



Sacred Grove of Devi Satkanya at Lebong in Darjeeling Himalaya (India): A Traditional Way of Biodiversity Conservation Since Time Immemorial

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ABSTRACT

Devi Satkanya Sacred Grove is located behind a mystic town called Lebong as a pristine forest patch, about 8 km from Darjeeling Town. Geographically, the grove is located between 27°03.436'N Lat. and 88°16.592'E Long. at an altitude of about 1823 m. Total area of the grove is approx. 5770 square metre (sq.m.). In Darjeeling, most of the Sacred Groves have 'deity'---rocky idols of Devi Durga and Lord Shiva, often reside inside small rocky caves called 'cave temple'. Devi Satkanya Sacred Grove possesses a great heritage of diverse gene pool of many forest species having socio-religious attachment and possessing medicinal values viz., *Garcinia cowa* DC., *Prunus cerasoides* D.Don, *Michelia cathcartii* Hook.f. & Thomson (Chanp), *Ficus nemoralis* Wall. etc. Devi Satkanya SG is ecologically and genetically very important. It harbours a good number of Endangered ethnomedicinal plants like *Swertia chirayita* (Roxb. ex Fleming) H. Karst. and animals like Himalayan Salamander (*Tylotriton verrucosus* Anderson). As a result of extensive field visits in different seasons to Devi Satkanya SG from June 2014 to October 2016, new and first hand data on threatened plants and animals, ethnomedicinal plants and traditional and magical way of biodiversity conservation by the local Nepalese since time immemorial were documented.

Keywords: Sacred Grove, Devi Satkanya, Lebong, Darjeeling, Biodiversity conservation, India

1. INTRODUCTION

Geographically, Darjeeling Himalaya is located between 27°13'N to 26°27'N Lat. and 88°53'E to 87°59'E Long in the present political boundary of India. Darjeeling Himalaya is bounded on the north by Sikkim, on the south by Kishanganj district of Bihar, on the east by Jalpaiguri district of West Bengal and on the west by Nepal. Devi Satkanya ('Satkanya' meaning seven goddesses or deities) Sacred Grove is located behind a mystic town called Lepong as a pristine forest patch, about 8 km from Darjeeling Town. Geographically, Satkanya Sacred Grove is located between 27°03.436'N Lat. and 88°16.592'E Long. at an altitude of about 1823 m. Total area of the grove is approx. 5770 square metre (sq.m.) including the main cave temple which is approx. 76 sq.m.



Map 1. Showing enlarged Darjeeling District with India and West Bengal
(Source: Darjeeling Tea-www1.american.edu)

A Sacred grove is any grove of trees or forest patch of special religious importance to a particular culture. On the other hand, Sacred groves are tracts of virgin forest with rich diversity, which have been protected by the local people for centuries for their cultural and religious beliefs and taboos that the deities reside in them and protect the villagers from different calamities (Khan et al. 2008). More often, Sacred groves are considered as distinct patches of vegetation (ranging in size from a small Map 2. Geographical Location of the grove (◇) in Darjeeling map cluster of a few trees to a large forest stand spanning several hundred acres) which are consecrated in the name of local deities or ancestral spirits, and are promoting conservation of biodiversity. Protected over centuries, Sacred groves are usually the remnants of pristine forests in climax formation (Malhotra et al., 2001). Around 14,000 sacred groves have been reported from all over India from nearly 20 states, which act as

reservoirs of rare flora and fauna amid rural and even urban settings. Experts believe that the total number of sacred groves could be as high as 100,000. Maximum number of Sacred groves are reported from Kerala, Tamil Nadu, Andhra Pradesh & Maharashtra.



Map 2. Geographical Location of the grove (◊) in Darjeeling map

Nature of Sacred Groves in Darjeeling: In Darjeeling, most of the SGs have ‘deity’--- Devi Durga (in the name of Singha mata, Satkanya, Tinkanya, Sweto devi etc.) and Lord Shiva, often inside small rocky caves as ‘cave temple’, as rocky idols, some are attached to the local monasteries (Gumpas) and a few are hindu temples inside forests (mostly in plain areas of Siliguri subdivision). Presently, some of the SGs are gradually declining under constant anthropogenic pressure. Spiritual sentiments of the people are attached with the ‘idols’ or ‘deities’ only, but not with the surrounding plant and animal diversities of that area. This leads to the exploitation of local biodiversity, and even causing extinction of rare plants and animals which may inhabit in these groves since time immemorial. Due to rapid urbanization and fast-changing society, the spiritual concept behind the groves has been fading day by day. Also activities inside most of the groves are restricted to some particular occasions once or twice a year or once a month (in some SGs), otherwise, it remains nothing more than a neglected forest patch (Agarwal, 1999).

