MISCELLANEOUS NOTES

Charadrahyla altipotens (Anura: Hylidae), a Critically Endangered treefrog rediscovered in Oaxaca, Mexico

Duellman (1968) described *Hyla altipotens* based on seven individuals collected in 1966 from 33–37 km N of San Gabriel Mixtepec on the Pacific slope of the Sierra Madre del Sur, Oaxaca, Mexico. Subsequently, Duellman (2001) reported new localities for this species from the Santa Maria Jalatengo region of the same mountain range in Oaxaca, from ca. 60 km ESE of the type locality. Faivovich et al. (2005) placed all of the species in the *Hyla taeniopus* group known at that time in the genus *Charadrahyla*.

Charadrahyla altipotens is considered a species under special protection by the Mexican government (NOM-059 SEMARNAT-2010), and as Critically Endangered (Possibly Extinct; A2ace) by the IUCN (Santos-Barrera and Canseco-Márquez, 2004; Stuart et al., 2008). Wilson et al. (2013) assessed it an Environmental Vulnerability Score of 12 (in the medium category), largely as a result of its reproductive mode. Importantly, Santos-Barrera and Canseco-Márquez (2004) indicated that this species apparently was in serious decline, as it had not been recorded since the 1960s, but several specimens actually were collected in 1970 (VertNet, 2016). Herein, we report on three individuals of *C. altipotens* that were encountered recently, from three new localities. We deposited photographs of these individuals (see below) in the digital herpetological collection of the Museo de Zoología, Facultad de Estudios Superiores Zaragoza, Universidad Nacional Autónoma de México (MZFZ), and the specimens collected were deposited in the herpetological collection of the Museo de Zoología, Facultad de Ciencias, Universidad Nacional Autónoma de México (MZFC).

On 26 August 2011, ANMO collected an adult male *C. altipotens* (Fig. 1A; MZFC-30628) perched on a branch about 1.6 m above the ground along a creek in pine forest, on the road between Candelaria Loxicha and San Miguel Suchixtepec, Municipio de San Pedro el Alto, Oaxaca (16.0333N, -96.5114W; datum WGS 84; elev. 1,740 m).

On 6 October 2014, MDL found an adult female *C. altipotens* (MZFZ IMG017) soon after it was hit by a vehicle, but still alive, on a road through pine forest, at 10.9 km NE of Santa Maria Jalatengo, Municipio de San Pedro el Alto, Oaxaca (16.03843N, -96.50471W; datum WGS 84; elev. 1,849).

On 13 April 2016 at 1307 h, during a field trip to Tierra Blanca Loxicha, Municipio de San Agustín Loxicha, Oaxaca (15.9697N, -96.5734W; datum WGS 84; elev. 1,680), CLBA found an adult female *C. altipotens* (Fig. 1C, D) in pine-oak forest, resting near a low waterfall along a narrow creek. The pool at the base of the waterfall harbored numerous large tadpoles, perhaps of this species (Fig. 1B). The individual was photographed (photo vouchers MZFZ IMG014–16) and released. The frog, however, appeared lethargic and thin.

Observations on color pattern and secondary sexual characters

The color pattern and secondary sexual characters noted for the adult male (MZFC-30628) are as follows: dorsum uniform green, with transverse bars absent on arms and legs; narrow, pale yellow line extends posteriorly from snout and along canthus rostralis, continuing along upper border of the eye; lips white with black margin; flanks cream with small, irregular green and black spots; nuptial excrescences dark gray; loreal and temporal regions with small, black spicules, possibly indicating reproductive activity; and small, dark spicules also notable on knees, outer surface of shank, heels, tarsi, and feet. The last character was not indicated in the original description of *Hyla altipotens* or later (Duellman, 1968, 2001).

The dorsum of the adult female that was released was green when the individual was captured (Fig. 1C), and contained small, scattered, gold and black spots. After the frog was handled for photographs, the dorsal ground color changed from green to tan (Fig. 1D), and the flanks turned cream with medium-sized, irregular black spots, and the transverse bands on the forearms, thighs, and shanks became more pronounced. The dorsum of the second female (MZFZ IMG017) was uniform green, and transverse bars were absent on the limbs.

Fig. 1. *Charadrahyla altipotens* in life: (A) adult male (MZFZ-30628) from the road between Candelaria Loxicha and San Miguel Suchixtepec, Municipio de San Pedro el Alto, Oaxaca; (B) tadpoles (MZFZ IMG014), possibly of *C. altipotens*, found at Tierra Blanca Loxicha, Municipio de San Agustín Loxicha, Oaxaca; (C) adult female from previous locality when first seen (MZFZ IMG015), and (D) the same individual after handling for photographs, showing the color change (MZFZ IMG016).

Conservation status

After recently observing *Charadrahyla altipotens* in three different localities, as well as hundreds of tadpoles similar to those described by Duellman (1970), which were not examined in detail and thus we can not positively assign them to this species), we hold a level of optimism about the future of this species. Nonetheless, because of its limited known distribution (Fig. 2), the disappearance of fragments of cloud forest in Oaxaca, and because the range of this species does not include any protected areas (Stuart et al., 2008), we believe that its conservation status should remain as Critically Endangered (CR A2ace) by IUCN, and we propose that its status should be raised to the threatened category (Amenazadas [A]) by the Mexican government (NOM-059 SEMARNAT-2010). Additional fieldwork and more data are necessary to learn more about possible threats (e.g., habitat destruction, vulnerability to emergent diseases) to adequately monitor the newly discovered populations.

