Sublime Beauty
The American White Pelican

Text by Elizabeth Mack
Photos by Rick Rasmussen

Imagine looking up into a blue Nebraska sky and seeing hundreds of white pelicans gliding through the air, their massive, black-tipped wings carrying them effortlessly over the prairie below. Lewis and Clark observed just such a mesmerizing scene as their expedition made its way along the Missouri River more than 200 years ago, noting upwards of 5,000 white pelicans feeding on a river sandbar as they traveled along what would one day become Nebraska's eastern edge.

A regular spring and fall migrant in Nebraska, the American white pelican (*Pelecanus erythrorhynchos*) can be found across the state, usually after lakes are clear of ice in early April. White pelicans found in Nebraska during the summer, however, are nonbreeding birds, as their nesting grounds are farther north. Researchers and biologists studying the white pelican note that nearly half of the population breeds at four major colonies along the Great Plains: Chase Lake National Wildlife Refuge (NWR) in central North Dakota, Bitter Lake in northeastern South Dakota, Medicine Lake in Montana and Marsh Lake in Minnesota. The closest breeding population of white pelicans, however, is just north of Nebraska, at LaCreek NWR near Martell, South Dakota.

The American white pelican normally breeds in large colonies, with sometimes upwards of several thousand nesting pairs in one area during a breeding season. White pelicans east of the Rockies usually breed in the Northern Great Plains and migrate along the Mississippi River, wintering in the lower Mississippi River Valley and along the Gulf of Mexico. As many as 30,000 breed at Chase Lake NWR, one of the largest breeding colonies for white pelicans in North America.

According to Joel Jorgensen, nongame bird program manager for the Nebraska Game and Park Commission, the white pelicans' lazy fall migration can last for several months, and stragglers have been sighted as late as December, with some overwintering in the state: "White pelicans have successfully overwintered almost every year at the Sutherland Reservoir cooling pond in the last few decades. Lake Ogallala is another site where pelicans seem to consistently pause during migration and end up staying. But that can often end up being a bad decision."

With powerful wingbeats, a white pelican lifts off at Calamus SRA.

Jorgensen explained that for whatever reason those few birds don't migrate, whether due to illness, weakness or other conditions, the consequence is often fatal and some of the birds that remain in Nebraska do not survive the state's harsh winters. However, Jorgensen said, those pelicans that stay at Sutherland's cooling pond, where heated water is discharged from the nearby power plant, do fairly well.

White pelicans, one of North America's largest birds, cover great distances during their migration. Birds banded at Chase Lake NWR have been recovered as far south as El Salvador and Nicaragua, although most pelicans summering in the northern Great Plains winter along the Gulf Coast, mainly in Mississippi and Louisiana.

Pelicans fly cross-country at high

American white pelicans loaf in early morning light on a gravel bar at Calamus State Recreation Area near Burwell.

altitudes to maximize their soaring performance. Although their massive wings – more than nine feet across from wing tip to wing tip – are not built for speed, pelicans can easily ride thermal updrafts, gliding with relatively little effort expended. On long distance flights, pelicans practice formation flying (the V-pattern of flying so commonly seen in flocks of geese). This aerodynamically efficient mode of flying is further enhanced by the pelicans' flapping and gliding in coordinated harmony, which also can improve their flight efficiency by reducing turbulence.

Other large birds fly with their neck extended, but the white pelican is one of the few to fly with its head pulled back onto its body. Paul Johnsgard, Foundation Professor Emeritus of Biological Sciences at the University of Nebraska and one of America's leading ornithologists, reasons: "Because of the weight of the head, with its long and heavy beak and pouch, it is less tiring to carry the head back on the shoulders, and it may move the center of gravity back somewhat, improving flight stability." In flight, the white pelican displays the same plumage pattern as snow geese and whooping cranes – all white with black wingtips – and is often confused with them. Pelicans, however, flap their wings much more slowly than geese or cranes, and the pelican's distinctive yellow-orange bill should distinguish it from other large, white birds.

