



GREEN PIGEON CONSULTING

# Beauty is in the eye of the beholder

*Presented by*  
**JUSTIN SMITH**  
Green Pigeon Consulting

# So, This is What Nature Looks Like



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Natural Beauty  
or  
an Unnatural Aesthetic Lie

# So, This is What Nature Looks Like



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**Wildflower Protagonist**

**Trophic Protagonist**

**Hybrid Protagonist**

# Nature Determines What Nature Looks Like



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## Wildflower Protagonism v Trophic Protagonism

Metric	Wildflower Protagonist Lens	Trophic Protagonist Lens
<b>What is foregrounded</b>	Wildflowers as primary producers and as system drivers for primary consumers	Interactions, <b>energy flow</b> , and cross-trophic relationships
<b>Success</b>	Visible plant abundance and compositional richness	Stability of <b>energy flow</b> and persistence of interaction networks
<b>Time horizon emphasised</b>	Short-term vegetation response and establishment	Longer-term system dynamics and feedbacks
<b>Diversity</b>	Diversity as more plant species = more functional variety = better ability to cope with change	Diversity as more complex interaction networks = more stability

# Nature Determines What Nature Looks Like

## Wildflower Protagonism v Trophic Protagonism

Metric	Wildflower Protagonist Lens	Trophic Protagonist Lens
<b>Control</b>	System can be steered through vegetation management	System is only partially steerable; interactions resist control
<b>Intervention type</b>	Continuous, directional (e.g. cut/remove, curate species)	Episodic, adaptive (e.g. grazing pulses, disturbance regimes)
<b>Failure mode</b>	Loss of target plant assemblage or rapid collapse	Slow erosion of interactions or unnoticed species loss
<b>Blind spot</b>	May over-attribute causality to plants and underplay trophic dynamics	May under-recognise foundational role of vegetation and composition

# Nature Determines What Nature Looks Like



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**We must be careful not to create nature in our own analytical image, but to approach an understanding that nature itself decides the form it takes through its own interactions...**

# So, This is What Nature Looks Like



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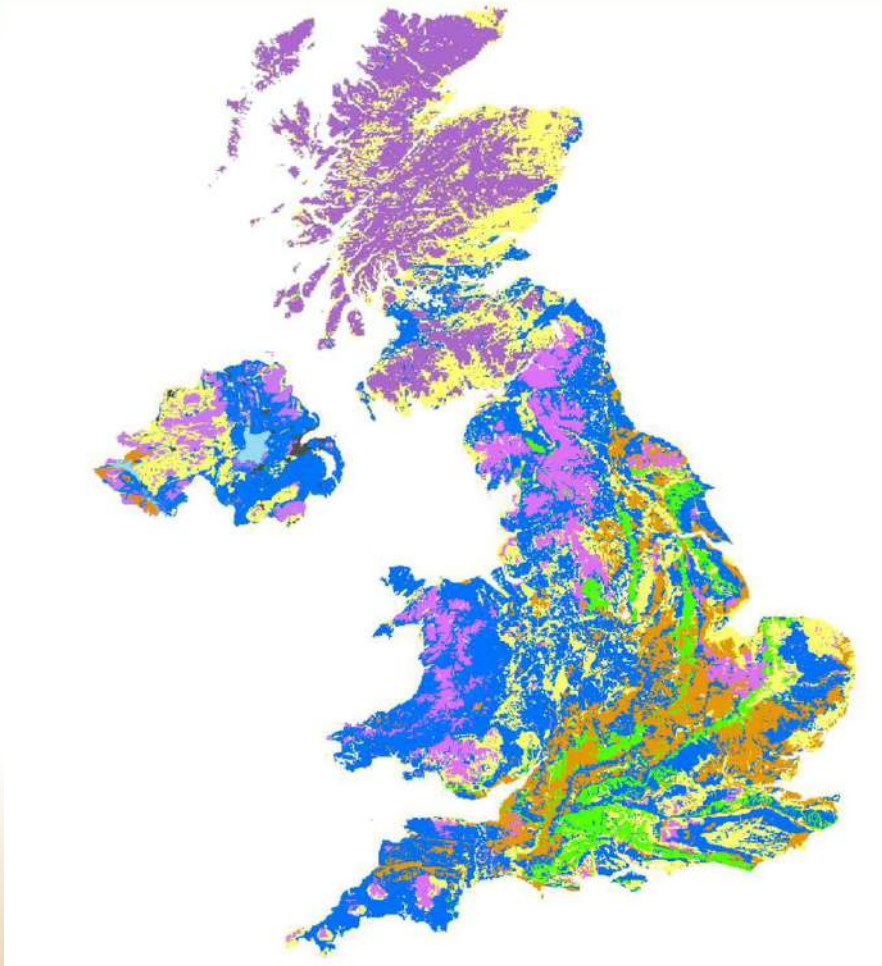
## National Supplier “General Wildflower Mix” (26/27 species) (The Wildflower Protagonist Selection)






<b>Wildflowers</b>	
<b>Wild Clary</b>	<b>Viper’s Bugloss</b>
<b>Teasel</b>	<b>Lesser Knapweed</b>
<b>Musk Mallow</b>	<b>Purple Loosestrife</b>
<b>Ragged Robin</b>	<b>Wild Marjoram</b>
<b>Self Heal</b>	<b>Field Scabious</b>
<b>Purple Cornflower</b>	<b>Small Scabious</b>
<b>Oxeye Daisy</b>	<b>Sainfoin</b>
<b>Yarrow</b>	<b>Bird’s-foot Trefoil</b>
<b>Ribwort Plantain</b>	<b>White Clover</b>
<b>Yellow Rattle</b>	<b>Red Clover</b>
<b>Agrimony</b>	<b>Kidney Vetch</b>
<b>Salad Burnet</b>	<b>Wild Foxglove</b>

