

DAKOTA GRASSLANDS  
where good things



# SPACE EXPLORERS

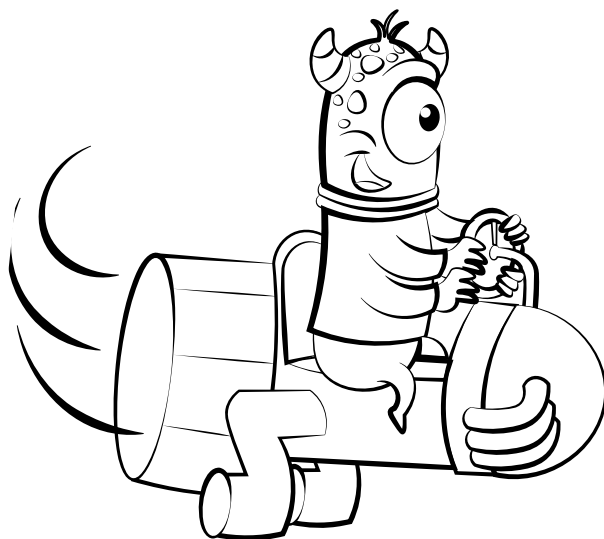


# AND THE GREAT GRASSLANDS TREASURE



STORY BY  
**RON NICHOLS**

ILLUSTRATIONS BY  
**CAT BAILEY**



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Natural Resources Conservation Service  
U.S. DEPARTMENT OF AGRICULTURE



South Dakota  
**Soil Health  
Coalition**



South Dakota's  
**Conservation Districts**

**CAPTAIN, WE'RE APPROACHING THE LANDING SITE.**

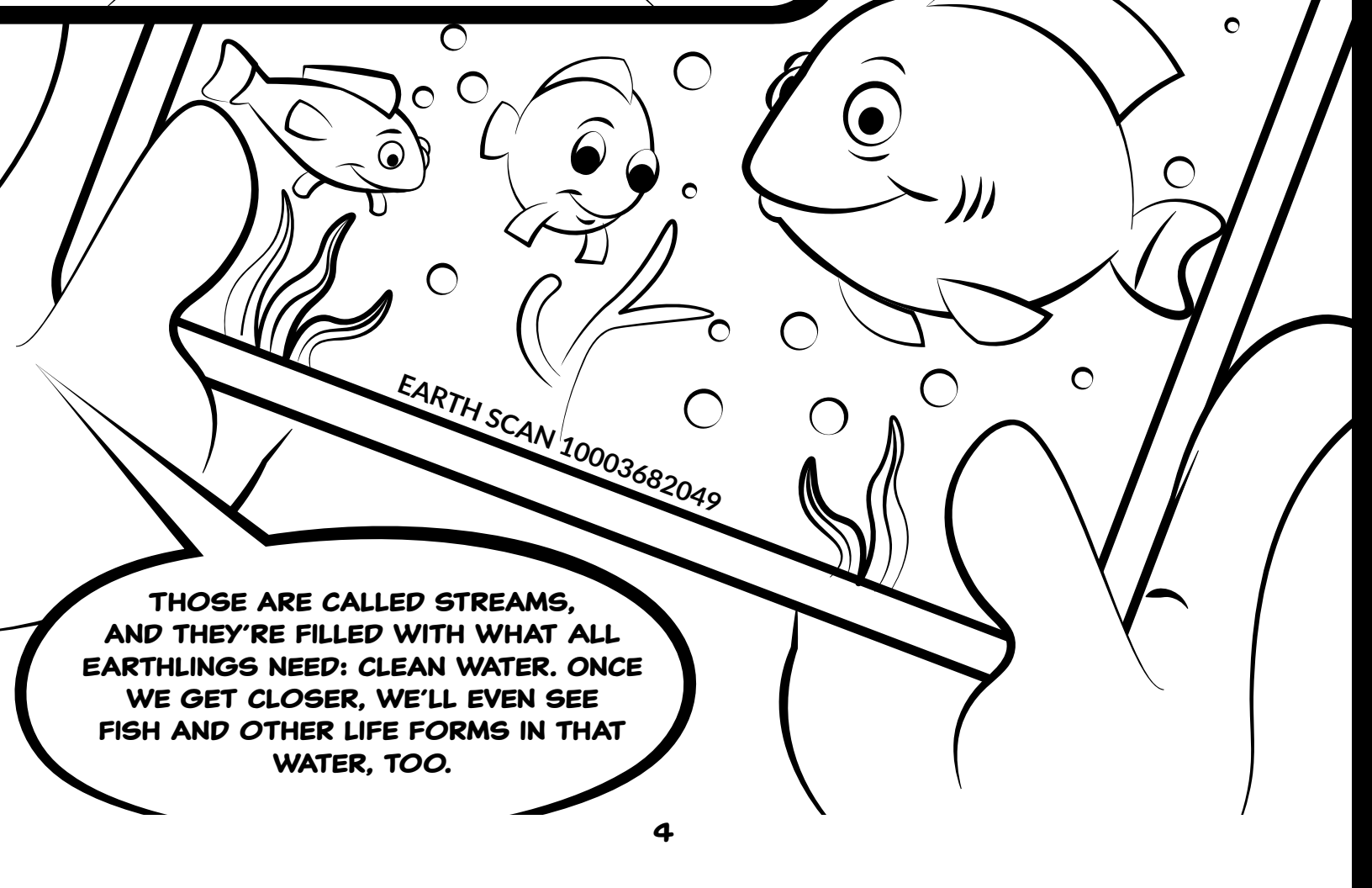
**ANY SIGNS THAT  
WE'VE BEEN  
DETECTED?**

**NO, CAPTAIN.  
OUR STEALTH  
MODE IS  
WORKING  
PERFECTLY.**

**GOOD. THIS IS A TOP-SECRET MISSION TO  
DISCOVER THE SOURCE OF THE TREASURES IN EARTH'S GRASSLANDS.  
WE NEED TO LEARN ALL WE CAN AND REPORT OUR FINDINGS  
TO THE STARSHIP.**



WOW! LOOK  
AT THAT BEAUTIFUL  
SEA OF GRASS.  
WHAT ARE THOSE  
PRETTY, BLUE  
RIBBONS?

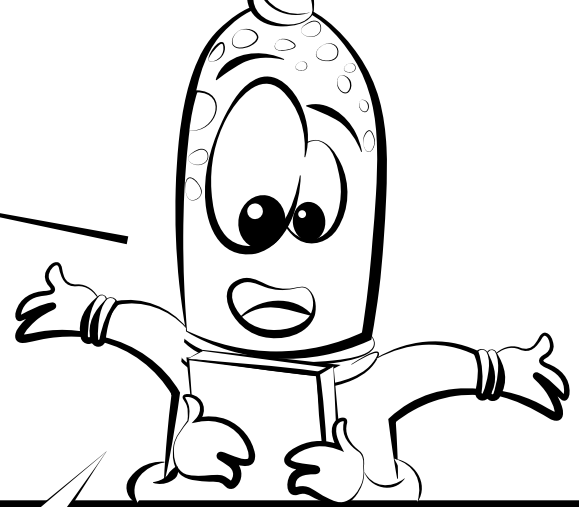


THOSE ARE CALLED STREAMS,  
AND THEY'RE FILLED WITH WHAT ALL  
EARTHLINGS NEED: CLEAN WATER. ONCE  
WE GET CLOSER, WE'LL EVEN SEE  
FISH AND OTHER LIFE FORMS IN THAT  
WATER, TOO.

