

# Bee brain size found to be related to diet diversity

16 September 2020, by Bob Yirka



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An international team of researchers has found that the size of a bee's brain appears to be related to what it eats. In their paper published in the journal *Proceedings of the Royal Society B*, the group describes their study of bee brains and what they learned about them.

Compared to mammal brains, the researchers note, insect brains have not received very much attention from scientists, and not nearly as much is known about them. In this new effort, the researchers sought to fill in some of this gap by studying the brains of 395 bee brains from 93 species found in Spain, the U.S. and the Netherlands. Their work consisted of removing the brains from each specimen and comparing its size with other bees, and then looking for ways to explain the differences.

The researchers found some patterns. For example, the length of a generation of bees could be correlated to bee [brain size](#). Bees that went through just one generation a year had larger brains than did those that went through multiple generations each year. This was not surprising,

they note, because the same is true for birds and many other animals. What they did find surprising was the connection between diet and brain size. Bees with less diet diversity had bigger brains than did bees that had a diverse diet. This was the opposite of most animals. The researchers suggest this might have come about because it would not take a lot of brain power to eat from any flower in a field—identifying specific flowers would take a lot more processing.

The researchers also compared [brain size](#) with [social behavior](#) and found little difference between the bees. Loner bee brains were no bigger or smaller than bees living in complex hives. The researchers note that this was also expected. Unlike most animals, the social behavior of bees is mostly fixed. Bees only socialize in a hive context where they carry out their duties, such as nursing the young or collecting pollen.

The researchers were not able to ascertain whether bees with bigger brains were any smarter than bees with smaller brains; size differences appeared to be due mostly to the sorts of activities the bees engaged in as part of their life cycle.

**More information:** Ferran Sayol et al. Feeding specialization and longer generation time are associated with relatively larger brains in bees, *Proceedings of the Royal Society B: Biological Sciences* (2020). [DOI: 10.1098/rspb.2020.0762](https://doi.org/10.1098/rspb.2020.0762)

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