

the family Belostomidae are predaceous aquatic insects from medium to large size, that colonize many types of aquatic habitats in tropical and temperate regions (Lauck and Menke 1961. *Ann. Ent. Soc. Amer.* 54:644–657). Here, we report the predation of an adult frog, *Barycholos ternetzi*, by a nymph of a water bug (*Lethocerus* sp.).

On 14 Oct 2005 at 2130 h, in a stream at the Floresta Nacional de Silvânia, State of Goiás, Brazil, a juvenile water bug was observed jumping toward an adult *B. ternetzi*. When the water bug was disturbed by our presence, it captured the frog and dove into the water to a depth of ca. 15 cm. Submerged in the water, the water bug remained grasping the frog from its ventral region (Fig. 1), which was trying to escape. A digital photograph was deposited with the Laboratory of Animal Behavior of the Universidade Federal de Goiás.

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BUFO NEBULIFER (Coastal Plains Toad). **URBAN ROAD MORTALITY.** Although motorways may affect wildlife populations investigators have performed few studies on the road mortality of wildlife (Lode 2000. *J. Human Environ.* 29:163–166), especially herpetofauna. The numbers of wildlife casualties on roads and railways have consistently grown as traffic, vehicle speeds, and their infrastructure networks have increased (Seiler et al. 2004. *Wildl. Biol.* 10:183–191). Amphibians and reptiles tend to be particularly susceptible to the ecological effects of roads (Forman and Alexander 1998. *Ann. Rev. Ecol. Syst.* 29:1–207). Road mortality along a 3.6 km section of a two-lane paved road adjacent to Big Creek National Wildlife Area on Lake Erie frequently included numerous amphibians (7 species, 30,034 individuals) and reptiles (10 species, 864 individuals; Ashley and Robinson 1996. *Can. Field Nat.* 110[3]:403–412). In most previous studies of road mortality, the roads crossed or were in some way associated with natural areas, thus providing significant data associated with large populations of amphibians and reptiles.

The Bowie Co., Texas study site was adjacent to Texas A&M University-Texarkana and Texarkana College on Virginia St. and Coolidge St. in Texarkana. Both paved, heavily trafficked, two-lane city-streets run parallel with, adjacent to, and approximately equidistant from Cow Horn Creek (a small stream that traverses Texarkana and receives much urban runoff). These streets differ in that Coolidge St. is lined by a subdivision on the side opposite Cow Horn Creek. Virginia St. is lined by a grassy field and the immediate area provides more habitat for wildlife. The roads were surveyed on foot for amphibian and reptile mortality on a 1.6 km stretch of Virginia St. on 1, 7, 14, 17, 20, and 28 June 2005. A 1.6 km stretch of Coolidge St. was surveyed on 17, 20, and 27 June 2005. Mean ambient temperature during surveys was 30.5°C (SD = 6.44). Data were tabulated and analyzed using MiniTab 13.30

Statistical Software (MiniTab, Inc., State College, Pennsylvania). This study is the first to examine *Bufo nebulifer* road mortality associated with movements to and from a breeding chorus.

Bufo nebulifer (N = 57) was the only species associated with road mortality in this study. Mortality data were normally distributed (Anderson-Darling: $A^2 = 0.604$, $P = 0.080$). Road mortality appeared higher on Virginia St. (N = 53, mean = 8.83 toads/survey, SE = 3.40) than on Coolidge St. (N = 4, mean = 1.33, SE = 1.33), but these differences were marginally significant (Two-sample T-test: $t = -2.05$, $df = 6$, $P = 0.086$; Neter et al. 1996. *Applied Linear Statistical Models*, 4th ed. McGraw-Hill, Boston, Massachusetts). The condition of specimens after mortality made sex determination difficult to impossible in most cases.

These data stimulate speculation regarding the influence of human habitation on habitat use by amphibians, particularly *B. nebulifer*. These data also suggest that *B. nebulifer* was originating from and returning to the grassy fields when mortality occurred. This implies that the breeding chorus in Cow Horn Creek was composed mostly of individuals originating from the grassy fields and that this habitat is important for the survival of this species in the immediate area. To deduce what influences undeveloped grassy fields and similar habitats occurring in urban environments have on sustaining urban populations of *B. nebulifer* and other herpetofauna will require more extensive studies.

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BUFO WOODHOUSII (Woodhouse's Toad). **SURVIVAL.** Records that demonstrate maximal natural longevity are virtually nonexistent for anurans, or amphibians in general. Records from captive specimens have demonstrated longevities as high as 36 yr for *Bufo bufo* (Duellman and Trueb 1986. *Biology of Amphibians*. McGraw-Hill Book Co., New York. 670 pp.). Here, we describe the longevity of a wild *Bufo woodhousii* that was initially monitored in 1978 (Engeman and Engeman 1996. *Northwest. Nat.* 77:23; Engeman and Engeman 2003. *Northwest. Nat.* 84:45), including 9 yrs of records on its emergence from hibernation (Engeman and Engeman 1996. *op. cit.*). The toad first appeared as an adult in 1978 in a basement window well of a home in suburban Denver, Colorado. It was observed alive every year to 2003 when in July it was observed dead in the window well of undetermined cause. Given that the toad was an adult when first observed, and that it was observed alive in 26 successive years, implies the toad was at least 27 years old at the time of its death. This toad was not a captive specimen, but the window well site in which it lived probably offered protection from most potential predators and also probably provided reliable arthropod food sources and moisture, thereby imparting optimal circumstances for maximal longevity. We could not find reference to a greater longevity for a wild amphibian.