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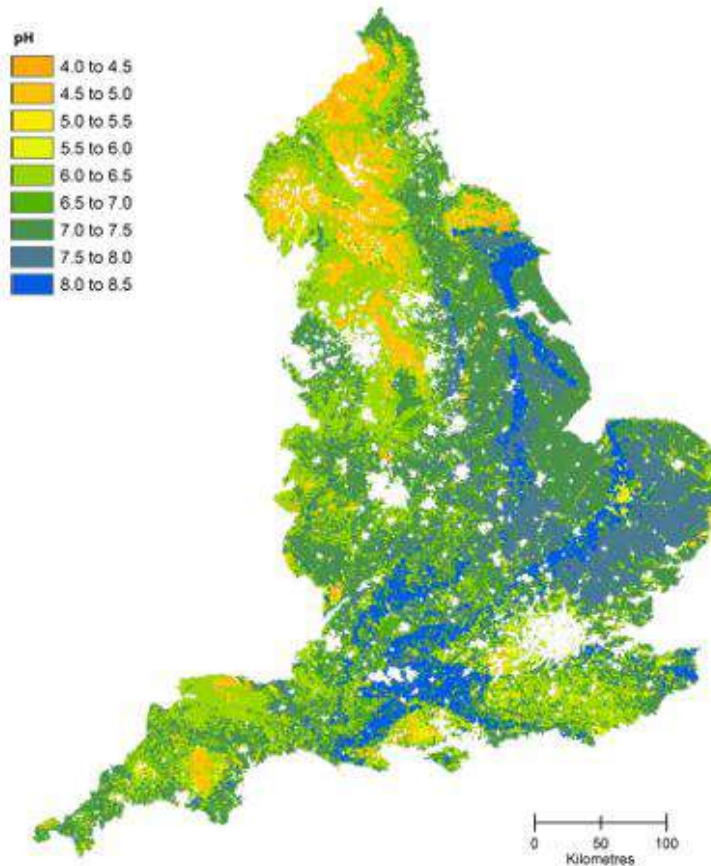
	<b>Chalk or Limestone</b>
	<b>Heavy (clays)</b>
	<b>Medium (loams)</b>
	<b>Peaty</b>
	<b>Sandy</b>

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Mean estimates of topsoil pH (0-15cm depth)



Soil types in the England vary from moderately alkaline to strongly acidic

# So, This is What Nature Looks Like



**You can't manage what you don't measure!**

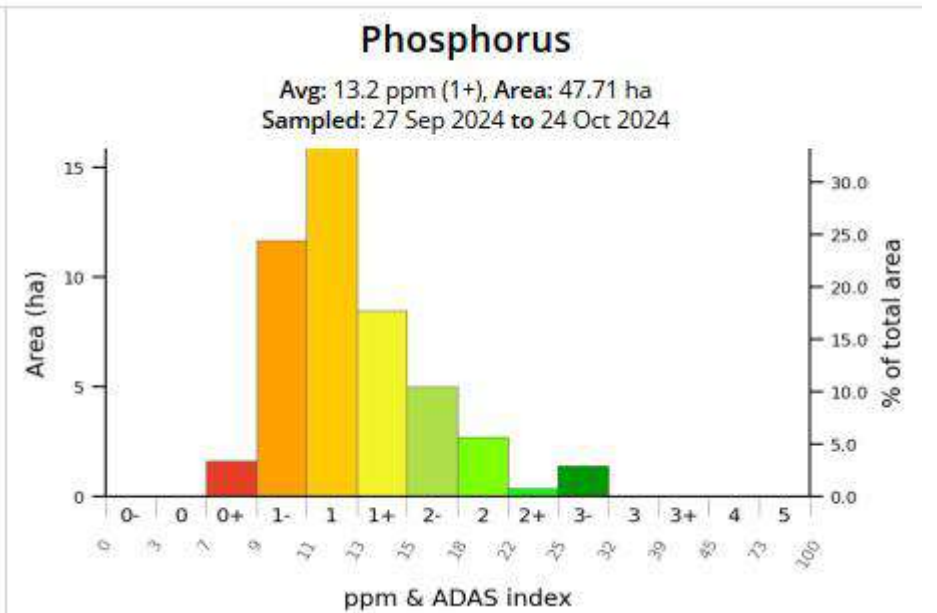
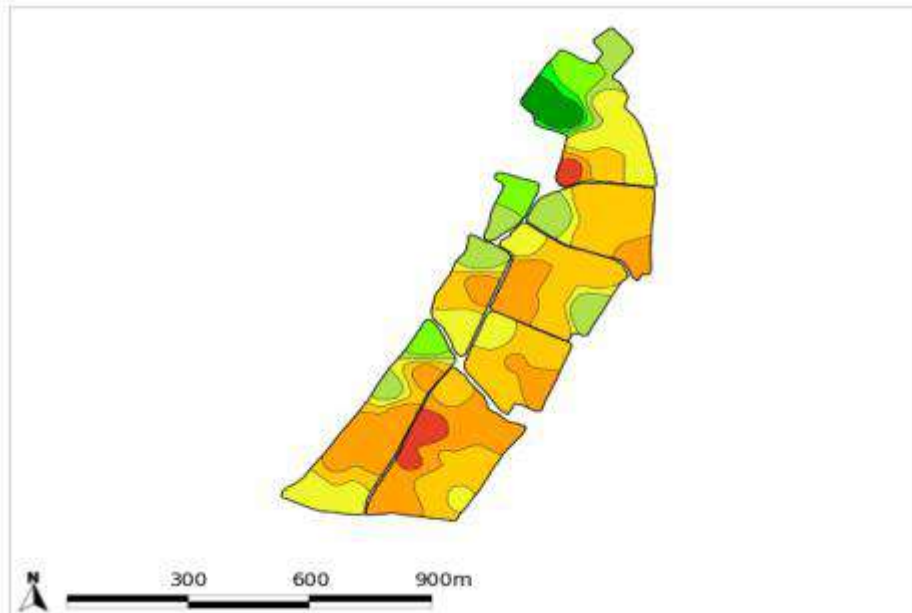
**Without understanding soil properties, we risk imposing outcomes rather than working with the system as it is.**

