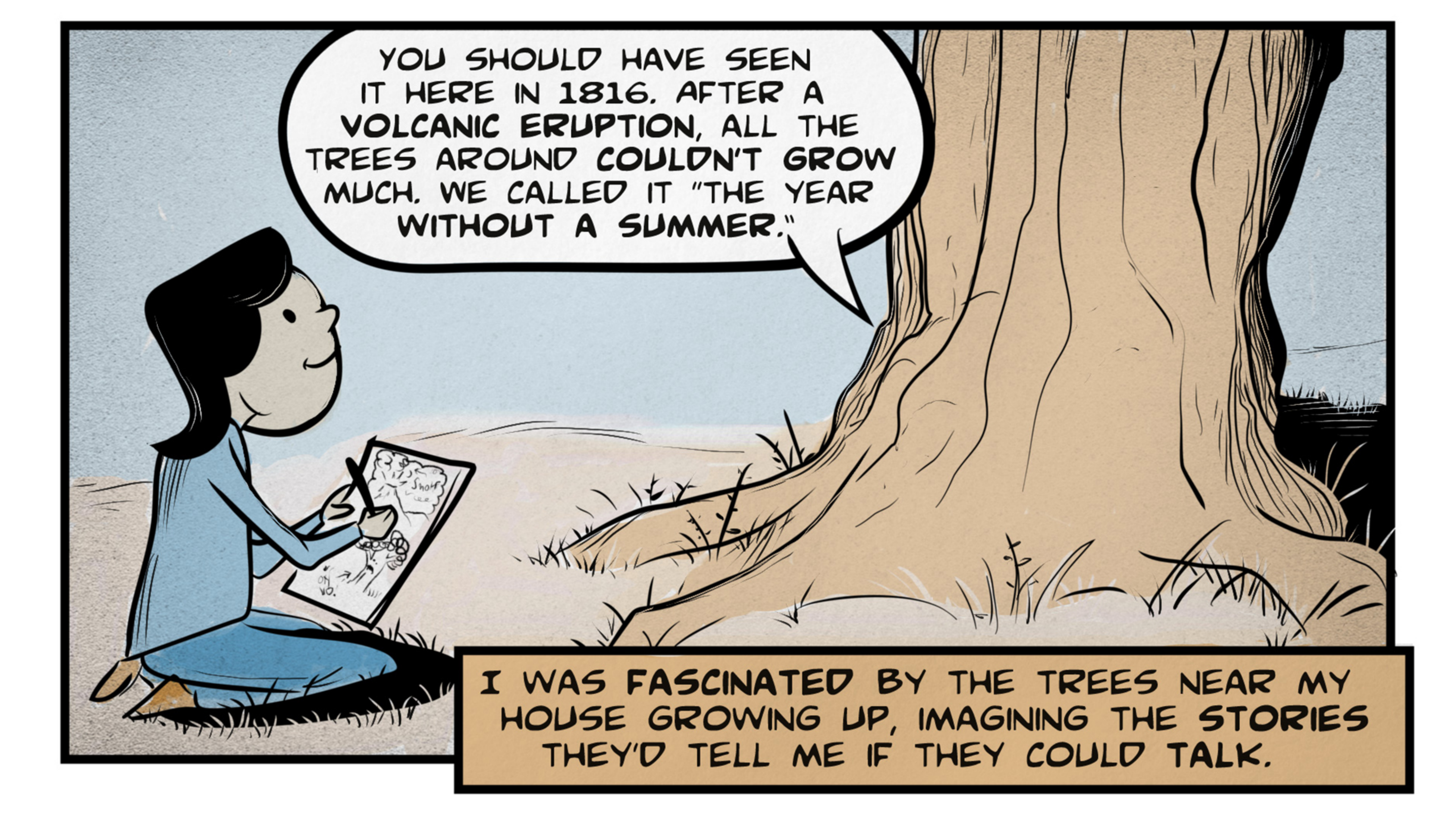




CARMEN

THE CONSERVATION SCIENTIST

HEY, TREE, WHAT'S YOUR STORY?

