CORE LESSON: Fire Sculpture

Objectives and Summary: The "Fire Sculpture" is a large and dramatically burnt snag (stump) located a short walk from the Waskowitz campus; the fire of unknown origin and date left behind a bizarrely shaped 30 ft stump. This lesson gives students an opportunity to appreciate, and be inspired by a unique natural space, and to practice sketching and creative writing skills.

Background: (From NPS teacher fire ecology field guide.)

Fire plays an important role in many ecosystems. It is a natural, episodic event on the same level as other natural occurrences, such as tornadoes, earthquakes, and floods. For many ecosystems, fire is essential for succession, regeneration, and maintenance of healthy forests. Land managers now recognize the necessity of fire to maintain healthy ecosystems and consider fire a necessary tool in monitoring and managing native flora and fauna.

Humans and Fire: Many indigenous cultures throughout North America learned to wield the power of fire in order to maintain, create, or protect valuable resources. Some tribes used fire to drive game animals into narrow chutes, lakes, and even off cliffs for easy hunting. Fire was also used as a means of protecting valuable resources by using it to clear undergrowth in forests and to maintain the ecotones along forest edges (the places most diverse in plant and animal life). Fire as a means of warfare, burning the land they wanted to protect from neighboring nations, and utilizing smoke as a means of communication over long distances, were also utilized.

European settlers mainly used fire for ease of settlement and unification of the land. Slash-and-burn techniques became a common agricultural practice for clearing land and recycling nutrients. Along with European settlers came the mentality of using fire as a destructive force. It was considered a dangerous natural disaster that should be suppressed to protect homes and land. This philosophy of fire as a danger has been perpetuated in modernity by the cultural icon and nation-wide Forest Service campaign of Smokey the Bear and the classic Disney movie Bambi.

This approach of suppressing all fires was used by public land managers until the 1960s, when ecologists began to better understand the necessity of natural fire. Fire suppression had caused an increase in fuel severity and intensity, especially among plant communities that had historically experienced frequent low severity fires.

Plant and Animal Fire Adaptations: Plants and animals have developed both physical and behavioral adaptations to help them deal with the natural occurrence of fire. The following species can be found at Waskowitz:

Lodgepole pines can produce serotinous cones, which require heat to open and germinate, however they also produce cones that open when the seeds are mature, in the same way as other conifers. The ratio of serotinous to non-serotinous cones on a tree varies with stand composition and location. Lodgepoles have relatively thin bark but are able to survive most low-intensity surface fires. The seedlings grow quickly in the clearings where the duff has been scorched away. Lodgepoles may only live about 100 years before they begin to die, this is relatively young for a tree, and these trees rely on

disturbance for re-establishment. Without fire, other types of shade-loving conifers would eventually dominate the lodgepole forests.

Douglas-fir are shade-tolerant trees that often grow slowly beneath faster growing, sun-loving species. Their branches grow close to the ground, acting as a ladder and allowing fire to spread up the trunk and often to the crowns of other trees. As a douglas-fir matures, thick bark helps to protect against surface fires. It does not possess the ability to re-sprout from its bulb and root structure, therefore regeneration from reseeding is its only form of restoration. It may take as long as a hundred years for Douglas-fir to reestablish itself after an intense fire.

Woodpeckers: Frequent surface fires help to maintain older trees by eliminating competition from younger trees. Older trees are more likely to experience rot or canker fungus. Standing trees with rot provide excellent nesting cavities for woodpeckers and completely fallen trees provide food. Woodpecker populations often increase following high severity wildfire, capitalizing on the insects that infest the fire-killed trees.

Badgers and other burrowing animals are rarely threatened by wildfires. Although badgers live in the montane where fire is a natural occurrence in the ecosystem, there are rarely mortalities because badgers tend to stay underground during the day, when fires reach their peak temperatures. They can dig deeper underground when threatened and often have multiple entrances to their burrow, making asphyxiation unlikely. However, they may leave an area following a fire, due to a decrease in available food.

Standards:

Materials

- Backpack to transport materials
- Charcoal, and charcoal sketch paper for each student. Located in Charcoal Sketch bin in teachers room.
- 1 sketch board per student, located in teachers room.
- Pen or pencil

Location and Duration: The fire sculpture is located about a 10min walk from the Waskowitz main campus on the 300 acers. It can be accessed via the Fire Sculpture trail on the Waskowitz map; 60min.

HS Leader Role: Participate in and role model the creative writing and sketching activity.

Procedure

Introduction (10-15min): Once students are seated in the shelter near the fire sculpture, discuss the important ecological role played by fire. You could begin this conversation by asking students to help you list the problems caused by fire… and then moving on to see if anyone can list the benefits. Use the background knowledge above to aid students in listing the benefits of fire, and/or the problems associated with modern fire suppression policies. You may wish at this point to ask a HS leader to share their version of the “Mouse and Douglas-Fir Story”, and a Doug-fir ID device that features fire ecology,

or read it yourself (this story could/should be supported by gathering and distributing Douglas fir cones prior to the telling):

The Mouse, Douglas Fir and the Great Forest Fire

-Adapted from a well-known local legend, by Heidi Bohan

A long time ago, when the animals and plants could speak to each other, there was a great forest fire burning through the forest. Little Mouse ran as fast as he could away from the hot fire but he knew he could not outrace the fast moving flames. He began to run from tree to tree asking them if they could save him. First he ran to the bigleaf maple tree. "Help, help!" he cried. "Can you help me escape this fire?" Bigleaf maple tree replied, "No, I'm sorry little mouse, I am afraid that I will not be able to survive this forest fire". The mouse then ran to the red cedar tree. "Help, help! Can you help me escape the fire?" "No, I'm sorry little mouse, but I do not think that I can survive this great forest fire, either" said Red Cedar. Mouse ran from tree to tree asking the same question, and getting the same answer.

Finally he came to a great old Douglas fir tree, with its thick furrowed bark. "Help, help, Douglas fir! Can you help me escape this fire?" And Douglas fir replied, "Yes, I think that my thick bark will protect me from the heat of these flames. I may be able to survive this great fire. Climb to the top of my branches, and climb under the scales of my cone for extra protection." So, little mouse did as he was told, and climbed way up into Douglas fir tree and hid under the scales of the Douglas fir cones. Many other little mice followed him and did the same. And the Douglas fir tree was right, its thick bark protected them from the flames of the fire, and the fire passed them by. To this day, if you look under the scales of the Douglas fir cone you can still see little mice hiding under the scales of the cones. Can you see them too?

Lesson/Activity: If they haven't yet noted the role played by fire in sculpting the snag, ask students to see if they can spot any evidence of fire nearby, or if they have seen any evidence in or around Waskowitz.

1) Pass out paper and sketch boards.
2) Guide or direct student observation of the fire sculpture. Some prompts for silent or group reflection could include: What sort of tree do you think it was? How old was it when it burnt? How long ago did it burn? What started the fire? How does looking at the tree make you feel?
3) Ask students to use their pen or pencil to write a 2 or 3 paragraph story *on one side of the paper* about the origins of the fire sculpture. 10-20min.
4) Tell students to turn their sheet over. They will be drawing on the other side.
5) Pass out charcoal, or direct students to take a small piece from the fire pit. They don't need much!
6) Students can now use charcoal to sketch the tree. They could be directed to supplement their drawing with notes, a title, or a poem

Conclusion: Facilitate/invite sharing of student work at the shelter, or return to Waskowitz for a gallery walk style activity.

Extension: This activity could be combined with a sit spot, or you may choose to focus your students on developing a poem to go with their sketch/story using the Waskowitz poetry resource.

Notes: