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A Course in Conservation of Natural Resources and Field Biology at Wartburg College

ELMER W. HERTEL

Abstract. A four semester hour course in Conservation and Field Biology is offered at Wartburg College. Two 1-hour lecture periods and two 2-hour laboratory periods per week are required. The lecture periods deal with the conservation of natural resources and the laboratory periods with ecology, ecosystems and natural history. The relationship between conservation and ecology is stressed.

I am presenting this paper with the idea of gaining information as well as sharing our experiences at Wartburg College. In the plans for a new science building on our campus there is included a special laboratory which will be used exclusively for our course in Conservation of Natural Resources and Field Biology. During the planning stages a consultant was asked to review the plans and to make suggestions. He questioned the necessity of a laboratory for this course. It was his opinion that a liberal arts college should not be in the business of conservation education.

Wartburg College holds that the conservation of our natural resources is basic to the continuation of the American way of life. The College is also of the opinion that one of the best ways to inform the American public about the principles of conservation is to teach our students, especially those who plan on entering the teaching profession, these principles so that they can in later life relate the philosophy of conservation to others. The College also holds that it is important that these students have practical laboratory experience in the areas of conservation and field biology. It is expected that the laboratory work will make a major contribution to the student's knowledge and understanding of the facts, principles and concepts of the subject area as well as to the development of skills and attitudes.

Our course in Conservation of Natural Resources and Field Biology was first offered in 1953 with an enrollment of five students. We currently have an enrollment of approximately one hundred twenty-five students per year. It is offered each semester and during the summer session with two sections being scheduled for each term. The course is now required of all students preparing to teach the elementary grades and of those who are taking either a major or minor in biology and are preparing to teach on the secondary level. Many students register for the course as an elective. This group who select the course

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as an elective has been growing appreciably each year. The course has replaced a previously offered three semester hour course in nature study.

There are two 1-hour lecture periods and two 2-hour laboratory periods per week. The laboratory periods are "open ended" and immediately follow the lecture periods to allow for flexibility so that, if necessary, both the lecture and laboratory periods may be used for extended field trips or discussions.

The lecture, or discussion periods, are devoted entirely to the study of the conservation of our natural resources. During a typical semester of sixteen weeks, or thirty-two class periods, the time is allotted somewhat according to the schedule which follows.

Introduction	1 period
A Philosophy of Conservation	1 period
The Conservation Movement	2 periods
Soils	5 periods
The Forest Resource	4 periods
Water Resources	4 periods
Mineral Resources	4 periods
Wildlife Resources	2 periods
Recreational Resources	2 periods
Prospects for the Future and Our Responsibilities	2 periods
Testing	3 periods

A textbook is always used and specific assignments are made from it. These assignments serve as the central theme for discussion. The textbook assignments are supplemented with materials from references, other textbooks, government publications, film strips and films. There are always available in the laboratory, folders containing materials relative to the particular area being studied. These materials are largely state and federal government publications.

The laboratory work is based largely on the study of ecology, ecosystems and natural history. The idea of conservation is certainly not eliminated in the laboratory work. Typical examples of ecosystems studied are the pond, the forest and the grassland or prairie. Since there are so many different organisms represented in the pond, considerable time is spent on this unit. Students are familiarized with the use of keys for the identification of living organisms. Many of the prevalent organisms are identified such as protozoans, crustaceans, insect larvae, fish, amphibians, algae and other aquatic plants. There are more detailed laboratory exercises assigned for several of the phyla which are represented in the pond.

We obviously deal almost entirely with the plants and animals of Iowa. Several of the most familiar organisms are selected for the study of their natural history. Students are, for

instance, assigned to study the natural history of several fishes such as the carp, bullhead, catfish, yellow perch, walleye and northern pike. These assignments are, for the most part, accomplished outside the regularly scheduled laboratory periods.

In the study of the forest and grassland ecosystems, insect collections are prepared as well as an herbarium of the common flowering plants. The amount of time available for the course obviously limits the study of any particular group.

The organization of the laboratory work, because of the seasons of the year, varies somewhat between the first and second semesters. The first semester and the summer session have, however, a very similar sequence of laboratory assignments.

Discussions are held during the laboratory periods relative to the relationships demonstrated among the organisms in a particular ecosystem. These discussions may include such areas as competition, mutualism, commensalism, parasitism and social relationships as demonstrated in certain insects. The influences of light, temperature, hydrogen ion concentration and other environmental influences are included.

I am not of the opinion that those of us who received our training along the traditional lines in taxonomy and morphology are headed for extinction. Although molecular biology has rightfully come into the picture in recent years there is still a place for the study of natural history and ecology. Students should know the names of plants and animals and appreciate the interrelationships displayed by them in their natural surroundings. To correlate the study of ecology with the study of conservation is, in my opinion, very essential.

Presently our laboratory sections are too large for effective field work. Available staff and limited facilities make this situation necessary. With the construction of our new science facility under way some of these conditions will be eliminated.

Today, few subjects are discussed more freely and frequently than "conservation." Citizens read about it in their daily newspapers, magazines and in the publications of various organizations. There are many programs on radio and television pertaining to it.

It is difficult to arrive at a definition of "conservation" which is satisfactory to everyone. "The wisest use of our natural resources" may not be a perfect definition but probably comes close to being satisfactory. I like to think of conservation in the manner of being thrifty, using what we need but no more. There are also great differences of opinion as to what is conservation and what is preservation. To one group, the building of a

dam will conserve water power and prevent floods, but at the same time may not preserve a wildlife sanctuary or an area of scenic beauty. It seems to me we must relate conservation to ecology in order that the true cause of conservation is not lost.

Our course in Conservation and Field Biology may appear to some as a "hybrid" when we teach both conservation and ecology. In my opinion it has been serving a real need and is stimulating a great deal of interest. We want to involve as many of our liberal arts students as possible. This becomes especially important in recent years when a much higher percentage of our student body is coming from the large urban centers. During recent discussions on changes in our curriculum a segment of our faculty advocated a course in conservation as required for graduation. This interest, I am sure, has come about to a great extent because of feature articles which are appearing in some of our journals such as the Saturday Review and others.

Management of Natural Landscapes in Iowa: An Appraisal

ROGER Q. LANDERS

Abstract. The management of natural landscapes must be based on well defined objectives and sound operational techniques. Both of these have been lacking in many situations in Iowa. Examples are presented, and proposals are suggested for an effective program.

Management of anything implies a set of values associated with the thing being managed. It assumes a control, partially at least, over the occurrence of undesirable events as well as a control, partially at least, over desirable events. Management is successful or unsuccessful depending on whether or not the objective is or is not achieved. Management then does not define the objective, but the objective should define the management.

Some more definitions are in order. *Natural* is intended to mean anything which is largely unaffected by man. In its strictest sense there are no natural areas of vegetation remaining in Iowa, but in a relative sense there are many areas which are natural, in that their present structure and composition are largely unaffected by man. I have used the word *landscape* in the fullest sense to mean the surface features of an area including the

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