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Checklist of the tree flora of the badami forest (Bagalkot district) Karnataka, India

Dry deciduous forests of Badami is one of the floristically rich forest of deccan peninsular region, which covers several habitats such as open grasslands, scrub forests, gravelly slopes, seasonal lakes, rocky plateaus and sandy plains which supports unique vegetation. Present work provides list of tree flora of Badami (Bagalkot district), Karnataka, which comprises 84 tree taxa belonging to 35 families and 68 genera. The families Fabaceae Lindl., Moraceae Gaudich., Rubiaceae Juss. are dominant among the arborescent flora. Acacia Mill. and Ficus L. are largest genera each having 4 tree taxa. Flowering and fruiting period, habitat and vegetation type is given for each tree taxa. A forest of Badami is very unique; however it is ignored by researchers and is constantly disturbed by local communities and tourists. These forests are the home of many insects, reptiles, birds and mammals and due to constant disturbances their existence is in trouble. Hence present work was undertaken to generate baseline data. Which become useful for conservation and sustainable utilization of extremely dry deciduous forest of Badami.

Key words: Badami, Dry deciduous forest, Checklist, Trees.

Introduction

Badami is historical city once ruled by Chalukyas, which is located in Bagalkot district of Karnataka (India) and full up of ancient temples and sculptures, which is declared as world heritage site by UNESCO, this is the cultural richness apart from that Badami is blessed with very unique type of extremely dry deciduous forests covering several habitats such as seasonal grasslands, gravelly slopes, scrub forests, wetlands & streams and rocky plateaus. The forest provides habitats to many life forms, which is useful for socio-economic development of Badami region. Many tree taxa provide source of food, fodder, fuel wood, timber, essential oils, medicines etc. The extremely dry climate of Badami is somewhat unfavorable to the luxuriant growth of plants because of scarcity of the water, however it supports very unique flora. Because of dominance of species of *Acacia* Mill. and scrubby nature of forest, it was neglected by explorers and hence remain unexplored for many years. That is why comprehensive and reliable floristic survey of Badami is not available. Present study was undertaken to produce an up-to-date account of the trees of Badami which can better enable documentation and conservation of these tree taxa.

Material and Methods

Study site

Badami is a small town on located 15°55'12.7"N 75°41'36.9"E to 15°55'55.6"N 75°43'12.5"E in Bagalkot district of Karnataka, which declared as world heritage site by UNESCO. Average altitude is 586 m. The area is under drought prone area and receives lowest rainfall in Karnataka state i.e. 592 mm (Bagalkot District Website.) from June to September. Badami is surrounded by wonderful rocky hills, many plateaus and grassland having seasonal and unique vegetation.

The present work compiled primary information about trees of Badami, it will become baseline data for future floristic study of dry deciduous forests and sustainable utilization of biodiversity.

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Table1: Checklist of tree flora of Badami (Bagalkot district), Karnataka.