EARTH SCAN 10003682049

**ANOTHER POSSIBLE LIFE FORM SPOTTED, CAPTAIN!  
THEY'RE LARGE CREATURES, ROAMING ON THE  
GROUND, AND THEY APPEAR TO BE EATING  
SOMETHING. OUR COMPUTERS SAY THEY'RE CALLED  
CATTLE, BISON, DEER AND PRONGHORN ANTELOPE.**

**YES, THEY ARE ALL GRAZING ANIMALS THAT EAT  
THE TOPS OF THE GRASSES AND THEN MOVE  
ALONG SO THE GRASSES CAN RECOVER AND  
REGROW. THEY'RE ALSO LEAVING SOMETHING  
BEHIND, BUT I CAN'T TELL FROM HERE WHAT IT IS.**

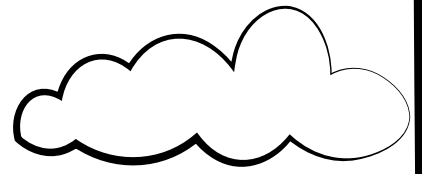


**ONCE WE LAND,  
WE'LL TAKE A  
CLOSER LOOK.**

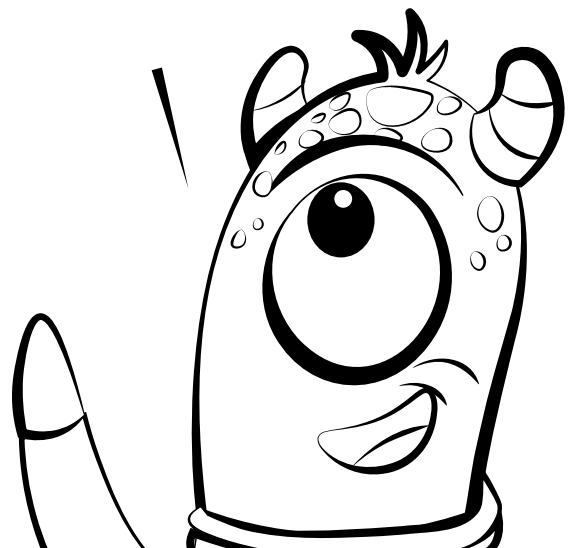


EARTH SCAN 10003682049

**CAPTAIN, I SEE OTHER FLYING  
OBJECTS DIRECTLY BELOW.**



**OH YES, I SEE THEM, TOO.  
BIRDS—ANOTHER AMAZING GRASSLAND  
LIFE FORM. THEY NEST IN THE GRASS  
AND HELP KEEP INSECTS IN CHECK. THIS  
PLACE HAS SO MANY LIVING TREASURES.**



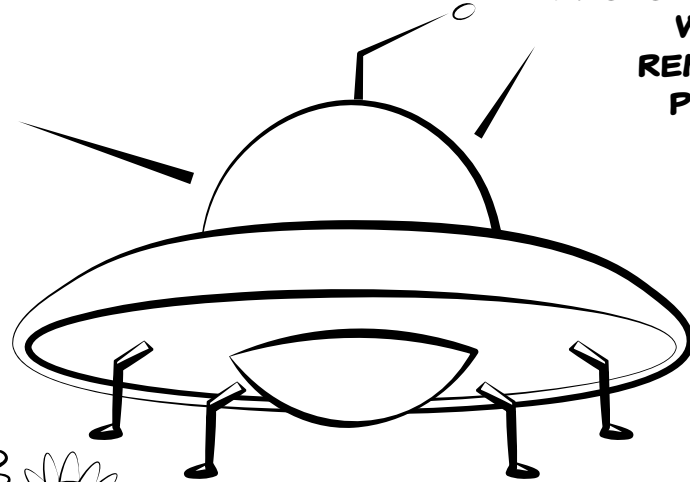
**EARTH SCAN 10003682050**

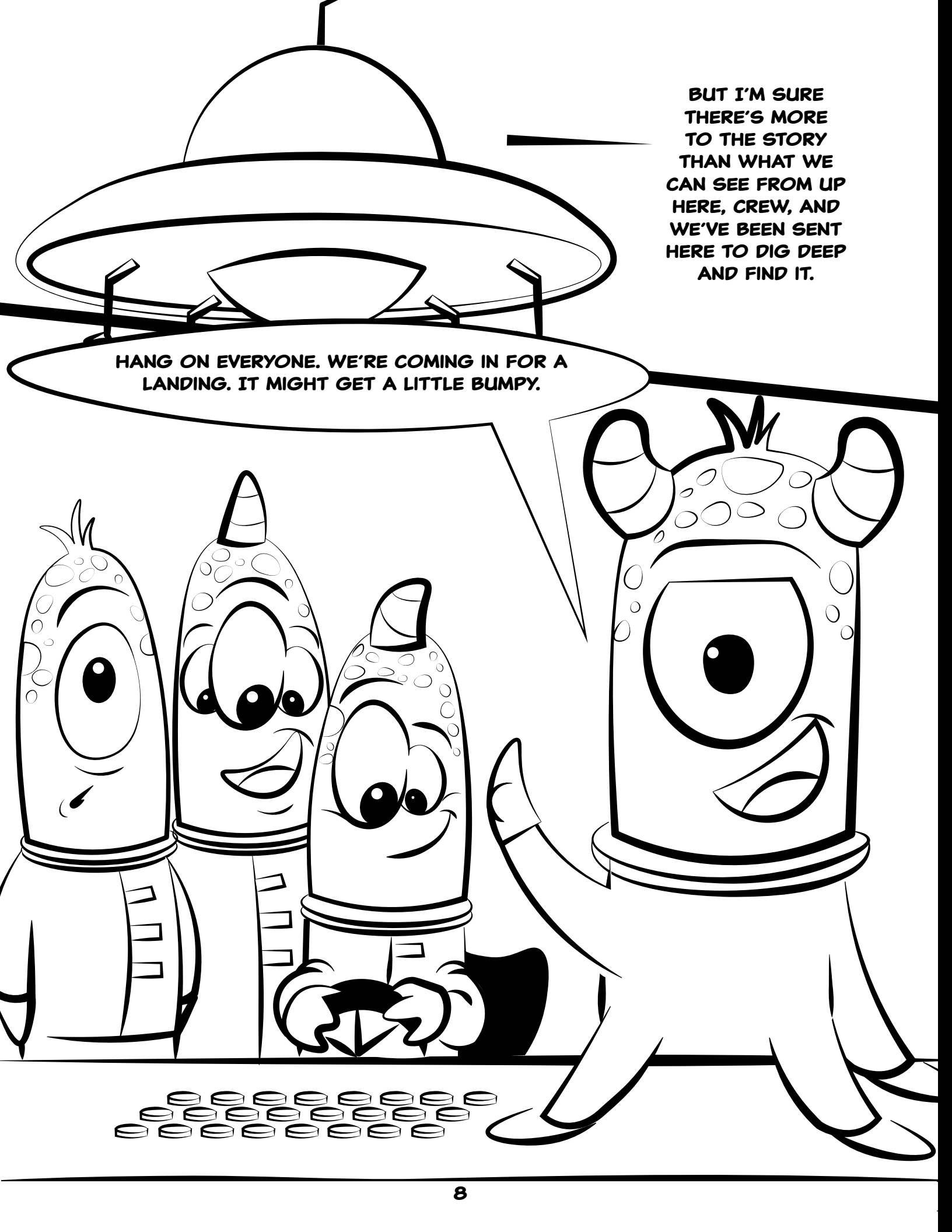


I'M NOT SURPRISED BECAUSE THE GROUND IS COVERED WITH GRASS AND OTHER PLANTS, SO THERE'S NO DUST IN THE AIR. AND ALL OF THOSE GRASSLAND PLANTS ARE COLLECTING SUNLIGHT AND CARBON DIOXIDE FROM THE AIR AND ARE PRODUCING PLANT SUGARS AND OXYGEN. IT'S CALLED "PHOTOSYNTHESIS."

NOW OUR SHIP'S SENSORS ARE SAYING WE'RE FLYING THROUGH VERY CLEAN AIR THAT'S RICH WITH OXYGEN.

WHAT A REMARKABLE PROCESS.

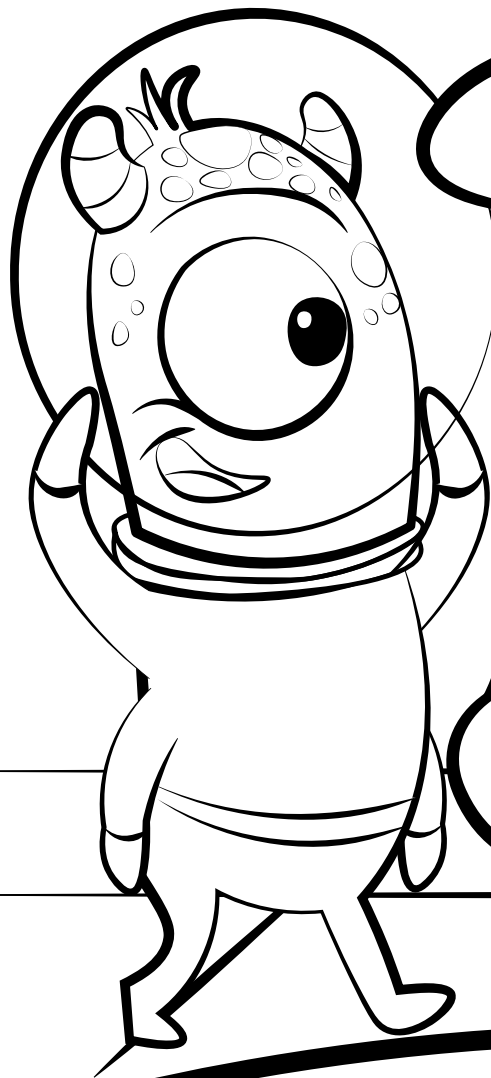




BUT I'M SURE  
THERE'S MORE  
TO THE STORY  
THAN WHAT WE  
CAN SEE FROM UP  
HERE, CREW, AND  
WE'VE BEEN SENT  
HERE TO DIG DEEP  
AND FIND IT.

