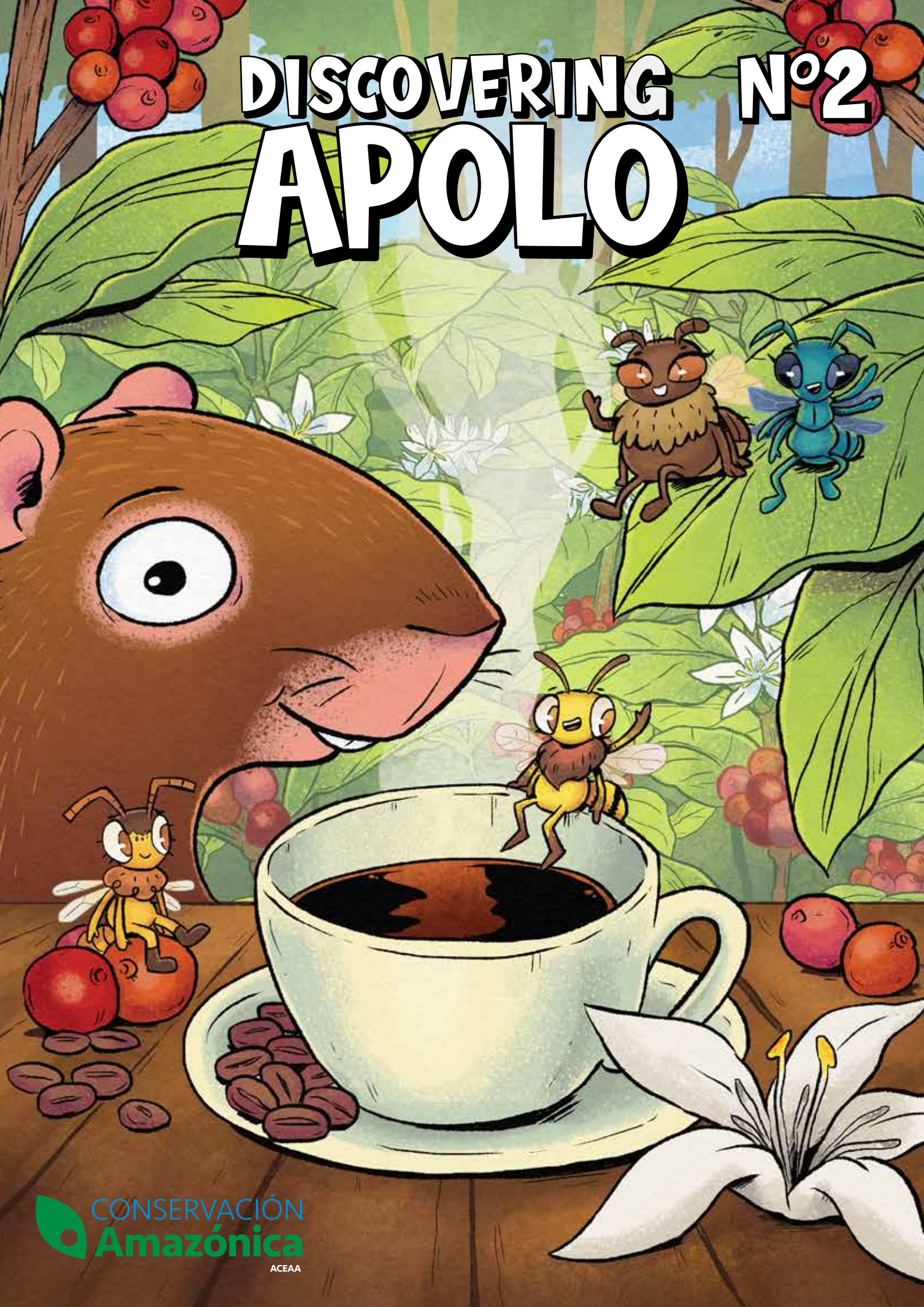

DISCOVERING Nº2
APOLO
CONSERVACIÓN
Amazónica
ACEAA

Bees make delicious Coffee

This comic was created by the Science and Technology Program at ACEAA-Conservación Amazónica under the the research, dissemination, and awareness-raising activities carried out in the Complex of Natural and Cultural Heritage Areas of Altuncama and the Serranía de Yanaloma-Siripita Natural Heritage Area in coordination with the Autonomous Municipal Government of Apolo, and support from the National Museum of Natural History.

