



NEVADA
DIVISION OF
NATURAL HERITAGE



Nevada Department of
**CONSERVATION &
NATURAL RESOURCES**

Inventory and Assessment by Nevada's Wetland Program

2025 EPA Region 9 WPDG Conference
February 26-27, 2025

Presented by:

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PRESENTATION OUTLINE

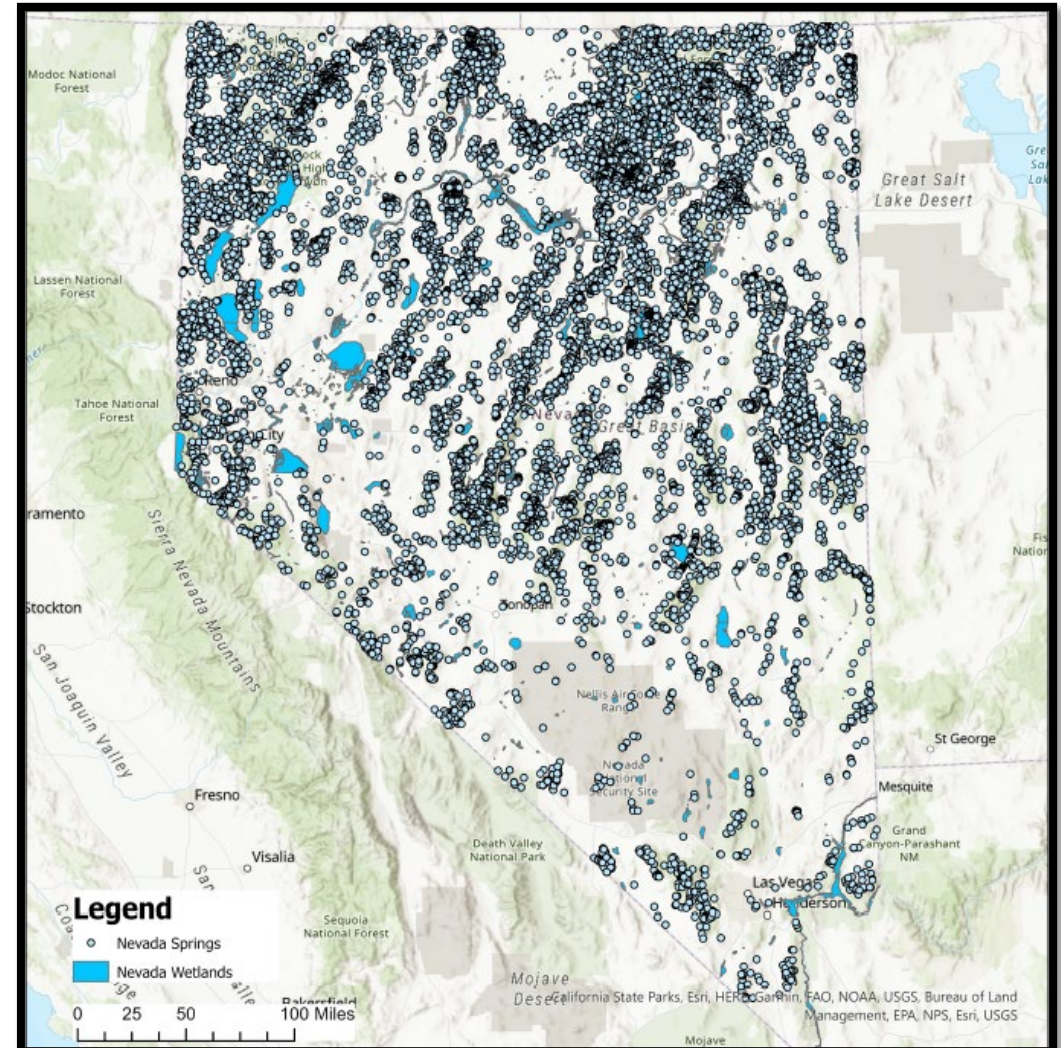
- Nevada's Wetlands
- Wetland Program background
- Wetland Program Plan
- WPDG-funded projects
- Rare wetland surveys
- Springs inventory
- WetBar
- Questions and discussion



