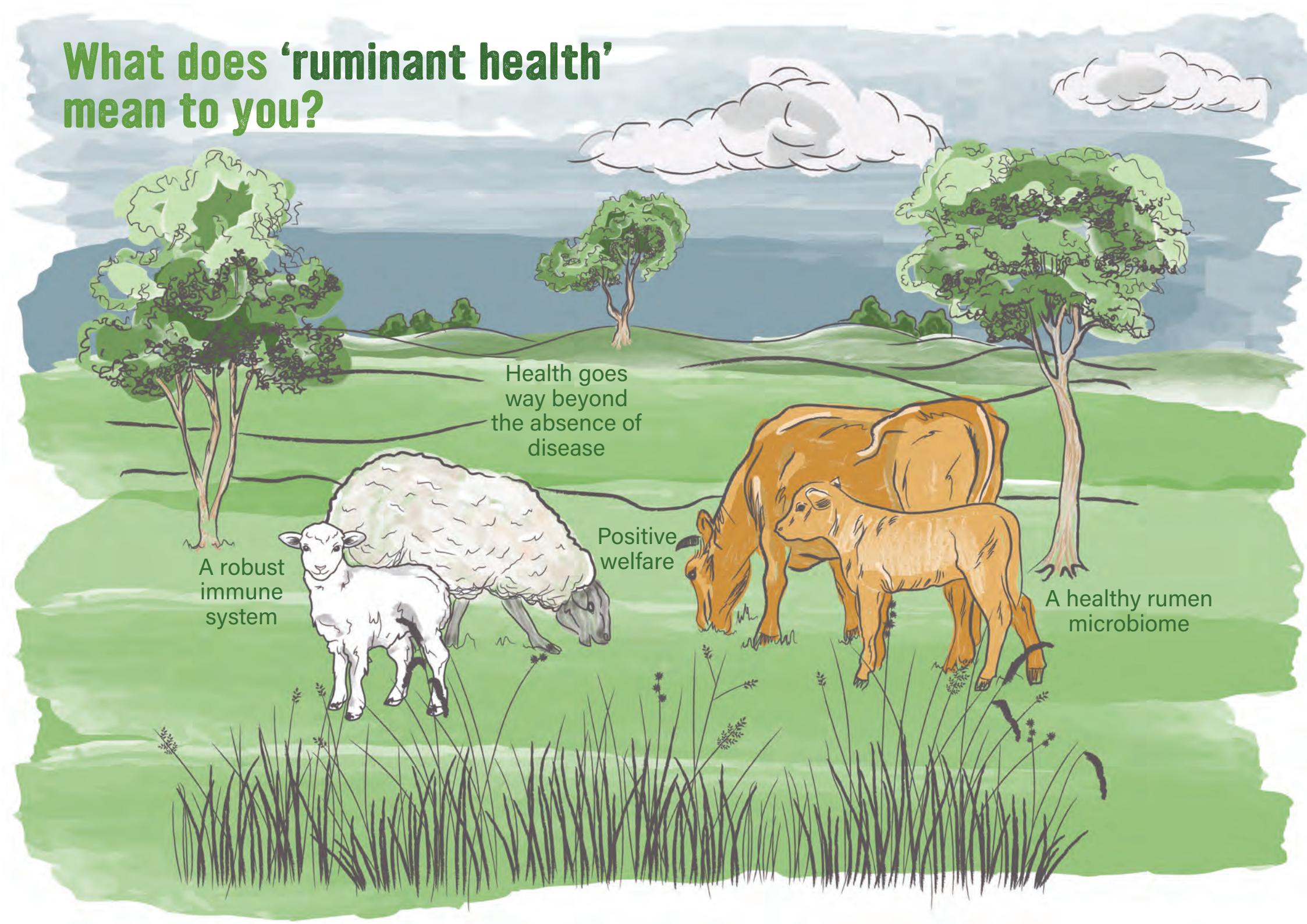
Ruminant health benefits from diverse permanent pastures

Diversity within a permanent pasture brings benefits across the board



This resource aims to highlight the specific benefits that are attainable for ruminant health and well–being; understand some of the processes that underpin these positive outcomes; and in particular illustrate that it is the cumulative and interactive effects of all aspects of the diverse permanent pasture that are key.

What does 'ruminant health' mean to you?



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Health goes way beyond the absence of disease

A robust immune system

Healthy livestock are not reliant on medicines to keep them well, and do not succumb easily to worm burdens, or microbial infections. Health is underpinned by a robust immune system, and being very well-nourished whether growing, pregnant, or lactating.

