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Taxon Pulses, Vicariance, and Dispersal: An Evolutionary Synthesis Illustrated by Carabid Beetles

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I do not trust Occam's razor. The simplest explanations are not necessarily the right ones in biogeography. To choose the simplest explanation because it is simple is like a surgeon choosing to cut a patient's throat with one razor stroke rather than to perform a complex operation. Occam's razor should be used to make an exploratory cut into a problem, not to solve it (Darlington 1965).

DURING MOST of earth's long history, species diversity has been nearly infinite, limited only by time and perhaps also by the chemistry and physics of genetic recombination. The multitude of biological processes and biological responses to climatic and geological processes is complex and laminar; the processes surely must act differentially at times on the same and on various organisms, and on biotas. This laminar effect, concurrently acting at different levels and through time at different levels, has produced the present distribution of plants and animals. Hypotheses that invoke *single mechanism* causal agents to explain distribution patterns of entire biotas—e.g., continental drift—cannot do justice to the true complexity of patterns. This kind of causal agent may account for vicariance between sister species or other taxon levels, but not for whole biotas.

Investigative procedures of the past (and present) have been, perhaps necessarily, *simplistic*. Biogeographical models of classic dispersalists were

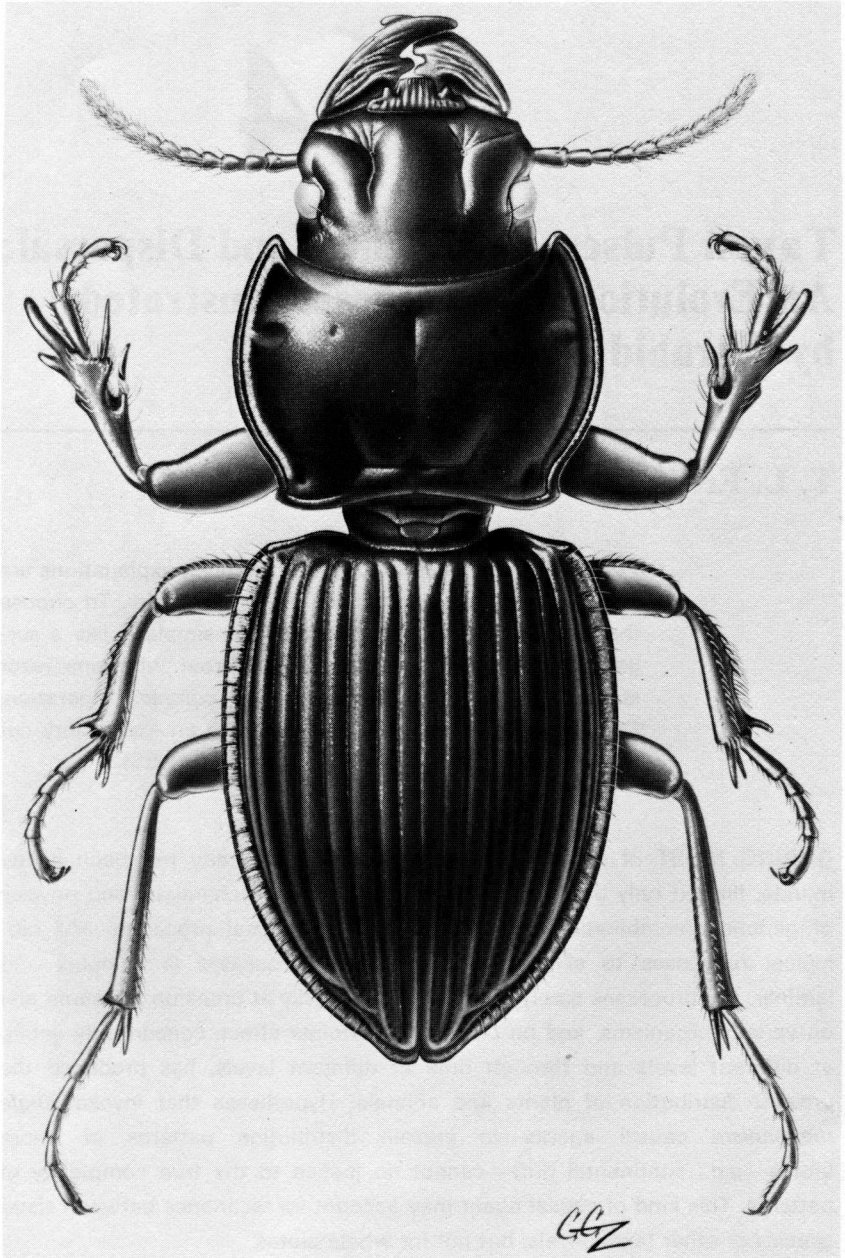


Figure 4.1. *Pasimachus cordicollis* Chd., dorsal habitus, length 16.37 mm.