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## Heat maps for soil nutrient testing locations

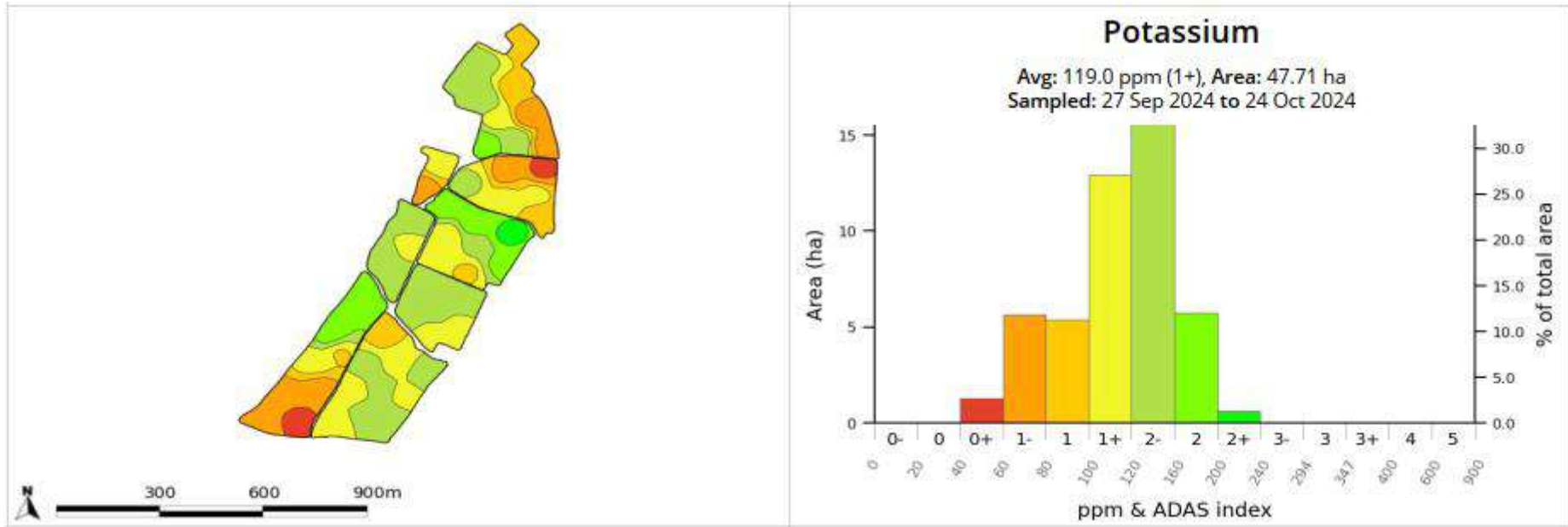


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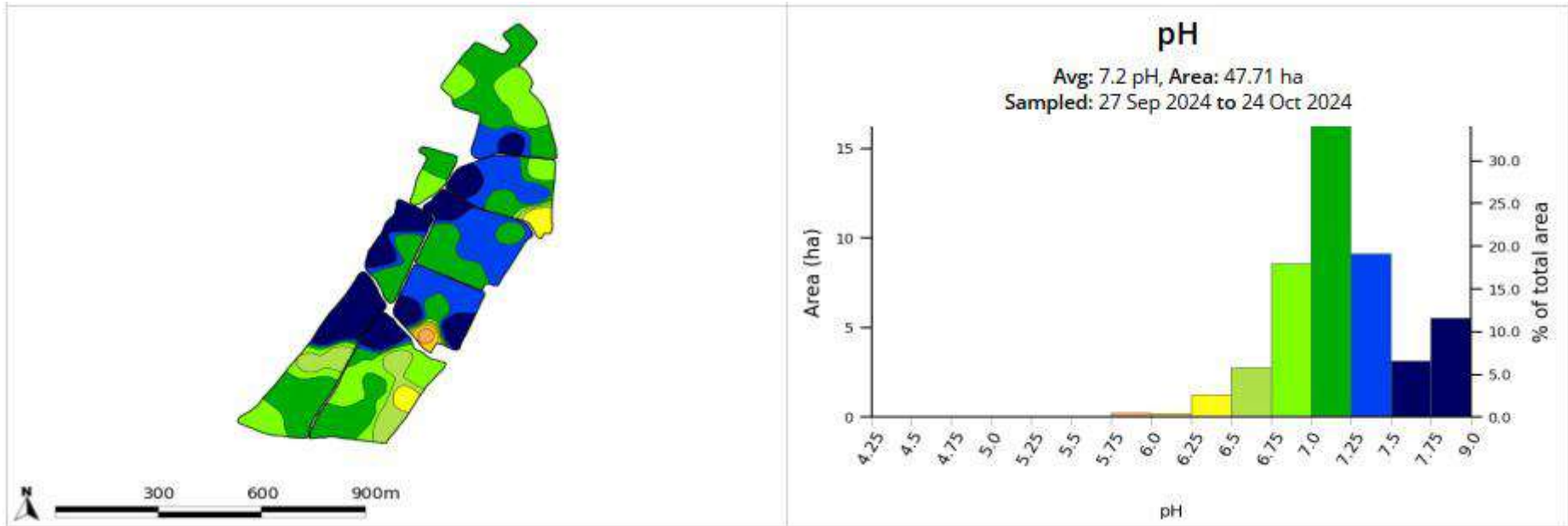
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## Heat maps for soil nutrient testing locations



