SPECIES: Ligustrum spp.

Choose from the following categories of information.

INTRODUCTORY

SPECIES: Ligustrum spp.

Japanese privet

J. S. Peterson, USDA, NRCS PLANTS Database

Chinese privet

Larry Allain, USDA, NRCS PLANTS Data

Amur privet

Jon T. Lindstrom, Univ. of Arkansas

European privet

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AUTHORSHIP AND CITATION:
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http://www.fs.fed.us/database/feis/ [2007, September 24].

FEIS ABBREVIATION:
LIGSPP
LIGAMU
LIGJAP
LIGSIN
LIGVUL

SYNONYMS:
None

NRCS PLANT CODE [62]:
LIGUS2
LIAM
LIJA
LISI
LIVU

COMMON NAMES:
Amur privet
Japanese privet
Chinese privet
European privet
common privet

TAXONOMY:
The currently accepted genus name for privet is *Ligustrum* L. (Oleaceae) [3,19,27,37,43,54,60,62,71,74,75].
This report summarizes information on 4 species of privet:

Ligustrum amurense Carr. [27] Amur privet
Ligustrum japonicum Thunb. [9,11,20,27,43,60,67,75] Japanese privet
Ligustrum sinense Lour. [9,11,20,27,43,59,74,75] Chinese privet
Ligustrum vulgare L. [3,19,25,27,37,54,60,69,71] European privet

When discussing characteristics common to all 4 species, this report refers to them collectively as privet or privets. When referring to individual species, the common names listed above are used.

LIFE FORM:
Tree-shrub
Shrub

FEDERAL LEGAL STATUS:
No special status

OTHER STATUS:
No entry

DISTRIBUTION AND OCCURRENCE

SPECIES: Ligustrum spp.

GENERAL DISTRIBUTION:
European privet is native to Europe [11,19,25,37,49,54,69,71]. Chinese privet is native to Southeast Asia [9,11,25,67,75] and was introduced to the United States in the early 1950s [31]. Japanese privet is native to eastern Asia [9,11,67,75]. The following general descriptions of North American distribution for privet are based on florae, herbaria samples, and other published literature.

Amur privet occurs from New York south to South Carolina and west to West Virginia, Kentucky, Tennessee, Alabama, Arkansas, and Texas. It has also been reported in Maine [27,61,62]. Plants database provides a map of Amur privet's distribution in the United States.

Japanese privet occurs mainly in the southeastern United States. It is reported from Florida west to north-central Texas and north to Maryland, Virginia, and Tennessee. It is also reported from Puerto Rico and Washington [4,11,20,27,31,61,62,75]. Plants database provides a map of Japanese privet's distribution in the United States.

Chinese privet occurs from Virginia south to Florida and west to Kentucky, Missouri, Oklahoma, and Texas. It occurs in the Atlantic coastal states as far north as Massachusetts. It also has been reported from Puerto Rico and Oregon [1,9,10,11,14,20,27,31,40,43,44,46,48,59,61,62,66,68,74,75]. Plants database provides a map of Chinese privet's distribution in the United States.

European privet occurs in every U.S. state east of the Mississippi River except Florida and Mississippi. To the west, it is reported from north-central Texas east into Arkansas and Louisiana. European privet distribution is apparently scattered throughout the western United States, with reported occurrences in Nebraska, Utah, Montana, and Oregon. In Canada it is reported in Newfoundland, Nova Scotia, Ontario, and British Columbia [1,3,11,18,27,47,57,61,62,69,71]. Plants database
provides a map of European privet's distribution in the United States.

The following biogeographic classification systems demonstrate where Japanese privet (labeled with the abbreviation J), Chinese privet (C), and European privet (E) could potentially be found based on the above information. Amur privet (A) has not been included in these lists (other than the States list) because information about North American distribution and occurrence is lacking for this species. In general, predicting distribution of nonnative species in North America is difficult due to gaps in understanding of their biological and ecological characteristics, and because they may still be expanding their range. These lists are speculative and may not be accurately restrictive or complete.

