Species Vulnerability Indices

Species are Important!

Vulnerability Indices can…

- … save R & D time
- … remind you about vulnerability factors
- … compare apples and oranges
- … promote transparency

Vulnerability Indices cannot...

... turn garbage into gold

... tell you the relative importance of different vulnerability factors

... replace in-depth VAs of species

System for Assessing `Vulnerability of Species (SAVS) to Climate Change
(Forest Service)

Framework for categorizing the relative vulnerability of threatened & endangered species to climate change
(EPA)

Climate Change Vulnerability Index
(NatureServe)

Climate Change Sensitivity Index
(University of Washington and TNC)

All:

are potentially rapid

score individual factors

produce categories of relative vulnerability

address uncertainty

Differences:

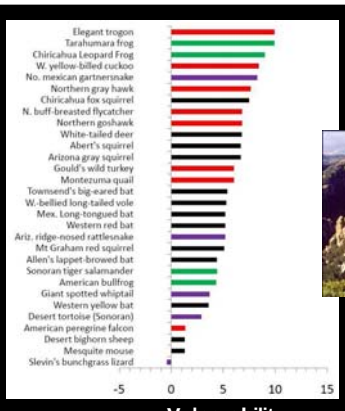
- Species covered
- Structure, variables included
- Abundance, range, and demographics
- Scale for use

SAVS

www.fs.fed.us/rm/grassland-shrubland-desert/products/species-vulnerability

- Terrestrial vertebrates
- Habitat, physiology, phenology, biotic interactions
- Abundance, range, demographics considered implicitly
- Scale: habitat/management area

Coronado National Forest



Coe et al. 2010

EPA

http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=203743

T&E Vertebrates Only

Baseline & climate change vulnerability

Abundance, range, demographics considered in baseline

Spatial Scale: any

NatureServe

NatureServe

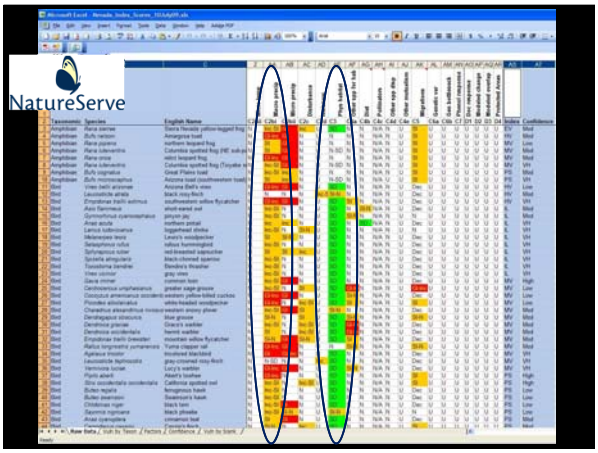
www.natureserve.org/climatechange

Terrestrial/aquatic, plants/animals

Excludes conservation status factors – use in conjunction with G/S-ranks

Exposure and sensitivity sections

Scale: state or large conservation area



Duplicate Conservation Status Assessments?

	Extremely Vulnerable	Highly Vulnerable	Moderately Vulnerable	Presumed Stable	Increase Likely
G1					
G2					
G3					
G4					
G5					

NatureServe

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	Extremely Vulnerable	Highly Vulnerable	Moderately Vulnerable	Presumed Stable	Increase Likely
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G4					
G5					

NatureServe

209 spp

	Extremely Vulnerable	Highly Vulnerable	Moderately Vulnerable	Presumed Stable	Increase Likely
G1	10	11	25	9	0
G2	2	4	5	3	1
G3	0	4	3	11	1
G4	1	1	6	24	3
G5	0	2	7	61	15

$p<0.001$

NatureServe

Climate Change Sensitivity Database

http://climatechangesensitivity.org

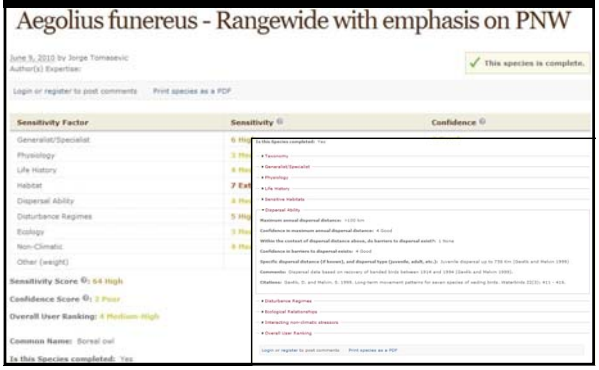
Pacific Northwest focus

Plants/animals, terrestrial/aquatic/marine

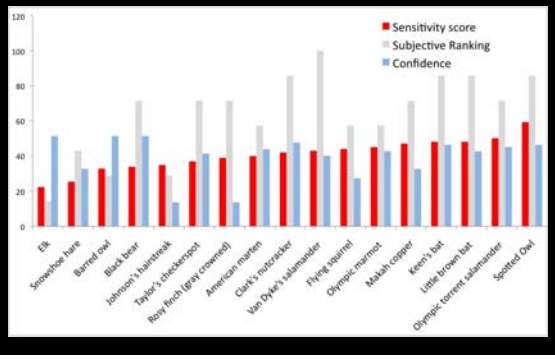
Sensitivity only

Scale: species range within Pacific Northwest

Climate Change Sensitivity Database



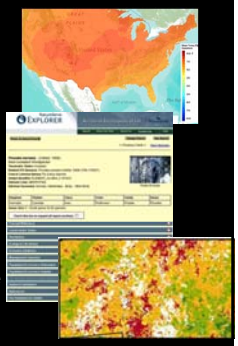
Climate Change Sensitivity Index



Finding data for the index

- **Exposure:** Climate Wizard; WorldClim
- **Sensitivity/adaptive capacity:** literature reviews and expert elicitation, existing web-based tools (ex: NatureServe Explorer, GAP, WUI)

- Uncertainty
  - Explore various climate models
  - Can explicitly address during input by omitting responses or providing multiple responses



Wildland-Urban Interface
Silvus Lab, U of WI

http://gapanalysis.usgs.gov/species/viewer/