

# Cave Swallows in the Northern Chihuahuan Desert: A 26-Year Journey

by Steve West

IN THE LATE 1970s, the Cave Swallow (*Petrochelidon fulva*) was known from a limited number of sites in the Edwards Plateau region of south-central Texas, at various isolated locations in west Texas, and in several limestone caves in the Guadalupe Mountains of southeastern New Mexico.

Elsewhere it was found in northeastern Mexico, the northern part of the Yucatan Peninsula, and in the Greater Antilles in the West Indies. Cave Swallows were one of the poorest known species in the United States at that time. In fact, it was one of only a handful of neotropical migrants for which the winter range was unknown.

In 1978, around 50 Cave Swallows were banded by myself and Dan Bennack of Alpine in the Glass Mountains west of that town, in Brewster County, Texas. That banding session began an association with this bird that has continued to this day. That same year, I moved back to New Mexico to continue teaching and in 1980 started banding Cave Swallows at Carlsbad Caverns National Park. The goal at the time was to band enough birds so that we could learn the wintering range of the species. Little did I know where searching for the answer to that one question would take so many of us.

Cave Swallows, while now occurring as a breeding species in four states (Florida, Louisiana, New Mexico, and Texas), is a recent invader to the United States. Storm-assisted and wandering Cave Swallows have also been reported in about 20 other states

and three provinces of Canada. The very first record was from the Dry Tortugas in far south Florida in 1890. The first Texas record was in 1910 with nesting recorded by 1914. The first Cave Swallows in New Mexico were collected in 1930, but there are indications that the species was present for a number of years before then. By 1980, the species was known from little more than half a dozen sites in the Guadalupe Mountains of New Mexico and a number of sites in the Trans-Pecos region of Texas. The Texas sites, with one exception, were on private land, and the best and most accessible site to study the species was at Carlsbad Caverns National Park.

Since 1980 the species has spread in the Guadalupe Mountains and occurs at a few US Forest Service sites and one Bureau of Land Management site adjacent to the park. Up until 1966 the species was known only from Slaughter Canyon. In that year, three pairs colonized the more accessible Carlsbad Cavern site and their numbers started to grow.

It is now 2005, 26 years after the first Cave Swallow was banded just outside the entrance to Carlsbad Cavern. Over 16,000 birds have been banded at that one site and—including multiple recaptures—we have handled

13,000 retraps. Sometime later this year we will handle our 30,000<sup>th</sup> bird. To accomplish this we have had to rely heavily on volunteers. In many years of trapping, we have had volunteers hold banding poles, take birds from nets, process birds, and sometimes analyze data. The 6,000+ volunteers have come from 38 states and 14 foreign countries. Most of the volunteers are local, many times park service employees or students from Carlsbad and surrounding schools. Without volunteers, this project would not be possible.



▲ A small identification band is attached to the leg of a Cave Swallow. Photo by Steve West.

The process of banding has been going on for many decades and is a valuable tool to help gather information about wild bird populations. Banding involves capturing a bird and placing on its leg a small metal band with sequential numbers. Also on the band is an address indicating where to report the band if you were to find it. Banding birds and hoping for a recovery is a form of lottery. The more birds you band, the more likely you are going to have a recovery—the same process as in buying lottery tickets. In banding, however; you have to hope that whoever finds the band will know what to do with it and then go to the trouble to report it. When the band is reported to the Bird Banding Laboratory (BBL) in Washington, D.C., BBL will then send a report to the original bander of the bird and to the person reporting the band. The weak link in this whole process is that many birds, especially small birds, are not seen again and therefore your chances of getting a recovery are slim.

Because recovery of a band is rare, and because the process is somewhat intrusive into the lives of the birds, we decided that we may as well collect as much information on the birds as possible. Collecting more information would only be minimally more intrusive and it may give some clues to find the answer to the question that started the whole activity.

Banders are required to go through a long process before being awarded a Federal banding permit. A state banding permit is also required and in this case, another permit from the National Park Service. Birds are captured using a mist net—a hair-net like object that is stretched across a narrow section of the entrance to Carlsbad Cavern. Being black, the net is not easily seen and birds will readily strike it. Hitting the net forms a



▲ A bird-banding volunteer removes a captured Cave Swallow from the mist net. Photo by Steve West.

pocket that captures the bird. Not all birds that hit the net end up in one of these pockets and not all birds that are stuck in the net stay long enough for us to retrieve them and process the birds.

Each bird so captured is banded first with the banders checking the number twice. The bird is examined to determine whether it is an adult or an immature (hatch year birds—those born that year—occur starting in late June and persist through the fall). Juvenile birds are highly variable and can appear with white blotches on the head or other plumage differences.

The sex of the bird is also determined by examining the bird for a brood patch. A brood patch is an area of bare skin that develops as the female bird begins to incubate eggs. Feathers on the abdomen are lost and additional blood vessels develop to warm the skin giving it a pinkish appearance. Brood patches first appear in mid-May and are found through early August. If the bird has a brood patch it is a female, if not it probably is a male.

