

Bridges as Corridors and Filters: A Biogeographic and Ecological Perspective

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The idea of the bridge has significantly contributed to the understanding of biotic dispersal, past and present. Specific cultural metaphors have often been cited in development of models used in biogeography, and recognition of the dynamic Earth enhanced the application of these models in paleontology. Hence the relevant literature is rich in discussions of “land bridges” that are now understood in terms of variable sea levels associated with glacial/interglacial cycles or, in longer-term examples, the actual movements of land masses. Scholars in the social sciences may not realize the extent to which modern bridges and metaphors derived from them have brought clarity to natural science discussions, or the similarity in terms of the questions being asked. Was a given dispersal event accidental (“sweepstakes dispersal”) or part of an ongoing pattern of expansion? To what extent did a bridge serve as a selective barrier, filtering those who would attempt to cross (“filter bridge”), much as the use of stepping-stones is limited to those who can jump far enough? Biogeographic and ecological evidence reveals temporary natural bridges that are predictably repetitive; such as winter ice across river barriers, fords available at low water, or seasonal delivery of fallen trees by floodwaters. From a cultural perspective these could have been the conceptual origin for constructed bridges. Examples are provided to illustrate the application of “bridge” models by biogeographers, ecologists, and paleontologists, and underscore the roles played by metaphors borrowed from modern cultural use of bridges. Given modern ecological concerns, bridges and tunnels are now being culturally constructed as wildlife corridors to allow animals (and plant propagules that they carry) to counter the impacts of cultural barriers such as roads, developed areas, or areas cleared of cover vegetation. In this way bridges promote interconnectedness within metapopulations and help to maintain or increase natural biodiversity.