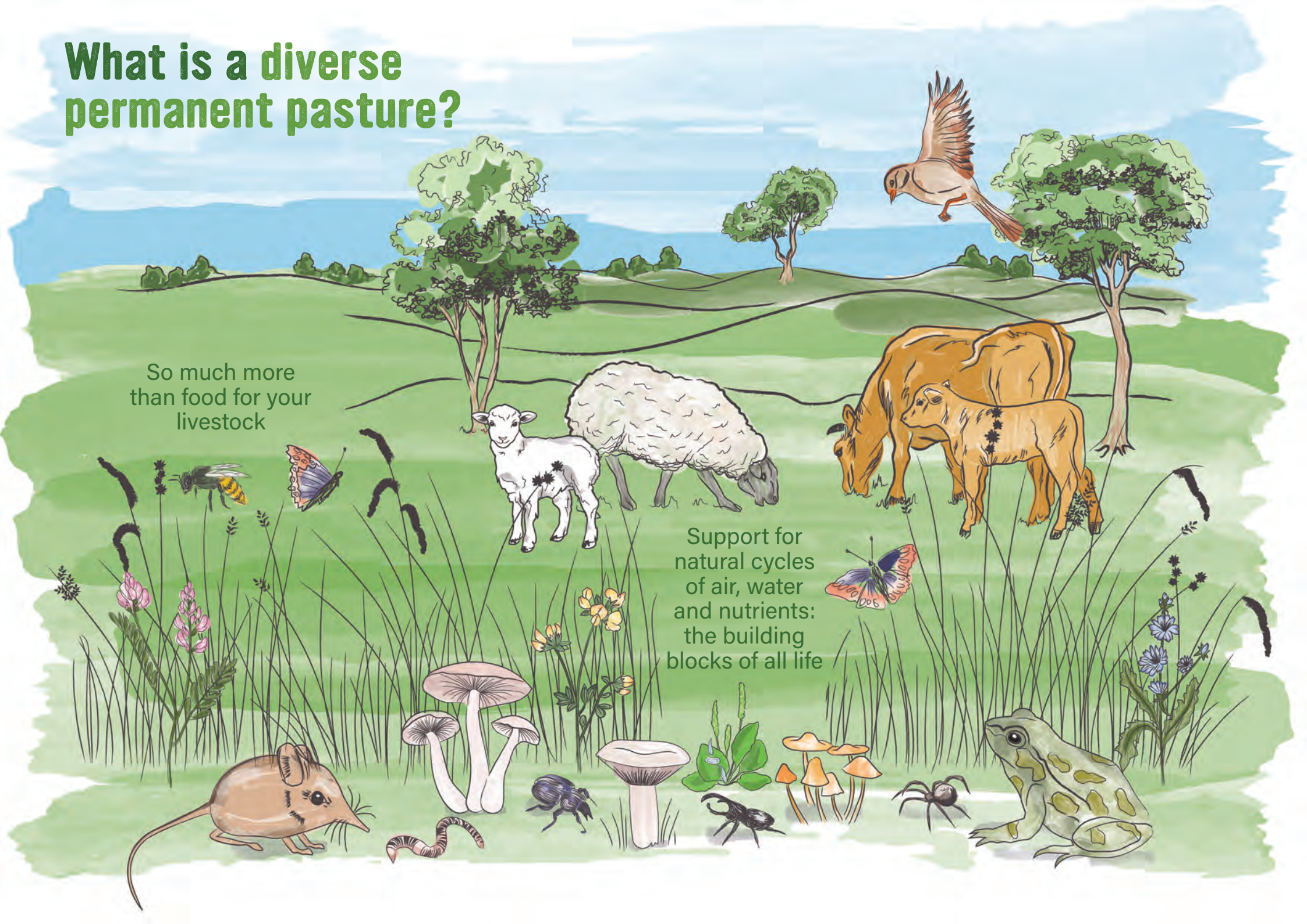
A healthy rumen microbiome

A rumen full of beneficial microbes can work hard to convert forage into growth, or a foetus, or milk.

Positive welfare

Positive welfare means having options about where to go in bad weather, or in very hot weather; and choices about what to eat, and when to eat it, or who to socialise with. Perhaps it’s also about well-being; not being bored, not being bullied, not being stressed. And perhaps having a positive relationship with you as the farmer feels important too.

What is a diverse permanent pasture?



