

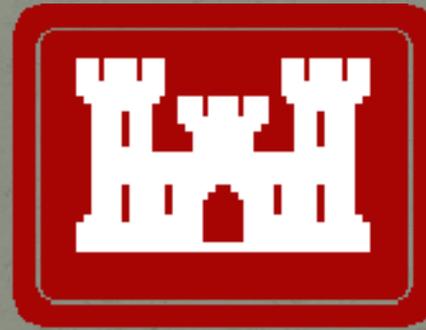
Overview and Demonstration of the Aquatic Plant Information System (APIS™)



Sherry Whitaker
U.S. Army Engineer Research & Development Center
Environmental Laboratory
Vicksburg, MS

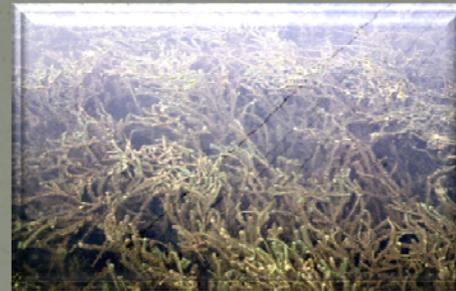
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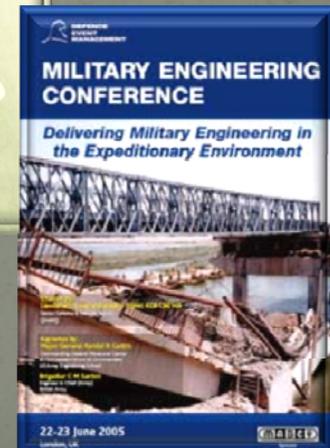
Invasive Species Management

- Biology
- Ecology
- Distribution
- Problems
- Laws and regulations
- Management options
 - Biological
 - Chemical
 - Mechanical
- Sampling methodologies
- And on, and on and on.....



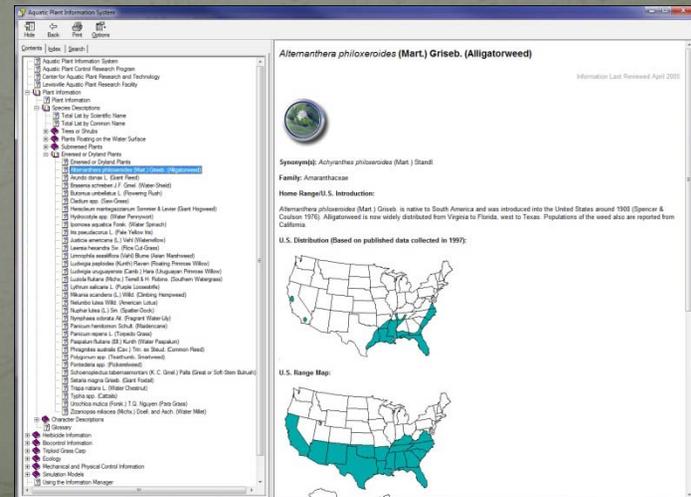
Sources of Information

- Technical publications
- Journal articles
- Reports
- Orally
 - Meetings
 - Personal communications
- Posters
- Books
- Internet
- And on, and on, and on.....



What is an Information System?

- PC/Web-based
- CD version operates under Windows[®]
- Allows for efficient and rapid access
- Highly interactive
- Use a variety of different formats
 - Text
 - Photo's
 - Hyper-linked text
 - Identification programming
 - Video
- All in one location...



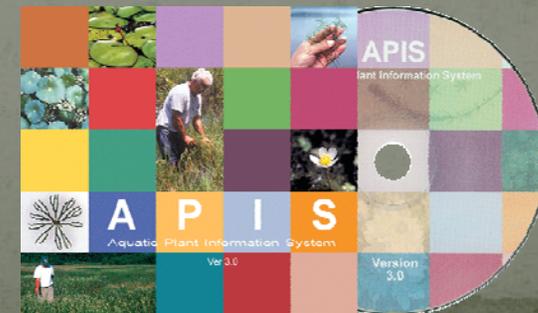
The Beginning...

