



Sky & Scrub

SPECIAL INVESTIGATORS



Come explore the alpine landscape and learn about ecosystem services and green infrastructure!

Alpine Space

FRACTAL

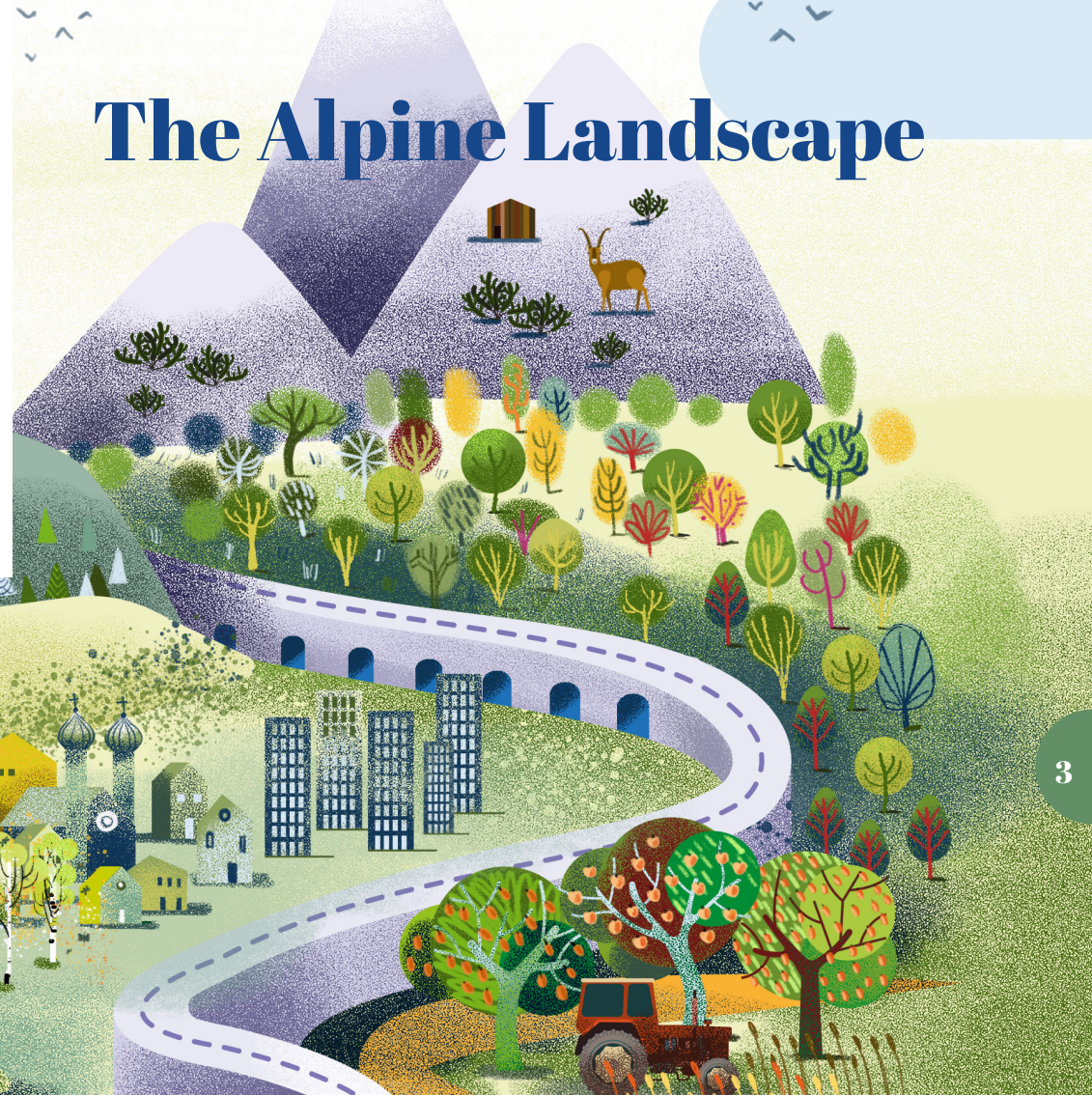
Sky & Scrub, Special Investigators. Come explore the alpine landscape and learn about ecosystem services and green infrastructure!

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The Alpine Landscape



Scrub is...

