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History and Current Status of Egyptian Goose (*Alopochen aegyptiacus*) in Northwestern Arkansas

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Actually a shelgoose (subfamily Tadorninae), the Egyptian Goose (*Alopochen aegyptiacus*) is native to the African continent, where it is one of the most common and wide-spread waterfowl (Mclean 1997). It is now established in Great Britain, Belgium, the Netherlands, Germany and France in Europe (reviewed in Kampe-Persson 2010). Populations have also been established in the United States (Pranty and Garrett 2011), with most of the breeding birds in Florida (Braun 2004), Texas (D. M. Brooks, *unpublished data*), and southern California (Pranty and Garrett 2011). Here we document the 30-year history of a small population of Egyptian Geese in northwestern Arkansas and assess their current status.

History and Current Status

Discovery - In March of 1988, James was alerted by Joe and Vivian Stockton of a strange goose at the C. B. "Charlie" Craig State Fish Hatchery in Centerton (Figure 1). He visited the hatchery on 26 March and found one Egyptian Goose that had a limp with its left leg. During the same time period, a goose was found at Devil's Den State Park (Washington Co.) that limped and had a band on its leg. That bird was captured and given to the Stocktons, who were bird rehabilitators. That bird was rehabilitated and given to a family living south of West Fork (Washington Co.), which was missing one of a pair of birds. James did not locate any geese on 4 May 1988, but he again located one bird at the fish hatchery on 14 May 1988 while the other bird was still with the rehabilitators. The origin of these birds at Centerton is unknown, but on 22 November 1996 James talked to a Ken Whited in Centerton, who told of a "Shorty" Long who had a hobby of raising exotic waterfowl across the street from him. Upon Long's death, his relatives may have released his captive birds. Whited stated that he had 2 Egyptian Geese at his place in 1987 and 1988. This story coincides nicely with the discovery of a bird at the fish hatchery in 1988. Alternatively, birds may have come from an animal park in Gentry (see below).

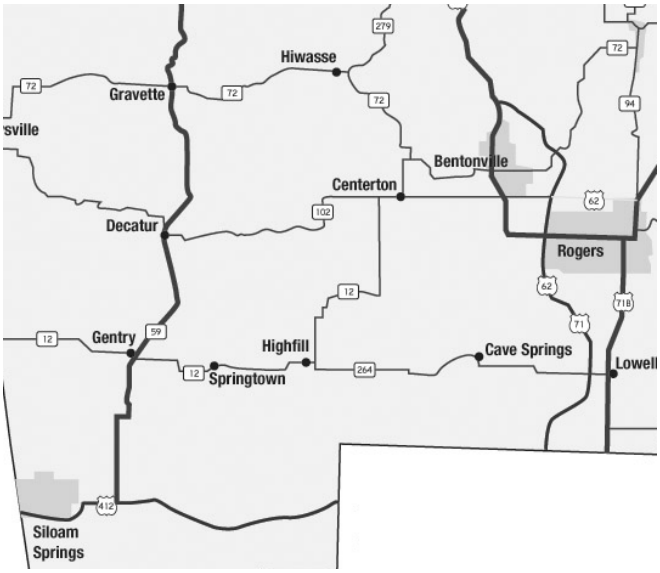

Figure 1. Map of western Benton County, Arkansas, showing the locations of most sightings of Egyptian Goose in the county.

No birds were recorded during the next 7 years.

Centerton - After the initial finding in 1988, Michael Mlodinow found a pair of birds at the fish hatchery on 13 June 1995. Since then, most sightings in northwestern Arkansas have occurred in and around the town of Centerton, and specifically at the C. B. "Charlie" Craig State Fish Hatchery**,** a 60 ha Important Bird Area in Arkansas. About 1-4 birds have been seen at the hatchery annually (Table 1). In most years, there have been about 6 or fewer reports from the hatchery, the exceptions being 2005, 2006, and 2010 with 27 or more reports (Table 1). The most birds recorded at one time at the hatchery were 11 seen by Joseph Neal on 8 October 2010. The second highest number was 6 birds on 8 June 2000 seen by Mlodinow. Five birds have been seen on three occasions: 23 May 2005 by Mlodinow, 28 April 2006 by Joanie Patterson, and 12 July 2010 by Neal.

Hiwasee -Starting in late 1996, birds were also seen by James at the Maplelawn Farms, just west of Hiwasee, 12 km north of Centerton (Figure 1). This pig

Table 1. Summary of sightings of Egyptian Geese at the C. B. "Charlie" Craig State Fish Hatchery from 1995 through 2011. Winter months are November, December, January, and February; Spring months are March, April, and May; Summer months are June, July and August; and Fall months are September and October. Numbers refer to total sightings per season, which could include multiple sightings of the same bird. Range refers to lowest and highest daily counts within a year.

