

Site Basic Report

7/11/2006

Site Code BCD S.USIDHP*309

Site Class Standard site

Name MCARTHUR LAKE

Defining Managed Area

State/Province Idaho

Directions McArthur Lake is located near the headwaters of the Deep Creek drainage, which is a tributary of the Kootenai River. From Sandpoint, Idaho, travel ca 18 miles north on US Highway 2 to the Idaho Fish and Game boat launch on the north side of the lake. Look for the access sign along Highway 2.

Minimum Elevation: 2,085 Feet 636 Meters

Maximum Elevation: 2,170 Feet 661 Meters

Site Description

McArthur Lake is a drainage lake located near the headwaters of Deep Creek, which flows north through the Purcell Trench south of Bonners Ferry, Idaho, where it ultimately feeds the Kootenai River just west of Bonners Ferry in the Kootenai National Wildlife Refuge. This glacial depression in the Purcell Trench has been enhanced with a dam on the Deep Creek outlet on the northeast side of the lake. Extensive rich fen and shrub carr communities are found around most sides of the lake. Marsh habitats are interspersed with the peatland communities. The area near the mouth of Dodge Creek, which enters McArthur Lake on the northwest end, is an extensive marsh.

The lake is very shallow and almost entirely vegetated littoral zone. *Nuphar lutea* var. *polysepalum* (yellow pond lily), *Potamogeton richardsonii* (Richardson's pondweed), *P. zosteriformis* (flatstem pondweed), *P. amplifolius* (largeleaf pondweed), *P. berchtoldii* (small pondweed), *P. pectinatus* (sago pondweed), *P. natans* (floating pondweed), *Hippuris vulgaris* (common mare's-tail), *Ceratophyllum demersum* (coon's tail), *Myriophyllum sibiricum* (shortspike watermilfoil), *Brasenia schreberi* (watershield), *Ranunculus aquatilis* (whitewater crowfoot), *Polygonum amphibium* (water knotweed), *Typha latifolia* (common cattail), *Elodea canadensis* (Canadian waterweed), and *Menyanthes trifoliata* (buckbean) are of widespread or local prominence in the lake littoral communities. The rich fen habitats are sedge dominated. Characteristic species include *Carex lasiocarpa* (slender sedge), *C. utriculata* (bladder sedge), *C. aquatilis* (water sedge), *C. nebrascensis* (Nebraska sedge), *C. stipata* (awl-fruit sedge), *C. bebbii* (Bebb sedge), *C. cusickii* (Cusick's sedge), *C. retrorsa* (knot-sheath sedge), *Dulichium arundinaceum* (three-way sedge), *Scirpus microcarpus* (panicled bulrush), *S. cyperinus* (woolgrass), *Calamagrostis canadensis* (bluejoint reedgrass), *Potentilla palustris* (purple marshlocks), and *Phalaris arundinacea* (reed canarygrass). Shrub carr areas are dominated by *Spiraea douglasii* (rose spirea), *Alnus incana* (mountain alder), *Betula pumila* (dwarf bog birch), *Rhamnus alnifolia* (alderleaf buckhorn), *Salix bebbiana* (Bebb willow), and other *Salix* spp. (willows).

On the south end of the lake, scattered clumps of shrubs are interspersed within the graminoid fen. This fen area, even more so than other areas around the lake, appears to be highly modified hydrologically, and appears to be drying out. The graminoid fen is characterized by a number of typical rich fen species including *Equisetum fluviatile* (water horsetail), *Lycopus uniflorus* (northern bugleweed), *Eleocharis tenuis* (slender elliptic spikerush), *Carex muricata* (spiny star sedge), and other *Carex* spp. (sedges). However, a number of weedy and mesic-indicator species including *Agrostis stolonifera* (creeping bentgrass), *Phleum pratense* (timothy), *Poa pratensis* (Kentucky bluegrass), *P. palustris* (fowl bluegrass), *P. arundinacea*, *Cirsium arvense* (Canadian thistle), *Prunella vulgaris* (common selfheal), and *Agropyron repens* (quackgrass) are common to prominent in the area. At least three rare species are found in this area: *Cypripedium parviflorum* var. *pubescens* (small yellow lady's-slipper), *Eriophorum viridicarinatum* (green keeled cotton-grass), and *Betula pumila* (swamp birch)--one of the few sites where it is prominent in the vegetation. Even though the sight quality seems to be degrading rapidly, McArthur Lake is one of the most unique wetland habitats we have seen in Idaho.

