

NASA CATALYST - Preserves Project

A Collaboration between NASA JPL, the Nature Conservancy and UCSB Sedgwick Reserve



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A Project Aimed at Monitoring California's Biodiversity

Accelerating pace and magnitude of recent environmental change require an enhanced understanding of the Earth as an integrated system

- The NASA CATALYST Preserves Project is an initial effort for CATALYST, to use remote sensing tools to identify invasive species at Santa Barbara's Jack and Laura Dangermond Preserve and Sedgwick Reserve



Locations of Study



Jack and Laura Dangermond Preserve

- Owned by the Nature Conservancy and relatively untouched by development
- 24,000 acres from the Santa Ynez Mountains to the coast



Sedgwick Reserve

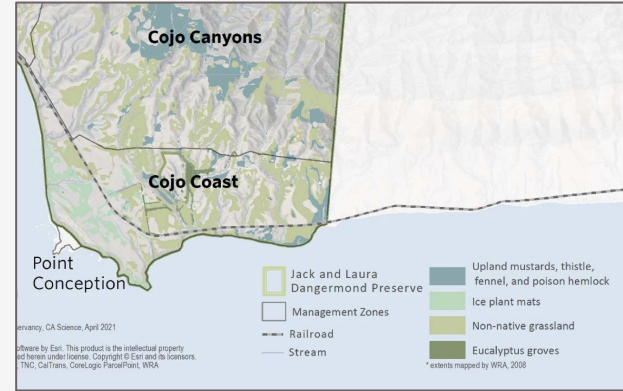
- A research hub with a rare collection of natural resources that support a wide array of wildlife
- 5,896 acres containing two watersheds in Santa Barbara County's Santa Ynez Valley

Iceplant

- Coastal non-native plant
- Shallow-rooted
- Range in color from red to green with thick leaves
- Hoards water from surrounding native plants, inhibiting their growth
- Spread by both ecological processes and anthropogenic activities (wind navigation, wildlife movement, and transportation activities)



Invasive Species Management: Essential Tracking



Removing iceplants manually is feasible due to their shallow roots. Since they are widespread, it's best to promptly address small infestations.

For identification of iceplant patches and tracking of removal efforts, accurate, high resolution, and wide scale data are needed.

Image Source: The Nature Conservancy

INTRODUCING CATALYST

Project Deliverables



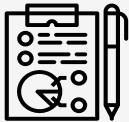
Algorithms to detect
invasive vegetation from
AVIRIS SHIFT data



Maps of invasive species
for Dangermond Preserve
and Sedgwick Reserve



GIS layers and
direct inputs for
land managers



Identification of costs
and benefits to
management strategies
(burning vs. grazing)



