Enabling Conservation Planning with GIS
A Vision for 30 by 30

Sunny Fleming
David Gadsden
Daniel Martin
Ryan Perkl

2021 ESRI USER CONFERENCE

Agenda

Understanding 30 by 30
David Gadsden

Process and Resources
Ryan Perkl

Working Towards 30 by 30
Sunny Fleming

California Nature Showcase
Daniel Martin

Q&A

David Gadsden
Director of Conservation Solutions

Ryan Perkl, PhD.
Green Infrastructure Lead
Principal Consultant
Environment & Geodesign

Sunny Fleming
National Solution Engineer
State Environment

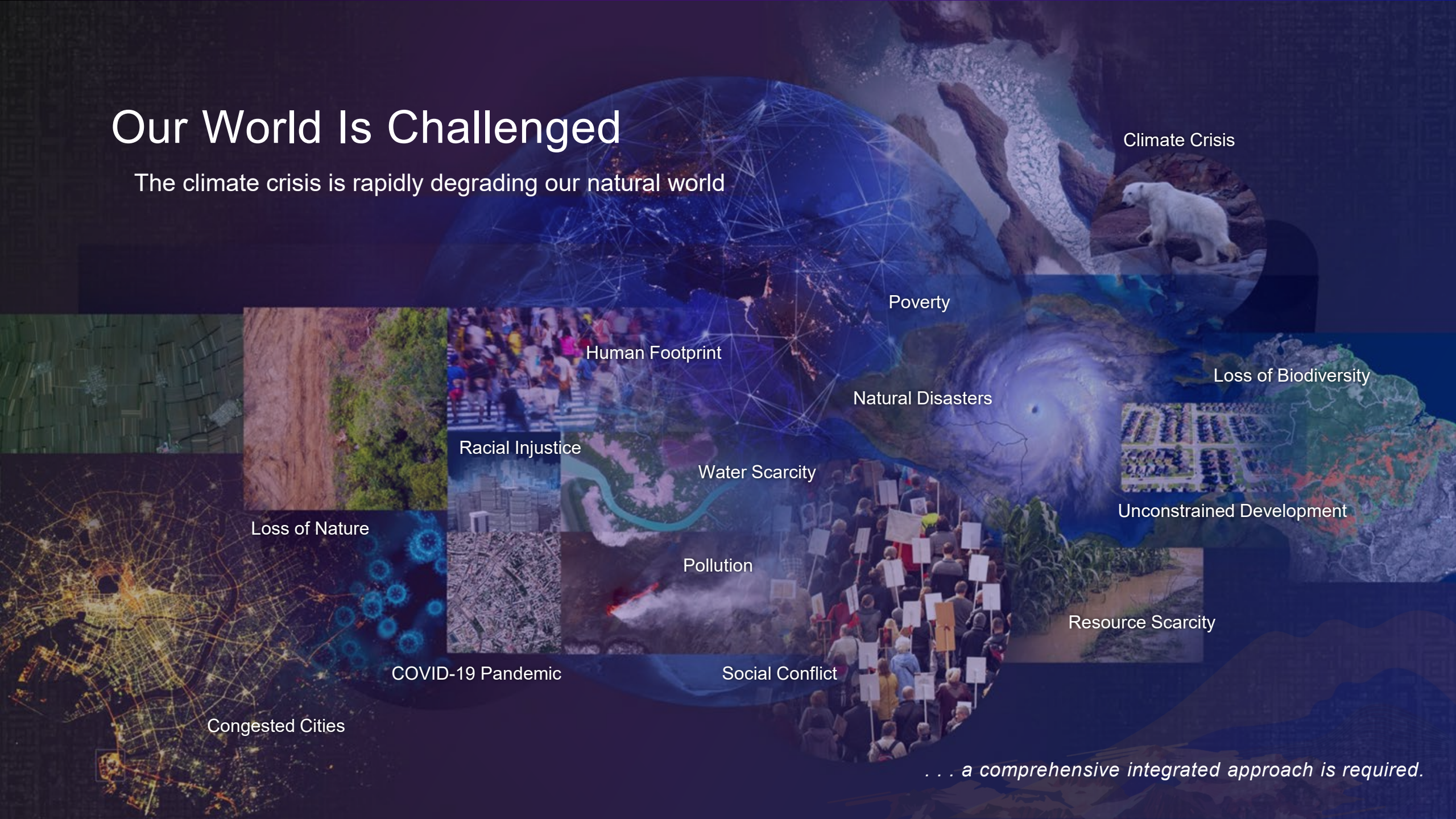
Daniel Martin
Consultant & Project Manager
Environment & Geodesign

Understanding 30 by 30

David Gadsden

Our World Is Challenged

The climate crisis is rapidly degrading our natural world

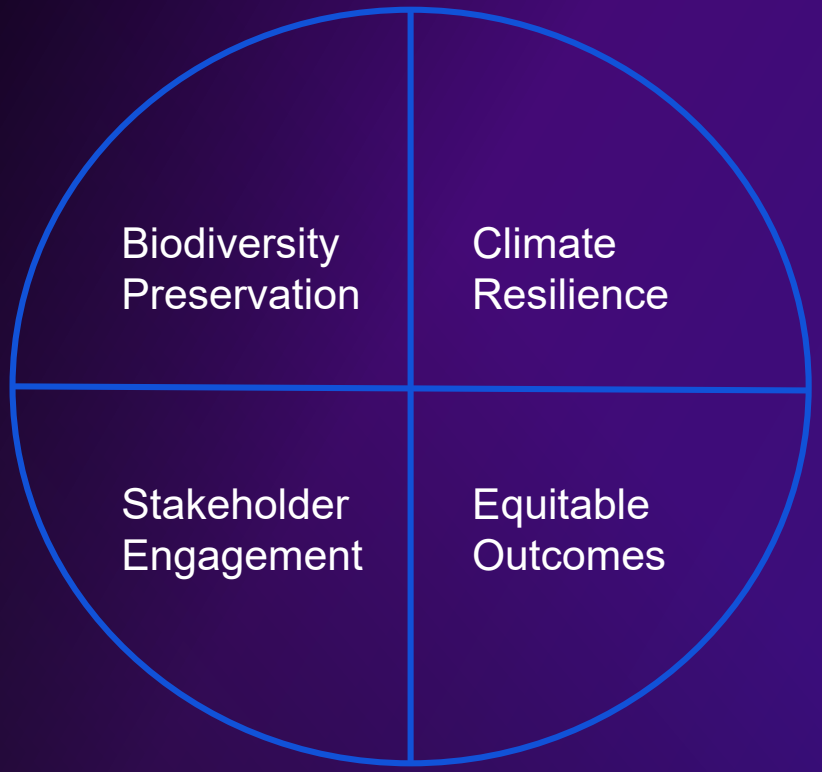


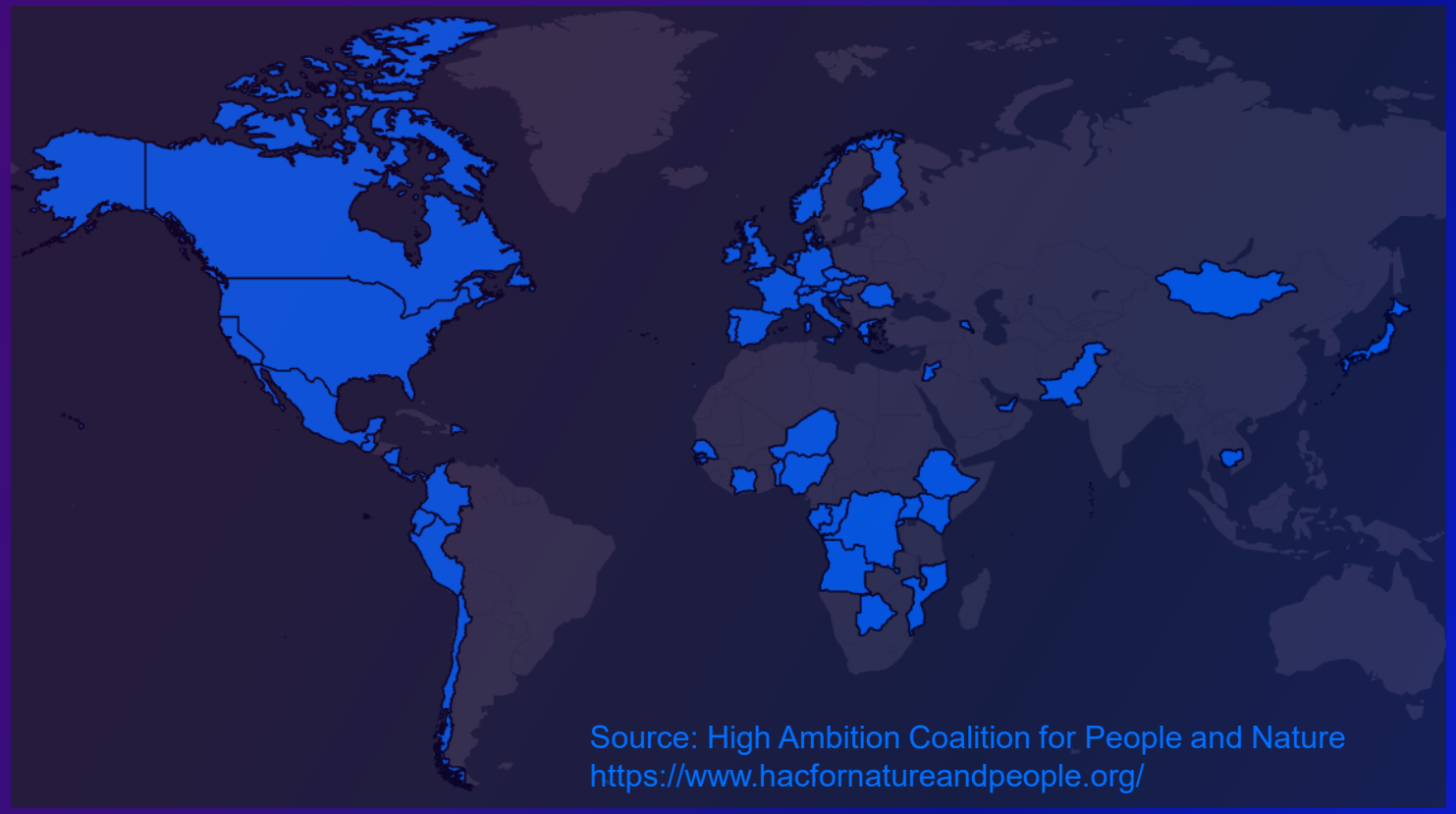
. . . a comprehensive integrated approach is required.

Conserving 30% of Land and Waters by the Year 2030

An emerging global movement to stop the rapid loss of species, and to improve resiliency to climate change by setting aside more of the Earth's surface for nature. While leading scientist such as E.O. Wilson have called for the preservation of Half the Earth's surface for nature, protecting 30% of land and sea by the year 2030 is a gaining momentum as an initial target.

