AMAZING ADAPTATIONS

SURVIVING DRY SPELLS: THE ICONIC EUCALYPTUS

Eucalypts have a range of adaptations that make them masters of surviving dry climates.

Leaves hang vertically to reduce sunlight exposure and prevent water loss via evaporation. They also have a waxy surface which reflects sunlight and reduces water loss.

Thick bark provides an insulating layer and protects plants from fire and drying out during hot summers.

Roots are deep and expansive to search far and wide for water, which is often scarce.

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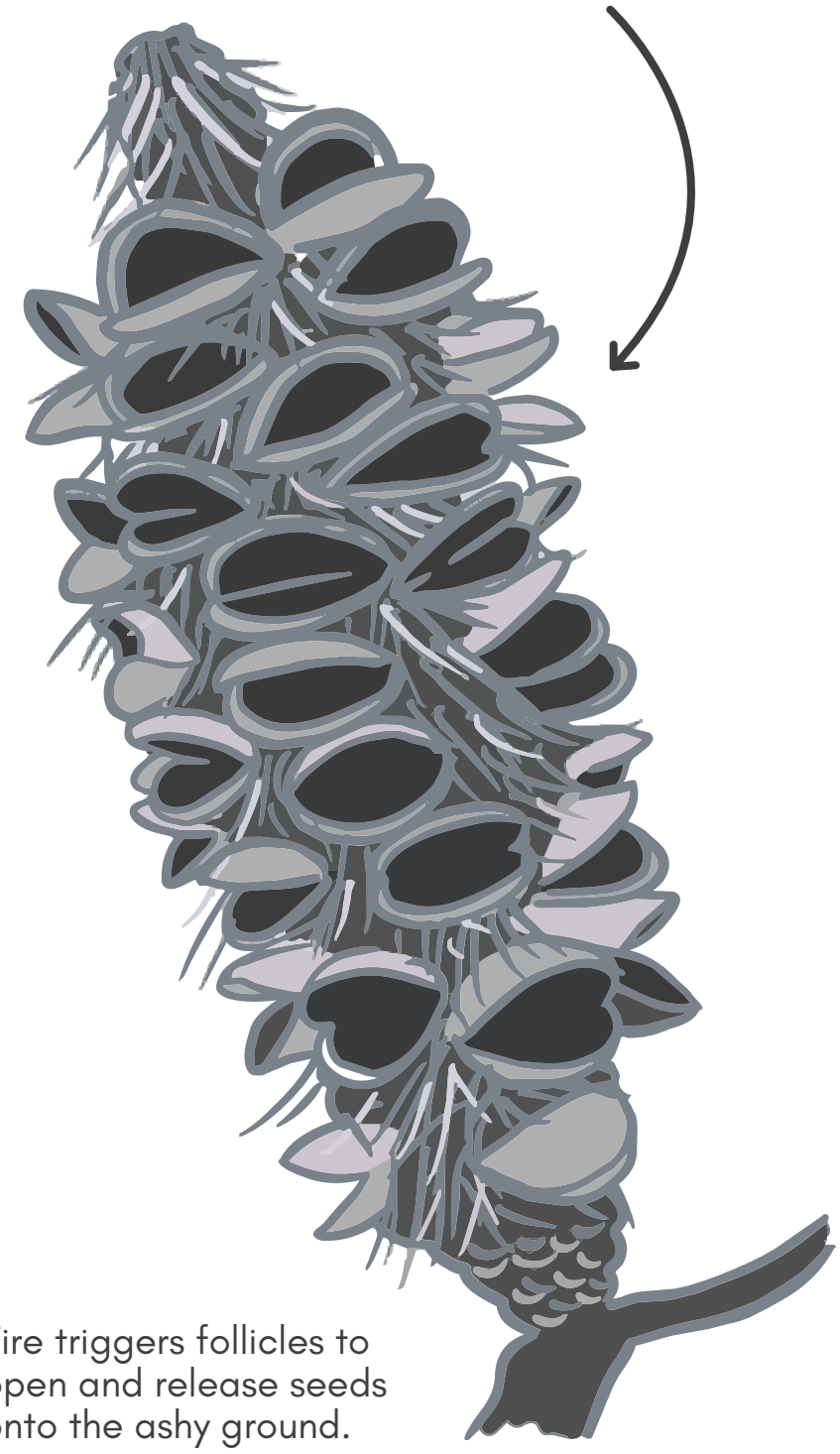
THRIVING THROUGH FIRE: OLD MAN BANKSIA

The seeds of Old Man Banksia plants (*Banksia serrata*) need fire to germinate!