SCRIPT AND ORIGINAL IDEA

Gabriela Aguirre

Indyra Lafuente

Daniel Larrea

ILLUSTRATION AND GRAPHIC DESIGN

Armin Castellón

COLORING ASSISTANT: Nicole Molleda

ENGLISH TRANSLATION

Lauren deVilla

Legal Deposit

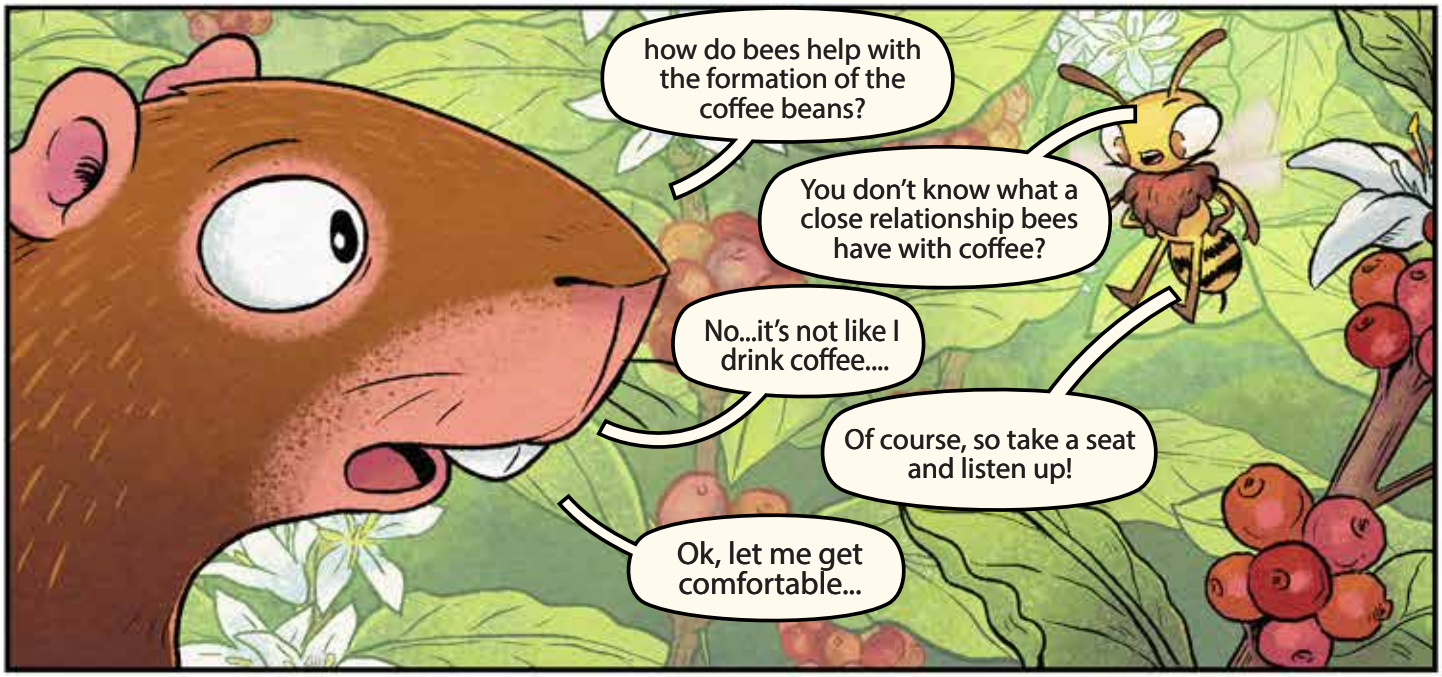
4-2-1077-2023

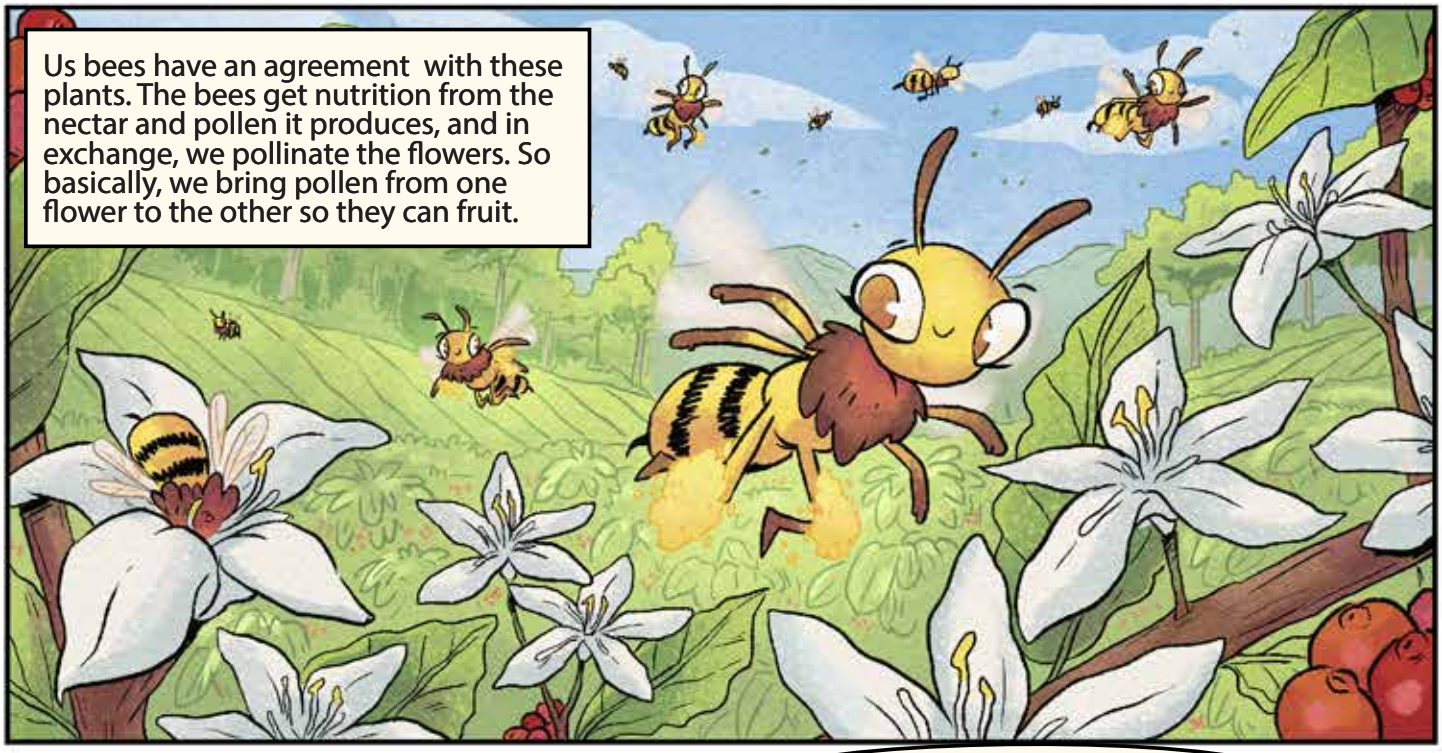
ISBN:

