

HOLOTYPE SPECIMENS IN ORCHID HERBARIUM TIPPI (OHT), WEST KAMENG DISTRICT, ARUNACHAL PRADESH, INDIA

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Abstract

Orchid Herbarium Tippi (OHT) at West Kameng district, Arunachal Pradesh, India has the collection of orchid species from different parts of the state, having a total deposition of about 2700 herbarium sheets representing 142 orchid genera. The present communication deals with 25 holotype specimens, some of which have also been deposited in ARUN, APFH, ASSAM, and CNH (CAL) herbarium as a Paratype sheets. The present study provides the brief notes including locality, habitat, distribution, description, and collection numbers of these 25 species from 16 genera.

Introduction

THE HERBARIUM (OHT) of Orchid Research Centre, Tippi, has rich collection of herbarium sheets of orchid genera and serves the purpose of preservation and identification of orchid species in the state of Arunachal Pradesh. The present communication deals with 25 species from 16 genera which are preserved as holotype specimens in OHT. Out of these, 19 species from 12 genera are epiphytic, 4 species from 4 genera are terrestrial, and 2 species from 2 genera are myco-heterotrophic.

Material and Methods

The specimen sheets of those Holotypes that have been preserved in species cover under genus cover singly or with 2 or 3 specimen sheets with silica gel are kept in Godrej almira. Some loose samples of seeds, flowers, fruits or stems are also placed in small paper packets. Field notes of species which were recorded on the spot during collection were presently studied. Methods for identification followed are, i) consultation of literature and study of plant material under microscope and ii) state, regional and national herbaria were consulted for identification. If there was a change in the name of genus (synonym) and species, was noted.

Species Description

The present communication deals with collection of 25 specimens (species) deposited in Orchid Herbarium Tippi (OHT) as Holotypes. The brief description of these species studied is as follows:

1. *Pinalia arunachalensis* A N Rao, sp. nov.

The genus *Pinalia* Lindl. was formerly included in the genus *Eria* for a considerable period, but it is now

restored to generic status. In Orchid Herbarium Tippi (OHT), there are 115 specimen sheets for 39 species collected from the state. Amongst these, *Pinalia arunachalensis* is one of them which has been documented as holotype and is represented by three specimen sheets. The species has earlier been published as a new orchid from India (Rao, 1997a).

Locality

Kaying (West Siang district)

Habitat

Epiphyte

Distribution

Rare

Description

Caespitose epiphyte. *Stems* upto 22 cm long, narrow, 4-5 leaved. *Leaves* lanceolate, elliptic-oblong, acute. *Raceme* 3 or 4, leaf opposed, *flowers* white with yellow disc of lip.

Collection Number

30108-A

2. *Pinalia kamlangensis* A N Rao, sp. nov.

The species was published

Locality

Kamlang Wildlife Sanctuary (Lohit)

Habitat

Epiphyte on large trees

Distribution

Rare

Description

Pseudobulbs 4-5 noded, ovoid-oblong, 4 leaved, hysteranthous. *Scape* and flowers white tomentose. *Bracts* 4-5 cm long, glabrous, pale green, *flower* pale green. Originally collected on 15-3-1996. Flowered at Tippi under cultivation on 27.07.2001.

Collection Number

28186

3. ***Pinalia lohitisensis*** Nageswara Rao *et al.*

The species was published as a new species of orchid from Arunachal Pradesh (Rao *et al.*, 1989).

Locality

Mailing-Mithumna

Habitat

Temperate forests

Distribution

Rare

Description

Epiphytic *herbs*. *Leaves* thick, *flower* white.

Collection Number

2185

4. ***Dendrobium sessanicum*** Ona Apang

There are 132 specimen sheets for 40 species documented in OHT. Amongst these, *Dendrobium sessanicum* is one of them which has been documented as Holotype. The species belongs to subsection II of section Stachyobium.

Locality

Sessa Orchid Sanctuary

Habitat

Epiphyte on mossed top and drooping twigs of trees.

