THE WATER UNDER OUR FEET

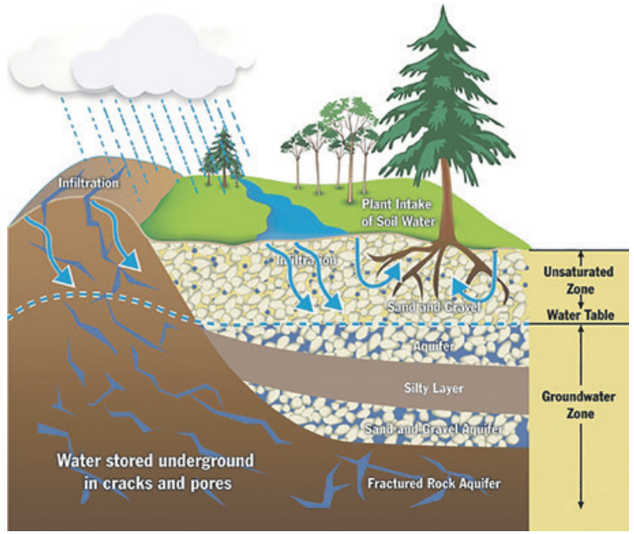
By **Annabeth Cohen**, Freshwater Advocate at Forest & Bird

In complete darkness, located underground you'll find New Zealand's largest freshwater habitat: wainuku (groundwater). Making up 80% of New Zealand's liquid freshwater, groundwater can be found up to kilometres under the Earth's surface. Scientists class it as its own distinct ecosystem.

Have you heard of the term aquifer? This is where groundwater lives. There are different types of aquifers depending on the soil, gravels, or rock that surround the water. To find groundwater you need to dig down through to a point called the "water table". Where the water table is depends on the area.

Groundwater is used by humans for irrigation (watering paddocks), drinking water, industrial processing, bottling, and it even has cultural and spiritual values – have you been to visit Waitomo Caves or Te Waikoropūpū Springs before?

Photos by N. Boustead, NIWA



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But groundwater isn't just for humans. Our surface water – rivers, lakes, wetlands, and natural springs – depend on groundwater. They wouldn't exist without it.

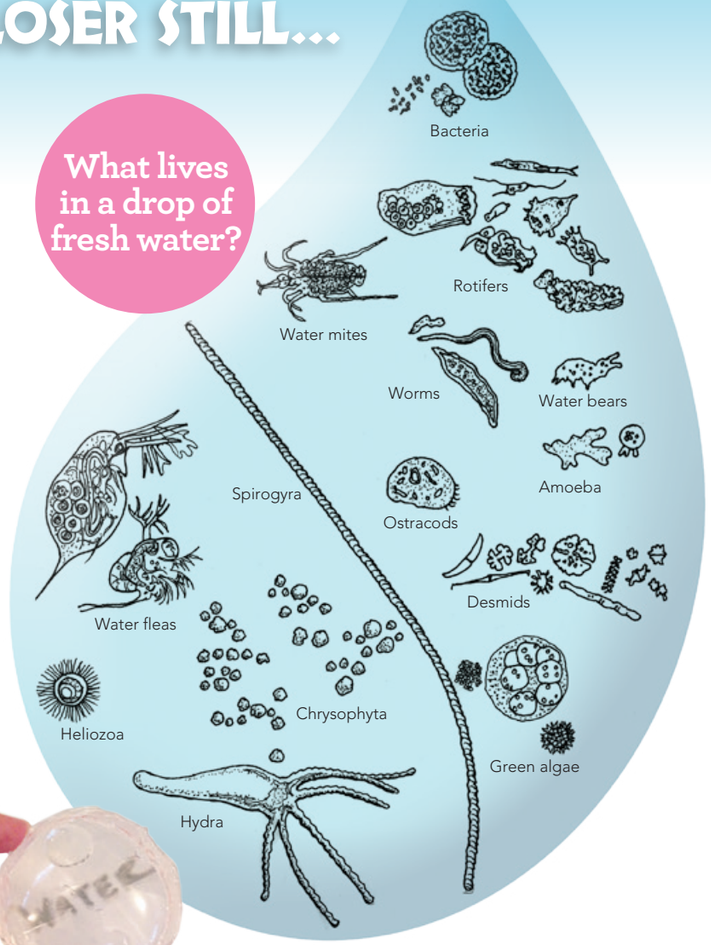
Even though groundwater and surface water have such an important and strong relationship, we shouldn't think of groundwater as being just the same as surface water. How fast they move is very different. Groundwater flows much more slowly than surface water because water underground has to travel through small pockets in soil, sand, and gravel, and cracks in large rocks. It can take hours, days, years, and decades for groundwater to travel.

Surface water and groundwater do have things in common though. They both have a whole mysterious and wonderful world of creepy-crawlies and microscopic organisms living in them.

Animals living in groundwater systems, or aquifers, are called stygofauna. They are teeny-tiny, pretty much transparent (see-through), and blind. They are great at improving the way groundwater ecosystems clean water.

LOOK EVEN CLOSER STILL...

What lives in a drop of fresh water?



Did you know... you can make a magnifying glass using water? Find instructions on our website (**kcc.org.nz**). Search "water".

Bacteria and amoeba (above in the water droplet) are important food for stygofauna.

Most of the microscopic organisms found in groundwater, and the most diverse, are bacteria. They are important because they control many chemical reactions, such as the nitrogen cycle and the oxygen cycle.

We still don't know all that much about groundwater really, but the more we investigate, the more we uncover. Scientists are finding new species that are unknown to science, some of which evolved 300 million years ago before Aotearoa split from Gondwanaland.

Groundwater is pretty cool!

They might be small, but that don't mean they ain't got moves! Introducing the "freshest" crew around:
The Freshwater Invertebrates!

Move like an invertebrate! Follow this hip-hop routine:

Photos by NIWA and Landcare Research