Seeds are stored in woody fruit on adult plants (follicles). The heat and/or smoke from fire triggers seed release – a mechanism known as **serotiny**.

After fire, the new seedlings enjoy optimal conditions for survival, with more sunlight, less competition and nutrient-rich ashy soil.

Fire doesn't always kill adult plants, either: thick, gnarled bark means mature trees can often survive moderate fires.



Fire triggers follicles to open and release seeds onto the ashy ground.

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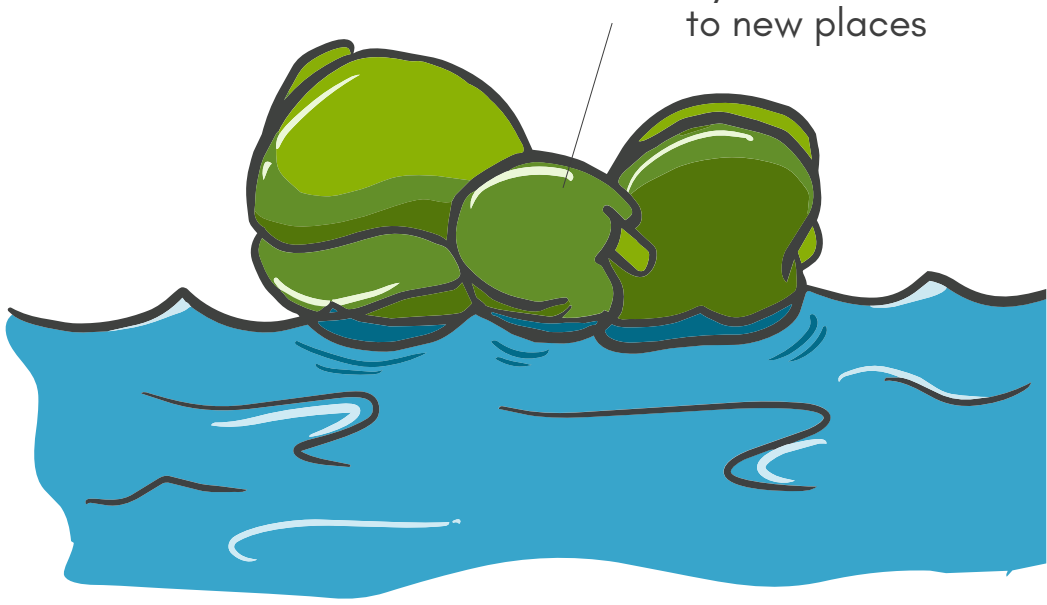
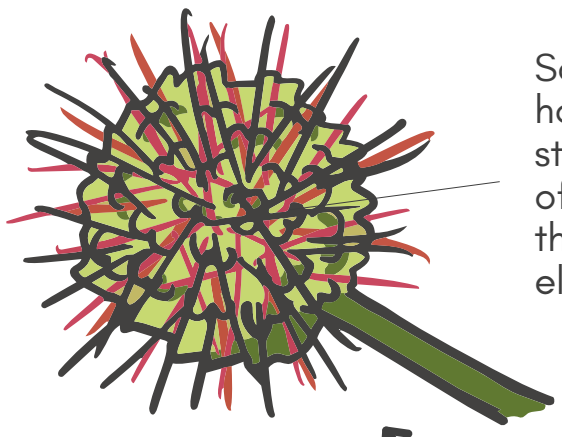
Hakea seeds have ‘wings’, so they can be carried by the wind.

