Notes on Nesting Osprey in the Kaibab National Forest

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The amazing Osprey (*Pandion haliaetus),* placed between the hawk and falcon families, is the only species in the family Pandionidae, named after Pandion. In Greek legend he was the King of Athens and known as the King of Sea Eagles from the Greek *halos* (sea) and *aetos* (eagle) (Terres 1980). One of the most widely distributed birds in the world, it lives in Europe, Asia, south to Spain, northern Africa, southern China, the East Indies, Australia, and some Pacific islands (Terres 1980). Generally found near or on fishing waters, however, it will sometimes nest miles away from foraging areas. Osprey feed almost exclusively on fish; therefore, it lives along seacoasts, rivers, and inland lakes, including several of the man-made fishing lakes scattered throughout the Kaibab National Forest (Kaibab) south of the Grand Canyon. In North America, the primary race, *carolinensis,* does not nest south of Baja California, but does breed as far north as central Alaska (Wheeler 2003).

In the fall, northern North America populations of Osprey migrate south to winter in Mexico and Central and South America via numerous routes. One known route is included in the Veracruz River of Raptors Project in eastern Mexico, where observers tallied 2,232 Ospreys traveling south in the fall of 2004 (Rodriguez Mesa 2004). Total migratory populations elsewhere are not known. An estimated 800-900 Ospreys are residential breeders along Mexico's west coast, the Sea of Cortez, and Baja California (Dodd and Vahle 1998). Arizona is the prime breeding state in the Southwest, but a few nest sites are also found in northern New Mexico (Wheeler 2003). In Arizona, Ospreys nest primarily in central regions of the state and winter fairly commonly along the lower Colorado, Gila, Verde, and Salt Rivers (Driscoll 2005).

In 1987, under the direction of U.S. Forest Service personnel, nine volunteer birders surveyed nine man-made lakes on the Kaibab for nesting Osprey. Only one nest was found – at Scholz Lake. Since then, Kaibab Ospreys have been surveyed and monitored in an effort to track improvement from the sadly depleted population of earlier decades. For some years following 1987, Osprey observations were scarce. In 1992, however, the *Arizona Breeding Bird Atlas* project began, with Whitehorse Lake located in an *Atlas* block on the Kaibab. Although the other eight lakes were not situated within *Atlas* priority blocks, an effort was made to survey them at least once each season. This article describes the findings of the annual surveys.

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Arizona is a prime breeding state for Osprey

These lakes and nest sites are located in that part of the Kaibab within 32 km (20 mi) of the city

of Williams, Coconino County. To visit these lakes, it is useful to purchase a Kaibab forest map in order to select forest roads. Lakes that host Osprey nests range in elevation from approximately 2000-2100 m (6500-6900 ft). Ponderosa pines (*Pinus ponderosa*) of varying sizes predominate; in addition, some forest areas have abundant Gambel's oak (*Quercus gambelii*).

The surveys were conducted as a census with subsequent monitoring. One to three observers surveyed the nine lakes by driving to each one, followed by walking whatever distance required to adequately view previous nests or survey surrounding trees for new nests. For efficiency, a "circle route" was developed by driving I-40 (and Highway 64) to Kaibab and Cataract Lakes. Then traveling south through Williams, past Santa Fe Reservoir on Perkinsville Highway to Dogtown Lake, east to Poquette Tank, and farther east to Whitehorse Lake. The route then turned south to JD Dam, west to Perkins' Tank, then back east to Scholz Lake, and I-40 to Flagstaff. Round-trip mileage from Flagstaff averaged about 130 miles. Sometimes this route was driven in reverse, either direction taking seven to eight hours.

As the Osprey population on the Kaibab lakes had only to expand, it was exciting to find three nests in July 1992. The next few years the survey areas were visited only once each spring, but in later years, we would visit the nests in May, then again in July to count nestlings before they fledged (table 1). After 1995, only two spring surveys were missed entirely, although the summer nestling count provided the number of successful nests. Currently four lakes on the Kaibab provide active Osprey nest sites: Whitehorse Lake (3), JD Dam (1), Poquette Tank (1), and Kaibab Lake (1). During the past 14 years, active nests had also been periodically noted at Scholz Lake and Santa Fe Reservoir. Perkins Tank and Cataract and

