The Exotic Lonicera

[Instructions: Read through the case, including the links, and answer the discussion questions at the end.]

Saturday mornings were earmarked for tackling household chores—especially since the weekdays were so busy now. He really just wanted to buy some shrubs, head home, and get them planted. He had hoped to get the front yard landscaped this morning so that he could watch the football game this afternoon. It was one of the last games of the season. Yet here Brian stood at the garden center, scratching his head and wondering what to do. Should he say something to the sales clerk or ask to speak to the manager? He was thinking he would really like to leave work at work for once. After all, his desk was covered with news articles, memos, phone calls, and projects about this issue. Sometimes he wished he could just walk away and forget he ever saw them. Pretend they didn’t exist. But he knew this problem wasn’t going to go away any time soon. He wasn’t a public policy maker, and he certainly didn’t see himself as a tree-hugging activist. As a park naturalist and director of Franklin Park, a city-owned natural area, he questioned his ability to really make any headway on the problem. Yet, how could he ignore them standing there in all their glory? All leafed out, with their red berries glistening in the sun. Grrrrrr.... Those red berries, Brian thought to himself.

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"Mr. Brian, do monkeys eat those berries?" a little girl had asked last Tuesday as Brian was leading a group of school children on a hike through the park. With a chuckle he had
explained that there were no monkeys in the woods of Tennessee but that other animals
te the bush honeysuckle berries. "And that causes us problems. Birds eat those berries
and then fly to other places in the woods. When they poop, the seeds from the berries are
in their poop." The kids had giggled over that, of course. "The seeds then end up in the
soil and germinate next spring to form new plants. The plants grow very quickly, and in a
few years they're the only shrubs under the trees. Many years from now, when the trees
die, there won't be any baby trees to take their place. Only these bushes. Some people
don’t like that. They think these plants don’t belong here because they came from Asia.
People call them 'exotics' or 'biological pollution.' Today, bush honeysuckle has spread
over most of the eastern United States and parts of Canada." Brian had paused and then
pointed, saying. "See those woods over there? Now that's what a wooded area in
Tennessee is supposed to look like...."

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"But the berries add color and contrast to my garden in the winter," declared a man sitting
in the front of the room at the Chandler’s Glenn Garden Club luncheon when Brian spoke
there on Wednesday.

The men and women in the gardening club had listened politely as Brian told them about
how *Lonicera maackii* was deliberately introduced into the United States. They had
nodded knowingly as he read out loud several passages from a U.S. Soil Conservation
Service brochure that claimed honeysuckle could be used to "Invite Birds to Your Home"
and that it "Competes well with other vegetation."

Brian liked to provide some historical context when he gave these talks. He described how
in 1897 an agricultural explorer working for the U.S. Department of Agriculture had sent
honeysuckle seeds back from Russia to Washington, D.C. Some of those seeds were sent
to the New York Botanical Garden as part of a Plant Introduction Experiment that
involved shipping seeds to the United States to see how well the plants would grow here.
By 1927, *Lonicera maackii* had been imported and released at least seven times in the U.
S. By 1931, at least eight commercial nurseries were selling it in this country. "Today, as
many of you know, local nurseries sell a cultivar called Rem-Red, which is just one of the
cultivars that the Soil Conservation Service developed for use by government agencies
and property owners to stabilize soil, to attract birds and other wildlife, and as ornamental
landscaping."

Sensing their interest, Brian had continued. "But the problem is, these non-indigenous
plants don’t stay where you plant them. In the mid-1920s, the Morton Arboretum near
Chicago reported that *Lonicera maackii* tended to spread readily. Today, you can find
bush honeysuckle throughout Franklin Park, where it has spread from neighboring yards.
Non-indigenous plants like *Lonicera maackii* can lead to the homogenization of the park
by displacing native species. If this 'biological pollution' continues, the plant species composition of our park will look just like everywhere else and there won’t be anything unique or special about it."

"How many of you have been on wildflower hikes in the Great Smoky Mountains National Park in eastern Tennessee?" Brian had asked. "I see that several of you have. Well, the staff there report that 400 of the park's 1,500 vascular plant species are exotic and that 10 of these are displacing and threatening other species in the park. While our problem here in Franklin Park isn’t that extensive, we encourage homeowners to remove invasive exotics like Lonicera maackii from their gardens and plant native species instead. There are lots of attractive native species that serve many of the same purposes as the exotics that gardeners commonly plant. Many of the native species require less maintenance and are more cost-effective in the long-term. I have with me copies of a brochure that lists native species you can use in home landscaping that I’d like to distribute to you...."

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"Why don’t we just bring some bugs from China to eat the berries so that the plant won’t spread anymore?" The best questions always came from the high school kids, Brian thought to himself. The students in Hillmead High's ecology club had listened intently to him on Friday morning during the exotic plant pull he had organized at the park.

"You’re right in realizing that this plant has no natural competitors, no enemies, nothing to keep it in check. In their fight against invasive exotics, some biologists have used various means of "bioc stretching." Sometimes it works, like when beetles were introduced from Eurasia, Europe, and Africa to control St. Johnswort, an introduced plant that had destroyed millions of acres of rangeland in this country. But sometimes things go awry. The mosquito fish Gambusia affinis and Gambusia holbrooki were introduced to control mosquitoes but the fish also preyed on native fish species and are now hybridizing with native fish species in Texas."