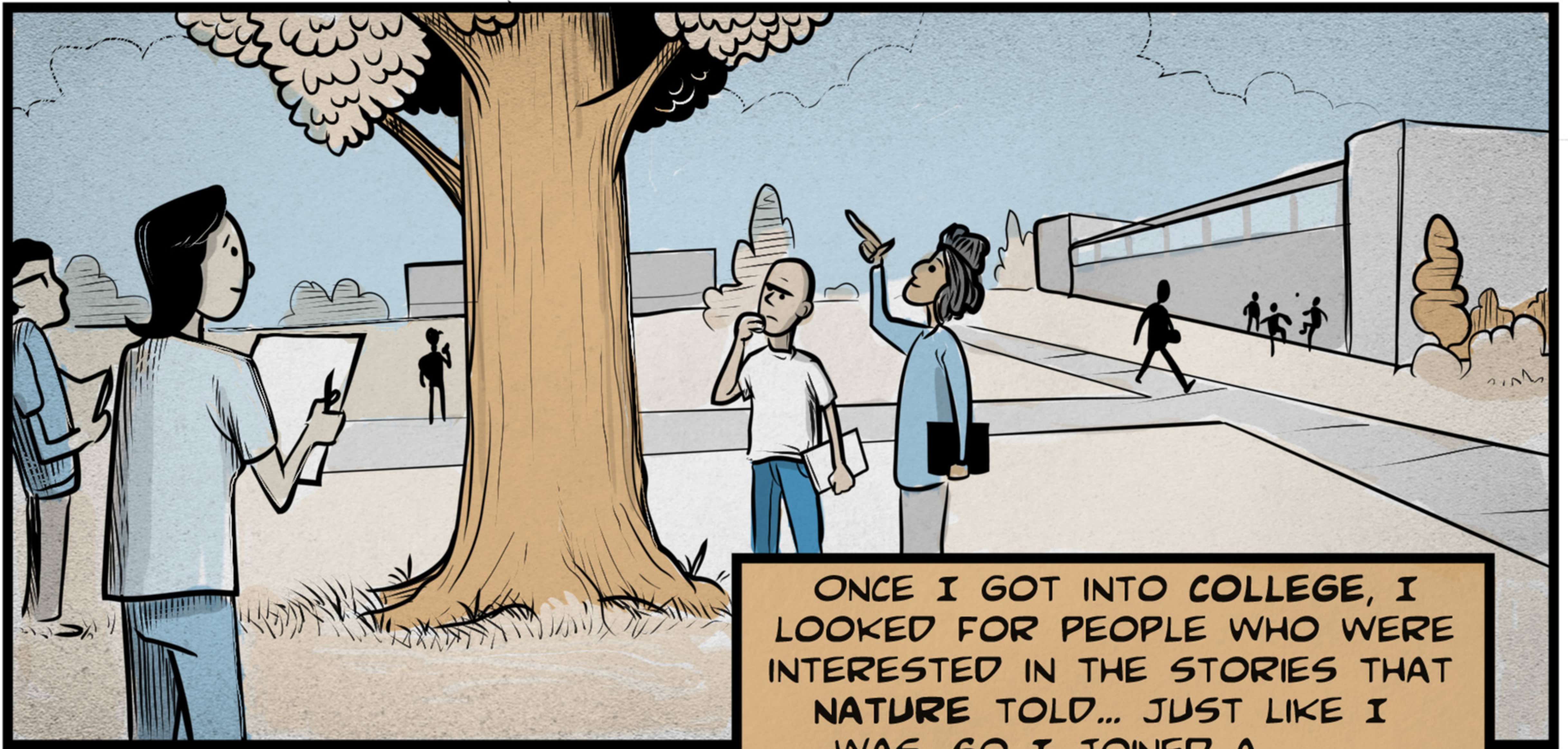


YOU SHOULD HAVE SEEN
IT HERE IN 1816. AFTER A
VOLCANIC ERUPTION, ALL THE
TREES AROUND COULDN'T GROW
MUCH. WE CALLED IT "THE YEAR
WITHOUT A SUMMER."

I WAS FASCINATED BY THE TREES NEAR MY
HOUSE GROWING UP, IMAGINING THE STORIES
THEY'D TELL ME IF THEY COULD TALK.

I GOT MORE
CURIOUS AS I
GOT OLDER.
AND MY STORIES
EVOLVED.

