

Wood Frog (*Rana sylvatica*) Survey Results: Chitina to McCarthy Road

PREPARED FOR: Alaska Department of Fish and Game (Permit # SF-2003-113)
Wrangell-St. Elias National Park and Preserve (Study #: WRST-00060; Permit #WRST-2004-SCI-0018)

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COPIES: Alaska Department of Transportation

DATE: August 2, 2004

Introduction

Frog surveys were completed along the Chitina to McCarthy Road to provide biological data for accurate biological evaluations for the Chitina to McCarthy Road Improvement EIS. Two types of frog surveys were completed along the Chitina to McCarthy Roadway in selected aquatic and wetland habitats: breeding frog chorus surveys and tadpole netting surveys. Two types of surveys were done in order to increase the probability of positively identifying suitable wood frog habitats along the roadway. Wood frogs were inventoried by listening for breeding choruses May 14, 18, 19, 20, 21, 23, and 24 and by net sampling for tadpoles June 24-26, 2004.

Chorus surveys were completed in May. The wood frog is known to have a very short breeding or chorusing window, which can last as little as two weeks. The short chorus period for the wood frog makes it difficult to time surveys to a peak breeding periods, which are impacted by the timing of break-up and vary from year to year (Wilder 2002). Although it is recommended that chorus surveys should be scheduled to coincide with water temperatures reaching at least 7-9 degrees Celsius, it is difficult to know in advance when this will occur in a given year. Therefore, surveys for 2004 were scheduled for mid-May and tadpole surveys for late June.

Twenty-one wood frog chorus surveys were completed on 18 different aquatic sites along the roadway. Three sites were surveyed twice to see whether survey time of day made a difference. Eight aquatic netting surveys were completed on a different set of water and wetlands along the Chitina to McCarthy. In addition, a wood frog tadpole observed in the water while doing vegetation surveys at an additional location was included in these data. Milepost locations for each survey site are based on auto mileage from Chitina, confirmed by standing milepost signs along the road right-of-way. Latitude-longitude data were collected in degrees and decimal minutes with a Garmin Rino 120 GPS receiver on WGS84 Datum. These data points were not post-processed.

Frog Chorus Surveys Results

Frog surveys along the McCarthy Road used the same chorus survey protocol as Wilder (2002). Type of water area, location, date, time, calling species, and relative abundance were recorded at each survey site. Temperatures were not monitored during these surveys. Two observers listened for a minimum of 5 minutes at each site and recorded wood frog relative abundance. Relative abundance is defined as a rough estimate of the numbers of calling males, according to the following index:

Index Number	Criteria
1	There are spaces between calls and individuals frogs can be counted.
2	Calls of individuals can still be distinguished but there is some overlapping of calls (intermediate between "1" and "3").
3	Full chorus. Calls are constant, continuous, and overlapping.

Type of aquatic zone is defined for these surveys as lake, pond, or deep marsh. Definitions for these zones are as follows:

Type of Water	Description
Lake	Permanent open water greater than 10 acres and usually more than 6 feet deep.
Pond	Permanent open water less than 10 acres and usually less than 6 feet deep.
Deep Marsh	A shallow basin with 6 inches to 3 feet of standing water throughout much of the year and with herbaceous aquatic plants growing throughout.

Results of the frog chorus surveys are provided on Table 1. The only species of frog heard was wood frog. This is the only species of frog expected to occur in this part of Alaska. Double surveys at three sites (Mileposts 11.1, 11.3, and 11.5) indicate timing of survey may affect counts somewhat. Wilder (2002) also believes that road traffic causes chorusing to stop for several minutes. Frogs were heard at 6 of the 18 sites surveyed (33 percent occupancy). Wood frogs were heard on ponds water types 83 percent of occurrences.

TABLE 1. RESULTS OF WOOD FROG CHORUS SURVEYS ALONG CHITINA TO MCCARTHY ROAD.							
Mile Post	Northing	Westing	Date	Time	Type of Water	Frog Chorus Index Number	Notes
0.1	61° 30.898'	144° 26.186'	5/24/2004	1015	Pond	0	Overcast, cold. Yellow-rumped warbler singing. Chitina residents report wood frogs hibernating.

