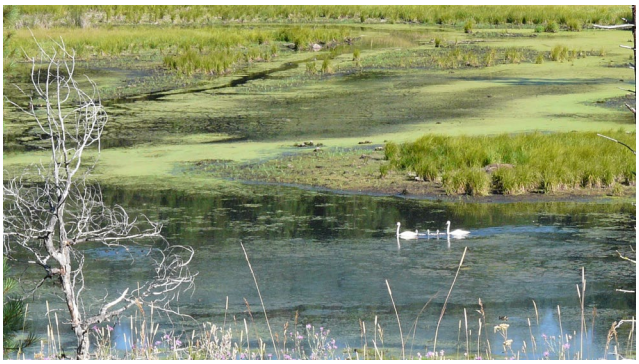
Assessing Blackfoot Wetlands

Background Information



Trumpeter Swans live on lakes, ponds, large rivers, and bays that have shallow wetland areas. ***Their most important habitat requirements*** are open water with adequate room to take off (approximately 100 meters), access to food (mostly aquatic plants), shallow, stable levels of unpolluted fresh water, a muskrat house, island, or other structure for the nest site, appropriate plant species for building nests, and low human disturbance.

Trumpeter Swans forage in water and, especially in winter, on land. **Plants** make up most of their diet. Adults eat stems, leaves, and roots of aquatic plants, switching to upland grasses and waste grain in the winter. Newly hatched cygnets feed mainly on aquatic insects and crustaceans.

Nests are usually located near shore, on small islands, on muskrat and beaver lodges, or on floating vegetation. The nest is a low mound of plant matter several feet across, with a depression in the middle. It is usually made of cattails, sedges, or rushes. The nest may be reused from year to year.

To identify the best sites for swan reintroduction in the Blackfoot, as well as to assess whether there is even enough appropriate habitat to support a population of swans, 71 wetlands in the upper Blackfoot Valley were surveyed in 2004. Data on the wetland characteristics deemed most important to swans (see Swan Habitat Criteria List) were collected and analyzed, and each wetland was assessed as both a release site and as potential nesting habitat.

Out of the 71 sites, 27 were determined to be suitable for nesting and 9 of these were selected for release sites. Hazards identified during the survey at some of these 9 sites were mitigated (e.g., fences moved or removed) before release.

Procedure

1. Based on the kinds of habitat Trumpeter Swans need, list at least 5 characteristics or traits of a site that would be important to measure in order to know if it is suitable habitat for swans.

a.
b.
c.
d.
e.

2. This is exactly what biologists did in order to figure out what places in the Blackfoot would be good swan habitat, and they have used this information to select the sites for releasing swans in the reintroduction program. The **Swan Habitat Criteria List** was developed from studies of habitat that swans already use in other places. Biologists from the University of Montana and the US Fish and Wildlife Service went to 71 sites in the Blackfoot and recorded information about these site characteristics. Look through these terms and make sure you understand what they mean. If you are confused about any of them, ask your teacher for help before proceeding.

3. The **Blackfoot Valley Wetland Habitat Suitability Data** shows *some* of the actual data the biologists collected in the Blackfoot. Although 71 sites were surveyed, this shows the data for just 12 of them.

4. You now have the chance to figure whether or not these particular Blackfoot Valley wetlands would be suitable for nesting and/or appropriate release sites for swans, based on the same data the biologists used. You can use the **Criteria List** and apply it to each wetland to decide if you think it would serve as habitat for swans, and if you would recommend it as a release site. You will summarize the pros and cons for each site and record your decisions on the **Wetlands Summary Chart**.

5. After you are finished, share your recommendations for each site with your teacher and the rest of your class. Discussion might include the following:

a. Did you have enough information to make a solid conclusion? If not, what more would you like to know?

b. Did you consider some characteristics more important than others? Which ones?

c. Do you think any wetland surveyed will be “perfect” for swan release and/or nesting? Why or why not?

d. Did most of you agree on the 3 “best” sites of all the ones you analyzed to recommend for release sites? What did you base your decisions on?

