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Status of Wild Orchids in the Mountain Ranges of Pilar, Capiz: Basis for Conservation

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A B S T R A C T

Because of their inherent beauty, orchids are highly valued. Of all blooming plants, it is the most evolved; to flourish in a particular habitat, it requires ideal circumstances. An ecosystem is said to be healthy and functional if orchids are found there. Genetic variety loss is just as much of an issue as species extinction. Thus this study was conducted with the aim of assessing the abundance, endemism, and conservation status of wild orchids in the mountain ranges of Pilar, Capiz. This study was conducted at 3 mountainous area in Piar, namely Mt. Agudo, Mt. San Silvestre and Mt. Tabun-aca. Walk transect method and opportunistic sampling technique following a trail was used. There were 7 species of wild orchids belonging to 6 genera recorded in the mountain ranges of Pilar.Three species were found to be widespread endemic, 3 were found to be Philippine endemic and 3 were endangered species, 3 vulnerable and 1 neutralized.

INTRODUCTION

The second-largest family of flowering plants, the Orchidaceae, contains around 26,000 species that are found almost everywhere, with roughly 880 genera. Numerous plants are cultivated as ornamentals due to their striking blossoms, and a few hold significant economic value as the source of vanilla taste and the most endangered group of plants in the world as well as in the Philippines. Approximately 8.1% of the documented orchid species in the Philippines, or 97 species, are currently vulnerable (DENR 2017).

The two biggest risks to orchid populations worldwide are habitat degradation and excessive harvesting. Orchid species richness is significantly impacted by habitat fragmentation. and orchids are more susceptible to changes in the global environment because of their extremely specialized habit. In addition, orchids are heavily trafficked, mostly for horticulture, food, and medicinal. Even though the Convention on International commerce in Endangered Species regulates their commerce, many of the species are still illegally gathered and trafficked, which has a detrimental effect on natural populations all over the world.

Orchids are among the most pressing conservation problems due to the growing strain on wild orchid populations. Studies on orchid species richness and distribution are still woefully deficient, despite the recent discovery of new species. Since assemblage-level studies may serve as baselines for future monitoring efforts in Philippine montane habitats, particularly for the heavily collected and trafficked orchids, this gap may present conservation issues for this critically endangered plant family. Because distribution studies give information on the geographic range and breadth of a species' occurrence, they also aid in the preparation of species conservation evaluations (such as those found on the Philippine Red List and the IUCN Red List of Threatened Species).

The purpose of this study was to evaluate the condition of wild orchids in the Pilar, Capiz mountain ranges in order to potentially develop a conservation policy. Its specific objectives were to: 1) Identify the various wild orchid species that can be found in the Pilar, Capiz mountain ranges; 2) Calculate the abundance of various species in the Pilar, Capiz mountain ranges; 3) Determine the endemism of various species in the Pilar, Capiz mountain ranges; and 4) Determine the conservation status of various wild orchid species in the Pilar, Capiz mountain ranges.

LITERATURE REVIEW

According to J. M. G. Betanio, et. Orchids are among the most varied and endangered plant groups in the world, including the Philippines, according to Al (2018). Even though new orchid species have been found in the nation recently, research on diversity and distribution is still woefully deficient. This

list of orchid species found in Mount Busa's various forest types includes details on the species' decorative uses as well as their altitudinal and vertica ranges.Of the 51 genera and 108 species of orchids that they found, 53 are indigenous to the Philippines, while 15 are known to only exist on the island of Mindanao. The species composition of the various forest types varied, with the highest recorded number of orchid species being found in the MASLEF (mixed advanced secondary lowland evergreen forest), followed by the LMF (lower montane forest), UMF (upper montane forest), and MESLEF (mixed early secondary lowland evergreen forest). Our findings support the high conservation significance of the mountain range by pointing to a comparatively rich and distinctive orchid diversity among the various forest types in Mount Busa.

