

A Different Viewpoint on Invasive Plants

The following letter was written in response to an article titled “Invasive Plants”, by Becke Davis. The article was printed in the November 2005 issue of *The Landscape Contractor*®, a publication of the Illinois Landscape Contractors Association.

There is much more to invasive plants than discussed by Becke Davis in the November edition of *The Landscape Contractor*®.

Ms. Davis’ article, “Invasive Plants”, falls short of presenting an accurate and balanced view of invasive species. In her opening remark Ms. Davis states “Anyone who works with plants knows that some are more vigorous spreaders than others. Frequently, we call such aggressive plants “invasive.”. [But], there is a difference between plants that are aggressive and those that are literally invasive. However, some aggressive plants are still used in garden designs because of their quick, spreading habit. Truly invasive plants such as the notorious kudzu (*Pueraria lobata*), throw off the balance of whole ecosystems and, if left unrestrained, can eventually destroy and supplant all native plant growth.”

Why then, does Ms. Davis include popular, utilitarian (some would say indispensable), comparatively easily restrained, vegetative plants such as English ivy (*Hedera helix*), periwinkle (*Vinca minor*), and purple wintercreeper (*Euonymus fortunei*) in her list of “serious invasives” on page 42? Maybe, Ms. Davis does not herself work with plants.

Ms. Davis goes on to say that “species that share some or all of the following characteristics are most likely to be invasive”, then proceeds to list a number of characteristics which include:

- a. production of many small seeds within the first few years,
- b. seeds dispersed by animals,
- c. longer flowering and fruiting periods,
- d. no special germination requirements,
- e. self-fertility or self compatibility,

- f. can reproduce both by seed and vegetative growth,
- g. introduced on a large scale or repeatedly into a new range,
- h. large native north-south ranges in Europe and Asia,
- i. small amounts of DNA in their cell nuclei.

The implication that sharing some of these characteristics most likely constitutes invasiveness is inaccurate. Rather, truly invasive plants tend to share many if not most of the points listed in a through f, but only within the context of a specific ecological/geographical region. Her points listed in letters g through i (above), aren’t typically included in scientifically credible protocols for invasive plant assessment (such as those produced by the Indiana Invasive Plant Council, or the Michigan Invasive Plant Council). Scientifically credible systems for invasiveness assessment always take into account the biological characteristics and reproductive behavior within a specific ecosystem and they avoid generalizations. Proper evaluation of invasiveness also takes into account:

- j. difficulty of management/restraint/eradication
- k. comprehensive analysis of impact on natural plant communities
- l. ability to naturally disperse across spatial gaps
- m. an evaluation of cost versus benefit

For a plant to be truly invasive, it first needs to be evaluated on all of these criteria (a through m), as well as others—within the context of the local climate and ecosystem. And, it must demonstrate a

high degree of ecological impact.

Invasive assessment systems typically quantify (numerically) the severity of ecological impact of a particular plant in a given locale. In the end, the points are tallied, and the sum total is used to rate the overall ecological impact of the plant. Ratings generally span the range of Insignificant, Low, Moderate, and High Significance, and are typically followed with a recommendation or “action plan” that can be used to educate land owners, land managers, growers, agronomists, gardeners, landscapers, foresters, ecologists, and educators.

Plants that are evaluated/determined to be of low or moderate significance and ecological impact and relative ease of management/restraint/eradication (like periwinkle, English ivy, or purple wintercreeper) typically carry a recommendation to employ them in a particular and responsible manner, such as to avoid planting along the periphery of natural areas (because such plants can creep into the natural area). Plants with high ecological impact ratings which are difficult to manage/restrain/eradicate (like purple loosestrife, *Lythrum salicaria* and garlic mustard, *Allairia petiolata*), are deemed truly invasive and typically come with a recommendation to discontinue use and/or eradicate.

