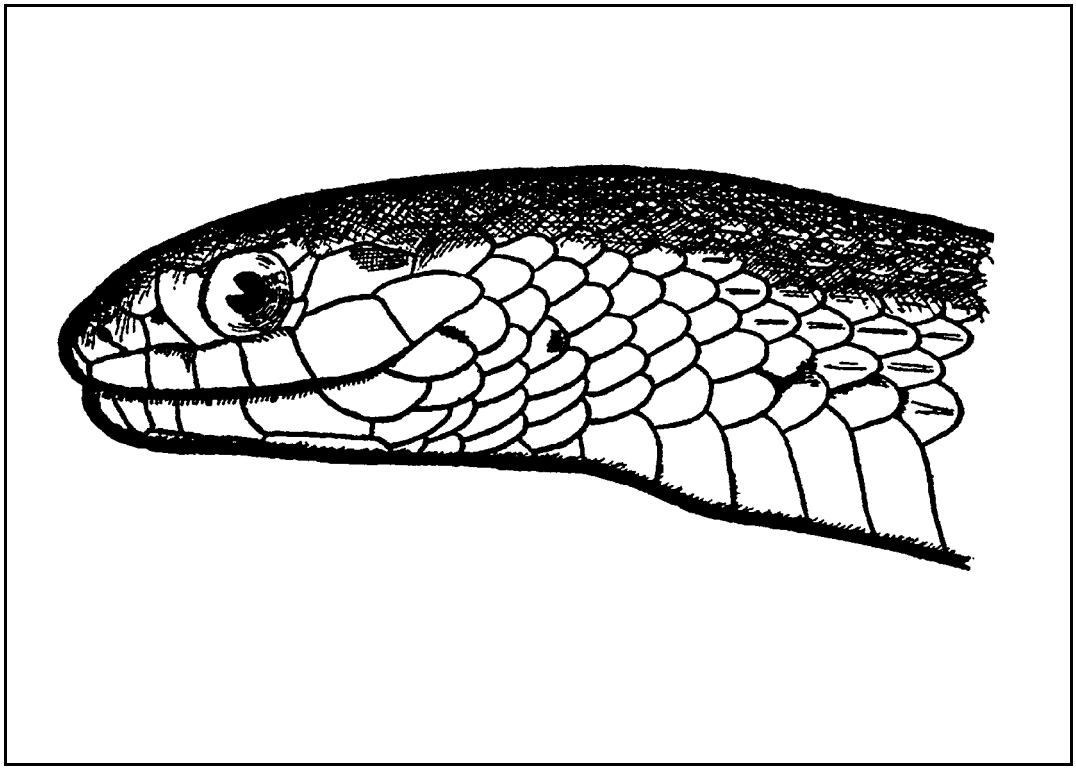
# BULLETIN
## of the
# Chicago Herpetological Society

**Volume 40, Number 12**
**December 2005**



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**Cover:** Butler's gartersnake, *Thamnophis butleri*. Drawing from *The Amphibians and Reptiles of Wisconsin* by T. E. B. Pope and W. E. Dickinson, Bulletin of the Public Museum of the City of Milwaukee, Volume 8, Number 1, 1928.



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**The *Bulletin of the Chicago Herpetological Society*** (ISSN 0009-3564) is published monthly by the Chicago Herpetological Society, 2430 N. Cannon Drive, Chicago IL 60614. Periodicals postage paid at Chicago IL. **Postmaster:** Send address changes to: Chicago Herpetological Society, Membership Secretary, 2430 N. Cannon Drive, Chicago IL 60614.

*Bull. Chicago Herp. Soc. 40(12):221-227, 2005*

# Use of Upland Habitat by Butler's Gartersnake (*Thamnophis butleri*)

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**Abstract**

Butler's gartersnake, *Thamnophis butleri*, is a state-threatened species in Wisconsin. This species occupies open-canopy habitat, including both wetlands and adjacent uplands, but very little is known about the extent of use of upland habitats by the Butler's gartersnake. We studied how far *T. butleri* ranges into upland habitats adjacent to wetland hibernacula in southeastern Wisconsin. We found that 25% of 329 observations of *T. butleri* were within 63 ft (19 m) of a wetland edge; 50% within 138 ft (42 m), and 75% within 238 ft (72 m). These observations provide an ecological basis for establishing protected buffer zones around wetlands known to support *T. butleri* populations. Observations of the common gartersnake, *Thamnophis sirtalis*, in the same habitat are compared with observations of *T. butleri*.

## Introduction

Butler's gartersnake (*Thamnophis butleri*) is a threatened species in the state of Wisconsin, protected under the state's Endangered Species Act (Christoffel et al., 2000). Very few studies have been conducted on this species, and little is known about its ecology and life history in Wisconsin. The geographic distribution of *T. butleri* includes "Ohio, extreme southern Ontario, and eastern Michigan to central Indiana" (Conant and Collins, 1998). The disjunct populations at the fringe of the species' range in Wisconsin occur only in the far southeastern part of the state, namely in Milwaukee, eastern Waukesha, southeastern Washington, and southern Ozaukee counties (Vogt, 1981).

*T. butleri* displays a strong affinity for the edges of the wetlands in which it hibernates, often in burrows of the prairie crayfish (*Procambaris gracilis*). Carpenter (1952) found that during warmer months the snake inhabits primarily dense grass adjacent to the wetland used as a hibernaculum. However, *T. butleri* can also range into seasonally dry upland habitat as long as standing water and dense moist grass are available nearby (Catling and Freedman, 1980). Carpenter (1952) found that *T. butleri* ranges on average about 400 ft (122 m) from a wetland edge, with a maximum range 1000 ft (305 m). Freedman and Catling (1979) reported that only a small percentage of individuals range > 400 m. Carpenter (1952) reported a home range size of about 2 acres (0.08 ha), similar to that of *T. sirtalis* (Carpenter, 1952).

It is hypothesized that *T. butleri* is not limited to wetland edges because of limited abilities to disperse from wetland hibernacula (Catling and Freedman, 1980). Instead, *T. butleri* may not be confined so much by the actual distance away from the wetland edge, as by its habitat preference for the vegetation typically associated with wetland margins.

Wisconsin's *T. butleri* population exists as scattered, probably isolated, subpopulations. *T. butleri* subpopulations in Wisconsin are centered on wetland hibernacula, and finding individuals outside of these localized populations is quite rare (Minton, 1944). Where present, however, this species often exists at high densities (Freedman and Catling, 1978), and it can outnumber populations of other coexisting snake species (Catling and Freedman, 1980; Carpenter, 1952). These life history traits of *T. butleri* may prevent individuals from dispersing away from a deteriorating habitat, (Carpenter, 1952; Freedman and Catling, 1979). In addition, development in Wisconsin has separated most *T. butleri* populations by roads, where dispersing snakes typically experience high roadside mortality rates (Bonnet et al., 1999). Furthermore, *T. butleri* shows a behavioral avoidance of roads (Catling and Freedman, 1980).

Interbreeding with the closely related species plains gartersnake (*Thamnophis radix*) is also a conservation concern for *T. butleri* (Casper, pers. com.). The current interaction between the two snakes is suspected to be a result of the recent extension of *T. radix*'s range (Schmidt, 1938). Ford (1982) reports that in a study of pheromone trails left by female snakes, male *T. butleri* were unable to distinguish between the chemical trail secreted by a female *T. butleri* and a female *T. radix*. If *T. radix* continues its northward expansion, genetic dilution of the *T. butleri* gene pool may become a serious concern. Davis (1932) hypothesizes that *T. butleri* was once found in the areas between the currently disjunct Wisconsin populations and Indiana populations before *T. radix* expanded.

The most important threat to *T. butleri*, however, is the rapid loss of wetlands and adjacent habitats through development. Carpenter (1952) indicated that *T. butleri* was decreasing in Wisconsin because of its highly specific habitat demands and human disturbance of the landscape. Smith and Minton (1957) reported that Butler's gartersnakes were "well on their way to extinction" in the states of Indiana and Illinois. Because of the current building boom in southeastern Wisconsin, developers are increasingly interested in building on lands adjacent to wetlands, which could impact *T. butleri* habitat. This desire to develop wetland sites occupied by *T. butleri* has led to a clash between conservation agencies and developers (Rathmann, 2002a,b) and forced numerous construction delays and reconfigurations (Galvin, 2002a,b).

Current state regulations adequately protect wetland areas

(Hay, 2003), but the adjacent uplands remain unprotected unless they are occupied by *T. butleri* (Hay, 2003). A central issue in protecting upland habitat for *T. butleri* is how far individuals range from a wetland edge (Hay, 2003). The Wisconsin Department of Natural Resources (DNR) has recommended a maximum buffer zone of 180 ft (55 m) and minimum buffer zone of 120 ft (35 m) at sites where *T. butleri* are present, wherein no construction activities are allowed without conforming to special conservation measures. This means that the DNR has leeway in recommending buffer zones on an individual case basis. Other methods for limiting incidental take of snakes during construction activities, for protecting habitat by installing silt fencing, and for restoring damaged habitat are required at development sites occupied by *T. butleri*. The DNR's buffer zone is somewhat arbitrary, however, as there have been no studies describing the actual extent to which *T. butleri* ranges into upland habitats in Wisconsin (Casper, pers. com.).

In this study we address the critical lack of knowledge regarding the extent of *T. butleri*'s use of upland habitats adjacent to wetland hibernacula. The results will increase management effectiveness by basing buffer zone regulations upon scientific evidence. We also examined the seasonal aspect of upland habitat use by *T. butleri* in order to define the periods when snakes are active and vulnerable to incidental take by construction activities. Additionally, we compare density of *T. butleri* in relation to *T. sirtalis* in habitats occupied by *T. butleri* populations.

**Methods**

To determine the extent to which upland habitat is used by the Butler's gartersnake, we studied six separate Butler's populations. Artificial cover objects (ACOs) are a standard survey technique to detect snakes, which seek shelter and warmth under these ACOs when placed on the ground in potential habitat (Kjoss and Litvaitis, 2001). Although black asphalt roofing and corrugated tin roofing may yield higher catch per unit effort (CPUE) for the related *T. sirtalis* (Engelstoft and Ovaska, 2000), we used plywood boards for this study. *T. butleri* is known to use these plywood cover boards for shelter during the night (Casper, pers. com.), but we did not know if *T. butleri* would actually use either asphalt or tin roofing. We also believed that plywood would absorb and retain more heat than the other two materials. This heat retention is vital if snakes are using the ACO to maintain an elevated body temperature throughout the night.

The ¾ × 48 × 32″ (2 × 122 × 81 cm) boards were placed every 25 ft (7.6 m) along a 400-ft (122 m) transect perpendicular to a wetland edge for a total of 16 boards per transect. A wetland edge was defined using a combination of soil, vegetation, slope, and normal high-water mark (Hay, 2003). Twenty-nine transects were established at six different sites, resulting in a total of 464 ACOs for the entire study. Each transect extended from a wetland edge into upland prairie/grass habitat. We cleared all vegetation from under each ACO site, laid the ACO flat on the ground, and covered it lightly with nearby vegetation. Every attempt was made to avoid laying an ACO on a moist area or any other area which might have discouraged *T. butleri* use of the ACO as shelter.

Each site was checked twice a week for the duration of the 7-week study period. Three sites were checked during each morning and evening sampling period. Because snakes typically arrive at their nocturnal resting spots a few hours before sunset (Casper, pers. com.), we normally checked the ACOs no earlier than 2 hours before sunset during the evening data collection and no more than two hours after sunrise for morning data collection. However, when rain was predicted, we checked the ACOs before precipitation occurred, regardless of time of day. The majority of ACOs were laid by the first week of May, allowing boards to weather before data collection began on 19 May. Two sites were not established until the middle of June. Data collection continued through the middle of July. The middle of July was chosen because the ACO survey method experiences lower capture rates as ambient temperatures increase and the snake's dependence on a cover object for thermoregulation decreases (Casper, pers. com.).