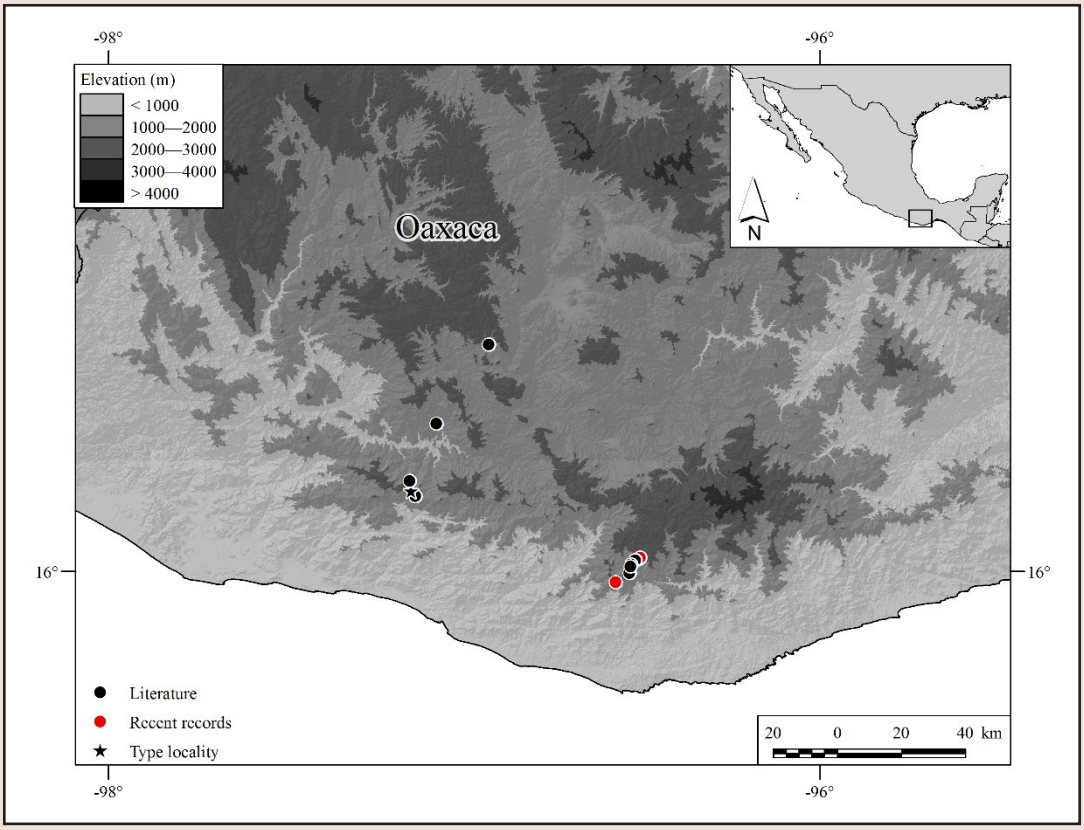

Fig. 2. Known distribution of *Charadrahyla altipotens*, including the most recent records.

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Rediscovery of the Critically Endangered treefrog *Charadrahyla trux* in the Sierra Madre del Sur of Guerrero, Mexico

Charadrahyla trux (Adler and Dennis, 1972) is a rare hylid frog with a distribution restricted to the higher portions of the Sierra Madre del Sur in central Guerrero, Mexico (Duellman, 2001). Adler and Dennis (1972) described the species based on nine specimens collected in December of 1969. The specimens were collected on the slopes and immediate vicinity of Cerro Teotepec in central Guerrero, at elevations from 1,760–2,120 m, between the town of El Paraíso, on the Río Atoyac, and El Asoleadero, an abandoned logging camp near Carrizal de Bravo. Subsequently, seven additional specimens were collected in December of 1972 (J. Campbell, pers. comm.). This species therefore, is known from 16 specimens (with a positive identification) and has not been seen since 1972 (GBIF, 2016).

Previous to this work, numerous researchers sampled the region from where *C. trux* was known to occur without finding the species (Lips et al., 2004; Caviedes-Solis et al., 2014). Lips et al. (2004) listed *C. trux* as potentially extirpated from the only area where it was known. In their evaluation of the species status for IUCN, Santos-Barrera and Canseco-Márquez (2004) assessed this species as Critically Endangered and Possibly Extinct. This status presumably was based on the assessment of Lips et al. (2004), in addition to the paucity of recent records for the species at the Museo de Zoología, Universidad Nacional Autónoma de México. Lamoreux et al. (2015) also listed *C. trux* as possibly extinct, based on the information from IUCN.

On 16 July 2016, we were sampling for direct-developing frogs of the genus *Eleutherodactylus* (subgenus *Syrrhophus*) and stream-breeding hylids on the windward slopes of Cerro Teotepec, Guerrero, between the settlement of Puerto del Gallo and the town of El Paraíso. We sampled the transect by car from 0900 h (on 15 July) until 0700 h (on 16 July), stopping approximately every 1,500 m to listen for vocalizing amphibians. Previously, we downloaded the known stream-breeding hylid collecting localities from GBIF (2016), as well as from the literature (Adler, 1965; Adler and Dennis, 1972; Duellman, 2001). We mapped each of these localities in Google Earth, and downloaded the KMZ file to our cellular phones. We stopped at each stream to listen for vocalizations, and where possible walked upstream from the highway to escape the sound of water crossing under or over the road. We searched the larger and permanent streams more thoroughly. We collected and photographed all animals, and deposited the images at the University of Texas at Arlington Digital Photo Voucher Collection (UTADC).