Table 1. Summary of Nesting Osprey Observations on Kaibab National Forest

Year	First Visit Date	# of Active Nests	Second Visit Date	# of Active Nests	# of Young	Comments
1992	No early visit		18 July	3	5	First regular visit
1993	13 June	4				
1994	11 May	1				Only 1 lake surveyed
1995*	21 May	3				1 nest fallen
1996*	7 April	2	21 July	4	5	
1997*	20 April	6	15 July	5	5	1 nest failed
1998	9 May	5	6 Aug	4	8	1 nest fallen, normal precipitation
1999*	No early visit		6 Aug	5	8	
2000*	21 May	5	21 July	3	4	2 nests failed
2001*	3 June	5	16 July	6	8	1 new nest
2002*	24 April	7	26 July	5	7	2 nests failed
2003*	11 April	5	27 June	4	7	1 nest failed
2004*	No early visit		7 July	4	6	Lakes very low or dry
2005	9 May	6	8 July	5	11	Wet winter – lakes full. 1 nest inactivated, but adults present

* Denotes years of drought or near-drought conditions

Dogtown Lakes have not provided nest sites.

Without exception, the ponderosa pine is the tree of choice for Osprey nests, either live trees or snags (dead-standing). The latter are favored if they are as tall as or taller than surrounding trees. Essential to selecting a nest tree are nearby lookout perches, commonly snags or flat-topped live trees. The current nest at Kaibab Lake sits on a platform installed on top of a snag prior to the initiation of these surveys. On occasion, a second pair of Osprey would build a second nest and it would disappear after a year or so, perhaps due to high winds. A typical nest is built of interwoven sticks and lined with grasses or pine needles. Because nests are normally reused, additional material is added each spring, which eventually creates a large, heavy nest that is durable for many years. If a nest falls, the pair might rebuild it the next spring, but usually will pick another nearby snag or tree, or perhaps move to an entirely new site.

Table 1 summarizes the Osprey survey results. After three to four years of maturing to adulthood, Osprey will return to their nestling area looking for a breeding territory (Terres 1980). As long as reliable fishing waters and tall snags or trees are available, Ospreys will nest as close as 0.1 mile to each other. The reason for failed nesting attempts is quite varied and often unknown. The typical indication of a failed nest often includes one or two adult Ospreys sitting on nearby perches, often calling for long periods, and not tending the nest that earlier was brooded. A fallen nest speaks of disaster as well. In July, strong thunderstorm winds can topple the nest and nestlings to the ground before they are capable of flight.

The new nest discovered on the second visit in 2001 does not indicate a new nest was built in the time between visits, only that on the first visit it had not been detected. Nests are typically constructed and eggs are laid in April and May. Plentiful fishing waters in 2005 appear to have contributed towards an all-time high of nestlings. The nest at Kaibab Lake and nest #2 at Whitehorse Lake each held three apparently healthy nestlings this year. Nest #3 at Whitehorse had one nestling, nest #1 had two, and the JD Dam nest had two nestlings already as large as the parents.

During the 10 years from 1995 through 2004, only 1998 could be considered as having "normal" precipitation. So far, precipitation levels for 2005 are above normal with full lakes that have been stocked with fish, to which the ospreys have responded well (NOAA). The nest site surveys do not seem to show a definite drought-related pattern of success or failure. It appears that the Osprey adapted to the increasingly arid climate, when most of the major lakes were either dry or lacked sufficient water to sustain a fishery, by traveling longer distances to fish. As long as one or two lake fisheries were available, the birds adjusted immediately, illustrating their survival flexibility.

These Osprey surveys are a result of the *Arizona Breeding Bird Atlas* where citizen scientists (nonprofessionals) volunteered their time to census and monitor bird species for breeding status within a designated block of approximately 10 square miles. The observers on the Kaibab took a great interest in Ospreys, not only because they are large and easy to see, but, because their behavior became most interesting to watch, as well as other bird species in the vicinity. Such activities as the *Atlas* project, Christmas Bird Counts, and Arizona Important Bird Areas can be called "birding with a purpose." All birders can benefit themselves and contribute to knowledge by assisting with ongoing surveys. Simply contact your local Audubon Society, Arizona Game and Fish Department, or U.S. Forest Service office for such opportunities.

Arizona has come a very long way since Phillips et al. (1964) noted: "How this magnificent hawk can survive in Arizona is a marvel, considering that even fish-and-game rangers are instructed to shoot them on sight. Man cannot tolerate an animal that is a better fisherman than he is!" Thankfully, this activity ended once Osprey and many other species were finally included for protection under the Migratory Bird Treaty Act in 1972.

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Kaibab - Kaibab National Forest: http://www.fs.fed.us/r3/kai.

NOAA - National Weather Service: www.wrh.noaa.gov/flagstaff.

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