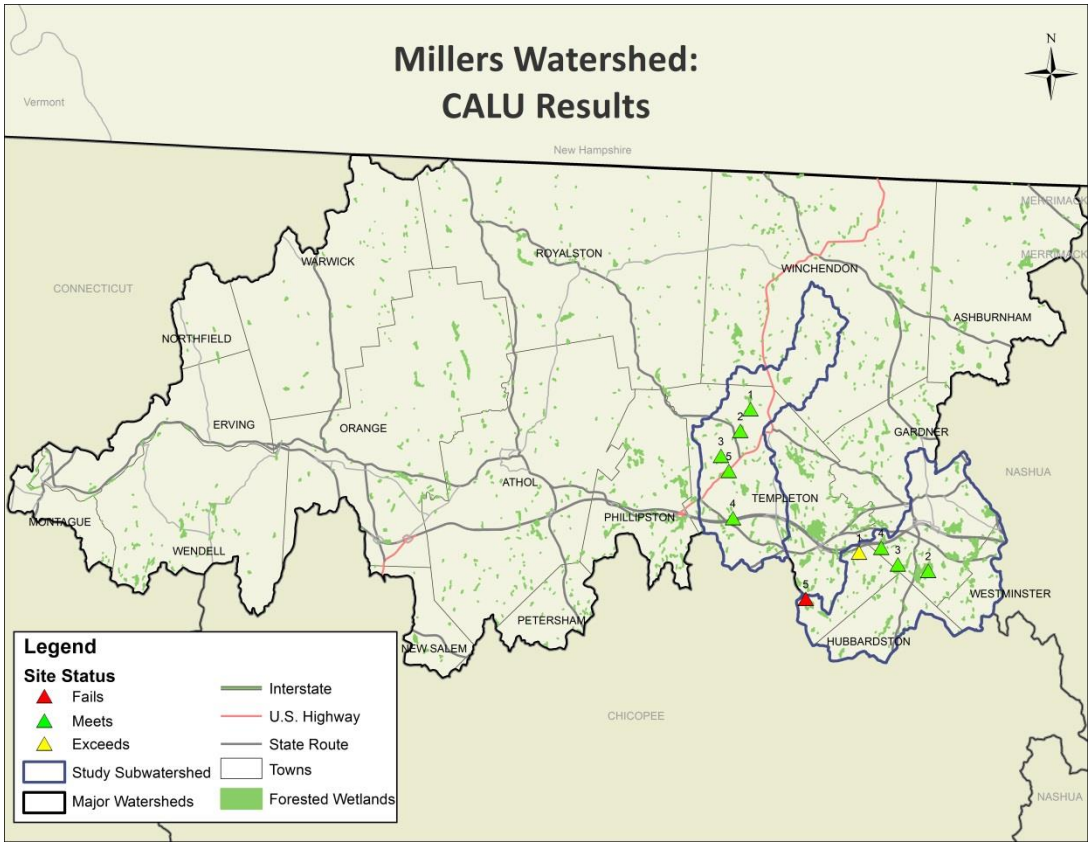
Appendix C:

IBI and CALU Assessment Results and Data for IEI Metric and Three Stressor/Resiliency Metric

