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CONNECTICUT RIVER CONSERVANCY

EXECUTIVE SUMMARY

Samplepalooza is an annual, one day, synoptic nutrient monitoring event in the Connecticut River watershed that was held in 2014, 2015, 2018, and 2019. This event is coordinated by the Connecticut River Conservancy (CRC) and samples collected by volunteers and professionals alike. Sites near the mouths of tributaries to and along the length of the Connecticut River are sampled for total nitrogen (TN) and total phosphorus (TP). TN and TP are of major concern to the Connecticut River watershed due to their influence on algal blooms within the watershed and Long Island Sound (LIS) which is the receiving body of water for the Connecticut River.

Samplepalooza included 11 mainstem sites in 2019; and of those 7 were sampled in 2014, and 9 in 2015 and 2018. There were 45 tributary sites in 2019, and of those, we tested 35 of those in 2014, 32 in 2015, and 35 in 2018. In order to find a standard that applied universally across the four watershed states, we choose to compare these results to the ambient water quality criteria recommendations based on ecoregion put forth by the United States Environmental Protection Agency. The Connecticut River watershed falls into two ecoregions, "VIII: Nutrient Poor Largely Glaciated Upper Midwest And Northeast" and "XIV: Eastern Coastal Plains." The recommendations for Ecoregion VII are 0.38 mg/L for TN and 10.00 µg/L for TP. The recommendations for Ecoregion XIV are 0.71 mg/L for TN and 31.25 µg/L for TP. All of the samples collected are single grab samples and are not intended to be used for assessment but rather to complete to a fuller picture of nutrients at a large watershed scale. The results are presented in this report graphically as they are measured by concentration and then the tributary sites are presented using calculated loading to demonstrate estimated impact of each tributary to the system.

Samplepalooza is continuing again in 2020 with the goal to bring in more partners and continuing to build communication and cooperation throughout the watershed. Quality Assurance/Quality Control information as well as complete results are presented in the appendices.

ACKNOWLEDGEMENTS

Thank you to the following partners who helped make Samplepalooza happen in 2019.

Vermont Department of Environmental Conservation

New Hampshire Department of Environmental Services

Black River Action Team

Southeastern Vermont Watershed Alliance

Deerfield River Watershed Association

Vermont Natural Resource Conservation Districts

Friends of Lake Warner and the Mill River

Woodard and Curran Consulting

Fort River Watershed Association

Chicopee 4 Rivers Watershed Council

Farmington River Watershed Assocation

Scantic River Watershed Association

Eightmile River Wild & Scenic Watershed

Salmon River Watershed Partnership

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BACKGROUND

Samplepalooza is an annual, one day, synoptic monitoring event throughout the entire Connecticut River Watershed. Teams of volunteers and professionals visited locations covering more than 1,000 river miles across four states. Samples are tested for the nutrients nitrogen and phosphorus. In the past, chloride, and other water quality parameters were sometimes included.

Samplepalooza is a coordinated effort led by the Connecticut River Conservancy (CRC) to collect data in support of a multi-state effort working to reduce nitrogen pollution in Long Island Sound. Nitrogen from the Connecticut River and other rivers entering the Sound has been determined to be the cause of the anoxic "dead zone" documented by researchers in the Long Island Sound. Excess nitrogen causes large amounts of algae to grow. As the algae dies, it depletes the water of dissolved oxygen that is critical for aquatic wildlife. The states of Connecticut and New York have made many strides to reduce the amount of nutrients going into Long Island Sound. The upstream states find this project useful to help identify the primary areas of elevated nutrients in their watersheds.

The strategy behind Sampleplaooza is to sample a large geographic area simultaneously, ideally a day with low flows and little precipitation in all four states. This allows for more accurate comparisons to be made between samples while minimizing differences in weather and river flow variation—issues that usually complicate such studies. The project is designed to identify areas of the watershed that provide the largest sources of nutrients and, in the future, will allow for more accurate targeting of efforts to reduce nutrient impacts. Sampling locations were selected on the main stem of the Connecticut River and the downstream sections of its major tributaries.

HISTORY OF SAMPLEPALOOZA

Samplepalooza was first held on August 6, 2014 as a collaboration between CRC, New Hampshire Department of Environmental Services (NH DES), and Vermont Department of Environmental Conservation (VT DEC). The following year, Yale University and the New England Interstate Water Pollution Control Commission (NEIWPCC) joined the effort and it was held on September 10, 2015. During the first two years, in an attempt to ensure low flow sampling throughout the watershed at all sites, several dates were selected by committee and decided 1-2 days out whether or not to sample. The project lost momentum after the first two years and was on hiatus until revived in 2018. We decided to move away from the committee model and to select the date ahead of time to simplify preparation and make it easier for everyone to participate fully. On September 20, 2018, the third Sampleplaooza was held with participation of NH DES and VT DEC. Following the same model, the fourth and most recent Samplepalooza occurred on September 12, 2019 with participation from the same state agencies. Samplepalooza is planned to continue in 2020.

NITROGEN

Total nitrogen (TN) tests for nitrogen in all its forms, including nitrate (NO3¬-), nitrite (NO2-), ammonium (NH4+), and as part of organic matter. Nitrogen is an essential nutrient for plants and can be found in the atmosphere as well as all living beings. It is also a key component of many fertilizers. An overabundance of nitrogen in our waterways can contribute to eutrophication (overgrowth of algae) and anoxia (lack of oxygen) in saltwater systems, such as Long Island Sound.

PHOSPHORUS

Total phosphorus (TP) tests for phosphorus in all its forms, including organic and inorganic phosphates (PO4-3). Organic phosphates are those that are bound to plant or animal tissue and formed primarily through biological processes, but they may occur from the breakdown of organic pesticides. Inorganic phosphates include orthophosphates, produced in natural processes and found in sewage, and polyphosphates, used in treating boiler waters and in detergents. An overabundance of phosphorus in our waterways can contribute to toxic algae blooms, eutrophication, and anoxia in freshwater systems, such as lakes and ponds.

WHY DO WE CARE?

Nitrogen and phosphorus loadings into lakes, rivers, estuaries, and wetlands can cause and/or contribute to water quality problems in many areas across the world. Excessive amounts of these nutrients can result in algae or vegetative blooms, benthic algal mats, slime layers on rocks, poor water clarity, aquatic habitat degradation for other plants and animals, and impairment of drinking water supplies. Nutrient effects such as eutrophication of downstream systems from upstream loads, human-health effects of excessive nutrient loads in water supplies, effects on recreational use and aesthetics, and impact on aquatic biota have all received national news attention. Recently, we have experienced an increased number of algae blooms in the Connecticut River and its tributaries each summer.

