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***PSEUDACRIS CRUCIFER* (Spring Peeper). ENDOPARASITES.** *Pseudacris crucifer* occurs in eastern North America east of a line from eastern Texas, USA to Winnipeg, Canada, except for the southern half of the Florida Peninsula (Green et al. 2013. North American Amphibians, Distribution and Diversity. University of California Press, Berkeley, California. 340 pp.). We examined the body cavity of one female *P. crucifer* from Oklahoma (29 mm SVL) collected in March 2001 from Cherokee County (35.697°N, 98.871°W; WGS 84) and deposited in the Sam Noble Oklahoma Museum of Natural History, University of Oklahoma (OMNH) as OMNH 38753. The body cavity was opened by a mid-ventral incision and the interior was searched for helminths utilizing a dissecting microscope. Two cysts were found on the body wall. They were removed, cleared in lactophenol, and opened. Their contents were found to contain larval digeneans. They were regressively stained in hematoxylin, mounted in Canada balsam, cover-slipped, studied utilizing a compound microscope and identified as two metacercariae of *Clinostomum* sp. after comparison with Olsen (1974. Animal Parasites: Their Life Cycles and Ecology. Dover Publications, Inc., New York, New York. 562 pp.): "the oral sucker is surrounded by a collar-like fold and the testes are tandem with the ovary." *Clinostomum* sp. has an indirect life cycle, utilizing snails as first intermediate hosts, the cercariae leave the snail and penetrate animals serving as the second intermediate host, where they develop into metacercariae. *Clinostomum* sp. matures in birds that eat infected amphibians harboring mature metacercariae (Muzzall and Kuczynski 2017. Comp. Parasitol. 84:55–59). There are reports of unidentified metacercariae in *P. crucifer* from Michigan (Muzzall and Peebles 1991. J. Helm. Soc. Washington 58:263–265) and from Wisconsin (Yoder and Coggins 2007. J. Parasitol. 93:755–760). Voucher specimens were deposited in the Harold W. Manter Laboratory, University of Nebraska (HWML) as *Clinostomum* sp. (HWML 112238). *Clinostomum* sp. in *P. crucifer* is a new host record.

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***RANA DRAYTONII* (California Red-legged Frog). COLORATION.** *Rana draytonii* has been described as brown, grey, olive, reddish, and/or yellow with dark patches dorsally, and having dark bands on the legs (Storer 1925. Univ. California Publ. Zoo. 27:1–342; Slevin 1928. Occas. Pap. California Acad. Sci. 16:1–152; Stebbins 2003. Western Reptiles and Amphibians, Houghton Mifflin Co., New York, New York. 533 pp.). This accurately describes the variety of the thousands of specimens we have encountered in the field. In October 2004, however, a post-metamorphic individual (45 mm SVL) of a completely atypical coloration was encountered. Herein, we describe an unusual color pattern in a *R. draytonii* that was found at the Lomita Canal in Millbrae, San Mateo County, California, USA.

Rather than the characteristic combination of tan, brown, and tomato red, this individual displayed brilliant orange across its body (Fig. 1). The specimen was encountered among thick cattails (*Typha* sp.), in a canal paralleling the western shoreline of the San Francisco Bay (37.61116°N, 122.39473°W; WGS 84). *Rana draytonii* typically have a white speckled venter, while this individual had a creamy orange ventral side, free of any dark coloration. The underlying mechanisms that led to the orange coloration of the individual described here are unknown, as it is the first description of such coloration in California. Riemer (1954. Copeia 1954:45–48), in referencing the coloration of *Masticophis lateralis euryxanthus* (Alameda Whipsnake) suggested that "a number" of species of terrestrial vertebrates found in the area of the San Francisco Bay appear to be more richly supplied with yellow, orange, and red pigments. Citing seven different species, six of which are sympatric with *R. draytonii*, Riemer (1954, *op. cit.*) was clearly referencing typical coloration of these species. It is unclear whether the morph seen here suffers from the loss of or under expression of certain pigments (i.e., amelanistic). Amphibians are reported to use carotenoids for skin pigmentation, and because carotenoids are only obtainable through the diet, color degradation could result from limited carotenoid availability (Ogilvy et al. 2012. Anim. Conserv. 15:480–488). It is also possible that this atypical coloration was developed through a genetic mutation. We believe this is the first report of atypical coloration in this threatened species.

FIG. 1. Atypical coloration in a *Rana draytonii* from San Mateo County, California, USA.

