

Maine Cliff Swallow Colony Monitoring Program

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A Project of the
Maine Natural History Observatory
In Collaboration with the Maine Bird Atlas,
a Project of the Maine Department of Inland Fisheries and Wildlife

Introduction

Thank you for your interest in Maine's Cliff Swallow Colony Monitoring Program. This is a project coordinated by Maine Natural History Observatory in partnership with the Maine Bird Atlas, a project of the Maine Department of Inland Fisheries and Wildlife. Your efforts to place artificial nests at existing and historic Cliff Swallow colonies and monitor their use will help us to understand their breeding distribution in Maine and increase the number of nesting options for this remarkable species.

Artificial nests should only be installed if you intend to monitor and maintain the nests throughout the season. An unattended nest can be detrimental to swallows and other native nest box users if non-native species begin using the nests. For more information on how to handle these situations, see the "*Maintaining Nest Boxes*" section below.

Why Monitor Cliff Swallows?

Recent information suggests that Cliff Swallows are decreasing in Maine. Consequently, Cliff Swallows are listed as Species of Greatest Conservation Need in the Maine Wildlife Action Plan. Although likely due to a culmination of many issues, the loss of nest sites to invasive species have been identified as a contributing factor to this species' decline in other regions of the country. Fortunately, recent studies have revealed that Cliff Swallows will readily make use of artificial nests when provided at existing and historic colony sites. These artificial nests can be maintained to prevent use by invasive species while also providing suitable nesting sites year after year.

Cliff Swallows are vulnerable to threats like pesticide pollution and competition with invasive European House Sparrows. Although highly tolerant of humans, their willingness to form colonies on or near human structures can result in conflicts ending in their eviction. Understanding the issues which negatively impact this species will require a better understanding of the species' distribution during the breeding season and their breeding behavior at nesting sites.

Natural History

Although perhaps not as familiar as the Barn Swallow or the Tree Swallow, Cliff Swallows are another species of swallow that will readily live near to humans. Although this

species historically nested on the cliffs and ledges of the Rockies and Sierra Nevadas, they have spread throughout North America. Much of this spread has been attributed to their use of man-made structures such as bridges, houses, culverts, and barns as alternative colony sites. Cliff Swallows are highly gregarious and nest in close proximity to one another -- sometimes by the hundreds or even thousands. Because Cliff Swallows rely on a regular supply of mud to maintain their nests, colonies are typically formed near wet areas where mud is plentiful (though these birds will fly longer distances to gather particularly suitable material). Wet meadows, grasslands, riparian areas, and even developed areas such as towns and cities with suitable nesting structures and foraging opportunities all provide suitable breeding grounds for this adaptable species.

Adult male and female Cliff Swallows sport the same plumage. Both have metallic blue upperparts and caps with a buffy ring around their necks, a tawny forehead, and chestnut cheeks and throats. Below, they have white breasts and bellies. Juveniles look like duller versions of adult birds with soot-colored backs and heads while lacking the bold forehead patch characteristic of adults. Adults have a fairly limited vocal repertoire consisting of squeaks, twitters, and churs. Nestlings make a purr-like begging call that can sometimes be heard from within the nest.

Cliff Swallows are aerial insectivores meaning they forage for insects on the wing. Pastures, wetlands, grasslands, and riverine areas are particularly suitable foraging sites. In some instances, these birds will hunt insects over water. Cliff Swallows often seek swarms of insects in groups and will alert other swallows to swarms through vocalizations. During the breeding season, these swallows will sometimes follow their fellow colony mates to sources of food. From dawn to dusk, these birds can be found actively feeding on and gathering flying ants, leafhoppers, beetles, and flies.

Males typically arrive at the colony sites ahead of the females and may begin building a nest or repairing an existing nest prior to pairing with a female. Territorial males advertise themselves and their nest sites with a simple song consisting of grating, twittering sounds. Once the pair is formed, both pair members will gather mud to construct or repair their nest. Cliff Swallows are highly social and do not guard their mates. Copulation occurs out of sight within their completed nests. Occasionally, non-pair members will copulate at mud gathering sites. For more information on breeding behaviors, see the "*Monitoring Protocol*" section below.

Nests are composed of mud, but are lined with other materials such as dry grasses. Both males and females are responsible for gathering materials and constructing the nest. Nest building and reconstruction is typically completed en masse within the colony, with colony members synchronizing their building efforts. Both males and females incubate eggs equally and incubation lasts approximately 15 days. Breeding adults may enter the nest of their neighbors, remove an egg, and replace it with one of their own. In the event of a nest collapse, adults may renest. After hatching, nestlings are brooded by the female. Males and females both feed nestlings. Nestlings will come to the nest opening to defecate. After leaving the nest site, young swallows will often remain in the company of their parents for several days. Parents will feed their young midair by either directly passing food or by dropping insects for their young to catch. Adults will often lead their dependent young back to the nest sites at night to sleep while still under their care. Cliff Swallows typically raise only one brood of nestlings each year.