Ginny Lake Fen, Tahoe Basin, Nevada

NEVADA'S WETLANDS

- Driest state (~9 in/yr precip)
 - High interannual variation
- Seeps, springs, riparian zones, wet meadows, marshes, playas, vernal pools, etc.
- >25,000 springs
- 2.9 million acres of wetlands
- <5% of NV by area, used by >75% of species
 - 39 T+E species
 - 146 endemic species
 - 305 sensitive species



NEVADA WETLAND THREATS AND CHALLENGES

Wetland threats

- 52-90% of wetland acreage lost in the last 200 years
- Few wetlands jurisdictional under CWA; minimal state regulatory protection
- Vegetated wetlands disproportionately privately owned and necessary for industry/ag
- Wetland loss from aridification

Management challenges

- Wetland work split amongst many agencies
- >85% of wetlands have not been surveyed

= Need for statewide Wetland Program and Plan!

WETLAND WORK IN NEVADA

- Split among many agencies
 - NDEP – CWA, water monitoring, state water pollution regulations
 - NDOW – managing wildlife, habitat restoration
 - NDNH – sensitive species and ecosystem data management, **Wetland Program**
 - Federal agencies (USGS, FWS, FS, BLM, etc.)
 - Tribes
 - Nonprofits (TNC, FNW, TU, etc.)

BACKGROUND ON NEVADA'S WETLAND PROGRAM

- Staffed briefly in the early 2000s
- Intermittent wetland projects by subawardees
- Staffed again in 2022
 - Coordinate between partners
 - Wrote the 2023-2028 Wetland Program Plan
- Working to grow permanent program driven by WPP



2023 WETLAND PROGRAM PLAN OBJECTIVES

Monitoring and Assessment

- Develop Level 1 and 2 survey tools
- Expand inventory efforts
- Wetland database
- Evaluate spatial and temporal wetland trends

Voluntary Restoration and Protection

- Define restoration goals
- Identify priority wetlands
- Guidance on restoration techniques
- Restoration project tracking

Partnerships, Outreach, and Education

- Regular communication and collaboration with wetland partners
- Public outreach
- Trainings, reference materials, reports for wetland professionals