Sacred groves of Darjeeling district are varied in respect to diverge people scape (subgroups of Nepalese viz. Tamang, Gurung, Chhetri, Rai, Sharma etc., Buddhist (Lama, Bhutia, Lepcha), Tibetans, Sherpas, local Biharese (Gupta), local Bengalese and their varied cultures and festivals. Therefore, local deities are different to different local groups, but all are conserving major flora and fauna in and around sacred groves. Although, whole Darjeeling himalaya is considered as an important megabiodiversity part in the world, sacred groves in

Darjeeling harbour rich biodiversity in respect to flora, fauna, people and its culture and their indigenous traditional knowledge.

Socio-Religious Heritage and Traditional Technique of Biodiversity Conservation by the Nepalese since time immemorial: Devi Satkanya Sacred Grove possess a great heritage of diverse gene pool of many forest species having socio-religious attachment and possessing medicinal values viz., *Garcinia cowa* DC. (Kafal-“*Reli khola bogoro kafal pakio laharo*”—a religious Nepalese song meaning *kafal fruits are ripening at Reli Khola river, one can go and eat to cure their asthma disease*, so the Nepalese are conserving this plant since time immemorial), *Prunus cerasoides* D.Don (Poiu), *Magnolia campbellii* Hook.f. & Thomson (Chameli), *Michelia cathcartii* Hook.f. & Thomson (Chanp), *Artemissia annua* L. (Titepati), *Mahonia nepalensis* DC.(Chutro), *Rhododendron arboreum* Sm. (Lali Guras—“*Lali Guras Ajambari Chanp Chameli jo vanini, huncha ajur mo to nepali*” and “*Guras so ko phedmuni samjhana ko chhaya janha goye poni kina lakchha timro maya*”—at the bottom of Lali Guras plant, remember your shadow, and from here again whenever you leave me, I feel your love), *Ficus nemoralis* Wall. (Dudhilo), *Alnus nepalensis* D. Don (Utis), *Castanopsis hystrix* A.DC. (Katus), *Taxus baccata* L. (Dhangre Salla), *Ficus roxburgii* Wall. (Nebara) etc.

Devi Satkanya SG is ecologically and genetically very important. It harbours a good number of Endangered ethnomedicinal plants such as *Swertia chirayita* (Roxb. ex Fleming) H. Karst. and animals like Himalayan Salamander (*Tylototriton verrucosus* Anderson). It also possesses a good number of fodder (viz., *Fagopyrum dibotrys* (D.Don) Hara; *Saurauia napaulensis* DC. -Gagun) and fuelwood species (*Quercus* spp., *Castanopsis hystrix* A.DC.--Katus). SG helps in improving the soil fertility through efficient nutrient cycling, conserving soil moisture through humus build up in the soil and partly through a deeply placed root system which has root biomass uniformly distributed throughout the soil profile. The value of sacred groves is immense as they are good sources of a variety of non-timber forest products and rich medicinal plants (viz., *Chiroto*, *Titepati*, *Pakhanbet*). The faunal wealth of sacred groves is also worth mentioning.

Review of Literature: Probably J. D. Hooker (April, 1848) was the first plant explorer who mentioned ‘sacred water of Senchul Lake’ in Darjeeling (‘Dorjiling’) and its sacredness to the local inhabitants, especially to the Buddhists. He also mentioned the belief of the Buddhist community in respect to the sacred water of lakes since time immemorial during his voyage to the Himalayas in his famous book “*Himalayan Journal*” (1854) which may be considered as the first documentation of Sacred Grove in Darjeeling. Hooker also mentioned other two pokhris—at Tonglu (‘Tonglo’) and at Kalapokhri (‘Kalipokhri’) during his voyage, but not mentioned sacredness of water or surrounding groves in respect to local beliefs. Since Hooker, workers like D. Brandis (1897), India’s first Inspector General of Forests acknowledged the existence of Sacred Groves as he mentioned in his book that sacred groves are existing ‘in nearly all provinces’ since pre-colonial ages, but not documented any particular grove from North Bengal including Darjeeling district. Since D. Brandis, a long gap of darkness was existing, particularly for Darjeeling district, until Deb (2007, 2008) who reported a dozen of Buddhist Sacred Groves from Darjeeling District. Deb (2007) mentioned “In Darjeeling Himalaya, Buddhist villagers prohibit tourists from polluting the Kali Pokhri Sacred pond. The dark water of this pond does not freeze in winter.... The old-growth forest adjacent to the pond is a sacred grove”. But, I do not agree with Deb (2007). Because the Nepalese of Kalapokhri, Kaiankata, Gairibas and Tumling do believe only sacred water of this pond, not surrounding degraded trees. The Nepalese believe that the ‘deity’ inhabits at the

