



Minnesota Landscape
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Achieving Comprehensive *Ex Situ* Conservation of Endangered Plants at a Public Garden

- In Situ vs. Ex Situ Conservation
- Conservation in Minnesota
- Ex Situ Conservation at Minnesota Landscape Arboretum
- Native orchid conservation at MLA



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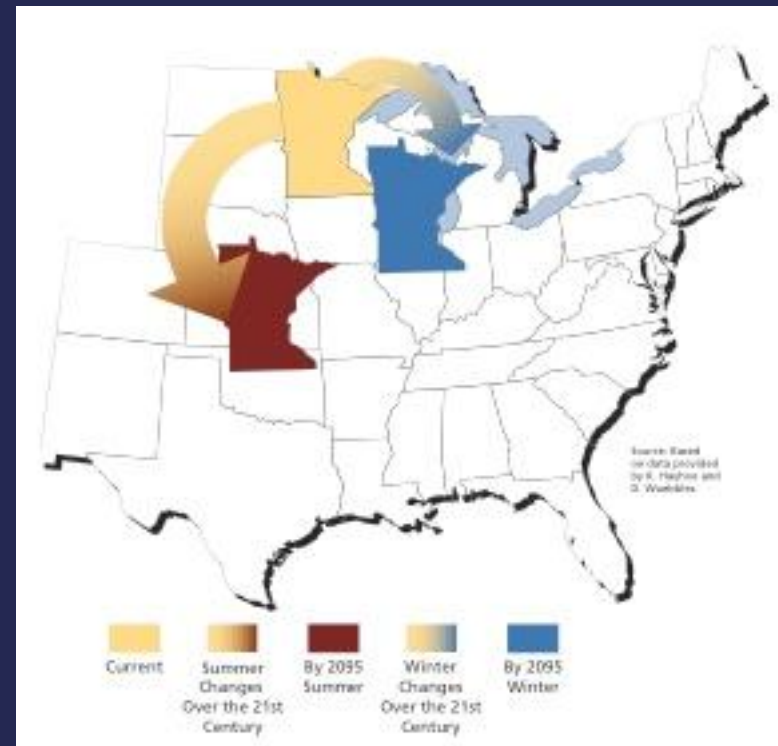
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What is *in situ* conservation?

- Protecting the species in the landscape
- Protecting the landscape
- Most effective way to preserve a species

Is *in situ* conservation the only solution?

- Climate change
- Direct habitat degradation
- Landscape fragmentation



From Kling et al. 2003

Ex situ conservation

- *Ex situ* conservation is insurance against failure of *in situ* efforts.
 - Genetic banking
 - Restoration/Reintroduction

Conservation in Minnesota

- Belarus – 202,900 km² of land
- Minnesota - 207,200 km² of land
 - 47,800 km² - publicly owned
 - 108,900 km² – farmland



Conservation in Minnesota

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 - 47,800 km² - publicly owned
 - 108,900 km² – farmland
- 98% of native prairie in MN is gone



Conservation in Minnesota

- 886 plant species federally protected under the Endangered Species Act
 - 4 in Minnesota
- 308 plant species protected by Minnesota under the Endangered Species Statute

Ex situ conservation at MLA

- Almost all of MLA's *ex situ* priority species are from these three ecosystem types
 - Prairie
 - Bog/wetland
 - “Driftless” area



Ex situ conservation at MLA

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Ex situ conservation at MLA

- *Polemonium occidentale* ssp. *lacustre*
- *Rhodiola integrifolia* ssp. *leedyi*
- *Platanthera praeclara*
- *Erythronium propullans*

- *Polemonium occidentale* ssp. *lacustre*
- Bog herbaceous perennial
- Only 6 known populations