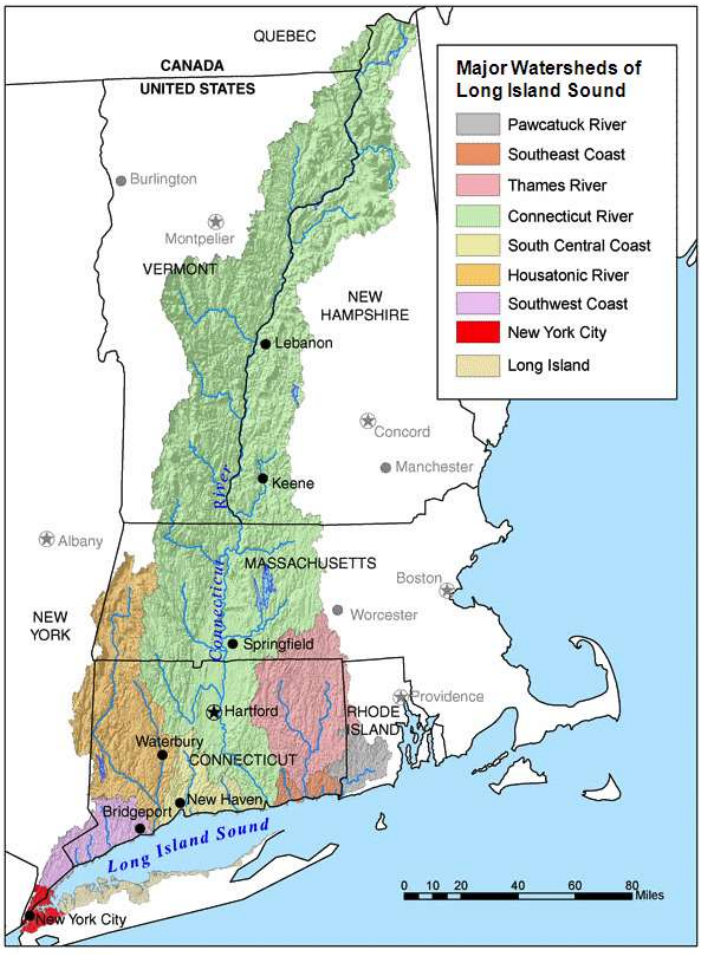


Figure 1 - Map of Long Island Sound Watershed

The Connecticut River is the largest contributor of freshwater to the Long Island Sound (LIS). Excess nitrogen loading has been identified as the critical contributor to water quality impairments in Long Island Sound namely low dissolved oxygen (DO) levels, or hypoxia, To address the hypoxia, the Connecticut Department of Energy and Environmental Protection (CTDEEP) and New York State Department of Environmental Conservation (NYSDEC) developed a Total Maximum Daily Load (TMDL) that identified nitrogen loading reductions necessary to meet water quality standards in the Sound. The U.S. Environmental Protection Agency (EPA) approved the LIS TMDL in 2001. In 2005, EPA indicated that the out of basin (MA, VT, NH) load reduction targets had been met.

In 2015, the Connecticut Fund for the Environment and other partner groups filed a petition with the EPA and state agencies to review, amend, or re-issue the Long Island Sound Total Maximum Daily Load (TMDL) because the 2001 TMDL efforts were not sufficient to meet water quality standards. EPA announced a new Nitrogen

Reduction Strategy for Long Island Sound (LIS) in 2016. The US EPA intends to identify point source and nonpoint nitrogen reduction options based upon ecological thresholds developed using existing data from a variety of sources, including locations throughout the LIS watershed. However, there is significant concern that this data set is incomplete and not representative of sufficient locations and hydrologic conditions necessary to develop scientifically based nitrogen reduction targets.

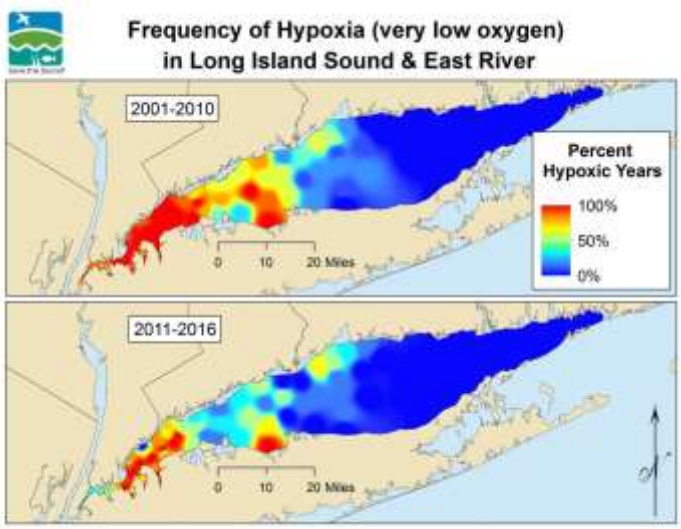


Figure 2 - Frequency of Hypoxia in LIS

The data collected as part of Samplepalooza is intended to contribute to the body of knowledge that is used by EPA and other agencies to set ecological thresholds, loadings, and effluent limits for the Connecticut River watershed and assist the states that are in the process of updating their nutrient water quality standards. Finally, Samplepalooza allows partners from throughout the watershed to form partnerships in anticipation of future efforts working across state lines to address water quality concerns.

RESULTS

This section includes the results of the sites tested in 2019 and any results from previous years at those sites. We have made adjustments each year to expand and capture the Connecticut River watershed as fully as possible in this snapshot. Of the 45 tributary sites tested in 2019, we tested 35 of those in 2014, 32 in 2015, and 35 in 2018. There were actually in increase in the number of tributary sites overall in 2015 due to some larger tributaries being selected to be sampled at multiple sites moving upriver to start identifying potential nutrient sources along those rivers. However, when Samplepalooza was rebooted in 2018, we decided to stick to tributary mouths to keep the goals simple and consistent across states and tributaries. Of the 11 mainstem sites sampled in 2019, 7 were sampled in 2014, and 9 in 2015 and 2018.

There is a map of all the sites on the following page. The sites are either named for the tributary they are located on or the location on the mainstem of the Connecticut. In Table 1 - Samplepalooza Tributary Sites and Table 2 - Samplepalooza Mainstem Sites, each site is listed by its name, a site ID if the site is sampled as part of another monitoring program, latitude and longitude, which Samplepalooza years it was sampled, and the number or letter that is used to label it on the map.

