

Movement and threat of RNA viruses widespread in pollinator community

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Penn State researchers have found that native pollinators, like wild bees and wasps, are infected by the same viral diseases as honey bees and that these viruses are transmitted via pollen. Their research published on December 22nd in *PLoS ONE*.

This multi-institutional study provides new insights into [viral infections](#) in native [pollinators](#), suggesting that viral diseases may be key factors impacting pollinator populations.

According to Diana Cox-Foster, co-author and professor of entomology at Penn State, pollinator populations have declined for various reasons, including ribonucleic acid (RNA) viruses, which are emerging as a serious threat. "RNA viruses are suspected as major contributors to [Colony Collapse Disorder](#) (CCD), where [honey bee](#) colonies die with few or no bees left in the hives. Recent detection of these viral species in bumble bees and other native pollinators indicates a possible wider environmental spread of these viruses with potential broader impact," explains Cox-Foster.

The researchers studied viral distributions from pollen pellets of honey bees and other pollinators collected from flowering plants in Pennsylvania, New York, and Illinois in the United States. "For the first time, RNA viruses such as deformed wing virus, sacbrood virus and black queen cell virus were detected in pollen pellets collected directly from forager bees," said Cox-Foster. "Pollen pellets from several uninfected forager bees were detected with virus, indicating that pollen

itself may harbor viruses. The viruses in the pollen and honey stored in the hive were demonstrated to be infective, with the queen becoming infected and laying infected eggs after these virus-contaminated foods were given to virus-free colonies."

The detection of RNA viruses in other pollinators, including bumble bees, solitary bees and [wasps](#), suggests that viruses might have a deeper impact on ecosystem health, given that these pollinators are essential to most plants for seed set and production of fruits, nuts, berries, and vegetables. The findings are important to the public and scientific community worldwide, given pollinators' role in agriculture and the environment and recent declines in native pollinators. The findings also raise biosecurity issues because pollen is currently being imported into many countries to feed honey bees used in agricultural pollination.

More information: Singh R, Levitt AL, Rajotte EG, Holmes EC, Ostiguy N, et al. (2010) RNA Viruses in Hymenopteran Pollinators: Evidence of Inter-Taxa Virus Transmission via Pollen and Potential Impact on Non-Apis Hymenopteran Species. *PLoS ONE* 5(12): e14357. [doi:10.1371/journal.pone.0014357](https://doi.org/10.1371/journal.pone.0014357)

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