

THE CADDO LAKE INSTITUTE'S WETLAND SCHOLARS PROGRAM:
A LOCAL "ECO-SYSTEM INSTITUTE" MODEL WHICH USES
GLOBAL VALUE SYSTEMS FOR MONITORING & STEWARDSHIP OF
A LARGE TEXAS WETLAND ECOSYSTEM*

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ABSTRACT

The Caddo Lake Institute's "Pathfinder" projects are designed to advance the call of its founder, musician environmentalist Don Henley, for the rapid proliferation of locally-based wetland stewardship entities. Under the theme of stewardship, the Institute uses agency and educational partnerships to train local Master Wetland Educator Trainers and private landowners in world-class wetland science skills. This includes local ecosystem research, monitoring and guidance in sustainable use. These projects are informed by, and seek to demonstrate the value of, the world-class wetland science guidance derived from the Ramsar international wetland treaty. The League of Ramsar Wetland Educators seeks to build upon the ecological linkages between Ramsar wetlands in the U.S and elsewhere.

INSTITUTE WITHOUT WALLS; MARGINAL COST APPROACH

Caddo Lake is a 26,000 acre wetland on the border of Texas and Louisiana. It drains the much larger catchment called the Cypress Bayou Basin, which flows into the Red River and thence to the Gulf of Mexico.

The Caddo Lake Institute is a 501(c)(3) private operating foundation underwritten by the American musician and environmentalist Don Henley. Its mission. statement commits it to "preserve and improve the biological and

*Presented at Eco-Informa '96, Lake Buena Vista, Florida, 4-7 November, 1996.

cultural integrity of the Caddo Lake wetland ecosystem. " It does this in the course of its various "Pathfinder projects." Some train "Master Wetland Educator Trainers" in world-class wetland science and related conservation technologies. Others support school and church based wetland monitoring and research, as well as technical support for private property-owners who may wish to become exemplars of applied world-class wetland stewardship.

Today the Caddo lake Institute is an institute "without walls." It has no purpose-built buildings. Rather it utilizes the facilities and expertise provided through working relationships with local public schools, colleges, universities and conservation agencies. The use of existing capacities is an example of our "marginal cost approach, " which extends to shared use of equipment, the expertise of agency or educator scientists, existing proven curriculum guides and the "living laboratories and classrooms" which our local wetlands provide. This permits us to create only that which others have not. Our approach is to pay the modest costs which are incurred by participating educators, institutions and agencies when they re-target their existing capacities to include world-class, field-based wetland science education and monitoring. The people of these institutions and agencies have responded quite positively to our local interest in their work. This has resulted in increased scientific support for our ecosystem.

SUSTAINABLE USE; RAMSAR INTERNATIONAL WETLANDS

World-class wetland stewardship is a combination of good data, good **science** and world-class **analytical frameworks which** permit locally influential people to **influence good local decision making**.

One such wetland-based framework is the scientific and technical regime provided by the Ramsar Convention on "wetlands of international importance, especially as waterfowl habitat." This treaty (signed in Ramsar, Iran in 1971) is a non-regulatory, but influential, framework for individual national action. It calls upon its 100 or so signatory nations to pursue the wise, sustainable use of all of their wetlands. Since adoption, the parties have agreed upon criteria and guidance which nations may use to identify, list, monitor, manage and remediate their internationally important wetlands. Its regime includes incorporation of international concepts for sustainable use, such as the "precautionary principle." Its Scientific and Technical Panels (STP) develop wise use guidance reflecting the global perspectives of world class wetland

science experts. (Davis, T.J. ed. (1994). The **Ramsar Manual: A Guide to the Convention on Wetlands of International Importance Especially as Waterfowl Habitat**. The Ramsar Convention Bureau. Gland, Switzerland.) In 1993 the Institute and conservation agencies of Texas and federal government embraced this framework at Caddo Lake when they co-sponsored the designation of 6,500 acres of Caddo Lake's wetlands under the Ramsar Convention.

While grounded in the Ramsar framework, our Master Wetland Educator training program is more comprehensive. It goes well beyond wetland science to include the dynamics which drive the quest for global sustainability generally. (IUCN. 1991. **Caring for the Earth. A Strategy for Sustainable Living**. Gland, Switzerland.) It begins with study of global population trends, then moves to global sustainability overviews which are reflected in IUCN's Caring for the Earth, the Rio Environmental Summit, Agenda 21, precautionary principles, etc., as well as world class wetland ecology, and the teaching thereof. These topics are covered in specially-designed college credit courses and non-credit workshops. (Darville, Roy G. 1996. **Caring for the Earth and Ramsar Wetland Ecology**. Curricula. East Texas Baptist University, Marshall TX.) Workshops in the copyrighted "Project lesson plans" also occur throughout the year. Wetland ecology teaching workshops typically include: Project WET, Project WOW, The Wonders of Wetlands, and associated field monitoring curricula, such as Project GREEN (discussed below in the monitoring section). Ground Truth Studies training workshops address the teaching of landscape classification methodologies, during the course of which computer-based Geographic Information Systems (GIS) are also demonstrated and used. (As to the above copyrighted teaching plans, see Aspen Global Change Institute. 1992. **Ground Truth Studies Teacher Handbook**. Aspen CO. Campbell, Gayla and Steve Wildberger. 1992. The **Monitor's Handbook**. Chestertown MD; Environmental Concern Inc. 1995. The Water-course. **WOW! The Wonders of Wetlands**. St. Michaels, MD; Kesselheim, Alan. 1993. Watercourse and National Project Wet and Western Regional Environmental Education Council. 1995. **Project Wet Curriculum & Activity Guide**. Bozeman MT).