Swan Habitat Criteria List

- Wetlands should be ice-free by mid-April at the latest.
- Wetland should have at least 100 meters of open water.
- Wetlands with highly irregular shorelines are preferred.
- Wetlands should be semi-permanent or permanent.
- Wetlands can be 1-400+ ha. Smaller ponds are suitable only when they are part of a larger wetland complex.
- Water should **not** be acidic, stagnant, or highly eutrophic (having so much plant life, such as algae, that oxygen is in short supply).
- Wetland should offer multiple potential nest sites, and at least some of these should be away from the shoreline. Potential nest sites include small to medium sized natural or man-made islands, beaver dams or houses, muskrat houses, water <1 m deep where swans can pile up aquatic vegetation, man-made floating nest platforms. Swans will also nest on shorelines but generally this is not ideal because of increased potential for predation.
- Water levels should be stable, or changes predictable (e.g. slow draw down due to evapotranspiration). Rapid changes due to flooding or draw down are not acceptable.
- Wetland should have a sufficient amount of suitable submergent plants (those growing completely under the water, such as pondweed, aquatic buttercup, etc.) for foraging.
- Mean water depth should be less than 1.2 meters.
- Disturbance should be minimal, or at least predictable, and should occur no closer than 100 meters to the nest site.
- Wetlands should not be crossed by fences, power lines, or other flight obstructions.
- Wetlands should be free of lead and other pollutants.

Blackfoot Valley Wetland Habitat Suitability Data

Site #	Type[1]	Size (ha)[2]	% open water	Length open water (m)	Ave. Water Depth (m)	Water pH*	Ice-off Date	Power-lines	Fences	Hunting (possible source of disturbance)	Other[3]	% with forage[4]	% with nest veg[5]	# of islands	# of beaver/ muskrat houses
26	Semi-perm	38.34	65	>152.4	0.98298	8.5	3/15-4/1	none	minor	no		75	40	4+	1
22	Perm	11.48	90	>91.44	2.286	8.0	4/1-4/15	across	minor	no	road	5	5	0	0
4	Perm	8.11	98	>152.4	1.143	10.5	4/1-4/15	adjacent	0	high	hwy	10	2	0	0
23	Semi-perm	22.05	35	91.44	0.508	8.1	3/15-4/1	none	major	no		75	50	1	5+
5	Semi-perm	14.82	60	>152.4	0.508	9.9	4/1-4/15	adjacent	0	high	hwy	50	40	1	5
42	Semi-perm	6.45	90	<15.24	0.3556	7.9	4/1-4/15	adjacent	0	low	pivot	5	10	0	0
57	Semi-perm	11.50	90	>152.4	1.4986	8.5	4/1-4/15	none	major	medium		60	10	1	1
59	Semi-perm	8.65	5	>152.4	1.50	7.0	4/1-4/15	none	0	low		45	10	0	0
29	Perm	3.83	40	>91.44	1.1684	9.3	4/1-4/15	adjacent	0	no	Hwy, houses	70	25	3	0
63	Semi-perm	2.47	90	>91.44	2.74	7.3	4/1-4/15	none	0	low	houses	50	10	1	0
55	Semi-perm	1.652	85	91.44	1.524	10.3	3/15-4/1	adjacent	0	no		50	15	0	0
19	Semi-perm	10.90	80	>152.4	0.4064	10.5	4/1-4/15	none	0	medium		90	20	2	0

- The pH scale ranges from 0 to 14. A pH of 7 is neutral. A pH less than 7 is acidic. A pH greater than 7 is basic.

[1]Perm= Permanent, Semi-perm=semi-permanent, Seas=Seasonal

[2] Area of wetland in hectares

[3] Other sources of disturbance, etc. are noted

[4] % of wetland with suitable submergent vegetation

[5] % of wetland with suitable emergent vegetation for nesting (sedges, rushes, and/or cattails)

Wetlands Summary Chart

Site #	Pros	Cons	Nesting Site? Y/N	Release site? Y/N
26				
22				
4				
23				
5				
42				
57				
59				
29				
63				
55				
19				