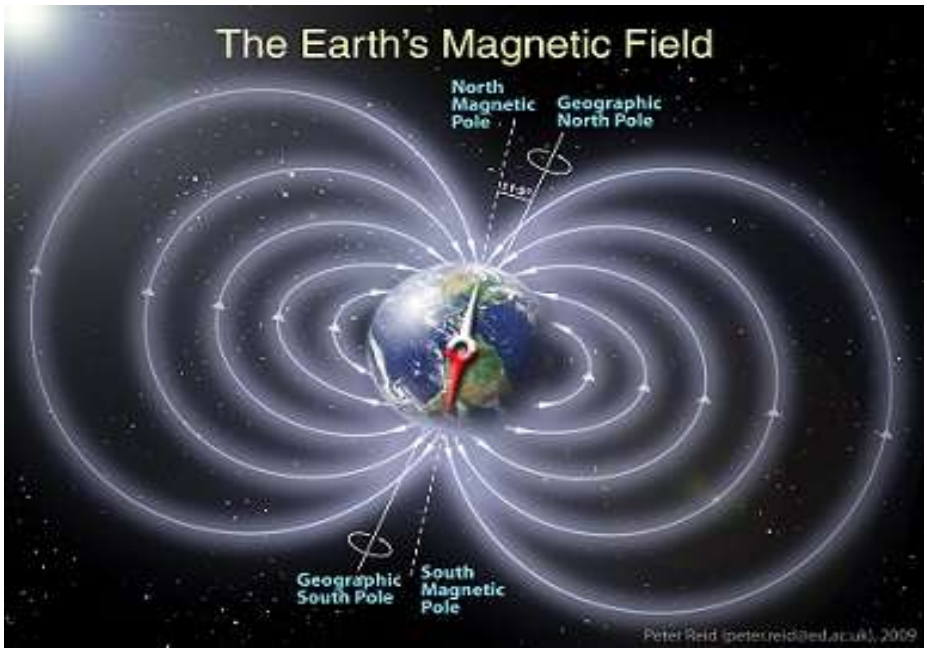
POOPING DOGS PERCEIVE EARTH'S MAGNETIC FIELD



Earth's magnetic field is the reason you're reading this.

In the first study of its kind researchers were able to prove that dogs are able to perceive Earth's magnetic field. Although it is still unknown exactly how dogs exhibit magnetosensitivity (magnetic sensitivity), the evidence speaks for itself. Observation of defecation and urination preferences of seventy different dogs led to conclusive answers. Recent studies have even led scientists to believe that humans may have the ability to perceive Earth's magnetic field in a similar way.

Earth's Magnetic Field and Dog Crap

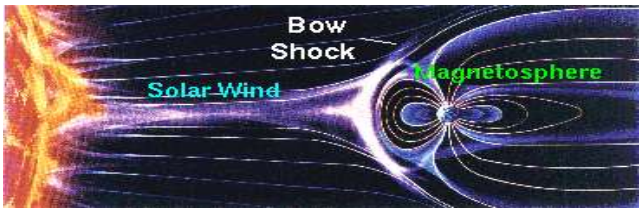
Several mammalian species spontaneously align their body axis with respect to the Earth's magnetic field (MF) lines in diverse behavioral contexts.

Dog poop will lead the way to understanding the magnetic field. motherboard.vice.com

It was this body alignment that researchers from all around the world speculated they might see in dogs. 70 dogs from 37 different breeds were chosen to take part in the study. No animal cruelty took place; the only thing the dogs had to do was number one and two. For two years scientists observed dogs defecate 1,893 times and urinate 5,582 times. Each time a dog did its business the research team took note of the geomagnetic conditions at the time, taking into account the intensity of Earth's magnetic field at the time, as well as the direction of the dog relative to magnetic north.

The results irrefutably show that as long as the Earth's magnetic field is calm and stable, dogs prefer to align themselves perfectly along the north-south polar axis. When the field is unstable, alignment no longer occurs. Researchers are unsure why dogs behave this way as it has nothing to do with navigation. In truth, bird and mammalian perception of Earth's magnetic field is still a total mystery.

What is the Magnetic Field?



The magnetic field is like a Romulan force field. http://csep10.phys.utk.edu/

Although the magnetic field is a wildly debated topic in various fields of science, scientists do agree on one fact: it is the only reason we're alive. The sun ejects ionized gases filled with charged particles, called a "solar wind," in all directions at a velocity of about 250 miles per second. This solar wind would leave Earth as barren as Mars were it not for our magnetic field.

The magnetic field is a constantly changing and shifting field of magnetic influence surrounding the planet. The field extends for hundreds of miles in one form or another. Although the evidence is still debated, most scientists accept dynamo theory, which is a theory describing the dynamo effect, as the source of the field's origin. The dynamo effect is an explanation for the creation of planetary magnetic fields which claims that it is produced by the movement of electrical currents in the spinning liquid metallic outer core of the Earth, which is made of iron and nickel.

Although we usually refer to space as a vacuum, or utterly empty, this is not exactly true.

The magnetic field shield!