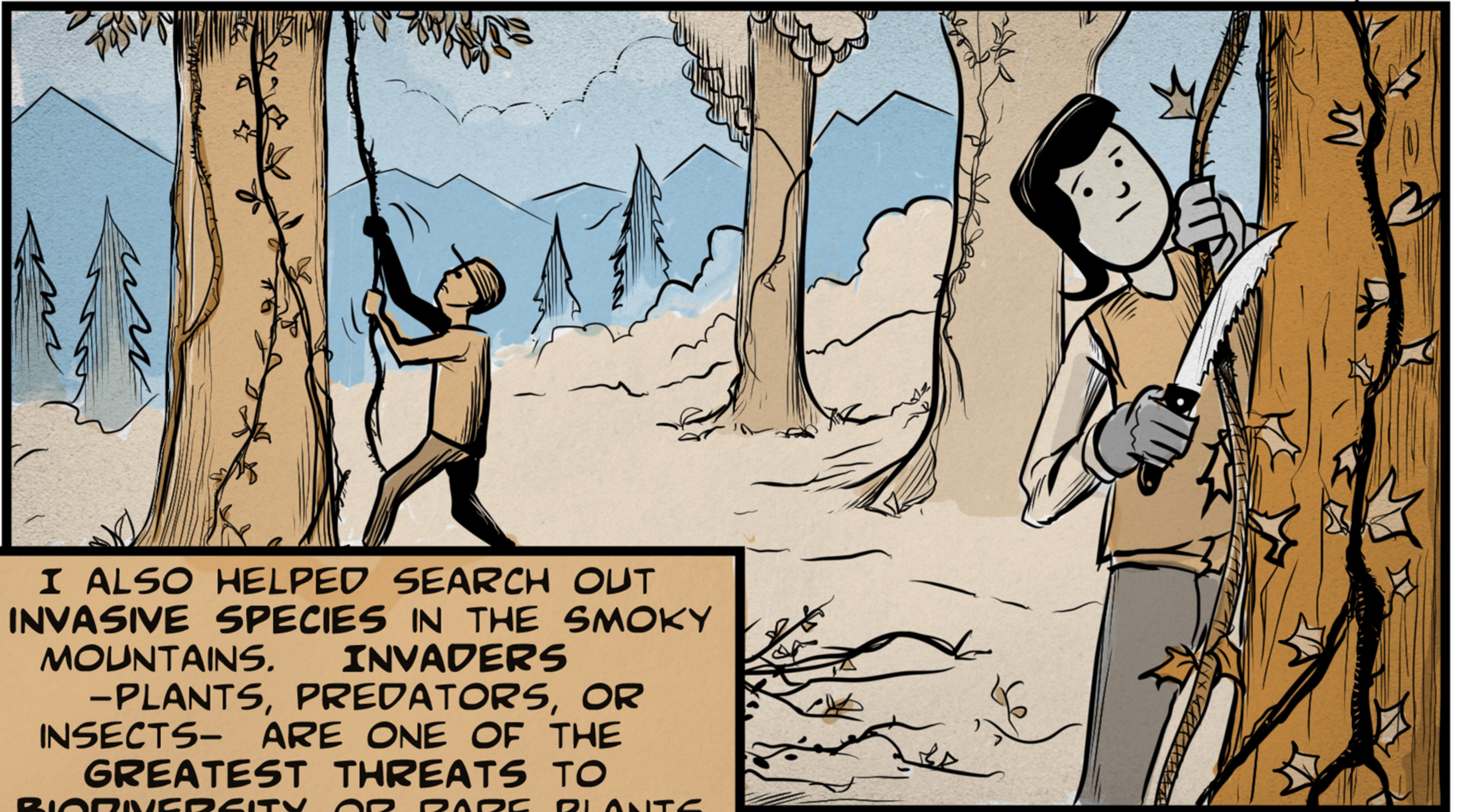




ONCE I GOT INTO COLLEGE, I
LOOKED FOR PEOPLE WHO WERE
INTERESTED IN THE STORIES THAT
NATURE TOLD... JUST LIKE I
WAS. SO I JOINED A
CONSERVATION ASSOCIATION.

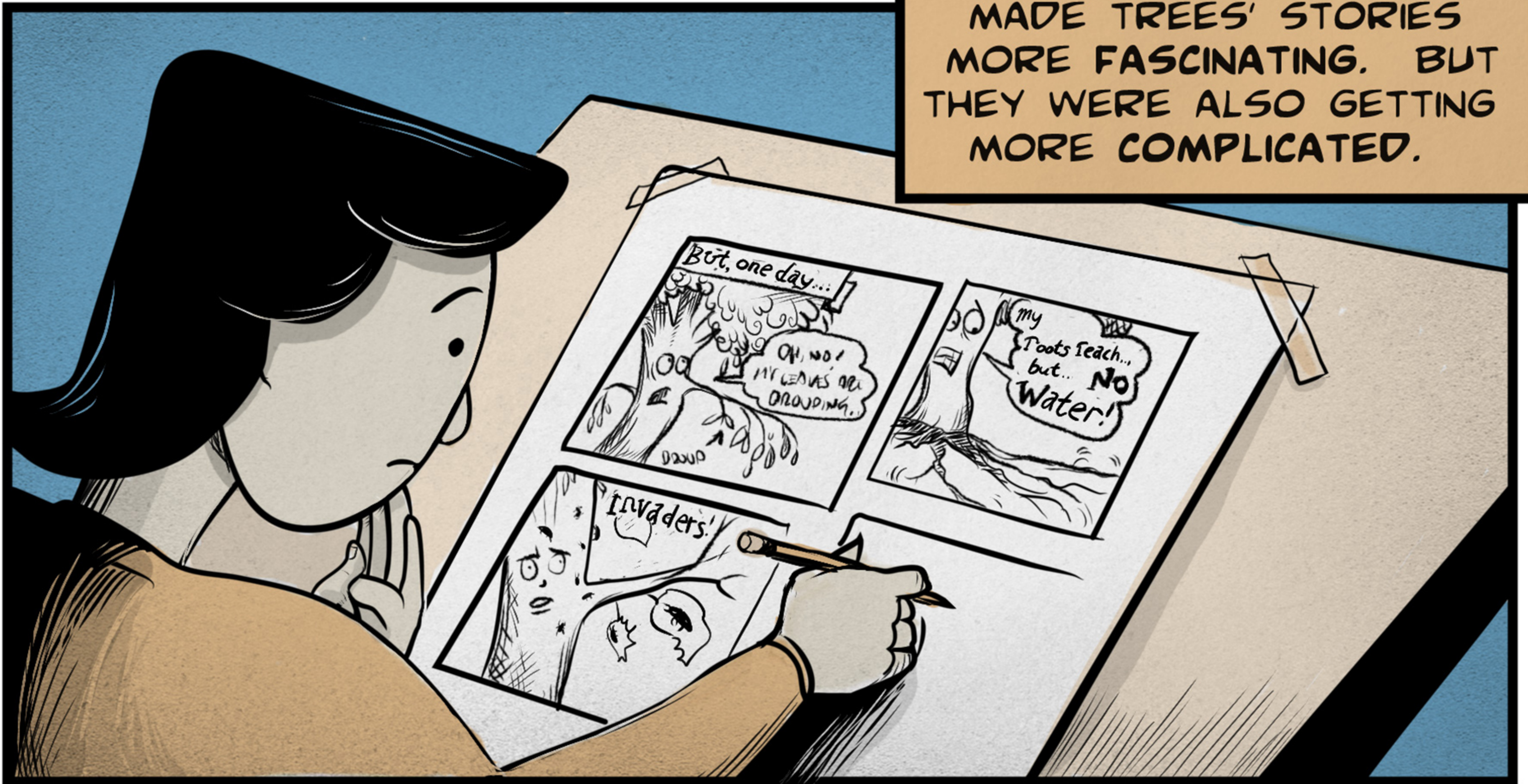
IT HELPED ME FIND SOME COOL SUMMER JOBS, LIKE GETTING PAID TO IDENTIFY PLANTS IN NATIONAL PARKS. I LEARNED THAT UNDERSTANDING WHAT YOU HAVE —TRACKING THE NUMBER, SIZE, AND AGE OF TREES IN A FOREST, FOR EXAMPLE— IS THE FIRST STEP IN CONSERVATION.