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***RANA ONCA* (Relict Leopard Frog). GROWTH, SEXUAL MATURITY, and SIZE.** Although *Rana onca* was once believed extinct, genetic analyses published in 2001 confirmed that the species had persisted (Jaeger et al. 2001. Copeia 2001:339–354). Since then, native populations (Bradford et al. 2004. Southwest. Nat. 49:218–228) have been supplemented by establishing populations at new sites as part of a multi-agency conservation effort (U.S. Fish and Wildlife Service 2016. Fed. Reg. 81:69425–69442). Following the translocation of recently metamorphosed *R. onca* into a pond refugium habitat within the Las Vegas Valley, Nevada (Saumure et al. 2021. *In* P.S. Soorae [ed.]. Global Conservation Translocation Perspectives: 2021. Case Studies from Around the Globe, pp. 76–81. International Union for the Conservation of Nature, Gland, Switzerland), four individuals grew rapidly,

PHOTO BY KEVIN GUADALUPE

FIG. 1. Adult female *Rana onca* #8958 (84 mm SVL, 60 g) about four months after metamorphosis recaptured on 3 October 2018 at the Springs Preserve, Las Vegas, Clark County, Nevada USA.

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FIG. 2. Adult female *Rana onca* #8958 (97 mm SVL, >100 g) recaptured on 7 November 2019 at the Springs Preserve, Las Vegas, Clark County, Nevada USA.

reaching the size of large adults in just over four months. Two recaptured adult females and one male continued to grow and reached record sizes.

In early 2018, eggs from three *R. onca* egg masses were collected from Black Canyon, Lake Mead National Recreation Area, Clark County, Nevada, USA (see map in Bradford et al. 2004, *op. cit.*). Tadpoles were raised in a laboratory setting until metamorphosis was complete. On 29 May 2018, 100 of these recently metamorphosed frogs were released into a newly constructed 0.02-ha pond refugium at the 73-ha Springs Preserve in Las Vegas, Clark County, Nevada, USA (36.17463°N, 115.18406°W; WSG 84). Prior to 1962, this area was inhabited by the extirpated *R. fisheri* (Hekkala et al. 2011. Conserv. Genet. 12:1379–1385). The released juvenile *R. onca* averaged 32 mm SVL.

Mark-recapture efforts started on 3 October 2018, and four large adult *R. onca* (3 females and 1 male) were captured by dipnet, measured, weighed, and marked with passive integrated transponder (PIT) tags (Biomark, Inc., Boise, Idaho, USA). The largest female (#8958; Fig. 1) had a SVL of 84 mm and mass of 60.0 g. This female was recaptured on 7 November 2019 (Fig. 2) and had grown to 97 mm and a mass > 100 g, which exceeded the range of the Pesola spring scales being used. The next largest female (#9052) had a SVL of 81 mm and mass of 62.0 g. When recaptured on 29 September 2020, she had grown to 94 mm and a mass of 87 g. The third smaller female (#8972) had a SVL of 75 mm and mass of 46.0 g; she was not recaptured. The single adult male (#9047) had a SVL of 68 mm and mass of 35.5 g. This frog was recaptured on 27 March 2019, and had grown to 69 mm with a reduced mass of 31.5 g.

Few unambiguous data exist on the growth and size of *R. onca* because the species has been, at times, considered synonymous with *R. fisheri* or *R. yavapaiensis* (Jaeger et al. 2001, *op. cit.*). Wright and Wright (1949. Handbook of Frogs and Toads. Comstock Publishing Company, Ithaca, New York. 640 pp.) measured 78 *R. onca* specimens from within the historical range of the species collected by Linsdale (1940. Proc. Amer. Acad. Arts Sci. 73:197–257). They noted that adults in the collection measured 44–84 mm SVL, with males 44–68 mm and females 51–84 mm. Brennan and Holycross (2006. A Field Guide to Amphibians and Reptiles in Arizona. Arizona Game and Fish Department, Phoenix, Arizona. 150 pp.) listed the maximum SVL for *R. onca* as 89 mm. Thus, female #8958 and male #9047 reached the maximum size reported by Wright and Wright (1949, *op. cit.*) within their first post-metamorphosis year and record size during their second year of growth.

On 27 March 2019, male #9047 was heard calling. Although no egg mass was observed, *R. onca* tadpoles were subsequently documented in the refugium for the first time on 25 April 2019. Thus, time from metamorphosis to reproduction was just under one year for both sexes. The size when female *R. onca* reach sexual maturity is not known but can be reached in males at ≥42 mm SVL (Bradford et al. 2004, *op. cit.*). Based on limited observations at one historically occupied site (Blue Point Spring, Nevada), *R. onca* was thought to attain adult size during the first year (Bradford et al. 2005. *In* Lannoo [ed.]. Amphibian Declines. The Conservation Status of United States Species, pp. 567–568. University of California Press, Berkeley, California).

Although speculative, several factors may have contributed to the growth rates observed. First, the newly created refugium contained no amphibians until the initial release, and the 100 laboratory-raised *R. onca* that were released experienced an estimated 96% mortality in 2018 (Saumure et al. 2021, *op. cit.*). Consequently, limited competition for available resources (i.e., food, cover) among the surviving juveniles may have stimulated growth rates. Secondly, the riparian area around the ponds appeared to have an abundance of food resources for *R. onca*. Of potential importance at the Springs Preserve refugium was a near-continuous diurnal stream of *Apis mellifera scutellata* (Africanized Bees) acquiring water to cool their hives. The bees were readily consumed by juvenile *R. onca* (Bennett et al. 2020. Herpetol. Rev. 51:303–304).

