

## Barn Swallows Successfully Nesting at Conte National Wildlife Refuge—Update

As described [previously](#), Barn Swallows nesting at the Silvio O. Conte National Fish and Wildlife Refuge have had a successful season in 2020. We estimate that 30 – 38 pairs of Barn Swallows nested in the Fort River boat house in 2020, producing a total of 49 nests.

Nineteen nests were used only during the first pulse of nesting activity. Eleven nests were used during the first and second waves of nesting. Eight nests were used only during the second pulse of nesting activity. We have no way of certainly knowing whether the 19 nests that were active during the second half of season represented (a) second broods, or (b) whether some (all?) of the nests initiated during the second half of 2020 resulted from late breeders that had not been present earlier in the season. However, banding data from 2019 suggests that most of the late nests observed during the second half of the 2020 season represented second broods of pairs that had nested earlier in the boat house in 2020. Mean clutch size of the 30 nests active during the first half of the season was 5.1 (s.d. = 0.84); this value was slightly higher (but without statistical significance) than the mean clutch size of early season nests laid in 2019 (4.6). We recorded no nest failures in 2020.

Of 98 adult swallows banded at Fort River in 2019, 27 were recaptured in 2020 (27.6%). Because precautions associated with the coronavirus pandemic precluded the more intensive sampling that we were able to pursue in 2019 (4 banding dates in 2020 vs. 9 dates in 2019), it is very likely that there were additional returning individuals in 2020 that went undocumented, meaning that the return rate was probably higher than 27.6%.

This value resembles data reported by other studies: in Oklahoma, Mason (1953) found a 20% return rate, and Shields (1984) a 42% return rate in New York. While these numbers may not seem particularly high, remember that each individual has undertaken two migrations (to and from South American wintering grounds) prior to coming back to nest in Massachusetts. And, while nesting Barn Swallows show some year-to-year site fidelity, some of the birds marked in 2019 may have nested in 2020 at Fort River sites not located in the Boat House, or at other sites distant from the refuge. Early spring temperatures in this region were among the coldest recorded since the 1800s, and this may have influenced both the timing of nesting at Fort River in 2020, as well as the return rates of birds that had nested here in 2019.

**This success story was due to several factors, and paves the way for future conservation actions that can be applied to other situations.** Aging barns occupied by Barn Swallows are a common feature in New England's historical agricultural landscape, and sometimes these structures simply cannot be saved. Thanks to the help of collaborator Andy French, project leader at the Conte Refuge, we have learned important lessons about how to attract and relocate Barn Swallows into alternative structures where they can be protected in cases where occupied barns need to be removed. Specific steps that were taken included:

1. Collection of some nests after the breeding season to use in attracting swallows the following year to different nesting locations. Hasegawa et al. (2012) and Mason (1953) found that the presence of previous years' nests was an important attractant to prospecting birds. By placing "seed" nests in a nearby structure (the Boat House at Fort River), where nesting could proceed without disruption, many of the birds that originally had nested in the demolished Bri Mar Stable

simply moved to a different building. Of the 38 nests that were used in 2020, 27 (71%) were located on “seed” nests that were placed in the Boat House prior to the 2020 nesting season.

2. Swallows preferred using “seed” nests (27 of 38, or 71%) over “new construction” (11 of 38, or 29%). Newly-constructed nests were placed on structures that had been provided as nesting substrates attached to wooden frames hung from the Boat House rafters, including 7 on square metal electrical boxes and 3 on small (5” x 5”) wooden platforms; 1 nest was constructed on a section of electrical conduit that had been provided as a perch for the nesting birds.

3. Other researchers have reported that reuse of old nests resulted in lowered reproductive success as a result of mite infestation (Barclay 1988, Donahue et al. 2018, Turner 2004). To address this potential issue, we cooked 50% of the “seed” nests in a pizza oven, reaching a 225° F core temperature for 30 minutes, prior to deploying them prior to the 2020 nesting season. We found no evidence that birds using the cooked “seed” nests or newly-constructed nests (neither of which potentially harbored parasites from previous use) successfully fledged more young than birds using uncooked “seed” nests that might have held parasites from 2019.

4. One advantage of the Boat House nesting site is that it is free of mammalian or avian predators. In another nearby barn, located in Amherst, approximately 14 pairs successfully nested in 2019. In 2020, 50% of 14 nests at this site failed in due to predation, possibly by a raccoon. One difference in 2020 was a dramatic reduction in human activity in this building during the nesting season, which may have previously deterred predator presence.

5. We used playbacks of Barn Swallow vocalizations during 2019 in the Boat House in order to advertise the availability of this site to pairs that were nesting nearby in the Bri Mar Stable. In 2020 we felt that there was no need for this audio attraction, as birds had already begun to colonize the Boat House in 2019.

Tangential to Mass Audubon’s work at the Conte Refuge, TerraCorps service member Kaleigh Keohane conducted a preliminary survey for Barn Swallow nesting sites in the general vicinity of Hadley. Of 1,324 0.5 km X 0.5 km grid cells that were examined between July 6-16, 145 (11%) contained barns or other structures that appeared potentially suitable for nesting Barn Swallows. Of these potential sites, Barn Swallows were seen at 38 (29%); in this preliminary work it was impossible to document actual numbers of breeding pairs. However, this Big Picture view of Barn Swallow nesting distribution across a larger area will help guide future work aimed at understanding the status of the regional population.

Mass Audubon also hopes to continue to contribute to a developing USFWS initiative aimed at conserving aerial insectivores – Barn Swallows, Cliff Swallows, Chimney Swifts, bats, etc. – as well as pollinators that feed in fields and field edges, and grassland nesting species in the Connecticut River Valley. If we are successful in securing funds, we hope to collaborate with the Conte Refuge in 2021 to deploy coded VHF nanotags on breeding Barn Swallows to learn more about the locations of important feeding areas with presumably healthy insect populations. This work will hopefully include education activities, working with private landowners to maximize the conservation benefits associated with their farms, and inventories of declining birds and other taxa. We’ll post more information about these efforts in future blogs.

## References

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