Figure 3 - Map of Samplepalooza Sites

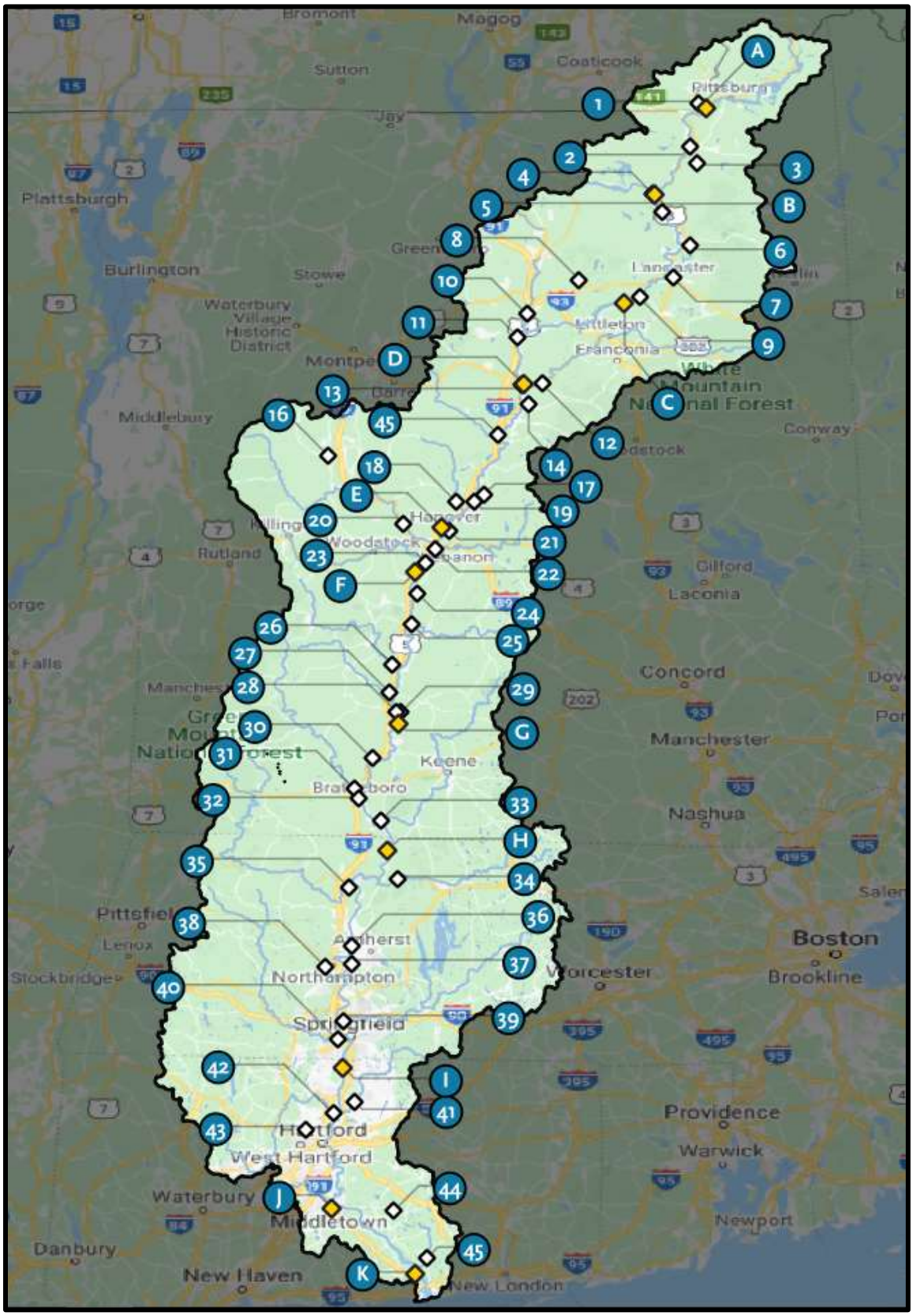


Table 1 - Samplepalooza Tributary Sites

Name	*Site ID*	*Latitude*	*Longitude*	*2014*	*2015*	*2018*	*2019*	*Map ID*
Hall Stream	02-HAS	45.0401	-71.4913	X	X		X	1
Mohawk R.	00-MHK	44.9001	-71.516	X	X	X	X	2
Simms Stream	05-SMS	44.84917	-71.4931	X		X	X	3
Nulhegan R.	Nulhegan_0.3	44.75499	-71.6356	X	X	X	X	4
Paul Stream	Paul Stream _0.1	41.4024	-72.3454	X	X		X	5
U. Ammonoosuc R.	01-UAM	44.5925	-71.516	X	X	X	X	6
Israel R.	02-ISR	44.48792	-71.5696	X	X		X	7
Moose R.	Moose_14.3	41.4024	-72.3454	X	X	X	X	8
Johns R.	01-JHN	44.4264	-71.6763	X	X	X	X	9
Passumpsic R.	Passumpsic_4.9	44.37444	-72.0311	X	X	X	X	10
Stevens R.	Stevens_1.4	44.30172	-72.0582	X	X	X	X	11
Ammonoosuc R.	03-AMM	44.15478	-71.9819	X	X	X	X	12
Wells R.	Wells_0.6	44.15444	-72.0489	X	X	X	X	13
Clark Brk.	02-CKB	44.0898	-72.0249	X	X	X	X	14
Waits R.	Waits_0.3	43.99651	-72.1224	X	X	X	X	15
Ayers Brk.	Ayers Bk_0.3	43.92861	-72.6556			X	X	16
Grant Brk.	02-GNB	43.80753	-72.1636	X		X	X	17
Ompompanoosuc R.	Ompompanoosuc_3.8	43.78583	-72.2547	X	X	X	X	18
Hewes Brk.	01-HEW	43.7854	-72.1971	X		X	X	19
White R.	White_1.1	43.71314	-72.4184			X	X	20
Mink Brk.	01T-MKB	43.6928	-72.2748	X		X	X	21
Mascoma R.	01-MSC	43.63383	-72.3174	X	X	X	X	22
Ottaquechee R.	OtR006	43.59316	-72.3488	X	X	X	X	23
Blow-Me-Down Brk.	01-BMD	43.4964	-72.3759	X	X	X	X	24
Sugar R.	01-SGR	43.39833	-72.3939	X	X	X	X	25
Black R.	Black_1.5	43.27113	-72.4542	X	X	X	X	26
Williams R.	Williams_0.92	43.18325	-72.4635		X	X	X	27
Saxtons R.	Saxtons_.19	43.123	-72.4424	X	X	X	X	28
Cold R.	02-CLD	43.13213	-72.3904	X	X	X	X	29
Sacketts Brk.	Sacketts_1.0	42.97512	-72.5178				X	30
West R.	West_1.4	42.87967	-72.5738	X			X	31
Whetstone Brk.	Whetstone Bk_0.2	42.8507	-72.5594	X	X	X	X	32
Ashuelot R.	02-ASH	42.77974	-72.49	X	X	X	X	33
Millers R.	W0690	42.59751	-72.4378	X	X	X	X	34
Deerfield R.	W0476	42.56966	-72.5921	X	X	X	X	35
Lake Warner (Mill R., Hadley)	LWBR01	42.38579	-72.5811			X	X	36
Fort R.	W1051	42.33279	-72.5786	X	X	X	X	37
Mill R. (Northampton)	W1796	42.31899	-72.6651	X	X	X	X	38
Chicopee R.	W0475	42.15037	-72.6076	X	X	X	X	39
Westfield R.	W0474	42.09003	-72.6269	X	X	X	X	40
Scantic R.	EW3	41.89421	-72.5729				X	41