Distribution

Rare

Description

Stem slanting, tapering towards the apex, clothed with old sheath. *Leaves* distichous, unequal bilobed. *Inflorescence* 3-4 flowers. *Flowers* greenish yellow. *Lip* just beside lateral sepals. *Column* a small white terminal cap and adnate to dorsal *sepal*.

Collection Number

37576

5. ***Porpax seidenfadenii*** A N Rao, sp. nov.

There are 2 specimen sheets from the species documented in OHT which were found in the state from this genus *Porpax* Lindl. (Rao, 2004).

Locality

Sissini (West Kameng district)

Habitat

Epiphyte on moss covered tree branches.

Distribution

Rare

Description

Pseudobulbs discoid, aggregate, clothed with reticulate sheath fiber, *leaves* 2, minutely hairy. *Flowers* 2, small, rusty brown, *Fruits* small, ellipsoid, stalked.

Collection Number

30603

6. ***India arunachalensis*** Nageswara Rao, sp. nov.

There is one specimen sheet in OHT and published as Holotype. The genus was also a new discovery from the state (Rao, 1998a).

Locality

Doimara R.F.

Habitat

Pendulous, epiphyte

Distribution

Rare

Description

Stem short, *leaves* narrow, oblong, *raceme* 2, drooping. *Flowers* laxly arranged, upto 15 cm, pale green with purple blotch on lip. *Spur* tubular, as long as or longer than *ovary* and *pedicel*.

Collection Number

30054

7. ***Cheirostylis sessanica*** Nageswara Rao, sp. nov.

Six species were found in Arunachal Pradesh and *Cheirostylis sessanica* is one of them. There are 2 specimen sheets from this species in OHT which were

found in the state from this genus *Cheirostylis* Bl. (Rao, 1988b). The species was published in 1988 as a Holotype.

Locality

Sessa, West Kameng district

Habitat

Terrestrial, on rich humus soil in dense, wet, evergreen, subtropical forest.

Distribution

Rare

Description

Stem prostrate, leave greenish brown, clasping the stem with sheathing base. *Flowers* upto 5, terminal, more or less close together.

Collection Number

24016

8. ***Cheirostylis gunnarii*** Nageswara Rao, sp. nov.

There are 4 specimen sheets documented in OHT. The species was published as a new orchid from Arunachal Pradesh, India (Rao, 1997c).

Locality

Kamlang RF (Lohit district)

Habitat

Epiphytic on moss covered tree trunk.

Distribution

Rare

Description

Creeping upside down (geotropic). *Stem* moniliform. *Leaves* cordate, many. *Raceme* terminal, few flowers. *Flower* white with green blotches.

Collection Number

28003

9. ***Cheirostylis munnacampensis*** Nageswara Rao, sp. nov.

There are 6 specimen sheets in OHT. The species was published as a holotype (Rao, 1988b).

Locality

Munna camp, West Kameng district

Habitat

On humus covered, exposed, rocky hill slopes.

Distribution

Rare

Description

Plant upto 12 cm long. *Stem* prostrate, moniliformis, pale green, with many small roots. *Leaves* 2 or 3, ovate, almost withered when plant in flower clasping the stem with sheathing base. *Flowers* 2-4, terminal, lip white with 2 green blotches.

Collection Number

14567

10. ***Gastrodia mishmensis*** Nageswara Rao, Hardidasan *et* Hegde sp. nov.

There is one specimen sheet in OHT. The species published as Holotype (Rao *et al.*, 1991).

Locality

Melinja, Lohit district

Habitat

Moist shady areas

Distribution

Very rare

Description

Terrestrial *herbs*, whole plant body pale brown, *flowers* dirty dull, creamy. *Rhizome* bud swollen.

Collection Number

1986

11. ***Oberonia arunachalensis*** Nageswara Rao, sp. nov.

There is one specimen sheet in OHT. The species published as holotype (Rao, 1997d).