# So, This is What Nature Looks Like

## Heat maps for soil nutrient testing locations



**So, This is What Nature Looks Like**

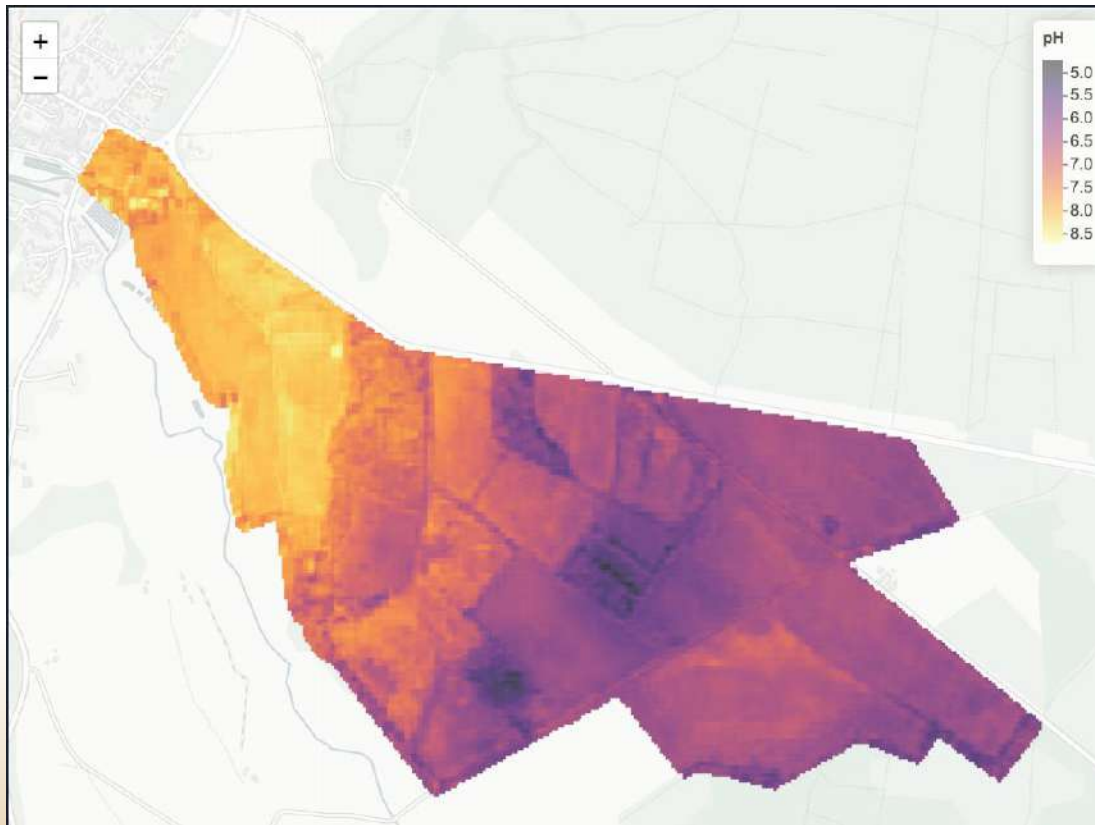


**You can't manage what you don't measure!**

**Measure affordably !**

# So, This is What Nature Looks Like

## Co-Variate heat maps for soil testing locations

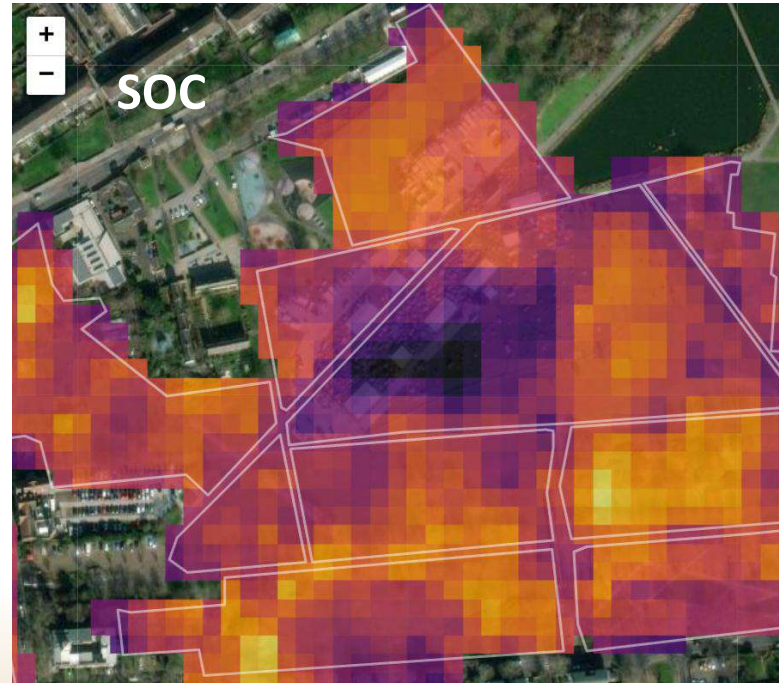
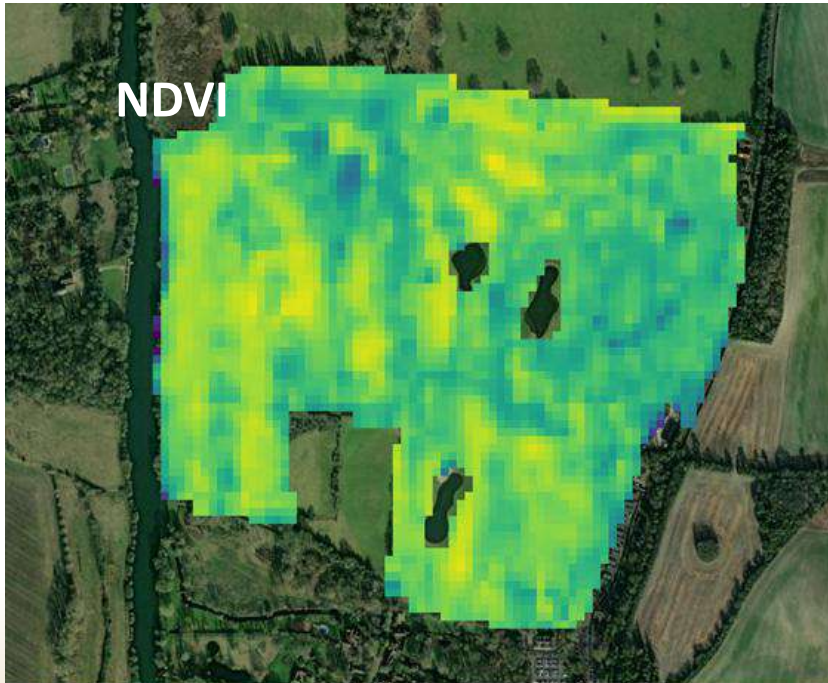


