Native Plant Conservation and KNPS
Preston Andrews, Ken Thacker and Phil Hough

Clustered Lady’s Slipper (*Cypripedium fasciculatum*)

Photo by Maria Mantas, Flathead National Forest
One of the principal missions of KNPS is “to advocate the conservation of this rich natural [native plant] heritage for future generations….”
Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

![Percentage of species in each category](chart)

- **Bony fishes***
- **Gastropods***
- **Birds***
- **Dragonflies**
- **Ferns and relatives**
- **Monocots**
- **Reptiles**
- **Mammals***
- **Crustaceans***
- **Sharks and rays***
- **Coral reefs***
- **Conifers***
- **Dicots***
- **Amphibians***
- **Cycads***

**Percentage of species in each category**

- **Estimate of percentage threatened**
- **Total number of extant assessed species**

**IUCN Red List categories**
- **Data Deficient**
- **Non-threatened**
- **Least Concern**
- **Near Threatened**
- **Threatened**
  - **Vulnerable**
  - **Endangered**
  - **Critically Endangered**
- **Extinct in the Wild**
Inventory of the world’s plants

Estimated 70,000 plant species are yet to be named, mostly in Australia, Brazil and China
How many plant species are at risk of extinction?

- Kew’s *State of the World’s Plants* estimates 20-33% are at risk
- International Union for Conservation of Nature’s *Red List of Threatened Species* estimates 11,400 species are threatened

[https://www.iucnredlist.org/](https://www.iucnredlist.org/)
Whitebark Pine
*Pinus albicaulis*

IUCN Red List

Main threats:
- Wildfire and fire suppression
- White pine blister rust
- Mountain pine beetle
- Climate change ➔ habitat shifting
IUCN Red List and NatureServe
Scientific resources for effective conservation action

Comparison of Red list classes above and NatureServe status below

NatureServe EXPLORER Online Encyclopedia of Life
http://explorer.natureserve.org/index.htm
Whitebark Pine
*Pinus albicaulis*

**NatureServe EXPLORER**

**Global Status:** G3 – Vulnerable

**Idaho Status:** S3 – Vulnerable

**Overall Threat Impact:** Very high – high

**Short-term Trend:** Decline of 50-70%

  “Whitebark Pine is declining at an unprecedented rate”

**Long-term Trend:** Decline of 50-90%

**Legal status (US-ESA):** Candidate (since 2014)

Dedicated to counteracting the decline of whitebark pine and enhancing knowledge of its ecosystem
Plants recognized in Idaho under ESA
All considered threatened, none endangered

Spalding's Catchfly (*Silene spaldingii*)

Water Howellia (*Howellia aquatilis*)

MacFarlane’s Four-o'clock (*Mirabilis macfarlanei*)

Ute Ladies’ Tresses (*Spiranthes diluvialis*)

Slickspot Peppergrass (*Lepidium papilliferum*)
Drivers of change threatening biodiversity

**IPBES Report (2019)**
1. Changes in land use
2. Direct exploitation
3. Climate change
4. Pollution
5. Invasive alien species

**USFS Chief (2004)**
1. Fire and fuel
   - i.e. forest management
2. Invasive species
3. Loss of open space
   - i.e. development
4. Unmanaged outdoor recreation

Dale Bosworth, Idaho Environmental Forum

Climate change shifts of huckleberry

Vaccinium membranaceum

Change in suitable habitat by 2100

- Reduction of suitable habitat at lower elevations and latitudes
- Expansion of habitat above 10,000 feet and north of 56° N
- 11-31 days advance in flowering (~20 days in N ID)
- 13-37 days advance in fruiting (~22 days in N ID)

https://doi.org/10.1016/j.agrformet.2019.107803
Conservation methods

- Biospheres, wilderness & conservation easements
- Restoration of plant species & their habitats
- Botanical gardens & managed landscapes
- Germplasm repositories & seed banks
- Re-introduction & assisted migration
You’ve got to know what’s there and what’s not

**Clustered lady’s slipper**  
(*Cypripedium fasciculatum*)  
- Rare, widely distributed orchid

**Vulnerable** – IUCN Red List & NatureServe  
- Highly threatened by timber harvest, ground disturbance, wildfires

**Greater risk of extinction**  
- Small populations and less frequent re-surveys  
- Lower elevation populations due to warming

https://doi.org/10.1371/journal.pone.0210378
National/international organizations

Native Plant Conservation Campaign

Plant Conservation Alliance

LandScope America

The Conservation Guide to America’s Natural Places

Encyclopedia of Life

Global access to knowledge about life on Earth

National Phenology Network