Locality

Kamlang R.F., on way to Chamba-Glow Lake area (Lohit district)

Habitat

Epiphyte

Distribution

Rare

Description

Leaves upto 5 cm long, spike, 6-10 cm long. *Flower* green, in irregular verticillate. *Petals* narrow, erose at

margin. *Lip* 3-lobed, lateral lobes dentate at margin, midlobe bilobed dentate at margin.

Collection Number

28067

12. ***lone arunachalense*** Nageswara Rao, sp. nov.

There is one specimen sheet in OHT. The species was published as Holotype (Rao, 1997d).

Locality

Tale valley, Lower Subansiri district

Habitat

Epiphytic

Distribution

Rare

Description

Small creeping *epiphyte*, *pseudobulbs* distant, ovoid, 1-leaved. *Leaf* petioled. *Inflorescence* lateral, 1-flowered. *Flower* crimson coloured. *Lateral sepal* free, *lip* ovate, acuminate.

Collection Number

20350

13. ***Gastrochilus sessanicus*** Nageswara Rao, sp. nov.

There are two specimen sheets in OHT. The species was published as holotype (Rao, 1997e).

Locality

Sessa

Habitat

Tiny epiphyte

Distribution

Very rare

Description

Tiny *epiphyte*. *Leaves* 4 or 5, elliptic oblong, 3-setate at apex. *Spike* 1.5-2.0 cm long. 4-5 flowered. *Flowers* small green blotched purple.

Collection Number

29273

14. ***Gastrochilus arunachalensis*** Nageswara Rao, sp. nov.

There is one specimen sheet in OHT. The species was published as holotype (Rao, 1992).

Locality

Dimachang West Kameng district

Description

Growing on lateral branches. *Flowers* pale green, densely spotted with maroon red. *Epichile* of lip with only small flanges laterally.

Collection Number

24220

15. ***Oberonia katakiana*** Nageswara Rao, sp. nov.

There is one specimen sheet in OHT. The species was published as holotype (Rao, 1996).

Locality

Tippi, West Kameng district

Habitat

Tufted small epiphytic found growing on the branches of small trees in association with *Luisia brachystachya* orchid in mixed deciduous tropical forests.

Distribution

Rare

Description

Stem short, roots many. *Inflorescence* long erect or arcuate, peduncle free from the leaves. *Flowers* widely opening, green with gland dotted perianth, *Lip* superior, erect, without or with any basal lobes.

Collection Number

26077-A

16. ***Rhomboda arunachalensis*** Nageswara Rao, sp. nov.

There is one specimen sheet in OHT. The species published as Holotype (Rao, 1998b).

Locality

Kimi (1100 m), West Kameng district

Habitat

Terrestrial herb found growing on humus of subtropical wet ever green forest floor.

Distribution

Rare

Description

Leaves green, ovate-elliptic. *Bracts* shorter than ovary. *Flowers* green with purple tinge. *Spur* with conical sac, 2 lanceolate teeth inside.

Collection Number

29426

17. ***Biermannia arunachalensis*** Nageswara Rao, sp. nov.

There is one specimen sheet in OHT. The species was published as holotype (Rao, 2006).

Locality

Tippi

Habitat

Epiphyte on moss covered twigs of *Thuja* sp. in ORC, garden.

Distribution

Rare

Description

Horizontal, *leaves* 3-4, subfalcate, unequally bilobed at tip. *Raceme* upto 2-5 cm long, 2-flowered. *Flowers* yellow, *Lip* fleshy, 3-lobed, with glandular villi on disc.

Collection Number

34448

18. ***Biermannia jainiana*** Hegde *et* Rao, sp. nov.

There is one specimen sheet in OHT. The species was published as holotype (Hegde and Rao, 1984).

Locality

Sessa

Habitat

Epiphyte

Distribution

Rare

Description

Arcuate epiphyte, *Leaves* sub-falcate, unequally bilobed at tip, pendulous, *Scape* leaf opposed, club shaped. *Flowers* white at widely opening, *Lip* ciliate on disc.

Collection Number

4192

19. ***Herminium longilobatum*** Hegde *et* Rao, sp. nov.

There is one specimen sheet in OHT. The species was published as Holotype (Hegde and Rao, 1982a).