# So, This is What Nature Looks Like



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## Co-Variate heat maps for soil testing locations



# So, This is What Nature Looks Like



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## Environmental Interaction on Wildflower Meadows

Wildflower	Nectar Output	Pollen Output	pH		Fertility
Viper's Bugloss	Very High	High	Green	Blue	Low/Moderate
Lesser Knapweed	High	High	Green	Blue	Moderate
Purple Loosestrife	High	Med-High	Red	Green	High
Wild Marjoram	High	High	Green	Blue	Moderate
Field Scabious	High	High	Green	Blue	Moderate
Salad Burnet	Low-Med	Low-Med	Blue	Blue	Moderate
Small Scabious	High	High	Green	Blue	Low/Moderate
Sainfoin	High	High	Blue	Blue	Moderate
Bird's-foot Trefoil	High	High	Red	Green	Low
White Clover	High	High	Green	Blue	High
Red Clover	High	High	Green	Blue	Moderate/High
Kidney Vetch	Med-High	Med-High	Red	Green	Low
Corn Poppy	Low-Med	High	Green	Green	Low
Wild Clary	Med	Med	Green	Green	Moderate

pH Range of Soils for Wildflowers		
Neutral soils	Green	Green
Neutral to alkaline	Green	Blue
Alkaline	Blue	Blue
Slightly acidic to neutral	Red	Green
Acidic	Red	Red

Insects Preferring Pollen	Insects Preferring Nectar
Honeybees	Butterflies
Bumblebees	Moths
Solitary bees	Wasps
Some beetles	Flies
Hoverflies (partly)	Ants

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## Environmental Interaction on Wildflower Meadows

Plant Finder Front Page		Preferred soil pH	Preferred soil type	Preferred soil fertility
Choose your preferred soil pH, soil type, and fertility below. The lookup lists stay visible on this page, and matching plants are shown on the Results page.		4.0	Clay	1.0
Preferred soil pH	6.0	4.5	Clay loam	2.0
Preferred soil type	Clay	5.0	Sandy	2.5
Preferred soil fertility	3.5	5.5	Sandy loam	3.0
		6.0	Loam	3.5
Matching plants	18	6.5	Peaty	4.0
		7.0	Chalk	4.5
		7.5		5.0
		8.0		
		8.5		
→ Open the Results sheet to see the filtered matches				

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## Environmental Interaction on Wildflower Meadows

Common name	Latin name	Flowering season	Pollen Rich	Nectar Rich	NVC communities	Seed mix inclusion	Seed mix %	Butterfly larvae host (UK species)	Butterfly dependence strength
Autumn Hawkbit	<i>Scorzoneroides autumnalis</i>	Jul–Oct	Medium	Medium	MG5	yes	2	Nectar only	none
Common Dandelion	<i>Taraxacum officinale</i>	Mar–Oct	High	High	MG5; OV24	no	0	Nectar only	none
Common Sorrel	<i>Rumex acetosa</i>	May–Jul	High	Low	MG5	yes	3	Small Copper	primary
Daisy	<i>Bellis perennis</i>	Mar–Oct	Medium	Medium	MG5	yes	1	Nectar only	none

officinale

# So, This is What Nature Looks Like



## Environmental Interaction on Wildflower Meadows

Excel ribbon: File, Home, Insert, Draw, Page Layout, Formulas, Data, Review, View, Automate, Help, Acrobat. Home ribbon includes Clipboard, Font, Alignment, Number, and Styles. Styles includes Normal, Bad, Good, Neutral, Calculation, and Check Cell.

Formula bar: `=FILTER(PlantCatalog[#Data],(ISNUMBER(SEARCH(TEXT('Front Page'!B3,"0.0"),PlantCatalog[Preferred pH options])))*(ISNUMBER(SEARCH('Front Page'!B4,PlantCatalog[Preferred soil type options])))`

Leaf-cutter Bee species preference	Specialist bellflower solitary bees	Specialist mallow bees	Occasional Bee species preference	Hoverfly benefit	trophic Value	UK region suitability	Display name	Preferred pH options	Preferred soil type options	Plant ID
No	No	No	No	High (late season)	High	Lowland	Autumn Hawkbit   <i>Scorzoneroides autumnalis</i>	6.0, 6.5, 7.0	Clay loam, Sandy, Sandy loam, Loam	PLT-003
No	No	No	No	High	High	All regions	Common Dandelion   <i>Taraxacum officinale</i>	5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5	Clay, Clay loam, Sandy, Sandy loam, Loam, Chalk	PLT-018
No	No	No	No	None	High	All regions	Common Sorrel   <i>Rumex acetosa</i>	5.0, 5.5, 6.0, 6.5	Clay loam, Sandy loam, Loam	PLT-026
No	No	No	No	Moderate	Medium	All regions	Daisy   <i>Bellis perennis</i>	6.0, 6.5, 7.0, 7.5	Clay, Clay loam, Sandy, Sandy loam, Loam, Chalk	PLT-038
No	No	No	No	Moderate	Medium	Lowland	Field Forget-me-not   <i>Myosotis arvensis</i>	6.0, 6.5, 7.0	Clay loam, Sandy, Sandy loam, Loam	PLT-050
No	No	No	No	Moderate	High	Lowland	Great Burnet   <i>Sanguisorba</i>	6.0, 6.5, 7.0	Clay, Clay loam, Sandy loam, Loam	PLT-060