Global Commitments to 30 by 30





Geospatial Infrastructure for 30 by 30

System of Record

Geographic Information Systems

Best Available Data

System of Engagement

Planning Applications

Open Access &
Engagement Hubs

System of Insight

Resources & Process

Ryan Perkl

ArcGIS

Esri’s Green Infrastructure Initiative

Esri Derived Data

Source Data

Models

Apps

ArcGIS

Esri derived national inventory of intact habitat cores, fragments, and national landscape connectivity data

Esri Derived Data

Source Data

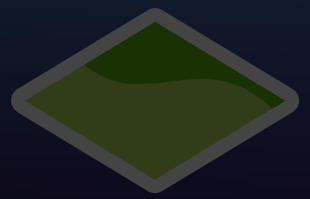
Models

Apps

ArcGIS

A one stop location for accessing the most commonly used and authoritative data for GI planning

New Core Data



Source Data

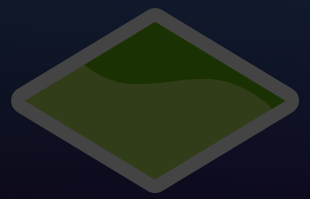
Models

Apps

ArcGIS

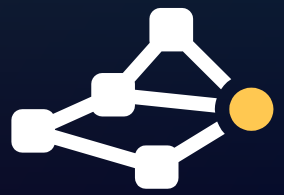
Freely available and configurable ArcGIS Desktop and Pro models for generating your organization's GI assets using your data

New Core Data



Source Data

Models

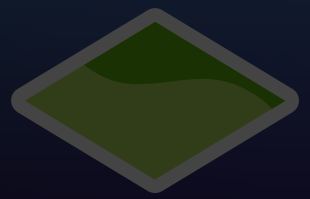


Apps

ArcGIS

Apps that are both freely available and others that function with ArcGIS online for engaging in GI asset identification, prioritization, and customizable analysis

New Core Data



Source Data

Models

Apps

A Process

Enabling GI, Conservation, and 30 by 30 Planning

Data Driven, Repeatable, & Transparent…

Live Demo

Enabling GI, Conservation, and 30 by 30 Planning

GI Resources

Contact: Ryan Perkl, rperkl@esri.com

Search “Green Infrastructure” In the Conference Detailed Agenda

Esri Green Infrastructure Initiative Web Page: http://www.esri.com/about-esri/greeninfrastructure

GI Data:

Green Infrastructure Data Gallery: https://nation.maps.arcgis.com/home/item.html?id=79f24082c91f4314b16bf8373c946ee5
Intact Habitat Cores (map image layer): https://nation.maps.arcgis.com/home/item.html?id=ee328d53ec9e4cccba005bed9374a25c
Intact Habitat Cores (tile layer): https://nation.maps.arcgis.com/home/item.html?id=0d2f35395c3c43ecb7685df9be63dd84
Intact Habitat Cores (web map): https://nation.maps.arcgis.com/home/item.html?id=b9155ee0caa04fcf9744e25cad76b44a
Habitat Fragments (image layer): https://nation.maps.arcgis.com/home/item.html?id=c27ff9b9a80b44dcb94ac7ad084a1eca
Habitat Cost Surface (image layer): https://nation.maps.arcgis.com/home/item.html?id=98882d18558a4659962d2b39a49ae7ed
Habitat Connectors (map image layer): https://nation.maps.arcgis.com/home/item.html?id=9e1925e34f9d4f1b88d9fa7aa4c8116d
Habitat Connectors (tile layer): https://nation.maps.arcgis.com/home/item.html?id=f8352a73777b4f23800cbd4cf83bcc72
Intact Habitat Cores by Connectivity Importance (image layer): https://nation.maps.arcgis.com/home/item.html?id=fe42b11c901d4dbab8833c2415ed21b7

GI Apps:

Green Infrastructure Apps Gallery: https://nation.maps.arcgis.com/home/item.html?id=cdaa4f3e12b246c0bee97cbb293703c8
Intact Habitat Near Me App: https://nation.maps.arcgis.com/home/item.html?id=7433627fbc674a90b0e6a3d7a5c5334d
Landcover Change App: https://nation.maps.arcgis.com/home/item.html?id=60d93ae835f54a98a2cd82edac76e740
Select Your Intact Habitat Cores: https://nation.maps.arcgis.com/home/item.html?id=7433627fbc674a90b0e6a3d7a5c5334d
Prioritize Your Intact Habitat Cores: https://nation.maps.arcgis.com/home/item.html?id=d2efd6dbda094741a661069263258293
Investigate Core Weighting: https://nation.maps.arcgis.com/home/item.html?id=4a47db0d498541cab0d3fdb14586d3b2
Conduct Landscape Analysis: https://nation.maps.arcgis.com/home/item.html?id=ad89d62e4b304396a7296be6898e61f2

Working Towards 30 by 30

Sunny Fleming

GIS is already making a difference

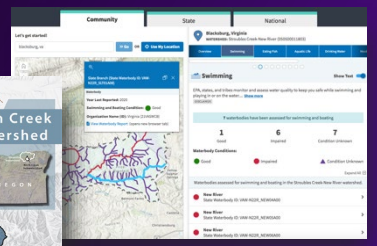
National, Tribal, State, Local and NGO Organizations

Climate

Watershed Planning

Confederated Tribes of the Umatilla Indian Reservation
Birch Creek

Watershed Assessment

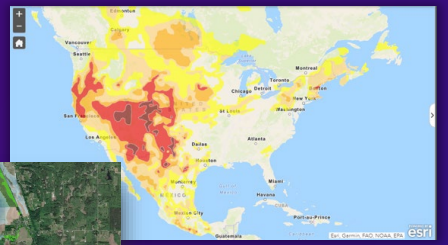


EPA
Blacksburg, Virginia

Sea Level Rise

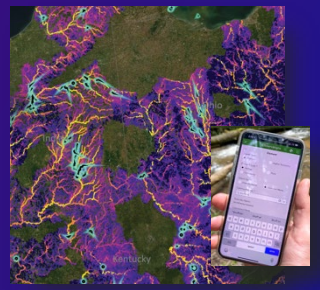
Samish
Washington

Drought Monitoring



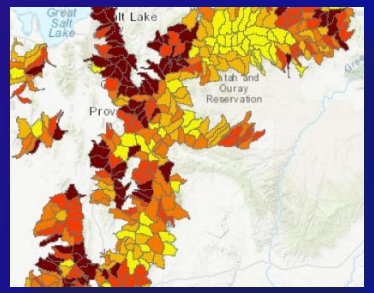
Biodiversity

Species Probability Modeling



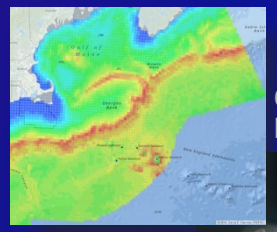
NatureServe
US

Integrated Landscape Management



USDA Forest Service
Utah

Marine Habitat Modeling

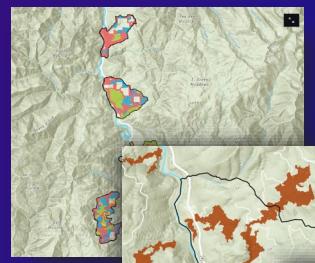


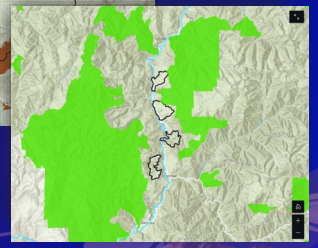
NOAA
North Atlantic Ocean

Coral and Habitat Monitoring

NOAA
Beaufort, North Carolina

Indigenous Led Restoration

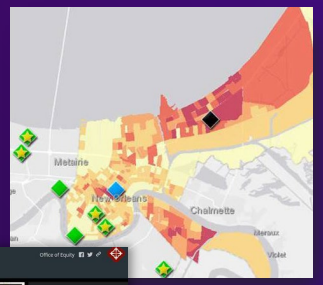




Karuk Tribe
California

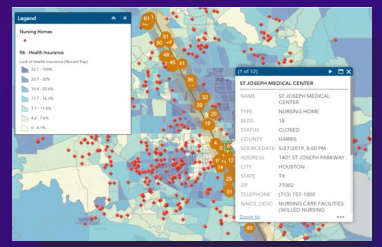
Equity

Black Women and Healthcare Access



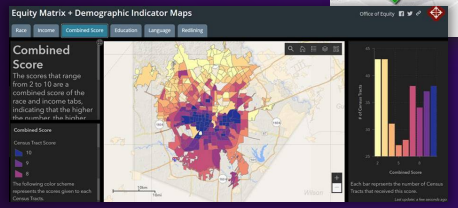
W.K. Kellogg Foundation
Louisiana

Vulnerable Population and Critical Infrastructure



DHS | FEMA
Houston, Texas

Interactive Equity Atlas



City of San Antonio
Texas

A Process

Enabling GI, Conservation, and 30 by 30 Planning

Data Driven, Repeatable, & Transparent…

A Process

Enabling GI, Conservation, and 30 by 30 Planning

Understand

Act

Plan

Data Driven, Repeatable, & Transparent…

A Process

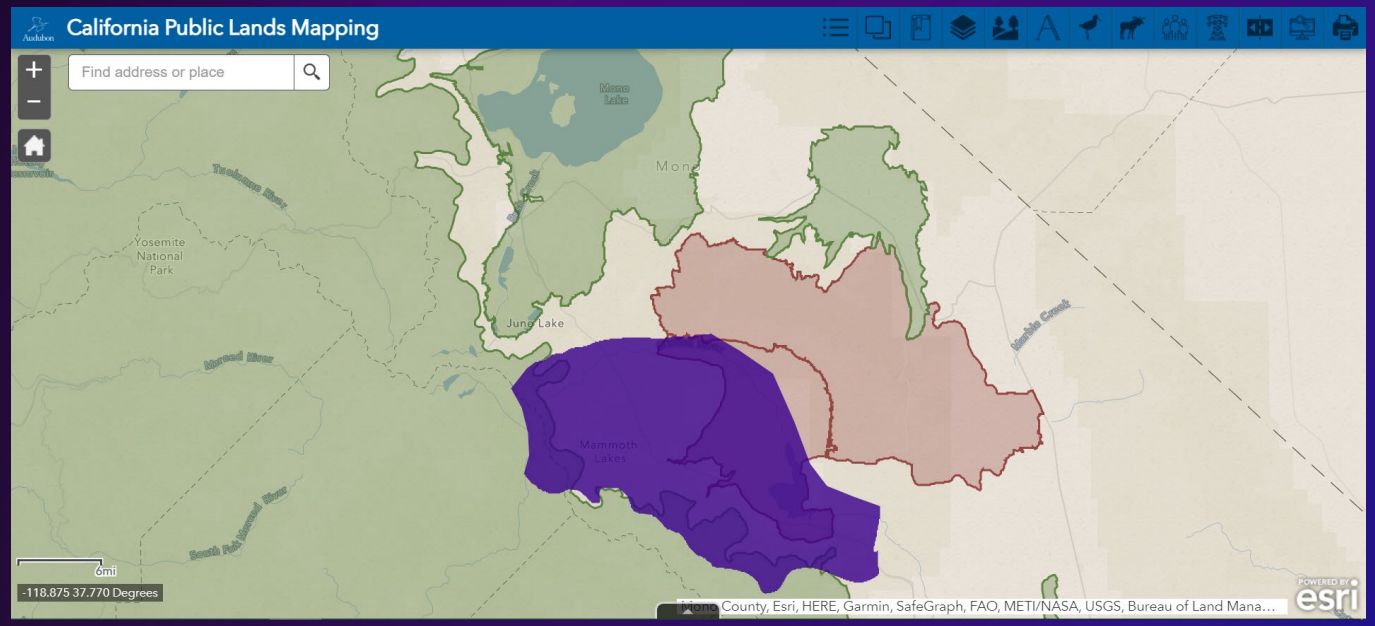
Enabling GI, Conservation, and 30 by 30 Planning