- Early 1990's
- Recognized need for better access
- DOS-based
- Distributed on floppy disks
- Huge technical difficulties
 - Displaying 256 colors
 - Photographs limited
 - Mainly line drawings
 - Limited interactivity



The Past...

- Advances in computer capabilities
 - Graphics
 - Power
 - Speed
 - Increased memory/storage
 - Programming languages
 - Windows®
 - Visual basic
- Allowed for:
 - Full color images
 - More standardization across computer hardware
 - Identification algorithms
 - More efficient access
 - More interactive GUI
 - Increased information content



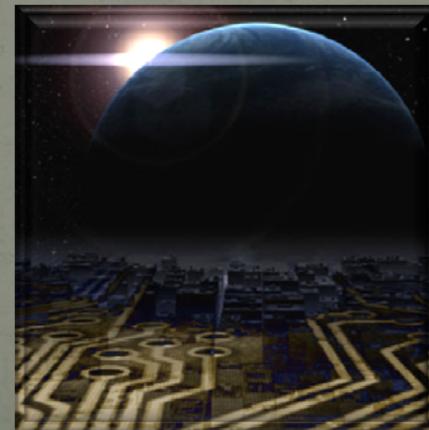
The Past...

- APIS™
 - Version 3.2
 - CD-Rom
 - Windows Vista compatible
 - Hand-held version – Microsoft-based PDA's
 - Started with nine species
 - Today > 70 species
 - Added computer models
 - Amur Stocking rate
 - Harvesting



The Past...

- Mainly increased content
 - Added more plant species
 - Updated mainly chemical info
 - General revisions
- Technological/programming updates
 - Revised with new operating systems
 - Hand-held application
- Favored information over technology

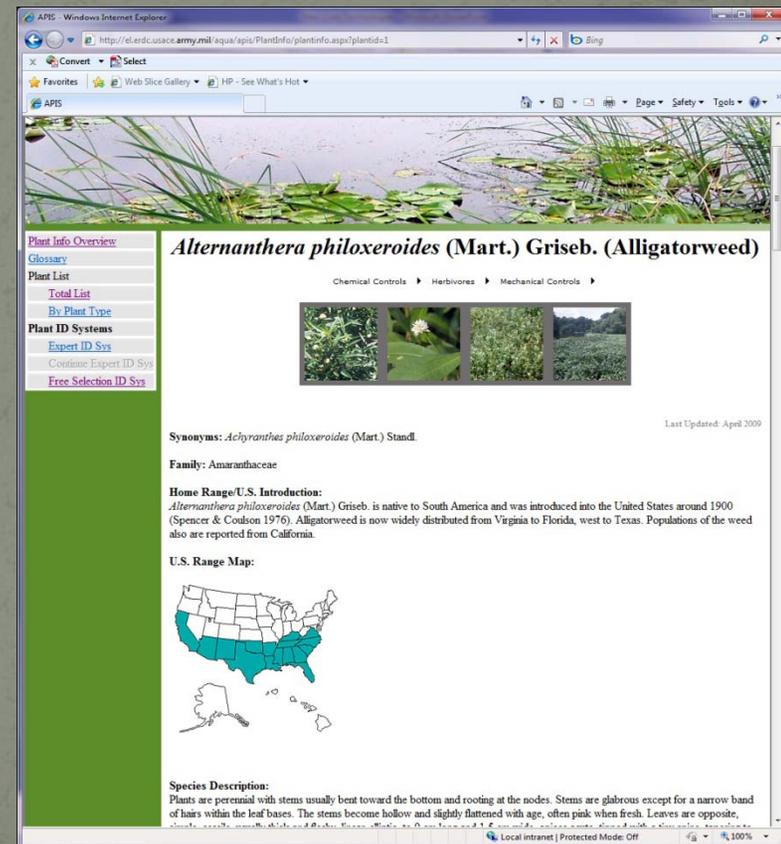


Time for a change...

- Information was increasing
- Harder to keep up
- Organization a problem
- Difficult, at best, to effectively update systems
- More flexibility in accessing information

The Present...

