Appendix R – Key Wetland Plants and Growth Requirements

Information gathered from the Conceptual Model for Managed Wetlands in the Suisun Marsh (Barthman-Thompson et al. 2005)

Important Wetlands Plants

Fat hen (*Atriplex triangularis*): Native annual 30-90 cm high producing abundant seeds. Fat hen is found in salt and brackish coastal marshes (SRCD 1998) and managed ponds of intermediate elevation, slightly higher than brass buttons (Rollins 1981). It is often the first to invade bare areas. Fat hen survives best in soils submerged three to five months, three months being optimum (Burns 2003, SRCD 1998). Habitat managers can encourage fat hen growth by beginning drawdown of water in late January or February (SRCD 1998). Over half of the seedlings emerge by mid-February so inundation past this time period reduces new growth (Rollins 1981). Fat hen can tolerate salinity of between 13-49 parts per thousand total dissolved solids (ppt TDS) or 20-77 milliSiemens/cm (mS/cm) (DWR 2001), but optimum is between 30 mS/cm and 45 mS/cm (SRCD 1998).
Fat hen was originally thought to be of great importance as waterfowl food in Suisun, probably because earlier studies concentrated on gizzard samples of ducks shot by hunters early in the morning (Burns 2003). More recent evidence shows that fat hen is consumed nocturnally, but overall is eaten in proportion to its availability by pintails and avoided by green-winged teal and mallards (Burns 2003). There were 2,053 acres of fat hen in diked areas of Suisun Marsh in 2000 (DFG 2000).
Lamb's quarters, pigweed (*Chenopodium album*): Nonnative annual with leathery leaves 18-100+ cm tall. Lamb's quarters grows on pond bottoms and germinates later in the year than fat hen (SRCD 1998). Lamb's quarters tolerates salinities up to 62 mS/cm (SRCD 1998).

Brass buttons (*Cotula coronopifolia*): Nonnative perennial up to 50 cm high. Brass buttons germinates winter to spring and forms a thick fleshy yellow-flowered carpet. It is adaptable, invading disturbed soil, and may be found year-round in moist soil. Brass buttons is often found on the edges of shallow ponds still flooded in early spring and will continue to grow where soil salinity remains relatively high. Brass button grows best when given two to four months submergence (Rollins 1981). It tolerates salinities from 9-30 ppt TDS (14-48 mS/cm) (DWR 2001).
Originally thought to be of high importance as duck food, brass buttons is now thought to be less favored by green-winged teal and pintails and actually avoided by mallards (Burns 2003). In 2000, there were 416 acres dominated by brass buttons in Suisun diked areas (DFG 2000).

Swamp timothy (*Crypsis schoenoides*): Nonnative mat-like annual grass with stems 5-75 cm. Swamp timothy is uncommon in Suisun Marsh, growing under the freshest 60 conditions (up to 5 mS/cm salinity). It is found in pond bottoms following late spring drainage. It is thought to be excellent food for northern pintails (SRCD 1998). In 2000, there were 74 acres of swamp timothy in Suisun diked areas (DFG 2000).

conditions (up to 5 mS/cm salinity). It is found in pond bottoms following late spring drainage. It is thought to be excellent food for northern pintails (SRCD 1998). In 2000, there were 74 acres of swamp timothy in Suisun diked areas (DFG 2000).

Watergrass (*Echinochloa crus-galli*): Nonnative annual grass 25-150 cm. high, producing large quantities of seed. Watergrass must be planted in late spring or early summer and have frequent irrigation (Rollins 1981). Subsequent year's watergrass may be a volunteer. It can grow in soils with salinities between 4-6 mS/cm (DWR 2001). Watergrass requires three to four irrigation cycles and must be flooded and drained within seven days during the summer to control mosquitoes (Rollins 1981). See H. Traditional Watergrass Management Schedule (page 34).

