

Bamboo Invasiveness and Control Statement

The American Bamboo Society (<http://www.bamboo.org/index.php>)

The American Bamboo Society (ABS) is concerned about misinformation regarding the potential invasiveness of bamboo, because if planted and cared for properly bamboo is not invasive. Therefore the ABS has prepared this statement to provide information about bamboo and how to grow and manage it responsibly.

About bamboo

Bamboos are members of the grass family (Poaceae). Bamboos are often called “tree” grasses because of their large, woody, branched stems, but bamboos grow very differently from true trees, and do not produce actual wood. There are over 1,400 species of bamboos worldwide and they are native to all continents except Europe and Antarctica. Like many grasses, bamboos are perennials with a rhizomatous growth habit. The woody bamboos, which make up the vast majority of bamboo diversity, flower at the end of long periods of vegetative growth (from 7 to 120 years, depending on the species) and then usually die after producing seed.

Woody bamboos are classified into two large groups, the temperate woody bamboos (tribe Arundinarieae, ca. 530 species) and the tropical woody bamboos (tribe Bambuseae, ca. 780 species). The temperate woody bamboos occur mainly in the north temperate zone, with the majority in China and Japan. Temperate bamboos are characterized by running rhizomes, although a number of genera have only clumping rhizomes, and relatively long flowering cycles, often on the order of 60 or 80 to 120 years. The tropical woody bamboos occur in tropical and subtropical zones in Central and South America, Africa, Asia and Australia. With few exceptions, they have clumping rhizomes and their flowering cycles range from 7 to 60 years.

Most woody bamboos grow in association with forests or woodlands, where the opportunistic colonization of forest gaps or edges is a strategy to compete with trees for light. Woody bamboos form an important part of their native ecosystems and provide food and shelter for a wide variety of organisms—the giant panda is only the most famous example of bamboo dependence. Bamboos are also extremely important economically—bamboo is known as the “plant of a thousand uses.” Bamboo is grown for human consumption for its edible shoots, for livestock for its edible leaves, and for its above ground stems that have many hundreds of applications, including for furniture, household items, wood pulp, biochar and construction. The live plants create habitat for birds, prevent soil erosion, and create both visual and carbon-consuming evergreen, deer-resistant screens. Bamboo is a renewable resource and if managed properly can be harvested yearly for many applications and on a 3-4 year basis for poles, whereas timber forests can take a generation or more to regrow once clear-cut.

The temperate woody genus *Arundinaria*, with 3 species, is native to the southeastern U.S.A. Close to 200 species of woody bamboos are cultivated in the U.S.A., the majority being temperate bamboos. Species of *Phyllostachys* are the most widely cultivated of the temperate bamboos. A few species of *Phyllostachys* and one or two other temperate genera have become

naturalized in some parts of the U.S.A. and two species of *Bambusa*, a tropical woody bamboo, have become naturalized in some locations in Florida.

Beware of “false” bamboos

Some grasses such as common reed (*Phragmites australis*) or reed (*Arundo donax*) are often mistaken for bamboos because of their large stems and clumping growth. Other cultivated plants, such as Lucky bamboo, Japanese bamboo and Heavenly bamboo, superficially resemble bamboos but are not even grasses. Japanese bamboo (or Japanese knotweed) is a rhizomatous member of the knotweed family (Polygonaceae) that is aggressive and partly responsible for the reputation of bamboos as invasive plants simply because of its common name.

Bamboo growth and potential for invasiveness

Bamboos reproduce sexually from seed, but their long flowering cycles, especially in the temperate bamboos, mean that reproduction is usually by rhizome growth. In the absence of barriers, bamboos will spread naturally through their rhizomes. Competition with nearby plants, substrate characteristics and the species involved are all factors that help determine how fast and how far a given plant can spread, although bamboos with running rhizomes will cover more territory than those with clumping rhizomes. Clumping bamboos may spread from 1 to several inches in a season, sometimes up to a foot or more. Running bamboos may extend their rhizomes from a few inches to many feet in a growing season. Underground spread can be increased with loose rich, warm moist soil, whereas nutrient poor, compacted, cold, dry or consistent soggy soil conditions will inhibit growth both above- and below-ground and in some cases kill bamboo. It is possible that rhizome clumps or pieces could break off along river banks during floods or heavy rains and be transported downstream, but this is a rare occurrence at best, so dispersal away from the local population by rhizomes is unlikely.