Name	Site ID	Latitude	Longitude	2014	2015	2018	2019	Map ID
Farmington R.	FR-W2	41.85719	-72.6405		✗		✗	42
Park R.	N/A	41.80531	-72.7263				✗	43
Salmon R.	N/A	41.54971	-72.451				✗	44
Eightmile R.	N/A	41.4024	-72.3454				✗	45

Table 2 - Samplepalooza Mainstem Sites

Location	Site ID	Latitude	Longitude	2014	2015	2018	2019	Map ID
Pittsburgh, NH	74-CNT	45.0211	-71.464	✗	✗	✗	✗	A
Stratford, NH	67-CNT	44.7526	-71.6303	✗	✗	✗	✗	B
Dalton, NH	53-CNT	44.411	-71.7227	✗	✗	✗	✗	C
Haverhill, NH	43-CNT	44.1539	-72.0408	✗	✗	✗	✗	D
Hanover, NH	30-CNT	43.70356	-72.2994		✗	✗	✗	E
Sumner Falls	25-CNT	43.56395	-72.3805		✗	✗	✗	F
Walpole, NH	10-CNT	43.0847	-72.433	✗	✗	✗	✗	G
Northfield, MA	01-CNT/W0478	42.6836	-72.4714	✗	✗	✗	✗	H
Thompsonville, CT	W1395	42.00311	-72.6086	✗	✗	✗	✗	I
Middletown, CT	MTN1	41.55987	-72.6441				✗	J
Essex, CT	N/A	41.35198	-72.3844				✗	K

SAMPLE RESULTS

In this subsection, you will find graphical representations of Samplepalooza results 2014-2019. All three graphs are set to the same scale to easily compare sites to each other.

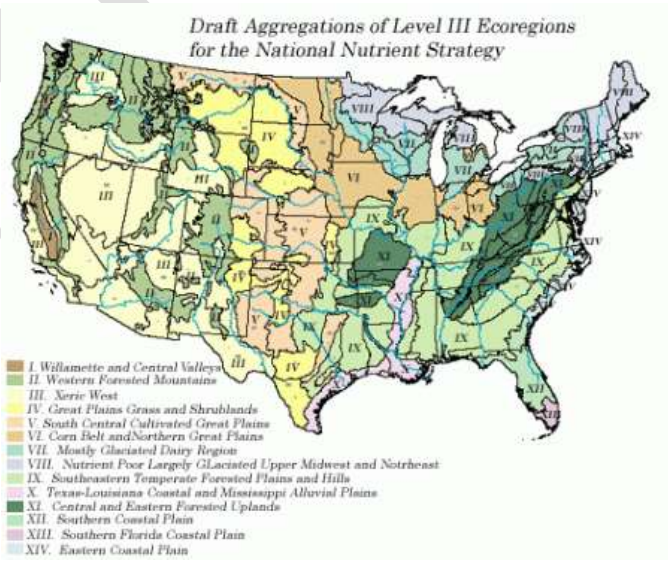


Figure 4 - Map of EPA Ecoregions

One of the challenges of interpreting this nutrient information is that each state has different criteria based on their water quality regulations and/or listing and assessment documentation. A water body that is considered impaired in one state may be meeting the standard in others. In the early 2000s, the US EPA released a series of ambient water quality recommendations for nutrient criteria by ecoregion. These recommendations are based on actual samples collected throughout each region. These are stringent, scientifically based, and consistent across state lines, so they are the criteria we are choosing to compare the results to. The Connecticut River watershed falls into two Ecoregions, "VIII: Nutrient Poor Largely Glaciated Upper Midwest And Northeast" and "XIV: Eastern Coastal Plains." The recommendations for Ecoregion VII are 0.38 mg/L for TN and 10.00 µg/L for TP. The recommendations for Ecoregion XIV are 0.71 mg/L for TN and 31.25 µg/L for TP. Any results that exceed the recommended concentration for the ecoregion they are located in have a dark bar over that level.

On a final note, all of these samples are single grab samples. We acknowledge that they may not be fully representative of the larger bodies of water. The goal of this project is not to assess water, rather to provide a unique look at a watershed scale. We are continually working to improve sampling procedures and make minor modifications to site locations to improve representativeness when needed.

