

CHECKLIST OF FLOWERING PLANTS OF KADABAGATTI FOREST RANGE GOKAK BELAGAVI KARNATAKA

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KEYWORDS

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ABSTRACT

Gokak is situated in the central part of Belagavi district which is located in northwestern parts of Karnataka, India, maintaining great plant diversity. Little attention to plant diversity studies has been made to it in the past years. Here, we present a checklist of the flowering plants of this region obtained through intensive field investigations and matching of herbarium specimens. In total, 81 species, including one IUCN endangered species and one rare species were documented, belonging to 27 families and 71 genera. The native ranges, habit, habitat, flowering and fruiting and voucher specimens of taxon have been recorded in this checklist. It is the first exhaustive inventory of the flowering plants in Gokak hills which is a significant regional center for plant diversity.

INTRODUCTION

Along with Australia, Brazil, China, Columbia, Ecuador, Indonesia, Madagascar, Malaysia, Mexico, Peru, and Zaire, India is one of the mega-diversity nations, holding together about 70% of the world's total diversity of flowering plants. A diverse abiotic and biotic environment is the primary cause of the biodiversity's richness. (Mc Neely *et al.*, 1990).

The status of living things belonging to different groups is being evaluated, and there is a global focus on preserving their diversity. All life is genetically determined; all life has evolved via natural selection; and all life is interconnected. There is no precise estimate of the overall number of species in the planet, although the total number of species that have been reported surpasses 1.7 million (Kambhar *et al.*, 2021). As previously stated, India is one of the world's top 12 mega-diversity hotspots, with 17,500 different species of flowering plants. It displays a wide range of intricately varied ecosystems with a lot of variance (Kotresha and Kambhar, 2016). With only 2.4% of the world's total land area, it represents 8% of the biodiversity overall (Singh *et al.*, 2011).

One of the primary elements of biodiversity is known to be plants. Since the destruction of the forest and other habitats is accelerating genetic erosion, a thorough research of our flora is urgently needed in addition to being a resource for human well-being and ecological relevance of biodiversity (Venu, 1998). A constant process of exploring and reviewing the past findings is inventory. Only an inventory will reveal the crucial management challenges for these priceless resources, which are not fixed and will undoubtedly change through time and space (Yadav & Sardesai, 2000). For this reason,

detail information of the known local plant species from surrounding area is essential. The information is crucial because it enables us to prevent or minimize the potential risk of biodiversity loss and to develop future environmental policy. As a result, the current study was carried out to collect, identify, and inventory the flowering plants in the Kadabagatti area of Gokak, Belagavi.

Study area

Gokak is positioned at latitude of 16.159185 and a longitude of 74.815620 in the Belagavi district, which is in the northwest of the state of Karnataka (Fig. 1). Gokak's vegetation can be

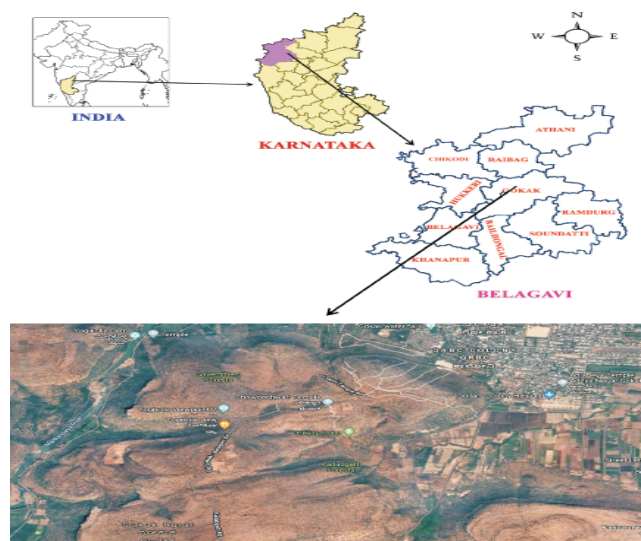


Figure 1: Location of the Kadabagatti Forest range Gokak, Belagavi

categorised as dry deciduous forests, which are typically scattered throughout the eastern and central regions of the Belagavi area. Gokak is located in south central India and is classified as part of the tropical deciduous moist belt. Its average elevation is 570 metres. In Gokak Taluka, laterite soil makes up the majority of the soil, with tiny amounts of black soil being present. The primary source of irrigation and drinking water for locals living in the nearby villages is the Ghataprabha River, which has water virtually all year round.

MATERIALS AND METHODS

The plant specimens were collected (in duplicate) throughout the study area, between October 2020 and July 2022. Observations made on the spot, such as habits, habitats, flower colours, and local names, were recorded in the field notebook. Using a Nikon D3500, pictures of the fresh flower, twigs, etc. were taken. Each specimen has a collector number assigned

to it. The collected specimens were identified with aid of floras (Cooke, 1958; Saldanha, 1984; Saldanha, 1996, Kotresha and Kambhar, 2016).

