



Lunge Feeding in the American Alligator (*Alligator mississippiensis*)

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Crocodylians are opportunistic aquatic predators, largely unchanged morphologically since the age of the dinosaurs (Grigg and Gans 1993). The American Alligator (*Alligator mississippiensis*) is native to the south-eastern United States and is among the most well-studied extant crocodylians (Schmidt 1922). The diet of American Alligators consists of invertebrates, fishes, amphibians, rep-

tiles, birds, and mammals (e.g., Delany and Abercrombie 1986; Wolfe et al. 1987; Delany et al. 1999; Rice 2004), and their foraging behavior is well documented (e.g., Busbey 1989; Cleuren and de Vree 2000; Cuff and Rayfield 2013). I herein describe an apparently novel feeding technique used by adult American Alligators to capture schools of small fish.

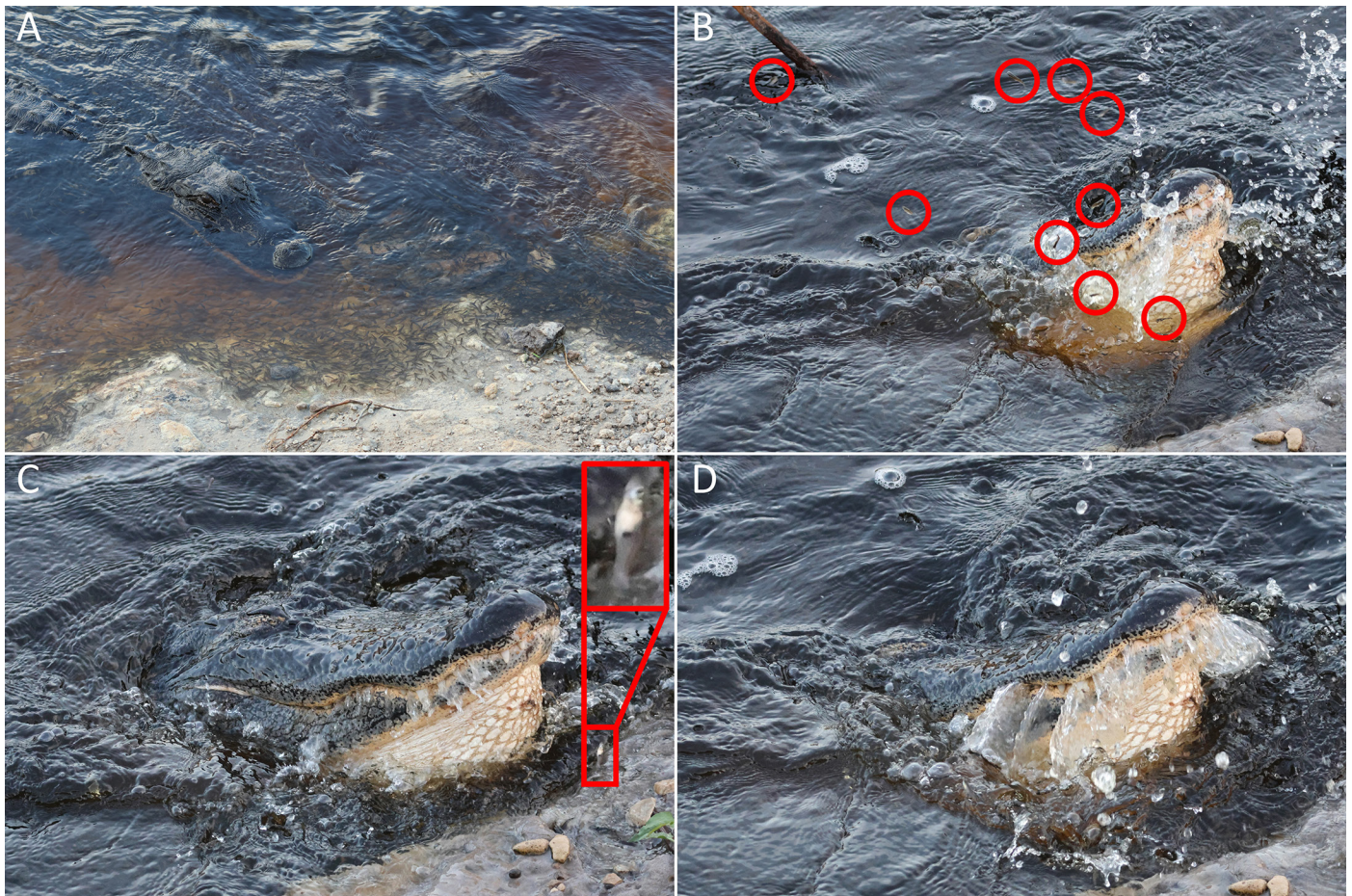


Figure 1. Lunge feeding in the American Alligator (*Alligator mississippiensis*). An alligator rests in shallow water with its mouth partially open, surrounded by a dense aggregation of small fish (A); the following day, in a spot very close by, an alligator emerges from the depths, rapidly engulfing water and small fish, and sending others scattering through the air (circled) (B); the fish being engulfed (see magnified inset) appear to be Eastern Mosquitofish (*Gambusia holbrooki*) (C); water is expelled with the mouth remaining closed (D). Photographs by the author. A video of this behavior taken by the author is available at: <https://youtu.be/NeWwQGupyFQ>, and a video of this behavior taken by wildlife photographer Dave Smith is available at: <https://youtu.be/all4fwiSbGM?si=Jhkf-dhsjeOvEA9Z>.