Data Driven, Repeatable, & Transparent…

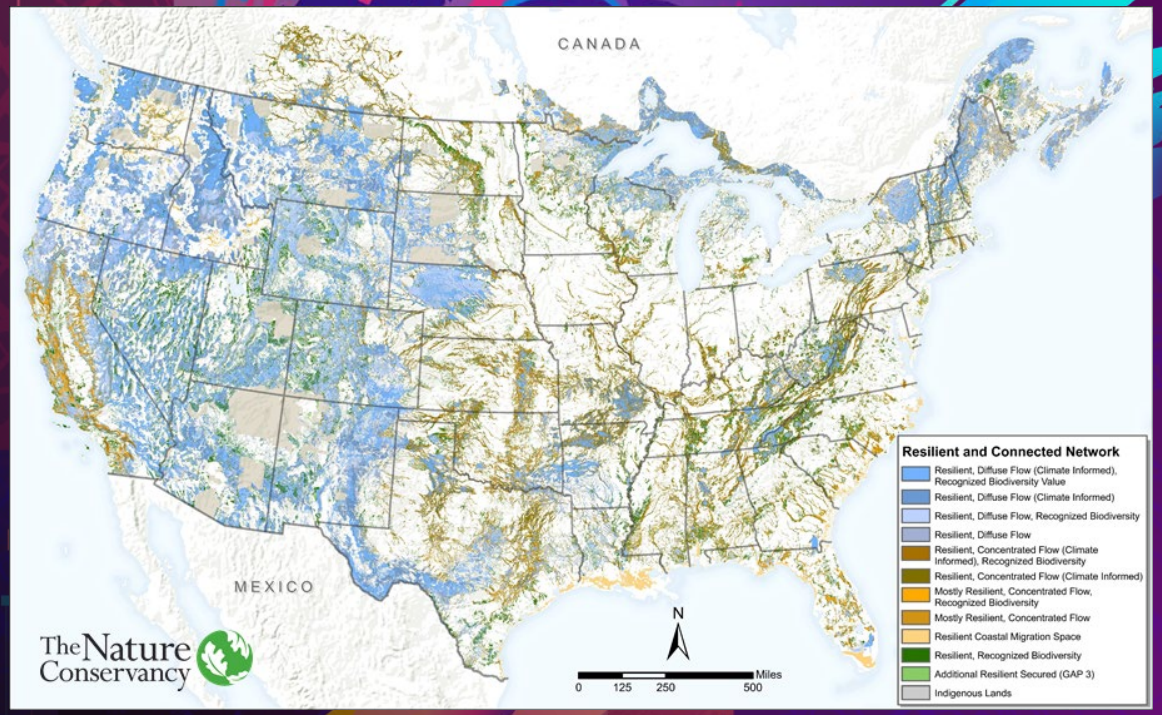
Audubon's Avian Migration Corridors

A Holistic Model for Conservation Planning

Audubon’s Avian Migration Corridors



- Science-based tools
- ArcGIS StoryMaps
- Multi-faceted
- Benefit local communities, birds, and other wildlife

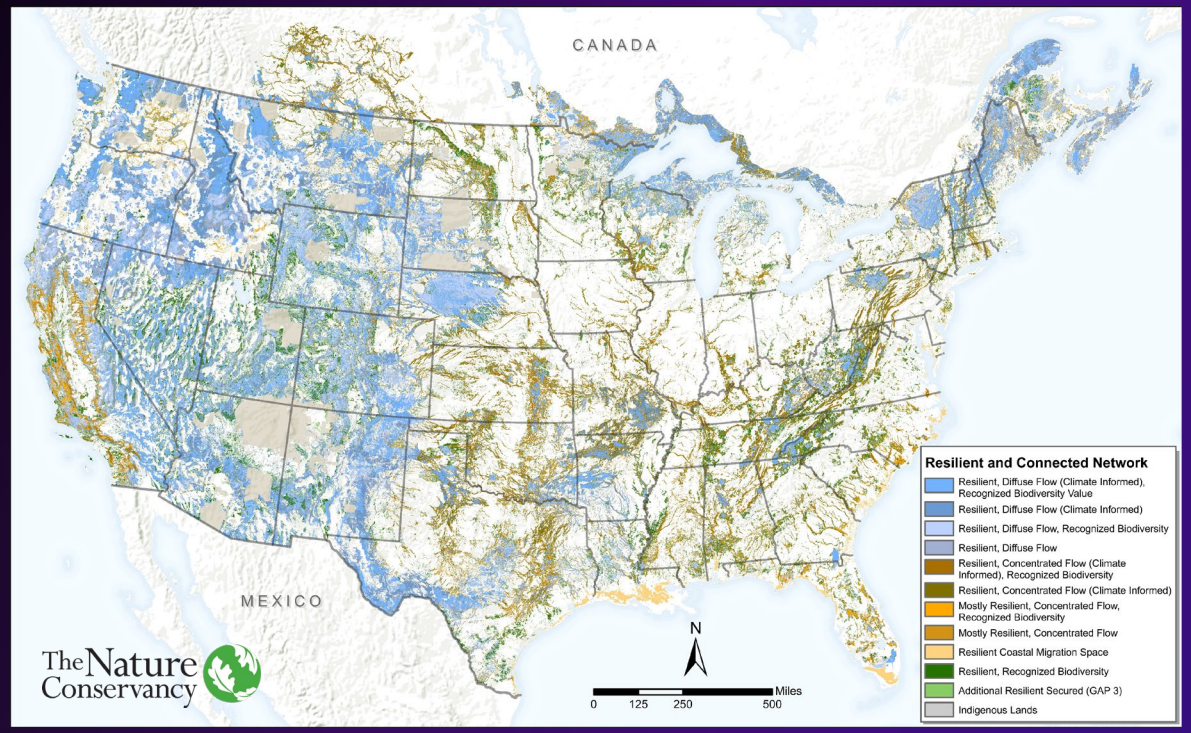


The Nature Conservancy

Resilient Land Mapping Tool

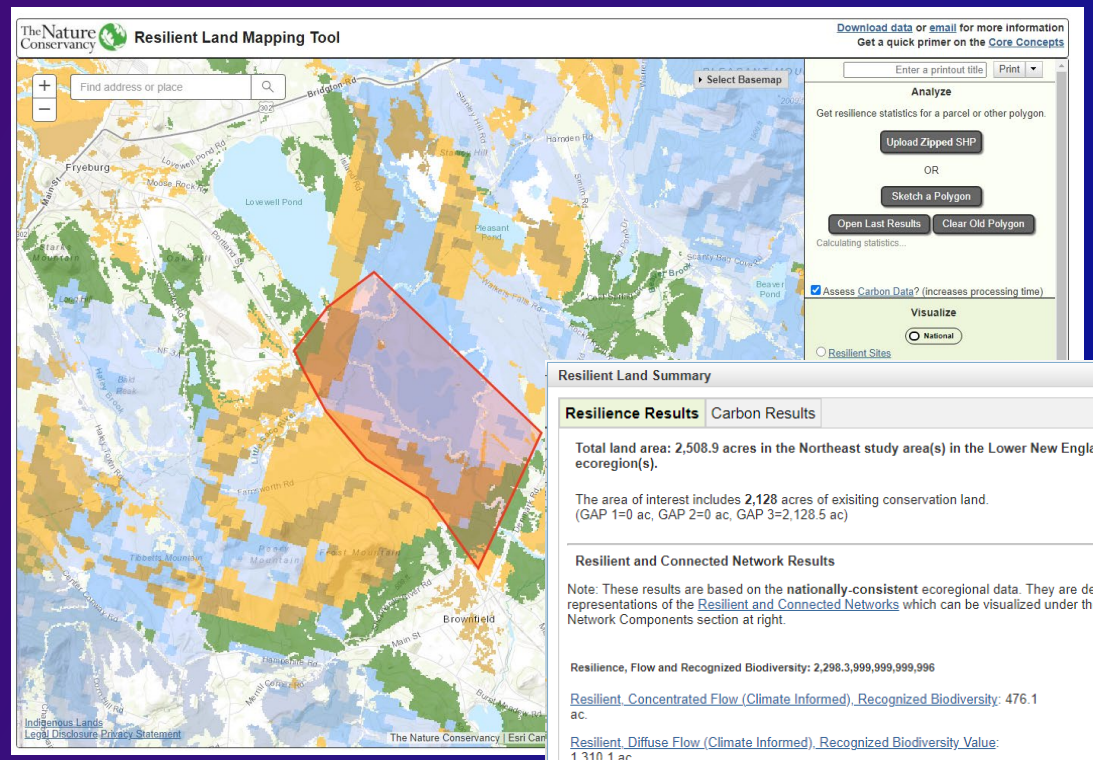
The Nature Conservancy

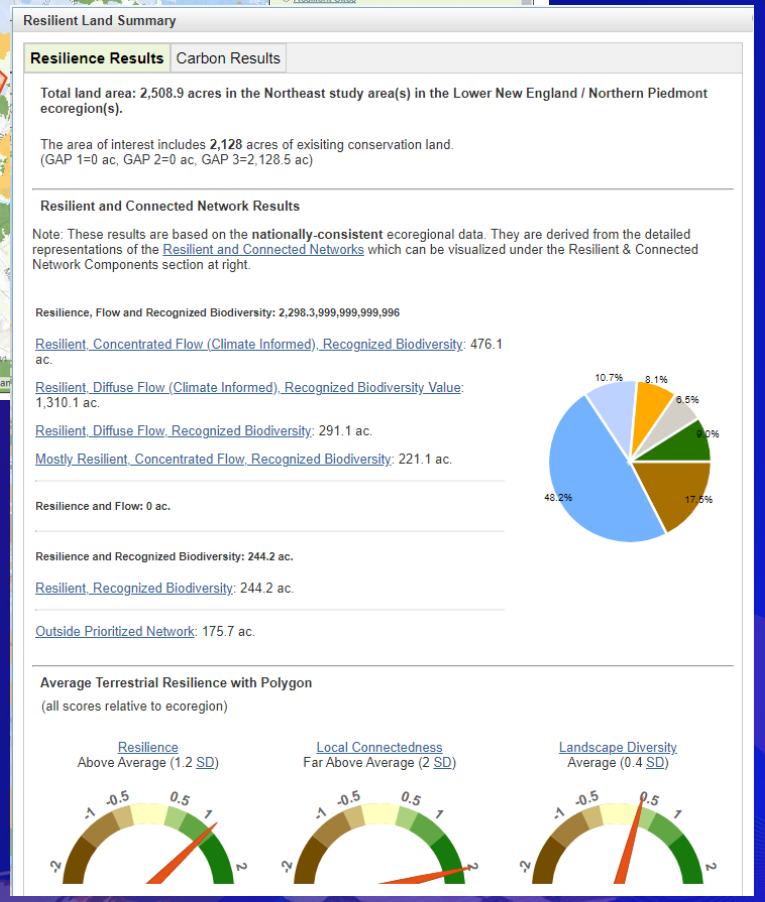
Resilient Land Mapping Tool



Resilient and Connected Network

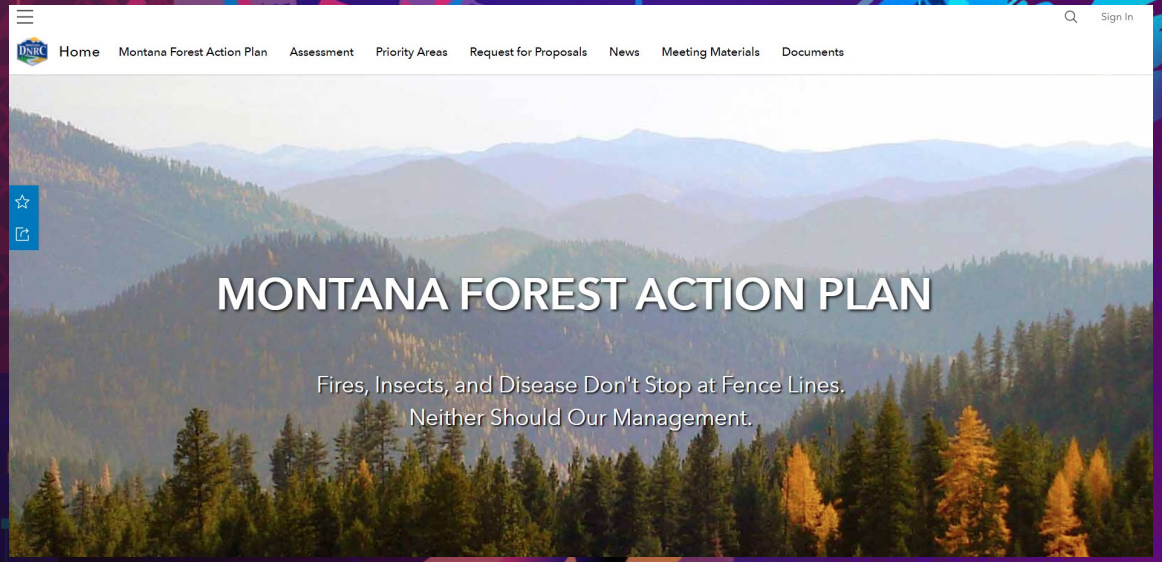
for Conservation in a Changing Climate





The map combines:

