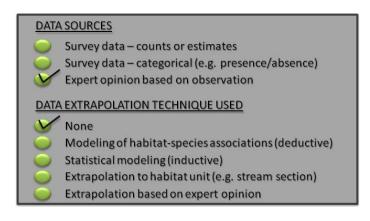## WETLAND AREAS

SUMMARY: The purpose of this layer was to represent maximum wetland area or count in each one-mile section in Montana. This layer does not reflect wetland condition or health. Wetlands serve as important sources of biodiversity and are not captured well in remotely-sensed data due to their size. We represented wetlands separately using this layer to capture the biodiversity that these unique habitats represent. The metric presented is a score that represents the greater of two measures: 1) total wetland area per one-mile section divided into four classes, and 2) total count of wetlands per one-mile section divide into four classes. The metric also takes into account the amount of flooded irrigation in a one-mile section.

MEASUREMENT UNIT: One-mile section

DATA SOURCES

- Survey data – counts or estimates
- Survey data – categorical (e.g. presence/absence)
- ✓ Expert opinion based on observation

DATA EXTRAPOLATION TECHNIQUE USED

- ✓ None
- Modeling of habitat-species associations (deductive)
- Statistical modeling (inductive)
- Extrapolation to habitat unit (e.g. stream section)
- Extrapolation based on expert opinion

DATA SOURCE(S) / QUALITY: National Hydrologic Dataset (NHD) 1:24,000 scale waterbodies, USFWS National Wetlands Inventory (NWI), Montana Land Cover (MLC), USDA/ERS Major Land Use (MLU), and Montana PLSS Sections. NHD waterbodies were digitized by 24K quad therefore results vary across Montana (both and amount and categorization of wetlands). USFWS National Wetlands Inventory was completed in the 1980's for much of the northern glaciated plains in Montana (north of Hwy-2 east of the Continental Divide), however completion of other parts of the state are subject to specific project funding. Coverage of Montana by the NWI is patchy but detailed where complete. Montana Landcover is based on satellite data and is comprehensive; however, small wetlands are not well represented by this layer. USDA MLU for Montana was digitized using aerial imagery and has complete statewide coverage.

METHODS: NHD waterbody features were available for Montana by hydrologic basin. NHD waterbody data for each basin was clipped to the extents of the Montana state boundary. All NHD basin waterbodies were merged to form a single layer. *Ice Mass* and

	% OF SECTION IN WETLANDS		COUNT OF WETLANDS IN SECTION		
CLASS	MAXIMUM VALUE	MEAN VALUE	MAXIMUM VALUE	MEAN VALUE	PERCENT OF STATE
1 (Highest)	100	18.1	183	57	1%
2	58.7	8.1	164	28	2%
3	46.1	3.0	42	11	7%
4 (Lowest)	17.3	0.4	20	3	30 %
No Class					59 %

Reservoir waterbody categories were removed from the NHD layer leaving *Lake/Pond*, Swamp/*Marsh*, and *Playa* wetland categories. To remove wetlands that are highly altered, we selected all wetlands from the NWI that included the word "impounded" in the wetland description. All wetlands in the NHD layer that intersected "impounded" NWI wetlands were removed. All wetland land cover classes from the Montana Landcover dataset were combined into a single wetland raster layer. Patches of wetland were identified from this layer and converted to simplified polygons. We overlaid the NHD wetlands described above with the Montana Landcover wetlands to arrive at unique wetland boundaries for all overlapping polygons.

FINAL CATEGORIZATION: We calculated the total wetland area and total count of distinct wetland by one-mile section. We converted each of these two metrics to four classes by finding natural breaks in the data. One-mile sections with no wetlands were given a score of zero. To calculate a single wetland score for each one-mile section we took the highest score from the total wetland area and total wetland count scores. Finally, we penalized all one-mile sections by one class (unless a section was already a "zero" or was in the lowest wetland class) if the amount of flooded agriculture in the one-mile section exceeded twenty-five percent.

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