



Topic: Japanese Knotweed – an invasive plant species

Knowledge:

- Japanese Knotweed is a fast-growing plant with a stem that looks similar to bamboo. It has heart-shaped green leaves, and small, white, spiky flowers in August/September. It grows in dense patches, and can reach 8-13 feet tall. It also grows rhizomes (underground branching stems) that can grow 65 feet underground, before popping up as a new plant. Its stem is easily broken and is hollow in the center.
- Japanese Knotweed is a plant that is not native to the state of Michigan. This means it was introduced by humans relatively recently, and has not historically been part of the plant life in Michigan.
- Japanese Knotweed is also invasive. This means it causes problems or is hard to control. Specifically, Japanese Knotweed grows quickly, has deep roots, and crowds out other plants by blocking light. It also releases chemicals into the ground to stop other plants from growing. It can block pipes and penetrate cracks in asphalt and concrete. Finally, it erodes soil banks when its branches and roots break off and wash downstream.
- It is illegal to plant Japanese Knotweed in Michigan because of the problems it creates. It often spreads when lawn mowers run over it and scatter cuttings and seeds. It can also wash downriver and regrow on a new bank of a stream. Finally, it grows when people dig up the dirt it was growing in, and dump the fill somewhere else.
- Its roots can survive for up to three years.
- Michigan has a wide variety of native plants that function well together and in a larger food web with other organisms ranging from bacteria to complex mammals.

Sources:

Japanese Knotweed, Michigan Department of Natural Resources, Michigan Natural Features Inventory 2012 2.
http://www.michigan.gov/documents/dnr/knotweed_BCP_372280_7.pdf?20150928201756

David R. Clements, Todd Larsen, and Jennifer Grenz. *Invasive Plant Science and Management* 2016 9 (1), 60-70.
<http://www.bioone.org/doi/abs/10.1614/IPSM-D-15-00047.1>

Ethics:

- The Bible teaches that God has called us to serve as stewards on earth. Not only are we called to take care of the earth, but we are to do it in a way that reflects God's character, since we are made in God's image. Stewardship involves using creation's resources responsibly for our own needs, as well as serving and preserving the creation for future generations.
- When an ecosystem is threatened by an invasive species, we should identify possible harms and seek to rectify them. Unbalancing an ecosystem can have a wide-ranging impact on the plants, animals, and human beings in that area that depend on it for food, clothing, shelter, and other uses. An unbalanced ecosystem can even alter the landscape of the entire region.
- It is important to reduce and remove Japanese Knotweed, so that it does not further harm Michigan ecosystems. These actions serve to protect creation and to restore it to health. This provides an opportunity to serve as stewards.

Practice:

- The following steps are necessary for removing Japanese Knotweed:
 - ≈ Identify it—see knowledge information on appearance.
 - ≈ Apply an herbicide that penetrates down to its roots (Arsenal or Clearcast are effective). Do not apply the herbicide near running water without a permit. Some herbicides can kill surrounding plants, too, and have other unintended consequences, so be aware of what and where you are spraying and avoid overuse.
 - ≈ Do not mow or till Japanese Knotweed as that creates more places where it can sprout and grow.
 - ≈ If there are less than 50 stems in a clump, it can be dug up and placed in a trash bag as garbage. Do not compost it, as it will only regrow there. It can also be burned.
 - ≈ Keep an eye out for new sproutings over the next four years, as it is particularly hard to eradicate and can regrow quickly. Spray or remove new sproutings every year.
- Educate others on what Japanese Knotweed is, how to identify it, and why it's necessary, both ecologically and theologically, to remove it. Share how we can serve more effectively as stewards caring for creation.

Film Idea:

Main Theme: Seeing ecosystems as sick or healthy, and invasive species as illness.

First Act: An ecosystem falls ill. A doctor takes a look at a piece of ground infected with Japanese Knotweed and points out to a nurse what it looks like (this covers introduction of general characteristics of Knowledge section). The nurse asks questions as part of back-and-forth dialogue to cover all information.

Second Act: Two doctors during their break time. One of them expresses weariness with trying to treat diseases that keep recurring. The other responds with big picture and theological reasons why this matters. Dialogue back-and-forth and renew commitment to seeking healing (covers the Ethics section).

Third Act: The intervention. The doctor tries several treatments, but the disease resists or recurs. Stronger treatments become necessary. Need live scenes of moving and tilling of the plant, throwing away chopped pieces, plants regrowing. Delivery of pesticide, and time lapse of plants dying. Doctors removing root buds, bagging and burning them, celebrating progress.

Fourth Act: Doctor meets the owners of the plot of land, and stresses the importance of vigilance against regrowth. Congratulates them on the current healthy status of the ecosystem, and exhorts them to good choices in the future.

The Stewardship Triangle image is adapted with permission from Calvin B. DeWitt, *Song of a Scientist* (Faith Alive, 2012), p.77.