

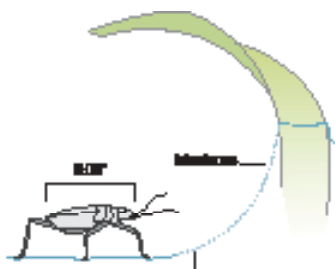


A water strider distorts the surface of a puddle with its legs.

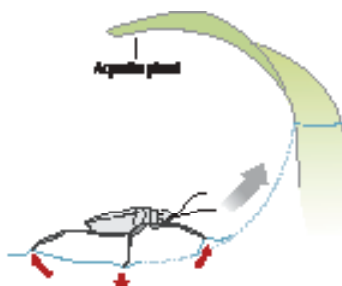
Up a Slippery Slope Gazing at a pond, you see a smooth surface. A tiny water-walking bug sees difficult terrain. Everywhere the water meets a leaf, a twig, or the shore, the surface curves up a few millimeters. The result is a meniscus, from the Greek word for moon, whose crescent shape is much like the water's slope.

As you climb a hill, friction between your foot and the ground pushes you upward. But most water-walking insects skate on tiny pockets of air, making for a very slippery world. So how does such a bug scramble up a towering meniscus to

lay eggs on a leaf or escape a predator? MIT researchers John Bush and David Hu say that it uses the same forces that clump breakfast cereal together in a bowl of milk. Watching high-speed videos, they saw that an insect approaching a meniscus reshapes the water surface below its body (art, below). Much as a trampoline gains energy when you stand on it, the surface of the water has more energy when a bug distorts it. Bugs use this energy to launch themselves up the meniscus—and away from the jaws of a hungry bass. —*Juli Berwald*



1 The bug walks to the meniscus—the curved water surface that forms because water is attracted to the plant.



2 To reshape the surface, water-grabbing claws on front and back legs pull up and middle legs push down. The surface gains energy.



3. Energy from the reshaped surface pushes the bug up the meniscus. Grabbing the leaf, it pulls itself off the water.