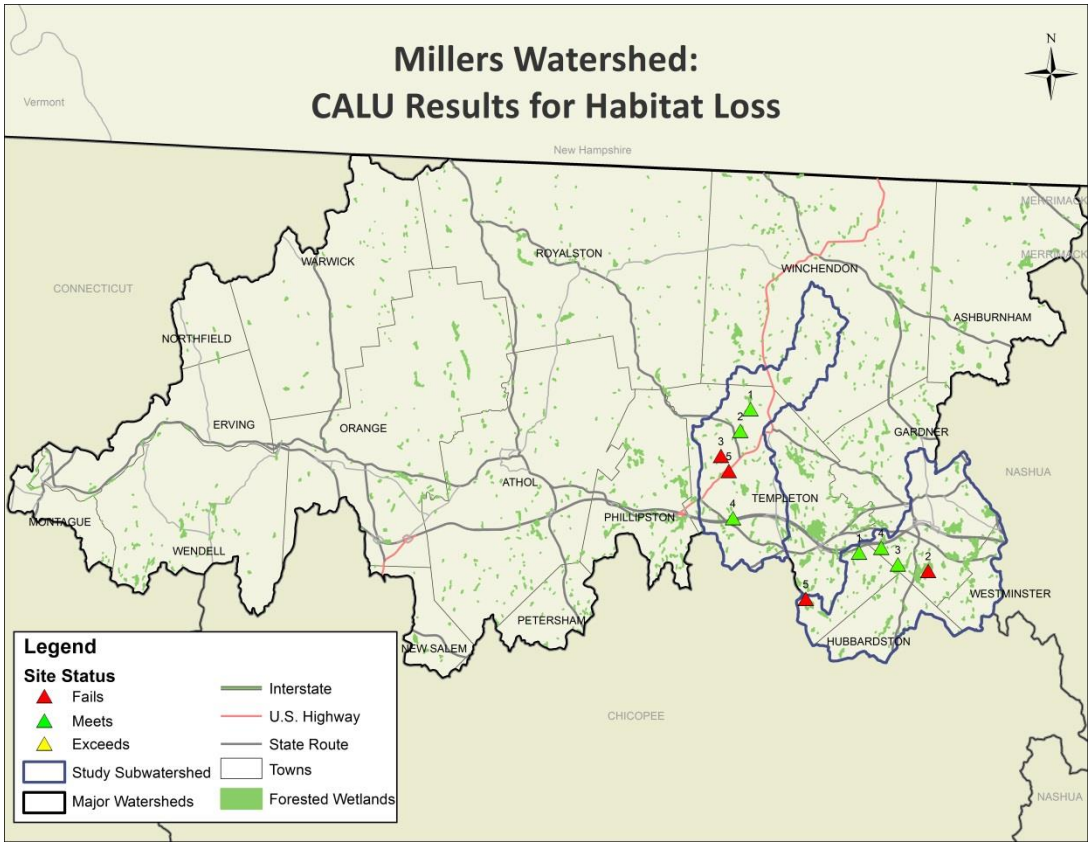
Central Study Watershed: CALU Results

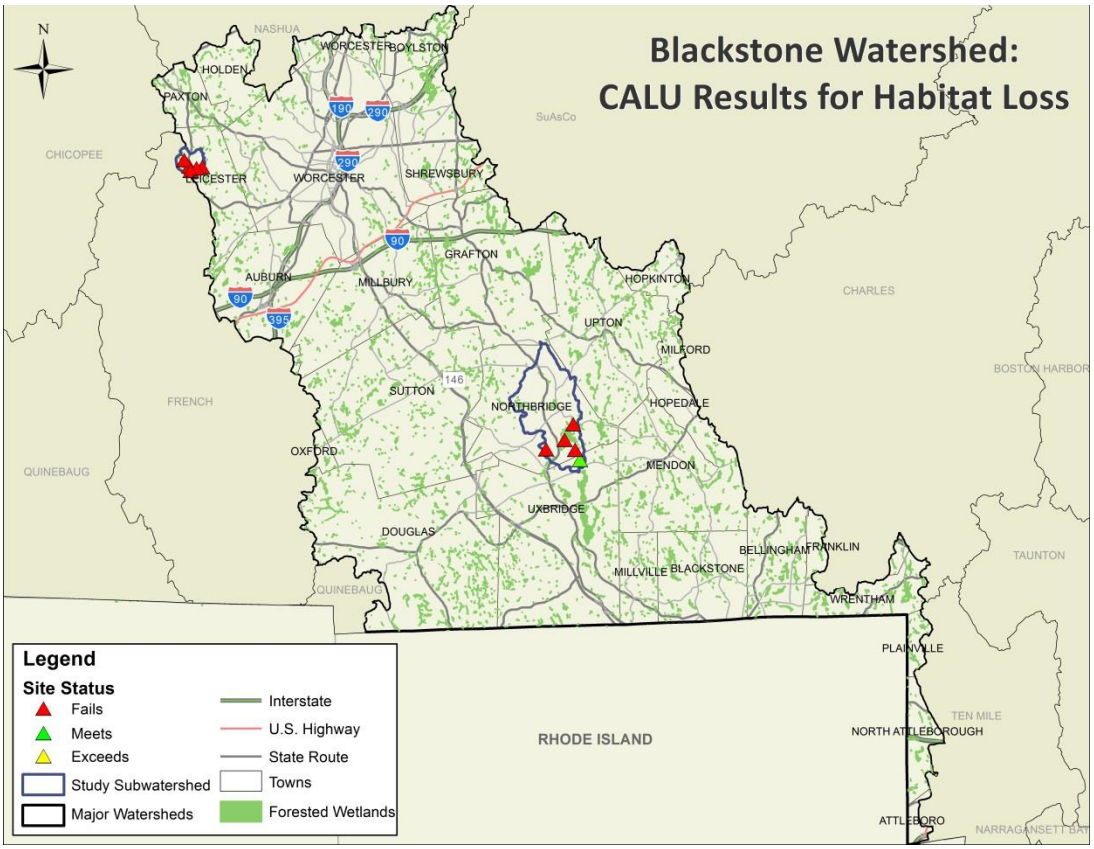


Eight of the sites sampled in the Millers Watershed met expectations, one of the sites exceeded expectations, and the other one failed to meet expectations. Eight of the sites sampled in the Blackstone Watershed met expectations, and two of the sites failed to meet expectations.

SITE_ID	TOWN	IBI Score IEI	Target Score IEI	Compliance Level IEI	Percentile IEI
LowOtter1	Templeton	0.5446	0.620000005	Meets expectations	37
LowOtter2	Templeton	0.3862	0.660000026	Meets expectations	15
LowOtter3	Templeton	0.2278	0.379999995	Meets expectations	23
LowOtter4	Templeton	0.7525	0.389999986	Meets expectations	87
LowOtter5	Templeton	0.2872	0.540000021	Meets expectations	17
UpOtter1	Templeton	0.9406	0.409999996	Exceeds expectations	96
UpOtter2	Gardner	0.4852	0.389999986	Meets expectations	64
UpOtter3	Gardner	0.3961	0.5	Meets expectations	33
UpOtter4	Gardner	0.5743	0.419999987	Meets expectations	72
UpOtter5	Templeton	0.2872	0.660000026	Fails to meet expectations	9
BStone1	Northbridge	0.0397	0.389999986	Meets expectations	11
BStone2	Uxbridge	0.0298	0.419999987	Fails to meet expectations	8
BStone3	Northbridge	0.0694	0.589999974	Fails to meet expectations	4
BStone4	Uxbridge	0.4654	0.589999974	Meets expectations	27
BStone5	Northbridge	0.4357	0.569999993	Meets expectations	25
Kettle1	Leicester	0.1882	0.50999999	Meets expectations	11
Kettle2	Leicester	0.1288	0.49000001	Meets expectations	10
Kettle3	Leicester	0.2674	0.620000005	Meets expectations	11
Kettle4	Leicester	0.4852	0.680000007	Meets expectations	21
Kettle5	Leicester	0.1981	0.430000007	Meets expectations	18

