A Checklist of Orchids of Shola and Grasslands of Nilgiris, Western Ghats, India

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ABSTRACT: The present paper shows the orchids diversity in shola forest and grasslands of Nilgiris, Tamil Nadu. A total of 37 species belonging to 23 genera have been recorded. Of these, 19 are epiphytic and 18 are terrestrial. Bulbophyllum mysorense and Oberonia swaminathanii are reported here as new records to Orchidaceae of Nilgiris.

Keywords: Nilgiris, Orchids, Shola and grasslands

INTRODUCTION

Orchidaceae is one of the largest groups among the angiosperms, about 15,000 species of wild orchids distributed throughout the world (Mukherjee, 1983, Mendez et al. 2017, Dizon et al, 2018). There are 1331 species of orchids belonging to 186 genera have been reported from India (Mishra, 2007). The threats on orchids in recent years are increased for their aesthetic value and economic importance. In India, about 21 species of orchids are well known for its medicinal value (Hedge, 1997). Nilgiris is one of the richest areas in orchid diversity with 113 species reported by Sharma et al (1977), later 121 species by Joseph (1987) and 128 species reported by Henry et al (1989), but Fyson (1920) has reported only 16 orchid species in flora of the Nilgiri and Pulney hills. The present work is an attempt to give an updated checklist of orchids in the sholas and grasslands of Nilgiris, Western Ghats.

MATERIALS AND METHODS

The Nilgiris is a part of Western Ghats with rich floristic diversity. It lies at 11 10’ and 11 43’N and 76 14’ and 77 00’E with maximum altitude of 2657 meters of MSL (Fig.1).

Fig. 1. Map of Shola and grasslands, Nilgiris.
The present investigation was taken up to assess the diversity of orchids in shola and grassland vegetation of Nilgiri District. The vegetation is 20% of temperate evergreen forest with small woods of stunted evergreen trees and 80% grasslands (Ranganathan, 1938), derived by the forest type Southern montane wet temperate forest (Champion and Seth, 1968). Intensive and extensive field surveys were conducted to assess the diversity and distribution of orchids from its habitat during 2015 to 2017. All the orchid specimens were identified with the help of pertinent literature (Abraham and Vatsala, 1981; Joseph, 1987; Ansari and Balakrishnan, 1990; Matthew, 1991). The online database such as IPNI (updated, 2015) www.ipni.org, the plant list (2013) www.theplantlist.org, Herbarium catalogue, Kew www.kew.org and IUCN red list, www.iucnredlist.org were used for checking correct nomenclature. Field observations such as habitat and ecology pattern were also noted. Photographs were taken and incorporated in the text as figures.

RESULTS

The present analysis resulted in 37 species belonging to 23 genera from shola forest for Nilgiris. Of these, 16 are terrestrial, 15 are epiphytic and 5 are lithophytic. The dominant genera are Habenaria with 6 species, followed by Oberonia with 5 species, genus Bulbophyllum with 3 species, Coelogyne and Eria with 2 species each. The distribution of endemic orchids in India with 404 species, followed by Western Ghats with 123 species and 130 species to Peninsular India reported by (Misra, 2007; Jalal and Jayanthi, 2012). In this analysis 9 species such as Bulbophyllum kattiense, Bulbophyllum mysorense, Coelogyne nervosa, Conchidium nanum, Eria pauciflora, Habenaria brachyphylla, Malaxis intermedia, Oberonia brumoniana, Seidenfadeniella rosea are endemic to Southern Western Ghats, and two species Eria mysorensis and, Habenaria rariflora are endemic to Western Ghats and Habenaria longicornu, Habenaria perrottetiana and Robiquetia josephiana are endemic to Peninsular India. About 8 species have been extended distribution in South India and Sri Lanka, followed by 3 species Luisia birchea, Malaxis densiflora and Taeniophyllum alwisii to Peninsular India and Sri Lanka. Species of Bulbophyllum mysorense is categorised as an endangered followed by Bulbophyllum kattiense in vulnerable and Conchidium nanum with critically endangered (Kumar et al., 2001).