Sr. No.	Botanical name	Flowering and Fruiting	Habitat	Vegetation type	Exciccata
ANNONACEAE Juss.					
1	<i>Annona squamosa</i> L.	May to January	Deciduous forests	Cultivated	JVD -229
2	<i>Miliusa tomentosa</i> (Roxb.) Finet & Gagnep.	May to July	Rare in dry deciduous forests	Natural	JVD -231
HERNANDIACEAE Blume.					
3	<i>Gyrocarpus americanus</i> Jacq.	August to January	Deciduous forests	Natural	JVD -206
ZYGOPHYLLACEAE R.Br.					
4	<i>Balanites aegyptiaca</i> (L.) Delile.	June to September	Dry deciduous forests	Natural	JVD -365
FABACEAE Lindl.					
5	<i>Acacia chundra</i> (Roxb. ex Rottler) Willd.	August to January	Dry deciduous forests	Natural	JVD -94
6	<i>Acacia leucophloea</i> (Roxb.) Willd.	August to February	Dry deciduous forests and along road sides	Natural	JVD -236
7	<i>Acacia nilotica</i> subsp. <i>indica</i> (Benth.) Brenan	August to March	Dry deciduous forests and along roadsides	Natural	JVD -08
8	<i>Acacia polyacantha</i> Willd.	August to April	Dry deciduous forests and along roadsides	Natural	JVD -237
9	<i>Albizia amara</i> (Roxb.) Boiv.	April to August	Dry deciduous forests and along roadsides	Natural	JVD -172
10	<i>Albizia lebbek</i> (L.) Benth.	April to August	Dry deciduous forests and along roadsides	Natural	JVD -241
11	<i>Bauhinia racemosa</i> Lam.	March to September	Dry deciduous forests	Natural	JVD -22
12	<i>Bauhinia tomentosa</i> L.	November to May	Dry deciduous forests	Natural	JVD -247
13	<i>Butea monosperma</i> (Lam.) Taubert.	December to May	Dry deciduous forests and along roadsides	Natural	JVD -248
14	<i>Cassia fistula</i> L.	February to April	Along roadsides	Cultivated	JVD -302
15	<i>Dalbergia lanceolaria</i> L.f.	March to May	Dry deciduous forests	Natural	JVD -251
16	<i>Dalbergia latifolia</i> Roxb.	February to May	Dry deciduous forests	Natural	JVD -252
17	<i>Dichrostachys cinerea</i> (L.) Wight & Arn.	June to August	Dry deciduous forests	Natural	JVD -19
18	<i>Erythrina suberosa</i> Roxb.	November to April	Deciduous forests	Natural	JVD -255
19	<i>Mundulea sericea</i> (Willd.) A. Chev.	May to September	Dry deciduous forests	Natural	JVD -21
20	<i>Peltophorum pterocarpum</i> (DC.) Backer ex K. Heyne	July to January	Dry deciduous	Cultivated	JVD -171
21	<i>Pithecellobium dulce</i> (Roxb.) Benth.	Throughout year	Dry deciduous forests and along roadsides	Cultivated	JVD -314
22	<i>Pongamia pinnata</i> (L.) Pierre.	March to September	Dry deciduous forests and along roadsides	Cultivated	JVD -315
23	<i>Prosopis cineraria</i> (L.) Druce.	September to April	Dry deciduous forests and along roadsides	Natural	JVD -316
24	<i>Prosopis juliflora</i> (Sw.) DC.	September to April	Dry deciduous forests and along roadsides	Natural	JVD -317
25	<i>Pterocarpus marsupium</i> Roxb.	May to October	Dry deciduous forests	Natural	JVD -319
26	<i>Senna siamea</i> (Lam.) H. S. Irwin & Barneby.	April to February	Open forests and Wast elands	Natural	JVD -266
27	<i>Sesbania bispinosa</i> (Jacq.) Wight.	September to January	Dry deciduous forests and along roadsides	Natural	JVD -269
28	<i>Tamarindus indica</i> L.	April to September	Open areas and wastelands	Cultivated	JVD -261
RHAMNACEAE Juss.					
29	<i>Ziziphus mauritiana</i> Lam.	October to February	Dry deciduous forests and open areas	Natural	JVD -329
30	<i>Ziziphus xylopyrus</i> (Retz.) Willd.	May to July	Dry deciduous forests and open areas	Natural	JVD -05
ULMACEAE Mirb.					
31	<i>Holoptelea integrifolia</i> Planch.	February to July	Dry deciduous forests and open areas	Natural	JVD -333
MORACEAE Gaudich.					
32	<i>Ficus benghalensis</i> L.	March to May	Dry deciduous forests	Natural	JVD -324
33	<i>Ficus hispida</i> L.f.	January to July	Dry deciduous forests	Natural	JVD -325
34	<i>Ficus racemosa</i> L.	November to June	Dry deciduous forests	Natural	JVD -326
35	<i>Ficus religiosa</i> L.	February to August	Dry deciduous forests	Natural	JVD -327
36	<i>Streblus asper</i> Lour.	January to July	Dry deciduous forests	Natural	JVD -328