Sustainable Financing

- Funding for staff and wetland projects
- Coordination to maximize funding

RECENT WPDG FUNDED WORK

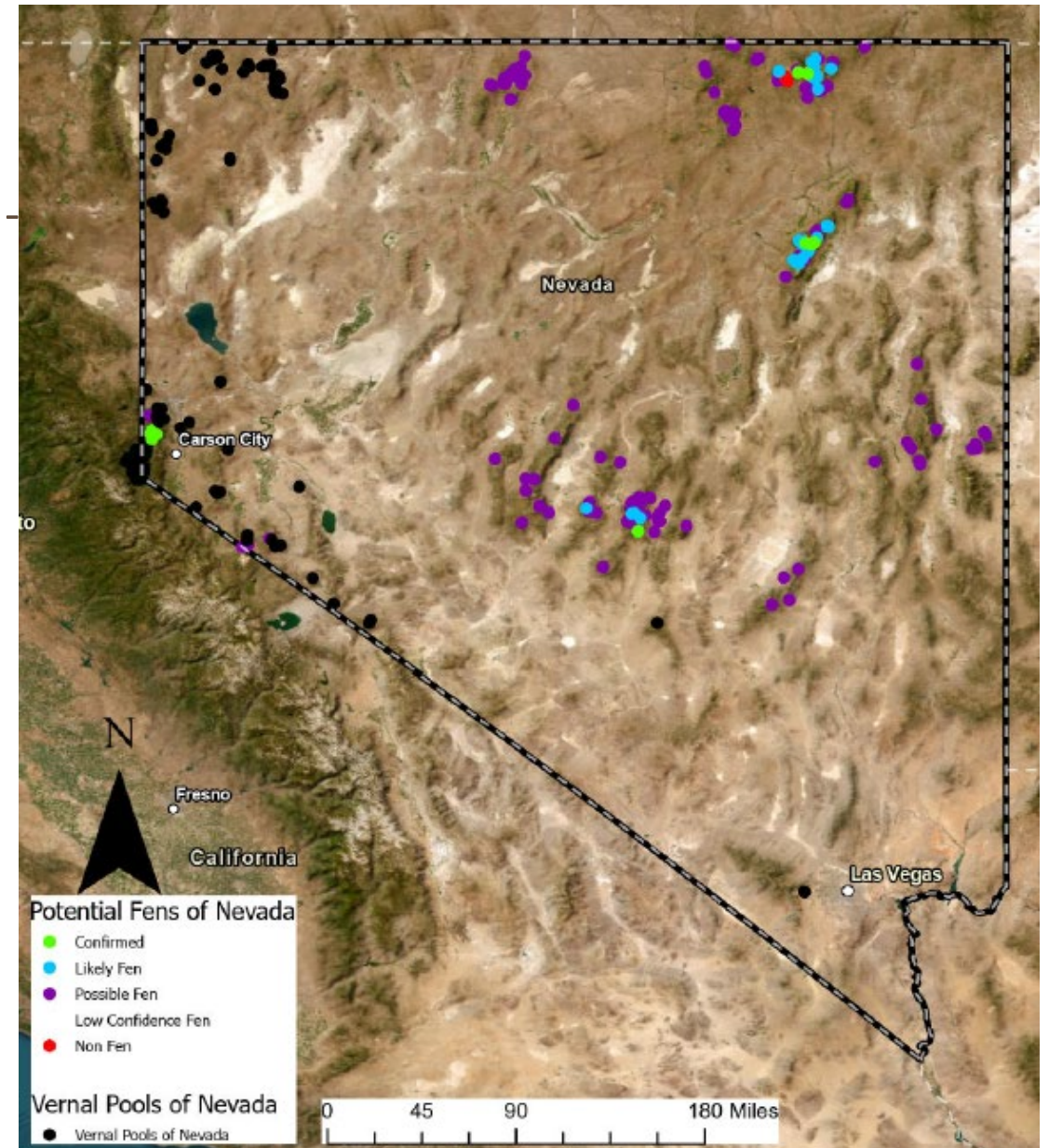
| | | Core Elements | | | |
|------------|--|---------------------------------------|--------------------------------------|---------------------------------------|-----------------------|
| | | Assessment, Inventory, and Monitoring | Voluntary Restoration and Protection | Partnerships, Outreach, and Education | Sustainable Financing |
| WPDG Tasks | WetBar development | X | X | | |
| | Spring surveys and SpringsOnline | X | X | X | |
| | Wetland Program Coordinator and WPP update | X | | X | X |
| | Rare wetlands | X | X | X | |
| | Improved data collection and storage | X | X | X | |
| | Reference wetlands | X | X | X | |

RECENT WPDG FUNDED WORK

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RARE WETLAND SURVEYS

- First inventory of two rare, small patch wetland types
- Fens
 - High elevation wet meadows with 40+cm of peat
- Vernal pools
 - Ephemeral depressional wetlands
- Isolated, typically not regulated
- High ecosystem value, unique ecology
- Reports for land managers
- Outreach



Distribution of known or predicted fens and vernal pools in Nevada

RARE WETLAND SURVEYS: FENS

- Targets from remote sensing, CNHP report, literature review
- 31 surveyed
- 30 associated sensitive species found
- Protected land units, good condition



A fen in the Ruby Mountains

SENSITIVE FEN-ASSOCIATED SPECIES



Moose



Meesia triquetra

RARE WETLAND SURVEYS: VERNAL POOLS

- Targets identified with remote sensing
- 45 surveyed
- 24 associated sensitive species
- Volcanic geology
- Condition varied, due to recreation, weeds, grazing, excavation, and other threats



A vernal pool in the Virginia Range

SENSITIVE VERNAL POOL ASSOCIATED SPECIES



Lepidurus bilobatus



Polycatenum williamsiae



Phacelia inundata

VERNAL POOL ASSOCIATED SPECIES



Bears!

