



Iron bacteria biofilm

Hunting Iron Bacteria - fuel for microbial fuel cells

Observed mostly in winter and spring in water-logged surface soils, these sheen areas (actually biofilms) are produced by iron bacteria (*Leptothrix discophora*) that live in iron rich soils. These bacteria thrive in anaerobic conditions caused by water-saturated soil conditions.

Here, the soil contains iron (in the form of Fe(II) hydroxide). *Leptothrix* gets its energy from the oxidation of Fe(II) hydroxide to Fe₂O₃ (iron oxide -- rust!). This is why it's equally common (when you see the "oily" sheen on the surface of those puddles) that you'll also see orangey-red/rusty-looking material around the water. *Leptothrix* isn't just an iron-oxidizing bacteria; it can also oxidize manganese, which will lead to a black residue in and around the puddles.

Still not convinced that the oily-looking stuff isn't oil? Okay, pick up a small twig lying nearby, and gently and slowly stir through that iridescent film. A real hydrocarbon-based oil would swirl back together in the wake of the twig. A biofilm created by iron-oxidizing bacteria like *Leptothrix* will remain "broken" and separate.

What are iron bacteria good for? Making a mud battery of course! Learn more about that in a future blog! Happy microbe hunting!