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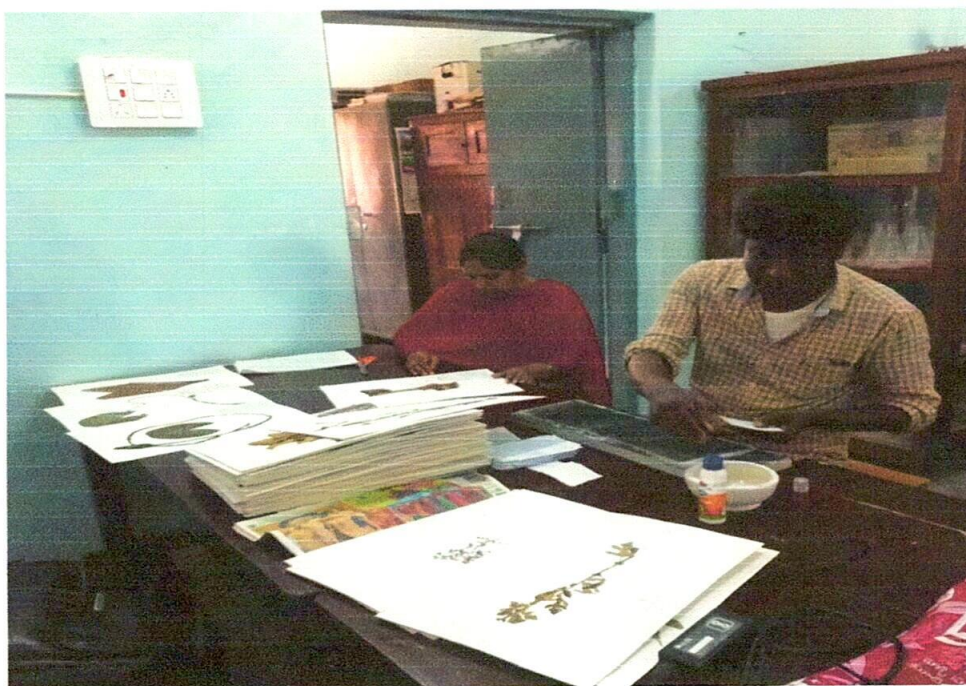
MAHABUBNAGAR (DIST), T.S

**Department of Botany MoU with Osmania University
Activities under MoU**

As a part of MOU with the Department of Botany Osmania University, the Department of Botany extended its services in research and in exchange of rare plants

1. Guidance in the preparation of the Herbarium

Dr.B.Sadasivaiah Asst. professor of Botany guided B. Kalpana, Research Scholar, at Osmania University in the preparation of the Herbarium during the year 2018-2020




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2. Exchange of Plants. 08-09-2019

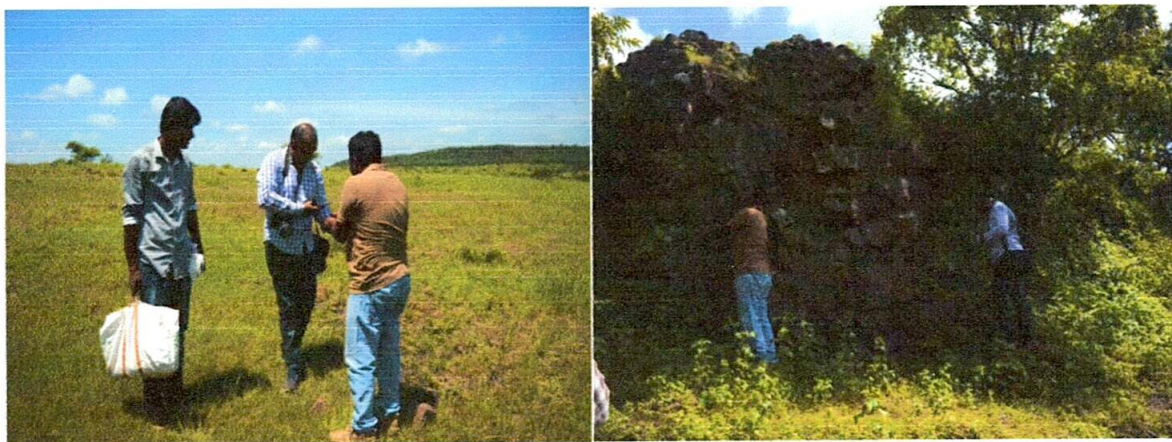
Mr. L. Paramesh, a Research Scholar at Osmania University brought some of the ornamentals from Osmania University and planted them in the Garden on 01-09-2019. Mr. Srikanth, a student of M.Sc Botany also attended.