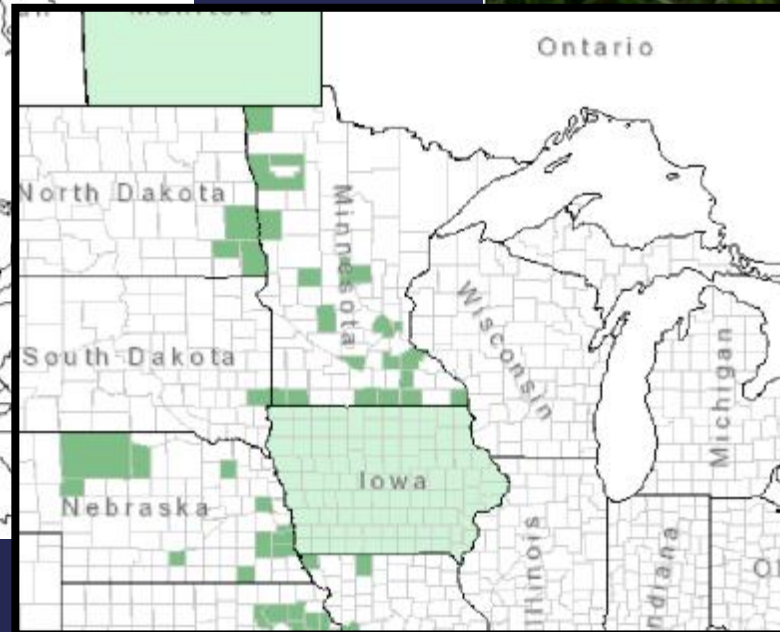
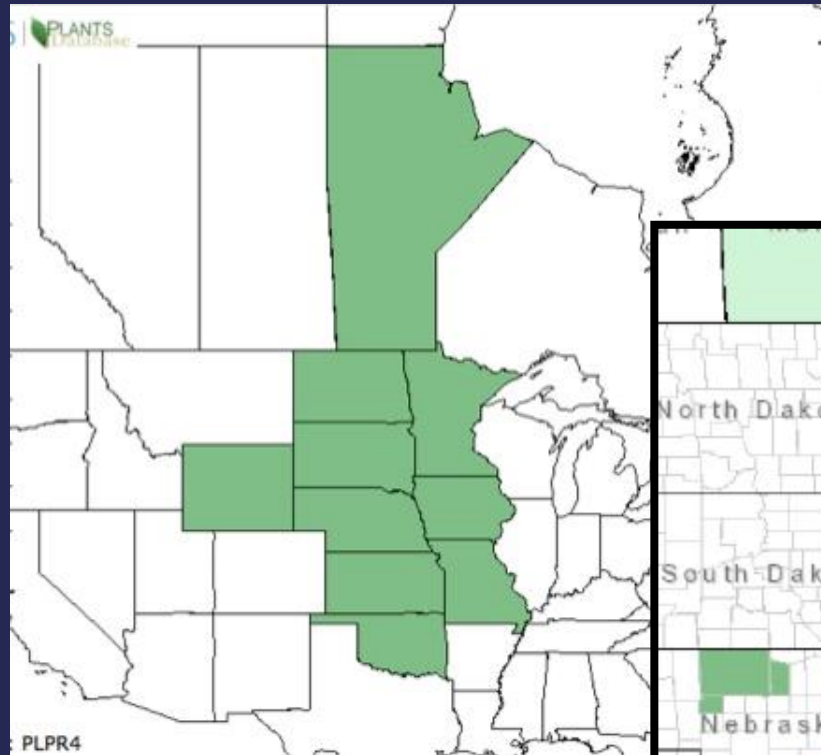
Ray Neumann, MN DNR

- *Rhodiola integrifolia* ssp. *leedyi*
- Cliff-dwelling herbaceous perennial in Driftless area
- Only 7 known populations



© MN DNR, Welby R. Smith

- *Platanthera praeclara*
- Moist prairie orchid
- Wide range
- Habitat is largely gone



- *Erythronium propullans*
- Woodland spring ephemeral
- Endemic to one watershed in Minnesota
- Not known to set seed



Ex situ conservation at MLA

- Public gardens are good sites for *ex situ* conservation
 - Genetic banking
 - Seeds or otherwise
 - Restoration/Reintroduction
 - Production of propagules
 - Education
 - Develop public support



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Plan to achieve comprehensive *ex situ* conservation at MLA

- Plant conservation is new at MLA
–2013



Plan to achieve comprehensive *ex situ* conservation at MLA

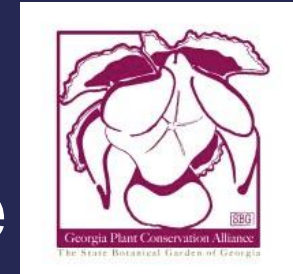
- Collaboration is vital – now and future
 - Genetic banking
 - Center for Plant Conservation
 - Restoration/Reintroduction
 - Minnesota Department of Natural Resources
 - Education
 - Develop displays (public collaboration)



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- Georgia Plant Conservation Alliance



- Organized collaborative effort within a state

- Connect To Protect

- Fairchild Tropical Botanic Garden

- Create genetic bridges for endangered pine rockland fragments



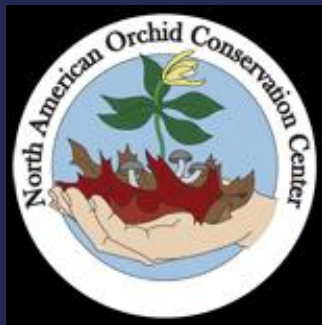
- Minnesota Prairie Conservation Plan

- Native Orchid Conservation Program
 - Minnesota has 48 native orchid species
 - Large number likely due to confluence of biomes
 - Over 20% of them are already endangered



•Native Orchid Conservation Program

- Collect, preserve, study Minnesota's native orchids (all 48)
- One of our CPC species - *Platanthera praeclara*
- Storage and restoration
- North American Orchid Conservation Center partner
 - Smithsonian Museum
 - US Botanic Garden



Comprehensive conservation

- Large, active network
- Conservation of native non-endangered plants
 - Proactive genetic banking
 - Restoration of more of the plant community



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Thank You Спасибо

