

BOOK REVIEW

SYSTEMATICS AND THE ORIGIN OF SPECIES FROM THE VIEW POINT OF A ZOOLOGIST. By Ernst Mayr, 8vo pp. XIV + 334, illus., Columbia University Press, New York, 1942. Price \$4.00 (U. S. A.), cloth.

There is almost endless variation in nature and the task of the taxonomist (or systematist) is to reduce it to a comprehensive system. The early stages of the study of a group is the sorting out and assigning of individuals to species, on morphological characters. In the study of birds and some other better known groups there has been a trend called the "New Systematics" (see *Can. Field-Nat.*, 56, 1942, p. 63 for review of Huxley's "The New Systematics"). In this the importance of the species is reduced, much of the work is done with infra-specific groups; and a biological rather than a purely morphological concept is used.

The present volume, with its wealth of examples from the whole field of zoology as well as Dr. Mayr's special field of birds, and its correlation of taxonomic results with ecological, geographical, and genetical viewpoints will aid not only in a better understanding of taxonomy but also of related experimental biology.

Practical aspects of taxonomy are touched on, such as: that the specialist can no longer depend entirely on random collections for his material; how identification and description is done; that the type is typical of nothing, but serves only to fix a name; and that populations and not individuals should be named. The taxonomist's terminology is idealized, and represents the facts as simpler than they really are. An understanding of this will save the non-taxonomist and the beginner in taxonomy much grief.

Individual variation is shown to occur in every population of animals and frequently foreshadows geographical variation. Populations within a species may show geographical variation in size, proportions, external structure, colour and pattern, internal structure, temperature tolerance, sexual dimorphism, molt, number of broods, nesting site, song habitat preference and migration. They differ in all the ways species differ from each other. These differences are genetic, the result of mutation and selection. Many subspecific differences may be grouped into certain classes of phenomena, as distribution of colour phases; adaptive colouration; correspondence

with ecological rules; and arrangement into clines.

Consideration of the differences between species shows they are sometimes less apparent than those between geographical races. Where actual intergradation occurs it is proof of subspecific status but island forms that are obviously geographical representations may not show intergradation. After considering various species definitions Mayr puts forward the following;

"A species consists of a group of populations which replace each other geographically or ecologically, and of which the neighboring ones intergrade or interbreed wherever they are in contact or which are potentially capable of doing so (with one or more of the populations) in those cases where contact is prevented by geographical or ecological barriers".

This including of geographical representatives, especially from islands or mountain tops that do not intergrade, into a larger, polytypic species has had an important effect in simplifying taxonomy. This is well shown by considering that in birds 19,000 species were recognized in 1910. Since then 8,000 forms have been described. Now the 27,000 forms are put in 8,500 species, a notable clarification of classification and less of a burden on memory.

There are certain border line cases of representative forms, for which no criteria are satisfactory; these are well considered as numbers of a super-species (an adaptation of the *Formenkreis* idea).

The process of evolution is demonstrated as starting with individual variation, passing through geographically isolated populations that, through mutation and selection, develop into subspecies and then species. These new species may then spread into the ranges of their closest relatives and live together.

The case for non-geographic speciation is considered, and the evidence for it found very scanty.

After a consideration of the geographical and biological barriers that separate species, and the trends of evolution in groups above species, the conclusion is put forth that the origin of higher categories, (families, etc.) is but a continuation of speciation. There is a bibliography of 16 pages.

This book will repay careful study by anyone interested in the variations of animals.

—A. L. RAND



Rand, Austin Loomer. 1943. "Systematics and the Origin of Species from the View Point of a Zoologist, by Ernst Mayr [Review]." *The Canadian field-naturalist* 57(4-5), 98–98. <https://doi.org/10.5962/p.340651>.

View This Item Online: <https://www.biodiversitylibrary.org/item/89043>

DOI: <https://doi.org/10.5962/p.340651>

Permalink: <https://www.biodiversitylibrary.org/partpdf/340651>

Holding Institution

Harvard University, Museum of Comparative Zoology, Ernst Mayr Library

Sponsored by

Harvard University, Museum of Comparative Zoology, Ernst Mayr Library

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: Ottawa Field-Naturalists' Club

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.