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## **Additional Information on a Nonnative Whiptail Population (*Aspidoscelis flagellicauda/sonorae* complex) in Suburban Orange County, California**

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The lowlands of cismontane southern California have proven to be hospitable not only to humans but to many exotic plant and animal species (Cox 1999). In addition to 14 nonnative reptile species established in the area<sup>1</sup> is a localized population of confusing whiptails in Orange County that was first reported by Winkleman and Backlin (2016). That report was based on observations in south Irvine in May 2014 and April–June 2015 and at least one similar whiptail seen in adjacent Lake Forest in July 2015. Four specimens collected in Irvine at that time were identified as belonging to the *Aspidoscelis flagellicauda/sonorae* complex. The Gila Spotted Whiptail (*A. flagellicauda*) and Sonoran Spotted Whiptail (*A. sonorae*) are morphologically similar all-female species native to Arizona, New Mexico, Sonora, and Chihuahua and previously not known to occur away from their native ranges.

Gary Nafis<sup>2</sup> provided an update on the status of these lizards, noting that they are not extirpated in Irvine, as suspected by Winkleman and Backlin (2016), and “as of 7/17, they have been found only in Orange County in Irvine, Lake Forest, and Aliso Viejo, but they appear to be spreading quickly.” The reference to Aliso Viejo was presumably based on the observations detailed here. Information displayed on iNaturalist<sup>3</sup> under the name of Sonoran Spotted Whiptail includes the Irvine observations and others beginning in 2015, but the precise locality data is “obscured” according to the wishes of reporting individuals or institutions. All of the iNaturalist locations, obscured or otherwise, are within the general geographic boundaries described above (G.B. Pauly pers. comm.).

Our observations come primarily from a church campus in suburban central Laguna Woods (33.609882 N, -117.733124 W; adjacent to the vast retirement community formerly known as Leisure World), approximately 4.8 km south-southwest of the locations reported by Winkleman and Backlin (2016). The manicured landscape with scattered ornamental shrubs provides suitable habitat for the whiptails, not unlike the situation described by Winkleman and Backlin (2016). Sandy substrates are especially favored by these lizards. Like Winkleman and Backlin, we initially struggled with their identification, generally trying to force the label of Orange-throated Whiptail (*A. hyperythra*) upon them.

Our first observation was of a single individual on 13 June 2010. Infrequent observations continued through 2016, but in 2017 we increased our effort to document them. Spotted

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<sup>1</sup> <http://www.californiaherps.com> (accessed May 2018).

<sup>2</sup> *Aspidoscelis flagellicauda* x *Aspidoscelis sonorae* complex, <http://www.californiaherps.com> (accessed May 2018).

<sup>3</sup> [https://www.inaturalist.org/observations?place\\_id=2738&taxon\\_id=73691](https://www.inaturalist.org/observations?place_id=2738&taxon_id=73691) (accessed May 2018).



Fig. 1. Spotted Whiptail (*Aspidoscelis flagellicauda/sonorae* complex) in residential Aliso Viejo, Orange County, 1 June 2018. Photo by Richard A. Erickson.

whiptails were seen from 16 April 2017 to 22 July 2017 but were not seen on 30 July 2017 or thereafter. We collected individuals on 1 and 4 July 2017 (LACM 189582 & 189583; collected under California Department of Fish and Wildlife Scientific Collecting Permit #000777) and saw at least three more after that. Our first observation of 2018 was on 22 April 2018.

On three occasions in May and June 2017, and three more in May and June 2018 (Fig. 1), we observed spotted whiptails amongst ornamental landscaping at two locations in nearby portions of Aliso Viejo, along Canyon Wren Lane and Calle Corta to the intersection of Chickadee Lane. These observations extended the known range another 1.2 km south-southwest of the church site.

In summary, all of our observations of spotted whiptails were in suburban landscaping >0.6 km removed from native coastal sage scrub and up to 6 km south-southwest of the original Irvine location. Our observations of activity extend from 16 April 2017 to 22 July 2017 with the exception of one fall sighting on 4 September 2016 (iNaturalist records extend to 31 October 2017). In light of the apparent displacement of Western Fence Lizards (*Sceloporus occidentalis*) by nonnative Italian Wall Lizards (*Podarcis siculus*) elsewhere in the Los Angeles Basin (G.B. Pauly pers. comm.) and the related warning of Deichsel et al. (2010), we note that as of May 2018 fence lizards were still present at all locations where we have seen whiptails. The spotted whiptail population in Orange County is known to have been present since at least 2010, with the first observations in the city of Laguna Woods. It has since been found in the neighboring cities of Irvine, Lake Forest, and Aliso Viejo. This area has received industrial-scale residential landscaping since the 1960s. The widespread movement of plants, soil, and materials involved in such endeavors has been

implicated in the establishment in southern California of species such as the Brown Anole (*Anolis sagrei*; Mahrtdt et al. 2014), Common Coqui (*Eleutherodactylus coqui*<sup>4</sup>; SDSNH 76135 and 76138), and others (G.B. Pauly pers. comm.). While we hope that these species will remain restricted to the highly altered urban environment, the spotted whiptail has already been found at the edge of protected open space in Irvine, where it is feared that it may threaten or outcompete native species in natural habitats (R.S. Winkleman pers. comm.).

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<sup>4</sup> *Eleutherodactylus coqui*, <http://www.californiaherps.com> (accessed May 2018).