In Southern Western Ghats, Swarupanandan et al., (1998) reported 24 orchid species with 16 genera in shola forest of Kerala with 15 rare and 11 endemic among them. The recent studies from Western Ghats, Mathew and George (2015) documented 53 orchid species from Achancoil forest. Ganesan and Livingston (2001) reported 55 orchid species in Kanyakumari tiger reserve, which 11 are endemic to Southern Western Ghats and 20 endemic to Peninsular India. In this enumeration about 16 species are distributed in Sri Lanka, which has 188 orchid species with 55 endemic to its type locality reported by (Fernando and Ormerod, 2008). Prasad et al (2000) collected 49 species of orchids in Nilgiri forest for ex situ conservation in government botanical garden, Udhagamandalam. Oberonia swaminathanii was recently described from Kerala (Narayanan et al, 2010) and it is recently reported from Megamalai in Tamil Nadu (Ravichandran and Karuppasamy, 2016). Hence the present report is an addition to the Oberonia of Nilgiris. Species such as Disperis neilgherrensis, Aerides ringens, Luisia birchea, Habenaria rariflora, Habenaria longicornulata, Anoectochilus elatus and Zeuxine longilabris are also distributed in semievergreen forest of Eastern Ghats (Kottaimuthu et al., 2008; Karuppasamy et al., 1999).

Systematic Enumeration

**Aerides ringens** (Lindl.) C.E.e.C. Fisch
Habitat: Epiphyte
Flowering: June-July
Distribution: South India and Sri Lanka

**Anoectochilus elatus** Lindl.
Habitat: Terrestrial in fringes and shady place of shola forest
Flowering: September-December
Distribution: Southern India

**Bulbophyllum fischeri** Seidenf.
Habitat: Epiphyte and also found in wet rocks
Flowering: October
Distribution: South India and Sri Lanka

**Bulbophyllum kattiense** Rchb.f.
Habitat: Epiphyte
Flowering: August-September
Distribution: Endemic to Southern Western Ghats and Vulnerable

**Bulbophyllum mysorense** (Rolle) J.J.Sm.
Habitat: Epiphyte and also in wet rocks
Flowering: June-July
Distribution: Endemic to Southern Western Ghats and Endangered.

Note: A new report for Orchidaceae of Nilgiris.

**Calanthe sylvatica** (Thouars) Lindl.
Habitat: Terrestrial in moist areas of shola forest
Flowering: August-October
Distribution: Indo-Malesia, Sri Lanka and Africa

**Cheirostylis flabellata** (A. Rich.) Wight
Habitat: Terrestrial
Flowering: February-April
Distribution: South India, Sri Lanka and Bhutan

**Coelogyne nervosa** A. Rich.
Habitat: Mostly epiphytic and also found in rocks cervices
Flowering: June-July
Distribution: Endemic to Southern Western Ghats

**Coelogyne odoratissima** Lindl.
Habitat: Epiphyte
Flowering: February-April
Distribution: South India and Sri Lanka

**Conchidium nanum** (A.Rich.) Brieger
Habitat: Epiphyte
Flowering: July-September
Distribution: Endemic to Southern Western Ghats and Critically Endangered

**Dendrobium wightii** A.D.Hawkes & A.H.Heller
Habitat: Terrestrial and lithophyte with moss surface
Flowering: September
Distribution: India and Sri Lanka

**Disperis neilgherrensis** Wight
Habitat: Terrestrial in shady and fringes of shola forest
Flowering: June-July
Distribution: South India and Sri Lanka

**Eria pauciflora** Wight
Habitat: Epiphyte and also in wet rock cervices
Flowering: August
Distribution: Endemic to Southern Western Ghats

**Habenaria brachypylla** (Lindl.) Aitch.
Habitat: Terrestrial with moist grasslands
Flowering: September
Distribution: Endemic to Southern Western Ghats

