

Lye Brook Amphibian Monitoring

Update

2010

(Covering 1995-2009)

For the Vermont Monitoring Cooperative

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Amphibian Monitoring in the Lye Brook Wilderness Region of the Green Mountain National Forest 1995-2009

Background

An inventory of amphibians in the Lye Brook Wilderness Region of the Green Mountain National Forest (GMNF) in Bennington County was begun in 1993 and completed in 1995. Monitoring of selected amphibian species began in 1994. The goals of the monitoring are to (1) establish a baseline data set of abundance indices for the amphibian species caught in the fences, (2) monitor year-to-year changes in their abundance indices, (3) compare population changes between this site and other monitoring locations in the Green Mountains, (4) look for correlations between amphibian populations and other data gathered at this site, (5) monitor changes in the number or type of obvious external abnormalities, (6) gather inventory data for the Vermont Herp Atlas, and (7) gather basic natural history information on the species present. Five species of salamander and five species of frog are monitored using drift fences. The salamander species are Eastern Newt (*Notophthalmus viridescens*), Northern Two-lined Salamander (*Eurycea bislineata*), Eastern Red-backed Salamander (*Plethodon cinereus*), Spotted Salamander (*Ambystoma maculatum*), and Spring Salamander (*Gyrinophilus porphyriticus*). The frog species are American Toad (*Anaxyrus americanus*), Green Frog (*Lithobates clamitans*), Pickerel Frog (*Lithobates palustris*), Spring Peeper (*Pseudacris crucifer*), and Wood Frog (*Lithobates sylvaticus*). Eight years of data were collected at the drift-fences through 2002, and an additional two years of data were collected in 2008 and 2009. Nine years of monitoring data were gathered using egg-mass counts and stream surveys through 2002. For details on methods and locations see the 1995 VForEM annual report.

No monitoring from 2003-2007

In 2003, funding from GMNF for continued monitoring was not available, and therefore monitoring was suspended. In the spring of 2003, the drift-fences in the Lye Brook Wilderness region were removed. To insure correct placement of fencing when monitoring resumed, GPS coordinates were taken and the ends of the fences were marked with wooden stakes. Forest Service personnel replaced these stakes with their permanent markers later. After a five-year break, fences were reinstalled at their exact previous locations in 2007. They were designed exactly as they had been originally and monitoring began again with the same field technician in charge (Colleen Jones) as had been in charge previously. The original monitoring protocols were again used for data gathering throughout the 2008 and 2009 field season with the hope of gathering three years of data before once again taking a break in monitoring at this site.

Dowels

Dowels and sponges were added to 1/2 the traps in 2002 as part of an experiment with a method to reduce small-mammal mortality. The use of dowels and sponges combined reduced amphibian captures by 95% and small mammal captures by a 100%. For the final 18 trap events of 2002 only the dowels were used, resulting in a 39% decrease in the number of amphibians, and an 87% reduction in small mammal mortality. Removing the sponges increased the small mammal mortality, and decreased the amount of escaped amphibians. In order to compare 2002 data and previous year's data we converted all numbers to approximate non-dowel values. Using the pre-selected data sets, this was done by excluding all dowel captures in improved traps, doubling captures in unimproved traps, and adding pre-dowel and snake trap data. Due to the decrease in amphibian captures while using dowels, they were not reinstalled in 2007 and there is no plan to use them in the future.

Stream surveys and egg-mass counts

Stream surveys for Spring Salamanders and egg-mass counts for Wood Frogs and Spotted Salamanders ended in 2002 and there are currently no plans or funds to start up these two monitoring methods again.

Young of the Year

In 2009 the percentage of young of the year for all amphibians at the upper two fences was 12% (Table 1). The percentage of young of the year for all amphibians at the lower fence was 11% (Table 3). These compare to 38% and 27% respectively in 2008, and 49% and 24% in 2002. Looking at the individual young of the year numbers for each species at the upper two fences and the lower fence, all species decreased except for Green Frogs which stayed the same at the upper fence and decreased by one at the lower fence. This can be partially explained by the lower total numbers of animals captured in 2009. The percentages of young of the year also went down for every species at the lower fence and every species at the upper fence, except the Green Frog whose percentage of young of year was higher because fewer adults were caught. Overall the number of young of the year caught this year was very low. However, a quick turn around is possible.

Overall trends

To calculate the # per trapping, results from the three most successful trap-efforts per month are used for year-to-year comparisons. Abnormality, maximum size, and first metamorph data are taken from all trappings (Tables 1 and 3). When looking at all 2009 trap-efforts, 34 at the lower drift fence and 33 at the upper, a noticeable result is a total of 807 amphibians were captured. This compares to 2008, with 28 trap-efforts for the upper fences and 30 for the lower fence, when 1342 amphibians were captured. Resulting in a difference of 535 animals, or a reduction of 40% between the two years (Figure 7 & 8). The precipitation was not considerably different (Table 5). Both years had below average rainfall in the spring (April and May) and a slightly above average summer (June, July, and August). In 2008 September was wetter than average while 2009 was dryer than average. Interestingly, this one month does account for part of the difference. In September of 2008 a total of 486 animals were captured in 5 trap-efforts for the upper two fences and 4 for the lower fence. In September of 2009 only 210 animals were captured in 5 trap-efforts for all three fences.

