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## Plant wealth (Angiosperms) of Kanger Valley National Park, Bastar (Chhattisgarh)

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The paper is an account of 456 species of Angiosperms occurring in Kanger Valley National Park, Bastar district, Chhattisgarh. A perusal of literature has indicated that 12 species are new records for Chhattisgarh State, while 37 taxa are new records for the erstwhile Bastar district.

**Keywords:** Kanger Valley National Park; Bastar; Chhattisgarh; Angiosperms

### Introduction

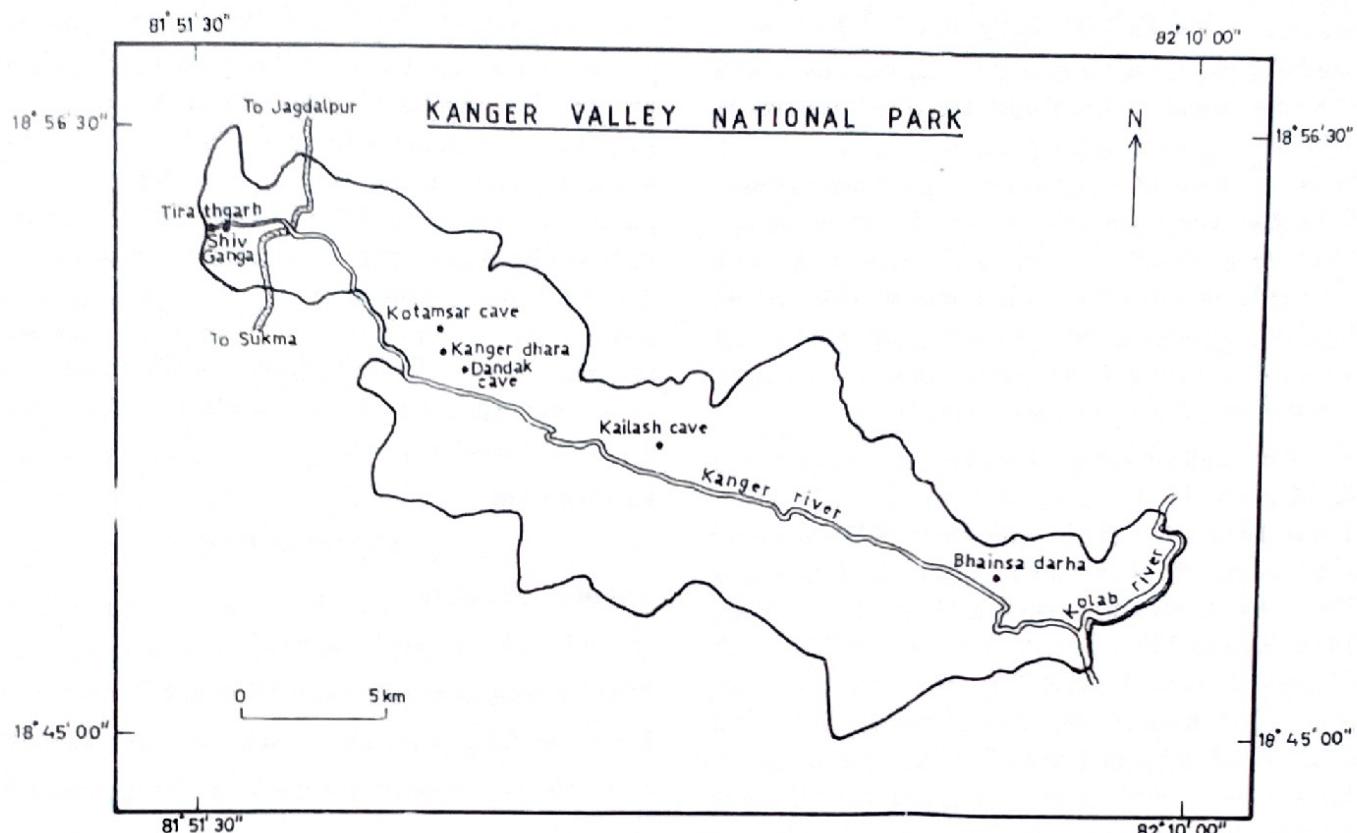
India being rich in biodiversity is one of the 12 mega diversity centres of the world. To safeguard this richness, a number of areas like Biosphere Reserve, National Park and Sanctuary have been declared as protected. Kanger Valley National Park, established on 22 July 1982 and situated 25 km south-east of Jagdalpur, the headquarter of Bastar district on Jagdalpur-Darbha road, is one of such floristically-rich protected areas. It lies between  $18^{\circ}45'$  to  $18^{\circ}56'30''$  N and  $81^{\circ}51'30''$  to  $82^{\circ}10'$  E and covers an area of 200 sq km. The park, starting from Tirathgarh waterfall to Kolab river (Orissa state boundary), is nearly 33.5 km long and about 6 km broad. The entire area of the park has been divided into two ranges, Kotamsar and Koleng (Map).

The soils of the park are yellowish, brownish red, reddish and brown in colour, and are loamy, sandy and lateritic in nature. The entire area of the park is hilly with the eastern half very hilly and the western half comparatively less hilly. There are also small plateaus interspersed with hills. There are a number of seasonal streams which ultimately confluence with Kanger river from both sides. The altitude of the park varies from 338 to 781 m above msl. The mean annual rainfall in the area is 1516.31 mm, while the mean temperature varies from  $10^{\circ}$  to  $38^{\circ}\text{C}$  with relative humidity ranging from 40 to 98%.

As far as the forests are concerned, the park is situated in a transitional zone where southern

limit of sal forests and northern limit of teak forests overlap. Both types of forests are seen in their best growth forms. According to Champion & Seth (1968), the forests of the area can be broadly divided into three categories:

**1. Moist Peninsular Valley Sal Forests [3C/C2e (iii)]:** This type of forest covers about 90% of the park area. It is found in valleys of the park and along Kanger river. The dominant trees are *Shorea robusta*, *Pterocarpus marsupium*, *Terminalia alata*, *T. chebula*, *Anogeissus latifolia*, *Mitragyna parvifolia*, *Diospyros melanoxylon*, *Miliusa tomentosa*, *Bauhinia malabarica*, *Careya arborea*, *Buchanania lanza*, *Phyllanthus emblica*, etc. Common shrubs in the forest are *Lagerstroemia parviflora*, *Flemingia strobilifera*, *F. paniculata*, *Colebrookea oppositifolia*, *Clerodendrum serratum*, *Embelia basaal*, etc. These are followed by some undershrubs like *Vernonia divergens*, *Indigofera cassioides*, etc. Conspicuous climbers in the forest are *Millettia extensa*, *Celastrus paniculatus*, *Bauhinia vahlii*, *Combretum roxburghii*, *Abrus precatorius*, *Asparagus racemosus*, *Dioscorea oppositifolia*, *D. pentaphylla*, etc. The ground flora is composed of a number of shrubs like *Eranthemum purpurascens*, *Andrographis paniculata*, *Dipteracanthus prostratus*, *Laggera alata*, *Chlorophytum arundinaceum*, *Alloteropsis cimicina*, *Arthraxon echinatus*, *Mnesithea laevis*, *Themeda triandra*, *Thysanolaena maxima*, etc.



## 2. Southern Moist Mixed Deciduous Forests

[3B/C2]: This type of forest occurs along the water courses, damp valleys and hill slopes. The common trees are *Pterocarpus marsupium*, *Syzygium cumini*, *Schleichera oleosa*, *Haldina cordifolia*, *Mitragyna parvifolia*, *Madhuca longifolia* var. *latifolia*, *Bombax ceiba*, *Lannea coromandelica*, *Mallotus philippensis*, *Cassine glauca*, *Garuga pinnata*, *Bridelia retusa*, *Cleistanthus collinus*, *Gardenia turgida*, *G. latifolia*, *Nyctanthes arbor-tristis*, *Casearia elliptica*, *C. graveolens*, *Holarrhena pubescens*, *Bauhinia racemosa*, etc. Some of the dominant shrubs occurring in the forest are *Clerodendrum serratum*, *Lantana camara* var. *aculeata*, *Grewia abutilifolia*, *Desmodium velutinum*, *Flemingia paniculata*, *F. strobilifera*, *Jasminum multiflorum*, *Homonoia riparia*, *Securinega virosa*, etc. Common climbers found in such forests are *Celastrus paniculatus*, *Bauhinia vahlii*, *Millettia extensa*, *Smilax zeylanica*, *Dioscorea bulbifera*, *Ampelocissus tomentosa*, etc. Some of the common herbs are *Blepharis*

*maderaspatensis*, *Desmodium pulchellum*, *D. heterocarpon*, *Phyllanthus virgatus*, *Elephantopus scaber*, *Commelina suffruticosa*, *Chlorophytum arundinaceum*, *Heteropogon contortus*, *Eragrostis unioloides*, *Arundinella pumila*, *Arthraxon echinatus*, *Dichanthium annulatum*, etc. It is interesting to record that *Dendrocalamus strictus* occurs as an understorey in the forest and covers more areas where canopy manipulations have been attempted.

