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Notes for Problems of Ecology Presentation to the Linfield Research Institute

Jane Claire Dirks-Edmunds

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for LRI Seminar - 3/19/57

PROBLEMS OF ECOLOGY

Name, Ecology, coined by ^{the} German ~~biologist~~ ^{zoologist}, Ernst Haeckel in 1870 from

Greek oikos-- house
logos-- discourse -- (subsequently, it has come to mean scientific study)

History

Ecology is relatively young as a distinct branch of Biology, though its roots in natural history go back at least to the time of Aristotle, around 350 B.C.

It became firmly established as a major division of Biology about 1896 - 1900 though the name, ecology was not ~~yet~~ universally accepted by workers in the field of study. *until a little later.*

In America very little ecological work was done prior to 1900.

Both botanists and zoologists became active in this field of work between 1900 and 1910 and it has expanded constantly since.

Definition

What, then, is the subject matter of ecology?

Ernst Haeckel, said of it, when he coined the name in 1870:

"By ecology we mean the body of knowledge concerning the economy of nature--the investigation of the total relations of the animal both to its inorganic and to its organic environment; including, above all, its friendly and inimical relations with those animals and plants with which it comes directly or indirectly into contact--in a word, ecology is the study of all those complex interrelations referred to by Darwin as the conditions of the struggle for existence. This science of ecology, . . . , has thus far formed the principal component of what is commonly referred to as 'Natural History.' . . . The ecology of animals has been dealt with quite uncritically in natural history; but natural history has in any case had the merit of keeping alive a widespread interest in zoology."

This is still essentially the subject matter of ecology, though the term may be variously defined, depending principally upon the interest and background of the ecologist.

Our Definition: **ECOLOGY:** Environmental Biology. The study of living things with emphasis on their environment and interdependence; soil-geology and atmosphere enter as important environmental factors.

Subject matter of ecology cont'd.

It is a broad field.

Much of sociology is ^{basically} human ecologically ~~basically~~, but I, for one, prefer to leave that field to the sociologists at the moment at least.

The entire field of economic entomology is ecological -- study of life histories, effects, and control of ^{insect} /crop pests, etc. ^{other insects with economic relationships.}

The problems involved in the "mining" of our agricultural lands and the subsequent effects upon human nutrition ^{Food chains} etc. ^{Biotic Potential, etc.}
How can depleted soil produce well nourished plants & soon

Application of DDT and other insecticides to forests without due regard for their effects upon beneficial insects, birds and other life have ecological repercussions;

Read (Natural Food and Farming, Jan, 1957, p 9)

Interview with Walter P. Nickell of the Cranbrook Institute of Science, in Michigan:

Ecologists recognize several major divisions of the total field:

1. Bioecology--refers to a study of all the life, both plants and animals. It is the most inclusive approach to the subject.
2. Plant ecology — *interrelationships of plants & their environment*
3. Animal ecology — *the study of animals with relation to one another & their environment*
4. Synecology--study of communities of organisms. It is a division found in each of the three above.

Hence one might study an oak grove community,
Douglas fir forest community
pond, river or marine community

Biome map

5. Autecology --study of an individual species or "kind" of organism.

*Some of you are bird
enthusiasts &
appreciate*

- (a) Life history studies fit in here: *studies*
→ ornithologists -- life history, of a wren, etc.
- (b) social order studies -- "peck order" of hens
--honey bee
other social insects
- (c) studies on territory, home range, migration, etc.