

Invasive plants at Redlair Farm and Forest (Draft)

December 2011

Carrie E. DeJaco

Invasive species are well-recognized as one of the most dominant threats to biodiversity. Many invasive plants are spread when their fruits are ingested by birds, who then later excrete the seeds of those fruits. Other invasive plants' seeds are dispersed by the wind, while many seem to get around with more direct human involvement, such as traveling via the tread of tires or shoes.

Because of Redlair's fragmented history and the existence of numerous forest edges, Redlair is particularly susceptible to invasive plants. When land is disturbed, as occurs when an area has been plowed or mowed, the spaces opened up between the remaining plants provide potential entryways and areas in which invasive plants can become established. Forest edges are well-suited for invasion because they form wind-breaks that may catch wind-dispersed seeds. In addition, many animals travel along or rest in forest edges; these edges provide ideal places for birds to rest in between foraging bouts, and so they receive numerous amounts of bird-dispersed seeds.

Haywood Rankin has been very proactive in fighting the invasive plants at Redlair over the past several years. His first declared enemy was kudzu (*Pueraria montana*), known to many as "the vine that ate the South". Kudzu has been a problem in the northwestern portion of the property near the Spencer Mountain Bridge. Haywood has spent a good deal of time removing the stands of kudzu encountered throughout the property, and has noted that kudzu forms a seedbank in the soil from which it continues to sprout for many years after the removal of all large vines.

The next two invasive species of concern at Redlair are autumn olive (*Eleagnus umbellata*) and Chinese privet (*Ligustrum sinense*). Haywood has spent much time and effort over the past several years combatting these two shrubs, which are most frequently encountered along the edges of forests and streams and in disturbed areas. These two species are bird-dispersed and, due to their prolific fruiting and their common use in landscaping, while removing established plants does prevent further spread of the species from those particular individuals, new individuals will continue to sprout as long as these plants are legally planted and propagated. Constant vigilance and removal of seedlings of these two species from along the edges of forests and streams will be necessary to prevent these species from taking over the understory of the forests at Redlair. In the portions of Redlair most recently disturbed, such as the northernmost and southernmost parcels, Chinese privet has already spread into substantial areas of the understory, where it prevents germination and growth of native plants.

Winter creeper (*Euonymus fortunei*) and periwinkle (*Vinca spp.*) are ground-covering vines frequently used in landscaping. Unfortunately, they cover the ground densely enough that they prevent any other plants from germinating and growing. These species most commonly invade the forests from edges near subdivisions where they are used ornamentally. These two species have been noted in the southern portions of Redlair. In particular, there is

a heavy infestation of periwinkle in the Lower Bottom region near Trail 15. Winter creeper has been found invading the eastern and southern edges of the forested area of the Big Lake Creek watershed, likely coming from yards of the houses along Rankin Road.

Liriope spp. (lilyturf or monkeygrass) is a grass-like monocot commonly used in landscaping and it, too, is escaping from cultivation. Like winter creeper, it has been found in the eastern and southern portions of Big Lake Creek watershed. It grows along the edge of the forest, but substantial clumps have also been found towards the interior of this forest fragment.

Nandina (Nandina domestica) is also spreading into the Big Lake Creek watershed, but has also been found along the edges of the fields between the South Fork of the Catawba and Trail 1 (the "Upper Bottom") and near the Rhyne Dyke and Trail 15 (the "Lower Bottom"). The latter 2 of these areas are more than 0.5 km from the nearest house, but the species has little difficulty transversing such distances. *Nandina* produces copious amounts of bright red berries that are quite attractive to birds.

Chinese wisteria (*Wisteria sinensis*) has invaded part of the northern region of Redlair, near the intersection of Trails 1 and 36. Chinese wisteria is most easily differentiated from American wisteria (*Wisteria frutescens*) by the former blooming in early spring, before leaf-out, while the latter blooms after the leaves have emerged.

A stand of tree-of-heaven (*Ailanthus altissima*) has been found in the northeastern part of the property near the intersection of Trails 13, 36, and 83. Haywood and his daughter (Johanna? Susanna?) did their best to eradicate this stand of wind-dispersed trees.

Mimosa (Albizia julibrissin) has been found sporadically across Redlair. This tree grows very rapidly and, a few times, mature flowering, fruiting trees have been encountered and then quickly eliminated. The seeds of this tree seem to remain viable in the soil for some time, so revisiting the site to remove newly emerging seedlings is essential.

English ivy (*Hedera helix*) has invaded the southernmost portion of Redlair. It forms a dense ground-cover, like periwinkle and winter creeper, but is also quick to climb trees. Once accessing trees, ivy will climb into the tree tops where it will shade out its host and weigh down the branches so they are more prone to breaking. This species produces flowers and fruit after achieving a height of at least 6-8'; its fruits are consumed and its seeds dispersed by birds.

Japanese stiltgrass (*Microstegium vimineum*) is a shade-tolerant annual grass that has recently sporadically invaded random locations at Redlair, frequently along trails or in recently cleared areas. If mown prior to its flowering in late summer/early fall for a few subsequent years, it can be tackled fairly easily. However, it is frequently not in places where it can be easily mown.

Japanese honeysuckle (*Lonicera japonica*) is a semi-evergreen or tardily deciduous vine almost omnipresent across Redlair, but it has not yet become a major problem. Most Japanese honeysuckle on the property are young seedlings that seem to have a difficult time competing in mature woods. Although the vine can girdle small saplings, it cannot climb structures with a diameter of much more than a centimeter so once a sapling has a diameter greater than this, it is no longer susceptible to being girdled by Japanese honeysuckle.

Without a doubt, it is the continued efforts of Haywood Rankin that enable Redlair to remain dominated by native plant species. The parts of the property that have been most disturbed most recently (the southernmost and northernmost regions) are those most severely impacted, with the biggest problem being the invasion of the understory by Chinese privet. The quality of these regions would be significantly increased with the removal of this invasive understory. Until and unless the established invasive plants are dealt with in these areas, the invaded land area will increase exponentially, requiring an exponentially greater management effort in the coming years. However, a project of such great magnitude as to try to get under control the shrub layer of the heavily invaded north or south areas would require many, many man-hours of chopping, cutting, and painting with herbicide. The good news is that, once an area is cleared of invasives, native species commonly begin to pop up fairly rapidly. However, due to persistence in the seed bank and continuous incoming seeds via bird dispersal, vigilance will be needed to prevent the invasion from recurring.

Perhaps we could request that the CLC organize a few volunteer work-days to enlist the help of a couple dozen people to assist in this effort in the south, and then again in the north.