

ELEMENT STEWARDSHIP ABSTRACT  
for

*Elaeagnus umbellata*

Autumn Olive

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The Nature Conservancy  
Element Stewardship Abstract  
For *Elaeagnus umbellata*

## I. IDENTIFIERS

Common Name: AUTUMN OLIVE

Global Rank: G?

### General Description:

*Elaeagnus umbellata* is a shrub or small tree with alternate, petioled leaves in small lateral clusters on twigs of the current year.

## II. STEWARDSHIP SUMMARY

*Elaeagnus umbellata* is planted in some states for wildlife cover. It invades disturbed areas adjacent to the plantings where encroachment can be rapid due to the high production of seeds, high germination rate, and hardiness of the plants. It also resprouts quickly after burning or cutting. Repeating cutting or burning may prevent spread, but may need to be conducted for many years, as resprouting will occur. Herbicides offer more effective control, and glyphosate is commonly painted on stumps after cutting in a 10-20% dilution in late August or September. Foliar sprays of glyphosate and dicamba may be effective but will damage other vegetation under the olive. Basal applications of triclopyr alone or in combination with 2,4-D applied in March (dormant season) will also provide effective control.

## III. NATURAL HISTORY

### Range:

*Elaeagnus umbellata* is native to China, Korea and Japan and was introduced to the United States for cultivation in 1830 (Rehder 1940). It occurs from Maine to New Jersey and Pennsylvania (Fernald 1950) and west to Wisconsin, Illinois, and Missouri (Holtz 1981).

### Habitat:

*Elaeagnus umbellata* grows well on a variety of soils including sandy, loamy, and somewhat clayey textures with a pH range of 4.8-6.5 (Holtz 1981). It apparently does not grow as well on very wet or dry sites (Allan and Steiner 1965), but Sharp (1977) described it as having excellent tolerance to drought. It does very well on infertile soils because its root nodules house nitrogen-fixing actinomycetes (Sternberg 1982). Mature trees tolerate light shade, but produce more fruits in full sun, and seedlings may be shade intolerant (Holtz 1981, Nestleroad et al. 1984).

### Ecology:

*Elaeagnus umbellata* is one of the earlier shrubs to break dormancy, putting out foliage in mid-March in southern Illinois and advancing north with the season about 100 miles per week (Sternberg 1982). It grows rapidly, producing fruits in 3-5 years. Anthesis occurs after first leaves are out from May to June. Flowers are fragrant and pollinated by a variety of insects (Holtz 1981). The drupes are silvery with brown scales when immature, ripening to a speckled red in September-October. Most fruits are eaten by birds or fall to the ground by early winter (Sternberg 1982). *E. umbellata* produces a large amount of seed, each tree producing 2-8 lbs. of seed per year and the number of seeds per lb. ranging from 20,000-54,000. The seeds are widely distributed by birds and have a high rate of germination (Holtz 1981). Cold stratification is required to break embryo dormancy (Holtz 1981). The effect of stratification by passing through a bird's digestive tract has apparently not been reported.

### Impacts:

*Elaeagnus umbellata* has the potential of becoming one of the most troublesome adventive shrubs in the central and eastern United States (Sternberg 1982). It exhibits prolific fruiting, rapid growth, is widely

disseminated by birds, and can easily adapt to many sites. It is vigorous and competitive against native species, and resprouts after cutting (Nestleroad et al. 1984). Due to its nitrogen-fixing capabilities, it has the capacity to adversely affect the nitrogen cycle of native communities that may depend on infertile soils. *E. umbellata* is just beginning to be recognized as a potentially serious problem exotic. Seeds are still distributed for wildlife plantings in some states such as Missouri, although the state conservation department is working to stop distribution (Kurz pers. comm.).

#### IV. CONDITION

#### V. MANAGEMENT/MONITORING

##### Management Requirements:

*Elaeagnus umbellata* seems to be a problem only in locations where small stands or rows were planted, usually within the last 10-20 years, and have begun to spread into adjacent fields or natural areas. It apparently can become troublesome where it occurs on or next to prairies with infrequent prescribed burns because it resprouts quickly after fire damage or cutting.

Since burning and cutting stimulate resprouting, herbicide treatment may be necessary to eradicate large patches. One method of application is to cut the plant off at the main stem and paint the herbicide on the stump. Glyphosate is effective and commonly used. Kurz (pers. comm.) and Nyboer (pers. comm.) recommended a 10-20% dilution for painting on stumps. Foliar applications may be adequate for small patches; the recommended dilution of glyphosate in this case is a 1-2% solution. Kurz (pers. comm.) stated that the best time for herbicide application is in late August or September when the plant is actively translocating materials to the roots.

Kuhns (1986) reported that March dormant season basal applications (stem injections) of triclopyr alone or in combination with 2,4-D provided excellent control of autumn olive at very low concentrations (down to 1% triclopyr in diesel oil). The lowest concentrations of triclopyr and all treatments with the 2,4-D/triclopyr combinations provided slower kills than higher concentrations of triclopyr alone, but only one of the treatment plants were expected to survive (Kuhns 1986). Foliar applications of 2,4-D, triclopyr or metsulfuron methyl in late May or June at recommended rates did not provide adequate control, and even plants that were severely injured recovered the following year. Dicamba applied in late June at 4 lbs/gal (2 qts/100 gal/acre) with a surfactant provided 90% total kill and severely retarded the growth of surviving stems the following year (Kuhns 1986). Glyphosate was not included in this study.

Ohlenbusch and Ritty (1979) reported excellent results for the control of russian olive (*E. angustifolia*) in Kansas using a variety of herbicides and treatments. Applications were made on June 14 and results evaluated in late August. Foliar applications of dicamba, picloram, and glyphosate, all in a 90% water/10% diesel oil carrier, resulted in total root kill. However, glyphosate in both 1% and 2% solutions damaged herbaceous plants under the trees so extensively that foliar application of this chemical is not recommended.

Basal application of triclopyr, all mixed in diesel oil and applied June 14, also resulted in 100% control. A second study by the same authors indicated that diesel oil alone also provides highly effective basal control of *E. angustifolia* (Ohlenbusch and Ritty 1979).

##### Management Programs:

*Elaeagnus umbellata* is not a problem on many preserve lands. It occurs on some state managed natural areas in Illinois and Missouri where management has implemented control programs consisting of herbicide application. Contact: Don Kurz, Natural History Section, Missouri Conservation Dept., P.O. 180, Jefferson City, MO 65102 and Randy Nyboer, Illinois Dept. of Conservation, 2612 Locust St., Sterling, IL 61081.

##### Monitoring Requirements:

Occurrences, especially those adjacent to or on natural areas, should be monitored to help substantiate the need for classification of autumn olive as a noxious weed where necessary. Planted stands near natural areas should be monitored to check their expansion.

## VI. RESEARCH

### Management Research Needs:

*Elaeagnus umbellata* is not a priority species for research. There are some indications that its abundance may be increasing, both by continued planting and by seed dispersal from naturalized populations (see Nestleroad et al. 1984 and Sternberg 1982) but little data is available on population dynamics within its range. Questions for consideration include: how well does *E. umbellata* compete with and displace native vegetation? What is the affect on growth and reproduction of repeated burning over several years?

## VII. ADDITIONAL TOPICS

## VIII. INFORMATION SOURCES

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## IX. DOCUMENT PREPARATION & MAINTENANCE

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