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# How Many Swallows Make A Summer?

PHOTOS AND TEXT BY CHARLES R. BROWN AND MARY BOMBERGER BROWN

**T**HE PLATTE River is best known to most people for its concentration of thousands of migrating sandhill cranes each spring, but probably few are aware that the Platte also plays host each year to thousands of individuals of another bird species. Often referred to as "mud daubers" by fishermen and others who encounter their distinctive gourd-shaped mud nests plastered to bridges or buildings, cliff swallows are probably the most abundant breeding bird found along the western and central Platte during the summer months.

The cliff swallow is a western species that in recent years has begun expanding its range eastward across the Great Plains. Historically, these birds nested on the sides of cliffs and canyons in the Rocky Mountains and the Southwest, where their nests were attached beneath overhangs or rocky outcrops. Cliff swallows were quick to pick up on the suitability of many of humankind's creations, however, finding that the underside of a bridge or the eaves of a building provide excellent protection for their nests.

As people began to build bridges over the Platte and other prairie rivers, and as drainage culverts under interstate highways appeared, cliff swallows moved eastward along the rivers. Not only did the bridges and culverts provide new and improved nesting habitat, the fields and pastures adjoining rivers

such as the Platte also harbored an abundance of flying insects, the cliff swallow's exclusive food. In short, the Platte offers superb living conditions for cliff swallows.

The sparrow-sized cliff swallow is distinguished from other swallows by its square tail, orange rump, and prominent white forehead patch. The birds have broader wings than other swallows and soar more often when flying. Their backs are bluish, their underparts cream color, and their throats and the sides of their heads chestnut. The sexes look similar. Cliff swallows are often confused with barn swallows, which also build mud nests on the sides of buildings. Barn swallows, however, have deeply forked tails, construct open cup-like mud nests (unlike the cliff swallow's enclosed gourd-like nest), and rarely nest in groups.

Cliff swallows usually nest in colonies, their nests packed side by side in dense clusters. Colony size can vary greatly, but in Nebraska, colonies range anywhere from two to 3,500 nests. Along the western half of the Platte, virtually every bridge, highway culvert, or irrigation structure having an overhang which will shield nests from the weather and a rough vertical concrete wall for nest attachment has at one time or another had nesting cliff swallows. Cliff swallows are extremely abundant in the western half of the state east to about Kearney, but occur in lesser

*Probably best known for its spring concentrations of thousands of migrating sandhill cranes, the Platte River also plays host to thousands of cliff swallows, whose gourd-shaped mud nests adorn bridges, buildings, and culverts.*

PHOTO BY BOB GRIER







numbers throughout Nebraska.