978-9917-626-04-6

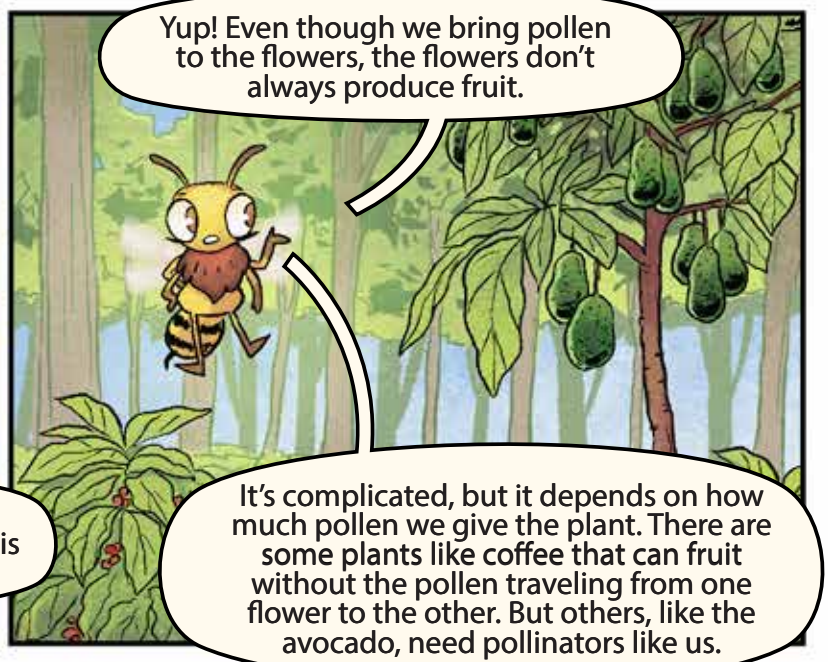
Bolivia

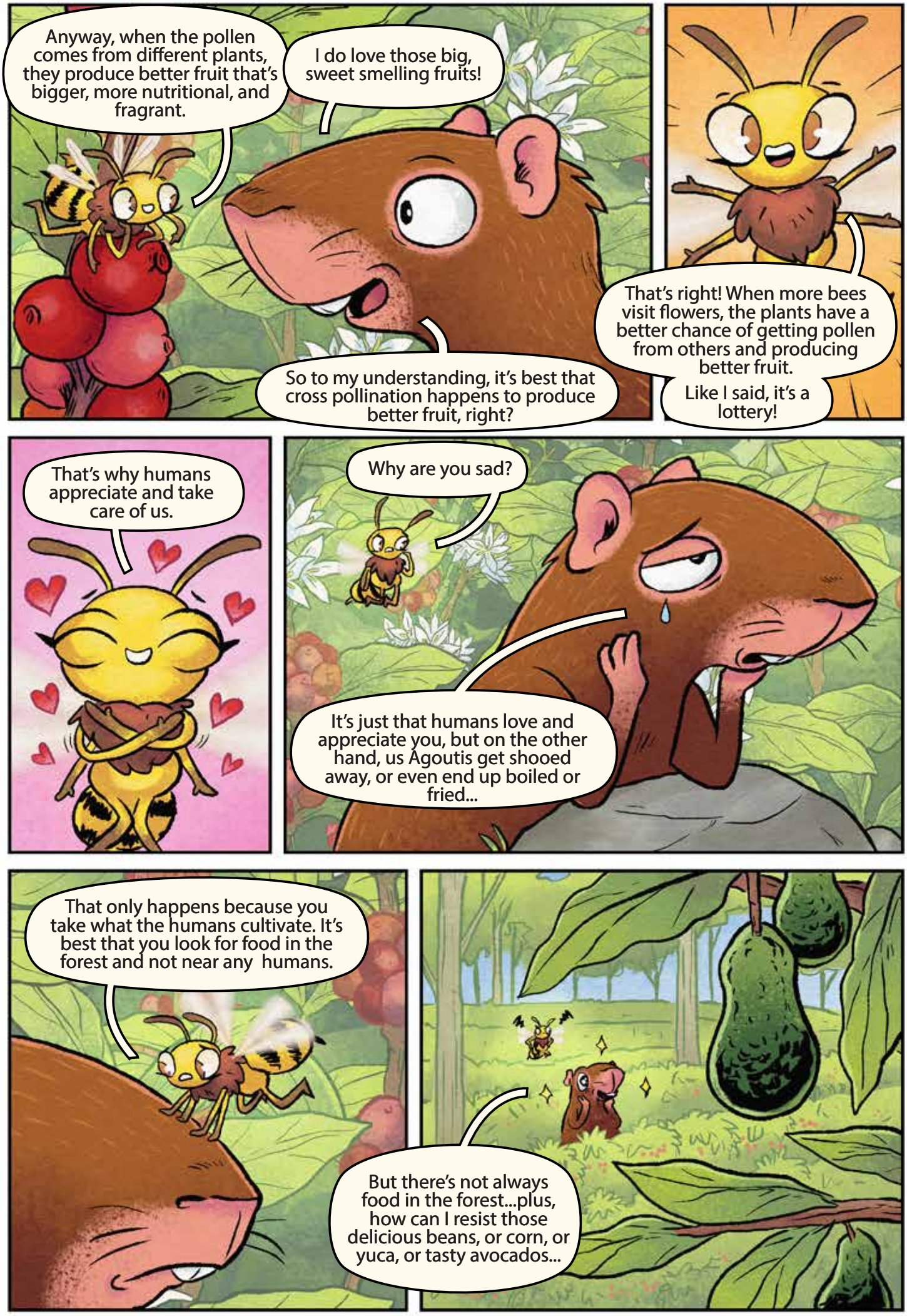

An agouti is walking through the grass, curious of his surroundings. He digs for roots, sniffs, and tears through leaves to look for fruits until he gets to a coffee plantation.
SNIFF
SNIFF
Oooh, what intersting plants!
I wonder what the roots taste like...
Keep your paws off those roots! Don't touch the coffee plant!
Oh! I'm sorry little bee, I was just curious! Please don't sting me!
I will not sting you if you show some respect for the coffee plants that make some of the best coffee in the region.
They're also very well kept by humans, that's why they have lots of flowers that bees use to get nutrition and help with the formation of the coffee bean.


how do bees help with the formation of the coffee beans?
You don't know what a close relationship bees have with coffee?
No...it's not like I drink coffee....
Of course, so take a seat and listen up!
Ok, let me get comfortable...

