How Do Homing Pigeons Know Where Home Is?

In 1988, researchers at Cornell investigate how homing pigeons navigate home, even when taken 1,000 miles from their coop, or loft. Pigeons may use magnetic fields, or perhaps smell.

Keywords
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BOB COSTAS, anchor:

ROBERT BAZELL, reporting:
Good Morning Bob. Many species of birds migrate halfway around the world twice a year and don’t get lost. Now scientists don’t just study pigeons because they find pigeons so interesting, the pigeons serve as a model to explain the magnificent ability of some animals to navigate through great distances. These pigeons are returning to their loft or pigeon coop after a long journey. The ability of these unintelligent animals to find their way so well has been a source of wonder since the time of the ancient Egyptians. Dr. Charles Walcott has been studying the question for much of his career.

DR. CHARLES WALCOTT: We can take a trained bird like this one up to a thousand miles away from this loft, let it go, and it will fly home. And the question that we’re interested in is how does it find its way on that, on that long journey, it’s never been there before, not familiar with the area, and yet when we let it go, it flies, circles a couple of times and heads home. The question is how does it know where home is?

BAZELL: In the hills around Cornell University, researchers try to learn the secrets of pigeon navigation.

IRENE BROWN (Cornell University): Let’s get that white one out and we’ll do that.

BAZELL: Irene Brown, coordinator of the Cornell Homing Pigeon Research Project, and two students, have taken some pigeons from their loft so they can release them. Irene Brown has been tracking pigeons for more than twenty years.

Unknown 1: One nine nine seven.
BAZELL: All of the birds are tagged for identification.
BROWN: Okay, we’ll tape his band red, hold still bird. If you’ll bare the feathers on his back.
BAZELL: On the backs of some pigeons, the scientists attach tiny radio transmitters to help with the tracking.
Unknown 1: Let him go?
BROWN: Are we ready?
Unknown 1: Time on that?
BROWN: Okay, the time on that is twelve twenty. With radio tracking we can get a full-length track of how the bird really flies. If we’re watching visually with binoculars we can usually see them for about a mile and a half. With a radio transmitter on the back of a pigeon, we’re allowed to follow them for almost ten miles.
BAZELL: From such tracking experiments, scientists have learned that part of the pigeon’s navigation uses the sun, but even on cloudy days the pigeons can make their way home.
BROWN: It’s like solving a complicated crossword puzzle. We have so many pieces already and it’s a matter of putting in the missing pieces right now, and every year we feel we only have two more pieces or maybe one more piece to go, but the following year we find that we’re really missing three or four. And it goes on from year to year.
BAZELL: The scientists now have strong evidence that the pigeons have a sense of magnetic fields, that they have an internal compass. But that doesn’t explain everything either.
DR. WALCOTT: A compass isn’t enough to tell you where home is, it tells you where North, South, East and West is, it doesn’t tell you where home is. And the question is, how do these guys know that they’ve been taken West, or they’ve been taken South, or whatever, and we don’t post road maps in the lofts and we never tell them where we’re going to take them. And yet when they’re released, they turn around and fly off home.
BAZELL: To try to learn more, the scientists are trying many experiments. They are raising some pigeons in this loft, where an electromagnetic coil will negate the earth’s magnetic field. Other pigeons are growing up in this loft, where they are exposed more to the natural smells in the air. Some research in Italy has suggested that the smell also plays a roll in pigeon navigation. It is becoming increasingly clear that pigeons find their way home with a complex mechanism, which includes several backup systems. Now as we said one of the main systems is magnetism, but it turns out that there are places on the earth that are like little Bermuda Triangles, if a pigeon goes there it gets completely lost, can never find its way home.
COSTAS: And apart from this remarkable ability, they’re really kind of dumb, huh?
BAZELL: Oh they’re really stupid except they sure can find home.
COSTAS: All right.