

Density Stacker

Diving birds, Loons, Mallards, Buffleheads

What you need!

- 1/3 cup of syrup
- Tall glass jar/graduated cylinder
- 1/3 cup of cooking oil.
- 1/3 cup of water
(add food coloring if you like)
- Small piece of plastic
- One grape
- One small cork

Looking out over any lake, you will see a variety of birds that float on the surface and dive for food. Many are ducks, but there are also pelicans, grebes, cormorants and loons. Some of these birds are better floaters while others are better divers. Their performance in and under the water depends on their density. Explore the density of common objects in this activity.

What you do:

1. Pour the syrup into a glass jar.
2. Slowly add the cooking oil.
3. Slowly add the water.
4. Drop in a piece of plastic, followed by a grape, followed by a small cork.



Ask yourself

- What happens to the liquids?
- What do you notice about how the objects float?
- Why do you think the objects float at different levels?
- Which liquid is most dense? Which object is most dense?
- What advantage would there be for animals with higher densities? Lower densities?

What did you find out?

The liquids that you have added all have different densities (thickness) and some will float on the others. Each of the objects also has a different density and they sink until they reach a liquid they can float upon.

Density Stacker

Diving birds, Loons, Mallards, Buffleheads

What did you find out? (cont)

Water birds all live in water, which has a pretty constant density. Some birds are adapted for floating, while others are adapted for diving. Loons, grebes and cormorants are great divers; they have a greater density because their bones are solid. These birds find food by diving deeper into lakes than other birds. Pelicans and ducks are less dense and float close to the water's surface where they find most of their food. These floaters have hollow bones and large air sacs in their chests, which make them less effective divers.

The trade off for being a really good diver comes at the cost of flight. Some of the best bird divers can hardly fly, and the heaviest and densest of them all - the penguins, have given up on flight altogether.

Specific Learner Expectations (SLE)

Grade 2 Topic B: Buoyancy and Boats.

SLE 1: Describe, classify and order materials on the basis of their buoyancy. Students will distinguish between materials that will sink in water and those that will float.

Grade 5 Topic C: Classroom Chemistry.

SLE 5 Recognize that the surface of water has distinctive properties and describe the interaction of water with other liquids and solids.