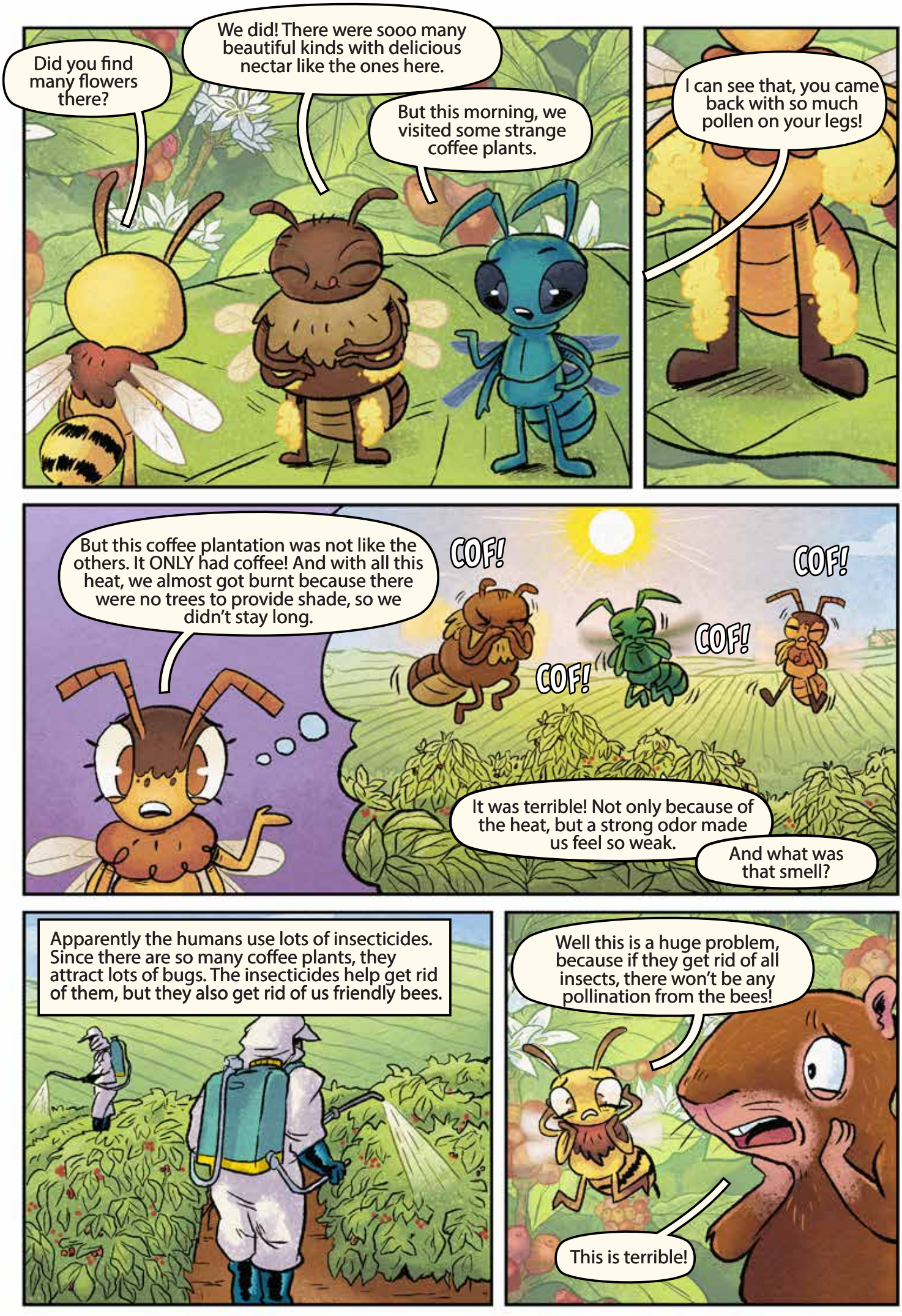

Us bees have an agreement with these plants. The bees get nutrition from the nectar and pollen it produces, and in exchange, we pollinate the flowers. So basically, we bring pollen from one flower to the other so they can fruit.