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COPHIXALUS ORNATUS (Ornate Nursery Frog). **CHYTRIDIOMYCOSIS.** Chytridiomycosis is an emerging infectious disease that has been linked to amphibian population declines worldwide (Berger et al. 1998. Proc. Natl. Acad. Sci. 95:9031–9036). The chytrid fungus *Batrachochytrium dendrobatidis*, causative agent of chytridiomycosis, has an incredibly broad host range: it is currently known to infect over 150 amphibian species spanning two orders and 14 families (Speare and Berger 2004. www.jcu.edu.au/school/phtm/PHTM/frogs/chyglob.htm, updated with recently published accounts). Only seven of these species, however, are direct developers that bypass the free-swimming tadpole stage (*Eleutherodactylus cruentus*, *E. emcelae*, *E. melanostictus*, *E. karlschmidti*, *E. saltator*, *E. coqui*, *Leiopelma archeyi*). Tadpoles are thought to be an important life stage with respect to disease transmission: they stand a high chance of being exposed to the fungus' aquatic zoospores, and they do not succumb to chytrid infections, making them likely disease reservoirs (Daszak et al. 1999. Emerg. Inf. Dis. 5:735–748). Currently, there are no records of chytridiomycosis in Australian direct-developing frog species.

On 23 Sept 2005, KMK captured a male *Cophixalus ornatus* (Microhylidae) that was calling while perched on a leaf 2 m from the edge of Babinda Creek (70 m elev.), in Queensland, Australia. KMK firmly ran a cotton swab over the frog's dorsum, ventrum, sides, thighs, and the webbing of its feet, and used quantitative PCR (Boyle et al. 2004. Dis. Aquat. Org. 60:141–148) to test for the presence of *Batrachochytrium dendrobatidis*. Thirty-one chytrid zoospores were detected on the swab. This represents the first record of chytridiomycosis in an Australian direct-developing frog species, and only the eighth record worldwide.

There are no published reports of population declines in *C. ornatus*, a species whose large geographic range encompasses the localities of many of north Queensland's recent amphibian declines and disappearances, including that of *Taudactylus acutirostris* (the last known individual of which died of chytridiomycosis in 1995; Wright et al. 2001. J. Herpetol. Med. Surg.). Our finding of chytridiomycosis in *C. ornatus* supports the hypothesis that while all frog species might be exposed to the disease, there are ecological differences among sympatric species that might lead to different disease outcomes, ranging from no effect on the population to mass mortality events and local extinctions (Daszak et al. 1999, *op. cit.*; Hero et al. 2005 J. Zool. Lond. 267:221–232).

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CRINIA SIGNIFERA (Eastern Froglet). **REPRODUCTION.** Multiple males simultaneously in amplexus with the same female is rarely reported in anurans. One of the species in which this behaviour is well documented is the quacking froglet *Crinia*

georginia (Roberts et al. 1999. Anim. Behav. 57:721–726). Here I report multiple male amplexus for another member of the genus. *Crinia signifera* is the most widespread and abundant frog in eastern Australia. The observation reported here was made in wet sub-alpine flat heathland in the Thomsons Run area of the Mount Baw Baw Plateau on the 18 Nov 2003. Morning conditions had been clear and sunny, however by the time the amplexing frogs were found, conditions were cloudy and cool.

At ca. 1400 h a female *C. signifera* was observed on the surface of a pool in a sphagnum bog. Upon noting my presence, she attempted to dive into the detritus at the bottom of the pond. She could not dive successfully and upon closer examination two males were found to be clasping her. The first male was in inguinal amplexus, while the second male was clasping in a slightly lateral position with one arm around the hind leg of the female and other arm around the body of the first male. Both males were approximately the same size while the female was at least twice as large. The trio was observed for ten minutes after which they were disturbed and the second male released his hold and dove into the detritus. There were numerous eggs on the base of the pond where the female was first observed. I did not observe any further instances of multiple male amplexus in the remaining 13 days of fieldwork, although amplexing pairs were observed on three other occasions. Upon conversation with other workers it was mentioned that they had also observed instances of multiple males amplexing one female (Woodford, pers. comm.; Hollis, pers. comm.).

Multiple males in amplexus with a single female have not previously been reported in *C. signifera*. Two factors could potentially increase the likelihood of this behaviour occurring in high altitude populations. First this observation was made at peak breeding time for *C. signifera* on the Mt. Baw Baw Plateau. Four weeks earlier the area had been covered in snow, while several weeks later the number of frogs observed was clearly reduced. By mid December the ponds in the sphagnum bog had begun to dry up. This explosive breeding pattern may increase the potential for multiple males to be in the close proximity with single females. Secondly, the diurnal breeding behaviour of highland *C. signifera* may also increase the probability of males seeing females. Conversely, diurnal breeding may simply increase the potential for the behaviour to be noted by observers.

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ELEUTHERODACTYLUS JOHNSTONEI (Johnstone's Whistling Frog). **HABITAT.** An increasing number of reptile and amphibian species have been documented to take advantage of the novel habitat provided by human night lighting (e.g., Perry and Lazell 2000. Herpetol. Rev. 31:247). Nonetheless, information is lacking for most species. Only one species of *Eleutherodactylus* is known to utilize the night-light niche (Henderson and Powell 2001. Carib. J. Sci. 37:41–54). *Eleutherodactylus johnstonei* is associated with humans in the Netherlands Antilles (Powell et al. 2005. The Reptiles and Amphibians of the Dutch Caribbean: St. Eustatius, Saba, and St. Maarten. St. Eustatius National Parks