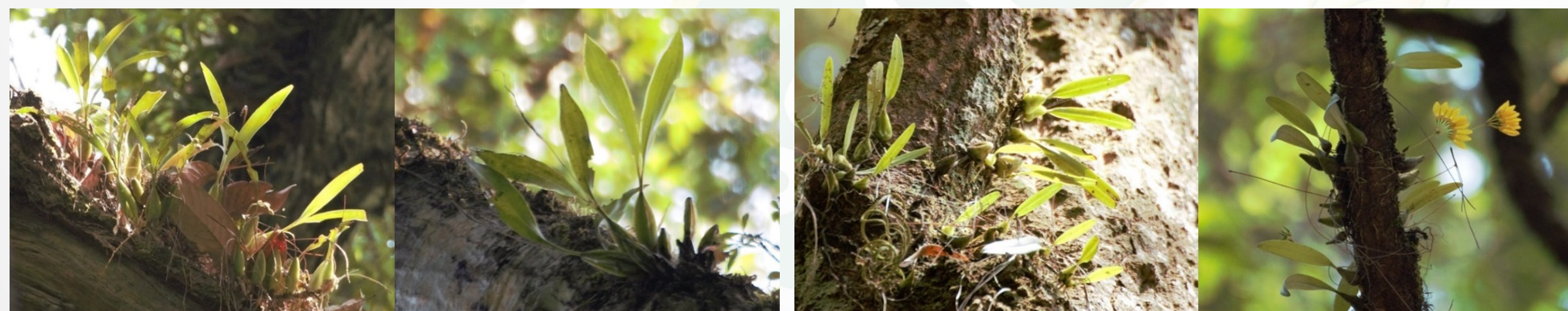


# Orchid species diversity in conservation forest: Doi Suthep-Pui National Park trail, Chiang Mai province



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A Study of orchid species diversity in natural forest areas particularly on the conservation forest, it can be considered as a survey of habitat conservation in its original habitat (in-situ conservation). This is especially in national park areas having a mission to promote recreation tourism. It is fundamental to the conservation of existing genetic resources. Doi Suthep-Pui National Park is an important tourist attraction which is closest to Chiang Mai city. It consists of a variety of forest types i.e. deciduous dipterocarp forest, mixed deciduous forest, pine forest, and lower montane forest (Hermhuk et al., 2020). It is the habitat of orchids that vary in different plant communities, terrestrial orchid and epiphytic orchid. Regarding Doi Pui peak nature study route, it is in the forest ecotone between the pine forest and the lower montane forest. It is popular among bird watchers, hikers, plant explorers and trail runners. In fact, orchids directly interest explorers and indirectly interest recreation tourists. The nature trail is 2,600 meters long, which is a path to learn about the plants and nature of the evergreen forest at the top of Doi Pui (1,658 meters high above the sea level). According to a report of Faculty of Forestry (2020), *Bulbophyllum sutepense*, *Coelogyne prolifera*, *Paphiopedilum callosum var. callosum*, etc. were found there.



เมืองเทียนพู (*Coelogyne schultesii*)

สิงโตพัดเหลือง (*Cirrhopetalum skeatianum*)