Key Environmental Factors

McArthur Lake is a drainage lake located near the headwaters of Deep Creek. It receives water from the true headwaters of Deep Creek, which flows in from the Selkirk Mountains from the southwest and receives water from Dodge Creek to the northwest. The lake rests in a glacial depression left behind by the ice sheet that occupied and formed the Purcell Trench of

sedge-dominated rich fen communities are extensive and diverse with several sedges and grasses being dominant in various areas. Overall, however, the rich fen is similar to other sedge-dominated rich fens seen elsewhere in the Panhandle region. The shrub carr community with *Betula pumila* being of widespread prominence is unique and exclusive to the Purcell Trench region of northeastern Idaho. The graminoid/shrub fen on the south end of the lake is unique but it appears to be degrading rapidly based on the number of weedy grasses and forbs that are well-established there. The reason for the deterioration of habitat conditions is unclear but seems to be consistent with drying or lowering of water levels. This doesn't make sense, however, given that the dam on the outlet raised water levels significantly since the 1950s.

McArthur Lake contains a number of plant species of conservation concern in Idaho, in addition to the *Betula pumila* population: *Carex flava*, *Carex lacustris*, *Cicuta bulbifera*, *Cyripedium parviflorum* var. *pubescens*, *Eleocharis elliptica*, *Eriophorum viridicarinatum*, *Epilobium palustre*, *Petasites sagittatus*, and *Salix candida*. *Eleocharis elliptica* and *Salix candida* were recorded there by Bursik, but no records exist for this site in the IDCDC database, possibly because these species were not tracked at that time. A single plant of *Salix candida* (hoary willow) was found on the south end of the lake in 1993. If no more individuals are located, viability of the population may be in jeopardy. *Bucephala clangula* (common goldeneye) and *Lophodytes cucullatus* (hooded merganser) use nest boxes erected on the site. Eight of the 12 critical habitat features were identified at McArthur Lake: rich fen, floating mats, shrub carr, vegetated littoral zones, ponds, a lake, and beaver activity (Bursik and Moseley 1995). Lacking are bog microsites, poor fen, intermediate fen, and paludified forest.

Other Values

V2 - High values

Other Values Comments

The McArthur Lake Wildlife Management Area supports significant recreational use. A boat launch exists in the northeastern corner of the area. The launch remains functional until mid-summer, at which point aquatic vegetation precludes use of motorized boats. Use during the spring and summer focuses on a warmwater fishery. Fall recreation centers on waterfowl hunting. Use by wildlife viewers is ongoing. The site is excellent for waterfowl due to the abundance of aquatic vegetation and the dense nature of the surrounding wetland vegetation. It is also heavily used by deer, elk, moose and black bear. McArthur Lake is recognized as a State Important Bird Area by the National Audubon Society and the American Bird Conservancy.

Protection Urgency

P4 - No threat or special opportunity

Protection Urgency Comments

Most of the site is owned by the State of Idaho and is managed by the Department of Fish and Game as a Wildlife Management Area. Most of the surrounding wetland communities are not threatened with direct impacts such as dredging and draining, but they could be threatened by water level manipulations, which require special management planning and consideration.

