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New Additions to the Flora of Bilaspur District, Chhattisgarh, India

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Abstract

The present study focuses on documenting new additions to the angiospermic flora of Bilaspur District, Chhattisgarh, India, through field surveys, taxonomic investigations, and a review of previously published floristic literature. Bilaspur District encompasses diverse habitats, including tropical deciduous forests, grasslands, agricultural lands, and disturbed habitats, which support a wide variety of plant species. Botanical explorations were undertaken to collect and document plant specimens, with particular emphasis on species that had not previously been reported from the district. The collected specimens were identified using standard taxonomic literatures, regional floras, relevant botanical references and experts etc. Their accepted scientific names, family affiliations, and habit of each plant species were recorded individually. The current study was conducted from 20 December 2025 to 20 September 2026. A total of one hundred newly recorded plant species were assessed in the current study. Out of them, there are nine Plant species recorded as new not only for the Bilaspur district, but also, they are registered as new for the state Chhattisgarh, India. These belong to 48 different families, including herbs, shrubs, and trees. The identification of new district records contributes to improving the knowledge of regional plant diversity and provides valuable baseline information for future floristic research, biodiversity assessment, and conservation planning. The findings also highlight the importance of continued botanical exploration and systematic documentation of the plant resources in Chhattisgarh. This study focuses on strengthening the existing floristic inventory of Bilaspur District, Chhattisgarh, India, and provides a foundation for further taxonomic investigations.

Keywords: *Floristic diversity, new distributional records, new additions, Bilaspur district, Biodiversity, Angiospermic flora.*

Introduction

India is one of the world's megadiverse country, characterized by a wide range of climatic conditions, geographical features, and vegetation types that support rich and diverse plant communities. The country possesses considerable floristic diversity, including numerous endemic, rare, and economically important plant species. The systematic documentation of this diversity is essential for understanding plant distribution patterns, taxonomic relationships, ecological interactions, and conservation priorities. Floristic studies provide fundamental information about the composition and distribution of plant species within a particular geographical region and serve as an important basis for botanical research and biodiversity conservation and management.

Chhattisgarh, located in central India, is endowed with rich natural vegetation and diverse ecological habitats. A substantial proportion of the state is covered by forests, predominantly tropical deciduous vegetation, which supports a variety of angiosperms, pteridophytes, and other plant groups. Variations in topography, soil characteristics, rainfall, and climatic conditions contribute to the distribution of diverse plant communities throughout the state.

Despite the availability of floristic information for several regions, continued botanical exploration remains important for improving knowledge of plant diversity, documenting changes in species distribution, and identifying species that have not previously been reported from particular localities.

Bilaspur district, situated in the almost central part of Chhattisgarh, India. represents an important area for floristic investigation because of its varied habitats, including forested areas, open grasslands, agricultural landscapes, wetlands, and human-disturbed environments. These habitats provide suitable conditions for the growth of diverse herbaceous plants, shrubs, trees, etc. The district's vegetation contributes to regional ecological stability and provides important resources for local communities. Previous botanical investigations, including the publication of Flora's and articles of Bilaspur district (Madhya Pradesh), Chhattisgarh (Raipur, Durg and Rajnandgaon, Indravati Tiger Reserve, Kanger Valley National Park), Madhya Pradesh, [1],[2],[3],[4],[5],[6],[7],[8],[9],[11],[12],[13[14],[15],[16],[17], and [18]. For correct and latest accepted naming of the plant's, website of POWO website [10] was used. This literature has contributed significantly to the understanding of the area's plant diversity.

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Nevertheless, additional field surveys and critical examination of botanical records were conducted to refine the existing floristic inventory and improve our understanding of the distribution of plant species within the district.

