Syst. Zool. 2: 97-111 (Sept. 1953)

Wilson, E.O., Brown, W.L. 1953

The Subspecies Concept and Its Taxonomic Application

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ELEVEN years ago, Mayr summed up and co-ordinated in his *Systematics and the Origin of Species* the taxonomic principles and methods that had gradually come to be recognized as basic and practical by many of the specialists working with the better-known groups of animals. Founded in the genetical precepts of neo-Darwinian evolutionary theory, Mayr's synthesis dealt most importantly with the nature of the species, which he held to be an objective and definable phenomenon, and with the geographical variation shown by populations composing the species. His species criterion was the occurrence in nature of free interbreeding, actual or potential, between members of a population or between populations; different species, he believed, are those populations possessing any factors intrinsic to their member individuals that will act to prevent interbreeding *between* the populations of a degree as free as that *within* each population. The basic reasonableness and operational advantages of Mayr's criterion struck an immediate wide and favorable response among many segments of taxonomic opinion, and his principle has been applied with considerable enthusiasm and with generally improved results to many and varied groups of Recent, sexually reproducing animals.

Along with widespread approval, this version of "population systematics" has aroused some outright opposition, as well as some more tempered criticism of particular phases of Mayr's argument. The outright opposition comes largely from those who either have not read carefully enough the various expositions of population systematics, starting with Mayr's, or who for some reason have failed to understand what we regard as for the most part a clear and simple thesis. Most of those so opposed, like M. W. de Laubenfels (1953) and Ruggles Gates (1951), insist upon regarding Mayr as having postulated that species are basically separated by *sterility barriers*. Starting with this thoroughly mistaken notion, de Laubenfels, Gates, and their school find it easy to bowl over straw men in all directions. De Laubenfels, for instance, is horrified to note that "Some dictionaries, many lesser zoologists, and the one whom many consider to be the greatest living systematist, propose a criterion of complete genetic isolation for species determination. Already they propose that most kinds of wild ducks are all one species. . . . Even many wood warblers are all one species [References?] . . . . By the geneticist's definition tigers are at best a subspecies of the lion, and bison merely a race of domestic cattle." The case of the lion and the tiger especially is so often used in this connection that we feel it would not be superfluous to make an example of it by pointing out the characteristics that prove these two forms species: (1) the breeding ranges of the lion and tiger overlap broadly in southern Asia, and the two species have occurred, at least in the recent historic past, in closely contiguous territories in India; (2) there is no sign that the Indian lion has been genetically affected through interbreeding with the surrounding tiger populations, or vice versa; (3) our principal reference (Burton, 1933) offers no evidence for any hybridization between lions and tigers in nature; (4) differences in breeding behavior, for instance, while not very well studied, seem nevertheless to be of a kind