SPRING SURVEYS

Led by the Springs Stewardship Institute
Funded in '19, '21, and '23 WPDGs

Why springs?

- Reliable water for humans and animals, even in drought
- Support many sensitive species; recent NV extinctions were SDT
- Isolated, limited information or regulatory protection

Springs inventorying

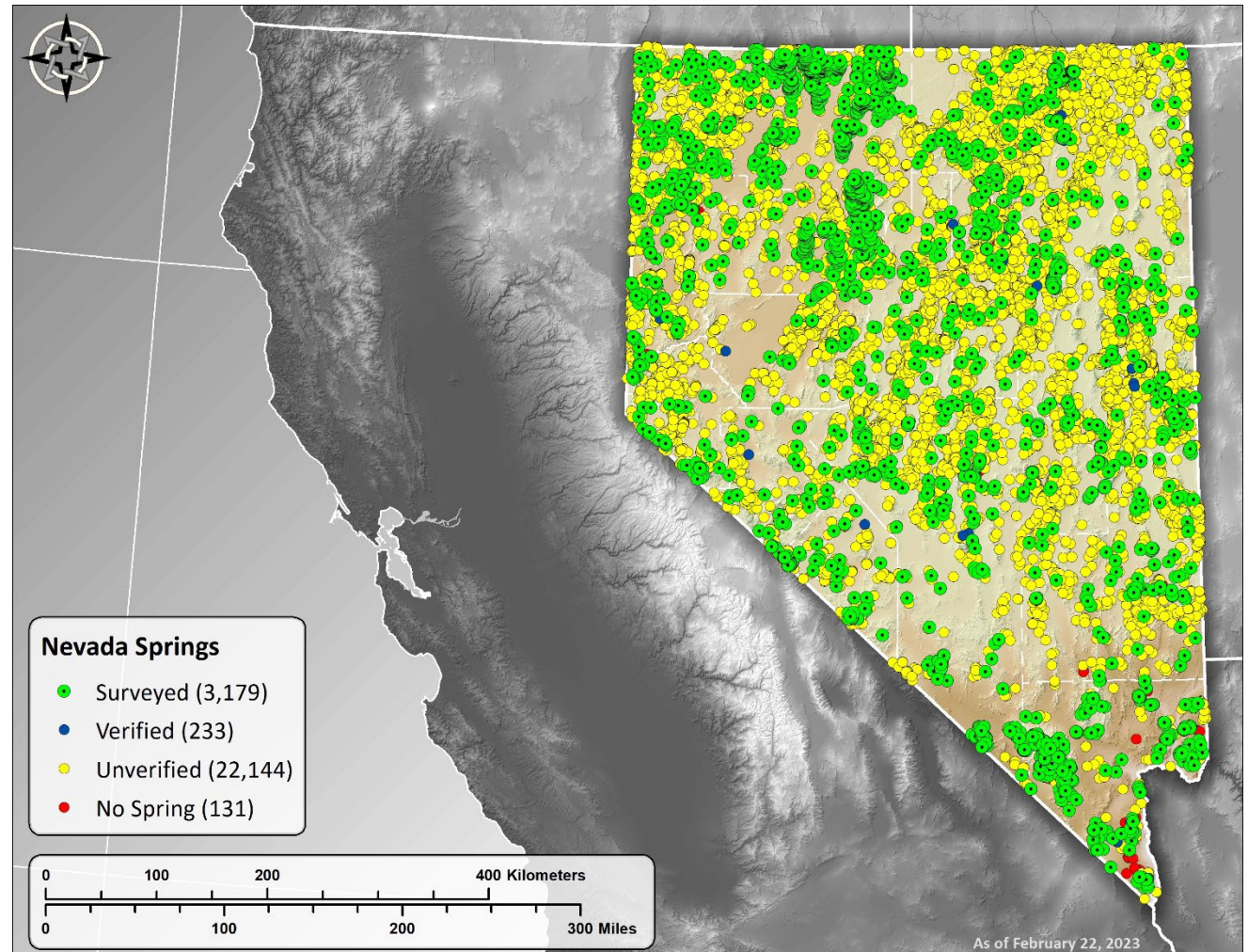
- Thousands of springs surveyed throughout NV
- Surveys include hydrology, water chemistry, plant species composition, condition, sensitive species (springsnails) and more
- Focus on understudied areas

