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Non-Native Amphibians and Reptiles in Iowa

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Only a few species appear as introductions into Iowa in the last 30 years. The bullfrog, *Rana catesbeiana*, was systematically introduced along with fish stocked from hatcheries in the 1930s and this species continues to spread in northern Iowa where it poses a hazard to smaller frogs. Turtles sold as pets, primarily map turtles (*Graptemys pseudogeographica* and *G. geographica*) and red-eared turtles (*Trachemys scripta*) continue to be found in scattered ponds, usually rural, throughout the state. The eastern box turtle (*Terrapene carolina*) has been reported in or on the edge of most major Iowa cities even though no breeding population is known here. A pregnant Arizona black rattlesnake (*Crotalus viridis cerberus*) found in a vacant lot in southeastern Des Moines, probably escaped from a snake breeder in the area. The continued existence of a population of salamanders native to the Pacific Northwest that at least temporarily established in Davis County after a lumber train derailed there in 1923, is unknown. The spread of the plains spadefoot (*Spea bombifrons*) throughout the loess hills since 1944 may be an example of a natural introduction. The northern movement of the plains leopard frog (*Rana blairi*) and the fertilizer-stimulated growth of cattails in shallow marshes that may be impacting survival of Blanding's turtle (*Emydoidea blandingi*) may be the indirect result of human modification of the environment.

INDEX DESCRIPTORS: Iowa herpetology, introduced amphibians, introduced reptiles.

The potential for an introduced species to become established declines as the number of limiting factors increases. The severe temperature swings, presence of roads around almost every square mile of the state, and agricultural and urban destruction of habitat conducive to wildlife make the environment of Iowa inhospitable for the vast majority of potential introductions of amphibians and reptiles. This paper constitutes a review of published accounts of introductions and summarizes the introductions encountered in my 30 years of herpetological surveying of the state. Throughout this period telephone calls, many from county conservation board workers or other field biologists, have been received reporting obviously non-native species. Usually no record was kept of these and only rarely was it possible to examine the specimen. The accounts presented herein are those in which I have the greatest confidence. However, dates are often approximate and other inaccuracies are possible.

ACCOUNTS OF INTRODUCED SPECIES

The species found in the state in areas where they are not native are listed in Table 1. One of these that could still exist in Iowa is a salamander that was described as a new species, *Ambystoma stejnegeri*, by Ruthven (1912) from Bloomfield in Davis County. Several specimens were taken and deposited in the University of Michigan Museum of Zoology. The holotype and paratypes were deposited in the US National Museum. These specimens have since been identified as the long-toed salamander (*Ambystoma macrodactylum*), a species native to the Pacific Northwest. It is rumored that they became established in Iowa as a result of a train wreck that dumped a load of logs from Washington State. I have no evidence that suitable habitat remains in the area but the multiple specimens involved suggest that the population could have become established for a period.

Two amphibians whose range changes are probably the result of natural invasion are the plains spadefoot (*Spea bombifrons*) and the plains leopard frog (*Rana blairi*). The plains spadefoot was discovered in Iowa near Council Bluffs by Huggins (1971) in 1967 approxi-

mately 23 years after Bailey (1944) completed four years of extensive studies of amphibians on the region. Mabry and Christiansen (1991) found the animal to be abundant in all of the counties of the Loess Hills by 1990. The rapid expansion of the range of this species in the state seems to be a good example of a natural introduction into an ideal habitat. A second, less prominent natural range expansion involves the plains leopard frog that appears to be replacing the northern leopard frog (*Rana blairi*) and expanding its range to the north (Baness 1997).

Bullfrogs (*Rana catesbeiana*) were introduced throughout the 1930s as a bonus to farmers who stocked their farm ponds with fish from the state fish hatcheries. They were an additional food source during those difficult times and the biological community was unaware of the potential damage this species does when introduced to areas where the existing community is not adapted to it. Lannoo et al. (1994) suggested that invading bullfrogs may have contributed to the decline in frogs he noted in Dickinson Co. It has been evident in my 30 years of work in the state that when the bullfrog population is high, especially in northern Iowa, it is rare to find significant numbers of other frog species sharing the pond-side habitat.