Graphs for those species caught in significant numbers are shown for all three fences combined (Figures 1-5). Total salamanders and total frogs are also graphed in the same way (Figures 7 & 8). At the lower fence, Pickerel Frogs and Wood Frogs showed increases in 2008 and 2009 as compared to 2002 (Table 4). At the upper fences Wood Frogs showed significant increases in numbers in 2008 and 2009 since 2002 (Figure 1). In 2008 all salamander species at the lower fence and all but the Blue-spotted Salamander at the upper fences also showed significant increases since the 2002 monitoring (Table 4). Except for the Wood Frog, whose numbers increased, and the Pickerel Frog, which stayed the same, fewer of each species were caught in 2009 (Table 4).

Linear regressions most closely fit most of the data plots, so they were used to show potential long-term trends in the abundance indices for all species caught from 1995-2009 (Figures 1-6). The data gathered suggest long-term increases for Spring Peeper, but it is a weak correlation and is most likely due to one very good year (2008) (Figure 3). Spotted Salamanders are showing a positive trend (Figure 4). Northern Two-lined Salamanders also show an increasing long-term trend line (Figure 5) but it is not effectively monitored at our fences. Our fences are not placed in appropriate habitat to catch significant numbers of them. All other species show long-term declines; although year-to-year capture rates often fluctuate and strength of correlation varies.

Green Frogs

Green Frogs have never been abundant near the lower fence, and remained fairly level from 2008 to 2009. The lower fence is probably too far from the nearest appropriate breeding habitat. With some year-to-year fluctuation, Green Frogs have been more abundant at the upper two fences. In 2009, only 1.3 Green Frogs

were captured per trapping as compared to 4.7 in 2008. This was the lowest amount caught since the study's inception, resulting in a weakly correlated decline (Figure 2). This decline has been on-going since 1999. Sixty one percent of the Green Frogs caught in 2009 were young of the year, as a result the population may increase again over the next few years with good overwintering success.

American Toad

Despite a slight increase in 2008 and 2009, from 2002, American Toads continue to show a long-term gradual decline in numbers (Figure 1) that is steady and significant. The decline at the upper two fences has been quite dramatic, from an initial high of 4.3 per trapping in 1995 to 0.4 per trapping in 2009 (Table 2).

Wood Frog

From 2002 to 2008 Wood Frogs showed a large increase from 0.2 to 3.2 per trapping at the lower fence and from 1.9 to 6.5 per trapping at the upper two fences (Tables 2 & 4). This trend continued in 2009 with 3.7 per trapping at the lower fence and 6.9 per trapping at the upper two fences. This may well be the result of good overwintering conditions (continuous snow cover) and/or adequate rainfall in the spring for tadpole development. The overall long-term trend is decreasing but is weakly correlated (Figure 1). This could change rapidly with another productive year.

Spring Peeper

Spring Peepers showed a huge increase in 2008 since 2002, but were then found in fewer numbers again in 2009 (Tables 2 & 4, Figure 3). At the lower fence its numbers soared from 0.2 per trapping to 2.7 in 2008 and then fell back to 1.0 per trapping in 2009. At the upper two fences its numbers increased from 0.8 to 4.8 per trapping and then fell back to 0.8. With the 2008 numbers, a fairly level trend line turned into what appears to be a long-term increase; although this may have merely been a spike resulting from a one-year increase. Spring Peepers showed a long-term decline and subsequent disappearance from the Mt. Mansfield fences. It supports our hypothesis that local factors (rather than regional or statewide) at Mt. Mansfield and Lye Brook currently control the populations.

Eastern Newt and Eastern Red-backed Salamander

Both the Eastern Newt and the Eastern Red-backed Salamander show a virtually flat trend line with large annual variation (Figures 4 & 6).

Spotted Salamander

The Spotted Salamander showed an increase since 2002 resulting in a positive slope of its long-term trend line (Figure 4) that has been both consistent and significant. At the lower fence, although it decreased from 2008 to 2009, 3.1 to 1.5 per trapping; these capture rates are still considerably higher than previous years. At the upper fences 12.1 per trapping were found in 2008 and 2009 (Tables 2 & 4).

Pickerel Frog

The Pickerel Frog disappeared entirely from the lower fence in 2002, but was found in 2008 and 2009, with a capture rate of 0.7 per trapping in both years (Table 4 and Figure 3). In 2009 Pickerel Frogs were found at the upper two fences for the second time since the beginning of the study; although only three adults were captured. It has never been caught in sufficient numbers to be reliably monitored. None of the fences are placed in ideal habitat for this species.

Northern Two-lined Salamander

Northern Two-lined Salamander is not caught in sufficient numbers at our fences to be effectively monitored. The fences are not placed in appropriate habitat for this species; however, in 2008 there was a

large increase in numbers of this species caught. In fact, more were caught then than in any previous year. Wet weather probably made it possible for this species to wander further from streambeds and seepage areas (Table 5). In 2009, a few were caught but not as many as were found in 2008 (Figure 5).

Abnormalities

In 2009 no amphibians out of a total of 807 captures had an abnormality (Tables 1 & 3). The last abnormality found at the Lye Brook Wilderness fences was a single Wood Frog in 2002. According to the drift-fence technicians, even that abnormality looked like an injury as opposed to a birth defect. Abnormalities have never been common at our Lye Brook fences.

Summary

In 2003, funding from GMNF for continued monitoring near Lye Brook Wilderness was no longer available. Consequently monitoring was suspended and the fences were removed. In 2007 the fences were rebuilt in their original locations and monitoring resumed in 2008 and continued in 2009 with funding from Vermont Monitoring Cooperative. Data from these efforts has been exported in Excel format and sent via E-mail to VMC. We hope to continue monitoring near Lye Brook Wilderness in 2012. Most species showed increases in per trapping rates in 2008 and 2009 when compared to 2002. Most notable and significant were the long-term and significant increase in Spotted Salamanders and the short-term increase in Spring Peepers. In our 2002 summary we were watching long-term increases in Spotted Salamanders, Eastern Newts, and Green Frogs. Of these, only the Spotted Salamander continues its upward trend with the other two species having leveled off and now showing a slight decline.