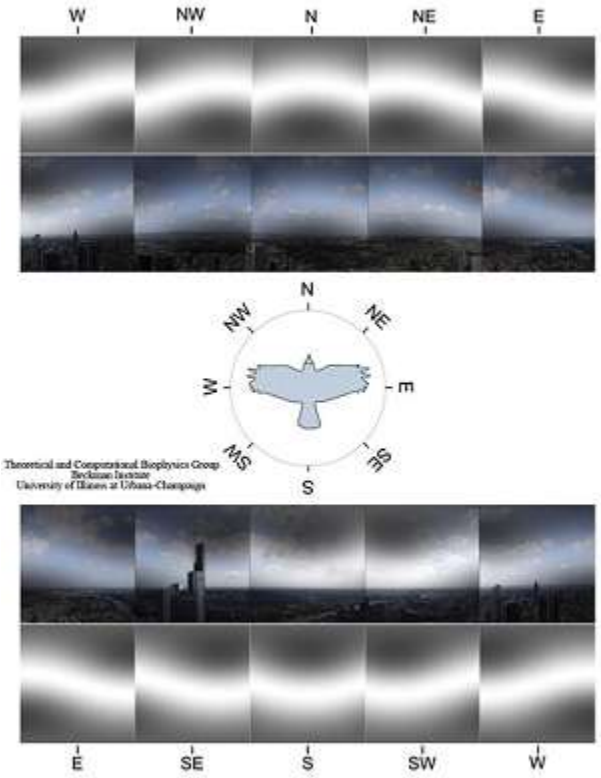
A colossal amount of plasma and ionized gas which we call a solar wind is constantly being ejected from the sun. The solar wind is slowed down from a super-sonic speed to a sub-sonic speed when it hits the bow shock, the outermost area of influence of the magnetic field. This area is also called the magnetopause. The entire area of space between the magnetopause and the Earth is called the magnetosphere, or Earth's magnetic field. All planets except for our neighbors Mars and Venus have a magnetic field.

Fun Fact: The magnetic field deflects the ionized particles like a windshield deflects rain. A very small amount of these gases break through the bow shock and get stuck in the field. These charged particles from the sun are what cause the aurora borealis (northern and southern lights).

Perceiving the Magnetic Field

There are three ways in which Earth's magnetic field can be perceived:

- ***Mechanical Reception*** *– This is the principle behind a compass needle. A magnetic field exerts a torque on a ferromagnetic material or on a material with diamagnetic anisotropy. Only ferromagnets will be able to produce a response to a field as weak as 0.5 Gauss that is detectable against thermal motion. In animals, the use of small magnetic particles (e.g., magnetite) as magnetoreceptors has been suggested. The use of magnetite has been shown in magnetotactic bacteria that are rotated by a magnetic field because of the torque exerted on their magnetite particles.*



A peek a the magnetic field. http://csep10.phys.utk.edu/

- ***Electric Induction –*** *Movement in a magnetic field will result in an induced electric field. Elasmobranch fish have a special sensory organ to perceive*

electric fields with high accuracy and can use this organ also to detect magnetic fields. However, such an organ cannot be found in all animals capable of magneto reception.

- ***Chemical Reception*** *– Chemical reactions that involve transitions between different spin states can be influenced by magnetic fields, so that one of the possible products is favored due to the influence of the magnetic field. Usually, magnetic fields much stronger than the geomagnetic field are necessary to see a significant change in products. For a particular type of chemical reaction, radical-pair reactions, it has recently been shown experimentally that 0.5 Gauss magnetic fields produce a small, but measurable change in product ratios.*

Perception of the magnetic field allows an animal to perceive their direction, altitude, and location in an environment. Magnetoreception allows an organism to create a regional map of the area they live in, as well as incredibly precise navigation. I like to think of perceiving the Earth's magnetic field as having a video game-like mini map on your existential interface.

Animal Perception of the Magnetic Field

There is only one organism with a magnetic field perception scientists are sure they fully understand. The organism is a bacteria called a magnetotactic bacteria, and it has a very remarkable sense of the magnetosphere.

Inside magnetotactic bacteria cells there are organelles which contain magnetic crystals. The fixed magnets in the bacteria force it into polar alignment. This occurs with cells even if they are dead.

Although many can do it, scientists still have no unanimously accepted explanation for how the magnetic field is perceived by animals. The ability has been observed in a wide variety of species.

A magnetic compass is widespread among animals, magnetic navigation is indicated e.g. in birds, marine turtles and spiny lobsters and the use of magnetic 'sign posts' has been described for birds and marine turtles.

Although in most cases we don't know how, or why some animals have the ability to perceive the magnetic field, we are certain it is widespread. A great example of an animal with a magnetosensitivity we mostly understand is the chicken, an animal we all know and love. Hens have tiny magnets in their beaks which help them navigate. It is standard practice to cut the end of the beak off to avoid pecking. Doing this, however, also greatly disrupts a hen's ability to navigate. Maybe that's why chickens always seem so confused.

Another classic example I'm sure you've heard of is the homing pigeon. This is a perfect example of an animal that proves time and time again it can perceive the magnetic field, and in fact depends on it for its precise navigation and homing ability.

In fact, bird migration as a whole greatly depends on perception of the magnetosphere. The cause of the ability still eludes scientists though.

Too much declination to read the magnetic field right now! misadventuresofwidowhood.blogspot.com

Human Perception of the Magnetic Field

Some studies have claimed that magnets in the bones of human sinuses allow for magnetosensitivity to take place in humans. Magnets in the cells of our eyes have been found as well.

There is currently a project which attempts to emulate the experience of magnetic navigation as a sensory experience. Feel Space uses a belt which emits ongoing vibrations which train the wearer to recognize when they are aligned north to south, or in other directions. Could magnetosensitivity be a sixth sense humanity unlocks for itself? For those brave enough to try it, you could always implant magnets into the tips of your fingers in order to 'feel' changes in electromagnetic fields around you.

Source: http://wondergressive.com/pooping-dogs-perceive-earths-magnetic-field/