Management Urgency

M3 - Needed within 5 years to maintain quality

Management Urgency Comments

Wetland habitats on the north, east, and west sides of the lake surveyed by Bursik between 1992 and 1994 appear to be in very good shape. Areas here old ditches still exist are gradually silting in and are having less effect on the vegetation. The habitat conditions on the south end are obviously deteriorating and a concern due to the rare plant populations and unique habitats found there. Some research will be required to figure out what is happening in this area hydrologically and how water level manipulations or other human activities may be affecting the site in order to restore it. Intensive weed eradication may also be required in the fen communities on the south end.

Conservation Intentions

Development of interpretive trails at McArthur Lake would be appropriate given the relatively easy access available on the north end of the WMA, the extensive nature of the plant communities, and the abundant wildlife at the site. McArthur Lake is already part of the Watchable Wildlife site network, and potential exists to link the value of critical habitats with healthy wildlife populations through an interpretive trail system.

Protection Comments

Land Use Comments

Since 2000, the dam has been operated to mimic natural hydrology. Water levels are raised to their maximum elevation for the year in the spring, dropped rapidly during May and June, and then allowed to decline gradually through the summer and into the fall. In the late fall, water levels are raised as stream inflow and precipitation allow. Year-to-year fluctuations in the water elevations that are attained and the duration these elevations are maintained have been purposely incorporated into the management scheme to mimic fluctuations historically associated with the system. Since implementation of the variable water level management scheme, the diversity and abundance of emergent vegetation has increased. The effect of this hydrological regime on the wetland communities around the lake margins has not been documented. In 1993, some logging was occurring along the edge of the wetlands on private land on the southeast end of McArthur Lake. Soil disturbance associated with this logging may locally enhance eutrophication and lead to changes in the composition in the plant communities on the south end of the lake. Nest boxes have been erected for cavity-nesting ducks.

Natural Hazard Comments

Exotics Comments

A number of introduced weed species are invading the fen communities on the south end of McArthur Lake, displacing the dominant native species and threatening the rare plant populations found there with extirpation.

Offsite

Most of the drainage basin surrounding McArthur Lake is forested and managed for timber production. Future logging and road building in the surrounding drainage basin including along Dodge and Deep Creeks could enhance eutrophication and lead to changes in the composition of plant communities at this site. Enhanced eutrophication could ultimately also threaten the viability of the seven rare plant populations.

Information Needs

Floristic inventory has been intensive in the northern and southern fen communities around the lake and the aquatic communities within the lake. Only cursory surveys have been done on the east and west sides of the lake. No work has been done on the aquatic or terrestrial invertebrate populations, the small vertebrate populations, or the water chemistry of McArthur Lake. The IDFG Habitat Biologist who manages McArthur Lake WMA for Idaho Fish and Game may have some information on the fauna and water chemistry of this site. A monitoring program for vegetation, water chemistry, and aquatic invertebrates should be developed. As with other priority Panhandle peatlands, Bursik and Moseley have recommended placing two or more 10 x 10 meter permanent vegetation monitoring plots in the various plant communities at this site to detect changes that may occur over time due to human activities or natural phenomena. They suggested following methods established for peatland monitoring in the Sawtooth Valley of Idaho (Moseley et al. 1994). The population of <i>Cyperidium parviflorum</i> and other rare plant populations at the southern end of the lake should be monitored to determine the effect of variable water level management currently in place.

Management Needs

Ground disturbance within the site boundaries should be minimized if not prohibited. Researching the possible causes of habitat deterioration in the fen communities on the south end of the lake should be a priority. Protection of the immediately adjacent uplands and the upland corridors along Deep and Dodge Creeks from potentially harmful logging activities is also critical to protecting this site. Monitoring of plant communities, aquatic invertebrates, and water chemistries should begin as soon as possible. The possibility of developing interpretive trails at McArthur Lake should also be considered in the near future. The interpretive trails at McArthur Lake would be appropriate given the relatively easy access available on the north end of the WMA, the extensive nature of the plant communities, and the abundant wildlife at the site.