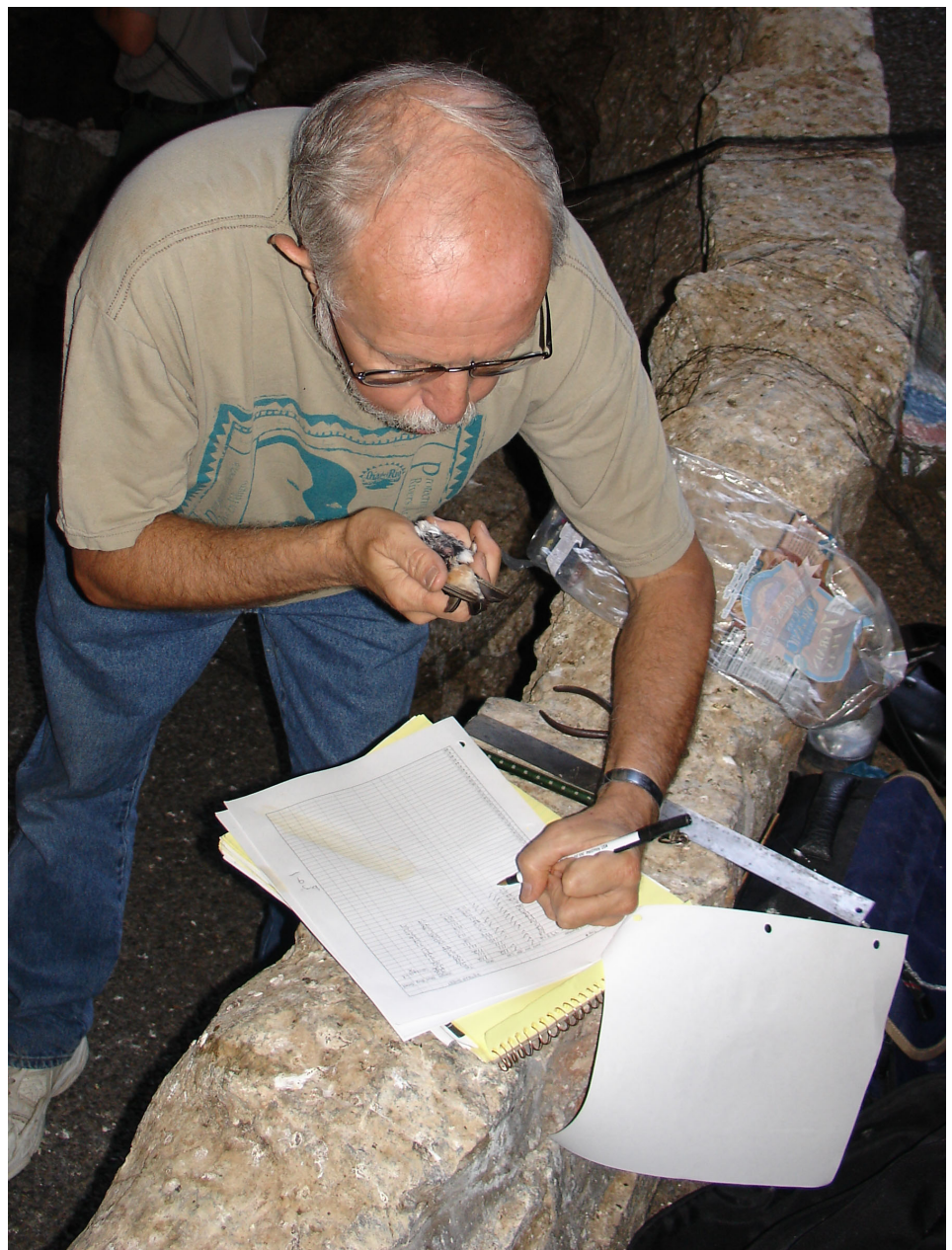
Additional data collected includes measurements of the left wing, right wing, and tail, and weight of the bird. Birds are examined to determine if

they are carrying mud or other materials for nest repair, and if they are carrying insects and if so, what kinds. Plumage abnormalities, the presence of ectoparasites and anything else that can be gleaned from this encounter are also noted.

All of this information is stored in two different locations. Currently the information gathered during 26,000 of these encounters is stored on a computer with data analysis to begin in the fall of 2005. In the early years, we were able to take banding sheets and extract information that provided data for several papers. Now, with almost 30,000 birds handled at just this site, a more sophisticated computer system is needed for data analysis.

So what have we learned? We know that Cave Swallows remain in our part of the Chihuahuan Desert for a longer period of time and in greater number than other swallows. Our latest record at Carlsbad Cavern is 10 November, our earliest is 2 January. Not much time for a long migration between those dates. The overwhelming majority of the population is gone by the third week of October and return by early March. That still doesn't leave much time for a long flight to the Amazon Basin—the site where its two closest relatives, the Barn Swallows (*Hirundo rustica*) and Cliff Swallow (*Petrochelidon pyrrhonota*) winter.

