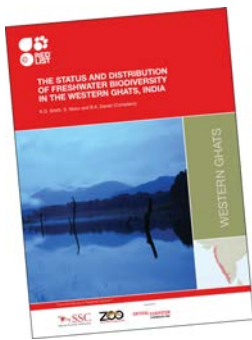


# Involving community, stakeholders and journalists for the conservation of Freshwater Biodiversity of Western Ghats

B.A. Daniel\*

In 2011, the IUCN Global species programme Freshwater Biodiversity Unit and Zoo Outreach Organization, conducted an assessment project in order to understand the status of Western Ghats Freshwater species. It reviewed the conservation status of 1,146 freshwater species belonging to four taxonomic groups viz., fish, odonates, molluscs and aquatic plants. The report showed that close to 16% of the total taxa assessed, are threatened with extinction, with a further 1.9% assessed as Near Threatened. No taxa were assessed as Extinct or Extinct in the wild. However, one-tenth of the species were assessed as Data Deficient (10.5%), while odonates and molluscs contributed more to Data Deficient (25.8% on average). A full report of this status assessment can be downloaded from the following link, e.g., <http://data.iucn.org/dbtw-wpd/edocs/RL-540-001.pdf>.



One of the recommendations of the above report states that 'Awareness programmes promoting better understanding of the values of sustainable use, and management of wetlands and rivers are crucial to eliminating public perception of wetlands as wastelands. Local communities must participate in the conservation of freshwater species and their habitats. Effective educational

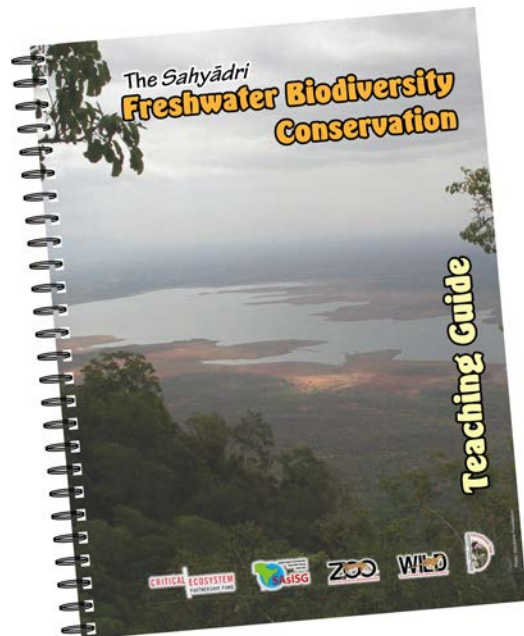
programmes, with special focus on children, should be implemented'.

WILD and ZOO are the in-country coordinators of the freshwater species assessments. WILD received funding support from CEPF in order to continue the assessment efforts, in disseminating the findings and to take follow up action and to work with the stakeholders on a long-term sustainable basis.

The CEPF project was initiated with the three primary aims i) to create a momentum on freshwater biodiversity conservation which would continue and build upon itself, ii) to bring in attitudinal change among the people who live in the vicinity of Western Ghats and create a positive attitude among the people towards flora and fauna with particular reference to freshwater biodiversity and its conservation and iii) to create a model project introducing species conservation concepts that can be replicated in other areas.

The Western Ghats mountains traverse through Kerala, Tamil Nadu, Karnataka, Goa, Maharashtra and Gujarat and support about 400 million people who live in the Peninsular India.

The project was intended to reach out to teachers, village heads, NGOs, forest department staff, policy makers, volunteers and local community in five states of the Western Ghats and to introduce the concept of freshwater biodiversity conservation.



Language being a major barrier in this region, conservation education and dissemination of information to local communities posed a big challenge. At the same time the conservation effort will not be effective without involvement of the local communities, governing bodies and all stakeholders. So it was inevitable that we develop education materials in local languages.

Four kinds of education materials were developed including The Sahyadri Freshwater Biodiversity Conservation Teaching guide for educators, packet materials in five different languages for the main target audiences, posters and pocket guides for students and managers.

