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***RANA DRAYTONII* (California Red-legged Frog). HABITAT USE.** *Rana draytonii* are known for using a range of habitats from coastal dunes, at an elevation of 1 m, to mountain meadows, at an elevation of 2100 m (Fellers and Kleeman 2007. J. Herpetol. 41:276–286; Peralta-Garcia et al. 2016. Herpetol. Cons. Bio. 11:168–180). They utilize ephemeral and perennial ponds and creeks, as well as the surrounding uplands, for all aspects of their biology (Storer 1926. Univ. California Publ. Zool. 27:1–342; Jennings and Hayes 1994. Amphibian and Reptile Species of Concern in California. California Department of Fish and Game, Rancho Cordova, California. 255 pp.; Thompson et al. 2016. California Amphibians and Reptile Species of Special Concern, University of California Press, Berkeley, California. 408 pp.). Due to this species being considered threatened by the U.S. Fish and Wildlife Service, considerable effort is directed at visual encounter surveys for monitoring presence/absence of *R. draytonii*. Some researchers have detected behaviors in upland habitat use that have aided in detecting this species when it was otherwise cryptic (Bulger et al. 2003. Biol. Conserv. 110:85–95; Alvarez 2004. Herpetol. Rev. 35:162–163; Fellers and Kleeman 2006. J. Wildl. Manag. 70:1805–1808; Alvarez et al. 2013 Herpetol. Rev. 44:127–128). Cryptic use of habitats and microhabitats or using habitats in a manner that would not meet expectations may mean that the species goes undetected when it is present. Alvarez and Wilcox (*in press*) detected *R. draytonii* climbing steep cliff faces and tall vegetation that was associated with a creek system and suggested that these frogs may be undetected by the unaware surveyor. Here, we report on *R. draytonii* using aquatic breeding habitat that we believe would be considered atypical for the species.

On the afternoon of 22 September 2020, while monitoring *R. draytonii* at two small ponds on Sonoma Mountain, Petaluma, California, USA the senior author noted numerous *R. draytonii* during a casual hike along Pierce Creek (38.32682°N, 122.57064°W; WGS 84; 700 m elev.), a first-order stream feeding Carriger Creek in the Sonoma Creek Drainage, Sonoma County, California. We entered the creek drainage after dark (ca. 2130 h) and noted that the drainage ranged from a steep to gentle gradient, had a substrate that ranged from silt to scoured bedrock, and was composed of step-pools and riffles that were from 0.3–1.0 m wide (Fig. 1). The majority of the spring fed creek was 0.05–0.10 m deep and was lined by slopes that ranged from 32–87° banks (Abney level, Dietzgen Company, Chicago, Illinois). Much of the creek included a tree canopy cover composed primarily of *Umbellularia californica* (California Bay), with *Quercus garryana* (Garry Oak), *Q. agrifiolia* (Coast Live Oak), and *Acer macrophyllum* (Big Leaf Maple). We used a spherical densiometer (Forestry Suppliers, Inc.) to determine that the canopy cover ranged from 85–100% in the stream section that held *R. draytonii*.

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FIG. 1. General condition of Pierce Creek in late September, Sonoma County, California, USA. The blue arrow marks the location of the individual *Rana draytonii* in Figure 2.

We detected one adult and nine post-metamorphic *R. draytonii* along the accessible portion of the creek. The majority (ca. 90%) of individual *R. draytonii* were 1–2 m above the water line and found stationary within small recesses in the steep slopes, above pools and runs in the creek (Fig. 2). Alvarez and Wilcox (*in press*) noted this behavior along a creek in Contra Costa County, California, and reported on the climbing ability of adult *R. draytonii*. They suggested that many *R. draytonii* in these situations may go undetected if the surveyors focus on the waterline rather than searching at eye level along steep banks.

The habitat within which we found these *R. draytonii* appeared to be more like that described for the sympatric *R. boylii* (Foothill Yellow-legged Frog; see Zweifel 1955. Univ. Calif. Publ. Zool. 54:207–292). The steep sides, lack of deep pools, lack of emergent vegetation, and steep stream gradients are not typical habitat described for either adult or post-metamorphic *R. draytonii* (Jennings and Hayes 1994, *op. cit.*; Thompson et al. 2016,

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FIG. 2. *Rana draytonii* resting in a stationary position 2 m above the water surface along Pierce Creek, Sonoma County, California, USA.

*op. cit.*; Stebbins and McGinnis 2012. Field Guide to Amphibians and Reptiles of California, University of California Press, Berkeley, California. 538 pp.). The type of habitat we described above could be immediately dismissed by most surveyors as inappropriate for investigation since it is not one previously described for *R. draytonii*.

We found no evidence that this habitat was used for breeding, but that remains undetermined because our observations occurred after the breeding season. However, we are certain that both adults and post-metamorphic *R. draytonii* are using this type of habitat for dispersal, foraging, and refuge. The presence of newly transitioned metamorphs more than 100 m from their presumed natal pond indicates that despite previous reports (Allaback et al. 2010. Herpetol. Rev. 41:204–206; Stebbins and McGinnis 2012, *op. cit.*), precipitation may not be required to commence dispersal, but further investigation is required. We contend that any aquatic habitat that is in *R. draytonii* range should be considered occupied and therefore should be carefully investigated.