**Habenaria digitata** Lindl.
Habitat: Terrestrial
Flowering: September-October
Distribution: India and Myanmar

**Habenaria longicorniculata** Graham
Habitat: Terrestrial with grassland and rocks
Flowering: July-August
Distribution: Western Ghats and Sri Lanka

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**Eria mysorensis** Lindl.
Habitat: Epiphyte
Flowering: August-September
Distribution: Endemic to Western Ghats

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**Fig. 2.** A. Aerides ringens, B.&C. Anoectochilus elatus, D. Bulbophyllum fischeri, E. Bulbophyllum kaitiense, F. Bulbophyllum mysorensis, G. Calanthe sylvatica, H. Cheirostylis flabellata, I. Coelogyne nervosa, J. Coelogyne odoratissima, K. Conchidium nanum, L. Dendrobium wightii, M. Disperis neilgherrensis.

**Habenaria longicornu** Lindl.
Habitat: Terrestrial with grassland and rock slopes
Flowering: September-October
Distribution: Endemic to Peninsular India

**Habenaria perrotetiana** A. Rich.
Habitat: Terrestrial in moist grasslands
Flowering: September-October
Distribution: Endemic to Peninsular India

**Habenaria rariflora** A.Rich.
Habitat: Terrestrial with moist grasslands
Flowering: August-September
Distribution: Endemic to Western Ghats

**Liparis atropurpurea** Lindl.
Habitat: Terrestrial with moist grasslands and rock slopes
Flowering: July-September
Distribution: South India and Sri Lanka

**Luisia birchea** Blume
Habitat: Epiphyte
Flowering: August-September
Distribution: Peninsular India and Sri Lanka

**Malaxis densiflora** (A.Rich.) Kuntze
Habitat: Terrestrial with rock slopes
Flowering: July-august
Distribution: Peninsular India and Sri Lanka

**Malaxis intermedia** (A.Rich.) Seidenf.
Habitat: Terrestrial with rock slopes
Flowering: July-September
Distribution: Endemic to Southern Western Ghats

**Oberonia brunoniana** Wight
Habitat: Epiphyte
Flowering: November-December

Distribution: Endemic to Southern Western Ghats

Oberonia swaminathani Rathaesh, Manudev & Sujanapal
Habitat: Epiphyte
Flowering: October-November
Distribution: Endemic to Southern Western Ghats.
Note: A new record for Orchidaceae of Nilgiri.

Oberonia verticillata Wight
Habitat: Epiphyte
Flowering: September-October
Distribution: South India and Sri Lanka

Oberonia wightiana Lindl.
Habitat: Epiphyte
Flowering: August-September
Distribution: India to Indo-China

Pecteilis gigantea (Sm.) Raf.
Habitat: Terrestrial in moist grassland
Flowering: September-October
Distribution: Indo-Malesia

Peristylus richardianus Wight
Habitat: Terrestrial with grassland slopes
Flowering: August-September
Distribution: India and Nepal

Robiquetia josephiana Manilal & C.S. Kumar
Habitat: Epiphyte
Flowering: September-October
Distribution: Endemic to Peninsular India
**Satyrium nepalense** D. Don  
Habitat: Terrestrial with moist grasslands  
Flowering: September-October  
Distribution: India, Sri Lanka, upto Myanmar

**Seidenfadeniella rosea** (Wight) C.S. Kumar  
Habitat: Epiphyte  
Flowering: April-June  
Distribution: Endemic to Southern Western Ghats

**Sirhookera latifolia** (Wight) Kuntze  
Habitat: Epiphyte  
Flowering: September-October  
Distribution: South India and Sri Lanka

**Taeniophyllum alwisii** Lindl.  
Habitat: Epiphyte  
Flowering: November - February  
Distribution: Peninsular India and Sri Lanka

**Zeuxine longilabris** (Lindl.) Trimen  
Habitat: Terrestrial  
Flowering: February-March and November-December  
Distribution: Indo-Malesia

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