Turtles, commonly kept as pets, are often released in urban ponds when their owner is tired of them. Red-eared turtles (*Trachemys scripta elegans*) have been reported to me several times from areas outside their range in Iowa. I have evidence, however, only of the two listed in Table 1. The false map turtle (*Gratemys pseudogeographica*) from Whitmer pond is another example of establishment of a released captive. It is common for travelers to pick up box turtles and bring them to Iowa. Both eastern and ornate box turtles are probably regularly brought to Iowa and the list of localities of the eastern box turtle, a species not known to exist as a natural population in Iowa, shows how the specimens found tend to be associated with cities. Because of scattered natural populations, ornate box turtle introductions are harder to detect.

Snakes from outside Iowa are sometimes kept as pets or for other purposes. When these escape, they often receive attention. Guthrie

Table 1. Non-native amphibians and reptiles found in Iowa. Many of the *Terrapene carolina* are three-toed box turtles, *T. carolina triunguis*. Dates are often approximate because in many cases no permanent record was kept and the data are from memory.

Species	Common name	Location	Date
<i>Ambystoma macrodactylum</i>	Long-toed salamander	Bloomfield, Davis Co.	1912
<i>Spea bombifrons</i> *	Plains spadefoot	Loess Hills	1952-present
<i>Rana blairi</i> *	Plains leopard frog	Extending northward in S. Iowa	1970-present
<i>Rana catesbeiana</i>	Bullfrog	NW 3/4 of Iowa	1930-present
<i>Trachemys scripta elegans</i>	Red-eared turtle	Inland Clinton Co	1989
<i>Trachemys scripta elegans</i>	Red-eared turtle	Farm Pond, S. Cedar Co.	1978
<i>Graptemys pseudogeographica</i>	False map turtle	Whitmer Pond, Des Moines, Polk Co.	1973
<i>Terrapene carolina</i>	Eastern box turtle	S. Iowa City, Johnson Co.	1990s
<i>Terrapene carolina</i>	Eastern box turtle	S. Muscatine, Muscatine Co.	1971
<i>Terrapene carolina</i>	Eastern box turtle	Sioux City, Woodbury Co.	1980s
<i>Terrapene carolina</i>	Eastern box turtle	Council Bluffs, Pottawattamie Co.	1998
<i>Terrapene carolina</i>	Eastern box turtle	Sand Creek Wildlife Area, Dekatur Co.?	1980s
<i>Boa constrictor</i>	Central American boa	grocery stores, Des Moines, Polk Co.	1923
<i>Python molurus</i>	Burmese python	Vacant lot, Des Moines, Polk Co.	1999
<i>Crotalus viridis cerberus</i>	Arizona black rattlesnake	Vacant lot, Des Moines, Polk Co.	1991
<i>Caiman crocodilus</i>	Common caiman	Saylorville reservoir, Polk Co.	1980s?

*Natural introductions or range expansions; all others are believed to be released captives

(1923) reported on Central American boas (*Boa imperator* = *Boa constrictor*) frequently appearing in bananas shipped to local grocery stores. They, of course would not survive Iowa's winters. In 1991 a "large bullsnake" in a vacant lot in Des Moines turned out to be a 40 pound (18.14 kg) Burmese python (*Python molurus*). Its owner never appeared to collect the snake. The same was true for a large Arizona black rattlesnake (*Crotalus viridis cerberus*) that appeared in a backyard in southeast Des Moines in 1991. Shortly after I captured the snake, it gave birth to nine young. Whether it would have survived Iowa's winters is questionable unless it or its young found their way into someone's basement.

"Pet alligators" appear in park ponds and sewers throughout the United States. These usually turn out to be Central American caiman (*Caiman* sp.) and have little chance of surviving Iowa's winters. The only record I know of in Iowa appeared in Saylorville reservoir (Table 1).

CONCLUSIONS

Few non-natural introductions pose a threat to Iowa's native species. With any introduction comes the risk of disease to which the native forms lack resistance. There is some evidence that some of Iowa's frogs may be in decline because of disease, but there is little evidence that the disease arrived through introduced species. The greatest damage from any herpetological introduction in Iowa appears to be the local elimination of native frogs as a result of huge populations of introduced bullfrogs. Introduced red-eared and false map turtles could become established in appropriate habitats in

southern Iowa and could introduce disease as well as genes that could alter the genetic makeup of natural populations.

Escape of captive snakes, especially venomous or very large ones could pose a threat to humans. No elapid would survive Iowa's winters, but many viperids could. Whether they last that long or not, a venomous snake giving birth to young in a large city could pose a serious threat, especially to young children that may not be able to report a bite or have the report believed by an adult. Appropriate antivenom may not be available and without the exotic snake in hand, it may not be clear which or how much antivenom to use.

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