Biology Seminar

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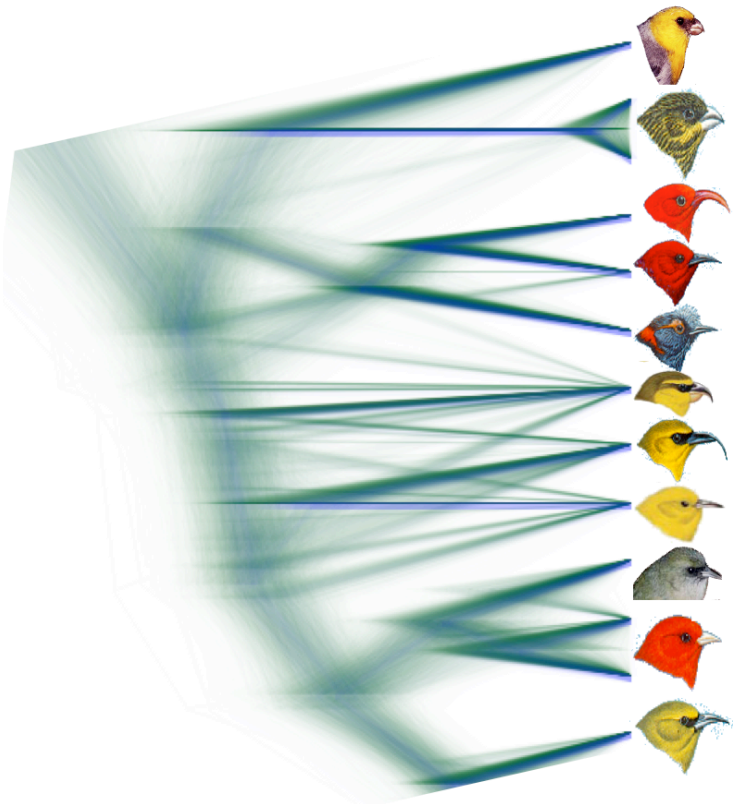
Smithsonian Institute & Natural Zoo

Hawaiian Honeycreeper Radiation: Phylogeny and Comparative Evolutionary Rates from Pyrosequencing and Species-Tree Methods



The Hawaiian Honeycreepers (Drepanidinae) are a classic example of adaptive radiation, encompassing tremendous diversity in morphology, ecology and behavior. A comparison of bill morphology alone shows that Hawaiian Honeycreepers encompass nearly all the variation found in the entire Passerine order (the largest order of birds, containing more than half of all extant bird species) as well as exceptionally unique bill forms not found in other songbirds (e.g. Hemignathus). Endemic to the Hawaiian Islands, a group of islands with well-documented geologic ages, the Hawaiian Honeycreepers provide a study system of incomparable value for determining rates of speciation and molecular evolution.

I generated sequence data from whole mitochondrial genomes (using parallel tagged sequencing on the 454 platform) and 13 nuclear loci for 19 species of extant Hawaiian Honeycreepers and 28 outgroups. In this seminar, I will present the first broadly resolved species tree for the Hawaiian Honeycreepers, comparing results from gene concatenation and species tree methods. I will also present estimates for the timing of divergences within the radiation. Finally, I will present molecular rates of evolution for all 13 mitochondrial genes, other regions of the mitochondrial genome and 13 nuclear loci.

Oct 15, 2010 **2:00 PM** **ENV125 (EESAT)**