Mapping of the distribution and abundance of nine plant species, serious invasive weeds in the Galápagos Islands (Ecuador)

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Background

No detailed maps have been developed for the Park area, but rather a data set of distribution at the herbarium CDRS*; Maps of land use and invasive plants at the highland area in Santa Cruz Island, resulted from remote sensing and digital satellite images classification (GNP*).
This project intended to validate this information, by finding reasons of invasion in determined areas of the island, and predicting potential invaded areas.

Methodology

Survey sampling in Santa Cruz island
Data acquisition:
• Grid 100m x 100m
• According to zoning of infrastructure and land use, contour lines, vegetation zones, Highways, streets and pathways
• Sampled point marked with GPS, every 100 paces each
• View 50m radius to determine cover abundance (invasion per area: domin scale from 0=absent to 10=100% coverage)

Mapping of predicted (interpolated) areas invaded by:
Cedrela odorata L. (Meliaceae),
Cinchona pubescens Vahl. (Rubiaceae),
Persea americana L. (Lauraceae),
Psidium guajava L. (Myrtaceae),
Cestrum auriculatum L' Her. (Solanaceae),
Lantana camara L. (Verbenaceae),
Pennisetum purpureum Schumach (Gramineae),
Passiflora edulis Sims (Passioraceae), and
Rubus niveus Thunb (Rosaceae).

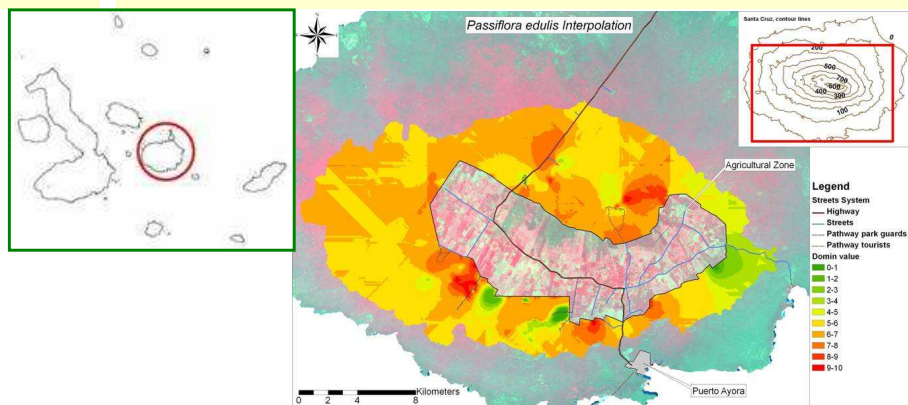## Results and Discussion

Fig. 1 *Map of predicted invaded areas (similar for all 9 species)*

✓ Invasion coverage is higher at higher altitudes, where more rainfall is available during the year.
✓ Arid and transition vegetation zones have invasive plants due to El Niño effect which increases precipitation.
✓ Invasion strategies that plants possess, feral animals and humans promote their dispersion.
✓ Suppression, competence with native vegetation; no cooperative relationships were founded so far.
✓ Control and eradication of invasive species, considering the consequences

Recommendations

Use the data here presented, as ground truth information for better mapping via high resolution image classification.
Elaborate a model of prediction of invasive plants dispersion, through further sampling

*Abbreviations:
CDRS: Charles Darwin Research Station
GNP: Galápagos National Park
GIS: Geographical Information System
GPS: Global Positioning System

Acknowledgements