American Toad still shows an overall decline that has been steady and significant since monitoring began in 1995. It has been most striking since 1999.

It is rewarding to see an increase in both Spring Peepers and Wood Frogs since 2002. This is in stark contrast to the disappearance of Spring Peepers and the decline of Wood Frogs at Mt. Mansfield. It is also rewarding to have Pickerel Frogs show up again at both the lower and upper fences.

The single Blue-spotted Salamander (*Ambystoma laterale* group) that was found in one of the upper fences in 1997 looks more suspicious as additional years accumulate with no others caught at any fence. This is primarily a low-elevation flood-plain-margin species. It may well have been placed in the pitfall trap by someone who was aware of the fence location.

Acknowledgments

Funding for this monitoring was provided through a cost-share agreement between the Vermont Monitoring Cooperative (VMC) project of the Vermont Department of Forests, Parks, and Recreation and the Vermont Reptile and Amphibian Atlas Project of Vermont Family Forests. Colleen Jones was the local field technician.

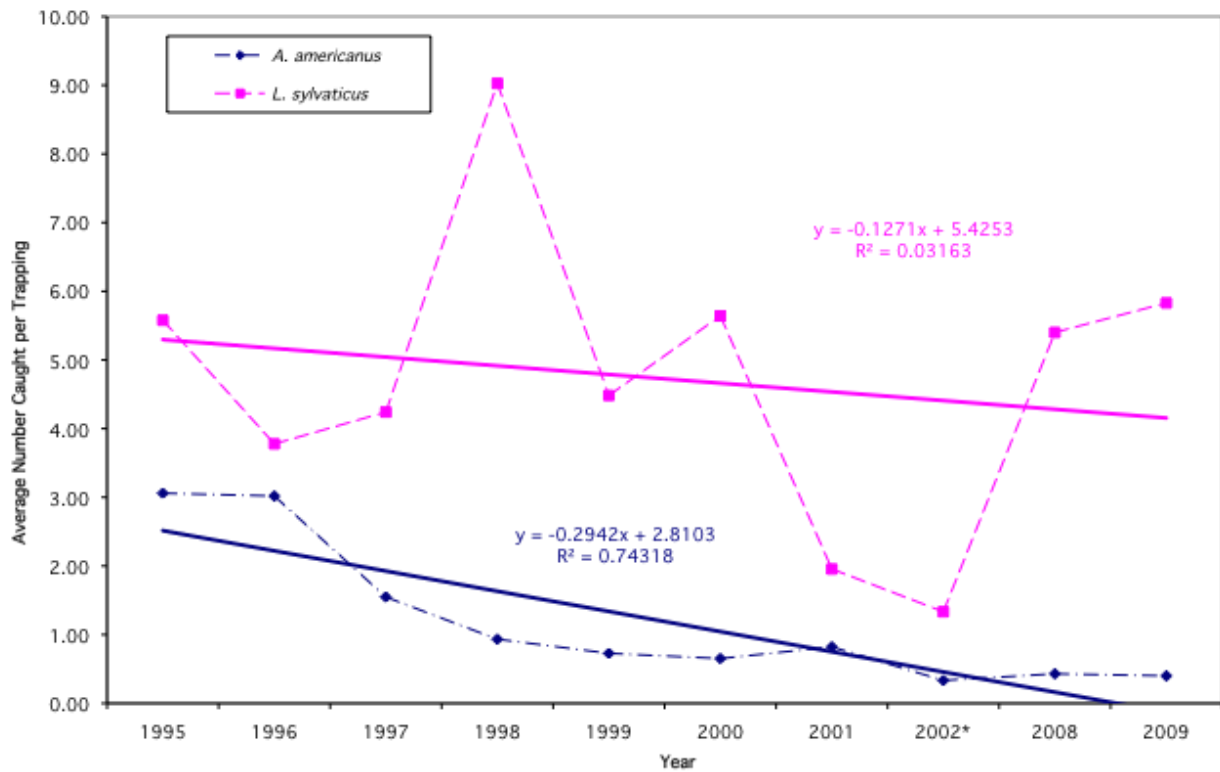


Figure 1. American Toad (*Anaxyrus americanus*) and Wood Frog (*Lithobates sylvaticus*) population indices from the three drift-fences in the Lye Brook Wilderness, Sunderland, Vermont, 1995-2009.

