

Kudzu's invasion into Southern United States life and culture

Richard J. Blaustein

...Up telephone poles,

Which rear, half out of leafage
As though they would shriek,
Like things smothered by their own
Green, mindless, unkillable ghosts.
In Georgia, the legend says
That you must close your windows

At night to keep it out of the house.
The glass is tinged with green, even so,

As the tendrils crawl over the fields.
The night the Kudzu has
Your pasture, you sleep like the dead.
Silence has grown Oriental
And you cannot step upon the ground ...

James Dickey " ALL: Kudzu"

Abstract

Kudzu, a perennial vine native to Japan and China, was first introduced into the USA in 1876 and was actively promoted by the government as a "wonderplant", It expanded to cover over 1 million ha by 1946 and well over 2 million ha today. When Kudzu invades a forest, it prevents the growth of young hardwoods and kills off other plants. Kudzu causes damage to powerlines, and even overwhelms homes, Kudzu has invaded important protected areas, requiring significant investment of management resources, The management response to date outside the protected areas has been insufficient to deal with this very significant threat.

Introduction

The Kudzu plant (*Pueraria lobata*) is an invasive alien species that has penetrated and persisted in the South-eastern United States for most of the twentieth century, and continues to debilitate natural communities and human well-being at the beginning of the twenty-first century .In fact, Kudzu has pervaded Southern life to such an extent that for many it has become a distinct emblem of the South. References to Kudzu abound in folklore, music, literature, advertising, and Southern popular culture, testifying to Kudzu's invasion of the individual psyche and the collective ethos of the South. Many of these cultural responses to Kudzu employ humour or irony, or simply express the sense of resignation and acceptance with which individuals and communities often regard Kudzu.

Even as it embeds itself ever deeper in the Southern psyche, Kudzu continues to wreak intolerable damage to the South's natural landscape, human health, private property, commercial life, and enjoyment of public lands. As conservationists and land managers fight a

continuous, and often losing, battle to halt Kudzu's march across the landscape, others not involved in the fight mistake Kudzu's invasion and degradation of lands and spaces as a natural process, and mistake the luxurious green shroud in which it smothers the land as the sign of a healthy and thriving ecosystem.

This paper examines the human dimensions of the ecological invasion of Kudzu. It begins with a brief description of the Kudzu plant and its invasive properties, followed by a historical sketch of Kudzu's introduction and diffusion throughout the South. Next, it examines Kudzu's effect on both the physical and cultural landscapes, which have been tightly interwoven throughout the history of the South. I will close with a few suggestions regarding what we can do about Kudzu.

The Kudzu plant

Kudzu is a climbing, semi-woody, perennial vine in the pea family, native to Japan and China. Kudzu spreads by vine growth, rhizomes and seeds. In the right climatic conditions -such as those, unfortunately, prevailing in the South-eastern United States -Kudzu grows at dramatic rates. A single plant may grow as much as 20 meters in a season, at a rate of about 30cm per day. Its impressive vines are anchored by equally impressive roots, often "7 inches (18cm) or more in diameter, 6 feet (180cm) or more in length, and weighing as much as 400 pounds (180kg)."

Kudzu is a classic invader, preferring disturbed or degraded habitats where sunlight is abundant, such as forest edges, clearcut patches, abandoned fields and roadsides. Once it has taken root in a disturbed area, Kudzu can expand rapidly outward, covering surrounding plants with a luxurious green foliage that blocks access to sunlight and, over time, crushes competitors beneath its weight. Once established in an area, Kudzu begins to reshape the entire landscape, enshrouding and slowly killing surrounding fields and forests, and destroying habitat for associated wildlife.