- *Resilience*
- *Connectivity*
- *Biodiversity*
- *Carbon*

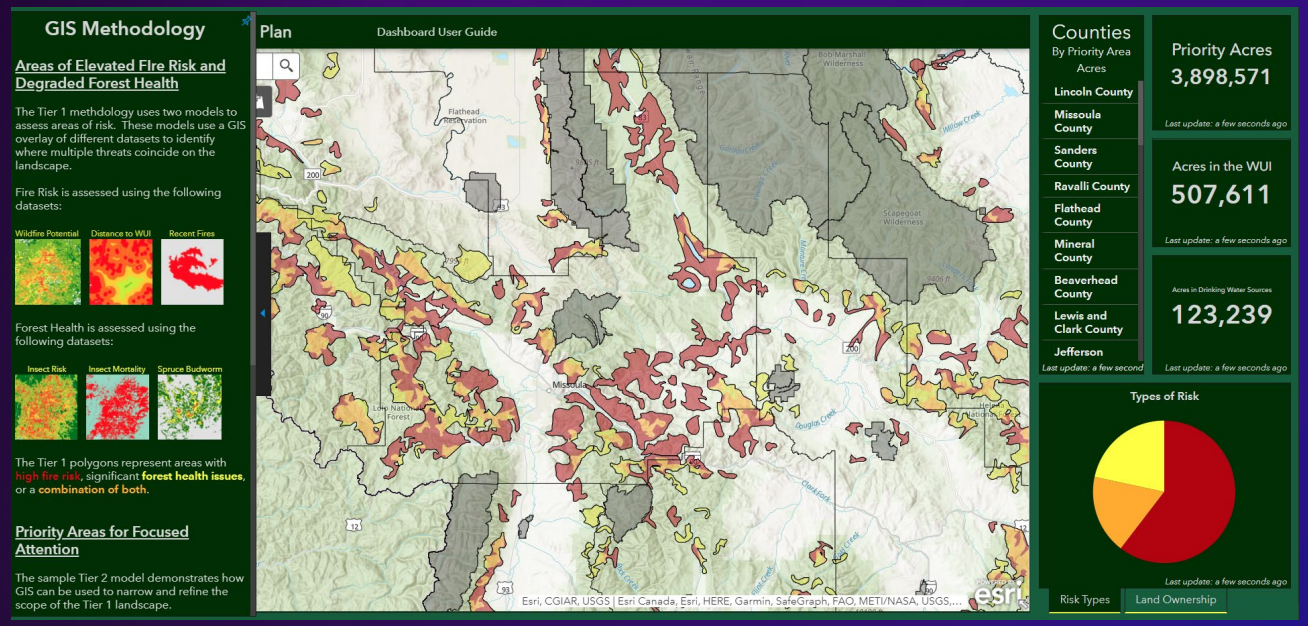


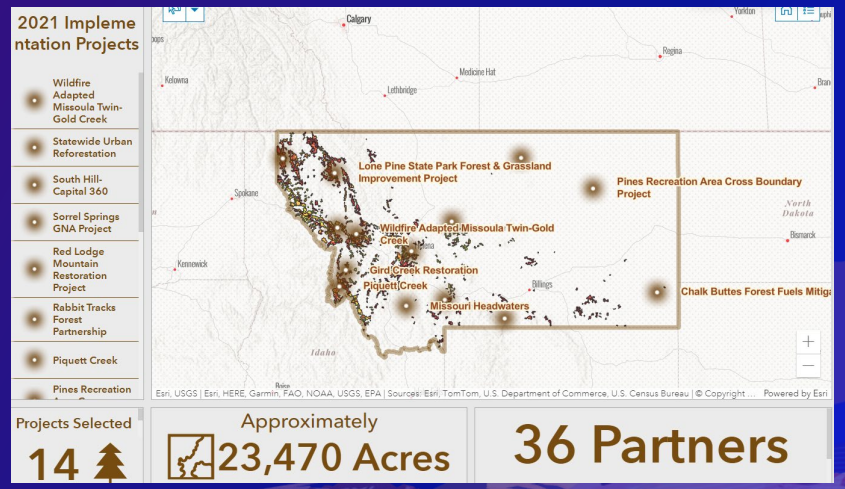
Montana's Forest Action Plan

Reconciling Stakeholder Perspectives

Montana’s Forest Action Plan

- Aligned Stakeholder Perspectives
- ArcGIS Hub Premium
- Engaged Community
- Agile Approach