White pelicans do not plunge dive for their prey like brown pelicans, the only other pelican species found in the United States; instead, they simply swim along the water surface, scooping up their favorite food – carp, suckers, crayfish, salamanders and chubs. In the Nebraska Sandhills, bullheads and minnows are also an important food source. White pelicans can eat up to four pounds of fish a day (one adult can eat upwards of 40 percent of its own body mass a day during the breeding season), trapping the fish in their large bills and landing them in their substantial, bucket-like pouches. As the pelican lifts its fish-filled bill, water slowly drains from the pouch. On occasions they feed in synchronized groups, trapping schools of fish in shallow water.

Shallow lakes and marshes are attractive feeding grounds

for white pelicans, and once they find a waterbody that suits their needs, they will settle in until it's time to move to a new location with a full stock of food. Some of Nebraska's reservoirs that regularly attract migrating or nonbreeding pelicans during the spring and summer months include Branched Oak Reservoir outside of Lincoln, and Lake McConaughy and Lake Ogalalla in Keith County, as well as Clear Creek Wildlife Management Area just to the northwest, which is considered to have one of the largest and most diverse birding populations in the Great Plains.

Located in south-central Nebraska, Harlan County Reservoir is also home to large numbers of white pelicans and other migrating birds every year, including Canada geese, ducks and even the rare gull or two. With more than 13,000 acres of water, Harlan County is the southernmost large body of water in Nebraska, so it's usually the first in the state to see the migrating birds each spring.

The lakes and marshes on Valentine NWR in north-central Nebraska are attractive summer feeding grounds for white pelicans. Although they've been known to lay eggs at Valentine NWR, there are no records of successful nesting there. When asked if it would be likely or possible for white pelicans to nest in Nebraska, Johnsgard stated: "I would think that pelicans might be able to nest in Nebraska, but Lake McConaughy fluctuates too much to allow it, even though its fish population supports a large number of summering, mostly immature, pelicans. Some of the larger lakes at the Crescent Lake or Valentine refuges might have the sandy islands that they would need . . . . I have only seen them nesting on fairly large marshes or lakes where there is little human disturbance, often in association with cormorants. Pelicans need low, sandy or gravelly islands on lakes or large marshes where there is very little water fluctuation. I doubt if many such conditions exist in the state."

Research biologists at Chase Lake in North Dakota studying their populations have been banding white pelicans for years, and many of those banded birds have turned up in

Pelican Reproduction Facts

- White pelicans typically lay a two-egg clutch.
- White pelicans nest only on the ground, in subtle depressions 2-3 feet across and only a few inches high.
- Both parents incubate the eggs with the help of their large webbed feet.
- Once eggs begin to hatch, they are shifted to the top of the feet, probably to avoid crushing.
- Eggs are hatched 2-3 days apart; the older bird being stronger will often be the only one to survive.
- Newly hatched chicks are blind, featherless and totally dependant on their parents for survival.
- Parents feed their young by regurgitating semi-digested food.
- Adults feeding young will fly up to 100 miles a day to forage for food.

Nebraska. Tommy King, research wildlife biologist with the USDA National Wildlife Research Center, said: "We've been color banding pre-fledged American white pelicans at Chase Lake since the summer of 2000 for a research study looking at colony dynamics of the species." According to King's research, sustained productivity at this and the other three major Plains' colonies is crucial to the entire white pelican population.