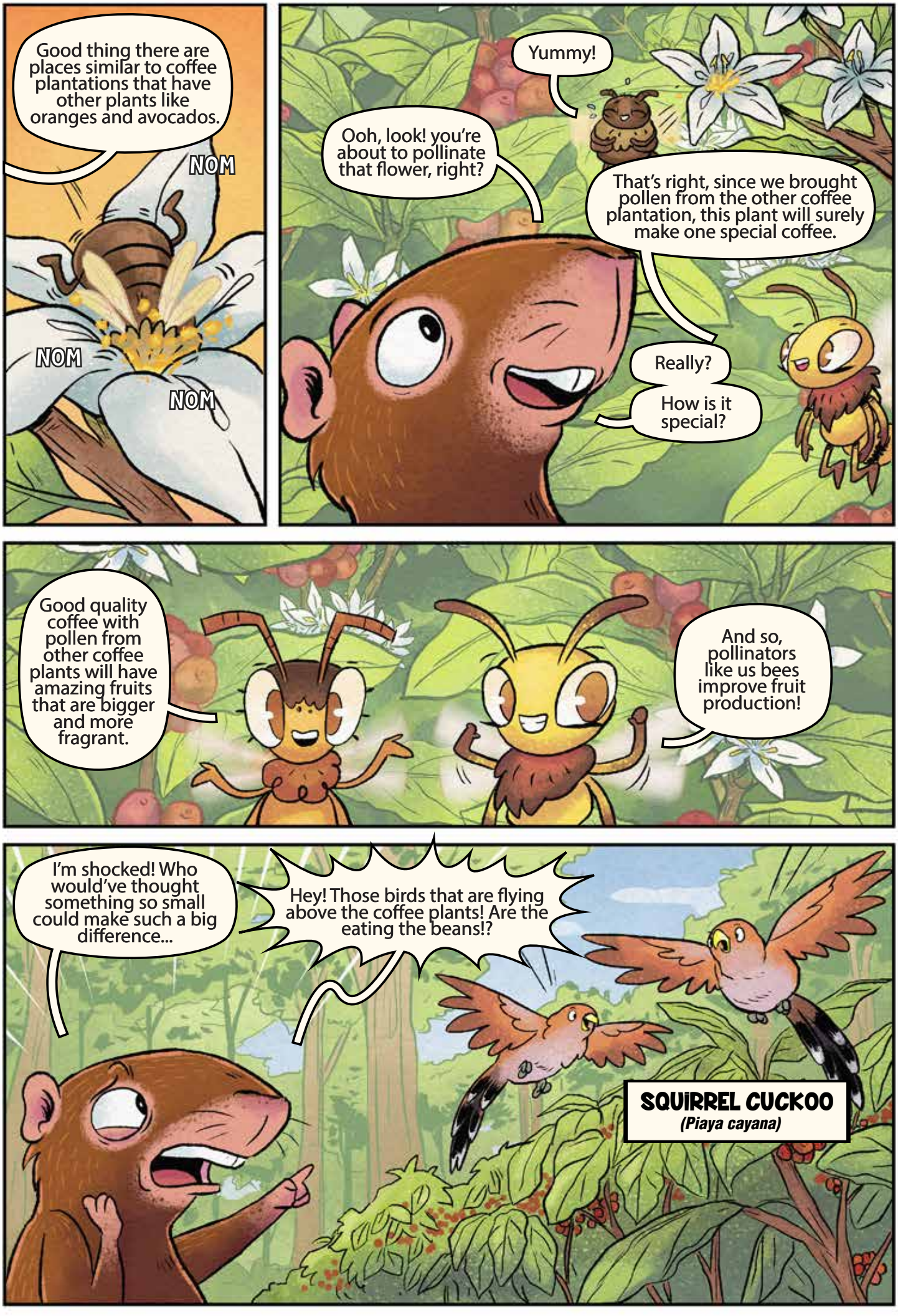

Wow! So you could say that without pollination, the plants wouldn't fruit?
That's right! Even though pollination is like a lottery.
Lottery?