The purpose of a Teaching guide for educators is to translate scientific data from the report of 'The status and distribution of Freshwater biodiversity in the Western Ghats, India' into stimulating concepts and messages that appeal to stakeholders and connect with their emotions and personal benefits. For any educator, it is difficult to generate interest among the audience in freshwater fish, dragonflies, water plants, snails and slugs. The teaching guide provides a means of making those freshwater critters and systems interesting to youngsters through games, competitions, drawings, song writing, role play and live debates, etc. This guide also helps to

\*Scientist, ZOO / Chair, IUCN SSC South Asian Invertebrate Specialist Group, [badaniel@zooreach.org](mailto:badaniel@zooreach.org)



engage any age group by relating the pitfalls of ignoring freshwater habitats and by learning about the animals fascinating lives and habits.

The teaching guide consists of four units featuring freshwater animals and plants, that can be used as a medium for conveying a wide range of active learning techniques for both experienced and casual educators. The Teaching Guide also provides education about freshwater animals and plants in general and creates interest among students and other target groups to contribute at the individual level to help protect them and their habitats. The teaching guide contains the basic facts about the four freshwater groups viz., fishes, dragonflies, molluscs and water plants. It also includes the value of Freshwater biodiversity, basic taxonomy of select groups, Western Ghats maps, species diversity, threats, status, freshwater biodiversity uses and values, assessment methodology, conservation status, and recommendations for conservation. The last unit exercises are provided to help participants commit themselves to contribute for the conservation of FW biodiversity. The approach in this guide is to teach and to attract non-traditional as well as traditional educators to adopt new teaching techniques and activities, which are more effective in influencing comprehension, retention and behavioural changes.

In addition to the teaching guide, educational packets featuring Freshwater Biodiversity were used during the programme. The packets containing a booklet, brochure, placard, *rakhi* and stickers were prepared in Tamil, Malayalam, Kannada, Marathi and English. The new education materials were tested inviting a set of experts who contributed for the species assessment report. All education materials developed can be downloaded from [http://www.zooreach.org/ZOO\\_WILD\\_Activities/2014/FWB.htm](http://www.zooreach.org/ZOO_WILD_Activities/2014/FWB.htm). These materials can be used as a comprehensive Freshwater Biodiversity “course” or as

separate activities from this manual and the provided packet.

Thus the approach involves a combination of tools, a teaching guide, educational packets with booklet, masks, stickers, placard, posters, etc., which are useful in teaching different target audiences. The activities can be indoors and outdoors, informative, interactive and fun. Only a few basic supplies are needed to supplement the teaching guide. Some activities are designed as handouts that can be removed from the guide and duplicated. In case there is no capacity to take photocopies, alternative group exercises are available in the guide. There is no need for a projector or any other ‘technology’ to use this material although presentations using projector can be included if one is available. The teaching guide is designed in such a way that only minimum expenditure is involved to plan an education programme.

Utilizing the already existing ZOO’s educator Network (ZEN) which has about 250 members spread all over South Asia, we identified about 15 educators



**B.A. Daniel** introducing the education materials to the participants. **Sangeetha**, Keystone Foundation coordinated the event. Photo: Arul

representing five Western Ghats states who acted as focal points. Educators from 5 Western Ghats states viz., Maharashtra, Goa, Karnataka, Kerala and Tamil Nadu attended this trainer's training programme representing schools, colleges, the forest department and non-profit organizations. A three day trainers training programme was organised for these selected state focal points. The 3-day programme was an interesting mix of activities, discussions and games that went hand-in-hand with learning about fun-filled education techniques, all directed at spreading the message on conservation of Freshwater Biodiversity. They brought with them a blend of teaching methods for Western Ghats (Kerala, Tamil Nadu, Karnataka, Maharashtra and Goa) targeting local communities and community heads, school children, educators at schools, NGOs, and community level, forest personnel, stakeholders and policy makers. See the link to know more about the training programme (<http://www.zoosprint.org/ZooPrintMagazine/2013/March/8-11.pdf>). Thus a network of skilled educators, who also acted as state focal points, was created in order to plan and organize community level local programmes. During the trainers training programme the target audience and activities from the teaching guide were worked out to plan local awareness programmes. In addition to this, journalists inclined to environment and species conservation were identified.

