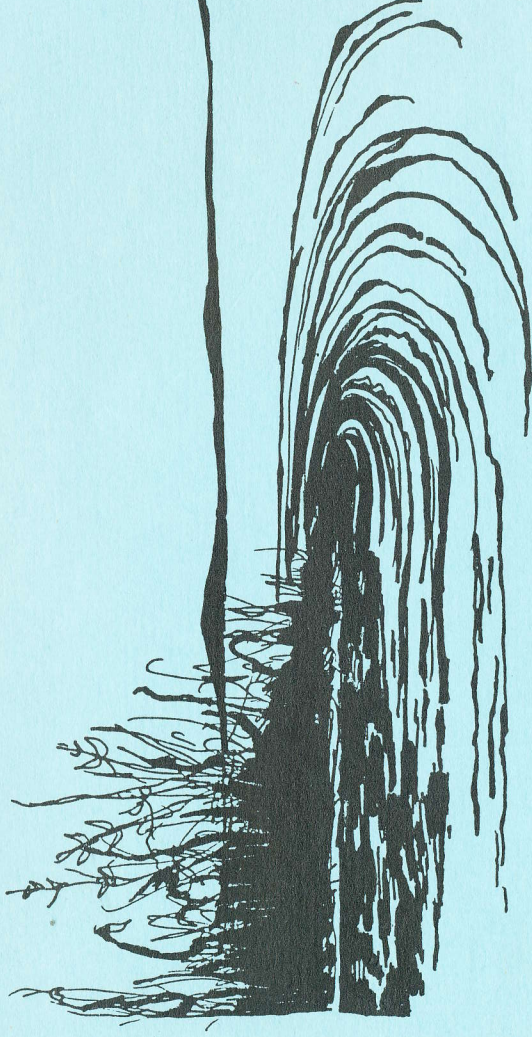


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*A Newsletter for People  
Interested in Wisconsin  
Lakes*



Lake

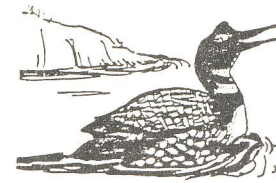
Tides

**JULY 1985**

**VOL.10 NO.2**

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IN THE WAKE OF A LOON:  
AN EDITORIAL

I. International Conference in Wisconsin

Lake property owners in Wisconsin will have a unique opportunity to participate in the 1985 International Symposium on Applied Lake and Watershed Management. The meeting will be held at the Lake Geneva Americana Resort from November 13-16. The last time a major lake management conference was held in Wisconsin was 1977.

The conference is organized by the North American Lake Management Society. The Society serves both professional lake managers and local lakeshore community leaders. In an effort to attract citizen leaders, special sessions have been planned for Thursday, Nov. 14 and Saturday, Nov.

16. Workshop topics include:

- . A Primer on Lake Ecology and Management
- . Advanced Concepts in Lake Ecology
- . Managing a Local Lake Association (Thursday only)
- . Management Ideas for Lake Homeowners (Saturday only)
- . Shoreline Protection (Thursday only)
- . Aquatic Plant Management (Saturday only)
- . Organizing a Local Lake Management Program
- . Lake Sediment Management (Thursday only)
- . Fisheries Management (Saturday only)
- . Lake Monitoring Programs.

To obtain copies of the entire program, contact NALMS, P.O. Box 217, Merrifield, VA 22116. Registration is \$28 for a one-day workshop, or \$85 for the entire conference.

I urge you to take advantage of this opportunity.

II. Mailing List Update

If you want to continue to receive Lake Tides, please return the back page with appropriate notations. The mailing list has become outdated and will be discarded in 1986.

III. Have a nice summer!

Sincerely,

Lowell L. Klessig  
Cooperative Extension Service Specialist  
Professor

## RUMBLINGS IN THE ROTUNDA

### DNR Budget

As of this writing in June, the state Legislature appears likely to fund the DNR proposal for about \$350,000 annually. The funds will be used for three staff positions and special efforts in the following areas: demonstration research, diagnostic studies, self-help monitoring, and informational materials.

### Lake Authority

An initiative by the Wisconsin Association of Lake Districts to create a Wisconsin Lakes and Watershed Authority is not part of the budget bill, but will be introduced as separate legislation. The authority would "provide educational, organizational, and technical assistance to lake or watershed development organizations."

