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Groundwater Dependent Ecosystems in Nevada

Outline

- A primer on The Nature Conservancy
- Nevada Chapter of TNC
- What is the Nevada Water Program?
- Groundwater dependent ecosystems

What is the Nature Conservancy?

65

Years

1M

Members

600

Scientists

100M

Acres Conserved

72

Countries

The Nature
Conservancy



Protecting nature. Preserving life.

CNRWA 2019

Yangtze River (©A. Vitale)

- Mission
To conserve the lands and waters on which all life depends
- Vision
A world where the diversity of life thrives, and people act to conserve nature for its own sake and its ability to fulfill our needs and enrich our lives

Nevada Chapter of TNC

- Sagebrush Ecosystem
 - Landscape Conservation Forecasting Modeling
 - Sage-Grouse Mitigation
- Eastern Sierra Rivers
 - Independence Lake Project
 - Truckee River Project
 - Carson River Project
- Mojave Desert
 - Amargosa River Project
 - Public Lands Mitigation – So. NV
 - Virgin River Watershed Plan
- Climate Action
 - Clean Energy Future
 - Natural Climate Solutions
- Water
 - State Water Law and Policy
 - Flow Science
 - Regional Water Issues
 - Colorado River

Nevada Water Program

- Established in September 2016
- Objectives
 - Engage with Nevada water law and policy
 - Flow science
 - Assist with water-related issues on Chapter projects
 - Watch water activities in the region

The Nevada Water Program

Advance the science behind water resources decision-making.

Advocate for policies that **promote reliable water supplies** and protections of freshwater ecosystems **for generations to come.**

Build partnerships **to sustain water** for working farms and ranches, cities, recreation, and native plants and wildlife.

Nevada Flow Science

- Driest state in the U.S.
- Ranks 11th in species diversity
- Almost 50% of endemic species are dependent on freshwater springs
- Habitat for migratory and resident birds and fish
- Freshwaters sustain habitat for sage-grouse and other upland species



Pahranaगत roundtail chub (E. Miskow)

Nevada Flow Science: GDEs

- Groundwater dependent ecosystems (GDEs)
 - GDEs rely on groundwater to maintain ecological structure and function
 - Ecosystem types (Eamus et al. 2006)

| | |
|---------------|----------|
| Springs | Lakes |
| Subterranean | Rivers |
| Phreatophytes | Wetlands |
- GDEs benefit people and nature

| | |
|----------------------------|----------------|
| water storage/purification | recreation |
| soil preservation | economic value |
| carbon storage | water supply |
| flood reduction | |



Bog Hot Springs (H. Maude)

Nevada Flow Science: GDEs

- Many environmental flows in Nevada are related to GDEs
- Previous TNC GDE studies
 - Oregon Chapter assessed GDEs and water quantity and quality threats to those GDEs (Brown et al. 2011)
 - California Chapter mapped GDEs (Howard and Merrifield 2010)



Nevada Flow Science: NV GDEs

- Step 1: Determine how many GDEs are in NV and where they are
- Step 2: Assess stressors and threats to GDEs
- Step 3: Determine how much water GDEs need
- Step 4: Identify strategies and priorities for protecting GDEs

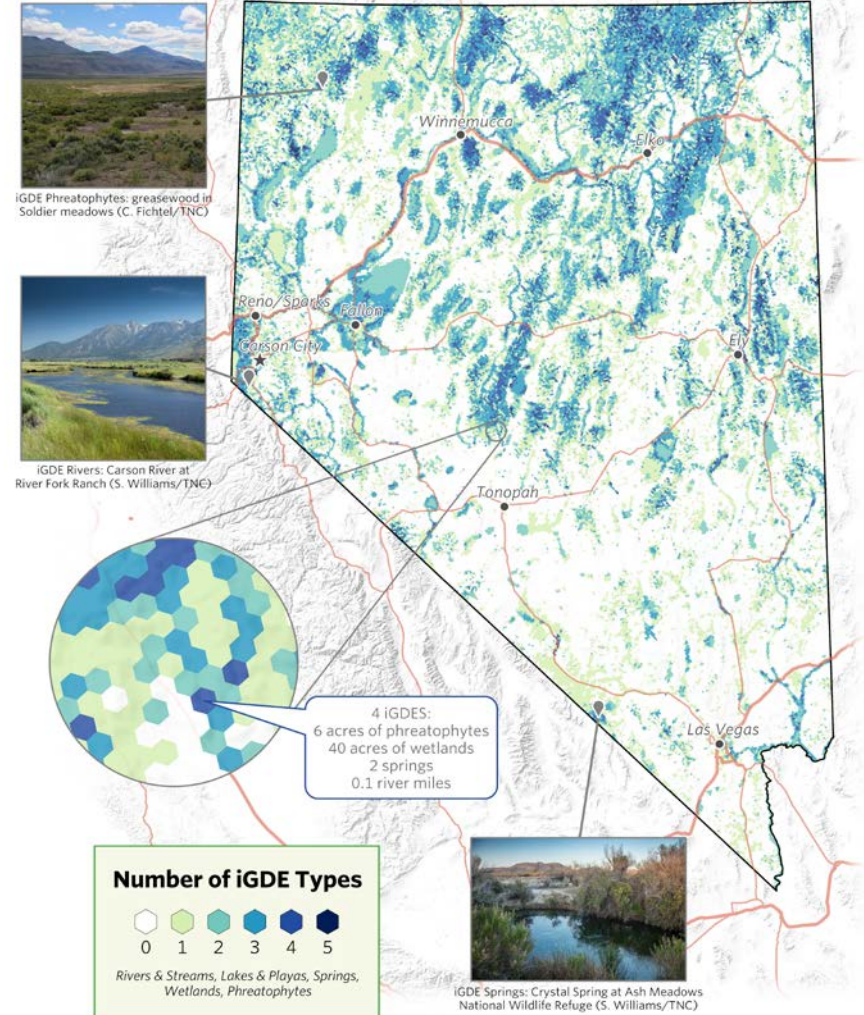


Hot springs at River Fork Ranch (B. Bushman)

