Orchid diversity of Great Nicobar Biosphere Reserve

Known by the name of *mighty miniatures*, orchids are flowers of exquisite beauty and variety of patterns belonging to the family Orchidaceae. The orchids are worldwide in distribution with greater concentration in tropical and subtropical regions of high humidity. Orchidaceae is one of the highly evolved, diverse and successful families of flowering plants and constitutes 40% of monocotyledon taxa[1]. It is the third largest family of flowering plants in India having 1141 species in 168 genera. Of these, 657 species in 86 genera are epiphytes and 484 species in 82 genera are terrestrial[2]. Orchids, declared as flagship species[3] grow luxuriantly in the Great Nicobar Island and attracted our attention while working in the Great Nicobar Biosphere Reserve. This paper is an outcome of species of orchids encountered during detailed survey carried out in the Great Nicobar Island during the months of April and December 2002.

As a part of Biodiversity Characterization at Landscape Level in Andaman and Nicobar Island Project under Jai Vigyan National Science and Technology Mission, a study was undertaken to explore the floral diversity of tropical forests of the Great Nicobar Island for phyto-sociological analysis and other biodiversity-related parameters. Sampling technique consists of laying down random plots in various vegetation strata (stratified random sampling). Various land use classes and forest types as seen on the ground are related with the corresponding tone and texture on the satellite data, for the preparation of detailed vegetation/land use map. Besides this, interesting plants other than those actually encountered in the area sampled for vegetation analysis are also enumerated.

The Great Nicobar is a southernmost extension of India covering an area of 1045 km^2. It is situated between 6°45′N and 7°15′N latitude and 93°37′E and 93°56′E longitudes and lies about 482 km south of Port Blair and about 145 km north of Sumatra. The island lies in a phytogeographically strategic location, being in the low latitude region and experiences tropical climate with mean annual temperature of 22–32°C, relative humidity of 82% and rainfall of 300–380 cm. The island harbours rich germplasm resources due to which the Ministry of Environment and Forest declared 85% of the island as a biosphere reserve in 1989 (ref. 4).

The island is known to harbour 27 genera, 32 species and 4 varieties of orchids[5]. However, during the present work we have encountered four more species, which were not previously reported from the Great Nicobar Islands. A comprehensive list of orchids reported in the Great Nicobar along with those collected during the fieldwork is given in Table 1. Out of the total of 36 recorded orchid species (including 32 mentioned by BSI and four new records), 6 species and var. *speciosa* of *Phalenopsis speciosa* are endemic, 22 species and one variety each of *Eria bractescens* and *Phalenopsis speciosa* are rare. Of these rare orchids, four are endemic as well, therefore their status is highly critical. The remaining five species and var. Kurzii of *Eria bractescens* are of common distribution in the Great Nicobar Island.

During the survey conducted by us, we could trace the existence of only five endemic orchid species and the *Anoecto-*

Figure 1. Some orchids found in the Great Nicobar Biosphere Reserve.

Table 1. List of orchids found in the Great Nicobar Biosphere Reserve

Species	Reported by BSI	Reported during study	Distribution		Known ecological status
			India	World	
Aerides emericii Reichb. f.	+	+	Andaman and Nicobar Islands		Endemic
Anoectochilus nicobaricus Balakr. and *T. Chakrab.*	+		Great Nicobar Island		Endemic
Appendicula reflexa Blume	+		Great Nicobar Island	Thailand, Sumatra and New Guinea	Rare
Bulbophyllum macranthum Lindl.	+	+	Nicobar Islands	Thailand, Sumatra and New Guinea	Common
Bulbophyllum sessile (*Koen.*) J. J. Sm.		+	Andaman Islands	South East Asia	New record
Ceratostylis subulata Bl.	+	+	Himalayas, North East India and Great Nicobar Island	Widespread in South East Asia	Rare
Cleisostoma uraiense (Hayata) Garay and Sweet	+		Great Nicobar Island	Philippines, Taiwan, Formosa, Java, Malaya Peninsula	Rare
Corymborchis veratrifolia (*Reinw.*) *Bl.*	+	+	Subtropical Eastern Himalayas, North East India and Peninsular India, Andaman and Nicobar Islands	South East Asia	Rare
Cymbidium bicolor Lindl.	+		Andaman and Nicobar Islands		Endemic and Rare
Dendrobiuim shompenii B. K. Sinha and P. S. N. Rao	+	+	Great Nicobar Island		Endemic
Dendrobium crumenatum Swartz	+	+	Andaman and Nicobar Islands	Malaya Peninsula, Singapore	Common
Dendrobium pensile Ridl.	+		Nicobar Islands	South East Asia	Rare
Eria bractescens Lindl.					
var. *bractescens*	+	+	Andaman and Nicobar Islands, Eastern Himalayas	Myanmar, Malaya Peninsula, Nepal	Rare
var. *kurzii Hook. f.*	+		Eastern Himalayas, North East India and Andaman and Nicobar Islands	Central Himalayas and South East Asia	Common
Flickengeria fimbriata (*Bl.*) *Hawkes*	+	+	Andaman and Nicobar Islands	South East Asia	Rare
Goodyera procera (*Ker.-Gawl.*) *Hook. f.*	+		Great Nicobar Island, Himalayas	Myanmar, Sri Lanka, Thailand, China, Japan, Malaysia, Indochina	Rare
Hetaeria oblique Bl.	+		Great Nicobar Island	India, Malaya Peninsula, Indonesia	Rare
Hetaeria oblongifolia (*Bl.*) *Bl.*	+		Andaman and Nicobar Island	South East Asia	Rare
Lusia zeylanica Lindl.	+	+		Widespread from India to Philippines	Rare
Nervilia punctata (*Bl.*) *Makino*	+		Nicobar Island	South East Asia	Rare
Oberonia iridifolia (*Roxb.*) *Lindl.*		+	Andaman and Nicobar Islands	Widespread	Rare
Phalaenopsis speciosa Reichb. f.					
var *speciosa*	+		Andaman and Nicobar Islands		Endemic and Rare
var *tetraspis* Sweet	+	+	Andaman and Nicobar Islands	Java	Rare
Pholidota pallida Lindl.	+	+	Great Nicobar Island		Rare
Phraetia secunda (Bl.) Lindl.		+	Andaman and Nicobar Islands	South East Asia	Rare
Plocoglottis javanica Bl.	+	+	Andaman and Nicobar Islands	Java, Malaya, Myanmar, Thailand, Sumatra	Rare
Podochilus microphyllus Lindl.	+		Nicobar Islands	Myanmar, Java, Thailand, Malaya Peninsula	Rare
Pomatocalpa andamanicum (*Hook. f.*) J. J. Sm.	+	+	Andaman Islands		Rare and Endemic
Pomatocalpa wendlandorum (*Reichb. f.*) J. J. Sm.	+	+	Eastern Himalayas, North East India and Andaman and Nicobar Islands	Myanmar	Common
Pteroceras barkeleyii (*Reichb. f.*) Holtt.	+	+	Andaman and Nicobar Islands	Malaya Peninsula	Rare
Rhynchostylis retusa Bl.		+	Andaman and Nicobar Islands, Himalayas	Nepal, Sri Lanka, Myanmar	Rare