Sr. No.	Botanical name	Flowering and Fruiting	Habitat	Vegetation type	Exciccata
FLACOURTIACEAE Rich. ex DC.					
37	<i>Flacourtia indica</i> (Burm. f.) Merr.	April to May	Dry deciduous forests	Natural	JVD-287
EUPHORBIACEAE Juss.					
38	<i>Ricinus communis</i> L.	February to June	Dry deciduous forests, open areas and wastelands	Natural	JVD-284
PHYLLANTHACEAE Martynov.					
39	<i>Phyllanthus emblica</i> L.	September to January	Open area forests	Natural	JVD-342
COMBRETACEAE R. Br.					
40	<i>Anogeissus latifolia</i> (Roxb. ex DC.) Wall. ex Bedd.	September to February	Dry deciduous forests	Natural	JVD-114
41	<i>Terminalia alata</i> Heyne ex Roth.	April to August	Dry deciduous forests	Natural	JVD-347
42	<i>Terminalia catappa</i> L.	October to July	Dry deciduous forests as well as cultivated along roadsides	Cultivated	JVD-348
43	<i>Terminalia chebula</i> Retz.	January to September	Dry deciduous forests	Natural	JVD-349
LYTHRACEAE J.St. -Hil.					
44	<i>Lagerstroemia parviflora</i> Roxb.	April to August	Dry deciduous forests	Natural	JVD-111
MYRTACEAE Juss.					
45	<i>Eucalyptus globules</i> Labill.	January to May	Common along road sides	Cultivated	JVD-291
46	<i>Psidium guajava</i> L.	May to November	Dry deciduous forests	Cultivated	JVD-292
47	<i>Syzygium cumini</i> (L.) Skeels	March to July	Dry deciduous forests	Natural	JVD-293
BURSERACEAE Kunth.					
48	<i>Commiphora berryi</i> (Arn.) Engl.	January to April	Dry deciduous forests	Natural	JVD-225
49	<i>Boswellia serrata</i> Roxb. ex Colebr.	June to September	Dry deciduous forests	Natural	JVD-354
ANACARDIACEAE R.Br.					
50	<i>Lannea coromandelica</i> (Houtt.) Merr.	February to April	Dry deciduous forests	Natural	JVD-294
51	<i>Mangifera indica</i> L.	March to July.	Dry deciduous forests	Natural	JVD-295
SAPINDACEAE Juss.					
52	<i>Dodonaea viscosa</i> Jacq.	July to January	Dry deciduous forests	Natural	JVD-17
53	<i>Lepisanthes tetraphylla</i> (Vahl) Radlk.	January to July	Dry deciduous forests	Natural	JVD-02
54	<i>Sapindus emarginatus</i> Vahl	August to November	Dry deciduous forests	Natural	JVD-297
RUTACEAE Juss.					
55	<i>Aegle marmelos</i> (L.) Correa.	March to May	Dry deciduous forests and cultivated near village	Natural	JVD-298
56	<i>Chloroxylon swietenia</i> DC.	March to June	Dry deciduous forests	Natural	JVD-299
57	<i>Murraya koenigii</i> (L.) Spreng	March to July	Dry deciduous forests and cultivated for leaves	Cultivated	JVD-300
SIMAROUACEAE DC.					
58	<i>Ailanthus excelsa</i> Roxb.	March to June	Dry deciduous forests	Cultivated	JVD-352
59	<i>Simarouba glauca</i> DC.	December to February	Rare in dry forests	Cultivated	JVD-353
MELIACEAE Juss.					
60	<i>Azadirachta indica</i> A. Juss.	November to August	Dry deciduous forests and along roadsides	Cultivated	JVD-355
MALVACEAE Juss.					
61	<i>Grewia tiliifolia</i> Vahl.	April to July	Dry deciduous forests	Natural	JVD-359
62	<i>Grewia rothii</i> DC.	April to December	Dry deciduous forests	Natural	JVD-78
MORINGACEAE Mortinov.					
63	<i>Moringa oleifera</i> Lam.	May to October	Dry deciduous forests	Natural	JVD-364
SALVADORACEAE Lindl.					
64	<i>Salvadora persica</i> L.	September to November.	Dry deciduous forests	Natural	JVD-149
CAPPARACEAE Juss.					
65	<i>Capparis decidua</i> (Forssk.) Edgew.	January to June	Dry deciduous forests and wastelands	Natural	JVD-400
OLACACEAE R. Br.					
66	<i>Ximenia americana</i> L.	March to June	Dry deciduous forests	Natural	JVD-367
SANTALACEAE E R.Br.					
67	<i>Santalum album</i> L.	April to February	Dry deciduous forests	Natural	JVD-366
CORNACEAE Bercht. ex J. Presl					
68	<i>Alangium salviifolium</i> (L. f.) Wangerin	March to July	Open forests	Natural	JVD-423
SAPOTACEAE Juss.					
69	<i>Madhuca longifolia</i> var. <i>latifolia</i> (Roxb.) A.Chev.	November to April	Dry deciduous forests	Natural	JVD-427

