

Annual Activity Report 2011

Save the Environment and Regenerate Vital Employment (Project SERVE), Darjeeling

An Initiative of Projektwerkstatt Teekampagne-Germany

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FOREWORD

Teaching is the highest form of understanding.

Aristotle

I think it is commonly understood that we need to give up destructive exploitation to sustain nature for future generations. In order to create awareness however, one cannot rest. My sincere thanks to the organisers and teachers in Darjeeling that help to make our program “Save the Environment and Regenerate Vital Employment” (S.E.R.V.E.) a success! Since inception, a huge number of people have participated and appreciated to respect nature. I do hope there will be many, many more that will take part and help to spread the wisdom of sustainability.

With kind regards,

A handwritten signature in black ink that reads "Günter Faltin". The signature is written in a cursive style.

Prof. Dr. Günter Faltin
Projektwerkstatt GmbH/Teekampagne

1. INTRODUCTION

Darjeeling is a part of the Eastern Himalayan zoo-geographic zone. **Darjeeling** is a Himalayan city in the Indian state of West Bengal. The town is located in the Mahabharat Range or Lesser Himalaya at an average elevation of 6,710 ft (2,050 m) and an area of 3148.74 sq. km. It is the northern most districts of the state and falls under the Himalayan Biodiversity Hotspot Region. The name Darjeeling got its name from the Khumbu rais. It is believed that during the set up of sanatorium by the British, there used to be a huge boulder, which is now the heart of the town. People used to gather at this place after a hard day's work, they used to bask in the sun, chat, sing songs, share stories, sale/ buy goods and stuffs, and many used to drink home-made wine. They used to call their meeting place 'Taaji-lung'. 'Taaji' meaning 'gossip' and 'Lung' meaning 'rock', in the Khambu dialect. The Khambus opine about 'Taaji-lung' being pronounced as 'Dorjé-ling' by the Chogyal Monarch of Sikkim when he leased out the place to East India Company in the year 1835. Thus, 'Taaji-lung' was pronounced as 'Dorjé-ling' which over time became 'Darjeeling'.

The place is internationally renowned as a tourist destination, along with its tea industry and Darjeeling Himalayan Railway (DHR), a UNESCO World Heritage Site. The development of the city dates back to the mid 19th century, when the British set up sanatorium and military depot. Subsequently, extensive tea plantation was done in the region, which is now the world's most preferred drinks. The DHR has one of the few Steam Locomotives still in service in India, and attracts tourist all over the world. This is also a place from where we can see some of the world's highest peak. Mt. Kanchenjunga, the world's third-highest peak, 8,598 m (28,209 ft) high, is the most prominent mountain visible. In clear weather, the world's highest peak, the Mt Everest, 29,029 ft (8,848 m) high, can also be seen.

For many people of this area, biological diversity has an intrinsic value; humans have a responsibility toward other living things, and obligations to future generations. Despite the richness in natural diversity, this region is facing sever threats of continuous depletion of its resources, deforestation, loss of flora and fauna and their critical habitat, soil erosion, unplanned development, unmanaged tourism, unemployment, serious water crises due to depleting water sources, increase use of chemicals in the farm lands etc. In the last couple of decades, the area has witnessed downfall in the socio economy of the region.

In this alarming situation, it was the vision of Prof. Gunter Faltn, a renowned tea entrepreneur and a social development activist, who established an integrated conservation development model, the Project SERVE (*Save the Environment & Regenerate Vital Employment*) in the year 1996 through Projektwerkstatt Teekampagne, Germany and since then implemented by WWF-India, Darjeeling. The project believes in people's participation in conservation, with primary focus on reforestation of degraded and landslide prone areas, generating awareness among common people, students and enhancing their livelihood.

2. PROJECT OBJECTIVES

The main goal of Project SERVE is to reinstate the environment of Darjeeling hills with active participation of general public, government officials, local community members, nature club students and teachers of schools, personals from Indian Army and home affairs, local civil society, other NGO's, Tea garden owners and managements, media persons and local policy makers.

The Project emphasizes on the following three objectives:

- 1) Ecological restoration of Darjeeling hills by improving the floral and faunal habitat.
- 2) Generating income and employment through reforestation and farming based on people's knowledge for alternate livelihood programme.
- 3) Environment education and awareness generation for communities and schools.

The project works with marginalized people with more than ninety percent of the target population comes from a mixed group consisting of different ethnic tribes. They are mostly dependent on agriculture, forest produce and tea gardens. Building a good understanding with these people, to motivate and support them towards environmentally and economically sustainable lifestyle is something the project always strives for in its conservation effort.



3. ACTIVITIES

3.1. Ecological Restoration

Ecological restoration is the major objective of Project SERVE. It aims at restoring the damaged, degraded and areas destructed by landslides. Project also focuses on areas critically important to floral and faunal habitat, water catchments and areas important with social and cultural values. Project emphasizes the importance of indigenous species and involves active human interventions and action with respect to its health, integrity and sustainability.

Destruction of forests creates numerous environmental catastrophes, including altering local rainfall patterns, accelerating soil erosion, causing the flooding of rivers, and threatening millions of species of plants, animals and insects with extinction.

3.1.1 Block Forest Plantation



Plantation of indigenous plant species at various degraded and land slide affected areas is being carried out by Project SERVE since 1996. During 2011 a total of 30 hectares of new plantation area was created at Phoobsering Tea Estate, Nayabusty Village and Chatakpur Railway Sliding. A total of 68,900 saplings of indigenous species were planted in those areas. Further, maintenance of 2009-10 plantations was also carried out at Gorabari Landslide area.

Project SERVE has its own nursery set up near the village of the plantation site. The local nursery will increase the survival percentage of the planted saplings.