After 12 years of banding we finally had our first band recovery. A retired U.S. citizen, who lived half of each year in Mexico and the other half in his home state of Minnesota, found a band on his front porch at San Patricio, State of Jalisco, Mexico in early January. While exciting, at first it raised far more questions than the recovery answered. First, there were no previous records of this species in the State of Jalisco. In fact, there was no record of the presence of Cave



▲ Information about a captured bird is meticulously recorded by Steve West.

Swallows on the west coast of Mexico. While we hoped the band recovery would provide a clue to the wintering sites of Cave Swallows, the recovery was somewhat dismissed as a very lost bird that just happened to beat the odds and be found—albeit in a very odd location. Eventually though as we began to learn more about this species

it was discovered that most Cave Swallows actually winter on the west coast of Mexico and Central America stretching from Jalisco to at least as far south as El Salvador. Before this band recovery and other investigations in that area, there were no previous records of this species in that large area. How was the species overlooked?

In the breeding range of the species, most nests are in caves, sinkholes, and under bridges. When people searched for this species in Mexico and elsewhere in the winter, caves were the first places they looked. However, on their winter ranges, Cave Swallows actually are more likely to occur in agricultural areas, flying high above the fields of sugar cane, corn, or sorghum. At the crack of dawn they head to the high sky, searching for more insects. While they do feed low, much of their time is spent above the fields. When visiting the neotropics, birders and ornithologists tend to head for mangrove swamps, elfin cloud forests, tropical rain forests and similar locales to study the fascinating tropical bird life. Having lived in Latin America off and on for over five years, I have spent minimal time in agricultural areas. Cave Swallows, similar in appearance to Cliff Swallows, were overlooked in an area where very few birders and scientists spent much time. Historically much of that area was lowland scrub forest or grassland and the birds probably roosted in scrub forest.

As always, nothing is simple in explaining the story of this species. To confound the volunteers, only a few years before the band recovery, several hundred Cave Swallows started wintering in Texas and have done so now for approaching 20 years. The Pacific coast sites are no doubt the historic wintering range of the species although this adaptable bird now has found the winter of south-central Texas to its liking.

After the band recovery, we decided to continue studying this species. At that time we had about 12 years of data and there was much to learn. With records on thousands of birds, and by building on the database each year, we have been able to develop life tables, determine sex and age ratios,

learn about which insects are preferred and which sex does what in the nesting cycle of the pair.

During the course of this study we frequently have reached a point where we seem to be going through the routine and “nothing new” is being discovered. Each time we reach that point, it seems something else happens. In Dona Ana County, New Mexico, and across numerous locations in west Texas (and probably northeastern Mexico) Cave Swallows have been found using other sites for nesting rather than just caves. Eddy County has remained one of the “pure” sites. Prior to this summer there had only been two isolated occasions where Cave Swallows were nesting in garages or abandoned buildings. We began to question why they almost exclusively chose caves here and not elsewhere. Then in late June, 2005, myself, Rick and Brenda Wiedenmann (two of the other researcher-volunteers) found Cave Swallows nesting at three culvert sites south of Whites City and Carlsbad Caverns National Park. Over the next few days I found numerous Cave Swallows nesting under highway bridges and over irrigation canals between Carlsbad and Otis. Those same bridges in previous years held only Barn Swallow nests.

The Cave Swallow colony at Carlsbad Cavern is one of the best known and longest studied populations of neotropical migrants in the United States—due largely to over a quarter century of dedication by thousands of volunteers. In 1980, we started out with one question. Now we have answers to questions we never anticipated and additional questions we are just starting to work on. We have banded birds at a number of back-country sites but those colonies generally have few birds and are difficult to reach. We know that

individuals move between these sites—several from that original sinkhole near Alpine, Texas, have shown up post-breeding at Carlsbad Cavern.

With the support and encouragement of the National Park Service, we have been able to fill in many of the gaps in our knowledge about this species. As important, thousands of people have involved themselves in hands-on science and, I hope, have developed a better appreciation for species sites in the Chihuahuan Desert such as Carlsbad Caverns National Park and for a very interesting species that we share this landscape with—Cave Swallows.



### Odonata Survey of Texas

The Odonata Survey of Texas (OST), centered at The University of Texas at Austin (UT), includes a group of people with a shared interest in the study of the distribution, biology, behavior, and enjoyment of dragonflies and damselflies occurring in Texas. The purpose of the OST is to act as an official organization whose job it will be to encourage, solicit, and maintain the Texas database for dragonfly and damselfly distributional information. The OST is chaired by John C. Abbott of the University of Texas and Brackenridge Field Laboratory.

The OST needs as many volunteers as possible to assist in the documentation of the state odonata fauna. Individuals who can assist in the discovery, collection, and documentation of species are welcome.

If you would like to learn more about the OST visit their website at: <http://www.odonatacentral.com/ost>