

# Amnesty for Plants



DAVID L RYAN/GLOBE STAFF

By Peter Del Tredici

**BOSTON GLOBE:** November 4, 2017

**Yank or spray all you want, the dandelion is here to stay. And while it’s considered an invasive species by some people, it is long past time to formally recognize the ubiquitous weed as a naturalized American plant. This amnesty has been a long time in the making.**

In 1672, just 52 years after the Pilgrims first landed on Cape Cod, the author of “New Englands Rarities Discovered,” John Josselyn, described some 21 species of plants that had “sprung up since the English Planted and kept Cattle in New-England,” including the dandelion, broadleaf plantain, and curly dock. In addition, he listed 10 other European weeds that were already so common in New England that he considered them native to both sides of the Atlantic. It’s an amazing fact that all 31 of these species —

botanical descendants of the Mayflower, if you will — have today spread across much of the North American continent.

The European invasion of North America was ecological as well as cultural. Colonists not only brought personal belongings and enough food to survive the first year, but livestock and the fodder to feed them plus propagules of their staple crops.

Unbeknownst to these settlers, the seeds of the weeds that Josselyn enumerated were embedded in the hay they brought to feed their livestock and mixed in with the grains they sowed on the land they cleared. Europeans didn't just bring their crops to the new world, they also brought their weeds.

A steady stream of immigrants — both plants and people — poured into the American colonies throughout the 17th and 18th centuries. As the population of Europeans increased dramatically in the decades following the American Revolution, so did the pressure to expand westward. Forest clearing and fencing the land became the mark of Manifest Destiny and agriculture a key to prosperity.

This brief narrative of American history raises an important ecological question that is relevant to the current, and often overheated, debate about native versus invasive species. Simply put, the question is: How does one define a native plant? Among conservation biologists, a species can be considered indigenous to the eastern seaboard if it was present before the Pilgrims landed in 1620 — everything associated with European colonization after this date is considered non-native.

This definition skirts two important questions raised by Josselyn's observations in 1672: Is there any length of time after which a non-native species can achieve native status? And second: Should there be a statute of limitations for plants after which it can be considered a de facto native species? To put it another way: Can the ubiquitous dandelion ever achieve native status or will it forever be considered an alien? Adding a layer of complexity to these questions is the fact that modern molecular research has demonstrated that many European weeds have undergone genetic adaptation under

North American conditions, and are now measurably distinct from their European ancestors.

In thinking about the meaning of the term native in the context of our globalized world, European botanists are way ahead of their American colleagues. They have subdivided the non-native plants of their various countries into two categories: “archaeophytes,” which were introduced with agriculture into a given European country from Central Asia, North Africa, the Middle East, or another part of Europe prior to 1500, and “neophytes” which were introduced after 1500, mainly from North and South America and Asia. The former category consists of species whose origins have been obscured by their long residency in Europe; the later are species that came in following Columbus’ “discovery” of the New World. One result of this categorization is that archaeophytes are given quasi-native status that classifies them as a legacy of European culture and, by extension, its ecology.

While the time frame for this European distinction — pre- and post-1500 — does not work for the Americas, I propose a similar type of categorization for non-native North American plants, with the date adjusted to account for our history. Any plant that can be documented as growing spontaneously in North America prior to 1800 should be considered a naturalized “American archaeophyte” with all the rights and privileges associated with being native. This date provides a convenient marker for the establishment of an independent US economy and the beginning of its industrialization. Plants introduced after 1800, including many ornamental species from Europe and Asia, should be classified as neophytes, to which the standard definition of non-native species applies. If such a neophyte can be shown to spread aggressively into minimally managed habitats, then it should be considered an invasive species.

While this discussion of nativity may seem arcane to many people, it is a way of acknowledging that globalization, urbanization and climate change have permanently reshuffled the world’s ecology. Scientists refer to the cosmopolitan assemblages of species that occupy human-disturbed habitats as “novel ecosystems” and estimate that

they occupy roughly a third of the earth's land mass. Novel ecosystems are widespread, biologically diverse, and capable of providing many of the "ecological services" provided by native ecosystems. The failure to recognize the value of these ecosystems or to condemn them because they were not here when the Pilgrims landed, is to deny the reality of what Americans have been doing to the continent since they first arrived in the 1600s.

Globalization has created a world in which the classic dichotomy that separates native from non-native species has lost its relevance. This is particularly true in cities where people, plants and animals from around the world have come together to create a unique metropolitan ecology. Using the designation "American archaeophyte" to describe non-native plants that have been in North America for over two hundred years is a symbolic gesture that acknowledges the reality of an environment irrevocably altered by humans. In a globalized world, the boundaries that separate countries are being breached not only by humans looking for a better life, but also by plants and animals seeking new opportunities in a rapidly changing world.

*Peter Del Tredici is a senior research scientist emeritus at the Arnold Arboretum of Harvard University and a visiting lecturer in the Department of Urban Studies and Planning at MIT. He is also the author of Wild Urban Plants of the Northeast: A Field Guide (Cornell Univ. Press, 2010)*