3.1.2 Shade Tree Plantation in Tea Gardens

Shade tree plantation in Tea gardens is one of the important activities of Project SERVE. Many gardens are converting into organic and affiliating with various certifying agencies like Rain forest alliance, fair trade etc, plantation of shade tree has become mandatory in almost all the gardens due to its ecological significance. The shade tree helps in the following ways:

- Increases photosynthesis.
- Conserve soil moisture.
- Leaf litter adds up major n minor nutrient to the soil.
- Provides root aeration n nitrogen fixation.
- Absorbs and reflects harmful infra-red radiation n protects from sun scorched.
- Pruned trees will provide additional fuel woods.
- The seeds are used as a food for livestock and wildlife, and the sweetly-scented flowers are a good nectar source for honeybees, butterflies and birds.

A total of 22,000 shade tree saplings were planted in different tea gardens of Darjeeling.



3.1.3. Soil Conservation at landslide affected areas

Soil conservation is a set of management strategies for prevention of soil being eroded from the Earth's surface. Due to many anthropogenic activities, the land of Darjeeling is prone to landslide every year. WWF-India initiated the protection of areas which are ecologically significance to the conservation of flora and fauna of the region. Vegetative control measure of soil conservations was adopted to protect further damage of land at and around the protected areas of Senchal Wildlife Sanctuary. These settlement areas (like Rampuria Forest Village) are critically important for the habitat of many endangered species like Asiatic Black Bear, Leopard and many faunal species. The affected areas were checked by erecting the wall made out of Maling Bamboo (*Arundenaria falcate*) and many soil binding species like Utis (*Alnus nepalensis*); Pipli (*Symingtonia populnea*); Khapal (*Syzygium tetragonum*); Maya (*Eriobotrya petiolata*) etc were planted along the erected walls.



3.1.4. Training and distribution of bio-globule (briquette) moulding machines



A briquette is a block of flammable matter used as fuel for burning and cooking. It is made by making coal out of waste twigs, weeds, wood cheeping etc. and mixing it with soil and water and pressing it into a compact material. As it is a mixture of coal (Koila) and soil (Mato) it is termed as "Matola" in Nepali. People have been using traditional animal dung briquettes for cooking in rural Nepal since time immemorial. The first biomass briquetting plant Nepal Bio-Extruder Industry in Nepal was established in 1982 in Thapathali Kathmandu.

This Briquette can be used as fuel instead of charcoal and firewood which will cost less and burn cleaner. Right now there is serious pressure on the forest for fire wood collection. So it can be used as an alternative fuel source in the rural villages as the material required for making briquette is easily available in their surroundings. Further, Briquettes are made from agricultural waste and are a replacement for fossil fuels such as oil or coal, it is thus environment friendly. These are a renewable source of energy and avoid adding fossil carbon to the atmosphere. It is a desirable fuel because it produces a hot, long-lasting, virtually smokeless fire. Besides saving the forest, it can also enhance the livelihood of the people by selling the chunks in the local market.

WWF-India, Project SERVE provided training on briquette making process to people of different forest villages around the protected areas and tea gardens . The project also supplied moulding machines to the people.



3.1.5. Establishment of Rhododendron nursery

Rhododendron comes from Greek words 'Rhodos' meaning 'Rose' and 'Dendron' meaning 'Tree'. These are the largest genus of the 'Ericaceae' family with as many as 1200 species grown naturally.



Rhododendron is one of the significant species of Darjeeling hills. It plays an important role in the ecosystem of these region. But in recent years, the species is threatened due to deforestation and loss of habitat. Thus, Project SERVE is initiating Rhododendron conservation by educating people and by raising saplings.

Project SERVE has established a rhododendron nursery at Chatakpur & Tonglu with an annual target of 5000 saplings each year. These saplings will be planted at and around protected areas and also sale those to the farmers and communities.

3.2. LIVELIHOOD & INCOME GENERATION ACTIVITIES

3.2.1. Apiculture Training and Workshop



Promotion of Apiculture as an alternate source of livelihood for forest villages and tea garden communities is one of the major activities of Project SERVE in Darjeeling. The word Apiculture is derived from the honeybee's Latin name *Apis mellifera*, meaning 'honey gatherer'. The vital role of Bees is to pollinate the crops and flowering plants and thus improve the ecological condition of the area. The honey is good for health. People who want to have a long and healthy life should use honey daily. From ancient times, honey was not only used as a natural sweetener but also as a healing agent. It is prescribed for a variety of uses including baldness, contraception and as a treatment of wounds. Some modern folk medicine includes treatment for coughs and sore throats, eye diseases, infected leg ulcers, ear aches, measles in the eyes to prevent corneal scarring, gastric ulcers and constipation. Honey stops the growth of dental plague-bacteria and reduces the amount of acid produced. Honey contains several compounds that function as antioxidants which play a large role in the prevention of cancer and heart disease.

Apiculture has always been tried out the traditional way in tree stumps in almost every village of Darjeeling Hills, while WWF-India, Project SERVE facilitated the transfer from traditional to modern bee keeping techniques through Apiary & Agro Beneficiary Committee



of Bungkulung, resulting in high yield and good quality honey production, and simultaneously, improving the health & wealth of the people and the environment.

Project SERVE conducted three days technical training in two phases this year for the people from various tea gardens, protected areas and khasmal villages. Essential Apiary equipments like ISI B Newton type Apiary Boxes, honey extractor machine, smoker, bee veil, queen gate, queen cage, drone door, comb cutter, rubber hand gloves, certificate of the training etc were distributed to the farmers.

3.2.2. Agro-Horti Techno Fair



WWF-India participated in a 10 days Agro-Horti Techno Fair organized by the District Administration and Agriculture Department of Darjeeling at Jamune. During this event our Apiary and Agro Beneficiary Committee of Bungkulung demonstrated the techniques of modern Apiculture to the visitors. The committee had also established a stall where they sold their honey products and other agriculture and horticulture products of Bungkulung village. Further through this event many people came to understand WWF-India's role on developing Apiculture in the villages, and more important the Apiary committee of Bungkulung got an exposure to tie up with many Government agencies in future.