### Special Meetings

The attorney general, in a three-page opinion, has responded to Rep. Cal Potter's question regarding special meetings of lake districts. The attorney general concludes that the Legislature did intend for lake districts to be able to hold special meetings. The same notice would be required as is required for an annual meeting. Action would be limited to the special business indicated in the notice. Rep. Potter is proceeding with legislation to further clarify the procedures for special meetings. However, the lake districts may continue to use the provision for special meetings found in the model by-laws.

If an annual meeting is recessed, it must be recessed to a specific place and date; and notice must be given again as required for an annual meeting.

### Repaying Loans

The state constitution (Article XI) requires units of local government which incur indebtedness to provide a "direct annual tax" sufficient to repay the interest and principal. This provision clouds the authority of lake districts to use special assessments to repay loans. It is arguable whether the Constitution limits the district to only use the mill levy to repay loans. The mill levy must be applied equally to all taxable property.

Because of the uncertainty involved, the Board of Commissioners of Public Land has asked the Attorney General whether it can approve loan applications which would be repaid with special assessments.

## ATTENTION: LAKE GROUPS HARVESTING WEEDS

Dr. Sandy Engel, a lake weed expert known to many of you, will be taking a 3-month leave of absence from his research activities this summer. He will be visiting lakes which are now harvesting weeds to document their experiences. From these visits, he will be preparing a summary report describing the types of harvesters being used, quantity of weeds being harvested, costs, and general effectiveness of harvesting on each lake.

To schedule a visit to your harvesting operation, please call Richard Wedepohl, DNR Lake Management Coordinator, Box 7921, Madison, WI 53707 (608/267-7513). Your cooperation will help other lake communities solve their lake weed problems. Dr. Engel's visit and the subsequent report may also help you improve your operation.

## LAKE GENEVA CONFERENCE WILL FEATURE WEED CONTROL SEMINAR

Summertime in Wisconsin means water sports and sometimes lots of lake weeds. By trapping nutrients, preventing bottom stirring, and supporting food for fishes and wildlife, aquatic vegetation can be beneficial. When the foliage becomes so dense that angling, boating, and swimming are curtailed, lake users object. Traditional treatments with herbicides and harvesting, however, have limitations.

On Wednesday afternoon, November 13, researchers from British Columbia, California, England, New York, and Wisconsin will gather at Lake Geneva, Wisconsin, for a special seminar on new ways to combat aquatic plants. The seminar is part of the conference of the North American Lake Management Society meetings mentioned on page 1. Slide presentations and a panel discussion are planned for the "Innovative Approaches for Aquatic Macrophyte Management" session, chaired by Sandy Engel of the DNR's Bureau of Research. The scientists will discuss such novel ideas as high energy ultrasound, refined applications of herbicides, dwarf plants that inhibit taller species, shading with bank vegetation, and designing underwater gardens.

Lake managers may someday be able to restructure inshore habitats of lakes to enhance lake recreation. There may really be something new under the sun, besides more lake vegetation. The session is open to any conference participant (see page 1).



ANNUAL LAKES CONVENTION A SUCCESS  
by Carolyn Rumery  
Department of Natural Resources

On March 29-30, 1985, about 250 Wisconsin residents attended the annual Wisconsin Lakes Convention at the University of Wisconsin Stevens Point. While most of the conference participants were citizens who live on some of Wisconsin's 15,000 lakes, DNR employees from the central office and each district, County Extension agents, University professors, legislators, and Federal Government employees also attended. The conference was cosponsored by the Wisconsin Federation of Lakes, Wisconsin Association of Lake Districts, DNR, and University of Wisconsin Extension.

On Friday, all participants heard four presentations. The first was a panel discussion of the proposed Lake Management Program being developed for the next biennium. Lyman Wible, Administrator for Environmental Standards, discussed some of the major components of the new program, including self-help monitoring, demonstration projects, and limited technical assistance from the DNR. "What we are proposing," stated Wible, "is a modest beginning for a new lake management program. Our primary objective is to protect and improve the quality of Wisconsin's inland lakes. One of our highest priorities is to involve local citizens in basic water quality data collection on their lake and in designing management plans using these and other data collected by DNR water quality specialists and others." Bill Walters, president of the Wisconsin Association of Lake Districts (WALD), presented a complementary proposal--asking the legislature to provide seed money to create a quasi-public agency to assist in the formation of new lake districts and to help existing lake districts finance lake management projects. All seven legislators on the panel responded favorably to the need for lake management.

