

Moss and Mycelium for Pollinators, Pollution & More!

Presented by:

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Presentation developed with help from
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Sponsored & supported by:

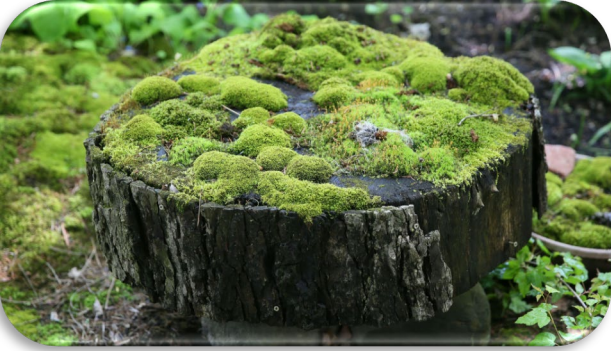


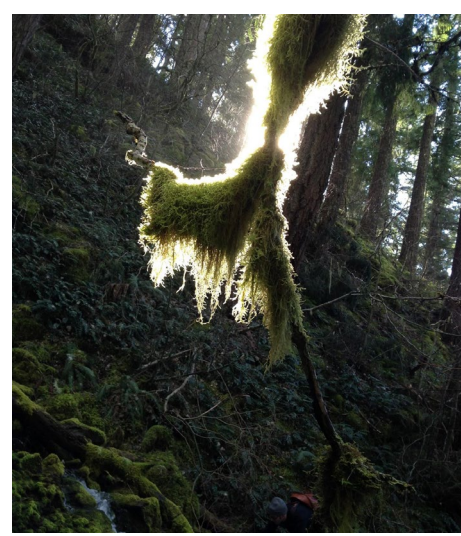
Tualatin Soil and Water
CONSERVATION DISTRICT



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When you hear
“**moss**”
what do you think
of?



pesky



POLL



pretty



What is moss?

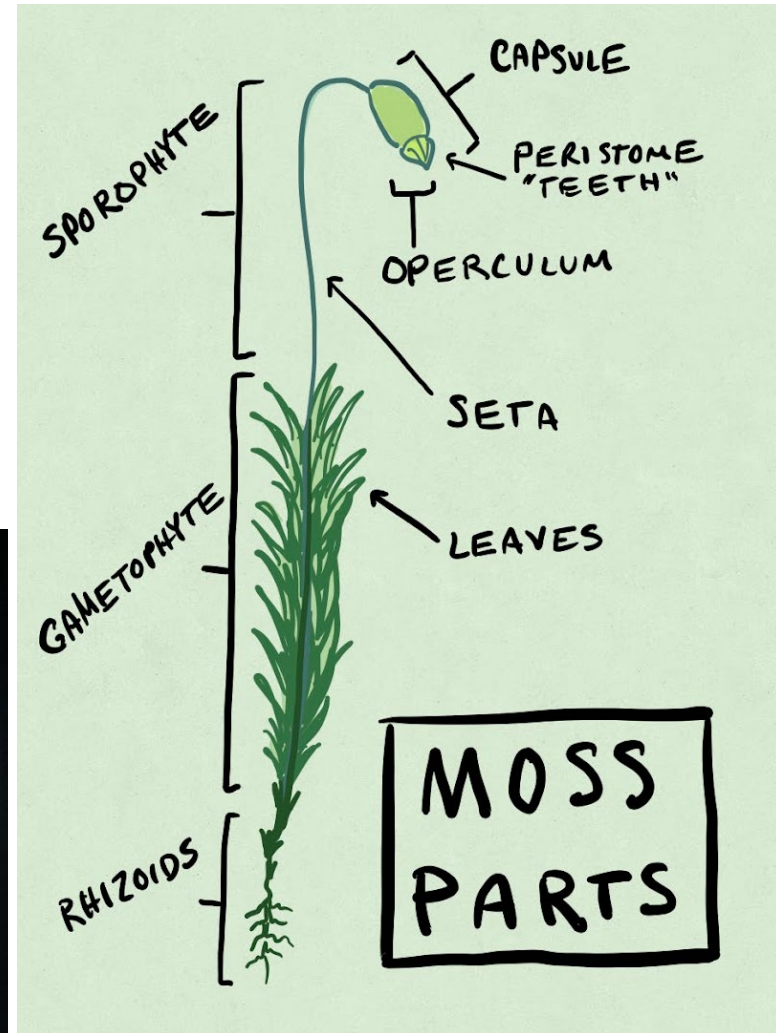
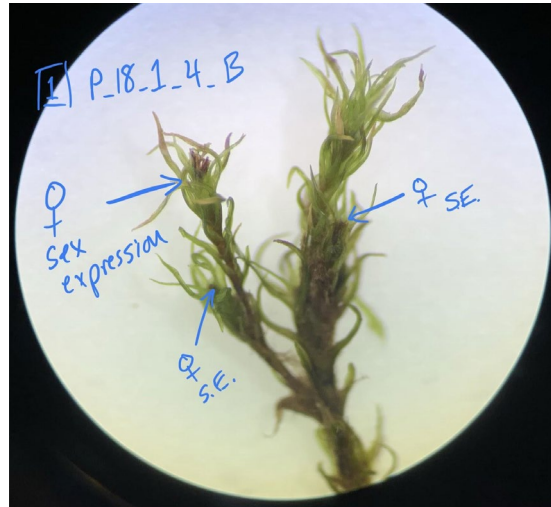
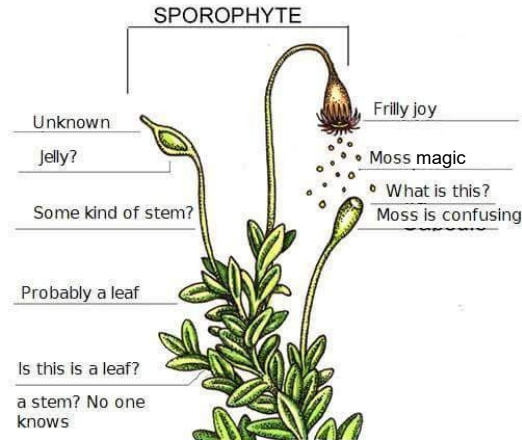
- no 🌻
- Di·oe·cious?
Di·oi·cous!
- spores!