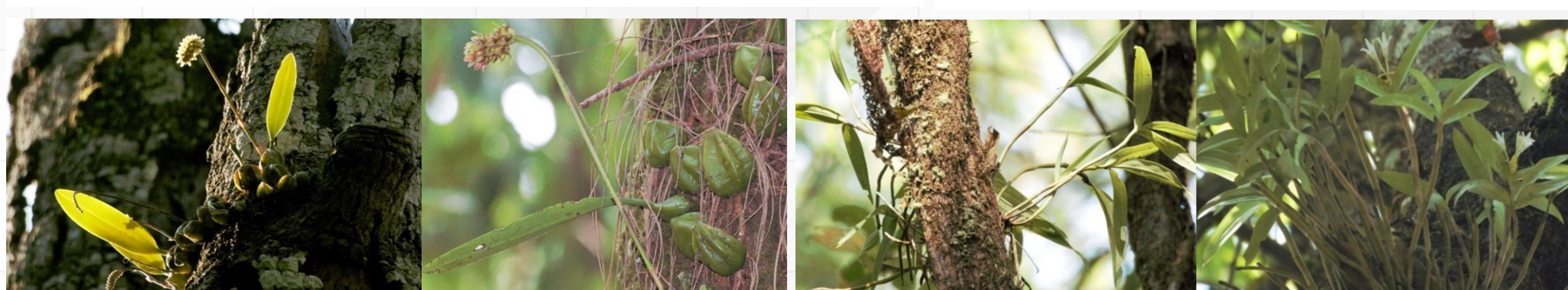
This study explored orchids in Doi Suthep-Pui National Park trail. There was a comparison between a place where forest fires have entered the areas and that of where forest fires have not entered the area (purposive sampling). There was selection of a survey point within the range affected by forest fires and the period affected by forest fires that occurred in 2020. This was done by choosing to use the survey method from counting along the route (Roadside counts) (Phumphakphan,2010). There was the determination of the distance from the orchid survey line within 40 meters from the original route. This was done by measuring from the nature trail 20 meters perpendicular to the right. Throughout the route, surveys were conducted to collect orchid data. This included the following: number of orchid clusters of each orchid plant; number of orchid types for each orchid plant; tree height; the height of the location where the orchid lives on the tree; diameter of the tree; geographic coordinates of trees and distance of the location of the tree where the orchid was found, etc.

Regarding the survey of orchid species diversity, 10 families, 17 species and 197 orchid clusters was found. The highest number of orchid species was found in areas affected by forest fires and in areas not affected by forest fires included *Pholidota recurva*, *Coelogyne schultesii*, *Pinalia amica*, and *Dendrobium sutepense*. Orchid diversity index value according to the formula of Shannon-Wiener index, on average, the two area patterns was equal to 2.26 (a moderate level of species diversity). The following were found most in the areas affected by forest fires: *Cirrhopetalum skeatianum*, *Dendrobium falconeri* and *Dendrobium heterocarpum*. The following were found most in the areas not affected by forest fires: *Bulbophyllum sichyobulbon*, *Dendrobium capillipes* and *Eria truncate*.



