

Distribution of the most Invasive plant species in Yangmingshan National Park of Taiwan

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Keywords: Invasive plant, Yangmingshan National Park, *Bidens pilosa*, *Impatiens walleriana*, *Tradescantia fluminensis*

Abstract

Non-native plant invasions have seriously altered community structure and ecosystem functioning in habitats around the globe. Yangmingshan National Park consist a diversified plant life including a total of 1224 species. There are about 110 alien species can be observed in this location. Here we selected two native species as the reference for the comparison (*Pseudosasa usawai* and *Miscanthus floridulus*) and three alien species (*Bidens pilosa*, *Impatiens walleriana* and *Tradescantia fluminensis*) for the study as past literature demonstrated that those five species exceedingly competitive in the park.

There are five major natural vegetation forms can be found in park, mixed broad leaf forests are the most dominant vegetation form covers approximate 7981.3 hectares and elevated between 200m to almost 850m. *M. floridulus* distributed approximately 1417.5 hectares among the mixed broad leaf forests. Grasslands are frequently found in areas above 800m and dominated by *M.floridulus* and *P.usawai*. Approximate they covered 709.9 hectares in grasslands. Total area enclosed by *M. floridulus* and *P.usawai* are about 2921.1 hectares approximately 25.5% of total land area of the park. *B. Pilosa* had the broadest distribution along roadsides in past surveyed area of all three focal invasive species, occurring in 119 roadside locations. Continuous *B. pilosa* infestations do not showing considerable distribution pattern along the elevation. According to the past studies *T. fluminensis* shows fastest growing patterns among selected species and presented in 108 of roadside locations, and highest occurrence and optimization recorded on elevation 650-850m. The higher levels of *I. walleriana* recorded on elevation 150-450 m along roadside vegetation. Considering distribution patterns towards higher elevation, *B.pilosa*, *I. walleriana* and *T. fluminensis* show drastic decline. It seems their spreading is affected by environmental and climatic variations. *I.walleriana* and *T. fluminensis* desire to the places where there are more sunlight and moisture. Although there are more Photosynthesis Active Radiations towards high elevations water scarcity may be the limiting factor for their distribution

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over gradient because of their prominent mid elevational distribution. *B. pilosa* has more ability to survive in harsh environment without dense moisture condition in soil. So it has a potential to move furthermore to higher elevations. But low temperature and allelopathic ability of *M. floridulus* may decrease their distribution in higher grasslands. The present study reveals the Yangmingshan National Park is more prone to biological invasions. *M. floridulus* shows unpredictable distribution pattern within the park. *P. usawai* seems restricted to uppermost elevation. With the global warming and high visitor pressure, the distribution patterns of these species may change in the future.