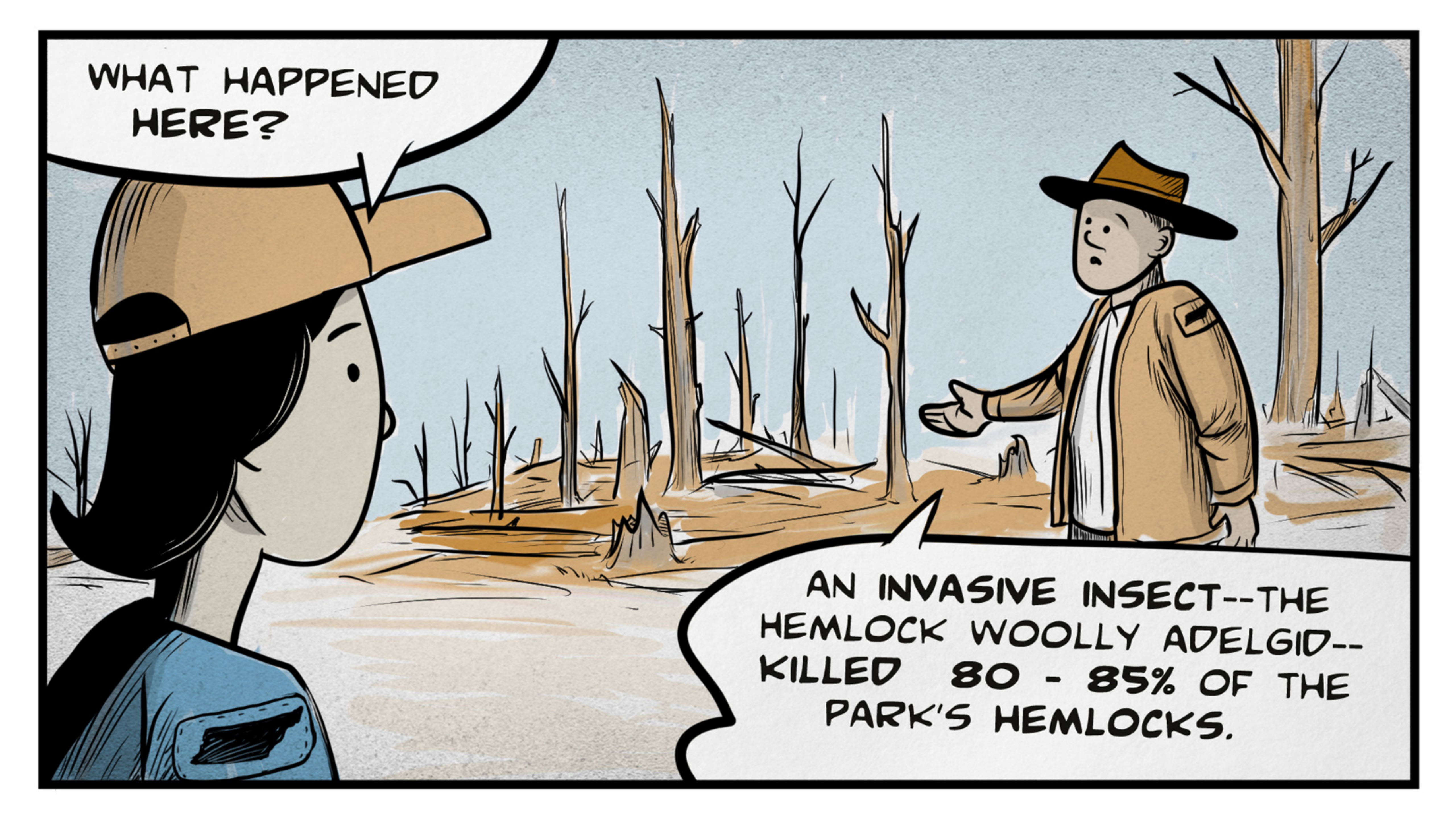




I ALSO HELPED SEARCH OUT
INVASIVE SPECIES IN THE SMOKY
MOUNTAINS. INVADERS
-PLANTS, PREDATORS, OR
INSECTS- ARE ONE OF THE
GREATEST THREATS TO
BIODIVERSITY OR RARE PLANTS.

EVERYTHING I WAS LEARNING
MADE TREES' STORIES
MORE FASCINATING. BUT
THEY WERE ALSO GETTING
MORE COMPLICATED.






WHAT HAPPENED
HERE?

AN INVASIVE INSECT--THE
HEMLOCK WOOLLY ADELGID--
KILLED 80 - 85% OF THE
PARK'S HEMLOCKS.

THERE WERE SO MANY UNANSWERED QUESTIONS...



WHAT CAN YOU DO
TO HELP THE
FOREST BOUNCE
BACK?

HOW WILL
CLIMATE CHANGE
AFFECT WHAT WILL
GROW HERE?