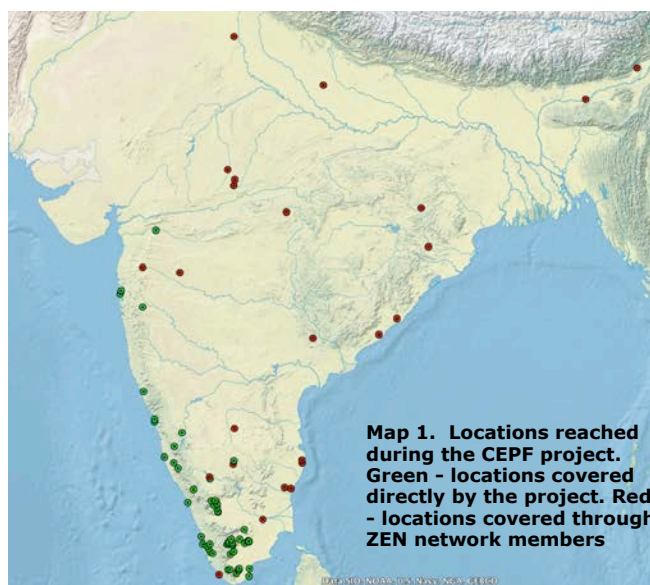
In consultation with the State focal points, a series of training / awareness programmes were conducted



**Drs. Abraham Samuel and Nelson Abraham, TIES, Kerala coordinators with project t-shirt. Photo: Daniel**

#### Box 1. Some commitments by participants

- I will share my learnings with my village people and others. - P. Gopalakrishnan, Nagamalai, TN.*
- I will encourage children to promote species conservation in River Tunga. - M. Sowmya, Sringeri, KA.*
- I will organize similar programmes in my School. G.S. Deepa, Sringeri, KA.*
- I commit to organize a workshop for my block teachers. Janardhanan J. Naih, Honnavar, KA.*
- I shall organize a programme in the NSS camps of other neighbouring colleges. S.G. Honnappayya, Honnavar, KA.*
- I will organize an awareness Programme to RPS students - Eco-club for about 25 students - M. Ramasamy, Ooty, TN*
- I am interested to conduct programmes in my school where i studied and give them awareness on biodiversity and its conservation. Arya Sidharthan, Kottayam, KE.*
- I will conduct some small scale projects on Freshwater biology. S.H. Bhosale, Goa.*



starting from Tamil Nadu through Kerala, Karnataka, Goa and Maharashtra. To reach the stake holders directly a total of 17 programmes were conducted throughout the Western Ghats states. The overall objective of the training is to impart knowledge about the status of the *Sahyādrī* Freshwater Biodiversity and to bring about attitudinal change among students and other target groups towards conservation of the species. The *Sahyādrī* Freshwater Biodiversity Teaching Guide was used throughout the trainings.

A typical one day trainers training programme usually start with registration followed by an informal inaugural around 9.15 am and will be closed around 5.15 with valedictory. The event start with the project background followed by introduction to the teaching aids, assessment tools, facts about Western Ghats, freshwater, value of freshwater and its types, water footprints, history of Western Ghats, introduction to animal kingdom, basics of classification and taxonomy, freshwater species, status assessment methods, species status of dragonfly, molluscs, fish and aquatic plants of Western Ghats, species threats, sessions on protection and management, planning education programmes, how to use the education materials etc. At the end participants received a certificate of appreciation for their interest and a set of education packets and a copy of the teaching guide. This



**Apart from the education materials, some stationery materials are also required for a workshop. Photo: Daniel**

incentive is to encourage them to do an awareness programme immediately after the training. Events were conducted for educators from various institutions who in turn conduct more awareness programmes for their audience and inviting public. Likewise programmes were conducted in the following Western Ghats regions: Palayamkottai, Vikramasingapuram, Kottayam, Sullia, Bangalore,



**An elderly citizen from Vikramasingapuram trying to understand the basics of animal classification. Photo: Daniel.**

Goa, Thekkady, Megamalai, Kambam, Kothagiri, Ooty, Sringeri, Honnavar, Tiruchendur, Madurai, Nagamalai, and Coimbatore. The entire series was conducted with the full support of 24 institutes/ organizations. During this series, 460 educators from various institutes spread across Western Ghats, 109 students and adults and 47 journalists were trained directly. At the end of each programme the trainees pledged to create awareness by doing some simple actions within three months from the date of training (see box 1 for some commitments).

