Autumn olive, *Elaeagnus umbellata* Russian olive, *Elaeagnus angustifolia*

Species Biology and Phenology:

Habitat: Autumn and Russian olive are good initial colonizers and emerge early in the spring. Autumn and Russian olive are nitrogenfixers and thus able to grow in infertile habitats and disturbed areas such as roadsides, in pastures, fields, and sparse woodlands. They are also salt and drought-tolerant and can survive in soils with a pH range of 4.8-6.5. Autumn olive does not grow well in wet habitats (flood intolerant) or dense forests. Mature shrubs and trees of Russian olive are more tolerant of floods, droughts in the dormant season. Russian olive prefers sandy floodplains and is often associated with moist riparian habitats but is not tolerant of acidic conditions (pH<6.0). Mature shrubs of both plants tolerate light shade but produce more fruits in full sun. Seedlings of Autumn olive may be shade intolerant while Russian olive seedlings appear to be more shade tolerant.

Reproductive Strategy: Establishment and reproduction of Autumn and Russian olive is primarily by seed but vegetative propagation can also occur. Plants mature begin to flower and produce fruit between 3-5 years of age. Each plant produces abundant fruits and approximately 20,000-54,000 seeds per year. Seeds require cold stratification to germinate and have very high rates of germination (70-90%). Seeds can remain viable for up to 3 years.

Dispersal: Most fruits are eaten by birds and small mammals that disperse seeds or seeds fall to the ground by early winter.

Phenology					Flowerin	g	Full leaf out					
								Seed ripening	5			
Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
						Har	nd pulling and digg	ging				
				Cı	utting and mowi	ng				_		
Manual Treatment					Cut stems			Graze animals				
Manual Heatment								-				
				Direct flam	ie		Follow-up direct	t flame		_		
							Foliar herbicide					
Chemical Treatment								Cut su	rface herbicide			
						Basal ba	rk herbicide					

Species Phenology and Treatment Options:

Treatment Methods:

Category	Method	Method Description	Considerations				
	Manual treatment can be highly effective for small plants and infestations of Autumn and Russian olive. Larger plants have robust root						
	systems and may be harder to remove manually.						
	Hand Pulling	• Pull entire plant by the base of the stem	• Effective on small-medium sized plants and small				
IANUAL		• Be sure to remove entire root system	infestations				
		• If feasible and fruit is present, bag and dispose of fruits to	 Most effective if done when soil is wet 				
		prevent seed dispersal	• Remaining portions of roots system not removed can re-				
		• Dry or burn all vegetation (most importantly roots) by	sprout				
		hanging upside down on surrounding vegetation or piling	• Take caution when pulling as some plants have thorns				
		into a brush pile and burning	 Avoid dragging or piling pulled plants into an area that is currently uninfested 				
	Weed	Remove plant by the base of the stem	Can be more helpful than pulling larger plants				
	Wrenching	• Be sure to remove entire root system					
		• If feasible and fruit is present, bag and dispose of fruits to					
		prevent seed dispersal					
		• Dry or burn all vegetation (most importantly roots) by					
		hanging upside down on surrounding vegetation or piling					
N		into a brush pile and burning					
	Mowing/	• Use lopper, pruning shears, weed whacker/brush saw or	• Cutting/mowing can help slow the spread of Autumn				
	Cutting	mower to cut the stem as close to the ground as possible	olive				
		• Cut at least 1 times during growing season (mid May-	• Cutting/mowing will encourage re-sprouting and may				
		October)	need to be conducted for 3-5 years to fully exhaust root				
		• Repeat for 3-5 years	• Most effective if followed with foliar horbigide application				
	Crazing	• Use lopper pruning shears wood wheeker/brush saw or	A detailed grazing plan should be developed before				
	Grazing	mower to get the stem as close to the ground as possible	employing this method				
		early in the growing season	• If native plants are present grazing animals might				
		Allow grazing animals to eat sprouts	preferentially graze them				
		Thiow grazing animals to cat sprouts	 Not all grazing animals will eat invasive plants. Goats 				
			have been known to graze Autumn olive				

	Active ingredients commonly used in herbicides: glyphosate or triclopyr						
CHEMICAL	Foliar Application	 If foliar spraying only: Foliar spray when plant is fully leafed out (May-October) Spray leaf surfaces with low volume backpack sprayer, or high volume mist blower If cutting and foliar spraying: Use lopper, pruning shears, weed whacker/brush saw or mower to cut the stem as close to the ground as possible Cut during early growing season (April and May) Spray sprouts with a low volume backpack sprayer during late growing season (September and October) 	 Low Volume Backpack Sprayer Herbicides (active ingredient): glyphosate or triclopyr with surfactant Used to target barberry plants and minimize drift to desirable species Low Volume Motorized Mist Blower Herbicides (active ingredient): glyphosate or triclopyr with surfactant Used for very larger and dense infestations that have little desirable, native vegetation that will be damaged by drift 				
	Cut Stump	 Cut stems 2-4" above the ground in late summer to early fall Apply herbicide immediately after cutting the exposed surface using a sponge, brush, hand-held squirt bottle or directly pouring Apply herbicide to at least the outer 20% of the surface Monitor and do follow up treatment as the following year and as necessary 	• Herbicides (active ingredient): glyphosate or triclopyr mixed with surfactant				
	Basal Bark	 Us a low pressure, low volume backpack sprayer Apply herbicide around the entire circumference of the lower 8-18" of individual stems of the plant and include the root collar Larger stems require the larger (18") treated area Do not spray to the point of runoff 	 Herbicides (active ingredient): triclopyr in an oil or oil- water mixture Recommended for scattered or light infestations of large plants Used to target Autumn olive plants and minimize drift to desirable species Only use this treatment method when stem and root collar are exposed 				
	Cut Surface	 Cut stems 2-4" above the ground Apply herbicide up to one month following cutting using a sprayer, hand-held squirt bottle or directly pouring Apply herbicide around the entire circumference of the cut surface until wet Do not apply herbicide until the point of runoff 	 Herbicides (active ingredient): triclopyr in an oil or oil- water mixture Recommended for scattered or light infestations of large plants Used to target Autumn olive plants and minimize drift to desirable species 				