Figure 5 - Northern Tributary Results

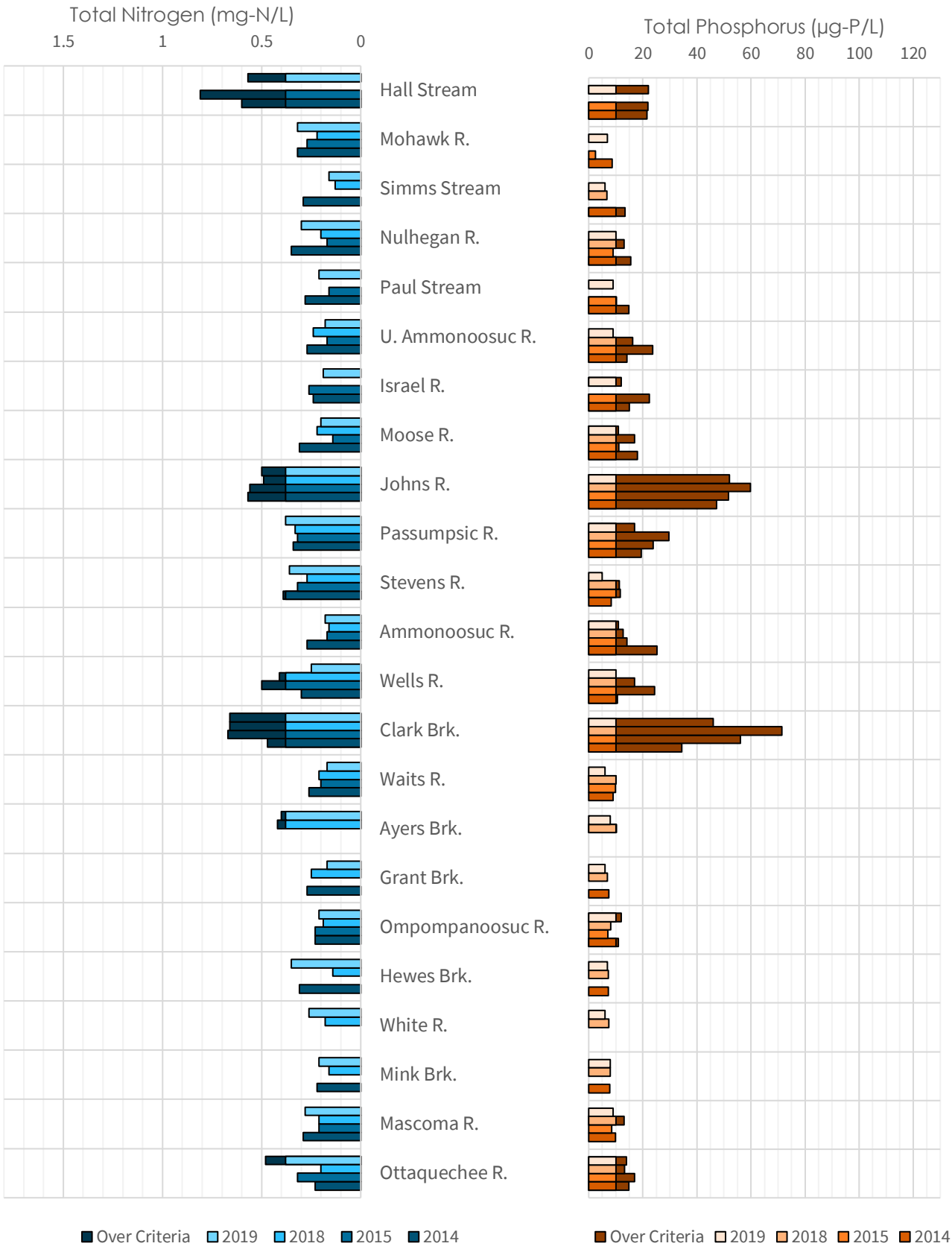


Figure 6 - Southern