The introduction of Kudzu into the South-Eastern United States

Kudzu was first introduced into the United States in 1876 at the United States Centennial Exposition in Philadelphia, Pennsylvania, where a bazaar was built to house a plant exhibition from Japan. At this Pavilion, Kudzu received noted attendee admiration (Kinbacher, 2000), with one admirer writing to her sister in Florida: "Today I visited the Exposition. Of all the marvellous things there, a vine which the Japanese call Kuzu (sic) astounded me the most...Knowing how you suffer from that awful heat down there, I am going to try to get one of the vines for you" (Hoots and Baldwin, 1996). This comment illustrates one of the primary attractions of Kudzu for Southerners, namely its provision of shade.

Shortly after the Centennial Exposition, Kudzu was brought directly to the South during the New Orleans exposition in 1883. During these final years of the 19th century, Kudzu introductions into Southern communities were not as pernicious as they would later be, because it was "first used as an ornamental vine to shade porches and courtyards" (Miller, pers. comm.) and because the Kudzu "was supported by some type of trellis...inhibit[ing] normal reproduction through runners putting down roots from nodes" (Hoots and Baldwin, 1996).

By the early twentieth century, however, Kudzu was being enthusiastically used for purposes other than residential ornamentation, bringing vines into closer contact with the land and encouraging the Kudzu to take root and expand. For example, in the first decade of the twentieth century Kudzu was used as a fall-back feed for inexpensive livestock foraging in locales of over-grazed pasture (Miller, pers. comm.).

In the early decades of the twentieth century, charismatic and zealous promoters brought Kudzu to prominence as a "wonder plant." In Florida, for example, Charles and Lillie Pleas established the Glen Arden Nursery to grow and market Kudzu, "a miracle vine they should use to help humankind" (Hoots and Baldwin, 1996). In Georgia, radio personality Channing Cope used his daily radio program to extol the many virtues and uses of the plant. Cope also founded the Kudzu Club of America, which putatively had 20,000 members who met "to promote planting Kudzu" (Hoots and Baldwin, 1996).

The growing cult of Kudzu was buttressed by commercial enterprises interested in expanding the plant's use. In 1920, for example, the Central of Georgia Railroad distributed free Kudzu plants to farmers with the hope that the farmers would grow Kudzu hay- a profitable crop at the time -and then transport it on the railroad (Kinbacher, 2000; Hoots and Baldwin, 1996).

Kudzu's most effective proponent by far, however, was the United States government. In the 1930s, massive soil erosion on Southern farmlands compounded the local impact of the Great Depression, seriously threatening the region's agricultural base. To bring the erosion under control, the federal government launched a massive promotional campaign for Kudzu. Throughout the 1930s and 1940s, the Soil Erosion Service and its successor, the Soil Conservation Service, touted Kudzu as the remedy to the South's soil problems. In a little more than a decade, these agencies provided "about 84 million Kudzu seedlings...to southern landowners for erosion control and land revitalization...[and it] offered up to \$20 per ha as an incentive for farmers to plant their land in Kudzu" (Miller, pers. comm.). The acreage planted in Kudzu rose from an estimated 4,000ha in 1934 to 1.2 million ha by 1946.

In a few years time, farmers became very concerned about the noticeable invasive and disruptive characteristics of Kudzu. Kudzu's uncontrollable growth, its smothering of pine trees, and other problems (combined with the emergence of new agricultural methods to mitigate erosion) led to a massive- but glacially paced -reassessment of Kudzu's value by both the U.S. government and the agricultural community .In 1953, the United States Department of Agriculture (USDA) removed Kudzu from the list of cover plants permissible under the Agricultural Conservation Program. By 1970, USDA had identified Kudzu as a common weed. And in 1997, after more than half a century of mounting evidence of its harmfulness, Kudzu was finally listed as a "noxious weed" under the Federal Noxious Weed Law.

Kudzu and the natural landscape

The damage done by Kudzu to the natural landscape in the South-eastern United States is enormous. Religious metaphors comparing the Kudzu invasion to biblical scourges are apt and appropriately evocative of the degradation the plant has visited upon the ecosystems of the South. By the mid-nineties it was estimated the Kudzu "has a stranglehold on an estimated 2.8 million ha and is spreading by 50,000ha a year and is increasing." The total area infested by Kudzu is larger than the state of Vermont, with the heaviest infestations of Kudzu occurring in Alabama, Georgia, and Mississippi. Although most Kudzu is found in the Southeast, recent sightings have been made as far north as Massachusetts and as far west as Texas and Oklahoma.

