

Cows may be able to find north-south

By Randolph E. Schmid
The Associated Press

WASHINGTON — Talk about animal magnetism, cows seem to have a built-in compass. No bull: Somehow, cattle seem to know how to find north and south, say researchers who studied satellite photos of thousands of cows around the world.

Most cattle that were grazing or resting tended to align their bodies in a north-south direction, a team of German and Czech researchers reports in today's issue of Proceedings of the National Academy of Sciences.

And the finding held true regardless of what continent the cattle were on, according to the study led by Hynek Burda and Sabine Begall of the University of Duisburg-Essen biosciences faculty in Germany. "The magnetic field of the Earth has to be considered as a factor," the scientists said.

This challenges scientists to find out why and how cows align to the magnetic field, Dr. Begall said in an e-mail interview. "Of course, the question arises whether humans show also such a spontaneous behavior" she said, asking what "consequences does it have for their health?"

The study sent Tina Hinchley, who with her husband, Duane, runs a Cambridge, Wis., dairy farm to take a look at an aerial photo of their farm from a few years ago. "The cows that were in the pasture were all over the place, ... about two-thirds were north-south," Ms. Hinchley said.

Two-thirds is close to what the researchers found in their look at 8,510 cattle in 308 pastures. In the study, 60 percent to 70 percent of cattle were oriented north-south, which Dr. Begall termed a "highly significant deviation from random distribution."

Ms. Hinchley stressed that one factor that must be considered is cow comfort. "They don't like to get hot. Their body temperature is 102, and they are wearing black leather jackets, literally! If turning north-south would keep them cooler, they would stand that way."

The researchers noted that, in very windy conditions, cattle tend to face the wind, and have been known to seek out the sun on cold days. But they said they were able to discount weather effects by analyzing clues such as the sun's position based on shadows.

"If they have evidence suggesting that mammals are using magnetic fields to orient their movements, this is very cool," said Mark A. Willis, an associate professor of biomedical sciences at Case Western Reserve University in Cleveland. Dr. Willis, who was not part of the research team, added, "We have only in the last few years begun to understand the mechanisms underlying magnetic-field orientation in birds and other smaller animals."

In fact, small animals led to this study. Dr. Begall said they were studying the magnetic-field effect on African mole-rats. "At one point last year, the question came up whether large animals could also sense the Earth's magnetic field or not. But, of course, it is difficult — or maybe impossible — to do these studies in the lab. So, the idea arose to look for other large mammals like cattle, and Hynek Burda was fascinated when he recognized that cattle could be found on Google Earth satellite images."

With satellite images they could tell the north-south orientation of the animals, but not whether an individual cow was facing north or south. You have to get closer to tell which end is which.

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