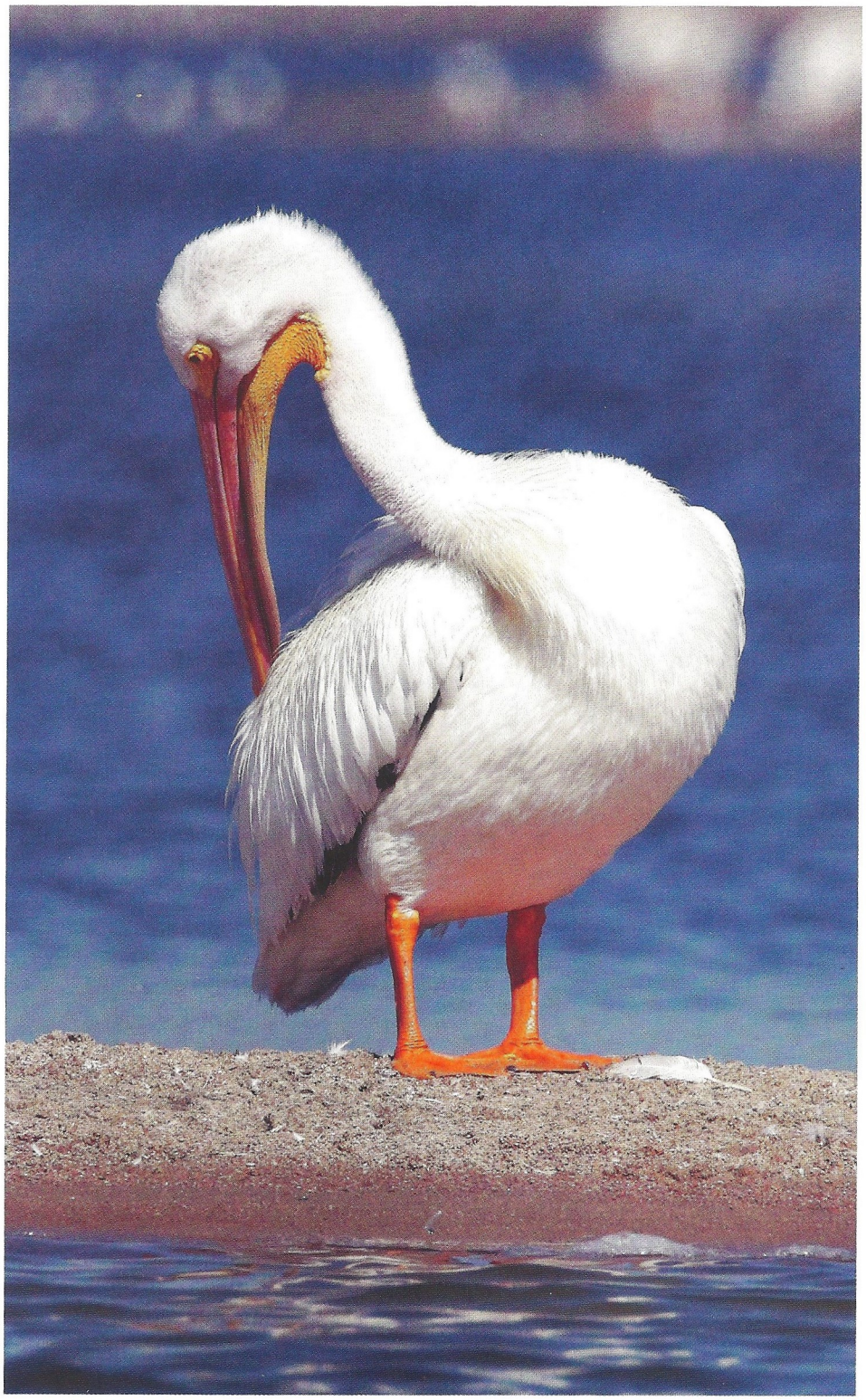
Because white pelicans are colonial breeders, they are especially vulnerable to disturbances such as severe weather events, human disturbance, predation of colony nesting sites and disease. In recent years, researchers have zeroed in on one potentially catastrophic disease to the white pelican – West Nile virus. Marsha Sovada, a research wildlife biologist with Northern Prairie Wildlife Research Center in North Dakota, has been studying the impact of West Nile virus on the white pelican. According to her research, unusually large numbers of near-fledging white pelicans have tested positive for the disease at the four major northern Plains' breeding colonies ever since West Nile virus first arrived in the region back in 2002.

Sovada's research noted West Nile virus in pelican chicks following a seasonal rise of the mosquito (*Culex tarsalis*) that carries the disease. Mortality rates fell dramatically in 2006, but that was probably attributable to near drought conditions in the region and, hence, lower mosquito populations. Sovada said researchers have found that it's the pelican chicks, not the adults, that seem susceptible to the virus: "Among colonial species, pelicans were the first documented to have such high rates of chick mortality attributed to West Nile virus." No adult pelicans with West Nile have been found at any of the colonies. Sovada and other biologists are now investigating the possibility the virus could be transmitted bird-to-bird, but as of yet, no definitive conclusions have been made.

