

# OBSERVATIONS OF LEAST GREBE FORAGING AND PARENTAL CARE BEHAVIORS

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**ABSTRACT.**—I observed Least Grebes (*Tachybaptus dominicus*) at the western edge of the Coastal Sand Plain in South Texas. I witnessed both a foraging behavior and a parental care behavior, neither of which are reported in the scientific literature. The foraging behavior appears to be a cooperative feeding technique, employed to increase predator vigilance in open water areas, where one pair member remains vigilant while the other member dives for prey. The parental care behavior involved a formation whereby adults flanked each side of the clustered young to protect them while in particularly vulnerable areas (e.g., open water). An additional aspect of parental foraging behavior was exhibited in which one adult would stay with the young as the other foraged for food, with adults regularly switching roles. I also provide a brief assessment of the management or enhancement of the proper habitat targeted for South Texas land stewardship of Least Grebes.

Opportunities to conduct research in Texas are often difficult to come by, as the vast majority of the land is privately owned. This difficulty is exacerbated when species have restricted distributions in the state. For example, there are numerous species that are restricted to the southern portion of the state (often the northern range limit of broadly distributed Central American species) that have minimal life history documentation, or simply go unnoticed. The Least Grebe (*Tachybaptus dominicus*) is one of these species. It is the smallest of the North American grebes and has wide distribution throughout much of South and Central America, with small populations in south Texas (Storer 1976). These small waterbirds can inhabit many freshwater systems, ranging from ephemeral to permanent bodies; these freshwater bodies may contain little or no emergent vegetation (Storer 1992). In recent years, work from Patrikeev (2009) and Konter (2014) have expanded our knowledge about the behavior this bird. Other studies have specifically documented diet and foraging behaviors of this species, but little is known of a possible cooperative aspect of foraging. Here, I recorded behaviors that indicate that Least Grebe pairs collaborate to feed both themselves and their offspring. Together, these behaviors function to maintain higher levels of predator vigilance than would be possible via individual foraging methods.



Least Grebe (*Tachybaptus dominicus*). Photo: Marvin Delong /USFWS

## METHODS

During large-scale biodiversity assessments conducted on East Foundation lands, I had the opportunity to observe Least Grebe behavior during 2014 on the San Antonio Viejo Ranch—a 60,298 hectare property located approximately 25 miles southwest of Hebronville, Texas in Jim Hogg County. Grebes were present at six man-made cattle stock tanks during 2014. These tanks are common amongst ranchers to provide an artificial water source for wildlife in the area. I recorded whether Least Grebes were breeding on each tank, as indicated by the presence of young (Table 1). I calculated the size of each tank by walking the

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perimeter while using the calculate area function on a GPS device. Vegetation (both emergent and surrounding) was noted to provide an indication of habitat structure. Overall, the tanks varied in size, and in vegetation composition (Table 1).

*I recorded grebe behaviors on the following tanks:*

*Tank 2:* This is one of the smaller tanks on the ranch measuring ~0.1 hectares. Dense mesquite trees (*Prosopis* spp.) and spiny hackberry (*Celtis pallida*) composed the main vegetation and provided overhang cover around the water's edge. Emergent vegetation was absent (Table 1).

*Tank 5:* Measuring ~0.49 hectares, this is the second largest tank where I recorded behaviors. There is dense mesquite surrounding the tank that created sheltered coves. Thick patches of rushes (*Juncus* spp.) covered half the tank in the shallowest areas.

*Tank 6:* This was the largest of all the water sources with grebes present on the ranch. This tank measured ~0.75 hectares, and was surrounded by Texas ebony (*Ebenopsis ebano*) and mesquite trees. There was no emergent vegetation present; however, there were several large broken tree limbs which provided shelter at one end of the tank.

#### OBSERVATIONS

*Asynchronous dive feeding:* I observed a pair of adult grebes (1 male and 1 female, based on body size) on tank 2 from 0800-1200, on both the 24th and 25th of October 2014. Normal foraging behaviors occurred throughout the time of observation. These normal behaviors included diving, grebes lowering their heads near water level to capture invertebrates active along the surface (Fjeldsa 2004), and attempting to collect flying insects (Storer 1992). From 1000-1200, diving was the preferred method of foraging, and it was during this time that I observed a previously undocumented foraging behavior.

