

Hybridization and nesting of Glossy Ibis (*Plegadis falcinellus*) in Wyoming

Doug Faulkner

Department of Physiology and Zoology

University of Wyoming

Laramie, Wyoming 82071

(email: dfaulk@uwyo.edu)

ABSTRACT

Since its North American colonization in the early 1800s, Glossy Ibis (*Plegadis falcinellus*) has expanded its breeding range to include the eastern U.S. seaboard and northern Gulf Coast in the United States. Patten and Lasley (2000) provided an excellent overview of this event and the species' expected further expansion into the West. Arterburn and Grzybowski (2003) depicted possible Glossy Ibis x White-faced ibis hybrids in Oklahoma, a phenomenon that had not been reported previously in the wild. In May 2005, the author noted an adult Glossy Ibis at Hutton Lake National Wildlife Refuge (near Laramie,

Wyoming) that was associating with several White-faced Ibis (*P. chihi*). Several visits to the site in July of the same year confirmed nesting of at least three Glossy Ibis, one paired with a White-faced Ibis (the others' pairings unknown), as well as the discovery of a possible hybrid individual whose breeding status remained undetermined.

INTRODUCTION

Patten and Lasley (2000) concluded that the rapid increase of Glossy Ibis (*Plegadis falcinellus*) records in the western United States "reflects a true range expansion." However, no breeding records had been obtained at that point, and thus the expansion could not be considered one of breeding range. In the western United States during the late twentieth century, the species was noted chiefly during spring migration, was only sparsely reported in the summer, and was reported in significantly smaller numbers during fall migration—likely due to the difficulty in separating this species from White-faced Ibis (*P. chihi*) at that time of year. In the current century, ibis exhibiting characteristics of both

Glossy and White-faced were noted in Oklahoma in 2002 (Arterburn and Grzybowski 2003), but it was not possible to determine where they were hatched. At mixed-species colonies along the Gulf Coast, no mixed-species pairings have been confirmed (see Arterburn and Grzybowski 2003). Faulkner (2004) theorized that Glossy Ibis nesting was occurring at unknown locations in Great Plains and Rocky Mountain states, but a lack of observers and effort probably hindered their discovery.

In 2005, I decided to spend more effort observing White-faced Ibis colonies in Wyoming, particularly at the closest possible location to my home for nesting ibis, Hutton Lake National Wildlife Refuge. On 26 May 2005, my first visit to the refuge, I noted a single adult Glossy Ibis in alternate plumage associating with four White-faced Ibis at Hoge Lake (one of five lakes in the refuge complex). Later visits in July indicated the presence of at least two more adult Glossy Ibis here; visits to other sites on the Laramie Plains (e.g., Lake Hattie Reservoir, Twin Buttes Reservoir, Meeboer Lake) did not pro-



Figure 1. View of Rush Lake, Wyoming from the south. Note the matrix of bulrush islands used by nesting ibis. Photograph by the author.

duce sightings of Glossy Ibis (private Caldwell Lake, near Hutton Lake, was not visited), and so field study was mostly limited to Hutton Lake National Wildlife Refuge.

FIELD ENCOUNTERS

10 July 2005

On 10 July, six weeks after I had observed the adult Glossy Ibis at Hoge Lake, I visited all five lakes on the refuge and noted that ibis were nesting only at one, Rush Lake (Figure 1). Of all the lakes, it was the only one to have islands of emergent vegetation, entirely bulrush (*Scirpus*), whereas the others had emergent vegetation only along the edge. I watched ibis flying to and from the vegetated islands over a dike on the lake's western end, noting that some birds tarried at a small mud island just off the southern shoreline. Positioning myself atop a nearby hill on the south side of the lake, I had a clear view of the lake and island at a distance of 60 m. At approximately 1330, I noted two adult Glossy Ibis with six White-faced Ibis on the mud island. I examined the birds carefully for hybrid characteristics but did not find any (Figure 2). All of the ibis eventually took flight and headed westward, away from the refuge. I watched the ibis return to and leave Rush Lake, concluding that they were feeding recently hatched young, as they stayed out of sight in the dense vegetation for approximately 5–10 minutes, then flew westward out of the refuge, repeating this behavior over the two hours I was there. In particular, I noted a Glossy Ibis, presumably only one individual, engaged in this behavior, returning to the same location (hereinafter designated as location #1) three times in the duration of one hour. The height of the bulrushes prevented further observation during these presumed feeding bouts. Encouraged by these findings, I decided to come back in a few days to obtain photographs and gather more information. I enlisted the help of Bill Schmoker, and we returned to Rush Lake on 14 July.

14 July 2005

Schmoker and I arrived at approximately 0745, but the bright background of the cloudless sky was not conducive to photographing or identifying flying dark ibis. No ibis landed on the mud island, so observations were essentially limited to flying birds. Curious about where these birds were foraging, I watched one of the birds through a spotting scope as it flew to a marshy area near Brubaker Road, ca. 3 km to the west. We decided to survey this location and others on the Laramie Plains and to return to Rush Lake later that afternoon.

