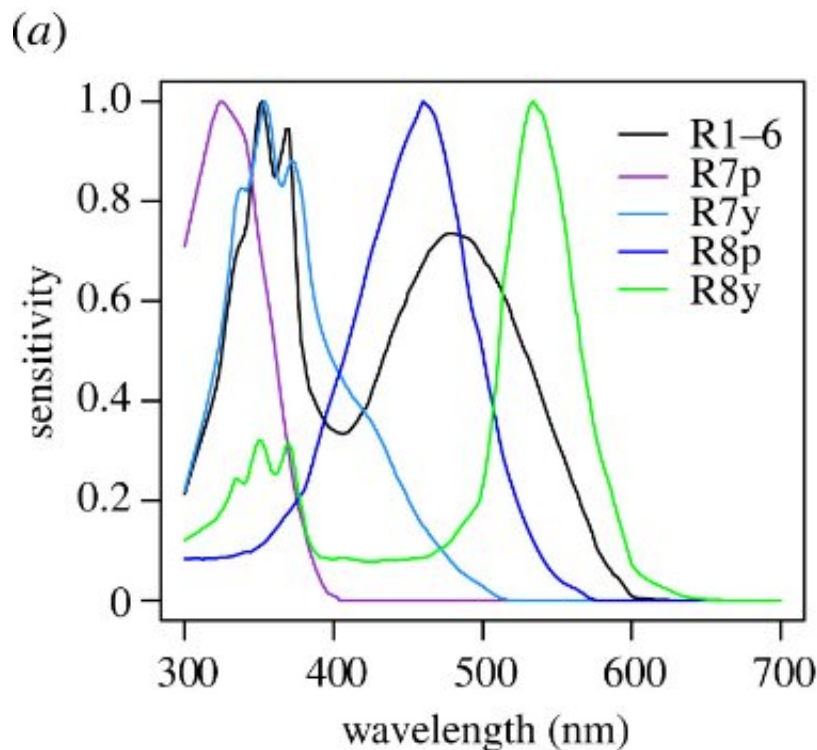# Artificial neural network study explains why biting flies are attracted to blue objects

June 29 2023, by Bob Yirka

Input spectra for photoreceptor excitation calculations. (a) Flies possess five spectral classes of photoreceptor through the majority of their compound eyes, and the responses of these photoreceptors provide the inputs to visually guided behaviors. Plot shows sensitivity functions for the photoreceptors of Musca and Calliphora. Excitations for each of these photoreceptors were calculated for samples of leaf and animal stimuli, and for blue, black and violet surfaces of biting fly control devices. Credit: *Proceedings of the Royal Society B: Biological Sciences* (2023). DOI: 10.1098/rspb.2023.0463

A small international team of life scientists has discovered why biting flies are attracted to things that are blue. In their study, reported in *Proceedings of the Royal Society B*, the group used an artificial neural network (ANN) to mimic the processing of a biting fly brain to explain their affinity for blue coloration.

Some theories have suggested [flies](#) associate blue with shady areas or bodies of water. Others have suggested that the fly brains associate the color blue with [animals](#) they might like to bite to suck out blood, similar to mosquitoes. In this new effort, the researchers took a new approach—using an ANN to mimic the thought process of a biting fly to see what it might be thinking when it spies something blue.

The ANN processes [visual information](#) in a way similar to that of the fly brain. As part of the development, the ANN was trained to understand the differences between objects, such as animals and leaves, and to discern shaded areas from those that are sunny. Information sent to the ANN was designed to simulate the types sent from photoreceptors found in biting fly eyes. Next, the ANN was asked to classify fly [traps](#) based on what it had been taught.

The ANN revealed that the flies were almost certainly not mistaking blue objects for shady or water areas. But the ANN did have trouble telling the difference between blue objects and animals. This suggested that an inability to distinguish between animals and blue objects is the reason for the attraction to blue objects by flies. The researchers also point out that prior research has found that most biting flies caught in blue traps have empty bellies, strongly suggesting they found their way there while looking for food.

Citation: Artificial neural network study explains why biting flies are attracted to blue objects (2023, June 29) retrieved 22 May 2024 from https://phys.org/news/2023-06-artificial-neural-network-flies-blue.html