**So, This is What Nature Looks Like**



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**Not just about Pollen and Nectar Rich Plants**

**but also**

**Larval Host Plants**

# So, This is What Nature Looks Like



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## Butterfly Larval Host Plants

Butterfly Species	Larval Food Plant(s)
Adonis Blue	Horseshoe Vetch
Brimstone	Alder Buckthorn, Common Buckthorn
Chalkhill Blue	Horseshoe Vetch
Clouded Yellow	<b>Clovers</b> , Lucern, <b>Bird's-foot-trefoil</b>
Comma	Nettles, Hops, Elms
Marbled White	Various grasses, esp. Red Fescue
Meadow Brown	Grasses: Fescues, Yorkshire Fog, Cocksfoot
Scotch Argus	Purple-moor grass, Tufted Hair-grass
Large Skipper	Cocksfoot, False Brome, Tor-grass
Silver-spotted Skipper	Sheep's-fescue and other fine grasses
Wall	Grasses: Cocksfoot, False Brome, Tor-grass, Fescues
Common Blue	<b>Bird's-foot-trefoil</b> , other Lotus and Trifolium species
Dark Green Fritillary	Violets, esp. Dog violet

**Or Is It?!**



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**Should we be changing the soil  
environment chemically, and  
biologically for “*Ecological Value?*”**

# Or Is It?!



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Grow your own  
wildflower meadow  
in your garden

## Growing a wildflower meadow

As a nation of keen gardeners, Britain has a reputation for some of the world's most beautiful gardens. However, no city-clipped lawns and weeded flower beds do not always make for a wildlife rich garden.

Increasing awareness of Britain's disappearing meadows and the loss of wild plants and wildlife, such as bumblebees and hedgehogs, has led to more of us creating wildflower meadows in our gardens.

This guide will tell you how to get started.

### Getting started

You don't need to have a large garden to have a wildflower meadow, but you will need an open, sunny space.

An existing lawn is often the perfect place to start - if you fancy converting one, read the section 'From lawn to meadow'. Otherwise, follow these simple steps...



Yellow Rattle © Andrew Cople / Phoenix

### Starting from scratch

**Step 1 Remove the topsoil**  
If you don't have an existing lawn, or want to take out your lawn, you will need to start a meadow from scratch - and an ideal time to do this is in July.

Wildflowers thrive on nutrient poor soil, so it is a good idea to completely remove your turf and 5cm of topsoil. You will need a strong spade and lots of energy, but it will be worth it.

Not only will this reduce nutrient levels, it is also a good opportunity to get rid of existing plant roots. Once you have removed the topsoil, rake over the ground until you have a fine tilth.

### Step 2 Remove the competition

Leave the area for three to four weeks to see what comes up. It is likely that a spread of tougher wild plants may appear, so to ensure that your wildflower seed will have a good start, a session of pulling these out may be needed.

### Step 3 Sow the seed

The best time of year to sow wildflower seed is from August to October.

You only need one or two teaspoons of seed per square metre, which should be sown on a dry day, if possible.

Plantslife advises that it is important to buy your seed from a supplier that provides seed from native British plants. If you can, buy seed that is sourced locally as this will ensure that your flowers will grow happily in your area and be suitable for local wildlife.

Habitually, most seed companies supply different mixes for different soil types. If you are unsure of your soil type, simple kits to test your soil's pH are available from garden centres.

### Step 4 Adding yellow rattle and other species

Top tip! If your seed mix includes grasses make sure you sow some 'Yellow Rattle Seed' - a pretty wildflower in its own right - as this semi-parasitic plant will help limit the growth of competing grasses, in favour of the wildflowers.

You could add some other flowers like Poppies and Cornflowers to give you some colour in your first year while your meadow plants are getting established but be aware that these are not traditional meadow species.

## Starting from scratch

### Step 1 Remove the topsoil

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Or Is It?!



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**Does Reducing SOM Affect  
the Whole Soil Ecology?**