The other three panel discussions on Friday afternoon were on self-help monitoring, controlling nonpoint sources of pollution, and chemical aquatic nuisance control. The latter was most controversial, since use of chemicals can provide quick-fix solutions to algae and weed problems, but their use may result in environmental and human health problems. In many cases, the long-term solution to algae and weed problems is to limit the nutrients entering the lake through watershed management practices or land use controls. While these practices require technical expertise to design and implement, there are things that lake citizens can do on their own.

Self-help monitoring implies citizens collecting data on their lake to help assess its "health." There are simple tests that residents can do themselves on a regular basis, such as Secchi disc measurements to measure water clarity. This information, if collected over a long enough period of time, can prove invaluable when designing a management plan.

Workshop topics on Saturday included controlling weeds with screens and blankets; constructing artificial wetlands; contamination of fish by mercury, pesticides and PCBs; the Little Rock Lake acidification project; and using biomanipulation as a lake management technique. Convention participants were encouraged to ask questions of the presentors and to discuss their lakes' problems with each other. Their interest, knowledge, and enthusiasm was impressive!

Perhaps the highlight of the convention was Senator Bill Proxmire's keynote address at Saturday's luncheon. Proxmire has been active in keeping the Clean Lakes Program alive in the Federal Government and promised that he would push to include \$30 million in the proposed amendments to the Clean Water Act. Wisconsin lake communities could be eligible for some of that money for cost-share projects.

Proxmire was recognized for his past efforts with a beautiful Owen Gromme print of a loon with two chicks on a northern Wisconsin lake. It was presented to Senator Proxmire and signed by Gromme, "Thanks for all your work towards clean lakes, Mr. Proxmire." State Representative Cal Potter was presented a plaque for "10 years of legislative leadership on behalf of Wisconsin lakes."

1986 WISCONSIN LAKES CONVENTION

The 1986 convention will be March 7-8, 1986, at the University of Wisconsin Stevens Point. Suggestions for the convention may be sent to an officer of the Wisconsin Federation of Lakes or Wisconsin Association of Lake Districts or to Dick Wedepohl (DNR) or Lowell Klessig (UW). Participants wishing to stay at the Holiday Inn (715/341-1340) should make reservations early. Please Mark Your Calendar!



LONG LAKE LOVERS  
by Richard L. Edwards  
Long Lake Fishing Club

Everyone knew something was wrong, but no one was doing anything about it--except talking! It took the action of a single property owner who invited a DNR representative to speak at a property owners meeting in September of 1982 to generate the spark which eventually became the Long Lake Fishing Club, Inc.

At the September meeting, area fish manager Jim Congdon pointed to the "silting" of natural rock and gravel spawning beds as the apparent cause for declining walleye reproductive success. He recommended new rock spawning reefs as a possible solution and suggested a potential source of available funds through the County should this project be undertaken. A certified application had to be submitted by October 1st to qualify for funds for the winter of 1983-84. Excellent cooperation from the County Planning Dept. enabled several volunteers to meet the deadline and funds were authorized for the reef project for the following years. All the Club had to do was to raise about \$2,500 in matching funds--in a year.

Long Lake suffers all of the problems of an increasingly eutrophic lake. Although classified as northern, bass, and panfish waters by the DNR, the lake has long been considered a walleye hotspot. Fishermen in recent years became increasingly aware of the dwindling supply. Spring fyke netting in 1963 and 1974 caught good numbers of adult walleye. However, walleye surveys conducted in 1982 and again in 1983 proved the fishermen correct.

Located in the heart of the Northern unit of the Kettle Moraine State Forest in Fond du Lac County, Long Lake contains 427 acres of water with the main body about two miles long and one-quarter mile wide. A popular recreation area only 50 miles from Milwaukee, the lake experiences heavy pressure during all seasons of the year. About one third of the shoreline is State Forest land, which includes campsites for 200 units plus picnic and beach areas. Private homes and cottages tightly line the remaining shores.

Twenty-five percent of these private lake property owners belong to the property owners association. The association helped by requesting a voluntary assessment from each of their members to be paid with their 1983 dues. \$900 was remitted by June. Some folks felt it was the DNR's responsibility to do the job and that "non-resident" fishermen should help pay the bill.

In July, 1983, the committee recommended formation of a new club, the "Long Lake Fishing Club," to include the vacationing and fishing public. "Long Lake Lover" T-shirts were given with a membership to attract members. A quarterly newsletter, the "Long Lake Legend," was proposed with the first mailing in September announcing an informational meeting to be held in October. Over 150 additional new members joined before the end of the first year.