All snakes present under each ACO were captured by hand, identified to species level, aged, and visually sexed. Aging was done visually by size with a neonate measuring less than 20 cm in length, a juvenile measuring 20–25 cm, and adults measuring greater than 25 cm. Sexing was also accomplished visually, with an abrupt narrowing of the tail behind the anal plate indicating a female. Individuals classified as juveniles or neonates were not sexed.

Catch per unit effort (CPUE) for the purpose of this study is defined as the total number of snakes observed divided by the number of board-days at a site. Board-days were calculated by multiplying the total number of days a site was checked by the total number of ACOs present at that site. The probability of observation at a particular distance from a wetland edge was calculated by dividing the total number of snakes observed under ACOs at each distance interval by the total number of snakes observed throughout the study. This was done on a site-specific basis (all observations at one site at each distance divided by the total observations at the site) as well as a whole-study basis (all observations at each distance divided by the study-total number of observations).

**Study Areas**

The six study areas were located in Milwaukee, eastern Waukesha, southeastern Washington, and southern Ozaukee counties. The sites have typical southeastern Wisconsin wetlands (cattail marsh, wet and wet-mesic prairie, southern sedge meadow, lowland old-field, shrub-carr) (Eggers and Reed, 1997), and were quite similar to one another. All sites had at least 400 ft (122 m) of upland habitat ascending a slope adjacent to a wetland. Habitat along each transect had less than 50% tree canopy cover. All transects were unbroken by developments such as roads, buildings, or fences.

Cedarburg Bog (Ozaukee Co., WI) 43.39°N, 88.02°W

This site consisted of southern sedge meadow (used as wetland boundary) with an abrupt transition into upland old-

**Table 1**. Observations of *Thamnophis butleri* at six southeastern Wisconsin study sites. Sex / Age codes: F = nongravid females; FG = gravid females; M = males; J = juveniles; N = neonates. Entries in the table are the number of observations at the indicated distance from wetland edge.

| Site | Sex / Age | Distance in feet from wetland edge | | | | | | | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 25 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 275 | 300 | 325 | 350 | 375 | 400 | |
| **Cedarburg** | F | 1 | 1 | | | | 1 | 2 | 1 | | | | | 1 | 1 | | 2 | 10 |
| | FG | | | | 1 | 1 | | | | | 2 | | | 2 | | 1 | 1 | 8 |
| | M | | 1 | | 2 | | 1 | | | | | | | 1 | | | | 5 |
| | J | | 2 | 1 | 1 | | 2 | 2 | 1 | 4 | | | | 2 | | | 1 | 16 |
| | **All** | **1** | **4** | **1** | **4** | **1** | **4** | **4** | **2** | **4** | **2** | | | **6** | **1** | **1** | **4** | **39** |
| **Grobschmidt** | F | | 2 | 3 | | | 1 | | 3 | | | 1 | 1 | | | | | 11 |
| | M | 1 | 2 | | 1 | 1 | | | | 2 | 1 | | | | | | | 8 |
| | J | 2 | 1 | 1 | 3 | | 1 | | | 2 | 1 | 1 | | | | 1 | | 13 |
| | **All** | **3** | **5** | **4** | **4** | **1** | **2** | | **3** | **4** | **2** | **2** | **1** | | | **1** | | **32** |
| **Jackson** | F | | | 6 | 1 | 1 | | 8 | 4 | 2 | 1 | 2 | | | 3 | 1 | 1 | 30 |
| | FG | 1 | 1 | 2 | 1 | 3 | | 1 | | | 3 | 1 | | | 2 | | 1 | 16 |
| | M | 3 | | 5 | 3 | | 5 | 7 | 1 | 5 | 1 | 1 | | 1 | | 1 | | 33 |
| | J | 18 | 11 | 8 | 9 | 11 | 2 | | | | 1 | | | | 1 | 1 | | 62 |
| | N | 3 | 1 | 1 | | | | | | | | | | | | | | 5 |
| | **All** | **25** | **13** | **22** | **14** | **15** | **7** | **16** | **5** | **7** | **6** | **4** | | **1** | **6** | **3** | **2** | **146** |
| **Malone** | F | 1 | 1 | | 1 | | | | | | | 1 | | | 2 | | | 6 |
| | FG | 2 | | 2 | | 2 | | | | | | 4 | 1 | | 2 | 1 | 1 | 15 |
| | M | 1 | 1 | 1 | | 2 | | | | 2 | 1 | | | | | | | 8 |
| | J | 3 | | | | 3 | | | | 2 | | | | | 5 | | | 13 |
| | **All** | **7** | **2** | **3** | **1** | **7** | | | | **4** | **1** | **5** | **1** | | **9** | **1** | **1** | **42** |
| **Menomonee** | J | 1 | | | | 1 | | | | | | | | | | | | 2 |
| | **All** | **1** | | | | **1** | | | | | | | | | | | | **2** |
| **Wehr** | F | | | | | | 4 | 2 | 5 | 1 | | | | | 1 | 4 | 2 | 19 |
| | FG | | 2 | | | 2 | | | 1 | 1 | 1 | | | | | | | 7 |
| | M | | | | 1 | 4 | 4 | 2 | 3 | 3 | 2 | 1 | 2 | | 2 | | 2 | 26 |
| | J | | | | 1 | 1 | 3 | 3 | 1 | 1 | 2 | | 1 | | | 3 | | 16 |
| | **All** | | **2** | | **2** | **7** | **11** | **7** | **10** | **6** | **5** | **1** | **3** | | **3** | **7** | **4** | **68** |
| **Total** | | **37** | **26** | **30** | **25** | **32** | **24** | **27** | **20** | **25** | **16** | **12** | **5** | **7** | **19** | **13** | **11** | **329** |

field habitat. All eight transects began at the margin of the southern sedge meadow (0.61 ha) and ran up a gentle slope through upland old-field habitat (5.5 ha) (Lorch, 2003).

Jackson Marsh State Wildlife Area (Washington Co., WI) 43.34°N, 88.02°W

This site had a wet lowland field of reed-canary grass (*Phalaris arundinacea*) (0.81 ha, used as wetland boundary for three transects) abruptly changing into upland old field (8.1 ha). It also had shrub-carr (0.4 ha, used as wetland boundary for three transects) abruptly changing to a restored prairie (10.1 ha) (Lorch, 2003).

Malone Park (Waukesha Co., WI) 42.97°N, 88.13°W

This site consisted a shallow cattail marsh (0.4 ha, used as wetland boundary) gradually transitioning into upland old-field (1.8 ha). All three transects ran perpendicular from the low-land old-field into the upland old field. The upland old-field, however, was moister than typical and supported species typically associated with a high water table such as a few prairie crayfish (*Procambaris gracilis*) and red-osier dogwood (*Cornus stolonifera*) (Lorch, 2003).

Menomonee Park (Waukesha Co., WI) 43.16°N, 88.18°W

This site consisted of a cattail marsh (0.81 ha, used as wetland boundary) and an adjacent upland old-field (1.8 ha) (Lorch, 2003). This site was not establish until the middle of June and contained very heavy ground cover. Because of the dense vegetation, many ACOs had some residual vegetation beneath them.

Wehr Nature Center (Milwaukee Co., WI) 42.93°N, 88.03°W

This site consisted of a pond (used as wetland edge for three transects), old-field savanna (0.4 ha), restored prairie (3.6 ha), southern hardwood swamp (0.4 ha, used as wetland edge for three transects), and upland deciduous forest (0.4 ha) (Lorch, 2003). At this site three of the six transects ran briefly (~50 ft, 15.2 m) through upland deciduous forest with canopy cover > 50%.

Grobschmidt Park (Milwaukee Co., WI) 42.92°N, 87.96°W

This site consisted of upland old-field (3.6 ha) and lowland old-field (1.2 ha) (Lorch, 2003). A low section of the lowland old-field was very wet, with the edge being used as the wet-land boundary. At this site ACOs along two transects were not

**Table 2**. Relative probability of observation as a function of distance from a wetland edge for *Thamnophis butleri* at six study sites in southeastern Wisconsin.

| | Distance in feet from wetland edge | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sex and age classes** | **25** | **50** | **75** | **100** | **125** | **150** | **175** | **200** | **225** | **250** | **275** | **300** | **325** | **350** | **375** | **400** |
| **Total population** | 0.11 | 0.08 | 0.09 | 0.08 | 0.10 | 0.07 | 0.08 | 0.06 | 0.08 | 0.05 | 0.04 | 0.02 | 0.02 | 0.06 | 0.04 | 0.03 |
| **Nongravid females** | 0.03 | 0.05 | 0.12 | 0.03 | 0.01 | 0.08 | 0.16 | 0.17 | 0.04 | 0.01 | 0.05 | 0.01 | 0.01 | 0.09 | 0.07 | 0.07 |
| **Gravid females** | 0.07 | 0.07 | 0.09 | 0.04 | 0.17 | 0.00 | 0.02 | 0.02 | 0.02 | 0.13 | 0.11 | 0.02 | 0.04 | 0.09 | 0.04 | 0.07 |
| **Males** | 0.06 | 0.05 | 0.08 | 0.09 | 0.09 | 0.13 | 0.11 | 0.05 | 0.15 | 0.06 | 0.03 | 0.03 | 0.03 | 0.03 | 0.01 | 0.03 |
| **Juveniles** | 0.20 | 0.11 | 0.08 | 0.11 | 0.13 | 0.07 | 0.04 | 0.02 | 0.07 | 0.03 | 0.01 | 0.01 | 0.02 | 0.05 | 0.04 | 0.01 |
| **Neonates** | 0.60 | 0.20 | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

laid until the middle of June.

**Results**

A total of 329 *T. butleri* observations was recorded during the duration of the study. In addition, 239 *T. sirtalis*, 6 brownsnakes (*Storeria dekayi*) and 1 eastern milksnake (*Lampropeltis triangulum*) were recorded. Distribution of observations over the 6 study sites is summarized in Table 1.

The total CPUE for the entire study was 0.06, with the highest CPUE of 0.25 occurring at Grobschmidt Park (Figure 1). For all sites combined, the sex and age ratios of *T. butleri* were as follows: 23% (n = 76) non-gravid female, 14% (n = 46) gravid female, 37% (n = 122) juvenile, 24% (n = 80) male, and 1.5% (n = 5) were neonates (Table 1).

The probability of observing *T. butleri* within 200 ft (61 m) of a wetland edge (0.671) was significantly greater than the probability of observing *T. butleri* 201–400 ft (61–122 m) from a wetland edge (0.328) (one-tailed t-test, df = 7, p = 0.00025). Although the probability of observing a common gartersnake within 200 ft (61 m) of the wetland edge (0.612) was not statistically greater than the probability of observing a common gartersnake 201–400 ft (61–122 m) from the wetland edge (0.387) (two-tailed t-test, df = 7, p = 0.167), there was no significant difference between the probabilities of observing *T. butleri* and *T. sirtalis* at those distance intervals [two-tailed t-test, df = 7, p = 0.322 (0–200 ft), p = 0.328 (201–400 ft)].

A linear regression model of the probability of observing *T. butleri* as a function of distance from a wetland edge resulted in a slope of -0.0002 (Figure 2). For *T. sirtalis* the slope of the regression line for probability of observation as a function of distance from a wetland edge was shallower (b = -0.00013) than for *T. butleri* (Figure 3). The same general reduction in probability of observation with distance from a wetland existed for all age and sex groups of *T. butleri* (Table 2, Figure 4).

The average distance from a wetland edge at which *T. butleri* was observed (170 ft, 52 m) did not differ statistically from that of *T. sirtalis* (182.6 ft, 56 m) (one-tailed t-test, df = 566, p> 0.1). When probabilities of observation were computed over 100-ft (30.5-m) increments, females, had the highest probability of being observed more than 300 ft (91 m) from the wetland edge (0.24) and juveniles had the highest probability of being observed within 100 ft (30.5 m) of the wetland edge (0.51). All neonates were observed within 175 ft (53 m) of the wetland edge.