Managed Area Relations

The majority of McArthur Lake is owned by the State of Idaho and managed by the Department of Fish and Game. The southeast end is privately owned. Surrounding forest lands are managed by the U.S. Forest Service (Bonners Ferry Ranger District), the Bureau of Land Management, State of Idaho Department of Lands, W-1 Forest Products, and other private owners.

<u>Element ID</u>	<u>Scientific Name</u>	<u>Common Name</u>	<u>G-Rank</u>	<u>S-Rank</u>
7488	<i>Valley peatland Floating Mat</i>	valley peatland floating mat	G3	S1
6959	<i>Cypripedium parviflorum var. pubescens</i>	Small Yellow Lady's-slipper	G5T5	S1
6959	<i>Cypripedium parviflorum var. pubescens</i>	Small Yellow Lady's-slipper	G5T5	S1
6747	<i>Epilobium palustre</i>	Swamp Willow-weed	G5	S3
5290	<i>Lophodytes cucullatus</i>	Hooded Merganser	G5	S2B,S3N
5242	<i>Podiceps grisegena</i>	Red-necked Grebe	G5	S3B
5297	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S3B,S4N
5287	<i>Bucephala clangula</i>	Common Goldeneye	G5	S3B,S3N
7426	<i>Carex lasiocarpa</i>	slender sedge	G4	S2
7355	<i>Phalaris arundinacea</i>	reed canarygrass	G5	S5
7265	<i>Spiraea douglasii</i>	pink spiraea	G5	S4
6542	<i>Betula pumila</i>	Swamp Birch	G5	S2
6897	<i>Carex lacustris</i>	Lake-bank Sedge	G5	S1
5807	<i>Gulo gulo luscus</i>	North American Wolverine	G4T4	S2
7487	<i>Valley peatland Pond</i>	valley peatland pond	G5	S2
6892	<i>Carex flava</i>	Yellow Sedge	G5	S3
6917	<i>Eriophorum viridicarinatum</i>	Green Keeled Cotton-grass	G5	S2
6542	<i>Betula pumila</i>	Swamp Birch	G5	S2
7476	<i>Typha latifolia</i>	common cattail	G5	S4
6438	<i>Cicuta bulbifera</i>	Bulb-bearing Waterhemlock	G5	S2
6517	<i>Petasites sagittatus</i>	Arrowleaf Coltsfoot	G5	S3
7474	<i>Nuphar polysepalum</i>	pond lily	G5	S4
7381	<i>Carex utriculata</i>	bladder sedge	G5	S4
6400	<i>Ramalina pollinaria</i>	Powdery Twig Lichen	G4	S2

Reference Code**Full Citation**

U97SVI01IDUS
A95BUR01IDUS
U95BUR01IDUS

U90BUR01IDUS

U86IFG01IDUS
U97JAN02IDUS

U04HEM01IDUS

Svingen, D. 1997. Idaho's important bird area program. Progress report. Not paged.
Bursik, R. J., and D. M. Henderson. 1995. Valley peatland flora of Idaho. Madrono 42(3): 366-395.
Bursik, R. J., and R. K. Moseley. 1995. Ecosystem conservation strategy for Idaho Panhandle peatlands. Cooperative project between Idaho Panhandle National Forests and Idaho Department of Fish and Game, Conservation Data Center, Boise. 28 pp. plus appendix.
Bursik, R. 1990. Floristic and phytogeographic analysis of northwestern Rocky Mountain peatlands, U.S.A. Unpublished thesis, University of Idaho, Moscow. 37 pp.
Idaho Department of Fish and Game. 1986. Region 1: 1986-1990 Wildlife Management Area Plans.
Jankovsky-Jones, M. 1997. Conservation strategy for Northern Idaho wetlands. Conservation Data Center, Idaho Department of Fish and Game. 35 pp. plus appendices.
Hemlich, B. 2004. Email regarding management history of McArthur Lake (S.USIDHP*309).

Imagery Comments

