

STUDY OF HABITAT ECOLOGY OF ORCHIDS OF PAPUM PARE DISTRICT IN ARUNACHAL PRADESH

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Abstract

Arunachal Pradesh is the largest state of North East Region with an area of 87473 Sq. Km area out of which 68602 Sq. Km. is under forest cover. The state is a hilly terrain containing a mosaic valley and ridges with an assortment of agro-climatic conditions. Due this wide range of altitudes from 150 to 7090 msl and agro-climatic zone, with mosaic valley and ridges provide many agro-climatic zones and forests supporting a vast biodiversity in the state and it is recognized as one of the richest "Biodiversity Hotspots" (Myers 1988) in the world. The forest contains many valuable produces like medicinal and aromatic plants, wild edibles, valuable timbers, bamboos, canes, broom grass, spice and condiments and many other minor forest produces. It is also a harbour of orchids with about 568 species so far reported. Starting from tropical to temperate forests in Arunachal Pradesh, it is like a store house of orchids with species of *Aerides*, *Bulbophyllum*, *Coelogyne*, *Cymbidium*, *Dendrobium*, *Phaia*, *Pholodota*, *Platanthera*, *Pleione*, *Rhynchostylis* etc. Papumpare district of Arunachal Pradesh has a wide range of altitudinal variation upto 2500 m (Lali Ane) and accordingly, different forest types are seen. Most of the tropical orchids are seen in foothills areas from Balijan to Kimin and subtropical and temperate orchids are seen in Sagalee, Mengio, Kabak and Toru Poto area. In this paper, some of the orchids found in the Papum Pare district are highlighted with their habitat.

Keywords: Orchid habitat; Ecology; Papum Pare

INTRODUCTION

Arunachal Pradesh has a very rich diversity of medicinal and aromatic plants due to wide range of altitude and different agro-climatic zone. The State represents many species of endangered, endemic, primitive, and relict flora. The state harbors about 5000 flowering plants with more than 500 species of medicinal plants, 82 species of Rhododendrons, 18 species of *Hedychium*, 16 species of Oaks, 34 species of conifers and a large number of ferns and lichens, 569 species of orchids, 18 species of canes, 73 species of bamboos. The state is equally rich in faunal diversity with mammals 217 spp., primates 7 spp., reptiles 113 spp., amphibian 27 spp., major cats 4 spp., fishes 117 spp., Mollusca 71 spp., birds 776 spp. and Annelida 16 species. The State has a forest cover of 68,009 km² which is about 81.21 % of total

geographical area. Still there are 20804 km² very dense forest; 31301 km² medium dense forest and 15143 km² open forests in the State. Papum Pare district is situated in the northern part of Arunachal Pradesh and host of state capital city Itanagar and Naharlagun.

MATERIAL

During the tour, the materials used for study of orchids are notebook, pen, camera, herbarium blotters, herbarium wooden presser, plastic ropes, tree pruner, secateurs, polythene bags both large and small size, alcohol, formalin etc.

METHODOLOGY

Field explorations were undertaken from 01/04/18 to 06/04/18 to Mangio, Sagalee, Leporiang, Karoi in the first trip and second

tour was undertaken from 07/05/18 to 11/05/18 to Tarasso, Balijan, Kimin, Bogoli, and Sangdupota area to study the habitat ecology of the orchids in these areas of the Papum Pare district. During the tour, survey was made for orchids, specially epiphytic orchids were observed on different host trees and recorded the phenology of the species. Some of the flowering plants are collected for herbarium and some live specimens are conserved at Orchid House of Van Vigyan Kendra, Chessa.

RESULTS AND CONCLUSION

In this study, 85 numbers of orchids belonging to 17 genera and 39 species have been studied.

As per our study in the Papum Pare district it reveals that area is very rich in orchid diversity, but most of the habitat are found to be disturbed. The main causes of continuous habitat disturbance are due to jhuming activities, road construction, Cardamom farmings. The distribution of various species of orchids are found to be evenly distributed in the entire district ranging from Taraso, Balijan, Kimin, Doimukh, in the plain upto Potin, Sagalee, Leporiang, Karoi, and Mangio in the hills. This habitat disturbance can be restored, if forest management system is developed in a sustainable way and through awareness among the common people for conservation.