SpringsOnline improvements

- <https://springsdata.org/>
- Free, publicly accessible, secure database for springs data

SPRING SURVEY OUTCOMES

- >25,000 springs estimated
 - Finding >5% new, likely more
- New springsnail populations identified, range extensions of other rare invertebrates
- 15% of NV flora found at ~200 springs (5x density of rest of state)
- >83% altered, >65% very altered
- Identified management needs and efficient restoration targets

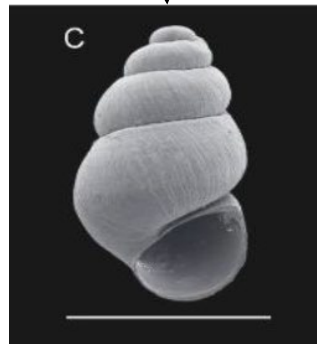


Springs inventory progress

SPRING SURVEY OUTCOMES



Springsnails, actual size, and zoomed in for detail



A hot spring complex in the Black Rock Desert

WETBAR

LEVEL 1 WETLAND ASSESSMENT TOOL

Developed by Dr. Ken McGwire at the Desert Research Institute
Funded in '19 and '21 WPDG

Web-based toolbar

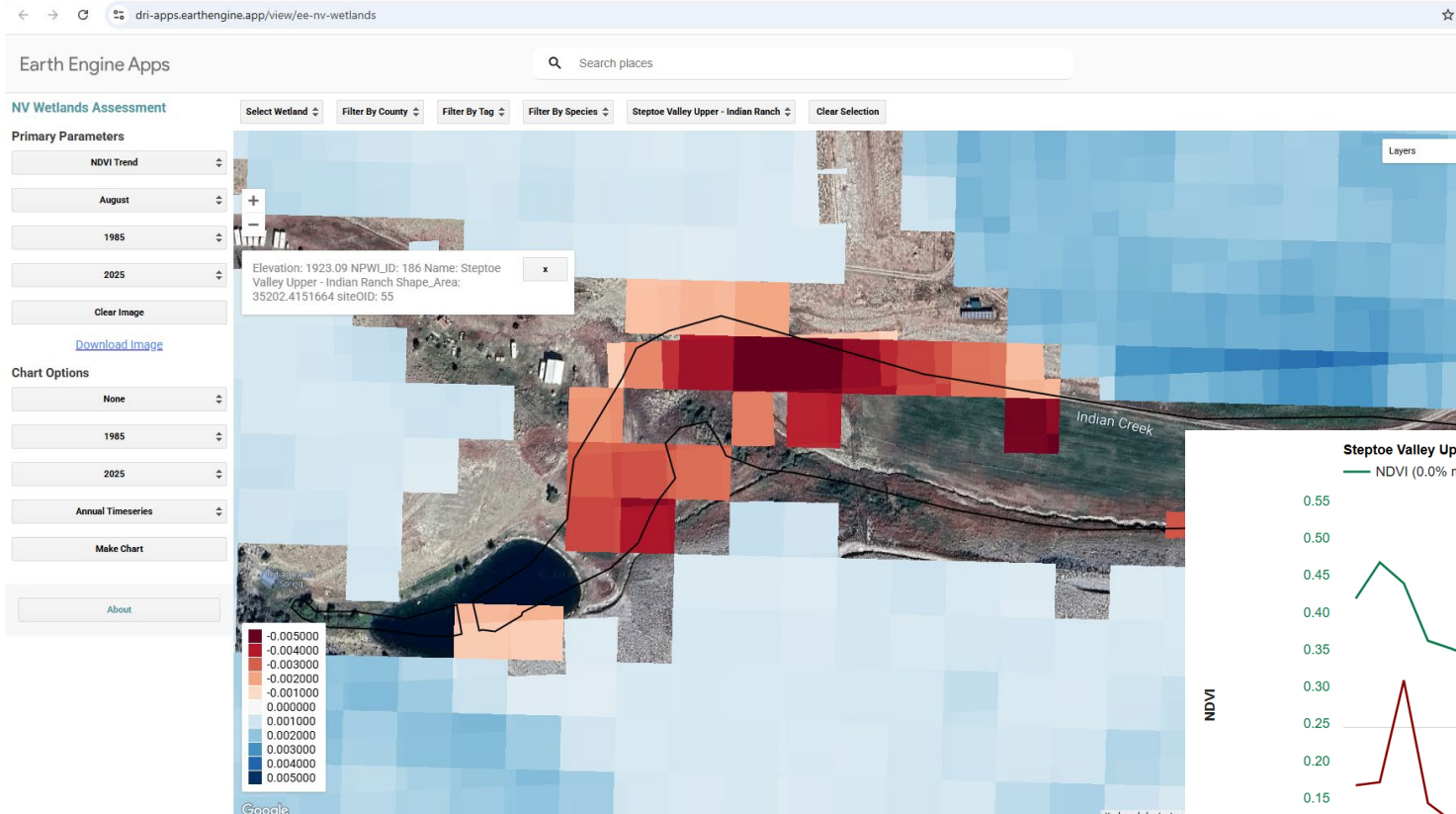
- Landsat imagery from 1985-present; other aerial imagery
- Spatial and temporal data
- Free, no GIS experience required