Floristic surveys frequently reveal plant species that have not been documented previously from a particular geographical area. Such findings result from intensive exploration of under-surveyed habitats, improved taxonomic identification, seasonal observations, or changes in the known distribution of plant species. A new distributional record for the district of Bilaspur, Chhattisgarh, is particularly valuable because it extends the documented geographical range of a species at the local level. However, the recognition of a species as a new district record requires careful comparison with previously published floras, taxonomic literature, and other reliable botanical records. Accurate identification and documentation of voucher specimens are therefore essential to ensure the scientific validity of such records. The documentation of new additions to the flora of Bilaspur District, Chhattisgarh, India is important for updating the existing checklist of vascular plants and strengthening the baseline information available for future taxonomic, ecological, and conservation studies etc. Such investigations also contribute to understanding the regional patterns of plant distribution and identifying habitats that may require further botanical exploration or conservation attention.

Furthermore, reliable records of plant species can support future research on vegetation composition, habitat associations, and the sustainable management of local plant resources. In this context, the present study aims to document plant species newly recorded from Bilaspur District, Chhattisgarh, India, through field exploration, taxonomic examination, and a review of relevant published literature etc.

The present study aims to document the new plant species following their accepted botanical names, family affiliations, and growth habits. It also seeks to incorporate newly verified records into the existing floristic inventory of Bilaspur District, Chhattisgarh, India. The study is intended to enhance the understanding of the region's plant diversity and provide valuable baseline information for future botanical research, taxonomic investigations, and biodiversity conservation initiatives.

Materials and Methods

Chhattisgarh came into existence as a new state on November 01, 2000. The present study was conducted in Bilaspur district, Chhattisgarh, India. The district is situated in the central-eastern part of Chhattisgarh and supports diverse vegetation types associated with forested areas, agricultural lands, grasslands, wetlands, and human-modified habitats. Variations in topography, soil characteristics, moisture availability, and climatic conditions contribute to the distribution of diverse plant species in the region. The study area was selected to investigate plant diversity and document the plant species that had not previously been reported in the published flora of Bilaspur District (formerly known as flora of Bilaspur District M.P.). Field surveys were conducted across various habitats of Bilaspur District, Chhattisgarh, from 20 December 2025 to 20 September 2026. Botanical explorations focused on forest margins, open areas, roadsides, agricultural fields, and other natural and disturbed habitats. The collected plant specimens were photographed, carefully examined, and documented, with particular emphasis on their family affiliations and growth habits.

Plant identification was carried out based on diagnostic morphological characters, including the characteristics of stems, leaves, inflorescences, flowers, fruits, and seeds, wherever applicable. Standard taxonomic literature, regional floras, pictorial guides, relevant botanical references, online resources, and consultation with subject experts were used for accurate identification and verification. The accepted scientific names, botanical author citations, and family assignments were further cross-checked using authoritative taxonomic databases and published literature. Nomenclatural discrepancies and synonyms were also considered during the verification process to confirm the identity and distributional status of the recorded species and establish their novelty as additions to the existing flora of Bilaspur District, Chhattisgarh, India. To determine whether a species represented a new addition to the flora of Bilaspur District, its occurrence was compared with previously published floristic accounts and taxonomic publications etc. Particular attention was given to the Flora of Bilaspur District and the Flora of Chhattisgarh, Flora of Madhya Pradesh etc.

Results

The present study focuses on documenting plant species that represent new additions to the flora of Bilaspur District, Chhattisgarh, India. Only those plant species that were not recorded in the previously published flora of Bilaspur District (formerly part of Madhya Pradesh) have been considered new additions to the flora of the district. This assessment takes into account the formation of Chhattisgarh as a separate state from Madhya Pradesh on November 1, 2000. The findings are presented in Table 1.

Details on the family-wise distribution of the recorded plant species are given in Table 2, and in Table 3, habitat variation of the newly added plant species to the flora of Bilaspur District, Chhattisgarh, India is given.