SEED DISPERSAL

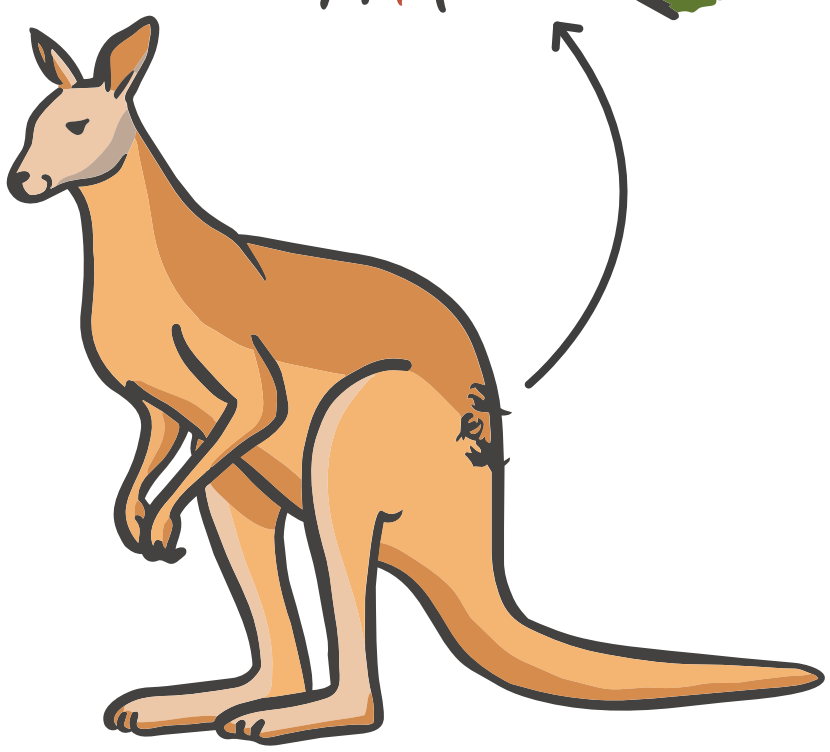
Australian plants have developed ingenious ways of spreading to new locations: via **wind, water** or hitching a ride on (or through!) **animals**.

Mangrove seeds float, so waterways take them to new places

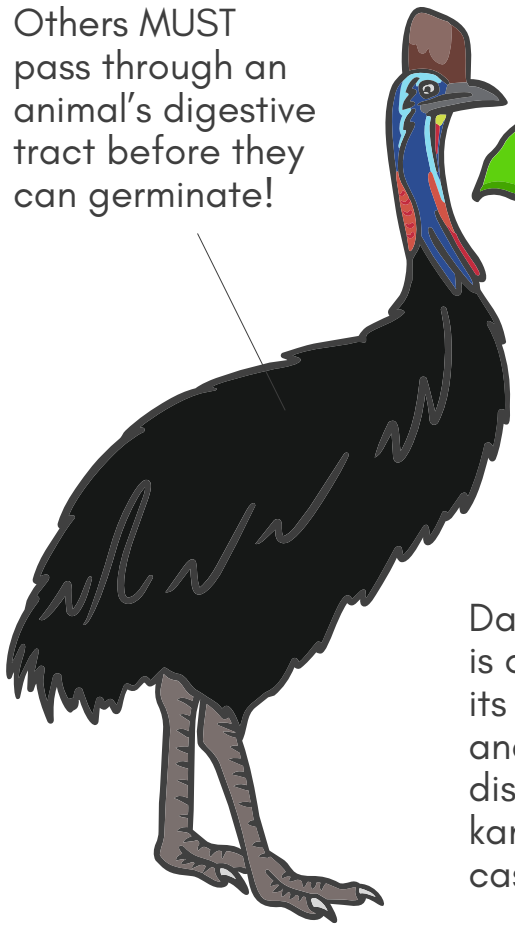




Some seeds have hooks or burrs that stick to the fur of animals, who then drop them elsewhere.



Others MUST pass through an animal’s digestive tract before they can germinate!



Davidson’s Plum is one example: its fruit is eaten and seeds then dispersed by tree kangaroos and cassowaries.

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SURVIVING THE ALPINE ZONE: ALPINE MARSH MARIGOLD

The Alpine Marsh Marigold (*Psychrophila introloba*) can flower under snow!

A master of surviving the alpine zone – with its strong winds, frost and snow – this plant is **small and low to the ground**, which minimises wind exposure and maximises contact with the warmer soil.

Growing in a **greenhouse-like microclimate** between melting snow and warmer soil means the plant can flower even when ambient temperatures remain comparatively low.

As water is often locked up in snow and ice, many alpine plants have **small, rolled leaves** to prevent water loss, similar to desert plants.

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VEGETATIVE REPRODUCTION

Plants don't only spread via seed. Some Aussie plants reproduce vegetatively, which means they clone themselves via specialised roots or stems.

Purple-wood Wattle (*Acacia carneorum*) reproduces almost exclusively from **root suckers**: new shoots that sprout from the root system to form clonal colonies.

Native Violet (*Viola hederacea*) produces **stolons**: horizontal stems that run above ground, taking root when they contact the soil.

