Bird Olfactory Sense

by Donna M. Nespoli

Inaccurate mapping of the avian brain has historically led researchers to vastly underestimate the ability of birds to smell. But, studies in the last 30 years are showing consistently that the ability of most birds to smell is comparable to mammals.

This ability varies between major bird orders. The proportion of brain tissue allocated to the olfactory bulb has a direct relation to the bird’s sense of smell. Birds with more tissue in this area can detect smaller amounts of chemicals. So, birds like falcons, ducks and sea birds are better smellers than passerines or loons. Most bird species use smell in order to carry out duties in their daily lives like food finding, nest material choice, navigation, and mating. Here are some ways in which birds use smell:

- A male mallard’s reproductive success depends on his ability to smell a female’s odors.
- Sea birds locate food on the open seas by homing in on dimethyl sulfide, a chemical present in zooplankton blooms. Leach’s Storm Petrels can detect this chemical from 12 kilometers away!
- Crested Auklets produce a scent similar to tangerines during breeding season. The scent is strong around the neck ruff. They are attracted more to this than any other scent and orient specifically to this chemical in maze experiments.
- Starlings select nesting material and African Honeyguides find beehives by smell.
- Goslings learn to accept or reject food based on the odor of the food.
- Recent Studies tend to support a role for olfaction in pigeon homing.

On a special note, New Zealand Kiwi’s make the best use of their sniffers. While other birds have nostrils at the base of the bill, Kiwis nostrils are at the tip. They probe their bills into the soil and sniff through the nostrils to locate invertebrate prey. A series of classical experiments has supported the Kiwis’ heavy reliance on smell.

This is nothing new, however. Birds have been sniffing things quite competently for a very long time. Ironically, it was a certain well-known primate that got it wrong and spread the word that birds don’t have a good sense of smell at all. Who knows which primate I speak of?

Regardless, a recent study found that the sense of smell actually increased very early in bird evolution. So, when the first birds evolved from theropod dinosaurs, their sense of smell became more acute. But not to worry, a bird’s sense of smell does not affect parenthood in the way we thought. The old myth that a bird will not take a baby back because it smells like a human is just that, a total myth. Some birds may very well be able to smell you but they just don’t care. So, plop that baby back in the nest, the parents will take him or her back. For a detailed history on the study of olfactory sense in birds, read the book *Bird Sense* by Tim Birkhead.

References
- Ornithology by Frank B. Gill, Third Edition
- Animal Behavior by Drickamer, Vessey, Jacob, Fifth Edition