On page 41, Ms. Davis states that purple wintercreeper (*Euonymus fortunei*) and periwinkle or myrtle (*Vinca minor*) are on the “Evaluate” list at the Chicago Botanic Garden, then goes on to cite Dr. Kayri Havens, Director of the Institute of Plant Conservation at the Chicago Botanic Garden, as saying “We are not convinced these species are a problem in our area”. But on page 42, Ms. Davis includes these very plants on

this list of “seriously invasive” plants of Illinois. Nowhere does she discuss how or who “evaluated” the plants on this “seriously invasive” list. She also did not state that some of the horticulturally important plants on this list have been determined, by credible sources using credible science, to have insignificant ecological impact (and therefore have been determined to be non-invasive).

In Ms. Davis’ article on page 42, just prior to the list of “seriously invasive” plants, Ms. Davis notes that Floyd Swink and Gerould Wilhem’s 1994 book, *Plants of the Chicago Region*, is “sort of a census of Chicago’s plants.” Gerould and Floyd did take a census of plants in the Chicago region. A census, by definition, is a count based upon observation. In other words, it is a report of plants that were seen. A census does not evaluate a plant’s invasiveness, and just because a plant is “observed”, it does not mean that it is invasive. It simply means that the plant was observed. Truth be told, many such plants originated from deliberate planting or irresponsible dumping of yard waste.

On page 42, Ms. Davis gives a listing of invasive plants and references the Illinois Natural History Survey, but cites no scientific assessment protocol and no recommendations for responsible use, management, or eradication. This list, by the way, is identical to the list of the Illinois Native Plant Society and causes one to wonder if the list began with the Illinois Native Plant Society. In turn, one must ask the question, does the Illinois Native Plant Society have intimate knowledge of the use, history, and biological characteristics of introduced landscape plants? And, do they present a balanced perspective on invasive plant issues?

Unfortunately, many invasive plant lists have been assembled with little regard to scientific credibility or adherence to any scientifically acceptable system of evaluation. There

are even lists in circulation in the upper Midwest that have been derived from lists/books/articles from geographic areas with very different climates than ours in the upper Midwest. In Michigan, we have seen one list—printed with tax dollars—that was based upon observations of plants in North Carolina. I can’t help but wonder if the list included in Ms. Davis’ article is one of these.

To compose a credible list of invasive plants, one must limit the list to plants that are truly invasive, as determined by credible scientific assessment. To conduct a credible assessment, one must know the biology of the plant, the history of its use and distribution, and its measured ecological impact. This takes knowledge, research, and hard work. It is much easier to point one’s finger at any non-native plant observed in a natural area (by census or superficial observation), and based on that alone, call it invasive. This is particularly inappropriate when one disregards the means by which the plant originally got there and does not account for lack of attempted control or eradication. Ms. Davis’ article resonates of this type of approach, and I’ll use the example of periwinkle (the same principle can be applied to other plants on her list such as purple wintercreeper and English ivy) to illustrate.

Periwinkle is a dense grower, able to out-compete less vigorous species (one reason that it is an effective ground cover). But, since it does not effectively reproduce by seed or readily disperse by other natural means (wind, birds, animals, streams), it does not naturally disperse across significant spatial gaps (defined by many evaluation systems as up to one kilometer). As it turns out, the reason periwinkle can sometimes be found in natural areas is that somebody, one way or another, planted it there! Usually this can be traced to its historical use as a grave site adornment,

inappropriately dumped yard waste, or to a landscape relic from a preexisting home site (which was either torn down or burned down some time previously). Once eradicated (and this is not particularly difficult), short of human reintroduction, myrtle will not return to the natural area.

Periwinkle has been evaluated by a number of credible protocols including those of the Indiana Invasive Plant Council (by the Midwest Invasive Plant Network) and the Michigan Invasive Plant Council. In each case it was determined to have a relatively low potential/history of environmental impact. Furthermore, in the book *Invasive Plants of the Upper Midwest*, published in 2005, both *Vinca minor* and *Euonymus fortunei* are categorized as plants of lesser concern with the common sense recommendation not to plant them adjacent to natural areas.