...a violet carpenter bee. A harmless, solitary pollinator, Scrub loves spring and wisteria.

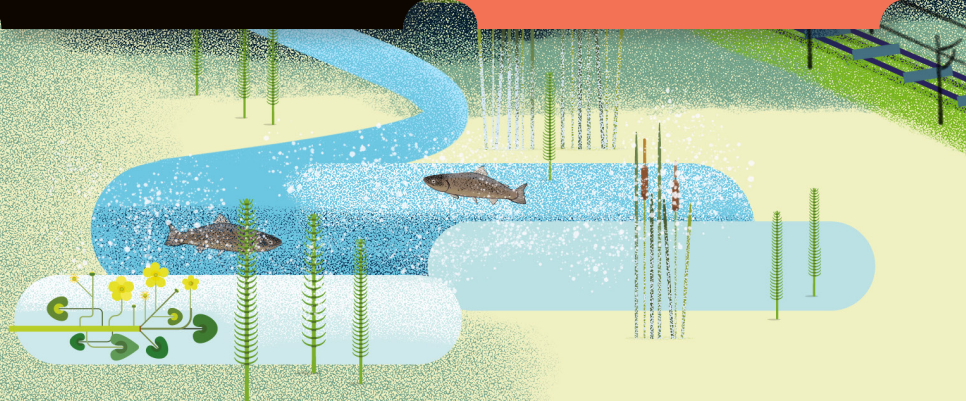
Scientific name: *Xylocopa violacea*



Sky è...

...a European stag beetle. Also innocuous, Sky is a solitary insect who eats nectar, fruit, and rotting wood.

Scientific name: *Lucanus cervus*



Scrub, what is this amazing place? There are so, so many plants and animals all around us!

We're in the Alps! It's a landscape full of different habitats—just like a collage!

Habitats? What are those?

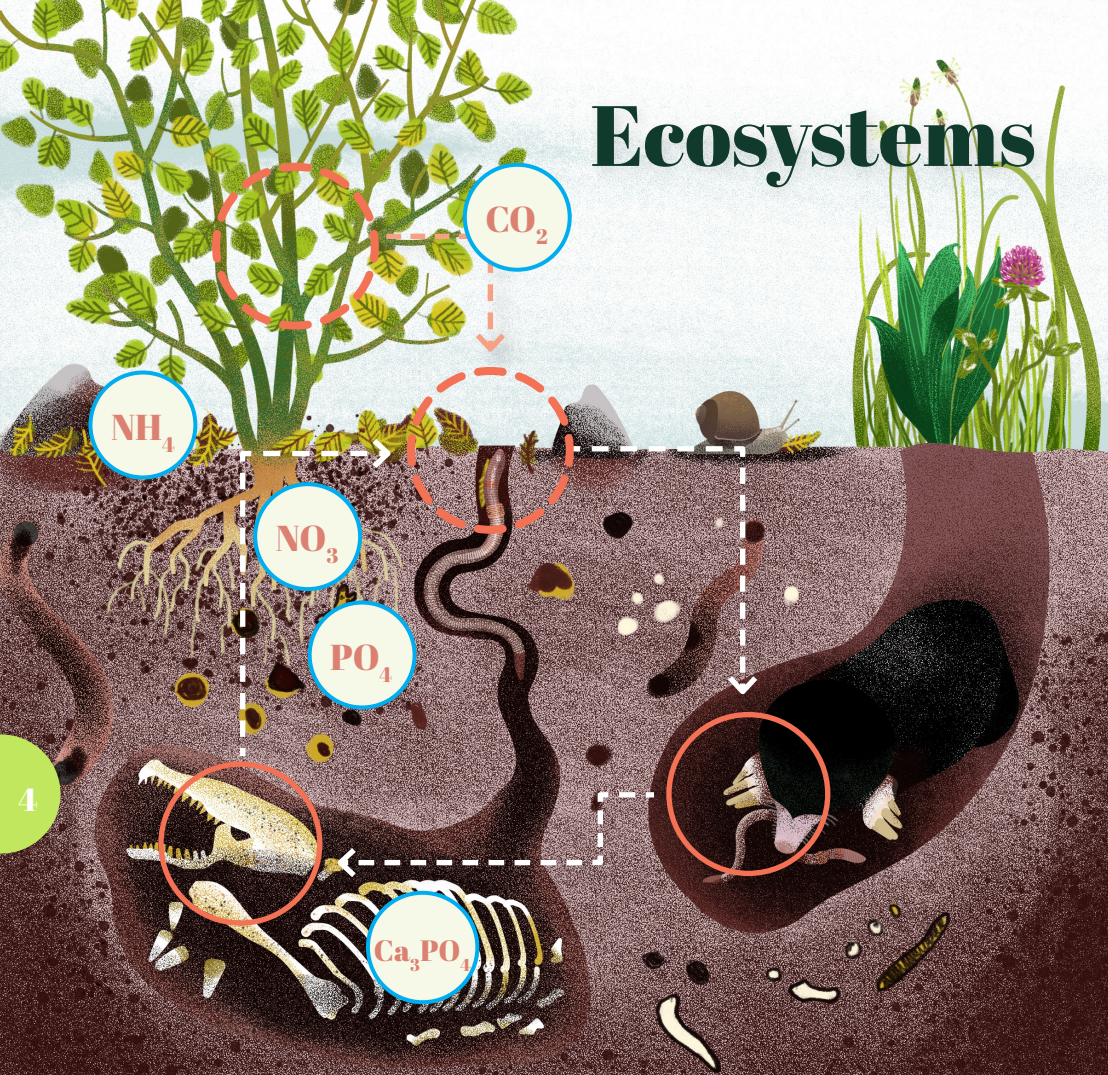
Sky, look over at those cliffs—see that mountain goat? And down there—a trout is jumping in the stream. A habitat is the place where a species