Central Study Watershed: CALU Results for Habitat Loss

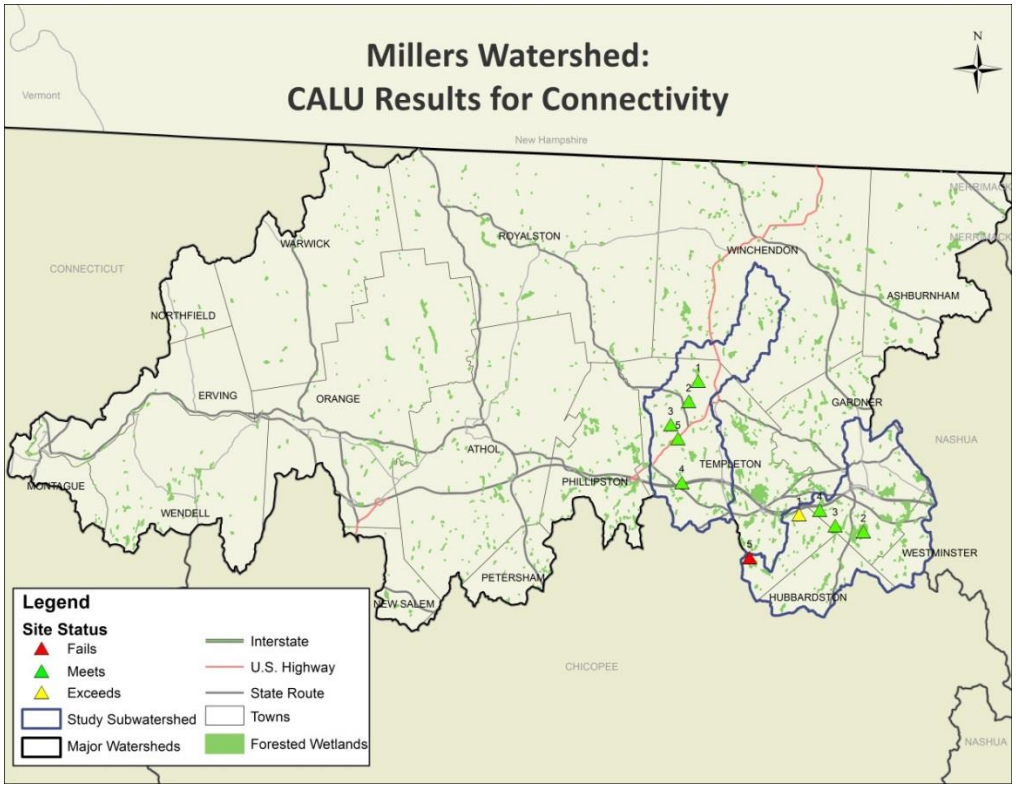


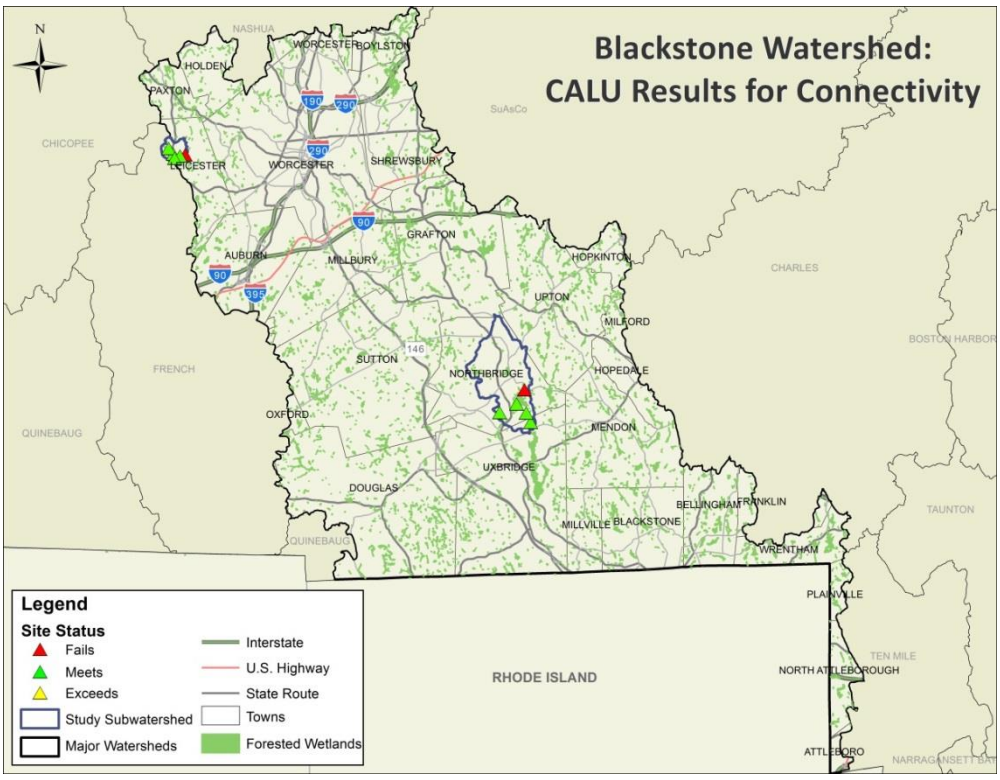


Habitat loss is a stressor metric. It measures the intensity of all forms of anthropogenic development in the neighborhood of and underdeveloped area. Results of this metric analysis were wide ranging and more specific data collection would be necessary to make any conclusive findings.

SITE_ID	TOWN	IBI Score Habitat Loss	Target Score Habitat Loss	Compliance Level Habitat Loss	Percentile Habitat Loss
LowOtter1	Templeton	0.24572704	0.045931425	Meets expectations	10
LowOtter2	Templeton	0.26108498	0.103768244	Meets expectations	13
LowOtter3	Templeton	0.50681202	0.163634449	Fails to meet expectations	2
LowOtter4	Templeton	0.16125837	0.106876425	Meets expectations	32
LowOtter5	Templeton	0.37626953	0.061349269	Fails to meet expectations	3
UpOtter1	Templeton	0.03839485	0.07799869	Meets expectations	60
UpOtter2	Gardner	0.26108498	0.0384105	Fails to meet expectations	8
UpOtter3	Gardner	0.29947983	0.114307493	Meets expectations	11
UpOtter4	Gardner	0.1535794	0.054112654	Meets expectations	22
UpOtter5	Templeton	0.34555365	0.109673381	Fails to meet expectations	8
BStone1	Northbridge	0.48377511	0.226550221	Fails to meet expectations	7
BStone2	Uxbridge	0.19965322	0.034311756	Meets expectations	13
BStone3	Northbridge	0.49913305	0.025562296	Fails to meet expectations	0
BStone4	Uxbridge	0.27644292	0.034255434	Fails to meet expectations	8
BStone5	Northbridge	0.28412189	0.050216876	Fails to meet expectations	8
Kettle1	Leicester	0.49145408	0.054803759	Fails to meet expectations	1
Kettle2	Leicester	0.48377511	0.092387989	Fails to meet expectations	1
Kettle3	Leicester	0.43770129	0.032380238	Fails to meet expectations	1
Kettle4	Leicester	0.23804807	0.028222907	Fails to meet expectations	9
Kettle5	Leicester	0.34555365	0.065607712	Fails to meet expectations	5