ECOSYSTEMS [17]:
FRES10 White-red-jack pine CE
FRES11 Spruce-fir E
FRES12 Longleaf-slash pine JC
FRES13 Loblolly-shortleaf pine JCE
FRES14 Oak-pine JCE
FRES15 Oak-hickory JCE

FRES16 Oak-gum-cypress JCE
FRES17 Elm-ash-cottonwood JCE
FRES18 Maple-beech-birch JCE
FRES19 Aspen-birch CE
FRES30 Desert shrub CE
FRES32 Texas savanna CE
FRES33 Southwestern shrubsteppe CE
FRES35 Pinyon-juniper CE
FRES38 Plains grasslands CE
FRES39 Prairie CE
FRES40 Desert grasslands CE
FRES41 Wet grasslands JCE

STATES/PROVINCES: (key to state/province abbreviations)

Amur privet:

AL	AR	IA	KY	ME
MD	MA	NJ	NY	NC
PA	SC	TN	TX	VA

Japanese privet:

AL	FL	GA	LA
MD	MS	NC	SC
TN	TX	VA	PR

Chinese privet:

AL	AR	CT	FL	GA	IA	KY
LA	MD	MA	MS	MO	NJ	NC
OK	RI	SC	TN	TX	VA	PR

European privet:

AL	AR	CT	DE	FL	GA	IL
IN	KY	LA	ME	MD	MA	MI
MO	MT	NE	NH	NJ	NY	NC
OH	OR	PA	RI	SC	TN	TX
UT	VT	VA	WV	WI	DC	

BC	NF	NS	ON

BLM PHYSIOGRAPHIC REGIONS [2]:
13 Rocky Mountain Piedmont CE
14 Great Plains JCE

KUCHLER [29] PLANT ASSOCIATIONS:
K072 Sea oats prairie C
K078 Southern cordgrass prairie C
K082 Mosaic of K074 and K100 E

K083 Cedar glades CE
K084 Cross Timbers E
K089 Black Belt JCE
K090 Live oak-sea oats JC
K091 Cypress savanna C
K094 Conifer bog E
K095 Great Lakes pine forest E
K096 Northeastern spruce-fir forest E
K098 Northern floodplain forest CE
K099 Maple-basswood forest E
K100 Oak-hickory forest CE
K101 Elm-ash forest E
K102 Beech-maple forest E
K103 Mixed mesophytic forest JCE
K104 Appalachian oak forest CE
K106 Northern hardwoods E
K107 Northern hardwoods-fir forest E
K108 Northern hardwoods-spruce forest E
K109 Transition between K104 and K106 E
K110 Northeastern oak-pine forest E
K111 Oak-hickory-pine JCE
K112 Southern mixed forest JC
K113 Southern floodplain forest JC
K114 Pocosin JC
K116 Subtropical pine forest C

SAF COVER TYPES [13]:
1 Jack pine E
5 Balsam fir E
12 Black spruce E
14 Northern pin oak E
15 Red pine E
16 Aspen E
17 Pin cherry CE
18 Paper birch E
19 Gray birch-red maple E
20 White pine-northern red oak-red maple E
21 Eastern white pine CE
22 White pine-hemlock CE
24 Hemlock-yellow birch CE
25 Sugar maple-beech-yellow birch CE
26 Sugar maple-basswood E
27 Sugar maple CE
28 Black cherry-maple CE
30 Red spruce-yellow birch E
31 Red spruce-sugar maple-beech E
32 Red spruce E
33 Red spruce-balsam fir E
35 Paper birch-red spruce-balsam fir E
39 Black ash-American elm-red maple E
40 Post oak-blackjack oak JCE
42 Bur oak E

43 Bear oak CE
44 Chestnut oak CE
45 Pitch pine CE
46 Eastern redcedar JCE
50 Black locust CE
51 White pine-chestnut oak C
52 White oak-black oak-northern red oak E
53 White oak JCE
55 Northern red oak CE
57 Yellow-poplar JCE
58 Yellow-poplar-eastern hemlock JCE
59 Yellow-poplar-white oak-northern red oak JCE
60 Beech-sugar maple CE
61 River birch-sycamore JCE
62 Silver maple-American elm E
63 Cottonwood JCE
64 Sassafras-persimmon CE
65 Pin oak-sweetgum JCE
68 Mesquite C
70 Longleaf pine JC
71 Longleaf pine-scrub oak JC
72 Southern scrub oak JC
73 Southern redcedar JC
74 Cabbage palmetto JC
75 Shortleaf pine CE
76 Shortleaf pine-oak CE
78 Virginia pine-oak CE
79 Virginia pine CE
80 Loblolly pine-shortleaf pine JCE
81 Loblolly pine JCE
82 Loblolly pine-hardwood JCE
83 Longleaf pine-slash pine JC
84 Slash pine JC
85 Slash pine-hardwood JC
87 Sweetgum-yellow-poplar JCE
88 Willow oak-water oak-diamondleaf (laurel) oak JC
89 Live oak JC
91 Swamp chestnut oak-cherrybark oak JC
92 Sweetgum-willow oak JCE
93 Sugarberry-American elm-green ash JCE
94 Sycamore-sweetgum-American elm JCE
95 Black willow JCE
97 Atlantic white-cedar JCE
104 Sweetbay-swamp tupelo-redbay JCE
105 Tropical hardwoods C
107 White spruce E
108 Red maple E
109 Hawthorn E
110 Black oak CE
111 South Florida slash pine C
235 Cottonwood-willow CE
236 Bur oak E

