



INVESTIGATOR'S ANNUAL REPORT

United States Department of the Interior

National Park Service

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OMB # (1024-0236)
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Form No. (10-226)

Reporting Year: 2007	Park: Saratoga NHP	Select the type of permit this report addresses: Scientific Study	
Name of principal investigator or responsible official: Lawrence Woolbright		Office Phone: 518-783-2451	
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Additional investigators or key field assistants (first name, last name, office phone, office email) No co-investigators			
Project Title (maximum 300 characters): The Amphibian Community at the Saratoga National Historical Park			
Park-assigned Study or Activity #: SARA-00002	Park-assigned Permit #: SARA-2002-SCI-0002	Permit Start Date: May 01, 2002	Permit Expiration Date: Aug 31, 2007
Scientific Study Starting Date: May 01, 2002		Estimated Scientific Study Ending Date: Aug 31, 2007	
For either a Scientific Study or a Science Education Activity, the status is: Completed		For a Scientific Study that is completed, please check each of the following that applies: ☒ A final report has been provided to the park or will be provided to the park within the next two years ☐ Copies of field notes, data files, photos, or other study records, as agreed, have been provided to the park ☐ All collected and retained specimens have been cataloged into the NPS catalog system and NPS has processed loan agreements as needed	
Activity Type: Research			
Subject/Discipline: Herpetology (Amphibians / Reptiles)			

Purpose of Scientific Study or Science Education Activity during the reporting year (maximum 4000 characters):

We propose to study the amphibian community of the Saratoga National Historical Park over a five-year period of time. Key goals are to determine species present on the site, population densities, and spatial and temporal patterns of habitat use. These will be accomplished mainly through auditory surveys, visual surveys, and driving transects during spring breeding seasons. Data will provide a historical baseline for future evaluations of amphibian population trends, along with information relevant to amphibian conservation.

Findings and status of Scientific Study or accomplishments of Science Education Activity during the reporting year (maximum 4000 characters):

This was the final year of the permit and we judged that sufficient data had already been collected on some of our projects. Our primary objectives for 2007 were: 1) to continue to quantify spatial patterns of egg deposition by wood frogs and ambystomatid salamanders via egg clutch counts, 2) to use radio-transmitters to track the movement of individual wood frogs as they moved from breeding ponds to summer ranges, and 3) to summarize accumulated data from the past 5 years.

Accomplishments:

1) We counted 1672 egg masses of the wood frog, *Rana sylvatica*. This is a sharp reduction from the over 4000 clutches seen for the last three years. It seems likely that multiple additional snowfalls and hard freezes after the onset of breeding might have been responsible for the reduction. We did not identify any new breeding sites this year, and the relative importance of the various sites remained similar to past years with only a few exceptions. This data set is a strong one and we will propose to continue its collection in future years. We found 68 egg clutches of ambystomatid salamanders. This is an increase from the record low number reported in 2006, but it is still less than half of the seven-year average. Data are on file in the Park office.

2) We attempted again this year to radio-track individual wood frogs as they left the breeding sites and moved back towards their summer ranges. Because of multiple issues involving both equipment and personnel, these efforts resulted in only nine new data points to go along with the pilot studies from 2004 and 2006. We will attempt this experiment again in 2008.

3) We once again noted several individual red-backed salamanders, *Plethodon cinereus*, crossing the tour road in the same location and moving in the same direction as we reported in 2005. This is a potentially interesting phenomenon that we would like to investigate further.

For Scientific Studies (not Science Education Activities), were any specimens collected and removed from the park but not destroyed during analysis?

No

Funding specifically used in this park this reporting year that was provided by NPS (enter dollar amount):
\$0

Funding specifically used in this park this reporting year that was provided by all other sources (enter dollar amount):
\$0

List any other U.S. Government Agencies supporting this study or activity and the funding each provided this reporting year:

Paperwork Reduction Act Statement: A federal agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. Public reporting for this collection of information is estimated to average 1.625 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the forms. Direct comments regarding this burden estimate or any aspect of this form to Dr. John G. Dennis, Natural Resources (3127 MIB), National Park Service, 1849 C Street, N.W., Washington, DC 20240.