Participants use their growing scientific and leadership skills at campus venues. There they design and direct curricula reflecting their training. These curricula include maintenance of eco-system monitoring sites.

ECO-SYSTEM MONITORING

Monitoring of the Wetland and its catchment is common guidance for Ramsar-based wetland stewardship. Academic, agency and land owner participants in our projects provide the ecological baseline data for our wetlands and the basin. This data will permit the identification of “ecological change, ” as that term is used in cautionary Ramsar guidance to signatory nations. This can lead to more formal STP-supervised “monitoring ” by international experts, who may recommend remedial measures.

Our participants also gain expertise in the applied wetland science of local wetlands as they acquire the baseline data. Monitoring at 15 testing sites follows recognized field training curricula. This includes fecal coliform sampling 5 times in every 30 days, at selected sites. Basic water quality/chemistry is monitored monthly using standard testing kits and protocols. (LaMotte Company *Napco Kit*. Chestertown, MD; Texas Water Commission undated. *Texas Watch. Volunteer Environmental Monitoring Manual*. Austin, TX.) Benthic aquatic biota (in sediments) are sampled seasonally to determine habitat quality effects on them over time. (See Firehock, Karen. 1995 *Hands On Save Our Streams. The Save Our Streams Teacher's Manual, For Grades One Through Twelve*. Gaithersburg, MD . See also Firehock, Karen. 1994 *Save Our Streams. Volunteer Trainer's Handbook*. Gaithersburg, MD. One of the most comprehensive applied monitoring guidebooks is published and supported by Project GREEN (Global Rivers Environmental Education Network.) The GREEN program includes an excellent manual for field monitoring. In simple language it covers a wide range of monitoring and evaluation methodologies, including chemical, benthic, coliform, and heavy metals testing. It includes “critical thinking ” and stewardship guidance These take the form of a comparative Water Quality Index, exercises for providing information to and participating in local decision making and international outreach and networking. (See Mitchell, Mark and William Stapp. 1995 *Field Manual For Water Quality Monitoring. An Environmental Education Program for Schools*. Ann Arbor, Michigan.) Other collegiate monitoring is more sophisticated.

Catchment monitoring includes expanded water monitoring, supplemented by “groundtruthing ” of remote imagery, GIS landscape-level data capture, data presentation and interpretation. Monitoring data are also archived by GIS coordinates. These applications build upon the Ground Truth Studies Teachers Manual

and GIS orientations of the training process. Advanced interpretation of these data is a high level skill, which is provided for us by the National Biological Services's (NBS) Lafayette, Louisiana Wetland Science Center's Spatial Analysis Section. However, much of the field work and many valid interpretations can be accomplished with levels of skill and technology which local people can access through programs like ours.

AGENCY AND OTHER PARTNERSHIPS

Agency support by NBS and Texas Parks and Wildlife Department scientists is a special dividend. We work with their scientists in the field, with research products being shared as local collegial relationships are being "grown." Like anyone, they like to work where their work is appreciated and supported by collegial relationships with local constituencies.

RESEARCH PROJECTS

Other by-products of our project partnerships include specialized ecosystem research projects. Examples include a biological inventory of an army base, the provision of local scientists to support NBS' long-term bald cypress regeneration studies, and the creation of comprehensive GIS catchment-wide mapping of monitoring data. We're now in the process of designing a catchment-wide agricultural discharge reconnaissance sampling. This will address whether pathogen and nutrient loads are increasing because of poultry and other intensive agribusiness activities.

MULTIPLIER EFFECT: LOCAL, PRIVATE, INTERNATIONAL

We emphasize the "multiplier effect" of "training trainers" who will train other educators. Exponential growth of applied knowledge can be achieved by this approach. This is also the objective of outreach projects within and well beyond the catchment. Locally, these include Discovery Days when our educators and their interns demonstrate their wetland science skills to the public. At our 1993 Ramsar dedication of our Wetland, our participants provided several hundred visitors with demonstrations of water monitoring, sediment monitoring, bird and other habitat issues. We use Discovery Days once or twice a year at local high schools and colleges to attract other educators --and landowners --who may wish to join our program of "Ramsar-compatible" wetland stewardship. This

private wetland initiative is requiring us to accommodate all of the volatile private property issues which must be resolved in the search for wise and sustainable use of wetlands everywhere.

Beyond the catchment, we plan (with Kenyan, Honduran and U.S. Ramsar sites) to model joint exercises in monitoring and in characterizing wetlands under Ramsar principles. This should expand the use of existing Ramsar guidance for stewardship purposes and identify additional sites for Ramsar designation.

We call this site-linking initiative the "Ramsar League of Wetland Science Educators." It reinforces our awareness of the global importance of the issues, the species and the expertise we share with our colleagues at other Ramsar wetlands. It also responds directly to Mr. Don Henley's call for more rapid proliferation of local entities to take on stewardship of the world's remaining wetlands. (Henley, Don.1996. "So **Many Wetlands: So Little Time**"... **A call for the rapid proliferation of local wetland science education for local wetland monitoring, stewardship and mentorship**. Keynote address at "Working together for Wetlands Conference," Washington D.C., April 25, 1995. Unpublished proceedings. Sponsored by the U.S. Department of State. Washington, DC.)

We invite colleagues from other wetland communities to join the League, or our mission of proliferating local Ramsar-based eco-system stewardship programs elsewhere.