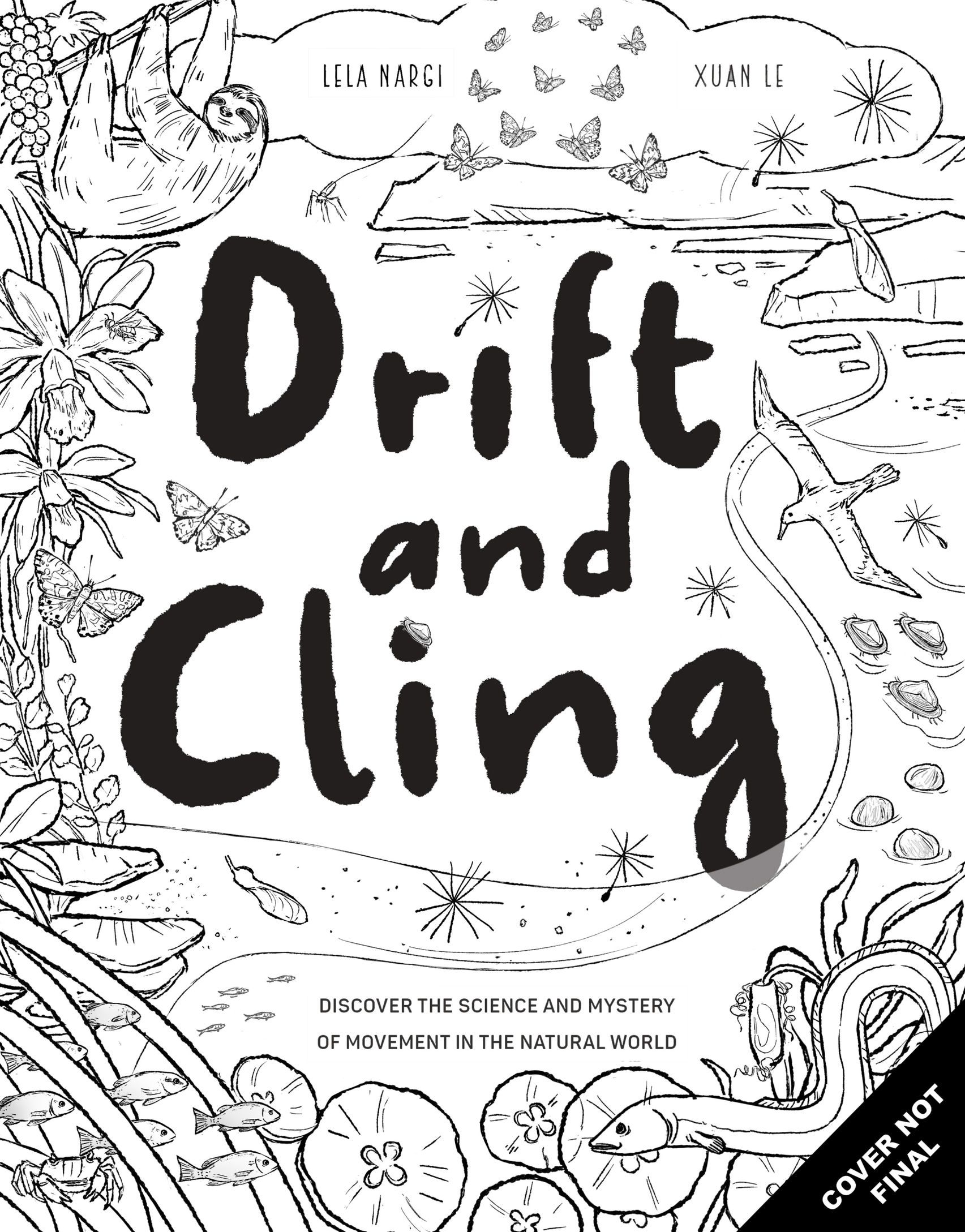
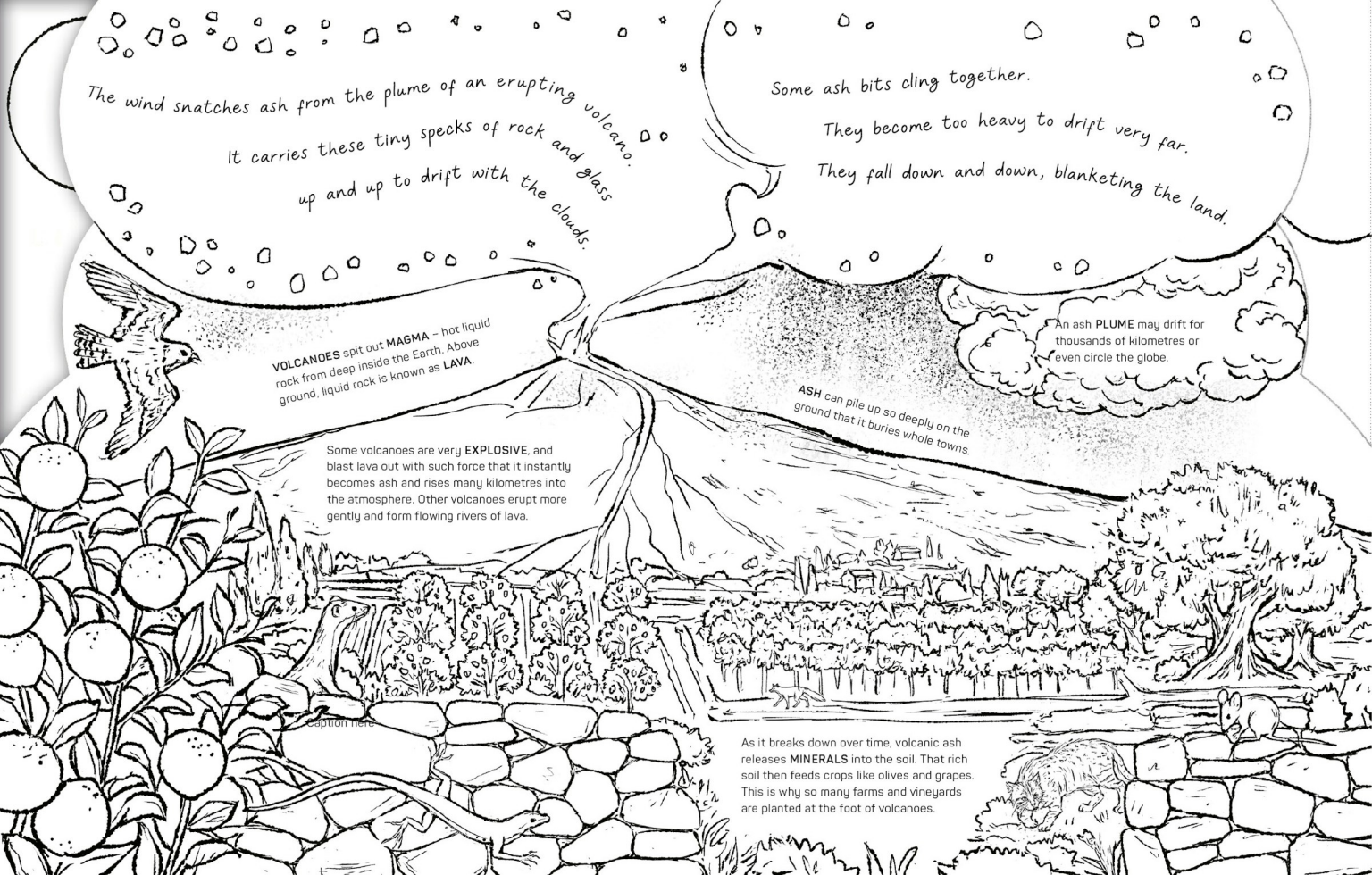
