

# Habitat Inventory of the Batten Kill Main Stem

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## Background

Stream habitat inventories provide fishery managers with the baseline information needed to not only evaluate the existing condition of a stream but to detect trends in habitat changes, to identify factors limiting the productive capabilities of habitats, and to assess the effectiveness of management activities within the watershed. Periodic inventories conducted according to an established protocol should produce data which is comparable both through time and between watersheds where similar inventories have been completed. Although the Vermont Fish & Wildlife Department has been intensively monitoring and evaluating the Batten Kill fishery since the early 1970s, no comprehensive stream habitat inventory had been completed. In response to the need for baseline data such an inventory provides, the Department conducted a modified Hankin and Reeves (Hankin and Reeves, 1988) stream habitat inventory from 2000 to 2004.

## Study Objectives

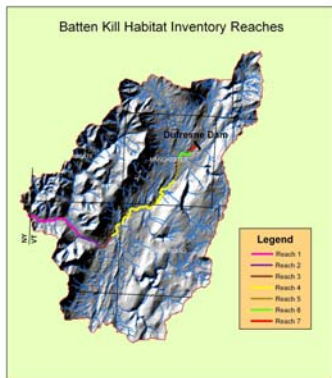
- Inventory the existing instream and riparian conditions in the 20 miles of Batten Kill main stem from the New York state line upstream to Dufresne Pond dam in Manchester, Vermont.
- The survey was designed specifically for the assembly of baseline data of current habitat conditions and for the precursory evaluation of brown and brook trout optimal habitat requirements.

## Study Methods

The Batten Kill habitat inventory utilized methods presented in “*Stream Inventory Handbook, Version 9.8*” (USDA, Forest Service 1998). These methods were slightly modified to reflect the relatively large size of the Batten Kill and to accommodate the objective of evaluating trout cover within the study area. Proceeding upstream from the New York state line, a three-person crew traversed the length of the main stem identifying distinct habitat units and classifying each as pool, riffle, or side channel. The length, width, and average/maximum depth of each unit were recorded and data was collected on the substrate composition, stream bank stability, and woody debris. The tail crest depth of each pool was measured and a qualitative assessment of trout cover within the unit was made based on size and depth of the pool and the percent area of the pool providing suitable cover. At every fifth habitat unit, additional measurements were made including bankfull/floodprone widths and depths, inner/outer riparian zone widths and types, and substrate embeddedness. The length, width, and temperature of tributaries and springs were recorded throughout the study area.

## Results

- Twenty miles of the Batten Kill main stem were inventoried and data collected on the type, length, width, depth, substrate, embeddedness, riparian zone, bankfull and floodprone characteristics, woody debris, and cover quality of each of the 267 habitat units identified.
- Seven distinct reaches collectively containing 154 pools, 81 riffles, and 32 side channels were identified and inventoried.

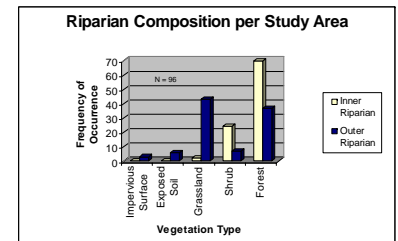
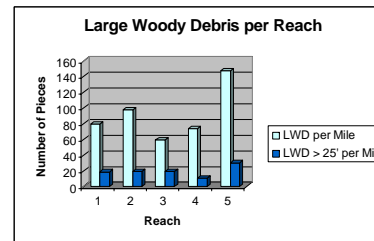
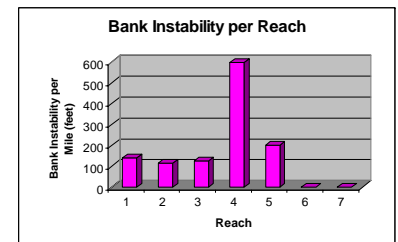
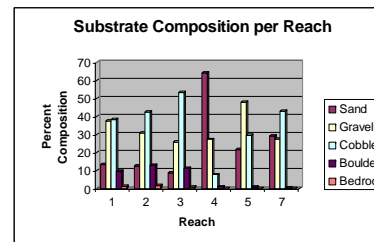
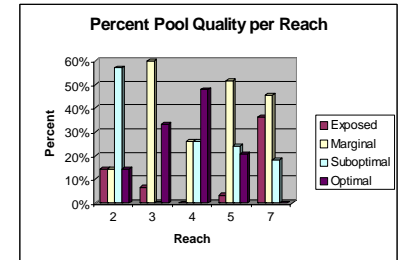


## General Reach Data

Reach	Length (miles)	Feet		
		Average Width	Average Depth	Floodprone Width
1	4.6	81.9	3.3	451.8
2	1.7	72.3	3.2	251.0
3	1.5	67.6	2.8	1070.0
4	9.0	52.1	5.3	941.7
5	1.9	40.3	2.5	447.2
6	1.5	31.0	7.2	N/A
7	0.6	31.2	2.0	96.0

## General Pool Data

Reach	Pool: Riffle Ratio	% Pool Area	% Pool Area >2' Deep	Feet			
				Ave. Distance Between Pools	Ave. Depth	Max. Depth	Ave. Residual Depth
1	3.5	77.3	49.1	162.2	4.9	9.5	3.3
2	5.5	84.2	37.3	103.5	4.2	6.5	2.8
3	0.9	46.4	33.0	290.1	4.4	7.0	2.8
4	18.1	94.7	70.4	50.7	6.0	16.0	4.1
5	1.0	47.9	22.9	172.2	3.7	7.0	2.8
7	3.3	78.1	17.9	75.1	2.9	6.0	2.2



## Conclusion

- Habitat inventory data analysis will guide future decisions regarding habitat protection and restoration measures aimed at improving watershed health and the recreational fishery on the Batten Kill.
- Information gathered via this inventory will serve as the basis for stream monitoring, evaluation, and management programs.

## Acknowledgements

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## References

Hankin, D. G., and G. H. Reeves. 1988. Estimating total fish abundance and total habitat area in small streams based on visual estimation methods. *Can. J. Fish. Aquat. Sci.* 45:834-844.

United States Department of Agriculture, Forest Service. 1998. *Stream Inventory Handbook, Version 9.8.*