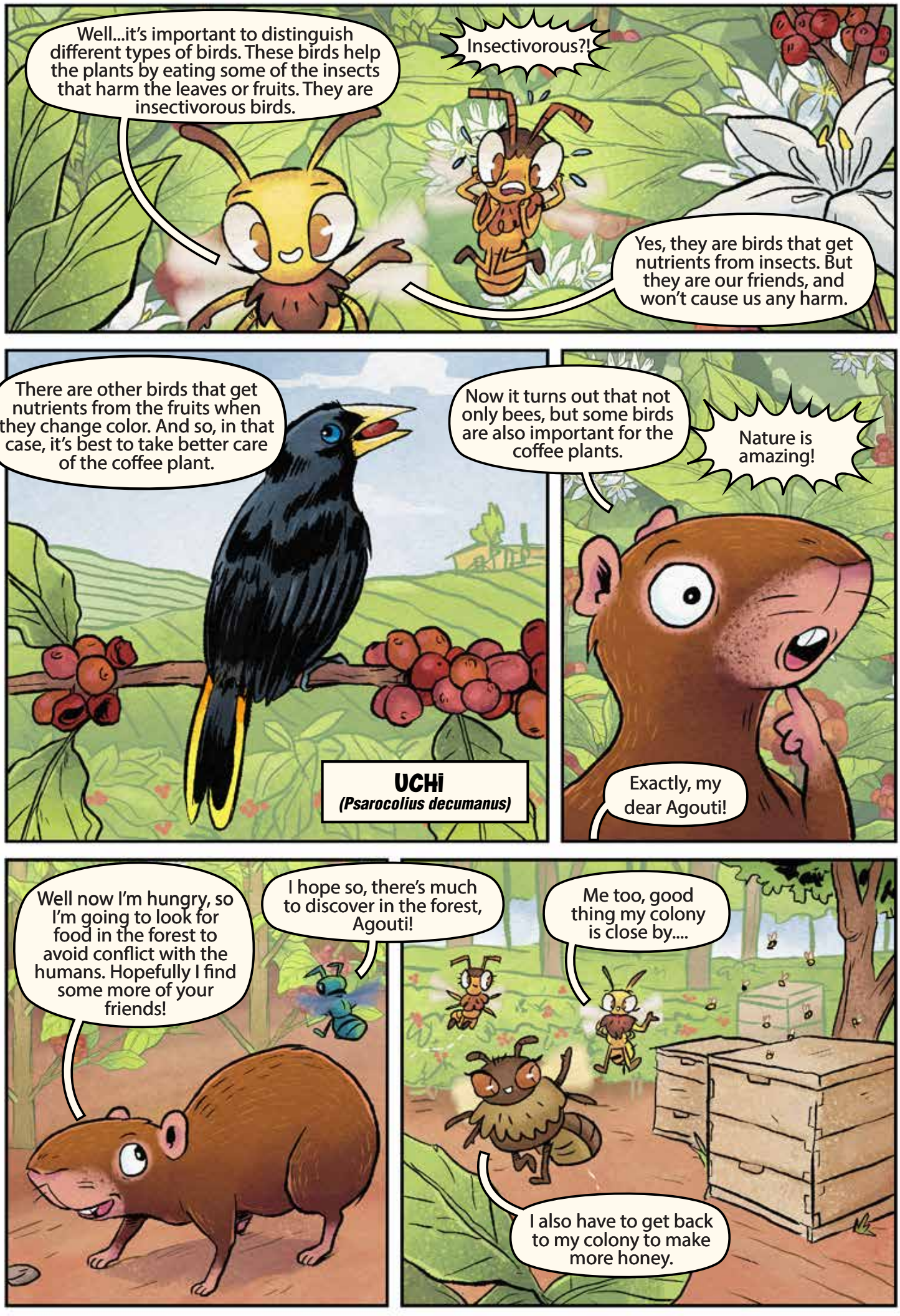

Yup! Even though we bring pollen to the flowers, the flowers don't always produce fruit.
It's complicated, but it depends on how much pollen we give the plant. There are some plants like coffee that can fruit without the pollen traveling from one flower to the other. But others, like the avocado, need pollinators like us.


Anyway, when the pollen comes from different plants, they produce better fruit that's bigger, more nutritional, and fragrant.
I do love those big, sweet smelling fruits!
So to my understanding, it's best that cross pollination happens to produce better fruit, right?
That's right! When more bees visit flowers, the plants have a better chance of getting pollen from others and producing better fruit.
Like I said, it's a lottery!
That's why humans appreciate and take care of us.
Why are you sad?
It's just that humans love and appreciate you, but on the other hand, us Agoutis get shooed away, or even end up boiled or fried...
That only happens because you take what the humans cultivate. It's best that you look for food in the forest and not near any humans.
But there's not always food in the forest...plus, how can I resist those delicious beans, or corn, or yuca, or tasty avocados...


I understand that you're tempted to go for the humans' crops when there isn't much food, but what about the seeds that you burry?
Ah...well, I always forget where I burry them....
You can take advantage of the variety of nutrients that exist in the forests. There are tons of native fruits, roots, and leaves that I'm sure have lots of nutrients.
Hey friends! How was your trip to the forest yesterday?
It was awesome!
You won't believe who me met
Hmmm...let me guess....
I'll tell you! We met a Palkachupa, and the great Jukumari bear! They both live in these forests close to Apolo.
PALKACHUPA
(Phibalura boliviana)
JUKUMARI BEAR
(Tremarctos ornatus)
Get out! I walk through these forests all the time and I have never seen either of those animals.
Those animals really exist? I'd love to meet one of them!
Of course, but they are very shy and only a few of them remain. You'd have to be an expert to find them.