Herbarium specimens were protected against deterioration with precautions. To suppress the fungal attack, a weak solution of mercuric chloride (0.1% HgCl₂) was sprayed on the specimens along with insect repellents like paradichlorobenzene (Lawrence, 1951) that were stored in small quantities in the herbarium cabinet (Ravindranath and Premnath, 1997). The specimens were deposited in the Herbarium at Department of Botany, The specimens were deposited in the Herbarium Department of Botany, J.S.S. Arts, Science and Commerce College, Gokak, Belagavi, Karnataka.

RESULTS AND DISCUSSION

A total of 81 species, representing 71 genera and 27 families of angiosperms, have been documented in the current work.

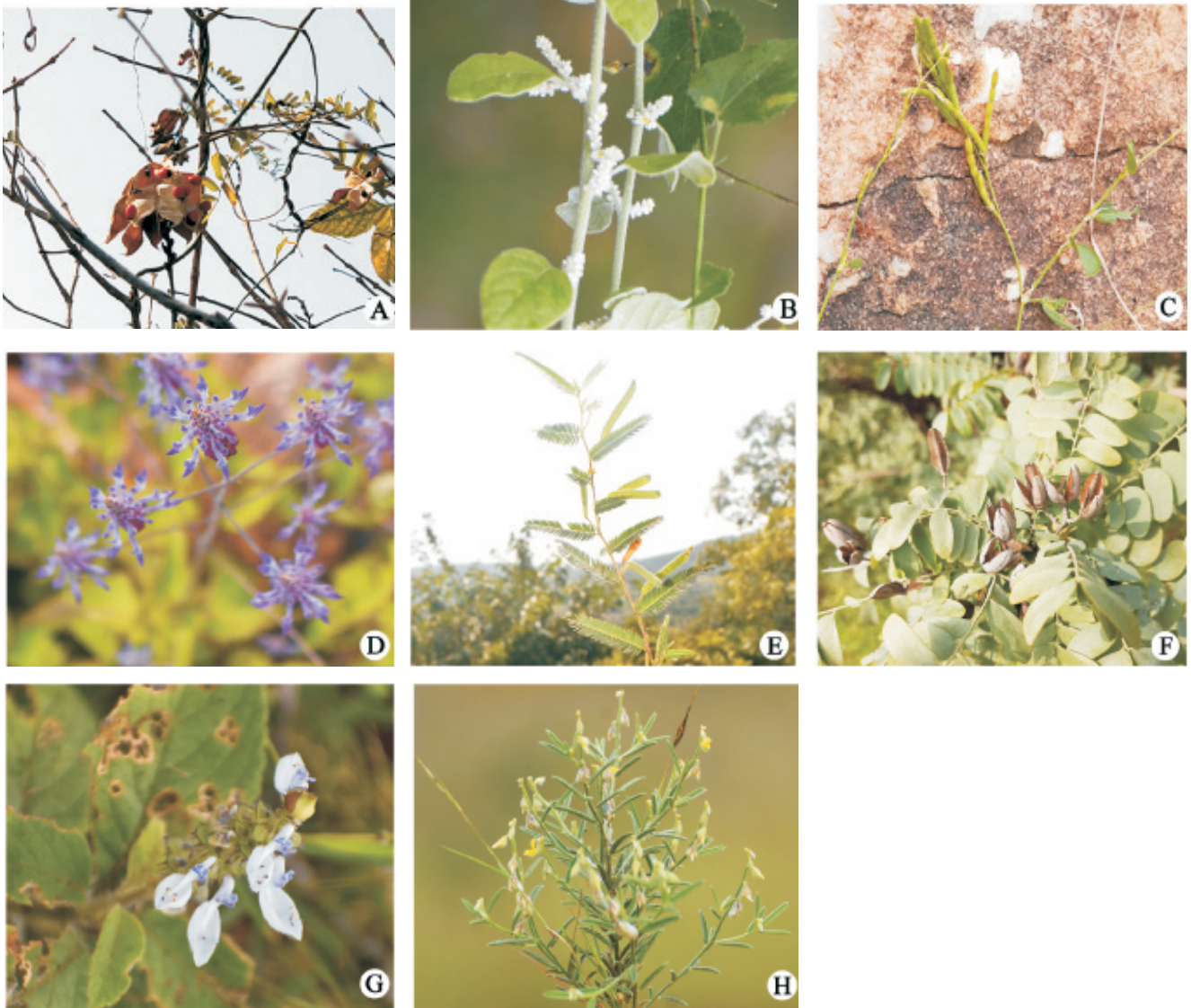


Figure 2: A. *Abrus precatorius* L., B. *Aerva lanata* (L.) A.L. Juss. ex Schult., C. *Alysicarpus bupleurifolius* (L.) DC., D. *Anisochilus carnosus* (L.f) Wall. ex Benth., E. *Chamaecrista pumila* (Lam.) K. Larsen, F. *Chloroxylon swietenia* DC., G. *Coelus barbatus* (Andrews) Benth. ex G. Don, H. *Crotalaria pusilla* DC.

Table 1. List of flowering plants with their family name, habit, habitat and flowering and fruiting.