Tributary Results

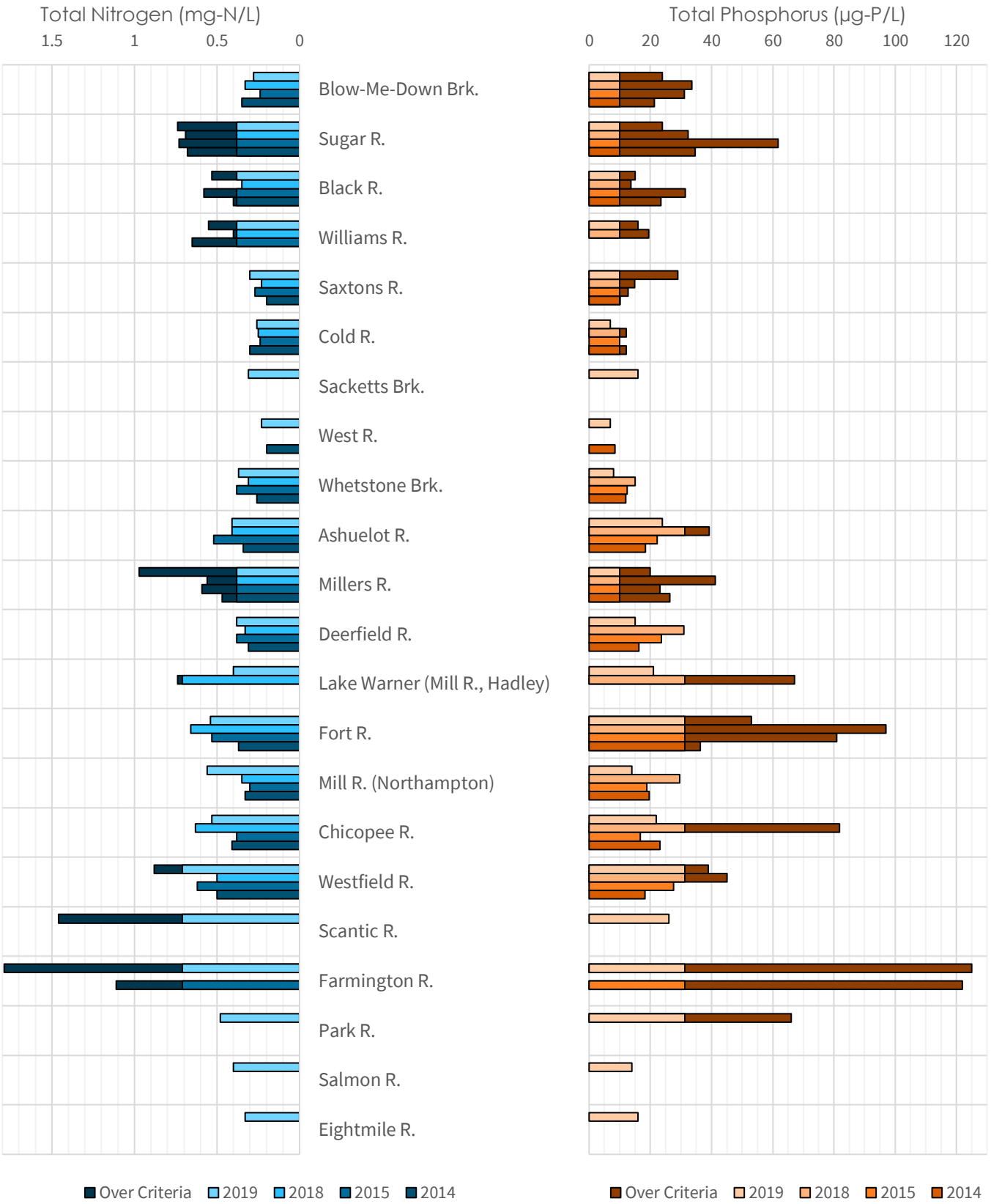
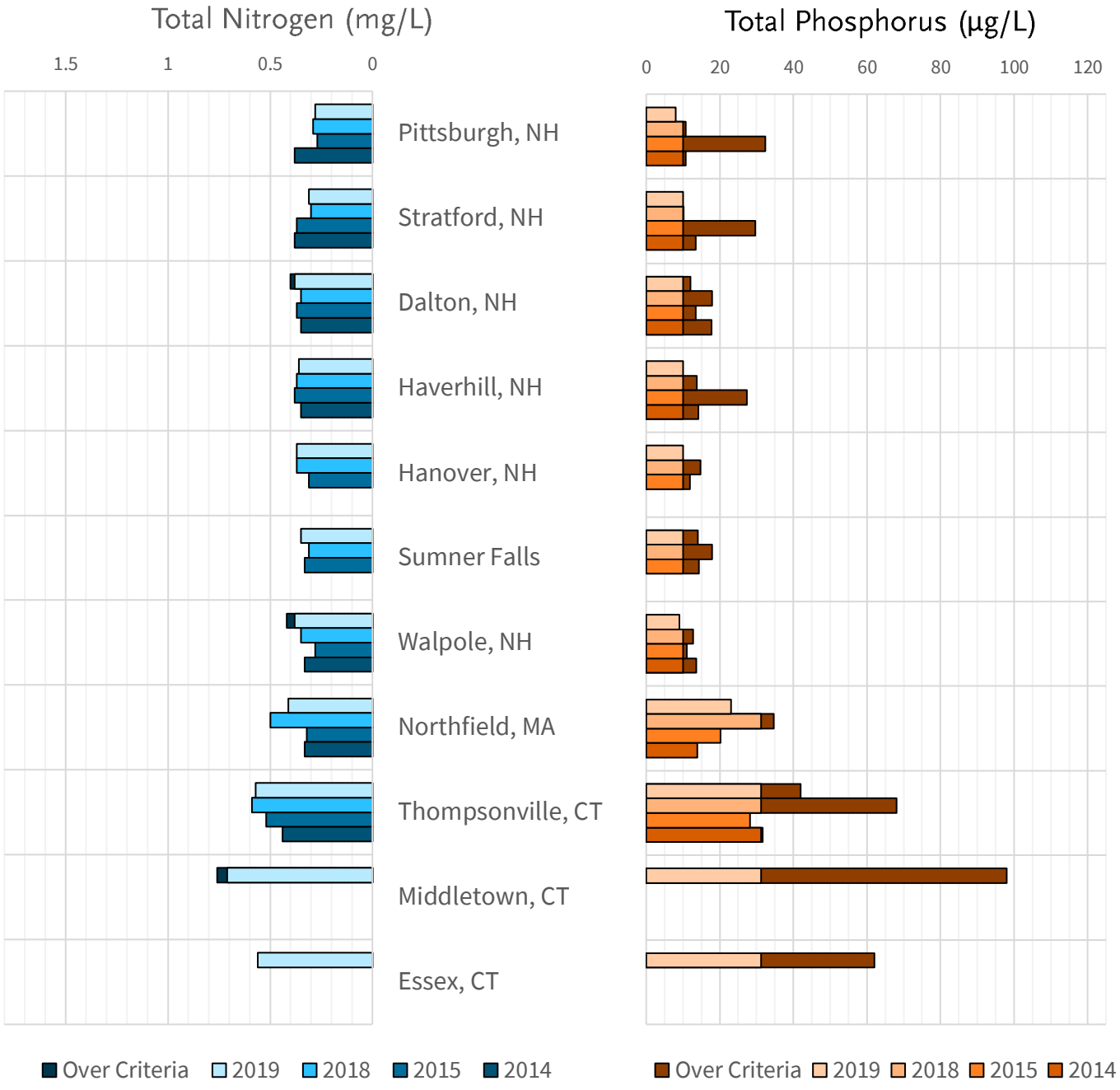