lives: rocky cliffs for mountain goats, the water for a trout.

Oh, I get it. A habitat is like a home for a plant or an animal. Hey, Scrub, can different plants and animals live in the same house?

Yes, Sky. Plants and animals, together with fungi and microorganisms, make up the ecosystem!

Whoa, whoa! Eco-what??



Ecosystems

The ecosystem, Sky! Look at the ground, what do you see?

Uh, Scrub, it's just dirt.

It's not just dirt, it's soil! Think about cutting a slice of it.

Like a cake?

Right! If you could cut a big slice of soil, you would see moles, earthworms, microscopic bacteria, strange fungi, and plants.

Ok, Scrub... so?

Well, plants absorb minerals and water

from the ground. When they lose their leaves, these become food for the snails to munch on.

And those little black mice?

They're moles! They eat insects and earthworms. Then there are the microbes that decompose everything, and it's a full cycle!

So...a habitat is a home, and the ecosystem is like the friendships between all the creatures who live in it?

Exactly!



Ecosystem Services

But what are ecosystems for, Scrub?

They provide ecosystem services. Imagine it's a summer day, and you're feeling SO hot. Where would you go to cool off?

Maybe under a tree, or along a riverbank.

That's it! You've just discovered something an aquatic ecosystem does. And, just like you, humans also receive a lot of benefits from ecosystems, if the ecosystems are healthy.

Wow! That's pretty cool.

Sky, can you hear that buzzing from the field full of wildflowers? Do you see all that activity around the elderflower bushes? All those insects are super important for pollinating plants and trees, while the birds help spread their seeds. Then their fruit matures and becomes food for humans too.

No way! What kinds of food?

If there were no pollinators, you'd have to say good-bye to cherries, apricots, plums, and even squash and tomatoes!

Green Infrastructure



Wildlife crossings and green spaces in cities

Ecosystem services: regulate climate, improve our well-being, and support biodiversity.



Depaving with pollinator gardens and rain gardens

Ecosystem services: regulate climate and reduce flooding, support biodiversity, habitats, and our well-being.



Hmm, when I look around, I think I see some problems here...

You're right, Sky, but with green infrastructure, there are solutions.

Green what?

Green infrastructure – strategies that imitate nature. Touch this sidewalk here.

Yikes! It's burning hot!

You can't walk on it, can you?

Maybe I can go a different way?

But what if every path is as hot as this one?

I'd be toast!

Time to turn the tables here, Sky! Let's take away all the asphalt and do something revolutionary: depave our cities!