**3. Moist Teak Forests [3B/C1/1c]:** Natural teak forests occur in the plain area, but are restricted only to smaller portions in the north of Kanger river. The dominant trees are *Tectona grandis*, *Terminalia alata*, *Haldina cordifolia*, *Dalbergia paniculata*, *Bombax ceiba*, *Syzygium cumini*, *Miliusa tomentosa*, *Mallotus philippensis*, *Careya arborea*, *Mitragyna parvifolia*, etc. The upper storey is followed by an understorey of *Dendrocalamus strictus* and a number of shrubs. Some of the common shrubs are *Woodfordia fruticosa*, *Glycosmis arborea*, *Clerodendrum serratum*,

*Ardisia solanacea*, *Embelia basaal*, *Flemingia strobilifera*, *Grewia abutilifolia*, etc. Common climbers found in the forest are *Bauhinia vahlii*, *Ventilago denticulata*, *Celastrus paniculatus*, etc. Some of the common herbs forming the underground flora are *Ageratum conyzoides*, *Scoparia dulcis*, *Ocimum gratissimum*, *Boerhavia repens*, *Blumea virens*, *Blumeopsis flava*, *Thecagonum ovatifolium*, *Lindernia ciliata*, *Eragrostis coarctata*, *Murdannia nudiflora*, *Tacca leontopetaloides*, *Oplismenus compositus*, *Hackelochloa granularis*, etc.

Although a number of workers (Narayanaswami & Mooney 1941; Mooney 1942; Raizada 1942; Tiwari 1954, 1955, 1957, 1963; Henry & Balakrishnan 1961; Jain 1963, 1964, 1965; Tiwari & Maheshwari 1963, 1965; Subramanyam & Henry 1967; Arora 1968; Saxena 1973; Saxena & Khotel 1976; Roy & Chaturvedi 1987; Dixit & Roy 1992a, 1992b; Verma et al., 1993; Kumar 1995, 1996, 1998, 2003; Mudgal et al., 1997; Khanna et al. 2001; Singh et al. 2001; Jha & Khanna 2002; Kumar & Sikarwar 2002) have worked on the flora of the erstwhile Madhya Pradesh, no effort has been made to work out the floristic account of Kanger Valley National Park separately. It is worth mentioning here that the Convention on Biological Diversity (CBD) and the Biological Diversity Bill 2000 of India have also laid emphasis on inventorisation of the rich biodiversity areas, so that a fair assessment can be made for sustainable utilization of bioresources. Keeping these points in view, an attempt has been made by the authors to work out the plant wealth of Kanger Valley National Park. For the purpose, the areas were surveyed for plant collection during September 2002, April-May 2003 and January 2004, and all the specimens after proper processing and identification have been housed in the herbarium of Botanical Survey of India, Central Circle, Allahabad (BSA). The present paper gives an account of 456 species of angiosperms occurring in Kanger Valley National Park based mainly on our own collections and a few earlier collections housed at BSA. The botanical names have been dealt with under their corresponding families that have been arranged according to Bentham and Hooker's system of

classification (1862-1883) with slight modification as per recent concept. However, the genera and species under each family have been arranged alphabetically. Each botanical name is followed by local names (if any), locality and voucher number (within parentheses). In our collections, only voucher numbers have been given, while in those of earlier collectors the numbers are prefixed by author's name. Plant names marked with single asterisk are new records for Chhattisgarh state, while those with double asterisk are new records for the flora of the erstwhile Bastar district.

#### Enumeration

#### ANNONACEAE

##### *Annona reticulata* L.

'Rumphal', Kotamsar Village (57319)

##### \*\**Miliusa tomentosa* (Roxb.) Sinclair

Kotamsar Village (57333, 57334)

##### *Mitraphora heyneana* (Hook. f. & Thomson)

Thwaites

Tirathgarh Fall (56661)

##### *Polyalthia longifolia* (Sonner.) Thwaites

Kotamsar Village (57476)

#### MENISPERMACEAE

##### *Stephania glabra* (Roxb.) Miers

Tirathgarh (Das 14984)

#### PAPAVERACEAE

##### *Argemone mexicana* L.

Kotamsar Village (57377)

#### BRASSICACEAE

##### *Brassica rapa* L. subsp. *campestris* (L.) Clapham

Kotamsar Village (57416)

#### CAPPARACEAE

##### *Cleome viscosa* L.

Kanger Dhara (56431)

#### BIXACEAE

##### \*\**Bixa orellana* L.

Nagalsar (57497)

**FLACOURTIACEAE**

*Casearia elliptica* Willd.

On way to Kotamsar Cave (57353)

*Casearia graveolens* Dalz.

'Girich', On way to Tirathgarh Fall (56682)

**CARYOPHYLLACEAE**

*Polycarpon prostratum* (Forssk.) Asch. & Schweinf.

Kotamsar (*Panigrahi & Arora* 1185)

**DIPTEROCARPACEAE**

*Shorea robusta* Roxb. ex Gaertn. f.

'Sal', On way to Tirathgarh Fall (56679)

**MALVACEAE**

*Abelmoschus crinitus* Wallich

Jagdalpur-Kotamsar (*Jain* 3940); Forest near Kotamsar Cave (*Panigrahi & Arora* 1-x)

*Abelmoschus moschatus* Medik.

About 5 km from Netanar towards Bhainsadarha (56499)

*Abutilon indicum* (L.) Sweet

Kotamsar Cave Area (*Das* 14991)

*Hibiscus rosa-sinensis* L.

Tirathgarh Fall (57462)

*Pavonia repanda* (Roxb. ex Sm.) Spreng.

Kanger Valley (*Das* 15028)

*Sida acuta* Burm. f.

Darbha-Jerum Ghat (56407), Kotamsar Village (57417)

*Sida cordata* (Burm. f.) Borss.

Darbha-Jerum Ghat (56404)

*Sida cordifolia* L.

Shiv Ganga Dhara (56478)

*Sida rhombifolia* L. subsp. *retusa* (L.) Borss.

Darbha Jerum Ghat (56194, 56654)

*Sida spinosa* L.

Tirathgarh (*Das* 14968)

*Thespesia lampas* (Cav.) Dalz. & Gibbs.

On way to Tirathgarh Fall (56102)

*Urena lobata* L. subsp. *sinuata* (L.) Borss. var. *sinuata*

'Chitiki', On way to Netanar (56500), Kotamsar Village (57420)

**STERCULIACEAE**

*Bytneria herbacea* Roxb.

'Jangli tilli', Tirathgarh Fall (55802), Kanger Dhara (57382)

*Helicteres isora* L.

Darbha-Jerum Ghat (55844, 56622)

*Melochia corchorifolia* L.

Kotamsar Village (55828), On way to Kotamsar Cave (56167)

*Sterculia urens* Roxb.

Tirathgarh Fall (57312)

**TILIACEAE**

*Corchorus aestuans* L.

Kanger-Mungabahar Sangam (56109)

*Grewia abutilifolia* Vent. ex Juss.

Darbha-Jerum Ghat (57367), On way to Tirathgarh Fall (57443, 57479), Tirathgarh (*Das* 14971)

*Grewia rothii* DC.

Kanger Dhara (57335)

*Grewia serrulata* DC.

Kanger Valley (*Das* 15026)

*Triumfetta pentandra* A. Rich.

On way to Tirathgarh Fall (56113)

**MALPIGHIAEAE**

*Hiptage benghalensis* (L.) Kurz

Kotamsar (*Panigrahi* 1141)

**OXALIDACEAE**

*Biophytum reinwardtii* (Zucc.) Klotz.

Tirathgarh Fall (55897)

*Oxalis corniculata* L.

