

"Seed Chemistry of *Sophora chrysophylla* (Mamane) in Relation to Diet of Specialist Avian Seed Predator *Loxioides bailleui* (Palila) in Hawaii." Banko, P. C.; Cipollini, M. K.; Breton, G. W.; Paulk, E.; Wink, M.; Izhaki, I. *Journal of Chemical Ecology*, 2002, 28, 1393-1410.

Abstract: This study describes the chemical ecology of a tritrophic interaction among species endemic to the island of Hawaii, USA: a tree (*Sophora chrysophylla*: mamane), an endangered bird (*Loxioides bailleui*; palila), and moth larvae (*Cydia* spp.). Palila and *Cydia* both specialize on the seed embryos of mamane but avoid eating the seed coats. Palila actively seek out and feed mamane embryos and *Cydia* larvae to their nestlings. Because mamane embryos contain potentially toxic levels of alkaloids, including broadly toxic quinolizidine alkaloids, and because insects often sequester alkaloids from their food plants, we focus on the questions of why palila forage upon mamane embryos and why they supplement their diet with *Cydia* larvae. Our data show that mamane embryos contain high amounts of potentially toxic alkaloids, but are well balanced nutritionally and contain lipids, carbohydrates, proteins, amino acids, and minerals at levels that are likely to be sufficient for maintenance and breeding.