SRM (RANGELAND) COVER TYPES [51]:
422 Riparian JCE
719 Mesquite-liveoak-seacoast bluestem C
723 Sea oats C
726 Cordgrass C
731 Cross timbers-Oklahoma E
732 Cross timbers-Texas (little bluestem-post oak) E
805 Riparian E
809 Mixed hardwood and pine JC
810 Longleaf pine-turkey oak hills JC
811 South Florida flatwoods C
812 North Florida flatwoods JC
813 Cutthroat seeps C
814 Cabbage palm flatwoods C
815 Upland hardwood hammocks JC
816 Cabbage palm hammocks C
817 Oak hammocks JC
820 Everglades flatwoods C
821 Pitcher plant bogs JC

HABITAT TYPES AND PLANT COMMUNITIES:
None of the privet species discussed in this summary is a climax dominant or indicator species in habitat type classifications in North America. Chinese privet is listed as a characteristic tall shrub of bottomland hardwood community types of South Carolina [39].

BOTANICAL AND ECOLOGICAL CHARACTERISTICS

SPECIES: Ligustrum spp.

GENERAL BOTANICAL CHARACTERISTICS:
Privets are nonnative shrubs or trees with smooth bark and slender twigs [1,21,65]. Leaves are opposite, and fruits are drupes produced in panicles [9,20,25,43,67,75]. Amur privet is a 12- to 16-foot-tall (3.7-5 m) shrub [1,62]. Japanese privet and Chinese privet are tall shrubs or small trees, 10 to 39 feet (3-12 m) tall, with trunks often clumped and inclined [20,43,67]. European privet is a 10- to 16-foot-tall (3-5 m), much-branched shrub [19,54,71].

Amur privet is considered deciduous [62]. Japanese privet is considered evergreen [20,62,75]. Leaf retention in Chinese privet and European privet is variable and is presumably dependent upon multiple site factors such as drought, shading, and temperature. These species have been described as deciduous [54,71,75], tardily deciduous [20], semideciduous [65], somewhat evergreen [65], half-evergreen [3,19,54,71], and evergreen [25,65]. Urbatsch [65] indicates European privet is relatively more deciduous than Chinese privet.

Japanese privet is single seeded. Seeds are somewhat rounded and wrinkled on 1 side; the other surfaces plane. Chinese privet fruits yield 1-2 seeds each [67]. Leaf and fruit size data are listed below.

	leaf size		fruit size	
	length	width	diameter	length
Amur privet	≥2 inches (5 cm) [43]	≤1 inch (2.5 cm) [43]	0.24-0.32 inch (6-8 mm) [43]	
Japanese privet	1.2-3.9 inches (3-10 cm) [9,20,43,67,75]	1-2 inches (2.5-5 cm) [20,43]	~0.2 inch (5 mm) [20,43,67]	0.24-0.47 inch (6-12 mm) [20,43,67]
Chinese privet	0.6-2.8 inch (1.5-7 cm) [9,20,25,43,67]	0.5-1 inch (1.3-2.5 cm) [20,43,67]	0.16-0.24 inch (4-6 mm) [20,43,67]	0.16-0.28 inch (4-7 mm) [20,43,67]
European privet	0.8-2.4 inches (2-6 cm) [19,25,54,71]	0.3-0.8 inch (0.8-2 cm) [71]	0.16-0.24 inch (4-6 mm) [54]	

In general, autecological information about privets is lacking. In particular, such information about Japanese privet is sparse, and information about Amur privet is absent from the literature.

The preceding description provides characteristics of privet that may be relevant to fire ecology and is not meant to be used for identification. Keys for identifying privets are available (e.g. [9,11,19,20,27,37,43,69,75]). See the Plants Database, Louisiana State University Agcenter and The Nature Conservancy's Wildland Invasive Species Team websites for photos and descriptive characteristics.

RAUNKIAER [45] LIFE FORM:
Phanerophyte
Geophyte

REGENERATION PROCESSES:
Privets reproduce from seed or from root or stump sprouts [1,65].

Breeding system: Privets have perfect flowers [19,20].