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Mile Post	Northing	Westing	Date	Time	Type of Water	Frog Chorus Index Number	Notes
3.0	61° 31.099'	144° 21.994'	5/18/2004	1926	Pond	0	Fox sparrow and yellow-rumped warbler singing. Common snipe winnowing.
8.9	61° 31.381'	144° 13.610'	5/18/2004	2015	Deep marsh	0	5 bohemian waxwings, 3 woodpeckers drilling, 2 American robins, yellow-rumped warbler, varied thrush, ruby-crowned kinglet singing.
9.1	61° 31.336'	144° 13.452'	5/18/2004	2030	Lake	0	Pair bufflehead swimming, yellow-rumped warbler and varied thrush singing.
10.2	61° 31.192'	144° 11.742'	5/18/2004	2045	Pond	1	3 ruby-crowned kinglets and an American robin singing.
10.6	61° 31.162'	144° 11.108'	5/18/2004	2105	Pond	0	1 male mallard swimming and one American robin.
11.1	61° 31.333'	144° 10.202'	5/18/2004	2115	Pond	0	Muskrat, 12 lesser scaup, male bufflehead, American widgeon, unknown duck swimming.
11.1	61° 31.333'	144° 10.202'	5/19/2004	1303	Pond	1	2 ring-neck ducks, 2 widgeons, 2 buffleheads, 3 lesser scaup swimming, black-capped chickadee, and Macgillivray's warbler singing.
11.3	61° 31.491'	144° 09.065'	5/18/2004	2130	Pond	1	2 female and 1 male ring-neck duck.
11.3	61° 31.491'	144° 09.065'	5/19/2004	1231	Pond	0	12 ring-neck ducks.
11.5	61° 31.962'	144° 09.654'	5/18/2004	2140	3 Ponds	0	
11.5	61° 31.962'	144° 09.654'	5/19/2004	1240	3 Ponds	1	American robin, Lincoln sparrow singing, 2 male and 1 female Barrow's goldeneye, 3 short-billed dowitchers foraging, bald eagle fly-over.
12.3	NI	NI	5/19/2004	1140	Pond	0	Savannah sparrow, pair bufflehead, pair rusty blackbirds, tree swallow, Wilson's warbler.
12.5	61° 31.395'	144° 07.873	5/20/2004	1505	Pond	0	Green-wing teal swimming and swallows flying over.
15.4	61° 30.251'	144° 03.126'	5/20/2004	1535	Pond	0	Bufflehead swimming and dark-eyed junco singing.

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Mile Post	Northing	Westing	Date	Time	Type of Water	Frog Chorus Index Number	Notes
20.7	61° 28.091'	143° 56.004'	5/23/2004	1458	Pond	0	Black phoebe. Someone starts a chainsaw or similar loud machine midway, making it difficult to hear anything.
33.5	61° 27.168'	143° 38.594'	5/23/2004	1600	Lake	0	Raining. Remaining snowbanks along lakeshore melting fast.
40.7	61° 21.884'	143° 27.174'	5/23/2004	1630	Ponds (small pools)	1	Heard no wood frog chorusing but saw one, which jumped into the water. Raining, heavy overcast.
46.0	61° 22.903'	143° 17.693'	5/21/2004	1155	Lake	0	
50.4	61° 23.234'	143° 10.297'	5/21/2004	1220	Deep Marsh	0	American robins foraging in sedge meadow and 8 pectoral sandpipers foraging in sedge around waters edge.
54.7	61° 30.288'	143° 03.233'	5/20/2004	1950	Lake	2	3 common snipe winnowing, Swainson's thrush singing, male Barrow's goldeneye and 2 trumpeter swans swimming.

Tadpole Netting Surveys Results

Tadpole surveys were completed to supplement frog chorus surveys along the Chitina to McCarthy road. Eight areas of ponds, lakes, and deep marshes not surveyed by chorus surveys were chosen for netting surveys. No tadpoles were harmed or killed as a result of these surveys. At each of the eight locations up to 12 sweeps or jabs with a fine mesh dip net was completed along a reach of aquatic habitat, first in the water column and then along the bottom of the area or among the vegetation. The net was examined after each sweep or jab for tadpoles in the net. Living things were placed in a bucket of water for identification. Everything collected was returned to the water unharmed after examination. Results of these surveys are provided in Table 2. Wood frog tadpoles surveys were found at an additional 3 locations not surveyed during chorus breeding surveys. Tadpoles were found on 33 percent of sites surveyed.