The probability of observing *T. butleri* varied over the 7-week study period (week 1 = 5/20–5/26, week 2 = 5/27–5/31, week 3 = 6/1–6/9, week 4 = 6/10–6/17, week 5 = 6/18–6/23, week 6 = 6/24–6/30, and week 7 = 7/1–7/8). The probability remained relatively stable through the first 3 weeks and declined during the exceptionally rainy and overcast fourth

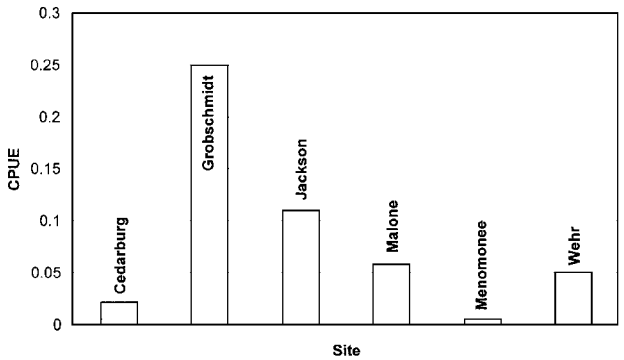


**Figure 1**. Catch per unit effort (CPUE) of *Thamnophis butleri* at six study sites in southeastern Wisconsin.

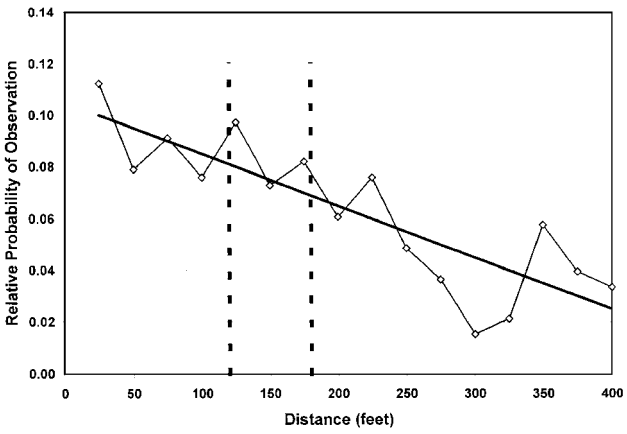


**Figure 2**. Relative probability of observation of *Thamnophis butleri* as a function of distance (feet) from a wetland edge at six study sites in southeastern Wisconsin. The dashed vertical lines represent the Wisconsin Department of Natural Resources minimum and maximum buffers. The solid straight line is a linear regression best fit to the 16 data points: $y = -0.0002x + 0.105$

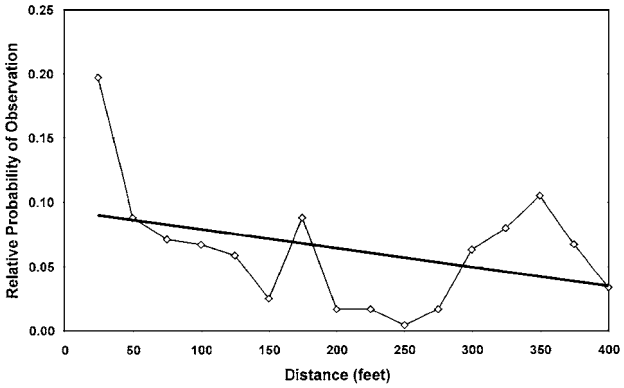


**Figure 3**. Relative probability of observation of *Thamnophis sirtalis* as a function of distance (feet) from a wetland edge at six study sites in southeastern Wisconsin. The solid straight line is a linear regression best fit to the 16 data points: $y = -0.00013x + 0.0939$

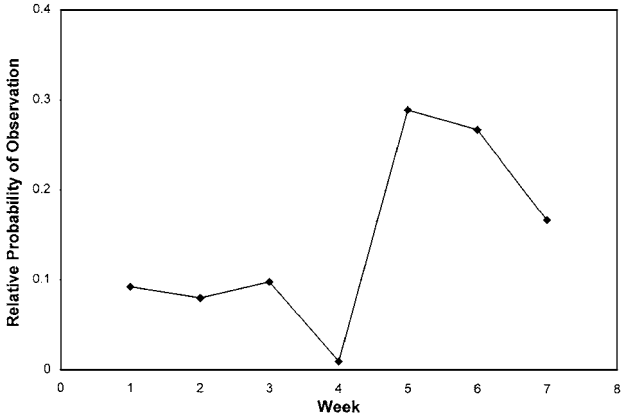


**Figure 5**. Seasonal changes in relative probability of observation of *Thamnophis butleri* at six study sites in southeastern Wisconsin.

week. During week five (n = 95) we recorded the highest probability of observation, followed by a slight drop-off in weeks 6 (n = 88) and 7 (n = 55) (Figure 5). The same general trend existed for all ages and both sexes; however, there was a sudden increase in observations of neonates after the sixth week (Figure 6).

Finally, we calculated distances at which cumulative proportions of the *T. butleri* population had been observed. These calculations were performed using all observations (n = 329). We found that 25% of *T. butleri* observations were within 62.5 ft (19 m) of a wetland edge, 50% within 137.5 ft (42 m), and 75% within 237.5 ft (72 m) (Table 3). Similar calculations for sex and age classes are included in Table 3.

**Discussion and Conclusions**

The probability of capturing a Butler's gartersnake is statistically higher within 200 ft of the wetland edge than within 201–400 ft. This finding is consistent with existing literature (Carpenter, 1952; Freedman and Catling, 1979) describing *T. butleri*'s general affinity for wetland edges. Accordingly, the declining capture numbers, probabilities of observation, and CPUE as a function of distance from a wetland edge were expected, but previous studies did not describe the distribution of individuals as a function of distance from a wetland edge.

The high proportion of females observed (37%) was also expected. Gravid females demand a much more regulated and elevated body temperature than males and juveniles, thus explaining their affinity for heat-storing ACOs (Beuchat and Ellner, 1987). Juveniles also were heavily represented in our captures. This could be because of the higher number of juveniles in the population, or because of their smaller body mass. With less body mass they are less able to maintain a constant body temperature and may use an ACO as an aid in thermoregulation. Of all sex and age classes, juveniles displayed the most affinity to the wetland edge. Both gravid and nongravid adult females displayed the least affinity. It is unclear exactly why this is; however, juveniles may seek the denser cover provided by vegetation near the wetland margin to avoid predation. We have no clear hypothesis why females were captured at such high numbers at extended distances from

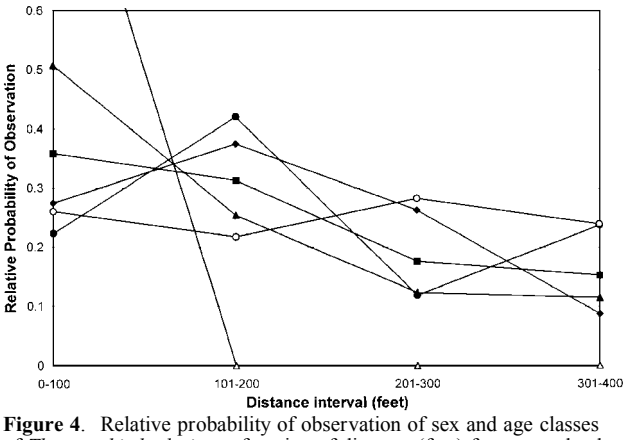


**Figure 4**. Relative probability of observation of sex and age classes of *Thamnophis butleri* as a function of distance (feet) from a wetland edge at six study sites in southeastern Wisconsin. Solid squares = all *Thamnophis butleri*; solid circles = nongravid females; open circles = gravid females; solid diamonds = males; solid triangles = juveniles; open triangles = neonates. Relative probability of observation for neonates was 1.0 at 0–100 ft.

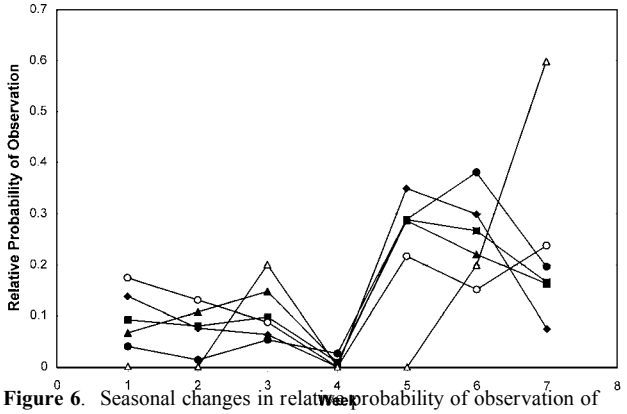


**Figure 6**. Seasonal changes in relative probability of observation of sex and age classes of *Thamnophis butleri* at six study sites in southeastern Wisconsin. Solid squares = all *Thamnophis butleri*; solid circles = nongravid females; open circles = gravid females; solid diamonds = males; solid triangles = juveniles; open triangles = neonates.

**Table 3**. Distribution of *Thamnophis butleri* observations as a function od distance from a wetland edge. Entries in the table are the distances from the wetland edge containing the indicated percentage of observations in the class.

| Sex and age classes | 25% | 50% | 75% |
|---|---|---|---|
| **Total population** | 62.5 | 137.5 | 237.5 |
| **Nongravid females** | 137.5 | 187.5 | 275.0 |
| **Gravid females** | 87.5 | 225.0 | 287.5 |
| **Males** | 87.5 | 162.5 | 212.5 |
| **Juveniles** | 37.5 | 87.5 | 187.5 |
| **Neonates** | 12.5 | 12.5 | 37.5 |

the wetland edge. It could be that already mated females are avoiding the territories and unwanted advances of males.

If snakes are using the heat-storing properties of the ACO to maintain an elevated body temperature and the number of active snakes was constant throughout the entire study period, one would expect a decrease in capture rates through time. As the average daily temperature increased from the cool spring to the warmer summer, the snakes might be expected to rely less and less on ACOs. This was not the case, however, and we conclude that snake activity actually increased through week 5 and then began to slowly decrease through week 7.

In general, the results of this study support other studies (Carpenter, 1952; Catling and Freedman, 1980) that found *T. butleri* at higher densities near wetlands than the more widespread common gartersnake (over our study: 329 *T. butleri* observations and 239 *T. sirtalis* observations). Our observations of *T. sirtalis* and *T. butleri* agree with previous observations that *T. sirtalis* displays less affinity for wetland areas and inhabits a variety of upland vegetation types. We found no difference between capture probabilities for *T. sirtalis* within 200 ft and beyond 200 ft of a wetland edge.

Capture probabilities varied over the course of our study, and this could have management implications. If the increasing capture probabilities observed during the course of the study are a result of increased snake movement instead of simply an increased use of ACOs for shelter, this could have implications for reducing incidental take of snakes during development activities in their habitat. For example, construction activities or other disturbances near wetlands occupied by *T. butleri* could be curtailed after the middle of May. This restriction would reduce incidental take as there are fewer snakes moving through the upland habitat prior to the middle of May.

Sex and age class differences could influence how Butler's population are managed. Juveniles of *T. butleri* are most likely to be found within the DNR's current maximum buffer zone (180 ft, 55 m), while nongravid and gravid adult females are not. If decisions on a buffer zone are biased by the large number of juveniles near wetland edges, adult females may not be adequately protected. That 25% of the total population was found within 19 m of the wetland edge is directly related to the large number of juveniles observed there. Adult females, in general, and gravid females, in particular, are found at greater distances.

The current DNR minimum (120 ft, 55 m) and maximum (180 ft, 37 m) buffer zones can be assessed in light of our study. The current maximum buffer is only 10 ft (3 m) further than the average distance for all *T. butleri* observations in the study. Less than 24% of non-gravid female *T. butleri* were observed within the minimum buffer zone. Less than half of non-gravid and gravid females were found within the maximum buffer zone. In general, less than half of a *T. butleri* population would be found within the DNR minimum buffer zone while approximately 61% of the population would be found within the maximum buffer zone.

A buffer zone of at least 238 ft (73 m) would be needed to include 75% of our observations. This is almost 60 ft (18 m) further than the current *maximum* DNR recommended buffer zone.