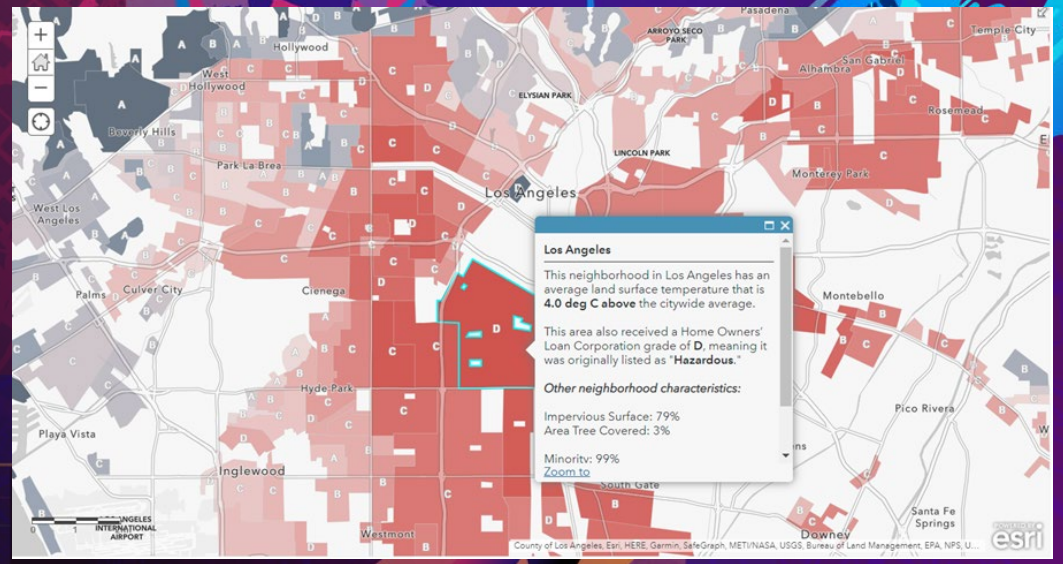




A Process

Enabling GI, Conservation, and 30 by 30 Planning

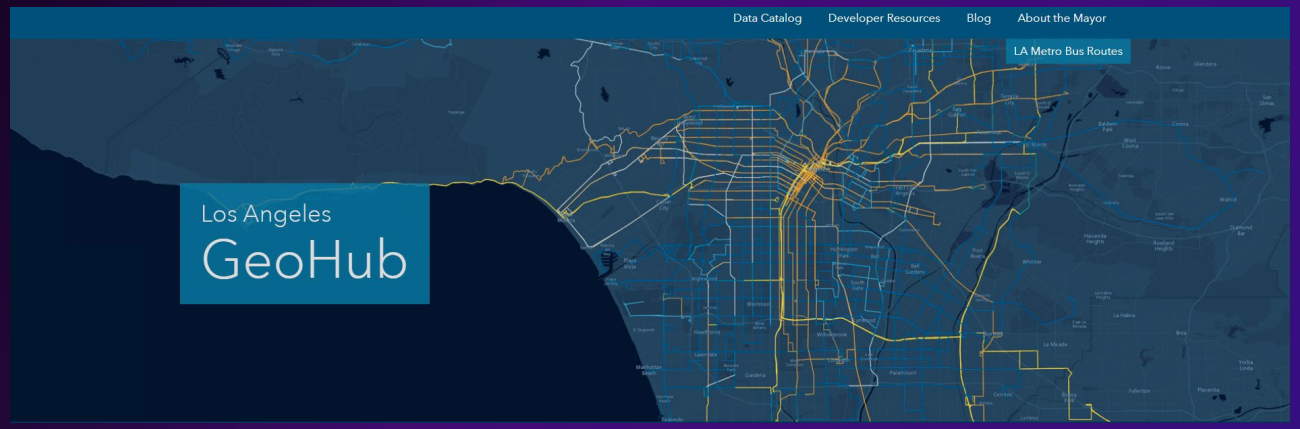
Data Driven, Repeatable, & Transparent…

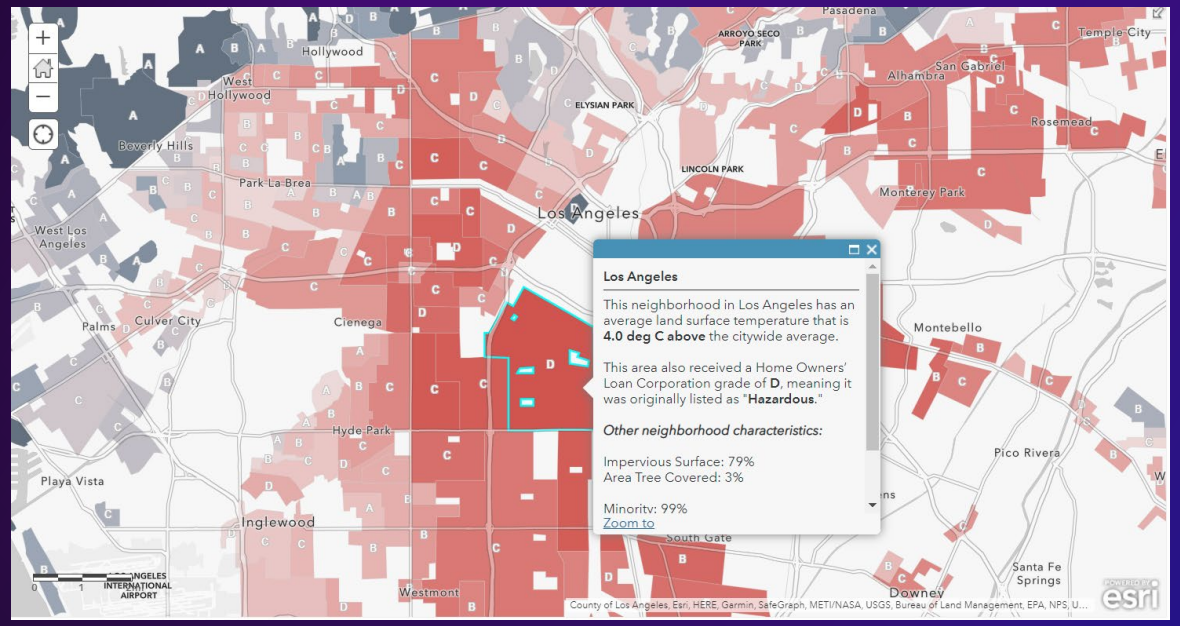


Los Angeles Shade Equity

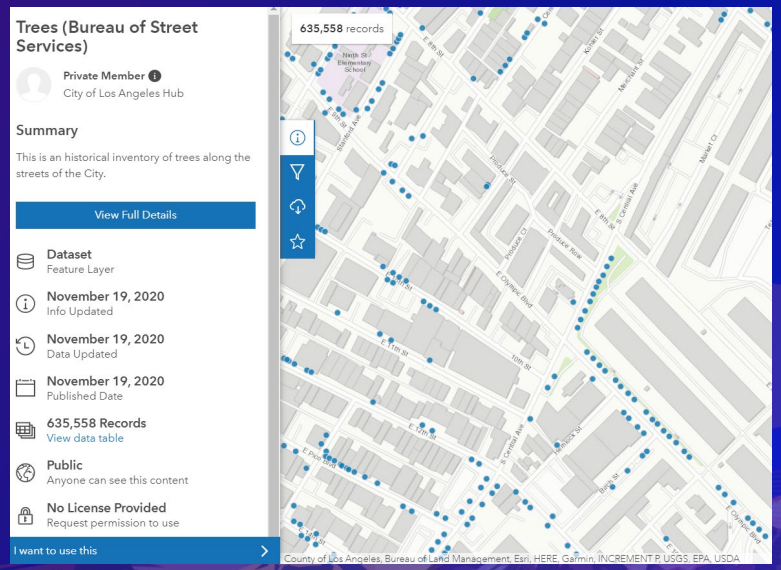
Driving Equitable Action

Los-Angeles Shade Equity





- Empowered Students
- Cross Collaboration
- Uncovered Inequities
- Visualizing Maps Helped to Plan and Act

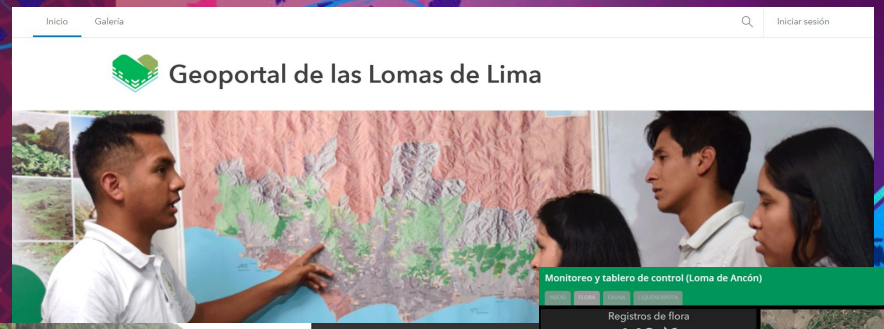


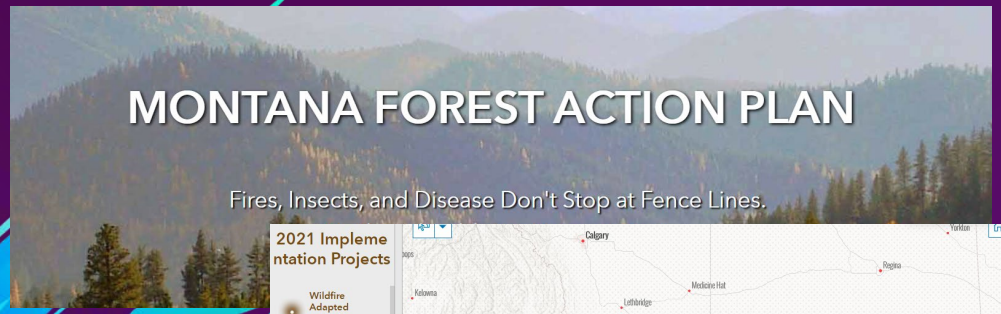
Conserving Peru's Lomas

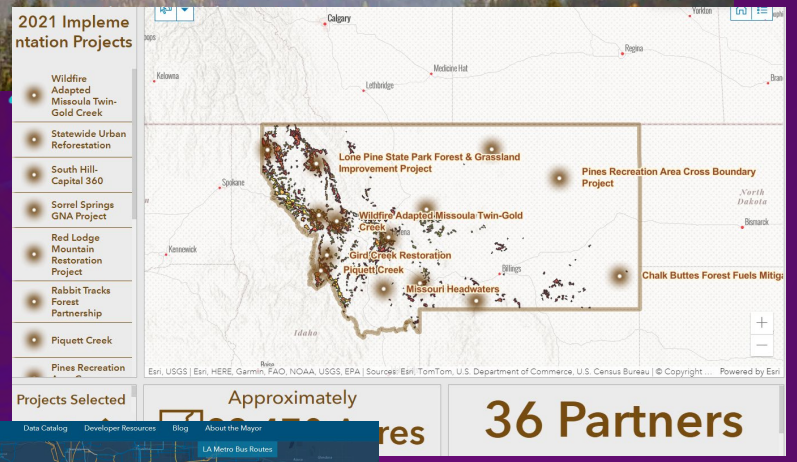
Achieving Land Protection Goals

Conserving Peru’s Lomas

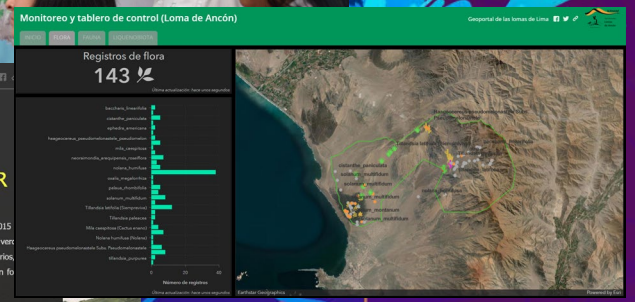
- GIS Revealed the Unknown
- Empowered Communities
- Reconciled Multiple Perspectives
- Inspired Legal Protections

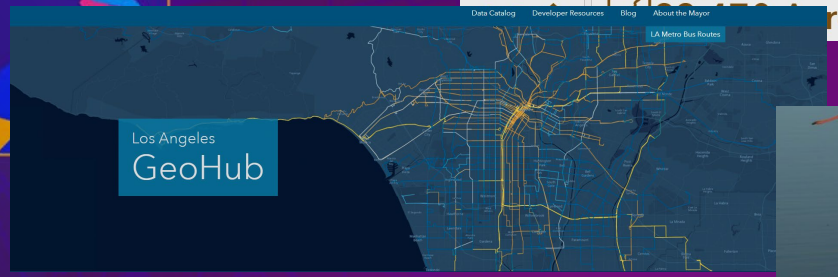

Inicio
Galería
Iniciar sesión
Geoportal de las Lomas de Lima

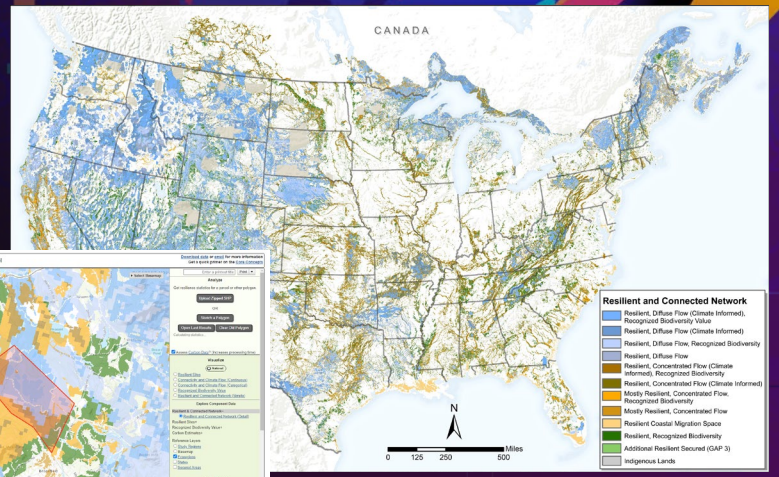

MONTANA FOREST ACTION PLAN
Fires, Insects, and Disease Don't Stop at Fence Lines.

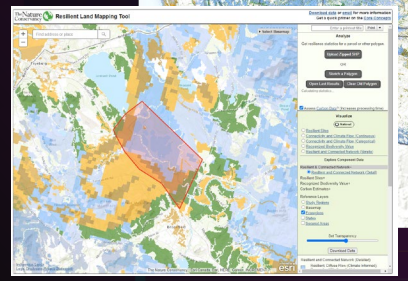

2021 Implementation Projects
Wildfire Adapted Missoula Twin-Gold Creek
Statewide Urban Reforestation
South Hill-Capital 360
Sorrel Springs GNA Project
Red Lodge Mountain Restoration Project
Rabbit Tracks Forest Partnership
Piquett Creek
Pines Recreation
Lone Pine State Park Forest & Grassland Improvement Project
Pines Recreation Area Cross Boundary Project
Wildfire Adapted Missoula Twin-Gold Creek
Gird Creek Restoration
Piquett Creek
Missouri Headwaters
Chalk Buttes Forest Fuels Mitiga
Projects Selected
Approximately
36 Partners

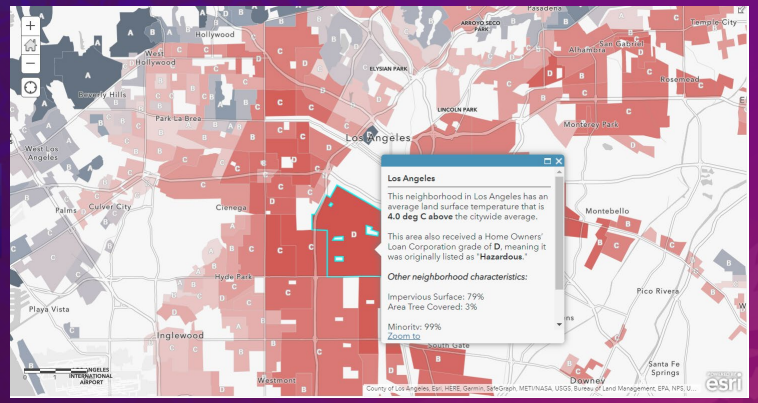
Geoportal de las lomas de Lima
CIRCUITO
LOMAS EL MIRADOR
¿Cómo usar este mapa?