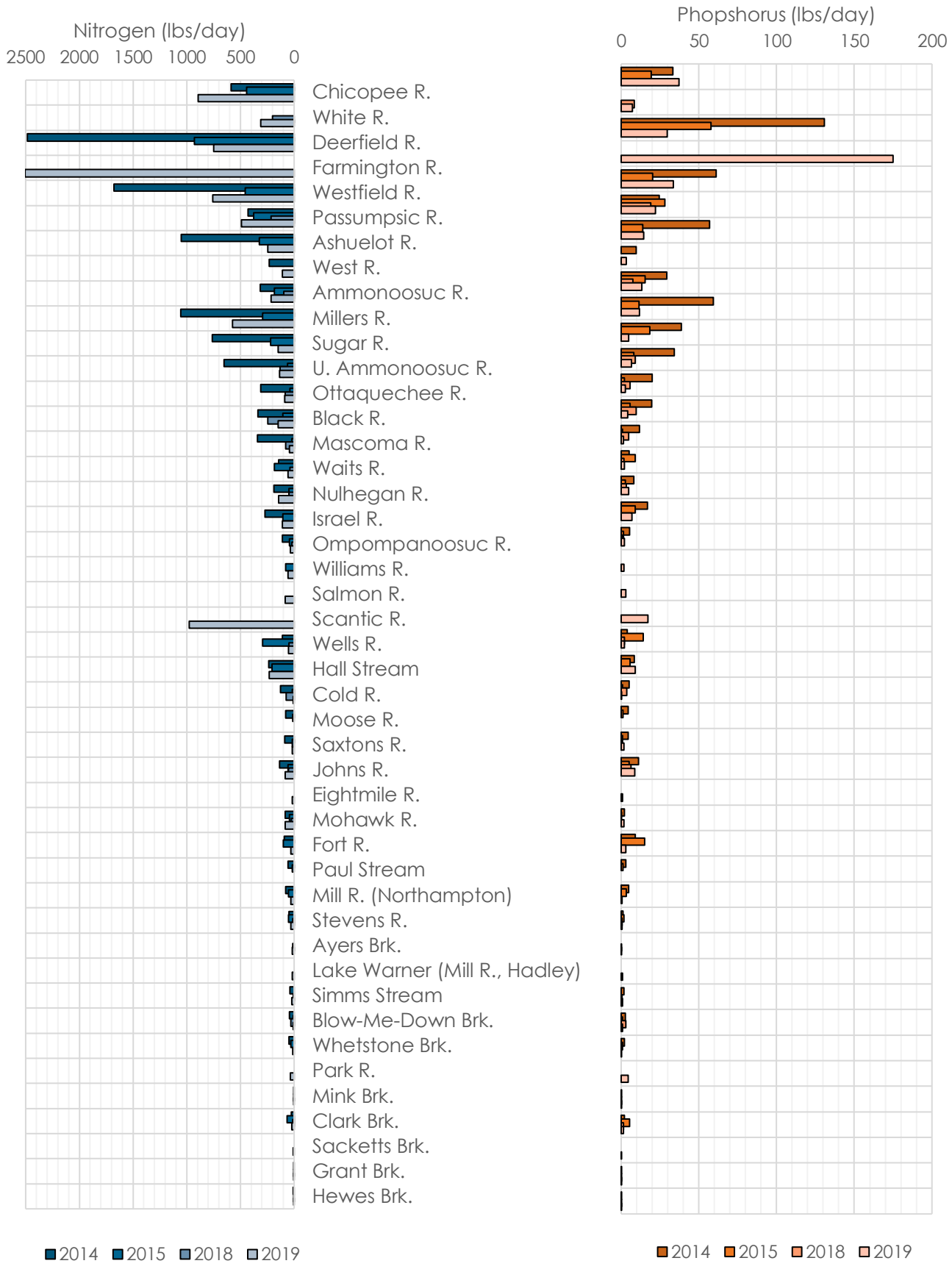
Figure 7 - Mainstem Results



LOADING

The above results are presented in concentrations (amount per a fixed volume). This sets all of the sites and tributaries equal to each other. However, tributaries have different flows and drainage areas and do not contribute equal amounts of water and therefore nutrients to the system. Concentration can be multiplied by flow (volume per time unit) to give you a loading value (amount per time unit) that allows a more accurate comparison between tributaries. The follow page features all tributaries arranged by drainage area from largest to smallest and presents the calculated loading values in pounds per day. This allows us to compare the relative impact of a tributary compared to others of similar size.

Figure 8 - Nitrogen & Phosphorus Loading by Tributary (2018 High Flows Excluded)



NEXT STEPS

Samplepalooza is happening again in 2020 on September 17th. The goal for 2020, as always, is to include more partners and increase communication between watershed groups and state agencies throughout the Connecticut River Watershed. In 2020, we will also be collecting samples to be analyzed for chlorides, as was done in 2014 & 2015. Another goal is to cover more tributaries that are smaller but heavily impacted by development or agriculture and overlooked by other regular monitoring initiatives.

The results from this project can be used to identify tributaries that may be impaired for nutrients or having a disproportionate impact on nutrient contributions to the Connecticut River and Long Island Sound. While these results cannot and should not be used for assessment, our hope is that by sampling a large number of tributaries annually, states and local watershed groups can identify watersheds that may be candidates for additional monitoring or restoration projects.

APPENDIX A: QUALITY ASSURANCE/QUALITY CONTROL

This appendix features the QA/QC measures as laid out in our Quality Assurance Project Plan (QAPP). A copy of the project QAPP is available upon request.

FIELD DUPLICATES/REPLICATES

Year	Site ID	TN (mg/L)			TP (ug/L)		
		Original Value	Duplicate Value	RPD	Original Value	Duplicate Value	RPD
2014	05-SMS	0.29	0.27	7%	13.5	12.8	5%
	01-HEW	0.31	0.29	7%	7.21	7.37	2%
	01-BMD	0.35	0.24	37%	21.3	23.1	8%
	Wells_0.6	0.3	0.31	3%	10.7	11.9	11%
	Black_1.5	0.4	0.43	7%	23.5	24.2	3%
	W0476	0.31	0.32	3%	16.3	15.7	4%
2015	25-CNT	0.33	0.32	3%	14.3	14.1	1%
	15-JHN	0.38	0.41	8%	42.7	44.4	4%
	First Branch White_6.6	0.15	0.16	6%	9.06	Sample Rejected	N/A
	Whetstone Bk_0.2	0.38	0.4	5%	12.5	14.8	17%
	W0475	0.38	0.38	0%	16.7	16.2	3%
	Simsbury	0.65	0.65	0%	96.1	98.4	2%
2018	LWBR01	0.74	0.73	1%	67.1	74.6	11%
	Saxtons_.19	0.23	0.22	4%	14.9	17.2	14%
	01-BMD	0.33	0.34	3%	33.6	34.5	3%
	Passumpsic_4.9	0.33	0.34	3%	29.6	24.1	20%
	30-CNT	0.37	0.34	8%	14.7	15.9	8%
2019	74-CNT Rte 3 N Favreau	0.28	0.37	28%	8	8	0%
	W1796	0.56	0.55	2%	14	15	7%
	01-MSC	0.28	0.26	7%	9	8	12%
	00-MHK	0.32	0.32	0%	7	7	0%
	Ompompanoosuc_3.8	0.21	0.2	5%	46	12	117%
	VT Town Brook Pond	1.42	1.39	2%	20	19	5%
Mean RPD		**7%**			**12%**		
RPD Goal		**20%**			**30%**		

The project is meeting the relative percent difference (RPD) goals on average.

In 2014, the Blow-Me-Down Brook TN replicate pair exceeded the RPD goal of 20%. The field sheet was checked for any sampling anomalies and none were found and both results were within reasonable expectations; the samples were not rejected.

In 2015, a field duplicate at First Branch White_6.6, could not be traced back to the site through Chain of Custody or the field sheet for that site; the volunteer stated she only collected a duplicate for TN at this site. The

duplicate was rejected because, though we got a result back from the lab, we could not verify which site it came from.

In 2019, the TN duplicate pair at 74-CNT exceeded the RPD goal of 20%. The field sheet was checked for any sampling anomalies and none were found and both results were within reasonable expectations; the samples were not rejected. The TP duplicate pair at Ompompanoosuc_3.8 was extremely far outside of the RPD goal of 30%. The field sheet was checked for any sampling anomalies and none were found but the duplicate value was more within expected values for the water body and was used in this report for the calculations instead of the original sample value, which we for rejection.

FIELD BLANKS

Year	Sample ID	TN (mg/L)	TP(ug/L)
2014	QC1	<0.1	<5
	QC3	<0.1	<5
	QC5	<0.1	<5
	QC7	<0.1	<5
	QC9	<0.1	<5
	QC11	<0.1	<5
2015	QC1	<0.1	<5
	QC3	<0.1	<5
	QC5	<0.1	<5
	QC7	<0.1	5.08
	QC9	<0.1	<5
	QC11	<0.1	<5
	QC13	<0.1	<5
2018	Field Blank Williams_.92	< 0.1	< 5
	Field Blank 01T-MKB	< 0.1	5.66
	Field Blank Moose TBD	< 0.1	< 5
	Field Blank 53-CNT	< 0.1	< 5
	Field Blank WO474	< 0.1	< 5
2019	BLANK - 25-CNT	<0.10	<5
	BLANK - CT Scantic	<0.10	<5
	BLANK - NH Ammonoosuc	<0.10	<5
	BLANK - VT Passumpsic	<0.10	<5
	BLANK - VT Saxtons	<0.10	<5
	BLANK - VT Town Brk	<0.10	<5

In 2015 and 2018, two individual TP blanks failed. Both results were just above the detectable limit and were accepted.

