

Land to Sea Mystery

Searching for the Source of Pollution





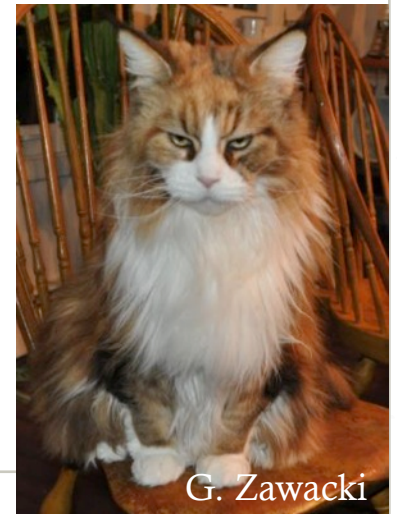
Pollutants from land



- *Toxoplasma gondii* – a parasite that causes neurological problems in California sea otters
 - Source: released in felid (cat) feces and enters the ocean in runoff water
 - **Challenge**: Find whether domestic or wild cats are carrying the parasite

SEA OTTERS ARE BEING KILLED BY TOXO! We know that *Toxo* “eggs” are making their way into the ocean, but we don’t know exactly how sea otters are becoming infected. We do know that the only way to prevent them from being infected is to reduce cat poop in the environment.

-The Regents of the University of California



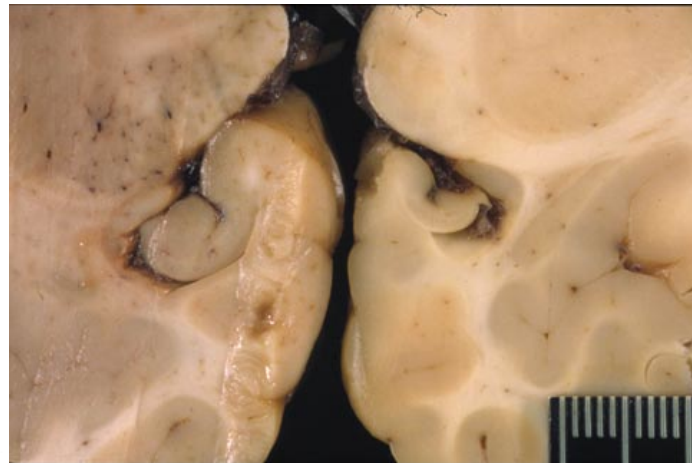
G. Zawacki

Pollutants from land



- **Domoic acid** – a toxin that causes brain damage and seizures in California sea lions
 - Source: Released by harmful algal blooms (HABs) in rivers or the ocean
 - **Challenge**: Find the source of nutrients that cause harmful algal blooms.

(left) A healthy sized hippocampus of a sea lion



(right) shrunken hippocampus of a sea lion brain as a result of domoic acid toxicity (Marine Mammal Center)

Using Maps in Science

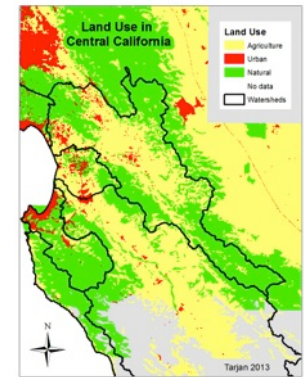
- Cholera in London (1854) , 616 people died
- Thought that cholera was passed on by touch
- John Snow made a map of the deaths

Using Maps in Science



Your Tools

- Data and maps



- Investigation sheet
- Previous knowledge (watersheds, river flow)
- Logic and Reasoning