Oily Feathers

Purpose To demonstrate the effect that polluting detergents can have on birds.

Materials
1 cup (250 ml) tap water
1 quart (liter) clear glass bowl
1 teaspoon (5 ml) vegetable oil
2 teaspoons (10 ml) powdered dishwashing detergent
Spoon

Procedure
• Pour the water into the bowl.
• Add the oil.
• Observe the surface of the water.
• Sprinkle the powdered dishwashing soap over the surface of the liquid.
• Gently stir the water to mix, but try not to produce bubbles.
• Again observe the surface of the water.

Results The oil spread out in large circles on the surface of the water before the addition of the dishwashing soap. When the soap was added, some of the oil sank and the rest broke up into tiny bubbles that covered the water’s surface.

Why? Water is denser and does not mix with oil, thus the oil was able to float on the water's surface. One side of the soap molecule is attracted to water and the other side is attracted to oil. The large circles of oil no longer exist because soap allows the oil and water to mix. Soaps can cause a swimming bird to sink and drown. Birds stay afloat because of the oil on their feathers, which makes them waterproof. If the birds become soaked in water containing a high concentration of soap, the natural oil in the birds' feathers would break up into tiny droplets and allow water to penetrate the feathers. The bird would lose its waterproofing, the extra water on the feathers would increase the bird's weight, and it could sink.