acrocarp (no branch)

pleurocarp (many branch)

archegonia (egg cells)

antheridium (sperm cells)



Fantastic Fungi

<https://www.youtube.com/watch?v=bxABOiay6oA>

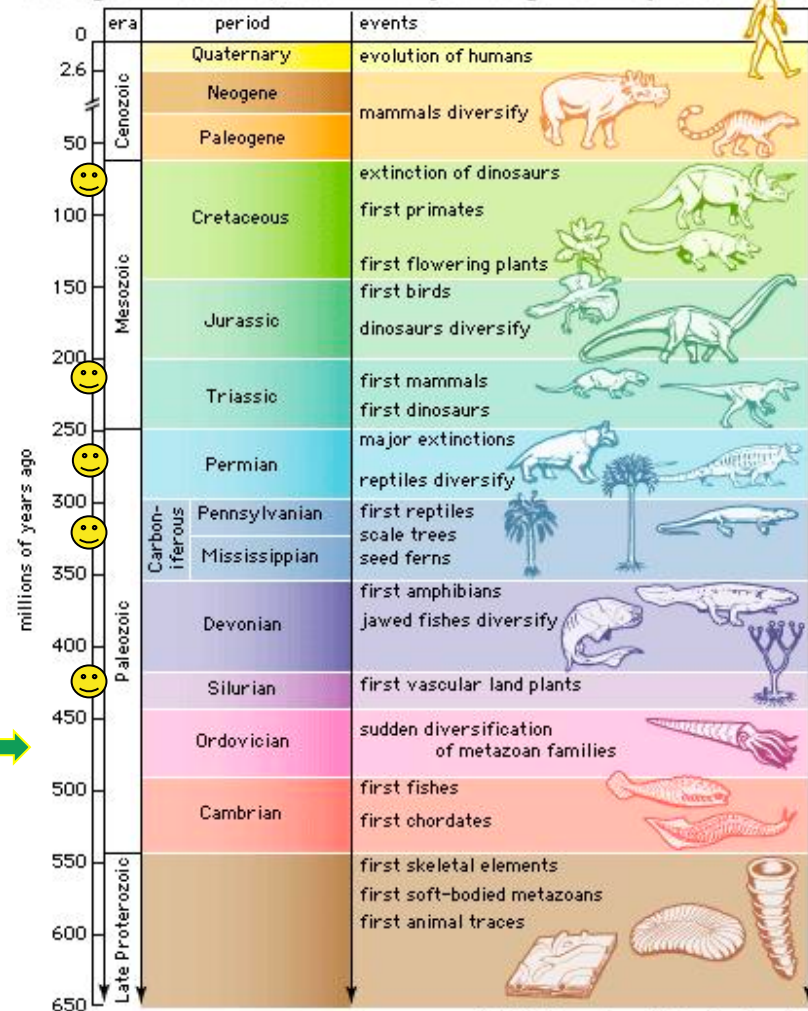
How old are moss? Mycelium?