Did you find many flowers there?
We did! There were sooo many beautiful kinds with delicious nectar like the ones here.
But this morning, we visited some strange coffee plants.
I can see that, you came back with so much pollen on your legs!
But this coffee plantation was not like the others. It ONLY had coffee! And with all this heat, we almost got burnt because there were no trees to provide shade, so we didn't stay long.
COF!
COF!
COF!
COF!
It was terrible! Not only because of the heat, but a strong odor made us feel so weak.
And what was that smell?
Apparently the humans use lots of insecticides. Since there are so many coffee plants, they attract lots of bugs. The insecticides help get rid of them, but they also get rid of us friendly bees.
Well this is a huge problem, because if they get rid of all insects, there won't be any pollination from the bees!
This is terrible!


Good thing there are places similar to coffee plantations that have other plants like oranges and avocados.
NOM
NOM
NOM
Yummy!
Ooh, look! you're about to pollinate that flower, right?
That's right, since we brought pollen from the other coffee plantation, this plant will surely make one special coffee.
Really?
How is it special?
Good quality coffee with pollen from other coffee plants will have amazing fruits that are bigger and more fragrant.
And so, pollinators like us bees improve fruit production!
I'm shocked! Who would've thought something so small could make such a big difference...
Hey! Those birds that are flying above the coffee plants! Are the eating the beans!?
SQUIRREL CUCKOO
(Piaya cayana)


Well...it's important to distinguish different types of birds. These birds help the plants by eating some of the insects that harm the leaves or fruits. They are insectivorous birds.
Insectivorous?!
Yes, they are birds that get nutrients from insects. But they are our friends, and won't cause us any harm.
There are other birds that get nutrients from the fruits when they change color. And so, in that case, it's best to take better care of the coffee plant.
UCHI
(Psarocolius decumanus)
Now it turns out that not only bees, but some birds are also important for the coffee plants.
Nature is amazing!
Exactly, my dear Agouti!
Well now I'm hungry, so I'm going to look for food in the forest to avoid conflict with the humans. Hopefully I find some more of your friends!
I hope so, there's much to discover in the forest, Agouti!
Me too, good thing my colony is close by....
I also have to get back to my colony to make more honey.



Did you know?

Bees are considered vital agents in the pollination of coffee, and can be responsible for up to 36% of its fruit production.





The more species of bees that pollinate the crops, the more honey we have on our table.

The control of pests in the coffee plantations is done by insectivorous birds that also have economic importance in the agricultural sector.





Biodiversity plays a fundamental roll in the health of production within the coffee industry

COFFEE

(Coffea arabica)

A cultivated plant that is important to Apolo, as it has high economic and cultural value within the region.





SEÑORITA

(*Tetragonisca* sp., Tribu Meliponini)

I am one of the smaller kinds of bees, and I make a delicious honey that humans use as medicine. I love flowers that grow on bushes and trees, so I prefer to be near forested areas.



CHINIBARI

(*Exaeretes* sp., Tribu Euglossini)

They call me the "lonley" bee because I don't live in a colony. I am a native bee and I love getting my pollen from orchids. You could say we've "adopted" one another, as I help pollinate the orchids, and in return I get a sweet, nutritious treat!



MOJOCO

(*Melipona* sp., Tribu Meliponini)

I am one of larger native bees, even though I am a bit smaller than European or Africanized bees. I make a delicious and nutritious honey that is also considered medicinal.



AFRICANIZED BEE

(*Apis mellifera*)

I am a bee that was introduced by humans. I am originally from Europe, but humans began to breed us so that they could have easier access to honey, so they've taken me all over the world!



AGOUTI

(Dasyprocta variegata)

I am very curious, but also a bit clueless. I love to eat fruits, roots, and often bury seeds to save them for later when they are scarce. I love to explore lots of places to find food, even though most of the time I enter cultivation areas and bother humans.

CONSERVACIÓN
Amazónica
ACEAA

Central Office - ACEAA Conservación Amazónica
La Paz Boliva.
Location:
Calle 16 de Calacoto # 8230
Office Tel.:
(+591) 2-2124987
info@conservacionamazonica.org.bo

Cobija Office -ACEAA Pando, Bolivia.
Location:
Calle Juan Oliveira Barros s/n (a media cuadra de la calle Cataratas)
Office Cell:
(+591) 67172203
Email:
asistcobija@conservacionamazonica.org.bo

Trinidad Office - ACEAA Beni, Bolivia.
Location:
Avenida 6 de Agosto esquina Calle los Macheteros
#615
Office Cell:
(+591) 67009214

VISIT US:
www.conservacionamazonica.org.bo
conservacionamazonica.org.bo
@AceaaAmazónica

WITH SUPPORT FROM:

ANDES AMAZON FUND