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).
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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.

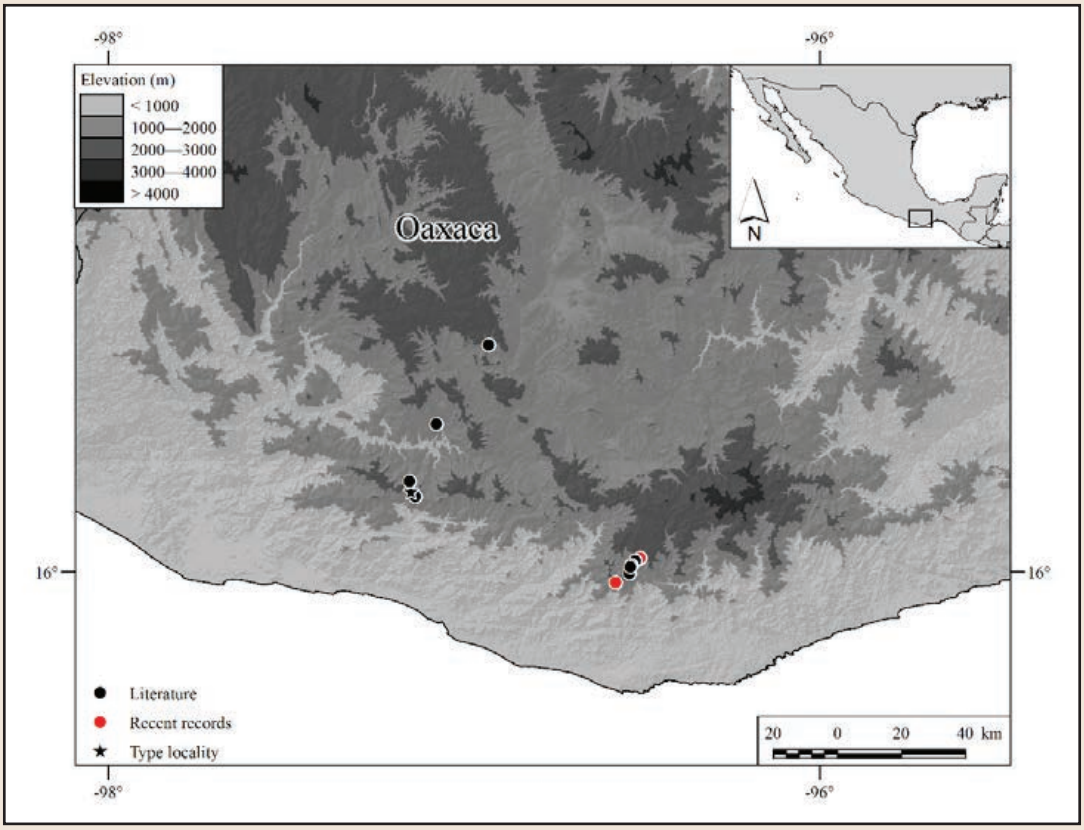

Fig. 2. Known distribution of *Charadrahyla altipotens*, including the most recent records.

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