Results of the 1998 Frog (Omakakii) and Toad (Obiigomakakii) Survey in the Ceded Territory of the Lake Superior Chippewa

by
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Mille Lacs	Clayton Boyd, Robert Boyd

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Introduction

The Great Lakes Indian Fish and Wildlife Commission (GLIFWC) has been coordinating annual frog and toad surveys within the ceded territory of the Lake Superior Chippewa (Figure 1) since 1995 (Dlutkowski 1996, 1997, Falck 1997). In 1998, GLIFWC again coordinated the survey and served as a repository for completed survey forms. Altogether, 4 frog and toad monitoring routes were surveyed during the spring and summer of 1998.

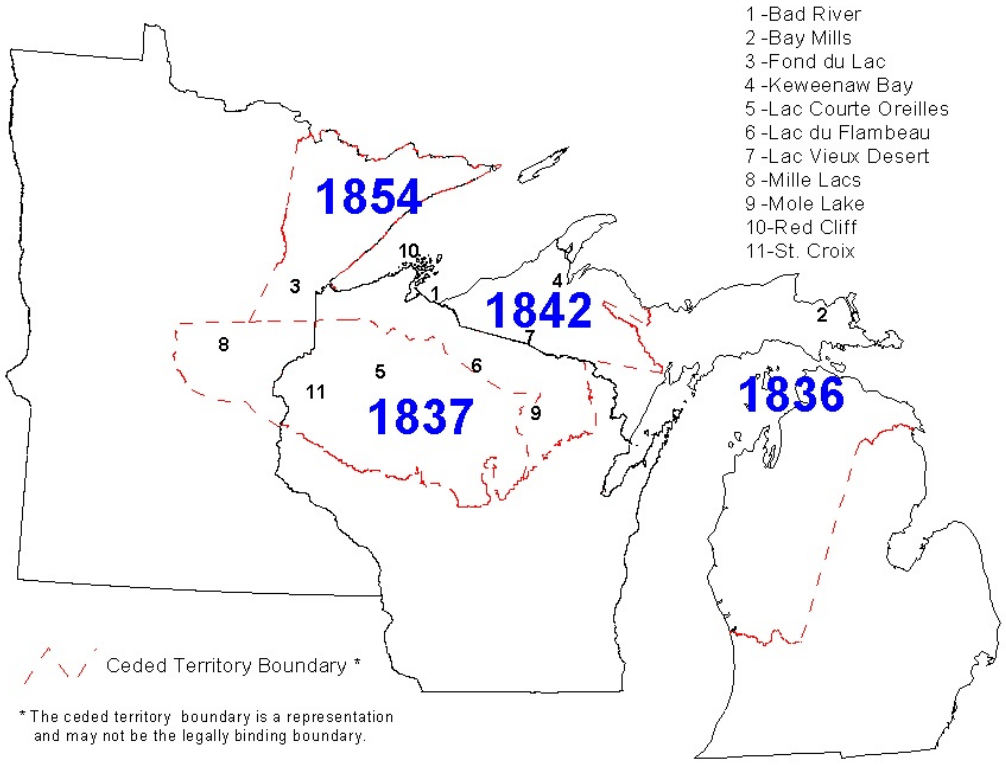

Figure 1. Location of GLIFWC member tribes treaty ceded territories

Frogs, toads, and other aquatic organisms are especially vulnerable to human uses and misuses of the land and water. Frogs and toads (collectively called anurans) are sensitive to changes in water quality and may be affected by environmental pollutants since they have permeable skin that can easily absorb both nutrients and contaminants from the water. Therefore, it is useful to understand the distribution and relative abundance of these animals since changes in their populations may alert us to changes in environmental quality.

There are 10 species of frogs and 2 toad species in the ceded territory (Table 1). Although a particular species may spend part of its life on land, all frogs and toads require water for breeding. Due to their specific breeding habitat preferences some species are found in temporary pools while others are found in more permanent bodies of water. Males call from their selected breeding waters to attract females and to initiate the breeding cycle. These distinctive calls were the auditory cues used by survey participants to determine the presence or absence of frogs and toads in a particular wetland.

Table 1. Natural history information on frog and toad species found in the ceded territory of the Lake Superior Chippewa. Adapted from Vogt (1981) and Harding and Holman (1992).

Species	Habitat	Breeding
Wood Frog (*Rana sylvatica*)	In or near moist wooded areas.	Mar - Apr
Western Chorus Frog (*Pseudacris triseriata*)	In or near shallow, often temporary bodies of water.	Mar - May
Northern Spring Peeper (*Pseudacris crucifer*)	Wooded areas with temporary or semi-permanent ponds, swamps, or marshes.	Mar - May
Pickerel Frog (*Rana palustris*)	Cool, clear waters of spring-fed lakes & streams.	Apr - mid-May
Northern Leopard Frog (*Rana pipiens*)	Lakes, streams, rivers, ponds, often far from standing water during the summer.	Apr - mid-Jun
Eastern American Toad (*Bufo americanus*)	Variety of moist & upland habitats.	Apr - Jun
Fowler's Toad (*Bufo woodhousii*)	Open woods & fields with sandy soils.	mid-May - mid-Jun
Eastern Gray Tree Frog (*Hyla versicolor*)	Trees or shrubs growing in or near water.	May - mid-Jul
Cope's Gray Tree Frog (*Hyla chrysoscelis*)	Trees or shrubs growing in or near water.	May - mid-Jul
Mink Frog (*Rana septentrionalis*)	Cool, permanent water where vegetation is abundant.	Jun - Jul
Green Frog (*Rana clamitans*)	All types of permanent bodies of water.	Jun - Jul
Bullfrog (*Rana catesbeiana*)	Permanent bodies of water.	Jun - Jul