This study provides the first quantitative assessment of the distribution of *T. butleri* in upland habitat in Wisconsin. This information should also be relevant to other states (e.g., Illinois) that host dwindling populations of *T. butleri*. By knowing the extent of the snake's use of upland habitat surrounding wetlands, managers can now do a better job of protecting its habitat. The results of this study will greatly increase the chances of preserving the species, especially if they result in an expansion of the buffer zones used to protect this threatened reptile.

In the future, a study should compare CPUE between black asphalt roofing, corrugated tin roofing, and plywood boards as ACOs for *T. butleri*. If roofing materials attract more snakes than plywood, it would ease both the study cost as well as the amount of work needed to carry the ACOs into the field. Because of *T. butleri*'s limited range around wetland hibernacula, it is an excellent species on which to study population dynamics. Because the population is tightly restricted to the wetland edges, it would be relatively easy to perform population sampling by trapping and marking individuals as they enter and leave the wetland and using ACO sampling to monitor their distribution and movements in the surrounding uplands. Data obtained from such a study would aid in recovery efforts by providing insights into a population's status.

**Acknowledgments**

This work was conducted with support from the Wisconsin Department of Natural Resources-Bureau of Endangered Resources, a Garden Club of America research award, Wisconsin Academy of Arts and Science's Lois Almon award, and the University of Wisconsin-Madison Holstrum Environmental Fellowship. We are extremely grateful to Bob Hay of the Wisconsin DNR for getting this project off the ground, as well as for his continued help throughout this study. Gary Casper of the Milwaukee Public Museum was instrumental in creating study design methodology, as well as map creation and study site selection. We also thank Jeff Lorch for his efforts in collecting field data.

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*Editor's Note: This same review will appear in* IGUANA *(Journal of the International Reptile Conservation Foundation)*

# Book Review: *The Reptiles and Amphibians of the Dutch Caribbean: St. Eustatius, Saba, and St. Maarten* by Robert Powell, Robert W. Henderson and John S. Parmerlee, Jr. 2005. 192 pp. The St. Eustatius National Parks Foundation, Gallows Bay, St. Eustatius, Netherlands Antilles. Softcover. ISBN 978-09673958-8-3. $25.00 plus shipping.

## U.S. distributor: Bibliomania! (www.herplit.com)

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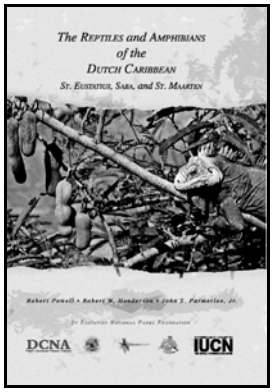


These days, it's fairly easy to produce a field guide to the amphibians and reptiles of a relatively small geographic area. It isn't even necessary to know much about the natural lives of the animals. It's enough to have access to good photographs of each species, often taken under controlled conditions in artificial "habitat" sets, and an abbreviated discussion of the distribution and biology of the species. Knowledge of the latter can often be found in scientific and lay literature, including other field guides. Such guides may be useful in identifying the animal before you—but, unless your only goal is to add a species to your herpetological life list, they may leave you hungry for more. A really good field guide is worth its weight in gold, and distressingly few are available. You probably already know this. You may have several guides to the amphibians and reptiles of a particular area on your shelf, but only one is dog-eared from page turning and trips to the field. To my mind, the ideal field guide is portable (it is, after all, supposed to be a *field* guide), and includes photographs not only useful for purposes of identification but which illustrate some aspect of the ecology or behavior of the animals. The text should provide descriptions of the species, including developmental, sexual and geographic variation, how to distinguish each species from similar species that occur in the region, and discussions of distribution, habitat, food habits, reproduction, behavior and conservation status. A general discussion of the geography of the region covered by the guide and of the habitats that are found there should be included, as well as a glossary of terms used in the guide with which the reader may not be familiar and a bibliography or literature cited section to lead the interested reader to more detailed information. Powell, Henderson and Parmerlee (hereafter, PHP) have produced a field guide to the amphibians and reptiles of the Dutch Antillean islands of St. Eustatius, Saba and St. Maarten that meets my expectations.

Including introduced species, the herpetofauna of the Dutch Windward Islands (the Dutch Leewards are Aruba, Bonaire and Curaçao, which are South American continental islands) consists of two species of amphibians, both frogs, 15 or 16 (depending on whether or not the green iguana of Saba is a species distinct from *Iguana iguana*) species of lizards, three of snakes, and two of turtles, plus three species of sea turtles known to nest in the islands and a fourth that is sometimes seen in the surrounding waters. This relatively small fauna has allowed PHP to produce a guide that is portable while including extensive accounts for each species. A similarly detailed guide for the herpetofauna of, for example, Cuba (which has at least 50 species of anoles alone) would take on the proportions of an unabridged dictionary.

Following the Introduction, the guide describes the natural features of each island. Included are topographic maps and aerial photographs and a discussion of the region's geological history. This is followed by a history of the human occupation of the islands; this section is enhanced by additional photographs of each island, including archival photographs that sometimes highlight the changes that have accompanied the human occupation and development of the region. Next comes a section on conservation that identifies parks and reserves, and emphasizes the local conservation organizations that are working to conserve the natural heritage of each island.

Next is an extensive section introducing amphibians and reptiles. It begins with definitions: What are amphibians and reptiles. The definitions go beyond external morphology to include features associated with respiration, reproductive biology and thermoregulation. There follows a short discussion of scientific names, their derivation and why they occasionally change. Common names and why they can create difficulties are discussed next. A subsection on biogeographic relationships emphasizes human-mediated introductions in the Dutch Antilles and the biogeographic similarities and differences among the three islands. Disappointingly, a discussion of the biogeographic origins of the elements of the herpetofauna of these islands is lacking, although species accounts remedy this shortcoming to some degree. A general discussion of conservation status includes concise descriptions of the conservation threat categories employed by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Red List of the World Conservation Union (IUCN). The Dutch Antillean species listed by either organization are discussed, as are the negative effects of the introduction of mongoose on the herpetofauna of St. Maarten. This section concludes with "Stories about Reptiles," including a discussion of the medicinal use of reptiles, iguana meat as an aphrodisiac and other myths. Here you can find two recipes

for lizard soup, once thought to be a treatment for bronchitis and asthma.

The bulk of the book is devoted to individual species accounts. This section is a little anachronistic in not following the usual taxonomic organization of amphibians first, then turtles, then lizards, and then snakes. Instead, lizards appear first, then snakes, then turtles, with amphibians bringing up the rear. Even within the lizard accounts the order of presentation of the families is unusual. None of this, however, detracts from the quality of the individual family and species accounts.

Family and species accounts begin with the common English and scientific names, and the derivation (etymology) of the scientific name. The latter is an interesting feature omitted from most field guides. This is followed, for family accounts, by a statement of the geographic range and of any interesting taxonomic considerations. Species accounts include a description that will facilitate identification, as well as any changes in color or pattern that are associated with age or sex. The distribution among the three islands is stated and note is made of populations known to have been extirpated. In some accounts (e.g., *Iguana delicatissima*), the origin of the species is discussed. Habitat is described in some detail and additional subsections address food and predators. The discussion of reproduction may include, among other things, seasonality, mode of reproduction (e.g., eggs, live-bearing, parthenogenesis [= reproduction within all-female population]) and clutch size. Rare in a field guide, the discussion of behavior is usually fairly extensive. Each species account concludes with a discussion of conservation status including primary threats and, if known, recent population trajectories. The accounts are all copiously illustrated (the book contains over 300 color and eight black & white photographs). The photographs of amphibians and reptiles were taken, for the most part, in natural habitat and often highlight differences among similar species, document age and sex variation in color and pattern, or illustrate aspects of behavior.

Following the species accounts is a section entitled "Strays and a Vagrant." The strays are species that were introduced to areas where they do not naturally occur but failed to become established. Strays are known only on St. Maarten and include two species that occur naturally elsewhere in the Dutch Antilles (green tree lizard, *Anolis bimaculatus*; red-bellied racer, *Alsophis rufiventris*) and five exotic snakes: boa constrictor (*Boa constrictor*), rainbow boa (*Epicrates cenchria*), blood or short-tailed python (*Python curtus* group), ball python (*Python regius*) and corn snake (*Elaphe guttata*). The loggerhead sea turtle (*Caretta caretta*) is listed as a vagrant. Not known to nest in the Dutch Antilles, loggerheads are occasionally encountered at sea around the islands.

The book concludes with a Bibliography, a List of Taxonomic Authorities for each Dutch Antillean species (unique, so far as I know, for field guides), a Glossary, and an Index to Names of Reptiles and Amphibians. The Bibliography lists 164 citations, two-thirds of which date from 1990 or later. The glossary contains 112 entries.

My complaints about the book are minor. Each page is UV-coated, lending a glossy appearance that dramatically enhances the photographs and renders the book moisture and mildew resistant (not an unimportant consideration for a guide to the herpetofaunas of tropical islands), but the slick surfaces stick together, making it next to impossible to casually leaf through the book. The book, although ostensibly soft covered, is heavy and stiff. Whether the quality of the images and weather resistance justifies the unusual feel may well vary from reader to reader. Also, I think we needed to have only one photograph of a mongoose, and a few individuals are illustrated more than once (figures 177 and 251 of a red-bellied racer, *Alsophis rufiventris*, provide an interesting example of photographic pseudoreplication).

The PHP guide ought to serve multiple audiences. For the amateur naturalist visiting the Dutch Antilles, it can serve as both an introduction to the islands and the herpetofauna, facilitating the location and identification of species. The book will serve the same purpose for the professional biologist new to the islands. In addition, it provides enough information on the biology of the amphibians and reptiles, and clues as to what is *not* known that it will point the way for future research. With respect to all of these, the book ought to be widely read by anyone conducting research on the amphibians and/or reptiles of the Dutch Antilles and beyond. It should be particularly popular with graduate students contemplating work in the region.

PHP have conducted research on amphibians and reptiles throughout the West Indies for an aggregate of over 60 years and, together with a small army of students, they have worked extensively in the Dutch Antilles. Fifty of the citations in the PHP Bibliography are authored or co-authored by Powell, Henderson or Parmerlee. Although new species may yet be discovered in these islands, and others will without doubt be introduced, this guide will be the gold standard for years to come. The World Wildlife Fund (Netherlands) and Prince Bernhard Nature Fund (Netherlands) are to be commended for funding its publication and allowing the proceeds from sales to go toward conservation efforts in the Dutch Antilles. However, as PHP was not produced by a major publisher, the number of copies printed may be relatively small. Get yours while you can!

# HerPET-POURRI
## by Ellin Beltz

**One half-life = 20 years**

The Chicago Herpetological Society will be 40 on February 23, 2006! Perhaps even more amazing than the long term survival of this popular educational group, this column marks the beginning of my 20th year writing for CHS, first for the *Newsletter*, later the *Bulletin*. But even more exciting, there's two people who've been at it even longer than I have: Michael Dloogatch, our long-suffering editor, and contributor Bill Burnett. His never-ending clippings of all things herpetological were copied in the old *Newsletter*, the conversion to the *Bulletin* required us to abbreviate the clippings to paragraphs. Who knew? Realize that about 2 billion people have been born since 1986. Consequently, the number of reptile and amphibian stories goes up every single year.

**Frog sweat stops HIV**

"Vanderbilt University researchers found that secretions from the skin of some Australian frogs were effective in the test tube at killing HIV, the virus that causes AIDS. They hope their findings will lead to the creation of a topical ointment containing synthetic secretions that will help cut the spread of the deadly worldwide pandemic," according to the October 21, 2005, *Daily Tennessean* (online). "The pair tested the secretions of 12 different frogs. The best results came from three species from Australia. . . . [The primary researcher said that] the discovery that frog secretions may potentially save lives reinforces the importance of protecting animals and their environments. She noted that the Australian frog species used in the study are being threatened by disease and disappearing habitat."

