UNIVERSITY OF WISCONSIN EXTENSION, COOPERATIVE EXTENSION SERVICE: NATURAL AND ENVIRONMENTAL RESOURCE EDUCATION PROGRAMS

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ABSTRACT. Perhaps no university element has had as much trouble adjusting to the environmental era as has the extension arm of the landgrant college of architecture. After all, extension-transferred technology was in part responsible for ecological scars on the landscape—wetland drainage, polluted groundwater, sod-busting, bayous reeking with the odor of spray-killed fish, devastated woodlots, orchards silent in the spring, lakes silted with the detritus of eroded watersheds. This paper shows that a university extension arm can turn around and become a source of environmental values and land management practices. That this has happened on Aldo Leopold's home campus is fitting indeed.

In his introduction to the 1978 case study, Marvin Beatty noted the challenge universities face in teaching many different students in a complex society: "If we accept the proposition that... effective action to protect the environment requires not only the willingness to act, but also a basic understanding of ecological and other scientific principles, then it is clear that universities have indeed a formidable challenge". His test of environmental education effectiveness included relevance, appeal, sound authoritative presentation, and programs that meet the needs of the audience (students).

A decade later, we believe that Wisconsin has indeed met this test. Our education programs continue with vigor and are reaching broader and more diverse components of the state's citizens. Although budget cuts have precluded the growth envisioned a decade ago, Wisconsin Extension nevertheless supports an active faculty currently engaged in environmental education. This paper outlines these programs and the new organizations that have developed in the past decade.

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EXTENSION STRUCTURE

The Wisconsin Board of Regents in the early 1980s reaffirmed its commitment to extension education as an important and integral part of the overall University mission and at the same time reorganized Extension into three major areas.

- Faculty and departments with responsibilities for professional development, continuing education, and independent study
- Telecommunications
- The Cooperative Extension Service (CES), the largest element.

Responsibilities for extension education through the University system (26 campuses and 165,000 resident students) are vested in a chancellor who is also the CES Director. An Extension Dean has the responsibility for management of faculty in depart-

ments and those jointly appointed by CES and counties (approximately 300 county and area agents). Subject matter faculty (specialists) are professors or staff in academic departments. Program leaders have responsibility for four major programs:

- Agriculture and Agri-business
- Family Living Education
- 4-H/Youth Development
- Community, Natural Resource and Economic Development.

The latter has primary responsibility for environmental education.

PROGRAM ORGANIZATION AND SCOPE

Several important principles have been enunciated in the Regents' policy on extension education. First, extension specialists are to be integrated with subject matter academic departments and to hold professional rank and tenure in such departments. Thus, the extension professor as a colleague of the resident research and teaching professor works in an environment where new knowledge is developing, while at the same time problems requiring additional research are brought to the attention of the resident researcher. Criteria for merit award and promotion are based on performance as an extension educator and not on research *per se.* Second, specialist appointments are to be made on campuses throughout the system, thus placing the subject matter knowledge in close geographical proximity to county and area faculty and citizens. Third, county and area faculty (agents) have their own academic departments and work with specialists in the state system.

An integrated statewide system has substantial advantages, but requires careful management. For example, Extension must have a co-equal role with departments in making initial appointments of faculty with extension interests, capacity, and commitment, and subsequently in merit and promotion recommendations. And Extension must be able to encourage and reward faculty who engage in inter-department and inter-disciplinary education, which for environmental education is crucial to effectiveness. Presently, budgets are transferred from Extension to colleges annually for agreed-upon programs. Whether or not this is sufficient to maintain strong interdisciplinary programs remains to be seen, since deparments generally emphasize and reward teaching and research in a discipline. Extension program leaders now rely on leadership, persuasion, and faculty commitment.

Program priorities are normally grouped around major themes: economic development, environmental education, rural revitalization, etc. A modicum of constructive tension often exists between program leaders who have primary responsibility (but not authority) for interdisciplinary extension education and the faculty. The dialogue and sometimes vigorous debate generally results in improved understanding by all parties and commitments to interdisciplinary programs. The system is flexible, and faculty activities shift from time to time to meet new needs. Program shifts occur when there are faculty vacancies, whereby funds revert to CES to be allocated to the original department or to another department that can provide expertise more in line with emerging priorities.