bottom of water. That is why, what Deb mentioned “The dark water of this pond does not freeze in winter...”. However, Deb & his co-workers (Deb et al. 1997; Spadoni & Deb, 2005) mentioned more than thousand Sacred Groves from various districts of West Bengal, but not a single from Darjeeling District. Deb (2008) mentioned “SGs are low in Darjeeling District”. He also mentioned the main cause of rarity of SGs in West Bengal due to the oppression by Zaminders and moneylenders who forced the forest tribals....., and of course, SGs had disappeared in the Permanent Settlement Provinces, concomitant to the abolition of village forests, and subsequently, as a result of industrialization.....based on Duyker (1987). Dash (2005) reported 13,720 Sacred groves throughout 19 States in India and mentioned “In Sikkim, all the SGs are attached to the local Monasteries (Gumpas), dedicated to the deities and managed by the Gumpa authority or Lamas, or often by the village community”. But contemporary to Sikkim, most SGs of Darjeeling are not attached to the local Monasteries, rather maintained by the local communities based on ancient beliefs since time immemorial.

Geology and Soil: The Hills of Darjeeling including Lebong are the part of the Mahabharat Range or Lesser Himalaya. The soil is chiefly composed of sandstone and conglomerate formations, which are the solidified and upheaved detritus of the great range of Himalaya. However, the soil is often poorly consolidated and thus is not considered suitable for agriculture. The area has steep slopes and loose top soil leading to frequent landslide during the monsoons. According to the Bureau of Indian Standards, the town falls under Seismic Zone-IV near the convergent boundary of the Indian and the Eurasian tectonic plates and is thus subject to frequent earthquake.

Climate: Darjeeling has a temperate climate with wet summers caused by monsoon rains. Darjeeling’s moist temperate climate has five distinct seasons: Spring, Summer, Autumn, Winter and the Monsoons. The annual mean maximum temperature is 14.9 °C (58.8 °F) while the mean minimum temperature is 8.9 °C (48.0 °F), with monthly mean temperatures range from 6 to 18 °C (43 to 64 °F). The lowest temperature recorded was -5°C (23 °F) on 11th February, 1905. The average annual precipitation is 309.2 cm, with an average of 126 days of rain in a year. The highest rainfall occurs in July. The heavy and concentrated rainfall that is experienced in the region, aggravated by deforestation and haphazard planning, often causes devastating landslides, leading to loss of life and property.

2. RESULTS AND DISCUSSION

a. Methodology: The present work is the result of an extensive Field visits in different seasons from June, 2014 to October, 2016. This work also recorded GPS (used GARMIN eTrex 10 model) data (*latitude-longitude and altitudes*) during field visits. The work also includes relevant literature and herbarium specimens consultations in Central National Herbarium (CAL). The work was carried out in the laboratory of Angiosperm Taxonomy & Ecology, Post-Graduate Department of Botany, Darjeeling Govt. College.

b. Data on Satkanya Sacred Grove include the groves and its surrounding flora, fauna (mostly based on previous knowledge of experienced local people), approx. total area of the grove, GPS data, name and form of the deity, religion, approximate age, worshipped/not, is there any taboo? ownership of the grove, threatened taxa, ethnomedicinal plants and animals if any, invasive species if any, utilization pattern of the grove if known, brief history if known and photograph of the grove. For data collection, local knowledgeable persons and sometimes

local porters and forest guards were also engaged in most of the places to get more accurate data. Detailed study site map of entire are also provided for better understanding purpose. Local Knowledgeable persons were also asked regarding their suggestions for conservation of these local hotspots (SGs) including attached plants and animals. For detailed study of some important plant taxa (mostly threatened ethnomedicinal), floral parts of live plants were dissected and examined. All measurements were given in metric system. For ethnomedicinal investigation, the first hand Indigenous Traditional Knowledge (ITK) or information were recorded during field visits through an oral interviews of experienced and elderly Neplese people, Nepalese medicinemen and field guides. Detailed information regarding local names(s), part(s) used, mode of administration or preparation and dosimetry are recorded in the Field Note Book. Botanical identity was confirmed with herbarium consultations in Central National Herbarium (CAL). Zoological identity of major fauna was confirmed by the Expert, Dr. Sumana Saha, Associate Prof. of Zoology, Darjeeling Govt. College. Important voucher specimens are deposited in the laboratory of Angiosperm Taxonomy & Ecology, Botany Deptt., Darjeeling Govt. College, Darjeeling.