- A simple example...
- Species profiles
 - Common/scientific name
 - Synonyms
 - Home range/introduction
 - Distribution
 - Description
 - Problems
- These are the records!



The screenshot shows a web browser window displaying a species profile for *Alternanthera philoxeroides* (Mart.) Griseb. (Alligatorweed). The page includes a navigation menu on the left with links for Plant Info Overview, Glossary, Plant List, Total List, By Plant Type, Plant ID Systems, Expert ID Sys, Continue Expert ID Sys, and Free Selection ID Sys. The main content area features a large image of the plant in a pond, followed by the title *Alternanthera philoxeroides* (Mart.) Griseb. (Alligatorweed). Below the title are links for Chemical Controls, Herbivores, and Mechanical Controls. A small gallery of images shows different views of the plant. The text includes Synonyms: *Achyranthes philoxeroides* (Mart.) Standl., Family: Amaranthaceae, and Home Range/U.S. Introduction: *Alternanthera philoxeroides* (Mart.) Griseb. is native to South America and was introduced into the United States around 1900 (Spencer & Coulson 1976). Alligatorweed is now widely distributed from Virginia to Florida, west to Texas. Populations of the weed also are reported from California. A U.S. Range Map shows the distribution of the plant across the United States, with the range shaded in green. The Species Description section provides details about the plant's morphology and characteristics.

The Present...



Species information

- Distribution
- Descriptions
- Problems
- Images



Identification

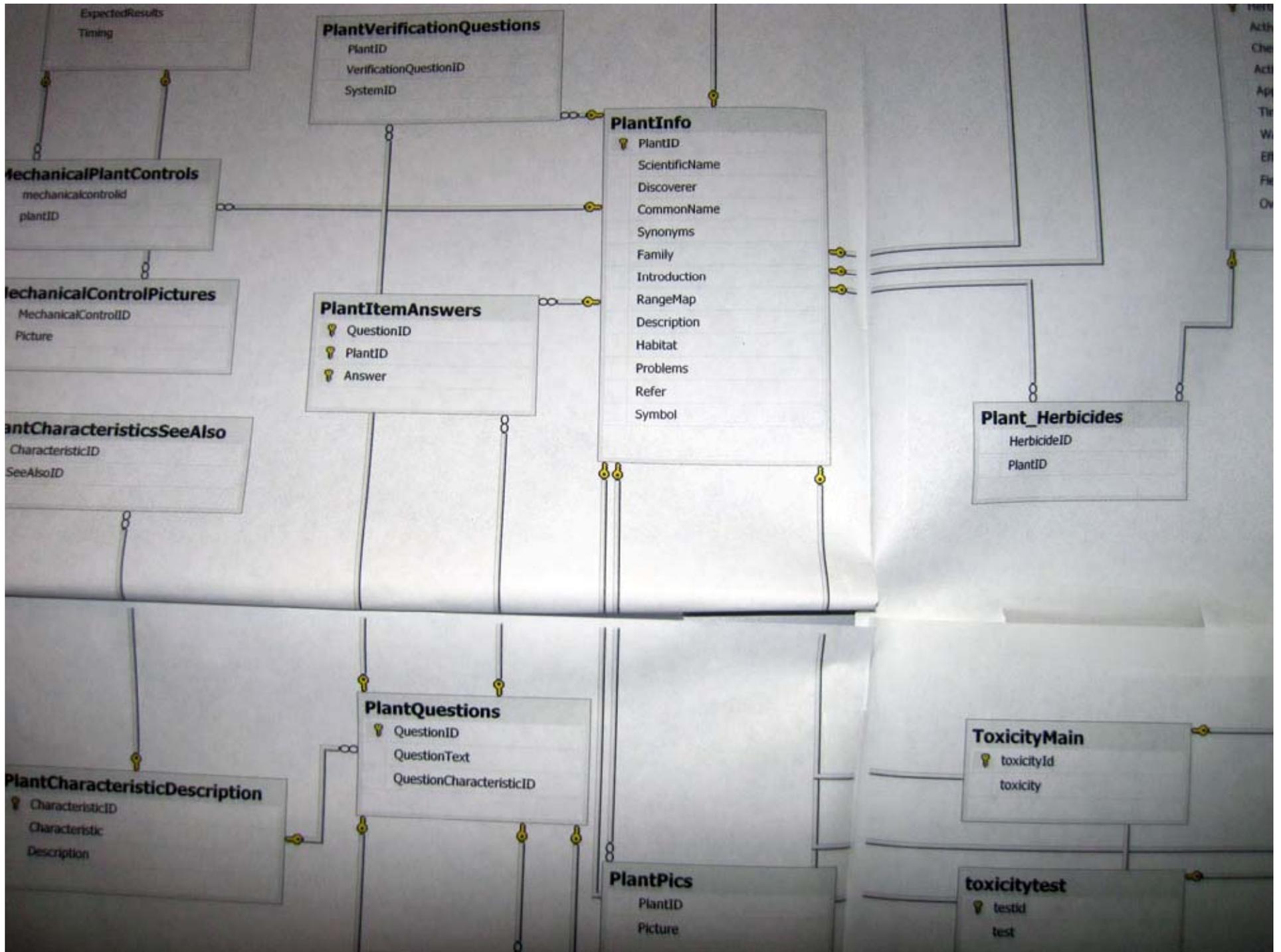
- Descriptions
- Characteristics
- Images



