The Herpetological Bulletin 155, 2021: 15-17
SHORT NOTE

https://doi.org/10.33256/hb155.1517

Exceptional longevity of a male Madeira rock lizard *Teira dugesii* maintained in captivity for 41 years

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Maintaining reptiles in captivity can give clues about their longevity. As expected, longevities in captivity have increased with the development of better care and husbandry; the first reports on reptiles life spans achieved in zoological gardens (Flower, 1925) are shorter than those reported in more recent studies (Bannert, 1998; Slavens & Slavens, 1999; Mendyk, 2014b). Herein, we recount the remarkably 41 year lifespan of a captive male *Teira dugesii* (Milne-Edwards, 1829).

THE LIZARD AND ITS HUSBANDRY

The *T. dugesii* of this account had been offered for sale at the front door of a family member of the first author in October 1977 by two boys. It was an adult male and was probably already 2 or 3 years old at purchase. Unfortunately, the buyer did not ask for the geographical origin of the lizard. It is assumed that the specimen was captured in the wild. Figure 1 shows a close-up of the head of the specimen in 1979, age 2+ years old. The head is without a remarkable spot pattern; the dorsal scales are small and granular. The nostril is separated from the first upper labial scale by contact between the postnasal and supranasal scales below it (unusually). Characteristic is the absence of an enlarged masseteric scale in the temporal region (Arnold et al., 2007). Measured after death, our specimen had a total body length of 18.4 cm and a snout vent length of 7.4 cm. The tail length of 11 cm had been shortened by a single caudal autotomy (Fig. 2). Regeneration took place before acquisition.

Figure 1. *Teira dugesii*, adult male head in 1979, age 2+ years old

Figure 2. *Teira dugesii*, habitus adult male in August 2013, age 35+ years old (arrow indicated position of tail regeneration)

For almost all the years of its life the lizard was kept alone in a rectangular terrarium (60 x 30 x 30 cm) with potting compost as ground cover and with a shallow water dish. Branches and tree stumps and artificial plants formed the furnishing elements and also facilitated climbing by the lizard. Some twigs in the water dish prevented the small food insects from drowning. The water dish was cleaned weekly and regular water renewal ensured that clean water was always available. The only heating was provided by a 25 Watt spotlight with an aluminium foil hood that directed light and heat onto a branch used as a basking position.

Food consisted of all kinds of larger invertebrates from the garden, such as crane flies (*Tipulidae*), blowflies and other Diptera, woodlice (*Isopoda*) and from time to time industrially reared fly larvae and house crickets. However, surprisingly the lizard disliked mealworms which although offered at the outset were usually rejected. In the last ten years of the lizard's life, fruit especially banana and fruit juice were added to the diet. It had been shown that these can form a substantial part of the natural diet of both *T. dugesii* and *Podarcis lilfordi* (Sadek, 1981; Cooper, et al., 2014). No food supplements or extra vitamins were offered.

OBSERVATIONS IN CAPTIVITY

Following 35 years in captivity, in 2013 the lizard showed hardly any external signs of aging (Fig. 2) and the femoral pores of hind legs were in good condition (Fig. 3). Just

following death in 2018, when 41+ years old the dorsal and ventral view of the lizard still showed the animal to be in apparent good health (Fig. 4 a & b) except for the femoral pores which showed degenerative impaction (Fig. 5). Within a year of these symptoms the lizard was dead. This ailment results when the lizard no longer rubs itself on tree branches and could be linked to an abrupt stage of senescence.

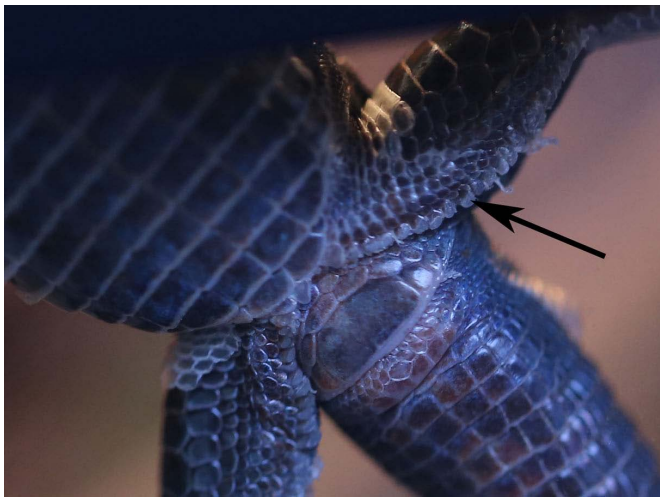

Figure 3. *Teira dugesii*, adult male with femoral pores (indicated by arrow) in good condition in August 2013, age 35+ years