Uses

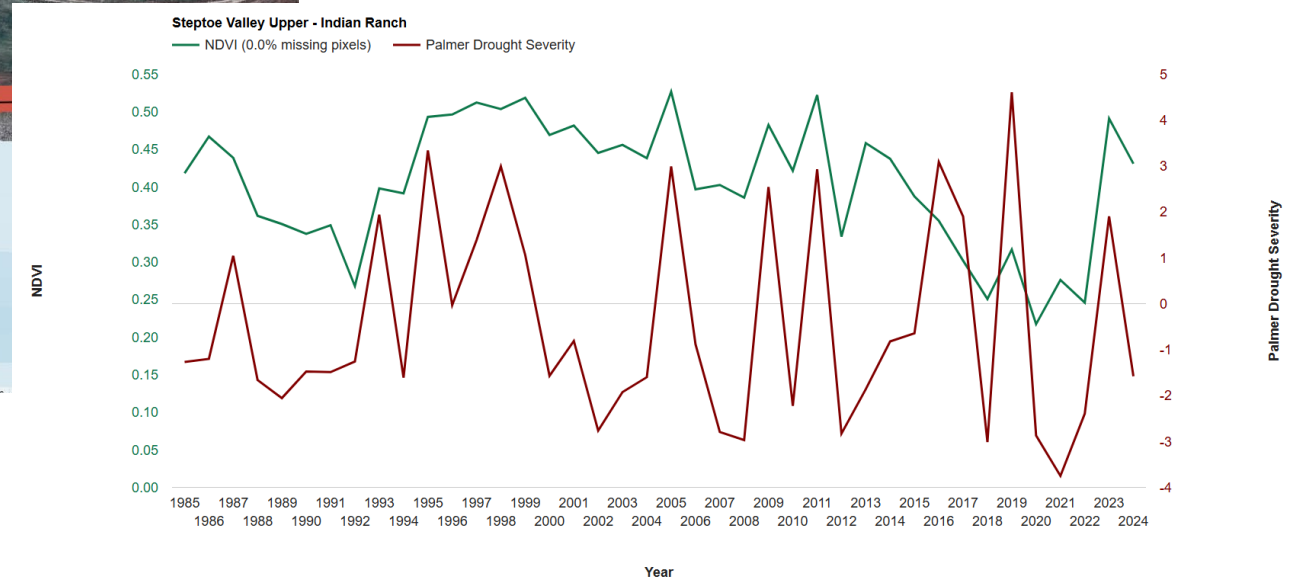
- Pre-survey site analysis
- Trend assessment of vegetation vigor (NDVI), waterbody extent
- Comparison to drought, precipitation, temperature, and other trends
- Assessments of specific sites or statewide
- Identifying restoration sites, habitat for Lahontan Cutthroat Trout