**Attention Australia**

Perhaps all you need to do is totally trash your environment to kill toads. The Bermuda Amphibian Project discovered that "Bermuda's ponds and nature reserves have reached a state of unsustainable pollution, with pollutants in the sediment at toxic levels" by studying cane toads. "Deformities were first noticed . . . in 1998. . . . By last year [2004], the abnormality rate in juvenile and adult toads had grown to 30 percent—with the normal rate for abnormalities being five percent." Some sites have had up to 55 percent abnormalities. Deformities were found at every site in every parish on the island nation. Researchers pointed out that tadpoles particularly are concentrating toxins and passing them up the food chain. [*The Royal Gazette*, October 24, 2005, from Wes von Papineäu]

**World Roundup 2006: Drowned, cooked or fried?**

• Scientists studying ice cores from east Antarctica have discovered that carbon dioxide levels in the atmosphere now are at their highest concentration for the last 650,000 years. "The analysis showed that today's atmospheric carbon dioxide concentration, at 380 parts per million, is already 27 per cent greater than previous highs. . . . The levels of primary greenhouse gases such as methane, carbon dioxide and nitrous oxide are up dramatically since the Industrial Revolution, at a speed and magnitude that the Earth has not seen in hundreds of thousands of years. There is now no question this is due to human influence. . . . [Consequently] ocean levels are rising by two millimeters per year compared with one millimeter annually for the last several thousand years," according to the *U.K. News Telegraph*, November 25, 2005]

• Officials in several Asian countries are beginning to be very worried about bird flu. Doctors in Jakarta, Indonesia, report the numbers of people infected is jumping rapidly. They and Thai researchers believe the virus has made the jump to human-to-human transmission. Meanwhile the Chinese are admitting that the situation in the countryside is beyond their control. Three villages in Romania were quarantined; the virus was also detected on the Crimean peninsula in neighboring Ukraine. All of Europe is on alert. [WHO reports, several sources] Meanwhile, "Dr. Nguyen Tuong Van runs the intensive care unit at the Center for Tropical Diseases in Hanoi and has treated 41 victims of H5N1. Van followed World Health Organization guidelines and gave her patients Tamiflu, but concluded it had no effect." [*Qatar Sunday Times*, December 5, 2005, from Ed Greenwood] Pet birds and poultry are being destroyed as the H5 form of the virus spreads around the world.

**Fossil Wranglers**

• A fossil of what researchers believe is an early aquatic turtle was found in 120-million-year-old rocks in Brazil. Some soft tissue was preserved, allowing scientists to state for sure that the creature had webbing on its feet. Some of the specimens are juvenile turtles visually indistinguishable from some alive today. Older turtle-like creatures are known, but they are more tortoise-like. [*BBC News*, November 16, 2005, from Ed Greenwood and Ms. G. E. Chow]

• A complete skull of *Dakosaurus andiniensis,* an early crocodile previously known only from fragments, was found in Argentina. According to *Science Magazine*, the creature grew to about 13 feet and cruised Jurassic seas, eating just about anything it desired. Pictures are available in the December *National Geographic*. [Little Rock, *Arkansas Democrat-Gazette*, November 11, 2005, from Bill Burnett]

• Another Argentinean find, *Buitreraptor gonzalezorum*, "proves that a family of small, swift dinosaurs called dromaeosaurs evolved tens of millions of years earlier than previously believed." And even more interesting, the central area of their evolution is not North America as previously believed, but South! The specimen was prepared at the Field Museum and returned to Argentina. [*Chicago Tribune,* October 13, 2005, from Ray Boldt]

**Pentacular trauma**

A member of the North Queensland (Australia) Herpetological Society found a five-tailed gecko. Not a new species, the animal sustained tail trauma causing five new tails to grow where previously there had been only one. [Earthweek, *The Honolulu Advertiser*, November 20, 2005, from Ms. G. E. Chow]

**Let's do the time-warp again**

• In 1994, in the October journal of the New England Herpetological Society, Bob Campbell reported a call record for *Eleutherodactylus coqui*, the Puerto Rican treefrog, from the grounds of the Hyatt Regency Hotel on the island of Maui. He also reported that Cuban green anoles and house geckos were "conspicuous" on the property as well. If the coquis naturalize on Hawaii, they will be the first calling frog in the islands as the poison arrow frog does not vocalize, according to the journal. [March 1997 this column - online archive]

• "Even with the door and windows in my [sixth floor hotel] room at the Hilo Hawaiian Hotel closed and the curtains pulled, even with the AC cranked up to full throttle (on a night that was already plenty chilly), the ceaseless coqui calls penetrated. . . . The call reaches 90 to 100 decibels. . . . How the heck can something the size of a quarter make so much noise?. . . . [I propose] not Nuke the Coqui with real nuke-you-ler warheads, but certainly an all-out campaign to eradicate this alien invader. . . . Think of it as a Hawaii version of a Texas rattlesnake hunt, but less dangerous. . . . Make no mistake, the coquis are coming your way, if they're not there already. The first coqui is believed to have arrived in 1988, probably on the Big Island. [Not what we recorded, but perhaps the Maui hotel was a second point of infestation?] Today there are more than 200 infestation colonies on the Big Island; Maui has 40 or more. . . . Oahu five, Kauai one. . . . In Puerto Rico [where they're native] an average 40 adult frogs per 20-by-20 meter plot, compared to 200 [on the same size] . . . on the Big Island. . . . In Puerto Rico female coqui frogs usually lay a clutch of 34– 75 eggs, four to six times a year (450 eggs max). In Hawaii, however, mating pairs can produce a clutch every two-and-a-half weeks without a loss of fertility . . . 26 clutches per year . . . more than 1,400 eggs per female annually! . . . Without needing to dodge hungry predators, coquis are fee to do nothing but eat, screech and fornicate. Forget rabbits when seeking an active sex life simile." [Don Chapman, *MidWeek Hawaii*, November 16, 2005, from Ms. G. E. Chow]

**Life in the Slow Lane**

• Several papers reported on the recent 175th birthday of Harriet, the oldest creature on earth. She's a Galapagos tortoise which may or may not have been collected by Darwin himself. In either case, she ended up in the drafty old zoos of Mother England; then was shipped to Australia when they realized the cold was killing her. She celebrated her 175th at Steve Irwin's Australia Zoo outside Brisbane where she's lived for the past 17 years. The event was widely covered by tabloids and real press. [*Daily Mail*, England, November 14, 2005, from Bill Burnett's Aunt Peggy and *CNN News*, from Ms. G. E. Chow]

• One of the famed white alligators of New Orleans Audubon Zoo is on loan to the Florida Aquarium. Jose Blanco was one of the original 19 white hatchlings found in a Louisiana swamp by fishermen in 1987. He's now 10 feet long and 260 pounds of pure white chicken chomping indolence. [Leesburg, Florida *Daily Commercial*, November 14, 2005, from Bill Burnett]

• Swedish fishermen caught a turtle under solid ice—an event so unusual in that cold northern country that it made the news. Turns out the turtle is a 10-inch-long, non-native, North American red-eared slider. Welcome to the new millennium. [HerpDigest, November 27, 2005, from Allen Salzberg]

• Someone has finally discovered what cave-dwelling grotto salamanders, *Eurycea* (= *Typhlotriton) spelaea*, eat. It was formerly believed they ate stuff that ate bat guano, now a researcher has found they consume the guano directly. Gray bats, *Myotis grisescens*, "don't digest their food properly, weight for weight their droppings contain more protein and nutrients than a Big Mac. This makes them a perfect snack in a pitch-black environment where food can be scarce," according to *Nature* [November 16, 2005] which added that the guano is piled up to two meters deep along the banks of an underground river.

**Life in the rich lane**

*The Porsche* magazine [October/November 2005, from Ray Boldt] is full of stuff about their new Cayman SUV vehicle including details of the photo shoot which produced the luscious photo of three caimans lit apparently only by the full moon. It's a studio shot and they explain that they had to build a heated pool, provide fog, make waves and light the caimans eyes just so to get it. So when you see the ad, yes those are real animals—it's gorgeous and it's real, sort of. [Ray credits his daughter Katy who drives one of these for sending the magazine along.]

**Sarcasm or ?**

"The fifteen-pound cat had it coming. Let others wring their hands about the threat that slithered into Miami-Dade [and ate a loose pet]. I say it's high time to praise the python. Good for you Mr. Python, for daring to do what no one else would. The rest of us talk a good game. But you're the only one with the long expandable gut to go after the smug suburban house pet all by yourself. *Bon appetit*. . . . [And] that American alligator that was eaten? Good riddance to him, too. What did he ever do to save the Everglades? Developers and their devoted politicians want to put more houses, more concrete and more people near what's left of the wetlands. . . . So what is the good old American alligator doing about it? Does he bother to graze on any developers? Snap at well-fed politicians? No. Gator just lounges around expecting the good times to last forever. Swallow every last one of them, I say, and spit up luggage and fancy shoes. . . . Go for it, mighty python! You've only just begun. Miami is full of turkeys and fat cats ripe for the culling." [Ana Menendez, *Miami Herald*, October 12, 2005, from Alan Rigerman]

**Unusual *pas de deux***

Fifteen years ago, a Miami-Dade woman opened the door to her carport and came face to face with an alligator. In October, she opened the same door and discovered a crocodile sunning itself. Reptile trapper Todd Hardwick said it was unusual to have an endangered crocodile in proximity to people, usually that's reserved for alligators. Captured and released pretty far away, chances are he'll be back, since croco-

diles are very territorial—rather like the people with whom they now try to coexist. [*Miami Herald*, October 6, 2005, from Alan Rigerman]

**Gator-aides**

• Piscataway, New Jersey, police took a 3-foot alligator from the backyard of a local house. "It's not normal to find an alligator around here," said the lieutenant, who added "I know we've had a lot of rain." Others speculated someone had released a no longer desired pet animal. [*Chicago Tribune*, October 16, 2005, from Ray Boldt]

• "A Schaumburg man found out the hard way that pet alligators aren't welcome in the northwest suburb. [He] was ticketed for keeping an exotic animal after he hauled a 4-foot-long alligator to the police station. . . . [He] told authorities that a friend asked him to care for the alligator for two days but didn't come back to claim the reptile." It was turned over to a member of the CHS for return to Florida after quarantine. [*Chicago Tribune*, October 20, 2005, from Ray Boldt]

**She must really *hate* snakes!**
"A Nacogdoches, Texas, woman [accidentally shot herself] in the foot while trying to kill a snake on her property, . . . and the same woman, again trying to kill a snake, shot herself in the other foot the next day. [News of the Weird, *Tennessee Flyer*, Memphis, November 10-16, 2005, from Bill Burnett]

**Kosher pups?**
People who treat pets like people are becoming quite common. The *Miami Herald* reports that a couple had a "bark mitzvah" party for their 13-year-old poodle, claiming that since they're both Jewish, the dog is too. [October 11, 2005, from Alan Rigerman]

**My Frog Book Reviewed**
*Frogs: Inside Their Remarkable World* ($35, Firefly). "The splendid leaf frog seems ready to jump off the cover of Ellin Beltz' book. The one-two delivery of information and fascinating photographs is a great deal. Learn a bit of natural history and about frogs in myth and culture, anatomy, environment and adaptation, and simply enjoy how differently each frog approaches life." [Sharon Wootton, *The Olympian*, November 5, 2005]

**Thanks to everyone who contributed,**
and to everyone who is just about ready to send in their first, middlest or many-est envelope full of clippings to me. As we enter 2006, I'm looking forward to celebrating all my old contributors and meeting many new ones! Send clippings with date/publication slug firmly attached to Ellin Beltz, POB 1125, Ferndale, CA 95536. Letters to my email, ebeltz@ebeltz.net, will be answered as possible. Life's getting busy!