3.2.3. Sapling Raising in Project Nurseries

One of the unique features of Project SERVE is its own forest nursery. A nursery is a place where plants are propagated and grown to a plantable size. The species to be raised in the nursery depends upon the objective of the project's reforestation programme and only the indigenous local species are raised in Project SERVE

nursery. It is also considered that the nursery should be established near the plantation site with similar topography and climatic condition. The nursery farmers are given technical training before the establishment of the area, and all the expenses to erect the nursery structure (Agro net, Silpauline, Water cans, Water Pipes, Poly pots etc) are supported by Project SERVE. Seeds of very important and rare species are also supplied by the project. The mature saplings ready for plantation are finally purchased from the farmer @ Rs 2 per saplings, which will be eventually planted for project's reforestation programme. Some of the saplings are also distributed to the nature club schools and local community for private plantation as well.



This year a total of 90,900 saplings of many indigenous species were raised and distributed in various areas for plantation.

3.2.4. Organic Farming

Adverse effects of modern agricultural practices not only on the farm but also on the health of all living things and thus on the environment have been well documented all over the world. Their negative effects on the environment are manifested through soil erosion, water shortages, salination, soil contamination, genetic erosion, etc. Organic farming is one of the several approaches found to meet the objectives of sustainable agriculture. Organic farming is a production system that sustains the health of soils, ecosystem and the people. Organic farming works in harmony with the nature

rather than against it. It relies on ecological processes adapted to local conditions, rather than the use of inputs with adverse effects in the long run. Organic farming combines tradition, innovation and science to benefit the shared environment and promote fair relationships and good quality of life for all the community involved.

WWF-India, Project SERVE has been encouraging and supporting the farmers towards Organic farming since many years. Organic vegetables in Bungkulung and Paschim forest village are now highly demanded in the local market. Project supported the farmers with Silpauline, agro-nets, vegetables seed etc.



SANJEEB PRADHAN

3.2.5. Mushroom Cultivation

Inadequate food supplies, diminishing quality of health, and increasing environmental deterioration are three key underlying problems affecting the future well-being of humankind. The magnitude of these problems is set to increase as the world's population continues to grow. In this backdrop, Project SERVE has initiated Mushroom cultivation in the villages adjoining the protected areas and tea gardens namely Rangbull, Chamong Tea Estate and Rampuria Forest Village.

Project SERVE's three important objective of Mushroom cultivation are:

- (1) To generate relatively cheap source of high quality food to the people living close to the protected areas of Darjeeling.
- (2) To promote health-enhancing dietary supplements and
- (3) To conserve the biodiversity of the area and maintain balanced ecosystems.

Mushrooms are the fruiting bodies of macro-fungi. Mushrooms are very nutritious products that can be generated from lignocellulosic waste materials; and are in rich in crude fibre and protein. In fact, mushrooms also contain low fat, low calories and good vitamins. In addition it possesses multi-functional medicinal properties. The cultivation technology is friendly to the environment. The production of edible and medicinal mushrooms utilising, for example, paddy straw, cotton wastes, coffee waste, water hyacinth, saw dust, sugar cane bagasse, wild grasses and various categories of refuse and lignocelluloses wastes are easily available in the rural villages.



PEMBA T. BHUTIA

3.3. ENVIRONMENT EDUCATION & AWARENESS

Project SERVE firmly believes in educating the youth and the students of various institutions and communities in environment conservation. Through its Environment education and awareness programme, Project now has 16 institutions registered as Nature Club of India. The Nature Club of India is a conservation programme which began long back in 1976 to inculcate appreciation of nature among young people from schools and colleges and to motivate them to participate in conservation action.

3.3.1. Celebration of National Science Day

In 1986, the National Council for Science and Technology Communication (NCSTC) asked the Government of India to designate February 28 as National Science Day. The event is now celebrated all over the country in schools, colleges, universities and other academic, scientific, technical, medical and research institutions.

Project SERVE observed this day by reaching out to those schools which are remote, students drop out is maximum and the institution do not have any basic teaching equipments. There were volunteer students from Darjeeling town and who are senior nature club members of WWF-India. They divided into groups of teaching subjects like Life science, physics, geography, math etc. The experience of the day was a life time for these rural students.



SANJEEB PRADHAN

3.3.2. World Earth Day Celebration

In an era of great environmental uncertainty, and at a essential point in time when nations will decide the earth's fate, Earth Day comes as a welcome reminder of our role in the global environmental movement. Just over forty years ago, during a time of revolutionary environmental legislation in the United States, Earth Day was added to our nation's calendar. The first Earth Day was celebrated in 1970. This year the Earth Day was focused on "Billion Acts of Green" to pledge to live and act sustainably.

Project SERVE also celebrated this day by organizing an awareness campaign for the rural community and students at and around Singalila National Park.



SANJEEB PRADHAN

3.3.3 World Environment Day Celebration

World Environment Day (WED) is observed on June 5 every year to promote awareness on the importance of preserving our biodiversity, the need to identify problems related to the environment and ways to take corrective action. It was on this day in the year 1972 that the United Nations Conference on the Human Environment was formed. First celebrated in 1973, World Environment Day, also popularly known as Environment Day, is a means to tackle environmental challenges that include climate change, global warming, disasters and conflicts, harmful substances, environmental governance, ecosystem management and resource efficiency.



This year, the United Nations Environment Programme (UNEP) has selected India as host of World Environment Day 2011. The Environment Day 2011 slogan was 'Forest: Nature at your service'. Project SERVE celebrated this event at Phoobsering Tea Estate with a massive reforestation programme. Many school students, garden managements and local self help groups participated in this event.

3.3.4 Reforestation by Nature Club members



This year Project SERVE initiated a reforestation programme at one of the highest place in Darjeeling by involving nature club students of rural areas. The place called Tonglu is 3070 mt bordering Singalila National Park. The place is home to many endangered species mainly Red Panda (*Ailurus fulgens*), Aisatic Black Bear (*Ursus thibetanus*), Satyra, Kalij Pheasant (*Lophura leucomelanos*) etc. and is the gate way of trekkers paradise. A total of 1250 saplings of high altitude species like *Rhododendron sp.*, *Quercus sp.* were planted in the area by students, local people and officials from forest department.