HANG ON EVERYONE. WE'RE COMING IN FOR A  
LANDING. IT MIGHT GET A LITTLE BUMPY.

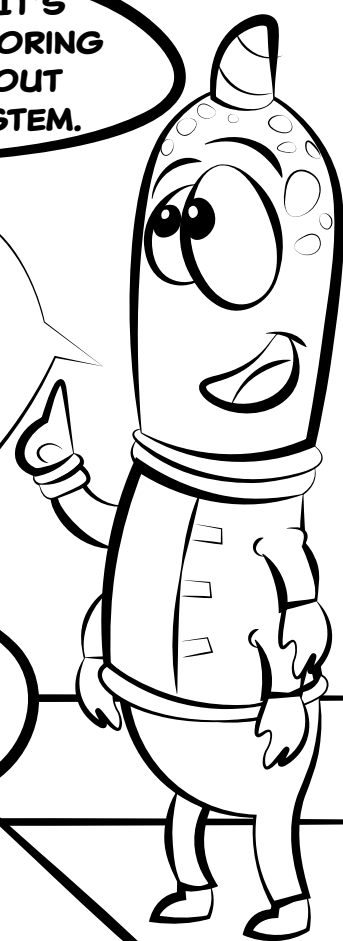




NICE LANDING, PILOT. IT'S TIME TO DO SOME EXPLORING AND LEARN MORE ABOUT THIS AMAZING ECOSYSTEM.

THE EXPLORER PODS ARE READY, CAPTAIN.

GOOD. LET'S MOUNT UP AND SEE WHAT WE CAN LEARN.



SET YOUR "SHRINK SETTINGS" TO 10, TEAM. THAT SHOULD MAKE US SMALL ENOUGH TO FLY THROUGH THE GRASS WITH EASE.



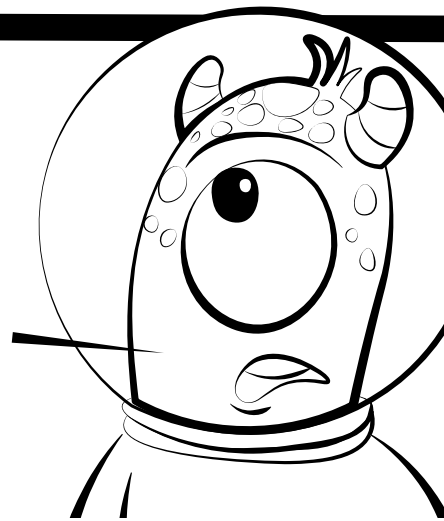
JUST LOOK AT ALL OF THOSE INSECTS ON THE GRASS LEAVES AND ON THE GROUND. WOW, THERE ARE EVEN FLYING ONES, TOO.

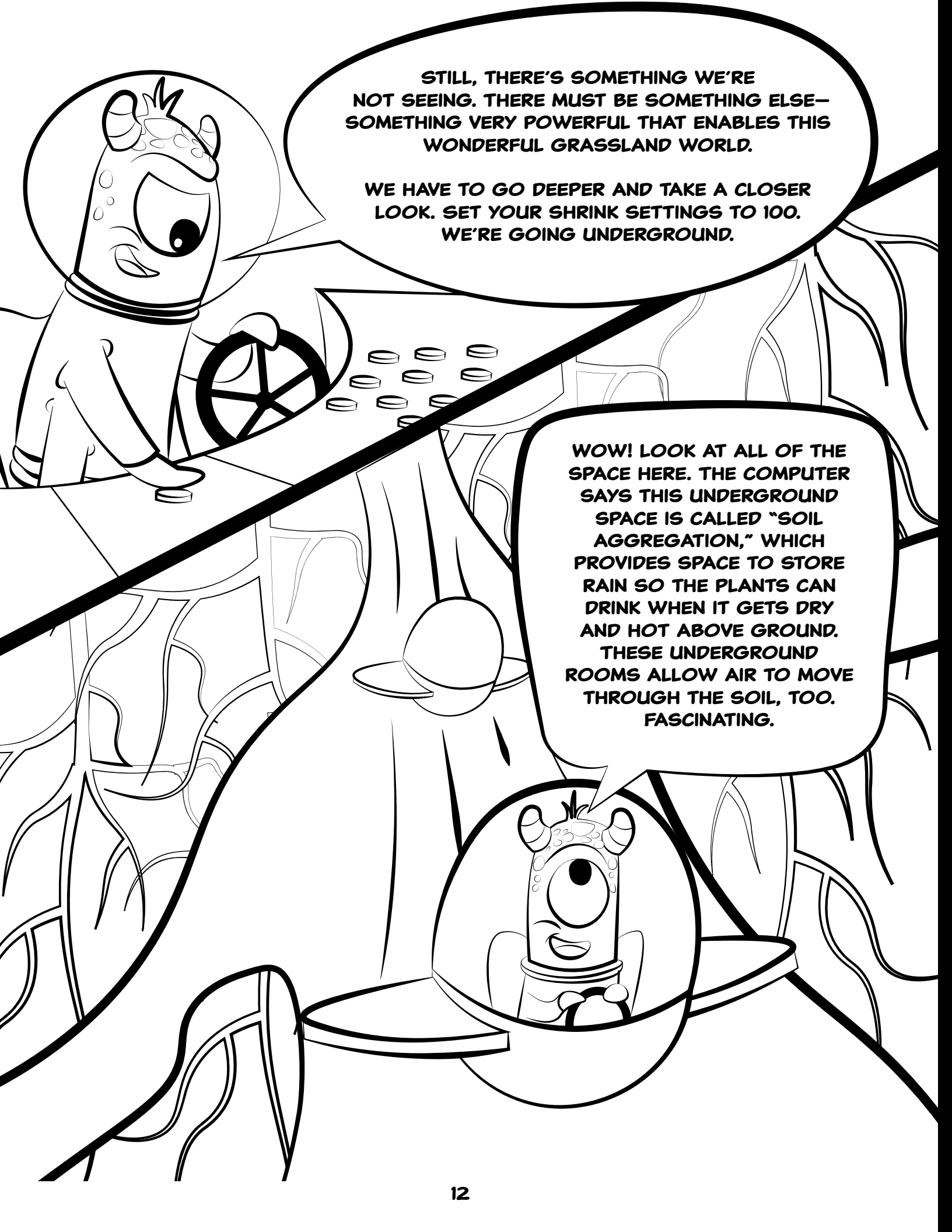
ACCORDING TO MY COMPUTER, MANY OF THE FLYING ONES ARE CALLED POLLINATORS. THEY HELP THE PLANTS MAKE SEEDS TO FEED THE INSECTS AND ANIMALS—AND TO SPROUT AND GROW MORE PLANTS.



**WHAT ARE THESE DARK PILES THE GRAZING ANIMALS ARE LEAVING BEHIND?**

**YES, THAT'S WHAT I WAS HOPING TO GET A CLOSER LOOK AT. OH, I SEE. IT'S MANURE. THEIR STOMACHS ARE RECYCLING THE GRASS THEY'VE EATEN SO OTHER INSECTS CAN BREAK DOWN THE NUTRIENTS TO FEED THE PLANTS AGAIN. HOW INGENIOUS!**





**STILL, THERE'S SOMETHING WE'RE NOT SEEING. THERE MUST BE SOMETHING ELSE—SOMETHING VERY POWERFUL THAT ENABLES THIS WONDERFUL GRASSLAND WORLD.**

**WE HAVE TO GO DEEPER AND TAKE A CLOSER LOOK. SET YOUR SHRINK SETTINGS TO 100. WE'RE GOING UNDERGROUND.**

**WOW! LOOK AT ALL OF THE SPACE HERE. THE COMPUTER SAYS THIS UNDERGROUND SPACE IS CALLED "SOIL AGGREGATION," WHICH PROVIDES SPACE TO STORE RAIN SO THE PLANTS CAN DRINK WHEN IT GETS DRY AND HOT ABOVE GROUND. THESE UNDERGROUND ROOMS ALLOW AIR TO MOVE THROUGH THE SOIL, TOO. FASCINATING.**

OKAY, LET'S FOLLOW THESE PLANT ROOTS DOWN THROUGH THE SOIL TO SEE WHERE THEY LEAD US. SET YOUR SHRINK SETTINGS TO 200. WE'RE GOING DEEPER.

