NAME OF SPECIES: Sturnus vulgaris	
Synonyms:	
Common Name: European starling, common starling, starling	
A. CURRENT STATUS AND DISTRIBUTION	
I. In Wisconsin?	1. YES X NO ☐
	2. Abundance: This species is common and abundant in WI (11).
	3. Geographic Range: This species can be found everywhere is WI. Starlings are mainly found primarily in cities, suburban areas, and agricultural areas (1, 10). This species is also found in open country on short, mown or grazed grasslands, while avoiding large areas of woodlands (1, 3).
	4. Habitat Invaded: This species is mainly found near human-altered habitats (4). A human commensal. Disturbed Areas X Undisturbed Areas ☐
	5. Historical Status and Rate of Spread in Wisconsin: This species was released in Central Park, New York in 1890 and 1891 and eventually spread to WI (1, 3). It was first detected in Milwaukee in 1923, in Waukesha in 1926, and by 1936 had spread throughout the state (11). This species is starting to stabilize due to limited breeding habitat (1).
	6. Proportion of potential range occupied: Detected in 81% of Atlas quads (11). Expanding forests and declining pasture acreage deprive starlings of favored habitat (11).
	7. Survival and Reproduction: This species is known to reproduce and survive in WI. Starlings living in the Midwest and Great Lake regions will migrate southward in the winters (1, 3).
II. Invasive in Similar Climate Zones	1. YES X NO ☐ Where (include trends): Found throughout North America. The population is around 200 million individuals and has stabilized over the past several decades (1). Starlings living in the Midwest and Great Lake regions will migrate southward in the winters (1, 3).
III. Invasive in Similar Habitat Types	1. Upland ☐ Wetland ☐ Dune ☐ Prairie ☐ Aquatic ☐ Forest ☐ Grassland ☐ Bog ☐ Fen ☐ Swamp ☐ Marsh ☐ Lake ☐ Stream ☐ Other: X Starlings are mainly found in cities, suburban areas, and agricultural areas (1, 10). This species is also found in open country on short, mown or grazed grasslands, while avoiding large areas of woodlands, arid chaparral and deserts (1, 3). This species also will avoid mountainous regions (2, 4). Not found in the Neotropics (5).
IV. Habitat Affected	1. Where does this invasive resided: Edge species X Interior species ☐
	2. Conservation significance of threatened habitats: None
V. Native Habitat	1. List countries and native habitat types: Native to Eurasia and North Africa (2). This species is found in the same areas it invades.
VI. Legal Classification	1. Listed by government entities? No. Not protected by Migratory Bird Treaty Act. Classified by WI DNR as an unprotected species.

	2. Illegal to sell? YES ☐ NO ☐ Notes: This species is abundant throughout the world. Starlings are kept as pets but nothing was found regarding their sale.
B. ESTABLISHMENT POTENTIAL AND LIFE HISTORY TRAITS	
I. Life History	1. Type of Animal: Mammal ☐ Bird X Reptile ☐ Amphibian ☐ Fish ☐
	2. Age of Maturity or time to self-sufficiency: Starlings fledge at 21-23 days old, then become self-sufficient 7 to 10 days after fledging (1, 4).
	3. Gestation Period: Starlings incubate their eggs for about 12 days (1) with a range from 12-15 days (4).
	4. Mating System: Polygamous ☐ Polyandrous ☐ Monogamous X Notes: Both sexes participate in nest building and incubation (1).
	5. Breeding/ Breeding period: In the southern extent of their range this species breeds around March 15, while in the northern range this species breed as late as June 15 (1). Clutches range from 4-7 eggs (1, 9), with up to 2 broods/year (1). This species exhibits breeding synchrony, most females lay eggs within 3-4 days of each other (4).
	6. Hybridization potential: No documentation found.
II. Climate	1. Climate restrictions: The temperature at which starlings can maintain their body temperature without expending any energy is 10-100 F (12).
	2. Effects of potential climate change: This species has a high population and is a prolific species. This means that climate change will probably not affect this species as much as other species without these characteristics. Also this species can live around man, preferring human-altered habitats (1,10).
III. Dispersal Potential	1. Pathways - Please check all that apply: Unintentional: Bird ☐ Animal ☐ Vehicles/Human ☐ Wind ☐ Water ☐ Other: Intentional: Ornamental ☐ Forage/Erosion control ☐ Medicine/Food: Recreational ☐ Other: X This species was brought into North America as part of an effort to introduce all the birds mentioned in Shakespeare's works.
	2. Distinguishing characteristics that aid in its survival and/or inhibit its control: This species has a diverse diet (5) and is very adaptable. This species has a wide range of ecological tolerances (2). Requires cavities for nesting. Gregarious.
IV. Ability to go Undetected	1. HIGH ☐ MEDIUM ☐ LOW X Starlings are gregarious and form roosting flocks that may exceed 200,000 birds, and their breeding activities are easily detected (11).
C. DAMAGE POTENTIAL	
I. Competitive Ability	1. Presence of Natural Enemies: This species is preyed upon by birds of prey, raccoons, and cats (2).