Pollination: No information

Seed production: Mature privet can produce hundreds of fruits per plant per year [1]. In an Australian study, large-diameter Chinese privet stems produced greater amounts of fruit, per unit canopy area, than small-diameter stems. Nevertheless, stems < 1 inch (25 mm) in diameter, growing as close as 7.9 inches (20 cm) above ground level, were capable of producing "substantial" amounts of fruit [72].

Fruit production in Chinese privet is reduced by shading [58]. An Australian experiment showed that fruit production in Chinese privet, per unit canopy area, was progressively reduced as degree of shading increased [72].

Seed dispersal: Wildlife, especially birds, disperse privet seeds [1,58,73].

Seed banking:
Chinese privet and European privet do not form seed banks. Nearly all germination occurs during the 1st growing season following dispersal [41,50].

Germination:
Seed germination is probably enhanced when fruits are 1st consumed by animals, typically birds [7,41]. In a laboratory experiment, germination of Chinese privet (and glossy privet (*Ligustrum lucidum*)) seeds was almost

completely inhibited when fruit was left intact. The cause was thought to be very low water potentials of the fruit juices [7].

Chinese privet germination appears to occur under a wide range of temperatures. In a laboratory experiment, Chinese privet seeds were germinated on moist filter paper (in petri dishes) under constant low light intensity (~0.5% daylight) and temperatures of 41, 50, 59, 68, 77, or 86 degrees Fahrenheit (5, 10 15, 20, 25, and 30 ºC, respectively). Maximum germination occurred between 59 and 77 degrees Fahrenheit, and >50% germination occurred in the 50 degree treatment. Initiation of germination was fastest at 68 degrees Fahrenheit, followed by 77 degrees Fahrenheit, 59 degrees Fahrenheit, and 50 degrees Fahrenheit. Seeds may be killed at temperatures of 86 degrees Fahrenheit or higher. Exposure to the 86 degrees Fahrenheit treatment for 33 days, followed by transfer to the optimum temperature (68 ^{O}Fahrenheit), resulted in substantially reduced germination (8.5%). In comparison, germination of seeds transferred to 68 degrees Fahrenheit from the 41 degrees Fahrenheit and 50 degrees Fahrenheit treatments was 73% and 88.5%, respectively [6].

A study of germination and seed bank dynamics for 11 shrub and vine species commonly found in the Arkansas coastal plain revealed that European privet seed germination rates were highest among the 6 shrub species studied [50].

Seedling establishment/growth: No information

Asexual regeneration: Privets reproduce from root or stump sprouts [1,65]. Chinese privet readily produces suckers from its extensive, shallow root system [31,58,65]. There is some speculation that suckering occurs only after root damage [58]. Chinese privet apparently sprouts from the root crown in response to stem damage [14]. Further research is needed on asexual regeneration in privets.

SITE CHARACTERISTICS:
Privets occupy a variety of habitats in North America but may not tolerate dry soils well.

Information about site characteristics for Japanese privet is sparse. It is mostly mentioned as occurring in mesic and/or disturbed habitats [4,20,31,75].

Chinese privet occurs within a variety of sites throughout its North American range. It is adapted to an assortment of soil types, is somewhat drought tolerant, and has low soil fertility requirements. Chinese privet is most competitive on moist, well-drained soils [31]. It is frequently mentioned from moist or "nonxeric" sites [1,4,10,14,20,31,40,46,59,68], and ruderal or edge habitats [1,9,20,31,43,59,68,75].

Although Chinese privet apparently does not grow well on poorly drained soils [31], it appears to be tolerant of short-term flooding. In a greenhouse study, seedlings were subjected to shallow flooding and deep flooding treatments for 80 days. While gas exchange and growth were lower in flooded compared with nonflooded treatments, morphological adaptations (i.e. lenticels and adventitious roots) led to ≥75% survival in 5 of 6 flood treatments [4].

European privet also has been recorded from a variety of sites within North America. It has been mentioned as occurring within old fields, glades, barrens, woodlands, and closed-canopy forests [1,57]. Forest sites where European privet has been described include riparian, bottomland, upland, and cove forests [1,47]. In the upper Midwest, it escapes to "disturbed ground and forests, dry or damp" [69], as well as "more or less undisturbed woodland" [3].

Despite the apparent ubiquitous nature of European privet, there is evidence that its distribution may be limited by moisture availability in some areas. In a mixed mesophytic forested valley in southwestern Ohio, European privet was unable to establish mature stands on dry rocky slopes, despite successful recruitment of seedlings from mature seed sources in the moist valley bottom. It was suggested that the dearth of mature stems on the steep valley slopes was due, in part, to the dry rocky soils [18].