TABLE 2. RESULTS OF WOOD FROG TADPOLE NETTING SURVEYS ALONG CHITINA TO MCCARTHY ROAD.

Mile Post	Northing	Westing	Date	Time	Habitat	# Wood Frog	Notes
0.1	61° 30.894'	144° 26.176'	6/26/2004	1345	Emergent vegetation along shore with unconsolidated bottom, relatively clear water.	0	Small pond across the road from Chitina Town Lake. Mayfly larvae only thing netted.
9.2	61° 31.336'	144° 13.305'	6/26/2004	0922	Water depth ± 1 ft. Dense emergent vegetation (mostly sedges), dark peaty water.	0	Netted only larval insects and rock.
11.4	61° 31.519'	144° 09.831'	6/26/2004	0816	Small water lilies, emergent and submerged vegetation with unconsolidated bottom and no large woody debris. Tadpoles found in giant equisetum @ $\pm 80\%$ canopy.	2	Damsel fly larvae and snails only things netted on right (south) side. Tadpoles netted on left (north) side.
11.7	61° 31.536'	144° 09.403'	6/26/2004	0750	Dense emergent vegetation, one tree in water (LWD).	0	White-crowned sparrow observed.
12.5	61° 31.404'	144° 07.043'	6/26/2004	0721	Willows and emergent sedges at water's edge. Lily pads in water. Unconsolidated bottom	0	Dragon fly and damsel fly larvae, water beetles and other insects netted.
20.5*	61° 28.020'	143° 56.539'	6/25/2004			1	*Not on survey route protocol. Observed wood frog tadpole in water during vegetation survey.
25.0	61° 27.491'	143° 49.102'	6/25/2004	1530	Sedges along water's edge with sphagnum and lilies in deeper water. Shallow water (± 1 ft) with unconsolidated bottom.	1	Wood frog with leg buds. Large number of invertebrates, damsel and dragonfly larvae, snails and water bugs netted as well.
41.5	61° 21.922'	143° 25.325'	6/24/2004	1720	Lake with submerged vegetation, rushes, lily pads and some LWD. Some rocks on bottom.	0	Snail, leech-like invertebrate, and 2 small fish netted.
45.8	NI	NI	6/24/2004	1705	Lake snags and other LWD. No submerged vegetation.	0	



Photo 1. Tadpole survey at Milepost 0.1 along pond across from Town Lake at Chitina.



Photo 2. Tadpole survey at Milepost 0.1 along pond across from Town Lake at Chitina.

Discussion

As expected, wood frogs were the only species of amphibian found in these surveys. Since a single survey period can be used to prove habitat occupancy but not the opposite, locations surveyed with no results for wood frogs do not preclude the possibility that wood frogs occupy habitat in those locations. Both surveys indicate that approximately 33 percent of all

aquatic areas surveyed do have wood frogs. Some of the locations surveyed are unlikely habitat for frogs because of a lack of emergent vegetation, aquatic vegetation or debris for egg mass protection and tadpole shelter and food. Also, tadpole surveys in the best habitat with submerged vegetation and debris were difficult to adequately net survey because of the hiding cover provided by the habitat. We found that tadpoles tended to dive for hiding cover in vegetation or bottom debris as soon as disturbed by the shadow the nest.

In addition approximately 33 percent of possible aquatic habitat being positively occupied, these surveys indicate centers of wood frog activity and occupancy along the Chitina to McCarthy road. The major center of activity is a relatively long complex of wetlands and ponds between Mileposts 10.0 and 12.0. In addition, aquatic areas around Milepost 20.5, 25.0, 40.7, and 54.7 were found to be occupied by wood frogs.

Literature Cited

Wilder, J.M. 2002. Wood frog surveys 2002. Wrangell-St. Elias National Park and Preserve. Unpublished Report. September 2002. 10 p.