Annual Report – The Amphibian Community of the Saratoga National Historical Park
Permit # SARA-2002-SCI-0002
Principle Investigator: Lawrence Woolbright
For the 2007 calendar year

Objectives. This is a five-year study of the amphibian community of the Saratoga National Historical Park. Key goals are to determine species present on the site, population densities, and spatial and temporal patterns of habitat use. These will be accomplished mainly through auditory surveys, visual surveys, and driving transects during spring breeding seasons. Data will provide a historical baseline for future evaluations of amphibian population trends, along with information relevant to amphibian conservation.

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3) We once again noted several individual red-backed salamanders, *Plethodon cinereus*, crossing the tour road in the same location and moving in the same direction as we reported in 2005. This is a potentially interesting phenomenon that we would like to investigate further.

4) We documented breeding activity by toads on May 23, 2007 at the roadside pond before stop 8. Some of the individuals examined showed phenotypic characters typical of the common American toad, *Bufo americanus*, and others were similar to Fowler's toad,

Bufo woodhousii fowleri. The mating calls were intermediate between the two species, which are known to hybridize. Fowler's toad is typically more southerly in its distribution, from Long Island south, and it breeds later in the year. We have documented American toad breeding activity at several ponds on the Battlefield every April since 2001. This is our first observation of the presumed hybrid form. It is possible that it has been here all along but that we did not conduct surveys late enough in the spring to encounter it, or it is possible that its range has been expanding north as a result of climate change.

Clutch Counts - <i>Fana sylvatica</i> - all years, all ponds							
Pond location	2001 Rs	2002 Rs	2003 Rs	2004 Rs	2005 Rs	2006 Rs	2007 Rs
Way back behind 1 (E end of trough)	nf	nf	13	174	60	482	193
John's Pond 2 (off track past stop 1)	nf	nf	35	145	102	108	71
stop 1	119	393	383	640	724	618	66
service road	174	1	100	149	511	437	306
wheatfield	0	0	0	0	0	5	2
Beaver (old - top of hill nr Larry's)	2	7	0	0	0	1	3
Sean's 2 (right of road at culvert)	nf	nf	0	0	0	7	0
1st flag to left before stop 2	nf	nf	2	0	34	88	16
2nd flag to left before stop 2	nf	nf	5	19	17	37	2
stop 2 (all ponds combined)	0	0	12	162	89	271	52
bottom of hill on left before stop 4	nf	nf	13	6	0	22	18
stop 4 culvert	nf	nf	0	0	0	0	0
Sean's = bottom of hill past stop 4 on	nf	4	0	0	0	0	0
Larry's = top of hill on left past stop 4	nf	23	16	47	32	23	38
Beaver pond below monument	nf	nf	16	0	0	2	3
stop 5	nf	160	91	160	217	253	112
pond south of road in curve below 1	nf	nf	0	0	6	18	19
roadside at John's Pond (all combined)	nf	0	6	55	118	80	67
John's Pond	nf	432	0	281	470	354	102
ditches on dirt track JP - FF	nf	nf	0	45	88	17	21
stop 8 fern field	129	419	317	1420	1114	839	277
stop 8 roadside	89	220	114	124	233	124	59
big pond on track thru Brit woods	*incl belc	*incl belc	246	133	61	94	20
vernal depressions in Brit woods - all	126	555	0	445	563	186	125
British camp north	67	?	65	119	102	56	100
British camp south	60	?	121	96	65	0	0
Total internal ponds	766	2214	1555	4220	4606	4122	1672

