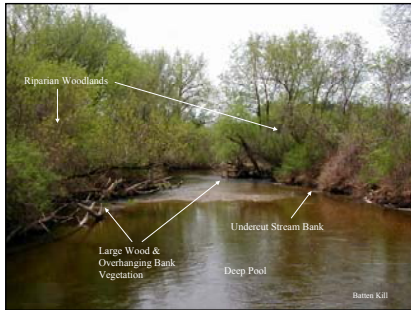


Assessment of Adult Brown Trout Cover in the Batten Kill

Kenneth M. Cox, Vermont Fish & Wildlife Department • Scott Wixsom, U.S. Forest Service – Green Mountain National Forest

Background

Trout cover is defined as any bank or channel feature “that allows trout to avoid the impact of the elements or enemies” (Binns and Eiserman 1979). It is an essential component of trout habitat and takes many forms, such as overhanging vegetation, undercut stream banks, large woody debris, boulders, aquatic vegetation, deep pools, and surface turbulence. Cover occurs in streams as a result of geomorphologic processes, interaction with the riparian vegetative community, and stream flow (Wesche et al. 1987). The characteristics of cover required by brown trout have been studied extensively; however, the precise amount of it necessary to support a healthy population has not been well documented. Shirvell and Dungely (1983) cite research indicating stream-residing trout use as little as 15% of the available habitat. More specific to brown trout, a value of 35% of the total stream area has been reported as adequate for adult fish (Raleigh et al. 1986).



Study Objective

- Survey current brown trout cover in representative samples of Batten Kill pool and riffle habitats.
- Evaluate cover based on a suitability target range of 15-35% of channel wetted area.

Study Methods

The amount of cover available to yearling and larger brown trout in the Batten Kill main stem was surveyed using the Habitat Quality Index (HQI) methodology developed by Binns (1982). HQI methods provide little guidance in terms of defining quantitative criteria useful to field survey crews enabling identification and measurement of brown trout cover with relative consistency, therefore criteria were developed by drawing upon other published scientific investigations of brown trout habitat and use. A randomly-selected sample of one out of five pools and riffles was surveyed. The amount of available cover in each habitat unit (pool or riffle) surveyed was expressed as the percentage of the wetted area meeting the specified criteria.

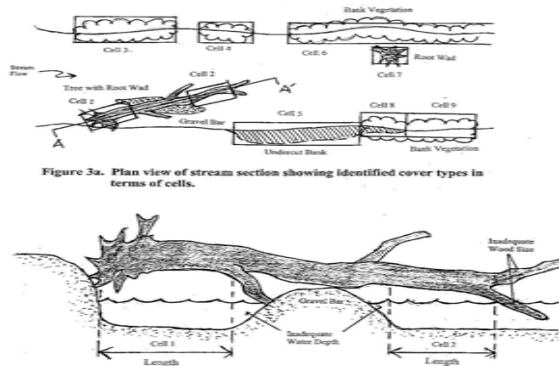


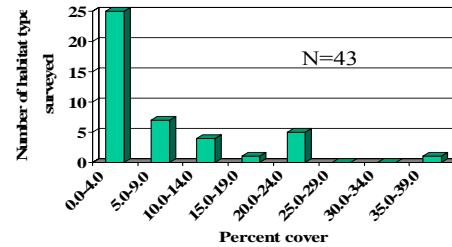
Figure 3b. Cross section A-A' from Figure 3a illustrating cells identified on the basis of the cover criteria for a log with an attached root wad.

Results

- Eighty-four percent of the habitat units surveyed in the Batten Kill main stem are deficient at the 15% coverage level and 98% are below 35% level.
- Based on our samples of pool and riffle habitats, the total wetted area of each affected by cover is 9.7% and 2.6%, respectively.
- As would be expected, deep water (≥ 4 feet) is the primary cover type in pools comprising 6.1% of the total wetted area for this habitat type.
- Next in importance are hard structures, such as large wood and coarse substrate, at 1.2%; revetments (stone riprap and bridge abutments), 1.0%; and overhanging stream bank vegetation, 1.0%.
- Cover within riffle habitats is generally lacking. Each of the identified cover types is $<1\%$ of the total riffle wetted area.

Summary statistics for the current condition in the lower Batten Kill.

Habitat type	Average %	Median %	Maximum %	Minimum %	Sample size
Pools	9.24	5.51	35.22	0.17	29
Riffles	2.83	1.62	9.1	0	14
Overall	7.15	3.98	35.22	0	43



Conclusion

- The amount of measured adult brown trout cover habitat in the Batten Kill main stem falls significantly short of the desired condition of 15-30% of the wetted channel area.
- Cover is a critical habitat component for adult brown trout and inadequate cover exposes fish to threats and stresses that may decrease their survival and/or fitness.
- Lack of adequate cover increases fish vulnerability to predators, flood events, and winter ice formation.

Acknowledgements

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