Tirathgarh Fall (56616)

## RUTACEAE

- Atalantia monophylla* (L.) Corrêa  
Kotamsar-Kanger Valley (*Panigrahi & Arora* 1126)  
*Citrus medica* L.  
Kanger-Kotamsar (*Das* 15030)  
*Glycosmis arborea* (Roxb.) DC.  
On way to Tirathgarh Fall (56623, 57438)  
*Zanthoxylum rhetsa* (Roxb.) DC.  
'Panikusum', On way to Tirathgarh Fall (56673),  
Tirathgarh Fall (56700)

## BURSERACEAE

- Garuga pinnata* Roxb.  
On way to Kotamsar Cave (57347)

## MELIACEAE

- Cipadessa baccifera* (Roth) Miq.  
'Nimni', Kotamsar Village (55818, 57330), On way to  
Tirathgarh Fall (55845), Nagalsar (57499)

## OLACACEAE

- Olax scandens* Roxb.  
'Bhadri', Tirathgarh Fall (57314), Kanger Dhara  
(57338), On way to Kotamsar Cave (57350)

## CELASTRACEAE

- Cassine glauca* (Rottb.) Kuntze  
Tirathgarh Fall (56482)  
*Celastrus paniculatus* Willd.  
Kanger Dhara (57339), Dandak Cave (57345)

## RHAMNACEAE

- Ventilago denticulata* Willd.  
Kotamsar Cave Area (*Das* 14990)  
*Ziziphus oenoplia* (L.) Mill.  
Tirathgarh Fall (55889)  
*Ziziphus xylopyra* (Retz.) Willd.  
About 8 km from Netanar on Netanar-Bhainsadarha  
Road (56496), On way to Tirathgarh Fall (56683)

## VITACEAE

- Ampelocissus tomentosa* (Heyne ex Roth) Planch.  
'Mutri', Tirathgarh Fall (55892), About 8 km from  
Netanar on Netanar-Bhainsadarha Road (56604),  
Kanger River Bank (57365)  
*Cyphostemma auriculatum* (Roxb.) P. Singh &  
Shetty  
Dandak Cave (56142)

## LEEACEAE

- Leea asiatica* (L.) Ridsdale  
Kotamsar Village (55827), On way to Kotamsar Cave  
(56174)

## SAPINDACEAE

- Schleichera oleosa* (Lour.) Oken.  
'Kusum', Kotamsar Village (57474)

## ANACARDIACEAE

- Buchanania lanza* Spreng.  
'Chironji', 'Char', On way to Shiv Ganga Dhara  
(57458)  
*Lannea coromandelica* (Houtt.) Merr.  
Tirathgarh Fall (56699)  
*Mangifera indica* L.  
'Aam', Kotamsar Village (57341)

## FABACEAE

- Abrus precatorius* L.  
Tirathgarh Fall (55851)  
*Alysicarpus bupleurifolius* (L.) DC.  
Shiv Ganga Dhara (56474)  
*Alysicarpus vaginalis* (L.) DC.  
Tirathgarh Fall (56449)  
*Atylosia scarabaeoides* (L.) Benth.  
Shiv Ganga Dhara (56466)  
*Atylosia volubilis* (Blanco) Gamble  
Kotamsar (*Panigrahi & Arora* 1170)  
*Butea monosperma* (Lam.) Taub.  
'Pharsajhad', Tirathgarh Fall (57452)

PLANT WEALTH (ANGIOSPERMS) OF KANGER VALLEY NATIONAL PARK, BASTAR  
(CHHATTISGARH)

- Crotalaria albida* Heyne ex Roth  
Darbha-Jerum Ghat (57378)
- Crotalaria laburnifolia* L.  
On way to Netanar (56602), Kanger Dhara (57401)
- Crotalaria linifolia* L. f.  
Darbha-Jerum Ghat (56196)
- Crotalaria spectabilis* Roth  
Bhainsadarha (59021)
- Dalbergia paniculata* Roxb.  
Kotamsar (*Panigrahi* 1146)
- Dalbergia sissoo* Roxb.  
On way to Kotamsar Cave (56619)
- Desmodium heterocarpon* (L.) DC.  
About 7 km from Netanar on Netanar-Bhainsadarha Road (56491)
- Desmodium laxiflorum* DC.  
Kanger-Mungabahar Sangam (56138)
- Desmodium motorium* (Houtt.) Merr.  
About 7 km from Netanar on Netanar-Bhainsadarha Road (56484, 57434)
- Desmodium pulchellum* (L.) Benth  
Tirathgarh Fall (56103)
- Desmodium triflorum* (L.) DC.  
Darbha-Jerum Ghat (56199)
- Desmodium triquetrum* (L.) DC.  
On way to Tirathgarh Fall (56132, 57435)
- Desmodium velutinum* (Willd.) DC.  
Near Kanger-Mungabahar Sangam (56140)
- \**Flemingia bracteata* (Roxb.) Wight  
On way to Tirathgarh Fall (56106), Near Kanger-Mungabahar Sangam (56139)
- Flemingia nana* Roxb  
Kotamsar (*Panigrahi & Arora* 1148), Tirathgarh (Das. 14972)
- Flemingia paniculata* Wallich ex Benth.  
Kotamsar (*Panigrahi & Arora* 1183)
- Flemingia praecox* C. B. Clarke ex Prain  
Kotamsar (*Panigrahi & Arora* 1113)
- Flemingia strobilifera* (L.) R. Br.  
Kotamsar Cave Area (Das 15008)
- Indigofera astragalina* DC.  
Shiv Ganga Dhara (56473)
- Indigofera cassioides* Rottl. ex DC.  
'Girgoli', Darbha-Jerum Ghat (57379), Tirathgarh Fall (Das 14967)
- Indigofera trifoliata* L.  
On way to Tirathgarh Fall (56133), Darbha-Jerum Ghat (56414)
- Millettia extensa* (Benth.) Baker  
'Agya', About 5 km before Kailash Cave (56181), On way to Tirathgarh Fall (56695)
- Pongamia pinnata* (L.) Pierre  
'Karanj', On way to Tirathgarh Fall (56662), Tirathgarh Fall (57311)
- Pterocarpus marsupium* Roxb.  
'Beeja', Shiv Ganga Dhara (57457)
- Pueraria tuberosa* (Roxb. ex Willd.) DC.  
Kotamsar (*Panigrahi & Arora* 1129)
- Tephrosia purpurea* (L.) Pers.  
Tirathgarh Fall (55858)
- Teramnus labialis* (L. f.) Spreng.  
On way to Dandak Cave (57380)
- Uraria alopecuroides* (Roxb.) Wight  
Nature Trail (56128)
- Vigna umbellata* (Thunb.) Ohwi & Ohashi  
Kanger Dhara (56445)
- Zornia gibbosa* Span.  
On way to Shiv Ganga Dhara (56461)

CAESALPINIACEAE

- Bauhinia malabarica* Roxb.  
Kotamsar Village (56162)
- Bauhinia purpurea* L.

- Darbha-Jerum Ghat (56620)  
*Bauhinia racemosa* Lam.  
‘Kachnar’, Kotamsar Village (57320)  
*Bauhinia vahlii*  
On way to Kotamsar Cave (57481)  
*Cassia absus* L.  
Kanger Dhara (56434)  
*Cassia fistula* L.  
On way to Tirathgarh Fall (56658)  
*Cassia occidentalis* L.  
Shiv Ganga Dhara (56464)  
*Cassia pumila* Lam.  
Darbha-Jerum Ghat (56419)  
*Cassia tora* L.  
Darbha-Jerum Ghat (56411)  
*Tamarindus indica* L.  
‘Imli’, Kotamsar Village (56116, 57326)
- MIMOSACEAE**
- Acacia sinuata* (Lour.) Merr.  
Kotamsar (*Panigrahi & Arora* 1149)  
*Acacia torta* (Roxb.) Craib  
Kotamsar (*Panigrahi & Arora* 1142)  
*Albizia amara* (Roxb.) Boivin  
Kotamsar Cave (57355)  
*Calliandra hematocephala* Hassk.  
Tirathgarh Fall (57460)  
*Mimosa himalayana* Gamble  
On way to Kotamsar Cave (56421)  
*Mimosa pudica* L.  
On way to Tirathgarh Fall (55896)
- COMBRETACEAE**
- Anogeissus latifolia* (Roxb. ex DC.) Wallich ex Guill. & Perr.  
Shiv Ganga Dhara (56481)  
*Combretum roxburghii* Spreng.
- Dandak Cave (57342)  
*Terminalia alata* Heyne ex Roth  
‘Saja’, Darbha-Jerum Ghat (57368)  
*Terminalia arjuna* (Roxb. ex DC.) Wight & Arnott  
On way to Tirathgarh Fall (56117)  
*Terminalia chebula* Retz.  
‘Harra’, Darbha-Jerum Ghat (57366)
- MYRTACEAE**
- Psidium guajava* L.  
‘Jamphal’, On way to Kotamsar Cave (57469)  
*Syzygium cumini* (L.) Skeels  
‘Jamun’, ‘Jam’, On way to Tirathgarh Fall (56676), Tirathgarh Fall (56698), Kotamsar Village (57357)  
\*\**Syzygium nervosum* DC.  
On way to Kotamsar Cave (57351)
- LECYTHIDACEAE**
- Barringtonia acutangula* J. R. Forster & G. Forster  
‘Timra’, On way to Tirathgarh Fall (56684)  
*Careya arborea* Roxb.  
On way to Tirathgarh Fall (56674)
- MELASTOMATACEAE**
- Memecylon umbellatum* Burm. f. var. *contractum* (Haines) Verma  
‘Tilia’, Tirathgarh Fall (57304)
- LYTHRACEAE**
- Lagerstroemia parviflora* Roxb.  
‘Lendiya’, On way to Tirathgarh Fall (56680)  
*Woodfordia fruticosa* (L.) Kurz  
On way to Kotamsar Cave (57352)
- PUNICACEAE**
- Punica granatum* L.  
Tirathgarh Fall (57494)
- ONAGRACEAE**
- \*\**Ludwigia hyssopifolia* (G. Don) Exell  
On way to Tirathgarh Fall (55878), Tirathgarh Fall (56659)