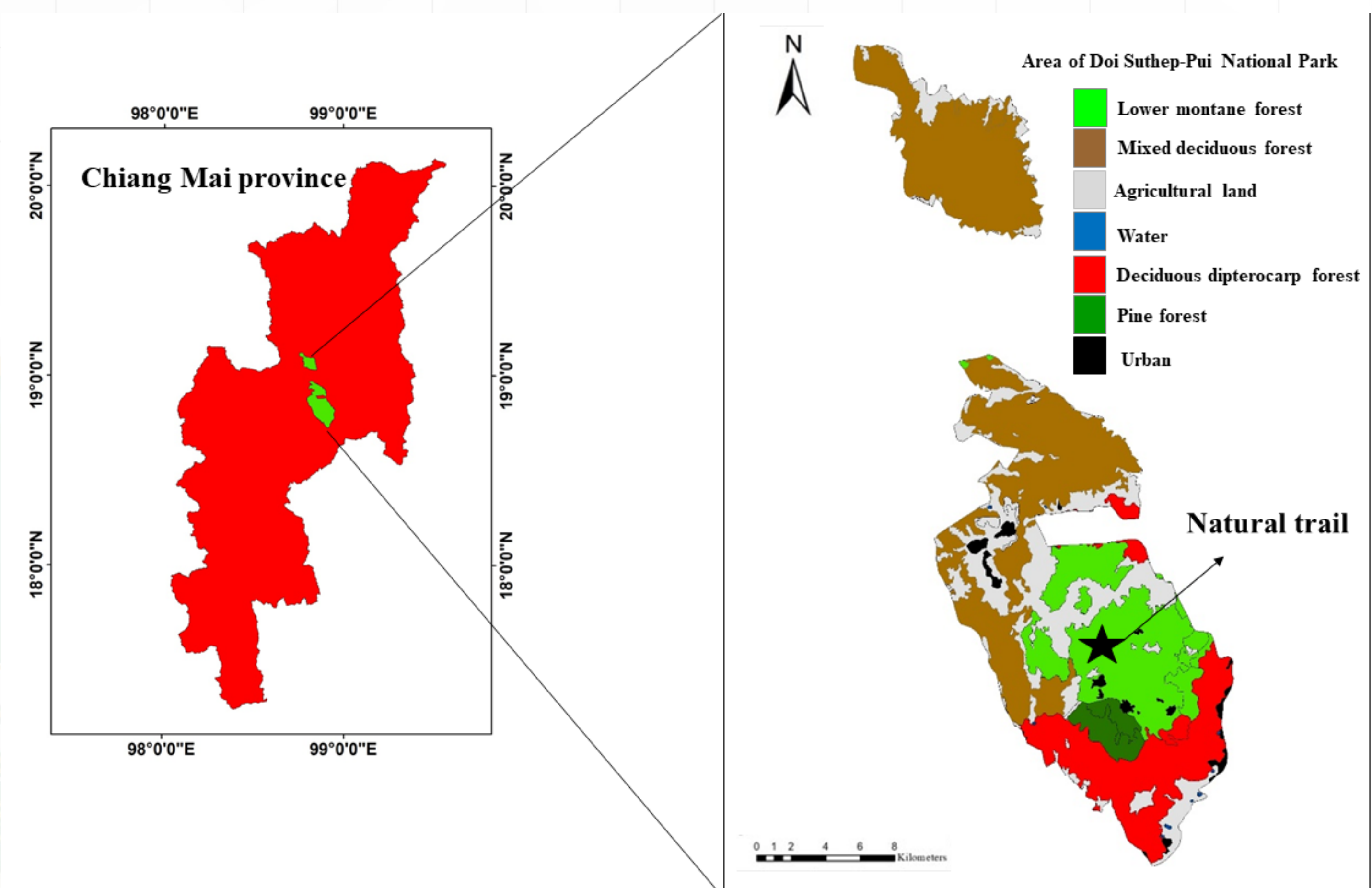
เมืองลำดอเหลี่ยม (*Pholidota recurva*)

เมืองเสียด (*Dendrobium heterocarpum*)



เมืองรวงข้าว (*Bulbophyllum sichyobulbon*)

เมืองมีปากคุด (*Eria truncate*)



Forest types map at the Doi Suthep-Pui

The types of tree that were the habitat of the epiphytic orchid depends on the density of the orchid clinging were *Castanopsis acuminatissima*, *Wendlandia paniculate*, *pinus kesiya*, *Betula alnoides*, *Castanopsis armata*, *Litsea martabarnica*, etc. Most of these were the dominant tree species of low-altitude evergreen forests in northern Thailand. According to an analysis of height data for all trees found in areas affected by forest fires, an average height was  $18.03 \pm 5.00$  meters. When compared all height data of trees grown in the study area, it was found that there was no difference in height of the trees found in the areas affected by forest fires and those not affected by forest fires. It could be said that the forest fires (Surface fire) had no effect on residence or attachment of the epiphytic orchid. However, it might have an effect on the terrestrial orchid and the forest ecosystem.

According to the interaction between orchids, tree types and bark types in the areas affected by forest fires and those not affected by forest fires, it was found that the areas affected by forest fires had more numbers of orchid cluster and varieties than those of not affected by forest fires. This might be because the former was a clear area having a greater amount of light than the latter. Rough bark such as fissured bark and scaly bark and the bare canopy of these trees was more suitable for orchids to live and grow. Generally, the epiphytic orchid prefers to live on the tree having rough bark since its roots cloud cling to it and retain moisture longer. Meanwhile, the bark structure was not the most important factor on habitat of the epiphytic orchid. Each condition affects the emergence of the epiphytic orchid, depending on the appropriate components such as light intensity, air circulation, and humidity. Therefore, the distribution pattern of the epiphytic orchid living in trees of each zone arised from needs for sunlight and humidity (Phiphatsawaddikul and Ladpala, 2019).

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