Testimony of Peter C. Patton before the Environment Committee

In Support of **H.B. No. 5820,** AN ACT CONSERVING NATURAL VEGETATION NEAR WETLANDS AND WATERCOURSES

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I strongly support H.B. No. 5820, An Act Conserving Natural Vegetation Near Wetlands and Watercourses

My area of expertise is in fluvial geomorphology, the study of rivers and their evolution over time. I also have had the practical experience of serving on inland wetland commissions for ten years and as an expert witness to wetland commissions throughout the state of Connecticut over the past 30 years.

There is a large volume of scientific literature that supports the importance of natural riparian buffer zones along streams and wetlands to maintain the natural functioning of these systems, to aid in the enhancement of water quality and to mitigate flooding (Klapproth and Johnson, 2000).

Riparian buffer zones are important filters for upland sediment that might otherwise cause excessive siltation in streams. Riparian buffers also help to stabilize stream banks and limit excessive bank erosion that can ultimately result in more sediment discharged into the stream causing rapid change in channel cross section and form.

Natural stream erosion will cause some trees to be undermined and to fall into streams and rivers. This is a natural process and some woody debris in New England streams is important to create habitat and shelter, particularly for fish, but also to provide a source of nutrients for benthic invertebrates which are an important component of the ecology of these rivers. Woody debris in streams can also slow the water flow velocity, can create important structures with the stream, such as pools, can shield the banks of the stream from further erosion and can help to reduce flood peaks downstream (Keller and Swanson, 1978).

Riparian forests provide a canopy that help to reduce water temperature during the warmest months of the year which is important to maintain the ecology of the stream Raleigh and others 1980)

Riparian borders are important elements of flow resistance when overbank floods occur. The vegetation impedes the flow of water across the floodplain and this flow resistance causes the flood wave to travel more slowly through the reach of the river. This is known as valley storage and is an important element in slowing the propagation of flood waves through a river system and thereby reducing the flood peaks. In the case of this particular act, the use of the FEMA floodway as a boundary for the riparian buffer on larger streams and rivers will maintain the ecology of this important zone and reduce the impacts that urbanization and suburbanization can have on increasing flood risk (Arnold and others, 1982).

Forested riparian zones have been demonstrated to have a significant impact on removing nutrients, particularly nitrogen and phosphorous from shallow groundwater and surface overland flow to streams. This is an important function in helping to reduce non-point source pollutants from streams (Hill, 1996, Lowrance,1985, Peterjohn and Correll 1984).

Finally, I would like to comment on the use of the 100 foot boundary proposed in the legislation. One could propose a site specific survey to determine the appropriate width of the riparian border. This would require a great deal of technical expertise and would be costly. The 100 foot boundary will be easier to regulate by local commissions. While the effective riparian zone varies for each of the functions outlined above, there is also sufficient scientific evidence that the 100 foot boundary proposed in this legislation distance is the right order of magnitude (Mayer and others, 2005, Murphy, n.d, Welsch, n.d.)

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