While on Brubaker Road, we observed ibis flying to and from several locations, notably

a large wet hay meadow, as well as several small wetlands, none of which afforded opportunities for viewing ibis. We drove northward on Brubaker Road and flushed five ibis from a roadside wetland. We stopped and re-found three, one a White-faced Ibis, another bird thought to be a hybrid, and the third an apparent Glossy. The birds quickly retreated into vegetation. Schmoker then located a larger flock a little farther from the road in that same area and identified only White-faced Ibis among a portion of the group before they flushed and did not return.

We returned at 1445 and noticed that ibis were using the mud island once again. Schmoker photographed an adult Glossy Ibis



Figure 2. One of three adult Glossy Ibis present at Rush Lake, Wyoming 14 July 2005. Photograph by Bill Schmoker.

at this island (Figure 2), as well as a bird exhibiting hybrid characteristics (Figure 3). During this time, I noticed one of the Glossy Ibis returning to the location noted on my previous visit (location #1) at least four times during an hour and half. The other Glossy Ibis—I presumed there were only two involved in these observations—favored a different location (location #2) approximately 80 m southeast of location #1, and, importantly, closer to the south shoreline from our point of observation. On two of these visits, that Glossy Ibis flew to location #2 with a White-faced Ibis. During one of these visits, we observed the White-faced Ibis feed one fledgling while the Glossy Ibis stood nearby. However, we did not witness the Glossy Ibis feed any young, although it often disappeared in the bulrush for minutes at a time. Satisfied that these observations provided some evidence of nesting, we departed around 1700.

16 July 2005

I returned two days later for a brief visit arriving around 0830. I eventually found a

Glossy Ibis on the mud island at 0910 and watched it fly to location #1 and perch on the bulrush. A minute later, the bird flew about 5 m. At that point, two fledglings clambered onto the vegetation, flapping their wings, and were fed by the adult Glossy. Six minutes later, the adult flew westward and out of the refuge. To my knowledge, this marked the first observation of Glossy Ibis feeding young in the western United States.

At 0925, while scanning the marsh, I found a Glossy Ibis at location #2. Three minutes later, it flew about 15 m and perched in the bulrush. Another three minutes later, it flew another 7 m, whereupon a fledgling approached it with flapping wings. At 0933, I took a 25-second videotape (digiscoped with a Nikon Coolpix 4500) of this Glossy Ibis feeding two fledglings, confirming the presence of at least two broods produced by Glossy Ibis as one of the parents. This Glossy Ibis flew back and forth between the two fledglings (feeding them twice) and a location about 10 m away, but the bird remained out of view at this second location each time. At 0938, this Glossy Ibis flew westward. I stayed for another 45 minutes but did not observe another Glossy Ibis during that time, nor were any of their young fed as far as I could ascertain.

20 July 2005

On my final visit, I hoped to be able to determine the mate of each Glossy Ibis seen on the previous visits. By this date, ibis young of variable ages (some volant and with fully grown bills, others with half-grown bills and clearly incapable of any kind of flight) could be readily observed standing atop matted bulrush clumps. Several such groups consisted of five or six birds and undoubtedly included young from multiple broods, although I did not observe signs of crèching. Both areas at which I had observed Glossy Ibis feeding young were now no longer isolated but contained several small groups (two or three individuals) of young ibis.

I arrived around 1300 and immediately set up a spotting scope on the same hill on the southern side of Rush Lake. At 1328, a White-faced Ibis fed two young at location #2. About ten minutes later, I found a Glossy Ibis feeding two fledglings at a new location (#3), about 60 m from the previous two locations, in the lake's northeastern quadrant. A White-faced Ibis stood nearby. Although the young from either previous location could have moved to this new spot, further observations would show that they had not and that this represented a third Glossy Ibis nesting. I now had three locations to observe simultaneously, which would prove difficult.

Observations over the next hour were fruitless. During several visits, adult Glossy

and White-faced Ibis were seen standing at locations #1 and #3, but no feedings were observed. Eventually, I found a Glossy Ibis standing with five White-faced Ibis in the marsh. One minute later, the Glossy Ibis flew to location #2, fed a single fledgling, then flew to another location about 10 m away and was lost to sight.

At 1508, a Glossy Ibis fed two fledglings at location #1, flew off, circled, and returned to feed one of the fledglings a second time. Two minutes later, this bird flew off to the west. A minute later, two White-faced Ibis arrived at that location, and two minutes later, one of them fed the same two fledglings that the Glossy Ibis had fed just five minutes previously, then flew off to the west shortly afterwards. The other White-faced Ibis fed a different set of fledglings that were also in that area.

Back at location #3 at 1530, I found a Glossy Ibis standing amid the bulrushes. It flew about 5 m and vanished into the bulrush; however, I noticed that as it landed, two fledglings hurried to that location with wings fluttering through the bulrush tops and were clearly being fed during that time. A few minutes later, that Glossy Ibis took flight toward the west.