According to O'Malley, K. 2009 for a long time, access issues have prevented scientists from doing research under forest canopies; but, in the last 20 years, methods for gaining access to tree canopies have been created, allowing more scientists to study this area of biology. In order to investigate the distribution patterns and presence of orchids in Parashorea malaanonan dipterocarp trees, this study used rope methods to gain access to the canopy in a primary rainforest system in Borneo, Malaysia. A total of 42 orchids from 8 species were found among the five trees that were tested. Branch height, distance from the bole, orchid location on the branch, substrate, and relationships were all measured and analyzed to identify any significant interactions.Numerous factors were discovered to have significant correlations with one another. The correlation between branch height and substrate, association, genus, species, and position on the branch suggests that branch height plays a significant role in orchid variety. The substrate had a non-uniform distribution among the five trees studied, as well as a connection with both genera and species. It was discovered that the link between genus and tree, as well as association and location on branch, was inverse. The correlations between the factors and patterns in orchid variety and abundance, however, could not be conclusively explained by this study

METHODOLOGY

Study Area

The municipality of Pilar's three hilly barangays were chosen as the research region. Brgy Yating is where Mt. Agudo is situated. 1014 feet above sea level is the elevation of Yating Pilar, Capiz. On top of one of these mountains, the Americans constructed an antenna known as Radar 1, 2, and 3 during World War II. The mountains of Hinulugan are in Brgy. Hinulugan, Capiz, and

Pilar. This is the location of Hinulugan Falls. Brgy is home to the San Silvestre mountain. San Silvestre, Capiz; Pilar. This is the location of Kwa-Kawa Falls.

Data Gathering

This research examined the quantity of wild orchids in the Brgy highlands. Using a transect walk approach and opportunistic sampling, San Silvestre, Tabun-acan, and Yating will be studied from September to November 2023. The study will follow a route from the mountain's base to its top.With the caveat that orchid species above 4 m above the ground may not have been recorded owing to inaccessibility or observer bias, in-depth searches of the understory and midstory layers of the forest for ground and epiphytic orchids were conducted. The species found visually along the trail were photographed for conservation purposes. Orchids on land and in epiphytes, with or without blooms, were counted and documented.

Enumeration and Identification of Specimen

Based on picture guides and professional consultations via the Co's Digital Flora of the Philippines online plant identification program and Phil.plant.gov, all species were counted and identified. Since many of these species are already being gathered for decorative purposes, there is no need to acquire voucher specimens for conservation.

Assessment for endemism and conservation status

The IUCN Red List of Threatened Plants from 2013 and CO.'s Digital Flora of the Philippines served as the bases for the conservation status of the gathered species. Endemism was derived from published floras, monographs, internet databases, and herbarium records, regardless of whether it was a Widespread Species (WS), Capiz or Panay Island Endemic (CE), or Philippine Endemic (PE).

Abundance

The abundance was measured using Simpson’s Diversity Indices a formula introduced by Curtis and McIntosh (1950).

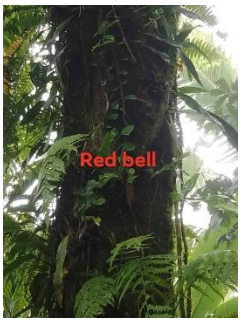
RESEARCH RESULT

Species of Wild Orchids foun d in the Mountain Ranges of Pilar

There were 7 species of wild orchids belonging to 6 genera were found mountain ranges of Pilar, Capiz. These were : Grammatophyllum scriptum, Dendrobium crumentarum Sw, Dendrobium anosmum Lindl, Spathoglottis plicata Blume, Hetaeria oblongifolia Blume, Vandopsis lissochiloides and Phalaenopsis amabilis. This implied that only few species were found in the montain ranges of Pilar. This is because of the excessive collection of orchids for ornamental use or for sale.

Table 1. Species of orchids found in three study area

	Name of Species	Brgy. San Silvestre	Brgy. Tabun-Acan	Brgy. Yating
1.	Grammatophyllum *scriptum*	1	5	7
2.	Dendrobium *crumentarum Sw*	3	10	12
3.	Dendrobium *anosmum Lindl*	0	5	9
4.	Spathoglottis *plicata Blume*	2	15	28
5.	Hetaeria *oblongifolia Blume*	2	9	18
6.	Vandopsis *lissochiloides*	0	5	14
7.	Phalaenopsis *amabilis*	0	0	3



Grammatophyllum scriptum

Dendrobium crumentarum Sw

Dendrobium anosmum Lindl

Spathoglottis plicata Blume

Hetaeria oblongifolia Blume

Vandopsis lissochiloides

Phalaenopsis amabilis

Species Abundance of Wild Orchids found in the Mountain Ranges of Pilar

Of the 7 species found in the mountain ranges of Pilar, Spathoglottis plicata Blume is the most abundant species with abundant rate of 15 followed by Hetaeria oblongifolia Blume with 9.67 abundant rate, Dendrobium crumentarum Sw with 8.33, Vandopsis lissochiloides with 6.33, Dendrobium anosmum Lindl with 4.67, Grammatophyllum scriptum with 4.66 and Phalaenopsis amabilis with an abundant rate of 1. This implied that Brgy. Spathoglottis plicata Blume is the most abundant species that is also present in 3 sampling areas.