Cliff Swallow in Maine

Cliff Swallows are a migratory swallow species and are only found in Maine during the breeding season. In the breeding season, they are widely distributed throughout the state and can be found in every Maine county.

Nest Monitoring

For this project, we are asking volunteers to install artificial clay nests at existing or historic Cliff Swallow colonies and to monitor these nests throughout the breeding season. The breeding season is a sensitive time for nesting birds. Because of this, our efforts are designed to minimize disruption that could lead to stress on these birds. The safety of the volunteers, the nesting adults, and their young is a priority. It is important to adhere to the monitoring protocol described below to best guarantee a successful season for all parties. Lastly, it is important to remember that if your nests remain unoccupied, this is still important information. If no birds take up residence in a nest this season, that is okay. We still would like for you to collect data that can be used to inform our effort. Give the birds some time to find your nests, but if your nests remain unused after a number of years, it is worth moving the nests to a new location.



Where to Install Artificial Nests

Artificial nests should be installed on buildings or other structures where Cliff Swallows have recently nested in the past few years, particularly for this pilot phase of this project. Sites near water and with large areas of unmowed grass are especially suitable. Sites with extensive tree cover and limited open space for foraging should not be used. Nests should be installed just under an overhang, such as an eave or shelf, to protect the nests from the elements. (Photo from M. Silver, *Swallow Conservation*).

Artificial nests should be installed on a vertical building surface at a height similar to existing or historic nests within the colony (typically at a 90° degree juncture between the wall and the overhang). The height of installation will vary from site to site as Cliff Swallows build at highly variable heights. Using a cordless drill, securely attach the nest with the supplied screws and gaskets. Take care not to over-tighten the screws to avoid breaking the nest. The nests should be easily viewable from 30' away and birds should have a clear flight path to the nests. Volunteers are encouraged to install and monitor more than one artificial nest at colony sites (ideally 3-5) and each swallow nest should be installed side by side near existing or the remains of historic nests. If no nests or remains from prior years are present, install nests side by side directly under an overhang (such as an eave or shelf). Ideally, nests should be installed facing open areas and/or water over which the

swallows can forage. Ease of access to suitable foraging habitat is more important than orientation, however, sites that are predominantly in the shade should be avoided. Where nests or nest remains exist, however, mimic the direction of these existing nests.

Predators should be considered when picking a location for the nests. Do not install in trees. It may be impossible to avoid all potential predators, but pay particular attention if the area has outdoor cats. Pick a location for the box where cats cannot climb and access the nests.

Artificial nests should only be installed if you intend to monitor and maintain the nests throughout the season. Any unattended nests can become highly detrimental to swallows if non-native species begin using the nest and disrupting the swallows nesting attempts. For more information on how to handle these situations, see the "*Maintaining Nest*" section below.

Call Broadcasting

Cliff Swallows are highly social and strongly attracted to their breeding vocalizations. Cliff Swallow vocalizations should be broadcast daily during the early weeks of the breeding season to attract birds to historic colonies after the nests have been installed. Broadcasts can be played anytime between the hours of 6 o'clock (AM) until 7 o'clock (PM) April 24th to May 24th. The duration of the broadcast is up to the volunteer and their availability, however, ideally 30-60 minutes of broadcast should be played in the mornings and evenings. **Do not broadcast calls at active colonies.** The project coordinator will supply you with an mp3 file of this recording if you are working at a historic colony site.

Monitoring Protocol

Here in Maine, the Cliff Swallows breeding season runs from approximately May 25st until July 15th. These safe dates indicate the time period where most migrating birds have already reached their breeding grounds. As such, these dates will serve as the start and end date for conducting nest monitoring. Nests should be installed by May 1st to best ensure that the nests are considered by arriving males. Any breeding behaviors observed before or after the safe dates should be noted in the comments section on the back of your monitoring data sheet and/or entered into eBird.

May 25th to June 22nd: Monitoring should be conducted once per week. During these first four weeks of monitoring ending on June 22nd, observations should be limited to viewing the nests from a distance of approximately 30' to avoid disrupting the swallows during the early nesting phase. The time and duration of your visit is up to you and your availability. We ask that you spend *at least* 15 minutes conducting observations per visit during this period. All observations should be entered onto your monitoring data sheet. A possible indicator that Cliff Swallows breed in the area would be the presence of an adult in appropriate habitat (code **H**). There are a few probable indicators of breeding which may be observed. An adult visiting a probable nest site (likely the artificial nest) should be coded as **N**. Skirmishes between males over nests early in the breeding season are part of territorial defense and should be coded as **T**. These skirmishes can involve physical scuffles at the nests as well as aerial chases and attacks. Volunteers will very likely be able to confirm breeding during this first window of monitoring by watching for adults carrying nesting materials such as mud or dry grasses (code **CN**). Adults may be observed building nests or adding materials to existing nests (code **NB**). Artificial nests are designed to imitate partially constructed nests. Cliff Swallows nesting in these artificial nests will add materials to complete them each season.

