

River Buddies

JC CoolScience
EcoScientist
 Education Kit

Hong Kong has more than 200 rivers. They support over 200 species of freshwater fish, 24 species of frogs, and many kinds of aquatic insects and water birds.

Rivers create many different habitats, from fast-flowing mountain streams to calm river sections, ponds, and wetlands, giving animals places to live and breed.

Every creature is important. We should protect rivers and the habitats around them, keep the water flowing naturally, and reduce pollution so that the ecosystem can last for a long time.

Named after "Hong Kong"

Hong Kong Newt



The Hong Kong Newt is endemic to Hong Kong and the only tailed amphibian found there. They prefer clear, well-oxygenated mountain streams. Their unique orange-red belly markings help identify individuals. The Hong Kong Newt is listed by the IUCN as a Near Threatened species, with habitat destruction being their main threat.

Hong Kong Cascade Frog



The Hong Kong Cascade Frog is adapted to fast-flowing streams. Their flattened bodies help reduce water resistance, and the suction cups on their toes allow them to grip firmly onto slippery rocks. Once thought unique to Hong Kong, they've also been found in Guangdong. They are protected under the Wild Animals Protection Ordinance of Hong Kong.

Aerial Spirits



Dragonfly



Dragonflies are excellent fliers with two pairs of strong wings and compound eyes connected to the top of their heads, enabling them to quickly capture prey. Their nymphs are aquatic predators that breathe through rectal gills. They play an important role as predators in the ecosystem, controlling the populations of other insects.

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Aquatic Elves

Pond Skater



Pond skaters use the surface tension of water to glide across the surface. They are surface predators, feeding on insects that fall into the water. They can jump away when threatened.

Stream Cleaners

Bee Shrimp



Bee shrimps are small crustaceans that are detritivores, primarily feeding on algae, organic debris, and detritus, recycling waste organic matter and maintaining water cleanliness. They are sensitive to changes in water quality and can be used as water quality indicators. There are several species of bee shrimps in Hong Kong, such as Caridina cantonensis and Caridina trifasciata.

Invasive Species

Apple Snail



Native to South America, they are highly adaptable and reproduce rapidly, eating large amounts of aquatic plants and disrupting aquatic ecosystems. A single egg mass can contain hundreds of eggs. The Apple Snail has been listed by the IUCN as one of the world's 100 worst invasive alien species.

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White Cheek Goby



The White Cheek Goby is bottom-dwelling fish that prefers to lie on rocks or sandy substrates at the bottom of the water. Their pelvic fins are fused into a sucker, which helps them adhere to surfaces.

Mountain Crab



The Mountain Crab is native to Hong Kong. They inhabit crevices in streams and use their claws to pick up food, including small insects, worms, and organic debris. They can also move on land for short periods.

Red-eared Slider



A common pet turtle, they are omnivorous and can live for decades. In the wild, they compete with native turtle species for habitat and food. The Red-eared Slider is listed by the IUCN as one of the world's 100 worst invasive alien species, and their widespread distribution poses a threat to global turtle diversity.

SCIENCE STARTS HERE:
WONDER. EXPLORE. DISCOVER.
 啟迪未來，從探索科學開始

NO For the sake of animals and the environment, please do not release animals into the wild!

River Buddies & The Magic Invisible Film

Fact File



☆☆☆☆☆

Name: Pond Skaters

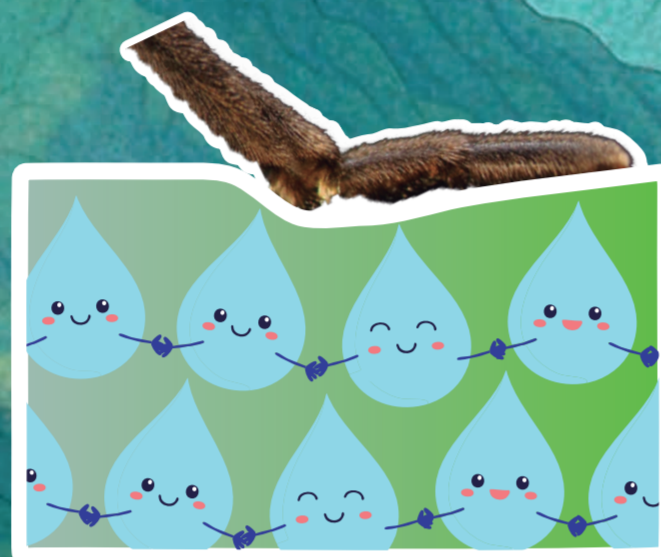
Weight: About 0.1-0.3g

Special feature: They live on the water surface. They are not "floating" by buoyancy, but cleverly using the "surface tension" of water.

What is surface tension?

Water's **surface tension** is created by the strong attraction between water molecules. This force of attraction makes the water surface behave like an invisible elastic film.

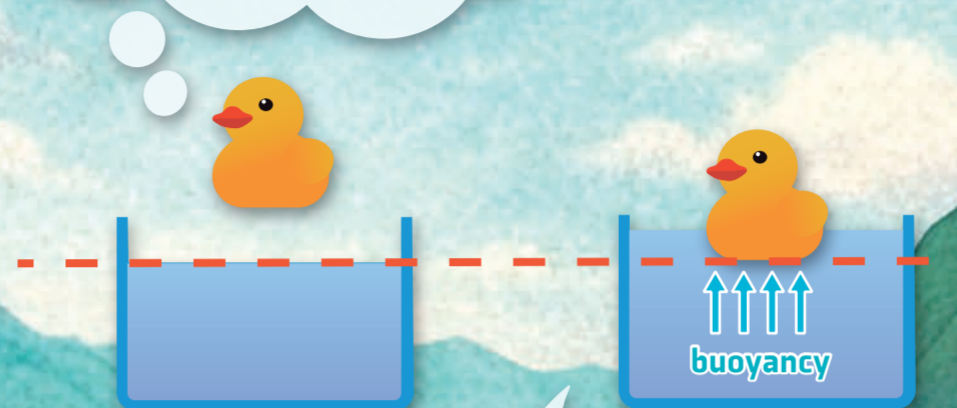
The long legs of the pond skaters are covered with tiny waterproof hairs, which spread out its body weight so it does not break this film. In this way, it gets strong support and can stand on the water.



