 2814ft, N: 8°32.030', E: 77°26.877' Kudiraivetti (Kothiar hills) Ele : 3343ft, N: 8°41.283', E: 77°31.098' Nagapothigai (Pothigai hills) Ele : 3476ft, N: 8°35.878', E: 77°16.556' Poongulam (Pothigai hills) Ele : 3712ft, N: 8°36.46', E: 77°15.243'	Rare fruit bat of rain forest area abovel elevation <b>Cave roost</b> <b>located among</b> the 4E/RSI Tropical Riparian Fringe Forests, 11A/CI Southern Montane Wet Temperate Forests and Subtropical Montane Forests. <b>While Forage in the</b> 1A/C3 Southern Hilltop Evergreen Forests and 11A/CI Southern Montane Wet Temperate Forests.	Kardana Coffee Estate (Bates et.al, 1994), High Wavy mountains Theni district (Singaravelan and Marimuthu, 2003), Kalakad Mundanthurai, Tiger Reserve, (Ghosh, 1999,Vanitharani et.al 2003, 2004 Vanitharani 2005).

#### Table I: Latidens salimalii distribution.

A special record about the role of *Latidens* in seed dispersal and pollination created (**Plate 3**) remarkable attraction among the international Chiropterologists (Published several papers in both National and International journals and Conferences).

Documented *L.salimalii*'s role of forest restoration in the tropical evergreen forests of Agasthiya hill range (**Plate 4**).

2) Malcolm Pearch from Harrison Institute, Centre for Systematics and Biodiversity Research, UK visited the study site and the Bat Research team for technical supervision and specialist training (09.05.2004 to 22.05.2004). Both Dr. Juliet and her student researchers of the Bat Research Laboratory got training and technical assistant both in the laboratory as well as in some of the field stations. The discussion was helpful in preparing and publishing research papers on conservation of bats (**Plate 5**).

**3) Public awareness** is a crucial component action that must be implemented as a holistic conservation action plan for bats in India. Promoted the concept of bat conservation both locally and nationally through bat awareness programmes and academic workshops (**Plates 6 a,b,c and d**).

- Awareness has been achieved by supplying education materials for schools and graduate students (Plate 5) Ministry both Central and State, Forest and Environment Officials
- Drafted special reading materials about bat's beneficial role in the ecosystem for policy makers (Village and Panchayat Officials) (Plate 6)

4) Radio telemetry studies are ongoing and the bat survey in the Agasthiyamalai Biosphere Reserve, is continuing. The team is augmenting data on distribution, roosting sites, population status, reproduction, and foraging behaviour through the radio telemetry studies.

**5)** Disseminated data to the international scientific community by means of the publication of papers in peer-reviewed journals( List of publications attached herewith Dr.Juliet Vanitharani attended 3 international conferences (At 13<sup>th</sup>.International Bat research Conference, organized by Polish Academy of Sciences and Museum and

Institute of Zoology Mikołajki, Poland, At Workshop on Seed Dispersal and Frugivory in Asia, organized by Xishuangbanna Tropical Botanical Garden and the Chinese Academy of Sciences, Xishuangbanna, Yunnan, China, At 4<sup>th</sup> International Symposium/Workshop on frugivores and Seed dispersal, organized by Griffith University, Brisbane, Australia)and submitted the research findings to create awareness about these important keystone species of ecosystem

## Publications of the year 2005-2006

#### Juliet Vanitharani 2005

Special Report about *Latidens salimalii* of Kalakad Mundanthurai Tiger Reserve. BAT NET Newsletter- CCINSA. Vol.6 No.1. January 2005. www.zooreach.org

#### Juliet Vanitharani, Malathi USU and Arul Sundari .A 2005

New records of bats from Kalakad Mundanthurai Tiger Reserve India BAT NET Newsletter-CCINSA. Vol.6 No.1. January 2005. www.zooreach.org

#### Juliet Vanitharani<sup>1</sup> and Chelladurai, V<sup>2</sup>. 2005

Food Selection And Foraging Behaviour Of *Latidens salimalii* In Agasthiyar Hill Range Of Kalakad Mundanthurai Tiger Reserve, Tamil Nadu. Proceedings of 29<sup>th</sup> Conf. Ethol. Soc. India

Rajkumar, S<sup>1</sup>., Addline Esther Pushparani, D<sup>2</sup>., Vanitharani, J<sup>2</sup>. and Sundararaj, T<sup>1</sup>. 2005.

Do Feeding Habits Influences The Normal Micro flora Of The Bat's Intestine?. Proceedings of 29<sup>th</sup> Conf. Ethol. Soc. India

#### D. Lily and Juliet Vanitharani. 2005

Olfactory Communication Through Scent Marking Behaviour During Breeding In *Hipposideros* speoris (Schneider's leaf nosed bat 1800). J. of Theoretical and Expt. Biol. 1 (3) : 121 – 128. Pub: *Elias Academic Publishers*.

#### Juliet Vanitharani<sup>1</sup> and Chelladurai, V<sup>2</sup>. 2005

Latidens salimalii (Salim Ali's fruit bat) A Reliable Seed Disperser Of Southern Western Ghats; India. Proceedings of 4<sup>th</sup> International Symposium/Workshop on frugivores and Seed dispersal at **Australia**.