- Before vascular plants - Paleozoic era
- Individual life-span up to 10 yrs
- Survived 5 of 6 mass extinction events

470+ million years ago



Geologic time scale, 650 million years ago to the present



Humans Moss and Mushrooms:

a love story

- Insulation
- Wound dressing
- Bedding
- Fuel
- Food
- Decoration
- Medicine



themossbagproject.org



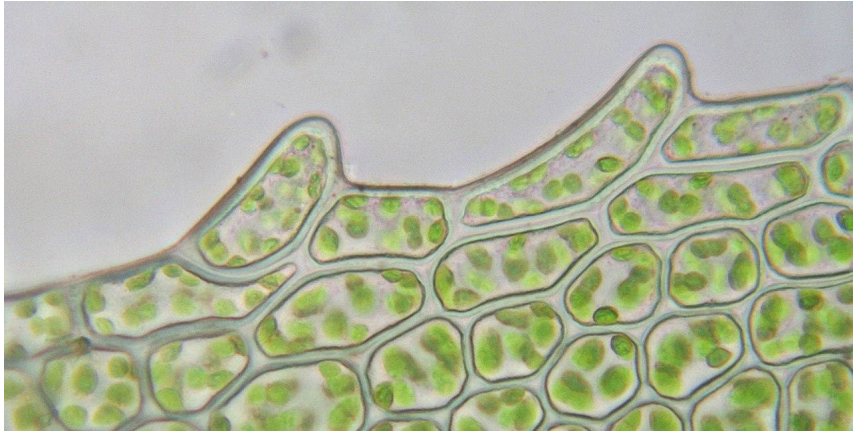
peat moss, SW England 1905



Why are there so many mosses and mushrooms in the PNW?

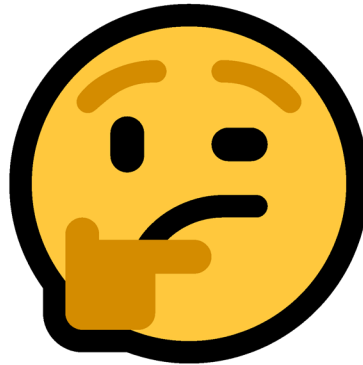
It's wet!

- No vascular system
- Absorb water through each cell
- Leaves are only 1 cell thick!



POLL

How do moss and mushrooms **improve our environment?**



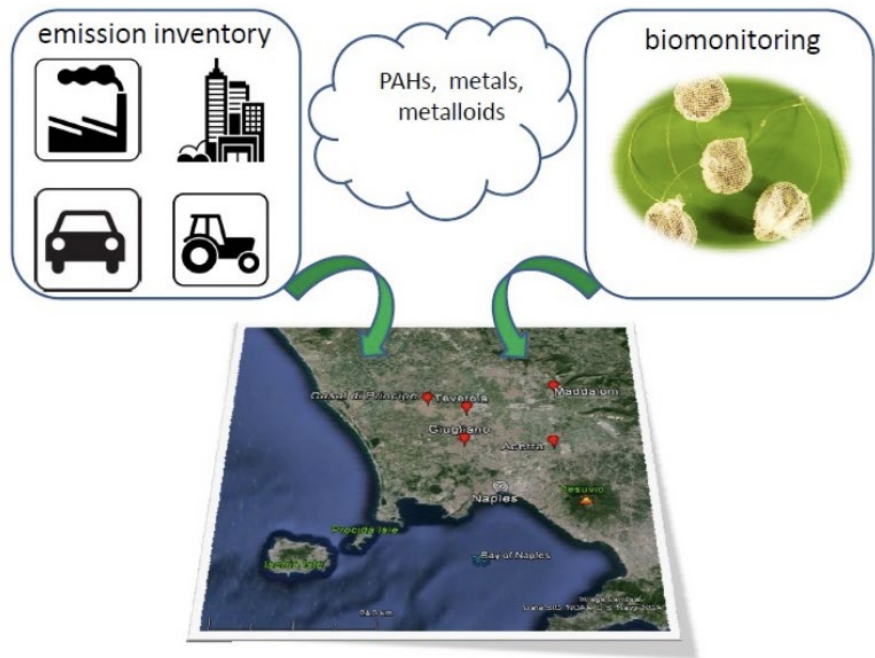
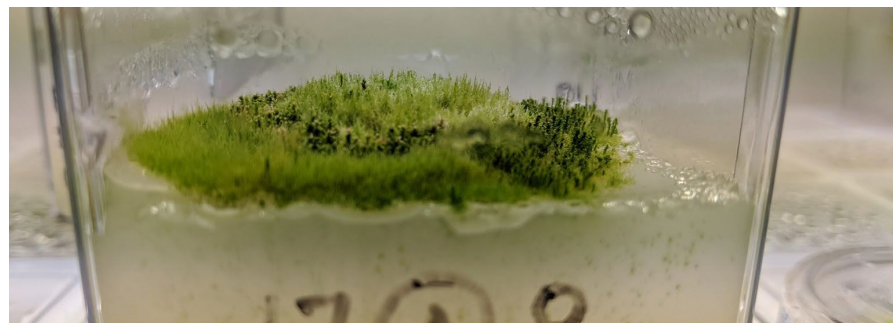