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ENUMERATIONS:

Sl	Name of species	Type of habitat	Status of habitat	Co-habitat	Locality	Host tree	IUCN status
1.	<i>Dendrobium chrysanthum</i>	Sub-tropical	Epiphytic	Ferns, agapetes, sphagnum moss	Shally	<i>Schima walichii</i>	Rare
2.	<i>Vanda cristata</i>	Sub-tropical	Epiphytic	Ferns, agapetes,	Shally	<i>Schima walichii</i>	Rare
3.	<i>Autchilus fuscus</i>	Sub-tropical	Epiphytic	sphagnum moss	Shally	<i>Schima walichii</i>	Common
4.	<i>Bulbophyllum gutulatum</i>	Sub-tropical	Epiphytic	Ferns, agapetes,	Mangio	<i>Altingia excelsa</i>	Common
5.	<i>Dendrobium aceneceforme</i>	Sub-tropical	Epiphytic	sphagnum moss	Mangio	<i>Altingia excelsa</i>	Common
6.	<i>Cymbidium munronianum</i>	Tropical, lithophyte	Terrestrial	Begonias, cythias, ferns	Panyor bridge, Mangio	Terrestrial	Common
7.	<i>Pholidota chinensis</i>	Tropical	Epiphytic	Fern, moss	Panyor bridge, Mangio	<i>Duabanga, grandiflora</i>	Common
8.	<i>Dedrobium densiflorum</i>	Tropical	Epiphytic	Fern, moss	Panyor bridge, Mangio	<i>Altingia excelsa</i>	Rare
9.	<i>Eria stricta</i>	Tropical	Epiphytic	Fern, moss	Panyor bridge, Mangio	<i>Altingia excelsa</i>	Common
10.	<i>Bulbophyllum gutullatum</i>	Tropical	Epiphytic	Fern, moss	Panyor bridge, Mangio	<i>Duabanga grandiflora</i>	Common
11.	<i>Polidata chinensis</i>	Tropical	Epiphytic	Fern, moss	Panyor bridge, Mangio	<i>Duabanga grandiflora</i>	Rare

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12.	<i>Cymbidim muronianum</i>	Tropical	Terrestrial	Fern, moss	Panyor bridge, Mangio	<i>Duabanga grandiflora</i>	Common
13.	<i>Pomatocalpa species</i>	Sub-tropical	Epiphytic	Fern, moss	Panyor bridge, Mangio	<i>Duabanga grandiflora</i>	Common
14.	<i>Gastrochilus spp</i>	Sub-tropical	Epiphytic	Fern, moss	Panyor bridge, Mangio	<i>Duabanga grandiflora</i>	Common
15.	<i>Dendrobium leuitiflorum</i>	Tropical	Epiphytic	Fern, moss	Mipsoro village, Kheel	<i>Duabanga grandiflora</i>	Common
16.	<i>Arachnis cathcarthii</i>	Tropical	Epiphytic	Fern, moss	Baat Village, Sagalee	<i>Terminalia myriocarpa, Castanopsis species</i>	Rare
17.	<i>Pholidota articulata</i>	Tropical	Epiphytic	Fern, moss	Baat	<i>Terminalia</i>	Common
18.	<i>Dendrobium chrysanthum</i>	Tropical	Epiphytic	Fern, moss	Village, Sagalee	<i>myriocarpa, Castanopsis species</i>	Rare
19.	<i>Gastrochilus spp</i>	Tropical	Epiphytic	Fern, moss	Baat	<i>Terminalia</i>	Common
20.	<i>Aeredes odoratum</i>	Tropical	Epiphytic	Fern, moss	Village, Sagalee	<i>myriocarpa, Castanopsis species</i>	Common
21.	<i>Dendrobium salcatum</i>	Tropical	Epiphytic	Fern, moss	Baat	<i>Bischofia javanica</i>	Common
22.	<i>Rubiquitia spatulata</i>	Tropical	Epiphytic	Hoya, ferns, asplenium	Leporiang	<i>Castanopsis indica</i>	Common
23.	<i>Eria panea</i>	Tropical	Epiphytic	,,	Leporiang	<i>Castanopsis indica</i>	Common
24.	<i>Oberonia spp</i>	Tropical	Epiphytic	,,	Leporiang	<i>Castanopsis indica</i>	Common
25.	<i>Dendrobium chrysotoxum</i>	Tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Sokum geke	Dried wooden log	Rare
26.	<i>Cymbidium iridiodes</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Apop village	<i>Elaeocarpus</i>	Rare