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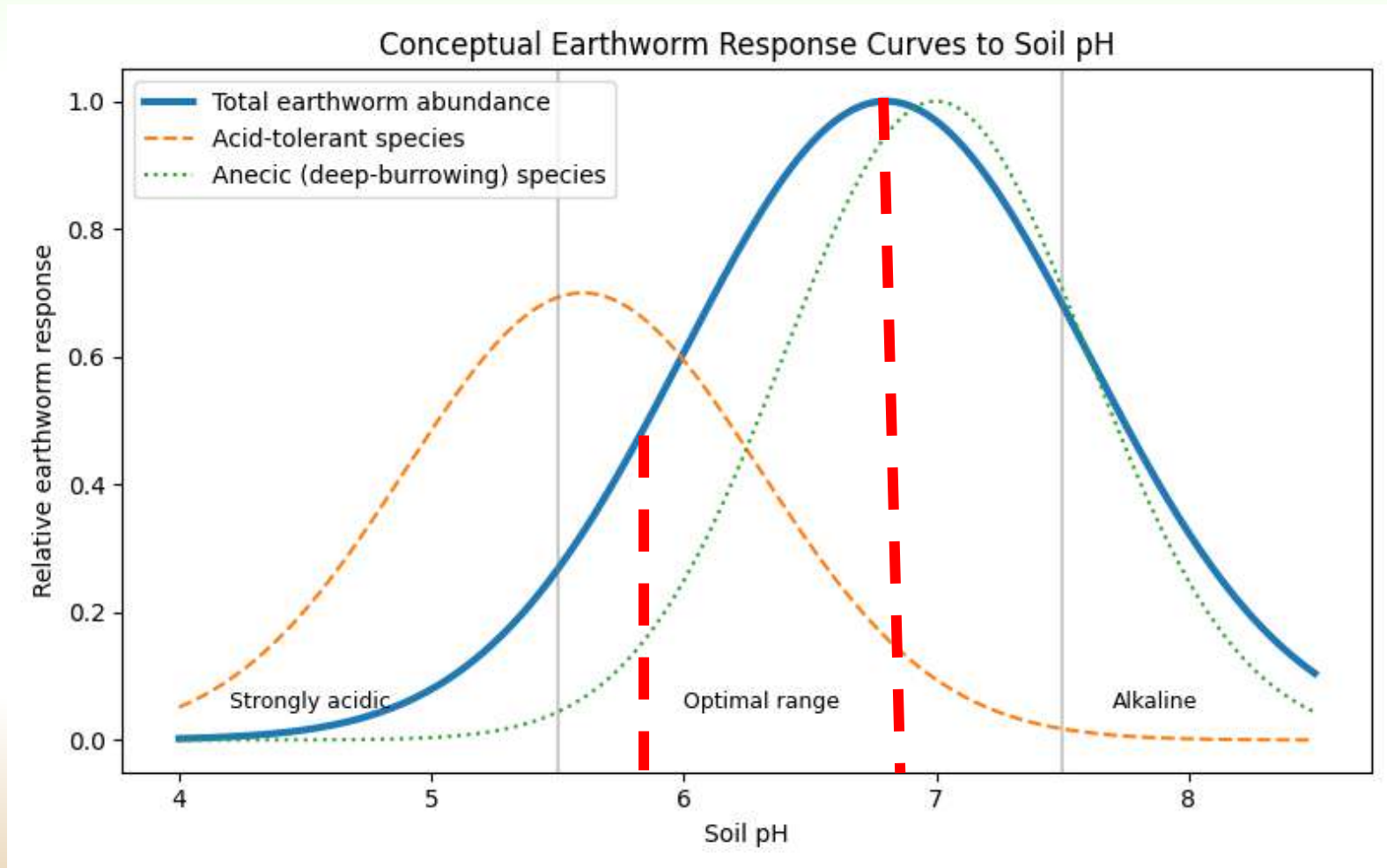
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Soil type	System focus	Long-term acidification risk	Typical pH behaviour	Ecological implications
Sand	Floristic rich (cut & remove)	High (Loss of base cations)	Persistent decline	Rapid worm loss. Poor nutrient cycling . High vulnerability to stress.
Sand	Trophic rich (organic return, grazing)	Moderate (OM and cation buffering)	Slow decline / quasi-stable	Partial trophic integrity retained. Stress resilience

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# Nature Determines What Nature Looks Like



## Time Scale of Biological Damage from Continuous Biomass Removal

Time Scale	Biological Component Affected	What Changes	Reversibility
<b>Weeks–months</b>	Surface microbes	Rapid decline in activity and biomass	✓ Fast if biomass restored
<b>Months (6 m–1 year)</b>	Microbial respiration	Reduced nutrient mineralisation	✓ Fast–moderate
<b>Months–1 year</b>	Mycorrhizal fungi	Fragmentation and reduced colonisation	✓ Moderate
<b>1–2 years</b>	Earthworm activity	Reduced feeding and burrowing	✓ Moderate
<b>2–5 years</b>	Earthworm populations	Decline in abundance and diversity	⚠ Slow recovery
<b>2–5 years</b>	Soil food web	Complexity diminishes loss of trophic levels	⚠ Slow
<b>3–10 years</b>	Microbial community	Shift toward fungi-dominated species	⚠ Slow
<b>5–10 years</b>	Biological aggregation	Reduced biologically-formed aggregates	⚠ Slow
<b>10+ years</b>	Resilience of soil biology	Poor recovery after stress (drought, tillage)	✗ Very slow
<b>Decades</b>	Biological legacy effects	Local extinction of sensitive species	✗ Difficult