Clutch Counts - <i>Ambystoma maculatum</i> - all years, all ponds							
Pond location	2001 Arr	2002 Arr	2003 Arr	2004 Arr	2005 Arr	2006 Arr	2007 Arr
Way back behind 1 (E end of trough)	nf	nf	1	0	0		0
John's Pond 2 (off track past stop 1)	nf	nf	0	0	1		0
stop 1	2	0	9	0	47		1
service road	0	0	1	0	4		0
Beaver (old - top of hill nr Larry's)	12	3		6	5 sperm.		0
Sean's 2 (right of road at culvert)	nf	nf	0	0	0		0
1st flag to left before stop 2	nf	nf	1	3	1		0
2nd flag to left before stop 2	nf	nf	1	0	0		0
stop 2 (all ponds combined)	0	0	0	0	0		0
bottom of hill on left before stop 4	nf	nf	2	8	0		0
stop 4 culvert	nf	nf	0	0	0		0
Sean's = bottom of hill past stop 4 on l	nf	0	0	0	0		0
Larry's = top of hill on left past stop 4	nf	6	2	0	0	4	10
Beaver pond below monument	nf	nf	4	9	0	3	3
stop 5	nf	0	4	0	9		12
pond south of road in curve below 1	nf	nf	0	0	0		0
roadside at John's Pond (all combined)	nf	0	3	0	0		0
John's Pond	nf	0	0	0	9		0
ditches on dirt track JP - FF	nf	nf	0	0	2		0
stop 8 fern field	4	156	161	136	62	8	20
stop 8 roadside	3	39	8	0	11		3
big pond on track thru Brit woods			15	0	3		4
vernal depressions in Brit woods - all	15	170	0	12	23		9
British camp north	6 ?		0	1	3		1
British camp south	12 ?		5	0	2		5
Total internal ponds	54	374	217	175	182	15	68

SNHP Tour Road Spring Driving Transects - All Amphibian spp.						
	Mostly April, wet nights, 0.0 is at gate below visitor ctr.					
Mile	2004	2005	2006	2007		total
0.0	1	0	1	0		2
0.1	0	2	0	0		2
0.2	1	5	8	0		14
0.3	23	12	13	0		48
0.4	17	15	17	5		54
0.5	2	3	12	1		18
0.6	0	5	8	7		20
0.7	1	5	1	0		7
0.8	4	2	0	0		6
0.9	2	2	2	1		7
1.0	2	2	1	1		6
1.1	2	4	1	0		7
1.2	1	4	0	0		5
1.3	4	0	0	0		4
1.4	0	0	0	0		0
1.5	5	2	1	0		8
1.6	0	0	2	0		2
1.7	0	2	6	0		8
1.8	0	4	3	0		7
1.9	0	0	1	0		1
2.0	0	0	0	0		0
2.1	0	0	0	0		0
2.2	1	0	0	0		1
2.3	0	0	0	0		0
2.4	1	0	0	0		1
2.5	0	1	1	0		2
2.6	0	4	0	0		4
2.7	1	0	0	0		1
2.8	0	0	0	0		0
2.9	3	0	1	1		5
3.0	0	1	0	0		1
3.1	1	0	3	0		4
3.2	0	0	0	0		0
3.3	7	0	0	1		8
3.4	3	0	0	0		3
3.5	2	6	1	2		11
3.6	3	3	1	0		7
3.7	4	1	0	0		5
3.8	5	10	2	1		18
3.9	12	2	6	2		22
4.0	6	5	9	0		20
4.1	2	9	6	3		20
4.2	3	8	7	4		22
4.3	2	3	8	7		20
4.4	0	0	2	1		3
4.5	0	0	0	0		0
4.6	2	2	0	0		4
4.7	0	0	0	0		0

4.8		2	15	5	0		22
4.9		1	0	0	0		1
5.0		1	0	0	0		1
5.1		2	3	1	0		6
5.2		1	2	2	0		5
5.3		3	1	0	0		4
5.4		20	0	1	0		21
5.5		11	6	1	0		18
5.6		15	2	4	1		22
5.7		12	6	1	1		20
5.8		0	3	5	9		17
5.9		8	12	15	5		40
6.0		14	2	2	0		18
6.1		0	0	0	no data		0
6.2		0	1	1	no data		2
6.3		0	1	0	no data		1
6.4		2	3	0	no data		5
6.5		2	0	0	no data		2
6.6		0	2	0	no data		2
6.7		0	1	0	no data		1
6.8		1	1	0	no data		2
6.9		0	0	0	no data		0
7.0		0	0	0	no data		0
7.1		2	2	0	no data		4
7.2		0	0	0	no data		0
7.3		0	1	0	no data		1
							0
total		220	188	162	53		623