Nevada Flow Science: NV GDEs

- Nevada Indicators of Groundwater Dependent Ecosystems (iGDEs) database and story map
 - Completed July 2019
 - Mapped by hydrographic areas and 1-mi² hexagons
 - Acknowledgments: NDOW, BLM, EPA, Sarah Byer (TNC)
 - <https://arcg.is/qyj0v>

Indicators of Groundwater Dependent Ecosystems in Nevada



Nevada Flow Science: Wetlands

- Rapid Assessment Method for Nevada Wetlands(Draft)
 - Completed October 2019
 - Available through Nevada Division of Natural Heritage (<http://heritage.nv.gov/wetlands>)
- Level 1 Wetland Mapping Tool available through DRI (<https://www.dri.edu/wetland-mapNV>)

EPA LEVEL II
RAPID ASSESSMENT METHOD
FOR NEVADA WETLANDS
Field Manual

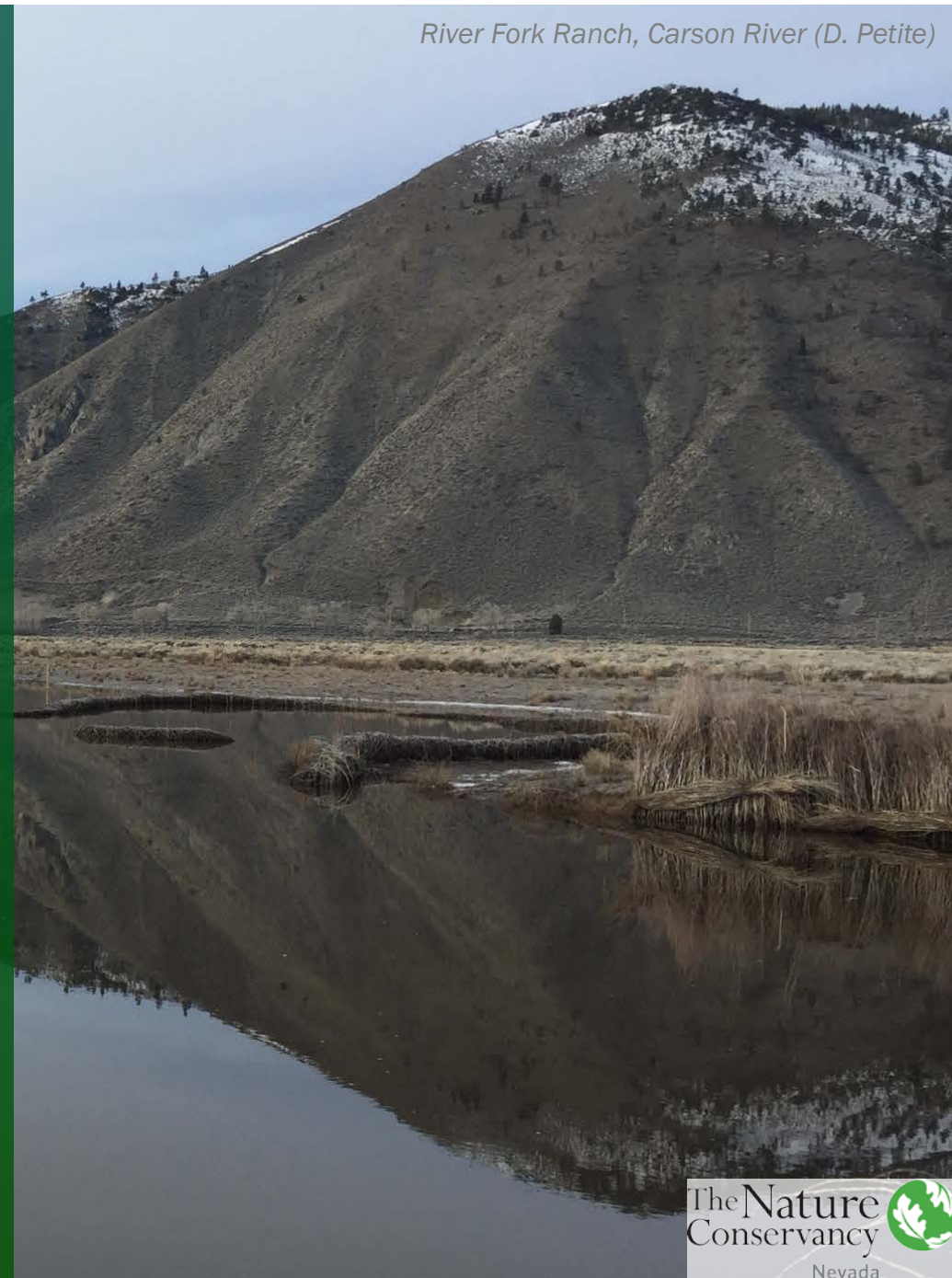


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- Nevada GDE information: <https://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/nevada/water/Pages/database-collaboration.aspx>



THANK YOU!

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