SUCCESSIONAL STATUS:
In general, privets discussed in this summary display some shade tolerance.

Successional status of Chinese privet is unclear. It appears to be at least moderately shade tolerant [31]. In a greenhouse study, Chinese privet seedlings were subjected to full sun, 30-35% full sun, and 10-15% full sun treatments. There were no significant ($P<0.05$) differences in survival, growth (height or diameter), net photosynthesis, or stomatal conductance between treatments over the 80-day sampling period [4].

Some evidence suggests that established plants are less shade tolerant than seedlings. A review by Swarbrick and others [58] indicates that Chinese privet can germinate and establish under very low light conditions (1-5% full sunlight), but cannot survive "more than a few years unless the canopy is broken." This would suggest that Chinese privet can invade relatively undisturbed habitats following formation of canopy gaps. More research is needed to help describe the relationship between succession and susceptibility to invasion by privet.

It appears that European privet invades recently disturbed habitats and once established, can persist for a substantial period. In Europe, it has been characterized as a "late-tolerant" species. Seedlings cannot survive under extreme shade conditions (0.3% daylight), and generally establish and develop only in a high-light environment. Once mature, however, European privet can persist under canopy shade [22]. Research in southwestern Ohio shows European privet distribution in a mixed mesophytic forest appears limited, in part, by canopy cover. Seedlings established but were unable to develop and thrive under the deep shade of the oak-sugar maple (*Quercus* spp.-*Acer saccharum*) forest [18].

SEASONAL DEVELOPMENT:
Reported flowering dates for privets:

	Japanese privet	Chinese privet	European privet
Arkansas		March-May [67]	April-May [25]
Blue Ridge Mountains		April-May [74]	
Carolinas	June-July	May-June [43]	
Florida panhandle		April-May [9]	
Illinois			June-July [37]
Louisiana	June-August	March-May [67]	
Oklahoma		March-May [67]	
New England			June-July [49]
northeastern U.S.			June [19]
Texas	June-August [67]	March-May [11,67]	
north-central Texas	June-July [11]		
West Virginia			June-July [54]

Japanese privet and Chinese privet produce fruits from September to November (in the Carolinas) [43]. Fruits of European privet remain on the plant through winter (in Arkansas) [25].

FIRE ECOLOGY

SPECIES: Ligustrum spp.

FIRE ECOLOGY OR ADAPTATIONS:

Fire adaptations:

Chinese privet survives fire by sprouting from the root crown in response to damage of aboveground tissue [14,31]. It is likely, though speculative, that privets generally respond to fire damage by sprouting from the root crown, and/or by root suckering (see Fire Effects). More research is needed on the fire ecology of privets in North America.

Fire regimes: Chinese privet was present in a longleaf pine (*Pinus palustris*) forest in southern Alabama, prior to and following 3 annual prescribed burns where fire had previously been excluded for >45 years. No further information is available about Chinese privet at this particular site, but we may presume from this report that it has some ability to persist (at least in the short term) in frequent, low-severity fire regimes characteristic of longleaf pine ecosystems in the Southeast [66].

As of this writing (2003), there are no other accounts in the literature of interactions between privets and specific fire regimes.

The following table lists fire return intervals for communities or ecosystems throughout North America where privet may occur. Amur privet has not been included in this list because information about North American distribution and occurrence is lacking for this species. This list is presented as a guideline to illustrate historic fire regimes and is not to be interpreted as a strict description of fire regimes for privets. For further information on fire regimes in these communities or ecosystems see the corresponding FEIS summary for the dominant taxa listed below.

Privet spp.*	Community or Ecosystem	Dominant Species	Fire Return Interval Range (years)
CE	maple-beech-birch	*Acer-Fagus-Betula*	> 1000
E	silver maple-American elm	*A. saccharinum-Ulmus americana*	< 35 to 200
C E	sugar maple	*A. saccharum*	> 1000
E	sugar maple-basswood	*A. saccharum-Tilia americana*	> 1000
JCE	Atlantic white-cedar	*Chamaecyparis thyoides*	35 to > 200
CE	beech-sugar maple	*Fagus* spp.-*Acer saccharum*	> 1000 [70]
CE	cedar glades	*Juniperus virginiana*	3-7 [42]
JCE	yellow-poplar	*Liriodendron tulipifera*	< 35 [70]
C	Everglades	*Mariscus jamaicensis*	< 10
C	melaleuca	*Melaleuca quinquenervia*	< 35 to 200 [38]
E	northeastern spruce-fir	*Picea-Abies* spp.	35-200
E	black spruce	*Picea mariana*	35-200
E	conifer bog**	*Picea mariana-Larix laricina*	35-200
E	red spruce**	*P. rubens*	35-200
E	jack pine	*Pinus banksiana*	<35 to 200 [12]
CE	shortleaf pine	*P. echinata*	2-15
CE	shortleaf pine-oak	*P. echinata-Quercus* spp.	< 10
JC	slash pine	*P. elliottii*	3-8