Stakeholders from other Indian States were also reached out through ZOO's Educator Network. ZEN used to celebrate special occasions like Wildlife week every year. Utilizing this opportunity ZEN members were offered education packets free of cost with a condition that they do programmes for the public as per instructions and report us with photos. On request about 1000 education packets were supplied to the ZEN members who conducted programmes during Wildlife week in their respective places. Thus the programme was extended to Assam, Andhra Pradesh, Delhi, Odisha, Pondicherry, Madhya Pradesh Uttar Pradesh and West Bengal (Map 1). For education reports please see the following link (<http://www.zoosprint.org/ZooPrintMagazine/2013/December/24-36.pdf> pages 28,35).

In addition to this, three invited lectures on the promotion of freshwater biodiversity conservation were given in Tamil Nadu and Kerala, three presentations were delivered in conferences and workshop, special programmes for public in local zoos were also conducted (see pages 34-35 in this issue)

### **Report by Abhisheka, Karnataka State focal point**

The Sahyadri Freshwater Biodiversity Conservation workshop for educators in Karnataka State was held on 19-20<sup>th</sup> of November 2013 at Sringeri and Honnavar which are located in the Western Ghats region.

The one-day workshop in Sringeri was coordinated by Jaycees Education Society and attended by 29 teachers from schools located in and around Sringeri town. Jaycees Education Society has always shown keen interest in organizing environmental related programmes with good support from the president Major G.M. Bhat and therefore came forward to organize this workshop. The programme started with an informal inaugural session and introductions. The workshop began by introducing participants to the assessment tools. This was followed by various activities and discussion. Covered topics like facts about Western Ghats, geography, freshwater types, water footprints, kingdoms of life, Freshwater flora and fauna, Species status, threats and conservation and so on. Workshop ended with participants committing to spread the message of Freshwater Biodiversity. All participants were issued certificates and a manual along with educational packets with masks booklet, placard and posters on fishes and Odonates of the Western Ghats. Teachers participated in all activities with enthusiasm. Few were uncomfortable during the session where they had to learn about the Story of Western Ghats through sketching. The workshop had limited participation by the teachers as they assumed it to be another teachers training sessions help by the education department but at the end of the workshop participants expressed how good the workshop was and that the teachers who were absent truly missed a very nice learning experience.

The second workshop was held at BuDa, a center for folklore research and documentation located in Honnavar in the Uttara Kannada region. The team at BuDa folklore has their roots in education, anthropology and community development. Apart from inviting participants personally, the workshop was also advertised in local newspapers and therefore participants hailed from various background including social workers, environmentalists, lecturers,



students, researchers, etc belonging to an age group of 20–60 years. Similar sessions handled at Sringeri workshop were held here too. The group was much more aware of their surroundings and the local biodiversity. They all shared their knowledge about the local aquatic fauna and interacted well with the resource people. They expressed concerns about invasive species and river pollution through use of pesticides and chemical fertilizers. Here too few female teachers were hesitant about the drawing session and the social workers shied away from displaying their work. The group was very active and highly appreciative of the workshop. Post lunch more participants joined the workshop after they got feedback from the existing participants. At the end of the workshop participants gave their feedback in writing as well as orally and one of the participants even composed a poem on spot. Though it was a successful workshop, one day workshop was too short for the participants to get familiar with each other and break the ice. Both the workshops were conducted both in English as well as Kannada for those who were not fluent with English.