Sl. No.	Botanical name	Family	Habit	Habitat	Flowering and Fruiting	Coll. No.
1	<i>Abrus precatorius</i> L.	Fabaceae	Climbers	Frequent in hedges and on bunds	September to January	12
2	<i>Aerva javanica</i> (Burm.f.) Juss. ex Schult.	Amaranthaceae	Herbs	Frequent in hill slopes	August to December	35
3	<i>Aerva lanata</i> (L.) A. L. Juss. ex Schult.	Amaranthaceae	Herbs	Frequent in hill slopes	August to December	53
4	<i>Albizia amara</i> (Roxb.) Boivin	Mimosaceae	Trees	Dry deciduous forests and along roadsides	April to August	54
5	<i>Allmania nodiflora</i> (L.) R. Br.	Amaranthaceae	Herbs	Frequent in hill slopes	September to December	14
6	<i>Alternanthera pungens</i> Kunth	Amaranthaceae	Herbs	Common in waste places	October to April	36
7	<i>Alysicarpus bupleurifolius</i> (L.) DC.	Fabaceae	Herbs	Frequent in hill slopes	August to December	8
8	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Herbs	Common in waste places	July to December	55
9	<i>Amaranthus viridis</i> L.	Amaranthaceae	Herbs	Frequent in wastelands and border of fields	August to December	13
10	<i>Andrographis paniculata</i> (Burm.f.) Nees	Acanthaceae	Herbs	Frequent in hill slopes	August to February	4
11	<i>Anisochilus carnosus</i> (L.f.) Wall. ex Benth.	Lamiaceae	Herbs	Wet rocky areas	July to December	15
12	<i>Aristida purpurea</i> Nutt.	Poaceae	Herbs	Frequent in hill slopes	July to December	16
13	<i>Aristolochia indica</i> L.	Aristolochiaceae	Herbs	Open forests	September to December	37
14	<i>Canthium parviflorum</i> Lam.	Rubiaceae	Shrubs	Frequent in hill slopes	March to May	10
15	<i>Carissa carandus</i> Lour.	Apocynaceae	Shrubs	Frequent in hill slopes	August to December	56
16	<i>Cassia fistula</i> L.	Caesalpinaceae	Trees	Along roadsides	February to April	17
17	<i>Chamaecrista pumila</i> (Lam.)K.Larsen	Caesalpinaceae	Herbs	Frequent in hill slopes	September to December	38
18	<i>Chloroxylon swietenia</i> DC.	Flindemiaceae	Trees	Dry deciduous forests	March to June	57
19	<i>Cissus pallida</i> Salisb.	Vitaceae	Herbs	Frequent in hill slopes	December to April	18
20	<i>Coelus barbatus</i> (Andrews) Benth. ex G. Don	Lamiaceae	Herbs	Frequent in hill slopes	December to April	59
21	<i>Crotalaria pusilla</i> DC.	Fabaceae	Herbs	Occasional in grasslands	September to December	19
22	<i>Cynanchum acidum</i> (Roxb.) Oken	Apocynaceae	Climbers	Frequent in hill slopes	December to April	58
23	<i>Cyanotis fasciculata</i> (B. Heyne ex Roth) Schult. & Schult.f.	Commelinaceae	Herbs	Frequent in hill slopes	August to December	7
24	<i>Dalbergia latifolia</i> Roxb.	Fabaceae	Trees	Dry deciduous forests	February to May	20
25	<i>Dalbergia sissoo</i> Roxb. ex DC.	Fabaceae	Trees	Frequent in hill slopes	February to May	39
26	<i>Decalepis hamiltonii</i> Wight & Arn	Apocynaceae	Climbers	Rare in hill slopes	July to December	60
27	<i>Digera muricata</i> (L.) Mart.	Amaranthaceae	Herbs	Frequent in wastelands and border of fields	August to September	40
28	<i>Dodonea viscosa</i> Jacq.	Sapindaceae	Shrubs	Frequent in hill slopes	July to December	6
29	<i>Dolichandrone atrovirens</i> (Roth) K.Schum.	Bignoniaceae	Trees	Occasional in hill slopes	March to May	21
30	<i>Eupatorium adenophorum</i> Spreng.	Asteraceae	Herbs	Frequent in hill slopes and roadside	August to December	41
31	<i>Euphorbia gokakensis</i> S.R. Yadav, Malpure & Chandore	Euphorbiaceae	Herbs	Rare in hill slopes	July to December	61
32	<i>Euphorbia nivulia</i> Buch.-Ham.	Euphorbiaceae	Shrubs	Frequent in hill slopes	July to December	5
33	<i>Euphorbia tirucalli</i> L.	Euphorbiaceae	Shrubs	Dry deciduous forests	February to April	63
34	<i>Evolvulus alsinoides</i> (L.) L.	Convolvulaceae	Herbs	Gravelly plains and grasslands	June to January	22
35	<i>Glossocardia bosvallea</i> DC.	Asteraceae	Herbs	Frequent in grasslands	August to December	62
36	<i>Gomphrena indica</i> (L.) A.J.Paton	Asteraceae	Herbs	Frequent in hill slopes	August to December	42
37	<i>Grewia hirsuta</i> Vahl	Malvaceae	Shrubs	Dry deciduous forests	June to July	64
38	<i>Hardwickia binata</i> Roxb.	Caesalpinaceae	Trees	Common in hill slopes	February to May	71
39	<i>Hedyotis herbacea</i> L.	Rubiaceae	Herbs	Frequent in hill slopes	August to December	3
40	<i>Heteropogon contortus</i> (L.) P.Beauv. ex Roem. & Schult.	Poaceae	Herbs	Common in grasslands	September to December	23
41	<i>Holoptelea integrifolia</i> (Roxb.) Planch.	Ulmaceae	Trees	Frequent in hill slopes	February to May	43
42	<i>Hybanthus enneaspermus</i> (L.) F.Muell.	Violaceae	Herbs	Frequent in hill slopes	August to December	72
43	<i>Indigofera linnaei</i> Ali	Fabaceae	Herbs	Grasslands, gravelly plains and wastelands	June to January	24
44	<i>Jasminum roxburghianum</i> Wall. ex C. B. Clarke	Oleaceae	Shrubs	Frequent in hill slopes	July to December	65
45	<i>Justicia trinervia</i> (L.) Lindau	Acanthaceae	Herbs	Frequent in hill slopes	August to December	11
46	<i>Lannea coromandelica</i> (Houtt.) Merr.	Combretaceae	Trees	Common in dry deciduous area	February to April	25
47	<i>Lavandulla bipinnata</i> (Roth) Kuntze	Lamiaceae	Herbs	Frequent in hill slopes	August to December	44
48	<i>Lepidagathis cristata</i> Willd.	Acanthaceae	Herbs	Frequent in hill slopes	August to January	66
49	<i>Lophopogon tridentatus</i> (Roxb.) Hack.	Poaceae	Herbs	Frequent in hill slopes	August to December	73
50	<i>Maytenus emarginata</i> (Willd.) Ding Hou	Sapindaceae	Shrubs	Frequent in hill slopes	July to December	26

