

Subject: : Conservation

Topic: : Magnetic force

Re: Magnetic force

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URL:

Sharks, skates, and rays have large electro-magnetic field sensors and it seems likely that that they use them to detect the Earth's magnetic field. This acts like a built in compass. The interaction between the Earth's magnetic field, ocean currents (Hall effect), and the solar ion flux also sets up an electric field around the Earth that sharks can sense. As an aside, the two sides of the Atlantic are routinely 20V apart and can be 2000V apart during a solar storm. The ground potential between Minneapolis and Fargo, ND was 800V once in a solar storm.

The electrical sensitivity of sharks' sensors is about 1 microvolt/cm. This allows them to detect the E/M Earth fields, and more importantly the E field around bait fish, but I think the trapped magnetic fields in rocks are below the sensitivity of sharks. That's just a gut feel from the crazy set-ups geologists use to measure the magnetic fields in rocks.

Sharks and rays have been studied quite a bit (I did work on sharks in the late 1980s and early 1990's because of shark attacks on undersea communication cables). I'm not sure if salmonids have the capabilities of the sharks and rays, but I remember work that they have some electrical field sensing capability.