

Records of the Northern Sierra Madre Forest Monitor *Varanus bitatawa* from the Northern Cordillera Mountain Range of Luzon Island, Philippines

The Northern Sierra Madre Forest Monitor *Varanus bitatawa* is a large-bodied, arboreal, and frugivorous monitor lizard thought to be restricted only to forests of the northern and central Sierra Madre range on the island of Luzon, Philippines. Since the first scientific description of the species by Welton et al. (2010), specimens have been obtained only from the Sierra Madre range particularly within the provinces of Cagayan, Isabela and Aurora for taxonomic, phylogenetic and ecological studies (Siler et al. 2011; Welton et al. 2012; Law et al. 2016). However, scratch marks characteristic of *V. bitatawa* that were found on *Pandanus* trees in Pagnudpuud, Ilocos Norte Province have also been reported (Brown et al. 2012; Welton et al. 2012). This indicated the possible presence of this species occurring in the western regions of northern Luzon, although specimens or direct observations have yet to substantiate its existence beyond its currently documented range (Welton et al. 2012).

Unlike its congeners *Varanus olivaceus* and *V. mabihang*, the other Philippine frugivorous and arboreal monitor lizards, the conservation status of *V. bitatawa* remains uncertain—primarily due to the fact that documentation of the extent of its geographical range, population status, and local abundances remain unknown. Here we report two detections of *V. bitatawa* in forests of the northern Cordillera mountains of Luzon, in the municipality of Calanasan, Apayao Province (Fig. 1). These constitute highly significant range extensions for this enigmatic species.

Varanus bitatawa was first detected in the Cordillera in 2015 during a diet and behavioral study of a nesting pair of Philippine Eagles (*Pithecophaga jefferyi*) in the mountains of Calanasan (Abaño et al. 2016). One of the adults delivered a disarticulated limb of a varanid lizard to the eaglet on the nest at 1425 h on 8 July 2015 (Fig. 2). The photo of the prey remains was examined by herpetologists involved in the first description of the species (Welton et al. 2010), and all unambiguously identified the limb as that of *V. bitatawa* based on the distinct yellow and black markings. Philippine Water Monitor lizards (*V. marmoratus*) prey remains were also brought to the nest on six occasions. Photographs of the prey items taken by our field team provided

an opportunity to compare and contrast prey remains, leading to positive identifications of both *Varanus* species.

The second encounter occurred in 2016, during monthly forest patrols by local “Green Guard” volunteers, organized by the Philippine Eagle Foundation and the Local Government of the Municipality of Calanasan, to provide protection of resident eagles and their nesting territory while deterring timber poaching. These forest guards obtained photographic documentation of one individual, positively identified as *Varanus bitatawa*, descending a dead tree within the lowland forests of Barangay Santa Elena (altitude 448 masl) at 0708 h on 27 October 2016 (Fig. 3). The Indigenous *Isneg* tribe of Calanasan calls this monitor “Lopi” which they regard as the arboreal and fruit- and foliage-eating form of the ground-dwelling “Banyas” (*V. marmoratus*).

We present these observations to encourage further field research on the occurrence of this species in regions west of the Sierra Madre and elsewhere on Luzon Island. The only other western Luzon Island record of a frugivorous monitor involves an occurrence of *Varanus olivaceus* from Cavite Province (SW Luzon; Welton et al. 2012), which may have resulted from a poorly advised release of a confiscated individual from east Luzon or the

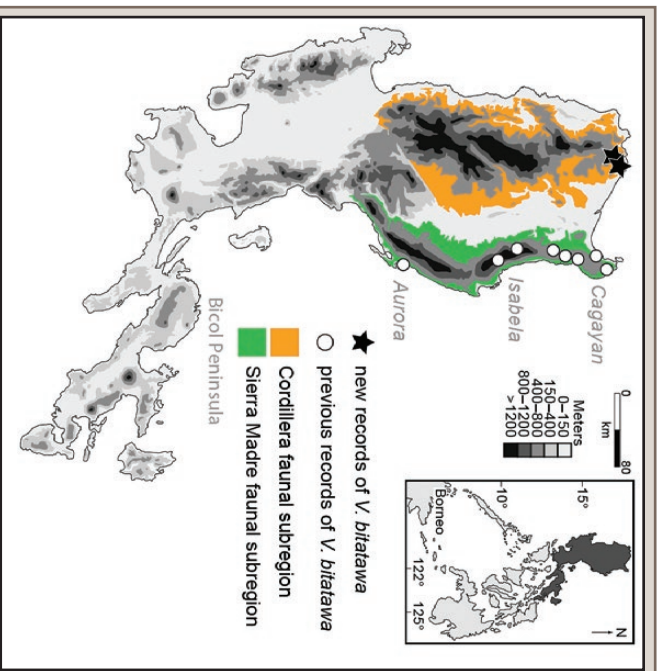


FIG. 1. Locations of the recent detections of *Varanus bitatawa* in the mountain range north of the Cordillera faunal subregion and the previous records of the species throughout the Sierra Madre faunal subregion of the Luzon Island, Philippines. The color-coded portions indicate only the 150–400 m elevation but the rest of the interior areas at higher elevation are still part of their corresponding faunal subregions.

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FIG. 2. The severed limb of a *Varanus bitatawa* (in red oval) fed to a Philippine Eagle nesting in the northern Cordillera mountain range, Luzon Island, Philippines.



FIG. 3. *Varanus bitatawa* descending a dead hardwood tree trunk in the northern Cordillera mountain range.

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Bicol Peninsula into the Palay-palay protected area (Welton et al. 2012). However, the forests of the Cordilleras have been so poorly studied to date (Diesmos et al. 2004; Brown et al. 2012), that any speculation regarding the extent of occurrence and systematic affinities of frugivorous monitors in this biogeographically distinct region of Luzon would be premature. There can be no substitute for field studies, designed to strategically target documentation of frugivorous monitors in the Cordillera, and elsewhere throughout the archipelago (Brown et al. 2013; Welton et al. 2013, 2014).

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