ARTICLES

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A Dubious Account of Breeding *Varanus olivaceus* in Captivity at the Paradise Reptile Zoo in Mindoro, Philippines

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Abstract - *Varanus olivaceus* is one of the most valuable monitor lizards in wildlife trade and considered vulnerable throughout its range. A published report claiming "the world's first successful breeding of *V. olivaceus*" is reviewed critically in the light of established facts about the reproduction of this species in captivity, and experience of the establishment in question in the year of the supposed breeding. Regulatory authorities and peer reviewers should require unambiguous proof of captive breeding success before accepting such claims in the future.

Varanus olivaceus is a large, frugivorous monitor lizard endemic to Luzon and some smaller adjacent islands in the Philippines. Its current IUCN classification is "Vulnerable" (Sy *et al*. 2009). Accounts of captive breeding of this species in the literature are rare. A single egg hatched at the Dallas Zoo, USA in 1992, but the hatchling survived for only a few hours (Card 1994, 1995). Yuyek (2004a,b, 2012) produced two hatchlings at Avilon Zoo, Philippines in 2004, only one of which which survived. Both accounts were accompanied by photographs of the neonates and the eggs they hatched from.

Lutz (2006) published a report claiming the "world's first successful breeding" of *V. olivaceus*. According to his account eight eggs were produced by one pair of *V. olivaceus* 74 days after mating was observed in February 2005, of which four hatched after 194 days. He further stated that a different pair of *V. olivaceus* produced eggs in June 2005, three of which hatched after 137 days and five after 201 days. All eggs were incubated in a homemade incubator with the temperature varying between 27.5° and 34° C. Photographs of juvenile animals (but not hatchlings) were included in this report, together with a photo of an egg and another showing a dorsal view of what was claimed to be a gravid female.

On 10 June 2006, I visited Mario Lutz at the Paradise Reptile Zoo (also known as the Zoological Institute of Herpaworld Inc.) in Mindoro, Philippines, at his invitation. During my visit I saw four juvenile *V. olivaceus*, each with estimated total lengths of about 40 cm (Figs. 1 & 2), but saw neither adult animals nor incubating eggs. Mario Lutz told me that his pair of adults had been killed earlier in the year during a typhoon, that there were no photographs of the eggs hatching, and that he had retained neither the corpses of the adults nor the eggs from which the juveniles had hatched. During my visit, Mario Lutz referred to only a single pair of *V. olivaceus* and the four juvenile animals which were present. Based on the dorsal head patterns of the juveniles and the kinked tail of one specimen, I believe these are the same animals that appear in Lutz's (2006) report as Figure 8, captioned "The first four Butaan hatchlings".

In September 2006, Mario Lutz exported 14 *V. olivaceus* from the Philippines to the United States. The relevant CITES documentation indicates that these animals were identified as captive-bred (CITES 2014). However, known incubation times for *V. olivaceus* eggs (with assisted hatching) range from 209 to 217 days (Card, 1994, 1995; Yuyek, 2004, 2012). Thus, even if Lutz had obtained a gravid adult female on the day after my visit, and that animal had produced eggs

Fig. 1. Three of four juvenile *Varanus olivaceus* photographed 10 June 2006 at Paradise Reptile Zoo, Mindoro.

Fig. 2. All four juvenile *V. olivaceus* photographed 10 June 2006 at Paradise Reptile Zoo, Mindoro.

immediately, it is inconceivable that the eggs could have hatched within three months, i.e., in time to be exported as juveniles in September 2006, even if his report of 137 days incubation was correct.

None of the evidence presented by Lutz (2006) can be considered incontrovertible. In particular, the lack of photographs of any eggs hatching or of neonatal animals is surprising, particularly in the age of digital cameras and considering the unique and unprecedented success reported in breeding a species that had previously proved almost impossible to reproduce in captivity. My observations at the Paradise Reptile Zoo in 2006 lead me to the conclusion that Lutz's (2006) paper must be at least partially fabricated.

Government agencies in some countries will only issue documentation that allows legal export of animals for wildlife trade if those animals are bred in captivity (e.g., Siswomartono, 1998; Lyons & Natusch, 2011). Nijman & Shepherd (2009) carried out a review of breeding facilities of five species of reptiles in Indonesia, including two monitor lizards; *V. prasinus* and *V. timorensis*. They found that wild-caught animals were regularly misdeclared to circumvent Indonesian wildlife trade restrictions and exported as captive-bred. For both *Varanus* species, Nijman & Shepherd (2009) concluded that all specimens exported as captive-bred were in fact wild-caught.

Fabricated accounts of captive breeding in rare species are highly detrimental to genuine attempts at propagating the animals in captivity and to efforts to monitor and regulate the wildlife trade. Furthermore, they threaten to damage the reputations of individuals and institutions who buy the animals in good faith, believing them to be genuine captive-bred stock. Because the value of such animals is often extremely high in the international pet trade, there are very strong incentives for making false claims.

Few falsified reports of captive breeding in *Varanus* can be identified from the literature. The most obvious is a report by Zwineberg (1972) describing the breeding of *V. albigularis* which included a photograph of an animal which was clearly not a neonate "hatching" from a hard-shelled bird's egg (Kratzer 1973). Another account by Carlzen (1982) reported on a captive breeding of *V. prasinus* which Eidenmüller (1992) could not reconcile with his experiences of breeding the species. Eidenmüller (1992) suggested that the dates or

temperatures may have been recorded incorrectly, but no such excuse seems warranted in the present case involving *V. olivaceus*.

Many facets of the study of animal behaviour and ecology do not strictly qualify as science, because conditions in the field or in the terrarium are rarely reproducible. There is therefore an element of good faith required whenever such a study is considered for publication. However, editors and reviewers should treat unprecedented reports of captive breeding in highly valuable species with caution, and it does not seem unreasonable to require unambiguous evidence, such as photographs of eggs hatching or at least of juveniles of hatchling size with distinctive neonatal coloration, in such cases. Alternatively, molecular evidence that unambiguously links sibling animals with a parental individual would allay any doubts that the breeding success claimed was genuine.

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