The Ethics of Plant Exploration

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INTRODUCTION

Throughout recorded history, man has collected plants from foreign lands and utilized them in agriculture, industry, medicine, and for garden uses. Indeed, worldwide, most of our crops originated in places other than where they are being cultivated. In the U. S.A. for example, wheat has a center of origin in western Asia, and soybeans, little known until this century, have a center of origin in China. Similarly, many of our most important landscape plants originated in foreign lands. Frank Meyer first introduced the callery pear in the early 1900s (Cunningham and Meyer, 1984). The original Kurume azaleas were first shown in this country at the 1915 San Francisco Exposition Japanese Pavilion. Today, introduced plants are a critically important component of landscapes, particularly in urban and suburban areas. Without introduced plants our cities and suburbs would be far bleaker and more hostile environments. Thomas Jefferson wrote in 1790, "The greatest service which can be rendered any country is to add useful plants to its culture." Allan K. Stoner, leader of the Agriculture Research Laboratory, states, "No one country or even one continent has all the genetic resources necessary to sustain crops at the level that is needed today. Conditions and needs continue to change, and collecting genetic diversity is how you have the genetic resources to deal with them." (Kaplan, 1998.)

Today the widespread destruction of forests worldwide makes the conservation of plants through plant exploration and ex situ cultivation in gardens all the more urgent. In China, a population of 1.3 billion people continues to press into more remote areas and few natural or semi-natural refuges remain. Some potentially important species like *Eucommia ulmoides*, are nearly extinct in the wild and only exist in cultivation. *Eucommia* is not only a highly drought-resistant urban street tree candidate, but it is also the source of medicine which has been widely used for many purposes in China and is currently being evaluated in the west. Insuring the survival of species likes *Eucommia* is likely to involve plant exploration and cultivation in curated gardens.

Throughout the 19th and 20th century, most plant exploration has been done under the auspices of institutions like the Arnold Arboretum, the Royal Botanic Gardens, and the U.S. Department of Agriculture. Historically, difficulties resulting from politics, communication, and travel have made plant exploration dangerous, expensive, and time consuming. For the most part, only education and research institutions could make the long-term commitment needed for a successful program. However, with the advent of instant worldwide communication, the breakdown of political barriers and inexpensive and convenient air travel, the opportunity to collect plants is more widely available. With this opportunity also comes the responsibility to collect in an ethically responsible manner.

PLANT EXPLORATION

International Protocols. Today, a myriad of laws can govern the collection of plants and the genetic resources of plants. "A new reality has come to those of us who collect, cultivate and study the exotic—people no longer have unchallenged and inherent rights to take plant material from the wild" (Folsom, 1996).

The genetic material of plants is property of the host country. Before any collecting is done, permission of the host must be granted. Usually, before permission is granted a formal exchange agreement must be executed with an institution within the host country. Often this includes a long-term commitment to scientific and educational exchange. Most countries will not give this privilege casually to private individuals.

The *United Nation Convention on Biological Diversity*, a legally binding treaty, opened for signature at the 1992 Rio Earth Summit. It is now international law in roughly 170 nations. Countries that have signed the Convention agree to facilitate scientific access to genetic resources, while users agree to share the benefits from the use of those genetic resources with the source country. Though the U.S. has not signed this convention, the U.S.D.A. and most U.S. institutions are committed to following its spirit. Exactly how that is interpreted continues to evolve (Galbraith, 1998). However, equitable sharing of commercial benefits of plants should be an important goal for any ethical plant explorer.

Field Protocol. The collection of seed and other genetic material in the field should be done in a professional way and thoroughly documented with notes and herbarium specimens. Sound field documentation is critically important to any long-term evaluation program. Often colleagues and students in the host country are not fully aware of modern documentation methods. Therefore, teaching current techniques is one way to help the host country build its conservation program. Likewise, all genetic collections, voucher specimens, and data should be freely shared with hosts.

Collectors must comply if certain areas or taxa are declared off-limits by the host. Of course, no collecting should be done that in any way endangers or compromises a natural population (USDA/ARS, 1998).

Importation Protocols. The danger of inadvertently introducing an insect pest, disease, or noxious weed through the importation of plants is well documented. Gypsy moth, Dutch elm disease, and kudsu are all reminders of the disasters that are possible if proper procedures are not followed.

To help prevent pest introduction, most countries have laws controlling the importation of plants and seeds and the ethical plant explorer abides by the law. Collectors must contact appropriate regulatory officials in advance for information and assistance on specific regulations. It is always necessary to meticulously clean and examine all collections and is usually best to pack cleaned seeds in clear polyethylene bags for ease of subsequent inspection. Plants and seeds must always be declared to customs officials at the port of entry. CITES regulations should be observed regarding the international transfer of endangered plants.

Post-trip Activities. It is important to remember and acknowledge the assistance and hospitality provided by the foreign hosts and credit should be given to them in papers and talks that result. It is imperative that collectors be respectful of local customs and traditions. Not only would disrespect be impolite, but in this age of

instant communication, word of your indiscretions is likely to get back to the host country. Most importantly, collectors need to follow through on commitments for exchange and fostering ongoing relationships.

Sound evaluation is a critical part of any plant exploration program. Plants must be evaluated for adaptability and landscape merit. It is not fair to customers and your good name to rush plants to market that have not been fully evaluated. Furthermore, plants that have any potential to become weedy invaders must be allowed to reach sexual maturity and evaluated for their invasive potential. If found to be invasive these weeds must be controlled or eliminated.

CONCLUSION

Though the world is shrinking and the difficulties of travel and communication are easing, in many ways today's conditions are more complex than ever to the plant explorer. The need for conserving and wisely utilizing plants has never been greater. However, conservation goals and human needs for plants need to be balanced with economic fairness, political realities, and environmental appropriateness.

Plant exploration continues to play a critical role in conservation but must be done in a scientific, professional, and ethical manner. What constitutes ethical practices is still being debated and defined. It is clear that grabbing a few plants abroad and smuggling them into your home country is simply not ethical both legally and environmentally.

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