Rollins (1981) reported that watergrass seeds are eaten by most duck species, other birds, and rodents. Burns (2003) found that mallards strongly preferred watergrass and green-winged teal and pintails ate it in proportion to its availability. It is important food for mallards late in the season. Burns suggests that watergrass has increased in Suisun through selective management. Watergrass is often associated with smartweed in Suisun. In 2000, there were 1090 acres of smartweed mixed with watergrass in Suisun diked areas (DFG 2000).

Smartweed (*Polygonum* spp.): Native/nonnative annual or perennial shrub or vine often rooting at the nodes. Smartweed must be grown in moist soils and may even be floating. Management is similar to that established for watergrass (SRCD 1998). Smartweed is at risk for contracting a fungus known as "smut" which destroys the plants' seeds (SRCD 1998). Soil salinities where smartweed is found generally do not exceed 5 mS/cm (DWR 2001).

Smartweed is thought to be good waterfowl food (particularly for pintail). It is often associated with watergrass in Suisun. In 2000, there were 1090 acres of smartweed mixed with watergrass in Suisun diked areas (DFG 2000).

Sago pondweed (*Potamogeton pectinatus*): Native perennial (producing fleshy corms in winter) submerged aquatic plant up to 80 cm. Sago pondweed grows in permanently flooded brackish ponds and ditches, or where water is absent no more than three months at a time (SRCD 1998). It is often the first plant to establish in newly flooded areas. Water disturbance, from winds or carp (*Cyprinus carpio*) movement, can easily disrupt the delicate root system (SRCD 1998). Sago pondweed can tolerate water salinities of 9-12 ppt TDS (14.0-18.7 mS/cm) (DWR 2001).

Ducks feed on all parts of the plant (Rollins 1981) as well as on the high number of invertebrates the dense plant material supports (DWR 2001, SRCD 1998). Canvasback and swans eat the tubers, which are high in carbohydrates (DWR 2001). Carp also eat this plant, competing with waterfowl (Rollins 1981). In 2000, there were 32 acres of sago pondweed in Suisun diked areas (DFG 2000). 61

Wigeongrass (*Ruppia maritima*): Native perennial submerged aquatic plant found in permanently flooded brackish ponds and ditches, usually in water depths of two to four feet. Wigeongrass grows best with water salinities of 5-23 mS/cm, but the seeds can tolerate long periods of drought and extremely high water salinities (up to 390 mS/cm) (DWR 2001, SRCD 1998). Like sago pondweed, wigeongrass can be disrupted by excessive wave action from winds or carp. However, wigeongrass has been observed to form dense stands in flowing water (SRCD 1998).

Many species of ducks feed on seeds, foliage, and rootstocks (Rollins 1981), and on the high number of invertebrates they support (DWR 2001). Wigeongrass is not abundant in Suisun.

Pickleweed (*Salicornia virginica*): Native fleshy perennial or subshrub 20-70 cm. Pickleweed is found in poorly drained highly saline pond bottoms, flooded for a maximum of six months. If it becomes invasive, pickleweed can be controlled by cross-discing (preferable) or mowing close to the ground in August or September and flooding the pond for waterfowl season (Rollins 1981). When pickleweed becomes woody, it should be disced to allow new and more productive growth (SRCD 1998). A well-drained pond with ditches reaching to the lowest points combined with leaching cycles typically used to promote fat hen or alkali bulrush will generally not sustain a significant population of pickleweed (Rollins 1981). Pickleweed grows best in soils between 31-67 ppt TDS (48-105 mS/cm) salinity (DWR 2001).

Pickleweed is an important food plant for omnivorous waterfowl species such as wigeon, gadwall, and northern shovelers (SRCD 1998) because it provides nutrition from plant parts, seeds, and invertebrates that live among the branched stems and leaves (De Szalay and Resh 1996). In 2000, there were 12,380 acres of pickleweed in diked areas of Suisun Marsh (DFG 2000).