Figure 4. A & B. The dorsal and ventral views the *Teira dugesii* male in January 2018 just after death at 41+ years old

Figure 5. Adult male *Teira dugesii* showing femoral pores (indicated by arrow) of the left hind leg with degenerative impaction, January 2018

The lizard was active year-round. In the first thirty years it flourished on an almost exclusively carnivorous diet. It had always had good appetite, even in the winter. Only subsequently was fruit and fruit juice consumed. No signs of malnutrition, such as swollen limbs or toes, eye infections, metabolic bone disease, muscle degeneration, rhabdomyolysis (muscle breakdown) were ever observed. Neither were periods of poor appetite or lethargy at the end of its life.

Maintained in solitary conditions, the lizard was free from the social stresses that would be associated with conspecifics living in the same terrarium. It finally died unexpectedly on 8th January 2018 with no obvious fatal change in body condition. The only injury noted following death was a broken middle toe of the right hind leg.

DISCUSSION

Several publications have reported increases in reptile life expectancy in captivity. These increases can largely be attributed to substantial improvements in husbandry. However, the present *T. dugesii* male grew old and reached a record survival age with very simple indoor husbandry, without UVB-lighting, without hibernation, without food supplements, and without extra vitamins (except for those present in fruit). The absence of UVB-lighting might have been thought to reduce longevity; especially as in nature *T. dugesii* spends many hours a day basking in sunshine (Malkmus, 1995). The diet in the first thirty years of the lizard's life in captivity hardly contain any vegetable material even though this is an important part of the natural diet of a number of Mediterranean small lacertas (Sadek, 1981; Rubinstein & Abbot, 2017). However, Sleijpen (1995) notes that only in the absence of arthropod prey was a captive breeding group of *T. dugesii* in the Netherlands interested in eating soft ripe fruit (bananas as well as fruit juice).

Published report on palearctic Lacertini in captivity have suggested longevity of at least 6 to 18 years (Bannert, 1998) and a male *Timon lepidus* was reported with a lifespan of 35 years (Böhme & Esser, 2015). These authors also report a female *T. lepidus* living in the same breeding group being 30 years and still alive at the time of publication. In contrast to our *T. dugesii* male this particular *T. lepidus* showed the first age-related handicaps when it was only 20 years old. The responses of eight experienced herpetoculturalist from Germany and The Netherlands to an unpublished questionnaire about lizard longevity in captivity, indicated that lifespans of Lacertini range from 14 to 26 years in small lacertas (e.g. *Podarcis*, *Archaeolacerta*) while in a larger species (*Lacerta bilineata*) 18 to 23 years.

Despite the lack of what nowadays may be considered 'indispensable' elements in lizard husbandry, the *T. dugesii* male of this report was not prevented from achieving a lifespan of more than four decades in good health. We suggest that low-quality nutrition reduces growth rates, promotes a relative decline in reproductive rates (although not relevant in this case) and thus prolongs life. Nevertheless, good husbandry is an important factor affecting the welfare and lifespans of reptiles, as has been comprehensively reported

over the last three decades (Iverson et al., 2004; Mason, 2010; Mendyk, 2014a, 2014b; Scharf et al., 2015, Wolterman, 2018).

The observed longevity of our captive *T. dugesii* is clearly exceptional even among other captive Lacertini. In the wild, longevities would be expected to be much shorter as demonstrated in a long-term mark and recapture study of *T. dugesii* which had a maximum longevity of 16 years (Jesus, 2012). Notwithstanding our impressive example, the record for small lizard longevity still remains with a slowworm (*Anguis fragilis*) that lived in captivity for at least 54 years in Copenhagen Zoo (Schmidt & Inger, 1957).

ACKNOWLEDGEMENTS

We kindly thank Tekla Boersma who introduced us to numerous herp keepers and breeders to compare lifespans of their lacertas with our observation. Thanks to Ingrid Margry-Moonen for taking the photos.

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Accepted: 12 January 2021