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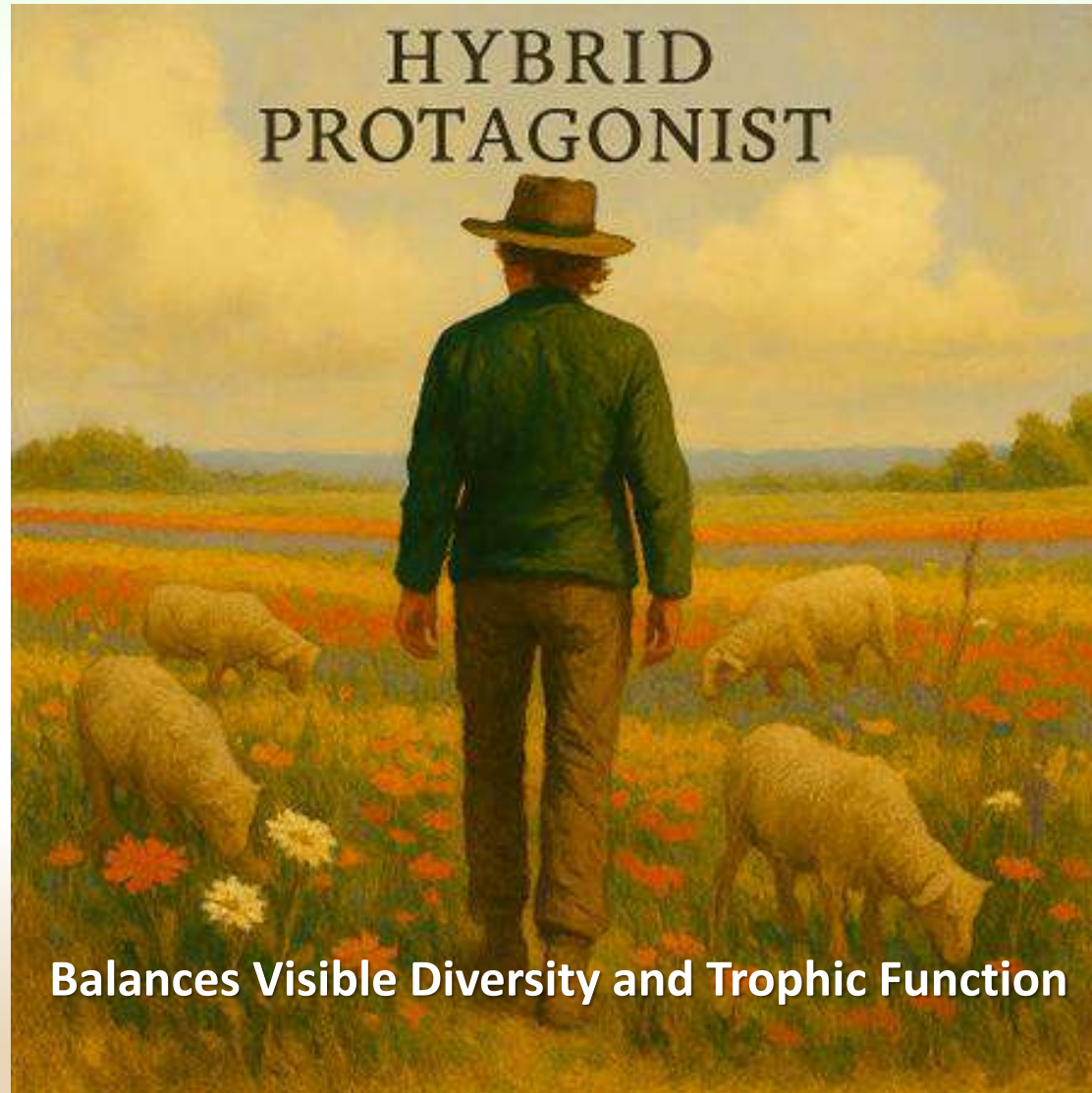
**Removal of organic matter is a  
biologically blunt instrument.**

**But What If??!!**

# Nature Determines What Nature Looks Like



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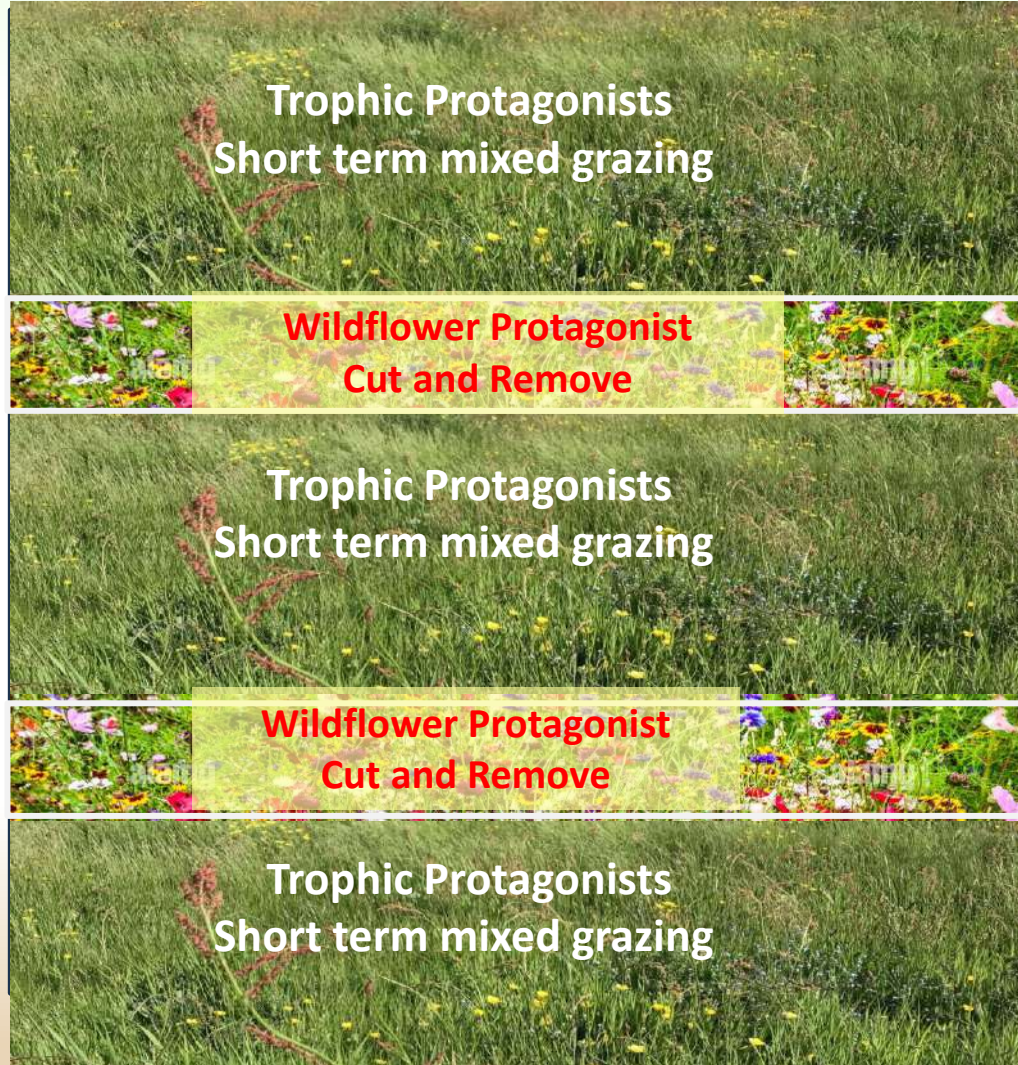


**Balances Visible Diversity and Trophic Function**

# Nature Determines What Nature Looks Like



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# What Do You Think It Looks Like?



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# Thank You!

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