June 23rd to July 15th: During this latter part of the survey period (once eggs are suspected to have been laid) monitors are asked to limit their observations to once every two weeks. Volunteers should continue to make observations of breeding behaviors at a distance at least until breeding can be confirmed. Adults may be observed carrying foods such as beetles, grasshoppers, and other insects back to the nest site (code **CF**). Young swallows may be observed waiting to be fed or defecating at the nest opening (code **NY**). Adults may be seen entering the nest to incubate eggs or brood young (code **ON**). Keep observations during this second monitoring window brief to avoid disrupting nesting swallows and their young. You are not required to continue monitoring colonies after breeding is confirmed, however, you are welcome to continue your observations through the survey window so long as you keep your visits brief and avoid disruption.

Maintaining Nests

Proper maintenance of these artificial nests is just as important as nest placement and observation. Nests should be cleaned and, when necessary, repaired between seasons. At the

end of the season (once all the young have fledged, the nests are unoccupied, and the colony has moved on), take down the nests. **Do not leave artificial nests up between breeding seasons.** Leaving the nest up between breeding seasons risks damage to nests and could mean invasive species will take up use of the nests. For that reason, both artificial *and* natural nests should be removed at the end of the season if House Sparrows are detected at the colony site. Removing the artificial nest around August 15th should allow adequate time for the birds to finish breeding, however, leave the nests up longer (2-3 weeks) if there is still swallow activity in the area. Do not remove nests if swallows are still present at the colony site.

Wear gloves and a face covering when removing and cleaning nests. Once removed, take out any added nest materials such as mud and grasses being careful not to breathe in any of the dust that stirs up. Do not use any cleaning solutions on the nests. If there is a build-up of debris stuck inside the nest, use warm water and a stiff-bristled brush to clean out the nest. Allow them to dry in the sun before storing. Since nests are constructed from clay, superglue can be used to repair cracks and breaks. Store the nests in a dry, secure place until the next field season.

A note on competition with non-native birds: Introduced House Sparrows often compete with native species for nesting sites. Cliff Swallow nests are no exception. House Sparrows have been documented destroying swallow eggs and killing nestlings. One House Sparrow may destroy multiple nests before selecting a nest to use for its own. Preventing House Sparrows from becoming established at Cliff Swallow colonies is therefore of vital importance. These introduced species threaten native wildlife and are therefore not protected by state or federal laws.

The removal of nests (both artificial and natural) between breeding seasons must be employed as a preventative measure to avoid House Sparrows from making use of Cliff Swallows nests. Waiting to install artificial nests until May 1st will prevent House Sparrows from becoming established before the Cliff Swallows return for the nesting season. Once an House Sparrow moves into a nest, it is very unlikely that swallows will use the nest that same field season. Therefore, any nest material and eggs from a House Sparrow should be removed and disposed of. If volunteers are uncomfortable doing so, please contact the project coordinator so we can arrange for you to coordinate with another volunteer to do so. Sparrow contents from a Cliff Swallow nest should be disposed of well away from the colony

site. Occasionally, House Wrens and Eastern Bluebirds have made use of Cliff Swallow nests as nesting sites. These are *native* bird species and **should not be disrupted**. Simply make note on your data sheet and continue your observations.

A note on competition with other wildlife: Occasionally, you may discover that other forms of wildlife take up residence in your nests. These may include mice, squirrels, and insects, but these occurrences are lessened by removing the nest(s) at the end of the season. If you are comfortable doing so, these animals can be removed from the nests. Please take proper precautions during this type of maintenance. Always use gloves and face coverings to limit the amount of airborne dust and debris you are breathing in. Rodent nests or small paper wasp nests can be manually removed from the nests and destroyed. **Do not use any insecticides** to exterminate insects as these products may contain chemicals which can be hazardous to birds. If a particularly large nest of stinging insects is suspected or detected, make note. Large stinging insect nests will likely have to be removed at the end of the season. Unless discovered and removed quickly at the beginning of the season, the presence of any of the animals discussed above will likely mean swallows do not use the nest(s) this field season, however, NEVER risk injury to yourself for the sake of nests maintenance.

A Note on Ladder Safety: Nests should be installed between 10' and 40' in height on the side of a building. This means you will more than likely need to use a ladder to access the nests during installation and annual maintenance. Take extra care with ladders, follow all safety precautions, and make sure to have a second person present to help steady the ladder. Installation of artificial nests can potentially be hazardous, and extreme care to your safety is the highest priority. Be familiar with the safe working practice for any tools you use. Beware of electricity from overhead power lines, particularly if carrying or placing a ladder, and keep nests at least 50 feet away from any power lines. Ensure your ladder is secure before you climb. Please do not risk injury of any kind - the nests and breeding observations are not worth the risk of an accident.

Reporting your results

Send your completed datasheets to Maine Natural History Observatory at the end of the field season (contact info on the datasheet), or enter your results directly through eBird. It

is very helpful if you can enter these breeding records directly into the Maine Bird Atlas eBird portal (ebird.org/atlasme). Again, if you prefer not to enter your records online, you can mail us your completed forms, and we will enter your observations into our databases.

Contact

For questions regarding this project, please contact:
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