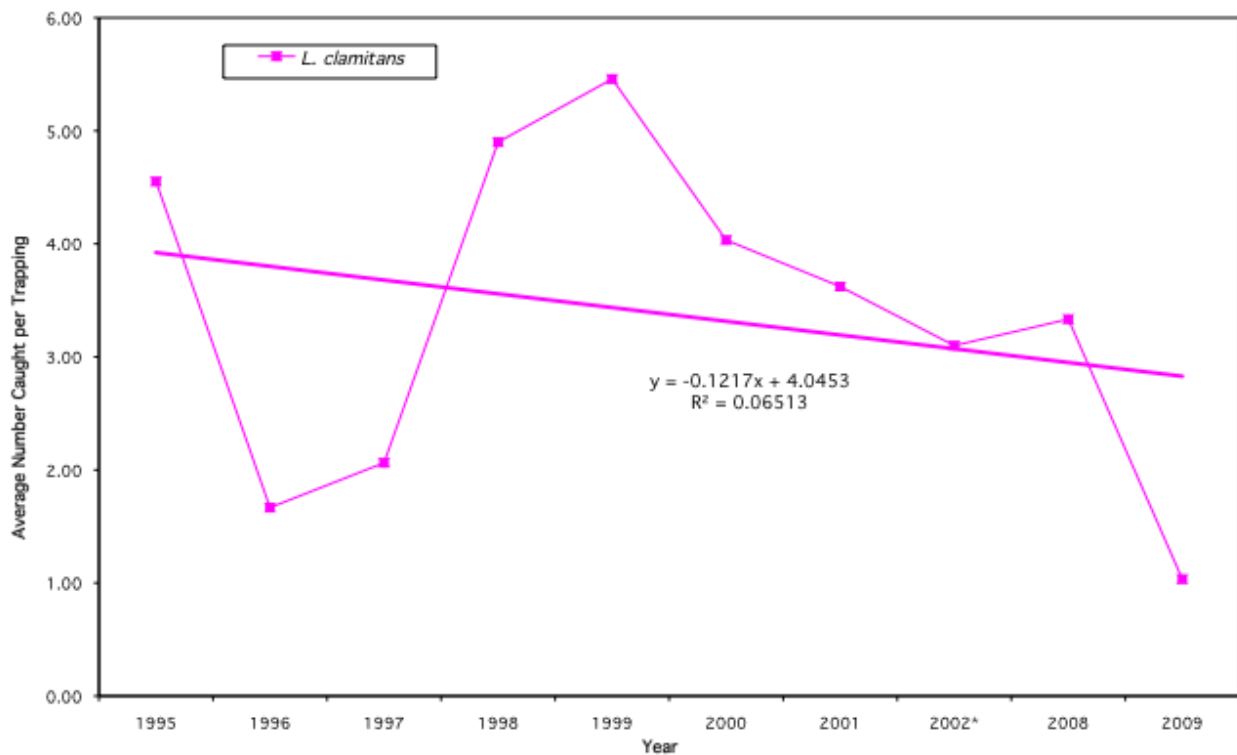


Figure 2. Green Frog (*Lithobates clamitans*) population indices from the three drift-fences in the Lye Brook Wilderness, Sunderland, Vermont, 1995-2009.

Average Number Caught per Trapping

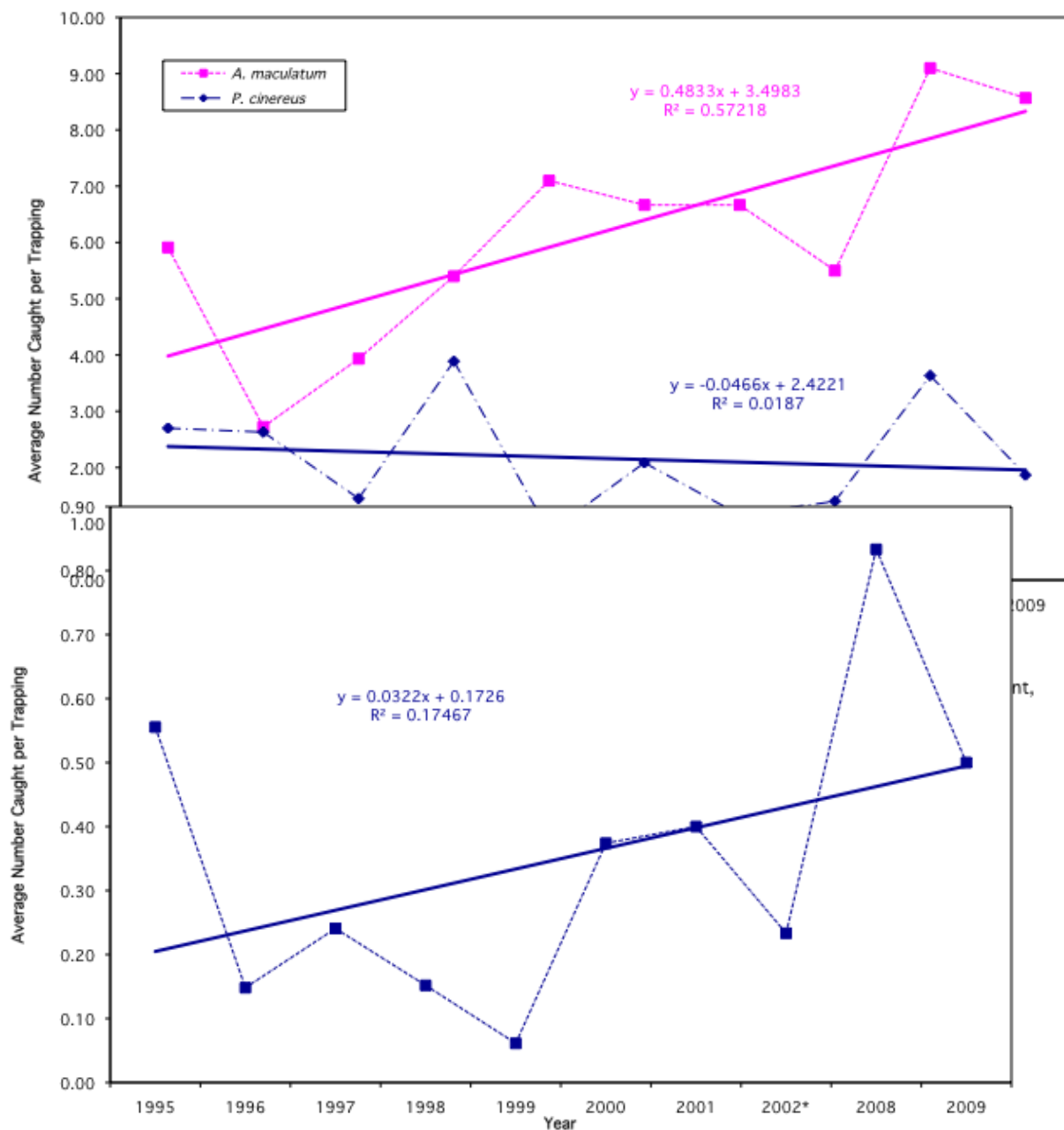


Figure 5. Northern Two-lined Salamander (*Eurycea bislineata*) population index from the three drift-fences in the Lye Brook Wilderness, Sunderland, Vermont, 1995-2009.

