ForestryImages.org: High resolution image archive and web-available image system

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Abstract

ForestryImages.org: The Source for Forest Health and Silviculture Images http://www.ForestryImages.org/.

Over 4,500 photographs and other images of more than 800 insects, diseases, plants, wildlife, and management practices taken by over 170 photographers are available. Most images were digitized from high-resolution 35mm slides. Multiple levels of jpeg format images are downloadable and may be copied and used for any non-profit, educational purpose with appropriate credit and copyright notice. Although most images are of North American forested systems and species, there are many images from other areas of the world in the system as well. The images are in this system to be used!

ForestyImages.org utilizes a fully searchable, relational database-driven system to track and provide scientific, descriptive and photographic credit information.   Several search and browse options are available to help locate images, including: scientific and common names, and "key word" searches of descriptive information about the image.

ForestryImages.org is an ongoing project supported by The USDA Forest Service, Forest Health Technology Enterprise Team and Washington Office, Forest Health Protection Staff, many images and new features will be added in ensuing months.

Introduction

"*A PICTURE IS WORTH A THOUSAND WORDS*"! Correct identification of insects, diseases, weeds and management practices with an understanding of the complex biology of the ecosystem in which they exist is critical in making management decisions on forest and natural areas. Educators need to utilize all available techniques and methodologies available to provide and disseminate materials to widely dispersed clientele who have very diverse educational backgrounds and interests. Correctly identified photographs and images can be invaluable educational

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programming aids. A good photograph of an insect, disease organism, damage or of a management practice will enable the educator and IPM practitioner to make correct decisions, or perhaps as important, not make incorrect management decisions (Bargeron, et al. 1999).

Many talented photographers throughout the years have taken many high-quality photographs of forested system organisms and management practices. These photographs typically exist as 35mm slides in various laboratories, agency offices and individuals' slide files. Unfortunately, as individuals retire or are promoted, or as offices and personnel change, these images are misplaced or are no longer available. Additionally, unless individuals make duplicates of these slides and these duplicates are distributed to others, they are not available for use by anyone other than the individual who holds the original slide. In many cases, even if duplicates are made and distributed to other individuals, critical information such as: the photographer, the correct identification information, common name, etc. is often not carried along with the duplicate slide, and hence, not available to other users.

Information and Communications Technologies (ICT), including the Internet and World Wide Web (WWW), portable computers and presentation equipment (such as Microsoft PowerPoint) and desktop/publishing software systems, provide exciting opportunities for educators to deliver timely and quality information to diverse audiences (Douce et al. 2001a, b). Additionally, most printed materials used by educators are now developed and delivered to printers via computer software, which again requires images to be in digital form. However, because of the high expense of professional printing in color, many publications now produced by educators must be in black and white, which reduces their educational impact. Materials provided via the WWW can be in color and, if desired, users can print them in color on relatively inexpensive home/office inkjet printers now available.

Need

We believe that it is extremely important for educators to have ready and easy access to correctly identified, quality images that can be used as identification aids.

Limitations to anyone desiring to use photographs and images in information and

communications technology applications include:

1. finding the desired photograph/image;
2. reliable access to the photographs/images when needed;
3. obtaining the image in the form and format suitable for the desired application – size, shape, format, color depth, etc;
4. obtaining the correct biological and descriptive information to identify the image – What is it? Who took it? What does it show?;
5. having the ability to easily use the images in the desired application; and
6. having the ability to use the image for the desired educational application without the need to obtain further legal releases.

System Description

Forestry Images is a web based, fully-searchable image archive and retrieval system that the authors developed in conjunction with the US Forest Service to serve Forest Health educational and support activities across the US. The system was developed by the authors and colleagues to support location and retrieval of images by the user community and contains such elements as:

1. the original scan of the photograph/image digitized and archived as a Kodak PCD PhotoCD file (Eastman Kodak Company, 2001),
2. full scientific classification for the organism,
3. photographer name and address,
4. legal releases for educational applications, and
5. image resolutions available: (3072x2048, 1536x1024, 768x512, 384x256, 192x128) in JPEG format

Forestry Images was developed by the authors and was released to the public on July 9, 2001 (http://www.forestryimages.org/). Currently, 4,500 images taken by over 170 photographers are

available to users.   An additional 3,000 additional images on a variety of topics taken by 80 more photographers are being processing and will be available in the system in the ensuing months.

The Forestry Images system backbone is a Microsoft SQL Server enterprise-level database running on a Microsoft Windows 2000 server located within the Bugwood Network offices. The web interface for to the database was written in the Macromedia ColdFusion 5.0 language and uses Macromedia ColdFusion 5.0 server and Microsoft Internet Information Services as the database connector and web server.

The database contains over 2,300 subject codes with scientific classification (Class, Order, Family, genus, species, identifier . . . etc. as appropriate).   Approximately 225,000 pages of information were served to over 14,000 Forestry Images users during the time period of July 9 to October 10, 2001. The system has 1,085 members who have registered for full use of the system and for e-mail updates.

Forestry Images has been under development for a number of years, and is the result of the efforts of a large number of people. In the mid-1990's authors Douce and Moorhead recognized a need for quality photographs of forest insects and disease organisms to use in information technology applications, and began exploring ways to address this need (Douce, et al. 1996).

The overall objective of Forestry Images is to provide an accessible and easily used archive of high quality images related to forest health and silviculture, with particular emphasis on educational applications. We interpret forest health quite broadly, to include natural and managed areas and the organisms and management practices that occur in these areas.

There is no charge to users for any educational application as long as credit is given to the photographer or agency and to Forestry Images as the delivery mechanism. The photographs and images in Forestry Images are either publicly-owned images, or have been released by "private" photographers to allow the images to be used with no royalty or fee charges in educational applications. For each image, we must receive legal release documentation stating

that we, representing The University of Georgia, have the right to distribute the image without restriction as long as appropriate credits are given, and that the image may be used for educational purposes without royalties and fees. For commercial applications, the potential user must contact and obtain release from the photographer or contact person/agency. However, the photographer retains full rights to his/her images, The University of Georgia, for legal purposes, have copyright to the delivery/packaging process.

Future

We will continue to work with foresters, forest entomologists, forest pathologists and others to expand content and scope of forestry information on the various web sites maintained by The Bugwood Network. We envision the image archive as being central to evolution of web-based educational information technology systems that will be developed and served by The Bugwood Network. We believe that Forestry Images will be a valuable resource for educators, practitioners, regulators, students and scientists into the future.

The Bugwood Network (Douce, et al. 2001a) currently includes educational web sites such as: Forestpests.org, Barkbeetles.org, Invasive.org, GAIPM.org, The Department of Entomology web site, Georgia Exotic Pest Plant Council, Southeastern US Exotic Pest Plant Council, Georgia Cooperative Agricultural Pest Survey Program, etc. (all available through www.bugwood.org home page).   The Bugwood Network is a non-profit, educational unit of The University of Georgia, College of Agricultural and Environmental Sciences and Warnell School of Forest Resources, Georgia, USA.

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