*Ludwigia perennis* L.

Kanger Dhara (56446), Tirathgarh Fall (56457),  
Kanger Dhara (57327), Kotamsar (*Panigrahi & Arora* 1133)

#### CARICACEAE

*Carica papaya* L.

Kotamsar Cave (57495)

#### CUCURBITACEAE

*Cucumis callosus* (Rottl.) Cogn.

Tirathgarh (*Das* 14982)

*Diplocyclos palmatus* (L.) Jeffrey

Dandak Cave (57388)

*Lagenaria siceraria* (Molina) Standl.

Tirathgarh (*Das* 14981)

*Melothria maderaspatana* (L.) Cogn.

Tirathgarh (*Das* 14970)

#### BEGONIACEAE

*Begonia picta* Sm.

Tirathgarh Fall (55866)

#### MOLLUGINACEAE

*Glinus lotoides* L.

Kotamsar (*Panigrahi & Arora* 1168)

*Mollugo pentaphylla* L.

Tirathgarh Fall (55862), Kanger Dhara (56423)

#### APIACEAE

*Centella asiatica* (L.) Urban

Tirathgarh Fall (55893)

*Pimpinella heyneana* (DC.) Wallich ex Kurz

On way to Tirathgarh Fall (57444), Kotamsar Cave Area (*Das* 15010)

*Pimpinella wallichiana* (Hoenck.) Gandhi

Kotamsar Cave Area (*Das* 14989)

#### RUBIACEAE

*Catunaregam nilotica* (Stapf) Tirvengadum

Kotamsar (*Panigrahi & Arora* 1178)

*Catunaregam spinosa* (Thunb.) Tirvengadum

Kotamsar Cave Area (*Das* 14992)

*Gardenia latifolia* Aiton

'Pattarkullu', Tirathgarh Fall (56479, 57302)

*Gardenia resinifera* Roth

'Mode', 'Kurru', Tirathgarh Fall (57313), Kanger Dhara (57389), Shiv Ganga Dhara (57456)

*Gardenia turgida* Roxb.

Kotamsar (*Panigrahi & Arora* 1177)

*Haldina cordifolia* (Roxb.) Ridsd.

'Haldu', Kanger River Bank (57363)

*Hedyotis auricularia* L.

About 7 km from Netanar on Netanar-Bhainsadarha Road (56490)

*Ixora pavetta* Andrews

Kanger Dhara (57340)

*Knoxia sumatrensis* (Retz.) DC.

Tirathgarh Fall (55868), About 7 km from Netanar on Netanar-Bhainsadarha Road (56492)

*Mitragyna parvifolia* (Roxb.) Korth

'Mundi', On way to Tirathgarh Fall (56678)

*Morinda pubescens* Sm.

'Korad', Tirathgarh Fall (57301)

*Oldenlandia affinis* (Roem. & Schult.) DC.

Bhainsadarha (59010)

*Oldenlandia corymbosa* L.

var. *corymbosa*

Tirathgarh Fall (55898)

var. *linearis* (DC.) Verdc.

On way to Kotamsar Cave (56170), Kanger Dhara (56435), Tirathgarh Fall (56456, 56627)

*Pavetta crassicaulis*

'Kanki', Tirathgarh Fall (57310), On way to Kotamsar Cave (57349)

*Pavetta tomentosa* Roxb. ex Sm.

Kanger Valley (*Das* 15027)

- Spermatoce hispida* L.  
Kanger Dhara (56430), Tirathgarh Fall (55852, 56651)
- Thecagonum ovatifolium* (Cav.) Babu  
Tirathgarh Fall (55899), Bhainsadarha (59009)
- Wendlandia tinctoria* (Roxb.) DC.  
On way to Bhainsadarha (59001)
- ASTERACEAE**
- Adenostemma lavenia* (L.) Kuntze  
On way to Dandak Cave (57411)
- Ageratum conyzoides* L.  
Darbha-Jerum Ghat (56189)
- Bidens biternata* (Lour.) Merr. & Sherff.  
On way to Tirathgarh Fall (56112), Tirathgarh Fall (56455)
- Blainvillea acmella* (L.) Philipson  
Tirathgarh Fall (55874, 56646)
- Blumea eriantha* DC.  
Kotamsar (*Panigrahi* 1167)
- Blumea virens* Wallich ex DC.  
Kotamsar (*Panigrahi & Arora* 1152, 1173)
- Blumeopsis flava* (DC.) Gagnep.  
On way to Tirathgarh Fall (57424), Kotamsar (*Panigrahi* 1172), Tirathgarh (*Das* 14979, 14980)
- Caesulia axillaris* Roxb.  
Bhainsadarha (59006), Kotamsar (*Panigrahi* 1122)
- Crassocephalum crepidioides* (Benth.) S. Moore  
On way to Kotamsar Cave (56169), Bhainsadarha (59019)
- Eclipta prostrata* (L.) L.  
Kanger Dhara (56437), Bank of Kanger River (57369)
- Elephantopus scaber* L.  
On way to Tirathgarh Fall (55837)
- Emilia sonchifolia* (L.) DC.  
Darbha-Jerum Ghat (56410)
- Erechtites valerianaeifolia* (Wolf) DC.  
On way to Tirathgarh Fall (56694)
- Eupatorium odoratum* L.  
Kanger Dhara (57385)
- Glossocardia bosvallea* (L. f.) DC.  
Tirathgarh Fall (55840)
- \*\**Gnaphalium luteo-album* L. subsp. *affine* (D. Don) Koster  
Bhainsadarha (59025)
- Guizotia abyssinica* (L. f.) Cass.  
Kanger-Kotamsar (*Das* 15032)
- Laggera alata* (D. Don) Schultz.-Bip. ex Oliver  
Kotamsar (*Panigrahi & Arora* 1161)
- Pentanema indicum* (L.) Ling  
On way to Tirathgarh Fall (57430)
- \*\**Spilanthes paniculata* Wallich ex DC.  
Kanger-Mungabahar Sangam (56119)
- Tagetes erecta* L.  
Tirathgarh Fall (57463)
- Tagetes patula* L.  
Tirathgarh Fall (57472)
- Tridax procumbens* L.  
Darbha-Jerum Ghat (56412)
- Vernonia cinerea* (L.) Less. var. *cinerea*  
Darbha-Jerum Ghat (56417)
- Vernonia divergens* (Roxb.) Edgew.  
Kotamsar Cave Area (*Das* 15017)
- \*\**Vernonia pyramidale* (D. Don) S. N. Mitra  
About 8 km from Netanar on Netanar-Bhains Road (56608)
- \*\**Wedelia urticaefolia* DC.  
Kailash Cave (56184)
- MYRSINACEAE**
- Ardisia solanacea* Roxb.  
On way to Tirathgarh Fall (55881, 56675)
- Embelia basaal* (Roem. & Schult.) A. DC.  
On way to Tirathgarh Fall (56129)

## SAPOTACEAE

*Madhuca longifolia* (J. Koenig) Macbr. var *latifolia*  
(Roxb.) Chevalier

'Mahua', Kotamsar Village (57321)

## EBENACEAE

*Diospyros malabarica* (Desr.) Kostel.

