Chimney Swift Nest-building Challenge

Chimney Swifts have unique and highly specialized nests to suit their habitat requirements. The nests are simple in design, but complex in structure. The nests are built from short sticks broken off from the tips of trees and glued together with sticky saliva. The nest is a half-cup shape affixed to the inside wall of a hollow tree of chimney. While building your nests imagine how much more difficult this would be if you could only use your mouths like the Chimney Swift only uses its beak!

Materials: sticks, glue (white glue, hot glue, paper mache glue, goop etc.), nest wall (cardboard, wood, brick molding etc.).

Instructions for:

Younger ages (grade 3 or 4 and down)

1. Nests are built from short sticks
2. Sticks are glued together with sticky saliva (glue)
3. The nest is a half-cup shape and glued to the inside of a chimney

Older ages (grade 4 or 5 and up)

1. Read the summary of the Birds of North America description of Chimney Swift nests and highlight the important information
2. Build the Chimney Swift nest to be the same size and dimensions as a real Chimney Swift's nest
3. Build the nest so it's strong enough to hold a Chimney Swift (an object that weighs about 30 grams i.e. 12 pennies, 20 paper clips, 5 brand new pencils)

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Summary of Chimney Swift nest description modified from Birds of North America

Steeves, T. K., S. B. Kearney-McGee, M. A. Rubega, C. L. Cink, and C. T. Collins (2020). Chimney Swift (*Chaetura pelagica*), version 1.0. In Birds of the World (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.chiswi.01

Nest construction

Both Chimney Swift parents help build the nest. They break off small twigs from the tips of tree branches while they fly and bring these branches back to the nest in their beaks. After the parents have brought their twigs back to their chimney they position the twigs on the nest and glue it into place with sticky swift spit. Generally they work on building their nest in the afternoon and early evening. At two nests watched for 8 hours Chimney Swifts would return to their nests with a new stick every 40 to 50 minutes. What twigs the Chimney Swifts use depends on their availability. In New York, American basswood, apple, black locust, red maple, and sugar maple were commonly used.

Chimney Swifts start laying their eggs when the nest is half done and continue adding twigs and saliva while incubating, often these additions are made when the parents trade off incubating duties. Chimney Swifts stop adding twigs shortly before the eggs hatch. On average it takes Chimney Swift parents 18 days to build a nest but it can take up to 30.

Nest structure

Chimney Swift nests look like half a bowl made of loosely woven twigs. The nests are less than 3 mm in diameter and 2-5 cm long. The ends of twigs stick out making the outside of the nest look rough and the inside smooth. By the end of the nesting season, parents and young break off many sticks that stick out beyond the general shape of the nest. Swift spit holds the twigs together and holds the nest to the wall. The chemical composition of swift spit that makes it so sticky is unknown. Once the Chimney Swifts start incubating their eggs they add a semi-circle of saliva above the nest and more support twigs to reinforce it. Twigs generally have about the same diameter (no super thin and super thick twigs). A few nests studied in Kansas though had twigs with a larger-diameter at the base and twigs with a smaller diameter near the rim.

Nest dimensions

Nests studied in New York were 0.5-7.5 cm wide (front to back), 10 cm long (right to left side average), and 2.5-3.1 cm deep. If a Chimney Swift nest is washed off the chimney wall during a rainstorm or something, the replacement nest tends to be smaller and takes less days to build.

Photo by Ontario Swift Watch Participant

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