3.3.5 Maintenance of Batasia Eco Garden (BEG)

Batasia Eco Garden is a symbolic structure of Darjeeling. The BEG is just four kilometers on the outskirts of Darjeeling town. This is a double loop train track with a grand view of Darjeeling town presided over by the Mt. Kanchanjunga right before our eyes. This loop was built in the memory of the martyrs who died in the war for the country. World famous Toy train follows this loop and rests at this place before entering the town.

Project SERVE has been maintaining BEG since 2000 with the following components:

- 1) Medicinal plants demonstration plots
- 2) Compost Pits- Vermi & Vegetation
- 3) Seasonal flower gardens
- 4) Organic Tea beds



3.3.6. Environment Awareness Camp

Environment awareness camps at various schools, tea gardens and rural villages were organized by Project SERVE. The objective of this awareness camp is to make people realize the importance of nature and their individual role in the conservation. They are also taught about the consequences of the disasters that we all have to face if we challenge the nature. "Save the Nature & Secure your Future" is the main theme of Project SERVE Environment Awareness Camp.

3.3.7. Cities for Forest Campaign

The United Nations General Assembly has declared 2011 as the International Year of Forests, with an aim to raise awareness towards conservation of forests, and strengthen efforts for their sustainable management and development. In this contest WWF-India launched the Cities for Forest Campaign for the urban youth to express their concern about the disappearing urban forests that are essential for the survival of their city and their well being, and undertake action towards their conservation.

The Campaign for Darjeeling was initiated in the form of a Nature Club Teacher's Meeting for 6 schools of Darjeeling on 12th August 2011, at St. Robert's H.Sec.School. It was decided on the meeting that every school would choose an urban forest patch close to their school for the study as part of the campaign. It was also decided that each school would work individually and meet at different events and at the end present and share their findings to other participants. A total of about 60 students were involved in this event from different participating schools.

Simultaneously, various other events were organized by different schools, on 15th September sit and draw competition was held at St. Roberts School with a theme "Lungs of the Hills", Then on 11th November the schools participating on Cities for Forest was invited to celebrate the closing of the event. Mr. Sanjeeb Pradhan, Asstt. Cordinator of WWF-India, Darjeeling started the programme with a brief talk on the Cities for Forest Campaign. The programme was followed by a Flim Show on Plants and Primates documented by BBC network. Then students presented their individual projects. After this programme a Quiz Contest was conducted on Wildlife and Nature.



The programme was concluded by a Certificate distribution to all the participants of Cities for Forest Campaign and Prize distribution to the winners of Sit and Draw competition, Slogan Writing Competition and Quiz Contest winners. First, second and Third prize for Sit and Draw competition was won by Mr. Anish Joshi, Sneha Yonzon and Rajiv Darnal respectively all from Gyanoday Nikitan. Slogan writing competition was won by Mr. Dibyananda Gurung. Quiz Contest was won by Gyanoday Nitikan.

3.3.8. Nature Camp at Gairibas & Tonglu

WWF-India, Darjeeling Field Office in Collaboration with Nature Club, St. Robert's School & Wildlife Div-1, Forest Department, Govt. of West Bengal organized a three day Nature Camp for four Schools of Darjeeling at Singalila National Park, Darjeeling. The event started on 20th March with an orientation session hosted by St. Robert's School & had 40 children participants from Kanchenjunga Public School, Tukvar, Senchal MSK, Rungbull High School & St. Robert's H.Sec. School. The orientation aimed at arousing interest among the students about the richness of Biodiversity in the hills & the need to conserve this biological wealth. The objectives of the Nature Camp were also discussed.



On the 21st, the participants along with their escort teachers were taken to Dhotrey from where they trekked up to Tonglu & further down to Gairibas which is known to be home to several species of birds & a variety of Himalayan flora. The students were divided into groups of ten each & were taken into the forest under the guidance of birds & plant experts. During the trip the children learnt the techniques of bird watching, plant identification in the field & the skills necessary in studying natural history.

On the 22nd afternoon the group trekked back to Tonglu where an experience sharing session was held & the children got an opportunity to give an account of their experiences & future plans. A total of 31 species of birds were sighted during the trip & the forests covered with Magnolia, Rhododendron & Daphne blossoms were a feast for the eyes. It is hoped that the event will certainly spark an interest in Biodiversity Conservation among the young children of Darjeeling.

3.3.9. Training SSB Personnel in controlling wildlife crime

Sashastra Seema Bal or SSB; the armed border force is one of India's Central Armed Police Forces, under the administrative control of the Ministry of Home Affairs.

SSB personals are posted along the Indo-Nepal border of Singalila National Park, and their duty is to curb any kind of illegal activities. The Singalila National Park is home to many endangered species of flora and fauna. But the open and porous border towards Nepal makes this place very vulnerable to poaching and illegal wildlife trade.

WWF-India, Project SERVE, in collaboration with Forest Department, Wildlife Division I, organised a training cum sensitizing programme at each SSB camps posted along the border. The army personals were informed about the importance of these areas, and need to conserve the heritage of Singalila NP with most priority. They were also trained on possible smuggling methods, major species that are traded, and ways to control them. They were also informed about the possible route of this smuggling through the park.



3.4. SPECIES CONSERVATION

3.4.1. Camera trapping of Asiatic Black Bear

Camera trap method was used as a part of the project on determining the status of Asiatic Black Bear at Senchal WLS to provide the direct evidence for the presence of Asiatic Black Bear. Senchal WLS is 38.97 km² with 18 villages surrounding it and 7 villages within. It is a prime biodiversity refuge in Northern West Bengal, holds 379 species of flora, 22 species of mammals and over a hundred species of birds. It was reported to have a population of 20 Asiatic Black Bears during the 2002 census (Anon, 2008).