The impact of Kudzu on the Southern landscape is especially pernicious because of the high levels of biodiversity and endemism found in South-eastern states. During the last ice age, the Southeast served as a refuge for species retreating from the southern-bound glacial advance that reached its maximum 18,000 years ago (Stein, Kutner, and Adams, 2000). The South retains relict populations of many species that were pushed out of the Upper Midwest and Northeast by the advancing ice (Stein, Kutner, and Adams, 2000). As a result, the South enjoys levels of plant diversity and endemism second only to the (much larger) western states.

Kudzu poses a significant threat to this diversity. Indeed, the threat of homogenization has already been realized in many locales as "[s]pecies rich forest ...with their associated

wildlife, recreation and aesthetic values are being replaced with a smothering matter vine monoculture" (Miller, pers. Comm.). Kudzu diffuses throughout the forest ground and inhibits the natural process of tree renewal, preventing the growth of young hardwoods and killing off other plants. Kudzu out-competes brush and indigenous plants, which in turn diminishes vital food and habitat resources for wildlife. The only plant species that successfully compete -and co-exist - with Kudzu are other invasive aliens, such as Chinese privet and Japanese honeysuckle. Together, they are reducing once-rich ecosystems to impoverished -if deceptively lush -vine barrens.

This degradation of the natural landscape is a profound loss for the South, and will be a cause of enduring grief if it is not reversed. The Southern culture's vital relationship with the landscape has been known and felt throughout American history, and is the basis for pride and accomplishment in literature, music, and civic spirit. In fact, it may be said that the biodiversity of the South has served as a primordial force shaping the human sense of freedom and of attachments. William Bartram, who with his father John were the seminal American naturalists in the eighteenth century, evoked this primordial connection of man to landscape in the South when he wrote of his explorations of the natural landscape around the Mississippi river in what today would be East Baton Rouge Parish, Louisiana. As Bartram noted, "the trees, high forests, even every particular object, as well as societies, bear the stamp of superiority and excellence; all unite or combine in exhibiting a prospect of the grand sublime" (Torrance, 1998). Almost a century and a half later, the Nobel prize-winning novelist and Mississippi resident, William Faulkner, would echo Bartram's appreciation of the natural bounty of the Southern landscape, an example of which is the following passage from the novella, "The Bear":

...He had created them, upon this land this South for which He had done so much with woods for game and streams for fish and deep rich soil for seed and lush springs to sprout it and long summers to mature it and serene falls to harvest it and short winters for men and animals... (Faulkner, 1973).

Beyond the writing worlds of Bartram and Faulkner, subsequent writers and laypersons have also been inspired by the Southern landscape's "grand sublime", of which Kudzu, followed by other invasive alien species, may impede or even deprive their descendants from encountering in the future.

Kudzu and southern culture

Kudzu has so altered the southern landscape and human experience within it that it has "seeped into southern culture" (Kinbacher, 2000) and established itself as a constant in the youth, adulthood, and old age of the individual. Indeed, the apparent inevitability of Kudzu in southern life has led many to resign themselves to the invasive species and to respond with humour, irony, or even a romanticized hopelessness. By the mid-1980s, for example, "[s]ociologists note a period of tempered enthusiasm for the vine...During this period total eradication of Kudzu became increasingly unlikely, and southerners began to reconcile themselves to the plant" (Kinbacher, 2000).

