

What is Our Backup Plan? A look at collections security

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Living Collections as a Safety Net

Not every public garden specializes in plant conservation, but every garden maintains living collections. A recent *ex situ* assessment found 30% of known plant species diversity is maintained in living collections, including 40% of globally threatened species (Mounce et al., 2017). These collections are composed of plant specimens as well as plant propagules stored in seed banks, tissue culture labs, and cryopreserved collections. With those diverse living collections (many with taxonomic, historical, or geographic significance) come the opportunity and the obligation to integrate with other *ex situ* collections and conservation efforts to save species.

Gardens across the world are doing amazing plant conservation work through curation, education, horticulture, restoration, reintroduction, and research activities. The combined expertise, skills, knowledge, collections and facilities of gardens around the world makes the botanic garden community **the world's greatest force for plant conservation and creates a global safety net** against plant extinction for nearly every ecosystem on Earth.

Strategic *Ex situ* Gap Analyses

BGCI regularly assesses *ex situ* representation of key plant groups. A few recently completed assessments by BGCI-US are presented here, with a common theme that a significant amount of plant diversity is currently maintained in only one or a few collections.

1. North American Threatened Species

- 3,598 of 7,662 (47%) species reported *ex situ*
- 30% maintained at a single collection

<i>Ex situ</i> Collection Locations	Threatened Species Reported <i>ex situ</i>	<i>Ex situ</i> Collection Type		
		Seed Banks	Plant Collections	Both
North America	3399	917	1406	1076
Non-North America	1616	191	1212	213
Total	3598	883	1517	1198

2. Plants Maintained in Single Collections

- 68,235 botanical taxa reported by single sites
- 10% assessed as threatened with extinction (BGCIb, 2018)

	Total globally unique taxa reported	Total institutions reporting globally unique collections
United States of America	17,103	205
United Kingdom	16,484	39
Australia	4,000	35
Germany	3,757	40
France	3,641	31
China	2,617	20
Russia	1,555	22
Netherlands	1,496	16
Indonesia	1,358	5
South Africa	1,155	10

*Including species and infraspecific taxa reported by a single institution to BGCI's PlantSearch database, August 2018 (BGCIa, 2018).

3. Extinct in the Wild Species

- 302 plant species on the brink of extinction (EX/EW)
- 39 of 54 (72%) species reported *ex situ*, in less than 10 total collections

Country	Number of <i>ex situ</i> sites	Number of taxa reported
United States	94	42
Germany	20	20
United Kingdom	20	20
France	14	20
Spain	11	7
Australia	10	11
Netherlands	9	13
Canada	8	7
Russia	7	10
Belgium	5	5

Gap Analysis Approach

BGCI uses data maintained in three globally unique databases that are free to use and access online.



Integrated Collections Development

An approach where institutions take into account their holdings, as well as holdings of others, to make complimentary and synergistic collection management decisions to maximize diversity within and across species (Meyer, 2018 (in review)).

Collection priorities to promote Integrated Collections Development

- Share collections data with the broader community.** Your collection can only be useful if potential users know about it. BGCI's PlantSearch connects your collections to the global botanical community, and it is free and simple to contribute to.
- Assess your collection.** Collection assessments can uncover previously overlooked or unknown information, and engage your staff in collection management activities. PlantSearch can help you identify the taxa in your collection that are threatened and underrepresented in collections, and connect and compare with other collections. Maximizing genetic diversity should be among your priorities.
- Duplicate and distribute plants.** Duplicate priority specimens that are most vulnerable and establish backups within and outside of your institution. Propagation of priority plants may be complicated by taxonomic uncertainty or difficulty in producing viable propagules and often requires expert input from several individuals.
- Support legal and ethical plant exchange.** Inform yourself and your staff about sharing plant material. Review or establish your institution's policies and practices surrounding plant exchange. This includes obtaining or renewing phytosanitary certificates and documentation associated with relevant legal or international frameworks like the Convention on Biological Diversity.
- Collaborate.** Seek out institutions that hold globally unique species your institution could accommodate. Taxonomic verification, exchange of propagation knowledge, *in situ* versus *ex situ* species gap analyses, and expeditions aimed at diversifying *ex situ* collections are additional examples of positive collaborative activities.

Unsure which plants to prioritize? BGCI can help get you started.

BGCI can help you prioritize a list of threatened plants in your collection! You can access valuable conservation information about your garden's collection through BGCI's GardenSearch, PlantSearch, and ThreatSearch databases. By uploading your taxa list, you can cross-reference your garden's plant list with major threatened species lists to find out which plants in your collection are threatened in the wild, native to your region, and how many other gardens grow the same species.

To access your garden's collections information, follow Steps 1 and 2 of the PlantSearch Upload Instructions: www.bgci.org/resources/plantsearchuploadinstructions.
NOTE: If your garden has not uploaded a plant list via GardenSearch, it is easy to do. Discuss with your collections manager or curator, or contact us for help with the process. Once you login as a Garden Editor, click on the 'Plant upload' tab in the left column to 'download your current plant list' in a sortable spreadsheet.1

Acknowledgements and References

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