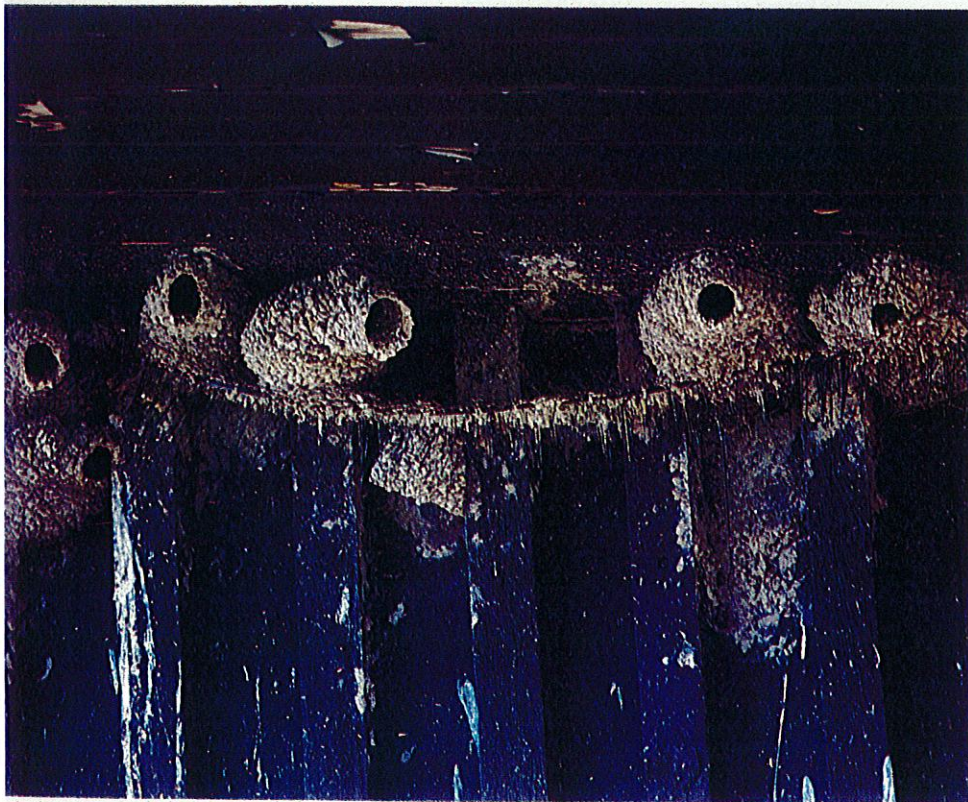
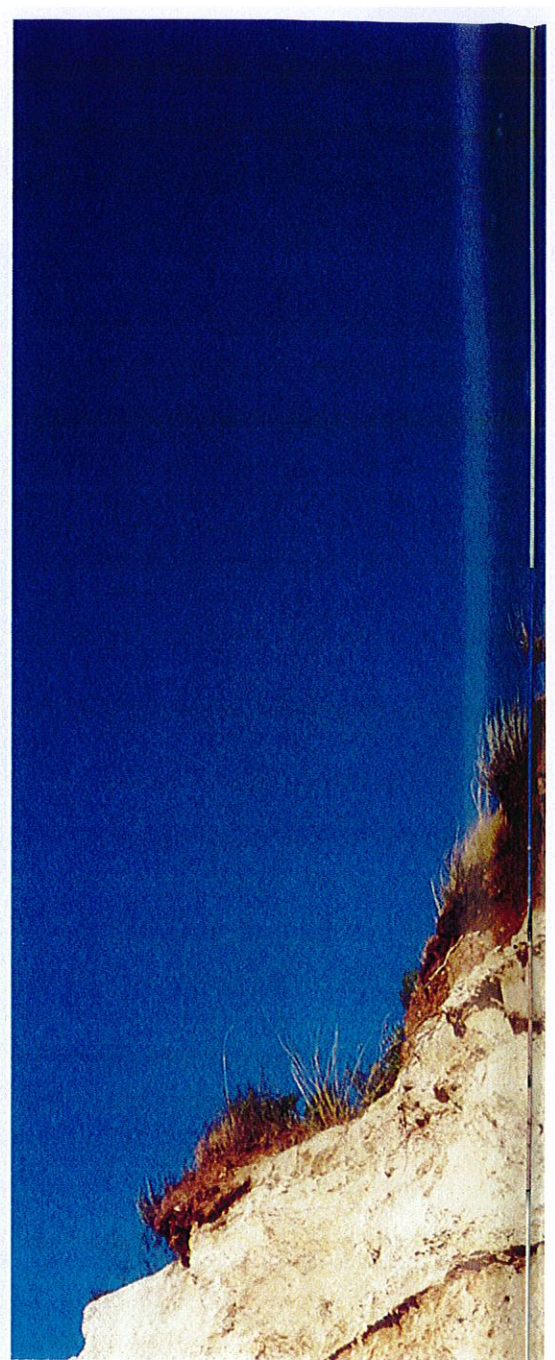
It was the abundance of cliff swallows along the Platte River that first drew us to Nebraska in 1982, as we contemplated a study of these birds. We were interested in why a social animal such as the cliff swallow chose to nest in such large groups. With backing first from Princeton University, and now from Yale, we began a long-term study of cliff swallows in Keith and Garden counties. Much of our research is being done near the University of Nebraska's Cedar Point Biological Station, a field camp below Lake McConaughy where biology classes are taught each summer.

Cliff swallows are migratory, making an annual trek to and from their North American breeding range and their wintering range in Argentina and Chile. Nebraska birds apparently migrate southward along the Central American coast, as one bird banded in Nebraska was found dead three months later in El Salvador.

During their time in Nebraska (about

ten weeks), cliff swallows typically raise one brood of three or four babies. The young ones can fly well once leaving the nest and begin flocking with other cliff swallows as soon as they fledge. One of the most social birds on this continent, cliff swallows do everything in a group, including feeding and migrating.

Our research has shown that many cliff swallows return to the same place to nest year after year. Since 1982, with the aid of a number of volunteer student assistants, we have permanently tagged over 22,000 of these birds in the vicinity of Lake McConaughy. Birds are tagged by placing a numbered aluminum U.S. Fish and Wildlife Service band around each swallow's right leg. Since each bird has a number, we can follow the histories of many individuals from year to year as we recatch them. Hundreds of the birds we have banded have returned, and as a result we are gaining insights into many facets of the cliff swallow's colonial life style in western Nebraska.