As a part of this reconciliation to Kudzu, the coping response of humour became pervasive, which is first evidenced in the many names and phrases used to refer to Kudzu. In addition to the well-circulated reference, "the vine that ate the south", other names for Kudzu include "drop it and run vine", "mile a minute vine", "Sodom vine" and "typical government gift" (Hoots and Baldwin, 1996). Humour as an expression of resignation or inevitability is also seen in the southern music scene where musical groups sing of Kudzu and sometimes have Kudzu in their names. The Kudzu Kings, the Kudzu Quartet, and the Kudzu Krooners have, in addition to Kudzu in their names, all a resemblance of Kudzu in their visual logos (Kinbacher, 2000). With

the punk rock group, Kudzu Ganja, the Kudzu in the band's name and its presence in their logo intertwined with marijuana serve as an emblem of the nihilism and disenchantment the band explores in their music (Kinbacher, 2000).

Using Kudzu in crafts is another example of Kudzu's seeping into southern culture, and the culture's responding to a seeming inevitability with a temporary coping response. A well circulated book, Diane Hoots and Juanita Baldwin's *Kudzu: The Vine to Love or Hate*, is dedicated to the craft usages of Kudzu. The book has numerous instructions as to basket-weaving, paper making, and recipes, as well as mentioning Kudzu crafts festivals and events. Notwithstanding the upbeat instructions found in the book, the title of Part IV, "Making the Best of the Kudzu Predicament" (Hoots and Baldwin, 1996), alludes to the seriousness of Kudzu infestation, and underscores the fact that material usage of Kudzu should be seen as a temporary measure to keep up morale and use up some Kudzu. As the authors of the book say in their final segment:

Kudzu has covered 7,000,000 acres (2.8 million ha) of land in the Southeast. Unless a way is found to stop it, this figure will double in ten years... The debate is over. Kudzu is changing ecosystems as small as freshwater ponds, a homestead, roadside, or huge slices of a county or state. Even those who recognize and promote the usefulness of Kudzu agree... (Hoots and Baldwin, 1996).

Even with the attraction of craft possibilities, any responsible means of using and coping with Kudzu warrants a continuous awareness of the plant's damaging reality and potential.

A final example here of Kudzu's "seeping into southern culture" is the plant's evocative presence in literature and folklore. Here, the ominous nature of the Kudzu threat is not lost on talented and nature-appreciating writers and good folklore storytellers. Interestingly, the conveyance of the threat of Kudzu often associates Kudzu with the perils of snakes. In the above-quoted poem by James Dickey, for example, the poem proceeds to depict the intertwining menace of snakes and Kudzu. As Dickey writes:

For when the Kudzu comes,

The snakes do, and weave themselves
Among its lengthening vines
Their spade heads resting on leaves,
Growing also, in earthly power
And the huge circumstance of
Concealment.
One by one the cows stumble in,
Drooling a hot green froth,
And die. ..

(Dickey, n.d.)

Numerous anecdotes, most often unverified, abound with tales of snakes launching perilous surprises in the Kudzu vine. In addition to the snakes and Kudzu, the rapid 30cm-a-day growth rate and the audibility of its growth add to a folklore of ominousness and menace that may serve as a counter-balance to a sentimentality or an abandon of seriousness that can arise in response to Kudzu.

Kudzu's interference with commercial life and human well being

Kudzu's impact on human commerce and human health might seem to be two topics warranting separate discussion. However, as Kudzu's main impairment of human health is its production of widespread stress (Miller, pers. comm., 2000) and as its inducement of this stress is inextricably linked to the invasive species' burden on property ownership and usage, discussing commerce and health together best conveys the invasive mode of Kudzu.

Kudzu's economic impact is enormous. One recent U.S. government publication estimates Kudzu causing over US\$100 million of damage a year. Another source, which factors in US\$336 million of lost productivity in forests, estimates total productivity losses to Kudzu as "greater than \$500 million per year" (Miller, 2000).

Two examples of Kudzu damage occurring in vital economic sectors are in railroad service and the power industry. With the railroad business, Kudzu presents engineers with unexpected dangers on what expectedly would be safe runs. Train wheels passing over Kudzu cause a slick pulp to form on the rails, and these often lead to dangerous slipping and occasional derailments (Hoots and Baldwin, 1996). Railroad companies have had to respond to Kudzu with extra resources and manpower devoted to clear Kudzu from rails.