Some of the taxa are provided in the photoplates (Fig. 2-5). Out of 27 families, the first 10 dominant families constitute 54 species (67%), of these Fabaceae 11 spp. (13%) is the leading family, Amaranthaceae 07 spp. (11%), followed by Asteraceae

with 06 species (07%), Euphorbiaceae 04 spp. (4%), Convolvulaceae 03 spp. (3%), Apocynaceae 03 spp. (3%), Acanthaceae 03 spp. (3%), Poaceae 03 spp. (4%), Combretaceae 04 spp. (4%), Rubiaceae 05 spp. Lamiaceae 05

Table 1. Continue...

51	<i>Mesosphaerum suaveolens</i> (L.) Kuntze	Lamiaceae	Shrubs	Common along roadside	July to December	74
52	<i>Mimosa hamata</i> Willd.	Mimosaceae	Shrubs	Occasional in roadside and hill slopes	February to May	45
53	<i>Morinda pubescens</i> Buch.-Ham.	Rubiaceae	Trees	Frequent in hill slopes and roadside	March to May	27
54	<i>Mundulea sericea</i> (Willd.) A.Chev.	Fabaceae	Shrubs	Common in hill slopes	December to April	67
55	<i>Ocimum sanctum</i> L.	Lamiaceae	Shrubs	Frequent in hill slopes	July to December	46
56	<i>Parasopbia delphinifolia</i> (L.) H.-P.Hofm. & Eb. Fisch.	Scrophulariaceae	Herbs	Common in grasslands	August to December	75
57	<i>Pavonia zeylanica</i> L.	Malvaceae	Herbs	Frequent in hill slopes	July to December	28
58	<i>Polycarpaea aurea</i> Wight & Arn.	Caryophyllaceae	Herbs	Common in rocks and plains	August to November	76
59	<i>Polygala elongata</i> Klein ex Willd.	Polygalaceae	Herbs	Common in grasslands	September to December	68
60	<i>Pulicaria wightiana</i> Gaertn.	Asteraceae	Herbs	Frequent in hill slopes	August to December	47
61	<i>Rhus mysorensis</i> G.Don	Anacardiaceae	Shrubs	Frequent in hill slopes	July to December	77
62	<i>Rhynchosia minima</i> (L.) DC.	Fabaceae	Climbers	Grasslands and open areas	July to January	29
63	<i>Rivea hypocrateriformis</i> (Desr.) Choisy	Convolvulaceae	Climbers	Common in scrub forests	December to March	48
64	<i>Securingea leucopyrus</i> (Willd.) Müell-Arg.	Euphorbiaceae	Shrubs	Common in hill slopes	July to December	9
65	<i>Senecio tenuifolia</i> (Jacq. ex Besser) Tzelev	Asteraceae	Herbs	Common in grasslands	August to December	2
66	<i>Senna auriculata</i> (L.) Roxb.	Caesalpiniaceae	Shrubs	Common in grasslands and roadside	August to February	30
67	<i>Sida cordata</i> (Burm.f.) Bors.	Malvaceae	Herbs	Common in open areas	July to December	49
68	<i>Sida cordifolia</i> L.	Malvaceae	Herbs	Occasional in open areas	June to December	69
69	<i>Spermocoe articularis</i> L.f.	Rubiaceae	Herbs	Open areas and seasonal grasslands	August to November	78
70	<i>Spermocoe pusilla</i> Wall.	Rubiaceae	Herbs	Frequent in hill slopes	August to December	80
71	<i>Striga asiatica</i> (L.) Kuntze	Scrophulariaceae	Herbs	Seasonal Wetlands	August to January	50
72	<i>Striga densiflora</i> (Benth.) Benth.	Scrophulariaceae	Herbs	Frequent in hill slopes	August to December	79
73	<i>Stylosanthes fruticosa</i> (Retz.) Alston	Fabaceae	Herbs	Open areas and wastelands	Throughout year	70
74	<i>Tephrosia purpurea</i> (L.) Pers.	Fabaceae	Shrubs	Open areas and wastelands	July to December	31
75	<i>Terminalia anogeissiana</i> Gere & Boatwr	Combretaceae	Trees	Dry deciduous forests	September to February	51
76	<i>Terminalia elliptica</i> Willd.	Combretaceae	Trees	Common in dry deciduous area	January to May	32
77	<i>Terminalia paniculata</i> Roth	Combretaceae	Trees	Frequent in hill slopes	March to May	52
78	<i>Vernonia cinerea</i> (L.) Less.	Asteraceae	Herbs	Frequent in hill slopes	August to April	33
79	<i>Waltheria indica</i> L.	Malvaceae	Shrubs	Open areas, seasonal grasslands and wastelands	October to January	1
80	<i>Xenostagia tridentata</i> (L.) D.F. Austin & Staples	Convolvulaceae	Herbs	Frequent in hill slopes	August to December	34
81	<i>Zornia gibbosa</i> Span.	Fabaceae	Herbs	Open areas and grasslands	July to January	84

