Invasive Species Profile: Running Bamboo (Various Species) Part 2

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Part 1 of this series examined running bamboo's biology and ways to keep it under wraps. Getting rid of running bamboo is more effective than trying to control it. Beware of methods depicted online; while some are good, others are useless or outright dangerous. When the larger patch encroaches from another property and that landowner is not controlling it (applicable to parcels outside of Fairfax County), severing the rhizomes at the property line by digging a shallow trench might be necessary. A pickaxe can remove a stray rhizome or two. To uproot a large patch mechanically, a bobcat or other earthmover will cut through the cable-like rhizomes. However, this method causes massive soil disturbance. Keeping the patch flooded kills it but that option relies on specific topographies, small dam construction, and a steady flow of water keeping the area saturated. Another eradication method is to continuously cut the canes down to the ground. The soft, new shoots are easily excised with any saw or pruners; these shoots are edible when properly prepared. The best and safest way to cut large, mature bamboo canes is with a special Japanese bamboo handsaw, which produces clean, efficient cuts without the blade dulling or getting damaged by tough bamboo as quickly as conventional saws or loppers. Whacking tools such as machetes are not recommended because the smooth, hard canes can make blades slip and cut someone. Saw just above the nodes because the hollow culms can collect water and become mosquito reservoirs. Always cut bamboo perpendicular to the culm since sharp angles and splintered ends can be hazardous. Remember, bamboo spikes are used in nasty things like Burmese tiger traps and fortification defenses! Furthermore, bamboo has elasticity; a bent pole can easily spring back and thwack someone. While landscaping professionals may use reciprocating or specialty power saws, chainsaws are not advised because the culms easily make the chain slip. Pouring vinegar solutions into the cuts is inefficient because the solutions do little to kill the rhizome. Using salt (sodium chloride) can be risky as excessive salt buildup in the soil can prevent other plants from growing long after the bamboo dies.

Figure 1. The large culm produced branches at higher nodes. This running bamboo has monopodial branching, meaning it has one primary branch and a thinner secondary one. Other bamboos are multi-branched.

Herbicide treatments should be avoided whenever possible. When used correctly, they are the most efficient way to destroy the bamboo patch. Glyphosate, the active ingredient in Roundup®, is especially effective on grasses including bamboo. Glyphosate is linked to cancer according to Zhang et al. (2019) and Portier (2020), although the EPA disputes this claim. Bear in mind that EPA has a history of approving chemicals only to ban them later. Glyphosate's hazards and long-term effects are still being studied. In addition to any active ingredient's toxicity, the unlisted "other ingredients" can be potentially hazardous chemicals including surfactants and emulsifiers. Always follow the label's directions and wear proper PPE including impermeable gloves. Herbicides are best used in the summer and fall months, when bamboo draws sugars from the leaves to the roots, and never in the spring, when the plant sends water and stored nutrients up into new growth. After testing many different methods on a large *Phyllostachys* patch on private property, here is this author's recommended technique that finally killed the bamboo within a year and a half. First, cut the bamboo culms with a bamboo saw to 3-4 feet high. This size is more manageable in the next steps than dealing with the full plant while remaining tall enough to avoid being a trip or impalement hazard. After clearing the large bamboo debris, recruit a partner for the next step. One person cuts the bamboo to the ground, thereby removing a trip hazard. The other uses an old paint brush to apply 40% glyphosate onto the stump, ideally within 15 seconds of the cut—before the plant starts sealing off from the cut. For large patches, divide it into sections and tackle one part at a time over the coming days or weeks. In addition to this method's high efficacy rate, it negates any need for herbicidal sprays, missing the target, and aerosolizing and inhaling a potentially toxic substance. As this initial treatment will

Figure 2. In February 2022, a patch of running bamboo was identified at Royal Lake Park next to the Glen Cove II community. Since bamboo removal at this scale requires herbicides, only licensed contractors were allowed to treat this site after the Fairfax County's Park Authority granted permission, but this route required funding. The Kings Park West Civic Associate has a strong Parks & Lakes Committee (P&L) with money to help pay the expenses. The contractors, Invasive Plant Control, Inc. (IPC), provided a price quote and P&L donated half of that money to the Fairfax County Parks Foundation for this bamboo removal, which matched the donation dollar for dollar. IPC cut the bamboo. To save money, IPC left the cut bamboo and, several days later, Invasive Management Area (IMA) volunteers ages 16 years and up hauled the culms to roll-on dumpsters (A). Glen Cove II's HOA permitted access across their property, which cut even more costs and time. All the bamboo was removed in an afternoon except for the stumps that IPC treated with herbicide dyed green (B). The filled dumpsters were sent to the incinerator. The plot was empty (C) because other plants cannot survive in the bamboo's shade, packed canes, and nearly impenetrable roots and rhizomes. Now, IPC and IMA site leaders monitor the site for bamboo regrowth. The cleared land will be allowed to heal. Quite a bit of dumping occurred here over the years, so public education on properly disposing of trash and yard waste is necessary. Native restoration plants may be added in the future depending on how the site fares.

kill most of the patch, continue monitoring the area into the next growing season, treating any new bamboo shoots. Dispose of the paintbrush, excess herbicide, and any other chemically contaminated materials as regulated by the local municipality. In Fairfax, objects like gloves can be thrown in the regular garbage; extra herbicides are household hazardous waste and brought to the I-66 Transfer Station and I-95 Landfill Complex.