Fig. 1. Front Gate of Saptakanya Mandir

As a result of extensive field visits in different seasons throughout Devi Satkanya Sacred Grove, following data are documented for the first time, of course with the help of local Nepalese people who are conserving traditionally and magically each and every sample of valuable biodiversity in and around Devi Satkanya Sacred Grove since time immemorial by generation after generation for the ancient belief which was inherited to them from their forefathers. Local Nepalese believe that Devi Satkanya saved all the inhabitants of Lebong

including Darjeeling town from the great devastating Earthquake which shook the world in the past approx. 2000 years ago. Since then the Nepalese started to worship not only the rocky idol of Devi Satkanya, but also each and every sample surrounding it.

i. THREATENED TREE SPECIES: *Taxus baccata* L. (Taxaceae) - Dhangresalla (Nep. = Nepalese), *Rhus chinensis* Mill. (Anacardiaceae), *Quercus lineata* Bl. and *Quercus lamellosa* Sm. (Fagaceae)—Bajrant (Nep), *Erithrina arborescens* Roxb. (Fabaceae)-Theki Kath (Nep), *Exbucklandia populnea* (Griff.)R.W.Br. (Hamamelidaceae)-Pipli (Nep), *Castanopsis hystrix* A.DC. (Katus) and *C. indica* A. DC. (Fagaceae)—Katus (Nep)., *Magnolia campbelli* Hook.f. & Thomson (Chameli), *Michelia cathcartii* Hook.f. & Thomson and *M. velutina* DC. (Chanp)-Magnoliaceae, *Ficus roxburghii* Wall. (Nebara) and *F. nemoralis* Wall. (Didilo)-Moraceae, *Symplocos racemosa* Roxb. (Chumlane)-Symplocaceae, *Ilex dipyrena* Wall.(Lise)-Aquifoliaceae, *Prunus cerasoides* D. Don (Paiyun)-Rosaceae, *Pterospermum acerifolium* Wild. (hatipaile)-Malvaceae, *Viburnum cordifolium* DC. (Thulo Asare)-Caprifoliaceae are conserved in this Sacred Grove.



Fig. 2. Devi Satkanya inside this broken cave

ii. THREATENED SHRUBS: *Maesa chisia* D.Don (Myrsinaceae)-Bilaune (Nep), *Dobinea vulgaris* Ham. (Anacardiaceae)—Sangle (Nep.), *Astilbe rivularis* Buch.-Ham. ex D.Don (Saxifragaceae)-Buro Okhati (Nep.).

iii. THREATENED LIANA & CLIMBERS: *Desmodium gyroides* (Roxb.) DC. (Fabaceae), *Spatholobus parviflorus* (DC.) Kuntze (Debgre Lahara)-Fabaceae, *Tetrastigma thomsonianum* Planch. (Charchare)-Vitaceae, *Actinidia callosa* Lindl. (Thekiphal)-Actinidiaceae, *Smilax glaucophylla* Klotzsch (Kukur Daine)-Smilacaceae, *Streptolirion volubile* Edgew.(Lekh Kanay)-Commelinaceae, *Thunbergia coccinea* D.Don (Kaneshi Lahara) and *T. lutea* T. And.

(Kaneshi Lahara) - Acanthaceae and *Trichosanthes tricuspidata* Lour. (Cucurbitaceae) are conserved here.



Fig. 3. Liana - *Spatholobus parviflorus*

iv. THREATENED HERBACEOUS PLANTS: *Swertia chirayita* (Roxb. ex Fleming) H. Karst. (Gentianaceae), *S. bimaculata* (Sieb. & Zucc.) C.B. Clarke (Gentianaceae), *Scutellaria violacea* B. Heyne ex Benth. (Lamiaceae), *Viola pilosa* Bl. (Violaceae), *Stellaria graminea* L. (Caryophyllaceae), 4 spp. of Araceae (Sanpko Makai in Nepalese), viz., *Arisaema griffithii* Schott, *A. speciosum* (Wall.) Mart. ex Schott & Endl., *A. nepenthoides* (Wall.) Mart. & *A. tortuosum* (Wall.) Schott.



