



Biologist

Lucy's Story

Lucy: (Thinking) This field trip has been so fun. Mark the environmental educator was so funny. (fuzzy image of Mark) Who would of thought they did all of those things on a National Wildlife refuge?

Sarah the Biologist: (Noticing Lucy) Oh...Hello..Are you having fun today?

Lucy: Yeah, everything has been so exciting. I have learned about fishing, and I love fishing. My name is Lucy....Who are you?

Sarah: Well Lucy, My name is Sarah, and I am the biologist on this refuge.

Lucy: Wow so you get to do all of the science stuff. I love science. At school we just dissected a frog. At first I thought is was going to be icky, but I learned so much I forgot to be grossed out.

Sarah: (Chuckling) Yeah I remember those classes. Just like you, I loved science when I was a kid, now I get to do it for a living. So does my best friend from high school. She also works for the Fish and Wildlife Service monitoring endangered species. Her office is in Ohio.

Lucy: Really, that sounds great... but ... it looked to me like you were just pulling weeds.

Sarah: Weeding is science when you are getting rid of invasives.

Lucy Invasic...what?

Sarah: Invasives. Invasives are plants and animals that someone or something brought here from another place, and now they're taking over and not letting native plants – the ones that are supposed to be here – grow.

Lucy: Like when my parents brought my little brother home?

Sarah: Hehe...not really, but it sounds like you get the idea. Invasive species are a big part of my job here on the national wildlife refuge. I monitor wildlife and plants to make sure that only native ones are here. When I find invasives, I figure out ways to get rid of them.

Lucy: Like weeding..

Sarah: Yup..in fact I could use your help. Can you help me get rid of the cheat grass and dyers woad you can see around here?

Lucy: I would love to. What should I do?

Sarah: Cheat grass has invaded America and crowds out native plants: it look's like this. Dyers Woad came from Russia and

actually produces chemicals that make it difficult for other plants to grow around them: it looks like this. Click on the plants to dig them up. Make sure not to dig up the other plants.

(Mini-Game) Feedback from Sarah: (Good) Yeah that was an invasive. (Bad) Woah. Don't dig that one up. It is native.

Sarah: Thanks Lucy. You really helped me out!

Lucy: That was hard work. I hope it made a difference.

Sarah: It can be hard work, but it is definitely worth it. Invasive species can hurt native plants in a lot of ways; they compete with native species for the same food and water, and they can even cause native species to become extinct.

Lucy: Wow! What can I do to help?

Sarah: Well really the best thing you can do is be careful. After you and your family spend time outdoors make sure to remind your parents to clean their boats and cars before they leave the area. You don't want unwanted invasive hitchhikers coming home with you.

Lucy: Be careful...Clean our stuff before leaving..Got it...I will make sure my parents do this.

Sarah: I'm sure you will. Well the invasives are gone. Feel free to explore the area. I will be here to answer any questions you might have.

Mountain Pine Beetle

Lucy: Eww..Why are people putting their gum all over on those trees? It looks like the gum is making the trees sick.

Sarah: That isn't gum. Those trees are infested with Mountain Pine beetles. Those gummy looking things are called pitch tubes and are created by the tree to fight off the beetles.

Lucy: So it is like a war?

Sarah: Yes but not a very fair one. The beetles almost always win. They attack pine trees and burrow under the bark and lay eggs. Once infested the tree dies from a fungus carried by the beetle that stops the flow of sap in the tree.

Lucy: So the beetle makes the tree dry up inside...How sad.

Sarah: Yeah, it is a native beetle that has always lived in our forests, but over the last 20 years the problem has become worse due to the rising temperatures caused by climate change. Now it is not cold enough during the wintertime to kill the beetle.

Lucy: Is there anything we can do?

Sarah: Actually there is. People can inspect the trees around their house. If they shows signs of the beetle, they can test the trees to make sure it is living in the tree. Infected trees need to be cut down and destroyed to make sure the beetles do not fly to new trees in the summer.

Habitat Restoration

Lucy: Why is that part of the refuge so dirty? It looks like my older brother's room.

Sarah: Actually, this is a brand new part of the refuge. The trash and pollutants people throw into the river upstream wash downstream and collect here and in other areas of the refuge.

Lucy: So you are stuck with other people's garbage.

Sarah: Yes, but we are trying to do something about it. That area by the river is a place where lots of animals live. We recently were able to buy this land, and we will clean it up. That will allow us to make sure that the animals and plants in the refuge have the best possible place to live.

Lucy: So you guys are like superheroes and save animals from getting sick and hurt.

Sarah: I guess...in a way we are. People just don't realize how much they hurt the environment by having irresponsible habits like being a litterbug and dumping oil down the sink.

Lucy: You mean the things people do in my neighborhood affect the refuge all the way out here?

Sarah: Yes, but you can help just by having good habits like recycling and making sure you don't throw garbage into rivers and streams.

Conservation

Sarah: I am so glad we had a chance to talk Lucy. I am sure you are going to grow up to be a great scientist.

(Sarah leaves scene and Mark enters scene)

Mark: Hello again Lucy, I hope you learned a lot today.

Lucy: Yes sir, I learned about killer beetles, and why I shouldn't throw garbage out the window. I even helped dig up invasive plants.

Mark: Wow, you have been busy. Is there anything else you want to know.

Lucy: Well, Sarah said that it has not been cold enough to kill the Mountain Pine Beetles in the winter. Why has it been too warm in the winter?

Mark: That is a tough question, but one thing that contributes to warmer winters is the destruction of forests and trees around the world.

Lucy: What...I don't get it. How can trees make it warmer or colder?

Mark: Well, in a nutshell, trees get rid of CO₂ from the atmosphere. Too much CO₂ gases trap heat here on the earth causing the earth to get warmer and warmer. The more trees that are cut down or burned the more CO₂ gas there is in the atmosphere. This could be a cause for warmer winters.

Lucy: I wouldn't of guessed. Trees are more important than I thought. I can't wait to get back home and tell the guys what I have learned.