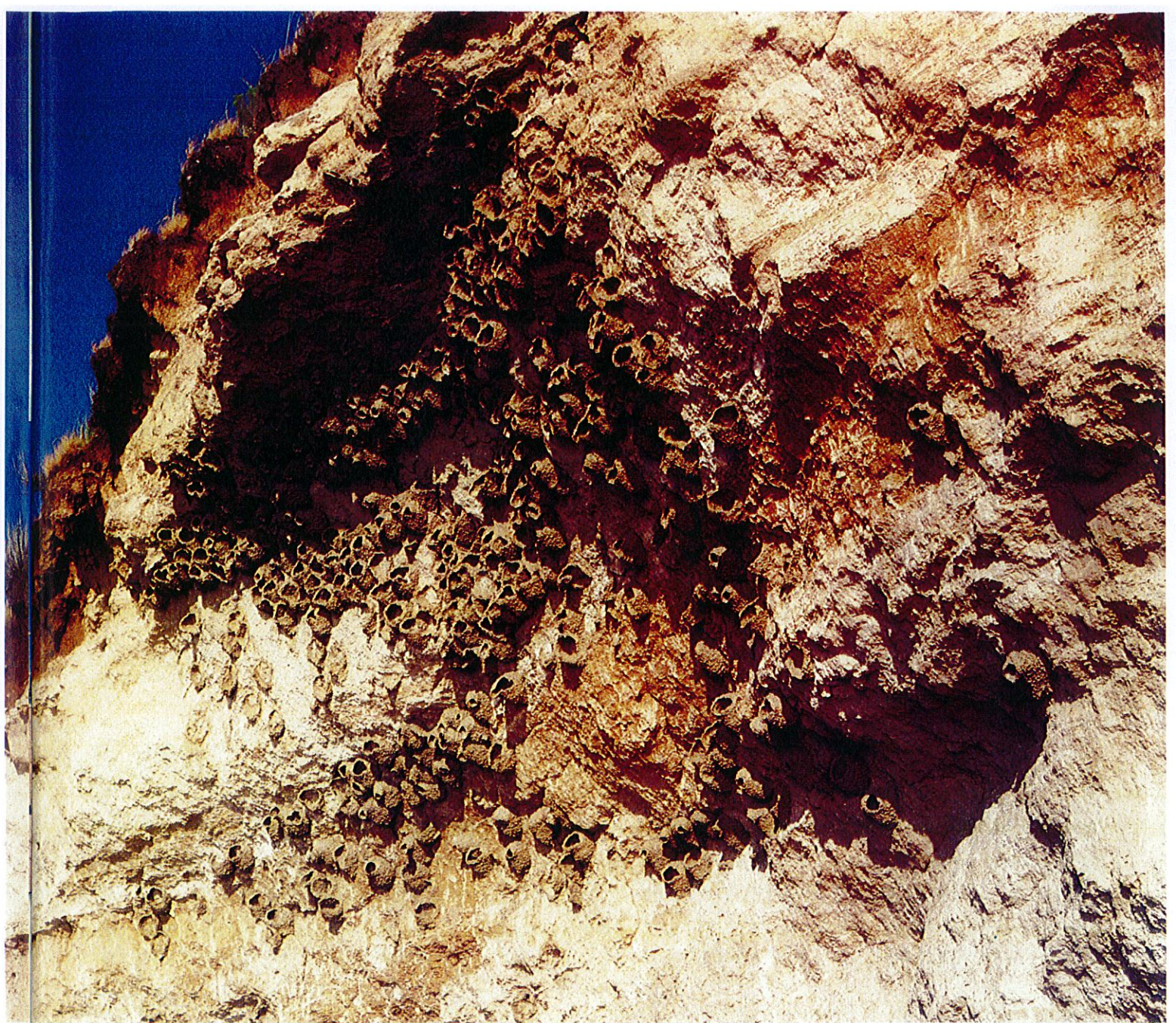


*"Mud daubers" prefer a rough surface and a protective overhang.*

Cliff swallows are well known for their legendary return to the San Juan Capistrano mission in California on March 19 of each year, but they are not quite that punctual in the Platte River valley. The birds begin arriving in Nebraska in mid April, with the exact date of the first arrivals varying each year. By early May, large flocks begin to arrive and start to colonize many of the Platte River bridges and interstate highway culverts. At Lake McConaughy some birds also build their nests along cliff faces on the south shore of the lake.

