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Ochyromera ligustri (Coleoptera: Curculionidae), an Immigrant Natural Enemy of Chinese Privet *Ligustrum sinense* Lour. (Oleaceae) in Florida

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Abstract

Chinese privet or hedge privet, *Ligustrum sinense* Lour. (Oleaceae), an ornamental deciduous shrub of Asian origin, has become naturalized throughout north Florida, Alabama, Georgia, Kentucky, Mississippi, North and South Carolina, and Tennessee. This woody plant is now considered an invasive weed because it displaces native vegetation. It is currently listed as a Category I species by the Florida Exotic Pest Plant Council. Because no practical control measures exist for large infestations of Chinese privet in natural areas, this weedy shrub may be a suitable candidate for biological control because there are no *Ligustrum* species native to the United States. However, there are other popular species of *Ligustrum* used as landscape plants. The seed weevil *Ochyromera ligustri*, an immigrant natural enemy of *Ligustrum* species, was recently discovered attacking Chinese privet in Leon County, Florida. Further studies will be required to determine what role seed predation by *O. ligustri* may play in reducing the invasiveness of Chinese privet in Florida.

Introduction

Chinese or hedge privet, *Ligustrum sinense* Lour. (Oleaceae), is a semi-deciduous shrub or small tree of Asiatic origin that is commercially available from the nursery industry (PlantFinder 1998) and frequently used as an ornamental or border plant. After its introduction into the United States in 1852 (Dirr 1983), this woody shrub eventually escaped cultivation. By 1932, Chinese privet had become naturalized across the southeastern United States (Small 1972), including north Florida, Alabama, Georgia (Godfrey 1988), Kentucky, North and South Carolina (Radford et

al. 1964), Mississippi (Goddard 1992), and Tennessee (Radford et al. 1964; Faulkner et al. 1989). The present distribution of naturalized populations of Chinese privet in Florida is shown in Fig. 1. While primarily a woody invader of abandoned or disturbed areas (Godfrey 1988), the shrub readily invades natural areas adjacent

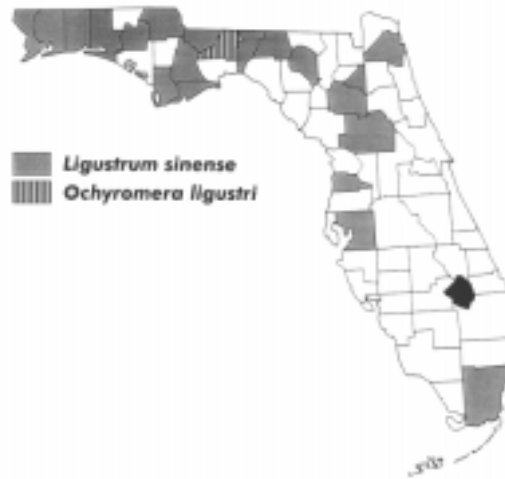


Figure 1. Current distribution of naturalized populations of *Ligustrum sinense* (from Wunderlin et al. 1995) and the seed weevil *Ochyromera ligustri* in Florida.

to disturbed sites and is especially abundant along stream banks.

Chinese privet can grow to a height of 10 m. The plant is characterized by its numerous, leafy, pubescent branchlets and small, simple, deciduous to semi-deciduous, elliptic leaves (Fig. 2). The leaves are opposite, have short pubescent petioles, and are attached at right angles to the stems. In bloom, the branchlets bear numerous, many-flowered panicles. Flowers are white and malodorous; the corolla tube is shorter than the spreading lobes, and the stamens are exerted. The fruit is a blue, berrylike drupe that attracts birds which ingest the fruits and spread the seeds (MacRae 1980).

The Florida Exotic Pest Plant Council (FLEPPC) lists Chinese privet as a Category I invasive species (Florida Exotic Pest Plant Council 1997) because it disrupts native plant communities in riparian and upland habitats by competing for the available light and space. The federal and state-listed endangered Miccosukee gooseberry *Ribes echinellum* (Coville) Rehd. is on the verge of being displaced in Jefferson County by encroaching stands of Chinese privet (K. Burks, pers. comm., 1998). Nutrient cycling in natural areas also may be disrupted by the presence of



Figure 2. *Ligustrum sinense*: (a) branch with branchlets bearing terminal inflorescences, (b) flower, (c) infructescence, and (d) fruit. Reproduced from Godfrey (1988), with permission of The University of Georgia Press, Athens.