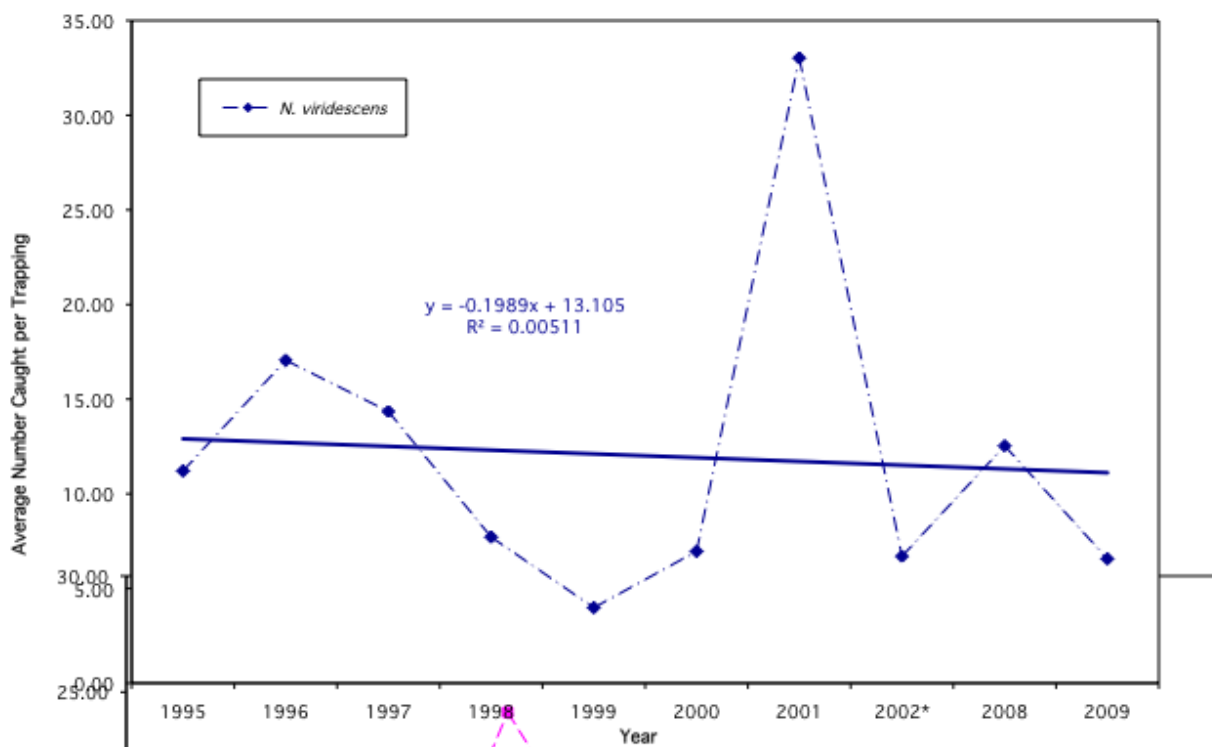


Figure 6. Eastern Newt (*Notophthalmus viridescens*) population indices from the three drift-fences in the Lye Brook Wilderness, Sunderland, Vermont, 1995-2009.

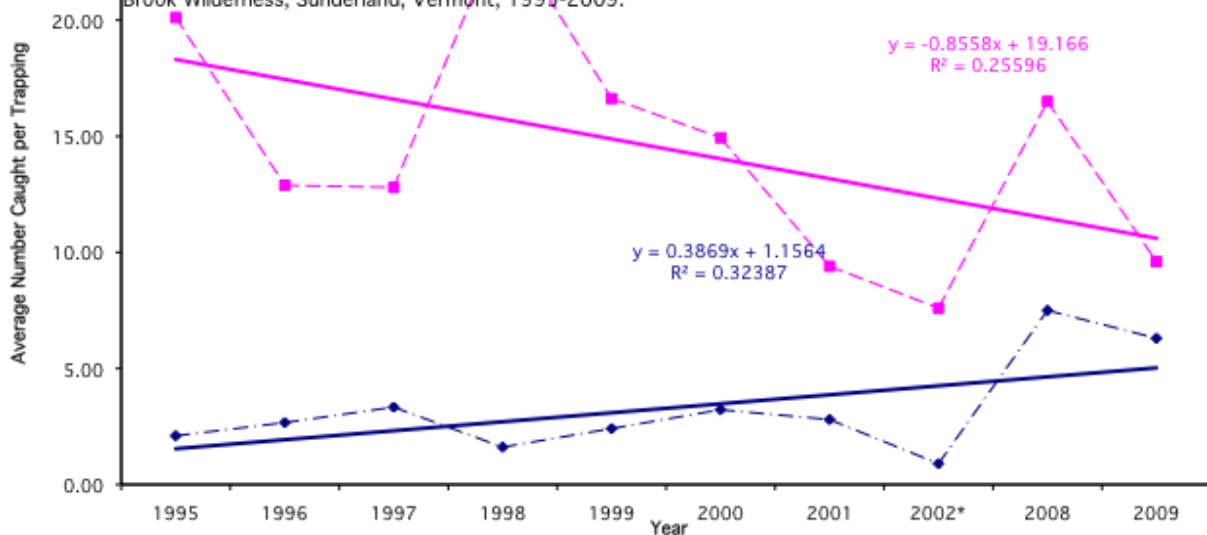


Figure 7. Numbers of Frogs caught per trapping at the lower and upper two drift-fences in the Lye Brook Wilderness, Sunderland, Vermont, 1995-2009.