The findings of the present study are based on the observation of the Flora of Bilaspur District (Madhya Pradesh), Volume -I and II; Flora of Chhattisgarh, Volume -I, II and III; Flora of Madhya Pradesh, Vol.- I, II, and III; Supplement to the Flora of Madhya Pradesh; Flora of Raipur, Durg and Rajnandgaon; Flora of the Indravati Tiger Reserve; Biodiversity of Kanger Valley National Park; Biodiversity of Chhattisgarh: A checklist. Online sources like POWO and other relevant sources used for the present study are mentioned in the references.

The plants not included in these flora/s are recorded and listed. The present study contributes to the revision and enrichment of the existing floristic inventory of Bilaspur District. Chhattisgarh, India. It also provides useful baseline information for future taxonomic, ecological, and biogeographical research in Chhattisgarh, India. Continued documentation of plant diversity is particularly important in the context of habitat modification and environmental changes, which may affect the distribution and persistence of the plant species.

Table 1: List of newly added plant species to the Bilaspur District's flora in Chhattisgarh, India

S. NO.	BOTANICAL NAME	FAMILY	HABIT
1.	*Aeschynomene americana* L.	Fabaceae	Herb
2.	***Ageratum houstonianum* Mill.**	**Asteraceae**	**Herb**
3.	*Alternanthera bettzickiana* (Regel) G.Nicholson	Amaranthaceae	Herb
4.	*Bauhinia acuminata* L.	Fabaceae	Shrub
5.	*Boerhavia coccinea* Mill.	Nyctaginaceae	Herb
6.	*Bombax ceiba* L. (Yellow)	Bombaxaceae	Tree
7.	*Butea superba* Roxb. ex Willd.	Fabaceae	Shrub
8.	*Calliandra haematocephala* Hassk.	Fabaceae	Shrub
9.	***Callitriche terrestris* Raf.**	**Plantaginaceae**	**Herb**

