Investigation of the Disparity between the Abundance of Tamalia spp. Galls on Arbutus unedo and Arctostaphylos spp.

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The purpose of this project was to investigate the disparity between the abundance of Tamalia spp. galls on non-native Arbutus unedo and native Arctostaphylos spp. It was hypothesized that this disparity was caused by A. unedo's susceptibility to different pests and diseases that are not found in its native habitat of the Mediterranean. The occurrence of Tamalia spp. galls on A. unedo has not been recorded in any scientific literature, and is the first occurrence of Tamalia on this branch of Arbutoideae's taxonomic tree. One population consisted of of ten A. unedo shrubs which was compared to 74 Arctostaphylos spp. individuals, with data regarding species, crown volume, branch divisions, number of galls on three outermost branch divisions, pathogenic status, and gall contents. The most likely pathogenic explanation for the difference in galls per cubic meter between A. unedo and Arctostaphylos spp. is that all of the A. unedo individuals exhibited extensive Heliothrips haemorrhoidalis infestations while only around three percent of Arctostaphylos spp. sample were found to harbor any thrips. Thrip bites and frass encourage the growth of Capnodium on the leaves, and all A. unedo individuals were found to have Capnodium on the leaves while only five percent of Arctostaphylos spp. individuals were found with Capnodium on their leaves. When Capnodium appeared on Arctostaphylos spp. individuals, it was also associated with a lower number of galls per cubic meter. The presence of H. haemorrhoidalis and the accompanying Capnodium on the A. unedo individuals are associated with the much lower number of galls per cubic meter. The far lower number of galls per cubic meter on A. unedo is related to its susceptibility to at least one New World vector and resulting fungal infection.

Awards Won:
Third Award of $1,000