Figure 3. Mossphere design and assembly

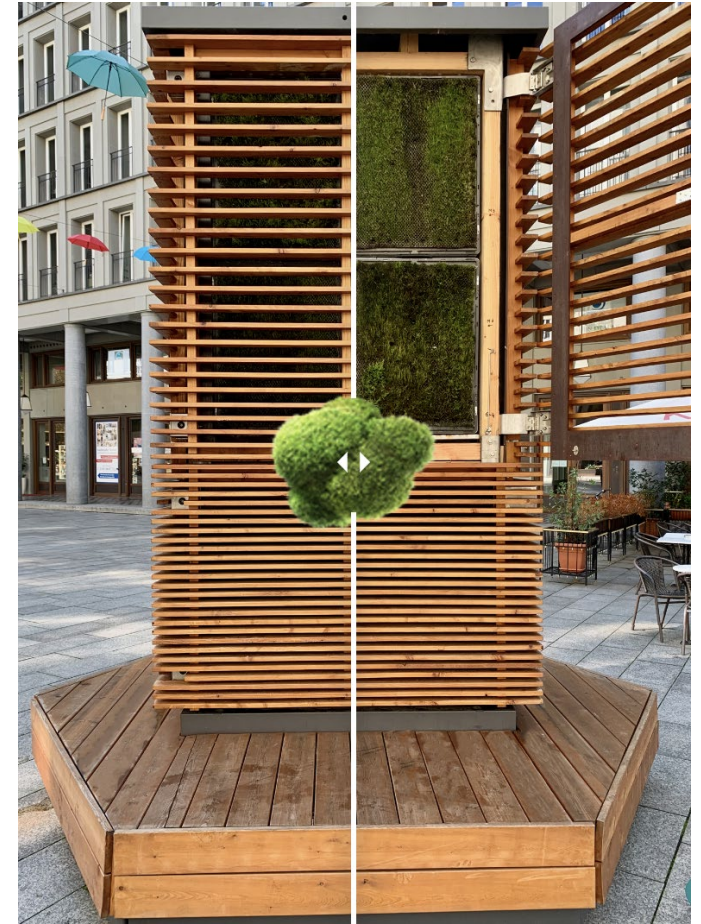


Are there **health benefits** to applying more moss to our environments?