BULLETIN OF ARUNACHAL FOREST RESEARCH, 33(2): 2018

						<i>aristatus</i>	
27.	<i>Rubiquitia spatulata</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Apop village	<i>Elaeocarpus</i>	Common
28.	<i>Esmaralda cathcarthii</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Apop village	<i>aristatus</i>	Rare
29.	<i>Dendrobium farmeri</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Apop village	<i>Elaeocarpus</i>	Rare
30.	<i>Aredes roseaum</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Apop village	<i>aristatus</i>	Common
31.	<i>Celogyne viscosa</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Apop village	<i>Terminalia myriocarpa</i>	Common
32.	<i>Pholidota chinensis</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Apop village	<i>Terminalia myriocarpa</i>	Rare
33.	<i>Bulbophyllum spp</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Apop village	<i>Terminalia myriocarpa</i>	
34.	<i>Aeredes odoratum</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Apop village	<i>Terminalia myriocarpa</i>	Common
35.	<i>Luscia spp</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Apop village	<i>Terminalia myriocarpa</i>	
36.	<i>Vanda cristata</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Apop village	<i>Morus spp.</i>	Rare
37.	<i>Autochilus porrectus</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Apop village	<i>Morus spp.</i>	Common
38.	<i>Vanda bicolor</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Apop village	<i>Elaeocarpus aristatus</i>	Rare
39.	<i>Bulbophyllum spp.</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Apop village	<i>Elaeocarpus</i>	
40.	<i>Autochilus fuscus</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Apop village	<i>aristatus</i>	Common
41.	<i>Dendrobium chrysanthum</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Karoi	<i>Terminalia myriocarpa</i>	Rare
42.	<i>Dendrobium vexabile</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Karoi	<i>Terminalia myriocarpa</i>	Rare
43.	<i>Autochilus porrectus</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Karoi	<i>Chisochetan paniculata</i>	Common
44.	<i>Dendrobium farmeri</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Karoi	Dead log	Rare
45.	<i>Dendrobium chrysotoxum</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Cocho	Dead log	Rare
46.	<i>Eria stricta</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Cocho	Dead log	Rare

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47.	<i>Luscia spp</i>		Epiphytic	Agapetes, ferns, hoyas, moss			
48.	<i>Eria lasiopatala</i>	Tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Cocho	<i>Eliocarpus arboria</i>	Rare
49.	<i>Agrostophyllum khasianum</i>	Tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Habiya	<i>Duabanga grandiflora</i>	Rare
50.	<i>Dendrobium fermeri</i>	Tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Habiya	<i>Duabanga grandiflora</i>	Rare
51.	<i>Pholidota articulata</i>	Tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Habiya	<i>Duabanga grandiflora</i>	Rare
52.	<i>Phleonopsis lobaii</i>	Tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Habiya	<i>Gmelina arborea</i>	Rare
53.	<i>Eria spp.</i>	Tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Habiya	<i>Gmelina arborea</i>	
54.	<i>Pholidata spp.</i>	Tropical		Agapetes, ferns, hoyas, moss	Habiya		
55.	<i>Ceratostylis himalaica</i>	Tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Habiya	<i>Elaeocarpus spp.</i>	Common
56.	<i>Rhynchostylis retusa</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Potin	<i>Gmelina arborea</i>	rare
57.	<i>Dendrobium aphyllum</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Potin	<i>Gmelina arborea</i>	Common
58.	<i>Eria flava</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Potin	<i>Gmelina arborea</i>	Common
59.	<i>Luscia trichoriza</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Potin	<i>Gmelina arborea</i>	Common
60.	<i>Pholidota imbricata</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Potin	<i>Gmelina arborea</i>	Common
61.	<i>Eria flava</i>	Sub-tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Potin	<i>Toona ciliata</i>	Common
62.	<i>Lusia spp</i>		Epiphytic	Agapetes, ferns, hoyas, moss			Common
63.	<i>Arachnis clarkei</i>	Tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Baliyan	<i>Chisochetan paniculata</i>	Common
64.	<i>Dendrobium moschatum</i>	Tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Baliyan	<i>Chisochetan paniculata</i>	Common
65.	<i>Eria flava</i>	Tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Baliyan	<i>Chisochetan paniculata</i>	Common
66.	<i>Lusia trichoriza</i>	Tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Baliyan	<i>Chisochetan paniculata</i>	Common
67.	<i>Dendrobium aphyllum</i>	Tropical	Epiphytic	Agapetes, ferns, hoyas, moss	Baliyan	<i>Chisochetan paniculata</i>	Common