Monitoreo y tablero de control (Loma de Ancón)
Registros de flora
143


Data Catalog
Developer Resources
Blog
About the Mayor
LA Metro Bus Routes
Los Angeles
GeoHub


CANADA
Resilient and Connected Network
Resilient, Diffuse Flow (Climate Informed), Recognized Biodiversity Value
Resilient, Diffuse Flow (Climate Informed)
Resilient, Diffuse Flow, Recognized Biodiversity
Resilient, Diffuse Flow
Resilient, Concentrated Flow (Climate Informed), Recognized Biodiversity
Resilient, Concentrated Flow (Climate Informed)
Mostly Resilient, Concentrated Flow, Recognized Biodiversity
Mostly Resilient, Concentrated Flow
Resilient Coastal Migration Space
Resilient, Recognized Biodiversity
Additional Resilient Secured (GAP 3)
Indigenous Lands
N
Miles
0 125 250 500


Resilient Land Mapping Tool

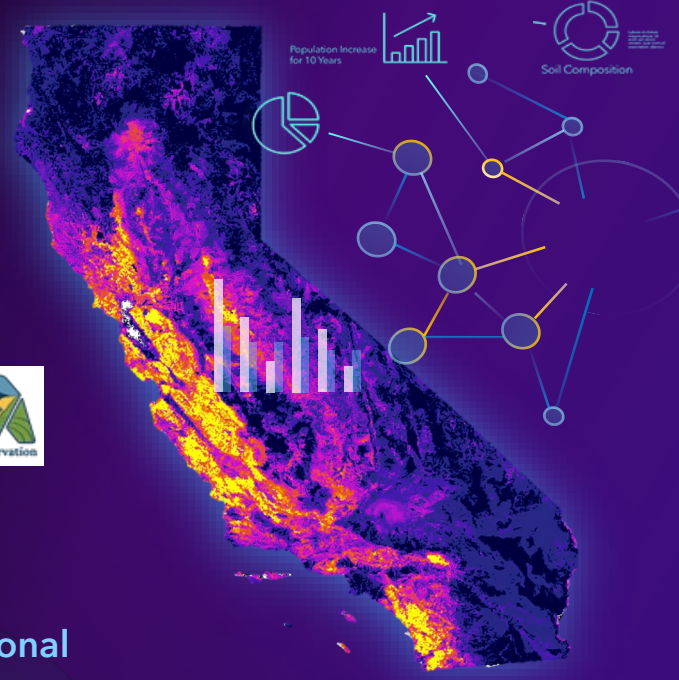

Los Angeles
This neighborhood in Los Angeles has an average land surface temperature that is 4.0 deg C above the citywide average.
This area also received a Home Owners' Loan Corporation grade of D, meaning it was originally listed as "Hazardous."
Other neighborhood characteristics:
Impervious Surface: 79%
Area Tree Covered: 3%
Minority: 99%
Zoom to

A New Model for Public Lands Conservation
Mapping Avian Migration Corridors in California
California Public Lands Mapping
Find address or place

CA Nature

Daniel Martin

CA Executive Order | Highlights



Principal Collaborators

California natural resources Agency

California Department of Fish & Wildlife

California Department of Conservation

Additional Departments

Cal Fire

California State Parks

Department of Water Resources, State of California

California Conservation Corps, Est. 1976

Additional 30x30 Contributors

California Strategic Growth Council

CalEPA California Environmental Protection Agency

cdfa

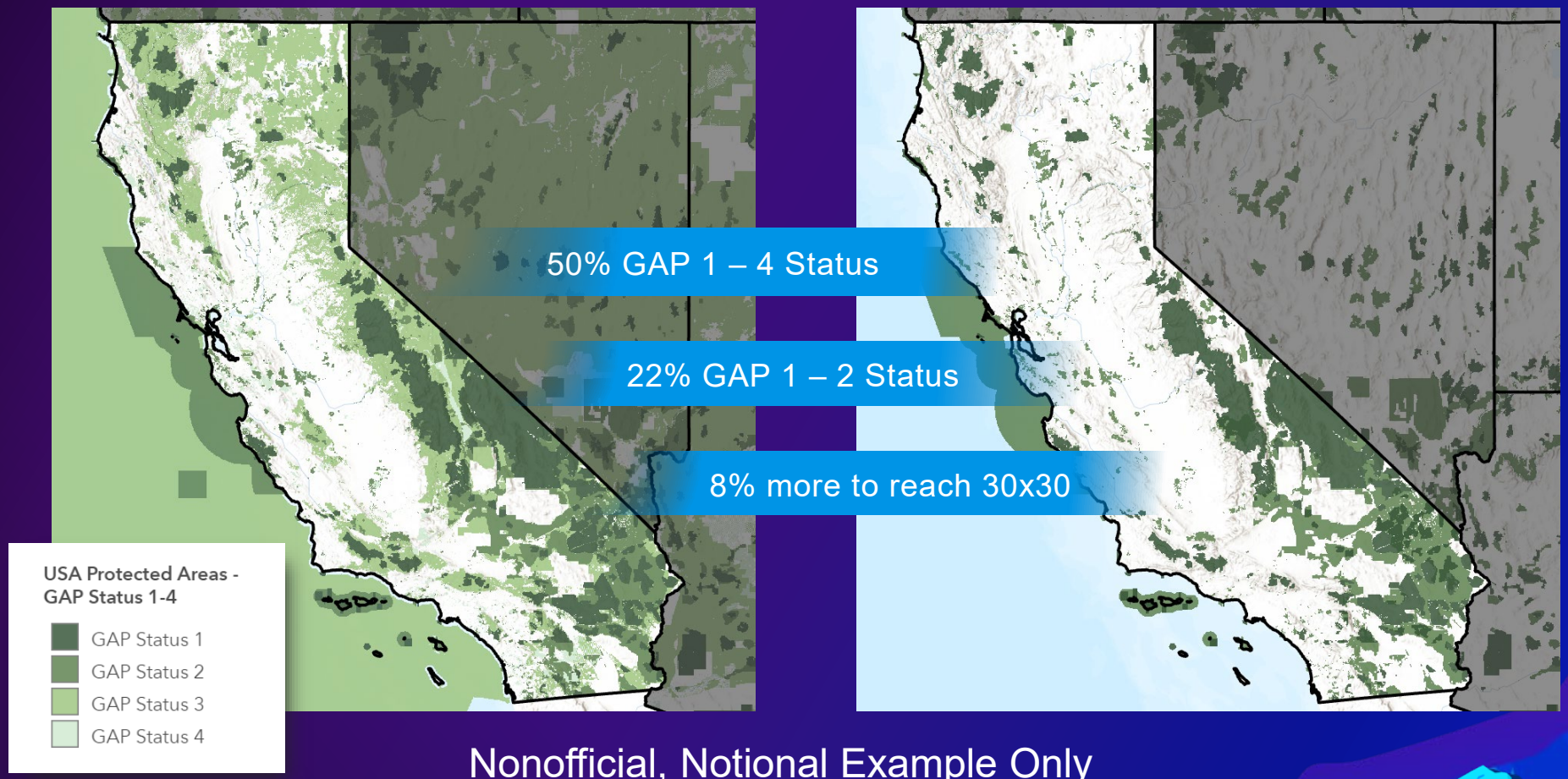
California Air Resources Board

Governor's Office of Planning and Research

- Establish a baseline assessment
- Inventory current biodiversity efforts
- Engage stakeholders
- Strategically prioritize investments

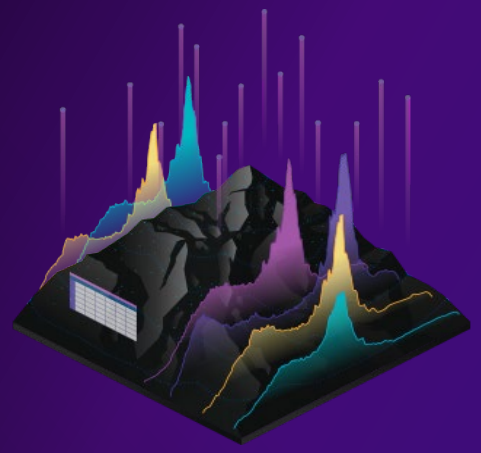
…Engaging diverse partners across CA government

Current Status | Conserved Land in California

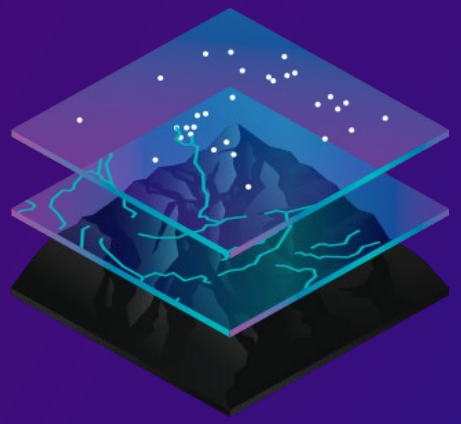


Nonofficial, Notional Example Only

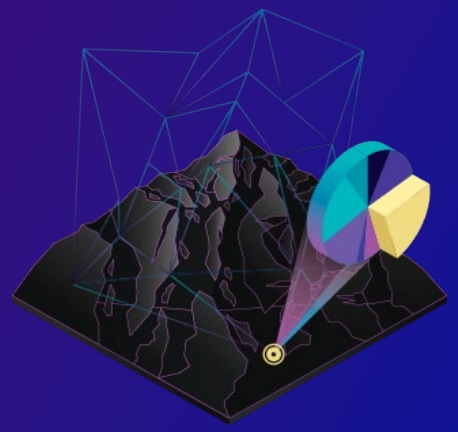
The CA Nature Platform



Data



Maps



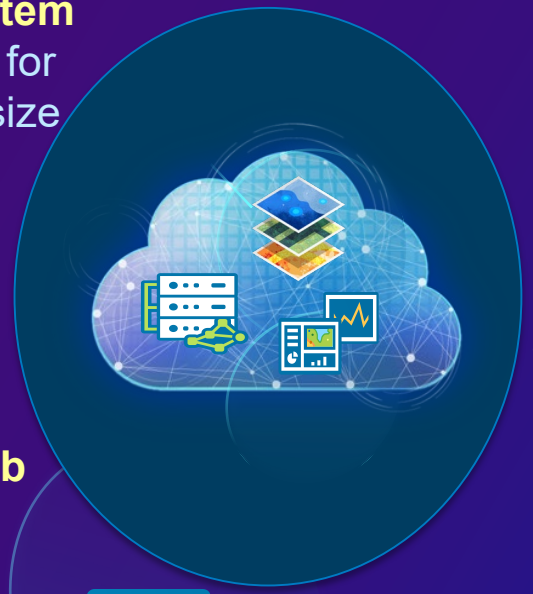
Analysis / Apps

An integrated suite of mapping and visualization tools that use authoritative data to display, prioritize, and track the State's biodiversity, climate, and access efforts.