Locality

Tawang

Habitat

Epiphyte

Distribution

Rare

Description

Growing, epiphytically on oak trees, *Leaves* 3 sheathed at base, densely flowered, *Lip* with long filiform, lateral lobes.

Collection Number

3208-A

20. ***Epipogium sessanum*** Hegde *et* Rao, sp. nov.

There is one specimen sheet in OHT. The species published as Holotype (Hegde and Rao, 1982b).

Locality

Sessa

Habitat

Saprophyte

Distribution

Rare

Description

Saprophyte in rich humus mixed forest with decaying wood matter. *Rhizome* horizontal, *Stem* and *Spike* white, *Flowers* partly opening, spurless, withering in 5 days.

Collection Number

3800-B

21. ***Gastrodia arunachalensis*** Hegde *et* Nageswara Rao, sp. nov.

There is one specimen sheet in OHT. The species was published as Holotype (Rao, 1988b).

Locality

Sessa Orchid Sanctuary

Habitat

Saprophyte

Distribution

Rare

Description

Erect saprophyte found growing on the rich humus of subtropical wet evergreen forest. Underground *rhizome* fusiform, covered with many small tuberoides. *Stem* brown.

Collection Number

9251

22. ***Zeuxine lindleyana*** Nageswara Rao, sp. nov.

There is one specimen sheet in OHT. The species was published as Holotype (Rao, 1988c).

Locality

Tippi

Habitat

Terrestrial

Distribution

Rare

Description

Small terrestrial herbs growing among grass in well maintained sun exposed lawn. *Leaves* grass like. *Spike* dense flowered. *Flowers* small, white, partly opening.

Collection Number

6496-A

23. ***Cleisostoma tricallosum*** Hegde et Rao, sp. nov.

There is one specimen sheet in OHT. The species was published as Holotype (Hegde and Rao, 1983).

Locality

Sessa

Habitat

Epiphyte

Distribution

Rare

Description

Arcuate *epiphyte*. *Leaves* unequally obtusely bilobed at apex, strongly veined. *Racemes* 8, leaf opposed. *Flowers* small, greenish yellow tinged with purple on *lip*.

Collection Number

4466

24. ***Sarcoglyphis arunachalensis*** S N Hegde, sp. nov.

There is one specimen sheet in OHT. The species was published as Holotype (Rao, 1990).

Locality

Sessa

Habitat

Epiphyte

Distribution

Rare

Description

Growing on the branches of small trees in dense evergreen tropical and subtropical rain forest. *Stem* 2-3 cm, with many long slender roots at base. *Leaves* strap-shaped, strongly veined, unequally obtusely or acutely bilobed at tip. *Inflorescence* panicle, drooping, many flowered. *Flowers* ca. 1 cm across, white tinged with rose purple on *sepals* and *lip*, scented.

Collection Number

4199

25. ***Herminium haridasanii*** Nageswara Rao

There is one specimen sheet in OHT. The species was published as Holotype (Rao, 1992).

Locality

Hot spring (Lohit district)

Habitat

Grassland

Distribution

Rare

Description

Herb, *Flowers* white, *Fruits* green.

Collection Number

3674

Conclusion

Orchid Herbarium Tippi (OHT), Arunachal Pradesh, India, with the rich collection of orchid species from different parts of the state (total deposition of about 2700 herbarium sheets representing 142 genera) would play an important role in taxonomical studies for scientists, researchers from various Institutes, Universities, and Government Departments etc. Out of

2700 herbarium sheets available in OHT, 25 species are holotypes which are briefly described in the present communication. As the holotype specimens are also endemic to the state, hence, there is an urgent need to study orchid diversity in some unexplored areas in the state and develop some appropriate conservation strategies.