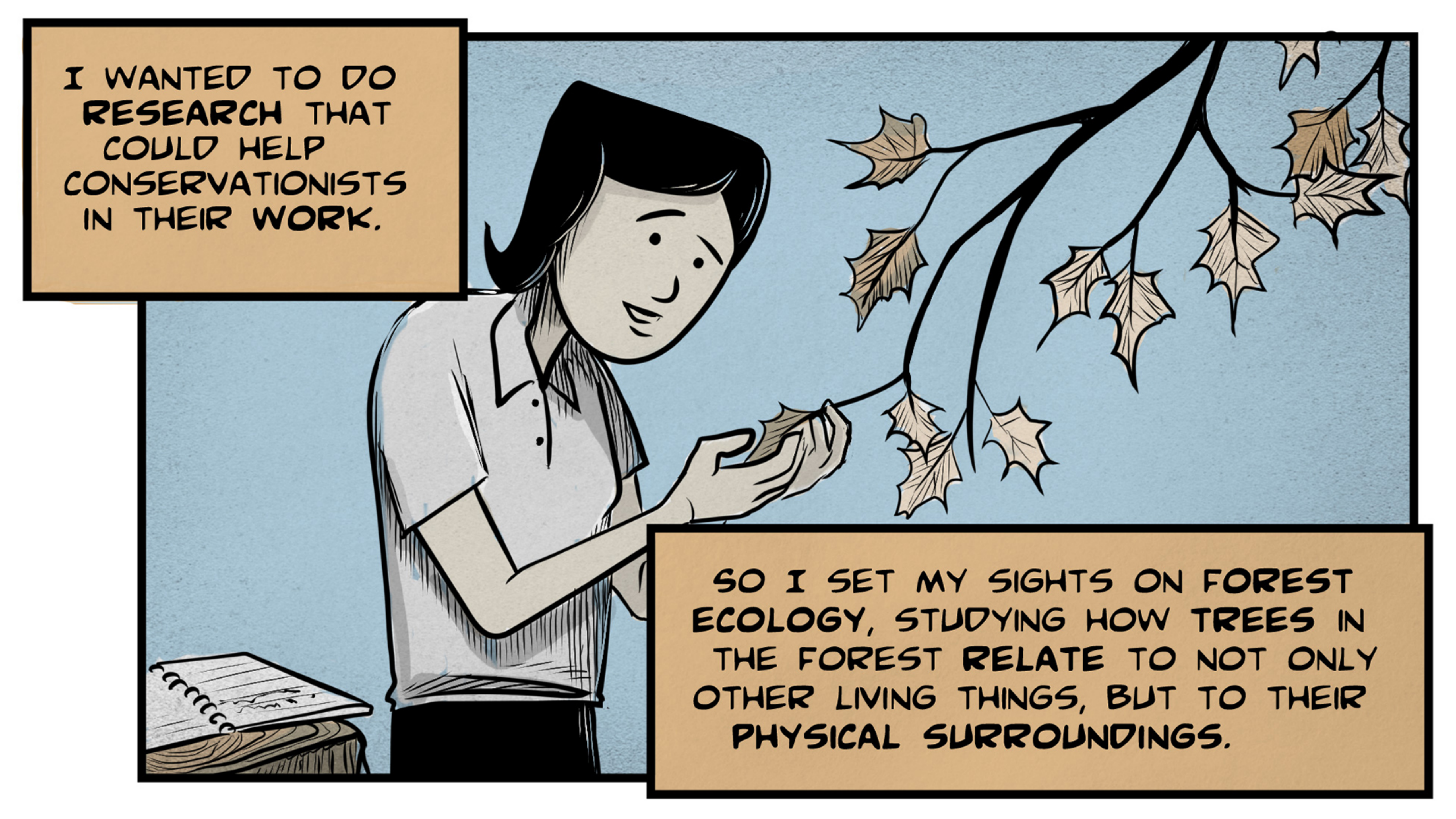


WE'RE JUST NOT SURE. THERE
ISN'T A WHOLE LOT OF DATA YET.



IT WAS A DEFINING
MOMENT.

TO GET THE
ANSWERS THAT
WOULD HELP FILL
OUT THE STORIES,
I DECIDED TO GO
BACK TO SCHOOL.

A woman with dark hair, wearing a light-colored short-sleeved shirt, is shown from the waist up. She is looking down at a single leaf she is holding in her hands. The background is a light blue sky with several tree branches and leaves hanging down. In the bottom left corner, there is a stack of books, with the top one being a spiral-bound notebook.

I WANTED TO DO RESEARCH THAT COULD HELP CONSERVATIONISTS IN THEIR WORK.

SO I SET MY SIGHTS ON FOREST ECOLOGY, STUDYING HOW TREES IN THE FOREST RELATE TO NOT ONLY OTHER LIVING THINGS, BUT TO THEIR PHYSICAL SURROUNDINGS.