The CA Nature Platform | Primary Components & Functions

Geographic Information System
Data & Modeling Environment for State Departments To Synthesize Their Work

Best Available Data
State Agencies,
Esri's Living Atlas,
& Partners



Planning Applications
- Local Conservation Resource Identification, Prioritization, & Planning
- Monitoring Dashboards

Open Access & Engagement Hub
- Open APIs & Data Access
- State Agencies
- Local Governments
- Tribes
- Other partners & contributors

Capacity Building
Agency Staff
Training & Support

The CA Nature Platform | Open Geospatial Platform for 30 by 30

Primary Components & Conceptual Design

Potential Source Data

Biodiversity
- *CDFW ACE 3*
- *CDFW BIOS*
- *PADUS*
- *CPAD*
- *Esri Living Atlas*
- *More…*

Climate
- *Cal Adapt*
- *CDFW*
- *CalEPA*
- *Esri Living Atlas*
- *More…*

Equity
- *CalEnviro Screen*
- *Esri Living Atlas*
- *More…*

Geographic
- *Topography*
- *Hydrology*
- *Land Use / Land Cover*
- *Transportation*
- *Demographics*
- *More…*

Applications

Conservation Identification, Prioritization, & Planning

Dashboards

Open Data Portal

Conservation Opportunities

Biodiversity

Climate

Equity

Threats & Risks

Protection Status

Analytics & Modeling

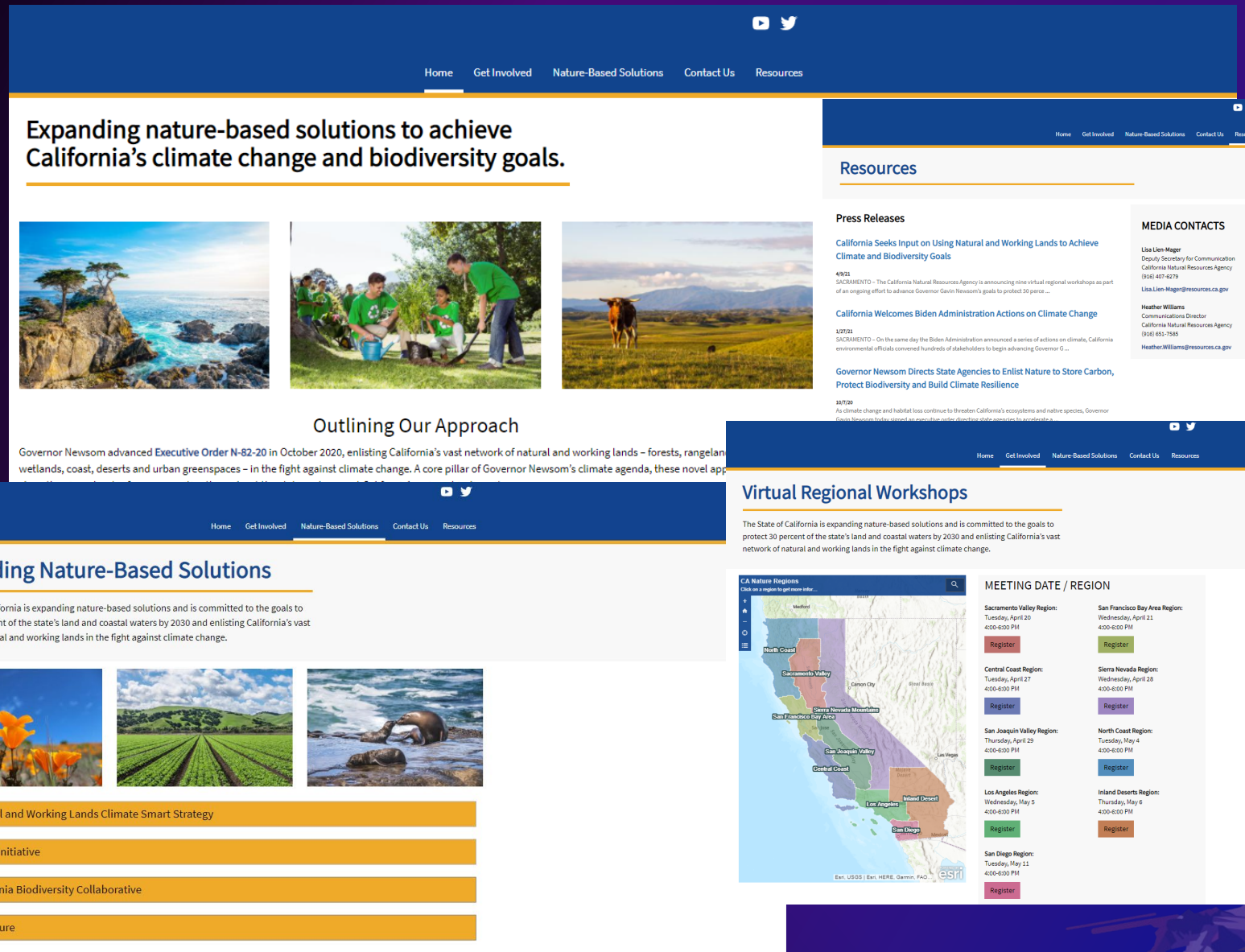
Open Access

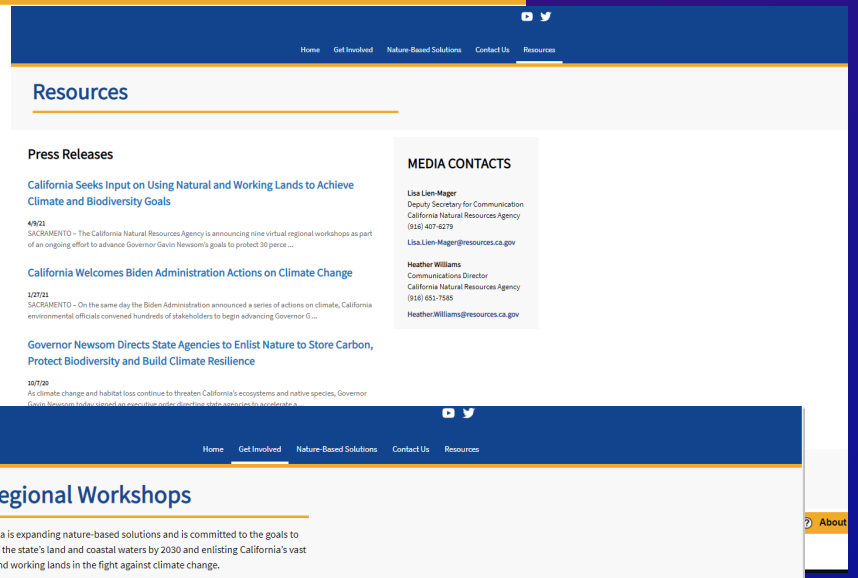
- Federal – (e.g. USFS Forest Planning, or PADUS)
- State – (e.g. CDFW Ace3, or CPAD)
- Local – (e.g. SCAG or city planning apps)
- Universities / NGO (e.g. Cal Adapt)
- Private (working lands)
- Other…

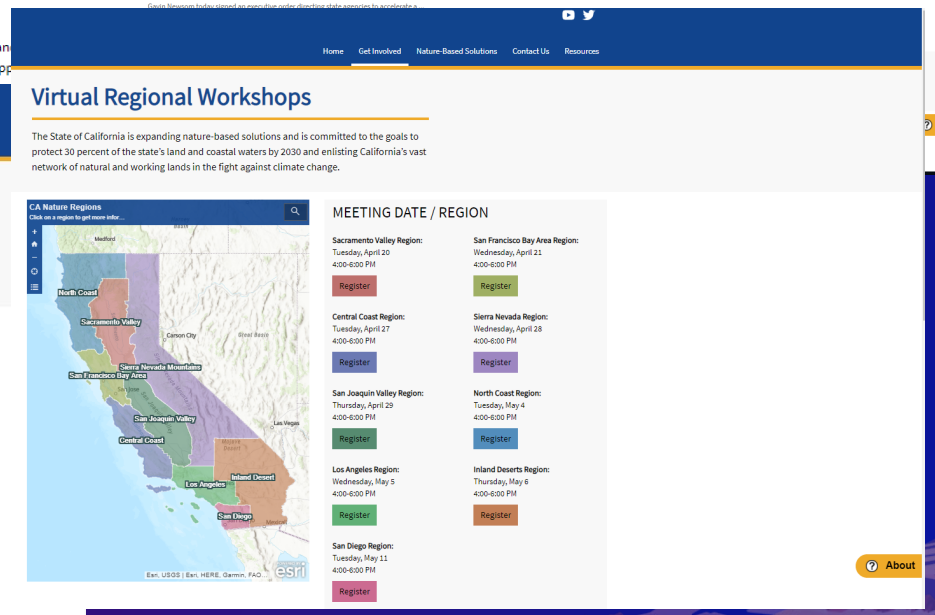
Planning & Conservation Action

Science Leadership

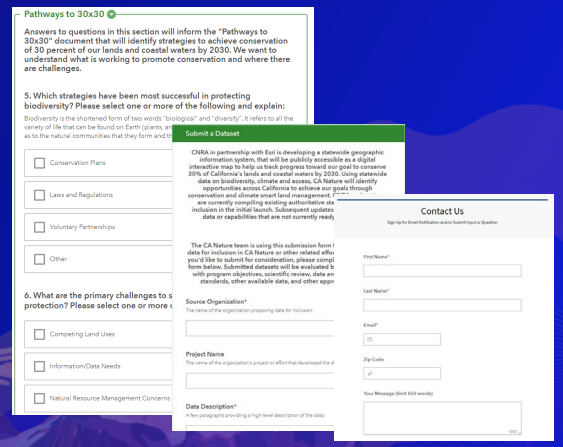
Progress: California Nature Website | Supporting Open Access & Engagement