#### Juliet Vanitharani 2005

Impact Of Anthropogenic Perturbation Through Science And Technology On A Group Of Bio- Agents In The Tropical Ecosystem. 'HESTECH – 2005' National Seminar On Human Values And The Emerging Problems Of Science And Technological Developments.

#### Vanitharani, J, Addline Esther Pushparani, and D. M. Vijaya, 2005

Temple Bats – A case study to assess the Health Hazards and Human Values. 'HESTECH – 2005' National Seminar On Human Values And The Emerging Problems Of Science And Technological Developments.

#### Vanitharani. J. and A. Arulsundari 2005

Effect of Recent Developments in Sciences and Human Impact on The Complex Networks of Seed Dispersers. 'HESTECH – 2005' National Seminar On Human Values And The Emerging Problems Of Science And Technological Developments.

#### Lily .D and Vanitharani. J 2005

Chemical Signaling In Hipposideros speoris (Schneider's leaf nosed bat 1800). J. of Theoretical and Expt. Biol. 1(4): 183-192. Pub: Elias Academic Publishers.

#### Juliet Vanitharani, 2005

A General Review Of Indian Bats. In. Souvenir, Silver Jubilee, 25 years of Academic Excellence. Pub: Post Graduate studies and research centre, Scott Christian College (Autonomous), Nagercoil. Ed. Dr. Prasannakumar, 125-130.

#### Juliet Vanitharani, 2005

Can The Indian Constitutional Provisions Protect Our Environment? Are They All Constructed With The Basic Knowledge Of Each Environmental Components? State Level Conference on The Changing Environment. T. Kallikulam, Tirunelveli District.

#### Jeya praba. L. and Vanitharani. J. 2005

Environment Impact Assessment Through Bat Species. State Level Conference on The Changing Environment. T. Kallikulam, Tirunelveli District.

#### Ezhilmathi Sophia and Vanitharani J. 2005.

A Probe into bat conservation in Indian Government Legislation. State Level Conference on The Changing Environment. T. Kallikulam, Tirunelveli District.

#### Juliet Vanitharani, Arul Sundari. A and Vijaya. M. 2005

Bat Diversity A Boon To The Forests Of Kalakad Mundanthurai Tiger Reserve. State Level Conference on The Changing Environment. T. Kallikulam, Tirunelveli District.

#### Juliet Vanitharani, Vijaya. M and Arul Sundari. A. 2005

Role Of Fruit Bats In Forest Management Of Agasthiyamalai Biosphere Reseve. State Level Conference on The Changing Environment. T. Kallikulam, Tirunelveli District.

#### Juliet Vanitharani. 2006

Case Study On Reality Of Bats And Suggestion For Bat (Chiropteran) Conservation In Indian Government Legislation. Proceedings of 30<sup>th</sup> Conf. Ethol. Soc. India.

#### L. Jeyapraba. and Vanitharani .J. 2006

Bat Species Diversity And Conservation Management In Kalakad Mundanthurai Tiger Reserve. Proceedings of 30<sup>th</sup> Conf. Ethol. Soc. India.

## Addline Esther Pushparani, D., Vanitharani, J., Rajkumar, S. and Sundararaj, T. 2006.

Do Feeding Behaviour Alters The Intestinal Aerobic Bacterial Flora In Megaderma lyra (Indian False Vampire bat )? Proceedings of 30<sup>th</sup> Conf. Ethol. Soc. I

#### Vanitharani . J, Vijaya . M. and D. Lily, 2006

Chemical Signaling During Mating - Rousettus leschenaulti (Indian Fulvous Fruit Bat). Proceedings of 30<sup>th</sup> Conf. Ethol. Soc. India.

#### Juliet Vanitharani, Vasanthasri.V and Ezhilmathi Sophia. 2006

Correlation Between The Dietary Selection And Morphology Of *Hipposideros Ater* (Dusky Leaf Nosed Bat). Proceedings of 30<sup>th</sup> Conf. Ethol. Soc. India.

#### Juliet Vanitharani and Arul Sundari . A. 2006

Role Of Fruit Bats In Rainforest Restoration At Kalakad Mundanthurai Tiger Reserve. Proceedings of 30<sup>th</sup> Conf. Ethol. Soc. India.

#### In Press

#### Juliet Vanitharani. 2005

Can The Indian Constitutional Provisions Protect Our Environment? Proceedings of State Level Conference on The Changing Environment. T. Kallikulam, Tirunelveli District.

#### Jeya praba. L. and Vanitharani. J. 2005

The Impact of Changing Environment On Bat Species. Zoo's Print Journal. Pub: Zoo's Outreach Organisation. On line www.zoosprint.org.

#### Juliet Vanitharani, Vijaya. M and Arul Sundari. A 2005.

Role Of Fruit Bats In Forest Management Of Agasthiyamalai Biosphere Reserve. Proceedings of State Level Conference on The Changing Environment. T. Kallikulam, Tirunelveli District

## Addline Esther Pushparani, D. Vanitharani, J. Rajkumar, S. and Sundara Raj, T. 2005

A report on the Bacteria flora of the intestinal track of Indian false vampire bat Megaderma lyra. Journal of Theoretical and Experimental Biology. Pub: Elias Academic Publishers.

#### Juliet Vanitharani. 2006

Noteworthy Representatives of Bat Species In Agasthiyamalai Biosphere Reserve , Tamil Nadu. Journal of Theoretical and Experimental Biology. Pub: Elias Academic Publishers.