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# Herpetology 2005

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

## COPROPHAGY IN A SALAMANDER

D. Fenolio et al. [2005, Proceedings of the Royal Society B (published online)], during a two-year population ecology study in a cave environment, observed 15 *Eurycea* ( = *Typhlotriton*) *spelaea* ingesting bat guano. Furthermore, *E. spelaea* capture numbers increased significantly during the time that grey bats (*Myotis grisescens*) deposited fresh guano. The authors investigated the hypothesis that this behavior was not incidental to the capture of invertebrate prey, but a diet switch to an energy-rich detritus in an oligotrophic environment. Stable isotope assays determined that guano may be assimilated into salamander muscle tissue, and nutritional analyses revealed that guano is a comparable food source to potential invertebrate prey items. This is the first report of coprophagy in a salamander and in any amphibian for reasons other than intestinal inoculation. Because many temperate subterranean environments are often energy poor and this limitation is thought to select for increased diet breadth, the authors predict that coprophagy may be common in subterranean vertebrates where it is not currently recognized.

## AMPHIBIANS ON THE ROAD

M. J. Mazerolle et al. [2005, Herpetologica 61(4):380–388] note that the behavior of amphibians presumably influences their vulnerability to mortality on the road, but this remains untested. The authors investigated the behavioral responses of six species of amphibians on roads when confronted by an approaching vehicle. Their field study consisted of 50 night-driving surveys over 4 yr during which they recorded the behavior (i.e., moving or immobile) of frogs and salamanders encountered on a 20-km stretch of road. An experiment was carried out on a test road where individual amphibians were exposed to different car-associated stimuli. This tested whether simultaneous exposure to headlights and the sound of a car motor would elicit a stronger response than exposure to a single stimulus or a control. Based on observations of 2767 individuals in the survey, immobility (mean probability of 0.82) was the most common response to the approach of a car; the response differed across species but depended on the season of the survey (May–June vs. July–September). The 91 individuals included in the experiment were more likely to move during the control treatment than during any of the car-associated treatments. The combined stimuli elicited the strongest response, followed by the headlights-only and the motor-only treatments. Spring peepers (*Pseudacris crucifer*) tended to move more often than the other species tested, which suggests they spend less time on the road and are less vulnerable to traffic mortality. Both the field survey and field experiment consistently indicated that amphibians tend to remain immobile at the approach of a vehicle. This behavior highlights the vulnerability of amphibians to road traffic and should be considered in measures to mitigate road impacts.

## HEADSTARTING EUROPEAN POND TURTLES

S. Mitrus [2005, Amphibia–Reptilia 26(3):333-341] reports on the European pond turtle (*Emys orbicularis*), an endangered species in Poland. From 1998 to 2000, as part of an active protection program for the species in central Poland, 123 year-old headstarted individuals were released into their original population. Survival rate in artificial rearing was 0.85. Annual recapture rate of the released turtles during the first year in the wild was 0.24, and during the next year 0.43 or higher. For comparable groups of year-old turtles the annual recapture rates of wild vs. headstarted were not statistically different, but were based on small samples. Analysis based on a life table for *Emydoidea blandingii* and data on survival rate of *E. orbicularis* to age one suggests that headstarting programs can increase population size only if a large percentage of hatchlings is artificially reared. However, as nothing is known about behavior and survivorship of older headstarted turtles, such programs still should be considered as experiments.

## MONOGAMY IN RED-BACKED SALAMANDERS

L. L. Joseph et al. [2005, Herpetologica 61(4):343-348] note that past research suggests that some individuals of the red-backed salamander (*Plethodon cinereus*) in Virginia form monogamous relationships. They investigated if living together for 9 days is sufficient to establish such a relationship. In their first laboratory experiment, they tested two hypotheses: that increased familiarity between territorial males and female intruders would lead to (1) reduced aggression and (2) increased touching (conciliation) by the males, as expected in social monogamy. The same two hypotheses were posed in the second experiment for territorial females responding to male intruders. When residents and intruders first met, residents in both experiments spent more time in threat postures than they did 9 days later. Thus, familiarity led to decreased aggression toward intruders of the opposite sex. The now familiar first intruders were removed and replaced with unfamiliar intruders. Aggression by residents in both experiments increased, suggesting that male and female residents can distinguish between a familiar and an unfamiliar intruder of the opposite sex. Shortly thereafter the second intruders were removed and, 2 days later, the original intruders were reintroduced. In both experiments residents maintained low levels of aggression. This suggests that they could remember the first intruders after 2 days of separation, even with the intervention of an unfamiliar member of the opposite sex. No difference was found in touching behavior for residents in either experiment. Thus, the hypothesis concerning reduced aggression was supported while the hypothesis concerning increased touching was not. Therefore, the formation of monogamous relationships may require longer than 9 days of living together and/or a "choice" of partners, which would be possible in the natural habitat but was randomized in these experiments.

## ESCAPE BEHAVIOR IN FOUR MEXICAN LIZARDS

G. R. Smith and J. A. Lemos-Espinal [2005, Herpetologica 61(3):225-232] note that several internal and external factors can influence escape behavior in lizards. The authors studied the escape behavior of four phrynosomatid lizards (*Urosaurus bicarinatus*, *Sceloporus gadoviae*, *S. anahuacus*, and *S. mucronatus*) from Mexico. Each species exhibited a unique combination of escape behaviors. *Urosaurus bicarinatus* had short approach and flight distances, and used squirreling (running to opposite side of tree or rock) when approached. *Sceloporus gadoviae* had a short approach distance, a large flight distance, and often used squirreling. *Sceloporus anahuacus* had a short approach distance, an intermediate flight distance, and typically fled under a nearby rock. *Sceloporus mucronatus* had large approach and flight distances, and ran under large rocks when approached. Males and females of all species did not differ in approach or flight distance. Reproductive status had no effect on approach or flight distances for the species where reproductive status was assessable (*S. anahuacus* and *S. mucronatus*). Body size did not influence either approach distance or flight distance for any species. Temperature had little effect on flight and approach distance except for *S. gadoviae* where warmer lizards tended to have shorter approach distances. Lizards that escaped capture used warmer sites than those that did not escape. The authors caught >75% of *U. bicarinatus* and *S. gadoviae*, 67% of *S. anahuacus*, and only 38% of *S. mucronatus*. Catchability appeared to be influenced by temperature (intraspecifically) and by approach and flight distance (interspecifically). While escape behavior of these lizards was generally not affected by internal or external conditions, these results suggest the ability of lizards to escape capture potentially depends on internal and external conditions (e.g., temperature).

## SPACE USE IN GRAND CAYMAN BLUE IGUANAS

R. M. Goodman et al. [2005, J. Herpetology 39(3):402–408] note that West Indian rock iguanas (genus *Cyclura*: Iguanidae) are among the most endangered lizards in the world, and many species will need to occupy human-modified and -occupied habitats to escape extinction. The Grand Cayman blue iguana, *Cyclura lewisi*, is critically endangered with fewer than 25 wild iguanas remaining. To aid the conservation of this and other iguanas, the authors investigated the spatial ecology of a captive-bred, released population of *C. lewisi* occupying a botanic park on Grand Cayman. Iguanas were monitored using transect walks and radiotelemetry during the summer and fall of 2002. Males used larger areas and had greater movement distances than females during tracking periods in the summer but not in the fall. Overall home ranges for both seasons combined were larger in males than in females. Some home-range estimates were greater than any previously reported in *Cyclura*. Several iguanas, especially males during the breeding season, used areas outside the park where they are vulnerable to increased predation, death by vehicle, and hunting or collection by humans. This, combined with the large average home-range sizes for this species, indicate that future reserves for *C. lewisi* should be large and surrounded by buffer zones or fences.

## GARTERSNAKE TAIL DAMAGE

J. S. Placyk and G. M. Burghardt [2005, Amphibia–Reptilia 26(3):353-358] note that tail loss, urotomy, in reptiles and amphibians has been the emphasis of many ecological and evolutionary studies, especially in lizards and salamanders; however, less is known about this phenomenon in snakes. In addition, while hypotheses for variation in tail loss across natural populations exist, none have been strongly supported. The authors studied tail loss in snakes and attempted to elucidate any relationship between variation in predator composition and frequency of wounds. They examined 523 common gartersnakes, *Thamnophis sirtalis*, from 5 Michigan field sites characterized by diverse predator compositions for tail loss and other predator-inflicted wounds and updated historical records of predator composition for Michigan. Results indicate that frequency of wounds varies geographically, and that this variation may be due, in part, to differences in predator diversity. The data also suggest that other environmental variables (e.g., predator inefficiency) that may influence the frequency of wounds in populations may be at work.

## FLORIDA SAND SKINKS

K. G. Ashton [J. Herpetology 39(3):389–395] evaluated the life history of Florida sand skinks (*Neoseps reynoldsi*), fossorial lizards endemic to central Florida. Based on museum specimens, literature records, and field captures, sand skinks have a single mating period each year, lasting from February through May. Females produce a single clutch each year between May and June, although some reproduce biennially or less frequently. Mean clutch size from counts of enlarged follicles and eggs was 2.2 (range two to three; if only oviducal eggs are counted, clutch size was two). Mark-recapture data indicate that sand skinks do not reproduce before 19–23 months of age and that sand skinks can live to at least eight to 10 years of age. The suite of life-history traits shown by sand skinks (low frequency of reproduction, small clutch size, late maturity, and long lifespan) is similar to those of other fossorial lizards.

## EGG ASSESSMENT BY BROODING SALAMANDERS

D. C. Forester et al. [2005, Herpetologica 61(3):219-224] conducted behavioral trials to determine if egg preference by female northern dusky salamanders (*Desmognathus fuscus*) is influenced by the developmental age of their eggs. Within 72 h of oviposition, the authors divided 41 clutches in half and monitored the time the female spent with each of the genetically similar half-clutches. The eggs were then reared for 21 days in darkness under two temperature regimes (13 and 23°C) to produce a developmentally advanced and delayed half-clutch for each female. Initially, females divided their time almost equally between half-clutches. After thermal manipulation of embryo development, females spent the majority of their time with the developmentally advanced half-clutch. Of the 25 subjects included in the second trial, 21 spent >60%, and 15 spent more than 80% of their time in the presence of developed eggs. The authors hypothesize that females assess the developmental status of their eggs in order to optimize the tradeoff between the costs and benefits of parental care.

## TESTING THE ANNUAL GROWTH LINE HYPOTHESIS

P. A. Stone and M. E. Babb [2005, Herpetologica 61(4): 409–414] tested the hypothesis that a single, countable growth line is deposited annually in turtles by calibrating growth line counts against elapsed time in a population of red-eared sliders, *Trachemys scripta elegans*, in central Oklahoma. Thirty-one percent of all individuals (349/1129) had countable growth lines. The maximum number of growth lines that could be reliably counted was four. In each year of the study, the first turtles were captured early in March, yet the first new growth lines were not documented until late April. The authors recorded 1569 captures of 106 turtles that were captured in consecutive years and had countable growth lines throughout the study. Within these turtles, the annual growth line hypothesis was supported. Growth line counts agreed with elapsed time for 100 (94%) turtles. Three turtles appeared to add two growth lines in one year, and three turtles did not add a growth line in one year. The authors conclude that growth line counts can be used to age turtles in this population up to age four. However, they recognize several sources of error in growth line counts, and encourage researchers to conduct intensive sampling with repeated growth line counts from individuals.