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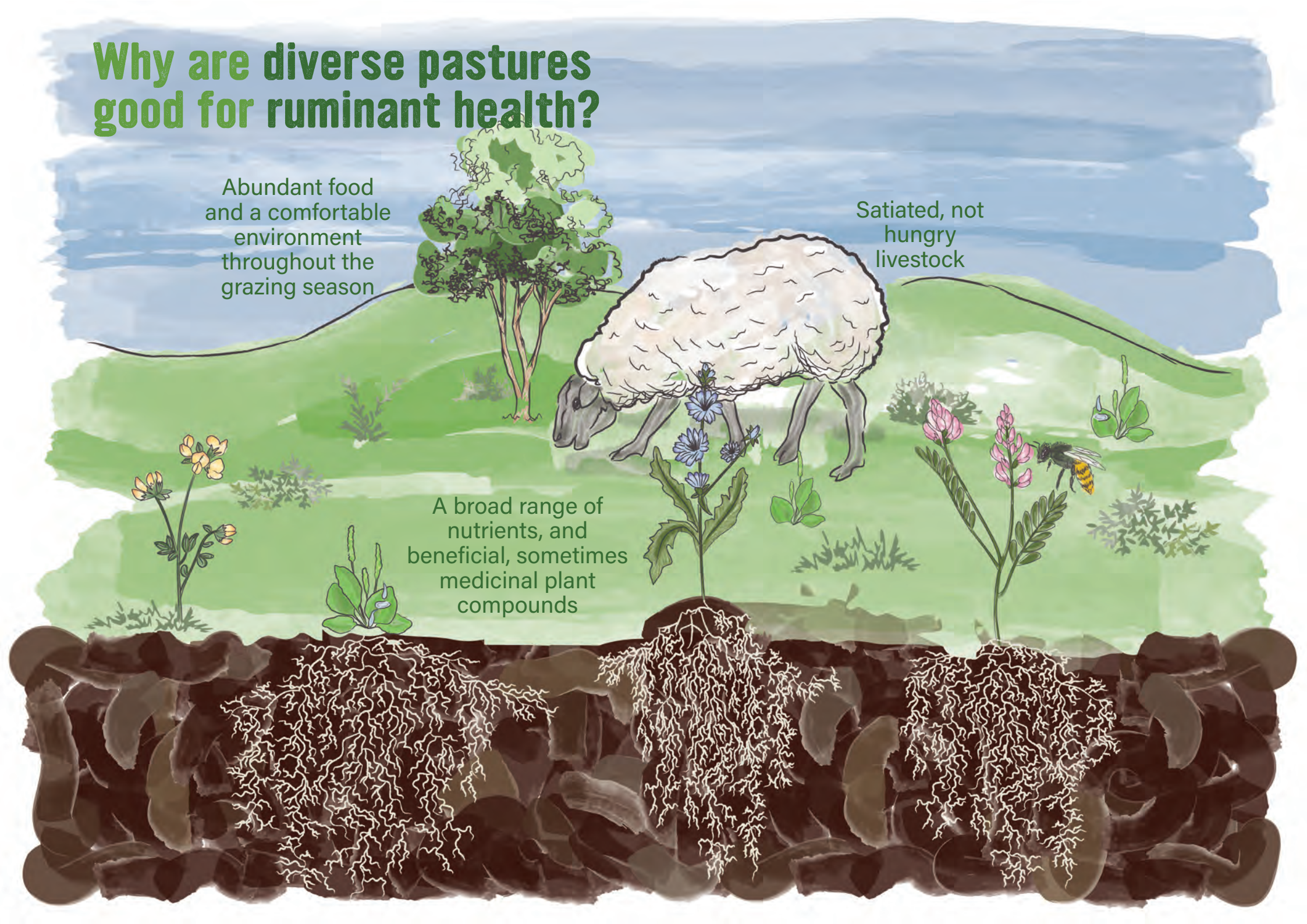
So much more than food for your livestock

A diverse pasture is more than a source of food for your animals. It provides that of course, but it is also an active contributor to so many other things; it supports all manner of microbes below the ground with a variety of root structures and depths. It supports insects, spiders, butterflies, amphibians, birds, and mammals in the pastures, and along the field margins or hedgerows.

Support for natural cycles of air, water and nutrients: the building blocks of all life

The 3-dimensional structure of different grasses, legumes (nitrogen fixers), herbaceous broad-leaved plants, shrubs and trees creates a framework above and below the ground that supports nutrient exchange, and optimises water retention in the soil. Pastures will likely look very different across the country, depending on soil type, the time of year, and crucially how you manage the grazing.