Fertility and reproduction success of American white pelicans plummeted during the hard-pesticide era (1940s-1970s) and many breeding colonies vanished. Additionally, biologists are finding that suitable nesting habitat free of human disturbance is rapidly declining across the United States. White pelicans were listed as endangered in Canada for years, but the protection of nesting colonies there has resulted in populations increasing, so they have been removed from the endangered status. However, in other places, such as the state of Washington, the white pelican has been disappearing from historic breeding areas and is still considered endangered.

The U.S. Fish and Wildlife Service (USFWS) identifies three major factors limiting the success of white pelicans: habitat destruction, utilization of wetlands and lakes for other purposes (irrigation, hydroelectricity, waterfowl production), and human and predator disturbance of nesting colonies. In 2004, Chase Lake NWR experienced a total nest abandonment on one of their major white pelican nesting peninsulas. None of the abandoned eggs or chicks survived. The USFWS manager at Chase NWR, Natoma Buskness, believes a pair of coyotes was the cause: "We found a coyote den on the peninsula where the abandonment took place. The white pelicans have returned to Chase, but will not return to that peninsula, even though we have removed the den. We are confident that coyote predation was the cause, though we can never be 100 percent sure."

In Washington, where white pelican populations had been falling, habitat destruction is one of the leading factors



A white pelican carefully uses its large bill to preen its feathers.

contributing to their endangerment. However, according to Madonna Luers, Public Information Officer for the Washington Department of Fish and Wildlife, their numbers are finally showing some improvement, with the number of breeding pairs up: "The increase in breeding pairs might be due to improvements in the past decade in areas where we have lots of non-breeding bird use. A good example is the Yakima River, which was cleaned up, mostly through irrigation system changes, in a multi-agency effort. Water clarity (which helps the birds fish) has improved and toxins in sediments have been reduced as well."

Protective legislation and improved conservation efforts have contributed to reversing population declines in other areas as well. Tommy King speculates the increase may be due to a number of factors, including the expansion of the aquaculture industry in the southeastern United States, which may be helping more pelicans in the east survive the winter by providing an abundant food source. However, the resulting conflicts with catfish farms are causing concern.

According to the National Wildlife Research Center, the production of farm-raised catfish has increased dramatically in the last 25 years. Because of the high fish-stocking rates, the ponds provide an attractive foraging environment for the white pelican, which causes a significant economic loss for catfish producers. Additionally, white pelicans have been identified as one of the hosts of commercial catfish parasites which have been responsible for the loss of entire catfish populations.

"The American white pelican transmittal of the trematode parasite remains a major problem for catfish producers in the Southeast," according to King, who, along with other researchers, estimates production losses of $27.1 million for Mississippi catfish farmers alone due to the parasites. Although King states that pelicans cannot be totally prevented from foraging on catfish ponds, he believes their foraging can be greatly reduced.

Although the white pelican population seems to be increasing in some areas east of the Rockies while decreasing in others, King said researchers can't be sure without a continental survey: "We don't know what effect the disease problem is having, but it appears they are still moving eastward into new areas. But because there is no funding to do a thorough survey, we don't really know what is going on with the white pelican population."

Before any questions about the pelican population can be answered, King said, researchers must first accurately determine how many there are now. But that will take

money, which is in short supply when it comes to pelicans:

"Everybody likes these birds, even the fish farmers, though they'd rather not have them eat their fish. But when it comes time for funding, there is apparently no interest, and with the economic times the way they are, it's probably only going to get worse."

For now, American white pelicans remain a majestic presence across the Great Plains, just as they were in the time of Lewis and Clark. Masters of aerial precision, a graceful, gliding procession of white pelicans is truly a remarkable sight to behold.

Tommy King, Research Wildlife Biologist with the National Wildlife Research Center would like to request that any banded White Pelican sighting please be turned in to the Bird Banding Lab at: http://www.pwrc.usgs.gov/bbl/ homepage/recwobnd.cfm.

(The author would like to note the scientific and population information was taken from Paul Johnsgard's Cormorants, Darters, and Pelicans of the World*; Jon Farrar's* Birding Nebraska*; Sharpe, Silcock and Jorgensen's* Birds of Nebraska*; Tommy King's* Interaction Between the American White Pelican and Aquaculture in the Southeastern US*; and The National Audubon Society's* Waterbirds*.*

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As dawn's sun clears the horizon, a solitary pelican leaves its roost and flys out to find some breakfast at Calamus SRA.