JC	slash pine-hardwood	*P. elliottii*-variable	< 35 [70]
C	South Florida slash pine	*P. elliottii* var. *densa*	1-5 [38,70]
JC	longleaf-slash pine	*P. palustris-P. elliottii*	1-4 [38,70]
JC	longleaf pine-scrub oak	*P. palustris-Quercus* spp.	6-10 [70]
E	red pine (Great Lakes region)	*P. resinosa*	10-200 (10***) [12,16]
E	red-white-jack pine**	*P. resinosa-P. strobus-P. banksiana*	10-300 [12,23]
CE	pitch pine	*P. rigida*	6-25 [5,24]
JC	pocosin	*P. serotina*	3-8
CE	eastern white pine	*P. strobus*	35-200
CE	eastern white pine-eastern hemlock	*P. strobus-Tsuga canadensis*	35-200
E	eastern white pine-northern red oak-red maple	*P. strobus-Q. rubra-Acer rubrum*	35-200
JCE	loblolly pine	*P. taeda*	3-8
JCE	loblolly-shortleaf pine	*P. taeda-P. echinata*	10 to < 35
CE	Virginia pine	*P. virginiana*	10 to < 35
CE	Virginia pine-oak	*P. virginiana-Quercus* spp.	10 to < 35
JCE	sycamore-sweetgum-American elm	*Platanus occidentalis-Liquidambar styraciflua-Ulmus americana*	< 35 to 200 [70]
JCE	eastern cottonwood	*Populus deltoides*	< 35 to 200 [42]
E	aspen-birch	*P. tremuloides-Betula papyrifera*	35-200 [12,70]
C	mesquite	*Prosopis glandulosa*	< 35 to < 100 [33,42]
CE	black cherry-sugar maple	*Prunus serotina-Acer saccharum*	> 1000
CE	oak-hickory	*Quercus-Carya* spp.	< 35
E	northeastern oak-pine	*Quercus-Pinus* spp.	10 to < 35 [70]
JCE	oak-gum-cypress	*Quercus-Nyssa*-spp.-*Taxodium distichum*	35 to > 200 [38]
CE	southeastern oak-pine	*Quercus-Pinus* spp.	< 10
E	white oak-black oak-northern red oak	*Q. alba-Q. velutina-Q. rubra*	< 35
E	northern pin oak	*Q. ellipsoidalis*	< 35
CE	bear oak	*Q. ilicifolia*	< 35
E	bur oak	*Q. macrocarpa*	< 10 [70]
E	oak savanna	*Q. macrocarpa/Andropogon gerardii-Schizachyrium scoparium*	2-14 [42,70]
CE	chestnut oak	*Q. prinus*	3-8
CE	northern red oak	*Q. rubra*	10 to < 35
JCE	post oak-blackjack oak	*Q. stellata-Q. marilandica*	< 10
CE	black oak	*Q. velutina*	< 35
JC	live oak	*Q. virginiana*	10 to< 100 [70]

JC	cabbage palmetto-slash pine	*Sabal palmetto-Pinus elliottii*	< 10 [38,70]
C	southern cordgrass prairie	*Spartina alterniflora*	1-3 [42]
CE	eastern hemlock-yellow birch	*Tsuga canadensis-Betula alleghaniensis*	> 200 [70]
JCE	elm-ash-cottonwood	*Ulmus-Fraxinus-Populus* spp.	< 35 to 200 [12,70]

* J = Japanese privet, C = Chinese privet, E = European privet
** fire return interval varies widely; trends in variation are noted in the species summary
*** mean

POSTFIRE REGENERATION STRATEGY [52]:
Tall shrub, adventitious bud/root crown
Small shrub, adventitious bud/root crown
Ground residual colonizer (on-site, initial community)
Initial off-site colonizer (off-site, initial community)
Secondary colonizer (on-site or off-site seed sources)

FIRE EFFECTS

SPECIES: Ligustrum spp.