Methods

The methods used for conducting frog and toad surveys in the ceded territories follow those described by Mossman and Hine (1984). Because frog and toad species have different calling chronologies due to their varying breeding behaviors, routes were surveyed on 3 separate nights (Table 2.). All frog and toad species detected at each site were identified by their calls and ranked into 1 of 3 abundance classes (Table 3). Standardized survey forms were used for recording call data, weather conditions, and miscellaneous comments to assist interpretation (Appendix A).

Table 2. Species most likely to call during the three survey periods of the ceded territory frog and toad survey.

Survey Period	Species Likely To Call
Spring (15 Apr - 5 May)	wood frog, western chorus frog, northern spring peeper, northern leopard frog, pickerel frog, eastern American toad
Early-Summer (20 May - 10 Jun)	western chorus frog, northern spring peeper, northern leopard frog, pickerel frog, eastern American toad, eastern gray treefrog, Cope's gray treefrog, mink frog, green frog, bullfrog
Mid-Summer (1 Jul - 15 Jul)	eastern gray treefrog, Cope's gray treefrog, mink frog, green frog, bullfrog

Table 3. Criteria for determining call values for frog and toad surveys in the ceded territory.

Call Index	Criteria
1	Individuals can be counted. There is space between calls.
2	Calls of individuals can be distinguished but there is some overlapping of calls.
3	Full chorus. Calls are constant, continuous, and overlapping.

Tapes with calls of the various frog and toad species (composed by Ray Anderson, UW-Stevens Point) found in the ceded territory were distributed along with the survey materials. Cooperators were instructed to review the tapes to learn how to distinguish the calls from one another.

Each survey route consisted of 10 stops near different wetland sites. The main criteria for the selection of sites was that they were far enough apart from each other to ensure that the same individual frog or toad was not being counted from any 2 sites. Each survey route attempted to include a variety of wetland habitats to increase the probability of detecting the full range of anuran diversity in the area.

Surveys were conducted after dark under favorable weather conditions. Ideal survey conditions included little wind, steady or normal air and water temperatures, and no major weather outbursts. If heavy rain or high winds were encountered before the survey was completed the cooperator was advised to terminate the survey for the evening and complete it at the earliest possible date.

Results

Four frog and toad monitoring routes were surveyed in the ceded territory during the 1998 season. A total of 11 species were detected on the combined routes. Fowler's toad was the only species not detected during the 1998 survey, however, its range is restricted to the southern counties of Michigan's lower peninsula.

The relative frequency of detection (number of stops a species was detected at divided by the number of stops in each route) for each species ranged from 0 - 100% (Table 4). The northern spring peeper was detected with the highest frequency for all 4 routes combined. Mille Lacs had the greatest species richness, detecting 8 different species.

Table 4. Relative frequency of detection (%) and species richness for frog and toad species, 1998.

Species	Tribe				Mean Detection Frequency
	Bay Mills	Fond du Lac	Keweenaw Bay	Mille Lacs	
Wood frog	100	80	10	40	57.5
Chorus frog	40	0	70	10	30
Spring peeper	100	100	100	100	100
Leopard frog	0	10	0	30	10
Pickeral frog	0	0	70	0	17.5
American toad	60	50	90	60	65
E. gray tree frog	30	100	0	80	52.5
C. gray tree frog	0	20	0	0	5
Mink frog	10	0	0	30	10
Green frog	60	10	80	70	55
Bull frog	0	0	10	0	2.5
Total Species Detected	7	7	7	8	

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Call Index

Observer(s) names :
Run 1: ________________________
Run 2: ________________________
Run 3: ________________________
Year: ________________________
Cnty: ________________________

FIRST RUN Water 50°F; April 15-May 5	
Date:	
Begin:	End:
Time:	Time:
Wind:	Wind:
Sky:	Sky:
Air Temp (F):	Air Temp (F):

SECOND RUN Water 60°F; May 20 - June 10	
Date:	
Begin:	End:
Time:	Time:
Wind:	Wind:
Sky:	Sky:
Air Temp (F):	Air Temp (F):

THIRD RUN Water 70°F; 1 July - 15 July	
Date:	
Begin:	End:
Time:	Time:
Wind:	Wind:
Sky:	Sky:
Air Temp (F):	Air Temp (F):

Call Index:

1 = individuals can be counted
2 = some overlapping of calls
3 = full chorus

Stop Name

Water Toodhfrogsr fiegpeepeckfrogefr. Tgaydtreyfinkfrogeefrogfrog

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