

Bibliography and Database of Invasive Pest Plants of the Southern Appalachian Mountain Region

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Introduction

The Southern Appalachian Mountain region has long been recognized as one of the most unique floral regions in the world. Today many endemic, rare, and even common native plant species are being displaced by invasive species introduced into the region. Introduced species are referred to as exotic, non-native, or non-indigenous species. These terms are essentially synonymous. Introduced species that naturalize and displace native flora are known as invasive exotics (non-natives, non-indigenous). While the majority of exotic plants are not invasive, exotic's which are invasive, or become invasive pose significant threats to this unique floral region.

Presently there is limited information readily accessible about the biology of invasive species. While many species are clearly invasive, other species naturalize and appear to be less invasive, and may only persist as minor components in an ecosystem. Their long-term ecological impact however may be unknown since these species are unpredictable. A desirable goal is to devise a scientific based risk assessment process that can be applied by all stakeholders to determine what species are invasive.

Various risk assessment methods and systems are under consideration and being developed as efforts to establish risk assessment continues. A major goal of this project is to contribute to the development of a risk assessment process by providing source information about introduced plants that presently, or may potentially impact the Southern Appalachian Mountain Region. A primary task of this effort is to provide readily accessible information about the biology of invasive plant species by developing a comprehensive bibliography and database. A minor task is to provide current definitions and criteria on "what is invasive" and other related terms that may be useful in the development of a scientifically based risk assessment process.

Scope

The scope of this project is to provide source information specifically focusing on exotic plants that are either invasive or may become invasive in the Southern Appalachian Mountain Region. This source information is provided in the form of a bibliography and a database. The database derives from the bibliography and provides the same information in a searchable database format. The species selected for the bibliography and the database are from lists that were submitted by eight land managing agencies in the region.

A composite master list of 246 exotic species was compiled from these eight agency lists. The list is titled “Exotic Plants of Concern in the Southern Appalachian Mountain Region” because it includes species that are both known to be invasive, and species that are less aggressive, and may not cause adverse ecological impact. These species were reported by eight agencies using different definitions and criteria. It was determined that “exotic plants of concern” was the best way to collectively reference this composite list since there was wide range of types of reporting. Most lists denoted only the most invasive species and were relatively short while other lists elaborately categorized species from highly invasive to lesser problem species. The latter were much longer lists with greater detail and more criteria.

The vast majority of species included in the bibliography and database occur on at least two or more of the eight lists. There are several species included in the bibliography and database that occur only on a single list. These plants have been reported as invasive elsewhere and were included in the bibliography and database. There are a few other species in this review that are reported as invasive elsewhere that could naturalize or be introduced that do not occur on any of the agencies lists. An example is burning bush (*Euonymus alata*) which is reported as invasive in other regions and is used as ornamental in landscaping in this region.

Secondly, this project includes a section called “Definitions and Criteria.” This is an accumulation of various uses of terms such as exotic, invasive, noxious, and native that occur in laws, invasives species lists, resource management guidelines, and literature. This section is also an information source and documents how these terms are defined and used in establishing criteria for creating awareness, management, and public policy. Defining terms and agreeing on criteria to rank species is a major issue in establishing an assessment process.

It is important to understand that the purpose of this project is not to create an invasive species list for the Southern Appalachian Mountain Region but rather to provide source information for assessment purposes. The master list compiled from eight agencies is the basis from which species were selected for review. The database and bibliography is from peer reviewed published research on the biology, management and control, and impacts of invasive species.

Method

The master list “Exotic Plants of Concern in the Southern Appalachian Region” was compiled from lists provided by six federal land managing agencies, the Virginia Natural Heritage Program, and The Nature Conservancy of North Carolina. The federal land managing agencies include: 1) Nantahala National Forest 2) Pisgah National Forest 3) Cherokee National Forest 4) Taladago National Forest and Shoal Creek National Forests (submitted as one list) 5) the Great Smoky Mountain National Park, and the, 6) the Blue Ridge Parkway

The literature search was completed by obtaining available information from the following on-line sources 1) Karl Uncovered 2) Agricola 3) Biological Abstracts 4)

Life Science Abstracts 5) The Nature Conservancy's "Stewardship Abstracts." 6) Tennessee Exotic Plant Management Manual and the 7) the Plant Conservation Alliance "Fact Sheets." Key word searches (usually title only for agricultural weeds) resulted in approximately 3100 records entered in Microsoft Access to create the database. A field was created to identify the literature type (book, journal, etc). Abstracts are included when available from on-line sources. Definitions and criteria were found on-line.