Following the site selection surveys, a total of 33 camera traps were employed in two phases, resulting into a total 986 trap nights from September - November 2010 with active involvement of Wild life wing of Forest Department, Govt. of West Bengal, Eco Development Committees, and Local community members.

Additionally, vegetation survey was completed in randomly selected plots to assess the habitat status. It was found that Senchal have a healthy assemblage of food bearing trees for bears and majorly composed of following vegetation:

Trees – 41 species recorded out of which *Symplocos sp* (Kharaney), *Cryptomeria japonica* (Dhupi), *Eurya japonica* (Jhinguney), *Quercus lineate* (Oak) were dominant species

Shrubs – 15 species recorded out of which *Viburnum sp* (Asare), *Rubus sp* (Aisalu), *Daphne canabina* (paper plant) was found to be dominant.

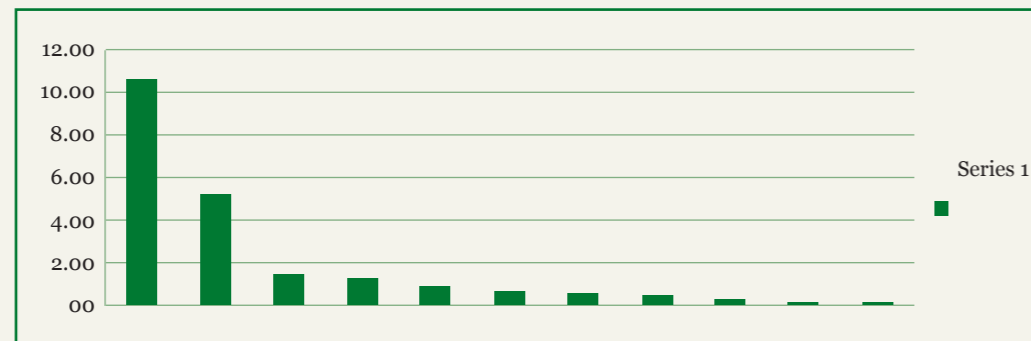
Herbs – 36 species recorded out of which Fern, *Cissus repanda*, *Elastostema sp* were dominant species.

A total of 11 faunal species were captured during the trapping period including 3 ungulates and 5 carnivores. The capture of 15 photos of Asiatic Black Bear by camera traps was very promising. The camera traps also captured a mother with a cub showing a signs of healthy breeding.



PROJECT SERVE STAFF

Barking deer	Wild boar	Black deer	Y T Marten	Palm civet	Himalayan Serow	Porcupine	Leopard cat	Leopard	A macaque	L I civet
105	52	15	13	9	7	6	5	2	2	3



Relative abundance index was estimated following Dutta et al, 2008 & Jenks, 2011
Interval for independent capture= 30 mins

To assess habitat conditions, IVI (Important value Index) was estimated for the trees and relative density (%) was calculated for shrubs and herbs.

A survey on Human and Animal conflict was conducted at Senchal Wildlife Sanctuary at different places. The following table shows the ranking of the most conflicting animals.

Ranking of different animals regarding crop damage in the fringe of Senchal WLS

Sl no	Name of the animal	Total points	Rank
1.	Wild boar	126	I
2.	Barking deer	32	II
3.	Hare	14	III
4.	Assamese macaque	3	IV
5.	Asiatic black bear	3	IV

Mr. Sanjeeb Pradhan	Asst. Coordinator
Mr. Deependra Sunar	Project Officer
Mr. Pemba Tshering Bhutia	Field Officer
Ms. Sangita Thapa	Asst. Admin Cum Account Officer
Mr. Rikchen Zimba	Asstt. Field Officer cum Driver
Mr. Narendra Sharma	Office Attendant

ANNEXURE

Annexure-1: Details of Block Forest Plantation -2011

Sl. No.	Plantation Site	Area in hectare	Year of Plantation	Total saplings planted	Remarks
1	Naya Busty	15	2011	34350	New creation
2	Chatakpur railway siding	8	2011	17300	New creation
3	Phoopsering Tea estate	5	2011	11500	New creation
4	Gorabari Land slide		2009	1500	Maintenance
5	Gorabari Land slide		2010	3000	Maintenance
6	Tonglu -Singalila NP Buffer	2	2011	1250	New creation
Grand total		30		68900	

Annexure-2: Details of Shade Tree Plantation-2011

Sl.No.	Name of the tea garden	Total seedling
1	Selimbong Tea estate	4000
2	Soom Tea estate	4000
3	Rohini Tea estate	2000
4	Avon Tea estate	5000
5	Lingia Tea estate	3000
6	Gopaldhara Tea estate	2000
7	Teesta valley Tea estate	2000
	Grand total	22000

Annexure-3: List of training and distribution of briquette making machine

Sl No	Date of training	Name of village	No. of Participants
1	25th August 2011	Bungkulung	36
2	21st Oct 2011	Phoobsering TG	11
3	10th Dec 2011	Lingia TG	2
4		Marybong TG	11
5		Pussimbing TG	2
6		Tukdha TG	2
7		Chamong TG	3
8		Nagarifarm TG	3
9		Dhejay TG	3
10		Shree Dwarika TG	3
11		Ging TG	4
12		Soom TG	3
13		Salu TG	3
14	Tumsong TG	6	
15	23rd dec 2011	Gorubathan Block	38
16	2nd Feb 2012	Sirikhola	8
17		Upper Sepi Busty	2
18		Bich Gaon	3
19		Dara Gaon	9
20	Sepi Busty	16	
21	7th Feb 2012	Rishihat	15
22	28th Feb 2012	Dhan Man Dhura, Singtam TG	11
23	9th March 2012	Singla Bazar	21
24	16th March 2012	Paschim forest village	23
Total			238