Likewise, power service has notably been interrupted across the South, especially in rural areas, due to Kudzu spread. In the South Kudzu often climbs up the guy (wire and pole supporter) and either weaves into the hot wire or causes the pole to fall, causing a cut in the power supply. In one substantial area of Alabama, it is estimated that the Alabama Power Company has to devote at least some summer hours from 100 of its employees to clearing Kudzu from power lines or their supports (Zarichnak, pers. comm., 2000). In total, a reasonable figure of US\$1.5 million per year is assumed by power companies in the South for removing Kudzu from or around power lines (Miller, 2000).

The most conspicuous Kudzu burden is on property owners and the use of their land. Because of Kudzu infiltration, farms are often degraded beyond use, and homes are, literally, overwhelmed by the Kudzu affliction. Ensuing from this Kudzu invasion great stress is experienced by individuals whose homes and farms have been swarmed by Kudzu. One expert believes that, pursuant to his own response to complaints, thousands of homeowners have been subjected to great stress resulting from Kudzu encroaching on their homes (Miller, 2000). In addition, many people have complained about being deceived and losing money after paying so-called "Kudzu specialists" considerable sums to remove Kudzu from their property, to no avail. The following poignant example is recounted by Dr. James Miller, a leading expert on Kudzu with the U.S. Department of Agriculture, as he recalls a letter he received from an elderly lady: "She related that Kudzu surrounded her home in the country, and her husband had fought it back until he had passed away a few years before, and now she was unable to keep up the fight. She told of her horrible recurring nightmares of Kudzu coming through the windows at night and grabbing her" (Hoots and Baldwin, 1996).

Numerous others have suffered emotionally and physically from Kudzu invasions on their private property. When adding the enormous human stress caused by Kudzu to similarly-caused respiratory ailments, allergies, and other physical maladies, Kudzu's effect upon human well-being can best be viewed as a profound impairment.

Kudzu's invasion of the national park system in the South

During the interruption of government services and access in the 1995/1996 winter -i.e. the government shutdown -many politicians and journalists were very surprised by the American public's outrage regarding its denied access to national parks (Mitchell and Olson, 2000). Indeed, these politicians and commentators soon learned that for many in the United States the national parks are cherished public places, and these Americans insist upon access and upkeep of their national parks.

In the American South these parks are no less valued than in any other part of the

United States. In fact, in the South these protected lands are often also the sites of historic civil war battles, and these historic connections interweave historical sentiments with the human experience of nature in a very evocative fashion. Unfortunately, at these unique southern national parks, Kudzu infiltrates ecosystems and often hinders the full human experiencing of nature and history. Three examples in the South where Kudzu is a major concern of the individual park management, the national park system, and the general public visiting the parks are Vicksburg National Military Park, Chickamauga and Chattanooga National Military Park, and the Great Smoky Mountains National Park.

Vicksburg National Military Park, located in Mississippi, was the site of fierce battles from 29 March to 4 July 1863. Vicksburg was perched on high bluffs (many of whose natural and essential grasses are now displaced or threatened by Kudzu), and was known as "the Gibraltar of the Confederacy." When Vicksburg surrendered, its fall, along with the fall of Port Hudson, Louisiana, divided the South, and gave the North undisputed control of the Mississippi river.

Today Vicksburg is the site of a national park consisting of 760ha, of which 80ha are either threatened or invaded by Kudzu. Four ha of Kudzu-infested park have been treated with fire and herbicide, but in the many other areas under threat or already invaded by Kudzu, the situation is indeed dismaying. In these areas Kudzu prevents tree growth and imperils the trees standing. In Vicksburg if these trees are felled the surrounding vistas made up of substantial commercial development would intrude upon the park, undermining the historical evocation of the civil war battles to the great dismay of park employees and visitors (Nichols, pers. comm., 2000). In another part of the park, Kudzu threatens the strategic bluffs, which were an intrinsic part of the Vicksburg fortress arrangement and which were covered with natural grasses. In these places and in the forested parts, the strategy of Kudzu eradication that was employed on four ha would not be appropriate. At present Kudzu not only threatens the park landscape but also has succeeded in causing pessimism and grief over the future of a highly valued piece of natural and historical heritage.