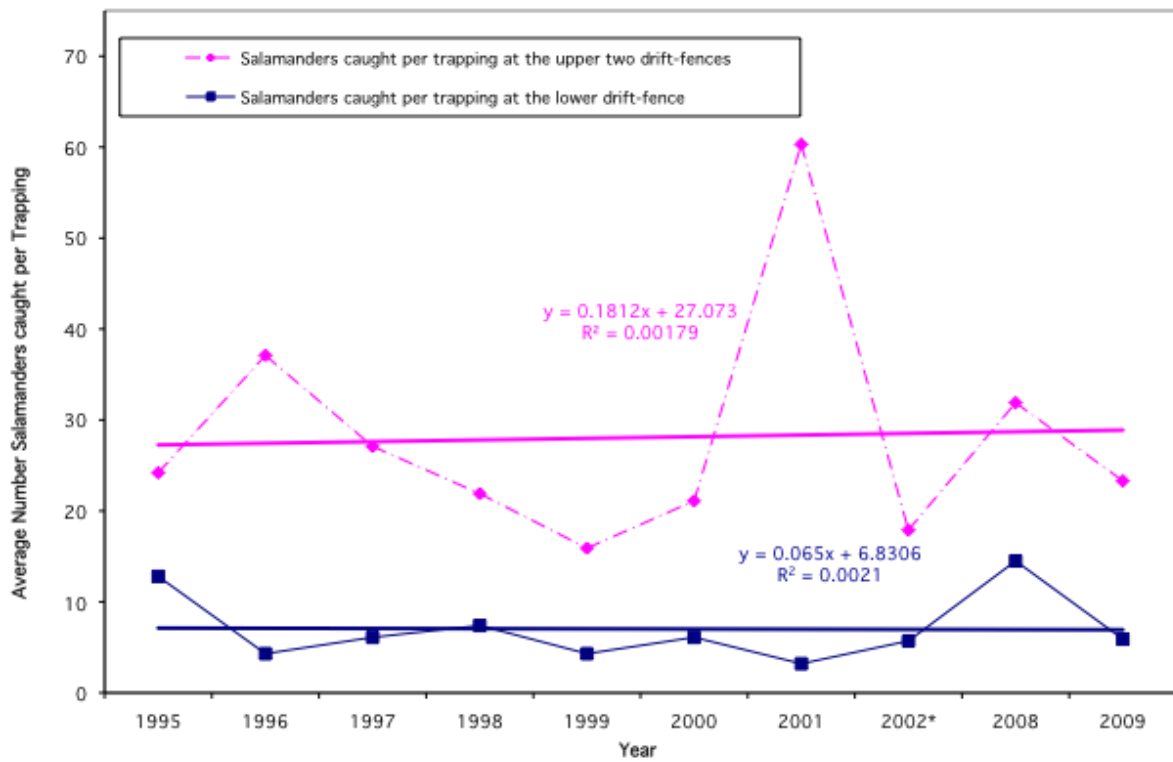


Figure 8. Numbers of Salamanders caught per trapping at the lower and upper two drift-fences in the Lye Brook Wilderness, Sunderland, Vermont, 1995-2009.

Table 1. Monitoring results from the upper two drift-fences in the Lye Brook Wilderness Region, Sunderland, Bennington County, during 2009. Traps were opened whenever conditions were appropriate for amphibian movement from May through October.¹ The three most successful trapping periods (+/-10 days) are used for year-to-year comparisons. Data from 18 out of 33 trap-efforts are used. Data used are from April 19 and 21, and May 1; May 15, 17, and 28; June 12, 13, and 19; July 17, 22, and 30; September 12, 24, and 28; October 3, 4, and 25. Abnormality, maximum size and first metamorph data are taken from all 33 trappings.

Common name	Scientific name	# of all ages	# of young of the year ²	% young of the year	date of first metamorph	largest adult (total length in mm)	# per trapping (adjusted) ³	% of group	% of total catch	# abnormal/total ⁴
Caudates (Salamanders)										
Spotted Salamander	<i>Ambystoma maculatum</i>	218	23	11%	August 22	214	12.1	52%	37%	0/218
N. Two-lined Salamander	<i>Eurycea bislineata</i>	10	1	10%	Aug 1	94	0.6	2%	2%	0/10
Spring Salamander	<i>Gyrinophilus porphyriticus</i>	1	0	0%	NA	110	0.1	0%	0%	0/1
Eastern Newt	<i>Notophthalmus viridescens</i>	161	15	9%	August 22	96	8.9	38%	27%	0/161
E. Red-backed Salamander	<i>Plethodon cinereus</i>	30	2	7%	October 25	86	1.7	7%	5%	0/30
Group totals		420	41	10%	NA	NA	23.3	100%	71%	0/420
Anurans (Frogs)										
American Toad	<i>Anaxyrus americanus</i>	7	0	0%	NA	67	0.4	4%	0%	0/7
Green Frog	<i>Lithobates clamitans</i>	23	14	61%	July 22	98	1.3	13%	4%	0/23
Pickering Frog	<i>Lithobates palustris</i>	3	0	0%	NA	70	0.2			0/3
Wood Frog	<i>Lithobates sylvaticus</i>	125	10	8%	July 24	69	6.9	73%	21%	0/125
Spring Peeper	<i>Pseudacris crucifer</i>	14	4	29%	September 12	34	0.8	8%	2%	0/14
Group totals		172	28	16%	NA	NA	9.6	98%	29%	0/172
Amphibian totals		592	69	12%	NA	NA	32.9	NA	100%	0/592

¹ Starting in 1999, fences were opened regularly in August in order to gather additional data on abnormalities and metamorphs. Data sets between August 10 and 20 are not used for calculating the index in order to maintain consistency with previous years.