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3. Offering Research Guidance

Dr. B. Sadasivaiah, Assistant Professor of Botany, helped in the identification of the flora especially the grasses in the Lingala forest range in Achampet Division to Mr. L. Paramesh, a Research Scholar at Osmania University on 10-09-2019




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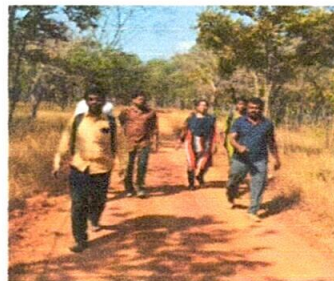
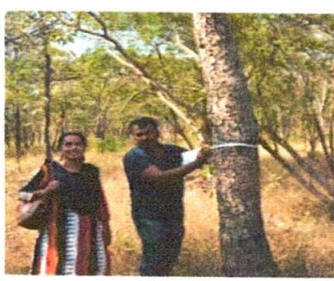
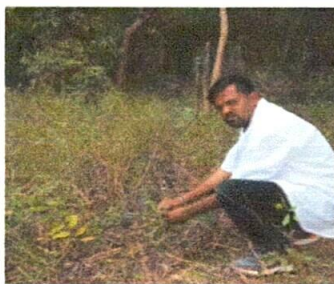
4. Providing Plant material to the Research Scholar

Smt. Neeraja, Ph.D. Scholar of Osmania University, Hyderabad received a live plant of *Andrographis beddomei* (Acanthaceae) for her research work from the Telangana Botanical Garden of this college and planted a sapling on 23-09-2019



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5. Research guidance to A.Ramakrishna and Shankar in the identification of plants, and Phytosociological studies on 19-01-2020 in Nallamala Forest .




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5. Research guidance to A. Ramakrishna and Shankar in the identification of plants, and Phytosociological studies on 19-01-2020 in Tirumalayya Gutta Forest on 25-07-2021 to A. Ramakrishna, Research Scholar, O.U .




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6. Publications with Osmania Research Scholars

With the support of Dr.Sadasivaiah A.Ramakrishna,Shanker ,Paramesh research scholars of OU did the research work and publish the research articles in reputed Journals.



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Occurrence Of *Chrysopogon velutinus* (Hook. F.) Bor (Poaceae: Andropogoneae) in Eastern Ghats of Telangana

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तेलंगाना के पूर्वी घाटों में क्रिसोपोगोन वेलुटिनस (हुक.एफ.) बोर (पोएसी: एंड्रोपोगोनि का उपलब्धता

अवुला रामाकृष्णा, बायल्ला सदासियाइह, गोरैलारमादेवी, सिद्दाबथुला नागराजू, निर्मला बाबू राव

सारांश

क्रिसोपोगोन वेलुटिनस (हुक.एफ.) बोर, एक स्थानिक घास है जिसे तेलंगाना के पूर्वी घाटों से अलग एक भिन्न क्षेत्र से प्राप्त किया गया है। संक्षिप्त विवरण तथा छाया चित्र इस घास के साथ प्रस्तुत किया गया है ताकि अज्ञानी से इसका पहचान किया जा सके।

ABSTRACT

Chrysopogon velutinus (Hook.F.) Bor, an endemic grass collected from other than type locality in Eastern Ghats of Telangana, India. Brief description key and photographs were provided for easy identification.

Keywords: Eastern Ghats, Endemic, Grass, New Record, Poaceae, Type locality

INTRODUCTION

The Eastern Ghats were well explored by the botanists from 18th century onwards like William Roxburgh, Robert Wight, Elliot, Beddome, Gamble, Lushington and few others. Robert Wight, a medical practitioner who visited India in the early 18th century and stayed 35 years in India. He made extensive collections in southern Peninsular India including present state of Andhra Pradesh. He described 38 genera and more than 3000 species of Indian plants. *Chrysopogon velutinus* is one among them and it was named by Arnott.