Tules (*Scirpus acutus* and *Scirpus californicus*): Native perennial emergents 150-400 cm. Tules are found in fresh or salt marshes (up to 17 mS/cm salinity), along sloughs, ditches, and in permanent ponds, usually in dense stands. Tules can grow in water up to four feet deep (Rollins 1981) and require at least nine months submergence (SRCD 1998). Tules reproduce mainly through underground vegetative rhizomes and infrequently through seed. Stands can break off and float in clumps to establish elsewhere, sometimes blocking drainage structures. It is recommended that tules not dominate more than 30% of the surface area of permanent ponds (Rollins 1981). Large stands may disrupt flight patterns of waterfowl. Tules can be controlled by mowing close to the ground in August or September and flooding at least one foot over the tops of the stubble from October to May. Prior to flooding, the stubble and litter may be burned if feasible. Managers wishing to limit tules should follow leaching schedules to promote fat hen or alkali bulrush. Control of tules may take longer than controlling cattails. In 2000, there were 2389 acres of *Scirpus americanus*, *S .californicus*, or *S. acutus* in Suisun diked areas (DFG 2000). 62

Alkali bulrush (*Scirpus maritimus*): Native perennial 80-150 cm high. Alkali bulrush is found in coastal brackish and salt marshes and in inland alkali and brackish marshes (Hotchkiss 1972). It is not dominant in historic tidal wetlands of eastern Suisun Marsh and is subdominant to codominant near the southwestern reach of Suisun Marsh (DWR 2001). Alkali bulrush reproduces primarily by clonal vegetative growth through extensive underground rhizomes, but can propagate by seed during periods of low salinity (high precipitation) (Burns 2003). Seeds float for several days before sinking and will survive long dormancy periods while waiting for favorable conditions (Lieffers and Shay 1981). Alkali bulrush should have seven to eight months of submergence each growing season (Rollins 1981). If less than six months is allowed, pickleweed and saltgrass may dominate. Submergence greater than nine months encourages cattails and tules (SRCD 1998).

Alkali bulrush germination occurs at salinities from 11-22 mS/cm, with none occurring at salinities above 35 mS/cm. Once the plant is established, it can tolerate salinity up to 42 mS/cm (SRCD 1998). Alkali bulrush can tolerate extremely saline conditions for up to three years, albeit with a temporary reduction in seed production (Rollins 1981).

Alkali bulrush is the primary food plant encouraged by waterfowl habitat managers. (See G. Traditional Alkali Bulrush / Intermediate Hydroperiod water (page 33). The original salinity objectives for the Suisun Marsh addressed in the 1978 State Water Resources Control Board's (SWRCB) Decision 1485 (D-1485) were based on the requirements of alkali bulrush (SWRCB 2000). The SWRCB's decision was driven by research by Mall and Rollins (Mall 1969 and Rollins 1973) identifying applied water salinity requirements for alkali bulrush and the accepted value at the time of alkali bulrush as waterfowl food. Since that time, new research has shown that pintails and mallards consume alkali bulrush only in proportion to its availability (Burns 2003). It is still, however, considered an important food source and is easily grown in managed areas of Suisun. Management favoring alkali bulrush also favors fat hen and brass buttons and inhibits pickleweed, tule, cattail, and saltgrass growth (Rollins 1981). In 2000, there were 2,478 acres of alkali bulrush in diked areas of Suisun Marsh (DFG 2000).

Sea Purslane (*Sesuvium verrucosum*): Native fleshy perennial up to 90 cm. Sea purslane grows in moist or seasonally dry flats and margins of saline wetlands. Seeds are 0.1-1 mm. and smooth. Sea purslane decomposes rapidly when submerged (SRCD 1998). Few landowners actively manage for sea purslane although it is known to occur in the lowest pond bottoms with high saline soil and is generally available early in the season as ducks return to the Marsh (Burns 2003). Sea purslane tolerates high salinities up to 100 mS/cm (SRCD 1998).