An article about the reef project appeared in the Milwaukee Journal in late 1983, which brought in nearly 100 new members to start off 1984. In early 1984, just when the rocks for the first reef were ready to be hauled onto the ice, a February thaw ruined all plans. Fortunately, the newsletter was available to inform members and keep them posted on other activities during the year.

The DNR stocked 450,000 fry in the spring of 1984 and added 21,000 small fingerlings in July. The Club purchased and stocked nearly \$2,000 worth of 6" to 8" fingerlings later in the year. Voluntary 13-inch walleye size limit signs were put up around the lake. A lake monitoring program proposed by the Environmental Task Force at UW-Stevens Point was instituted by the club. The mailing list for the "Legend" rose to nearly 800. About half were lake property owners and half were environmentalists and fishermen who do not own property on the lake. Dinner books were added as a new incentive, and the year ended with over 350 members.

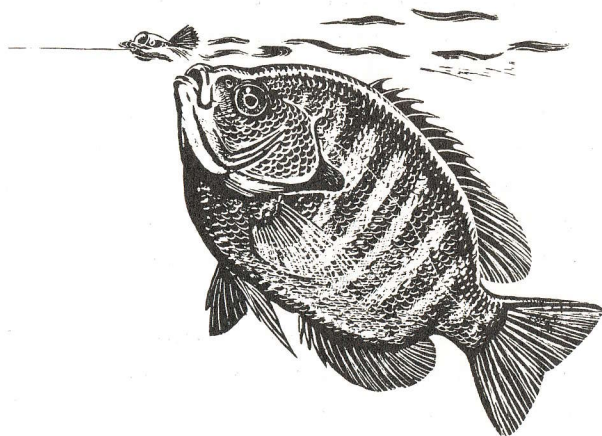
In winter of 1985, two new rock spawning reefs were quickly installed. Rather than risk loaded trucks on the ice, it was decided to dump the rocks on the shores and push them into position with front-end loaders. The first reef is 70' by 200'. The second, funded mostly by the DNR and donations of nearly \$1000 from two local sportsmen's clubs, is 50' by 360'. As natural spawning this spring was limited, the reefs were "seeded" with 2,000,000 "eyed" walleye eggs. Should this project prove successful, it is expected the reefs will be expanded.

The club incorporated as a non-profit organization in 1984 and is hoping to attract additional funds from foundations which have been established by large corporations for certain special projects. General membership meetings are held in spring and in fall, with several fun-and-fund raisers in between. Area individuals and businesses have cooperated generously by providing facilities and door prizes. The board of directors meets when necessary to discuss events and plan future club activities.



Perhaps the club will be judged successful only when the fishermen start catching walleye in good numbers again. But as an environmental club, the Long Lake Fishing Club, Inc., is alive and well. New projects protect and improve the quality of life in and around the lake are already in the planning stages, most of them in cooperation with the DNR and other governmental agencies. The newsletter has proven an invaluable tool. In addition to providing information on a regular basis, it gives the club a positive identity. A strong sense of camaraderie has developed between year-round residents, part-time residents, and an involved and interested non-property owning public. The "Legend" acts as a sort of glue which binds them all together.

Should a problem arise which is out of this club's financial reach, it would seem the next step--formation of a Lake Management District--will have been made much easier.



FRANKOWIAK

ROOTS IN THE WATER  
by Inga Brynildson  
Department of Natural Resources

Water was the first medium of life. Single cells floating in the sunlit veneer of the water's surface were the earliest life forms. Life, as such, was spare and vulnerable. It had not yet begun to shape and turn its earth environment, but was encased in the humbleness of cellular vessels adrift in vast global waters. But if anything, life is persistent. Driven by that most primitive and powerful instinct, survival, life took on a million crude designs, variations on a theme of cell bundling and life packaging. It took a billion years or so for life to crack the chemical equation of photosynthesis, squeezing sugar from sunbeams and oxygen from water. In another two and one-half billion years, with oxygen swelling in the atmosphere, life was ready to set a primordial foot upon land.