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***RHACOPHORUS RHODOPUS* (Red-webbed Treefrog). MORPHOLOGY.** *Rhacophorus rhodopus* is a small sized tree frog having a reddish brown or yellowish dorsum, usually with a dark brown X-shaped marking on the occiput, a large black axillary spot, and dark bands on the limbs (Liu and Hu 1960. Acta Zool. Sinica 11:525; Bordoloi et al. 2007. Zootaxa 1653:1–20; Li et al. 2012. Zool. Scr. 41:557–570).

Three specimens of *R. rhodopus* were collected on 17 June 2017 (1900 h) from Pange, Tale Wildlife Sanctuary, Arunachal Pradesh, India (27.5485°N, 93.89756°E; WGS 84; 1855 m elev.) and deposited in the National Zoological Collection, Zoological Survey of India, Shillong (V/A/NERC/ZSI/1364: 51.87 mm SVL; V/A/NERC/ZSI/1380: 54.80 mm SVL; V/A/NERC/ZSI/1382: 34.22 mm SVL). The individuals exhibited variations in their dorsal coloration with variable dark spots on the flanks (Fig. 1). While

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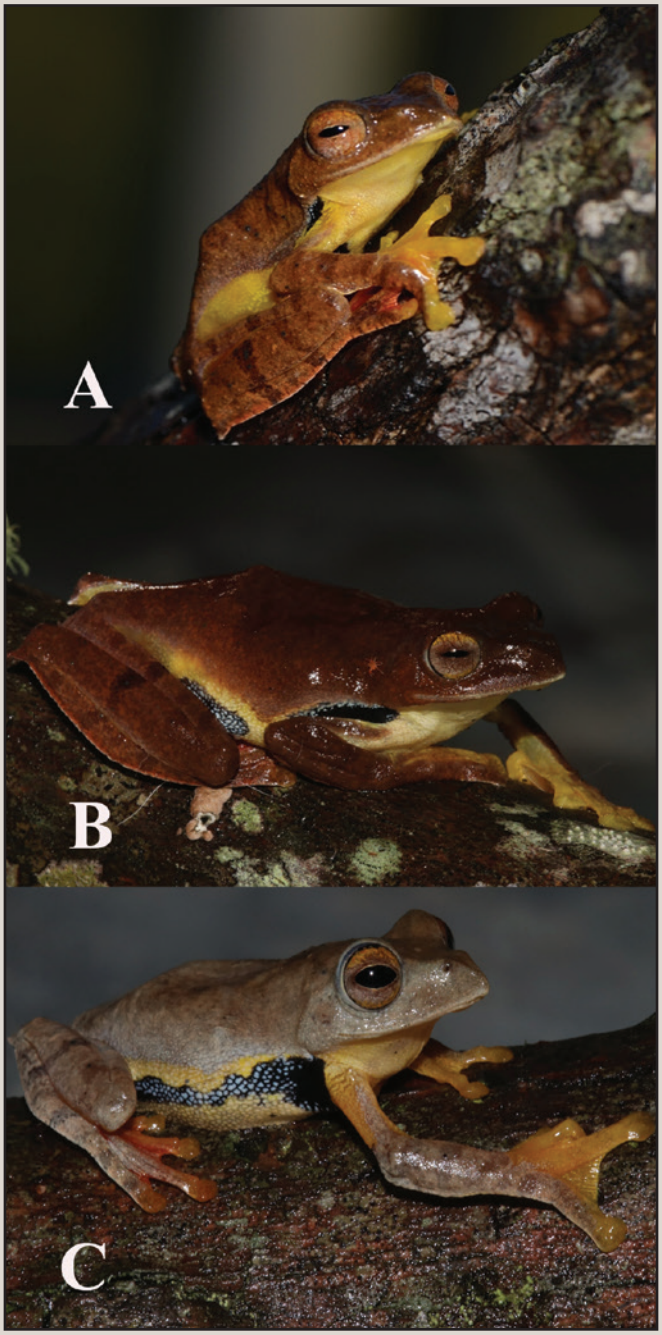


FIG. 1. *Rhacophorus rhodopus* from Pange, Tale Wildlife Sanctuary, Arunachal Pradesh, India.

one individual exhibited the coloration of a typical *R. rhodopus* with a single dark blotch on the flank (V/A/NERC/ZSI/1380; Fig. 1A), the other two were unusual. On one individual (V/A/NERC/ZSI/1364; Fig. 1B), the flanks had twin dark blotches (with whitish spots) that spread ventrolateraly; whereas, in the third individual (V/A/NERC/ZSI/1382; Fig. 1C), the dorsal color was light greyish-brown with the flanks having a dark longitudinal band (with whitish spots) instead of one or two standalone blotches. Thus, three morphological variants of *R. rhodopus* were observed in this population.

This work was carried out under the permit number CWL/G/13(95)/2011-12/Pt./1048-49 dated 22 June 2015 issued by the Forest Department, Government of Arunachal Pradesh, India.