HAWAIIAN STREAM ECOLOGY AS EXEMPLIFIED BY THE STREAMS OF THE KIPAHULU DISTRICT, HALEAKALA NATIONAL PARK[1]

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The age of the Hawaiian Islands ranges from very recent to several million years. This fact, in conjunction with locally determined rainfall patterns, produces a spectrum of topographies and a corresponding diversity of stream profiles. The two end points of this array of stream types are (1) streams that plunge directly into the sea and (2) streams with terminal estuaries. Hawaiian estuaries harbor a variety of itinerant marine and true estuarine fishes, many of which are at least partly carnivorous. This guild, which may be best developed in streams having long, low, terminal reaches, may act as a filter for any animal passing between marine and freshwater ecosystems. Because all of Hawai'i's indigenous freshwater fishes as well as several stream crustaceans and mollusks are diadromous, these species must pass through this filter two times in their life cycle. The more developed the flat terminal portion of the stream, the stronger the action of this filter, whereas, in streams with terminal cascades it is absent. Thus, the components of the community of the lowest stream reaches, particularly the predators, may strongly influence the nature of the freshwater fauna by the action they exert during the two periods in the life of diadromous fresh water animals. It is predicated that this influence will be most strongly exhibited in oceanic island ecosystems where much of the freshwater fauna is derived from marine ancestors and still has a marine planktonic larval life stage.

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[1] Abstract

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