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# Evaluation of Undergraduate Courses Taught by Biology Teachers

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## General Notes

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### EVALUATION OF UNDERGRADUATE COURSES BY BIOLOGY TEACHERS

Eighteen high school science teachers who brought students to a High School Science Day at the University of Central Arkansas were asked to complete questionnaires about the size and organization of their schools, some aspects of their lives as teachers, and their evaluation of selected college courses as far as the usefulness of these courses to a high school science teacher. The questionnaire required only the checking of appropriate blanks.

Of the eighteen teachers who were polled, fourteen were biology majors in college, two were mathematics majors, one was a physical education major, and one was a business administration major. Each of the participants was teaching one or more science courses in high school. The teaching experience of the respondents ranged from one year to twenty years with a mean of 5.2 years. Twenty-eight percent of the teachers taught only biology, and 72% taught biology and another science. Seventy-two percent indicated that they had free periods during the school day that could be used for the preparation of lessons and teaching materials.

The smallest school represented in the survey had 115 students, and the largest had 500. Twelve percent of the schools included grades 10-12, 25 percent had grades 9-12, 25 percent had grades 8-12, and 38 percent were grades 7-12. Table 1 summarizes other information about the schools. formation about the schools.

Table 2 indicates the number of teachers who had taken each of the selected courses in college, the percent who had taken each course, and their evaluations of the courses.

It should be noted that only small schools are represented in the study. The pupil-teacher ratio for either biology teachers or for science teachers in general is not high.

Explaining the course evaluations is difficult. Why should General Zoology be given a perfect 1.00 rating and both General Botany and General Biology receive lower ratings? The differences in evaluations cannot be ascribed to large differences in the number of teachers who evaluated the courses because in each case a large majority of the teachers who were polled evaluated each course. The higher rating of zoology compared with botany might be caused by a greater interest in animals than in plants. If this is true, however, how can the fact that botany rated higher than General Biology be explained?

It should be noted that, except for Conservation, the biology courses that rated 1.00 are some aspect of zoology or human biology. Applied Physics, which has a life science emphasis, was rated higher than General Physics. This may be a result of the small number of respondents who had taken the course, or it may indicate the natural antipathy of many biology majors for anything that requires a rigorous mathematical treatment.

Although this study is too small for any of the results to be statistically significant, some of the results are interesting. The ratings of various college courses may indicate a need for continuing evaluation of courses required of biology teachers.

Table 1. Some characteristics of schools included in study.

| | School Organization (Grades) | | | |
|---|---|---|---|---|
| | 10-12 | 9-12 | 8-12 | 7-12 |
| Number of schools | 2 | 4 | 4 | 6 |
| Number of students | | | | |
| Range | * | 120-275 | 280-300 | 115-500 |
| Mean | | 198 | 290 | 326 |
| Number of science teachers | 12 | 3 | 6 | 13 |
| Students/science teacher | | 66 | 48 | 25 |
| Number of biology teachers | 7 | 2 | 2 | 8 |
| Students/biology teacher | | 99 | 145 | 41 |

*Teachers did not supply information requested.

Table 2. Teacher evaluations of college courses.

| Teachers who had course No. | % | Name of course | Rating of course |
|---|---|---|---|
| 15 | 83 | General Biology | 1.53 |
| 17 | 94 | General Botany | 1.24 |
| 15 | 83 | General Zoology | 1.00 |
| 6 | 33 | Cell Biology | 1.33 |
| 14 | 78 | Genetics | 1.29 |
| 9 | 50 | General Ecology | 1.56 |
| 13 | 72 | General Physiology | 1.15 |
| 13 | 72 | Human Anatomy | 1.07 |
| 11 | 61 | Human Physiology | 1.16 |
| 1 | 5 | Human Sexuality | 1.00 |
| 6 | 33 | Invertebrate Zoology | 1.00 |
| 8 | 44 | Plant Morphology | 1.63 |
| 6 | 33 | Plant Taxonomy | 1.33 |
| 12 | 67 | Microbiology | 1.50 |
| 6 | 33 | Vertebrate Zoology | 1.00 |
| 11 | 61 | Inorganic Chemistry | 1.27 |
| 13 | 72 | Organic Chemistry | 1.54 |
| 11 | 61 | General Physics | 1.55 |
| 1 | 5 | Applied Physics | 1.00 |
| 2 | 11 | Conservation | 1.00 |
| 6 | 33 | Biology Teaching | 2.00 |

Scale: 1=Course has been very useful. 2=Course has been of some use. 3=Course has been of little use.