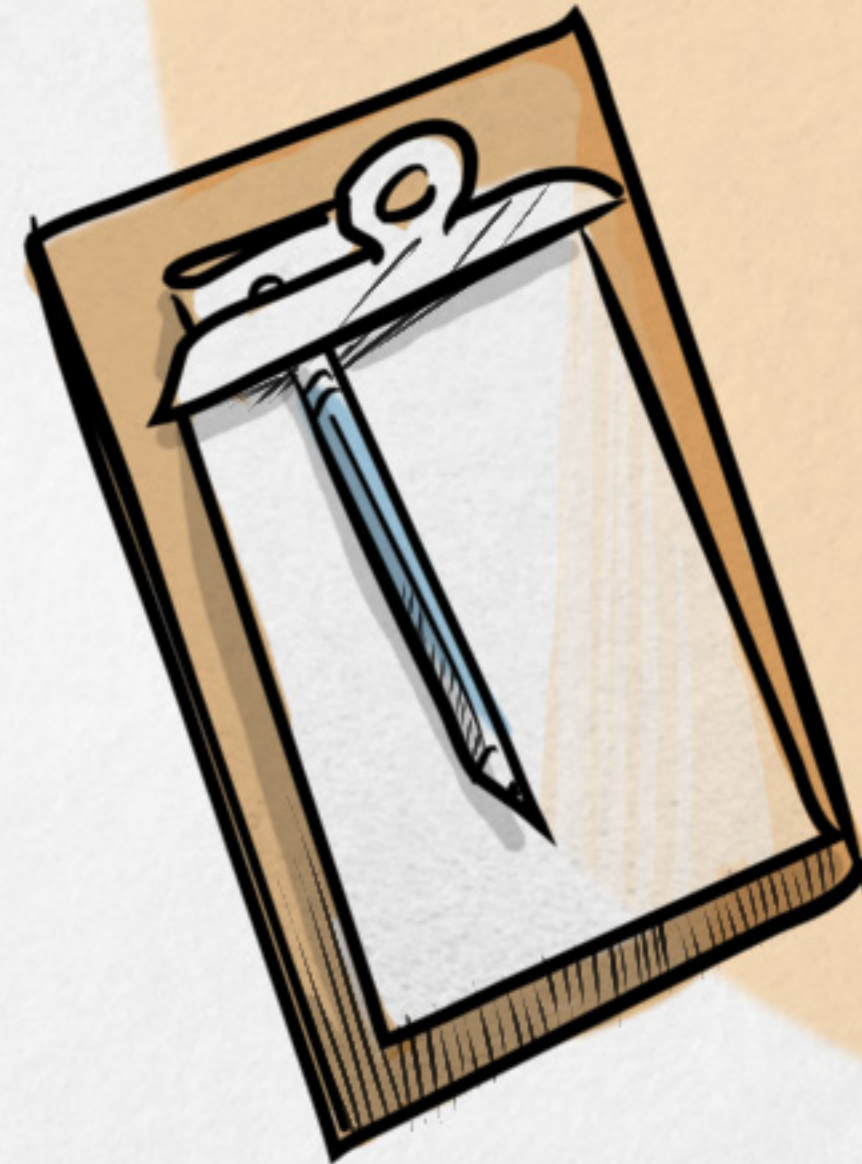
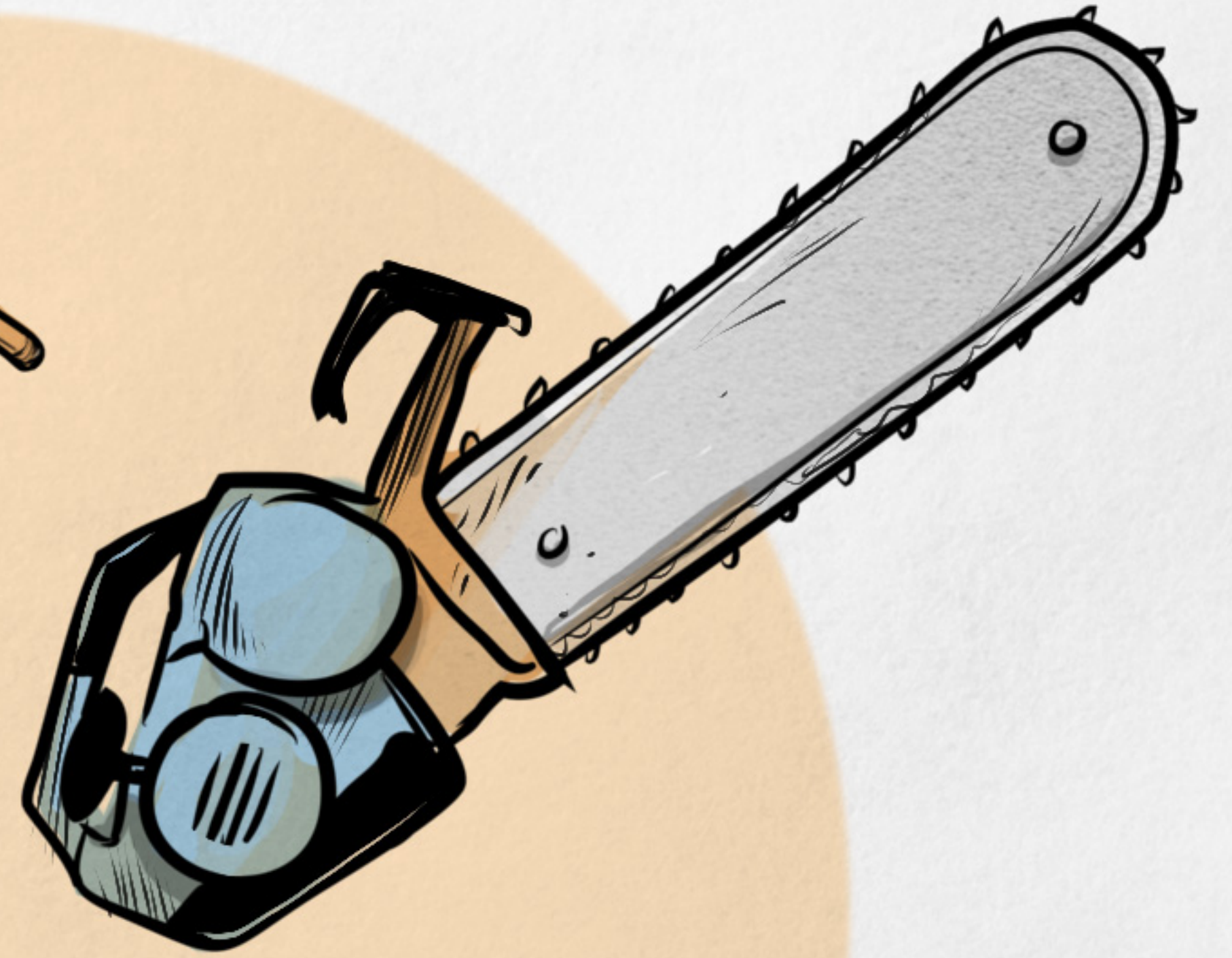
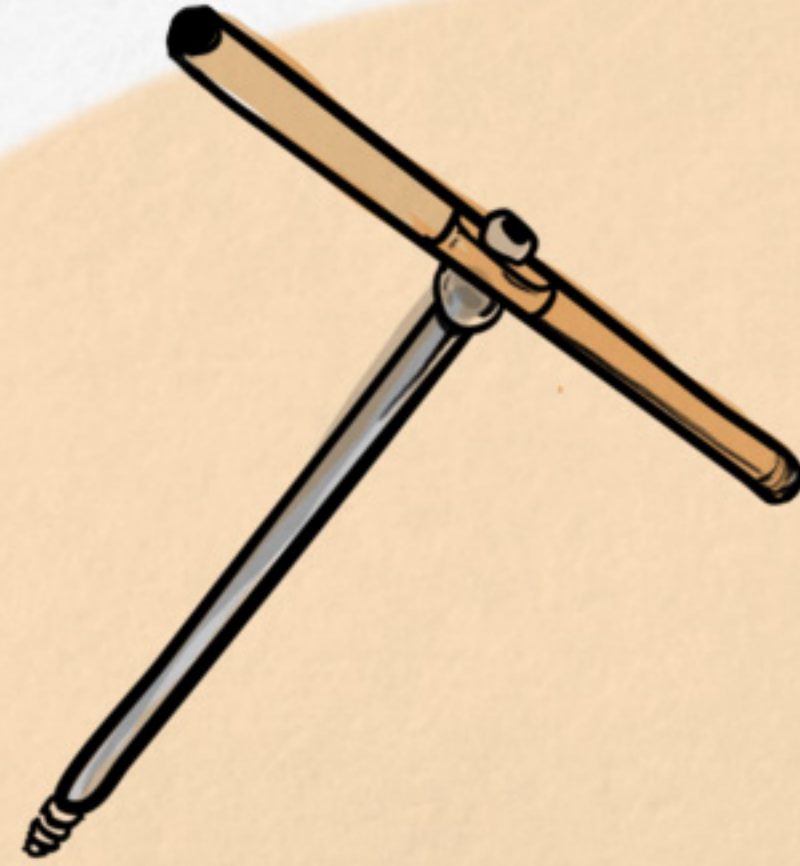



