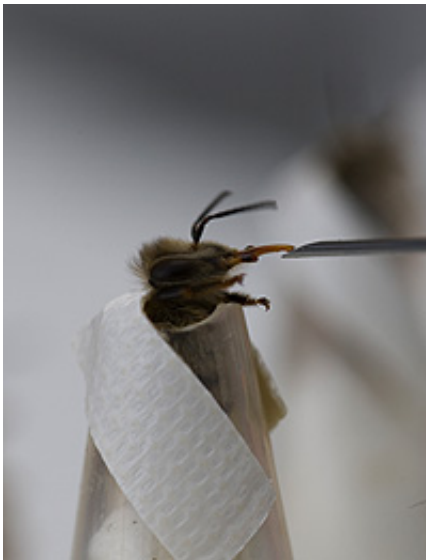


Insect world royalty shows they really count... up to four

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A bee being rewarded

(PhysOrg.com) -- Research led by the head of visual neuroscience at UQ's Queensland Brain Institute (QBI) has demonstrated honey bees are capable of routinely counting up to four.

Professor Mandyam Srinivasan and a colleague from Sweden discovered a new insight into honey bee cognition after developing a series of experiments based on sugar-water incentives.

"We began by asking whether bees can learn to 'count' the number of

landmarks that they encounter on the way to a food source," Professor Srinivasan said.

"Individually marked bees were trained to receive a reward of sugar solution after they had flown past a specific number of regularly spaced yellow stripes during their flight through a narrow tunnel.

"Depending upon the experiment, this number was one, two, three or four.

"After training, the bees were individually tested by removing the food reward, and observing their searching behaviour in the tunnel to determine which landmark they had associated most strongly with the reward during the training."

When the research team randomly introduced random objects that were outside the bees' range of experience, the bees' ability to count to four did not appear to be hampered.

"Bees trained in this way are able to count novel objects, which they have never previously encountered," Professor Srinivasan said.

"Our findings provide evidence that bees are capable of counting objects on the way to a food source.

"In all probability, this counting is performed sequentially, and required the ability to maintain a running tally of the number of events, incrementing the tally by one each time an event occurs."

Professor Srinivasan took up a Professorship in visual neuroscience at QBI in January 2007. In August 2007, he was awarded the Queensland Smart State Premier's Fellowship, and in October 2006, he was awarded the Prime Minister's Prize for Science.

Professor Srinivasan's research paper Evidence for Counting Bees appears in the journal *Animal Cognition* 11, 683–689 (2008).

Provided by University of Queensland

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