Evolution's answer to the need for an anchor was roots, which could also double as absorbers of water and nutrients. While life had evolved from water, it had not shaken its dependence on water. A pipeline was needed to draw the water and nutrient-lode throughout land life. Water also seemed to hold the answer for the turgor needed to fight gravity's pull. The Mother of Invention gave birth to the vascular plant. The rest, so they say, is history. But at some point in the floral dominion of the planet, life (evolutionarily speaking) looked back at water and saw habitat left wanting. Spurred by the fundamental biology lesson, "life abhors a vacuum," some of these pioneering plants returned to the "old country"--water.

But life in water was different for vascular plants than it had been for their wave-tossed ancestors. While on land, life had picked up new ways and new tools, all of which had to be adapted to water life once again.

What we now see as wetland and aquatic plants is the survival of the fittest of evolution's designs for dealing with the hurdles which water presents to plants.

Wetland and aquatic plants are broadly separated into three tribes. Emergents like cattails, sedges, and grasses live with water-logged roots, often in anaerobic soil, while the top of the plant sticks out above water in aerobic conditions. Water lilies are an example of surface floaters, while other vascular plants are completely submerged.

One of the problems for wetland plants is decreased light intensity. Longer internodes and higher chlorophyll concentrations are some responses for handling this. Oxygen deficiency is solved mainly by development of a lacunar system, which equips a plant with air-space between cells or in place of disintegrated cells. Gases such as oxygen and carbon dioxide pass through the lacunae. Gas plays a secondary role when needed for buoyancy to keep the plant afloat. Some plants have spongy tissue called aerenchyma with intercellular air space to increase buoyancy.

If a response to extreme dryness is reduced leaf surfaces, such as on cacti, one would expect wetland plants all to have big, broad leaves to encourage water transpiration. But the narrow leaves of some sedges and grasses even roll at night to prevent water loss. The cumulative leaf surface in a dense wetland sedge stand may lose water by transpiration two or three times as fast as water evaporates from a bare water surface.



Carbon dioxide, a necessary ingredient for photosynthesis, may also be a limiting factor to wetland species. While this compound may be as prevalent in water as in air, the rate at which it is absorbed is ten times slower in water. To deal with this, submerged leaves on many species are much-divided or ribboned, increased the surface area. This can boost the rate of CO<sub>2</sub> assimilation. Dissected leaves also cause less resistance to water currents than entire leaves. Many aquatic plants are heterophyllous, having different shaped leaves above and below water. Thin leaves are another simple adaptation to assist CO<sub>2</sub> absorption. Submerged or floating leaves can get away with less rigidity than terrestrial species.

Wind can be a challenge to shallow-rooted wetland plants. The linear dominant line of sedges and grasses, no doubt, is an attempt in part to reduce wind resistance. Arrowhead or saggitate leaves are common among wetland plants. The theory goes that this triangular shape offers a plant less wind drag while boosting the solar collection surface.

Plant nutrients may be spare in acidic wetlands or bogs. This is why you'll find carnivorous plants like sundews, pitcher plants, and bladder-worts in bogs. Trapping insects and other animal matter is a means to fortify the plant's nutrition. On the other hand, the cattail and sedge marsh is often a sink for nutrients and is the most productive native Wisconsin community in terms of biomass.

One benefit of life in the wetland is the role water can play in pollination and seed dispersal. While terrestrial plants largely rely on wind and animals (for example, insects) for pollination, water is a third avenue for wetland species. Many aquatic angiosperms have not relented their pretty flower heads, artifacts of terrestrial evolution. Some submerged plants even bear flowers entirely underwater, paradoxical if the primary purpose of flowers is insect attraction (unless flowers also attract underwater insects). Vegetative or asexual reproduction, however, is probably the most common mode of plant propagation in a wetland.

The spread of wetland plants also employs a number of mechanisms. The seeds of emergent plants or those with emergent flowers may be wind-tossed like those of their terrestrial kin. Water currents may also carry seeds or break plants for vegetative propagation downstream. The lax posture that causes many submerged plants to tangle about swimmers' legs or become a passenger on a canoe paddle also allows these plants to drape over the backs of diving ducks or a heron's neck to be ferried to other watersheds. This type of transport best facilitates short-distance dispersal, however, as plants may dry out. It is likely that most long-distance dispersal of aquatic plants is done in seed stage in the gut of migratory birds such as sandpipers and ducks.

In short, all that we look upon as nature's wonders are really nature's solutions to life challenges by soil, climate, and water. Just as there is no climax to the evolution of life, there is no climax to the succession of wetland plants as water grades to land. The cattail marsh is sometimes called a climax community, growing in the peaty mire of its own degeneration. But climax implies a steady state, and nature implies dynamics. Wetlands are constantly tempered by fire, water-level changes, drought, water exchange, sedimentation, land use, pollution, and the workings of muskrats. A beaver dam can change the whole floral character of a wetland.