Annexure-4: List of Apiary training participants

Sl No	Date of training	Name of village	No. of Participants
1	21-23 Dec-2011	Jholung Bazar	3
2		Dal Gaon	5
3		Paren Tar	3
4		Rango	2
5		Gairibans	13
6		Kumai	8
7		Jaldhaka	1
8		Siliguri	1
9		Kurseong	1
10		Arowal Tar	1
Total			38
1	30th Jan-2nd Feb2012	Tung	3
2		Fazy Busty	1
3		Margret's Hope TG	11
4		Balasan TG	1
5		Soureni Busty	3
6		Marybong TG	1
7		Montiviot TG	1
8		Manju	5
9		Ghoom Khasmal Busty	1
10		Mirik Busty	1
11		Singhmari	1
12		Kurseong	3
13		Bungkulung Busty	2
14		Singbully Busty	2
Total			36
Grand Total			74

Annexure-5: Details of Project SERVE Nurseries

Sl No	Date of training	Name of village	Total Seedling Supplied
1	Da Tshering Sherpa	Paschim Forest Village	7250
2	Sumi Sherpa	Paschim Forest Village	5350
3	Phurba Sherpa	Paschim Forest Village	2000
4	Lochan Rai	Chatakpur Railway siding	15000
5	Nima Dorjee Glan	Chatakpur Railway siding	9400
6	Rakhi Tamang	Chatakpur Railway siding	8900
7	Kalpana Sherpa	Chatakpur Railway siding	13000
8	Krishna Kumar Thakuri	Phoobfering	8000
9	Pawan Subba	Bungkulung	8000
10	Kamal Subba	Bungkulung	7000
11	Durga Subba	Bungkulung	7000
Grand total			90900

Annexure-6: Major Species grown in Project SERVE Nurseries

Sl. No.	Local name	Botanical name	Uses/ purpose
1	Adkowlo	<i>Quercus spicata</i>	Timber, firewood, furniture, fruits,
2	Arupatae	<i>Prunus nepaulensis</i>	Timber, furniture, foliage, flower,
3	Badrasae	<i>Elaeocarpus lanceaefolius</i>	Timber, fruit, medicine,
4	Bogana	<i>Melia azedarach</i>	Foliage, pestiside, fruit,
5	Buk	<i>Quercus lamellosa</i>	Timber, furniture, foliage, flower, fodder, fruit, charcoal
6	Chilawnae	<i>Schima wallichii</i>	Plywood
7	Chiplae Kawlo	<i>Machilus gammieana</i>	Timber, charcoal
8	Goge chap	<i>Magnolia campbelii</i>	Timber, foliage, flower,
9	Gagun	<i>Saurauria nepalensis</i>	Fodder, fruit,
10	Kapasi	<i>Acer campbelii</i>	Agricultural impliment, fodder, timber, furinture, plywood
11	Kaphal	<i>Syzygium tetragonum</i>	Fodder, fruit,
12	Katus	<i>Castonopsis indica</i>	Timber, Fruit, charcoal, agricultural implements
13	Kyamuna	<i>Syzygium operculutam</i>	Fruit, fire wood, fodder,
14	Lal Chandan	<i>Daphniphyllum himalayense</i>	Timber, firewood, furniture, fruits,
15	Lali Guras	<i>Rhododendron arboreum</i>	Fire wood, medicine, flower,
16	Lapche Kawlo	<i>Machilus edulis</i>	Timber, fruit, medicine,
17	Maya	<i>Eriobotrya petiolata</i>	Fire wood, fodder,
18	Mitae Chap	<i>Michelia exelsa</i>	Timber, furniture, fruit, flower,
19	Okhar	<i>Juglans regia</i>	Timber, furniture, medicine, fruit,
20	Pani sajh	<i>Termenelia myriocarpa</i>	Timber, furniture, plywood, fodder, flower,
21	Payoon	<i>Prunus ceracoides</i>	Flower, fruit, fodder,
22	Phalant	<i>Quercus lineata</i>	Timber, fodder, fruit, charcoal
23	Pipli	<i>Symingtonia populnea</i>	Timber, fodder, foliage, charcoal,
24	Putli	<i>Acer laevigata</i>	Timber, fruit, fodder, agricultural impliment
25	Seto siris	<i>Albizzia procera</i>	Timber, flower,
26	Sinkowlo	<i>Cinnamomum obtusifolium</i>	Timber, fodder, medicine,
27	Tata siris	<i>Albizzia lebbek</i>	Timber, flower,
28	Tetae chap	<i>Michelia cathcartii</i>	Timber, fodder, furniture,
29	Utis	<i>Alnus nepalensis</i>	Timber, soil conservation,

Annexure-7: List of Mushroom cultivation units

Sl.No	Name of SHG and place	Village	Quantity produced- Kg	Duration	Earning-Rs
1	Shree Ganesh Self Help Group	Rampuria , Senchel Wildlife Sanctuary	107	3 months	7,500
2	Nirmal Farm	Rangbull, Senchal Wildlife Sanctuary	300	6 months	21,000
3	Makhamali Self Help Group	Chamong Tea Estate	Just started		

Annexure-8: List of participants on World Earth Day Celebration-2011

Sl. No	Name of the School	Address	No of Participants
1	Sri Saraswati Primary School	Meghma	21
2	Sree Rastriya Primary School	Jaubari	10
3	Blooms English School	Dhotray	18
4	Dhotray Primary School	Dhotray	17
5	St. Robert's HS School	Darjeeling	11
Grand Total			77

Annexure-11: List of participants on Cities for Forest Campaign

Sl. No	Name	No of Participants
1	Gyanoday Niketan, Darjeeling	10
2	St. Teresa's Girls School, Darjeeling	15
3	Siksha Sangh H.S. School, Ging	15
4	St. Robert's HS School, Darjeeling	15
5	Sunrise School, Lebong	15
Total		70

Annexure-9: List of participants on World Environment Day Celebration-2011

Sl. No	Name of the School/SHGs	Address	No of Participants
1	St. Robert's HS School	Darjeeling	16
2	Shiksha Sangh HS	Ging	15
3	Sunrise School	Lebong	23
4	BSMI School	Lebong	20
5	Sunakhari Self Help Groupg	Phoobsering	10
6	Phoobsering Nari Dhukha Niwaran SHG	Phoobsering	9
7	Kasturi SHG	Phoobsering	10
8	Pragati Sangh SHG	Phoobsering	10
9	Nava Jyoti SHG	Phoobsering	10
10	Biswakarma Pragati SHG	Phoobsering	10
11	Nava Pravat Sangh SHG	Phoobsering	12
12	Phoobsering Tea Garden	Phoobsering	10
Total			155