Over the course of several weeks during late March and early April 2025, I observed adult American Alligators (hereafter referred to as alligators) employ lunge feeding to capture and consume schools of small fishes at La Chua Trail in Paynes Prairie Preserve State Park, Florida, USA (29.60281, -82.30284). This behavior was documented with photographs (Fig. 1) and a video (<https://youtu.be/NeWwQGupyFQ>). The technique appeared to involve several steps: (i) submerging below a school of small fish, (ii) rising toward the water's surface, (iii) rapidly opening the mouth and engulfing fish and water, (iv) expelling water with the mouth closed, and (v) swallowing without opening the mouth. I initially suspected alligators engaged in this behavior were consuming small fishes as the technique appeared deliberate, was performed repeatedly, was conducted in areas where small fishes were abundant, and appeared to involve swallowing while the mouth remained closed without prey being visibly chewed or processed. However, because this hunting technique occurred rapidly, I had difficulty definitively determining this in real time. Only after reviewing video footage in slow motion and examining still images was my initial presumption supported. In particular, small fish near the water's surface were observed scattering and leaping from the water to avoid being engulfed. When their identity could be confirmed, these fishes appeared to be Eastern Mosquitofish (Poeciliidae: *Gambusia holbrooki*), a common native species of live-bearing fish 1–5 cm in length (Pyke 2005; Robins et al. 2018).

Lunge feeding has been described in baleen whales as “a sequential two-step process that begins with the engulfment of a discrete but large volume of prey-laden water during a high-velocity lunge, and ends with the purging and filtration of the water out of the distended buccal cavity” (Goldbogen et al. 2017). This resembles the hunting technique described herein in alligators (Fig. 2). In particular, a (relatively) large volume of water containing numerous small fishes appeared to have been engulfed in the mouth and gular throat pouch of alligators that rapidly accelerated toward the water's sur-

face during a lunge. The water was then expelled through clenched teeth. Finally, subtle head movements were indicative of swallowing while the mouth remained closed.

I cannot definitely rule out the possibility that alligators engaged in this behavior were attempting to capture larger prey and any capture (and scattering) of small fishes was incidental. However, this seems unlikely for several reasons. First, the behavior was performed repeatedly in the presence of schools of small fishes. No larger prey items were apparent and none were observed being captured when this technique was employed. Second, a large volume of water appeared to have been engulfed in the mouth and gular throat pouch, and engulfing such a large volume of water would likely be an inefficient means of targeting larger prey as this would dramatically increase drag. Third, water was expelled through clenched teeth while the mouth remained closed. Presumably an open mouth would allow water to drain more quickly but keeping the mouth closed would prevent the escape of numerous small fishes. Finally, after expelling the water, subtle head movements were indicative of swallowing without opening the mouth. When alligators capture large prey, it typically is processed (i.e., crushed in the jaws) before the characteristic backward tilt of the head allows gravity to facilitate swallowing. Consequently, I suggest that lunge feeding by alligators is a deliberate and integrated hunting technique designed to capture small fish.

To the best of my knowledge this particular hunting technique has not been described previously in alligators. Reasons why this might be the case include that this strategy is employed only in a narrow set of circumstances (i.e., it is rare), it is difficult to observe, or it has not been recognized as a novel hunting strategy. This technique is likely to be effective only when many small fishes are densely aggregated in water sufficiently deep enough to allow for the acceleration and lunge. Bodies of water that undergo seasonal wet and dry cycles such as wetlands and flooded prairies might be more likely to at least occasionally meet these conditions. I often



Figure 2. Lunge feeding in baleen whales, such as the Humpback (*Megaptera novaeangliae*) (left), resembles the hunting technique used by American Alligators (*Alligator mississippiensis*). Photographs by Robert Pitman, U.S. National Oceanic and Atmospheric Administration (public domain) (left) and the author (right).

visit Paynes Prairie Preserve State Park but observed this behavior only during a few weeks of the dry season. During the wet season, fishes presumably are spread across larger areas and not sufficiently concentrated for this hunting technique to be employed. Also, this behavior was evident only when alligators broke the plane of the water's surface and similar behavior under water would not be seen. Finally, at this same site, I have observed alligators resting in shallow water with their mouths partially open surrounded by small fishes (Fig. 1A) and, in the Florida Everglades, I have observed an alligator feeding on small poeciliid fishes in a shallow puddle during the dry season (Furness 2021). In those instances, alligators could have been engaged in something akin to trap-feeding (McMillan et al. 2019) but additional observations would be needed to confirm that.

Most studies of alligators' diets examined stomach contents (e.g., Wolfe et al. 1987). Three such studies of 769 alligators in 11 Florida lakes found a total of six Mosquitofish (Delany and Abercrombie 1986; Delany et al. 1999; Rice 2004). So, this species is a known dietary item, although small fish such as Mosquitofish might be so quickly digested that they are underestimated in analyses of stomach contents. The observations reported herein suggest that, at least for certain alligator populations, small fishes might be important seasonal prey worth pursuing using specialized hunting tactics.

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