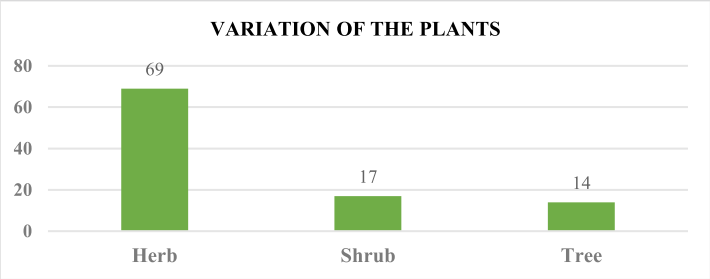
10.	*Canna indica* L.	Cannaceae	Herb
11.	*Carduus pycnocephalus* L.	Asteraceae	Shrub
12.	*Cenchrus pedicelaatus* (Trin.) Morrone	Poaceae	Herb
13.	*Centaurium pulchellum* (Sw.) Hayek ex Hand. - Mazz., Stadlm., Janch. & Faltis	Gentianaceae	Herb
14.	*Cereus hexagonus* (L.) Mill.	Cactaceae	Shrub
15.	***Commelina erecta L.***	**Commelinaceae**	**Herb**
16.	*Corchorus capsularis* L.	Malvaceae	Herb
17.	*Cordia dichotoma* G.Forst.	Boraginaceae	Tree
18.	*Crinum macowanii* Baker	Amaryllidaceae	Herb
19.	*Crossandra infundibuliformis* (L.) Nees	Acanthaceae	Herb
20.	*Crotalaria pallida* Aiton	Fabaceae	Herb
21.	*Crotalaria quinquefolia* L.	Fabaceae	Shrub
22.	*Crotalaria verrucosa* L.	Fabaceae	Herb
23.	*Cucumis prophetarum* L.	*Cucurbitaceae*	Herb
24.	*Cuscuta campestris* Yunck.	Convolvulaceae	Herb
25.	*Dendrobium macrostachyum* Lindl.	Orchidaceae	Herb
26.	*Digera muricata* (L.) Mart.	Amaranthaceae	Herb
27.	*Elytraria acaulis* (L.f.) Lindau	Acanthaceae	Herb
28.	*Erythrina variegata* L.	Fabaceae	Tree
29.	*Euphorbia balbisii* Boiss.	Euphorbiaceae	Herb
30.	*Euphorbia chamaesyce* L.	Euphorbiaceae	Herb
31.	*Euphorbia nutans* Lag.	Euphorbiaceae	Herb
32.	*Euphorbia tithymaloides* L.	Phyllanthaceae	Herb
33.	*Fernandoa adenophylla* (Wall. ex G.Don)	Bignoniaceae	Tree
34.	*Ficus amplissima* Sm.	Moraceae	Tree
35.	*Gamochaeta pensylvanica* (Willd.) Cabrera	Asteraceae	Herb
36.	*Grewia sapida* Roxb. ex-DC.	Malvaceae	Shrub
37.	*Habenaria commelinifolia* (Roxb.) Wall. ex Lindl.	Orchidaceae	Herb
38.	*Habenaria laciniata* Dalzell	Orchidaceae	Herb
39.	*Hardwickia binate* Roxb.	Fabaceae	Tree
40.	*Holoptelea integrifolia* (Roxb.) Planch.	Ulmaceae	Tree
41.	*Hydrocotyle ranunculoides* L.f.	Araliaceae	Herb
42.	*Hypertelis umbellata* (Forssk.) Thulin	Molluginaceae	Herb
43.	*Indigofera cordifolia* B.Heyne ex Roth	Fabaceae	Herb
44.	*Indigofera trita* L.f.	Fabaceae	Herb
45.	*Ixora pavetta* Andrews	Rubiaceae	Shrub
46.	*Kallstroemia maxima* (L.) Hook. &Arn.	Zygophyllaceae	Herb
47.	*Laportea interrupta* (L.) Chew	Urticaceae	Herb
48.	*Launaea procumbens* (Roxb.) Ramayya & Rajagopal	Asteraceae	Herb
49.	***Lepidagathis mitis* Dalzell**	**Acanthaceae**	**Herb**
50.	*Lepidium didymium* L	Brassicaceae	Herb
51.	*Leucaena leucocephala* (Lam.) de Wit	Fabaceae	Tree
52.	*Leucas grandis* Vatke	Lamiaceae	Herb
53.	*Lindenbergia indica* (L.) Vatke	Orobanchaceae	Herb
54.	***Lindernia rotundifolia* (L.) Alston**	**Linderniaceae**	**Herb**
55.	***Liparis deflexa* Hook.f.**	**Orchidaceae**	**Herb**
56.	*Lipoblepharis urticifolia* (Blume) Orchard	Asteraceae	Herb
57.	*Lippia alba* (Mill.) N.E.Br. ex-Britton &P.Wilson	Verbenaceae	Shrub
58.	*Ludwigia hyssopifolia* (G.Don) Exell	Onagraceae	Herb
59.	*Malachra capitata* (L.) L.	Malvaceae	Herb
60.	*Microcarpaea minima* (Retz.) Merr.	Phrymaceae	Herb
61.	*Mikania micrantha* Kunth	Asteraceae	Herb
62.	*Opuntia cochenillifera* (L.) Mill.	Cactaceae	Shrub
63.	*Opuntia engelmannii* var. *lindheimeri*	Cactaceae	Shrub
64.	***Oxalis articulata* Savigny**	**Oxalidaceae**	**Herb**
65.	***Paramollugo nudicaulis* (Lam.) Thulin**	**Molluginaceae**	**Herb**
66.	*Parasopubia delphniifolia* (L)H.P. Hofm. & Eb. Fisch.	Scrophulariaceae	Herb
67.	*Pavonia cancellate* (L.) Cav.	Malvaceae	Herb
68.	*Peperomia pellucida* (L.) Kunth	Piperaceae	Herb
69.	*Persicaria decipiens* (R.Br.) K.L.Wilson	Polygonaceae	Herb
70.	*Phyllanthus scabrifolius* Hook.f.	Phyllanthaceae	Herb
71.	*Pleurolobus gangeticus* (L.) J. St.-Hil. Ex H. Ohashi & Ohashi	Fabaceae	Herb
72.	*Portulaca quadrifida* L.	Portulacaceae	Herb
73.	*Pouzolzia zeylanica* (L.) Benn.	Urticaceae	Herb
74.	*Richardia brasiliensis* Gomes	Rubiaceae	Herb
75.	*Rotala densiflora* (Roth) Koehne	Lythraceae	Herb
76.	*Ruellia simplex* C. Wright	Acanthaceae	Herb
77.	*Senegalia rugata* (Lam.) Britton & Rose	Fabaceae	Shrub
78.	*Senna hirsuta* (L.) H.S.Irwin & Barneby	Fabaceae	Shrub
79.	*Senna sulfurea* (DC. ex Collad.) H.S.Irwin& Barneby	Fabaceae	Shrub
80.	*Sida mysorensis* Wight &Arn.	Malvaceae	Herb
81.	*Solanum sisymbriifolium Lam.*	Solanaceae	Shrub
82.	*Solanum viarum* Dunal	Solanaceae	Herb
83.	*Streblus asper* Lour.	Moraceae	Tree
84.	*Strobilanthes hirta* (Vahl) Blume	Acanthaceae	Herb
85.	*Stylosanthes scabra* Vogel	Fabaceae	Herb
86.	***Synedrella nodiflora* (L.) Gaertn.**	**Asteraceae**	**Herb**
87.	*Syzygium salicifolium* J.Graham	Myrtaceae	Tree
88.	*Tephrosia pumila* (Lam.) Pers.	Fabaceae	Herb
89.	*Tephrosia villosa* (L.) Pers.	Fabaceae	Herb
90.	*Teramnus labialis* (L. f.) Spreng.	Fabaceae	Herb
91.	*Terminalia pendula* (Edgew.) Gere &Boatwr.	Combretaceae	Tree
92.	*Theriophonum minutum* (Willd.) Baill.	Araceae	Herb
93.	*Trema politoria* (Planch.) Blume	Cannabaceae	Shrub
94.	*Urena repanda* Roxb. ex Sm.	Malvaceae	Herb
95.	*Vallaris solanacea* (Roth ex Roem. & Schult.) Kuntze	Apocynaceae	Shrub
96.	*Veronica hederifolia* L.	Plantaginaceae	Herb
97.	*Yamazakia multiflora* (Roxb.) A.Pal&M.Chowdhury	Linderniaceae	Herb
98.	*Ziziphus horrida* Roth	Rhmnaceae	Tree
99.	*Ziziphus nummularia* (Burm.f.) Wight &Arn.	Rhmanaceae	Tree
100.	*Ziziphus oenopolia* (L.) Mill.	Rhmanaceae	Tree