Annexure-12: List of participants on Nature Camp

Sl. No	Name	Address	No of Participants
1	St. Robert's HS School	Darjeeling	11
2	Senchal Madhyamik Sikshya Kendra	Jorebanglow, Darjeeling	11
3	Kunchanjunga Public School	Tukvar, Darjeeling	11
4	Rangbull Junior High School	Rangbull, Darjeeling	11
Total			44

Annexure-10: List of participants on Environment Awareness Camp

Sl. No	Name	Address	No of Participants
1	Shree Dwarika Tea Estate	Via Tukvar , Darjeeling	42
2	Poobung Madhyamik Sikshya Kendra	Poobung, Darjeeling	196
3	Manedara Madhyamik Sikshya Kendra	Manedara, Tukdah Tea Garden	176
Total			414

POSTER PUBLISHED



SOME BEAUTIFUL BIRDS OF DARJEELING



 Rufous Sibia (সিঁহ) 21 cm	 Green-backed Tit (সিঁহ পিঁচ) 12 cm	 Silver-eared Mesia (সিঁহ পিঁচ) 15 cm	 Satyr Tragopan (গাং) 72 cm	 Red-tailed Minia (সিঁহ পিঁচ) 14 cm	 Little Pied Flycatcher (সিঁহ পিঁচ) 10 cm
 Green-tailed Sunbird (সিঁহ গাং) 11 cm	 White-capped Redstart (সিঁহ গাং) 19 cm	 Chestnut-crowned Laughingthrush (সিঁহ গাং) 28 cm	 Ashy-throated Warbler (সিঁহ গাং) 9 cm	 Oriental Turtle Dove (সিঁহ গাং) 33 cm	 Rufous-winged Fulveta (সিঁহ গাং) 10 cm
 Black Drongo (সিঁহ গাং) 28 cm	 Darjeeling Woodpecker (সিঁহ গাং) 25 cm	 Scarlet Minivet (সিঁহ গাং) 22 cm	 Rufous Treepie (সিঁহ গাং) 50 cm	 Vardier Flycatcher (সিঁহ গাং) 15 cm	 Fire-tailed Sunbird (সিঁহ গাং) 12 cm
 Black-throated Tit (সিঁহ গাং) 10.5 cm	 Oriental White-eye (সিঁহ গাং) 10 cm	 Winter Wren (সিঁহ গাং) 9.5 cm	 Red-billed Leiothrix (সিঁহ গাং) 12 cm	 Common Tailorbird (সিঁহ গাং) 13 cm	 Eurasian Woodcock (সিঁহ গাং) 35 cm
 White-throated Fantail (সিঁহ গাং) 19 cm	 White-crested Laughingthrush (সিঁহ গাং) 28 cm	 White-tailed Nuthatch (সিঁহ গাং) 12 cm	 Paddyfield Pipit (সিঁহ গাং) 15 cm	 Dark-breasted Rosefinch (সিঁহ গাং) 15 cm	 Kalij Pheasant (সিঁহ গাং) 73 cm
 Black Bulbul (সিঁহ গাং) 25 cm	 Red-vented Bulbul (সিঁহ গাং) 20 cm	 Common Green Magpie (সিঁহ গাং) 39 cm	 Common Hoopoe (সিঁহ গাং) 31 cm	 Blood Pheasant (সিঁহ গাং) 38 cm	 Greater Goldenback (সিঁহ গাং) 33 cm
 White-collared Blackbird (সিঁহ গাং) 27 cm	 Blue Whistling Thrush (সিঁহ গাং) 33 cm	 Plumbeous Water Redstart (সিঁহ গাং) 12 cm	 Red Junglefowl (সিঁহ গাং) 75 cm	 Rufous-billed Niltava (সিঁহ গাং) 18 cm	 Rusty-flanked Treecreeper (সিঁহ গাং) 12 cm
 Great Barbet (সিঁহ গাং) 33 cm	 Chestnut-crowned Warbler (সিঁহ গাং) 9.5 cm	 Whiskered Yuhina (সিঁহ গাং) 13 cm	 Gray-headed Canary Flycatcher (সিঁহ গাং) 13 cm	 Long-tailed Shrike (সিঁহ গাং) 25 cm	 Yellow-billed Blue Magpie (সিঁহ গাং) 66 cm

Birds need our urgent conservation as they play an important role in our natural environment and in maintaining a balance in the ecosystem. They act as scavengers, pest controllers, pollinators and as biological indicators. Several of these birds are threatened due to deforestation, habitat loss, hunting, poaching and pollution. It is essential that all these species are conserved along with their habitat.

"Saving Birds and their habitat will save our future."

ILLUSTRATION BY : Saibal Sengupta, Nature Club, St. Robert's School, Darjeeling.

PUBLISHED BY : WWF-India, Project SERVE, Darjeeling.

SAVE THE NATURE AND SECURE YOUR FUTURE

Art By - Anish Joshi, Gyanoday Niketan

Published By: WWF-India, Project SERVE, Darjeeling.



SIMPLE WAYS OF DISPOSING WASTE AT SOURCE BY SEGREGATION OF SOLID WASTE

ORGANIC WASTE



Every Home can maintain two dustbins, one for the Recyclable waste like plastic, paper, metal, glass & the other for all organic Biodegradable kitchen waste.