Central Study Watershed: CALU Results for Connectivity

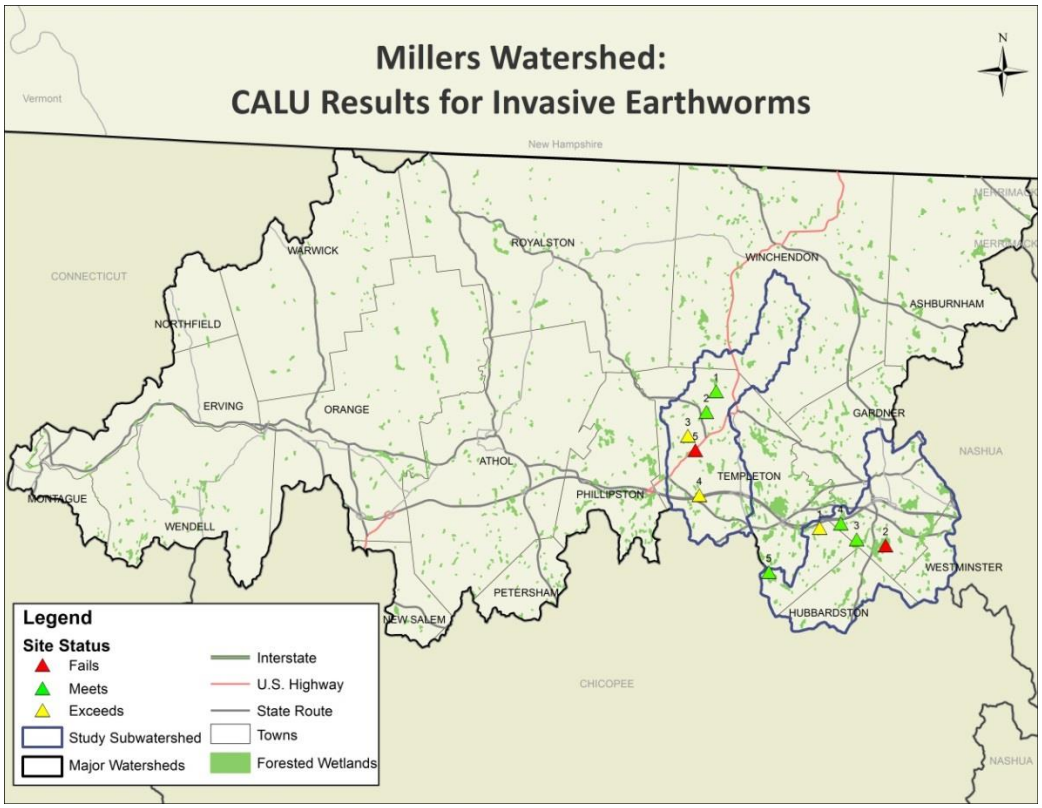


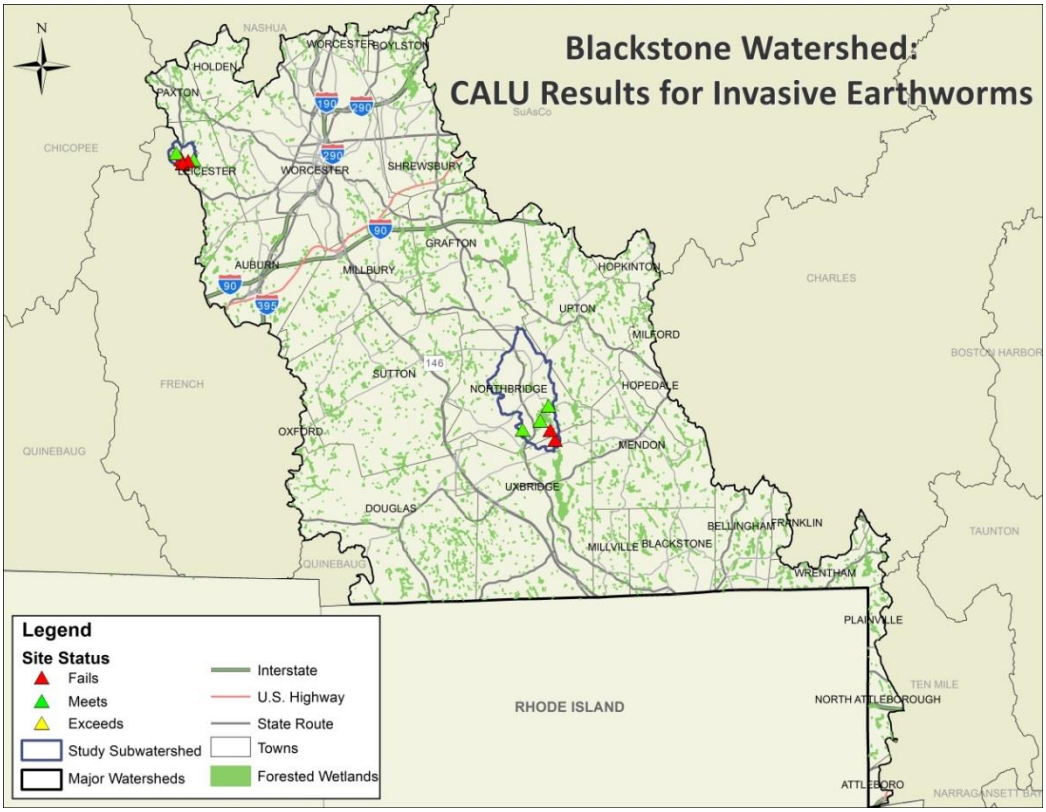


The connectedness metric is a resiliency metric, in that it identifies the degree that a wetlands can recover or adapt to perturbations. It measures the disruption of habitat connectivity caused by all forms of anthropogenic development between and surrounding the undeveloped landscape. The results of this metric analysis showed that most sites performed as expected given their landscape context. The few sites that failed to perform as expected would require further site specific analysis to determine the cause.

SITE_ID	TOWN	IBI Score Connectedness	Target Score Connectedness	Compliance Level Connectedness	Percentile Connected-ness
LowOtter1	Templeton	0.13421648	0.104080118	Meets expectations	62
LowOtter2	Templeton	0.10367208	0.158312634	Meets expectations	22
LowOtter3	Templeton	0.07923656	0.162313342	Meets expectations	12
LowOtter4	Templeton	0.05480104	0.118472196	Meets expectations	19