Several options exist to dispose of the inevitable bamboo debris, which takes a long time to decompose. Preferably, repurpose them in useful applications such as vegetable garden stakes, fences, or trellises. Optional: many online resources demonstrate ways to preserve bamboo and extend this already hardy material's life. At one time, the National Zoo accepted bamboo to feed their pandas but this option has many restrictions. Otherwise, bundle the bamboo for curbside household waste since Fairfax County no

longer accepts bamboo with recycled yard debris. Readers outside the county should check if their municipality designates bamboo culms as household trash or recyclable yard debris. To prevent accidental regrowth, roots and rhizomes are always best destined for landfills or incinerators. Lower canes are round without branches, so they slide out of bundles when tied in four-to-six-foot lengths; best to place them in a large bin. Never dump bamboo or other yard debris in parks or other natural areas.

Expect the area to be devoid of any native plants when the bamboo is gone. If needed, temporary groundcovers, such as annual ryegrass (*Lolium multiflorum*), can be seeded on this site. Wait several months before replanting with permanent specimens. Once the bamboo dies, the rhizomes remain tough and may take time to rot, though plants can be added often with the help of a pickaxe to excavate the hole.

Virginia is home to a native bamboo genus, *Arundinaria*. Switch cane (*A. tecta*) grows in the southeastern parts and possibly Arlington according to the Digital Atlas of the Virginia Flora. River cane or giant cane (*A. gigantea*) is found in southwestern Virginia. Both species are more common in the Deep South. Hill cane (*A appalachiana*) is the shortest of the three *Arundinaria* members and restricted to mountainous localities in states south of Virginia. *Arundinaria* looks similar to arrow bamboo, but the easiest way to tell them apart is looking at the junction between the leafy blade and sheath: that area is smooth in arrow bamboo and fuzzy in *Arundinaria*. Native bamboos are not recommended as an Asian bamboo alternative because this genus is also a runner and can spread aggressively. The extensive patches are called canebrakes. A good native alternative is black willow tree (*Salix nigra*). It reaches 30-50 feet tall, grows fast, and has narrow leaves similar to bamboo. Indian grass (*Sorghastrum nutans*) is an excellent native if a grass is still desired though it only reaches 10 feet. A mixture of native species makes a wonderful screen and a great habitat for birds and other wildlife.

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For more information on bamboo:

https://harvesttotable.com/bamboo_shoots_stalk_vegetable/
https://bambubatu.com/the-most-invasive-varieties-of-bamboo/
https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=10577
https://extension.umd.edu/resource/containing-and-removing-bamboo
https://forestupdate.frec.vt.edu/content/dam/forestupdate_frec_vt_edu/newsletter/archives/2019/33-3/Coyle.pdf
https://www.guaduabamboo.com/blog/bamboo-flowering-habits
https://bambubatu.com/bamboo-flowering-a-botanical-phenomenon/

Links to the Fairfax County bamboo ordinance:

https://www.fairfaxcounty.gov/topics/running-bamboo
https://www.fairfaxcounty.gov/topics/sites/topics/files/assets/images/running%20bamboo/running%20bamboo%20one%20pager%20-%20final.pdf

For references on native bamboo:

http://www.namethatplant.net/article_nativebamboo.shtml
https://plants.ifas.ufl.edu/plant-directory/arundinaria-gigantea/
https://bambubatu.com/native-bamboo-of-north-america/

Bamboo for pandas:

https://nationalzoo.si.edu/news/smithsonians-national-zoo-seeking-bamboo-bolster-dwindling-supply

Glyphosate references are:

https://dnr.wi.gov/lakes/plants/factsheets/GlyphosateFactsheet.pdf
https://www.cancercenter.com/community/blog/2021/07/does-glyphosate-cause-cancer
https://www.science.org/content/blog-post/glyphosate-and-cancer

https://www.sciencedirect.com/science/article/abs/pii/S1383574218300887
https://www.epa.gov/ingredients-used-pesticide-products/glyphosate

Portier, Christopher J. 2020. A comprehensive analysis of the animal carcinogenicity data for glyphosate from chronic exposure rodent carcinogenicity studies. *Environmental Health* 19(18). https://doi.org/10.1186/s12940-020-00574-1

Zhang, Luoping et al. 2019. Exposure to glyphosate-based herbicides and risk for non-Hodgkin lymphoma: A meta-analysis and supporting evidence. *Mutation Research/Reviews in Mutation Research* 781: 186-206. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6706269/

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