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A RANGE EXTENSION FOR THE BLOTCHED BLUE TONGUE SKINK (*Tiliqua nigrolutea*) (SCINCIDIDAE) AND IMPLICATIONS FOR THEIR FUTURE SURVIVAL

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Reptile fauna is one of the most poorly studied taxa of vertebrate across the vast majority of Australian ecosystems when with birds and mammals (Mac Nally & Brown 2001). As a result, the paucity of knowledge regarding the distribution of reptiles across Australia is reflected in a number of published range extensions in recent times (eg., Fearn 1998; Gaikhurst 2002; Sass et al. 2005).

Tiliqua nigrolutea is a large viviparous skink measuring around 300 mm snout to vent

(Swan et al. 2004). It is regarded as an omnivorous species with food items consisting of invertebrates and plant material (Shea 1982). The species has been recorded throughout South Australia, Victoria and New South Wales (Cogger 2000). In New South Wales, it is typically associated with cool climates and moderate to high elevations (Swan et al. 2004) with most records confined to several disjunct populations centred around the Blue Mountains and Central Tablelands area in the north, and the Southern Tablelands and Snowy Mountains in the south (DECC 2007). *Tiliqua nigrolutea* are known to inhabit a variety of habitats ranging from grasslands, woodlands and forests (Shea 1982; Swan et al. 2004), where it is a solitary species, only coming together for mating in spring and early summer (Shea 1982).

In the south-west slopes, the lack of dedicated reptile surveys is highlighted by a paucity of museum records, public records and published papers. However, in recent years, several workers have provided much needed information on the status and distribution of herpetofauna in the south-west slopes (Annable 1995; Daly 2004; Lemckert 1998; Michael 2004; Sass 2003, 2007). This short note documents a range extension for *Tiliqua nigrolutea* and adds to the limited knowledge of the herpetofauna of the region. Further, the implications for this population in terms of future survival are discussed.

During reptile surveys conducted over 43 woodland remnants in the Upper Billabong creek catchment area in southern New South Wales (Figure 1), one *Tiliqua nigrolutea* was captured on the 17nd November 2005 (Figure 2; see Sass 2007 for further details of overall study). This individual was captured during pitfall trapping within a 19.3 ha woodland remnant (AGD66, 526117E, 6070186N) approximately XX kilometres south-east of Wagga Wagga. This woodland remnant is characterised by inland scribbly gum (*Eucalyptus rossii*) and red stringybark (*Eucalyptus macrorhyncha*) with an understorey of blue flax lilly (*Stypandra glauca*) (Figure 2) and exists within a matrix of an agricultural landscape. Within less than one kilometre of the remnant exists large areas of *Pinus radiata* plantations. The spatial distribution of this record when compared with previous records across New South Wales highlights the significance of this new record (Figure 3).

In their detailed analysis of climate data from museum records of *Tiliqua nigrolutea*, Hancock and Thompson (1997) created a climate profile to predict distributional limits for this species. This climate profile predicts that *Tiliqua nigrolutea* would only occur where the maximum temperature does not exceed 31.1° C. From this analysis, Hancock and Thompson (1997)

revealed that populations in New South Wales are generally limited to elevations above 500 m above sea level (asl).

The remnant where this species was recorded during this study is 440 metres asl which is below Hancock and Thompson's prediction. Their general consensus is that the distribution range for *Tiliqua nigrolutea* is limited by specific temperature requirements influenced by elevation (Hancock & Thompson 1997). With this is mind, and with temperatures exceeding 40° C recorded during the surveys (BOM 2007) this population, regardless of its current status, is likely to be balancing ecological existence with their sensitivity to high temperatures within the study area.

The impacts of climate change on populations that are considered sensitive to temperature and elevation are expected to be detrimental. Large-scale movements and shifts in distribution patterns are two likely responses to climate change across the majority of taxa (Lindenmayer & Fischer 2006). Species that are most vulnerable to climate change are predicted to be those that are geographically isolated, have poor dispersal capabilities and have an altitudinal restricted distribution (New 2000). While it could be argued that past climate change has contributed to these patterns of movement and distribution (Cogger & Heatwole 1981), these processes have generally occurred over a much longer period of time, with speciation a potential outcome for species that have the time or opportunity to adapt (Pianka 1968). Present patterns of climate change are more rapid and extreme than previously experienced (McCarty 2001), with *Tiliqua nigrolutea* fitting within these broad categories of vulnerability suggesting that they have a high potential of becoming locally extinct (New 2000).

This record of *Tiliqua nigrolutea* provides further evidence that the distribution of herpetofauna within the south west slopes region of NSW is limited and requires further investigation considering that this species is a moderately sized and reasonable conspicuous lizard that, until now, has not been detected. Additionally, this 'lowland' population of a species typically associated with cool climates is likely to be especially sensitive to any change in temperatures in the region.

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REFERENCES

TO BE ADDED.

Figure 1: Location of the Upper Billabong creek catchment in southern NSW.

Figure 2: One *Tiliqua nigrolutea* was captured during pitfall trapping (left), The woodland remnant where this individual was recorded (right).

Figure 3: Spatial representation of previous records and the new record for *Tiliqua nigrolutea* across New South Wales (Data source: NSW Atlas of Wildlife Database, DECC 2007)