Male (151.813): Followed from 10 May–26 August 2008 (N = 21 locations). Mass = 171 g, midline carapace length = 10.33 cm. Home range: 100% MCP = 7.6 ha, MCP - land = 6.8 ha, length = 332.4 m. Average daily distance moved (range) = 17.9 m (range: 0.6–68.5 m/day)

Male 150.663 has the largest home range size yet reported for *S. odoratus*. This turtle was originally caught in a wetland bordering the Otonabee River in late May 2008. He remained in this area throughout June, then moved across the river into a large side channel wetland in July. In August, he moved over 5 km towards the mouth of the Otonabee River at Rice Lake, presumably where he hibernated (he was located there in October and November 2008). We lost track of this turtle over the winter of 2008, so do not know if these movements represent an annual migration, or if this was directional dispersal to a new site.

Although long distance (> 1 km) movements of *S. odoratus* do not appear to be the norm, Edmonds (1998. M.Sc. Thesis, University of Guelph) reported a similar maximum male home range size of approximately 430 ha. We note, however, that this estimate included terrestrial and deep-water areas the turtle was unlikely to use. The estimated usable habitat area was estimated at 22.2 ha for this home range in Georgian Bay, Ontario (Edmonds 1998, *op. cit.*). Belleau (2008. M.Sc. Thesis, McGill University) reported a maximum average daily movement of 1000 m for *S. odoratus* in Norway Bay, Quebec. Indeed, home range size for *S. odoratus* appears to increase with latitude. Mean 100% MCP ranges from 0.94 ha (females) and 1.75 ha (males) in southeastern Pennsylvania (Ernst 1986. J. Herpetol. 20:341–352) to 48.89 ha (females) and 155.36 ha (males) in Georgian Bay, Ontario, Canada (Edmonds 1998, *op. cit.*). A later study in Georgian Bay, which excluded terrestrial habitat from home range estimates (100% MCP), found a maximum home range size of 205 ha, strikingly similar to our male 150.663, though in this case the turtle was a female *S. odoratus* (Laverty 2010. M.Sc. Thesis, Laurentian University). There are relatively few studies of the movement patterns of this species, thus further investigation into their spatial ecology across their range is necessary for interpretation of the biological relevance of variation in home range size along a latitudinal gradient.

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***TRACHEMYS SCRIPTA ELEGANS* (Red-eared Slider). MORTALITY.** Human-caused mortality for *Trachemys scripta elegans* has included being shot while basking, beheaded by fishermen after being hooked, killed by automotive traffic, and trapped for research and teaching purposes, and the pet and food industries (Ernst and Lovich. 2009. Turtles of the United States and Canada, 2nd ed. Johns Hopkins University Press, Baltimore, Maryland. 827 pp.). This report adds an additional anthropogenic hazard. On 18 May 2009 at 1300 h in Comanche Co., Texas, USA, on Hwy 16 ca. 1.39 mi. S of County Road 2156 (32.193400°N, 98.532396°W; 387 m elev.), an adult female *T. scripta* was found trapped in a cattle guard. The turtle was caught in a vertical position, face down between two of the rails at the bottom of the cattle guard. Both the anterior portion of the carapace and plastron were stuck between the rails (Fig. 1). It is likely that this specimen would have died had it not been discovered. Directly beneath the aforementioned specimen were the skeletal remains of another *T. s. elegans*. However, it is uncertain if this death was caused by a similar circumstance.

Fig. 1. Female *Trachemys scripta elegans* trapped in a cattle guard, Comanche Co., Texas.

The live specimen was photographed as found (UTA DC 8086) and then released. The dead specimen was also photographed (UTA DC 8087).