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## UNUSUAL RESULTS FROM PELLET ANALYSIS OF THE AMERICAN BARN OWL *Tyto alba pratincola* (Bonaparte)

A great deal of information concerning the food habits of the Barn Owl, *Tyto alba*, has been gathered through pellet analysis (Bent, 1938; Wallace, 1948; Boyd and Shriner, 1954; Banks, 1965). A comparative literature search and the results of this study both indicate that availability determines the kind and numbers of prey consumed by owls. Barn Owls feed on various species of mammals such as: mice, rats, shrews, moles, pocket gophers, bats, weasels, skunks, and rabbits, although birds, amphibians, and even an occasional insect are preyed upon. Most authorities agree that the Barn Owl is one of our most useful birds of prey, especially in farming communities, since its food consists almost entirely of rodents (Bent, 1938).

The Barn Owl usually swallows its prey headfirst, and later the nutritious portions (i.e.: soft anatomy) are digested and absorbed, while the indigestable matter (i.e.: bones, hair, feathers) are formed into oval, black, shiny-looking pellets, which are passed forward to remain in the proventriculus until the sight of new food triggers ejection (Wallace, 1948; Smith and Richmond, 1972) disgorging the pellet through the mouth. Therefore, by examining owl pellets, one should gain a fairly good knowledge of the local small mammal population through identification of skeletal material (primarily skulls) and hair contained in the pellets.

The primary purpose of our study was to determine the prey items consumed by a Barn Owl from pellet analysis at a winter roost and to associate this with availability of prey items.

Forty-five Barn Owl pellets were retrieved from the floor of the press box at Indian Stadium on the campus of Arkansas State University, Craighead County. Prey species were obtained through careful dissection of each pellet in the laboratory, and identification was based primarily upon skeletal material (i.e.: skulls and mandibles), but also included hair and feather remains as secondary sources. An analysis was made to determine the species preyed upon, the number of species preyed upon, and the frequency with which each species occurred.

A total of 93 skills were removed from 45 pellets, an average of 2.07 skulls per pellet. One species of rodent, the southern bog lemming, *Synaptomys cooperi*, represented the dominant prey item consumed by the Barn Owl and was of particular interest since it represented 54% of the total prey species taken (Table 1). Although *Synaptomys* is found in low damp bogs and meadows throughout the northeastern portion of the U.S., the results are unusual since *Synaptomys* rarely forms dense local populations and therefore rarely represents a significant prey item in the diet of the Barn Owl. Bent (1938) states that the diet of the Barn Owl in the South consists almost exclusively of the cotton rat, *Sigmodon hispidis*, whereas in our study *Sigmodon* represented 17% of the content of the pellets. *Sigmodon* is normally a common rodent in open pastures and semi-brushy areas, and often forms an important constituent in the diet of raptorial birds (Parmalee, 1954). The winter roost utilized by the Barn Owl in our study was in close proximity (300 meters) to habitat which should support a population of *Sigmodon*. Other species taken by the Barn Owl were voles *(Microtus spp.)* 15%, Passerines (primarily *Sturnus vulgaris* and *Junco hyemalis)* 7%, shorttail shrews *(Blarina carolinensis)* 4%, marsh rats *(Oryzomys palustris)*, least shrews *(Cryptotis parva)*, and house mice *(Mus musculus)*, each of which made up 1% of pellet contents.

Similar investigations fail to report *Synaptomys* as a food item in the South, possibly due to its scant distribution (Burt and Grossenheider, 1964) in most of its range, or due to misidentification as a species of *Microtus*. Nevertheless, availability probably determines the kind and numbers of prey consumed by owls (Boyd and Shriner, 1954). In the remainder of the Barn Owl's range in the Northeast, Midwest, and South