The use of roadside gabions as refugia by reptiles in Kota Kinabalu, Sabah, Malaysia

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On the evening of 10 September 2016 at approximately 23:00, an Asian water monitor (*Varanus salvator*) was observed to be sheltering from the rain inside a gabion in Kota Kinabalu, Malaysia (Figure 1). The monitor lizard was spotted during a short excursion to make a preliminary count of the amphibian species in the nearby area. There had been persistent rain throughout the day and it is believed that the monitor was sheltering from this downpour whilst trying to maintain a reasonable internal body temperature. The area where the monitor was discovered is an edge habitat, to the west is the city of Kota Kinabalu and to the east is an area of tropical woodland. Usually burrows are used for thermoregulation (Shine *et al*., 1996) but these are likely less common in urban areas compared with semi-natural and natural areas.

Figure 1. Varanus salvator as seen from within a roadside gabion.

Gabions are used for the support of embankments and consist of a wirework frame filled with rocks and broken concrete. These can then be used in the construction of roads or as a method of coastal defence. The gabion in which the monitor was seen sheltering in was part of a small complex which aids in supporting a local embankment close to a car park and local buildings, including a hotel. Interestingly the gabion was also occupied by a number of invertebrate species such as cockroaches, orthopterans and mantids. Unfortunately none of the invertebrates were identified past order level. Geckos of the species *Hemidactylus garnotii* and *H. frenatus* were also found seeking refuge in or around the gabion. As a plentiful food source was available, perhaps the geckos were using this man-made habitat feature as a place to hunt for food.

When the monitor lizard was initially spotted, it was assumed to be dead. Earlier in the week a smaller juvenile was found at the roadside nearby after being struck by a car. Urban environments post a number of risks to wildlife such as reptiles

Figure 2. A roadside gabion in Kota Kinabalu.

(Koenig *et* al., 2002) that are only going to increase as settlements encroach wild habitats. As well as sheltering from the rain, this shows evidence of seeking refuge from the traffic or the disturbance of people. Urban environments may be dangerous to large lizard such *V. salvator* but they also offer opportunities for the lizards to scavenge food scraps left by humans (Kulabtong & Mahaprom, 2014).

At first all that was visible was the monitor's tail but after a few brief moments of shining a torch through the crevices to see if the rest of the lizard was hidden, the tail disappeared and the body of the lizard came into view. The monitor had been disturbed by the bright light of the torch and had awoken, it then hissed for a only a couple of seconds before manoeuvring between the rocks within the gabion and moving deeper inside. This was likely to find somewhere new to hide. During this time that the lizard's size became apparent, the lizard had a snout to vent length (SVL) of somewhere between 30 and 40 cm. Telling the true length of the animal was difficult as it was contorted in order to fit in such a tight gap. Once the monitor moved out of view all care was taken not to disturb the animal any further and so we moved on. The uses of gabions in semi-urban environments are likely to benefit local species of herpetofauna as shown in this case as they provide both a refuge and plentiful hunting opportunities to smaller individuals/species.

References

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