

## FAUNA AND FAUNAL AREA

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**F**EW indeed are the departments of Natural Science wherein knowledge approximates completeness. The worker will still find bricks to be laid in any established field which elicits his interest. In most cases effort along conventional lines will lead most surely to some definite tangible contribution. By and large, pioneer work does not pay.

There is, nevertheless, something of the explorer in almost every investigator. Science would be a comparatively dull affair if one did not gamble a part of one's substance in fields where thought is not yet standardized. Here, too, there is always the opportunity, the hope, the chance of winning firm ground for science from treacherous wastes so far ruled only by the fickle winds of philosophy.

Zoogeography is a department of science, or shall we say a line of thought, which has at present a strong appeal, particularly for the field naturalist. It is based on the difference between the animals, taken collectively, of different geographic areas. It describes and classifies these differences, seeks to explain them, and to deduce from them corollaries bearing on other important problems. In the pursuit of zoogeography various writers are prone to use, some one, some another basic unit concept, as the life zone, faunal area, or fauna. All three are perfectly good concepts. Further than that, the writer is convinced that each stands for certain tangible phenomena of frequent occurrence, worth describing, classifying and reflecting upon. These three sets of phenomena, however, are as different in fact as in concept, and to confuse them as is sometimes done, merely confuses their discussion, and is to be avoided.

The life zone and the faunal area are alike in being geographic divisions, and differ fundamentally in the basis on which they are delimited. The life zone depends primarily upon temperature which seems to be the chief determinant of kinds of life. Taking it the world around there are three primary life zones, cold, temperate and tropical. The divisions between these also divide kinds of life; their subdivisions do the same to a subordinate degree. Hence it is possible to use the life zone as a faunal area, that is, as an area characterized by a certain fauna or association of animals.

There are, however, other factors which separate fauna from fauna, which in certain cases are of greater importance than the temperature factor. Such are relative humidity, physiography and physiographic isolation, and history. Hence if one delimit faunal areas on the basis of the faunas inhabiting them, these show a greater or less unconformity with life zones.

In the study of faunas the writer would delimit and classify his faunal areas primarily on the basis of their faunas, recognizing the life zone as a controlling factor comparable with, for instance, relative humidity or divergent physiography. Further than that, in as much as the fauna is the living unit on which the zoologist's interest in the problem depends, why not make it and no area, however naturally or arbitrarily delimited, the basic unit of discussion?

The reason why this has not been more generally done is not far to seek. However real, however important, the fauna itself is an intangible entity. By delimiting it more or less arbitrarily to within the geographic boundaries of a faunal area, one has something more definite, more easily grasped.

This very indefiniteness is a fundamental characteristic of faunas, which in certain aspects and certain places hold apart and are mutually exclusive, but as a

rule interdigitate or blend one into the other. Probably where contiguous they are always in a more or less unstable equilibrium, pressing outward and invading a neighbor's territory, or receding. Certain of their most significant living characteristics, are the very ones which cut across arbitrary spacial lines, and become subordinated in thought where emphasis is placed on such lines. Such a characteristic, for instance, is presented by the dominant or successful forms which radiate from the stronger faunas as centers of differentiation and distribution, often crossing barriers into quite different faunal areas. Study of faunal areas and their comparison emphasizes existing conditions, for it is existing conditions which postulate the limit of such an area. Study of faunas apart from their present geographic limits emphasizes their historical aspect, and it is the historical aspect of zoogeography which has the most fascinating appeal for the light it may throw on the history of life.

This study falls naturally into the investigation of each group of animals independently, for the investigator is as a rule a specialist, familiar with a single group or a limited number of groups. As the history of the groups, though often parallel, has been independent and frequently different, such division is rather advantageous. Herein the line of investigation of the zoogeographer diverges sharply from that of the ecologist. It is not, however, the most fundamental difference between zoogeography and ecology, and that one which makes of the ecological association an unsatisfactory minor factor from which to build faunas, or faunal areas. Ecology is fundamentally a science of the balance of life, and of life and environment, and as such has a main objective almost completely divorced from the more broadly historical aspect, which seems to the writer the very essence of zoogeography. In it, synthesis is the obvious phenomenon and analysis the problem, whereas in the study of faunas the problem is largely one of synthesizing analyses drawn from other fields. The ecological association, like the life zone, becomes merely another factor to be borne in mind in a proper understanding of the complexity of faunas—which vary in size, definition, and significance, and which may only be rationally divided into an equal complexity of similarly varying subfaunas.

To recapitulate, zoogeography, on the borderland of science and philosophy, offers a fascinating and potentially worth-while field of thought for the naturalist. Its various different, though allied concepts, such as life zone, faunal area, fauna, should not be confused. The fauna is the most logical basic concept for the science and the historical aspect of the subject affords the most fruitful objective. Zoogeography and ecology, though allied, are incommensurable.

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