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Mapping of the Distribution and Abundance of the Key Plant Species, Serious Invasive Weeds in the Galapagos Islands (Ecuador), and Development of a Management Strategy against these Invasive Weeds

VICTOR PATRICIO RUEDA AYALA, ROLAND GERHARDS

University of Hohenheim, Institute for Phytomedicine, Germany

Abstract

On the Galapagos Islands, invasive plants are of high threat to both agricultural and natural habitats, causing therefore damage to the welfare of farmers and native fauna and flora species, hence tourism and inhabitants. Approximately 475 species of introduced plants were found in the Archipelago. Quinine (*Cinchona pubescens*), elephant grass (*Pennisetum purpureum*), blackberry (*Rubus niveus*), guava (*Psidium guajava*), passion fruit (*Passiflora edulis*), and sauco (*Citharexylum gentryi*) in the agricultural zone of Santa Cruz are identified as the most severe invasive plants. The protected one (Park area) is also threatened by them. Several methods of controlling these plants are being attempted though, including chemical and biological control. Basic information on the distribution of these species is required to plan eradication programs and to identify reasons for invasions. A tentative plan of mapping these species has been developed by the Galapagos National Park, where the above mentioned species were identified. Nevertheless, a validation of the results is required. Consequently, this research is proposed with the aim to map the spatial distribution and abundance of those alien plants on Santa Cruz Island, and contribute to validate the previous results. A mobile GIS connected to a Handheld GPS is used for plotting. Sampling territories in patches of invasives are randomly established to take measurements of plants abundance, occurrence, and to determine interactions with native species. Information about plants biology, competitive ability and phenology are also to be collected in a literature review. The analysis of data will be done with Open Jump software with General Public License (GPL); a multilayer analysis with all the available shape files will be performed. Existing information and Geo-referenced maps of the islands will be provided by the cooperation partners PNG and CDRS. The results will be presented to the management authority of the Galapagos National Park, for further control and removal actions. Expected results are the determination of the competitiveness of invasive over the native flora, interaction with the ecosystem, prediction of future possible appearance and to propose a further work for ecological control of the species.

Keywords: Competitiveness, endemic, Galapagos islands, Geographic Information System (GIS), invasive plants, mapping