- “Greening” for joy
- Air quality
- Water quality



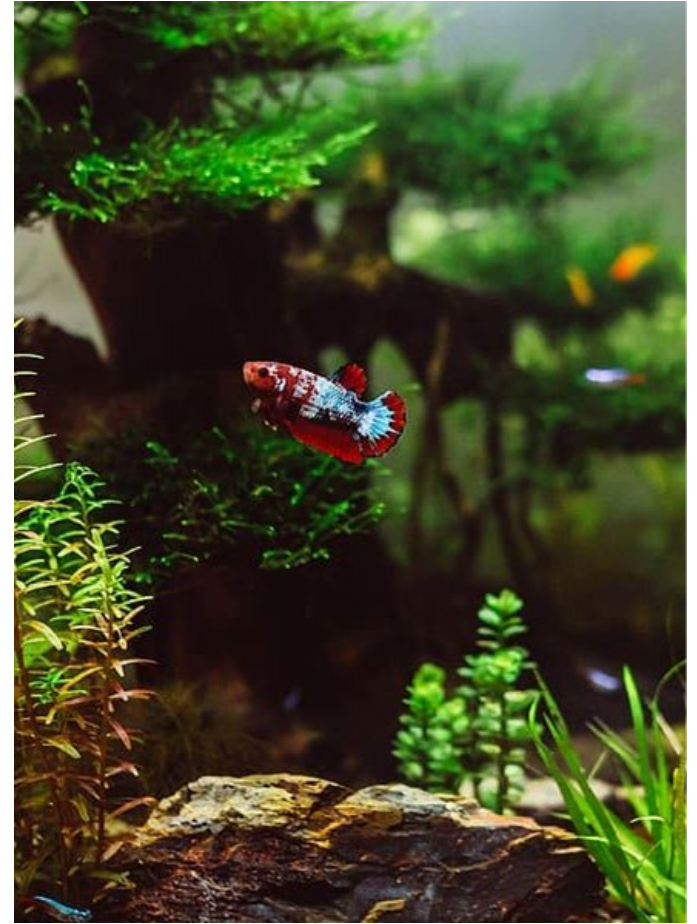
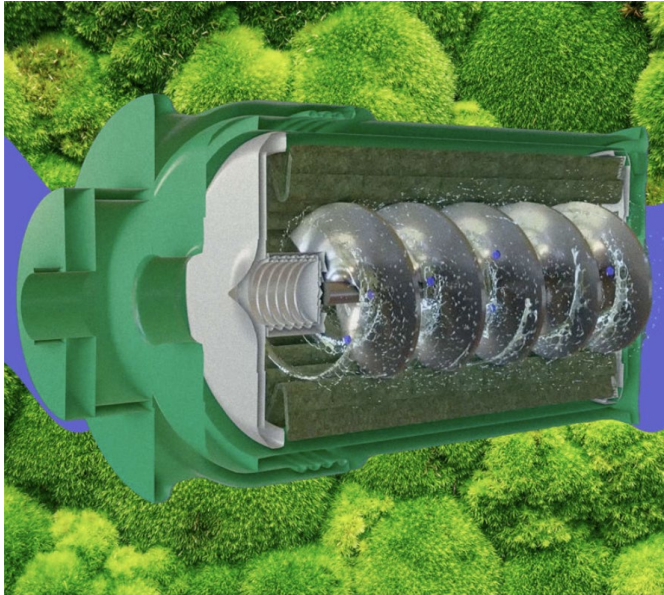
Respyre - bio-receptive material
<https://gorespyre.com/>



Green city Solutions - “Citytree” public air purifier
<https://greencitysolutions.de/en/>

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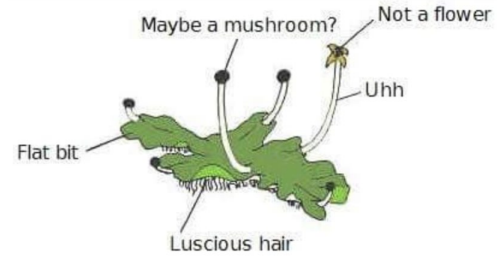


IS IT MOSS?

Can you identify any moss in these pictures?

A), B), C), D) None, or E) what is moss ?

Liverworts: like a moss.
But flat. And weirder.



A



B



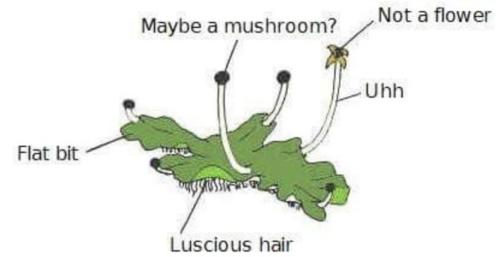
C

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B



C

Sustainable harvest

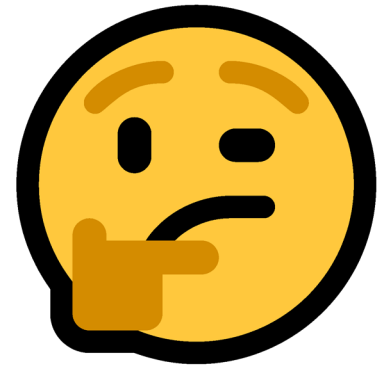
- location
- tools
- moderation
- safe controls?



