

## NATURAL ENEMIES OF WILLAMETTE VALLEY BUMBLE BEES

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Globally, declines in bee populations have been reported, and scientists have speculated on possible causes behind these trends. The recent appearance of colony collapse disorder has highlighted the influence of diseases on honey bee declines. Native bees have also been subjected to a suite of diseases but, in contrast to honey bees, have received much less attention.

Bumble bees (*Bombus* spp.) are a group of native pollinators that are important in both native and agricultural systems. Oregon produces over two hundred different agricultural products, many of which are dependent on pollination. Native bumble bee species are diverse and abundant in the state but one species, *Bombus occidentalis*, is now nearly extinct along coastal regions. Its decline has been attributed to its susceptibility to pathogens acquired during captive rearing elsewhere in the country. This has raised concerns about pathogens and other natural enemies of native bumble bee species in Oregon.

The objective of this study was to determine internal natural enemies associated with native bumble bees in Oregon. Bumble bee workers and queens were collected in the Willamette Valley in western Oregon from May to August in 2011 and 2012. The bees were dissected and all organs were examined under light microscopy for detection of parasitoids and pathogens.

In all, two protozoans, *Crithidia bombi* and *Apicystis bombi*, one microsporidian, *Nosema bombi*, one entomopathogenic nematode, *Sphaerularia bombi*, and two dipteran parasitoids were detected. In addition, a novel infection caused by the larval pathogen, *Ascospaera apis*, was observed. Parasitism and pathogen infection rates detected in Willamette Valley native bumble bees will be presented, and the significance of the findings will be discussed.