Continued

Table 1. (*Continued*)

Species	Reported by BSI	Reported during study	Distribution		Known ecological status
			India	World	
Spathoglottis plicata Bl.	+	+	Andaman and Nicobar Islands	Thailand, Malaysia, Sumatra, Java, Philippines, Cambodia, Vietnam	Common
Thelasis pygmaea (*Griff.*) *Lindl.* var. *pygmaea.*	+		Eastern Himalayas and Nicobar Islands	Central Himalayas and Southern Asia	Common
Thrixspermum hystrix (*Bl.*) *Reichb. f.*	+	+	North East India and Andaman and Nicobar Islands	South East Asia	Rare
Trichoglottis cirrhifera Teysem. and *Binn.*	+		Nicobar Islands	South East Asia	Rare
Trichoglottis quadricornuta Kurz	+	+	Nicobar Islands		Endemic and Rare
Vanilla andamanica Rolfe	+	+	Andaman and Nicobar Islands		Endemic and Rare
Vrydagzynea albida (*Bl.*) *Bl.*	+		North East India and Great Nicobar Island	Myanmar, Thailand, Malay Peninsula, Indonesia and Philippines	Rare

chillus nicobaricus and *Phalenopsis speciosa* var. *speciosa* were not sighted. Out of 24 rare (including 22 species and two varieties) and 6 common (five species and one variety) orchids, we came across 16 and 4 in each group respectively. Thus there is a need to revise the status of the remaining orchids, mentioned as rare in the existing literature to see whether they are now endangered or extinct. Also *Bulbophyllum macranthus*, which was once very common in the island, was seen only at one location during the study. We also came across 4 more records, viz. *Oberonia iridifolia*, *Bulbophyllum sessile*, *Phraetia secunda*, *Rhynchostylis retusa* that were not reported previously in the Great Nicobar Island.

Although the number of species of orchids is not very high, it is important to consider that a significant number of these are endemic to Andaman and Nicobar Island and not found elsewhere. They can be seen in a variety of habitats from seashore to the hilltops (Figure 1). The fallen logs, the moss pads covering the bark of the trees in the tropical evergreen forest and the microhabitats on *Barringtonia speciosa* and *Heriteria littoralis* along the seashores and the creeks forms their most likely substratum (Figure 1). A flowering plant of *Oberonia* sp. was seen growing on the *Lagerstroemia* in a moist deciduous association, and another beautiful ground orchid *Spathoglottis* sp. grows in plenty all along the East-West road. This shows that local conditions existing in the island are extremely suitable for the growth and survival of orchids, which can be exploited to commercially raise the orchids in the Great Nicobar Island and also to maintain a gene pool of the orchids in the biosphere reserve. The findings also call for a detailed survey in the island in order to evaluate the exact status (extinct, rare or endangered) of enlisted species, which we could not locate during the visit carried out in the island. Since the island was declared as a biosphere reserve only in 1989 and before that settlements was established in the island which occupied 15% of the area, possibilities exist that some of the species which were found previously and listed in the literature may not be existing today and there are many more other species which have not been reported so far.

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