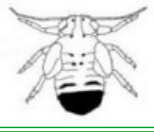

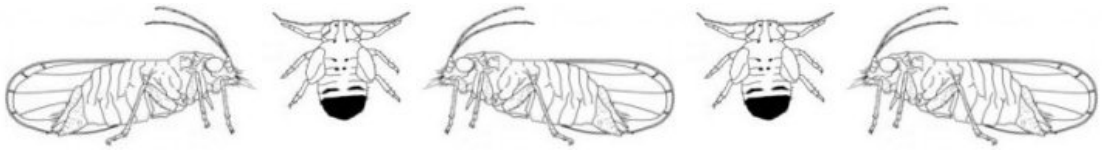

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PSYLLIDS or 'jumping plant lice' (PSYLLOIDEA, HEMIPTERA)

An endemic legume-feeding psyllid from the Pacific Austral Islands. Photo © Ron Englund

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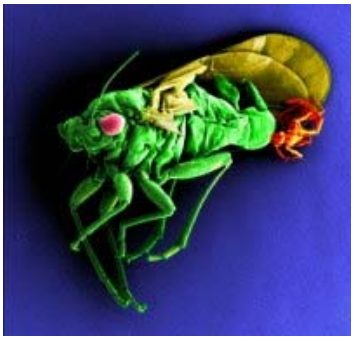

An endemic legume-feeding psyllid from the Atlantic Canary Islands, *Arytinnis nigralineata* (male), with a parasitic mite

Welcome to psyllids.org

This site is an ongoing project to present and summarize general information about psyllids, their biology, host plant associations and the economic and ecological impact that pysllids have on man-made and natural environments. It also presents specific research on psyllid faunas in different parts of the world.

Other psyllid pages currently under development:

psyllid acoustics
psyllid morphology
Macaronesian island psyllids
Pacific island psyllids
psyllids of economic importance
searchable psyllid/host plant database
psyllid bibliography
interactive key to the legume-feeding psyllids of the Canary Islands

Psyllids (Psylloidea, Hemiptera)

Psyllids or 'jumping plant lice' are small phytophagous, phloem feeding insects that are typically monophagous (feed on a single plant) or oligophagous (feed on a few related plants). Together with aphids, coccids and whiteflies they form the monophyletic group, Sternorrhyncha (Homoptera), which is considered basal within the true bugs (Hemiptera). Psyllids are probably the most benign of these four insect groups and therefore the least well studied. ‘Sternorrhyncha’ refers to the rearward position of the mouthparts relative to the head. The Homoptera are no longer considered to be monophyletic, refer to:

'Hemiptera and Homoptera' at University of California, Berkeley

and the Hemipteran 'Tree of Life' page

Psyllid fossils have been found from the early Permian before the angiosperms evolved. Thus, psyllids may have primitively fed on gymnosperms, or even lycopods (Hodkinson, 1980). The explosive radiation of the angiosperms in the Cretaceous was paralleled by a massive radiation of associated insects, and many of the morphological and metabolic characters that the angiosperms exhibit may have evolved as defenses against herbivorous insects. Primitively, insects were probably saprophagous with a shift to the more complex lifestyle of herbivory, a secondary adaptation (Mitter, Farrell & Wiegmann, 1988). Allocation of resources in plants can vary seasonally, within an individual plant, between individuals, and from species to species. An example of this is the phenological changes in chemical profile of flowers, leaves, stems, and fruit for the legume species, Adenocarpus (Greinwald *et al*., 1992). The changing character of an individual plant is a complex and challenging landscape to herbivorous insects (Wink, 1992). An insect that attains an adaptive peak on one plant species is likely to be in an adaptive trough on another species (Janzen, 1979).

Coevolution?

Insect/plant interactions have been important in defining models of coevolution and cospeciation. In the Canary Islands metapopulation structures combined with local variation in host plant ecology and habitat/island fragmentation may support Thompson's 'geographic mosaic theory of coevolution' (Thompson 1994; Gomulkiewicz et al. 2000; Thompson & Cunningham 2002; Percy 2003). However, in many cases it is believed that herbivorous insect speciation is sequential in relation to the host plant (Jermy, 1976; Menken, 1996; Percy et al. 2004).

Plant/insect interactions have been important in contributing to the debate on coevolution. Thompson (1994) challenged the conventional co-speciation model in his book 'The Coevolutionary Process' pointing out that - interactions between plants and insects may not result in fixed traits in species that can then be mapped onto a phylogenetic tree, but instead there may be a shifting geographic mosaic, combining differences in the physical environment and the local genetic and demographic structure of populations. So that plant/insect interactions may involve localized coevolution, that is not taken into consideration by a strict model of pairwise species for species coevolution.

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