² For each species, individuals under a given total length were considered potential young of the year. The chosen length was based on the timing of their appearance, gaps in their size continuum, and records in the literature. The cutoff sizes used were *A. maculatum* (70 mm), *D. fuscus* (30 mm), *E. bislineata* (60 mm), *N. viridescens* (45 mm), *P. cinereus* (32 mm), *A. americanus* (23 mm), *H. versicolor* (26 mm), *P. crucifer* (20 mm), *L. clamitans* (44 mm), *L. palustris* (34 mm), and *L. sylvaticus* (27 mm). In addition, it was necessary to examine the minimum possible development time for each species. Individuals shorter than the cutoff lengths clearly overwinter (possibly as larvae for *N. viridescens* and *A. maculatum*) and show up in very early spring. These are not counted as young of the year.

³ These figures are rounded to the nearest 0.1. All other figures are rounded to the nearest whole number.

⁴ These may contain old deformities (traumatic) as well as malformities (developmental). Salamanders missing all or portions of their tails are not included. The total number checked may contain specimens that were caught more than once.

Table 2. A comparison of data from the upper two drift-fences in Lye Brook Wilderness, Sunderland, Bennington County, Vermont. Data are taken from the 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2008, and 2009 field seasons. Fences were opened at least three times per month.

Common name	# per trapping ¹									
	95	96	97	98	99	00	01	02 ²	08	09
Caudates (Salamanders)										
Blue-spotted Salamander Group	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spotted Salamander	8.7	4.7	5.7	7.9	10.5	9.7	9.8	8.1	12.1	12.1
Northern Two-lined Salamander	0.8	0.3	0.3	0.2	0.1	0.5	0.6	0.3	0.9	0.6
Eastern Newt	12.7	29.5	19.4	10.5	4.6	10.0	49.0	9.1	17.3	8.9
Eastern Red-backed Salamander	2.0	3.3	1.5	3.3	0.8	0.9	0.9	0.4	1.6	1.7
Group Totals	24.2	37.1	27.1	21.9	15.9	21.1	60.3	17.9	31.9	23.3
Anurans (Frogs)										
American Toad	4.3	2.7	2.0	1.1	0.6	0.5	0.9	0.3	0.5	0.4
Green Frog	6.8	2.9	3.1	7.3	8.2	5.8	5.4	4.6	4.7	1.3
Pickerel Frog	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2
Wood Frog	8.2	6.3	6.0	13.4	6.3	7.9	2.3	1.9	6.5	6.9
Spring Peeper	0.8	1.2	1.8	2.3	1.6	0.7	0.9	0.8	4.8	0.8
Group Totals	20.0	13.1	12.8	24.1	16.6	14.9	9.4	7.7	16.5	9.6
Amphibian Totals	44.2	50.2	39.9	46.1	32.6	36.1	69.7	25.6	48.4	32.9

¹Numbers per trapping are rounded to the nearest 0.1. All other figures are rounded to the nearest whole number. As a result of this, group totals may not be equivalent to the sum of the individual species' values. There were a total of 18 trappings counted in 1995, 15 in 1996, 15 in 1997, 15 in 1998, 16 in 1999, 15 in 2000, 15 in 2001, 18 in 2002, 15 in 2008, and 18 in 2009.

² In 2002 we used dowels to reduce small mammal mortality. In order to compare 2002 with other year's data we converted all numbers to approximate non-dowel values. Using the pre-selected data sets, this was done by excluding all dowel captures, doubling captures in unimproved traps, and adding predowel data. As a result, group totals may not be equivalent to the sum of the individuals species' values.

Table 3. Monitoring results from the lower drift-fence in the Lye Brook Wilderness Region, Manchester, Bennington County during 2009. Traps were opened whenever conditions were appropriate for amphibian movement from March through October.¹ The three most successful trappings per month (+/- 10 days) are used for year-to-year comparisons. Data from 18 out of 34 trap-efforts are used. Data used are: April 3, 11 and 19, and May 1, 15, and 17; June 12 and 19, and July 2, July 17, 22, and 30; September 12, 13, and 24; September 28, and October 4 and 25. Abnormality, maximum size, and first metamorph data are taken from all 34 trappings.