Control options

- Chemical
- Biological
- Mechanical



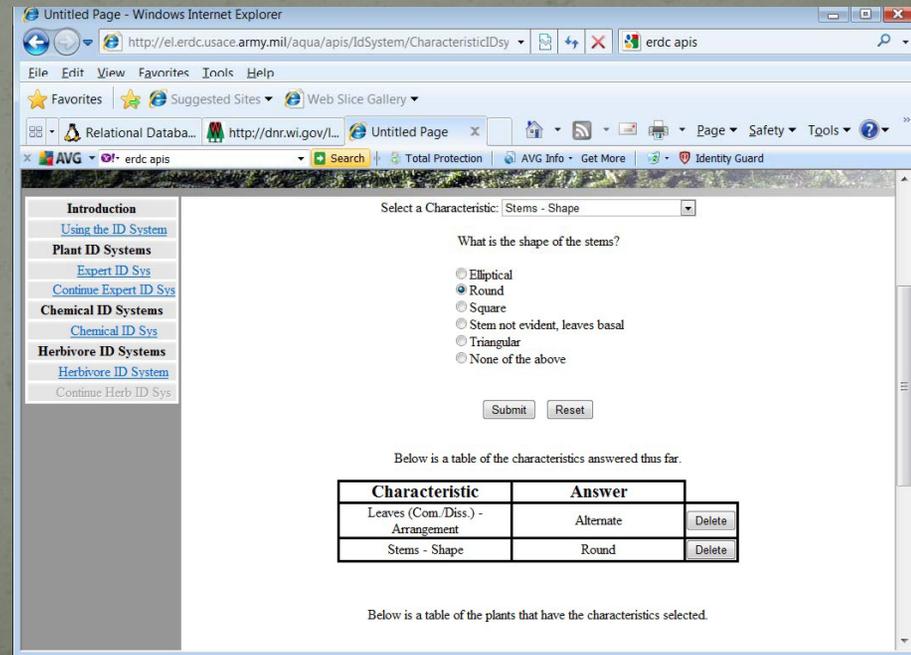
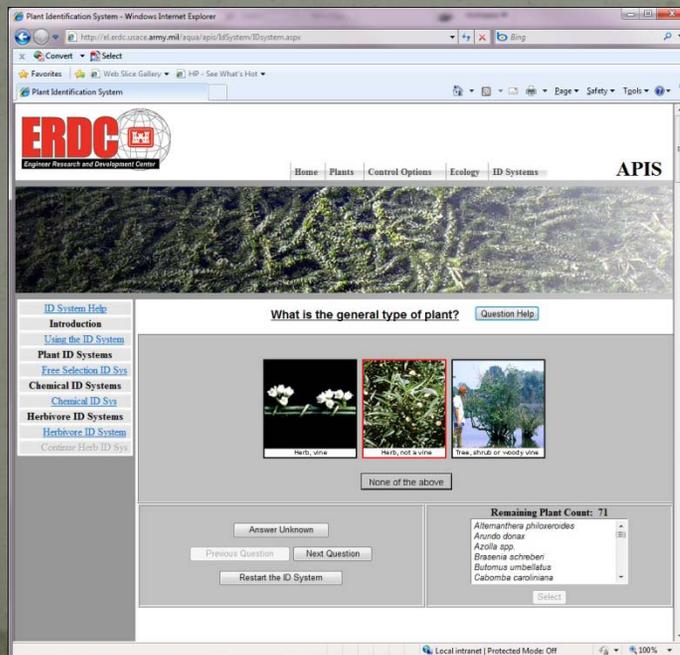