Table 2: Family-wise distribution of the newly added plant species to the Bilaspur District's flora in Chhattisgarh, India

S. NO.	FAMILY	NUMBER OF PLANTS
1.	Acanthaceae	5
2.	Amaranthaceae	2
3.	Amaryllidaceae	1
4.	Apocynaceae	1
5.	Araceae	1
6.	Araliaceae	1
7.	Asteraceae	7
8.	Bignoniaceae	1
9.	Bombaxaceae	1
10.	Boraginaceae	1
11.	Brassicaceae	1
12.	Cactaceae	3
13.	Cannabaceae	1
14.	Cannaceae	1
15.	Combretaceae	1
16.	Commelinaceae	1
17.	Convolvulaceae	1
18.	Cucurbitaceae	1
19.	Euphorbiaceae	3
20.	Fabaceae	20
21.	Gentianaceae	1
22.	Lamiaceae	1
23.	Linderniaceae	2
24.	Lythraceae	1
25.	Malvaceae	6
26.	Molluginaceae	2
27.	Moraceae	2
28.	Myrtaceae	1
29.	Nyctaginaceae	1
30.	Onagraceae	1
31.	Orchidaceae	4
32.	Orobanchaceae	1
33.	Oxalidaceae	1
34.	Phrymaceae	1
35.	Phyllanthaceae	2
36.	Piperaceae	1
37.	Plantaginaceae	2
38.	Poaceae	1
39.	Polygonaceae	1
40.	Portulacaceae	1
41.	Rhmanaceae	3
42.	Rubiaceae	2
43.	Scrophulariaceae	1
44.	Solanaceae	2
45.	Ulmaceae	1
46.	Urticaceae	2
47.	Verbenaceae	1
48.	Zygophyllaceae	1
Total Families - 48		Total Plants -100