Lightbulb: If a pond skater can stay on the water surface, can a light paper clip do it too? Try it out!

What is buoyancy?

When you put an object into water, it pushes some water out of the way. The water then pushes back with an upward force. This upward force is called **buoyancy**!



Why do some objects sink?

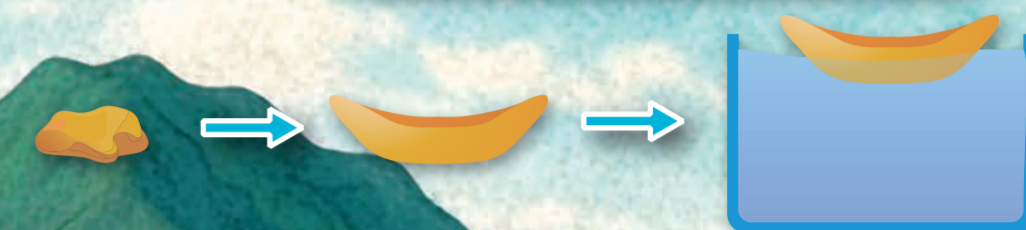
If an object is heavy but small in volume (for example, a ball of solid clay), it can only push away a small amount of water. The buoyant force is not strong enough to hold it up, so it **sinks**.



Learn More

Floating switch-around

If the weight of an object stays the same but its volume becomes larger (for example, reshaping the clay into a hollow "little boat"), it can push away more water and receive more buoyant force, so **it can float**.



Density and Buoyancy Lab

Gently place these three objects into water. Will they **sink** or **float**?

Mass	100g	100g	100g
Volume	50cm ³	80cm ³	250cm ³

Density of Water: 1.00 g/cm³

Find out more!



Headline News

River Management and Pollution

In Hong Kong, artificial channels are built to improve flood control and to support urban development. However, channelization weakens habitats for plants and animals and reduces the river's ability to clean itself. Together with pollution from agriculture, industrial and construction, and household, river ecosystems are under even greater pressure.



Main sources of pollution

Agricultural activities

Fertilizers and pesticides are washed into rivers by rain. Wastes from pig farms and poultry farms can also seriously pollute the water if it is not treated properly.



Household sewage

Wastewater from washing dishes, bathing, and flushing toilets contains soap, cooking oil, and food scraps. If it is not properly treated, it can flow into rivers.



Construction and industry

Soil and mud from construction sites can be washed into rivers by rain, making the water muddy. Materials such as cement and paint can also cause pollution.

Factories may release chemicals, oils, dyes, and other toxic wastewater directly into rivers. This badly harms fish and other aquatic life, and can even affect human health.

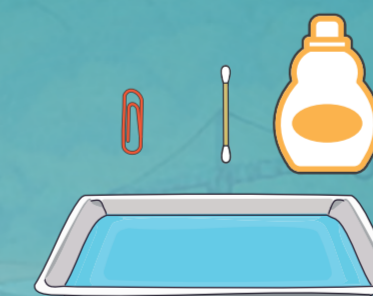


Surface Tension Magic Trick

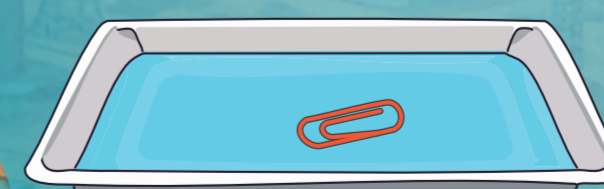
This experiment shows the supporting force that pond skaters rely on. What will happen to this force when detergent pollutes the water surface?

Materials:

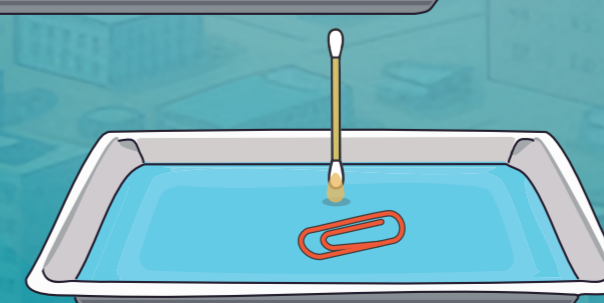
- A bowl or shallow dish
- Clean water
- A paper clip (keep it dry)
- Cotton bud
- Small amount of detergent



Step 2



Step 3



Steps:

1. Pour clean water into the shallow dish and let it become still.
2. Carefully place the dry paper clip flat on the water surface so that it is held up by surface tension.
3. Dip the cotton bud into a small amount of detergent. Gently touch the water surface near the paper clip (be careful not to touch the paper clip directly).
4. Observe and record what happens to the paper clip.

Sinks Floats

Think and predict: What does this mean for our rivers?

- If untreated detergent or household wastewater enters a river, what impact might it have on organisms like pond skaters that rely on surface tension to stay on the water surface?

Experiment Video