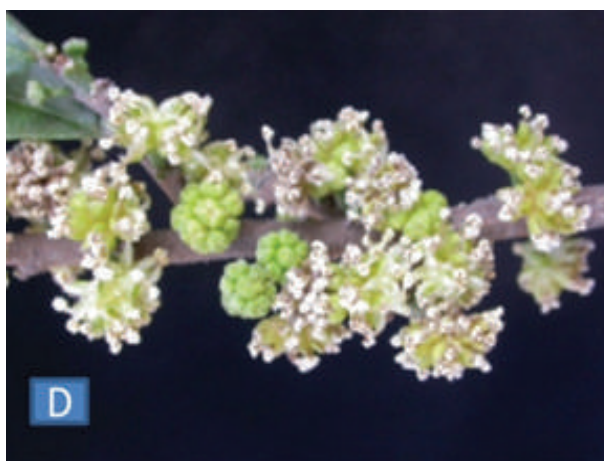
Sr. No.	Botanical name	Flowering and Fruiting	Habitat	Vegetation type	Exciccata
65	<i>Capparis decidua</i> (Forssk.) Edgew.	January to June	Dry deciduous forests and wastelands	Natural	JVD -400
OLACACEAE R. Br.					
66	<i>Ximenia americana</i> L.	March to June	Dry deciduous forests	Natural	JVD -367
SANTALACEAE E R.Br.					
67	<i>Santalum album</i> L.	April to February	Dry deciduous forests	Natural	JVD -366
CORNACEAE Bercht. ex J. Presl					
68	<i>Alangium salviifolium</i> (L. f.) Wangerin	March to July	Open forests	Natural	JVD -423
SAPOTACEAE Juss.					
69	<i>Madhuca longifolia</i> var. <i>latifolia</i> (Roxb.) A.Chev.	November to April	Dry deciduous forests	Natural	JVD -427
EBENACEAE Gurke.					
70	<i>Diospyros melanoxylon</i> Roxb.	April to January	Dry deciduous forests	Natural	JVD -426
RUBIACEAE Juss.					
71	<i>Catunaregam spinosa</i> (Thunb.) Tirveng.	May to September	Dry deciduous forests	Natural	JVD -222
72	<i>Gardenia latifolia</i> Soland.	May to January	Dry deciduous forests	Natural	JVD -28
73	<i>Gardenia resinifera</i> Roth.	March to October	Hilly deciduous forests	Natural	JVD -428
74	<i>Morinda pubescens</i> J.E. Sm.	March to September	Dry deciduous forests	Natural	JVD -54
75	<i>Pavetta cracicaulis</i> Bremek.	February to July	Dry deciduous forests	Natural	JVD -429
LOGANIACEAE R.Br. ex Mart.					
76	<i>Strychnos potatorum</i> L.	February to October	Dry deciduous forests	Natural	JVD -26
APOCYNACEAE J. uss.					
77	<i>Holarrhena pubescens</i> Wall. ex G.Don	May to October	Dry deciduous forests	Natural	JVD -79
78	<i>Wrightia tinctoria</i> (Roxb.) R.Br.	February to November	Dry deciduous forests	Natural	JVD -99
BORAGINACEAE Juss.					
79	<i>Cordia dichotoma</i> G.Forst.	June to February	Deciduous forests	Natural	JVD -500
BIGNONIACEAE Juss.					
80	<i>Dolichandron eatrovirens</i> (Heyne ex Roth) Sprague.	March to July	Dry deciduous forestst	Natural	JVD -530
LAMIACEAE Martinov.					
81	<i>Premna tomentosa</i> Willd.	February to April	Deciduous forests	Natura l	JVD -479
ARECACEAE Bercht. & J. Presl.					
82	<i>Cocos nucifera</i> L.	Throughout year	Rare in dry deciduous forests and Cultivated for fruits	Cultivated	JVD -469
83	<i>Phoenix humilis</i> Becc. & Hook. f.	March to September	Rare in deciduous forests	Natural	JVD -470
84	<i>Phoenix sylvestris</i> (L.) Roxb.	May to October	Deciduous forests	Natural	JVD -552