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CROCODYLIA — CROCODILIANS

***ALLIGATOR MISSISSIPPIENSIS* (American Alligator). NECROTIZING EXFOLIATION.** Effects of a prior severe winter freeze on *Alligator mississippiensis* in Louisiana were documented (Joanen and McNease 1990. Proceedings of the 9th Working Meeting of the Crocodile Specialist Group, IUCN – The World Conservation Union, Gland, Switzerland. Volume 2. pp. 21–32) and behavioral responses to freezing have been described (Hagan et al. 1983. J. Herpetol. 17:402–404; Brandt and Mazzotti 1990. Copeia 1990:867–871). Captive *Crocodylus niloticus* (Nile Crocodiles) can develop "winter sores" when held under cold conditions, wherein blood supply to the skin is reduced and the action of the immune system is impeded, causing erosions between scales (Huchzermeyer 2002. Rev. Sci. Tech. Off. Int. Epiz. 21[2]:265–276). We recently observed a large free-ranging *A. mississippiensis* with necrotizing scale exfoliation possibly due to severe winter weather.

On 24 March 2014 (ca. 1745 h), RME observed an adult alligator that appeared listless on a bank of a canal near the headquarters of Rockefeller Wildlife Refuge (RWR) in Grand Chenier,

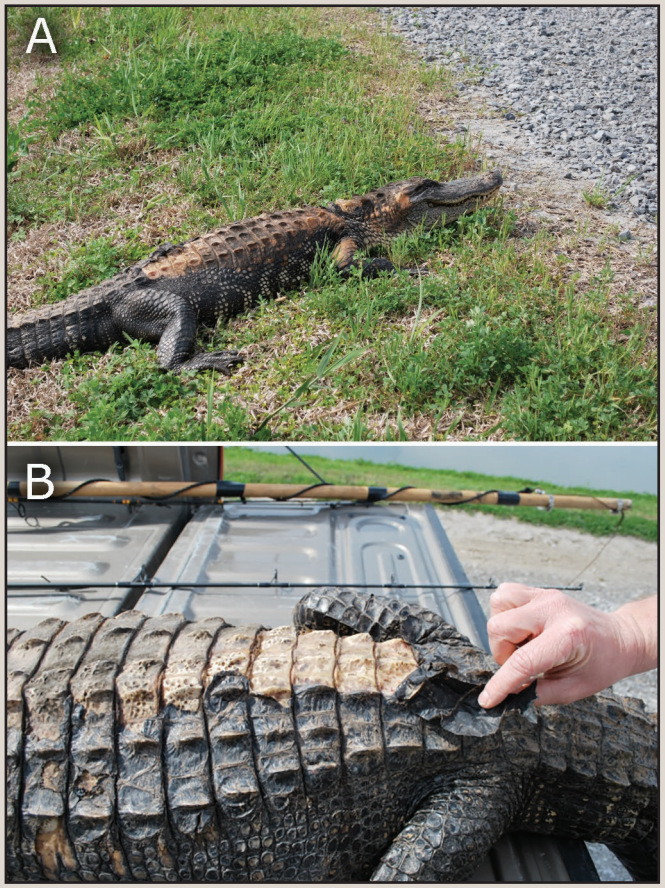

Fig. 1. Adult American Alligator (*Alligator mississippiensis*) immediately upon capture with necrotizing exfoliation (A) and detail of sloughing skin (B).

Louisiana, USA. The skin on the dorsal surface of the alligator was peeling off in numerous locations. Initially it was thought the alligator might be dead; upon gentle provocation it was guided back into the canal. The following morning (ca. 0930 h) the alligator was again observed in the water in nearly the same location. The alligator was readily observed even after submerging, as the exposed white osteoderms were visible as the overlying skin had been lost. After gathering equipment, the alligator was easily caught on the opposite bank of the canal. It did have strength to struggle mildly after capture, but less vigorously than normal for an alligator of comparable size. The male alligator was 239 cm total length, and had skin sloughing off the dorsal surface of the body (Fig. 1), including the head, neck, back, and limbs. The left rear foot had a prior well-healed amputation; likely due to trauma. The right eye was cloudy; when we tried to closely examine the left eye the surrounding skin sloughed off to mild touch. Several biopsies were taken of the skin surface. The animal was placed in a holding tank temporarily, but it was decided the alligator was near death and humane euthanasia was the best option. Arrangements were made for transport and full necropsy to be done at the Louisiana State University School of Veterinary Medicine.