CENTERS

Centers have and will continue to be an important organizational tool for interdisciplinary education. In CES, at least five Centers provide a formal opportunity for faculty from disciplines as diverse as agricultural economics, agricultural engineering, soils, and rural sociology to associate with each other and develop interdisciplinary strategies for contemporary resource/environmental problems. The Environmental Resources Center provides a unique service by offering office and faculty support for private organizations, such as the Wisconsin Land Conservation Association, and for interagency projects, such as the nonpoint source pollution project which brings Extension and Department of Natural Resource employees together.

OBJECTIVES

The principal mission of CES environmental education is as described in 1978: "to help individuals, groups of citizens, and organizations improve the management, use, and protection of natural resources . . . and improve the quality of their environment."

The word "help" is generally interpreted by faculty as meaning to take the *initiative* and to provide an *enabling* structure to assist action concerning unresolved management or protection problems.

The objectives have been further refined in 1982. Depending on the resource issue, CES faculty provide education about one or more environmental management strategies: research, planning, education, economic incentives, and regulation. Faculty may also provide original research, a new conceptual scheme, or an enabling structure concerning one of these strategies.

STAFF RESOURCES

From its inception, CES in Wisconsin has been influenced by a progressive tradition (See especially, University of Wisconsin-Extension report, *The Wisconsin Idea,* 1981). In addition to the important and traditional programs for youth, agriculture, and the family, strong programs have been sustained in community development, land use, and environmental management. Presently, major faculty time is committed to environmental

resources in 35 countries and on five campuses which include ten departments and centers (Roberts and Rossing, 1982). Family Living, Youth and Agriculture Agents also program in environmental issues depending on county needs.

DELIVERY

The delivery system has been described as follows: "CES is the people's open doorway to university resources. CES takes a broad range of information and problemsolving approaches into the town and country and to the people. CES staff help people interpret and apply research-based information useful to their lives. . . . Close interaction between faculty and people at the local level keeps CES programs vital and responsive. Citizens, often serving on county advisory committees, identify community and county needs for CES programming. County faculty work with local people to define these needs and communicate this information to state specalists" (Schmidt and Lee, 1986).

Reports from county faculty in 1985-86 provide insights into the effectiveness of the delivery system. Resource agents in one third of the counties plus two area offices reported major programs in natural/environmental resources. One hundred and fifty-six programs on nineteen different subjects were described (Somersan, 1986). These data do not include time spent by resource agents in consulting with small groups or individuals and specialist time which is described in more detail in the balance of the paper.

Major Student Groups and Programs

Extension traditionally programs with client groups as decribed by Beatty in 1978. This works well, provided *all* relevant groups are offered an educational opportunity and minority groups are not overlooked. Fortunately, Wisconsin CES has the breadth to insure that programs dealing, for example, with environmental advocacy are balanced with other programs such as economic development. Obviously, the full range of alternatives and consequences cannot be dealt with in client-oriented programs. Citizens are, however, insured equity in reaching into the market place of ideas and knowledge and bringing those insights into public debates and decisions.

Although programming with client groups continues, most educational programs and publications are not restricted to primary audiences. On the contrary, several identifiable client groups may benefit from specific programs. Environmental "watchdogs," for example, may attend a program series designed primarily to acquaint zoning administrators with new techniques in managing land for groundwater protection.

PROFESSIONAL RESOURCE MANAGERS

Extension faculty are involved in a number of ongoing programs for professional resource managers. Key topics include lake resource protection and management, waste management, groundwater/wellhead protection, nonpoint source pollution abatement, land information systems, small woodland owner profile analysis, and landscape aesthetics. Education delivery systems include continuous data gathering and publication by departments and centers, annual conferences, and pilot studies designed to serve as state models. For example, CES provides coordination and resources for an annual confererence for county land conservation committee (LCC) staff, the development and application of an aesthetic assessment tool for recreation land management, and a model land management mapping system for groundwater protection in a demonstration county.

GOVERNMENTS

Greatly increased public understanding and support has led to a political response increasing the number of both Federal and State environmental programs and the development of extremely complex regulatory systems. New policy in turn creates a need for education for all clientele groups, but particularly affects resource/environment programs for local and county governments. Government employee training includes description and interpretation of resource/environment laws, education about technical skills needed to apply laws, and evaluation of new regulatory needs for management of local concerns. Business and industry also benefit from many of these programs.