IMMEDIATE FIRE EFFECT ON PLANT:
Fire can kill aboveground portions of Chinese privet and European privet [1,14]. Although documentation is lacking, it is likely that fire also top-kills Amur privet and Japanese privet.

DISCUSSION AND QUALIFICATION OF FIRE EFFECT:
No entry

PLANT RESPONSE TO FIRE:
Japanese privet can "resprout following fire," although further details are lacking [31]. Chinese privet responds to aboveground damage from fire by vigorously sprouting from the root crown [14]. It is also likely that European privet and Amur privet respond to fire damage by sprouting, although as of this writing (2003), documentation is lacking.

DISCUSSION AND QUALIFICATION OF PLANT RESPONSE:
As of this writing (2003), there is no mention in the literature of fire-induced root suckering in privet, although such a response seems likely. Chinese privet is known to produce suckers from its extensive, shallow root system [31,58,65], usually following damage to shallow roots [58].

FIRE MANAGEMENT CONSIDERATIONS:
Effectiveness of prescribed fire to control privet may vary. Prescribed burning to control Chinese privet in northwestern Georgia resulted in a mixed-severity fire, with some aboveground mortality and survival of substantial numbers of mature stems. This result was attributed to the erratic, spotty nature of the fire. This may have been due to Chinese privet's affinity for moist, low-lying habitat [14]. More research is needed that documents the effects of fire on privet and subsequent plant responses.

Due to the ability of privet to sprout following damage from fire, persistent annual burning will likely be required for local eradication. Nature Conservancy preserve managers in Alabama and Florida have reported that repeated annual prescribed burning, when conducted during periods of low fuel moisture, can eventually eliminate Chinese privet and European privet from invaded sites. Burning is not likely to be effective on perpetually moist sites [1].

MANAGEMENT CONSIDERATIONS

SPECIES: Ligustrum spp.

IMPORTANCE TO LIVESTOCK AND WILDLIFE:
A variety of birds eat privet fruits, including cedar waxwings and northern bobwhite [25,36,67,73]. Chinese privet fruit may be particularly important to northern bobwhite in winter after other food sources are depleted [34]. Deer browse Chinese privet and European privet [25,36,55,56], and it is likely they browse other privets too. In southeastern Texas, cotton rats consume Chinese privet fruits in fall and winter and consume foliage in fall [44].

Palatability/nutritional value:
Terminal twigs and foliage of Chinese privet maintain a crude protein content of >10.5% year-round [56]. However, privet may be toxic to livestock [8,28].

Cover value: Chinese privet provides cover for northern bobwhite in northern Georgia [34].

OTHER UTILIZATIONS:
Privet is commonly cultivated for hedges and other ornamental purposes [1,49].

IMPACTS AND CONTROL:
Impacts:
In many areas of North America, privet easily escapes cultivation and can quickly degrade native communities by forming dense monospecific stands [1]. In a survey of federal wilderness managers, privet was mentioned among "widely reported problem species" in Alabama, Arkansas, and Kentucky [32].

Japanese privet escapes into natural areas in southern North America where it can form "dense, impenetrable thickets" and displace native species [31]. One example is in natural areas around Austin, Texas, where Japanese privet has invaded intermittent stream bed and mesic woodland habitats. Its impacts include outcompeting native woody species such as wax mallow (*Malvaviscus arborea* var. *drummondii*), Mexican buckeye (*Ungnadia speciosa*), American beautyberry (*Callicarpa americana*), small palmleaf thoroughwort (*Conoclinium greggii*), pecan (*Carya illinoensis*), and Texas ash (*Fraxinus texensis*). Removal of Japanese privet from these areas has resulted in regrowth of other native species, including mescalbean sophora (*Sophora secundiflora*), Buckley oak (*Quercus buckleyi*), live oak (*Quercus virginiana*), southwestern bristlegrass (*Setaria scheelei*), toothleaf goldeneye (*Viguiera dentata*), white crownbeard (*Verbesina virginica*), Rio Grande palmetto (*Sabal mexicana*), rougeplant (*Rivina humilis*), and Drummond's woodsorrel (*Oxalis drummondii*) [53].

Chinese privet invades natural areas throughout much of southern and eastern North America. It has been reported as a problem weed on Nature Conservancy preserves in Alabama, Arkansas, Louisiana, Georgia,

Florida, Mississippi, Tennessee, and North Carolina [1]. Chinese privet establishes monospecific stands that dominate the forest shrub layer and shade out herbaceous plants, altering species composition and community structure [11,31,68]. Increasing abundance of Chinese privet in the understory of eastern bottomland forests may hinder regeneration of native hardwood species [4].