The genus *Chrysopogon* Trin., comprises ca. 48 species, distributed in tropical and subtropical regions of the Old World to Pacific, South central and Southeast North America, and Cuba in the Caribbean (Clayton et al. 2006 onwards). In India, it is represented by 23 species (Kellogg et al. 2020, Prasanna et al. 2020, Nagaraju et

al. 2021) and 14 species were reported in in Eastern Ghats (Pullaiah, 1997, Kabeer & Nair, 2009, Pullaiah & Karuppusamy, 2020). Among 14 species recorded from Eastern Ghats, 12 are reported from Andhra Pradesh, 6 are from Odisha (Saxena & Bramham, 1996), 9 species from Tamil Nadu (Kabbeer & Nair, 2009) and 3 species from Telangana (Pullaiah, 2015, Reddy & Reddy, 2016) and recently *Chrysopogon serrulatus* added to the flora of Telangana by Nagaraju et al (2021).

MATERIALS AND METHODS

An intensive and extensive floristic survey was conducted from 2012 to till date in the Eastern Ghats of Telangana. The plant specimens were collected at different locations and made herbarium following the standard method (Jain & Rao, 1977). The mounted specimens were identified with the help of available literature (Pullaiah & Karuppusamy, 2020). The phenological

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Species

23(71), 2022

Four endemic Euphorbiaceae taxa additions to Telangana state, India

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To Cite:

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ABSTRACT

An endangered and endemic taxon *Phyllanthus narayansteami* Gamble is reported from Nallamalais of Telangana region. Thus it forms a new distributional record for the state of Telangana. Endemic taxa *Euphorbia deccanensis* V.S. Raju, *Euphorbia deccanensis* var. *nallamalaluana* (J.L. Ellis) V.S. Raju and *Euphorbia senguptae* N.P. Balakr. & Subr. are reported here as new records for the Flora of Telangana State.

Keywords: Endangered, Endemic, Extended distribution, Eastern Ghats, Grasslands and Palni Hills.

1. INTRODUCTION

Euphorbia s.l. the largest genus in the family Euphorbiaceae s.l. and sixth largest genus among the flowering plants, consisting of about 2000 species (Malpure *et al.*, 2021) and occurring throughout the world chiefly seen in tropical, subtropical and warm temperate regions. The genus comprises more than 80 species in India with highest number of endemics (Binojkumar & Balakrishnan 2010; Sarojinidevi, 2017; Malpure, 2021). Cyathium is the general character of the Tribe Euphorbieae. The cyathium is actinomorphic bearing a ring of broken glands at the rim of the involucrel cup, a solitary exerted or included naked pistillate floret in the central position of the cup bearing a single 3-loculed ovary with one ovule in each locule. Several aggregated fascicles of staminate florets surround the pistillate floret, each consisting of a pedicel and a ring of filiform bracteoles or solitary bracteole at the junction of pedicel and filament. This type of inflorescence is unique and found only in this group.

Phyllanthaceae is one of the five segregated families of Euphorbiaceae s.l. recognized by Angiosperm Phylogenic Group (Hoffmann *et al.*, 2006), which contains around 2099 species belonging to 58 genera (POWO, 2021). The genus *Phyllanthus* L. is one of the largest genera of the family Phyllanthaceae with around 880 species (Bouman *et al.*, 2018) distributed throughout the tropics mainly in dry deciduous forests (Gautam & Adhikari, 2021; Naik *et al.*, 2020). In India, the genus *Phyllanthus* is represented with more than 50 species (Mathew, 2021) among them, 17 species were recorded in Telangana state



Phenological Patterns of Selected Tree Species in Amrabad Tiger Reserve, Telangana, India