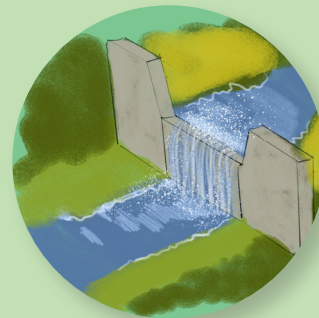
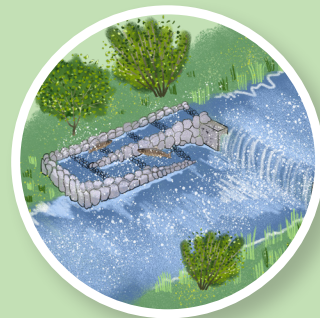
Born to be rebels!

If we put down soil, then plant flowers, shrubs, and trees, it becomes a green



Small-scale wetlands and stream buffers between crop fields

Ecosystem services: climate regulation and support for habitats, the soil, biodiversity, and food production.



Re-naturalized rivers and fish ladders

Ecosystem services: climate regulation, water and food provisioning, biodiversity, recreation.



corridor.

Good idea, Scrub! That will make it cooler.

And we can even do this to make wildlife bridges over roads so we animals can cross safely without getting hit by cars.

And if it rains, soil soaks up water better than asphalt, right?

Absolutely. To handle rainwater, we

can build rain gardens with flowering plants and bushes. Not only will they absorb water better, but they'll also provide homes for birds and small mammals.

Yay! Our open spaces will be so beautiful, and we'll all feel better!

Congratulations, Sky, you just identified the cultural and well-being services that ecosystems offer us.

Human-Caused Threats



So cool, it's like a perfect machine!

It's true, everything runs smoothly if our ecosystems are healthy.

What do you mean? Ecosystems can't get sick, can they?

Unfortunately, if too many nutrients get into the soil, like nitrogen, carbon, and phosphorus, then the ecosystems can't 'digest' them all.

Wait, you're saying that soil can have a stomach-ache?

Look at those fields, Sky. They're using very intensive farming. And in that pasture—see how many animals are grazing there? Think of all the cars and trucks too, and the industrial waste in

the air and waterways. Even people's houses use resources and cause pollution. But that's not all...

There's more?

Climate change is happening too. It's threatening and destroying natural and semi-natural habitats, so that the ecosystems don't work well anymore.

Ruining ecosystems doesn't sound like a smart thing to do!

You're right, Sky. Fortunately, green infrastructure can give us a hand, but we all need to pitch in and do our part!

Ok, Scrub, from now on, this is our motto: for healthy ecosystems, more green infrastructure for the Alps!

Words to Learn

- **HABITAT:** The physical environment, including non-living elements and resources, where a species or a community of animal and plant species lives.
- **ECOSYSTEM:** The system formed by the relationships between a community of living organisms and the physical environment where they live.
- **ECOSYSTEM SERVICES (ES):** The positive contributions, both direct and indirect, that ecosystems naturally provide to humans. Ecosystem services are called **REGULATING** when they help stabilize the climate or improve air and water quality. They are called **PROVISIONING** services when they provide raw materials that are useful to humans, such as wood, food, and water. **SUPPORTING** ecosystem services are those that help ecosystems stay healthy, for example when they improve habitats and biodiversity. **CULTURAL** ecosystem services contribute to our mental and physical well-being, such as forests and streams where we can go to relax.
- **NUTRIENTS:** Organic and synthetic chemical compounds based on nitrogen, phosphorus, and carbon. In the soil, these nutrients are absorbed by plant roots and digested by microbes.
- **GREEN INFRASTRUCTURE (GI):** A network of natural and semi-natural areas and constructed elements that provide significant benefits to humans and improve biodiversity. Examples include green corridors in cities or along bicycle paths, hedgerows between farm fields, pollinator gardens and bee hotels, and wildlife crossings over roads.

Ready to Play the Game?

Scan the QR code to download the cards and game instructions.



Let's Play!



The FRACTAL Project

Green infrastructure projects remain rare in the rural and peri-urban areas of the Alpine Region. FRACTAL (Fostering Green Infrastructure in the Alps) helps organizations and businesses implement green infrastructure at the local level and teaches children and adults about ecology with its educational toolkit.

Want to know more? You can find us on the web:

www.alpine-space.eu/project/fractal/

and follow us on Instagram and Facebook

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