A few minutes after that Glossy Ibis left, I found another Glossy Ibis in that same general location. It flew a short distance to three fledglings that I had observed earlier being fed by a White-faced Ibis but paid no apparent attention to them. One minute later, it flew 20 m to a different group of four fledglings and stood preening, also apparently paying them no attention, nor did the young beg to be fed. At 1543, the Glossy Ibis took flight, landed at location #2, fed two fledglings, and then flew off to the west.

DISCUSSION

The *Birds of North America* accounts for the *Plegadis ibis* (Ryder and Manry 1994, Davis and Kricher 2000) indicate that there are no reports of extra-pair copulation or feeding of young other than those of the parents. Thus, the observation of two young being fed by individuals of both species constitutes strong circumstantial evidence for mixed-pair nesting at this location.

Arterburn and Grzybowski (2003) state that in Gulf coastal colonies containing both *Plegadis*, hybrids or mixed pairs have not been noted, possibly due to the adequate number of each species at those sites for conspecific mate selection; they also note that further research is needed on the subject. Little is known about species-specific courtship displays or other isolating mechanisms. The presence of a minimum of three Glossy Ibis, none mated to each other, at this

one site in Wyoming may suggest that either species-specific displays are not effective in situations of mate scarcity or that other non-species-specific factors are involved in this case. (These three Glossy Ibis could all have been of the same sex, for instance.)

Migration timing may affect mate selection for extralimital Glossy Ibis. Until recently, Glossy Ibis records in Colorado and Wyoming have been of single birds, the majority of reports falling between 15 April and 15 May (Faulkner 2004). Glossy Ibis that



Figure 3. Suspected White-faced Ibis x Glossy Ibis at Rush Lake 14 July 2005. Note the reddish eye, the thin, deep-pink facial border not connecting behind the eye, and the plum-gray facial skin. This individual exhibits the same features shown by the Figure 10 bird in Arterburn and Grzybowski (2003). Photograph by Bill Schmoker.

visit White-faced Ibis colonies in the West could arrive weeks apart from one another, and the time lag may be sufficient enough for early migrants to pair with conspecifics, if present, or White-faced Ibis, while later-arriving migrants may find conspecifics already paired and have no other mate option than White-faced Ibis.

These three Glossy Ibis represent only 27% (3 of 11) of migrant Glossy Ibis reported in eastern Colorado during spring migration (16 April to 18 May 2005) and only 17% (3 of 17) for the entire Colorado and Wyoming region covered in this journal. Experienced observers also reported three suspected hybrid *Plegadis ibis* in Colorado (*vide* B. Schmoker). Some of the Glossy Ibis reports from the montane West may pertain to the same individual(s), but one may conclude that vagrant Glossy Ibis in this region, if breeding, probably do so at locations other than Hutton Lake National Wildlife Refuge.

Further research, perhaps through satellite telemetry, is needed to understand migration dynamics of *Plegadis* in North Amer-

ica. Banding records have provided significant information on White-faced Ibis breeding sites, migratory routes, and wintering grounds (Ryder 1967); however, little is known about group solidarity during migration, whether all individuals in a migrant flock attempt nesting at the same location, or when and where Glossy Ibis join White-faced Ibis flocks (e.g., on wintering grounds or mid-migration) and for how long.

Observations in July 2005 provide a strong suggestion of at least one mixed-pair of Glossy and White-faced Ibis nesting and successfully producing young in southeastern Wyoming. In addition, two other Glossy Ibis nested (mates unknown) and a suspected hybrid (breeding status unknown) were located at this site in Wyoming. This represents the first documented nesting Glossy Ibis in the western United States, as well as potentially the first report of hybridization in the wild of *Plegadis ibis*. It is unlikely that this one colony is the sole source of all reported hybrids or the only location of nesting Glossy Ibis in the Great Plains and Rocky Mountain state region.

Acknowledgments

The field work for this paper was supported by funds from the Robert B. Berry Chair in Ecology at the University of Wyoming. I would also like to acknowledge the Rocky Mountain Bird Observatory, which supported this and other field work in Colorado and Wyoming. I thank Larry Semo and the associate editors of *North American Birds* for helpful comments on the manuscript.

Literature cited

- Arterburn, J. W., and J. A. Grzybowski. 2003. Hybridization between Glossy and White-faced Ibises. *North American Birds* 57: 136–139.
- Davis, W. E., Jr., and J. Kricher. 2000. Glossy Ibis (*Plegadis falcinellus*). In: *The Birds of North America*, No. 545 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, Pennsylvania.
- Faulkner, D. 2004. Glossy Ibis records for Colorado and neighboring states. *Western Birds* 35: 147–155.
- Patten, M. A., and G. W. Lasley. 2000. Range expansion of the Glossy Ibis in North America. *North American Birds* 54: 241–247.
- Ryder, R. A. 1967. Distribution, migration, and mortality of the White-faced Ibis (*Plegadis chihi*) in North America. *Bird-Banding* 38: 257–277.
- Ryder, R. A., and D. E. Manry. 1994. White-faced Ibis (*Plegadis chihi*). In: *The Birds of North America*, No. 130 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, Pennsylvania. ☉