Faculty participate in interagency coordination, research, planning, and education concerning waste management, groundwater protection, forestry plans, mining, rural/urban interface issues, nonpoint source pollution, and radioactive waste depositories. For example, the Environmental Resources Center and the Central Wisconsin Groundwater Center sponsor a multiplicity of groundwater education services and programs for local officials. These programs include an annual monthly update on groundwater issues over the Statewide Educational Telephone Network (ETN), a new guide to the use of local ordinances as management alternatives, private and municipal water quality testing, and design of community groundwater protection strategies. Recent plans to investigate Wisconsin as a site for both low level and high level radioactive waste depositories has involved the technical assistance of the Wisconsin Geological and Natural History Survey (GNHS) and agents in central and northern Wisconsin who have assisted local governments in evaluating their alternatives.

ECONOMIC DEVELOPMENT

The GNHS continues to provide substantial natural resource data for a variety of private industries. Other outreach programs of note include seminars on the emerging economic value of wildlife ("watchable wildlife"), "environmentally sound" pest control advice, hazardous waste disposal education workshops, and community appearance analysis and revitalization.

An emphasis on the economic importance of well managed natural resources has become important not only to CES programs for industry and business, but as a theme running through the objectives of many environmental outreach efforts. Clientele have an interest in the development of cost effective management strategies for the present and the future. Representatives from hundreds of Wisconsin businesses attended workshops held during the past two years to acquaint themselves with the current State and Federal regulations applying to small generators of hazardous waste and to learn that appropriate hazardous waste management can contribute to community quality of life. Recently a conference sponsored by the Recreation Resources Center brought State agency chiefs, legislators, tourist, and industry representatives, businesses, and farmers together to consider elements of sound natural resource management and protection that benefited the overall economic health of the state as well as the economic interests of each group.

PUBLIC POLICY EDUCATION

Environmental protection can be accomplished through citizen education which eventually leads to change or through the enactment of new public policy. Many CES programs respond to extant public policy or to the expectation that a knowledgeable citizenry will encourage prudent policies. Frequently, however, Extension provides substantial leadership in the development of new resource policies.

In 1981, Extension issued a task force report that laid the foundation for groundwater protection legislation and education programs. During the following three years, faculty participated with a number of other agencies and groups to provide educational opportunities to numerous clientele on the nature of Wisconsin groundwater contamination problems. This activity culminated in new legislation in 1984 which set up a regulatory framework for groundwater protection.

Extension faculty were directly involved in the development of a new state policy that encourages small woodland owners to manage their lands for multiple purposes. As a part of that effort an extensive study of owners (some 219,000 owning more than 9 million acres) was conducted. That report is now being used by an Extension-DNR committee which will report on program effectiveness to the legislature in 1992.

To develop leadership capacity in rural Wisconsin, Extension initiated a Rural Leadership program. Now in its fourth year, this program provides an intensive education to thirty participants on rural issues including natural resource management.

LAND AND LAND OWNERS

Soil and water conservation programs remain a major feature in CES. In 1983, the Soil and Water Conservation Unit joined the Environmental Resources Center. The merger has facilitated the addition of nonpoint pollution and groundwater protection research results into traditional soil conservation education.

Educational programs for the development and management of lake districts, a unique governmental body with a number of powers including taxation, have continued as described in the 1978 paper. Features of note include the ongoing publication of the *Lake Tides* newsletter providing current information on management issues, an annual lake district conference attended by land owners as well as substantial numbers of professional resource managers, and leadership in the development of a state association of lake districts (W.A.L.D.).

Public participation in watershed management expanded greatly in the 1980s. With financial assistance from DNR, CES coordinates planning for landowner educational programs such as the local watershed newsletters developed by county resource agents with advice from campus faculty. A high priority project in the Milwaukee River watershed included a landowner survey resulting in an analysis of owner attitudes and perceptions. Project results will contribute to the design of educational programs and new public policy in this watershed having both rural and urban implications.

ADULT ENVIRONMENTAL EDUCATION

Fall 1985 saw the end of a twelve-year model education program for the general adult audience which offered over one hundred issues- or recreation-based short courses each year. This unique program was based on the philosophy that environmental problems could be prevented by an aware and knowledgeable citizenry. Program need was demonstrated by a statewide survey (Nichols et al., 1981) which indicated that ninety-nine percent of the respondents were interested in environmental topics and that sixty-four percent of these were interested in learning *more* about environmental topics. Although popular and financially stable, the program did not fit any of the three major Extension areas resulting from the 1980 reorganization.

CES has continued its commitment to the nine thousand plus individuals who received the annual course catalogs by providing a new semiannual catalog ("Environment") which lists adult credit and non-credit education opportunities offered by a variety of Wisconsin institutions. A masters thesis (Wood, 1987) surveyed over one hundred providers as part of a larger effort to develop an information base for new adult environmental education program needs. Seventy-nine percent of the respondents indicated enthusiastic support for catalog continuation.

