

The Value of Living Collections

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Living collections in botanic gardens and arboreta are precious assets that we maintain in trust for future generations

We base our livelihood largely on our ability to understand plants and to use them for our purposes: the Earth yields its rewards most abundantly to those who cultivate it best. At a time when human beings are using, diverting, or wasting more than 40 percent of total terrestrial photosynthetic productivity, saving plants has been converted from a harmlessly amusing pastime to a matter of life and death. In a global population that has doubled in size since the early 1950's, more than a billion people exist in a state of absolute poverty, and half that many receive less than 80 percent of the United Nations–recommended minimum caloric intake each day. Their situation, and our sustainable use of the planet's resources, can be improved only by a more complete knowledge of plants.

Only a few hundred kinds of plants are currently cultivated on a wide enough basis to be considered crops in world commerce; of these, fewer than two dozen provide more than four-fifths of human caloric intake. Surprisingly in the face of these numbers, however, economic botanists estimate that tens of thousands of kinds of plants may be usable as sources of food, and that many more could potentially satisfy the need for the fuel that supports the energy requirements of fully 1.5 billion people—well over half of those who live in the warmer regions of the globe. As devastation spreads through the remaining half of the Earth's forests and carbon-dioxide loading in the atmosphere accentuates the

greenhouse effect, people are becoming increasingly concerned with the kinds of plants that they may be able to use to reforest the cleared areas and thus contribute to a sta-



Franklinia alatamaha, once endemic to a single location in Georgia, is extinct in the wild and is now seen only in cultivation. Although the majority of endangered plant species are in the tropics, Temperate Zone botanical gardens and arboreta can help preserve their climate's endangered species in living collections. Photograph courtesy of Rácz and Debreczy.

ble and relatively prosperous world in the future. Nearly half of our prescriptions contain molecules initially derived from plants or microorganisms, yet only a very small percentage of such organisms have been examined for such useful products. The opportunities for future development, especially given the potential of genetic engineering, are virtually limitless. In this whole process, living collections, because of their accessibility and the potential for repeating diverse scientific observations on single, specified individuals, are of special importance.

With more than a quarter of the world's 250,000 species at risk of extinction over the next 20 years or so, it is a matter of great satisfaction that perhaps 75,000 species of plants are already in cultivation—most of them only in botanical gardens or arboreta. Even though in most cases these plants do not represent genetically adequate samples, they are protected to some degree in the gardens and do constitute a resource of incredible importance to future human progress. Unfortunately, most samples represent temperate plants, and a much smaller proportion of tropical and subtropical floras is currently cultivated. This situation should be rectified as a matter of

urgent priority by the formation and world support of a network of tropical botanical gardens and seed banks, and it is encouraging that the International Union for the Conservation of Nature and Natural Resources is pursuing just such a goal. Even for the plants of temperate regions, however, the preservation of adequate samples is of critical importance, and many species will disappear forever within the next few years unless they are accorded special attention.

Building a stable world a century from now will be a daunting task, but the plants that we save in our time will constitute a major resource for this purpose. Viewed in this light, our living collections are precious assets, to be cherished and augmented not only because of their current usefulness, but for the sake of our children and grandchildren. In drawing wider attention to their potential, the current number of *Arnoldia* performs a valuable service; the implications of its message should be brought to the attention of policymakers at all levels because of their urgent importance for us all.

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