Why are diverse pastures good for ruminant health?



Why are diverse pastures good for ruminant health?

Satiated, not hungry livestock

Livestock get to feel properly full, satiated, in a relatively shorter time than on monocultures, due to the range of nutrients available from this mix of grasses and broad-leaved plants. Satiety brings a sense of well-being for your animals, with more time to lie down and ruminate.

A broad range of nutrients, and beneficial, sometimes medicinal plant compounds

The different root structures support high levels of communication between plant roots and microbes in the soil – exchanging nutrients, and enabling plants to access minerals, which subsequently are available to your livestock. The broad-leaved plants in particular, are able to produce a vast array of secondary compounds, for which there is always a reason (the plant knows even if we don't): some might attract pollinators, others might deter competitor plants, and many are to defend against being grazed by your livestock. This is a dynamic relationship between the plants and their entire environment – all elements of the pasture including your livestock influence each other, and have co-evolved together.
Some of the secondary compounds can be beneficial for grazing livestock, such as tannins, that are active against internal worm burdens. These are bitter to taste (hence their role in plant defence), but it seems likely that tolerance is increased when there is a worm burden upsetting livestock internal physiology. Other compounds include anti-inflammatory agents, antioxidants, antimicrobials, and compounds that support the rumen microbiome and the animal's immune system. All of these interact to keep your livestock healthy.

Abundant food and a comfortable environment throughout the grazing season

The grasses, broad-leaves, shrubs and trees often have different seasonal growth patterns, so that there is always something to go at for the livestock, potentially extending the grazing season. In this sort of landscape your livestock will also not be bored – actively foraging for what they need. The 3-dimensional structure also gives animals options to maintain their physical and thermal comfort whatever the weather (within reason).

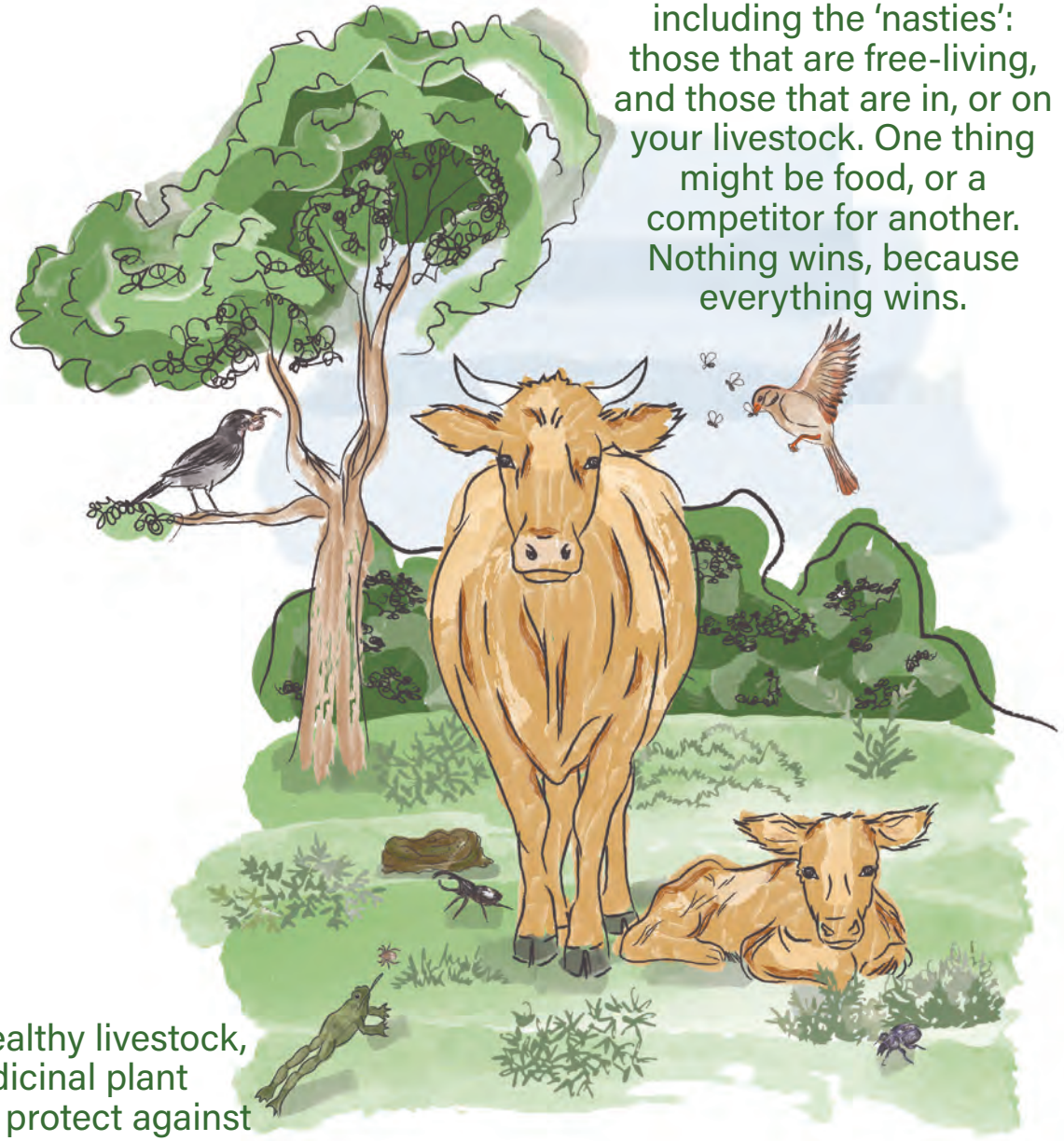
How do pathogens and parasites fare in diverse pastures?