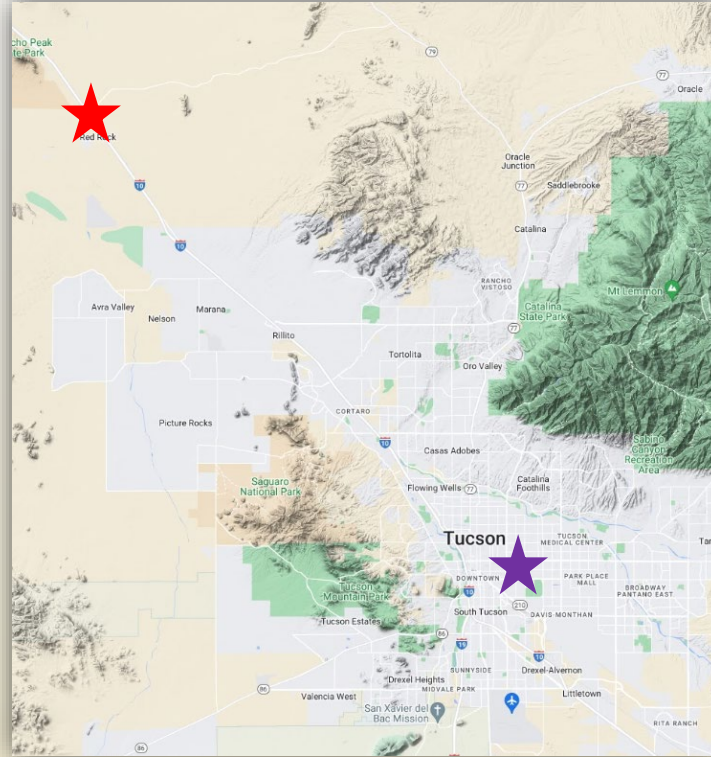
POLL

How would you rank your interest in these moss activities?

- A) Moss propagation workshop
- B) Moss walk
- C) How to incorporate moss into your landscape?
- D) How to sustainably manage moss on your property?
- E) Moss meetup
- F) All of the above!



Red Rock Demonstration Site



Why soil health?

- Circle of life!
- Floods
- Erosion
- Dust storms
- Extreme heat
- Nutrient dense food production
- Challenges with plant establishment
- Synthetic & organic chemicals address symptoms, not cause





Take Aways

- We need to embrace and celebrate death in our work in order to bring more life into the world,
- Not all compost is created equal,
- Where there are human produced chemicals, nature/biology can do it better.

CHOMP + STOMP™



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Soil health for urban infiltration



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What is healthy soil?

- Native/adapted vegetation above
- Deep roots below
- Complex, diverse fungal, microbial life
 - Fungal:Bacterial (F:B) ratio > 1