We have records of banded adult birds returning to the same highway culvert for at least four years in a row.





*At McConaughy some cliff swallows build on rock faces along the south shore of the lake.*

Many of the birds hatched the previous summer also return to nest in the colony where they were born. As a result of this apparent fidelity to nesting areas, colonies are often made up of many of the same individuals from year to year. Some banded cliff swallows in the Lake McConaughy area have lived at least six years. A few birds we banded in 1982, the first year of our study, are still alive.

As soon as the birds decide which colony they will use, nest construction begins. Nests from the previous year often survive the winter in protected sites. There is a great premium on selecting an existing nest if one is available, because doing so can save a bird

up to two weeks of time otherwise spent collecting mud, pellet by pellet, to build a new nest. Cliff swallows collect the mud for their nests by picking up one beakful at a time, sometimes traveling as far as half a mile between the colony and their mud source for each pellet gathered. Nests may contain as many as 1500 separate globs of mud.

After the nest is built, the birds begin laying eggs. One of our most interesting discoveries was that Nebraska cliff swallows are brood parasites. This means that they sometimes lay an egg in the nest of one of their neighbors within the colony. The unsuspecting neighbor is left with the job of incubating the foster egg and later raising the

foster nestling. We found that cliff swallows frequently manage to parasitize the reproductive activities of their neighbors, and perhaps as many as 40% of all cliff swallow nests contain at least one parasitic egg. Usually a bird slips one of its eggs into a neighbor's nest but continues caring for its other eggs in its own nest. Cliff swallows apparently engage in brood parasitism more than any other bird yet studied, and our research on the birds living along the Platte River has in part caused ornithologists elsewhere to start looking for brood parasitism in other birds.

An even more bizarre discovery was that a cliff swallow of southwestern Nebraska will at times physically pick



up an egg from its own nest in its bill and fly to a nearby nest and leave the egg. This is another way to slip a foster egg into a neighbor's care. No birds were believed to be capable of successfully moving eggs this way until we observed cliff swallows doing it. Physically carrying eggs probably does not occur frequently, but we estimate that at least 6% of nests have an egg or two brought into them.

When cliff swallow eggs hatch, both parents begin continual dawn-to-dusk foraging, attempting to find enough flying insects to satisfy their babies' insatiable appetites. Cliff swallows feed on a variety of insects. These birds destroy huge numbers of grasshoppers which they catch by skimming low over the grass. They also eat corn borers, var-

ious types of flies, mosquitos on occasion, and other injurious and pest insects. We have sampled the kinds and quantities of insects the birds eat, and one cliff swallow returned with over 170 plant hoppers on a single visit to its nest to feed its young! In some colonies a pair of swallows may make an average of 220 separate trips to and from their nest to feed the young each day. Needless to say, cliff swallows are highly beneficial birds and one of the farmer's best friends.

A major goal of our research has been to learn why cliff swallows live in colonies. The answer becomes obvious when eggs hatch and the birds start feeding their young. Cliff swallows use each other to learn where food is. The insect swarms on which the birds feed

often change location, and a foraging cliff swallow needs constant information about where an insect swarm is at any moment. This information is obtained by watching one's neighbors and determining who returns with food. A cliff swallow returning to its nest with food is obvious, with insects protruding from its bill and bulging in its throat. Any bird returning with food obviously knows where food is at that moment, and when it departs from the colony to return to the food source, its less successful neighbors follow it. Whenever a cliff swallow is unsuccessful in finding food, all it has to do is simply return to its nest and watch for the return of neighbors who have had better luck. The more neighbors a bird has, the better its odds of rapidly finding someone



*Typical cliff swallow habitat near Ash Hollow State Park, Garden County. Culvert with nests lower right.*