LowOtter5	Templeton	0.07618212	0.15205346	Meets expectations	15
UpOtter1	Templeton	0.2655574	0.097718991	Exceeds expectations	98
UpOtter2	Gardner	0.13116204	0.076414108	Meets expectations	72
UpOtter3	Gardner	0.1281076	0.099712923	Meets expectations	61
UpOtter4	Gardner	0.0670188	0.084723182	Meets expectations	41
UpOtter5	Templeton	0.09145432	0.20039323	Fails to meet expectations	6
BStone1	Northbridge	0.01814776	0.134343192	Fails to meet expectations	5
BStone2	Uxbridge	0.01203888	0.075962245	Meets expectations	19
BStone3	Northbridge	0.00593	0.087003991	Meets expectations	12
BStone4	Uxbridge	0.08534544	0.068335287	Meets expectations	58
BStone5	Northbridge	0.10367208	0.073115848	Meets expectations	62
Kettle1	Leicester	0.04258328	0.109614804	Meets expectations	18
Kettle2	Leicester	0.00898444	0.112733729	Fails to meet expectations	7
Kettle3	Leicester	0.082291	0.108808115	Meets expectations	35
Kettle4	Leicester	0.14948868	0.15353398	Meets expectations	49
Kettle5	Leicester	0.21363192	0.111289322	Meets expectations	89