Low diversity

Gut and lung worms, liver fluke, microbes, ticks and flies can cause so many problems for your livestock

High diversity creates an extraordinary network of interactions within and between all life-forms, including the 'nasties': those that are free-living, and those that are in, or on your livestock. One thing might be food, or a competitor for another. Nothing wins, because everything wins.



High diversity

Resilient, healthy livestock, and medicinal plant compounds protect against the harmful effects of parasites and pathogens

How do pathogens and parasites fare in diverse pastures?

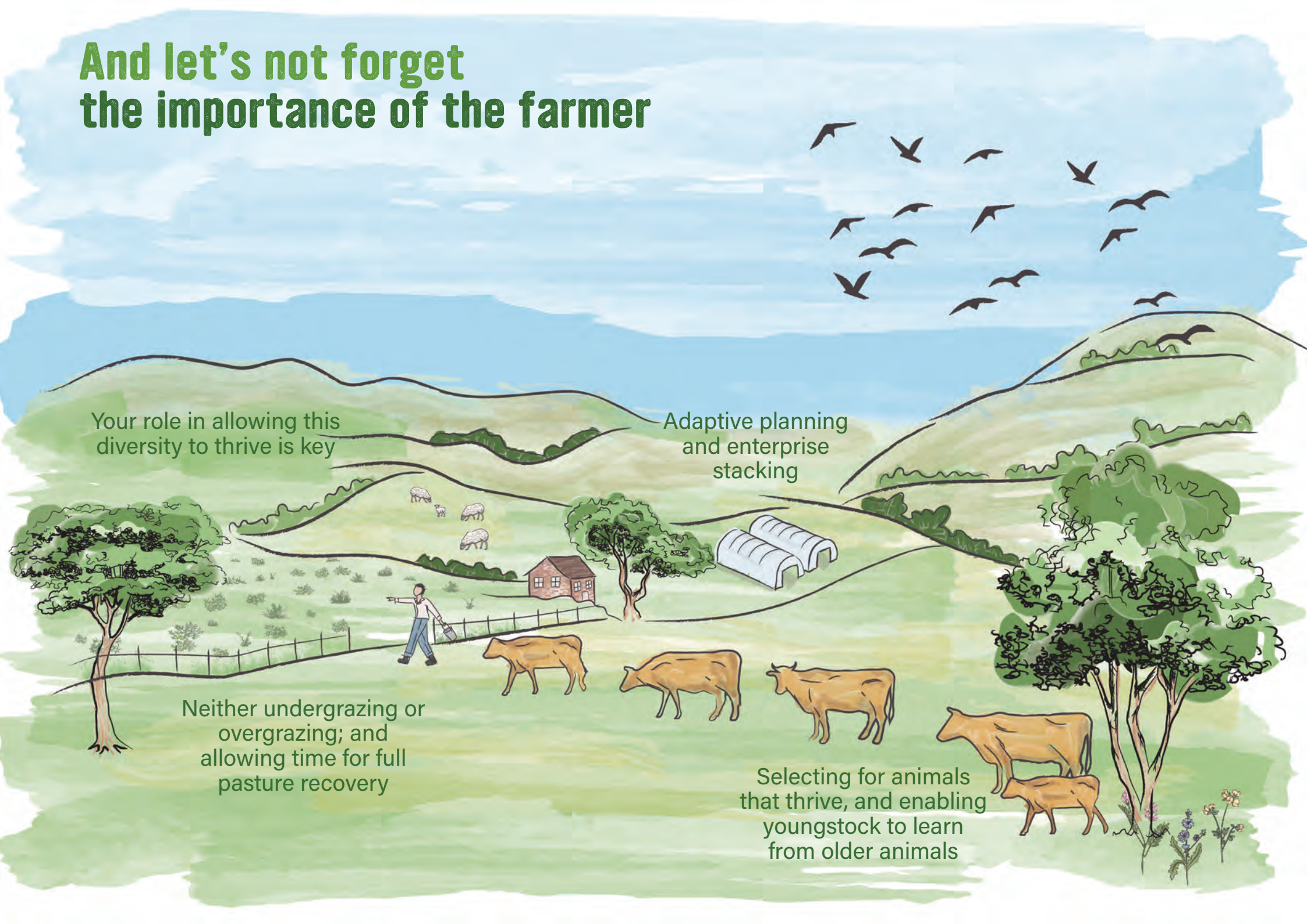
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Do you ever wonder why it is that gut or lung worms, liver fluke, microbes (like the bacteria that cause lameness), ticks and flies can cause so many problems for your livestock? Let's consider the role of a diverse pasture. All the life forms in a diverse pasture interact, perhaps as food for something, or predators of, or competition for something else. Dung beetles gobble up dung quickly – reducing the habitat available for worm eggs to develop to infective stages, or for fly eggs to develop. Birds and frogs might eat ticks, or mud snails (the intermediate host for liver fluke). There is so much going on, and we are really only beginning to unveil the extent of these interactions.
The greater the variety of species and habitats, combined with good water and nutrient cycling, the less likely one particular species will thrive and dominate: this applies to the potential pathogenic microbes; the intermediate host species, such as the mud snail; the ticks; the biting flies, the nuisance flies, and the blow flies. The diversity means nothing wins because everything wins.