An example of the impacts of Chinese privet on native plant diversity is in southern Florida, where it has invaded undisturbed relict slope hammock habitat, threatening to displace the rare Miccosukee gooseberry (*Ribes echinellum*) [64]. Miccosukee gooseberry is federally listed as threatened [63] and state listed as endangered in Florida [15].

Impacts of European privet on native North American flora are mixed. It has been reported as a problem weed on Nature Conservancy preserves in Arkansas, Tennessee, and Ohio [1], but there are fewer reports of negative impacts from invasive European privet in North America than for Chinese privet. Gayek and Quigley [18] describe valley bottoms in a southwestern Ohio mixed mesophytic forest where European privet has been growing for at least 40 years. Their studies indicate that European privet generally does not compete well in the understories of these forests. Even in moist valley bottoms where it establishes mature stems, European privet coexists with a variety of native perennials and spring "wildflowers" [18]. More research is needed to determine where escaped European privet poses the greatest threat to North American natural areas.

Control:
Perhaps the most important aspect of controlling privet is managing sprouting that often occurs subsequent to initial control treatments (see Asexual regeneration). Control methods that remove or damage aboveground stems, such as mechanical cutting or prescribed burning, will likely cause sprouting. Subsequent monitoring and repeated treatments may be necessary to eliminate sprouting stems.

Prevention:
Preventing the influx of privet seed from relatively distant sources may be impossible due to dispersal by birds. Preventing establishment of dense, seed-producing populations in managed natural areas will increase the probability of successful restoration programs [1]. Frequent monitoring may be necessary in areas near a privet seed source or in areas that were recently treated to control existing privet infestations. Young Chinese privet seedlings (stem diameter < 1 inch (25 mm) and height < 8 inches (20 cm)) are able to produce "substantial" amounts of fruit [72]. Young privet stems of sprout origin might also be capable of contributing seed soon after control treatments.

Integrated management: No information

Physical/mechanical:
Seedlings can be removed by hand-pulling. When hand-pulling seedlings, the entire root system must be extracted to prevent sprouting. Established seedlings become increasingly difficult to hand-pull because of a strong root system [68].

Mowing and/or cutting can reduce the spread of privet by preventing seed production. Repeated cutting may eventually eradicate privet [1]. Stems larger than 1 inch (2.5 cm) in diameter may be most easily controlled by cutting close to ground level and applying herbicides to the cut stumps [30,53,68]. Cutting stems without accompanying herbicide treatment will likely promote growth from sprouting. Even with repeated follow-up cutting, mechanical control alone may be difficult [68].

Fire: See Fire Management Considerations.

Biological: No information

Grazing/browsing:

Domestic goats can provide some control, provided privet has not grown beyond browseline [1].

Chemical:

Invasive privet can often be effectively controlled by painting cut stumps with herbicides. Areas where this method may be particularly desirable include sparse infestations of large stems, places where stems are concentrated, such as fence lines, or habitats where the presence of desirable native species precludes foliar application [26].

Foliar spraying can also be effective, particularly for dense populations. Late fall or early spring are the best times for foliar spraying, since privet is likely to be biologically active but native species are dormant. Applying herbicide and oil solution to basal stem bark may also kill privet [1].

Below is a list of herbicides that have been tested and judged effective for controlling privets in North America, as well as some special considerations for specific control techniques. There is no information available, as of this writing (2003), concerning chemical control of Amur privet.

Japanese privet		Chinese privet		European privet	
Chemical(s)	Special Considerations	Chemical(s)	Special Considerations	Chemical(s)	Special Considerations
imazapyr	effective for painting cut stumps [53]	imazapyr [1,35]	effective for painting cut stumps [1]	2,4-D/picloram	effective for painting cut stumps [26]
glyphosate	most effective when applied at bud break or soon thereafter [1]	glyphosate [35,68]	apply to foliage in late fall after native plant foliage has abscised [1,68]	glyphosate	effective for painting cut stumps [1]
		triclopyr [1]		triclopyr/picloram	effective for painting cut stumps [26]
		metsulfuron [26,35]		metsulfuron [26]	
		glyphosate/X-45 [26,31]	effective for painting cut stumps or for foliar application [31]		

For more information regarding appropriate use of herbicides against invasive plant species in natural areas, see The Nature Conservancy's Weed Control Methods Handbook, as well as TNC's Wildland Invasive Species Team web page. For more information specific to herbicide use against privet, see TNC's Element Stewardship Abstract web page for *Ligustrum* spp.

Cultural: No information

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