spp. (6%).

Dominance of these families is due to their adaptability to the arid climatic condition. Most of these families have a large number of herbs (Kambhar and Kotresha, 2011). The remaining families are Aristolochiaceae and Anacardiaceae, Bignoniaceae and Caryophyllaceae has 01 spp. each. Ulmaceae, Violaceae, Oleaceae and Flindersiaceae 01 spp. each. Vitaceae, Commelinaceae, has 01 spp. each. Scrophulariaceae has 03 spp, Caesalpiniaceae, has 04 spp. each. Sapindaceae has 02 spp.

An analysis on the life form composition of plant species of the study area reveals that majority of the plant species are herbs predominate with 46 species (58%) followed by trees with 13 species (16%), climbers with 5 species (5%) and shrubs with 17 species (21%). The herbs get physiological maturity soon and produce the progeny in a couple of months in comparison to trees and shrubs that need a longer time to mature. The greater tolerance to harsh conditions could result in the predominance of herbs (Kotresha et al., 2012).

The main component of being *Albizia amara* (Roxb.), *Dalbergia sissoo* Roxb. ex DC., *Dolichandrone atrovirens* (Roth) K.Schum. *Hardwickia binata* Roxb. The shrubs occurring all over the area are *Waltheria indica* L. is dominantly

spreading in the forest, which is associated with the *Senna auriculata* (L.) Roxb. being found. The climbers found within the area are quite distinct. Some of the common plants *Abrus precatorius* L., *Rhynchosia minima* (L.) DC., and *Rivea hypocrateriformis* (Desr.) Choisy. The common herbs occurring all over the area are *Aerva javanica* (Burm.f.) Juss. ex Schult., *Alternanthera pungens* Kunth, *Alysicarpus bupleurifolius* (L.) DC. *Andrographis paniculata* (Burm.f.) Nees. Some frequently seen species are *Cynanchum acidum* (Roxb.) Oken and *Lepidagathis cristata* Willd. The species like *Gomphrena indica* (L.) A.J.Paton, *Zornia gibbosa* Span. and *Striga densiflora* (Benth.) Benth., are sporadically occur in the forest. In monsoon season the species *Anisochilus carnosus* (L.f.) Wall. ex Benth.

The study area is represented with one IUCN endangered species, *Decalepis hamiltonii* Wight and Arn with 30 to 40 individuals, and one rare plant species, *Euphorbia gokakensis* S.R.Yadav, Malpure and Chandore. Among the grasses the common species occurs all over the area are *Heteropogon contortus* (L.) P.Beauv. ex Roem. and Schult., *Lophopogon contortatus* (Roxb.) Hack. The important earlier floristic work covering some parts of the district was by T. Cooke a century ago and till date his work is most preferred in many of the