Subsequent management
plans for treatments to
control invasives



Maps and products for
science outreach, future
grant applications,
and planning

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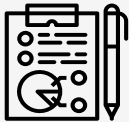
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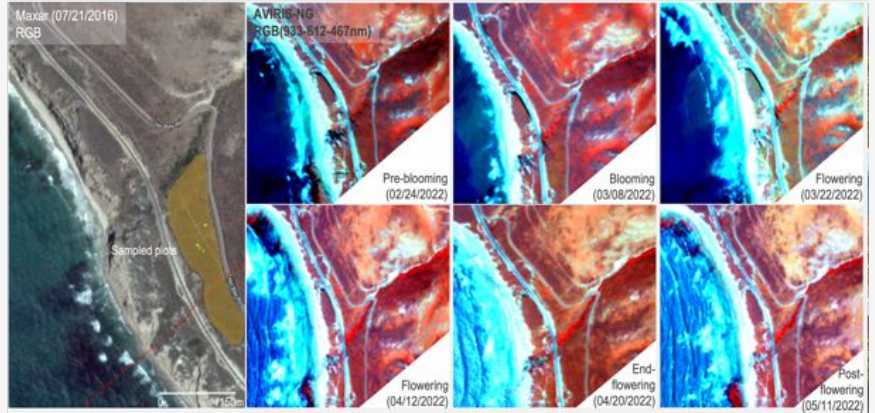
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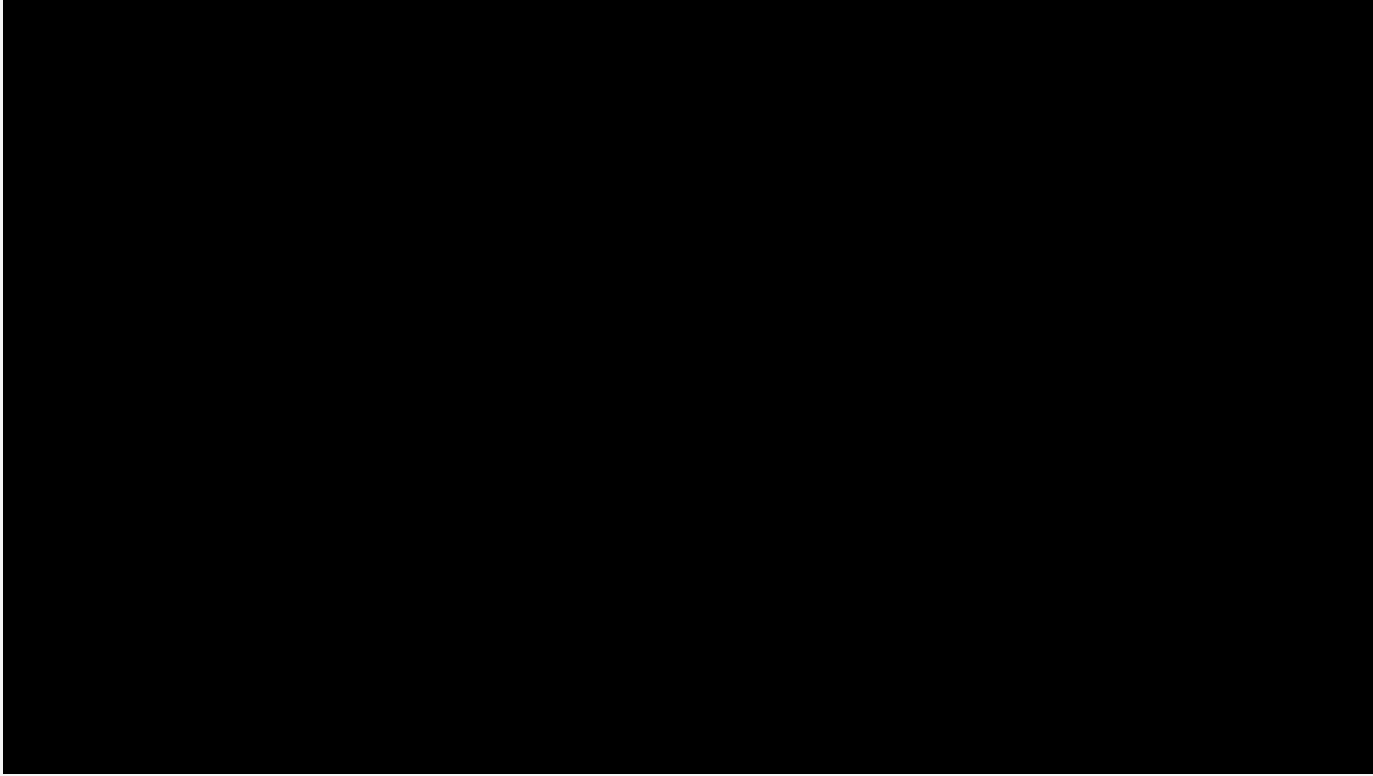
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Projects' Significance to Biodiversity

- Algorithms to detect invasive vegetation from AVIRIS SHIFT data and can be used for a range of applications
- Maps of invasive ice plant and mustard for Dangermond and Sedgwick
- GIS layers and direct inputs for land managers at both preserves
- Testing of how satellite imagery can be used to detect biodiversity - identification of limitations and opportunities
- Translation of NASA data products into maps and products to be used for science outreach, requesting grants from funders for management goals, and climate change planning



A Fruitful Collaboration





THANK YOU!
QUESTIONS?