Native Ginger (*Alpinia caerulea*) produces **rhizomes**: horizontal underground stems that can sprout into new plants.

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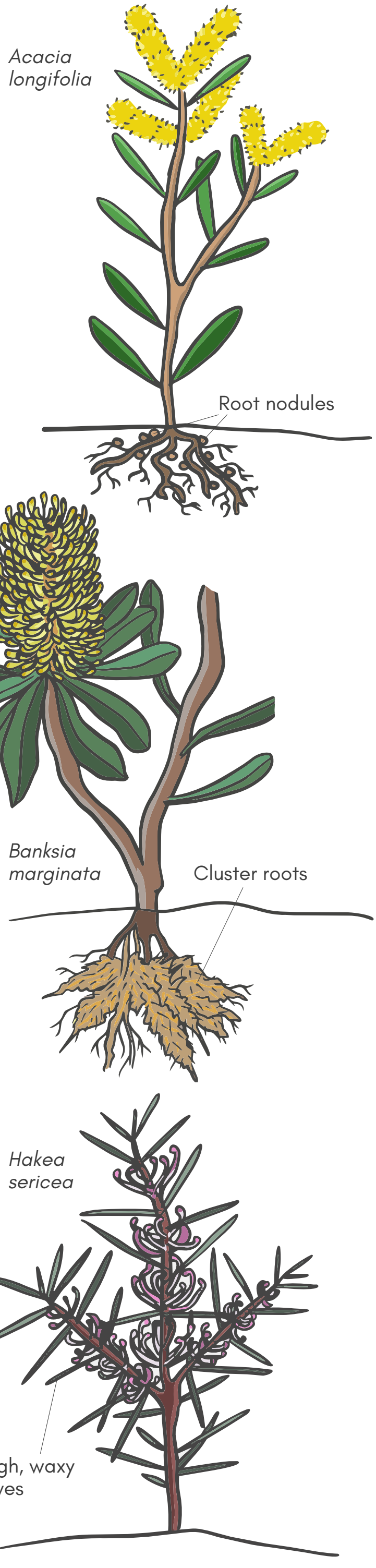
THRIVING IN NUTRIENT POOR SOIL

Since Australia is an old, flat and drought-prone continent, many soils are low in nutrients (especially phosphorus), so plants have adapted clever solutions to this problem.

Many Acacias have **root nodules**, which contain bacteria that fix atmospheric nitrogen into a form that can be used by plants.

Banksias have **cluster roots**, which enhance the absorption of nutrients like phosphorous.

Hakeas are **sclerophyllous**, meaning they have tough, waxy, and long-lived leaves to protect and conserve valuable leaf nutrients.



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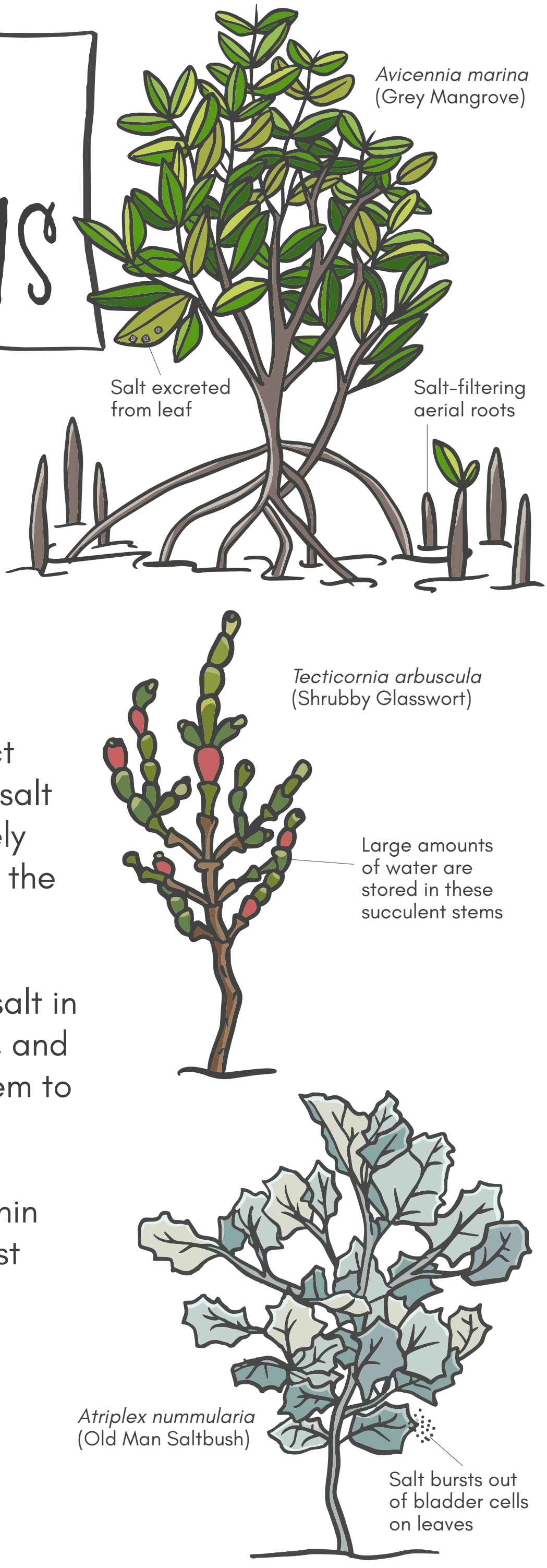