At necropsy, a definitive cause of the condition could not be determined, but multiple abnormalities related to the necrotizing dermatitis and chronic debilitation were described, such as multisystemic thrombosis of small vessels possibly resulting from severe systemic inflammation and/or sepsis. The ulcerated dermis was colonized by moderate numbers of bacteria and fungal hyphae, which extended into the deep dermis, and there was some evidence of a non-severe pneumonia. The lesion in the right eye was thought to be chronic and unlikely to have contributed to the presenting condition. West Nile Virus testing was negative.

We suspect the alligator may have been adversely affected by numerous unusual regional winter freezes. The necrotic areas of the skin were on the surfaces that would have been in contact at the air-water interface for an alligator floating at the water surface. RWR documented three days of below-freezing temperatures from 6–8 January, with -6.67ºC (20ºF) on 7 January. For the ten day period from 22–31 January, nine days had temperatures at or below freezing, including -4.44ºC on 30 January; such extremes are rare in coastal Louisiana with three winter storms (i.e., ice and freezing rain) impacting the region within one month. In February 2014 another four days were at or below freezing, as well as similar freezing temperatures again on 4–5 March.

An adult alligator with similar dermatological abnormalities was observed on nearby private wetlands by RME on 16 December 2010. Temperatures at that time were not nearly as severe as in the present case, but there were six days with temperatures at/below freezing from 1–14 December, with the lowest temperature being -1.67ºC. At the time it was believed the skin lesions might be due to exposure to an environmental irritant or contaminant such as gasoline, or possibly the alligator may have been exposed to a controlled fire in a prescribed autumn/winter burn, which is a common marsh management tool. Indeed, similar skin sloughing was noted in a Saltwater Crocodile (*Crocodylus porosus*) trapped in a bushfire (Webb and Manolis 1989. Crocodiles of Australia. Reed Books Pty. Ltd.).

Deep hypothermia used for anesthesia in alligators caused local sloughing of the stratum corneum where scales were frozen (Kennedy and Brockman 1965. Herpetologica 21:6–15). Necrotic dermatitis and lifting of entire scales was also noted in a juvenile *C. porosus* that had been listless, not eating, and died of a generalized bacterial infection (Buenviaje et al. 1998. Aust. Vet. J. 76:357–363). Frye (1991. Biomedical and Surgical Aspects of Captive Reptile Husbandry. Vol. 1. Krieger Publishing Co. Malabar, Florida) discussed frostbite in reptiles, and noted severe hypothermic injury can cause tissue necrosis and dry gangrene.

Recent studies have shown that the blood of American Alligators has antibacterial (Merchant et al. 2003. Comp. Biochem. Physiol. 136:505–513), amoebacidal (Merchant et al. 2004. J. Parasitol. 90:1480–1483), and antiviral properties (Merchant et al. 2005. Antiviral Res. 66:35–38). However, natural mortalities do occur. To our knowledge, this is one of the rare instances of a wild crocodilian suffering exposure to ice storms and freezing temperatures, which may have been a contributing factor in its debilitated condition. It would be of interest to know how long it may have survived had we not elected to humanely euthanize it. It may be that wild alligators do succumb to extreme weather events, but after death in the wild, carcasses may rapidly deteriorate and are not known or recovered by researchers. It is possible that environmental stressors such as recent hurricanes in Louisiana followed by drought years might suppress the immune system and predispose some alligators to development of abnormal lesions or skin disorders. Additional research investigating such disease mechanisms in valuable crocodilian resources might be warranted.

