Springs stewardship through the lens of the Springs Dependent Species Project: understanding the scope of springs ecosystems as vital endemic habitats and wildlife pathways.

Authors
Brianna N. Mann, Springs Stewardship Institute, Museum of Northern Arizona
Larry E. Stevens, Springs Stewardship Institute, Museum of Northern Arizona
Jeff Jenness, Springs Stewardship Institute, Museum of Northern Arizona
Our Mission
To advance understanding and stewardship of springs ecosystems.
Springs Online

- Over 950 users
- Over 157,000 reported springs
- State and Federal agencies, tribes, and the public
- Springstewardshipinstitute.org
Solar radiation budget

Human impacts

Admin Context

Temporal change

Aquatic fauna

Riparian fauna

Flow

Trophic Cascades/Feedback

Bedrock geology

Climate

Water quality

Geomorphology

AQ & Terr. Vegetation: Composition Function Structure

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The Springs Dependent Species Project:

springs-dependent species (SDS) are organisms that require springs habitat for at least one life stage.
Types of Data Associated with a Taxon:

- Level of endemism
- Aquatic Status
- ESA status
- IUCN status
- Spring Life History
6. The entire life cycle occurs in springs-associated habitat(s)

4. Breeding and egg and larval development within spring, with frequent adult dispersal

0. Random occurrence at/in springs-associated habitats at any life stage
The difference in springs dependence from plants to animals
Montezuma Well - Biodiversity and Springs Dependence
Springs Dependence Across Elevation

Frequency of SD Invertebrates and Springs

- Springs Dependent
- Springs Invertebrates

Number

Elevation (m)
Springs Dependence Across Elevation

Frequency of SD Flora and Springs

- **springs**
- **Springs Dependent Flora**
Causality: environmental harshness, biogeography, other?
Species with Spring Life History ≥ 4
- Flora
- Vertebrates
- Invertebrates

Projected Temperature Change
SRES Scenario A2
Multi-Year Mean
2046 - 2065
Median of 16 Models
- 1.48 - 1.50 °C
- 1.51 - 1.75 °C
- 1.76 - 2.00 °C
- 2.01 - 2.25 °C
- 2.26 - 2.50 °C
- 2.51 - 2.75 °C
- 2.76 - 3.00 °C
- 3.01 - 3.25 °C
• Small springs at risk
• Many springs are stable
• Managing springs → Wildlife Refugia
• Greatest management concern
Conclusions

• Springs are important ecosystems
• Collaboration through Springs Online
• The SSI geodatabase → large-scale spatial patterns
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www.springstewardshipinstitute.org