**Report from a trainee of this workshop series:**

Brawin Kumar, one of the trainees of this series conducted a half-day freshwater biodiversity education and awareness programme at Amar Seva Sangam, Ayikudy, Tamil Nadu on 3 November 2013 for 38 students. The class began with an introduction to the freshwater sources such as rivers, dams and tributaries from the district. Then they were asked to list out some common freshwater animals they see, they listed many living things commonly seen in freshwater bodies. The freshwater sources and the species importance were explained by using cards from the *Sahyadri* Freshwater biodiversity teaching guide. Illustrations of running and stagnant water systems were shown and it was explained to the participants. The importance and major facts about Western Ghats were explained using tips taken from the teaching guide. In another activity the participants were grouped in to four teams and Western Ghats boundary and river maps activity was done to explain the hot spot and river systems in Peninsular India. To introduce taxonomy, species classification game was conducted with the participants. They learned to classify animals also they classified the species based on mode of location and food habitats. Later four different groups of the assessed species such as fishes, molluscs, dragonflies



A session in progress at Keystone Foundation, Kothagiri



Rananan, ZEN member introducing the packets

and aquatic plants were introduced using the booklet and masks. In particular, their numbers and endemic status, and threatened status in the Western Ghats were discussed. Posters helped a lot to lead them through a detailed discussion. Western Ghats freshwater biodiversity education packets were used throughout and the students enjoyed using the rakhi, stickers and other materials in the packet. The freshwater biodiversity education booklet was explained to the them. At the end, wearing four different masks, they pledged to save the freshwater biodiversity. Thanks to Mrs. Sumathi, Mr.



At the end of each programme, participants committed to help promote freshwater biodiversity conservation



Understanding Western Ghats through group activity. Photo. Brawin Kumar

Sankararaman and Mr. Ramakrishnan of Amar Seva Sangam for their assistance to conduct this event. At the end of each workshop of the series evaluation was conducted to understand the impact of the programme. Some selected comments about the workshop are given below.



Press and media coverage for the series. Photo Daniel

*'This workshop is one of the unforgettable movements in my life. .... I came to all more about Freshwater Biodiversity Conservation. Now I am aware about my responsibilities that I should do for the society. I pledge that from today I will work for Freshwater Biodiversity Conservation'* - Maria Anna.

*'I had no ideas about biodiversity before this workshop, but now I have lot of ideas and knowledge about this subject, ie. Water resource, freshwater, biodiversity, Western Ghats etc. This work is most useful for me and my students, my family and also our nation'* - K. Radhika, Megamalai.

*'Workshop was quit good. Inspiring. It motivates novices like me and creates an enthusiasm to learn more about freshwater biodiversity. Thanks for the program'* - N.C. Sashi Kumar.

*'The activities conducted are good and attractive. Posters given are good and very useful. The teaching guide will help to conduct different programmes for differed aged groups' ....* - Vinay C.G.

Thanks to Manoj Borkar, Sachin Tendulkar, Abraham Samuel, Nelson Abraham, Mamatha, S., Abisheka, A.K. Sivakumar, Sangeetha, C. Gajendran, Brawin Kumar, Packianathan, Selvin Samuel and Rajkumar, to the focal points who took efforts to complete the workshop series.



During a press meet. Photo. Manoj

**List of collaborators/hosts for the programme series:**

- BuDa Folklore, Honnavar
- St. John's Higher Secondary School, Palayamkottai.
- St. John's College, Palayamkottai.
- National Green Corps, TN.
- School for Deaf and Dumb, Thirunelveli.
- Tropical Institute of Ecological Studies, Kottayam.
- Tamil Nadu Forest Department, Thirunelveli, Madurai, Nilgiris.
- Dr.K. Shivarama Karantha Govt. First Grade College, Bellare.
- Asisi Church, Vikramasingapuram.
- Atree, Field station, VK Puram.
- De Paul International Residential School.
- Wildlife SOS, Bannarghatta.
- Carmel College for Women, Goa.
- Biodiversity Board, Goa.
- Megamalai Wildlife Sanctuary, TN.
- Nalam Hospital, Theni.
- Adithanar College, Tiruchendur
- VANAM Trust, Theni.
- Environmental Information Dissemination Centre, Palayamkottai.
- Florene Swainson Hr. Sec School, Palayamkottai.
- Bee Meseum, Ooty.
- Hayagreeva Vidhyalaya Matriculation School, TN.
- Keystone Foundation, Kothagiri.
- Nilgiri Natural History Society, Kothagiri.
- Senthamarai College of Arts and Science, Vadapalanji Village.
- S. Vellaichamy Nadar College, Nagamalai.



Goa workshop participants