Question: चिड़िया के बच्चे को घोंसला बनाना कौन सिखाता है?

Answer:

To me this is a very good question to investigate because of two reasons:

1. It is about a remarkable phenomenon happening every now and then right in front of our eyes, yet we often fail to notice it and don't stop to think it through.
2. As of this moment there are no clear-cut answers to it!

Well, those who have never seriously studied nest-building by birds – like me, till today – can easily come up with either of the following two responses: 1. Come on, it's so obvious, birds are just born with that skill, isn't it? Nobody needs to *teach* young birds how to build nests; 2. There must have been many researches done till date to look into this question, right?

However, in reality the answer to the first is that 'it depends', especially on the species you are talking about. And as for the second, a perfectly reasonable guess, is wrong.

Innate vs. learnt

There were two unrelated and important sets of experiments done in the 1960s and '70s to study birds' nest-building behavior. Studies till this time were on captive birds of various species. In a few species it had been shown that when reared in the absence of adults and nests the birds were unsuccessful in building them on their own when presented with nest building material even though they were able to lay eggs. In some other species, however, birds were able to build nests even when reared in the absence of nest building materials. Two studies indicate a role for learning and memory in nest building in some species. In one study, some of these birds built 'better' nests when reared in nests as compared to those reared in artificial boxes and in another species young males built more untidy and loosely woven nests than mature adults. But even after this solid foundation was laid, hardly anything else was done to find out more.

And then very recently in 2011, 2014 and 2016, three separate pieces of research work seemed to strongly suggest that in fact birds learn from experience and from each other when it comes to building their nests.

In 2011, scientists from the Universities of Edinburgh, St Andrews, Glasgow and Botswana filmed male Southern Masked Weaver birds in Botswana (southern Africa) building nests. This colourful bird was selected for the investigation because they build many complex nests in one season, often dozens, which allowed the team to monitor differences in nests built by the same bird.

They found that individual birds varied their technique from one nest to the next. They saw that some birds build their nests from left to right, and others from right to left. Also, as the birds gained more experience in building, they dropped blades of grass less often, which appears to be saying that this particular skill requires learning like every other too.

One of the members in the study said, “If birds built their nests according to a genetic template, you would expect all birds to build their nests the same way each time. However this was not the case. Southern Masked Weaver birds displayed strong variations in their approach, revealing a clear role for experience. Even for birds, practice makes perfect.”

Three years later in 2014, scientists from the University of St Andrews and The Roslin Institute filmed male zebra finches as they built numerous nests out of string (they are a species of small birds where the male builds a circular domed shaped nest in which the eggs are incubated and the chicks live until they are a few weeks old). After a short period of building with relatively flexible string, birds preferred to build with stiffer string while those that had experienced a stiffer string were indifferent to string type. After building a complete nest with either string type, however, all birds showed a greater liking for stiff string. The stiffer string appeared to be the more effective building material as birds required fewer pieces of stiffer than flexible string to build a roofed nest. Birds' material preference was not in line with either the preference of their father or of their siblings. But one interesting observation was that experience of either string type in childhood times actually increased their preference for stiffer string later in life. So it was clear to the researchers that choosing what material to put in use in the nest is not entirely

genetically predetermined as both the type and amount of experience influences birds' choices.

Ability for this kind of learning is certainly helpful for wild birds, because it lets them choose nest materials suited to the habitat in which they find themselves.

Social learning

Finally it was researchers from University of St Andrews once again who reported last year that birds can learn what nest to build by watching others but they tend to ignore strangers. Zebra finches were once more called into action to help these scientists figure out what possibly goes on inside the brains of our feathered friends.

A male zebra finch that had never before built a nest was paired with a female. The pair watched the male of another pair build a nest with either pink or orange string, colours that these birds would not normally use to build a nest. The male that had been watching the other bird do all the work was then given a chance to build his first nest. He copied the colour of nest material that was used by the demonstrator bird, but only if he knew that individual. Males that observed birds they did not know did not show this behaviour.

This study was the first to show that birds can learn about what nest to build from watching others. This is called 'social learning', and can save time and effort for first-time nest-builders because it allows them to capitalise on the success of others while also avoiding making their own mistakes."

Innate and learnt!

Hence it appears more and more to be the case that together with carrying some kind of a degree in construction engineering from their very first day on Earth, maturing birds in some species not only teach themselves how to further polish their ability based on experience, but let the others around them apply some additional teaching onto them as well.

By Rudrashis