EEB 4260, Ornithology

Lecture Notes: Nests

Class Business

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Reading for this lecture

Required. Gill: Chapter 15

1. What are nests used for?

A) MATE ATTRACTION

i) In some species, nest construction abilities are an issue in mate choice. Males will build nests before they have a mate and females will inspect nests when deciding who to mate with.

ii) For example, in some wrens the males build multiple nests in their territories and females select males (at least in part) based on the number of nests they have built. The extra nests serve an additional function by acting as "dummy nests" that make it harder for predators to find the real nest.

B) INSULATION

i) Nests play a key role in insulation, and a well constructed nest can help considerably with successful incubation. Consequently, most nests are constructed in such a way as to maintain a microclimate that is conducive to successful hatching. There are several things that a bird can do to improve the microclimate in their nest.

ii) Nest placement also can help to prevent eggs from overheating (e.g., by building the nest somewhere shady) or drying out (e.g., by building near water).

iii) Other birds nest in cavities, which are more protected from the elements and thus make it easier to maintain constant conditions. In several species it has been shown that cavities

facing in certain directions (e.g., relative to the prevailing wind direction or to benefit from the degree of exposure to the sun) are preferred – the preferred direction varies depending on the location (e.g., in cool climates it might be good to face south to get full sun, but in the desert such a placement might be hazardous).

iv) The nest architecture (type of material, thickness of vegetation, looseness of construction, etc.) also has a big effect on its insulation abilities. Many birds line their nests with materials that provide good insulation. This trait is especially well developed in waterfowl, which pluck large number of down feathers from their bodies to line their nests with.

C) PROTECTION FROM PREDATORS

i) Nests also are designed to help protect the eggs and young from predators, especially when the adults are not around to help. With this in mind, most nests are very cryptic and difficult to see. How many birds nests have you found? And yet, there are nests all around us.

ii) For example, just walk up the road between the dorm and the cemetery across the road. About half way up there is a small tree with branches overhanging the road. If you go and look before the leaves come out you'll see that there is a pretty obvious nest (probably a robin's). If you go back when the leaves are out, it will probably be much harder to see.

D) SOMEWHERE TO LEAVE YOUR EGGS AND CHICKS

Perhaps most simply (and obviously) nests also function as somewhere predictable where a pair can leave their eggs, and later on their chicks. This might become especially important after the young have hatched and have become somewhat mobile.

2. Different types of nests

Birds build a huge variety of different nests and different species can often be identified by their nests. Here are just a few examples; lots more in the text book.

- Simple cup nest – even these vary a lot in terms of what type of vegetation they are made with and what (if anything) they are lined with (usually some fine, soft material). Sometimes they are just made

with twigs or grasses woven together; sometimes mud is used as cement. Some of the most amazing nests are those of hummingbirds, which can be made entirely out of spider webs and lichen – just imagine how much work it must take to collect all the material!

- Domed nests – sometimes a roof is built over the top of the cup, presumably for added protection from predators and the elements.
- Pendulous nests – hanging nests are found in a wide variety of different birds, mostly passerines (e.g., orioles). These nests usually hang from a tree branch and involve a complex weaving job.
- Mud nests – some birds (e.g., several species of swallows) build nests completely out of mud and stick them on the underside of overhangs (in caves, under bridges, under the eaves of houses, etc.).
- Floating nests – various waterbirds build nests on floating vegetation -even on algal mats - in order to ensure that they are in areas that are inaccessible to predators. Often these nests simply involve pulling up the surrounding vegetation into a mound on which the eggs can be laid.
- Tree holes – these can be made by the bird that uses it; such species are called **primary cavity nesters** (e.g., woodpeckers). In other cases, birds use existing holes (e.g., one that was excavated by a woodpecker); these are called **secondary cavity nesters** (e.g., some chickadees, bluebirds, some ducks).
- Burrows – some birds will burrow in the ground (e.g., many seabirds) or in sandy river banks (e.g., kingfishers). Often these birds will make their own burrows, but sometimes they will use existing holes, such as old rabbit burrows (e.g., puffins).
- Simple scrape nests – many ground nesting birds (e.g., plovers, terns) simply make a shallow depression in the ground. Sometimes they will line it with a few pebbles or leaves, sometimes they will just lay their eggs right on the ground.
- Communal nests – some birds even make communal nests that have multiple pairs of birds breeding in them. These extreme forms of colony are pretty rare, but one species that does this is the Monk Parakeet. This South American species has established non-native populations along the Connecticut coast and it is possible to see their "apartment" nests if you go to Bridgeport and drive along the seafront there.

- Reused nests – reuse of old nests is fairly common in many species of birds, and some birds never build their own nests. Owls for example do not build nests: some are cavity nesters (e.g., screech-owls), others use old hawk nests (e.g., Great Horned Owls).

3. Nest construction

A) WHO BUILDS THE NEST?

This depends on the species. In some cases it is just the male, in others just the female, and in others both birds work together.

B) CONSTRUCTION CAN HELP WITH DEFENSE

i) Certain plants can help reduce parasite loads in nests. In some cases this can have a significant effect on nestling survival.

ii) Some birds also will use other animals to help them in nest defense. One way is to build their nest near to another species that provides protection. Examples, include small birds that build their nests in the bottom of a hawk nest, or shorebirds that nest in the middle of a gull colony in order to take advantage of the gull's mobbing of approaching predators, or birds that build their nests near the nests of stinging insects, such as bees or termites.

C) BUILDING IS A LOT OF WORK

i) In many birds, nest building takes a long time and a lot of effort. Consequently it is no surprise that many birds will reuse old nests, perhaps just adding some new vegetation each year. In other cases birds will not reuse the nest, but will reuse material from old nests. Female hummingbirds, for example, will often dismantle old nests and reuse the spider webs and lichens to build a new one.

ii) Experience also is very important. Although much nest building behavior seems to be under genetic control, there are species in which nest building abilities seem to improve with age. Even in species with very simple nests, experience might play a role in terms of finding a good place to put the nest.