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Abstract: The present paper deals with phenology of selected tree species like *Phyllanthus emblica*, *Dalbergia paniculata*, *Hardwickia binata*, *Anogeissus latifolia*, *Albizia thompsonii*, *Chloroxylon swietenia*, *Diospyros melanoxylon*, *Givotia moluccana*, *Buchanania axillaris*, *Terminalia alata*, *Sterculia urens*, *Strychnos nux-vomica*, *Bombax ceiba*, *Butea monosperma*, *Madhuca indica*, *Eriolaena lushingtonii*, *Albizia odoratissima*, *Terminalia bellica*, *Pterocarpus marsupium*, *Fimbraria colorata*, *Careya arborea* in Amrabad Tiger Reserve, Telangana, India. The phenological observations include leaf flush, leaf mature, leaf fall, leaf less periods, flowering, fruiting, fruit fall, among the selected tree species. A total of ten individuals (±50 cm girth), for each of the selected 21 tree species were observed at fifteen days interval during 2018-2020. It was observed that there were species specific phenophases relationship with deciduous period and initiation of seasonal rainfall and warm periods. In addition, intra species asynchrony in phenological activities was also recorded. Leaf flush activity was initiated in March and reached peak in the month of April and completed before the initiation of South-West monsoon. Leaf maturity started in the month of May and peak was recorded in June and completed in September. Leaf fall activity was initiated in the month of November and reached peak in January before the arrival of intense dry period. Deciduous period was recorded in December to April and the peak period was recorded in February. The reproductive phenophases like Flowering, Fruiting and Fruit fall have significantly varied across the different seasons among the observed tree species. Majority of tree species (43%) revealed synchronous flowering with Leaf flush activity. The results indicate that Leafing (48%) and flowering phenophases (70%) occur during the dry period before the onset of first rains and fruiting, fruit fall being was in consequence to utilize the growing season. Thus, species specificity was recorded with respect to Phenophases were found to be in relation with the seasonal rainfall distribution and in turn soil moisture availability in the study area.

Keywords: Phenophases, Amrabad Tiger Reserve, Synchronous flowering

Among the plants, the variations in phenological activities such as leaf flush, leaf fall, and flowering were directly related to deciduous period, seasonal distribution of rainfall, soil moisture and temperature (Moza and Bhatnagar 2005). Tropical dry deciduous forest consists of tree communities which grow in climates with marked pronounced dry and wet conditions in an annual period (Singh and Kushwaha 2006). Nanda et al (2014) observed that these forests constitute high variations in vegetative and reproductive phenological patterns at both large scale and small scales. The phenophases of tree species were mainly found to be based on the seasonal changing events such as availability of soil moisture, stem water status, photoperiod, changes in temperature and irradiance (Singh and Sahoo 2019) and biotic factors like pollinators attraction, competition for seed dispersers and avoidance of herbivore have been proposed to influence different phenological patterns in tropical dry forests (Singh and Kushwaha 2006). Thus phenological events should be assessed by both abiotic factors and plant

functional traits to achieve integrative understanding of tree community (Saha 2007). In seasonal tropical forests, plant phenological patterns were controlled by various interactions between biotic and climatic factors, especially seasonal variation in rainfall, dry periods which influence soil moisture, tree water status are considered as the principal factors influencing the timings of the periodic phenophases of growth and reproduction (Sakai 2001). In dry forests of southern Eastern Ghats the peak leaf flushing activity and flowering events occur during the dry period before the onset of first rains and fruit maturation period is high and fruit fall timing is in consequence to utilize the rains for germination. Thus, seasonal rains (soil moisture availability) and extent of deciduous period (photoperiod) influence the leafing and reproductive phenological events in dry deciduous forest (Mastan et al 2020). Few communities wide phenological studies in dry forests were carried out in dry forests of India. (Singh and Kushwaha, 2005, Nanda et al 2014, Mastan et al 2020). But no phenological studies were carried out in the dry


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RESEARCH ARTICLE

Addition of five grass species to the state of Telangana

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Abstract Five species of Poaceae namely *Arundinella nervosa*, *Enteropogon monostachyos*, *Eulalia phaeothrix*, *Oryza officinalis* and *Panicum fischeri* collected from Amrabad Tiger Reserve, Telangana and reported here as new additions to the flora of Telangana state. Apart, the detailed description, ecology and distribution information is facilitated here.