WETBAR

Check it out at <https://dri-apps.earthengine.app/view/ee-nv-wetlands>

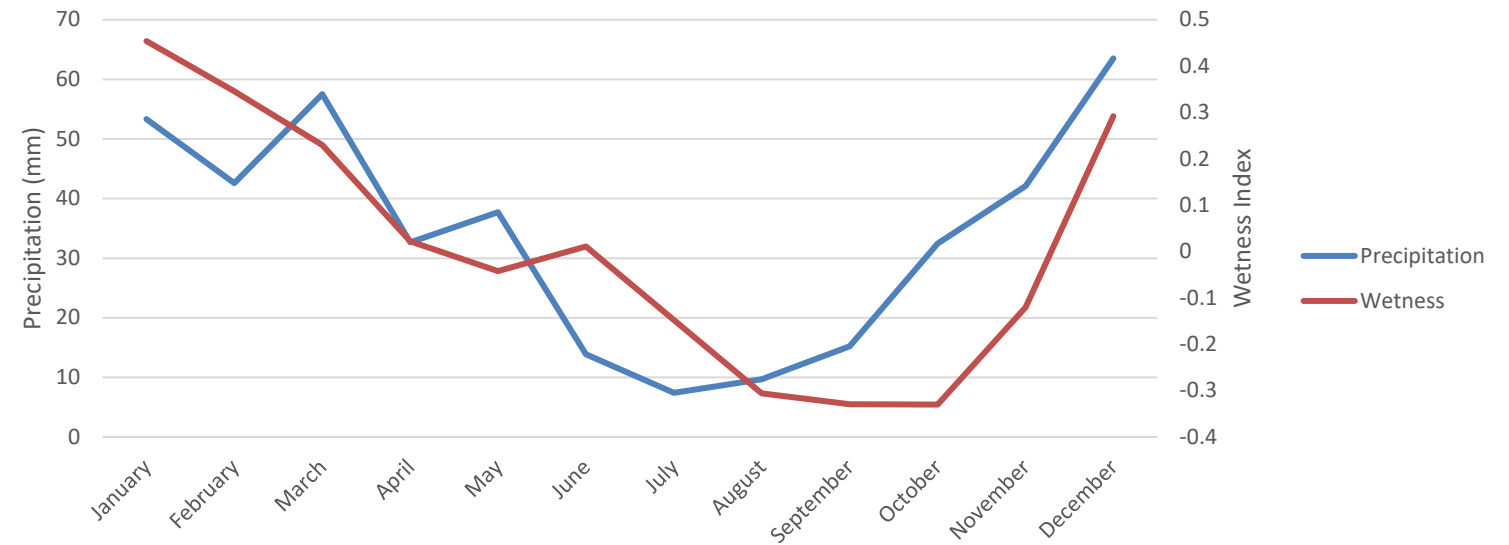
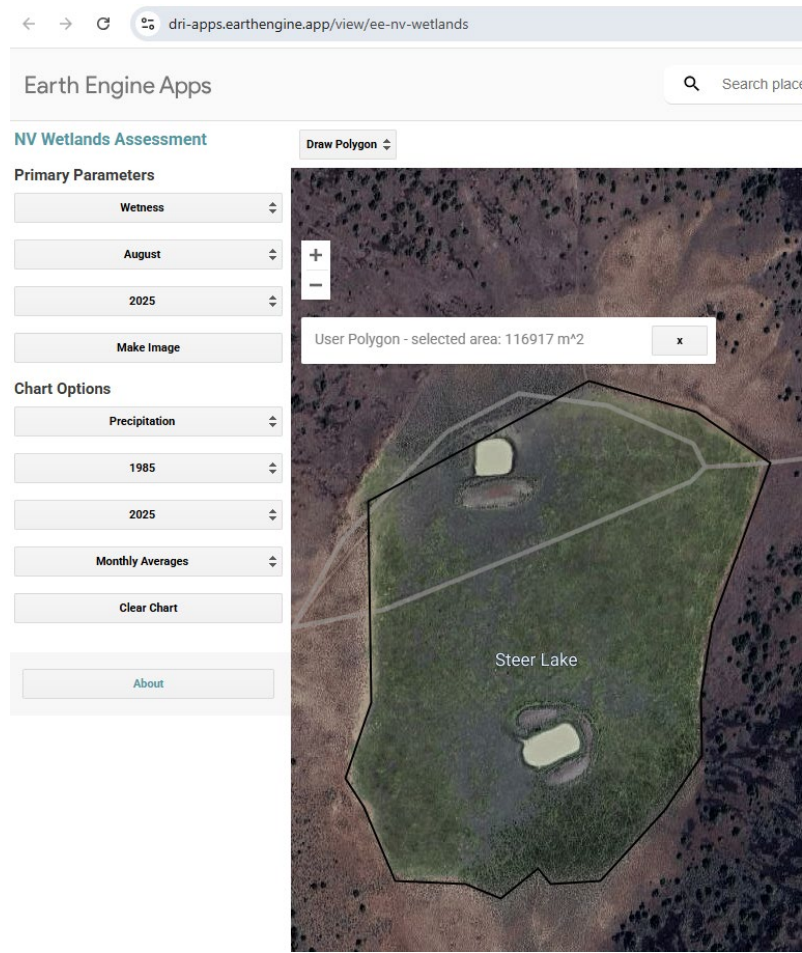