WOW, WHAT ARE ALL OF THESE STRUCTURES?

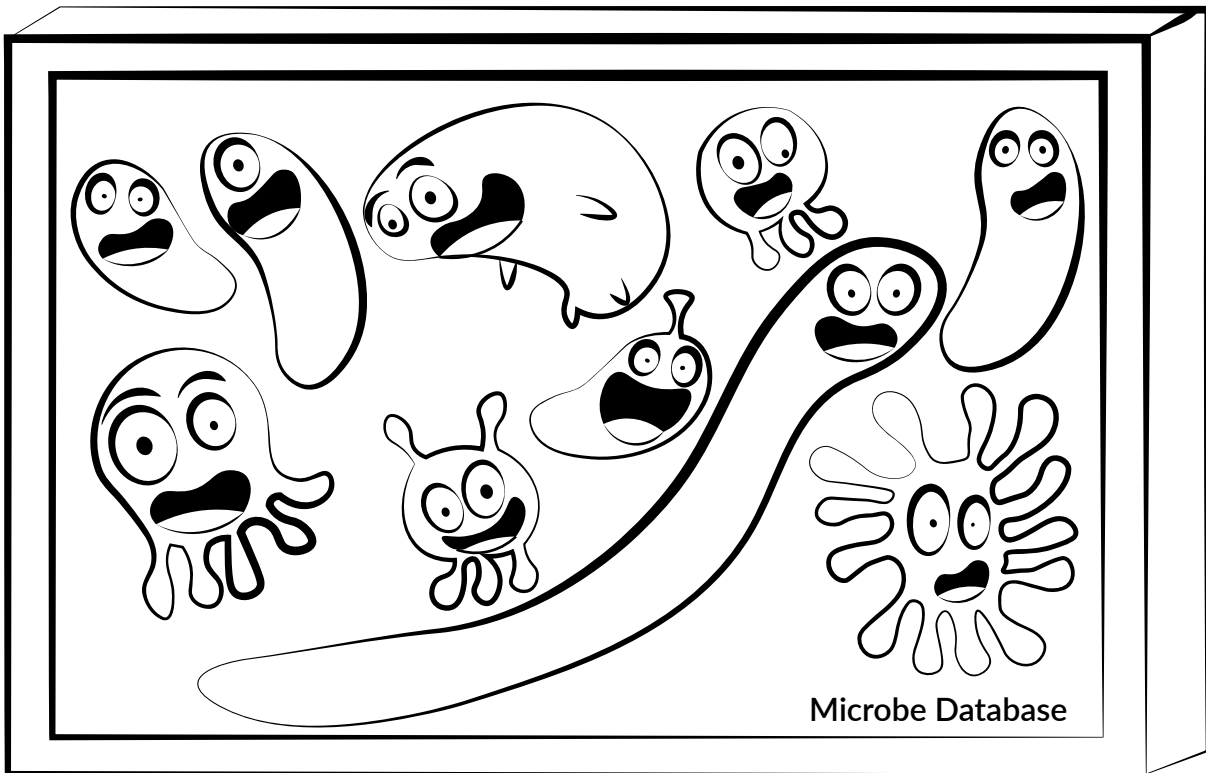
THE COMPUTER SAYS THEY'RE CALLED "ROOTS."

BUT I SUSPECT THOSE ROOTS DO MORE THAN WHAT WE CAN SEE HERE. SET YOUR SHRINK SETTINGS TO 500 AND HOLD ON. WE'RE GOING DEEPER

THERE SEEM TO BE AS MANY ROOTS BELOW GROUND AS THERE ARE PLANTS ABOVE. WHAT IS THEIR PURPOSE?

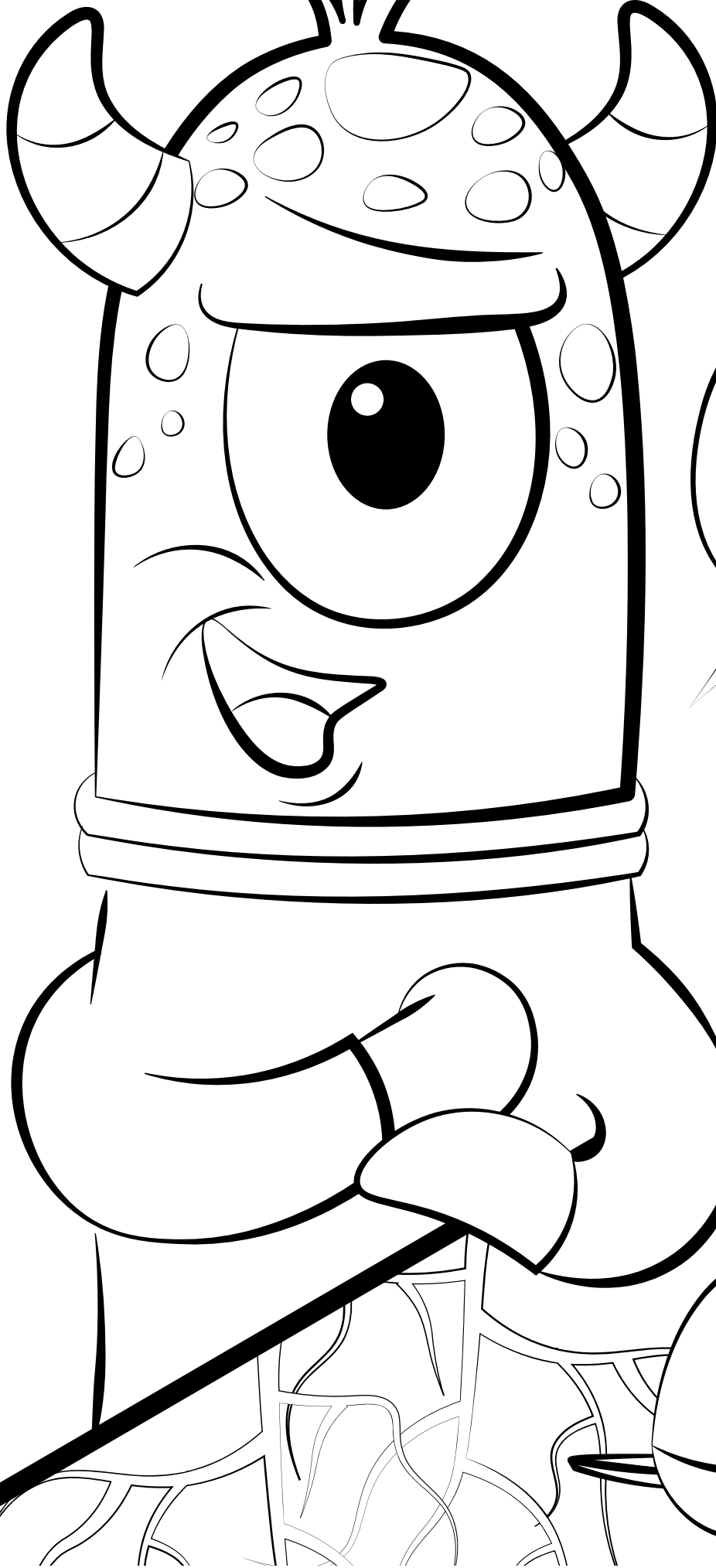
IT APPEARS THESE ROOTS ALSO REACH DEEP TO GET WATER FOR THE PLANTS TO DRINK, AND THEY ALSO KEEP THE PLANTS AND SOIL IN PLACE NO MATTER HOW HARD THE WIND BLOWS. THEY SURE GO DEEP INTO THE SOIL. RIGHT NOW, WE ARE 10 FEET BELOW THE SOIL SURFACE!