I'M INTERESTED IN
CLIMATE CHANGE AND
HOW HUMANS CAN
HELP PROMOTE
HEALTHY FORESTS
INTO THE FUTURE.

TO DO THIS, WE NEED
TO UNDERSTAND WHAT
HAPPENED IN THE PAST.

IT TURNS OUT THAT
TREES TELL THEIR OWN
STORIES THE BEST.

I JUST NEEDED THE
TOOLS TO BE ABLE TO
UNLOCK THOSE STORIES.





SO THAT DARK SPOT
MEANS IT SURVIVED
A FOREST FIRE?

SURE DOES!

BY STUDYING THE RINGS FROM TREES THAT HAVE ALREADY FALLEN, WE CAN SEE HOW FORESTS HAVE RESPONDED TO CHANGES AND STRESSES LIKE FIRE, DROUGHT, AND CLEARING LAND FOR AGRICULTURE.

COMPARING TREE RING
INFORMATION WITH
CLIMATE DATA AND HISTORICAL
RECORDS HELPS US TELL A
MORE COMPLETE STORY.



WHY IS THIS RING
SO SMALL
COMPARED TO THE
YEARS BEFORE?

Oooo, this was
during the dust
bowl in the
1930s!

I JUST
TOUCHED THE
DUST BOWL!

WE ALSO USE
INCREMENT BORES, OR
HOLLOW HAND DRILLS,
TO GET PENCIL-SIZED
SAMPLES FROM LIVING
TREES WITHOUT
HARMING THEM.

WE CAN EXAMINE
THESE THROUGH A
MICROSCOPE.





IT'S
STARTING
TO TURN
GREEN!

THE LEAVES
ARE
EMERGING!

TO TELL TREES' STORIES
WITHIN A SINGLE YEAR, WE
RELY ON CITIZEN SCIENCE.
OUR VOLUNTEERS GO OUT
WEEKLY, NOTING THINGS
LIKE WHEN A TREE'S
LEAVES APPEAR OR WHEN
IT'S BLOOMING.

BUT TO TELL TREES' STORIES
INTO THE FUTURE, WE NEED
DIFFERENT KINDS OF TOOLS.