Previous studies showed this plant to have little importance as waterfowl food. However, Burns (2003) showed that pintails and green-winged teal actively select this plant when feeding while mallards eat it in proportion to its availability. In 2000, there were 573 acres dominated by sea purslane in Suisun diked areas (DFG 2000). 63

Cattail (*Typha* sp.): Native perennial emergent 150-300 cm. Cattails are usually found along banks of sloughs and ditches and in permanently flooded ponds or any area receiving greater than nine months submergence. They are found in fresher areas of the Marsh (up to 15 mS/cm salinity), in the eastern half or wherever freshwater is present from underground aquifers or seeps (Rollins 1981). If conditions are favorable, cattails can be easily established by planting divisions (SRCD 1998). Cattails can impede water flow by building up around gates or blocking ditches. Large stands may disrupt flight patterns of waterfowl (SRCD 1998). If they become a problem, mowing close to the ground in August or September and flooding at least one foot over the tops of the stubble from October to May can control them. Prior to flooding, the stubble and litter may be burned if feasible. Other mechanical methods include cutting, crushing, and discing when the pistillate spikes are a lime green color (SRCD 1998). Optimally, discing should be done three times per year, in fall, spring and summer. Managers wishing to limit cattails should follow leaching schedules to promote fat hen or alkali bulrush and be sure to drain quickly to prevent cattail seedlings from establishing on mudflats. Ditches should be dredged to a minimum of three feet. Ponds that have subsided to elevations prohibiting gravity drainage are particularly problematic. In these cases, systemic herbicides, such as Roundup® or Aquamaster (both glyphosate) may be applied in June or July when seed heads are maturing. The dead plant material can then be mowed or burned prior to fall flooding.
Cattails provide food and cover for wildlife. In 2000, there were 4955 acres of cattails in Suisun diked areas (DFG 2000).

Important Upland Plants
In 2000, there were 6361 acres of annual grasses or annual grasses mixed with weeds in Suisun diked areas (DFG 2000).
Quail brush/ Big saltbush (*Atriplex lentiformis*): Native shrub 80-300 cm in height and more wide than tall. Quail brush is found on levee tops and upland fields. It may become somewhat dormant in winter. Quail brush provides cover and nesting sites for upland species, including passerines (SRCD 1998). In pheasant habitat, edge cover, made up of saltbush and tall wheatgrass (*Elytrigia elongata*), provides cover from predators, dogs, and hunters. Saltbush provides mass while tall wheatgrass provides a vertical edge. This species rarely needs to be controlled, but it can be burned or bulldozed if it becomes a nuisance. In 2000, there were 26 acres of big saltbush in Suisun diked areas (DFG 2000).
Wild oat (*Avena fatua*): Nonnative annual grass 30-120 cm tall. Wild oat is easily established in disturbed fields. It may need occasional mowing, burning, or discing to renew growth. This grass provides good cover for wildlife and food for ungulates (SRCD 1998). 64