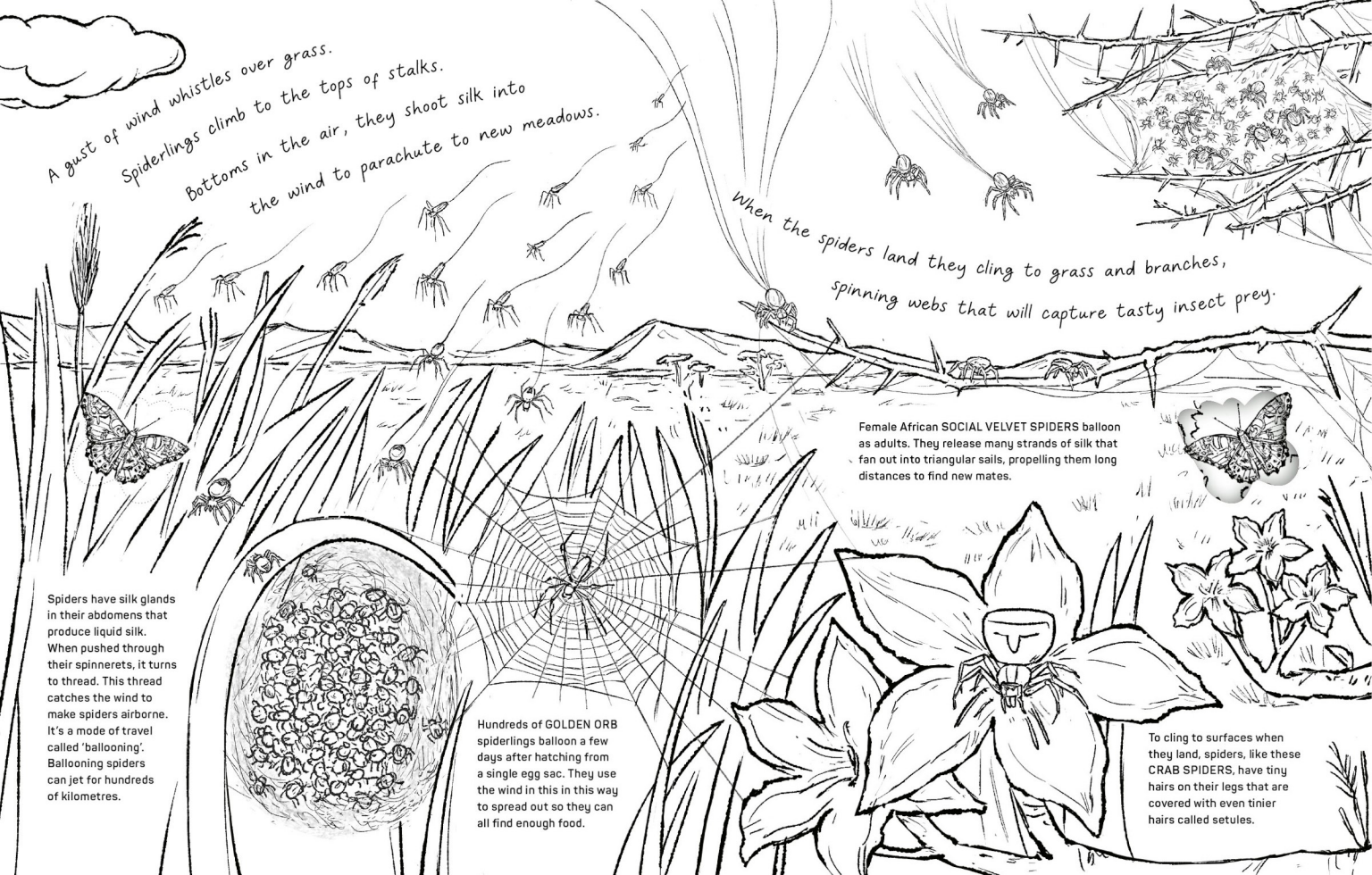
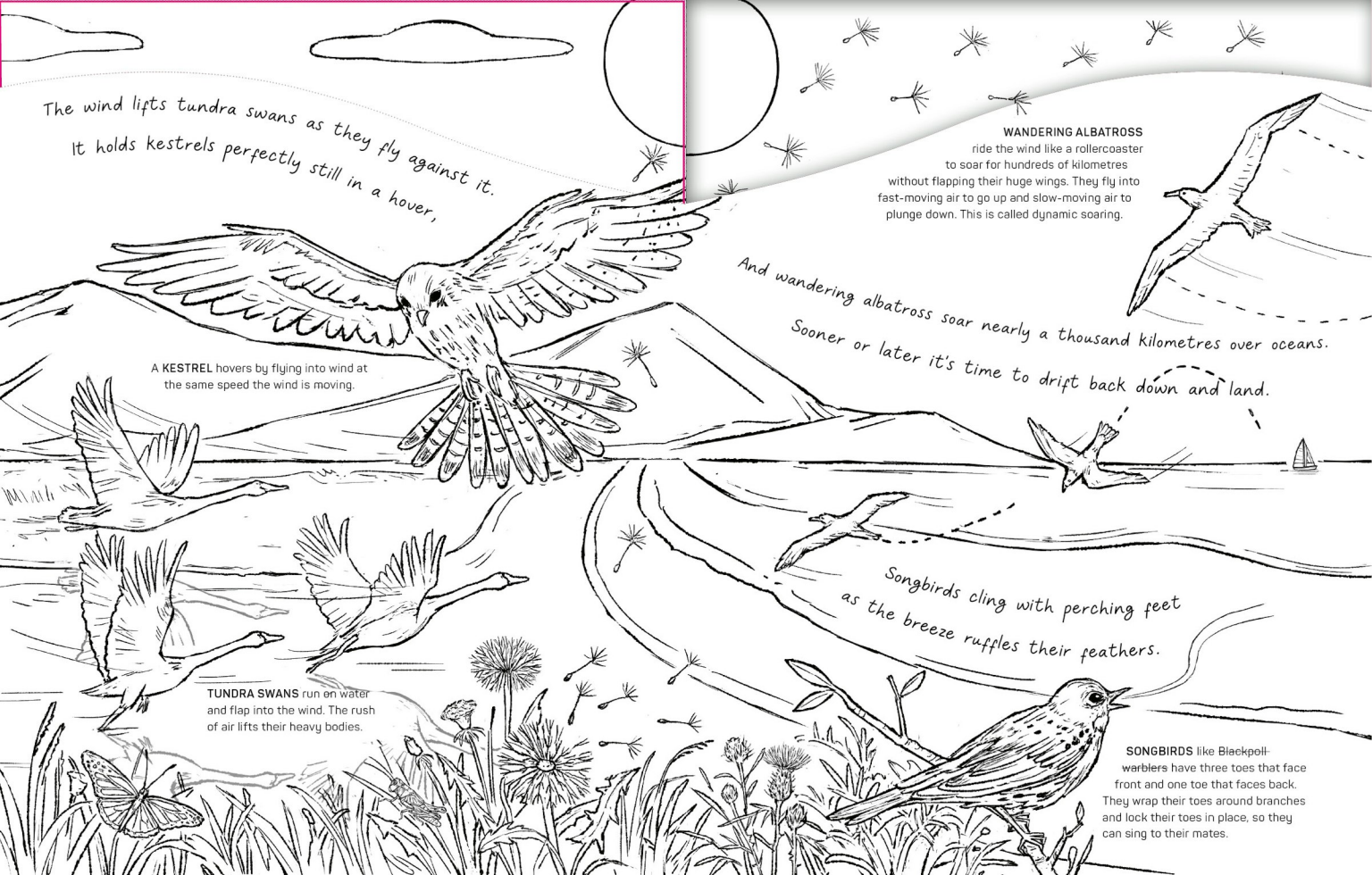

LELA NARGI
XUAN LE
Drift and Cling
DISCOVER THE SCIENCE AND MYSTERY
OF MOVEMENT IN THE NATURAL WORLD
COVER NOT FINAL


The wind snatches ash from the plume of an erupting volcano.