'Makad tendu', Tirathgarh Fall (57309)

*Diospyros melanoxylon* Roxb.

'Tendu', On way to Tirathgarh Fall (56681)

*Diospyros montana* Roxb.

'Makad manj', Kanger River Bank (57356), On way to Tirathgarh Fall (57448)

*Diospyros sylvatica* Roxb.

Tirathgarh Fall (57308)

## OLEACEAE

*Jasminum multiflorum* (Burm. f.) Andr.

Kotamsar Cave (57348), On way to Tirathgarh Fall (57450)

*Jasminum scandens* (Retz.) Vahl

On way to Tirathgarh Fall (57442)

*Nyctanthes arbor-tristis* L.

On way to Tirathgarh Fall (56101)

## APOCYNACEAE

\*\**Alstonia venenata* R. Br.

Kanger Dhara (56444, 57329)

*Catharanthus roseus* (L.) G. Don

Tirathgarh Fall (57461)

*Holarrhena pubescens* (Buch.-Ham.) Wallich ex G. Don

'Kurai', Shiv Ganga Dhara (56475), On way to Tirathgarh Fall (56677), Kotamsar Village (57332)

*Ichnocarpus frutescens* (L.) R. Br.

Nagalsar (57498)

*Plumeria rubra* L.

Tirathgarh Fall (57493)

*Rauvolfia serpentina* (L.) Benth. ex Kurz

'Sarpgandha', Kotamsar Village (55812)

*Tabernaemontana divaricata* (L.) R. Br.

Tirathgarh Fall (57471)

\*\**Wrightia arborea* (Dennst.) Mabberley

Kanger River Bank (57358)

## ASCLEPIADACEAE

*Calotropis gigantea* (L.) R. Br.

'Punder', Kotamsar Village (57316)

\*\**Holostemma annulare* (Roxb.) K. Schum.

About 8 km from Netanar on Netanar-Bhainsadarha Road (56609)

## LOGANIACEAE

*Strychnos nux-vomica* L.

'Kuchla', Tirathgarh Fall (57315)

## GENTIANACEAE

*Canscora decussata* (Roxb.) Roem. & Schult.

On way to Tirathgarh Fall (57429)

*Canscora diffusa* (Vahl) R. Br. ex Roem. & Schult.

On way to Tirathgarh Fall (57428)

*Exacum carinatum* Roxb.

Tirathgarh Fall (56663)

*Swertia corymbosa* (Griseb.) C. B. Clarke

Kotamsar Cave Area (Das 14986)

## BORAGINACEAE

*Cynoglossum lanceolatum* Forssk.

Kotamsar Cave (57488)

*Cynoglossum zeylanicum* (Vahl ex Hornem.) Thunb. ex Lehm.

On way to Kotamsar Cave (56161)

*Ehretia laevis* Roxb.

Tirathgarh Fall (56665)

*Heliotropium indicum* L.

About 7 km from Netanar on Netanar-Bhainsadarha Road (56489), Bhainsadarha (59024)

### CONVOLVULACEAE

- Argyreia daltoni* C. B. Clarke  
Tirathgarh (Das 14976)
- Argyreia involucrata* C. B. Clarke  
On way to Tirathgarh Fall (56131)
- Argyreia nervosa* (Burm. f.) Bojer  
Tirathgarh Fall (56460), Kotamsar (*Panigrahi & Arora* 1127)
- Argyreia strigosa* (Roth) Roberty  
Kanger Valley (Das 15022)
- Evolvulus nummularius* (L.) L.  
On way to Tirathgarh Fall (56110)
- Ipomoea carnea* Jacq.  
Tirathgarh Fall (57451)
- Ipomoea hederifolia* L.  
Kotamsar Village (57419), Kotamsar Cave Area (Das 14987)
- Ipomoea obscura* (L.) Ker.-Gawl.  
Tirathgarh (Das 14978)
- \*\**Ipomoea pes-tigridis* L. var. *capitellata* C. B. Clarke  
Tirathgarh Fall (56641)
- Merremia vitifolia* (Burm. f.) Hall. f.  
Tirathgarh (Das 14977)

### CUSCUTACEAE

- Cuscuta reflexa* Roxb.  
On way to Kailash Cave (57426)

### SOLANACEAE

- Lycopersicon esculentum* Mill.  
Tirathgarh Fall (57470)
- Physalis minima* L.  
Bhainsadarha (59018)
- Solanum incanum* L.  
Kotamsar Village (55815)
- Solanum nigrum* L.  
Kanger River Bank (57375), Bhainsadarha (59022)

### *Solanum torvum* Sw.

About 7 km from Netanar on Netanar-Bhainsadarha Road (56613)

### *Solanum virginianum* L.

Kotamsar Village (57317)

### SCROPHULARIACEAE

- Lindernia anagallis* (Burm. f.) Pennell  
Kanger River Bank (57371)
- Lindernia antipoda* (L.) Alston  
Tirathgarh Fall (55894, 56628)
- Lindernia ciliata* (Colsm.) Pennell  
On way to Kotamsar Cave (56156)
- Lindernia crustacea* (L.) F. v. Muell.  
Tirathgarh Fall (55895)
- \**Lindernia multiflora* (Roxb.) Mukerjee  
Kotamsar Village (55809)
- \*\**Lindernia nummulariifolia* (D. Don) Wettst.  
Darbha-Jerum Ghat (56190)
- Mecardonia dianthera* (Sw.) Pennell  
Darbha-Jerum Ghat (56402), Kanger Dhara (56422),  
Kanger River Bank (57374), Bhainsadarha (59016)
- Scoparia dulcis* L.  
Tirathgarh Fall (56645), Kanger Dhara (57328)
- Sopubia delphiniifolia* (L.) G. Don  
Tirathgarh Fall (56640)
- Striga angustifolia* (D. Don) Saldanha  
Shiv Ganga Dhara (56465)
- Torenia fournieri* Linden ex Fourn.  
Kotamsar Cave (56173)

### OROBANCHACEAE

### *Aeginetia indica* L.

Kotamsar Village (55803)

### LENTIBULARIACEAE

### *Utricularia aurea* Lour.

On way to Netanar (56614)

- Utricularia bifida* L.  
Kotamsar (*Panigrahi & Arora* 1125)
- GESNERIACEAE**
- \*\**Didymocarpus pygmaea* C. B. Clarke  
Tirathgarh Fall (55867), Dandak Cave (56149)
- BIGNONIACEAE**
- Oroxylum indicum* (L.) Venten.  
Kailash Cave (56185)
- ACANTHACEAE**
- Andrographis paniculata* (Burm. f.) Wallich ex Nees  
Tirathgarh Fall (55849)
- Barleria prionitis* L.  
Kanger Dhara (56432)
- Barleria strigosa* Willd.  
On way to Tirathgarh Fall (56671, 57445), Kotamsar-Bastar (*Jain* 3947)
- Blepharis maderaspatensis* (L.) Heyne ex Roth  
On way to Dandak Cave (57413)
- Dipteracanthus prostratus* (Poir.) Nees  
Darbha-Jerum Ghat (56197)
- Dyschoriste nagchana* (Nees) Bennet  
Kotamsar (*Panigrahi & Arora* 1165)
- Eranthemum purpurascens* Wight ex Nees  
Tirathgarh Fall (55848)
- Hemigraphis latebrosa* (Heyne ex Roth) Nees  
On way to Tirathgarh Fall (56693)
- Hygrophila auriculata* (Schumach.) Heine  
Tirathgarh Fall (56632)
- \*\**Hygrophila erecta* (Burm. f.) Hochr.  
Tirathgarh Fall (56644)
- Indoneesiella echiooides* (L.) Sreemadh.  
Tirathgarh Fall (55880)
- Justicia betonica* L.  
Tirathgarh Fall (55879)
- Justicia prostrata* (C. B. Clarke) Gamble  
Tirathgarh Fall (55857)
- Lepidagathis incurva* Buch.-Ham. ex D. Don  
On way to Tirathgarh Fall (57439), Kotamsar (*Panigrahi & Arora* 1174)
- Peristrophe paniculata* (Forssk.) Brummitt  
Kanger Dhara (57408)
- Petalidium barlerioides* (Roth) Nees  
Dandak Cave (57346)
- Phaulopsis dorsiflora* (Retz.) Sant.  
On way to Dandak Cave (57410), Kotamsar (*Panigrahi & Arora* 1151)
- Rungia pectinata* (L.) Nees  
Kotamsar (*Panigrahi & Arora* 1132)
- VERBENACEAE**
- \*\**Clerodendrum indicum* (L.) Kuntze  
Darbha-Jerum Ghat (56198)
- Clerodendrum serratum* (L.) Moon  
Darbha-Jerum Ghat (56406)
- Clerodendrum viscosum* Venten.  
On way to Tirathgarh Fall (56672), Kotamsar Village (57422)
- Lantana camara* L. var. *aculeata* (L.) Moldenke  
Darbha-Jerum Ghat (56405)
- Stachytarpheta dichotoma* Vahl  
Tirathgarh Fall (55850), Darbha-Jerum Ghat (56408)
- Tectona grandis* L. f.  
On way to Tirathgarh Fall (56115)
- Vitex leucoxylon* L. f.  
'Jamela', Tirathgarh Fall (57307)
- LAMIACEAE**
- Anisochilus carnosus* (L. f.) Wallich ex Benth.  
Kanger Dhara (56426)
- Colebrookea oppositifolia* Sm.  
On way to Dandak Cave (57412), Kotamsar Cave Area (*Das* 15002)
- Hyptis suaveolens* (L.) Poit.  
'Jangli tulsi', Tirathgarh Fall (56450), Kotamsar Village (57421)