## WEATHER EFFECTS ON FROG CALLING

K. F. Hauselberger and R. A. Alforda [2005, Herpetologica 61(4):349–363] note that it is sometimes perceived that the cues affecting chorusing behavior in frogs are simple combinations of weather variables, and that closely related or sympatric species should respond to these cues in similar ways. The authors investigated these ideas by examining chorusing behavior in two species of tropical Australian microhylid frogs, *Austrochaperina robusta* and *Cophixalus ornatus*. Both species have small adult body sizes, are terrestrial breeding, direct-developers, and extensively co-occur in the Australian Wet Tropics. Timed tape recorders were used to monitor calling activity over two breeding seasons (October to March) during 1995–96 and 2001–02. Calling activity was recorded at three times each night at seven locations along a 550 m transect. In the 2001–2002 seasons, dataloggers recorded temperature, humidity, and rainfall, and we calculated moon phase each night. Individuals of *C. ornatus* called more times per minute than individuals of *A. robusta*, and called at much more consistent levels across nights, in a seasonal pattern that closely followed a quadratic curve in both seasons. Calling activity by *A. robusta* males could occur at any level on any night of the breeding season, and varied greatly among nights. Principal components analyses for the 2001–02 data showed that 78.1% of variation in *A. robusta* calling activity could be due to factors common to the entire transect, while such factors could account for 62.8% of the variation in calling by *C. ornatus*. This result suggests that weather influences calling activity of *A. robusta* males more than of *C. ornatus* males. Canonical discriminant function analyses and partial rank correlations of the relationships between environmental variables and calling activity over the season indicated that initiation of calling in *A. robusta* males was strongly affected by rainfall, and continuation of calling by rainfall and humidity. Calling initiation in *C. ornatus* males was less correlated with weather variables, and appeared most strongly affected by humidity. Calling levels within species were correlated across the three recording times each night, but much less strongly than would be expected if caused by responses to weather. Calling activity also was correlated between species at each time of night, and a substantial proportion of this correlation did not appear to be caused by common responses to the weather variables we measured. We suggest that in both species weather conditions affect the probability of initiation of calling activity, and that initiation and continuation of calling are probably also affected by intraspecific and perhaps interspecific social facilitation.

## ECOLOGY OF OAK TOADS IN FLORIDA

C. H. Greenberg and G. W. Tanner [2005, Herpetologica 61(4):422–434] used data from 10 years of continuous, concurrent monitoring of oak toads (*Bufo quercicus*) at eight isolated, ephemeral ponds in Florida longleaf pine-wiregrass uplands to address: (1) did weather variables affect movement patterns of oak toads?; (2) did pond hydrology and the condition of surrounding uplands affect pond selection by adults or juvenile recruitment?; (3) were population trends evident?; and (4) did a classical metapopulation model best represent their population ecology? Of 4076 oak toads captured, 92.2% were adults. Substantial ($n \geq 30$ exiting juveniles) recruitment occurred only three times (once each at three ponds during two years). Males outnumbered females (average for all years 2.3:1). Most captures occurred during May–September. Adult captures during June–August increased with heavier rainfall but were not influenced by the durations of preceding dry periods. Movement patterns of metamorphs suggested that oak toads emigrated when moisture conditions become favorable. Pond use by adults was correlated with maximum change in pond depth (May–September). Juvenile recruitment was negatively correlated with minimum pond depth and the number of weeks since a pond was last dry, and positively correlated with the maximum number of weeks a pond held water continuously. The number of breeding adults and juvenile recruitment were highest at ponds within the hardwood-invaded upland matrix. The direction of most immigrations and emigrations was nonrandom, but movement occurred from all directions, and the mean direction of pond entry and exit did not always correspond. A total of 21.1% of individuals was recaptured; 13.3% of first captures were recaptured during the same year, and 7.7% during a subsequent year. Only 1.9% of captured oak toads moved among ponds, mostly within a distance of 132 m. No adult population trends were detected over the 10-yr study. Presence or absence at ponds in any given year was a poor indicator of overall use. The authors saw little evidence of local extinction or "rescue," but were unable to determine whether juveniles returned to natal ponds or colonized new ponds for breeding as adults. Oak toad conservation can best be ensured by maintaining multiple ponds within a landscape to increase the probability of recruitment within the landscape neighborhood during at least some years and at some ponds, and to increase the likelihood of inter-pond movement.

# Unofficial Minutes of the CHS Board Meeting, November 18, 2005

Linda Malawy called the meeting to order at 7:30 P.M. Board members Melanie Aspan, Sean Bober, Betsy Davis, Jim Hoffman and Jennifer Spitzer were absent.

There was recognition from the board of the passing of Ron Humbert and reflection on his impact on our lives as well as his dedication to the CHS.

**Officers' Reports**

Recording Secretary: In Melanie Aspan's absence Cindy Rampacek read the minutes of the October 14 board meeting. Corrections were made and the minutes were accepted as corrected.

Treasurer: Linda Malawy distributed the October income statement in Jim Hoffman's absence. The credits to the massasauga fund and T-shirt sales were questioned. Clarification will be requested for these line items.

Membership Secretary: Linda Malawy distributed the membership graph. Our current membership stands at 594.

Corresponding Secretary: Deb received a suggestion that for general meetings, board members wear name badges to help new attendees learn who the board is. Deb has offered to take on the task of distributing these at the general meeting sometime in the near future. There is also another Big Sand Mounds trip in the works and it was proposed for a May 2006. Deb is also looking for volunteers to assist at the Lizard Lovers program at Plum Creek Nature Preserve, March date to be confirmed. She is looking for members with large or unique lizards. More information will be forthcoming.

Publications Secretary: There will be a tribute to our dear friend Ron Humbert in the December issue of the *Bulletin*.

**Committee Reports**

Shows: The next weekend show at the Peggy Notebaert Nature Museum will be December 3–4. As always Jenny is looking for volunteers. We are considering participating at the Arlington Family Pet Fair. The dates are Friday, March 17 – Sunday, March 19. Volunteers needed for all days.

ReptileFest: Jenny will be meeting with Sandy Quinn of *Reptiles* magazine to arrange the advertising. The first committee meeting has been moved to early December.

Raffle: We are still looking for sources for raffle items. Raffle appears to be going well.

Library: Steve Sullivan announced the addition of Ellin Beltz's new book, *Frogs: Inside Their Remarkable World*, and Tom Johnson's *Amphibians and Reptiles of Missouri*. Steve also brought samples of materials under consideration for the Esther Lewis memorial plaque.

General Meetings: Rich Crowley will be coordinating the round table discussions for the December meeting.

**Old Business**

Award Presentations: Awards honoring members' service in 2005 will be presented at the January general meeting.

Sushi for Salamanders was a great success. All proceeds to benefit giant salamanders: genera *Andrias* and *Cryptobranchus*. Thank you Erik and Zoe.

Samples were shown by Steve Sullivan for the kingsnake.com Chicago Herp Society ad. A final copy should be ready by the December board meeting.

Membership Survey: Adjustments are being made to the survey and the board is looking at the possibility of placing the survey on the website. Deb Krohn and Jason Hood are working on the changes suggested and will bring the sample to the December Board Meeting.

Milwaukee Public Museum's Snake Days: Bob Henderson, Curator of Herpetology at the Milwaukee Public Museum arranged a generous reimbursement for CHS members who presented at the event. Mike Dloogatch made a motion to reimburse transportation expenditures incurred to the MPM event on a pro-rata mileage basis up to the amount that we received from MPM. Steve Sullivan seconded and the motion was approved unanimously. The event was enjoyed by exhibitors as well as attendees.

**New Business**

Las Cruces Reptile Rescue is requesting signatures on their petition to stop rattlesnake round-ups in New Mexico. See http://new.petitiononline.com/roundups/petition.html

The December meeting of the CHS Board of Directors will not be held at the North Park Village Administration Building as usual.

The CHS would like to thank the Volunteer Services Staff at the Notebaert Museum for assistance preparing the mailing of absentee ballots. Their help was appreciated.

Big Apple Herpetological donated many items to the raffle. Sincere thanks to Big Apple Herpetological for their support.

A motion was made and passed to send a donation again this year to the Declining Amphibian Populations Task Force at Arizona State University.

**Roundtable**

Once again the loss of Ron Humbert was expressed by all in attendance.

The meeting was adjourned at 9:53 P.M.

*Respectfully submitted by Cindy Rampacek.*

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# Advertisements

For sale: rats and mice—pinkies, fuzzies and adults. Quantity discounts. Please send a SASE for pricelist or call Bill Brant, *THE GOURMET RODENT*, 6115 SW 137th Avenue, Archer FL 32618, (352) 495-9024, E-mail: GrmtRodent@aol.com.

For sale: from **The Mouse Factory**, producing superior quality, frozen feeder mice and rats. We feed our colony a nutrtionally balanced diet of rodent chow, formulated especially for us, and four types of natural whole grains and seeds. Mice starting from: pinks, $.17 each; fuzzies, $.24 each; hoppers, $.30 each; weanling, $.42; adult, $.48. Rats: starting with pinks at $.45 each, to XL at $1.80 each. Discount prices available. We accept Visa, MC, Discover or money orders. PO Box 85, Alpine TX 79831. Call **toll-free** at (800) 720-0076 or visit our website: < http://www.themousefactory.com> .

For sale: **high quality frozen feeders**. Over a decade of production and supply. Seven sizes of mice availabe: small newborn pinks up to jumbo adults. Prices start at $25 per 100. Feeders are separate in the resealable bag, not frozen together. Low shipping rates. Free price list. Kelly Haller, 4236 SE 25th Street, Topeka KS 66605, (913) 234-3358 evenings and weekends.

For sale: books. *Dragon Lizards & Goannas of South Australia* by T. F. Houston, 1978, 30 figs. (range maps, drawings), 12 plates (some in color), softbound, $28; *Australia's North* by Stanley and Kay Breeden, 1975, 208 10 × 12" pp., many excellent color and b&w photos of herps such as the frill-necked lizard, olive and black-headed pythons, geckos, crocodiles, turtles, and others; an authoritative account of the natural history of the Top End of the Northern Territory (including Kakadu), DJ, hardbound, $32; *Poisonous Snakes of the World* by the Department of the Navy, revised edition, 1965, 212 pp., 120 figs. (b&w photos, drawings), 8 color plates, 15 tables, contains info on venoms, hardbound, $15; *Forgotten Edens—Exploring the World's Wild Places* by Frans Lanting and Christine Eckstrom, 1993, 202 pp., handsomely illustrated with superb Lanting color photos on nearly every page, Borneo, Hawaii, Okavango, and Madagascar including herps, DJ, hardbound, $9; *Hidden Worlds of Wildlife*, 1990, National Geographic Society, 199 pp., many color photos of NGS high quality, localities include Papua New Guinea, the American tropics and Etosha, herps such as sideneck and olive ridley turtles, palm viper, and cat-eyed snake, DJ, hardbound, $8. All books in excellent condition. Postage $2.50 for orders under $25, free for orders of $25 or more. William R. Turner, 7395 S Downing Circle W, Littleton, CO 80122, (303) 795-5128, e-mail: toursbyturner@aol.com.

For sale: 125-gallon metal-frame glass tank, 60" × 17" × 20", custom wood top w/ incandescent light, end cracked, siliconed, not a show tank, functional, very heavy, $175; two 3' × 2' × 8" black plastic utility tubs, $5 each; one 27" × 18" × 10" gray plastic tub, $5. Also three male painted turtles—one 4½" southern (*Chrysemys picta dorsalis*), yellow stripe, LTC, and two western (*C. p. bellii*), 5" & 6", smaller has healed shell from road hit,$10 each, $20 all three; one 9" female c.b. yellow-bellied slider (*Pseudemys s scripta*), dark face, $20; one 5½" Mexican mud turtle (*Kinosternon* sp.), very nice, $15; old male redear, 9", needs a good home, $5. All LTC. Must cut back and weed out collection. Great pets. Harry, (773) 274-1098, eves.

For sale: c.b. blue-tongued skinks, *Tiliqua scincoides*, born August 2004, $70 each. Linda Malawy, (630) 717-9955.

For sale: Currently available captive-bred animals: ball pythons (*Python regius*) sexed 2005 eating on frozen-thawed rats/mice 200g+ , normals $40 each or Pastels $550 males/$1100 females; Borneo short-tailed pythons (*Python breitensteini*), feeding on live mice, $125 each. Rich Crowley, (708) 646-4058 (cell) or (708) 485-5705 (home) or email at pogona31@ameritech.net.

For sale: 3 male and 1 female c.b. Jampea reticulated pythons. I'm asking $250 for males and $350 for the female, $500 for a pair. Out of 33 hatchlings this is all that remains. You can email me at gaspar5@comcast.net or phone me at (219) 696-1432. Thanks, Jim Gaspar.

Free to a good home: Near-complete set of the *Bulletin of the Chicago Herpetological Society* from 1982 through 2005. Contact Rob Streit at (708) 383-6830 to arrange pickup.