TOLERATING SALTY ENVIRONMENTS

Most plants cannot survive in very salty environments. However, salt-tolerant plants – known as **halophytes** – are able to thrive.

Grey Mangrove has roots that act as filters to reduce the amount of salt entering the plant, and also actively removes salt via special glands on the underside of leaves.

Shrubby Glasswort can lock up salt in special compartments within cells, and stores water within a succulent stem to balance salinity.

Old Man Saltbush stores salt within bladder cells on leaves, which burst when full!

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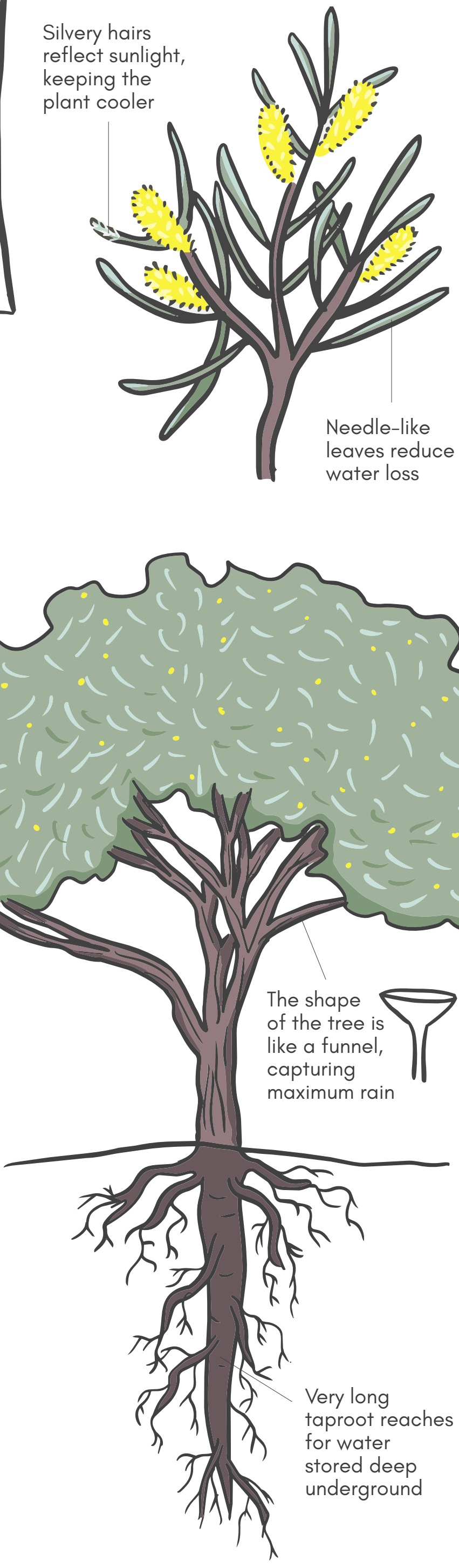
ENDURING THE ARID ZONE: MULGA

Australia is the driest inhabited continent. Therefore, plants that call the arid zone home have adapted to survive extremely harsh conditions.

The iconic wattle known as Mulga (*Acacia aneura*) has a **very long taproot** to source water from deep underground.

Their **funnel-like branching shape** allows scarce rainfall to be captured and sent to the base of the plant.

Needle-like 'leaves' (in fact flattened stems known as **phyllodes**) reduce water loss and have silvery-grey hairs to reflect sunlight.



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