**CAPTAIN. OVER HERE. WHAT ARE THESE STRANGE THINGS? THE PLANTS SEEM TO BE FEEDING THEM FROM THEIR ROOTS, AND SOME OF THESE CREATURES ARE EATING EACH OTHER.**



**YES, THE DATABASE SAYS THEY ARE CALLED SOIL MICROBES. THE PLANTS FEED THEM BECAUSE THE MICROBES PROVIDE THE PLANTS WITH NUTRIENTS THE PLANTS CAN'T GET ON THEIR OWN. AND THOSE LITTLE CREATURES APPEAR TO BE RESPONSIBLE FOR BUILDING THE ROOMS WE SAW EARLIER—PROVIDING WATER STORAGE AND SPACE FOR THEMSELVES. THEY ARE TRULY AMAZING AND THERE ARE BILLIONS OF THEM.**

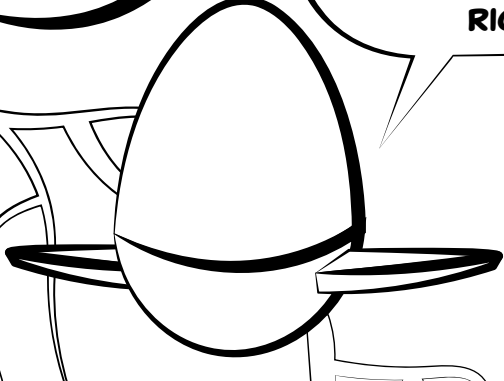
**YES, IT SEEMS THOSE LITTLE MICROBES ARE KEY TO POWERING THIS UNDERGROUND WORLD—AND THE LIFE ABOVE IT.**



**WE HAVE DISCOVERED WHAT  
REALLY CREATES THE TREASURES  
IN THE GRASSLANDS.**

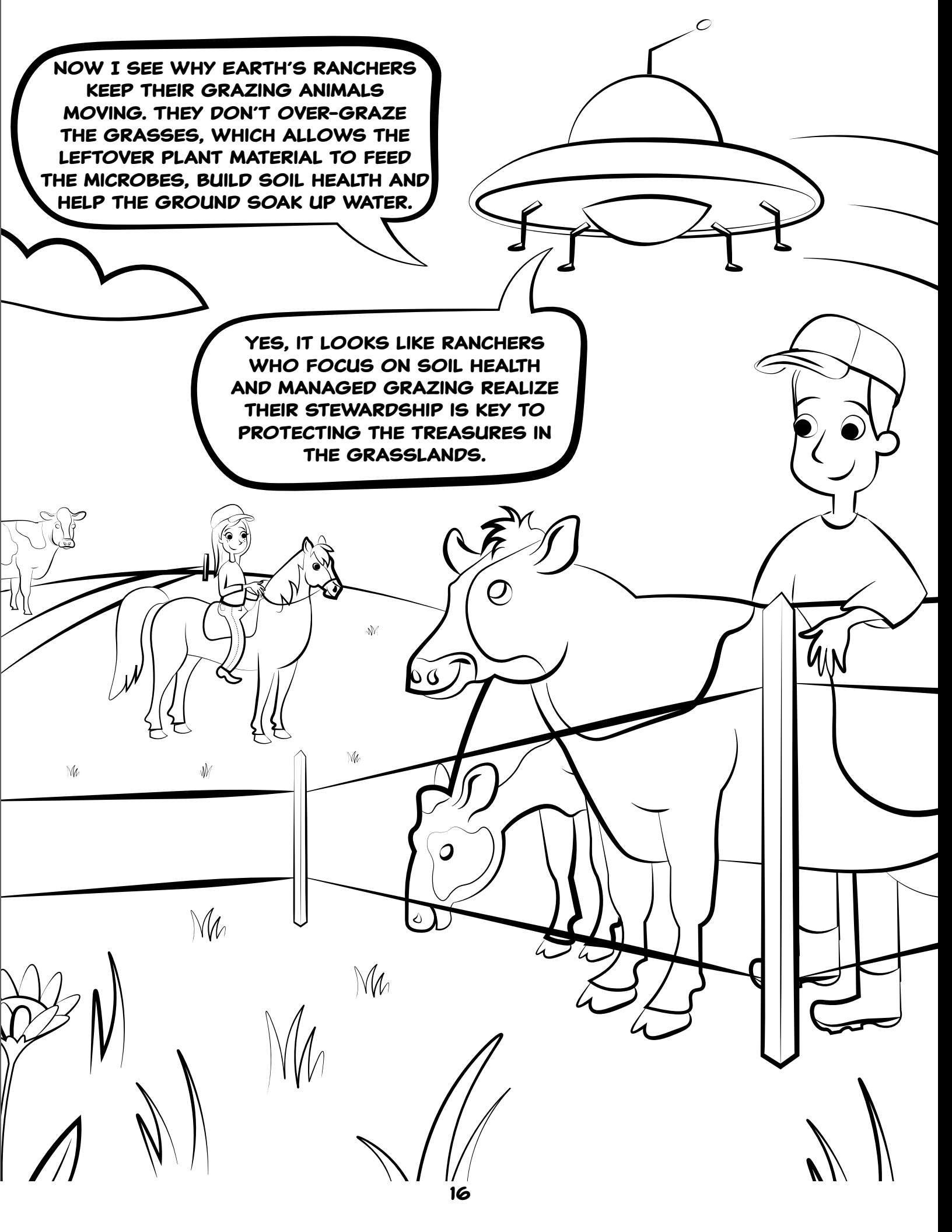
**THE SECRET'S IN  
THE SOIL!**

**LET'S GET ABOVE GROUND  
AND UN-SHRINK. THEN WE  
NEED TO GET BACK TO THE  
SHIP. WE MUST REPORT ALL  
OF THESE DISCOVERIES  
BACK TO THE STARSHIP  
RIGHT AWAY.**

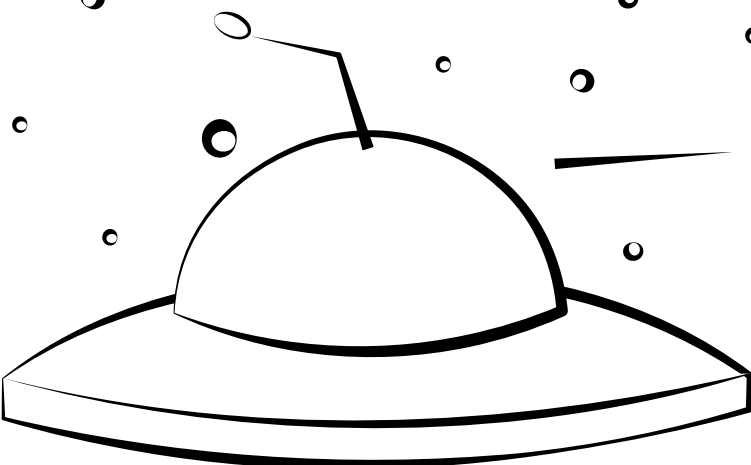
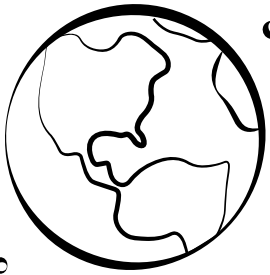


**NOW I SEE WHY EARTH'S RANCHERS  
KEEP THEIR GRAZING ANIMALS  
MOVING. THEY DON'T OVER-GRAZE  
THE GRASSES, WHICH ALLOWS THE  
LEFTOVER PLANT MATERIAL TO FEED  
THE MICROBES, BUILD SOIL HEALTH AND  
HELP THE GROUND SOAK UP WATER.**

**YES, IT LOOKS LIKE RANCHERS  
WHO FOCUS ON SOIL HEALTH  
AND MANAGED GRAZING REALIZE  
THEIR STEWARDSHIP IS KEY TO  
PROTECTING THE TREASURES IN  
THE GRASSLANDS.**