According to a nearly thirty-year-old scheme developed by the U.S. Fish and Wildlife Service, plants can be used to help characterize wetland types. (Adapted from U.S. Fish and Wildlife Service Circular 39, Wetlands of the United States (1956).)

**Seasonally Flooded Basin or Flat.** A type of wetland which is covered with water or is waterlogged during some seasons but is usually well drained during most of the growing season. Vegetation on this type of wetland is quite variable--ranging from bottomland hardwood forests to open meadows. This type of wetland may be found in an upland depression or in an overflowed bottomland.

**Fresh or Wet Meadow.** A type of wetland which is not covered with standing water, but is waterlogged within a few inches of the surface during most of the growing season. Characteristic vegetation on this type of wetland includes grasses, sedges, rushes, redtop grass, reed grasses, manna grasses, prairie cordgrass, and mints. This type of wetland may occur in a shallow lake basin, slough, farmland sag, or on the edge of a shallow marsh.

**Shallow Marsh.** A type of wetland which is usually waterlogged during the growing season and often is covered by water six or more inches deep. Vegetation characteristic of this type of wetland includes grasses, sedges, bulrushes, burreed, spikerushes, cattails, arrowheads, pickerelweed, and smartweeds. This type of wetland may occur in a shallow lake basin or slough, on the edge of a deep marsh, or as a seep area on irrigated land.

**Deep Marsh.** A type of wetland which is covered with six inches to three feet or more of water during the growing season. Vegetation characteristic of this type of wetland includes cattails, bulrushes, spikerushes, and wild rice. This type of wetland may occur in a shallow lake basin, a pothole, limestone sink, slough, or on the edge of open water.

**Open Water.** A type of wetland which is covered with three to ten feet of water and has emergent vegetation along its edges. Vegetation characteristic of this type of wetland includes pondweeds, waterlilies, celery, coontail, and water milfoils. This type of wetland includes low ponds and reservoirs.

**Shrub Swamp.** A type of wetland which is usually waterlogged during the growing season and which is often covered with as much as six inches of water. Vegetation characteristic of this type of wetland may occur along a sluggish stream, on a floodplain, or on a disturbed wet meadow, or shallow marsh.

**Wooded Swamp.** A type of wetland which is waterlogged within a few inches of the surface during the growing season and often covered with as much as one foot of water. Trees characteristic of this type of wetland include American elm, silver maple, tamarack, white cedar, black spruce, balsam fir, red maple, and black ash.

**Bog.** A type of wetland on acid peat which is waterlogged. Vegetation characteristic of this type of wetland includes heath shrubs, sphagnum moss, sedges, black spruce, and tamarack. This type of wetland may occur in a lake basin, along a sluggish stream, or on a watershed divide.



Wetlands are the earth's kidneys with plants and muck soil short-stopping impurities and siltloads from entering rivers, streams, lakes, and ground water. But the capacity of the marsh to swallow urban runoff and debris and still grow healthy plant and animal life is not unlimited. The swamp can be overburdened by sediments; the bog can be choked by chemicals. Some species are especially sensitive to impurities in their wetland medium. They are an early warning system of the fraying of the wetland web. Their roots are in the water and suck in the bad with the good.

The containers of our own human life are 70 percent water. Like wetland plants, we take in water throughout our lives. Also like wetland plants, our roots are in the water.

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TROPICAL ECOLOGY:  
RESOURCE MANAGEMENT IN COSTA RICA  
December 27, 1985 - January 18, 1986

Costa Rica is a small country with a stable democratic government and no militia. Topography and geography have blessed the country with unparalleled natural diversity. The study tour will include camping on the Pacific Coast to observe leatherback turtles, visit to the Monteverde Cloud Forest, studies of the coral reef on the Caribbean Coast, as well as participation in the Christmas Holiday Festival in San Jose. High ranking officials will lead discussions of governmental efforts to manage its natural heritage in the face of population pressure.

Cost of \$1,400 plus credit or audit fee includes air transportation from Chicago, lodging, and meals on field trips.

For complete itinerary, contact: Professor Lowell Klessig, College of Natural Resources, Univ. of Wisconsin, Stevens Point, WI 54481. Phone 715/346-3783.

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