

CONSERVATION RESEARCH REPORTS

Effects of Rattlesnake Roundups on the Eastern Diamondback

Gassed out of Gopher Tortoise burrows for roundups, the Eastern Diamondback Rattlesnake (*Crotalus adamanteus*) has declined in the southeastern part of the United States during the last two decades. Initially held for excitement and adventure and as a competition to diminish snake populations, roundups today are being motivated by economic concerns. Snake venom, flesh, and skin are in high demand. MEANS (2009. *Herpetological Conservation and Biology* 4:132–141) analyzed the data on size and numbers of rattlesnakes for four roundups in the southeastern U.S. (Opp, Alabama and Whigham, Fitzgeralds, and Claxton, Georgia) spanning a period of 50 years (1959–2008). Both numbers of snakes and weights of the largest snakes that participants turned in annually declined in the last two decades. Statements by roundup officials and rattlesnake hunters support that roundup hunting has depleted local rattlesnake populations and forced hunters to travel farther to collect snakes in recent years. Declining maximum sizes of snakes reflect possible age-class truncation, whereby collectors cull older, larger individuals of this long-lived species. Roundups reduce their populations and perpetuate negative attitudes about venomous snakes, whose skins and flesh are subject to high commercial demand. Before the Eastern

Diamondback Rattlesnake becomes threatened throughout its range, state wildlife agencies should either ban the taking of individuals or regulate their taking by developing bag limits and seasonal harvest guidelines. The Eastern Diamondback Rattlesnake would further benefit by refocusing extant roundups as wildlife festivals in which participants celebrate rattlesnakes and other wildlife rather than exploit them. Alternatively, roundups could change their theme entirely (such as one roundup that became a Wild Chicken Festival).

Imperiled Map Turtles in Mississippi

Species distribution and abundance is often difficult to delineate due to species factors (e.g., crypsis, low abundance) or sampling techniques. Species of the genus *Graptemys* are primarily riverine turtles and have historically been subject to declines because of anthropogenic changes to their habitats. Therefore, to better inform conservation efforts, SELMAN AND QUALLS (2009. *Herpetological Conservation and Biology* 4:171–184) thoroughly studied the distribution and abundance of two imperiled *Graptemys* species within the Pascagoula River System in Mississippi: Yellow-blotched Sawbacks (*Graptemys flavimaculata*) and Pascagoula Map Turtles (*Graptemys gibbonsi*). They studied turtle populations in 17 counties in south-



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eastern Mississippi using four methods: Mark-resight population surveys (three populations), bridge surveys (160 bridge crossings), basking density surveys without marked individuals (23 localities), and trapping (three populations). *Graptemys flavimaculata* was present throughout its historical range, as well as in new drainage localities. Pascagoula Map Turtles (*Graptemys gibbonsi*; bottom) also were found in many new localities and occurred in most of the drainages of the Pascagoula River system.

eastern Mississippi using four methods: Mark-resight population surveys (three populations), bridge surveys (160 bridge crossings), basking density surveys without marked individuals (23 localities), and trapping (three populations). *Graptemys flavimaculata* was present throughout its historical range, as well as in new drainage localities; abundance in historically surveyed areas was generally higher than previous surveys had reported. *Graptemys gibbonsi* also was found in many new localities and occurred in most of the drainages of the Pascagoula River system. However, abundance was much lower for *G. gibbonsi* than for *G. flavimaculata* throughout the system and individuals were not found in several historical localities, suggesting localized extirpations. The authors recommended that *G. gibbonsi* be listed as state Endangered in Mississippi and Louisiana, U.S. federally listed as Threatened, and upgraded to Endangered (EN) under IUCN listing guidelines. Future conservation measures should extend to protect additional riparian habitat throughout the Pascagoula River system and future surveys of other *Graptemys* species are warranted due to the imperiled status of this genus.



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Rattlesnake roundup hunting has depleted local Eastern Diamondback Rattlesnake (*Crotalus adamanteus*) populations and forced hunters to travel farther to collect snakes in recent years.