- Leucas lavandulifolia* Sm.  
Kotamsar Village (55821, 56652), On way to Tirathgarh Fall (56691)
- Leucas mollissima* Wallich ex Benth.  
subsp. *mollissima*  
On way to Tirathgarh Fall (55847, 56105)  
\*\*subsp. *scaberula* (Hook. f.) S. K. Murti & Panigrahi  
On way to Kailash Cave (56182)
- Ocimum basilicum* L.  
'Bantulsi', Tirathgarh Fall (55838)
- Ocimum gratissimum* L.  
On way to Kotamsar Cave (57478), Kotamsar Cave Area (Das 15009)
- Pogostemon quadrifolius* (Benth.) Kuntze  
Kanger Dhara (56428)
- NYCTAGINACEAE**
- Boerhavia repens* L.  
Kanger Dhara (56433)
- Bougainvillea spectabilis* Willd.  
Tirathgarh Fall (57465)
- AMARANTHACEAE**
- Achyranthes aspera* L.  
var. *argentea* (Thwaites) Hook. f.  
'Apamarg', Tirathgarh Fall (55839)  
var. *porphyristachya* (Wallich ex Moq.) Hook. f.  
Dandak Cave (56144)
- \**Achyranthes bidentata* Blume  
Bhainsadarha (59014)
- Aerva sanguinolenta* (L.) Blume  
Kotamsar Village (57491), Bhainsadarha (59015)
- Alternanthera sessilis* (L.) R. Br. ex DC.  
Kotamsar Village (55825), Tirathgarh Fall (55870)
- Amaranthus lividus* L. subsp. *lividus*  
Kotamsar (Panigrahi & Arora 1176)
- Amaranthus spinosus* L.  
Kotamsar Village (55814), Bhainsadarha (59023)
- Celosia argentea* L.  
Kotamsar Village (56618)
- POLYGONACEAE**
- Polygonum barbatum* L. subsp. *barbatum*  
Kanger Dhara (56436)
- Polygonum dichotomum* Blume  
Tirathgarh Fall (56634), Kotamsar (Panigrahi & Arora 1136)
- Polygonum glabrum* Willd.  
Tirathgarh Fall (56472), On way to Tirathgarh Fall (56689)
- \**Polygonum serratum* Lag.  
On way to Tirathgarh Fall (56690), Kanger River Bank (57370)
- PIPERACEAE**
- \**Piper longum* L.  
'Piprajad', Bhainsadarha (59005)
- LORANTHACEAE**
- Dendrophthoe falcata* (L. f.) Etting.  
On way to Tirathgarh Fall (57492), Kotamsar (Panigrahi & Arora 1147)
- Viscum angulatum* Heyne  
Kotamsar (Panigrahi & Arora 1145)
- Viscum orientale* Willd.  
Tirathgarh Fall (56480)
- SANTALACEAE**
- \*\**Santalum album* L.  
Tirathgarh Fall (55882)
- EUPHORBIACEAE**
- Acalypha wilkesiana* Muell. Arg.  
Tirathgarh Fall (57467, 57468)
- Antidesma acidum* Retz.  
Nature Trail (56124)
- Bridelia retusa* (L.) Spreng.  
'Kasai', On way to Kailash Cave (56186), On way to Tirathgarh Fall (57447)

*Cleistanthus collinus* (Roxb.) Benth. ex Hook. f.  
‘Karra’, On way to Tirathgarh Fall (55846a), About  
8 km from Netanar on Netanar-Bhainsadarha Road  
(56605)

*Euphorbia hirta* L.

Darbha-Jerum Ghat (56409)

*Euphorbia nivulia* Buch.-Ham.

‘Kantadutra’, Shiv Ganga Dhara (57459)

*Euphorbia thymifolia* L.

Kotamsar Village (55805), Bhainsadarha (59011)

*Homonoia riparia* Lour.

On way to Tirathgarh Fall (56696), Tirathgarh Fall  
(Panigrahi & Arora 1117)

*Mallotus philippensis* (Lam.) Muell. Arg.

Kotamsar Village (57325), Nagalsar (57496), Kanger-  
Kotamsar (Das 15033)

*Pedilanthus tithymaloides* (L.) Poit.

Tirathgarh Fall (57466)

*Phyllanthus airy-shawii* Brünel ex Roux

On way to Tirathgarh Fall (56107), Kanger Dhara  
(57383)

*Phyllanthus emblica* L.

‘Aonla’, On way to Kotamsar Village (57473),  
Kotamsar Cave Area (Das 15015)

*Phyllanthus urinaria* L.

On way to Kailash Cave (56178)

*Phyllanthus virgatus* G. Forster

Tirathgarh Fall (55842)

*Securinega virosa* (Roxb. ex Willd.) Baill.

On way to Tirathgarh Fall (56686)

\**Trewia nudiflora* L.

On way to Tirathgarh Fall (56685)

#### URTIACEAE

*Boehmeria glomerulifera* Miq.

Kotamsar Cave (57484), Kotamsar (Panigrahi 1153)

*Boehmeria macrophylla* Hornem.

Kotamsar Cave (57485), Kotamsar Cave Area (Das  
15003)

*Elatostema cuneatum* Wight

Kotamsar Cave (56158)

*Laportea interrupta* (L.) Chew.

Kotamsar Village (55811)

*Pouzolzia pentandra* (Roxb.) Benn.

Kanger Dhara (56424)

#### ULMACEAE

*Trema orientalis* (L.) Blume

Darbha-Jerum Ghat (56697)

#### MORACEAE

\*\**Ficus arnottiana* (Miq.) Miq.

‘Paras peepal’, Kanger Dhara (56617), Tirathgarh Fall  
(57306)

*Ficus benghalensis* L. var. *benghalensis*

Kotamsar Village (56656), Tirathgarh Fall (57303)

*Ficus benjamina* L. var. *nuda* (Miq.) Barrett

Dandak Cave (57343), Kanger-Kotamsar (Das 15029)

*Ficus heterophylla* L. f.

About 7 km from Netanar on Netanar-Bhainsadarha  
Road (56610)

*Ficus hispida* L. f.

On way to Kotamsar Cave (57354)

\*\**Ficus lanceolata* Buch.-Ham. ex Roxb.

On way to Tirathgarh Fall (56687)

*Ficus microcarpa* L. f.

Dandak Cave (57344)

*Ficus religiosa* L.

Kotamsar Village (56655)

\*\**Ficus rumphii* Blume

Kanger River Bank (57360)

*Ficus semicordata* Buch.-Ham. ex Sm.

About 7 km from Netanar on Netanar-Bhainsadarha Road (56611)

\**Ficus talbotii* King

Kanger River Bank (57359)

*Ficus tinctoria* G. Forster

\*\*subsp. *gibbosa* (Blume) Corner var. *gibbosa*

Kotamsar Village (57323), Kanger Dhara (57336)

subsp. *parasitica* (Willd.) Corner

Kotamsar (*Panigrahi & Arora* 1144)

*Ficus virens* Dryander

Tirathgarh Fall (57305), Kotamsar (*Panigrahi* 1116)

#### SALICACEAE

*Salix tetrasperma* Roxb.