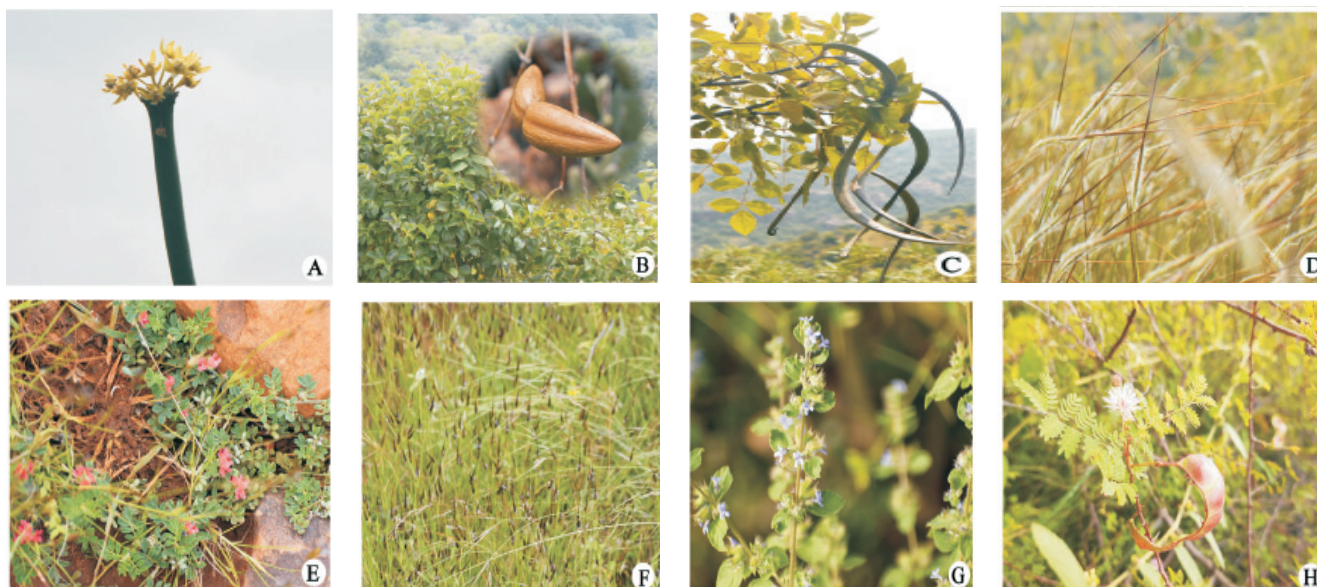


Figure 3. A. *Cynanchum acidum*(Roxb.) Oken, B. *Decalepis hamiltonii* Wight & Arn, C. *Dolichandrone atrovirens* (Roth) K. Schum., D. *Heteropogon contortus*(L) p. Beauv.ex Roem. & Schult., E. *Indigofera linnaei* Ali., F. *Lophopogon tridentatus* (Roxb) Hack., G. *Mesosphaerum suaveolens*(L) Kuntze. H. *Milmosa hamta* Wild.