Demographics of an Isolated Population of a Threatened Salamander in Illinois

Amphibian populations that use small isolated wetlands often are small in size, susceptible to stochastic extinction processes, and have little to no contact with other populations. One can ascertain the persistence of such populations only by obtaining data that allow the prediction of future changes in a population's size and a propensity to achieve a sustainable number of individuals. The number of metamorphosing larvae leaving a pond predicts the viability of a salamander population, and thus, the number recruited into the terrestrial adult population. Jefferson Salamanders (*Ambystoma jeffersonianum*) are listed as a threatened species in Illinois, occurring at fewer than 15 ponds statewide. In 2004 and 2005, at an isolated breeding pond in Lincoln Trail State Recreation Area, **MULLIN AND KLUEH** (2009. *Herpetological Conservation and Biology* 4:261–269) determined the number of egg masses, average percentage of successfully hatched eggs, and number of juveniles leaving the pond. They incorporated those data into a matrix for a stage-based population model, which predicted that, on average, the population at the LTSRA pond would persist for four more years, with survivorship from larvae to juvenile being the



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Studies have projected that populations of Jefferson Salamanders (*Ambystoma jeffersonianum*) in ponds at the Lincoln Trail State Recreation Area in Illinois would persist for only four more years.

most important parameter. Increasing survivorship during the larval period increased abundance as well as average persistence time. Active management at the breeding pond to increase the time available for suc-

cessful metamorphosis might facilitate persistence of the salamander at this site.

Invasive Cane Toads Increase Mortality of Australian Varanids

Exotic animal and plant species introduced into the Australian continent often have imparted catastrophic effects on the indigenous fauna and flora. Proponents of biological control introduced the South American Cane Toad (*Bufo marinus* [= *Rhinella marina*]) into the sugar cane fields of Queensland in 1935. The Cane Toad is one of the most toxic bufonids, and when seized by naïve Australian predators, the toxin usually kills the attacker.



JEANETTE COVACEVICH

Nine of nine radio-tracked Yellow-spotted Goannas (*Varanus panoptes*) were found dead in August 2006, most likely after attempting to feed on invasive Cane Toads (*Bufo marinus* [= *Rhinella marina*]).

Australian varanid lizards are particularly susceptible to Cane Toad toxins. Prior to the Cane Toad invasion of the Adelaide River floodplain of the Northern Territory of Australia, **UJVARI AND MADSEN** (2009. *Herpetological Conservation and Biology* 4:248–251) recorded a very low annual mortality (2 deaths among 20 lizards over 3 years) of adult male radio-tagged Yellow-spotted Goannas (*Varanus panoptes*). After the arrival of the toads in October 2005, all (9 of 9) radio-tracked lizards were found dead in August 2006, most likely after attempting to feed on toads. Those results suggest that invasive Cane Toads place naïve adult male Yellow-spotted Goannas at risk of very high mortality (possibly >90%). This increase in mortality could reduce the genetic diversity and hamper long-term survival of these large carnivorous lizards.

Jamaican Iguanas Bred in North America

The Jamaican Iguana (*Cyclura collei*) was considered to be extinct until its rediscovery in 1990 in the Hellshire Hills region of Jamaica. Between 1994 and 1996, several wild caught juveniles were placed in six North American zoological institutions including the Indianapolis Zoo. The intent was to establish a self-sustaining captive population outside of Jamaica in order to serve as an ancillary population should the wild numbers decline. **SEARCY ET AL.** (2009. *Zoo Biology* 28:343–349) manipulated several environmental parameters such as temperature, humidity, photoperiod, and diet to encourage reproduction in captivity. In 2006, two clutches of eggs were deposited by two separate females for a total of 35 eggs. Twenty-six eggs were fertile and 22 hatched after a 76–83-day incubation at 30.3–30.8 °C (86.5–86.7 °F). The average weight of the neonates was 26.4 g and the average total length was 21.7 cm. This successful reproduction of *C. collei* constitutes the first North American hatching for this species. Environmental parameters, incubation techniques, and neonate morphometry can serve as a baseline for further propagation of the species. This represents a positive milestone for the continuing conservation of this critically endangered species.



JOHN BINNS

The successful reproduction of Jamaican Iguanas (*Cyclura collei*) at the Indianapolis Zoo constitutes the first North American hatching for this species.