SINCE WE DON'T HAVE A
TIME MACHINE, WE USE
MATH, STATISTICS, AND
COMPUTERS TO BRING
DIFFERENT STORIES
TOGETHER AND TELL
NEW ONES.





I NEED TO PULL IN MY COLLEAGUES FOR THIS,
BECAUSE NOBODY KNOWS IT ALL.



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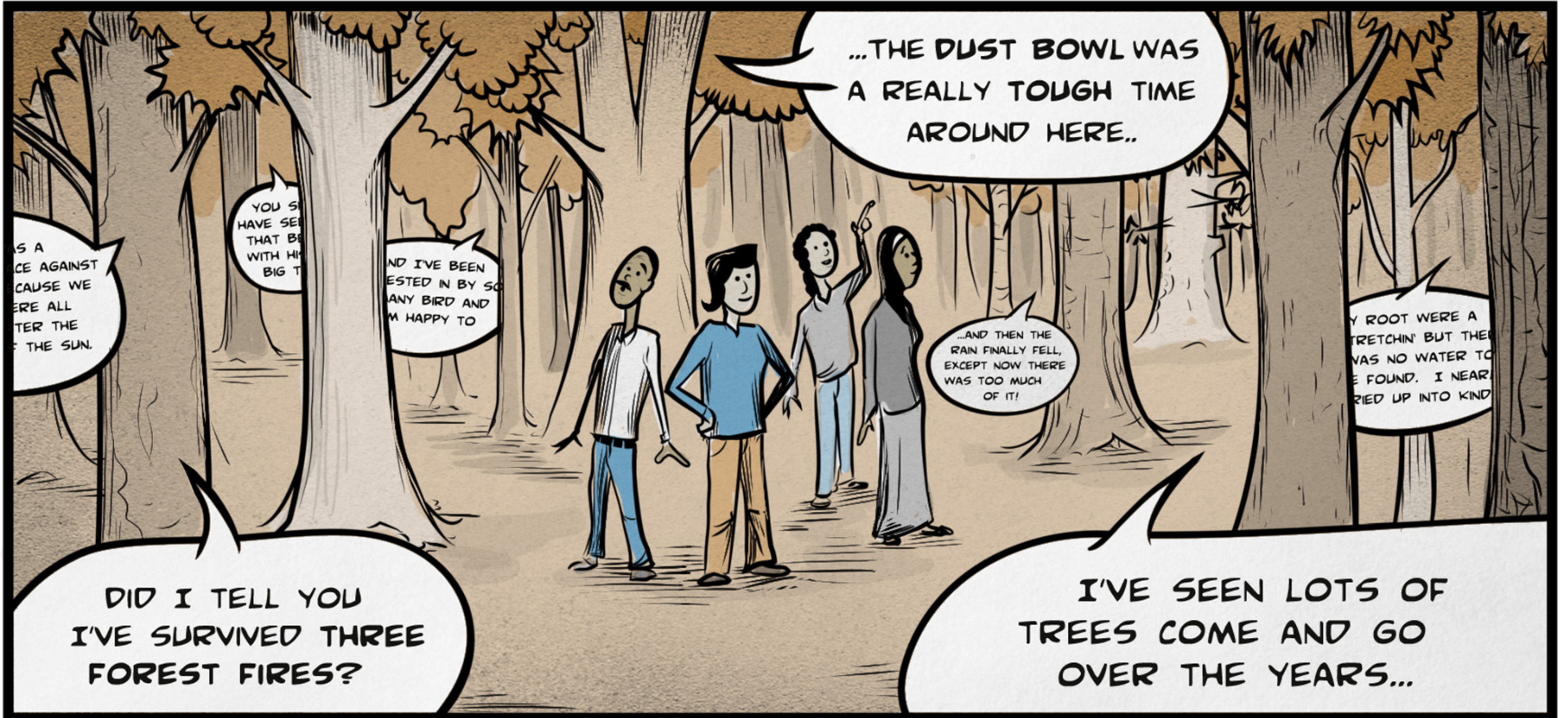
I NEED TO PULL IN MY COLLEAGUES FOR THIS, BECAUSE NOBODY KNOWS IT ALL.

I LOVE MY JOB.
I MEAN, TO
UNLOCK TREES'
STORIES I HAVE
TO GET DIRTY AND
USE POWER
TOOLS.





BUT OUR COMPUTER MODELS ARE EVEN MORE POWERFUL TOOLS...



...AS A
...CE AGAINST
...CAUSE WE
...ERE ALL
...TER THE
...F THE SUN.

YOU S
HAVE SE
THAT BE
WITH HI
BIG T

ND I'VE BEEN
ESTED IN BY SO
ANY BIRD AND
M HAPPY TO

...THE DUST BOWL WAS
A REALLY TOUGH TIME
AROUND HERE..

...AND THEN THE
RAIN FINALLY FELL,
EXCEPT NOW THERE
WAS TOO MUCH
OF IT!

Y ROOT WERE A
STRETCHIN' BUT THE
WAS NO WATER TO
E FOUND. I NEAR
RIED UP INTO KIND

DID I TELL YOU
I'VE SURVIVED THREE
FOREST FIRES?

I'VE SEEN LOTS OF
TREES COME AND GO
OVER THE YEARS...

...HELPING US TELL THE STORIES OF HUNDREDS OF
THOUSANDS OF TREES ALL AT ONCE.