Fig. 4. Green Pigeon inside the Grove

v. THREATENED EPIPHYTES: *Agapetes serpens* (Wight) Sleumer (Ericaceae), *Vaccinium vacciniaceum* (Roxb.) Sleumer (Ericaceae), *Aeschynanthus radicans* Jacq. (Gesneriaceae), *Coelogyne cristata* Lindl. (Orchidaceae) and *Peperomia tetraphylla* (G. Forst.) Hook. & Arn. (Piperaceae).

vi. MAJOR THREATENED ANIMALS: Frog-Paha (*Amolops monticola* Anderson of Ranidae family), Himalayan Tree Frog-Paha (*Polypedates himalayanus* Gray of Rhacophoridae), Khosre Bheguta (*Bufo* sp. of Bufonidae family), Kalo sap, Hario sap etc. of families viz., Gekkonidae, Viperidae and Scindae, birds like Hill crow (*Corvus* sp. of Corvidae family), Hill Myna (*Gracula religiosa* Linnaeus of Sturnidae), Fly Catcher (*Culicicapa ceylonensis* Swainson of Stenostiridae), Wild Sparrow (*Passer domesticus* Linnaeus of Passeridae), Black Drongo (*Dicrurus macrocercus* Vieillot of Dicruridae), Darjeeling Woodpecker (*Dendrocopos darjillensis* Blyth of Picidae), Black Bulbul (Jureli) (*Hypsipetes leucocephalus* Gmelin of Pycnonotidae), Common Hoopoe (*Upupa epops* Linnaeus of Upupidae) and Mammals viz., Lotharke (Flying squirrel) of Sciuridae family, Nigale (Striped Leopard--rarely seen) of Felidae family and jungle khorayo (wild rabbit) of Manidae family—mostly not seen but reported by the local inhabitants.

vii. DEITY: Devi Saptakanya (Devi Durga) inside rocky cave and Lord Shiva outside the cave. Form: made of ancient black rocky idols.

viii. NATURE OF WORSHIP: Daily by the local Hindu Nepalese Priest.

ix. HISTORY & AGE OF THE GROVE: Not exactly known, but locals believe more than 2000 years or more, due to a major earthquake, Devi Saptakanya's rocky temple was totally destroyed and Devi was survived inside the broken rocky cave (what is in today), and surprisingly, the entire Lebong village was saved owing to Devi Saptakanya, although other parts of Darjeeling were heavily damaged.



Fig. 5. Rocky idol of 'Devi Satkanya' inside rock cave

x. TABOO: There were two strong taboos maintained inside the grove viz., i. nobody can enter inside the temple with shoes, if anybody does so, he/she will lost memory for ever, ii. Nobody should touch the idol of the deity inside the cave if they do not take bath—if they do so, snake will bite them within one month.



Fig. 6. Second Gate of the Sacred Grove

xi. PEOPLE-GROVE ASSOCIATION: mainly Non-tribal Nepalese Hindu communities are associated (Gurung, Chhetri, Pradhan, Sharma, Rai), but Subba, Moktan, Sarki, Roka and other scheduled castes are also actively associated with the Grove.

xii. THREAT: well-maintained by the local Nepalese of Lebung.

xiii. INVASIVE SPECIES: seen 2 alien spp. as an aggressive colonizers native of tropical America viz., *Ageratina adenophora* (Spreng.) King & H.Rob. (Asteraceae) & *Bidens pilosa* L. (Asteraceae) inside the grove.

xiv. STRUCTURE: The grove is associated with the ancient rocky cave temple and recently man-made cemented two Gates (made in 2002 in memory of Late P. Tamang, Army Officer), but dieties reside inside the natural rocky cave (age more than 2000 years) as well as outside the cave. Area is not fenced, but main deity including rocky cave is fenced by iron pillars & grill gate.

xv. OWNERSHIP: Darjeeling Municipal authority 32-Ward Committee (Govt).

xvi. UTILIZATION PATTERN OF THE RESOURCE OF THE GROVE: fallen tree trunks are used by the locals, but no resources are used in the area vicinity to main deity.

xvii. TREE FELLING & POACHING: Not yet.

xviii. WHETHER AREA OF THE GROVE SHRINKING: not yet.

xix. SPECIAL NOTE: Devi is situated inside the broken cave (30 ft down), but there is electricity inside.

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