Extension continues other programs for the general public which enhance their awareness, knowledge, and skills: a bi-weekly radio program on wildlife; a non-credit independent study course, "Ecosploring", designed for volunteers and naturalists; county homemaker groups leadership training on water quality issues; an eight-week course on mining impacts; environmental issues sessions in the annual College Days for Women; and conference development support for service groups and other non-profit organizations.

TEACHERS AND YOUTH

CES continues a modest involvement in teacher training. The Wisconsin Department of Public Instruction has recently promulgated two new administrative rules which have substantially increased demand for teacher training in environmental education and methodology. Demands involve training teachers for Wisconsin certification in seven environmental education competencies and providing training support for school system committees developing required K - 12 environmental education curriculum plans. CES has worked to meet these demands by providing workshop content and coordination as described below and by providing advice and consultation to state and regional task force groups.

The "A to Z" catalog provides an annual summary of environmental science and environmental education methodology courses available to teachers for credit from Wisconsin campuses. Other teacher programs include four annual week-long summer workshops at a private camp in northern Wisconsin, faculty coordination and instruction for a number of credit course described in the "A to Z" catalog, and workshops by invitation such as those presented by the Central Wisconsin Groundwater Center demonstrating a groundwater flow model.

There is a substantial infusion of environmental education philosophy into 4H curricula. Materials for a new 4H natural sciences curriculum called "Nature Space" have been in use for the past three years. A leader guide and five units have been completed to date. Guide topics, such as "Insects" or "Forestry," each include the same themes: species, population, habitat, interactions, and human effects. A member or club selects a "space" such as an urban park or a backyard corner to study, then applies the activities of one or more guides to that "space." Similarly, a "Recycling for Reuse" project has been successfully piloted in one county, and requests for the project materials have come from forty other states.

Leaders at Upham Woods, a statewide camp and nature center for 4H youth, have continued to incorporate environmental education techniques into their programs. Camp programs utilize the "Nature Space" curriculum as well as national curricula such as Project Learning Tree and Project Wild.

CONCLUSION

In spite of budget reductions that have constrained Extension environmental education programs during the past decade, a strong and continuous basis of University support to Extension for environmental education and, more importantly, a vigorous faculty and staff actively conducting educational programs are in existence. Especially encouraging is the sustained participation and support from the Wisconsin citizenry—Extension's students.

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THE DEPARTMENT OF HOUSING AND INTERIOR DESIGN AT THE UNIVERSITY OF MISSOURI-COLUMBIA: THE ENVIRONMENT AND BEHAVIOR PARADIGM

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ABSTRACT. A new school of social psychologists, architects, and home economists within environmental studies are studying the physical design of human living spaces under an environment-and-behavior paradigm. The Department of Housing and Interior Design at UM-Columbia is a center of teaching, research, and outreach in this emerging field.

A growing sensitivity to the relationship between environment and behavior is guiding curriculum changes and academic activities. This environment-and-behavior paradigm adopts a problem-solving perspective and cares about the people using the structure. It seeks to improve the man-made environment by understanding people and how they interact with the environment. For example, theories regarding territory, privacy, personal space, and crowding help the designer understand the relationship between the physical design and behavior. The Environmental Design Research Association helped initiate and formalize this zeitgeist philosophy of the 1960s.

The environment and behavior approach goes beyond the visual experience, since the visual perception is often inaccurate or inconsistent. The Escher lithographs and trompe l'oiel designs fool the competent eye and may either add interest or disorient the user. Meanwhile, the blind or visually impaired elderly individual who requires basic levels of safety and comfort in the physical environment might not be concerned with visual style. For those with visual impairments, for example, there are unique environmental requirements.

The environment and behavior perspective is evident in the Department of Housing and Interior Design, University of Missouri-Columbia. The conceptual foundation on which faculty, students, curriculum, research and creative endeavor, and extension programs are coordinated is underpinned with a sensitivity to the ecological relationship between people and environment. Students are challenged to investigate the impact of the environment on our more vulnerable society members, such as the elderly, the infirm, minorities, children, low income families, and the homeless. Hence, design education embraces a social consciousness that stimulates concern and professional responsibility for safety, health, and welfare.

Stated as a hypothesis, the Department's mission reads: The activities of individuals or families are supported by the physical design of their living spaces that design must respond to human values, behavior, cultural, and social factors and the

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