Year	Winter Sightings	Spring Sightings	Summer Sightings	Fall Sightings	Total Sightings	Range Daily Count
1995			1		1	2
1996		1			1	2
1997						0
1998						0
1999			6		6	2-4
2000		1	1	2	4	1-6
2001		1	3	1	4	1
2002	1	1	1	2	5	1-2
2003	1	1		1	3	1-2
2004		2	3	1	6	1-4
2005	6	12	13	2	33	1-5
2006	10	16		5	31	1-5
2007	1	1		3	5	1-2
2008	1	2			3	1-2
2009		1			1	3
2010	2		13	12	27	1-11
2011		1			1	8

farm was owned by Paul and Scott Belts and had a large pond with many feral ducks. Although James never saw more than 18 birds, which was on 22 November 1996, Scott Belts stated that he had seen as many as 43 birds the previous week and that geese had been present for 4-5 years. During January and February of 1997, James found 10 birds at the farm, but only 4 during March and May of that year. He found only 2 birds on 15 March 1998 and 3 birds on 24 December 1998. James recorded 34 birds at the pig farm on 22 August 1999, but geese have not been reported from there since. Trips in January and March 2012 by Smith and Neal found the property nearly abandoned with some native and domestic waterfowl in the large pond, but no Egyptian Geese.

Gentry – James discovered a population of geese associated with the Wild Wilderness Drive-Through Safari in Gentry (Figure 1) in 1998, about 24 km southwest of Centerton. This 160 ha park has free-ranging animals from around the world and several ponds. At that time he estimated that there were 30 birds in the park on 11 October. Subsequently, he found 12 birds on 20 October 2000, 17 on 5 November 2004, 16 on 28 September 2008, and 9 on 26 September 2010. Smith and Neal counted 31 birds on 5 January 2012 at the entrance to the park and on a pond across the street from the entrance outside of the park. These birds were probably feeding within the park. According to the owner, Leon Wilmoth, the park first acquired some geese in the early 1980s, possibly 1981 or 1982, so they have been there about 30 years.

Other Benton County reports – Mlodinow found one goose at Lake Atalanta in Rogers (Figure 1) during summer and fall of 2000, but that bird died during the record ice storm of December 2000. On 19 May 2007, James found 3 birds at a pond about 1.6 km south of Centerton. On 19 November 2011, a flock of 9 birds was seen by several observers on a large pond just east of Highfill (Figure 1). For the past 10 years, birds have often been seen flying around Lake Flint Creek (T. Stanfill, personal communication), which is just south of the drive-through zoo in Gentry (Figure 1).

Both Whited and Belts referred to a weekly "chicken swap" that occurred in Benton County during the summer months of the late 1980s and early 1990s. People would show up to sell or trade various kinds of

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waterfowl and chickens. They contended that Egyptian Geese were sometimes part of the swap.

Washington County – Most observations of Egyptian Geese have occurred in Benton County. However, some important sightings have occurred in Washington County to the south. The first sightings in Washington County occurred in 1995, when a pair of birds was observed at Lake Fayetteville on and off from July to October by Mlodinow. During the Fayetteville Christmas Bird Count (CBC) on 19 December 1998, James and Abby Powell found 2 birds on a pond in the community of Zion outside Fayetteville. As compiler of the count, James convinced the director of the CBC to add Egyptian Goose to the list of birds that can be reported on any CBC. During summer of 1999, James observed 2 birds at the Fairview Cemetery pond in Fayetteville. No birds have been reported from Washington County since then.

Breeding – Despite many spring and summer sightings of adults (Table 1), little attention has been given to the breeding of Egyptian Geese in northwestern Arkansas. The first report was made by Neal of 2 adults and 2 goslings at a pond at the corner of Tycoon Rd. (County Road 567) and Motley Road (County Road 569) on 15 August 2008, just southeast of the Centerton fish hatchery. On 10 June 2010, Jacque Brown found 2 adults with 5 young on a small pond just east of Fairmont Road just north of Highway 412 east of Siloam Springs (Figure 1). In early May 2010, Kim Witt photographed a pair of birds investigating a round bale of hay on her farm on Peach Orchard Lane in Centerton, but nesting could not be confirmed. On 14 June 2011, Susan Anglin photographed 2 adults and 8 chicks at a pond on her dairy farm in Vaughn, located about 1.6 km south of the fish hatchery. This family of 10 remained together through at least February and suffered no juvenile mortality. Near the end of March 2012, two birds, presumably the parents, were seen by Anglin swimming on the pond.

Discussion

Free-ranging Egyptian Geese have occurred in northwestern Arkansas for almost 25 years. Birds appeared at the fish hatchery in Centerton in the mid-1980s and small numbers of birds have been seen there almost annually. Upwards of 40 birds were associated with a pig farm in Hiwasee in the mid to late 1990s, but they have not been seen there since 1999. Another group of geese has been associated with the animal park in Gentry for nearly 30 years, and upwards of 30 birds have been associated with the park since 1998.