Key words: Distribution, Ecology, Endemic, Grass, New records, Poaceae

Introduction

Telangana state is situated in the central stretch of the eastern seaboard of the Indian Peninsula with an area of 114,840 km² and lies between 15.50'–19.55' N latitudes and 77.14'–78.50' E longitudes. The area is divided into two main regions, the Eastern Ghats and the plains. The Nallamala Hill ranges of Telangana distributed in Nagarkurnool and Nalgonda districts. These hills possess moist deciduous, dry deciduous and scrub forests. The family Poaceae is represented by 242 species (Pullaiah 2015, Reddy and Reddy 2016, Reddy 2018, Nagaraju *et al.* 2019 a,b; 2020 a,b; 2021 a,b,c; Nagaraju & Annamma 2021; Nagaraju and Bharath 2021, Swamy and Nagaraju 2019, Swamy *et al.* 2021, Swamy and Arumugam 2021) in Telangana

state. While inventorying the grasses of Amrabad Tiger Reserve, Telangana, the authors collected five interesting species of grasses. Detailed study of the collected specimens and thorough perusal of relevant literature (Pullaiah 2015, Reddy and Reddy 2016, Reddy 2018) revealed that the above five species are additions to the Telangana State of India.

Materials and methods

Intensive and extensive floristic surveys were conducted between 2012 and 2022 in the Amrabad Tiger Reserve, Telangana. The plant specimens were collected at different locations with GPS coordinates. The herbarium specimens prepared by following the standard herbarium techniques (Jain and Rao 1977) were preserved at Dr. B.R.R. Govt. Degree College, Jadcherla, Telangana. The phenological events of the grasses, habitat, associated plant species and soil type were recorded in the field.

Result and discussion

After a critical study, the specimens were identified as *Arundinella nervosa*, *Enteropogon monostachyos*, *Eulalia phaeothrix*, *Oryza officinalis* and *Panicum fischeri* (Plate 1 & 2). A

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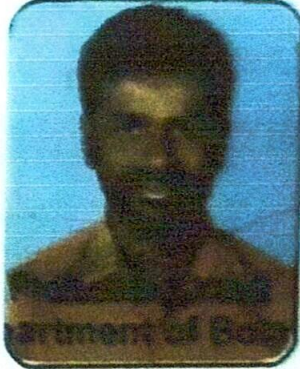
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2018-22

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***Pancreatium triflorum* Roxb. (Amaryllidaceae) new distributional record for Telangana state, India**

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ABSTRACT

Pancreatium triflorum Roxb. an endemic plant of Indian sub continent reported as new distributional record for the state of Telangana of India.

Key words: Endemic, Floristic Explorations, New Record, Telangana

INTRODUCTION

The genus *Pancreatium* L. belonging to Amaryllidaceae (Asparagales, Pancrotricia) [1], a widespread genus among the three genera of the family and representing with 21 species [2]. *Pancreatium* are perennial bulbous herbs with white fragrant flowers, perianth tube and corolla formed by the basal connective of the staminal filaments.

Roxburgh [3] reported 4 species including present species in his work. Herbert [4], in his work on Amaryllidaceae included 5 species from India and described two species, *P. malabaricum* and *P. Coimbatense*, the later one synonymised under *P. triflorum*. Later Dalziel [5] described *P. parvum* from Cochin region. Baker [6] in his book worked out 12 species of *Pancreatium*, out of which 5 spp. and 1 variety were from India. Hooker [7], enumerated 6 species of the present genus and two species under doubtful. After the Hooker treatment two species *Pancreatium invariae* [8] and *P. assolvi* [9] added from the Western Ghats of India.

MATERIALS AND METHODS

The intensive and extensive floristic surveys were conducted for the past 3 years in Mahabubnagar District, in 2013 the authors could collect few individuals of bulbous plants with ovate bulb, semi succulent leaves, in vegetative stage and planted them in pots. Some of the specimens were preserved in the form of Herbarium according to standard methodology. Recently June 2015, the flowering was observed in the potted plants.

RESULTS AND DISCUSSION

After a critical study it was identified as *Pancreatium triflorum*. A perusal of literature has revealed that this species has not been reported from Mahabubnagar district and other districts of Telangana state [10, 11]. It is Pallasah [12] mistakenly mentioned its distribution in his 'Flora of Telangana' with Visakhapatnam locality, now Visakhapatnam is in Andhra Pradesh state. Hence the present distribution of *Pancreatium triflorum* forms new distributional record for the state of Telangana.