In general, when bamboos do flower and produce seed, most of the seed falls near the parent plants. Much of the seed may be eaten by birds or rodents, but some will germinate and re-establish the clump. Although many bamboos have small bristles adjacent to their seeds, which may allow animals to accidentally transport them, this is not a very effective dispersal mechanism. Available genetic studies on bamboos, including on our native canes, indicate that dispersal away from the local parent population is a relatively rare event. Bamboos that have spread from plantings tend to be very clonal and at flowering time may not be able to set seed due to self-incompatibility.

Three criteria are commonly used to determine whether a plant is invasive or has the potential to be invasive: ecological impacts, potential for expanded distribution, and management difficulty. I) *Documented ecological damage* is what separates a true invasive from a plant that has simply escaped from someone's yard. Is it displacing native species or otherwise changing the structure of ecological communities? Is it hybridizing with natives? Is it impacting endangered or protected species? If it cannot clearly be shown to cause ecological harm in natural areas it is not an invasive plant. II) Does the plant have the potential to expand on its

own into natural communities? Does it have a broad tolerance to a wide range of environmental conditions? III) How difficult is it to control and manage the plant?

Bamboos generally have low potential for invasiveness due to their rare flowering, but some running bamboos can be aggressive spreaders and form large stands if left to their own devices. Although bamboos have some potential to reach natural areas on their own, they tend to have a narrow range of environmental conditions in which they thrive, and thus bamboos are expected to fail the potential-for-expanded-distribution test. Even an out-of-control bamboo can be dealt with readily. No bamboos are federally listed as noxious weeds or invasives and no bamboos are officially listed by any state (<http://plants.usda.gov/java/noxiousDriver>). In almost every situation where bamboos are problematic, especially in urban and suburban settings, it is because people have not planted them properly, have not maintained them properly, or have not disposed of them properly.

Responsible planting and control

If you plant bamboo you are responsible for its care. Choose your growing site carefully, keeping in mind the intended function of the bamboo (e.g., screen, specimen plant) and type of bamboo and its future growth potential. Select bamboo that grows well in your site and familiarize yourself with the growth characteristics of that species. The ABS recommends that running bamboos should be planted within a maintainable barrier and that you strongly consider this for any bamboo planting.

Man-made barriers assist in keeping the bamboo where you want it; responsible bamboo growers and sellers will insist on barrier installation at the time of planting and can provide suggestions for annual care for you to maintain and curb (rhizome pruning) the future spread of these bamboos. The 80 mil thick HDPE (High Density Polyethylene) is the best barrier material available at this time, although continuous poured concrete barriers can be effective as well. The thickness of the barrier is important, but the depth of the barrier and the soil type are also very important to consider when planting, containing and maintaining the bamboo. Barriers in dense soil may need to be only 24 to 30 inches deep. However, if your soil is very loose and or sandy, bamboos do have the ability to go under 24 inch barriers. Always consider the soil conditions before planting bamboo and how you will maintain them for the lifespan of this planting. Other thinner plastics are too thin or not stable enough to hold up to the pressures of rhizome expansion. Metal will rust out. Wood rots and decays. Dry moats may also be an effective method of control, depending on your site, as it allows easy access to rhizomes.

Rhizome pruning is an important, once-a-year maintenance chore that will keep rhizomes from jumping barriers or moats. This requires knowing when your bamboo(s) produce shoots, and using the appropriate tools to chop off rhizomes as they appear.

If you must remove unwanted bamboo, the only truly effective way to get rid of it is to dig it out. The ABS does not recommend using chemicals to kill bamboo because of the potential for environmental damage from ground and water contamination and the potential for contact

with humans and animals. If you inherit a “problem” bamboo, the fastest and most cost-effective means of removing it or managing it is to hire someone with expertise to assist you.

Growing bamboo responsibly means educating yourself about bamboo; taking the time to plant the bamboo correctly initially; and doing regular, once-a-year maintenance on your bamboo plants. Bamboo, if mistreated and ignored, can grow to be an unruly mess. But a properly managed bamboo clump or grove is a beautiful sight to behold.