	2. Competition with native species: Starlings out-compete many native birds for food and nest sites (1, 2, 3, 9, 10). Starlings have been known to destroy eggs of other birds and kill nestlings of other birds (4). In Ohio, competition for nest sites with European starlings has resulted in a noticeable decline in the flicker population in the past 30 years (6). Another study found that the only species that are declining due to European starlings are sapsuckers, the other species are holding their own (8).
	2. Rate of Spread: -changes in relative dominance over time: -change in acreage over time: HIGH(1-3 yrs) X MEDIUM (4-6 yrs) ☐ LOW (7-10 yrs) ☐ Notes: This species was introduced in 1890 and numbers about 200 million birds today.
II. Environmental Effects	1. Alteration of ecosystem/community composition? YES X NO ☐ Notes: Congregate in large numbers. May impact seed dispersal because of their consumption of a wide variety of fruits (4, 5). May also control insect populations.
	2. Alteration of ecosystem/community structure? This species may have impacts on seeds, fruits, and insects (4, 5).
	3. Alteration of ecosystem/community functions and processes? YES ☐ NO X Notes:
	4. Exhibit Parasitism? YES X NO ☐ Notes: This species exhibts intraspecific, not interspecific, brood parasitism (1).
D. SOCIO-ECONOMIC EFFECTS	
I. Positive Aspects of the Species to the Economy/Society:	Notes: This species can regulate insect pest (4). Starlings are harvested as a food source in Europe, and have similar potential in US (5). Huge starling flocks perform fantastic aerial displays which appeal to many people (5).
II. Potential Socio-Economic Effects of Requiring Controls:	Notes: Negative: Implementation costs of controls. Protests of control program. Positive: Reduction in agricultural damage, human health, sanitation, and janitorial concerns.
III. Direct and Indirect Socio-Economic Effects of the Animal :	Notes: Crop damage losses, sanitation and janitorial costs, domestic animal and human health issues, airport safety concerns.
IV. Increased Costs to Sectors Caused by the Animal:	Notes: Agricultural, janitorial, and health sectors impacted. Droppings comtanimate food and water sources and can be corrosive to cars, buildings, statues, etc. (5). Starlings cause major crop damage, and their damage has been reported to USDA–WS from every state except North Dakota and Alaska (7). USDA-WS estimated that starlings cost $13.8 million in 8 years (1990-1997) (7).
V. Effects on Human Health:	Notes: This species carries 25 diseases that can be transmitted to humans, including avian malaria(7).
VI. Potential Socio-Economic Effects of Restricting Use:	Positive: Restricting use of these animals could lower crop damage and restrict a disease carrier. Negative: Protests of control program.

E. CONTROL AND PREVENTION	
I. Costs of Prevention (please be as specific as possible):	Notes: Starlings are likely too well established/widespread and control costs too expensive to eliminate all starlings.
II. Responsiveness to Prevention Efforts:	Notes: Instead of eradicating starlings, another idea is to eliminate these birds where they are causing the most problems (5). Physical exclusion and habitat modification have been successful locally (5).
III. Effective Control Tactics:	Mechanical X Biological ☐ Chemical X Times and uses: Exclusion, habitat modification, frightening, repellents, poisoning, shooting, trapping, artificial nest sites attract starlings allowing eggs or young to removed (5).
IV. Minimum Effort:	Notes: Physical exclusion would take the least amount of effort but is often impractical. Habitat modification may be more effective but may be more time intensive.
V. Costs of Control:	Notes: It would be expensive to modify habitat so starlings will not use it, while at the same time allowing other species to use it. Cost would likely be borne by individual landowner.
VI. Cost of Prevention or Control vs. Cost of Allowing Invasion to Occur:	Notes: It would be impossible to control all European starlings. Controlling starlings in areas where competition with native bird species and crop damage are major concerns is a feasible alternative.
VII. Non-Target Effects of Control:	Notes: The wrong bird species could be affected by lethal or non-lethal control efforts.
VIII. Efficacy of Monitoring:	Notes: The BBS and the CBC would not be as effective as more localized monitoring. In areas where starling control is applied, run transects and listen for birds.
IX. Legal and Landowner Issues:	Notes:

F. REFERENCES:

Number	Reference
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3	http://www.birds.cornell.edu/BOW/EURSTA/
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5	http://www.columbia.edu/itc/cerc/danoff-burg/invasion_bio/inv_spp_summ/Sturnus_vulgaris.html
6	http://dnr.state.oh.us/tabid/1737/default.aspx
7	http://www.aphis.usda.gov/ws/nwrc/symposia/economics/bergmanHR.pdf
8	http://www.birds.cornell.edu/AllAboutBirds/BirdGuide/European_Starling_dtl.html
9	Bull, John and John Farrand. 1994. National Audubon Society Field Guide to Birds, Eastern Region. Alfred a. Knopf Inc. New York, New York.
10	National Geographic. 1999. Field Guide to the Birds of North America 3rd edition. National Geographic Society Washington D.C.
11	Cutright,N.J., B.R. Harriman, and R.W. Howe, eds. 2006. Atlas of the Breeding Birds of Wisconsin. Wisconsin Society for Ornithology, Inc. Waukesha, WI.

12	http://www.starlingtalk.com/european_starling.htm

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