Time Taken to Decompose

Banana Peel	3-4 weeks
Paper Bag	1 month
Cotton Cloth	5 months
Woolen socks	1 year
Wood	10-15 years
Leather	40-50 years
Tin box	50-100 years
Aluminium box	200-250 years
Plastic Bag	100,000 years
Styrofoam cup	Non-degradable
Glass Bottle	Non-degradable

RECYCLABLE



"A step towards Healthy Living Planet"

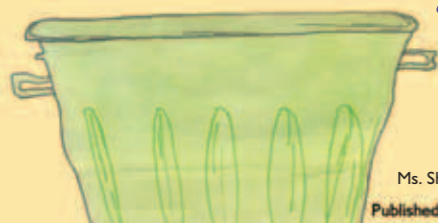


Illustration by :
Ms. Shanal Pradhan, Nature Club, Darjeeling.
Published By- WWF-India, Project SERVE, Darjeeling.



SOME MEDICINAL PLANTS OF DARJEELING

<p>Taxus baccata (Dhingre Salu) Status - Threatened Parts used - Leaf, fruit & bark Uses - Gastric spasm, cough, fever, epilepsy, diabetes, contraception, cancer</p>	<p>Mussaenda pudica (Buhari Jhar) Status - Common Parts used - Whole plant Uses - Galls, kidney and bladder stone, leucorrhoea, diabetes, fever, rheumatism</p>	<p>Mahonia napulensis (Chutru) Status - Threatened Parts used - Berry, root and bark Uses - Dysentery, urinary troubles, cardiac weakness, bronchitis, backache</p>	<p>Taraxacum officinale (Tuki Phool) Status - Common Parts used - Whole plant Uses - Jaundice, dysentery, induces flow of urine, gall bladder complaints, indigestion</p>
<p>Oroxylum indicum (Totula) Status - Common Parts used - Bark, flower & root Uses - Diabetes, throat and tongue infections, abortion, cancer, skin tuberculosis</p>	<p>Neracoleum wallichii (Chimphing) Status - Common Parts used - Inflorescence and fruit Uses - Influenza, typhoid, body aches</p>	<p>Euphorbia pulcherrima (Lalupata) Status - Common Parts used - Leaf, flower & latex Uses - Post natal complaints, protracted normal stools, skin complaints, cuts, wounds</p>	<p>Leucosceptum canum (Ghorpi) Status - Common Parts used - Root and leaf Uses - Epilepsy, wounds</p>
<p>Dichroa febrifuga (Batak) Status - Common Parts used - Root & leaf Uses - Fever</p>	<p>Bergenia ciliata (Pakhantel) Status - Rare in wild but sufficiently planted Parts used - Root Uses - Dysentery, diarrhoea, menstrual disorder, renal and pulmonary infection</p>	<p>Datura suaveolens (Dhatara) Status - Common Parts used - Whole plant Uses - Hydrophobia, insanity, convulsion, toothache, gastritis, sexual disorder</p>	<p>Artemisia dubia (Tay pati) Status - Common Parts used - Leaf and young shoot Uses - Headache, nose bleeding, skin disease, fever, asthma, cardiac troubles</p>
<p>Aloe vera (Ghev Kuman) Status - Common Parts used - Leaf Uses - Rheumatism, gout, jaundice, liver complaints, indigestion, constipation</p>	<p>Allium wallichii (Ban Lazun) Status - Threatened Parts used - Whole plant Uses - Cholera, dysentery, cough & colds, altitude sickness, reduce blood cholesterol</p>	<p>Aconitum biana (Bih) Status - Threatened Parts used - Root Uses - Antidote for food poisoning, leprosy, rheumatism, diabetes, high fever, neuralgia</p>	<p>Panax bipinnatifidus (Ghang) Status - Threatened Parts used - Rhizome Uses - Liver arthritis, leucorrhoea, gastric ulcer, cough, gastritis, diarrhoea, dysentery</p>
<p>Schima wallichii (Chitashae) Status - Common Parts used - Bark, leaf & fruit Uses - Gastric flatulence, cuts, ringworms, intestinal worms, sore throat</p>	<p>Oxalis corniculata (Charu Amlo) Status - Common weed Parts used - Whole plant Uses - Cough, indigestion, gastric colic, diarrhoea, dysentery, fever, kidney stone</p>	<p>Rhododendron arboreum (Lalputra) Status - Common Parts used - Corolla Uses - Pneumonia, diarrhoea, dysentery, diphtheria, bone fracture, throat trouble</p>	<p>Urtica dioica (Senu) Status - Common Parts used - Whole plant Uses - Dysentery, liver disorder, sciatica, gout, bone fracture, jaundice, piles</p>
<p>Rumex nepalensis (Mahulay) Status - Common Parts used - Leaf, young shoot & root Uses - Gastric irritation, urinary disturbances, minor burns, scurvy, swelling, skin disease</p>	<p>Tropaeolum majus (Pindaki phool) Status - Common Parts used - Leaf, flower & fruit Uses - Scurvy, pulmonary tuberculosis, constipation, skin psoriasis</p>	<p>Thyrsanotaena maxima (Kushoo) Status - Common Parts used - Root Uses - Cough, asthma, bronchitis, tuberculosis, contraception, check boils</p>	<p>Eupatorium adenophorum (Banmara) Status - Common Parts used - Whole plant Uses - Typhoid, cough, pharyngitis, asthma, gastritis, stropby</p>

LET US CONSERVE THESE VALUABLE ASSETS OF DARJEELING

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Published By : WWF-India, Project SERVE, Darjeeling.

+68,000 saplings

Indigenous plant species planted over an area of thirty hectares in six locations for block forestation

22,000 trees

Shade trees planted in seven different tea estates to provide ecological services like retaining soil moisture, generate organic manure etc.

33 camera traps

Camera traps setup for a total of 986 trap nights to determine status of Asiatic black bear in Senchal Wildlife Sanctuary

+90,900 seedlings

Seedlings raised in eleven project nurseries setup to provide alternative livelihood to locals

+230 people

People trained in briquette making from twenty four villages to reduce dependance on forests for fuelwood



Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

www.wwfindia.org

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WWF-India Secretariat

172-B Lodi Estate

New Delhi 110003

Tel: 011 4150 4814 Fax: 011 4150 4779