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Beetles and Moths Podcast and Scientist Interview

Nebria brevicollis, Lymantria dispar, Anoplophora glabripennis

Tiny stowaways like the European gazelle beetle are arriving on container ships and wreaking havoc with native ecosystems. Long-standing pests like the gypsy moth have been joined by new exotic species that are crowding out North American fauna.

Transcript

Ari: From the Encyclopedia of Life, this is: One Species at a Time. I'm Ari Daniel Shapiro.

Ari: This is the sound of a dozen black beetles, each the size of my fingernail, scampering about in a plastic baggie. The person holding that bag is Jim Labonte, an entomologist with the Oregon Department of Agriculture.

Labonte: The beetles that you hear are an exotic European species called *Nebria brevicollis* – the European gazelle beetle. And they were found just a few years ago in Oregon, and that was the first detection in North America. And they have become so abundant that we are concerned that they might be starting to compete with and exclude other native species.

Ari: That's Labonte's beat these days. He works with exotic species. Exotic because they're from somewhere else. The beetles in this baggie came from a single fistful of Oregon soil. And it's not just *Nebria brevicollis* that Labonte's on the lookout for.

In the past few years, he's found one new foreign species every month, and those are just the ones he's detected. On this particular day, Labonte's searching for bugs in traps in a lush vineyard in Hillsboro, Oregon – outside Portland.

Labonte: This is called a pitfall trap. And it's used for catching insects that will crawl over the ground. It's basically just a drinking cup that's set in the ground with some preservative in there so the specimens don't rot.

Ari: Labonte holds up the clear cup and eyes its contents. A mix of native and exotic bugs speckle the green liquid at the bottom. The same goes for the other traps scattered about the

vineyard. Some local bugs, some foreign ones. Labonte doesn't welcome the ones from someplace else.

Labonte: It's a type of ecological pollution, if you will. They don't belong there.

Ari: The real problems start when an exotic species becomes invasive, causing severe ecological and economic damage.

Labonte: So, for instance, gypsy moth. Gypsy moth love oak trees. So where you have heavy infestations of gypsy moth, oak trees tend to diminish after a while. And they're replaced by other trees that gypsy moth don't like quite as much, like for instance, maple trees. Asian longhorn beetle –

Ari: Another kind of exotic invasive species...

Labonte: Loves maple trees. So if that gets well-established, you can pretty much kiss off maple trees. So when you lose one species, you don't normally lose just one species. You lose the species that are dependent on it or associated with it.

Ari: Labonte's wife, Diana Kimberling, agrees. She's also an entomologist for the Oregon Department of Agriculture.

Kimberling: Last year we were dealing with eradicating gypsy moth here in Oregon. If it did become established, a lot of the native moths that are dependent on oaks, could be out-competed by the gypsy moths. So when those native species decline and you just have a single dominant exotic, it really does have this whole cascade of effects.

Ari: The real culprit here is global trade. Insects can burrow into packing crates, or stow away on cargo ships, and end up on a different coast, like in Oregon, where they can ravage native ecosystems.

Labonte: So if we can detect them early, then it gives us the best chance for being able to either restrict their subsequent expansion of range or to maybe even eradicate them.

Ari: Labonte told me one story about a time he helped out with an eradication effort in Chicago of the Asian longhorn beetle, scientific name *Anoplophora glabripennis*.

Labonte: This is a species of beetle whose larvae bore in live trees. At that time, there was no recourse when you found an infested tree except you cut it down, burn it or chip it into pieces so small that no larva could survive inside of it. So I happened to go into this one yard, which had a magnificent maple tree: the canopy of the tree filled the entire backyard. And I found evidence of the Asian longhorn beetle. And one of the most distressing things that I've had to do in my career was to tell the homeowner that this wonderful, beautiful tree was going to

have to be destroyed. And she was clearly heartbroken, and understandably so: this tree had been part of her life. She had grown up in this house. But she understood the need to do this so that Chicago would not have such a widespread infestation of these that every tree of this type would be destroyed. And this demonstrates on a very small scale the impact of exotic invasive species.

Ari: To hear more stories about exotic invasive insects, visit our website: eol.org. You can also hear how Jim Labonte and Diana Kimberling met.

Labonte: Beetles brought us together!

Ari: Let us know if you've got a local example of how an exotic invasive species – insect or otherwise – gained a foothold in your community. Or maybe how it was thwarted. Just go to eol.org. Our series, One Species at a Time is produced by Atlantic Public Media in Woods Hole, Massachusetts.

Meet the Scientist

Meet scientist Jim Labonte, who you heard in the Beetles and Moths podcast:



Where do you work?

I am a taxonomic and survey entomologist for the Oregon Department of Agriculture.

What do you study?

For my personal research, I study all aspects of the biology of carabid beetles (including their taxonomy) and for a paycheck I work on the survey for and identification of exotic insects, especially wood associated species.

What are three titles you would give yourself?

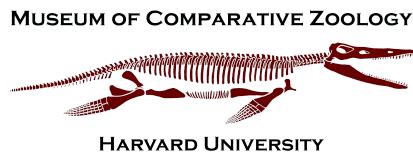
Naturalist, biophile, dilettante.

What do you like to do when you are not working?

I garden (flowers), read fantasy and science fiction, enjoy life with my wife and our twelve pets (two dogs, three cats, four goats, and three house rabbits) at our home on six acres, and, when I can afford to, engage in ecotourism.

What do you like most about science?

The best thing about science is the joy of discovery, which is easy to experience because we know so little!



The One Species at a Time podcast series is supported by the Harvard Museum of Comparative Zoology.