The *R. onca* refugium at the Springs Preserve was established under Landowner Cooperative Agreement #LCA-R01 with the assistance of the Nevada Department of Wildlife (NDOW, Permit #489200) and US Fish and Wildlife Service under the programmatic Relict Leopard Frog Candidate Conservation

Agreement with Assurances. Support for the rearing of *R. onca* was acquired by JRJ at University of Nevada, Las Vegas (UNLV) by the Clark County Desert Conservation Program (Project 2015-UNLV-1550A) to further implement or develop the Clark County Multiple Species Habitat Conservation Plan. Protocols involving live animals were approved by the Institutional Animal Care and Use Committee at UNLV, and authorized under permits by NDOW, the National Park Service, and Lake Mead National Recreation Area.

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***RHINELLA MARINA* (Cane Toad) and *LITORIA CAERULEA* (Australian Green Tree Frog). INTERSPECIFIC AMPLEXUS.** *Rhinella marina* is an amphibian species native to parts of the Americas and has extended its range through human introduction to several different countries, including Australia (de Mello Mendes 2019. Herpetol. Rev. 50:551). Since their introduction in Australia in Northern Queensland, the range of *R. marina* now extends to include northern Western Australia, Northern Territory, northern New South Wales and a large part of Queensland (https://www.environment.gov.au/biodiversity/invasive-species/feral-animals-australia/cane-toads; accessed 9 January 2021). The arrival of *R. marina* can possibly result in detrimental outcomes for native species (e.g., Phillips et al. 2003. Conserv. Biol. 17:1738–1747; Letnic et al. 2008. Biol. Conserv. 141:1773–1782). Despite this, little is known regarding how *R. marina* influences the reproductive success of native amphibians where they have been introduced.

At 1930 h on the 3 January 2021, a male *R. marina* was observed in amplexus with a *Litoria caerulea* (Fig. 1). The observation occurred in Habana, Mackay, Queensland, Australia (21.03036°S, 149.05523°E; WGS 84) on a gravel driveway located ca. 70 m uphill from a manmade, ephemeral dam, where *L. caerulea* had been recorded calling in the previous month. Water was present in the dam at the time of the observation.

Interspecific amplexus, which may interfere with reproductive success, has been recorded by *R. marina* for species outside of Australia (Schuman and Bartoszek 2019. Herpetol. Rev. 50:757; de Mello Mendes 2019, *op. cit.*), however, this is the first reported case of interspecific amplexus involving *R. marina* and *L. caerulea*. Species within the genus *Litoria* have been recorded in amplexus with different species (e.g., *L. cooloolensis* with both *L. olongburensis* and *L. rubella*; Lowe and Hero 2011. Herpetol. Rev. 42:585–586). However, to the best of my knowledge, this is the first recorded case of *R. marina* in amplexus with a member of the genus *Litoria*. Future observations of *R. marina* displaying interspecific amplexus need to be documented in order to fully understand how *R. marina* may be interfering in the reproductive success of native Australian anurans.

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***SCINAX TRIPUI*. DEFENSIVE BEHAVIOR.** Anurans display a wide variety of defensive behaviors (Toledo et al. 2011. Ethol. Ecol. Evol. 21:1–25). One rare posture displayed by frogs is leg interweaving, being reported for only a few species (Ferreira et al. 2019. Behav. Ecol. Sociobiol. 73:1–21; Souza et al. 2020. Herpetol. Notes 13:667–669). This behavior consists of interlacing the limbs, sometimes over the dorsal surface, and is related to presenting aposematic coloration, secreting toxins, feigning injury, or disrupting the silhouette of the amphibian to avoid detection or avoid being swallowed by a predator (Channing and Howell 2003. Herpetol. Rev. 34:52–53; Toledo et al. 2011, *op. cit.*; Lourenço-de-Moraes et al. 2014. Herpetol. Notes 7:391–392; Rojas-Padilla et al. 2019. Herpetol. Rev. 50:113–114; Ferreira et al. 2019, *op. cit.*).

Scinax tripui is a hylid occurring in the Mantiqueira Mountain Range and the Quadrilátero Ferrífero's Mountain Complex, in

FIG. 1. *Rhinella marina* in amplexus with a *Litoria caerulea* in Queensland, Australia.

PHOTO BY LEANDRO A. OLIVEIRA

FIG. 1. A female *Scinax tripui* displaying leg interweaving as a defensive behavior at Serra do Brigadeiro, Municipality of Ervália, Minas Gerais, Brazil.