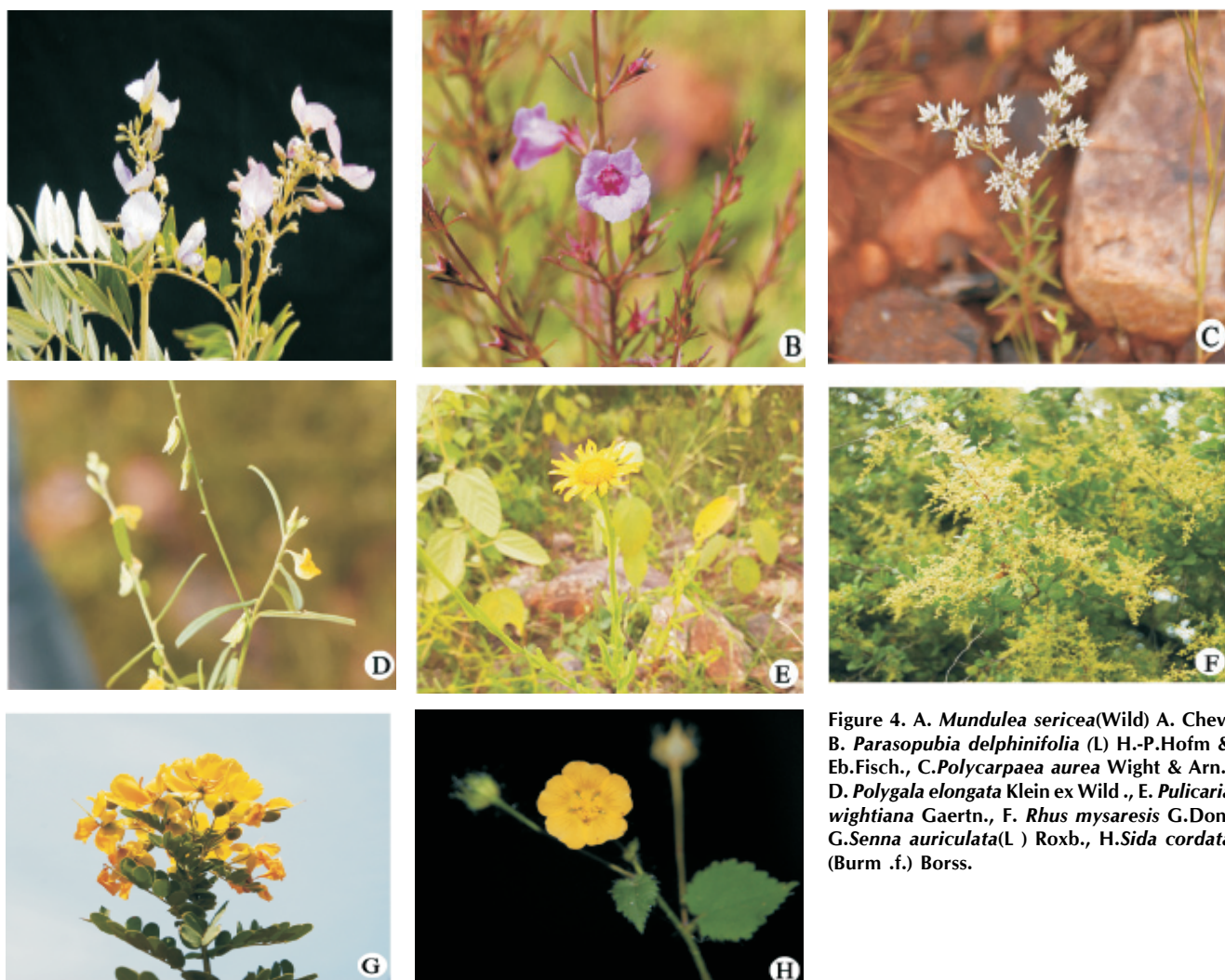


Figure 4. A. *Mundulea sericea*(Wild) A. Chev. B. *Parasopbia delphinifolia* (L) H.-P.Hofm & Eb.Fisch., C. *Polycarpaea aurea* Wight & Arn., D. *Polygala elongata* Klein ex Wild., E. *Pulicaria wightiana* Gaertn., F. *Rhus mysaresis* G.Don, G. *Senna auriculata*(L) Roxb., H. *Sida cordata* (Burm. f.) Bors.