Coyote brush (*Baccharis pilularis consanguinea*): Native woody shrub up to 200 cm high and 250 cm wide. Coyote brush is common in upland fields and levee tops. It provides cover and nesting sites for upland species, including passerines (SRCD 1998). Coyote brush can become impenetrable over time on little used levee trails. It can be burned, bulldozed, or cut back if it becomes a nuisance. In 2000, there were 92 acres of coyote brush in Suisun diked areas (DFG 2000).
Wild mustard (*Brassica* spp.): Nonnative annual 20-100 cm. Mustard is most often found in disturbed places, such as levee tops and roadsides. It is good cover for breeding waterfowl and other wildlife, such as short-eared owls, northern harriers, and ring-necked pheasants.
Brome (*Bromus* spp.): Native or nonnative annual grass 10-40 cm tall. Brome is easily established in disturbed fields. It may need occasional mowing, burning, or discing to renew growth. This grass provides good cover for wildlife and food for ungulates (SRCD 1998). In 2000, there were 8 acres of bromes in Suisun diked areas (DFG 2000).
Tall wheatgrass (*Elytrigia elongata*): Nonnative perennial grass growing from rhizomes 35-130 cm tall. Tall wheatgrass is easily established in disturbed fields. It may need occasional mowing, burning, or discing to renew growth. Tall wheatgrass is important for food and cover for ungulates and upland game (SRCD 1998). In pheasant habitat, edge cover, made up of saltbush and tall wheatgrass, provides cover from predators, dogs, and hunters. Saltbush provides mass while tall wheatgrass provides a vertical edge. In 2000, there were 86 acres of tall wheatgrass in Suisun diked areas (DFG 2000).
Barley (*Hordeum* spp.): Domesticated annual grass 10-50 cm tall. Barley requires precipitation for growth because channel water is too saline (DWR 2001). Barley may be actively cultivated, but when established it grows well and may even become invasive (SRCD 1998). It is prone to depredation by starlings and blackbirds (Rollins 1981). Barley requires occasional mowing, burning, or discing to renew growth. Ducks eat barley seeds in September and early October before duck clubs flood for the hunting season. Geese feed on the seeds and young plants in winter (Rollins 1981). This grass also provides good cover for wildlife and food for ungulates (SRCD 1998). In 2000, there were 2 acres of barley in Suisun diked areas (DFG 2000).
Italian rye grass (*Lolium multiflorum*): Nonnative annual or biennial grass 90-150 cm tall. Italian rye grass is easily established in disturbed fields. It may need occasional burning and mowing (SRCD 1998). Italian rye grass provides food for waterfowl and is important as nesting cover for waterfowl and other ground-nesting birds, such as short-eared owls, northern harriers, and ring-necked pheasants (SRCD 1998). In 2000, there were 264 acres of rye grass in Suisun diked areas (DFG 2000).
Harding grass (*Phalaris* spp.): Nonnative perennial grass 60-150 cm high. Harding grass is easily established in disturbed fields. It may need occasional mowing, burning, or discing to renew growth. Waterfowl use Harding grass for nesting and escape cover. 65

Harding grass is important food and cover for ungulates and upland game (SRCD 1998). In 2000, there were 22 acres of Harding grass in Suisun diked areas (DFG 2000).

Rabbit's foot grass (*Polypogon monspeliensis*): Nonnative annual grass 20-100 cm tall. This common grass is able to grow in highly disturbed seasonally or permanently saturated soils subject to brackish or saline conditions (SRCD 1998). Rabbit's foot grass can be used as food and cover for waterfowl (SRCD 1998). In 2000, there were 54 acres of rabbitsfoot grass in Suisun diked areas (DFG 2000).

Wild radish (*Raphanus sativus*): Nonnative annual 40-120 cm high. Radish is found in disturbed places in uplands, roadsides, and levee tops. Radish is good cover for breeding waterfowl and other ground-nesting birds, such as short-eared owls, northern harriers, and ring-necked pheasants.

California rose (*Rosa californica*): Native shrub 80-250 cm high, forming dense thickets. Rose grows along levees and roadsides where the ground is moist. Rose is excellent at stabilizing slough banks. If it becomes invasive, especially on levees, it can be mowed or sprayed with Garlon (triclopyr). Rose provides cover and food for wildlife, including passerines.

Blackberry (*Rubus* spp.): Native or nonnative woody perennial forming brambles and producing dark reddish fruits. Blackberry grows along levees, roadsides and stream banks in moist soil (SRCD 1998). It is excellent at stabilizing slough banks. Blackberry provides cover and food for wildlife, including passerines. The nonnative Himalayan blackberry (*Rubus discolor*) is on the 1999 California Invasive Plant Council's (Cal-IPC) List A-1: most invasive wildland pest plants; widespread. All blackberry species can be controlled by mowing back or spraying with Garlon (triclopyr). In 2000, there were 54 acres of blackberry in Suisun diked areas (DFG 2000).