Resilient, healthy livestock, and medicinal plant compounds protect against the harmful effects of parasites and pathogens

Diverse pastures are not a hospitable place for pathogens and parasites to thrive in the first place. Combine that with your livestock's robust immune system, and with the secondary compounds from broad-leaved plants that can help with control (like the tannins), and there is less need to treat, and ideally never a need to treat routinely. N.B. Always discuss this with your veterinary surgeon – animals that need treatment for their health and welfare should not be denied that treatment.
Furthermore, using fewer treatments means the diversity can continue to thrive – wormers and antibiotics are not fussy which invertebrates or which bacteria they kill – and if they persist (like the clear drenches, such as ivermectin) – they can really harm the very diversity that we have seen is so beneficial.

And let's not forget the importance of the farmer



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Your role in allowing this diversity to thrive is key

Neither undergrazing or overgrazing; and allowing time for full pasture recovery

The way your livestock are managed, whether that be conservation grazing, or rotational grazing – as long as pastures are not over or under grazed, and as long as they are given time to recover – the diversity will thrive, and the benefits will accrue.
The diversity and soil structure that support optimal water cycling, combined with good grazing management, and less need for supplementary feeding will lead to fewer poached areas, leading to fewer foot problems, and fewer habitats for microbes, or mud snails to thrive. Nicer for your livestock too – not to be standing in wet muddy fields.

Selecting for animals that thrive, and enabling youngstock to learn from older animals

Selecting the animals that thrive in your system will really help to get the most out of the diversity in the pastures. If you are able to group your stock so there are mixed age groups, adults will support the youngstock in making the right choices, helping them to develop their own nutritional wisdom. Furthermore, any worm egg outputs from youngstock will be diluted by the presence of the immune adults.

Adaptive planning and enterprise stacking

Working with the seasons, having multiple enterprises on the farm to fill the gaps, perhaps using bale grazing to lengthen the grazing season further, and most importantly being adaptive with your planning week on week, month on month, year on year can all contribute.
Perfection is rarely achievable, but when all these factors work together your livestock are healthier, your land supports all manner of wildlife, and you get a real sense of achievement. Your vet bills are down, your wintering costs are down, your feed bill is down. That's a great story to accompany what you produce, a great system to showcase to your customers, and a great nutrient-dense product to sell.

Further reading

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Cornwall National Landscape

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