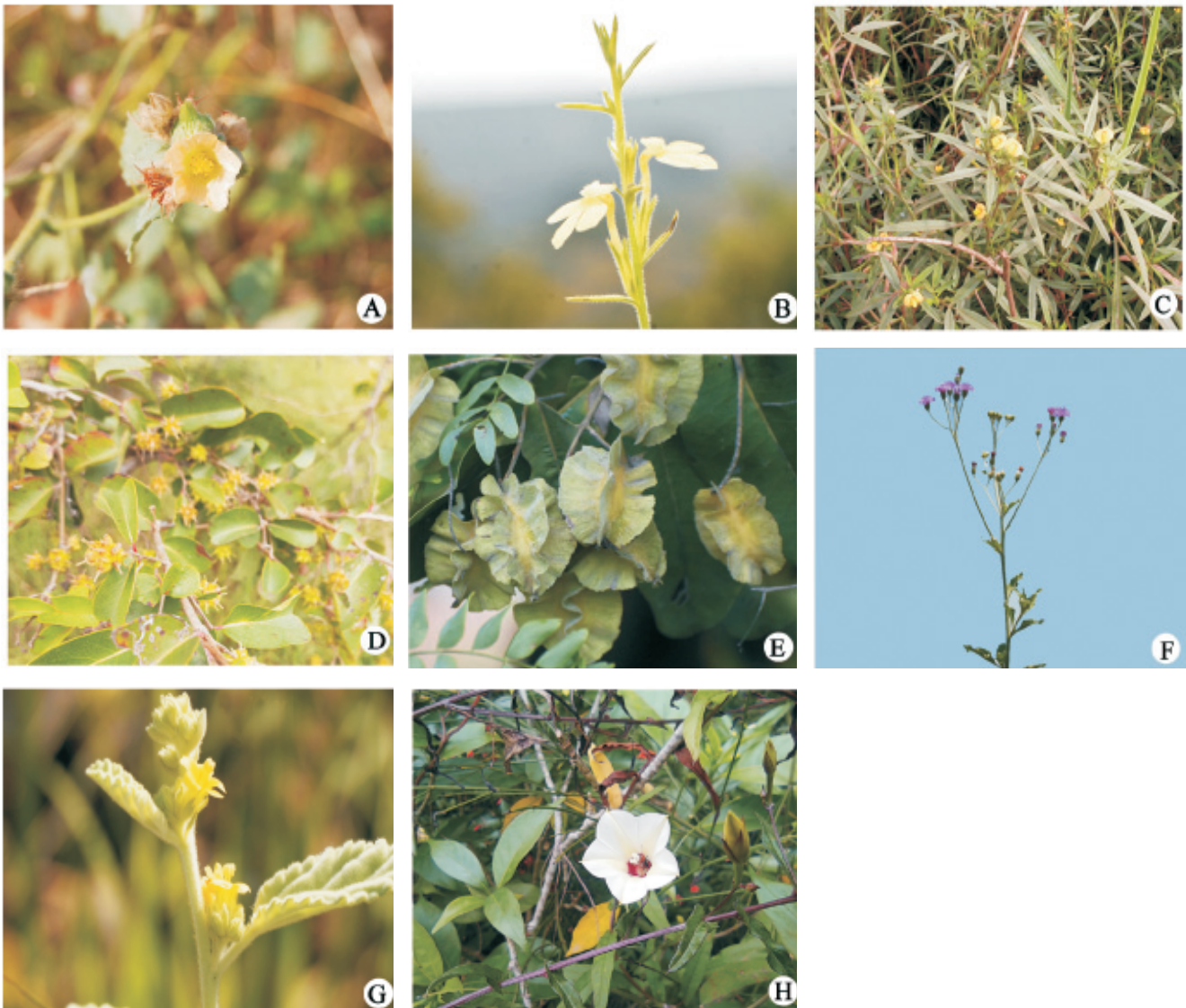


Figure 5. . *Sida cordifolia* L. B. *Striga asiatica* (L) Kuntze, C. *Stylosanthes fruticosa* (Retz) Alston D. *Terminalia anogeissiana* Gere & Boatwr, E. *Terminalia elliptica* Wild., F. *Vernonia cinerea* (L) Less., G. *Waltheria indica* L., H. *Xenostagia tridentata* (L) D.F Anustin & Staples

research organizations and Universities. T. Cooke, (1901-1908) reported about 613 species of Dicots and Monocots belonging to the 93 families of which 94 species belonging to 13 families of monocots. Sharma *et al.* (1984) in his 'Flora of Karnataka Analysis' reported 706 species of flowering plants belonging to 118 families of which 166 species belonging to 18 families were monocots. In 2010, a total of 1619 taxa of Dicotyledones belonging to 792 genera under 148 families have been collected and described from Belgaum district which was followed by Bentham and Hooker system of Classification (Malpure, 2011). Subsequently, 715 taxa, (including 7 subspecies and 22 varieties) belonging to 275 genera and 43 families of monocotyledons have been collected and described for Belgaum district by Chandore (2010). In spite of this, the present checklist is to understand the diversity of flowering plants in Kadabagatti forest range Gokak. This will serve as a database for regional students, especially for undergraduate students' even postgraduate students, botanists, ecologists, foresters, and those who are interested in the

flowering plants.

CONCLUSION

Results from the checklist indicate that the Gokak hills have not yet been thoroughly investigated. The current study offers the initial data for future research on conservation-related topics, with a focus on endemic and uncommon plants as well as the overall pattern of biodiversity. Therefore, it is advised that community-based forest conservation is crucial for ensuring the long-term use of these forests.

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REFERENCES

- Chandore, A. 2010.** Monocotyledons flora of Belgaum District. Ph.D. Thesis submitted to Shivaji University, Kolhapur
- Cooke, T. 1958.** The Flora of Presidency of Bombay. Vol. I-III. Bisen Singh Mehandra Pal Singh, Dehradun.
- Kambhar, S.V. & Kotresha, K. 2011.** A study on alien flora of Gadag District, Karnataka, India. *Phytotaxa*. **16**: 52-62.
- Kotresha, K. and Kambhar, S.V. 2016.** Flora of Gadag District Karnataka. Lambert Academic Publishers, Germany. p. 382.
- Kotresha, K., Kambhar, S.V., Harihar, N.S. and Premalatha, K. 2012.** *Indigofera Hochstetteri* Baker (Eudicot: Fabaceae): Recollection in Karnataka, India. *J. Eco. Tax. Bot.* **36 (1)**: 28-32.
- Lawrence, G.H.M. 1951.** Taxonomy of Vascular Plants. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi. p. 251.
- Malpure, N.V. 2011.** Dicotyledones flora of Belgaum District. Ph.D. Thesis submitted to Shivaji University, Kolhapur
- Mc Neely, J.A., Miller, K.R., Reid, W.V., Mittermeier, R.A. and Werner T.B. (eds.) 1990.** Conserving the world's Biological Diversity. IUCN, Switzerland. pp. 196.
- Ravindranath, S. and Premnath, S. 1997.** Biomass Studies; Field Methods for Monitoring Biomass. Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi. pp. 157.
- Saldanha, C.J. 1984.** Flora of Karnataka. Vol. 1. Oxford and IBH publishing Co. New Delhi. p. 535.
- Saldanha, C.J. 1996.** Flora of Karnataka. Vol. 2. Oxford and IBH publishing Co. New Delhi. p. 304.
- Sharma, B.D., Singh, N.P., Raghavan, R.S and U.R. Deshpande 1984.** Flora of Karnataka Analysis. Botanical Survey of India. Calcutta. p. 50.
- Kambhar, S.V., Patil, R.R., Patil, V.P., Jadagoudar, S.S., Danannavar, V.V., Bandagar, S.S., Makandar Bawa, N.J., Dalavi, J.V., Bhise, M.R. and Kotresha, K. 2021.** Flowering Plants of Chikodi Hills Belagavi, Karnataka, India. Munich, GRIN Verlag. pp.1-40
- Singh, R.P., Rai, N. and Tiwari V.K. 2011.** A Study of Polypetalous Plant Diversity of Moradabad District, Uttar Pradesh, India. *Webmed Central ECOLOGY*. **2(4)**: 1-20.
- Venu, P. 1998.** A Review of Floristic Diversity Inventory and Monitoring Methodology in India. *PINSA*. **64 (5&6)**: 281-292.
- Yadav, S.R. and Sardesai M.M. 2002.** Flora of Kolhapur District. Shivaji University, Vidyanagar, Kolhapur, Maharashtra.