Curly dock (*Rumex crispus*): Nonnative erect perennial less than 150 cm tall. Curly dock is common in many different types of habitat, including wet or moist meadows, flats, and shallow fresh or brackish marshes (SRCD 1998). It provides little wildlife value, but is generally not actively controlled. In 2000, there were 16 acres of curly dock in Suisun diked areas (DFG 2000).

Vetch (*Vicia* spp.): Nonnative vine-like annual or biennial. Vetch can be planted by first discing the ground, them mixing the seeds with a nitrogen fixer, followed by drilling the seeds into the ground at least one-quarter inch (SRCD 1998). The seeds are sown in September or October and germinate late in the fall. Vetch will mature in late May. Vetch provides important cover for breeding waterfowl and other ground-nesting birds, such as short-eared owls, northern harriers, and ring-necked pheasants.

Habitat values, salinity tolerance, and vegetation requirements for key plants in Suisun Marsh

Species Common Name	Species Scientific Name	Food Value[1]	Cover Value[1]	Nesting Value[1]	Soil/water Salinity Tolerance (MS/cm)	Water Management/ Planting Schedule	Use Control Measures/ Desirable vs. Undesirable	Acreage in 2000 in diked lands[2]	Notes
Fat hen	*Atriplex triangularis*	Good	Good	Moderate	20-77	I - Traditional Fat Hen/ Short Hydroperiod		2,053	
Lamb's quarters, Pigweed	*Chenopodium album*	Good	Good	Poor	Up to 62	I - Traditional Fat Hen/ Short Hydroperiod		unknown	
Brass buttons	*Cotula coronopifolia*	Good	Poor	None	14-48			416	
Swamp timothy	*Crypsis schoenoides*	Good	None	None	Up to 5			74	Excellent waterfowl plant, esp. northern pintail
Watergrass	*Echinochloa crus-galli*	Good	Good	None	Up to 7	H - Traditional Watergrass		1090	
Smartweed	*Polygonum* spp.	Good	Good	None	Up to 5	H - Traditional Watergrass		1090	
Sago pondweed	*Potamogeton pectinatus*	Good	None	None	14-18			32	Supports high numbers of invertebrates
Wigeongrass	*Ruppia maritima*	Good	None	None	5-23			unknown but not abundant	Supports high numbers of invertebrates
Pickleweed	*Salicornia virginica*	Good	Moderate	Poor	48-105	J - Pickleweed Schedule	New growth more desirable - disc 20% per year	12,380	Supports high numbers of invertebrates
Tules	*Scirpus acutus*	Poor	Good	Good - for Passerines	Up to 17	C - Permanent Pond or A, B, D	Undesirable when dominates pond or obstructs water flow	2389	

Species Common Name	Species Scientific Name	Food Value[1]	Cover Value[1]	Nesting Value[1]	Soil/water Salinity Tolerance (MS/cm)	Water Management/ Planting Schedule	Use Control Measures/ Desirable vs. Undesirable	Acreage in 2000 in diked lands[2]	Notes
Alkali bulrush	*Scirpus maritimus*	Good	Good	None	Up to 42 for mature plants, 11-22 for germination	A, B, G		2,478	
Sea purslane	*Sesuvium verrucosum*	Good	Poor	None	Up to 100 mS/cm			573	
Cattail	*Typha* spp.	Poor	Good	Good - for Passerines	Up to 15 mS/cm	C - Permanent Pond or A, B, D	Undesirable when dominates pond or obstructs water flow	4955	
Quail brush, Big saltbush	*Atriplex lentiformis*	Poor	Good - for upland species and passerines	Good - for Passerines				26	Good pheasant cover
Wild oat	*Avena fatua*	Good - for ungulates and upland game	Good	Good			Occasional mowing, burning, discing to renew growth	unknown	
Coyote brush	*Baccharis pilularis consanguinea*	Poor	Good - for upland species and passerines	Good - for Passerines			Undesirable when dense on levee trails	92	
Wild mustard	*Brassica* spp.	None	Good	Good				unknown	
Brome	*Bromus* spp.	Good - for ungulates and upland game	Good	Good			Occasional mowing, burning, discing to renew growth	8	