PERCENT COMPLETENESS

Parameter	Year	Total Number of Anticpated Samples	Valid Samples Collected & Analyzed	Percent Complete	Number of Sites	Number of Duplicates	Percent Duplicate	Number of Blanks	Percent Blanks
Total Nitrogen	2014	67	67	100%	55	6	11%	6	11%
	2015	79	79	100%	65	7	11%	7	11%
	2018	58	55	95%	45	5	11%	5	11%
	2019	71	70	99%	57	6	11%	6	11%
Total Phosphorus	2014	67	67	100%	55	6	11%	6	11%
	2015	79	78	99%	72	6	8%	7	10%
	2018	58	55	95%	45	5	11%	5	11%
	2019	71	69	97%	57	6	11%	6	11%

We met the project goals of greater than 90% completeness, and 10% each of duplicates and blanks except for TP duplicates in 2015 due to one rejected duplicate.

APPENDIX B: FULL RESULTS

Name	Site ID	Eco-Region	TN Results (mg-N/L)				TP Results (µg-P/L)			
			'14	'15	'18	'19	'14	'15	'18	'19
Hall Stream	02-HAS	7	0.6	0.81		0.57	21.5	21.9		22
Mohawk R.	00-MHK	7	0.32	0.27	0.22	0.32	8.66	2.5	0	7
Simms Stream	05-SMS	7	0.29		0.13	0.16	13.5		6.71	6
Nulhegan R.	Nulhegan_0.3	7	0.35	0.17	0.2	0.3	15.5	8.97	13	10
Paul Stream	Paul Stream _0.1	7	0.28	0.16		0.21	14.8	10.2		9
U. Ammonoosuc R.	01-UAM	7	0.27	0.17	0.24	0.18	14.2	23.7	16.2	9
Israel R.	02-ISR	7	0.24	0.26		0.19	15.1	22.4		12
Moose R.	Moose_14.3	7	0.31	0.14	0.22	0.2	18	11.1	17	11
Johns R.	01-JHN	7	0.57	0.56	0.49	0.5	47.2	51.6	59.8	52
Passumpsic R.	Passumpsic_4.9	7	0.34	0.32	0.33	0.38	19.4	23.9	29.6	17
Stevens R.	Stevens_1.4	7	0.39	0.32	0.27	0.36	8.33	11.7	11.3	5
Ammonoosuc R.	03-AMM	7	0.27	0.17	0.16	0.18	25.2	14.1	12.7	11
Wells R.	Wells_0.6	7	0.3	0.5	0.41	0.25	10.7	24.3	16.9	10
Clark Brk.	02-CKB	7	0.47	0.67	0.66	0.66	34.4	56.1	71.5	12
Waits R.	Waits_0.3	7	0.26	0.2	0.21	0.17	8.98	9.84	10.1	6
Ayers Brk.	Ayers Bk_0.3	7			0.42	0.4			10.3	8
Grant Brk.	02-GNB	7	0.27		0.25	0.17	7.38		6.86	6
Ompompanoosuc R.	Ompompanoosuc_3.8	7	0.23	0.23	0.19	0.21	11	7.16	8.21	12
Hewes Brk.	01-HEW	7	0.31		0.14	0.35	7.21		7.33	7
White R.	White_1.1	7			0.18	0.26			7.51	6
Mink Brk.	01T-MKB	7	0.22		0.16	0.21	7.72		8	8
Mascoma R.	01-MSC	7	0.29	0.21	0.21	0.28	9.95	8.44	13	9
Ottaquechee R.	OtR006	7	0.23	0.32	0.2	0.48	14.8	16.9	13.2	14
Blow-Me-Down Brk.	01-BMD	7	0.35	0.24	0.33	0.28	21.3	31.1	33.6	24
Sugar R.	01-SGR	7	0.68	0.73	0.69	0.74	34.6	61.7	32.3	24
Black R.	Black_1.5	7	0.4	0.58	0.35	0.53	23.5	31.4	13.7	15
Williams R.	Williams_0.92	7		0.65	0.4	0.55			19.5	16
Saxtons R.	Saxtons_.19	7	0.2	0.27	0.23	0.3	10.1	12.8	14.9	29
Cold R.	02-CLD	7	0.3	0.24	0.25	0.26	12.1	9.98	12.1	7
Sacketts Brk.	Sacketts_1.0	14				0.31				16
West R.	West_1.4	14	0.2			0.23	8.45			7
Whetstone Brk.	Whetstone Bk_0.2	14	0.26	0.38	0.31	0.37	12	12.5	15	8
Ashuelot R.	02-ASH	14	0.34	0.52	0.41	0.41	18.4	22.2	39.3	24
Millers R.	W0690	7	0.47	0.59	0.56	0.97	26.4	23.1	41.3	20
Deerfield R.	W0476	14	0.31	0.38	0.33	0.38	16.3	23.6	30.9	15
Lake Warner (Mill R., Hadley)	LWBR01	14			0.74	0.4			67.1	21
Fort R.	W1051	14	0.37	0.53	0.66	0.54	36.4	80.9	97	53
Mill R. (Northampton)	W1796	14	0.33	0.3	0.35	0.56	19.7	18.8	29.6	14
Chicopee R.	W0475	14	0.41	0.38	0.63	0.53	23.2	16.7	81.8	22
Westfield R.	W0474	14	0.5	0.62	0.5	0.88	18.2	27.6	45.1	39

Name	Site ID	Eco-Region	TN Results (mg-N/L)				TP Results (µg-P/L)			
			'14	'15	'18	'19	'14	'15	'18	'19
Scantic R.	EW3	14				1.46				26
Farmington R.	FR-W2	14		1.11		1.79		122		125
Park R.	N/A	14				0.48				66
Salmon R.	N/A	14				0.4				14
Eightmile R.	N/A	14				0.33				16
Pittsburgh, NH	74-CNT	7	0.38	0.27	0.29	0.28	10.7	32.4	10.8	8
Stratford, NH	67-CNT	7	0.38	0.37	0.3	0.31	13.5	29.7	10.2	10
Dalton, NH	53-CNT	7	0.35	0.37	0.35	0.4	17.8	13.5	17.9	12
Haverhill, NH	43-CNT	7	0.35	0.38	0.37	0.36	14.2	27.3	13.8	10
Hanover, NH	30-CNT	7		0.31	0.37	0.37		11.9	14.7	10
Sumner Falls	25-CNT	7		0.33	0.31	0.35		14.3	17.9	14
Walpole, NH	10-CNT	7	0.33	0.28	0.35	0.42	13.6	11.1	12.8	9
Northfield, MA	01-CNT/W0478	14	0.33	0.32	0.5	0.41	13.9	20.2	34.7	23
Thompsonville, CT	W1395	14	0.44	0.52	0.59	0.57	31.6	28.2	68.1	42
Middletown, CT		14				0.76				98
Essex, CT		14				0.56				62