What I can’t understand is why Ms. Davis doesn’t make these points. I have spoken to many individuals, both scientifically trained and not, who can appreciate the significance of:

- a. framing each evaluation in the context of geography, climate, duration of growing season, and ecology;
- b. differentiating between vegetative ground covers and plants that jump across spatial gaps (i.e. true invasives);
- c. making a recommendation for responsible use, if a plant is evaluated to be of lesser risk/influence in regard to ecological impact.

Also, missing from Ms. Davis’ article is an acknowledgment that cultivars and hybrids often behave in a distinctly different manner than species in regard to invasive characteristics (and should be treated and evaluated as independent plants). For example she lists Japanese knotweed, *Polygonatum cuspidatum* (now known as *Fallopia japonica*) as invasive. In reality, credible evaluation

systems may determine this species to have significant ecological impact, and to conform to the definition of invasive. However, Ms. Davis should also point out that the dwarf cultivar ‘Compacta’ has been grown for decades without displaying invasive properties (and to date has not been scientifically evaluated). These concepts are really quite basic.

My impression is that Ms. Davis’ article mixes science with journalistic sensationalism and the two are not a comfortable mix. Her statement on page 42, “while catalogues [nursery?, seed?] are necessary to record the constant introduction of new species into our floral community, they are no less useful for writing obituaries of forms that have become extinct.” Statements like this, which incite emotion, are not appropriate. What “forms” have been made extinct by garden plants?

I would also like to make the point, that it is incumbent upon publishers to be knowledgeable about invasive plant issues so that what is printed can be critically evaluated. By publishing articles that lack scientific credibility, horticultural businesses of all types are damaged. It is hoped that editors as well as readers would employ common sense and ask questions such as the following.

How can plants like Autumn olive (*Elaeagnus umbellata*), purple loosestrife (*Lythrum salicaria*), and garlic mustard (*Alliaria petiolata*), which are highly ecologically impactful (i.e. invasive) and difficult to manage/restrain/eradicate, show up on the same (invasive plant) list as plants that have been used for well over a century without displaying invasive qualities, (e.g. periwinkle, purple wintercreeper, and English ivy)? Ms. Davis also includes Kentucky blue grass on her list, but makes no mention of it in her article, nor does she present any management recommendation. By virtue of placing it on her list, is she saying that Kentucky blue grass should be eradicated and not planted?

The logical mind might conclude that the above examples result from either

taking the issues of invasiveness out of context or confusing them with growth habit. Worse yet, one might wonder if the invasive plant issue is being used to further a personal philosophy centered around the notion of native good, non-native bad.

I’m not saying that the horticultural industry shouldn’t become involved and take an active role in invasive plant management. On the contrary, we should be proactive in our approach, evaluate plants before they are introduced, and prevent future introductions of truly invasive plants. I believe that every member of the horticultural community has a responsibility to become informed, to become a member of their state’s Invasive Plant Council, and to educate their employees and customers. Likewise, those that are involved in writing about and managing invasive plants should never distort or sensationalize the issues, but should adhere to a code of conduct and scientific method.

Through the process of becoming educated, one learns that there is a big difference between true invasive plants, and those that are assertive vegetative spreaders. One also learns to question lists and information that lack adherence to scientifically sound procedure. And, one learns to appreciate more fully the great importance of planting and managing the man-made ecosystem (i.e. home, commercial, and public landscapes) with plants that are truly successful in this environment.

It is through everyone’s involvement and a greater understanding of all perspectives that we can both preserve our natural ecosystems as well as maximize the positive environmental and aesthetic potential of landscape plants (native and non-native). Given the challenges we have with global warming, salinity, high winds, urban heat islands, and drought and pollution we can’t afford to lose successful landscape plants due to labeling them invasive when they really are not. And, it is for this reason, if not

for the intrinsic reason of being scientifically accurate, that we need to make appropriate distinctions between plants that clearly demonstrate destructive invasive qualities and those that do not.

Sincerely,

David MacKenzie
Owner, Hortech, Inc.,
Board member Michigan Invasive
Species Council,
Member Michigan Invasive Plant
Assessment Committee

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