Data collection

Due to unavailability of reliable literature the frequent visits were undertaken in different seasons. During field exploration, information on vegetation type, habitat, flowering season, phenology, topography and present status were noted down. Specimens were collected and deposited in the herbarium of Shivaji University, Kolhapur (SUK), Maharashtra. Field identifications were confirmed with the help of available literature such as Cooke (1958); Gamble (1935); Katrahalli and Kambhar (2016); Matthew (1983). Doubtful and interesting identifications were confirmed by their direct comparison with authentically identified specimens deposited in various herbaria which are available online like Jstor, Kew. Nomenclatures of collected species were confirmed by using International Plant Name Index (IPNI), the plant list and Tropicos. All the families in the present study have been arranged according to Chase (2016). The genera, species and infraspecific taxa are arranged alphabetically. 84 tree species with their correct botanical names, flowering and fruiting period, habitat, vegetation type and herbarium accessions are listed in Table1.

Result and Discussions

During the present work 84 tree species (including 2 infraspecific taxa) belonging 68 genera covering 35 families have been recorded from dry deciduous forests of Badami. The families like Fabaceae Lindl., Moraceae Gaudich., Rubiaceae Juss. are dominant. Fabaceae is the largest family with 24 tree taxa followed by Moraceae Gaudich. (5), Rubiaceae Juss (5), Combretaceae R. Br. (4), Myrtaceae Juss.(3), Anacardiaceae R.Br (3), Sapindaceae Juss. (3), Rutaceae Juss. (3), Arecaceae Bercht. & J. Presl. (3), *Acacia* Mill. and *Ficus* L. are largest genera. Many trees of Badami are the source of food, fodder, fuel wood, timber and medicines. *Strychnos potatorum* L. is used for purification of water by local people. It also has medicinal properties. Important medicinal trees such as *Butea monosperma* (Lam.) Taubert., *Cassia fistula* L., *Terminalia chebula* Retz., *Eucalyptus globules* Labill., *Azadirachta indica* A. Juss., *Madhuca latifolia* Roxb., *Holorrhena pubescens* Wall. ex Don., *Wrightia tinctoria* (Roxb.) R.Br., and *Gardenia resinifera* Roth. are used in ayurvedic preparations. *Cordia dichotoma* G. Forst., *Grewia tiliifolia* Vahl., *Aegle marmelos* (L.) Correa., *Syzygium cumini* (L.) Skeels.,



A. *Miliusa tomentosa* (Roxb.) Cinclair (Annonaceae); B. *Aegle marmelos* (L.) Correa. (Rutaceae); C. *Boswellia serrata* Roxb. ex Colebr. (Burseraceae); D. *Streblus asper* Lour. (Moraceae); E. *Anogeissus latifolia* (Roxb. ex DC.) Wall. ex Guill. & Perr. (Combretaceae); F. *Dodonaea viscosa* Jacq. (Sapindaceae); G. *Diospyros melanoxylon* Roxb. (Ebenaceae).