The Present...

- So with a relational database structure...
- Better organization of information
 - Know where every information piece is located
 - It's relationship to other pieces
- Limited use of static web pages
- Add new specific info
 - Modify a single table
 - Instead of the whole static page
- Easier, faster, and more economical to update
- Overall more flexibility in displaying info

The Present...

- More importantly...
- Allows web-based identification programming
 - Classical form
 - New free selection



APIS™ Online

- <http://el.erd.c.usace.army.mil/aqua/apis/intro.aspx>



The screenshot shows a Windows Internet Explorer browser window displaying the APIS website. The address bar shows the URL <http://el.erd.c.usace.army.mil/aqua/apis/intro.aspx>. The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The toolbar shows various icons for navigation and search, including a search box with the text "APIS".

The website content features the ERDC logo (Engineer Research and Development Center) and a navigation menu with links for Home, Plants, Control Options, Ecology, ID Systems, and APIS. Below the navigation menu is a large collage of images depicting various aquatic plant management activities, such as field sampling, laboratory work, and boat-based operations.

On the left side of the page, there is a vertical list of links: [APCRP](#), [LAERF](#), [Aquatic Research Center](#), [System Credits](#), [User Registration](#), [CD Request](#), [APIS Mobile Download](#), and [APIS PC Update](#).

The main text area contains the following information:

The capacity of aquatic plant managers to successfully control aquatic plant infestations is highly dependent on their ability to access pertinent and up-to-date information on ecology, biology, systematics, identification, and environmentally compatible management techniques. However, such a task is becoming increasingly more difficult because the existing knowledge base, in the form of technical reports, journal articles, oral presentations, videotapes, etc., is already sizable and increasing rapidly. An efficient mechanism is needed to access such diverse and important information. Toward this goal, the "Aquatic Plant Information System (APIS™)" was developed which is available not only online but also in PC and PDA versions as well. To request a copy of the PC or PDA version of APIS™, click the link on the left.

This system will allow users to view information on over 70 aquatic plant species as well as available control options. By using the links across the top of the page, information on ecology, biology, systematics, identification, and environmentally compatible management techniques can be obtained. With each new topic or section, links are available on the left side of the page allowing access to more specific information on the chosen topic.

We have strived to include the most up-to-date and accurate information on the identification, ecology, biology and management of

The Future...

- Currently information display static
 - Based on programming
- But with dynamic queries...
- User can specify
 - Type of information
 - Format of information
- Management plan
 - Species name
 - Description
 - Only those with yellow flowers
- Distribution
 - Only in southeast
- Chemicals
 - Only contact
- Biologicals
 - Only operational
 - Only weevils
- Mechanicals
 - Only harvesters
- Customized
- Filtered Information

The Future...

- More mobile versions
- PDA version
 - APIS™
 - Microsoft Mobile-based PDA's
- Limited use
- Variety of different operating systems
 - Blackberry
 - I-Phone
 - Others
- 'Mobile internet version'



For more information:

- Sherry Whitaker
 - Sherry.L.Whitaker@usace.army.mil
 - (601) 634-2990
- Michael J. Grodowitz
 - Michael.J.Grodowitz@usace.army.mil
 - (601) 634-2972