Central Study Watershed: CALU Results for Invasive Earthworms

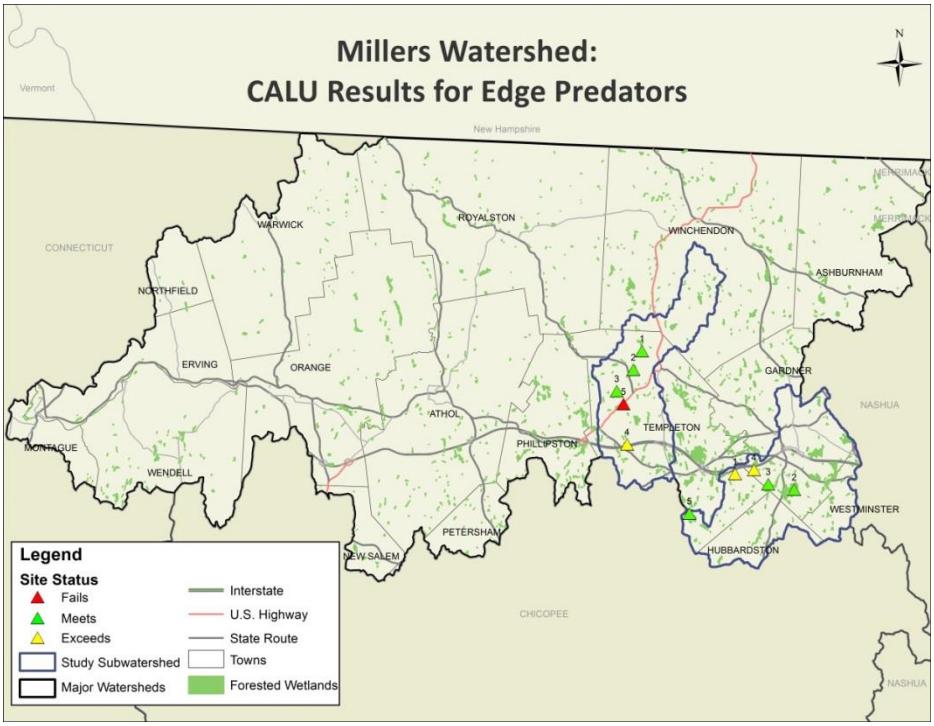


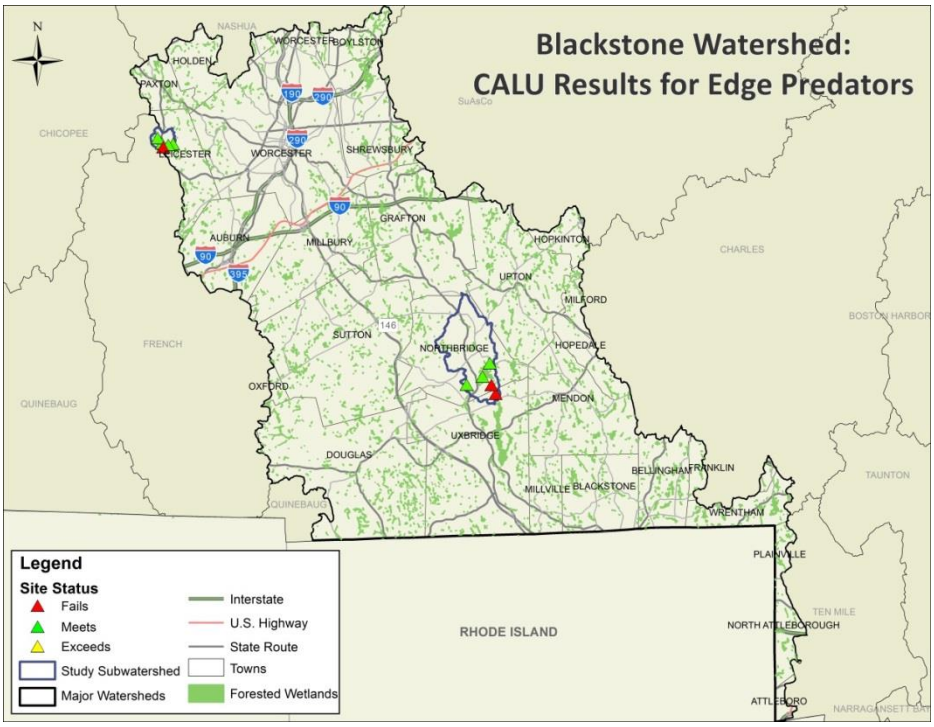


Measures the intensity of development associated with sources of non-native invasive earthworms in the neighborhood surrounding the area. Non-native invasive earthworms breakdown nutrient rich organic matter, which stresses removing available nutrients. This can lead to decreased biodiversity and increased invasive plants. Several of the sites failed, but further investigation would be needed to make any conclusive findings.