Species Common Name	Species Scientific Name	Food Value[1]	Cover Value[1]	Nesting Value[1]	Soil/water Salinity Tolerance (MS/cm)	Water Management/ Planting Schedule	Use Control Measures/ Desirable vs. Undesirable	Acreage in 2000 in diked lands[2]	Notes
Tall wheatgrass	*Elytrigia elongata*	Good - for ungulates and upland game	Good	Moderate			Occasional mowing, burning, discing to renew growth	86	Good pheasant cover
Barley	*Hordeum* spp.	Good - for ungulates and upland game	Good	Good			Occasional mowing, burning, discing to renew growth	2	Ducks eat seeds in September to early October
Italian rye grass	*Lolium multiflorum*	Good	Good	Good			Occasional mowing and burning	264	
Harding grass	*Phalaris* spp.	Good - for ungulates and upland game	Good	Moderate			Occasional mowing, burning, discing to renew growth	22	
Rabbitsfoot grass	*Polypogon monspeliensis*	Good	Moderate	Poor	saturated brackish to saline soils			54	
Wild radish	*Raphanus sativus*	None	Good	Good				unknown	
California rose	*Rosa californica*	Good - for passerines	Good	Good - for Passerines				202	Good for stabilizing slough banks
Blackberry	*Rubus* spp.	Good	Good	Good - for Passerines				54	Good for stabilizing slough banks
Curly dock	*Rumex crispus*	Poor	None	Poor				16	
Vetch	*Vicia* spp.	Good - for upland birds	Good	Good		Sow seeds in September to October		unknown	
Giant cane	*Arundo donax*	None	None	None			Mechanical or herbicide removal	2	

Species Common Name	Species Scientific Name	Food Value[1]	Cover Value[1]	Nesting Value[1]	Soil/water Salinity Tolerance (MS/cm)	Water Management/ Planting Schedule	Use Control Measures/ Desirable vs. Undesirable	Acreage in 2000 in diked lands[2]	Notes
White-top	*Carderia pubescens*	Poor	Moderate	Moderate			Herbicide removal (Telar)	unknown	
Poison hemlock	*Conium maculatum*	None - lethal if eaten	Moderate	Poor			Herbicide removal (Roundup or Aquamaster)	290	
Pampas grass	*Cortaderia selloana*	None	None	Moderate - rabbits, passerines			Mechanical or herbicide removal	6	
Saltgrass	*Distichlis spicata*	Poor	None	Poor	Up to 12		Burning, discing, flooding	9569	
Fennel/Anise	*Foeniculum vulgare*	Poor	Moderate	Poor			Mowing	81	
Baltic rush	*Juncus balticus*	None	Moderate	None	Up to 15		Mechanical or herbicide removal	1091	
Perennial pepperweed	*Lepidium latifolium*	None	Poor	Poor			Herbicide removal (Telar)	682	Control invasions early. Difficult to eradicate when established.
Phragmites, Common reed	*Phragmites australis*	None	Good	None	Up to 20		Mechanical or herbicide removal	479	
Cocklebur	*Xanthium strumarium*	None-poisonous	Moderate	None	Up to 15		Mowing, flooding, herbicides	1099	

[1] Plant food, cover, and nesting values are for waterfowl unless otherwise noted. Ratings from best to worst: Good, Moderate, Poor and None.
[2] Diked wetland acreages include diked areas not managed for waterfowl as well as diked areas managed for waterfowl.