Predation of Bay-breasted Warbler *Setophaga castanea* (Parulidae) by Green Vinesnake *Oxybelis fulgidus* (Colubridae) on Utila Island, Honduras

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Introduction:

Oxybelis fulgidus (Daudin, 1803) known as the Green Vinesnake, is a well-camouflaged and arboreal colubrid with a wide spanning Neotropical range including most of Central America (Köhler, 2008; McCranie, 2011). These large but slender diurnal snakes are inept ambush predators, relying largely on their flawless leafy camouflage to stalk and acquire prey items. The diet of *O. fulgidus* includes a wide variety of lizards and songbirds (Passeriformes) (Scartozzoni et al., 2009), whereas mammals, frogs and insects are taken rarely or on occasion (Savage, 2002; Kohler, 2008). The venom of *O. fulgidus* is stored in high volumes, containing Fulgimotoxin, a specialist monomeric three-finger toxin (3FTxs) that is highly neurotoxic to lizards and birds, but of no effect on mammals (Heyborne & Mackessy, 2013).

Field observations on *O. fulgidus* throughout its Mesoamerican range have documented a wide variety of birds in its diet, that include seventeen families to date e.g. Bucconidae (Endo et al., 2007); Columbidae (Fraga et al., 2012; Miranda et al., 2013); Dendrocolaptidae (Scartozzoni et al., 2009; Fraga et al., 2012); Emberizidae (Sosa-Bartuano & Rodríguez-Beitía, 2015); Fringillidae (Scartozzoni et al., 2009; Fraga et al., 2012); Furnariidae (Leenders & Colwell, 2004; Díaz-Gamboa et al., 2017); Icteridae (Capurucho & Costa, 2012); Momotidae (Cherry, Jr. et al. 2017); Muscicapidae (Scartozzoni et al., 2009); Parulidae (Henderson & Binder, 1980; Henderson, 1982); Pipridae (Martins & Oliveira, 1998); Rallidae (Bringsøe, 2002); Thamnophilidae (Silva Pena et al., 2017); Thraupidae (Scartozzoni et al., 2009; Fraga et al., 2012; von May et al., 2018; Hernández-Ruz, 2019; Sánchez-Ojeda & Cortés-Suárez, 2019); Trochilidae (Van Dort, 2011); Turdidae (Figueroa & Valerio, 2011; Viana et al., 2014; Rodríguez-Pérez & Mata-Silva, 2019); and Tyraniidae (Hayes, 2002; Rodrigues et al., 2005; Viana et al., 2014). This observation provides the first published example of Bay-breasted Warbler *Setophaga castanea* predation by *O. fulgidus*, and perhaps the fourth ever reported instance of the family Parulidae (Warbler) in the diet of this snake (Henderson & Binder, 1980; Henderson, 1982; Scartozzoni et al., 2009).

Field Observation:

The observation commenced on 01 May 2019 at 15:30 h (+ 6hrs to GMT) on the grounds of Kanahau Utila Research & Conservation Facility, Utila Island, Honduras (16.119383° N,

Figure 1: (A & B) An adult Green Vinesnake (Oxybelis fulgidus) in the process of ingesting a Bay Breasted Warbler (*Setophaga castanea*) on Utila Island, Honduras. © Tom W. Brown

86.884989° W, WGS 84). The authors attention was drawn by the squawking alarm call of a male *S. castanea* that was apparently 'mobbing' a snake it had encountered whilst foraging. Upon pinpointing the distressed bird c. 8 m high in the canopy of a broad-leaf tree, the author observed an adult *O. fulgidus* (c. 1300 mm Total Length) striking and firmly grasping the individual *S. castanea* by the head. The captured *S. castanea* struggled and flapped in an attempt to break free, but became limp and unresponsive after 10 m of being restrained (Fig 1a & b). After the *S. castanea* apparent demise, the adult *O. fulgidus* retracted and continued to hold the prey for c. 25 m, before beginning to maneuver and swallow the *S. castanea* in a headfirst position. Ingestion of the prey took >45 m in total, but was not observed for its entirety to avoid disturbance. The prey's identification was confirmed by photographs, as a male *S. castanea* has distinctive reddish brown upper flanks and two conspicuous wing bars (Gallardo, 2014).

Concluding Remarks:

While native birds are a common prey source for *O. fulgidus* throughout its range, this observation, on Utila Island, is especially notable as *S. castanea* has a migratory island status. Utila is an important albeit little studied site for migrating birds (Gallardo, 2014). An estimation of at least 70 - 90 different bird species may stop-off and overwinter on the island, of which c. 16 are reportedly small warblers (Sullivan et al., 2009). The greatest number of these species arrive in Honduras during the southern migration between October and April (Gallardo, 2014). This seasonal influx of migratory birds may provide a passing abundance of prey for *O. fulgidus,* influencing dietary shifts and changes in this snakes foraging strategy throughout the year. Previously, the only known examples of *O. fulgidus* diet on Utila included the lizards *Ctenosaura similis*, *Hemidactylus frenatus* (Brown et al., 2019) and *Basciliscus vittatus* (Brown, T. pers.observ.), as well as a small mouse (Köhler 2008) and the fatal ingestion attempt of a small bat *Saccopteryx leptura* (Brown et al., 2019[2]). This note attests to the varied diet of *O. fulgidus* by further documenting an avian prey item on Utila.

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