Kanger Dhara (57387)

#### HYDROCHARITACEAE

*Blyxa octandra* (Roxb.) Planch. ex Thwaites

Tirathgarh Fall (56636)

*Hydrilla verticillata* (L. f.) Royle

Kanger River Bank (57376)

*Vallisneria natans* (Lour.) Hara

Kanger Valley (*Das* 15023)

#### ORCHIDACEAE

*Geodorum densiflorum* (Lam.) Schlechter

On way to Tirathgarh Fall (55900)

*Habenaria commelinifolia* (Roxb.) Wallich ex Lindl.

On way to Kotamsar Cave (56154), About 8 km from Netanar on Netanar-Bhainsadarha Road (56607)

\*\**Habenaria furcifera* Lindl.

On way to Tirathgarh Fall (55875)

\*\**Habenaria marginata* Colebr.

Shiv Ganga Dhara (56468)

*Pelatantheria insectifera* (Rehb. f.) Ridl.

Kotamsar (*Panigrahi & Arora* 1163)

*Peristylus plantagineus* (Lindl.) Lindl.

Nature Trail (56135)

*Rhynchosystylis retusa* (L.) Blume

Kanger Dhara (57337), Kanger River Bank (57362)

#### ZINGIBERACEAE

*Amomum dealbatum* Roxb.

Kotamsar Cave Area (*Das* 14996)

*Curcuma amada* Roxb.

'Batri', Kotamsar Barrier (55801), Nature Trail (56123)

*Globba marantina* L.

Kotamsar Village (55804)

*Globba racemosa* Sm.

Nature Trail (56125)

\*\**Hedychium coronarium* J. Koenig

On way to Bhainsadarha (59029)

*Zingiber roseum* (Roxb.) Roscoe

'Bail adrakh', On way to Tirathgarh Fall (55

On way to Dandak Cave (57381)

#### COSTACEAE

*Costus speciosus* (J. Koenig) Sm.

'Keokand', Kotamsar Village (55813)

#### HYPOXIDACEAE

\**Curculigo crassifolia* (Baker) Hook. f.

Dandak Cave (56148), Shiv Ganga Dhara (57454)

*Curculigo orchoides* Gaertn.

'Kali musli', Kotamsar Village (55810)

#### AGAVACEAE

*Sansevieria hyacinthoides* (L.) Druce

Tirathgarh Fall (57464)

#### TACCACEAE

*Tacca leontopetaloides* (L.) Kuntze

Nature Trail (56137), Kotamsar (*Jain* 3946)

#### DIOSCOREACEAE

*Dioscorea alata* L.

About 8 km from Netanar on Netanar-Bhainsadarha Road (56497)

*Dioscorea bulbifera* L.

Tirathgarh Fall (55860)

*Dioscorea oppositifolia* L.

Tirathgarh Fall (55859), Dandak Cave (56145)

*Dioscorea pentaphylla* L. var. *pentaphylla*

On way to Tirathgarh Fall (56624)

*Dioscorea pubera* Blume

Darbha-Jerum Ghat (56621)

*Dioscorea wightii* Hook. f.

Kotamsar Cave Area (Das 15012)

LILIACEAE

*Asparagus racemosus* Willd. var. *javanicus* (Kunth)  
Baker

On way to Kotamsar Cave (56153)

*Chlorophytum arundinaceum* Baker

'Safed musli', On way to Tirathgarh Fall (55876)

*Disporum calcaratum* D. Don

Kotamsar Village (55807), Kotamsar Cave (57486)

*Gloriosa superba* L.

'Kaliyari', Tirathgarh Fall (55841)

SMILACACEAE

*Smilax zeylanica* L.

Kotamsar (Panigrahi & Arora 1166)

COMMELINACEAE

*Commelina benghalensis* L.

Darbha-Jerum Ghat (56193), Kotamsar Cave Area  
(Das 15001)

*Commelina suffruticosa* Blume

Kotamsar Cave Area (Das 14999)

*Murdannia nudiflora* (L.) Brenan

Tirathgarh Fall (55890)

*Tonningia axillaris* (L.) Kuntze

Kotamsar (Panigrahi & Arora 1120)

ARECACEAE

*Caryota urens* L.

'Salphi', Kotamsar Village (57475)

ARACEAE

*Alocasia macrorrhiza* (L.) G. Don

Kotamsar Cave (57482)

*Arisaema decipiens* Schott

Kotamsar (Jain 3943), Kotamsar Cave Area (Das  
15014)

*Arisaema tortuosum* (Wallich) Schott

Dandak Cave (56147)

*Colocasia esculenta* (L.) Schott

On way to Kotamsar Cave (56168)

LEMNACEAE

\*\**Lemna perpusilla* Torr.

Kanger Dhara (57423)

ERIOCAULACEAE

*Eriocaulon cinereum* R. Br.

Tirathgarh Fall (56470)

*Eriocaulon parviflorum* (Fyson) Ansari & Balakr.

Tirathgarh Fall (56637)

*Eriocaulon quinquangulare* L.

Tirathgarh Fall (56660)

*Eriocaulon trilobum* Buch.-Ham. ex Koern.

Kotamsar (Panigrahi & Arora 1121)

CYPERACEAE

*Carex cruciata* Wahlenb.

On way to Kotamsar Cave (56160)

*Cyperus distans* L. f.

Kotamsar Village (55819), Kanger Dhara (56442)

*Cyperus halpan* L.

Kanger River Bank (57372)

*Cyperus iria* L.

Tirathgarh Fall (55872), Nature Trail (56130)

*Cyperus pangorei* Rottb.

Tirathgarh Fall (55887), Kanger Dhara (56443)

*Cyperus procerus* Rottb.

On way to Kotamsar Cave (56171), Tirathgarh Fall  
(56448)

- Cyperus tenuispathica* Steud.  
Tirathgarh Fall (56453)
- Fimbristylis alboviridis* C. B. Clarke  
Tirathgarh Fall (55855)
- Fimbristylis bisumbellata* (Forssk.) Bubani  
About 7 km from Netanar on Netanar-Bhainsadarha Road (56488), On way to Tirathgarh Fall (56688)
- Fimbristylis dichotoma* (L.) Vahl  
Tirathgarh Fall (55888), On way to Tirathgarh Fall (56126), Darbha-Jerum Ghat (56200)
- Fimbristylis miliacea* (L.) Vahl  
About 7 km from Netanar on Netanar-Bhainsadarha Road (56487), Tirathgarh Fall (56629), Kanger River Bank (57373)
- Fimbristylis schoenoides* (Retz.) Vahl  
Tirathgarh Fall (56626, 56648)
- Fimbristylis tetragona* R. Br.  
Tirathgarh Fall (56625, 56638)
- Kyllinga brevifolia* Retz.  
On way to Kotam Cave (56176), Tirathgarh Fall (56664)
- \*\**Kyllinga nemoralis* (J. R. Forster & G. Forster)  
Dandy ex Hutch. & Dalziel  
Darbha-Jerum Ghat (56403)
- Kyllinga tenuifolia* Steud.  
Shiv Ganga Dhara (56469)
- Mariscus compactus* (Retz.) Boldingh  
On way to Netanar (56187)
- Mariscus cyperinus* (Retz.) Vahl  
On way to Kotamsar Cave (56175)
- Mariscus sumatrensis* (Retz.) Raynal  
On way to Tirathgarh Fall (56114)
- Pycrus diaphanus* (Schrad. ex Roem. & Schult.) Hooper & T. Koyama var. *diaphanus*  
Tirathgarh Fall (56471)
- Pycrus flavidus* (Retz.) T. Koyama  
Kotamsar (Panigrahi 1137)

*Pycrus pumilus* (L.) Nees ex C. B. Clarke

Darbha-Jerum Ghat (56401), About 7 km from Netanar on Netanar-Bhainsadarha Road (56486)

*Rikiella squarrosa* (L.) J. Raynal

Kanger Dhara (56425), About 7 km from Netanar on Netanar-Bhainsadarha Road (56485)

*Scleria levis* Retz.

On way to Tirathgarh Fall (56136), On way Kotamsar Cave (56151)

## POACEAE

*Alloteropsis cimicina* (L.) Stapf

Tirathgarh Fall (55856, 55861)

\**Arthraxon echinatus* (Nees) Hochst.

Kanger Dhara (56427)

*Arundinella pumila* (Hochst. ex A. Rich.)

Tirathgarh Fall (55886)

*Bothriochloa pertusa* (L.) A. Camus

Darbha-Jerum Ghat (56418)

\*\**Cenchrus ciliaris* L.