Species Reported Per Number of Lists

8

Japanese honeysuckle	<i>Lonicera japonica</i>
Kudzu	<i>Pueraria montana</i>

#7

Mimosa	<i>Albizia julibrissin</i>
Multiflora rose	<i>Rosa multiflora</i>
Oriental bittersweet	<i>Celastrus orbiculatus</i>
Royal paulownia	<i>Paulownia tomentosa</i>

#6

Chinese privet	<i>Ligustrum sinense</i>
Miscanthus	<i>Miscanthus sinensis</i>
Nepal grass	<i>Microstegium vimineum</i>
Tree of heaven	<i>Ailanthus altissima</i>

#5

Air-potato	<i>Dioscorea batatas</i>
Autumn olive	<i>Elaeagnus umbellata</i>
Bicolor lespedeza	<i>Lespedeza bicolor</i>
Garlic Mustard	<i>Alliaria petiolata</i>
Japanese barberry	<i>Berberis thunbergii</i>
Japanese spirea	<i>Spiraea japonica</i>
Johnson grass	<i>Sorghum halepense</i>
Musk thistle	<i>Carduus nutans</i>
Periwinkle	<i>Vinca minor</i>

#4

Crown vetch	<i>Coronilla varia</i>
White Poplar	<i>Populus alba</i>
Wineberry	<i>Rubus phoenicolasius</i>

#3

Bermuda grass	<i>Cynodon dactylon</i>
Common Reed	<i>Phragmites australis</i>
English ivy	<i>Hedera helix</i>

Eurasian watermilfoil
Hairy jointgrass
Japanese knotweed
Mugwort
Periwinkle
Purple loosestrife
Sericea lespedeza
Shrub honeysuckle
White sweetclover
Wisteria
Yellow sweetclover

Myriophyllum spicatum
Arthraxon hispidus
Polygonum cuspidatum
Artemisia vulgaris
Vinca minor
Lythrum salicaria
Lespedeza cuneata
Lonicera maackii
Melilotus alba
Wisteria floribunda
Melilotus officinalis

#2

Ajuga
Bamboo
Boxwood
Bristled knotweed
Bull thistle
Canada bluegrass
Canada thistle
Chicory
Chinaberry
Climbing euonymus
Common chickweed
Common dayflower
Common mullein
Common privet
Curled dock
Daffodil
Dame's rocket
Forked catchfly
Forsythia
Giant foxtail
Gill-over-the-ground
Hop clover
Hop clover
Japanese fleecflower
Knotweed
Leafy spurge
Moneywort
Moth mullein
Norway Spruce
Orange-red hawkweed
Orchard grass
Poison hemlock
Puncture vine

Ajuga reptans
Pseudoras japonica
Buxus sempervirens
Polygonum cespitosum
Cirsium vulgare
Poa compressa
Cirsium arvense
Chicorium intybus
Melia azadarach
Euonymus fortunei
Stellaria media
Hemerocallis fulva
Verbascum thapsus
Ligustrum vulgare
Rumex crispus
Narcissus psudonarcissus
Hesperis matronalis
Silene dichotoma
Forsythia viridissima
Setaria faberi
Glechoma hederacea
Trifolium aureum
Trifolium arvense
Polygonum sachaliense
Polygonum caespitosum
Euphorbia esula
Lysimachia nummularia
Verbascum blatteria
Picea abies
Hieracium auraniacum
Dactylis glomerata
Conium maculatum
Tussilago farfara

Ragwort	<i>Senecio vulgaris</i>
Red sorrel	<i>Rumex acetosella</i>
Reed canary grass	<i>Phalaris arundinacea</i>
Rough bluegrass	<i>Poa trivialis</i>
Shrub honeysuckle	<i>Lonicera morrowi</i>
Speedwell	<i>Veronica hederifolia</i>
Tall fescue	<i>Festuca arundinacea</i>
Thorny olive	<i>Elaeagnus pungens</i>
Timothy	<i>Phleum pratense</i>
Velvet grass	<i>Holcus lantanus</i>
Vinca	<i>Vinca major</i>
Weeping lovegrass	<i>Eragrostis curvula</i>
Weeping lovegrass	<i>Eragrostis curvula</i>
Yellow iris	<i>Iris psuedacorus</i>
Yellow toadflax	<i>Linaria vulgaris</i>

#1

Brazilian eloda	<i>Egeria densa</i>
Cogongrass	<i>Imperata cylindrica</i>
Common buckthorn	<i>Rhamnus cathartica</i>
Common teasel	<i>Dipsacus sylvestris</i>
Cut-leaf teasel	<i>Dipsacus laciniatus</i>
Russian-olive	<i>Elaeagnus angustifolia</i>
Russian-olive	<i>Elaeagnus angustifolia</i>
Spotted knapweed	<i>Centaurea maculosa</i>

Included, but not occurring on lists

Burning bush	<i>Euonymus alatus</i>
Japanese privet	<i>Ligustrum japonicum</i>