Throughout this period the grebe pair remained in close proximity of each other, and began foraging using an "asynchronous diving" technique. This technique was observed 15 times, and involved one grebe diving for approximately 10 seconds, while the other grebe stayed on the surface. As the diving grebe resurfaced, and after a slight pause of a few seconds, the pair would reverse roles, with the second grebe diving while the other stayed on the surface.

*Parental care and Parental foraging:* On 17 May 2014, I observed two separate groups of grebes, both of which exhibited a type of parental foraging behavior that appears to be undescribed. On tank 5, from 1200-1400 I observed an adult grebe pair with four offspring. While observing the group I noticed that the adults were flanking (bracketing) their offspring. The adults ushered the young grebes around the open water as they dove for food. The adults themselves were never observed to dive during this time. Eventually, the parents steered the young to the dense emergent vegetation and then returned to forage themselves.

I observed similar behavior at tank 6, by a group of grebes consisting of 2 adults and 3 juveniles. During the late afternoon from 1500-1700 on 17 May 2014, the grebes moved across the open water in the same formation as observed on tank 5, one adult on each side of their young, with only the young diving for food. Once the young were finished feeding, the adults ushered them to the portion of the tank where numerous fallen tree limbs provide shelter. In this case, one parent stayed with the young, while the other moved to open water to forage. This lasted for approximately 5 minutes, after which the adults switched roles. This process happened twice during the observation period.

#### DISCUSSION

Predation plays a significant role in shaping grebe behavior (Fjeldsa 2004). The behaviors that I report here support this idea. An "asynchronous diving" technique is an excellent strategy that allows for increased predator vigilance during foraging in open water. Grebes have been recorded to have aerial, land, and aquatic predators (Fjeldsa 2014). There is a documented account of young being taken by water turtles (*Psuedemys*) in South Texas (Palmer 1962). Large raptors such as Great Horned Owls (*Bubo virginianus*), Peregrine Falcons (*Falco peregrinus*), Red-Shouldered Hawks (*Buteo lineatus*), and Accipiter hawks have been recorded to capture and kill Pied-billed Grebes (*Podilymbus podiceps*) (Fjeldsa 2004, Riehl 2002). A Cooper's Hawk (*Accipiter cooperii*) was hunting in the same location prior to observing this cooperative feeding technique, and Great Horned Owls and large hawks are common on the San Antonio Viejo Ranch. These observations combined with previous reports in the literature yield plausible scenarios for the

raptors found in south Texas to regularly prey upon the smaller Least Grebe.

The observed behavior where paired adults ushered and flanked their young as they foraged, along with “parental foraging” behavior, are likely additional predation defense strategies. The flanking formation observed creates a more vigilant situation that can lead to quicker warning vocalizations to protect offspring from potential predators. After securing their young, the parental foraging observed describes an efficient strategy of predator avoidance. This allows the young to be in a sheltered area with an adult grebe, while allowing the other adult to forage. This seems to be an effective strategy to protect young from predators and still maintain adequate resource.

The habitat preferences for these birds have been well documented and highlights that they can live on a tank or water source of any size. The data in Table 1 provides information about available vegetation in and around the tanks where I observed Least Grebes. It appears that even minimal emergent vegetation or overhanging shelter from surrounding plants provides suitable habitat in tanks with stable food resources, the size of these tanks can be exceptionally small (Table 1). This idea is supported by Howell and Webb (1995), in which they documented that areas with vegetation along the edges and cover were preferred by grebes. Noting South Texas land stewardship, it would be relatively easy to manage for this species. To establish or enhance a habitat for these birds all that is required is to have semi-permanent or permanent ponds, or stock cattle tanks. This is in line with observations by Ortega-Álvarez (2013), who documented artificial water sources (such as stock tanks) as being able to provide suitable habitat for waterbirds. Vegetation, both emergent and

surrounding (Table 1) these artificial water sources can provide a sustainable food source, sufficient vegetation to provide protection from predators, and assist in the success of the Least Grebe in south Texas

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## APPENDIX

Table 1. List of grebe tanks on the ranch, size, available vegetation, and if breeding occurred.

Tank	Size (hectares)	Emergent Vegetation	Overhang Cover	Breeding
Tank 1	0.03	Present	Absent	Yes
Tank 2	0.1	Absent	Present	Yes
Tank 3	0.386	Absent	Absent	No
Tank 4	0.41	Present	Absent	Yes
Tank 5	0.488	Present	Present	Yes
Tank 6	0.747	Absent	Present	Yes