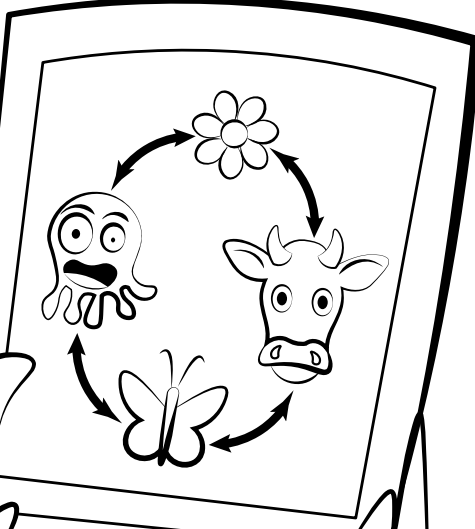
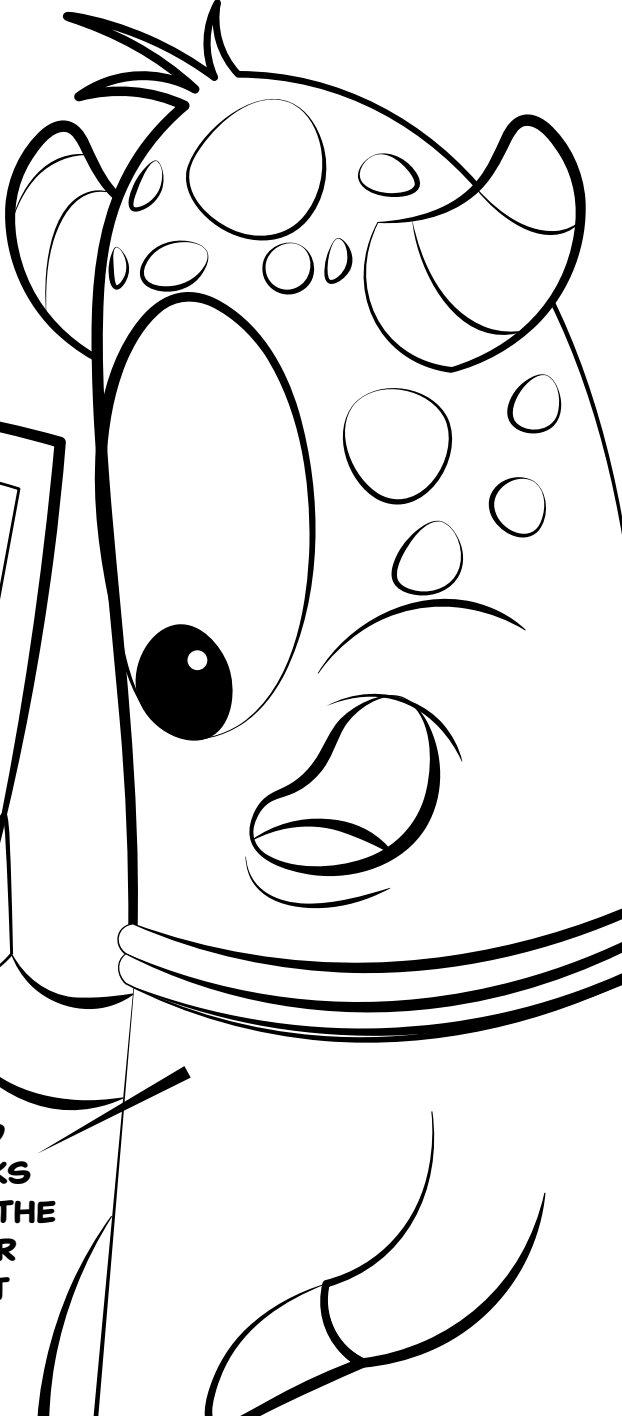




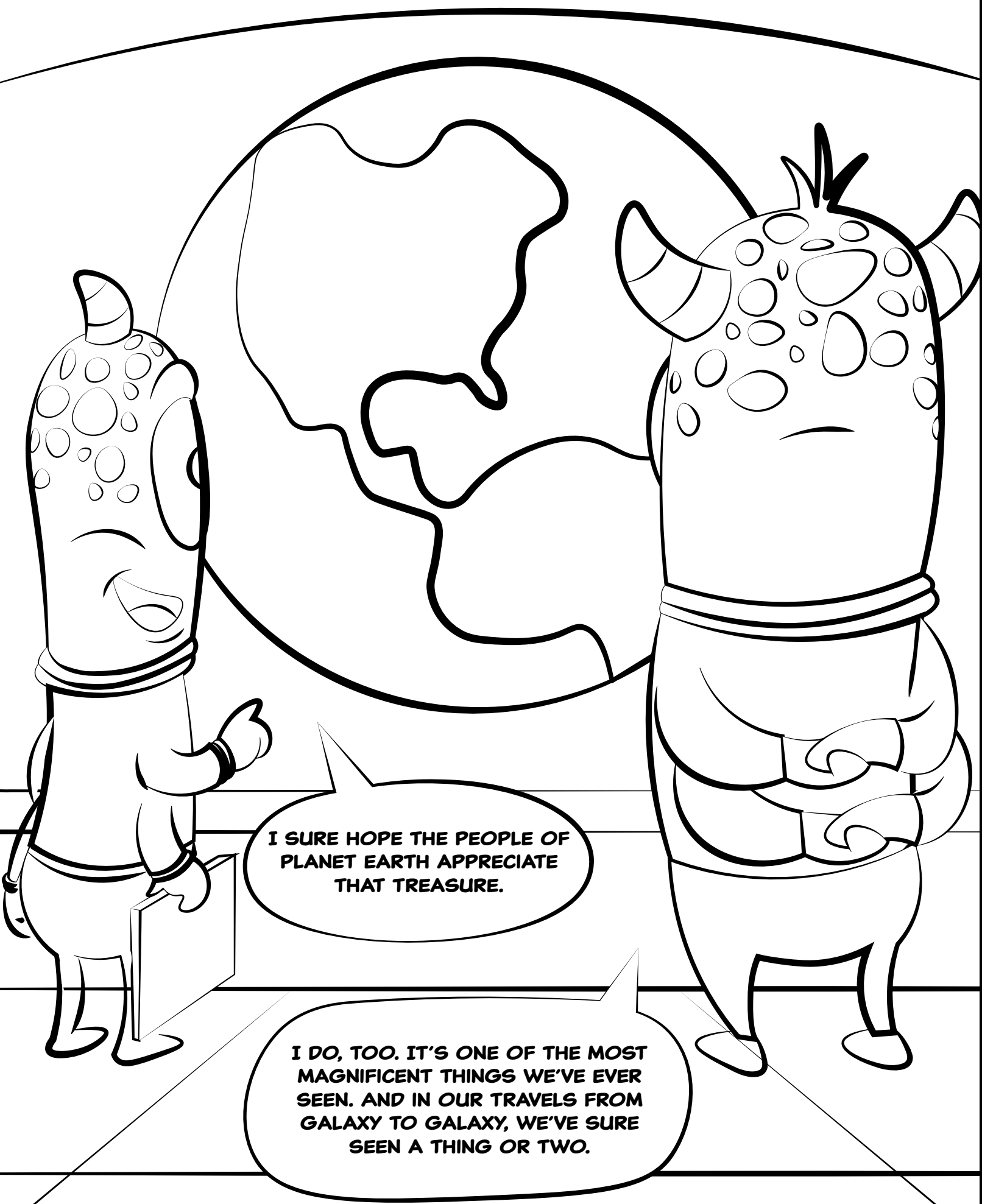
**NO DOUBT THE GRASSLANDS ARE AMONG THIS PLANET'S MOST VALUABLE TREASURES—PROVIDING CLEAN WATER AND HABITAT FOR WILDLIFE, LIVESTOCK AND BUGS.**



**I THINK THAT WAS THE MOST EXCITING WORLD WE'VE EVER EXPLORED, CAPTAIN.**



**INDEED, IT WAS. SEEING HOW THE SOIL MICROBES FEED THE PLANTS, HOW THE PLANTS FEED THE ANIMALS AND INSECTS, AND HOW IT ALL WORKS TOGETHER SO BEAUTIFULLY—IS THE RICHEST TREASURE WE'VE EVER DISCOVERED. WE CAN'T TAKE IT WITH US, BUT WHAT WE'VE SEEN HERE IS MORE VALUABLE THAN GOLD.**



**I SURE HOPE THE PEOPLE OF  
PLANET EARTH APPRECIATE  
THAT TREASURE.**

**I DO, TOO. IT'S ONE OF THE MOST  
MAGNIFICENT THINGS WE'VE EVER  
SEEN. AND IN OUR TRAVELS FROM  
GALAXY TO GALAXY, WE'VE SURE  
SEEN A THING OR TWO.**

GREETINGS PEOPLE OF  
THE EARTH!

I HOPE YOU HAVE ENJOYED EXPLORING, DISCOVERING, COLORING THE GRASSLANDS' MANY TREASURES, AND LEARNING ALONG WITH US, HOW THIS REMARKABLE ECOSYSTEM CREATES SO MANY BENEFITS FOR PLANTS, INSECTS, ANIMALS, RANCHERS AND ALL OF EARTH'S PEOPLE.