A. *Morinda pubescens* Sm. (Rubiaceae); **B.** *Santalum album* L. (Santalaceae); **C.** *Holoptelea integrifolia* Planch. (Ulmaceae); **D.** *Chloroxylon swietenia* DC. (Rutaceae); **E.** *Alangium salviifolium* (L.f.) Wangerin (Cornaceae); **F.** *Ailanthus excelsa* Roxb. (Simaroubaceae)



A. *Lannea coromandelica* (Houtt.) Merr. (Anacardiaceae); **B.** *Ximenia americana* L. (Olacaceae); **C.** *Lagerstroemia parviflora* Roxb. (Lythraceae); **D.** *Lepisanthes tetraphylla* (Vahl) Radlk. (Sapindaceae); **E.** *Dichrostachys cinerea* Wight et Arn. (Fabaceae); **F.** *Gardenia resinifera* Roth. (Rubiaceae).

Phyllanthus emblica L., *Ziziphus mauritiana* Lam. *Tamarindus indica* L., *Ficus racemosa* L., *Pithecellobium dulce* (Roxb.) Benth., and *Annona squamosa* L. are some wild edibles. Essential oil is extracted from heartwood of a tree *Santalum album* L. known as sandal wood which is used in cosmetics. *Acacia*'s are used as fodder and fuel wood by the local people.

Conclusion

The present work of checklist of tree flora of Badami

provides detailed information about 84 tree taxa belonging to 68 genera and 35 families. This data generate baseline information for further research work and exploration of dry deciduous forests, which holds many unique species, which will be helpful for botanist, research scholars & amateur workers. As the forests are source of food, wood, gum, resins, fibre, fodder, and essential oil it will be useful in socio-economic development of region by sustainable utilization.

बादामी वन (बागलकोट जिला), कर्नाटक, भारत की वृक्ष
वनस्पति की जांच सूची
स्नेहा पी. ब्रह्मादण्डे जगदीश वी. दालवी शरद, एस. काम्बली
एवं
अविनाश आर घोलावे
सारांश

बादामी का शुष्क पर्णपाती वन डेक्कन प्रायद्वीपीय क्षेत्र के पादपी रूप से समृद्ध वन में से एक है, जो अनेकों आवासों, यथा-खुली घास भूमियों, झाड़ी वनों, कंकड़ीले ढलानों, मौसमीय झीलों, चट्टानी पठारों और बलुई मैदानों, को कवर करते हैं, जो विलक्षण वनस्पति की सहायता करते हैं। वर्तमान कार्य में बादामी (बागलकोट जिला), कर्नाटक की वृक्ष वनस्पति की सूची उपलब्ध कराई गई है, जो 35 कुलों तथा 68 वंश से संबंधित 84 वृक्ष टैक्सा को मिलाकर है। कुल फेबेसीया लिन्डल, मौरसीया गौडिच, रूबिएसीया जस. वृक्षवत् वनस्पति में प्रधान हैं। ऐकेसीया निल और फाइक्स एल. प्रत्येक 4-4 वृक्ष टैक्सा के साथ सबसे बड़ा वंश है। पुष्पण और फलन अवधि, आवास एवं वनस्पति किस्म प्रत्येक वृक्ष टैक्सा के लिए दी गई है। बादामी के वन बहुत विलक्षण हैं; तथापि शोधार्थियों द्वारा इसकी उपेक्षा की गई है और स्थानीय समुदायों एवं पर्यटकों द्वारा इसे लगातार विक्षुब्ध किया जा रहा है। ये वन अनेकों कीटों, सरीसृपों, पक्षियों और स्तनधारियों के आवास हैं तथा लगातार विक्षोभ के कारण इनका अस्तित्व संकट में है। अतः आधाररेखा आँकड़ा सृजन हेतु वर्तमान कार्य शुरू किया गया। जो बादामी के अत्यन्त शुष्क पर्णपाती वन के संरक्षण एवं पोषणीय उपयोजन के लिए उपयोगी बन गया है।

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