Indian Ranch in Steptoe Valley, one site with a negative NDVI trend



WETBAR

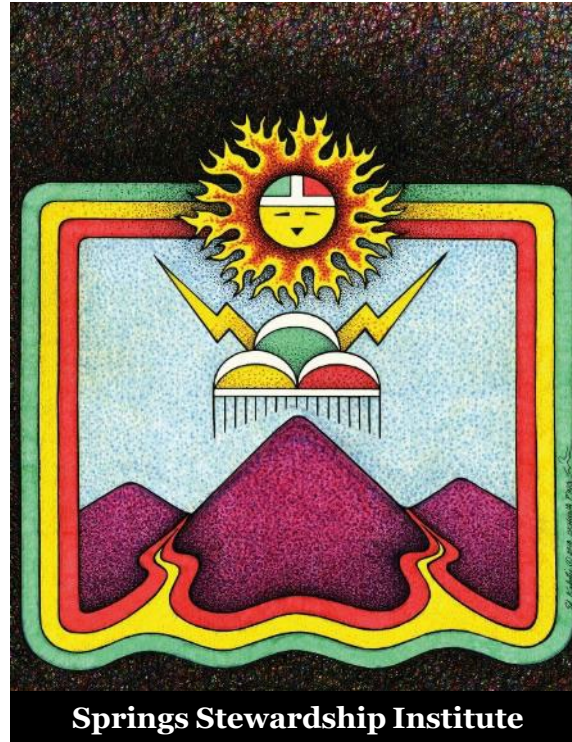
Check it out at <https://dri-apps.earthengine.app/view/ee-nv-wetlands>



User-defined polygon of Steer Lake, a vernal pool

WETLAND PROGRAM PARTNERS

THANK YOU!



Other partners that provided feedback and engaged in wetland work:

The Nature Conservancy
US Forest Service
Bureau of Land Management
US Fish and Wildlife Service
US Geological Survey
Nevada Division of Environmental Protection
Nevada Department of Wildlife
Pyramid Lake Paiute Tribe
Riparian Creeks and Communities Team
USDA National Resource Conservation Service
Nevada Division of Water Resources
Friends of Nevada Wilderness

And many more...

Questions?



Contact

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<https://heritage.nv.gov/programs/wetland-program>