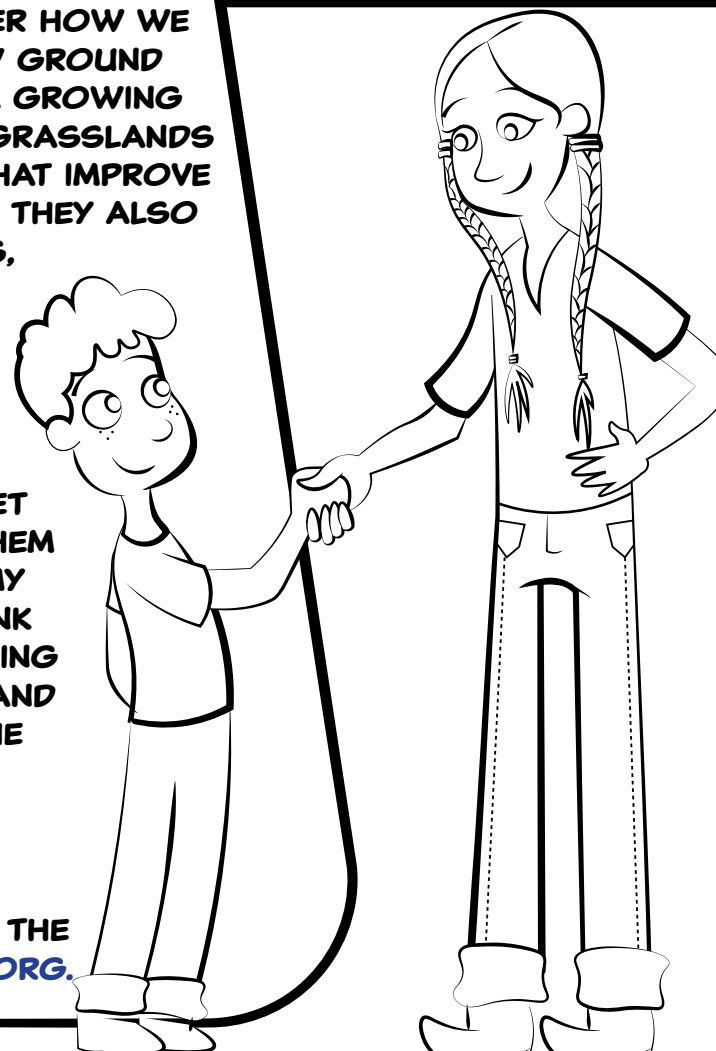
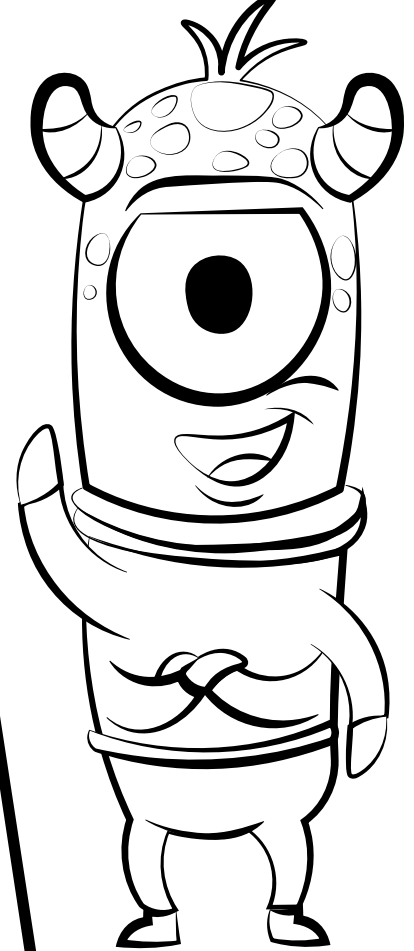
AFTER OUR GREAT ADVENTURE, AND UPON RETURNING TO OUR STARSHIP, WE WERE SADDENED TO LEARN THAT MANY THOUSANDS OF ACRES OF GRASSLANDS ARE LOST EACH YEAR AS SOME LANDOWNERS PLOW THEM UP TO PLANT OTHER CROPS. WE ALSO LEARNED THAT SOME GRASSLAND ACRES ARE NOT PROPERLY CARED FOR, LEADING TO PLANTS BEING OVERGRAZED AND TO THE GROWTH OF WOODY PLANTS. THESE ARE AMONG THE REASONS IT IS THE MOST THREATENED ECOSYSTEM IN NORTH AMERICA.

BUT THERE IS GOOD NEWS. REMEMBER THE SOIL MICROBES WE DISCOVERED? AND REMEMBER HOW WE LEARNED THOSE TINY MICROBES BELOW GROUND ENABLE ALL THE LIFE ABOVE IT? WELL, A GROWING NUMBER OF RANCHERS ARE PROTECTING GRASSLANDS BY MANAGING THEIR LIVESTOCK IN WAYS THAT IMPROVE SOIL HEALTH. AS THEY IMPROVE SOIL HEALTH, THEY ALSO IMPROVE THE HEALTH OF THE PLANTS, INSECTS, LIVESTOCK AND WILDLIFE, AND THEY IMPROVE WATER AND AIR QUALITY, TOO, ALL WHILE GROWING THE FOOD WE NEED AND ENJOY.

IN A WAY YOU MIGHT SAY THESE RANCHERS ARE THE REAL PROTECTORS OF EARTH'S GRASSLAND TREASURES. SO, IF YOU EVER GET A CHANCE TO MEET ONE, BE SURE TO TELL THEM "THANK YOU" FOR ALL OF US (INCLUDING MY SPACE EXPLORER CREW AND ME). AND THANK YOU FOR LEARNING MORE ABOUT THIS AMAZING ECOSYSTEM AND FOR TELLING YOUR FAMILY AND FRIENDS ALL YOU HAVE LEARNED ABOUT THE TREASURES IN THE GRASSLANDS.

SINCERELY,  
SPACE EXPLORER CAPTAIN

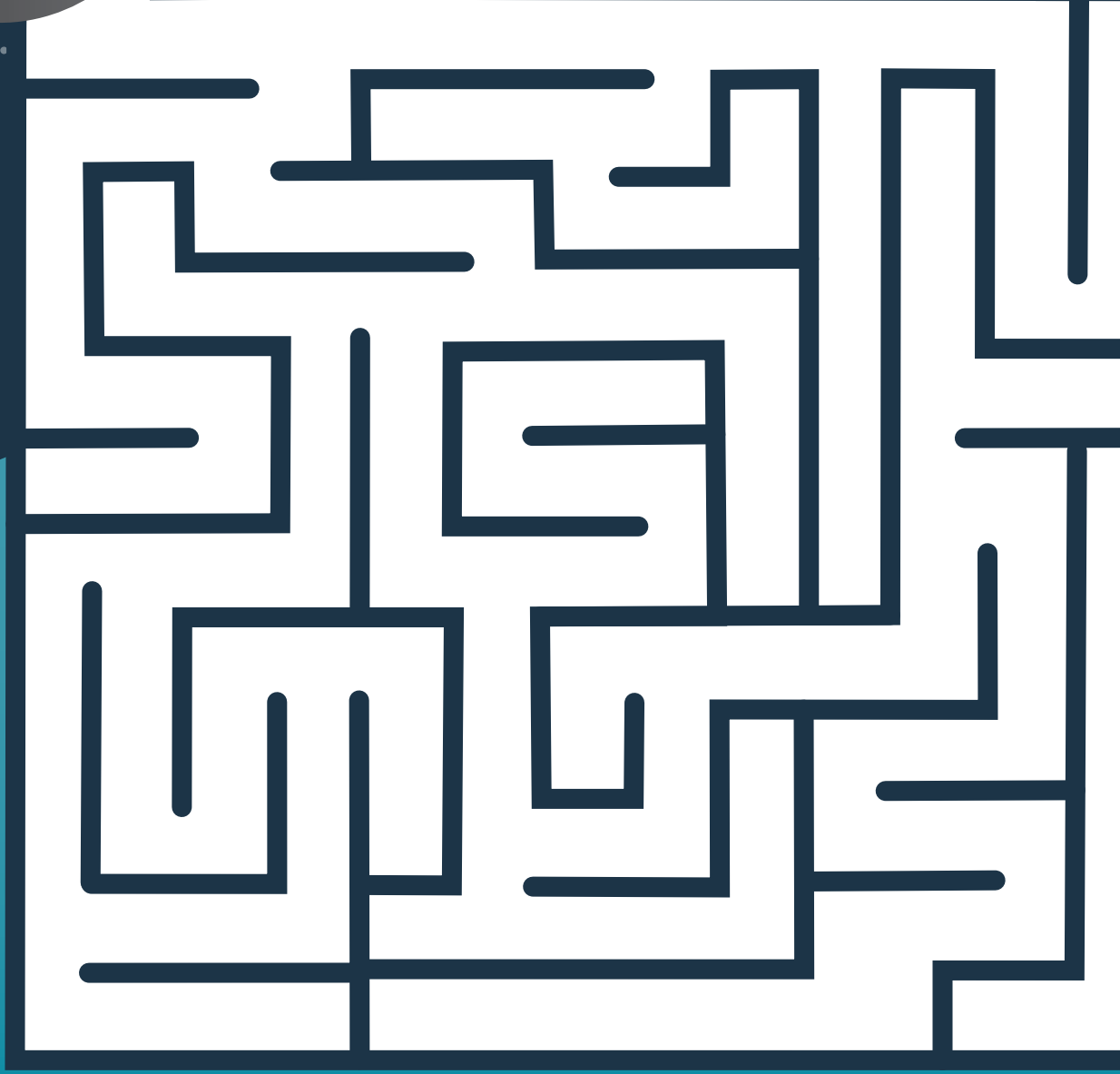
P.S. TO LEARN EVEN MORE, BE SURE TO VISIT THE WEBSITE [WWW.WHEREGOODTHINGSGROW.ORG](http://WWW.WHEREGOODTHINGSGROW.ORG).