Chinese privet. Faulkner et al. (1989) observed that dense thickets of Chinese privet in Tennessee produce large quantities of litter and act like umbrellas by preventing the infiltration of leaf litter from the native tree canopy. Chinese privet can even have an adverse impact on public health. Dense stands of this invasive shrub are conducive to infestations of the hard tick *Ixodes scapularis* Say, a suspected vector of Lyme disease in the southern United States (Goddard 1992).

Biological Control

From a management perspective, mechanical control methods such as cutting and prescribed burning are ineffective against Chinese privet (Faulkner et al. 1989). The plant resprouts rapidly from the cut stumps and its affinity for low-lying damp areas does not allow fire to carry well. The moist conditions in the bottom litter layer also reduce the effectiveness of fire by not allowing temperatures to become hot enough to kill the root crowns. Although the herbicide glyphosate will severely damage or kill Chinese privet, chemical control is impractical and too expensive for large areas with dense growth (Faulkner et al. 1989). Since conven-

tional methods are inappropriate for selectively controlling large infestations of Chinese privet in natural areas, classical biological control with insects should be considered.

Chinese privet would be a good candidate for biological control because the environmental risks associated with the importation and release of host specific natural enemies would be low. Since there are no native congeners in the genus *Ligustrum* occurring in the United States (Pemberton 1996), the level of host specificity required for candidate natural enemies may be quite broad yet still not pose a risk to nontarget native or economically important plant species. The nursery industry would probably object to the introduction of insects that feed on the foliage or girdle the branches or stems of Chinese privet and would be fearful of attacks on the widely used *Ligustrum japonicum* Thunb. (Japanese privet) and the also popular *L. lucidum* Ait. (wax privet). This conflict of interest could be resolved by selecting only those insects that attack the plant's flowers or seeds. According to Harley (1986), suppression of reproduction is important for controlling woody weeds (1) that reproduce by seed, (2) where existing plantings provide some benefit, e.g., ornamental value, and (3) when herbicide applications provide only temporary control and retreatment is uneconomical or environmentally disruptive. Chinese privet meets all of these criteria.

Biological control of Chinese privet already may be occurring, although not as a result of any purposeful introductions. The seed weevil *Ochyromera ligustri* Warner was recently found attacking Chinese privet in Leon County, Florida (Fig. 1) (Cuda and Zeller, n.d.). This immigrant natural enemy of *Ligustrum* species may be capable of reducing the spread of Chinese privet into new areas and/or the densities of existing stands. However, field and laboratory studies will be required to determine to what extent this insect can control the growth and spread of Chinese privet populations in natural areas.

Ochyromera ligustri was first discovered in 1959 on Japanese privet *L. japonicum* in Wake County, North Carolina (Warner 1961; Wray 1961), and is believed to have immigrated from the Orient in nursery stock imported into the United States. Since then the weevil has been found in Florida, Georgia, North and South Carolina, and Virginia, as well as North and South Dakota (Carolina?) (O'Brien and Wibmer 1982; Johnson and Lyon 1988). Considering that Leon County is the only locality in Florida where Japanese privet (the principal host plant for *O. ligustri*) is documented as naturalized (Wunderlin et al. 1995), it is not surprising that the weevil has host shifted to Chinese privet in this region of north Florida where both species of *Ligustrum* are sympatric in natural areas. The weevil also has been collected from wax-leaf ligustrum *L. lucidum*, common privet *L. amurense* Carr., lilac (*Syringa* spp.), and grape (*Vitis* spp.) in North Carolina (Warner 1961; Wray 1961). However, it is not clear from the literature whether lilac or grape are host plants in the context that they are capable of supporting complete development of the weevil.

The biology of *O. ligustri* on Japanese privet was reviewed by Johnson and Lyon (1988). The adult weevil is 3-5 mm long and is shiny brown with golden yellow hairlike scales. The adult weevil feeds on the foliage by making small perforations in the interior of the leaf blade, and drops to the ground when disturbed. In North Carolina, adults are active from late June to early July. Females deposit their eggs in the seed or in the mature fleshy fruits. The larvae feeding inside the fruits destroy the seed while they develop to the adult stage. New adults emerge from the seeds (one weevil per seed) in mid-May, and there is only one generation per year.

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