It carries these tiny specks of rock and glass
up and up to drift with the clouds.
Some ash bits cling together.
They become too heavy to drift very far.
They fall down and down, blanketing the land.
VOLCANOES spit out MAGMA – hot liquid rock from deep inside the Earth. Above ground, liquid rock is known as LAVA.
An ash PLUME may drift for thousands of kilometres or even circle the globe.
ASH can pile up so deeply on the ground that it buries whole towns.
Some volcanoes are very EXPLOSIVE, and blast lava out with such force that it instantly becomes ash and rises many kilometres into the atmosphere. Other volcanoes erupt more gently and form flowing rivers of lava.
Caption here
As it breaks down over time, volcanic ash releases MINERALS into the soil. That rich soil then feeds crops like olives and grapes. This is why so many farms and vineyards are planted at the foot of volcanoes.


A gust of wind whistles over grass.
Spiderlings climb to the tops of stalks.
Bottoms in the air, they shoot silk into the wind to parachute to new meadows.
When the spiders land they cling to grass and branches, spinning webs that will capture tasty insect prey.
Female African SOCIAL VELVET SPIDERS balloon as adults. They release many strands of silk that fan out into triangular sails, propelling them long distances to find new mates.
Spiders have silk glands in their abdomens that produce liquid silk. When pushed through their spinnerets, it turns to thread. This thread catches the wind to make spiders airborne. It's a mode of travel called 'ballooning'. Ballooning spiders can jet for hundreds of kilometres.
Hundreds of GOLDEN ORB spiderlings balloon a few days after hatching from a single egg sac. They use the wind in this in this way to spread out so they can all find enough food.
To cling to surfaces when they land, spiders, like these CRAB SPIDERS, have tiny hairs on their legs that are covered with even tinier hairs called setules.


Listen to the wind howl!
It gives butterflies an extra whoosh from behind as they drift, flit and flutter on their spring migrations.
When they reach their destinations, they are ready to make the next generation of butterflies.
WESTERN MONARCHS travel from Mexico to Canada and back.
PAINTED LADY BUTTERFLIES fly non-stop over the Sahara Desert to travel to Europe.
Spring migrating butterflies are given a push by TAILWINDS. These winds help butterflies use less energy and travel faster – at speeds of up to 100 kilometres per hour – to get to their destination.
They lay their eggs on leaves, fastening them on with a special goo.
PURPLE CROW BUTTERFLIES migrate across Taiwan to spend winters in warm valleys.
The caterpillar that hatches from a butterfly egg has six legs and up to 10 prolegs – fleshy leg-like structures with tiny hooks that help them cling to stems and leaves.
When a caterpillar has grown to full size, it's ready to become a butterfly. It spins itself into a chrysalis made of silk threads that also fasten it to a twig or a leaf.


The wind lifts tundra swans as they fly against it.
It holds kestrels perfectly still in a hover,
A KESTREL hovers by flying into wind at the same speed the wind is moving.
TUNDRA SWANS run on water and flap into the wind. The rush of air lifts their heavy bodies.
WANDERING ALBATROSS ride the wind like a rollercoaster to soar for hundreds of kilometres without flapping their huge wings. They fly into fast-moving air to go up and slow-moving air to plunge down. This is called dynamic soaring.
And wandering albatross soar nearly a thousand kilometres over oceans.
Sooner or later it's time to drift back down and land.
Songbirds cling with perching feet
as the breeze ruffles their feathers.
SONGBIRDS like Blackpoll warblers have three toes that face front and one toe that faces back. They wrap their toes around branches and lock their toes in place, so they can sing to their mates.