Kanger Dhara (57384)

*Chrysopogon fulvus* (Spreng.) Chiov.

Kanger Dhara (56188)

*Coix aquatica* Roxb.

On way to Netanar (56601)

*Cyrtacoccum oxyphyllum* (Steud.) Stapf

Tirathgarh Fall (56104), Nature Trail (56122), to Kailash Cave (56180), Kotamsar Cave (57480)

*Dactyloctenium aegyptium* (L.) P. Beauvois

Tirathgarh Fall (56653)

\**Dactyloctenium scindicum* Boiss.

Darbha-Jerum Ghat (56413)

*Dendrocalamus strictus* (Roxb.) Nees

Landak Cave (56146)

*Dichanthium annulatum* (Forssk.) Stapf

Darbha-Jerum Ghat (56416)

- \*\*Digitaria setigera** Roth ex Roem. & Schult.  
 Kotamsar Village (55830), Darbha-Jerum Ghat (56420)
- Digitaria violascens** Link  
 Darbha-Jerum Ghat (56195)
- Dimeria ornithopoda** Trin.  
 Tirathgarh Fall (57453), Kotamsar (*Panigrahi & Arora* 1124)
- Echinochloa colonum** (L.) Link  
 Kotamsar Village (55831), Tirathgarh Fall (56630)
- Eleusine indica** (L.) Gaertn.  
 Kotamsar Village (55835)
- Eragrostis ciliata** (Roxb.) Nees  
 Kotamsar (*Panigrahi & Arora* 1181)
- Eragrostis coarctata** Stapf  
 On way to Tirathgarh Fall (57432)
- Eragrostis nutans** (Retz.) Nees ex Steud.  
 On way to Kotamsar Village (56157)
- Eragrostis unioloides** (Retz.) Nees ex Steud.  
 Tirathgarh Fall (55853, 55865), Kanger Dhara (56439)
- Garnotia tenella** (Arn. ex Miq.) Jan.  
 Tirathgarh Fall (55869)
- Hackelochloa granularis** (L.) Kuntze  
 On way to Tirathgarh Fall (56134), Darbha-Jerum Ghat (56415)
- Hemarthria compressa** (L. f.) R. Br.  
 Kanger Dhara (56429, 56440)
- Ischaemum indicum** (Houtt.) Merr.  
 Kotamsar (*Panigrahi & Arora* 1139)
- Iseilema prostratum** (L.) Anders.  
 tamsar (*Panigrahi & Arora* 1156)  
**sia hexandra** Sw.  
 tamsar (*Panigrahi & Arora* 1131)
- Microchloa indica** (L. f.) P. Beauv.  
 thgarh Fall (55863)  
**sithea laevis** (Retz.) Kunth  
 way to Kotamsar Cave (56152)
- Oplismenus compositus** (L.) P. Beauv.  
 On way to Tirathgarh Fall (57440), Bhainsadarha (59008)
- \*\*Oropetium thomaeum** (L. f.) Trin.  
 Tirathgarh Fall (55864)
- \*Oryza glaberrima** Steud.  
 On way to Tirathgarh Fall (55877)
- \*\*Oryza minuta** J. Presl ex K. Presl  
 On way to Netanar (56603)
- Oryza rufipogon** Griff.  
 'Jangli dhan', Tirathgarh Fall (56631, 56642, 56649)
- Oryza sativa** L.  
 'Dhan', Tirathgarh Fall (Cultivated)
- Paspalidium flavidum** (Retz.) A. Camus  
 Kotamsar Village (55829)
- Paspalum plicatulum** Michx.  
 On way to Tirathgarh Fall (56108), On way to Kotamsar Cave (56166), Tirathgarh Fall (56650)
- Pennisetum hohenackeri** Hochst. ex Steud.  
 Kotamsar Village (56118)
- Pennisetum pedicellatum** Trin.  
 Tirathgarh (Das 14969)
- Perotis indica** (L.) Kuntze  
 Tirathgarh Fall (56639)
- Polygonatherum crinitum** (Thunb.) Kunth  
 On way to Kotamsar Cave (56477), Bhainsadarha (59004)
- \*Pseudoraphis brunonianana** Griff.  
 Kotamsar Village (55826)
- Rottboellia exaltata** L. f.  
 Kotamsar Village (55820)
- Saccharum spontaneum** L.  
 Tirathgarh Fall (56635)
- Sacciolepis indica** (L.) Chase  
 Tirathgarh Fall (56643)

*Setaria glauca* (L.) P. Beauv.

Kotamsar Village (55823), Tirathgarh Fall (55854)

*Setaria intermedia* Roem. & Schult.

Kotamsar Village (55824, 55834, 55836)

\*\**Sporobolus capillaris* Miq.

On way to Kotamsar Cave (57480)

\*\**Sporobolus diander* (Retz.) P. Beauv.

On way to Tirathgarh Fall (57441)

\*\**Sporobolus fertilis* (Steud.) W. D. Clayton

Kotamsar Village (55822)

*Sporobolus indicus* (L.) R. Br.

Kotamsar (*Panigrahi & Arora* 1175)

\*\**Sporobolus tenuissimus* (Schrank) Kuntze

Tirathgarh Fall (56467)

*Themeda triandra* Forssk.

Kotamsar (*Panigrahi & Arora* 1158, 1159, 1160)

*Thysanolaena maxima* (Roxb.) Kuntze

On way to Kotamsar Cave (57477), Kotamsar (*Panigrahi & Arora* 1128), Cave Area (*Das* 15018)

\*\**Urochloa panicoides* P. Beauv.

Kotamsar Village (55832, 55833)

*Vetiveria zizanioides* (L.) Nash

'Khas', Tirathgarh Fall (55843), On way to Tirathgarh Fall (56438)

*Zea mays* L.

'Makka', Kotamsar Village (Cultivated)

## Discussion

It is apparent from the present study that 456 species of angiosperms under 310 genera and 89 families occur in Kanger Valley National Park. Occurrence of such a high number of species within only 200 sq km area of the park is an indication of high floristic richness of the area. Further, it is interesting to record that 49 taxa collected by the authors have not been reported earlier. Out of the 49 taxa, 12 species have not been reported from the area under Chhattisgarh State, and 37 taxa from the

erstwhile Bastar district. Thus, the present findings not only depict the status of plant wealth of Kanger Valley National Park, but also fulfil the point given in Chapter IX of the Biological Diversity Bill 2000 as well as Article 7 of Convention on Biological Diversity.

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## Book Review

*Environmental Management and Sustainable Development at the Crossroad* by Ananda Raj Joshi, Surendra Lal Shrestha and Kunjani Joshi. 2003. AnKuS, Kathmandu, Nepal. pp.1-302. P.B., size 24 x 16.5 cm, ISBN 99933-53-55-8.

Nepal has immense variability in altitude from nearly sea level to the highest peak (Mount Everest) in the world and also in plant diversity. The geologically young, fragile and seismically active mountains are naturally prone to degradation. The authors have divided the 12 chapters of the book into three main sections - Environmental Resource base: Potentialities and Opportunities, Harmonising Environment and Development, Environment management for sustainable development. The first four chapters are on Environmental Resource base: Potentialities and Opportunities. In the first chapter, sustainable land management in the mountainous region deals with land degradation and its impact on ecosystems, efforts and achievements in land management. The second chapter deals with biological diversity, its present status and agenda for conservation. Chapter three gives a brief account of hydro resources for energy development, policy programme and performance. Chapter four deals with status of wetlands, degradation, efforts and achievements in management of wetlands. Chapters 5-10 are placed under Harmonising Environment and Development section. Chapter five gives

an overview of development scenario in Nepal. Chapter six deals with medicinal plant lore of three villages, Okharni, Mulkharka and Kakani, of the Central Development Region of Nepal. Chapter seven gives a brief account of Environment friendly approach to road development in Nepal. Chapter eight has enumeration of 76 wild food plants consumed by tribals and the folk of Chaubas and Syabru villages of the Central Development Region of Nepal. Chapters nine and ten give a brief account of environmental implications for mountain tourism development and trail bridge development in Nepal. Chapters eleven and twelve deal with environment management for sustainable development. In both the chapters, the authors give an account of sustainable environmental management in Nepal and in South Asia.

Most of the photographs (black and white) are clear and satisfactory. Selected references are given at the end of the chapters. The book will be useful for students, teachers and researchers engaged in management of environment and its development. Printing and binding are good. The book will be a useful addition to environment-related libraries.

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