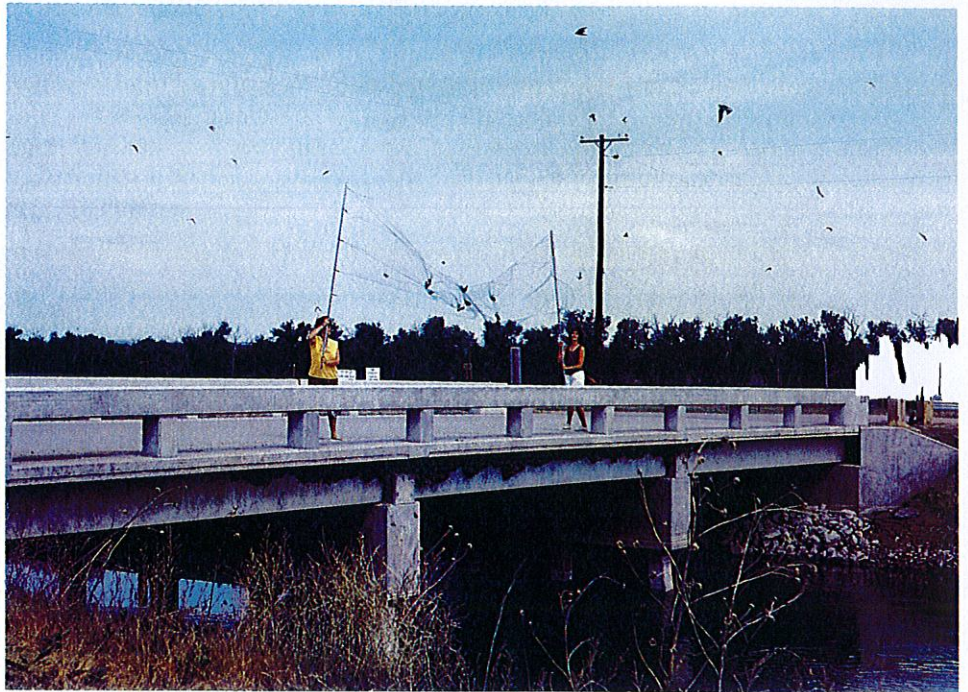


to follow to food. The result is that cliff swallows that live in large colonies forage more efficiently and bring more food to their nestlings, which in turn causes nestlings in large colonies to grow faster and survive better. This is apparently a major reason why cliff swallows in Nebraska live in colonies.

We discovered that cliff swallow colonies of the Platte valley function as "information centers"; the colony is the central place to which birds can return to gain information about feeding sites. Ornithologists had long speculated that colonies of birds in general might be information centers. If so, this might explain why many species live in groups. But no studies until now had provided convincing evidence that birds actually gained any sort of foraging information from their neighbors. Our research on cliff swallows has contributed in part to a renewed interest on the part of biologists in the concept of information centers.

But we have found that living in a colony also can have some costly side effects for cliff swallows. One of the major drawbacks to a colonial life style is that the birds are more vulnerable to infestations of blood-sucking ectoparasites. With more individuals in a colony, the odds of at least a few birds bringing in some ectoparasites are high. These ectoparasites travel on the body feathers of the birds, and once brought into a colony the ectoparasites crawl into the birds' nests where they breed. Close packing of nests in colonies makes it easier for ectoparasites to spread through a colony and find suitable hosts. The result is that cliff swallows nesting in a colony have greater ectoparasite infestations than do birds nesting alone.

These ectoparasites attack the baby swallows, sucking their blood. The young swallows are often killed by these blood-sucking insects, and the birds that survive often are in poor condition as a result. In southwestern Nebraska, the principal ectoparasites that attack cliff swallows are a bird flea and a swallow bug. The swallow bug is closely related to the human bedbug.



*Authors' field assistants use mist net to capture birds for study.*



*Authors have tagged and released more than 22,000 cliff swallows.*



Some people persecute cliff swallows that try to build nests on their property because they fear the ectoparasites that the birds carry. These fears are absolutely unfounded, because neither the bird flea nor the swallow bug will attack humans. They are strictly bird ectoparasites, and the presence of cliff swallow nests will not cause one's house or farm to become infested with human-seeking bedbugs.

