INLAND STRANDED OIL HABITAT FACT SHEET FOR RESPONSE:

Submersed Aquatic Vegetation

Indicator Species

Wild Celery
Vallisneria spp.

Coontail
Ceratophyflum spp.

Invasive Species

Eurasian Watermilfoil
Genus: *Myriophyllum*

Curly-leaf Pondweed
Genus: *Potamogeton*

I. Habitat Description

The submersed vegetation habitat is those portions of lakes, ponds, channel borders, or backwaters that appear more than 10% of vegetation fully underwater. Common vegetation types include wild celery (*Vallisneria*), coontail (*Ceratophyflum*), and the invasive curly pondweed (*Potamogeton*). While this habitat is dominated by submersed vegetation, it may have inclusions of nonrooted-floating aquatics, rooted-floating aquatics, or emergent vegetation. It generally is found in areas which are flooded year round and have water depths between 0.5 and 2 meters. Submersed vegetation occurring at depths greater than 2 meters may be classified as open water.

Water Star Grass (*Heteranthera*) beds.
Image: Kurt Carpenter, USGS

II. Sensitivity to Oil Spills

Due to proximity to shorelines and establishment in shallow water, submersed aquatic vegetation habitat is highly sensitive to oil spills. Submersed vegetation, especially wild celery, are an important food source for waterfowl such as canvasback (*Aythya valisneria*), and provide habitat and food sources for a variety of invertebrates, fish, and other wildlife. Many fish and amphibious species deposit eggs on submerged vegetation. Light refined oils with high amounts of water-soluble fractions can cause acute mortality to animals and plants in these shallow habitats. Heavier oils tend to coat vegetation and animals, though the vegetation may survive because the roots are not affected. It is more difficult for more viscous oils to penetrate dense vegetation beds. However, these oils can smother submersed grass beds. Above all, oil reduces plant and animal tolerance to other environmental stress factors.

References/Additional Information:

General Classification Handbook for Floodplain Vegetation in Large River Systems (http://pubs.usgs.gov/tm/2005/tm2A1/)
Inland Oil Spills: Options for Minimizing Environmental Impacts for Freshwater Spill Response (http://www.michigan.gov/documents/deq/deq-wb-wws-FreshwaterResponse_NOAA102706_265069_7.pdf)
NatureServe (natureserve.org)
Natural Wetland Inventory (http://www.fws.gov/wetlands/)
The U.S. National Vegetation Classification (http://usnvc.org/)
Wetland Plants and Plant Communities of MN & WI, 3rd Edition (http://www.bwsr.state.mn.us/wetlands/delineation/WPPC_MN_WI/index.html)

Information compiled by UMRBA staff from NOAA, USFWS, and U.S. EPA sources, March 2016

INLAND STRANDED OIL HABITAT FACT SHEET FOR RESPONSE:

Submersed Aquatic Vegetation

III. Sensitivity to Response Methods

The following text describes potential adverse impacts to this habitat resulting from various oil spill response methods and provides recommendations to reduce impact when these methods are implemented. This is not intended to preclude the use of any particular methods, but rather to aid responders in balancing the need to remove oil with the possible adverse effects of removal. More detail about the response methods themselves can be found in the Inland Response Tactics Manual.

Least Adverse Habitat Impacts

Containment Booming

- Use containment boom to keep oil from spreading and to concentrate slicks for recovery.
- Effectiveness is increased by positioning boom at appropriate angles for the current speed and where water slows down and debris naturally collects, such as the outside of a meander or below a point bar.
- Recovery by skimmers or vacuum systems needs to accompany booming.

Sorbents/Sorbent Boom

- Deploy sorbent boom to recover sheens in low-current areas and along the shoreline.
- Overuse results in excess waste generation.
- Pom-pom type sorbents are best for heavy viscous oils that coat the strands; sorbent boom is best for light, low-viscosity oils that can penetrate into the sorbents.
- Absorbent boom must be changed frequently to prevent it from becoming a source of sheen.

Debris/Vegetation Removal

- Collect oiled free-floating vegetation. Minimize the cutting of rooted vegetation when possible.

Natural Attenuation

- Least impact for small spills and lighter oils; avoids damage often associated with cleanup activities.
- Consider impact to aquatic life in the area. Consultation with a Trustee is recommended.

Some Adverse Habitat Impact

In-Situ Burning

- Burn only in calm water with no current where containment and maintenance of minimum slick thickness (1-3 millimeters) is possible.
- "Heavy ends" of petroleum product remain unburned. This residue will begin to sink as it cools and should therefore be recovered as quickly as possible after the burn is complete.
- Authorization of in-situ burning is subject to RRT approval, consultation and concurrence from the state and the Department of the Interior.

Herding Agents/Physical Herding and Visco-Elastic Agents/Solidifiers

- Should be coupled with recovery.
- Most effective on lighter oils, which allow the product to mix into the oil.
- Care should be taken not to drive oil into the water column or sediment, or damage rooted vegetation.
- Visco-elastic agents improve overall oil recovery from water surfaces, reducing the potential for secondary shoreline oiling.
- Best used in calm water without debris/vegetation.
- Prior approval must be obtained from the RRT before use of these agents and solidifiers.

Most Adverse Habitat Impact

Sediment Removal

- Vacuum/dredge sediments and dewater using geotube/settling tank. Or, where feasible, dewater area and excavate the sediment
- Significant sediment removal may result in a change in the area's hydrology as well as make it difficult to fully restore the plant community that existed prior to the spill incident.
- Permits will be required for sediment removal and for water discharge.