Image source:
www.ridgedalepermaculture.com/

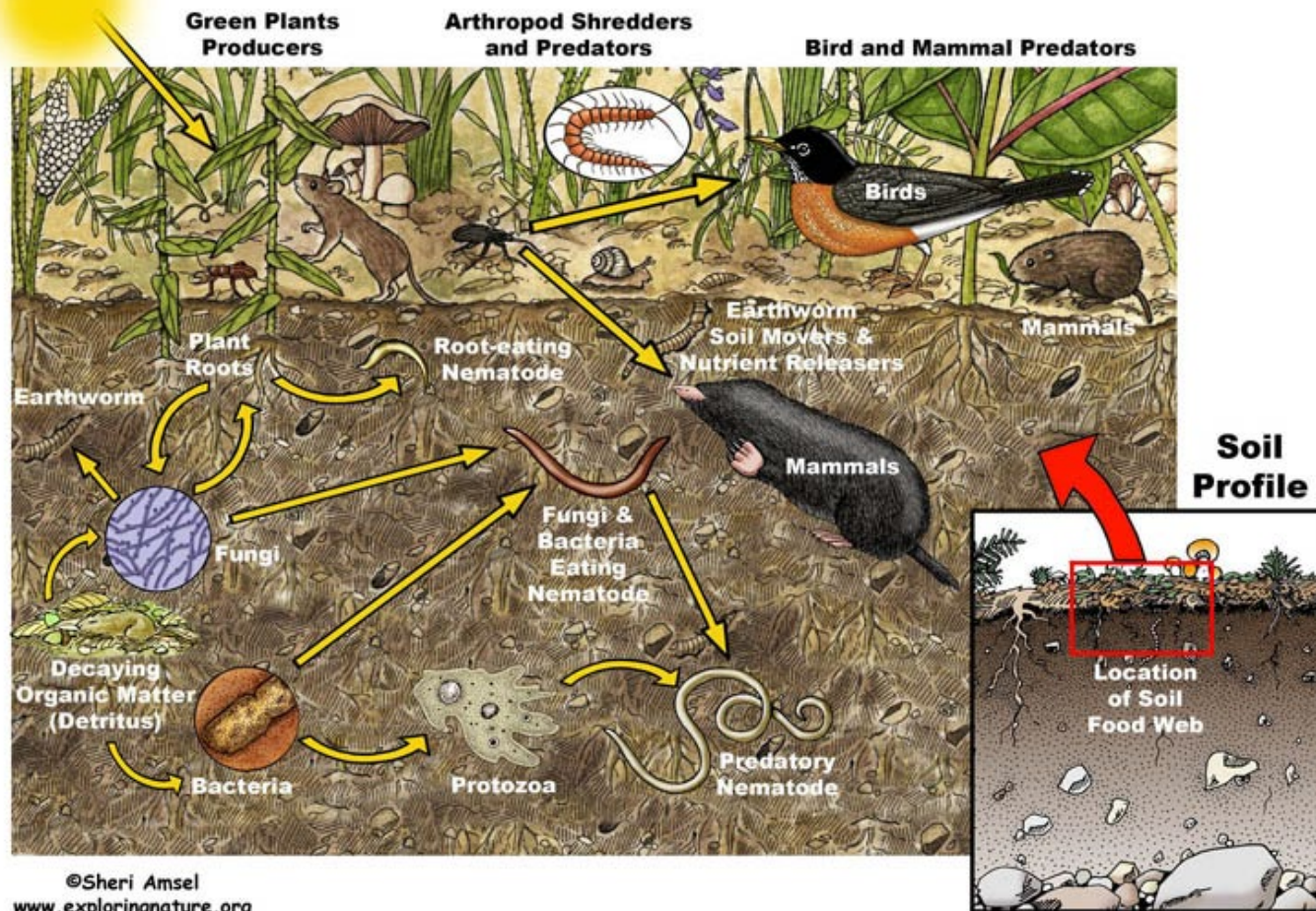


Photo credit: unknown
Pictured: mycelial network



Photo credit: Jim Richardson
Pictured: Jerry Glover

Soil Food Web



What is healthy soil?

	Minimum Biological Requirements*	Custom-Made BSA Sample**	Example Municipal Compost
Bacterial Biomass (ug/g)	135	6,016	1,996
Fungal Biomass (ug/g)	135	153	0
F:B ratio	0.3:1	0.3:1	0:1
Protozoa (ug/g)	10,000	1,182,040	0
Beneficial Nematodes (per g)	100	7,500	0
Ciliates	<5	8,152	0

Biological Soil Amendments



- Biological Soil Amendments (BSAs) are biologically active compost products including solids, extracts, and teas.
- BSAs primary function is to restore the soil food web to efficiently cycle water and nutrients through the ecosystem.



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BSA Application



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What systems do we want to support?

AN ECONOMY

Place - Culture - Enterprise - Government - Commons



LESS
Energy / Materials
Required

Holistic Thinking
Patterns

Natural System Design

REGENERATING

CONVENTIONAL

GREEN

SUSTAINABLE

RESTORATIVE

REGENERATIVE

DEGENERATING

Mechanistic Design

Reductionist Thinking

Parts

MORE

Energy / Materials
Required



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How can citizens advocate for healthy soils?

- Support and advocate for chemical-free public spaces
 - Landscapes, buildings
- Develop and support biologically based businesses



Opportunities

- Increase health of communities and landscapes
- Reduce costs & externalities
- Create circular local systems
 - Reduce imports of nutrients and materials
 - Local resources better adapted to local conditions



What future do you want?

Kieran Sikdar

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Thank you!