SITE_ID	TOWN	IBI Score Invasive Earthworms	Target Score Invasive Earthworms	Compliance Level Invasive Earthworms	Percentile Invasive Earthworms
LowOtter1	Templeton	0.1093473	0.037544552	Meets expectations	19
LowOtter2	Templeton	0.13486167	0.043908443	Meets expectations	13
LowOtter3	Templeton	0.2551437	0.365248621	Exceeds expectations	92
LowOtter4	Templeton	0.00728982	0.135977089	Exceeds expectations	94
LowOtter5	Templeton	0.26607843	0.092218615	Fails to meet expectations	2
UpOtter1	Templeton	0	0.109361999	Exceeds expectations	92
UpOtter2	Gardner	0.29888262	0.064388081	Fails to meet expectations	1
UpOtter3	Gardner	0.13486167	0.139079705	Meets expectations	56
UpOtter4	Gardner	0.01822455	0.081828095	Meets expectations	83
UpOtter5	Templeton	0.13850658	0.229117244	Meets expectations	90
BStone1	Northbridge	0.24420897	0.299630076	Meets expectations	82
BStone2	Uxbridge	0.364491	0.045518685	Fails to meet expectations	0
BStone3	Northbridge	0.32075208	0.061433587	Fails to meet expectations	0
BStone4	Uxbridge	0.10205748	0.051709946	Meets expectations	25
BStone5	Northbridge	0.12028203	0.147264421	Meets expectations	72
Kettle1	Leicester	0.23691915	0.095066629	Fails to meet expectations	5
Kettle2	Leicester	0.19318023	0.170368075	Meets expectations	33
Kettle3	Leicester	0.21140478	0.051159602	Fails to meet expectations	4
Kettle4	Leicester	0.09476766	0.079499595	Meets expectations	36
Kettle5	Leicester	0.34991136	0.160814524	Fails to meet expectations	2

Central Study Watershed: CALU Results for Edge Predators





Edge predators are animals mid-level on the food chain such as raccoons and skunks that predate upon other, smaller animals, and are also predated upon by larger predators. When edge predator populations expand, it creates stress on he population of smaller animals on the food chain, such as reptiles and amphibians and can impact biological conditions. Edge predators benefit from human activity, such as suburbanization which results in increased food sources (i.e. garbage). The Edge predator metric is based on land use that provide increased habitat and food sources. The CALU results indicate that a few site exceed expectations – possibly indicating restoration of land uses (e.g. agricultural fields reverting back to forest) – further investigation would be needed to make any conclusive findings.

SITE_ID	TOWN	IBI Score Edge Predators	Target Score Edge Predators	Compliance Level Edge Predators	Percentile Edge Predators
LowOtter1	Templeton	0.15494028	0.129018888	Meets expectations	35
LowOtter2	Templeton	0.19719672	0.137249067	Meets expectations	28
LowOtter3	Templeton	0.4225644	0.313939691	Meets expectations	18
LowOtter4	Templeton	0.00469516	0.275653988	Exceeds expectations	99
LowOtter5	Templeton	0.40378376	0.14292182	Fails to meet expectations	2
UpOtter1	Templeton	0	0.225058481	Exceeds expectations	97
UpOtter2	Gardner	0.3756128	0.261375278	Meets expectations	17
UpOtter3	Gardner	0.28640476	0.20654726	Meets expectations	24
UpOtter4	Gardner	0.02817096	0.244806394	Exceeds expectations	97
UpOtter5	Templeton	0.2817096	0.271316409	Meets expectations	40
BStone1	Northbridge	0.34744184	0.323641807	Meets expectations	35
BStone2	Uxbridge	0.469516	0.196968988	Fails to meet expectations	1
BStone3	Northbridge	0.3756128	0.083933815	Fails to meet expectations	1
BStone4	Uxbridge	0.13146448	0.239791289	Meets expectations	86
BStone5	Northbridge	0.15494028	0.253725022	Meets expectations	85
Kettle1	Leicester	0.33335636	0.232932284	Meets expectations	21
Kettle2	Leicester	0.28640476	0.195298836	Meets expectations	23
Kettle3	Leicester	0.31927088	0.201655671	Meets expectations	16
Kettle4	Leicester	0.15024512	0.21839647	Meets expectations	78
Kettle5	Leicester	0.34991136	0.160814524	Fails to meet expectations	2