Pancreatium triflorum Roxb. Fl. Ind. 2: 126. 1832, FRI 6: 285, Fischer 3: 1694. 1928.

IMPATIENS ROSEA LINDL. (BALSAMINACEAE) - A NEW RECORD TO THE FLORA OF TELANGANA STATE, INDIA

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ABSTRACT

Impatiens rosea Lindl. (Balsaminaceae) was collected for the first time from Vikarabad district, Telangana, India and reported here as new record to the flora of Telangana. Photographs of Habitat, Flowering, Fruiting and seeds have been provided

Key words: Balsaminaceae, *Impatiens*, New record, Telangana

Introduction

Family Balsaminaceae consists of annual and perennial herbs with conspicuous and attractive flowers. The genus *Impatiens* L. is phylogeographically unique and it is commonly known as balsams (Akhier et al. 2018). The genus is represented by about 1,000 species with worldwide distribution. Out of these 210 species have been reported from India (Jyosna and Janarthanam 2011).

Many species of *Impatiens* are popular as ornamental plants with characteristic spurred, zygomorphic flowers with fused stamens surrounding the pistil (Mani et al. 2018). So far, only one species i.e. *Impatiens balsamina* L. was reported from Telangana state (Pulaaah, 2015, Reddy and Reddy 2016). Present report adds one more species to the locality.

Materials and Methods

Botanical explorations of Vikarabad District Telangana State is being conducted since past two years, during which the authors collected few interesting specimens of *Impatiens* in the form of full blooming dense patch, growing abundantly in sandy soils of the

agricultural lands and also periphery of the forests. The specimens were collected, preserved in the form of herbarium sheets and identified following relevant literature (Jyosna and Janarthanam 2011). Morphological characters of the plants such as habitat, associated species, soil type, geographical coordinates, and elevation were recorded. The photographs of fresh specimens were taken and microscopic observations were carried out for identification.

Results and Discussion

After a critical study the plant specimen was identified as *Impatiens rosea* Lindl. Which is widely distributed in Northern Himalaya, Goa, Gujarat, Karnataka, Maharashtra and Tamil Nadu (Jyosna and Janarthanam 2011). A perusal of literature revealed that this species was not recorded earlier from Telangana state (Pulaaah, 2015, Reddy and Reddy 2016). Hence it may be considered as a new distributional record for the state of Telangana.

Impatiens rosea Lindl. Edwards's Bot. Reg. 27(Misc.) 6: t. 27, 1841 (Plate, 1)


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NORDIC JOURNAL OF BOTANY

Research

Brachystelma ananthagiriense (Apocynaceae), a new species from Ananthagiri hills, Telangana, India

L. Paramesh, K. Prasad, B. Sadasivaiah and A. Vijaya Bhasker Reddy

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Accepted: January 2021

Published: 19 July 2021

A new species of *Brachystelma*, *B. ananthagiriense* is described and illustrated from the Ananthagiri hills of Vikarabad district, Telangana. The new species is closely similar to *B. pentanervium* but differs in a few attributes which are discussed. A detailed description, photographs and the conservation status of the new species are provided.

Keywords: Cerropogonae, Deccan plateau, Hyderabads

Introduction

Brachystelma R. Br. is the second largest genus of the tribe Cerropogonae with ca. 150 species, distributed mainly in the Old World tropics, particularly in sub-Saharan Africa, India, Sri Lanka, South East Asia and northern Australia (Prasad et al. 2018). Till date, 38 taxa have been reported from India and all of them are known to be confined to Indian political boundaries (Prasad and Veru 2020). *Brachystelma* has traditionally been distinguished from the morphologically similar *Cerropogon* by its corolla and corona structure. Molecular studies have shown that phylogenetically the Indian *Brachystelma* are all nested in the *Cerropogon* tree, making *Cerropogon parapsilense*, but still *Brachystelma* has been maintained separately (Mee and Eide-Schumann 2007, Saravanan et al. 2009, Kumbale et al. 2018, Bhat et al. 2018, Mee et al. 2017, Prasad et al. 2017, Saravanan et al. 2020).