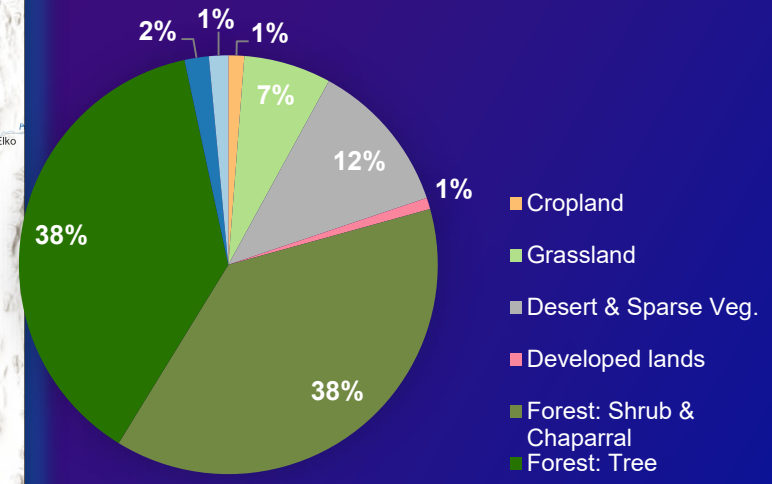


Surveys

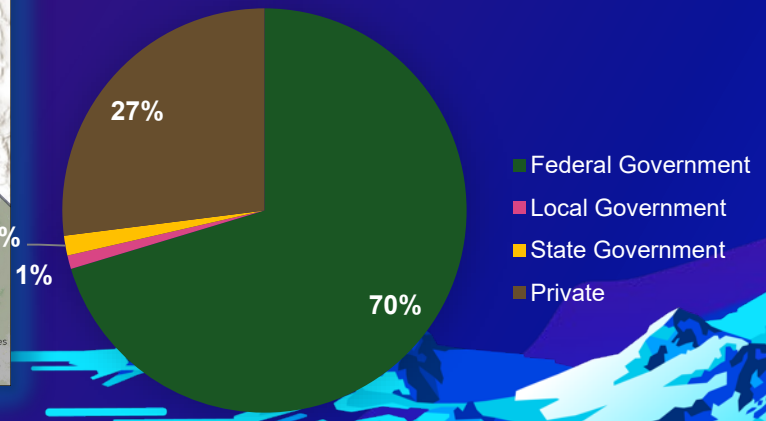


Progress: Supporting Stakeholder Workshops | Regional Information Summaries

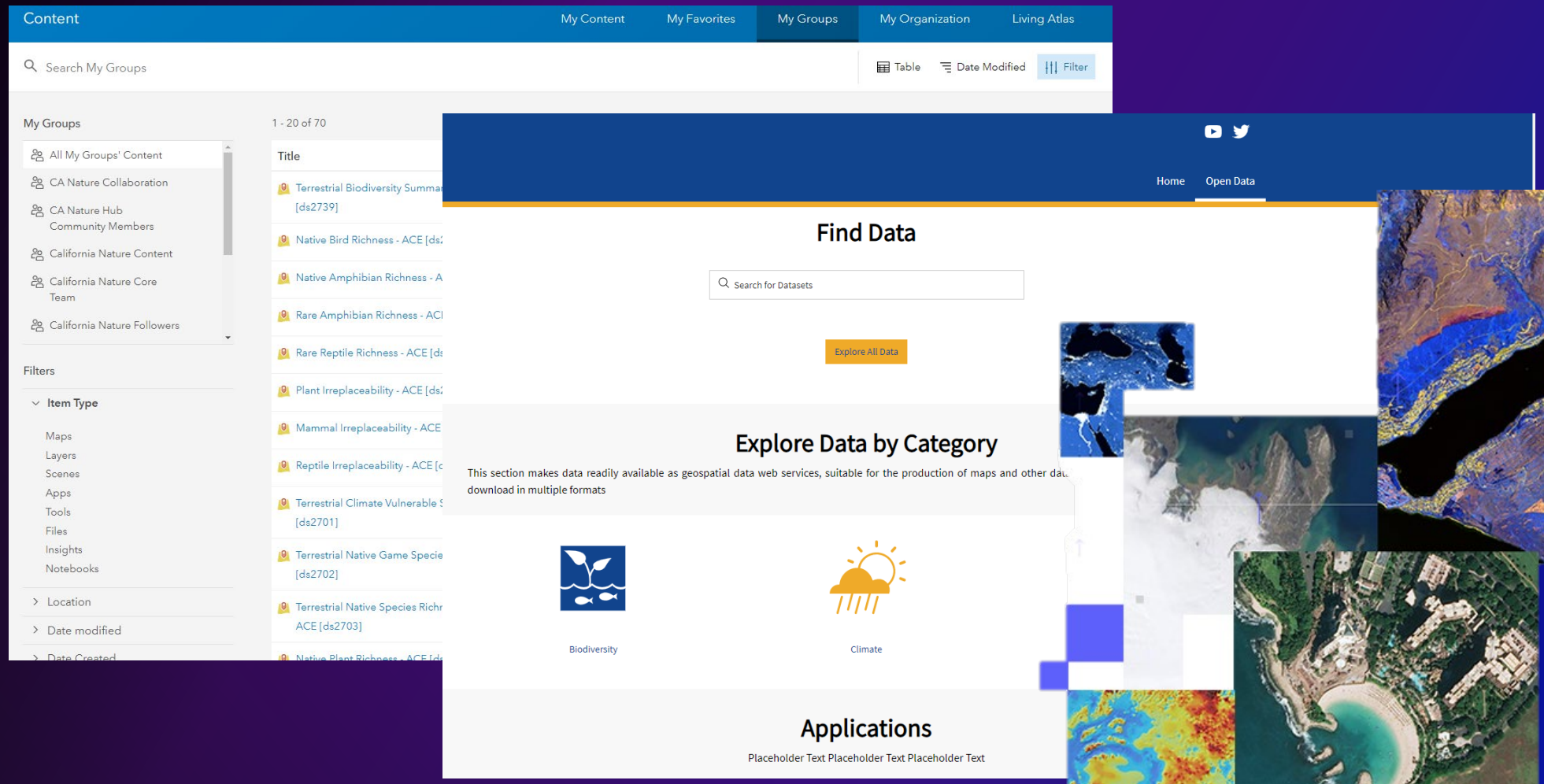
Sierra Nevada: Land Cover



Sierra Nevada: Land Ownership

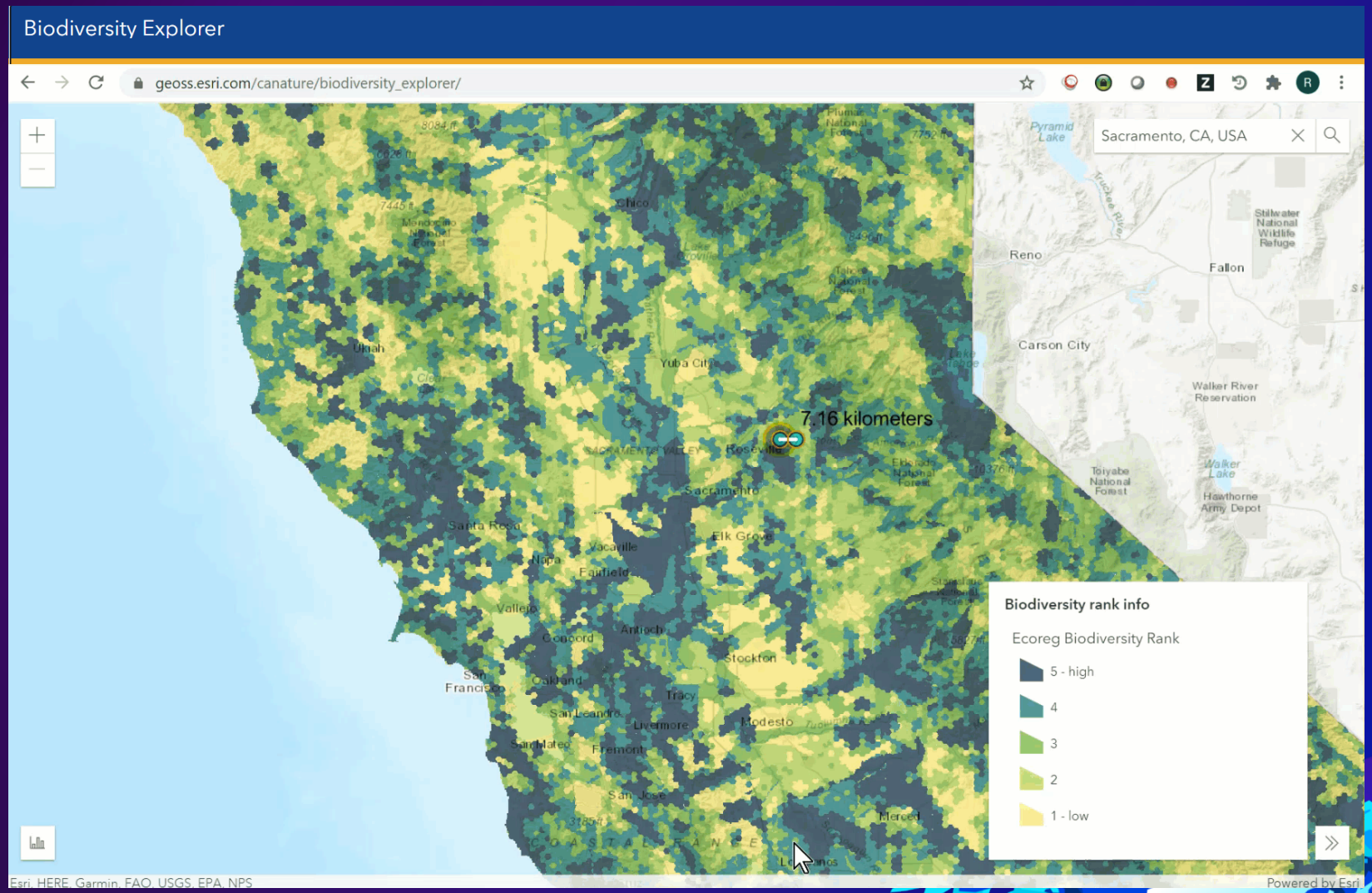


Next Up: Website Updates & Open Data | Best Available from Agency Sources



Next Up: Data Explorer Applications | Sharing & Exploring Data with Stakeholders

Preliminary Biodiversity Explorer (GIF)



Geospatial Infrastructure for 30 by 30

Geographic Information System

- GIS Administration
- Imagery Data Hosting
- Analysis
- *
- *

Best Available Data

- Curated Data
- Basemaps
- State Agency Data
- *
- *

Open Access & Engagement Hub

- Hub Site
- Get Involved
- Nature-based Solutions
- Resources
- Open Data
- Stakeholder Survey
- Data Survey
- Contact Survey
- California Nature
- Stakeholder Engagement
- *
- *

Planning Applications

- Baseline & Progress Tracking
- Biodiversity, Climate, & Access Explorers
- Decision Support
- Prioritization
- *

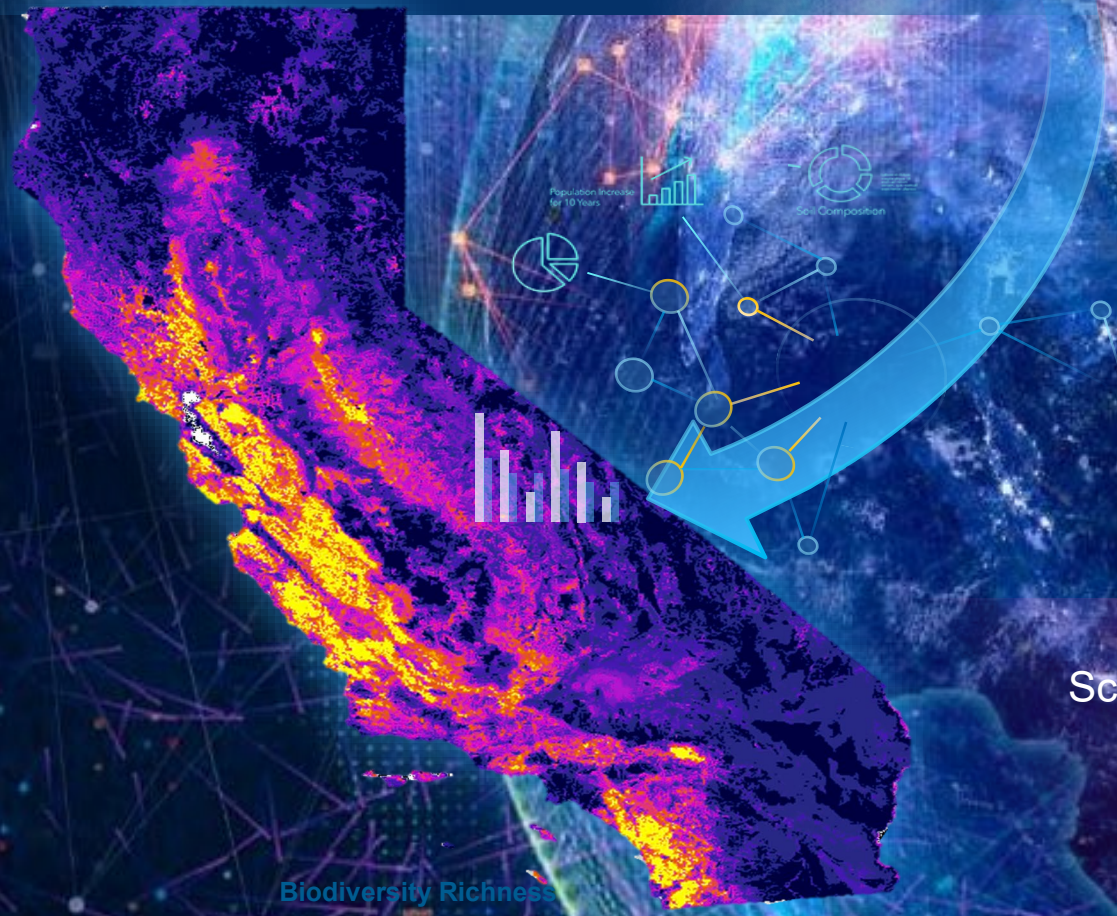
Capacity Building

- Peer to Peer
- Training

* Future Potential

California Nature

An Open Geospatial Platform for 30 by 30



Science, People, and Process.

Creating Fundamental Geographic Understanding

. . . And An Integrated Action Plan

Achieving 30 by 30

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