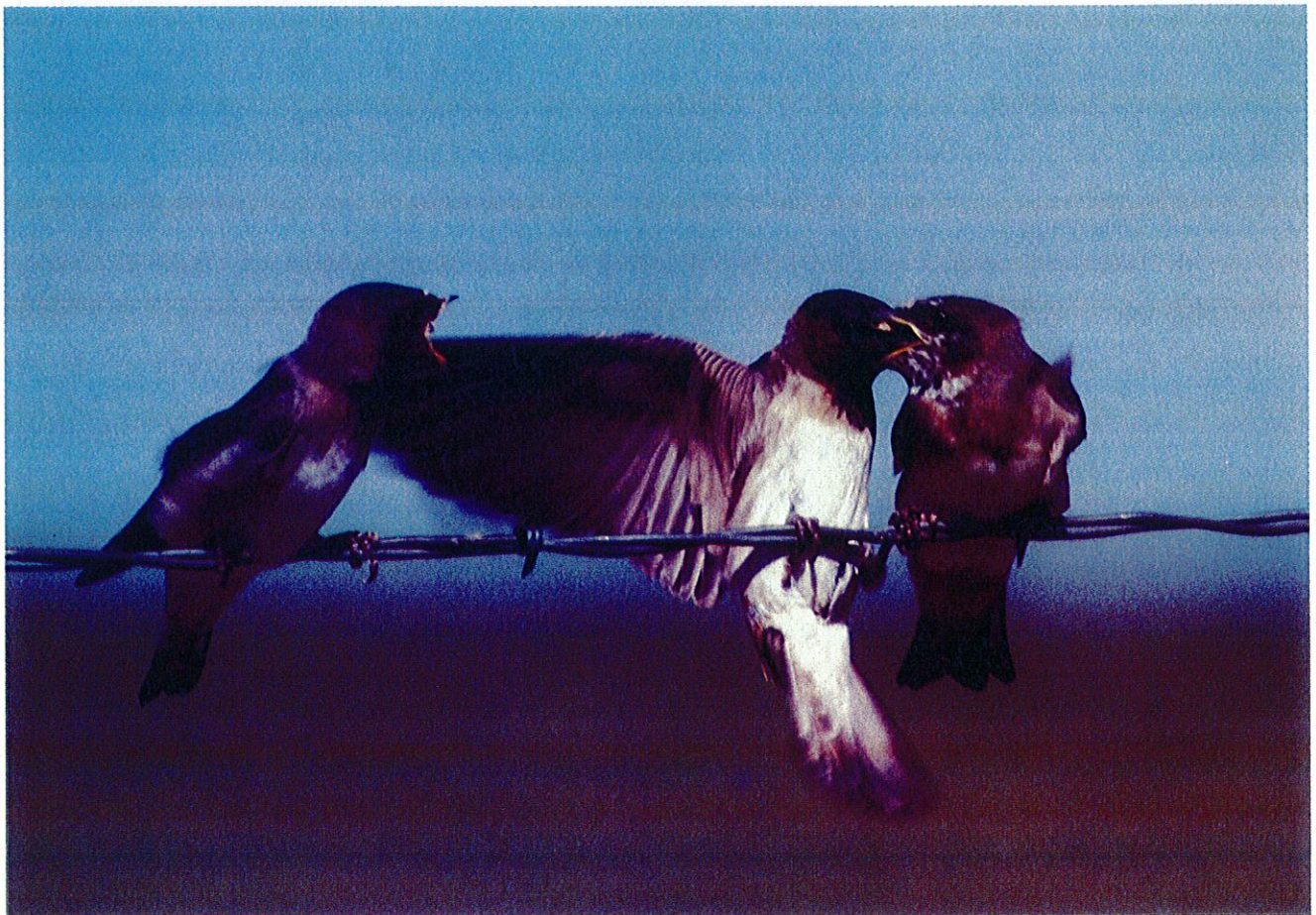
Young cliff swallows leave their often-infested nests when they are between 21 and 24 days old. Many of the adults in each colony start breeding at about the same time in the spring. This means that once fledging in a colony begins, large numbers of juvenile swallows emerge simultaneously. A challenge faced by parental cliff swallows is to locate and feed their own fledglings among the hordes of juve-

niles of similar age and appearance. Young cliff swallows from a colony often assemble in large flocks on wires, fences, or in trees near the colony, and they remain dependent on their parents for several days after fledging. The young birds call incessantly, and apparently their parents use these call notes to identify their own young. The calls of different fledglings vary slightly, so that each bird has a unique vocal "fingerprint." Adults have keen enough hearing to make these subtle discriminations, and they selectively feed their own babies. This behavioral adaptation is just one of many shown by highly social species such as cliff swallows.

With an ever increasing trend for wildlife to disappear as natural habitats are lost or altered, it is heartening to know that a wild and beautiful animal

such as the cliff swallow appears to thrive in man's environment. Nebraska's Platte Valley probably has as many—or more—cliff swallows as any other place in North America. Nebraskans can be proud of this unique wildlife resource. Our research on these birds has yielded a number of discoveries that underscore the remarkable complexity of this species' social behavior. We will continue our studies of cliff swallows in the Lake McConaughy area for the next several years and hope that readers will appreciate these interesting birds when they encounter them along the Platte or elsewhere in the state. ■

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*Young swallows leave the nest in 21-24 days, but remain dependent on their parents for several days after fledging.*



