

First Record of Komodo Dragon Nesting Activity and Hatchling Emergence from North Flores, Eastern Indonesia

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Abstract - For wild varanid populations, basic measures of reproductive ecology, such as distribution and selection of nest sites, are difficult to obtain. To date, nest distributions and nesting behavior for Komodo dragons (*Varanus komodoensis*) have only been reported from Komodo National Park. Here we report the first record of *V. komodoensis* nesting activity and hatchling emergence on Ontoloe Island, off the north coast of Flores. This is a significant finding for it suggests that this relatively small but well protected island supports a viable population of *V. komodoensis*.

A key factor in Komodo dragon (*Varanus komodoensis*) conservation is a comprehensive understanding of processes that influence population persistence (Jessop *et al.*, 2007; Purwandana *et al.*, 2014, 2015). Basic attributes of female reproductive ecology, such as the annual number of reproductive females, and the habitat and the physical characteristics that influence both distribution and selection of nest sites are core aspects, necessary to facilitate informed decisions regarding the management and conservation

of this species (Jessop *et al.*, 2004).

Surveys and observations of wild *V. komodoensis* nest distribution and nesting behavior have been reported from Komodo National Park (Jessop *et al.*, 2004; Purwandana, 2007). This research suggested relatively low densities of nests across Komodo Island and that lizards preferred to nest in the abandoned nest mounds of the orange-footed scrubfowl *Megapodius reinwardt* (Jessop *et al.*, 2004). The annual nesting cycle begins with females preparing their nests in June and July.



Fig. 1. A Komodo dragon hatchling emerging from the nest chamber on Ontoloe Island, North Flores. Photographed by Achmad Ariefiandy.

Oviposition then takes place in August, and females will guard their nests until November (Purwandana, 2007). Emergence of hatchlings takes place from February to April. Hatchlings then immediately disperse to nearby trees to enter an arboreal life-stage that lasts for 1-2 years (Imansyah *et al.*, 2008).

Observations of nest use and hatchling emergence outside of Komodo National Park (*i.e.*, Flores Island) remain undescribed. In this study, we report the first observation of *V. komodoensis* nesting activity on Ontoloe Island (08°22'16.2" S; 121° 00' 45.2" E), part of the Tujuh Belas Pulau Nature Reserve, in North Flores. Since 2008, surveys on *V. komodoensis* populations on Flores Island have been conducted extensively by the Komodo Survival Program, an Indonesian non-governmental organization working in collaboration with the Indonesian Lesser Sunda Center for Conservation of Nature Resources (BBKSDA NTT). In November 2013, we found an orange-footed scrubfowl nest with signs of recent digging activity and *V. komodoensis* tracks, which suggested that the nest was visited and possibly used by a *V. komodoensis* as a nesting site. The nest was located in dry *Tamarindus indica* woodland and received partial

shade (~ 40%) from adjacent vegetation.

We placed four ScoutGuard SG560V (Boly Media Communications Inc., Santa Clara, USA) wildlife cameras around the nest as described in Ariefiandy *et al.* (2013) from June to November 2014 in order to confirm *V. komodoensis* nesting activities. The cameras recorded a female digging nest chambers and protecting the nest from other adult dragons. This provided further evidence of the female using the scrubfowl nest for oviposition. In November 2014, the female *V. komodoensis* was no longer recorded on camera traps. The nest was then fenced using a 1 m high metal sheet and covered with 1 cm mesh netting in order to capture the hatchlings upon emergence from the nest at the end of the wet season (February-March 2015). Intensive daily observations were conducted to determine the presence of emerged hatchlings. On 5 March 2015, 16 hatchlings emerged from the nest (Fig. 1). Hatchlings were measured and tagged using a passive integrated transponder (TROVAN 100A, Trovan Ltd, London, UK). Average total body length and mass of hatchlings were 46.5 ± 0.3 SE cm (range: 44.6-48.9 cm) and 105.1 ± 2.2 SE g (range: 83-121 g), respectively. A blood sample was also collected

from the caudal vein. All hatchlings were released on large trees close to the nest.

This is the first record of Komodo dragon nesting activity and hatchling emergence in Flores, and represents a significant finding for it suggests that Ontole Island, a relatively small but well protected island, supports a viable population of *V. komodoensis*. It is also an important result considering that, unlike Komodo National Park, Flores is subject to significant levels of habitat disturbance that have significantly affected extant *V. komodoensis* populations since 1970 (Ciofi & De Boer 2004; Ariefandy *et al.*, 2015).

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