

PROTECTING AMERICA'S ECONOMY, ENVIRONMENT, HEALTH, AND SECURITY AGAINST INVASIVE SPECIES REQUIRES A STRONG FEDERAL PROGRAM IN SYSTEMATIC BIOLOGY

Hilda Diaz-Soltero¹ and Amy Y. Rossman²

¹USDA, National Invasive Species Council,
Washington, DC 20005

²USDA Agricultural Research Service,
Beltsville, MD 20705

ABSTRACT

Systematics is the science that identifies and groups organisms by understanding their origins, relationships, and distributions. It is fundamental to understanding life on earth, our crops, wildlife, and diseases, and it provides the scientific foundation to recognize and manage invasive species. Protecting America's economy, environment, health, and security against invasive species requires a strong Federal program in systematic biology.

Systematics is in crisis. As systematists retire, they are not replaced, and universities train too few professionals in systematics. Furthermore, the biological collections needed to support systematics languish in substandard facilities lacking adequate staffing, technology, and coordination. As a result of this inadequate support, the United States cannot effectively manage the threat posed by invasive species.

The purpose of this report is to increase awareness of the crisis in systematics and to advocate the need for a permanent, viable, and coordinated Federal systematics program. Systematics expertise and use is distributed across the Federal sector, so participation will be inclusive; no single agency can serve as the steward for the proposed program. The proposed systematics program requires four components: research, specimen-based collections, an informatics network, and the education of future systematists. These are

collectively designed to provide the means to detect, identify, and predict the behavior and consequences of invasive species.

In working toward its mandate to limit damages from invasive species, the Systematics Subcommittee (SSC) of the Federal Interagency Committee on Invasive Terrestrial Animals and Pathogens (ITAP) has a 20-year vision: "Strengthen national and global systematics to predict, prevent, and manage invasive species to ensure biosecurity; public health; economic, environmental, and agricultural security; and sustainability."

When this vision is achieved, the U.S. will have:

- Systematics expertise covering all groups of organisms
- An effective communication network linking Federal, academic, and international taxonomic resources
- A Web-based information system that integrates organismal biology, geography, and taxonomy with diagnostic keys and specimen data
- Adequate human and physical resources to manage Federal systematics collections
- A re-invigorated capacity and commitment by universities to prepare professionals in systematics
- A culture that values systematics and sustains its systematics resources

The SSC will conduct a comprehensive survey of Federal agencies to determine the agencies' present and future needs as well as their capacity to promote research, collections, and information resources. Based on these findings, the committee will develop a 10-year plan for an enhanced, integrated systematics program. Phased in over 10 years, an enhanced Federal systematics program will better counter national security threats posed by invasive species, foster a new generation of systematic biologists, and establish contingencies for continuing operations in case of emergency or catastrophic loss. An interagency body will monitor the program's progress.

The full report is available at http://itap.gov/nal_web/itap/docs/itap_report_mar23.pdf. It was written by the Invasive Terrestrial Animals and Pathogens (ITAP) Systematics Subcommittee, which includes David Chitwood, USDA Agricultural Research Service (ARS); Hilda Diaz-Soltero, USDA; Eric Hoberg, USDA ARS; Scott Miller, Smithsonian Institution (SI); Robert Reynolds, Department of the Interior, U.S. Geological Survey; Benjamin Rosenthal, USDA ARS; Amy Rossman, USDA ARS; Marsha Sitnik, SI; and Alma Solis, USDA ARS.