Common name	Scientific name	# of all ages	# of young of the year ²	% young of the year	date of first metamorph	largest adult (total length in mm)	# per trapping (adjusted) ³	% of group	% of total catch	# abnormal/total ⁴
Caudates (Salamanders)										
Spotted Salamander	<i>Ambystoma maculatum</i>	27	3	11%	September 12	196	1.5	25%	13%	0/27
N. Two-lined Salamander	<i>Eurycea bislineata</i>	5	0	0%	NA	85	0.3	5%	1%	0/5
Eastern Newt	<i>Notophthalmus viridescens</i>	34	6	18%	September 24	92	1.9	32%	16%	0/34
E. Red-backed Salamander	<i>Plethodon cinereus</i>	40	1	3%	October 25	98	2.2	38%	19%	0/40
Group totals		106	10	9%	NA	NA	5.9	100%	49%	0/106
Anurans (Frogs)										
American Toad	<i>Anaxyrus americanus</i>	8	0	0%	NA	92	0.4	7%	4%	0/8
Green Frog	<i>Lithobates clamitans</i>	9	5	56%	July 17	94	0.5	8%	4%	0/9
Wood Frog	<i>Lithobates sylvaticus</i>	66	2	3%	August 22	61	3.7	61%	31%	0/66
Pickerel Frog	<i>Lithobates palustris</i>	8	5	63%	August 22	77	0.7	7%	4%	0/8
Spring Peeper	<i>Pseudacris crucifer</i>	18	1	6%	September 24	34	1.0	17%	8%	0/18
Group totals		109	13	12%	NA	NA	6.3	100%	51%	0/109
Amphibian totals		215	23	11%	NA	NA	12.2	NA	100%	0/215

¹ Starting in 1999, fences were opened regularly in August in order to gather additional data on abnormalities and metamorphs. Data sets between August 1 and 23 are not used for calculating the index in order to maintain consistency with previous years.

² For each species, individuals under a given total length were considered potential young of the year. The chosen length was based on the timing of their appearance, gaps in their size continuum, and records in the literature. The cutoff sizes used were *A. maculatum* (70 mm), *D. fuscus* (30 mm), *E. bislineata* (60 mm), *N. viridescens* (45 mm), *P. cinereus* (32 mm), *A. americanus* (23 mm), *H. versicolor* (26 mm), *P. crucifer* (20 mm), *L. clamitans* (44 mm), *L. palustris* (34 mm), and *L. sylvaticus* (27 mm). In addition, it was necessary to examine the minimum possible development time for each species. Individuals shorter than the cutoff lengths clearly overwinter (possibly as larvae for *N. viridescens* and *A. maculatum*) and show up in very early spring. These are not counted as young of the year.

³ These figures are rounded to the nearest 0.1. All other figures are rounded to the nearest whole number.

⁴ These may contain old deformities (traumatic) as well as malformities (developmental). Salamanders missing all or portions of their tails are not included. The total number checked may contain specimens that were caught more than once.

Table 4. A comparison of data from the lower drift-fence in Lye Brook Wilderness, Manchester, Bennington County, Vermont. Data are taken from the 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2008, and 2009 field seasons. Fences were opened at least three times per month.

Common name	# per trapping ²									
	95 ¹	96	97	98	99	00	01	02 ³	08	09
Caudates (Salamanders)										
Spotted Salamander	0.4	0.2	0.3	0.3	0.3	0.7	0.4	0.3	3.1	1.5
Northern Two-lined Salamander	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.7	0.3
Eastern Newt	8.3	1.9	4.7	2.1	2.8	0.9	1.1	1.9	3.0	1.9
Eastern Red-backed Salamander	4.1	2.2	1.1	4.9	1.1	4.4	1.7	3.4	7.7	2.2
Group Totals	12.8	4.3	6.1	7.4	4.3	6.1	3.2	5.7	14.5	5.9
Anurans (Frogs)										
American Toad	0.4	0.7	0.7	0.7	1.2	0.9	0.7	0.4	0.3	0.4
Green Frog	0.1	0.1	0.1	0.2	0.0	0.5	0.1	0.1	0.6	0.5
Pickereel Frog	1.1	0.8	0.7	0.2	0.2	0.1	0.5	0.0	0.7	0.7
Wood Frog	0.4	0.8	0.7	0.3	0.8	1.1	1.3	0.2	3.2	3.7
Spring Peeper	0.1	0.2	1.1	0.3	0.4	0.7	0.2	0.2	2.7	1.0
Group Totals	2.1	2.6	3.3	1.7	2.6	3.3	2.8	0.9	7.5	6.3
Amphibian Totals	14.9	6.9	9.3	9.1	6.9	9.4	6.0	6.6	22.0	12.2

¹In 1995, there were only 10 successful trappings. Dates used were April 20; June 16; July 1 and 18; September 10, 14, and 15; and October 6, 15, and 28.

²Numbers per trapping are rounded to the nearest 0.1. All other figures are rounded to the nearest whole number. As a result of this, group totals may not be equivalent to the sum of the individual species' values. There were a total of 10 trappings counted in 1995, 18 in 1996, 18 in 1997, 18 in 1998, 17 in 1999, 18 in 2000, 15 in 2001, 17 in 2002, 18 in 2008, and 18 in 2009.

³In 2002 we used dowels to reduce small mammal mortality. In order to compare this year's and past year's data we converted all numbers to approximate non-dowel values. Using the preselected data sets, this was done by excluding all dowel captures, doubling captures in unimproved traps, and adding predowel data. As a result, group totals may not be equivalent to the sum of the individuals species' values.

Table 5: Rainfall in inches from Bennington County, Vermont during the months data are collected at drift fences in the Lye Brook Wilderness Region.

Month	Historic Average ¹	2008 ²	2009 ²
April	3.55	2.48	1.61
May	4.8	1.32	3.68
June	4.67	4.18	6.7
July	4.61	6.53	6.65
August	4.59	4.62	4.64
September	3.94	5.63	1.44
October	4.4	4.2	4.44

¹ Historic average precipitation data from intellicast.com accessed February 7, 2011

² Historic monthly precipitation data for 2008 and 2009 from wunderground.com accessed February 7, 2011