

Possible evidence of spatial memory in an Eastern Water Skink *Eulamprus quoyii* (Dumeril and Bibron 1839) in Cooranbong, New South Wales

Observations

Early on a warm summer afternoon, a subadult Eastern Water Skink *Eulamprus quoyii* (Dumeril and Bibron 1839) was observed crawling across a west-facing brick wall at a height of about 1 m. This is a common enough observation for this species in Lake Macquarie, New South Wales. As it came close to a blueberry bush that was growing close to the wall, it was looking at the ripe fruit hanging at the end of a horizontal branch, about 300 mm long, growing parallel to, and about 150 mm from, the wall. The Skink was unable to reach the fruit, but it had a strategy to achieve this purpose. It moved towards the vertical main stem and found a small branch growing towards the wall. It climbed across this branch and about 75 mm up the main stem to the branch with the fruit on it. By now the fruit would have been completely out of sight to the skink because of the high density of the short-petioled, alternate leaves growing laterally along the branches. The Skink continued to crawl along this branch with some difficulty (Eastern Water Skinks have no adhesive ability). The branch was only about 3 mm wide, and the Skink had to use the claws on its hind legs to prevent itself from falling off. By the time it reached the end of the branch the Skink was hanging down at an angle of about 45°. Even at this point it may not have been able to see the fruit because the fruit was hanging below the leaves. The Skink then bent its head down below the leaves and twisted sideways to grab a ripe, glaucous blueberry, ignoring an unripe adjacent berry. At this point I dashed to get my camera, but the Skink was gone when I returned about one minute later, and I presume it fell off and scuttled away.

Comments

The Eastern Water Skink is a medium-sized skink, with adult snout–vent length often exceeding 100 mm. It is commonly found in eastern Australia, often near waterways. These Skinks are viviparous (Cogger 2014), giving birth to up to as many as 6 neonates in early summer (pers. obs.). They are omnivorous, although predominantly carnivorous, feeding largely on a range of arthropods such as crickets, cockroaches, centipedes and spiders, but also tadpoles and small skinks, including adult *Lampropholis delicata* and also their own neonates (pers. obs.). Like other skinks, they have a parietal third eye, which may be used in directional behaviours (Fo., et al. 2009). They are active hunters, spending a lot of time searching crevices etc. for food. In winter they might find a refuge under a rock or in dense vegetation or deep litter for several months, possibly emerging on a warm day even in mid-winter (pers. obs.). This lifestyle requires significant brain power, and several studies have been done on lizards to assess their more advanced cognitive abilities such as spatial learning and memory (e.g. LaDage, et al. 2017 and references therein). These abilities were clearly demonstrated by *Eulamprus quoyii* in the above observations.

References

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- LaDage LD, Cobb Irvin TE, and Gould V (2017) Assessing Spatial Learning and Memory in Small Squamate Reptiles. *JoVE Journal (Neuroscience)*, doi: 10.3791/55103.

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Fig. 1. Eastern Water Skink *Eulamprus quoyii*