Herp Tours: Why pay more? Travel with the International Fauna Society, a 501 (c)3 not-for-profit organization, and experience the Costa Rican rainforest! Stay at the beautiful Esquinas Rainforest Lodge in the untouched herpetological paradise that is Piedras Blancas National Park. Meet new friends, relax in the naturally-filtered swimming pool or in the lush, fauna-filled tropical garden. Discounts for IFS and Chicago Herp Society members. For details, visit The International Fauna Society website at www.faunasociety.org or E-mail: info@faunasociety.org.

Herp tours: Adventure trips to **Madagascar**! Journey somewhere truly unique to seek and photograph nature on the world's least-studied mini-continent. For maximum herp fun and discovery, join Bill Love as we go where few people will ever venture in their lives. Let his experience assure a comfortable tour finding the most colorful and bizarre species on the planet! Get all the details at Blue Chameleon Ventures' comprehensive new website: < http://www.bluechameleon.org> , E-mail: bill@bluechameleon.org, or call (239) 728-2390.

Herp tours: The beautiful Amazon! Costa Rica from Atlantic to Pacific! Esquinas Rainforest Lodge, the Osa Peninsula, Santa Rosa National Park, and a host of other great places to find herps and relax. Remember, you get what you pay for, so go with the best! GreenTracks, Inc. offers the finest from wildlife tours to adventure travel, led by internationally acclaimed herpers and naturalists. Visit our website < http://www.greentracks.com> or call (800) 892-1035, e-mail: info@greentracks.com

**Virtual Museum of Natural History at www.curator.org**: Free quality information on animals—emphasis on herps—plus expedition reports, book reviews and links to solid information. Always open, always free.

Wanted: To hire housesitter and feeder of female reticulated python in Washington, D.C., for late spring/summer 2006. To learn more, contact kbricker@oceanconservancy.org or call (301) 320-4457.

Wanted: Volunteer to help with midwestfrogs.com web site by transcribing videotaped interviews with frog biologists (from VHS). Dave McGowan, dmcgowan3@earthlink.net.

Wanted: I'm looking for my soulmate. I want to settle down to a family before it is too late. But I have this problem. . . . When we get into hobbies and interests: old popular records, jazz and show tunes, and antique electronics are fine, but when I mention turtles, "What, are you crazy?" So maybe this is a better place to look. Please don't try to separate me from my turtles—at least not most of them. If interested, please drop a line to Ellis Jones, 1000 Dell, Northbrook IL 60062, telling a bit about yourself and giving a phone number.

Line ads in this publication are run free for CHS members—$2 per line for nonmembers. Any ad may be refused at the discretion of the Editor. Submit ads to: Michael Dloogatch, 6048 N. Lawndale Avenue, Chicago IL 60659, (773) 588-0728 evening telephone, (312) 782-2868 fax, E-mail: MADadder0@aol.com.

## In Memoriam: Ron Humbert

CHS Sergeant-at-arms Ron Humbert, 67, died of pancreatic cancer on Sunday, November 13, in the University of Chicago Medical Center. At the time of death, Ron was surrounded by his family: wife Dotty and children Dan, Rena, Missy and Gretchen.

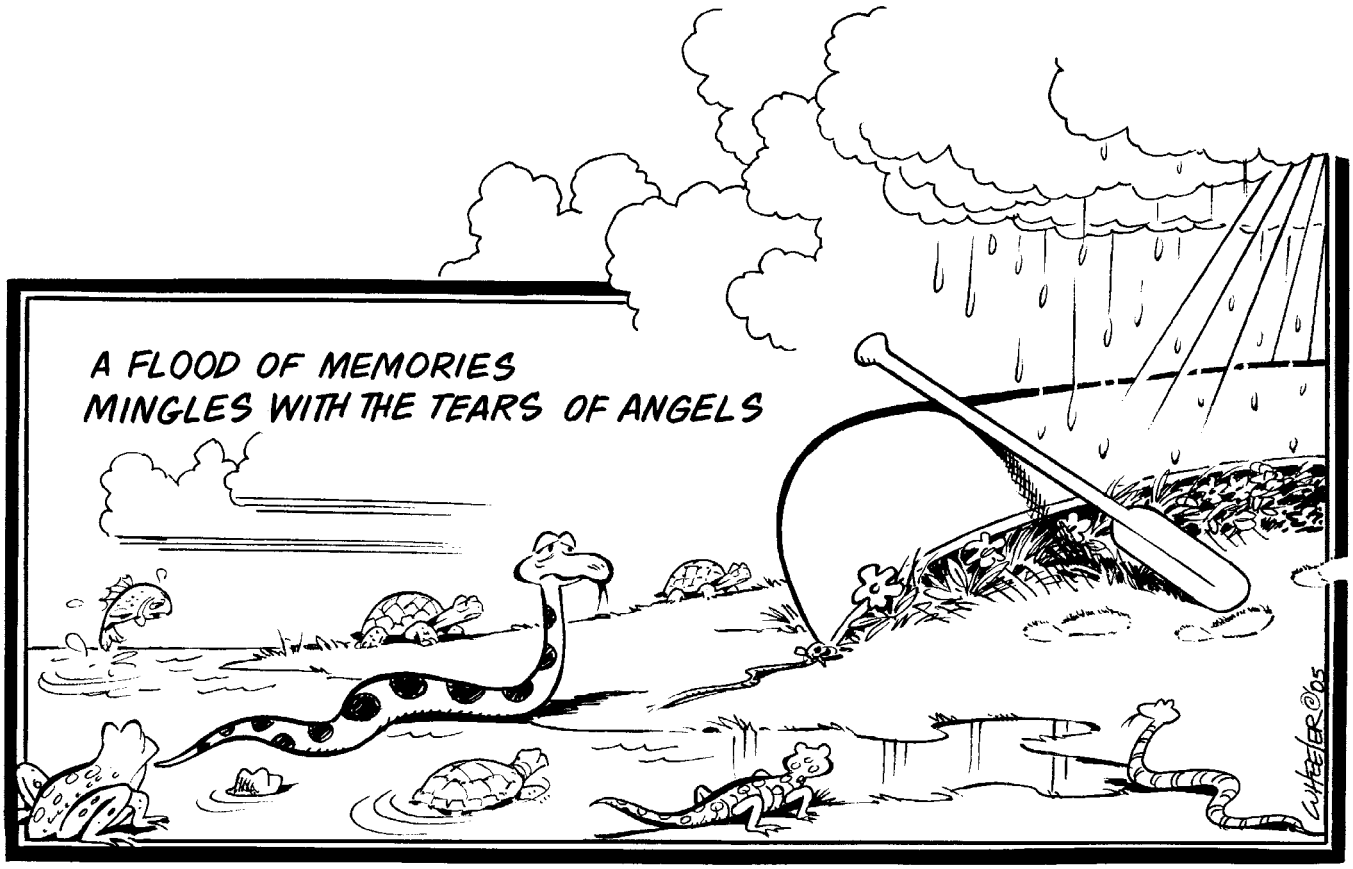
Ron was a CHS member for just over 30 years. He played a prominent role in our group from the moment he joined. In 1978 he served as President. In 1984 he started our annual Spring Salamander Safari. He chaired ReptileFest in 1995. In that year a grateful Society bestowed on Ron and Dotty jointly the CHS Lifetime Achievement Award. Over the past few years Ron won many new friends for the CHS while spearheading a successful campaign to provide the state of Illinois with an official State Reptile and State Amphibian.

The list could go on and on. Ron held many different CHS board positions over the years. And even when he didn't hold a position, he regularly attended board meetings. Ron was the perennial go-to guy when something needed doing.

Better than anyone else, Ron embodied the CHS mission of education, conservation and closer cooperation between amateur and professional herpetologists. He participated in every aspect of the educational shows sponsored by the CHS—not only ReptileFest, but also countless smaller programs for local museums, libraries, nature centers, schools and scout groups. He taught nature study classes at the Field Museum and the Morton Arboretum. In Michigan Ron was closely associated with the Owasippe Scout Reservation. Ron and Dotty built a second home on property adjacent to Owasippe. Ron served as conservation director for the Owasippe Outdoor Education Center and was actively involved in Michigan's massasauga and wood turtle conservation programs.

In so many ways Ron was an inspiration to us all. He always seemed to know the *right* thing to do, and never hesitated to do it. For first-timers to CHS meetings, it was Ron more than anyone else who made them feel welcome. As a field companion, no one could compare: He was conservation-minded, knowledgeable, enthusiastic, good-humored and endlessly energetic.

He will be missed, he will be mourned, he will be remembered by all of us who were privileged to know him.



## UPCOMING MEETINGS

The next meeting of the Chicago Herpetological Society will be held at 7:30 P.M., Wednesday, December 28, at the Peggy Notebaert Nature Museum, Cannon Drive and Fullerton Parkway, in Chicago. After the business segment at this meeting we will break up into "round table" discussion groups on various topics of herpetological interest. Group topics will include snakes, lizards, turtles, frogs and salamanders. There will be a group led by a veterinarian, and if there is sufficient interest there will be a group especially for youngsters.

On January 25, **Dr. Paul T. Andreadis**, Visiting Assistant Professor at Denison University in Granville, Ohio, will present a program entitled "I Like to Watch: Insights from Observing Herps." Paul will show field video of various herps (and other animals), with emphasis on the foraging behavior of cottonmouths. His suggestion to all is: "In captivity, admire them, but admire what they do as well as how they look. In the field, catch if you must, but watch first if you can."

The regular monthly meetings of the Chicago Herpetological Society take place at Chicago's newest museum — the **Peggy Notebaert Nature Museum**. This beautiful new building is at Fullerton Parkway and Cannon Drive, directly across Fullerton from the Lincoln Park Zoo. Meetings are held the last Wednesday of each month, from 7:30 P.M. through 9:30 P.M. Parking is free on Cannon Drive. A plethora of CTA buses stop nearby.

### Board of Directors Meeting

Are you interested in how the decisions are made that determine how the Chicago Herpetological Society runs? And would you like to have input into those decisions? If so, mark your calendar for the January 13 board meeting, to be held at the North Park Village Administration Building, 5801 North Pulaski Road, Chicago. To get there take the Edens Expressway, I-94, and exit at Peterson eastbound. Go a mile east to Pulaski, turn right and go south to the first traffic light. Turn left at the light into the North Park Village complex. At the entrance is a stop sign and a guardhouse. When you come to a second stop sign, the administration building is the large building ahead and to your left. There is a free parking lot to the left and behind the building.

### The Chicago Turtle Club

The monthly meetings of the Chicago Turtle Club are informal; questions, children and animals are welcome. Meetings normally take place at the North Park Village Nature Center, 5801 N. Pulaski, in Chicago. Parking is free. For more info call Lisa Koester, (773) 508-0034, or visit the CTC website: http://www.geocities.com/~chicagoturtle.

## HERP OF THE MONTH

Each monthly meeting will showcase a different herp. CHS members are urged to bring one specimen of the "Herp of the Month" to be judged against the entries from other CHS members. Prizes will be awarded to the top three winners as follows: 1st place—6 raffle tickets at next meeting; 2nd place—4 raffle tickets at next meeting; 3rd place—2 raffle tickets at next meeting. For a change of pace in December, entries should be nonliving, herp-related art objects or bric-a-brac. Just about any nonliving herpetological curiosity should be acceptable.

## ELECTION RESULTS

As a result of the elections held November 30, 2005, the following officers and members-at-large will serve on the CHS Board of Directors for the year 2006.

| | | | |
|---|---|---|---|
| President: | Rich Crowley | Membership Secretary: | Deb Krohn |
| Vice-president: | Linda Malawy | Sergeant-at-arms: | Betsy Davis |
| Treasurer: | Andy Malawy | Members-at-large: | Mike Dloogatch |
| Recording Secretary: | Zorina Banas | | Jason Hood |
| Corresponding Secretary: | Cindy Rampacek | | Mike Scott |
| Publications Secretary: | Erik Williams | | Mary Beth Trilling |

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