One of the students had interrupted at this point and asked, rather nervously, "How will we know which plants are honeysuckle? What if we pull up the wrong plant?"

"Let me show you how to identify bush honeysuckle, which is also called Amur honeysuckle. This time of the year, most of the native herbaceous plants have died back and the native shrubs have dropped their leaves. Amur honeysuckle is one of the few shrubs that keeps its leaves until late autumn. These plants also produce new leaves earlier in the spring than the native species so it's fairly easy to identify them. Also, look for opposite leaves and striped bark."
"Some of these plants are huge. They’re at least six feet tall. Do we remove those, too?" another student had asked.

"Amur honeysuckle can grow six to 20 feet tall, but we'll leave the ones that are over six feet. Later, park staff will come through and cut them down with chainsaws and then apply a herbicide. Today, we’ll just remove the smaller plants, making it easier for the park staff to work in this area with their chainsaws."

"Do we just chop the plants down?" a particularly eager student had asked.

"We'll use our Weed Wrenches® and mattocks to pull the plants up, making sure to get as much of the root as possible. If not, the plants can easily grow back from the roots. Amur honeysuckle is an aggressive plant. It grows quickly, and each bush produces a lot of berries. The berries germinate throughout the year under a wide range of light conditions, and the plants can tolerate a wide range of light and moisture. They grow well in disturbed sites, like along the edge of this picnic area where we are working today. So use your mattocks to ….

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"Are these berries also from amur honeysuckle?" Jinnie had asked on Friday afternoon as she and Brian were walking through a wooded area of the park. They had been discussing Jinnie's research for her college senior thesis project.

"No, these are from an endangered hawthorn found here in the park. This is the plant we want to protect," Brian had told her. "I was hiking this south ridge last week and noticed that some trees had fallen. They probably got blown over in the storm last week. I'm concerned about that small stand of native hawthorns over there. I want to do everything I can to protect it. This is also a great area for native spring wildflowers. "

"I don’t understand," Jinnie had said. "What does a fallen tree and some endangered hawthorns have to do with exotic plants?"

"Last time a tree blew over in the park, the gap quickly filled in with honeysuckle. Then the honeysuckle began to invade the woods beyond the gap. We need to know more about how exotics invade the core of the park and how their presence affects the overall biodiversity of the area. Scientists aren’t sure whether exotics cause damage to natural ecosystems by competing with native species or by changing the ecosystem processes in the area so that the natives are no longer able to survive. Regardless of the process, I would sure hate to lose those hawthorns."

"Has this park ever lost any endangered species because of exotics?" Jinnie had asked.
"I'm not sure about here in this park. We don't have any records of that happening. But almost half of the species and subspecies listed as federally endangered are primarily threatened by competition with or predation by non-indigenous species. Some endangered species are threatened by exotic diseases carried by introduced species. Many are threatened by the habitat destruction caused by invading exotics."

"Will other people be working on exotics in this area?" Jinnie had wanted to know.

"Not in this area. There are other parts of the park where we depend on volunteers to help us control exotics by manually removing the plants. Controlling and monitoring exotics is expensive and very little federal or state money is available to help. Recently, I read somewhere that the federal government spends only about four cents per acre to control exotics on federal lands. We've certainly found that keeping the exotics out is much easier than removing them once they've become established. Your research project will help us to better understand the rate of invasion and the impact exotics have on the more pristine core areas of the park."

Jinnie had mulled this over and then remarked, "So, it seems like over time we would want to record the number of honeysuckles and other species in the gap as well as beyond it, including the area where the hawthorns currently exist. What other kinds of data do you envision collecting?"

"Let's head back to my office and talk about the various ecological and environmental data you might consider.…"

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"Excuse me, sir." Brian jumped as the sales clerk interrupted his thoughts. "Do you want to buy some honeysuckle? It's our best-selling shrub, grows in a wide range of conditions, and has beautiful red berries that.…"

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**Discussion Questions**

1. List the characteristics of exotics (ecological and biological) that can enable them to be effective invaders.

2. List the reasons (social, political, and economic) that people have deliberately introduced exotics into the U.S. Name some ways in which exotics have been accidentally introduced.
3. Is there a difference between an "invasive exotic" and an "exotic"? Think about the tulips commonly seen in yards in the spring--or potatoes and rice grown in the U.S.

4. What characteristics of communities increase their invasibility?

5. What are the effects of exotics on community structure?

6. Defend or dispute the statement: "Exotics increase the biodiversity of an area." [Hint: explore the various meanings of the word "biodiversity." ]

7. Defend or dispute the statement: "Exotics play an important function in urban landscapes."

8. Should legislation be enacted to regulate the import, sale, and distribution of exotics? If so, should this legislation be at the local, state, or federal level? If not, then why not?

9. Assuming that legislation of exotic species should be enacted, what should it include and what information should be used to determine the laws governing exotic species?

10. Should Brian say anything to the sales clerk or manager about the honeysuckle? What role, if any, do you think biologists should play in forming public policy?

**Image Credit:** Photographs of *Lonicera maackii* (amur honeysuckle) courtesy of the [Web of Species](http://ublib.buffalo.edu/libraries/projects/cases/exotics/exotics.html) at Wellesley College.

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