The situation resulting from the presence of Kudzu at Chickamauga and Chattanooga National Military Park, located in Georgia and Tennessee, is not as dire as that of Vicksburg, but is still a cause of concern. The prize for the battle at this site was Chattanooga, Tennessee, which was the key rail centre and gateway to the heart of the Confederacy. After many months of a vicissitudinous series of battles, the Union forces captured the area. This region would later serve as the launching base for General Sherman's famous conquering of Georgia.

Today the Chickamauga and Chattanooga National Park consists of seventeen disconnected pieces covering 2,000ha, and is adjoined by the 1,120ha of Lookout Mountain, which has some public land belonging to the national park. From 1992 to 1998 a sustained effort to control Kudzu at the Chickamauga locales was executed, and this effort has been deemed a success as native grasses resumed their places in the ecosystem (Weddle, pers. comm., 2000). On and around Lookout Mountain the situation is different. Lookout Mountain is a mixture of public and private lands. On Lookout Mountain's public lands, the government actively and successfully fights to control Kudzu, but on private lands many owners are indifferent and take no measures against Kudzu. These private sites serve as a base from which Kudzu threatens public spaces.

The Park Service management mentions that as yet no ground swell of interest for remedying the Kudzu situation on private lands has appeared, and this prevents a holistic private/public initiative to control Kudzu. In this locale, Kudzu benefits from the lack of coordination between private and public property owners.

The Great Smoky Mountains National Park is unlike Vicksburg and Chickamauga parks, not solely because it does not commemorate a battle, but significantly because it is one southern national park where Kudzu is successfully controlled. At the Smoky Mountains National Park, located in Tennessee and North Carolina, the success in controlling Kudzu is due primarily to the fact that the park has worked on the Kudzu threat for over 60 years, dedicating a

considerable amount of resources and employee time to the Kudzu problem. Of the 120 Kudzu sites in the park in 1990 only one site now experiences uncontrollable Kudzu. This site is at a foothill adjacent to a prospective road development, and the park therefore has decided that it is not detrimental to the other parts of the park and will be contained, if not eradicated, in the future (Johnson, pers. comm., 2000).

It is fortunate that the Great Smoky Mountains National Park has had success with their sustained efforts directed against Kudzu, because one estimate has it that the Kudzu invasion of the park would have covered up to 20% of park lands with its monoculture if the effort had not been sustained (Johnson, pers. comm., 2000). Thus, Kudzu has required a 60-year effort to prevent it from robbing the public of enjoying the Great Smoky Mountain; National Park.

Conclusions

Kudzu has infiltrated the South, pervaded the culture, altered lifestyles, caused great distress, and hindered the enjoyment of national parks. Significantly, many of those who either work on or have studied Kudzu do not believe the current combination of responses will control the problem. These individuals often hope that in the future an effective biocontrol program will be developed and implemented that will finally bring the Kudzu problem under control (Miller, 2000).

In the meantime education and an increase in resources dedicated to the problem could lead to a better handling of Kudzu. In areas where public lands border private property where owners are insufficiently engaged in controlling Kudzu, the government should direct funds to develop public outreach programs that would take the lead in coordinating private and public interests and responses. Also, the federal, state, and local governments should devote more resources to helping people who are overwhelmed by Kudzu infestations. These government efforts should include centres and sources that would provide people with information about legitimate Kudzu redresses and their agents. Finally, there needs to be more awareness that Kudzu causes much hardship and losses to human beings, and that any coping response to Kudzu should never drift into resignation or an embrace of the plant that causes such distress to human beings.