Indian *Brachystelma* species typically have spreading corolla lobes except for those of the *B. delavayi* complex which have corolla lobes connate at the tips to form a cage-like structure (Veru and Prasad 2015). This complex includes *Brachystelma ananthagiriense* K. Prasad, A. Naray. & Mee (endemic to Gorantla hills, Ananthapuramu distr., Andhra Pradesh), *B. pentanervium* Govekar, Kalkar & Sardesai (endemic to Gadchiroli district, Maharashtra), *B. delavayi* Arelal & E. M. Ramakrishna (endemic to Southern Karnataka), *B. watsanense* S. R. Yadav & N. P. Singh (endemic to Kankar, Malwan of Maharashtra), *B. saccosii* P. Tripathi, D. K. Kulk., S. Tetali & Kumbale (endemic to Western Ghats of Maharashtra) and *B. shastrii* Kumbale, Gholase & Sardesai (endemic to Karnataka and Maharashtra). The Ananthagiri hills,



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Updated Snakes Check List and Extended Distribution of Five Species in the State of Telangana

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ABSTRACT: Present paper dealing with updated checklist of snakes of Telangana State, based on field observations, rescued snakes, road kills, opportunistic sightings and review of literature revealed that the Telangana State is home for 39 species of snakes belonging to 30 genera and seven families. Among the 39 species, 25 (64%) were non-venomous, seven (18%) were venomous and seven (18%) were mildly venomous. Among the total occurrence of species, the species namely *L. rapriei* affinis, *L. prodon flavicollis*, *Pseustes lineatus*, *Sibynophis subpunctatus*, and *Callisophis ovalis* are found in new locations. This study will enlighten the information regarding the snake diversity and forms a baseline data for future studies for the conservation.

Key words: Snakes, Checklist, Road kills, Telangana State

INTRODUCTION

Snakes are an important part of the natural environment and the food chain. These are the ambush predators as well as successful hunters (Bhattachar & Palival 2021). India is home for about 10% of the total number of snake species found worldwide (Nongkai et al., 2017). India is representing with 178 snake species (Whitaker & Caprain 1988). In the state of Telangana so far, a total 35 species of snakes were recorded (Chandra et al., 2011). Snakes are majority feed on insects, amphibians, reptiles, small birds and mammals, especially rodents. It indicates the diversity and distinction in food selection of snakes. The snakes are one of the efficacious vertebrates on the earth since ancient time. Most of the snake species are found in the arid zone of the world (Whitaker & Caprain 1988). Snakes are also called as friends of farmers because they are natural predators of rodent pests found in agriculture fields. But in India, due to a lack of knowledge and proper awareness among the people and farmers kill the snakes without realizing their significant importance. Habitat destruction, scarcity of prey animals, extensive use of pesticides, pollution, road kills and poaching are the major threats for the survival of snakes. Illegal collection of venom, illegal exporting and snake shows by charmers are some difficult tasks to protect and conservation of snakes. Across the country, documentation on snake populations is sparse and in depth studies are very few.

Similarly in the state of Telangana except few studies no systematic estimates are available so far. Hence the current paper will act as a revised check list for Telangana state based on intensive field studies and secondary sources. There is a pressing need to compile and collate existing data, as well as to begin systematic cataloging and documentation of the state herpetofauna abundance, distribution, habitat preferences, and natural history, in order to produce an authentic, annotated and illustrated checklist of snakes found within Telangana State, which can serve as a reliable baseline data for monitoring biodiversity and environmental change.

4. Study area

The Telangana state lies on the Deccan plateau to the west of the Eastern Ghats range between 15° 48' 37" to 19° 55' 46" N latitude and 77° 09' 02" E to 81° 18' 51" longitude and was came into existence on 01 June 2014. It is the 12th largest state of India and it is bounded by the Andhra Pradesh in the south, Maharashtra in the north, Karnataka in the west and Odisha in east. Administratively Telangana has been divided into 33 districts. The terrain is mostly of plains, gentle slopes and undulating hills. Isolated peaks and rocky clusers are found all over the state with elevation ranges between 100m to 900m MSL. The highest peaks are situated in Nallamala of Nagarkurnool district with elevation of 800 to 900m MSL (Fig. 1).