In colonizing new areas or after an introduction, it is not unusual for Egyptian Geese to persist for long periods of time in small populations (Kampe-Persson 2010), so the low number of birds in northwest Arkansas may be typical for this species. Most introduced populations of this species in the United States are associated with urban areas and features like city parks and golf courses (Pranty and Garrett 2011) and the largest group in northwest Arkansas is currently associated with the animal park. Although relatively large urban areas do exist in northwest Arkansas, the birds outside the animal park are still confined to relatively rural areas dominated by farmland. In their native continent of Africa, they are often associated with farmlands and agriculture (Taylor 1957, Shewell 1959, Clancey 1967, Davies 2005). In the non-molt period, they are terrestrial feeders, foraging on crops such as corn (Halse 1984). The abundance of small farm ponds in northwest Arkansas is probably ideal for these solitary nesting pairs.

It is strange that it was 20 years from the discovery of Egyptian Geese until breeding was documented, but this was probably due to no one paying any attention to this species. Undoubtedly they have been nesting in the animal park, where a few pairs nested in summer of 2012 (Cameron Chesbro, *unpublished data*). Egyptian Geese typically nest near water (Taylor 1957) and all 3 breeding records are from small farm ponds. Since incubation is about 30 days (Clancey 1967), the two sets of chicks found in early June and the observation of a pair looking for a nest site in early May suggest that breeding begins in late April or early May. In South Africa, there is typically heavy predation on young birds, quickly reducing a family of 8 or more to three or four or less (Taylor 1957). The first two breeding records would appear to be reductions to 2 and 5, respectively, but it is interesting that the family found in 2011suffered no young mortality. Taylor (1957) reported that young stay with parents for up to 3 months and it has been suggested that small flocks in winter might be family groups. Such was the case with the family of 10 at Vaughn staying together for at least 8 months in 2011 through spring of 2012.

It is also curious that Egyptian Geese have consistently been present at the fish hatchery in Centerton, yet there has been no evidence of breeding there. In South Africa, Taylor (1957) found it puzzling that there were large numbers of non-breeding birds present during the breeding season. It has been reported that birds may take 2 or even 3 years to reach

sexual maturity, so some of the summer non-breeders may be young birds. There is also a 30-40 day, post-breeding wing molt when birds are flightless and stay near water (Shewell 1959). During the molting period, the geese switch to a diet of aquatic vegetation and grasses that grow along the water's edge (Halse 1984). Some birds might be spending this flightless period at the fish hatchery because of its numerous stocking ponds and vegetation surrounding the ponds. In Africa, geese may frequent human-made water features during molt periods, such as sewage treatment plants (Harebottle et al. 2008).

The American Birding Association (ABA) has developed guidelines to document establishment of exotic bird populations in the wild based on 8 criteria (www.aba.org/checklist/exotics.html). Some of these criteria have been met by Egyptian Geese in northwest Arkansas: (1) there are a number of photographs of these birds; (2) the population appears to be more-or-less contiguous, allowing for gene flow; and (6) the population has been present for at least 15 years.

The other 5 criteria are more difficult to document, given the lack of attention to this species until recently. The 3rd criterion deals with current or future plans to eradicate the species. While there is no current eradication plan, Egyptian Geese can potentially cause a variety of environmental problems (Rehfisch et al. 2010), possibly arguing for eradication of this invasive exotic species in the future. For example, an increase in Egyptian Goose numbers could pose a hazard for bird strikes with planes associated with Northwest Arkansas Regional Airport, located just northeast of Highfill (Figure 1).

The 4th criterion is that the population is large enough to survive a routine amount of mortality or nesting failure. The fact that the population has persisted for nearly 25 years would suggest that this is true, but the total population size is small (currently less than 100 individuals). It is possible that there have been more releases over the last 25 years or that the animal park in Gentry has been a source from the birds seen in Benton and Washington counties. The 5th criterion is that sufficient offspring are being produced to maintain or increase the population. This would clearly seem to be the case, but there are only 3 confirmed breeding records. A study by Cameron Chesbro on the breeding distribution of the goose in northwestern Arkansas is currently underway.

The7th criterion is that the population is not directly dependent on human support. We have the least amount of information on this issue and only anecdotal observations over the years. The relationship between population establishment and the pig farm remains obscure, but there were other exotic barnyards ducks and geese being fed there. Although the pig operation is defunct, there still were about a dozen barnyard ducks and geese there in spring of 2012, but no Egyptian Geese. The current largest population is likewise associated with the animal park, where other exotic birds from around the world are being fed in the open. The persistence of this population would appear to be dependent on human support. The successful breeding in 2011 at Vaughn was associated with a large (300 head) dairy operation, with the goose family commonly feeding with the cows in feedlots. Geese are also known to frequent feedlots in South Africa (van Kiekirk 2010). We have no information on what birds are feeding at the fish hatchery in Centerton. We assume it is aquatic vegetation and grasses, but they could be eating food fed to the fish.

Although not explicitly mentioned in the ABA criteria, acceptability by the ABA committee is also influenced by geographical range (see www.aba.org/checklist/exotics.html). The current area occupied by Egyptian Geese in northwestern Arkansas is on the order of 400 km^2, which may be too small of an area for consideration.

The 8th criterion is the publication of a peer-reviewed paper that documents the first 7 criteria. Clearly we currently do not have enough information to support all 7 criteria, so we conclude that the Egyptian Goose cannot yet be considered established in the wild in northwestern Arkansas.

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