Table 2. Species abundance of wild orchids in the mountain ranges of Pilar

Name of Species	No. of Species/Brgy.			Total	Abundance Rate
	Brgy. San Silvestre	Brgy. Tabun-acan	Brgy. Yating		
Grammatophyllum scriptum	1	5	7	13	4.33
Dendrobium crumentarum Sw	3	10	12	25	8.33
Dendrobium anosmum Lindl	0	5	9	14	4.67
Spathoglottis plicata Blume	2	15	28	45	15
Hetaeria oblongifolia Blume	2	9	18	29	9.67
Vandopsis lissochiloides	0	5	14	19	6.33
Phalaenopsis amabilis	0	0	3	3	1
Total	8	49	91		

Species Endemism of Wild Orchids found in the Mountain Ranges of Pilar

Four species were found to be Wide Spread or can be located in different country or continents. These were Grammatophyllum scriptum, Spathoglottis plicata Blume, Hetaeria oblongifolia Blume and Vandopsis lissochiloides and only three were found to be emdemic in the Philippines. These were Dendrobium crumentarum Sw, Dendrobium anosmum Lindl and Phalaenopsis amabilis. This implied that there were only few species that is endemic in the Philippines were found in the mountain ranges of Pilar.

Table 3. Species endemism of wild orchids

Name of Species	Endemism
Grammatophyllum scriptum *(Blume, Rumphia 4 (1848) 48*	(WS) Wide Spread
Dendrobium crumentarum Sw (Cootes, Orch. Philip. (2001) 73)	(PE) Philippine Endemic
Dendrobium anosmum Lindl (Cootes, Orch. Philip. (2001) 66)	(PE) Philippine Endemic
Spathoglottis plicata Blume (Lubag-Arquiza, Orchid Digest 70(3) (2006)	(WS) Wide Spread
Hetaeria oblongifolia Blume (Fl. Jav. Orch. (1858) 85)	(WS) Wide Spread
Vandopsis lissochiloides (Ames in Merr., EPFP 1 (1925) 427)	(WS) Wide Spread
Phalaenopsis amabilis (Ames in Merr., EPFP 1 (1925) 410)	(PE) Philippine Endemic

Conservation Status of Wild Orchids found in the Mountain Ranges of Pilar

There were 3 endangered species recorded in the mountain ranges of Pilar. These were Dendrobium crumentarum Sw, Dendrobium anosmum Lindl and Phalaenopsis amabilis. Three species were vulnerable: Grammatophyllum scriptum, Spathoglottis plicata Blume and Hetaeria oblongifolia Blume and Vandopsis lissochiloides is neutralized.

Table 4. Conservation Status of wild orchids

Name of Species	Conservation Status
Grammatophyllum scriptum	Vulnerable
Dendrobium crumentarum Sw	Endangered
Dendrobium anosmum Lindl	Endangered
Spathoglottis plicata Blume	Vulnerable
Hetaeria oblongifolia Blume	Vulnerable
Vandopsis lissochiloides	Nuetralize
Phalaenopsis amabilis	Endangered

CONCLUSIONS AND RECOMMENDATIONS

There were 7 species of wild orchids belonging to 6 genera recorded in the mountain ranges of Pilar. Spathoglottis plicata Blume is the most abundant species by Hetaeria oblongifolia Blume, Dendrobium crumentarum Sw, Vandopsis lissochiloides, Dendrobium anosmum Lindl, Grammatophyllum scriptum and Phalaenopsis amabilis. Three species were found to be widespread endemic, 3 were found to be Philippine endemic and 3 were endangered species, 3 vulnerable and 1 nuetralized.It is advised that the DENR designate an area to be protected, that the policy for the conservation of wildlife be strictly implemented, that a center for the collection of wild plant germplasm for preservation be established by CapSU Pilar, and that policies be developed for the conservation of currently extant species.

ADVANCED RESEARCH

Thorough assessment should be done in areas.

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