BULLETIN OF ARUNACHAL FOREST RESEARCH, 33(2): 2018

68.	<i>Stitanandiana micranta</i>	Tropical	Epiphytic	Mosses	Balijan	<i>Chisochetan paniculata</i>	Common
69.	<i>Dendrobium aphyllum</i>	Tropical	Epiphytic	Mosses	Balijan	<i>Bischofia javanica</i>	Common
70.	<i>Cymbidium aloefolium</i>	Tropical	Epiphytic	Mosses	Balijan	<i>Bischofia javanica</i>	Common
71.	<i>Eria flava</i>	Tropical	Epiphytic	Mosses	Balijan	<i>Terminalia myriocarpa</i>	Common
72.	<i>Lusia trichoriza</i>	Tropical	Epiphytic	Mosses	Balijan	<i>Terminalia myriocarpa</i>	Common
73.	<i>Pholidota imbricata</i>	Tropical	Epiphytic	Mosses	Balijan	<i>Terminalia myriocarpa</i>	Common
74.	<i>Dendrobium aphyllum</i>	Tropical	Epiphytic	Mosses	Balijan	<i>Terminalia myriocarpa</i>	Common
75.	<i>Luscia spp.</i>		Epiphytic	Mosses	Balijan		
76.	<i>Dendrobium aphyllum</i>	Tropical	Epiphytic	Mosses	Balijan	<i>Duabanga grandiflora</i>	Common
77.	<i>Eria flava</i>	Tropical	Epiphytic	Mosses	Balijan	<i>Duabanga grandiflora</i>	Common
78.	<i>Pholidota imbricata</i>	Tropical	Epiphytic	Mosses	Balijan	<i>Stereosperm-um acerifolium</i>	Common
79.	<i>Pholidota articulata</i>	Tropical	Epiphytic	Mosses	Balijan	<i>Stereosperm-um acerifolium</i>	Common
80.	<i>Aeredes odoratum</i>	Tropical	Epiphytic	Mosses	Chessa	<i>Tectona grandis</i>	Common
81.	<i>Vanda cristata</i>	Tropical	Epiphytic	Mosses	Hawa camp	<i>Tectona grandis</i>	Rare
82.	<i>Leparis plantaginia</i>	Tropical	Epiphytic	Mosses	Hawa camp	Lithophyte	Rare
83.	<i>Polidota imbricata</i>	Tropical	Epiphytic	Mosses	Hawa camp	Lithophyte	Common
84.	<i>Eria flava</i>	Tropical	Epiphytic	Mosses	Hawa camp	Lithophyte	Common
85.	<i>Aeredes odoratum</i>	Tropical	Epiphytic	Mosses	Hawa camp	Lithophyte	Common

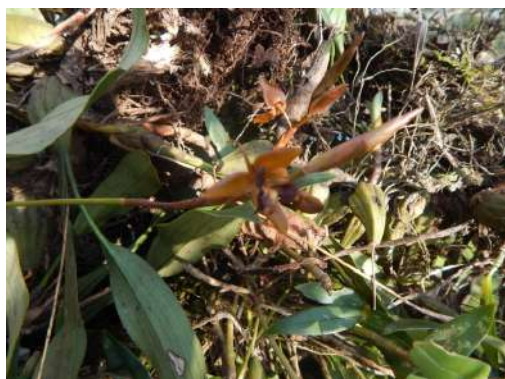
PHOTO PLATES



Aredes rosea



Bulbophyllum odoratissimum



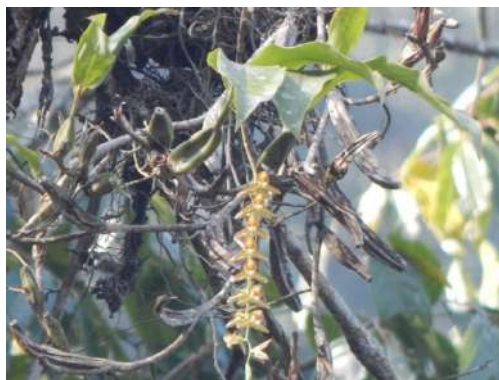
Coelogyne prolifera



Coelogyne fuscisens



Cymbidium iridioides



Coelogyne spp.



Liparis plantagina Lithophytic



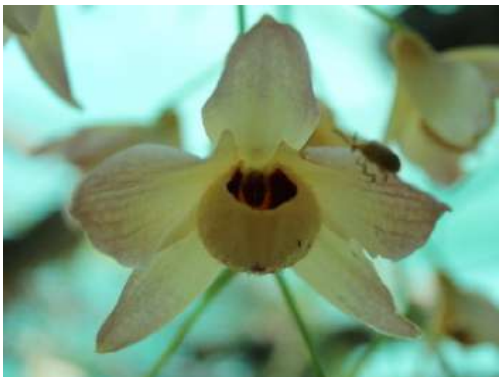
Dendrobium salcatum



Chisochetum paniculata, tree full of orchids



Vanda cristata, an epiphytic orchid



Dendrobium moschatum



Phlolidata imbricata



Habitation of *Dendrobium* spps.



Dendrobium aphyllum on *Bischofia javanica* tree



Cymbidium aloefolium



Habitation of *Eria lasiopetala*



Pholidata articulate on *Altingia excelsa*



Pholidata imbricata



Cymbidium aloefolium on *Tectona grandis*



Rhynchosstylis retusa on *Tectona grandis*



Dendrobium aphyllum



Eria flava



Liparis plantaginia on rocks (lithophytes)



Rhynchosstylis retusa on Hollock tree



Ceratostylis himalaica



Dendrobium transference



Dendrobium nobile



Eria bambusoides



Snorchis spp.



Sub tropical forest, suitable for all types of orchids



Eria carinata



Esméralda cathcarthai



Phalanopsis lobii