**CAPTAIN JORY NEEDS YOUR HELP!  
NAVIGATE THE MAZE TO DISCOVER  
SOME OF DAKOTA GRASSLANDS'  
MANY TREASURES!**

**START**



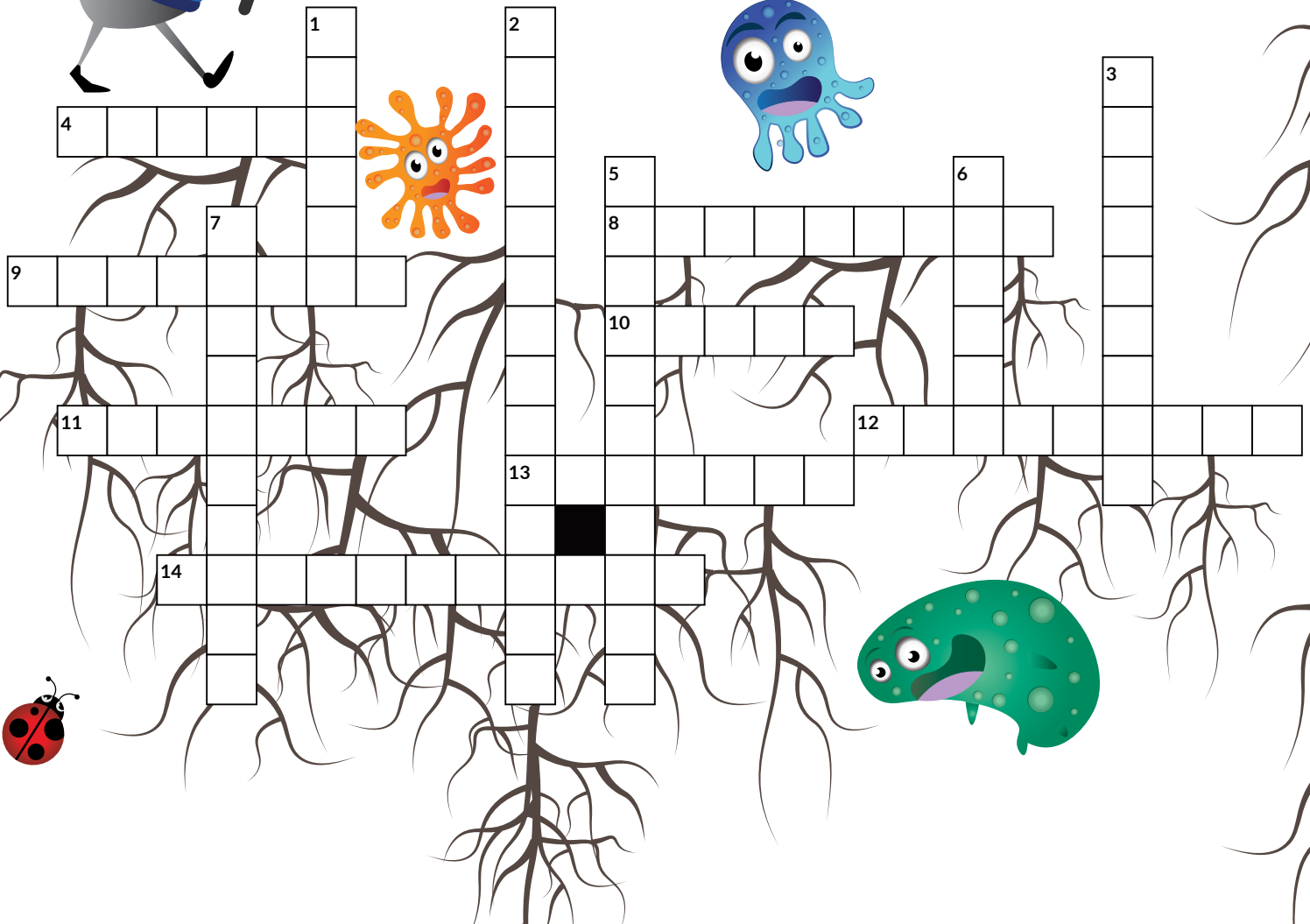


**FINISH**



# DIRECTIONS

CAPTAIN JORY IS ON THE HUNT FOR EARTH'S SOIL SECRETS. USE THE CLUES BELOW AND COMPLETE THE CROSSWORD TO HELP THE CAPTAIN ON HIS JOURNEY.



## Across

4. Key element in air and water
8. Land covered with grasses
9. The smallest forms of life
10. Underground part of plants
11. Where something lives
12. Needed for life and health
13. Soil that is rich with life
14. Caring for something

## Down

1. Bodily waste from animals
2. How plants use sunlight to survive and grow
3. A community of living things
5. Creates water and air space for plants in soil
6. Bug
7. Insect that helps plants reproduce



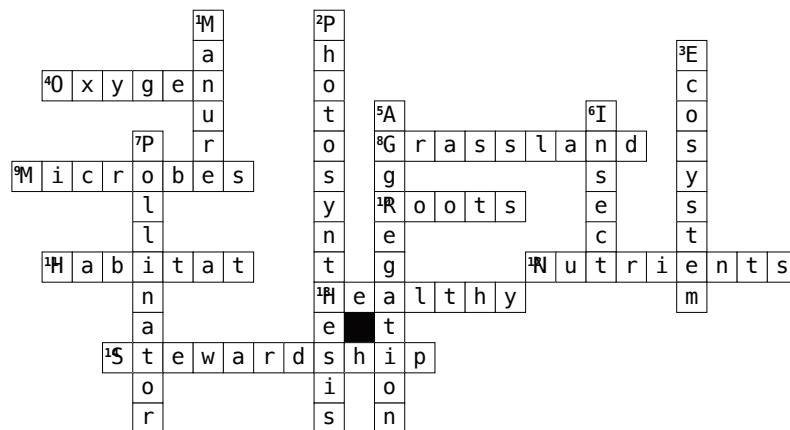
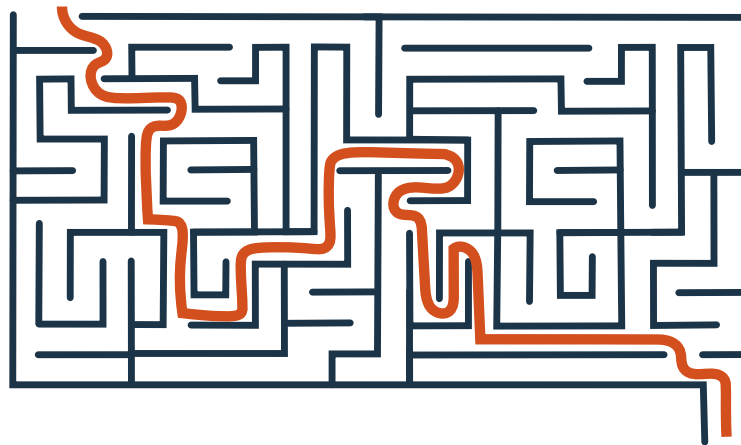


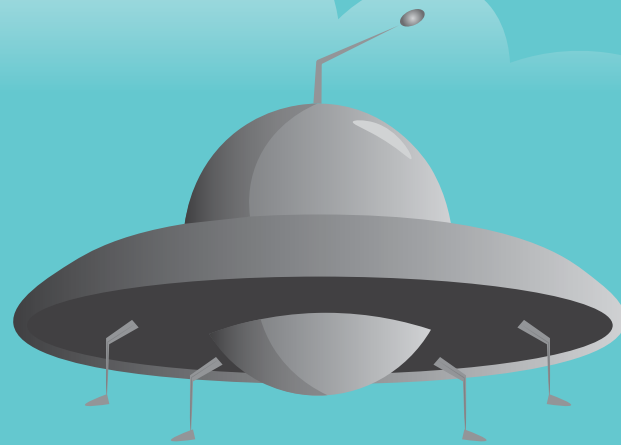
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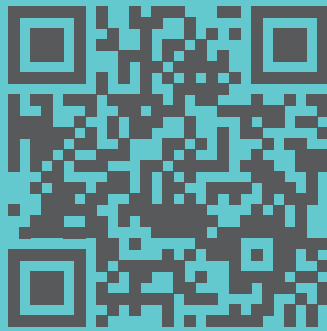
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