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References

- Hegde, S. N. and A. N. Rao. 1982a. *Herminium longilobatum* Hegde et Rao- A new species of orchid from Arunachal Pradesh, India. *Himal. Pl. J.*, **1**(2): 46-48.
- Hegde, S. N. and A. N. Rao. 1982b. *Epipogium sessanum* Hegde et Rao- A new species of orchid from Arunachal Pradesh, India. *J. Econ. Tax. Bot.*, **3**(2): 597-601.
- Hegde, S. N. and A. N. Rao. 1983. *Cleisostoma tricallosum* Hegde et Rao- A new orchid from Arunachal Pradesh. *Orch. Rev.*, **91**: 54-55.
- Hegde, S. N. and A. N. Rao. 1984. *Biermannia jainiana* Hegde et Rao- A new species of orchid from Arunachal Pradesh. *Bull. Bot. Surv. India*, **26**: 97-99.
- Rao, A. N. 1988a. A taxonomic review of the saprophytic orchids of Arunachal Pradesh, India. *J. Orchid. Soc. India*, **2**(1-2): 9-18.
- Rao, A. N. 1988b. Two new species of *Cheirostylis* (Orchidaceae) from Arunachal Pradesh, India. *Nord. J. Bot.*, **8**(4): 339-40.
- Rao, A. N. 1988c. *Zeuxine lindleyana* Nageswara Rao- A new species of orchid from Arunachal Pradesh. *Arun. For. News*, **6**: 34-36.
- Rao, A. N. 1990. A new species of *Sarcoglyphis* (Orchidaceae) from Arunachal Pradesh, India. *Nord. J. Bot.*, **10**: 161-62.
- Rao, A. N. 1992. Two new species of orchids from Arunachal Pradesh. *J. Econ. Tax. Bot.*, **16**(3): 723-25.
- Rao, A. N. 1996. *Oberonia katakiana* Nageswara Rao- A new orchid species from Arunachal Pradesh, India. *J. Econ. Tax. Bot.*, **20**(3): 711-13.
- Rao, A. N. 1997a. *Eria arunachalensis* Nageswara Rao- A new orchid from India. *J. Econ. Tax. Bot.*, **21**(3): 711-13.
- Rao, A. N. 1997b. A new species and some new records of orchids from Arunachal Pradesh, India. *Rheedea*, **7**(2): 130.
- Rao, A. N. 1997c. *Cheirostylis gunnari* (Orchidaceae)- A new orchid from Arunachal Pradesh, India. *Nord. J. Bot.*, **18**: 23-25.
- Rao, A. N. 1997d. A new species of *Ione* Lindl. (Orchidaceae) from Arunachal Pradesh, India. *Rheedea*, **7**(1): 47-50.
- Rao, A. N. 1997e. A new species of *Gastrochilus* from Arunachal Pradesh, India. *J. Orchid. Soc. India*, **11**(1-2): 1-3.
- Rao, A. N. 1998a. *India arunachalensis* Nageswara Rao (Orchidaceae)- A new genus and species from Arunachal Pradesh, India. *J. Econ. Tax. Bot.*, **22**(3): 701-03.
- Rao, A. N. 1998b. *Rhomboda arunachalensis* Nageswara Rao- A new species of orchid from Arunachal Pradesh, India. *J. Econ. Tax. Bot.*, **22**(2): 426-28.
- Rao, A. N. 2004. *Porpax seidenfadenii* Nageswara Rao- A new species of orchid from Arunachal Pradesh, India. In: *Orchid Memories- A Tribute to Gunnar Seidenfaden* (eds. K. S. Manilal and C. S. Kumar) pp. 23-26. Mentor Books for Indian Association for Angiosperm Taxonomy, Kerala, India.
- Rao, A. N. 2006. *Biermannia arunachalensis* Nag. Rao: A new orchid from Arunachal Pradesh, India. *Rheedea*, **16**(1): 29-31.
- Rao, A. N., K. Haridasan, and S. N. Hegde. 1989. *Eria lohitensis* Nageswara Rao, Haridasan et Hegde- A new species of orchid from Arunachal. *J. Bombay Nat. History Soc.*, **86**(2): 229.
- Rao, A. N., K. Haridasan, and S. N. Hegde. 1991. A new species of *Gastrodia* from Arunachal Pradesh, India. *Arun. For. News*, **9**(1): 10-12.