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***CROCODYLUS POROSUS* (Estuarine Crocodile). FISHING BEHAVIOR.** In all extant crocodilians, the morphology of the skull and feeding structures are strongly linked to the overall dietary preference and niche of a species (Pierce et al. 2008, J. Morphol. 269:840–864). In the case of *Crocodylus porosus*, the species is considered to be a generalist but its diet is dependent on the size of the animal. As a neonate the diet is comprised mainly of insects and other small compliant prey (Webb et al. 1991. J. Herpetol. 25:462–473). Sub-adults consume more robust prey such as birds, fish, small mammals, and carrion (Taylor 1979. Aust. Wild. Res. 6:347–359). Adult *C. porosus* are reportedly large game specialists consuming medium to large mammals and turtles (Webb and Manolis 1989. Australian Crocodiles, Reed Books Pty. Ltd, Sydney; Doody et al. 2009. Herpetol. Rev. 40:26–29). Although the diets of juveniles and sub-adults have been quantified for some areas (see Taylor 1979, *op. cit.*; Webb et al. 1991, *op. cit.*; Shahrul and Stuebing 1996. J. Trop. Ecol. 12:651–662), the diet, hunting strategies, and prey preferences of adults are limited to anecdotal observations and the occasional stomach sample. Recent observations by Britton and Britton (2013. Herpetol. Rev. 44:312) provided the first insight into the use of a unique foraging technique by *C. porosus* that was previously only recorded in *Caiman yacare* (Olmos and Sazima 1990. Copeia 1990:875–877) and *Caiman crocodilus* (Thorbjarnarson 1993. Copeia 1993:1166–1171). Here, we present three additional observations of cross-posture fishing by *C. porosus* and discuss the implications of these observations in terms of understanding the foraging strategies of the species in northern Australia.

On 24 April 2013, a *C. porosus* (total length ~150 cm) was observed in the Hunter River in the north Kimberley region of Western Australia. The *C. porosus* was observed to be herding prey items using the cross-posture fishing foraging technique in a small tributary of the river on the run out tide (Figs. 1–2). The *C. porosus* was observed with its front legs held perpendicular to the body, palms facing outwards and the toes projected above the water. Consistent with the observations of Britton and Britton (*op. cit.*) the jaws were held partially open with the upper jaw positioned just above the surface of the water and the lower just beneath. The *C. porosus* was observed lunging at mudskippers (*Oxudercinae* sp.) and prawns on the exposed mudflats. Occasionally, the animal was observed to lift its tail out of the water, which was thought to be a mechanism to stop prey from escaping the inlet.

On 2 March 2014, two adult *C. porosus* (total length ~ 250 cm and ~430 cm) were observed on the Yellow Waters Billabong region of the South Alligator River in Kakadu National Park, Northern Territory of Australia. Both animals were observed using the same cross-posture fishing technique. Both *C. porosus* were observed at a junction locally known as "three ways," which is situated on one of the upper freshwater billabong reaches of the South Alligator River. Despite observing the foraging activity for an hour, neither *C. porosus* was successful in capturing any prey items. It was noted that Ox-eye Herring (*Megalops cyprinoides*) were observed splashing on the surface in the vicinity of the observation. While we suspect that the individuals were targeting this prey item, this could not be confirmed given the lack of observations of successful prey capture.

PHOTO BY GREG CALVERT

Fig. 1. *Crocodylus porosus* using the cross-foraging posture in the Hunter River in the Kimberley region of Western Australia.

PHOTO BY GREG CALVERT

Fig. 2. Successful use of the cross-foraging posture by *Crocodylus porosus* to capture prey items in the Hunter River in the Kimberley region of Western Australia.

A further observation was made on 16 May 2014, where an adult *C. porosus* (400–450 cm) was observed with arms outstretched in the Corroborree Billabong within the Mary River Region of the Northern Territory. While the individual was not observed to have caught any prey using this method, it is likely that the individual was also targeting Ox-eye Herring, a locally common fish species and which were observed splashing on the surface at the time near the observation. Ox-eye Herring have been observed to be a frequent prey item of *C. porosus* in this location previously (D. Rhind, pers. obs.). Although the cross-posture fishing technique has been documented previously (Britton and Britton, *op. cit.*), our observations confirm that the technique is not restricted to Cahill's