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Do Birds Have a Built-In Magnetic Direction Finder?

dwelling sites there.

Binford, with National Science Foundation support, is trying to find out why certain bones are so often missing from the animal skeletons found at archeological sites, not only in Alaska but in other parts of the world.

Other scientists have wondered about the repeated patterns of missing pieces, too, and an array of contradictory explanations has been offered over the years; most fit some known facts, but none is satisfactory:

- The pieces were hard and were used for weapons or tools.
- The pieces were not hard and were eaten, split for marrow or disintegrated early.
- The pieces were missing from the camp site because they were left behind at the kill site.
- The pieces were missing at the kill site because they were carried off to the camp site.

Binford feels that the answer to the missing-bones riddle can hold important answers to questions about the economics of primitive hunting and gathering societies. He is pursuing those answers down parallel roads: With National Science Foundation help, he is exploring the archeological sites and the durability of various kinds of bone; under a grant from the Doris Duke Oral History Foundation, he is conducting intensive interviews with the Nunamiuts in a search for clues in living Eskimo habit or memory.

DO BIRDS HAVE A BUILT-IN MAGNETIC DIRECTION FINDER?

How do birds find their way south in the fall?

Some may have a built-in magnetic compass to help them find the way. At least there is an upsurge of scientific interest lately in the possibility that birds can orient themselves for their seasonal migrations by using the earth's magnetic field as a navigation aid.

"There is not, to date, conclusive evidence to support the hypothesis that birds orientate during migration by means of magnetic cues," says Dr. William E. Southern of Northern Illinois University at DeKalb. But he has noticed recently that young birds—especially ring-billed gulls—don't need adults to follow or any previous migrating experience in order to adopt the traditional migrating pattern of their kind and head southeast in the fall. In addition, the juvenile birds' ability to pick this direction appears to be unhindered by shielding from the sun or by changes in other possible cues, Southern says. He found only one exception: magnetism.

If the magnetic field changes, the birds lose their sense of direction.

"The earth's magnetic field was the only fluctuating environmental parameter that showed a consistent correlation with the variation in preference for the southeast," says Southern. Magnetic storms or the creation of an artifical magnetic environment confused the birds and the tendency toward southeast headings fell off sharply.

Southern thinks his observations of the young gulls may answer many of the objections biologists traditionally raise to the possibility of magnetic sensitivity in migrating birds. But he is not jumping to any conclusions.

He is, however, with National Science Foundation support, currently embarked on a two-year research project into the ability of some birds to draw directional clues from magnetic fields.

"The available data," he says, "seem to justify further inquiry."