Table 3: Variation of newly added plant species in Bilaspur District's flora, Chhattisgarh, India, based on their Habit

S. NO.	HABIT	NUMBER OF PLANTS
1.	Herb	69
2.	Shrub	17
3.	Tree	14
	TOTAL	100



Habit variation of the newly added Plant species

Discussions

The documentation of new additions to the flora of Bilaspur District, Chhattisgarh, India, contributes to a better understanding of the floristic diversity and distribution of plant species in the region. Floristic investigations are essential for updating regional plant inventories, identifying distributional gaps, and improving knowledge of local biodiversity. The new additions of species not previously documented in the flora of Bilaspur district, Chhattisgarh, India, highlight the importance of continued botanical exploration and systematic examination of existing taxonomic records.

Bilaspur district encompasses a variety of habitats, including forested areas, grasslands, agricultural landscapes, roadsides, and other disturbed environments. Differences in habitat conditions, soil characteristics, moisture availability, and vegetation structure influence the distribution and establishment of plant species. Surveys conducted across these habitats reveal plant species that have been overlooked in earlier investigations. Consequently, repeated field surveys were conducted to achieve the goal of the present study.

The identification of new district records also emphasizes the importance of revisiting previously published floristic accounts. Historical floras provide essential baseline information, but changes in land use, habitat conditions, survey intensity, and taxonomic knowledge may lead to the recognition of additional species within a geographical area. In some cases, plant species may have been present for a long time but remained undocumented because of insufficient botanical exploration or difficulties in identification. Therefore, a newly reported occurrence should be interpreted primarily as an addition to the documented distribution of a plant species as a new addition to the flora of Bilaspur, Chhattisgarh, India.

A total of one hundred newly recorded plant species belonging to forty-eight different families were documented in the present study, comprising herbs, shrubs and trees. Notably, nine of these (from one hundred plant species) species represent new distributional records not only for Bilaspur District but also for the state of Chhattisgarh, India. (Sr. no. of the listed plants – Table -1. - 2,9,15,49.,54,55,64,65 and 86).

Among the recorded plant species, the family Fabaceae was the most dominant, comprising 20 species, followed by Asteraceae (7 species), Malvaceae (6 species), Acanthaceae (5 species), and Orchidaceae (4 species). Three species each were recorded under the families Cactaceae, Euphorbiaceae, and Rhamnaceae. The families Amaranthaceae, Linderniaceae, Molluginaceae, Moraceae, Phyllanthaceae, Plantaginaceae, Rubiaceae, Solanaceae, and Urticaceae were represented by two species each. The remaining 31 families were represented by a single plant species each. As a habit variation of the recorded plants, the maximum was Herb (69 Plant species), followed by Shrub (17 Plant species) and Trees (14 Plant species).

Finally, this study focuses on new additions specifically to Bilaspur District, Chhattisgarh, India. The study includes plant species not previously recorded in the flora of Bilaspur District. It is concluded that the present study highlights the continuing relevance of floristic exploration in improving knowledge of plant diversity at the district level. The systematic documentation of additional plant records, supported by taxonomic verification, provides stronger botanical knowledge of Bilaspur District, Chhattisgarh, India, and supports the future importance of the plant species for further teaching, research, and other purposes.

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