

Pennsylvania Plant Conservation Plan

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1 Project Goal

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2 Introduction

Two questions of conservation planning:

1. Where conservation areas should be located? (systematic/spatial)
2. What actions should be undertaken to manage them? (strategic)

What data gaps exist for plants in Pennsylvania?

2.1 State of Knowledge of the Pennsylvania Flora

Floras

The most recent statewide flora is the "The Plants of Pennsylvania" (Ann Fowler Rhoads and Timothy A. Block. 2007).

Vascular Flora of Pennsylvania: Annotated Checklist and Atlas

"Flora of Pennsylvania" by Thomas Conrad Porter

3 Species Prioritization

Two Outcomes Provide prioritization beyond G/S-ranks Setting the targets for this project Minimum set is "all tracked and watchlist plants"

Framework could be expandable to all native plant species.

3.1 Species Ranks

rank	S1	S2	S3	S4	S5	SH	SNA	SNR	SU	SX
G1	3	0	0	0	0	2	2	2	0	0
G2	9	1	0	0	0	2	4	1	0	2
G3	31	6	3	2	0	5	6	12	0	6
G4	94	58	27	35	5	26	28	211	5	22
G5	269	191	128	165	235	74	187	1141	11	43
GH	0	0	0	0	0	0	0	0	0	1
GNA	4	1	0	0	1	0	13	41	0	1
GNR	13	5	1	1	0	5	600	81	1	0
GU	1	0	0	0	0	0	11	3	1	0
T1	1	0	0	0	0	0	0	0	0	0
T2	0	0	0	0	0	0	0	1	0	0
T3	4	3	0	0	0	1	1	3	1	0
T4	15	8	6	1	0	2	3	47	2	1
T5	21	10	14	9	14	3	7	161	2	0
TNR	6	2	1	0	1	3	8	16	1	0
TU	0	0	0	0	0	0	3	2	0	0

30 species are ranked critically imperiled (G1/T1) or imperiled (G2/T2) on a global level. Another 84 species are vulnerable to extinction (G3/T3).

number of endemics/near-endemics to Pennsylvania?

3.1.1 IUCN Redlist

A query (5/29/2018) of the IUCN Redlist (<http://www.iucnredlist.org>) yielded 535 species in Pennsylvania. However, upon further analysis only 418 species (78%) on the Redlist are present in Pennsylvania. The reason for this difference is due to distribution coding by the IUCN. The following table present Red List data for the 8 species that are considered CR, EN, or NT.

SNAME	Redlist Status	Redlist Criteria	Trend
<i>Fraxinus americana</i>	CR	A3e+4ae	decreasing
<i>Fraxinus nigra</i>	CR	A3e+4ae	decreasing
<i>Fraxinus pennsylvanica</i>	CR	A3e+4ae	decreasing
<i>Fraxinus profunda</i>	CR	A3e+4ae	decreasing
<i>Malaxis bayardii</i>	CR	D	decreasing
<i>Coreopsis rosea</i>	NT		stable
<i>Scirpus ancistrochaetus</i>	NT		decreasing
<i>Tsuga canadensis</i>	NT		decreasing

Cite:IUCN 2014. IUCN Red List of Threatened Species. Version 2014.2. <www.iucnredlist.org>. Downloaded on 6 November 2014.

Are there any species that we could consider as responsibility species? Previous work by the VPTC

3.2 Methods

In order to make this project as repeatable as possible, we developed scripts that drove the analysis. Code is hosted on the PNHP GitHub (<https://github.com/PNHP/PCPP>).

3.2.1 Project Area

The project area is the state of Pennsylvania. Pennsylvania has an area of 119,283 km²—of this 116,075 km² are land, 1,269 km² are inland waters, and 1,940 km² are waters in Lake Erie. It is bordered by New York to the North, Ontario (Canada) to the Northwest, Ohio to the West, Maryland to the South, Delaware to the Southeast, West Virginia to the Southwest, and New Jersey to the East.

3.2.2 Species List

For this project, the we worked with all tracked and watchlist plants. We worked with the PNHP botanists to confirm the species on the list.

3.3 Results

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3.4 Conclusions

The results of the priority setting provides the targets for the spatial part of this project.

3.4.1 Responsibility Species

A Pennsylvania-responsibility species (the term may also refer to subspecies or varieties) is one for which Pennsylvania plays a key role in sustaining its global security by hosting at least 10% of its North American population or encompassing at least 25% of its North American range. (PABS <http://www.pabiologicalsurvey.org/pennsylvania-responsibility.html>)

4 Spatial Prioritization

We can't work everywhere Institutional knowledge and potential biases Some spatial prioritization exists in the form of the NHAs and the previous B-ranks

Principles of Spatial Conservation Planning

- Efficiency – compactness and spatial arrangement

- Flexibility – alternative solutions
- Complementarity – the gain in diversity achieved when adding that site to a set of other sites
- Irreplaceability – (selection frequency)

4.1 Methods

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4.2 Results

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4.3 Conclusions

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5 Putting this Plan Into Practice

Highlight broad scale patterns of plant distribution and targeted areas
Can focus on protection, management, and other issues

5.1 Policy guidance

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5.2 In situ conservation at habitat level

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5.3 In situ conservation at species/population level

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5.4 Species reintroduction programs

Species reintroduction is the deliberate release of a species into the wild, from captivity or other areas where the organism is capable of survival. Species that may be eligible for reintroduction are typically threatened or endangered in the wild.

5.5 Ex situ conservation

It is the process of protecting an endangered species, variety or breed, of plant or animal outside its natural habitat.

5.5.1 Ancillary botanic gardens

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5.6 Community and Participatory Approaches

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5.7 Habitat Restoration

Habitat restoration is the practice of renewing and restoring degraded, damaged, or destroyed ecosystems and habitats in the environment by active human intervention and action.

5.8 Land Protection

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5.8.1 Natural Heritage Areas (NHAs)

NHAs are sites, which means that they can have a boundary that exists on a map. NHAs can serve as a finer filter.

6 Overall Conclusions and recommendations

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7 Acknowledgements

We would like to thank the following people for their input on the development of this project: