4.0 RIVER CLASSIFICATION FOR ATLANTIC SALMON IN PRINCE EDWARD ISLAND

The number of rivers in Prince Edward Island from which populations of Atlantic salmon have disappeared continues to increase. A half century ago, at least fifty-five watercourses had runs of Atlantic salmon. By 2002, salmon remained in only thirty-three rivers, many of which had very low populations. Since 2002, runs have disappeared from eleven more rivers and seven others have perilously low numbers of salmon. Many streams that still have salmon runs have serious habitat problems. Often, only one year class is present in the river which usually indicates that salmon populations are barely hanging on.

It would be beneficial to develop a classification scheme that would identify management strategies for all salmonids and other anadromous fish in the eighty or so largest streams on Prince Edward Island. That task would require blending necessary ingredients, such as topics covered in the present report with harvest and future population enhancement opportunities. If such a venture were undertaken, all potential stakeholders, such as landowners, government agencies and non-government groups with vested interests should be asked for input.

The current task was to focus on a conservation strategy for Atlantic salmon. However, all anadromous fish are so inextricably connected with each other and the environment, that any scheme which would work for Atlantic salmon should also benefit the other species.

All of the rivers on Prince Edward Island that currently or recently had Atlantic salmon runs are categorized in the following scheme. Data and specific recommendations for each are provided in Section 5.0. Table 1 indicates the total area in hectares, stream length, area and percentage under forest cover for each drainage basin in Class I, II, III and IV rivers.

4.1 Class I Rivers - Wilderness Rivers

These rivers (Figure 9) have annual runs of salmon that should be sustainable barring catastrophic events (e.g. beaver populations not controlled or massive inputs of pesticides and/or sediment into watercourses). Some of these drainage basins are located in areas of the province with extensive forest (Table 1), while others with more cleared land have major portions of the river with relatively good riparian buffer zones. All of the proposed wilderness rivers still have reasonable populations of Atlantic salmon and with the proposed specific recommendations in section 5.1, there is reason to be optimistic that such populations will remain stable or increase. Populations of other anadromous fish (alewives, blue-backed herring, rainbow smelt and brook trout) should respond positively to improved habitat and blockage removals if these obstacles have not already been eliminated from the drainage basin.

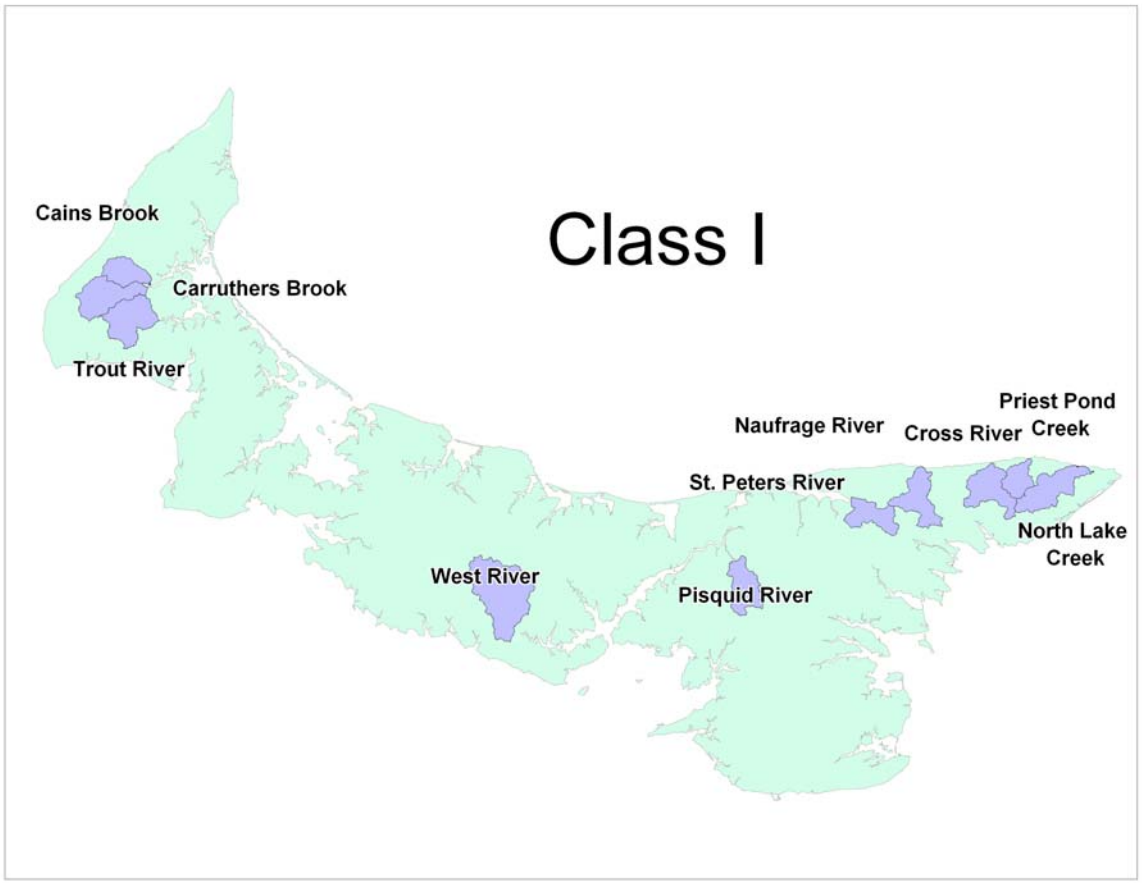

Figure 1. Class I salmon rivers in Prince Edward Island.

At present, the following list of rivers should be considered for this wilderness river category. As habitat and populations of salmon are improved in other rivers, they should be considered for inclusion. Detailed recommendations for each river are found in section 5.1.

- Cains Brook
- Carruthers Brook (Mill River)
- Cross River
- Naufrage River
- North Lake Creek
- Pisquid River
- Priest Pond Creek
- St. Peters River
- Trout River (Coleman)
- West River

4.2 Class II Rivers – Where Salmon and Beavers may Co-exist?

All of these streams should continue to have salmon runs if water quality conditions and beaver populations are managed to a greater extent than is currently happening. Responsibility and resources should be provided to each watershed group to hire or train a

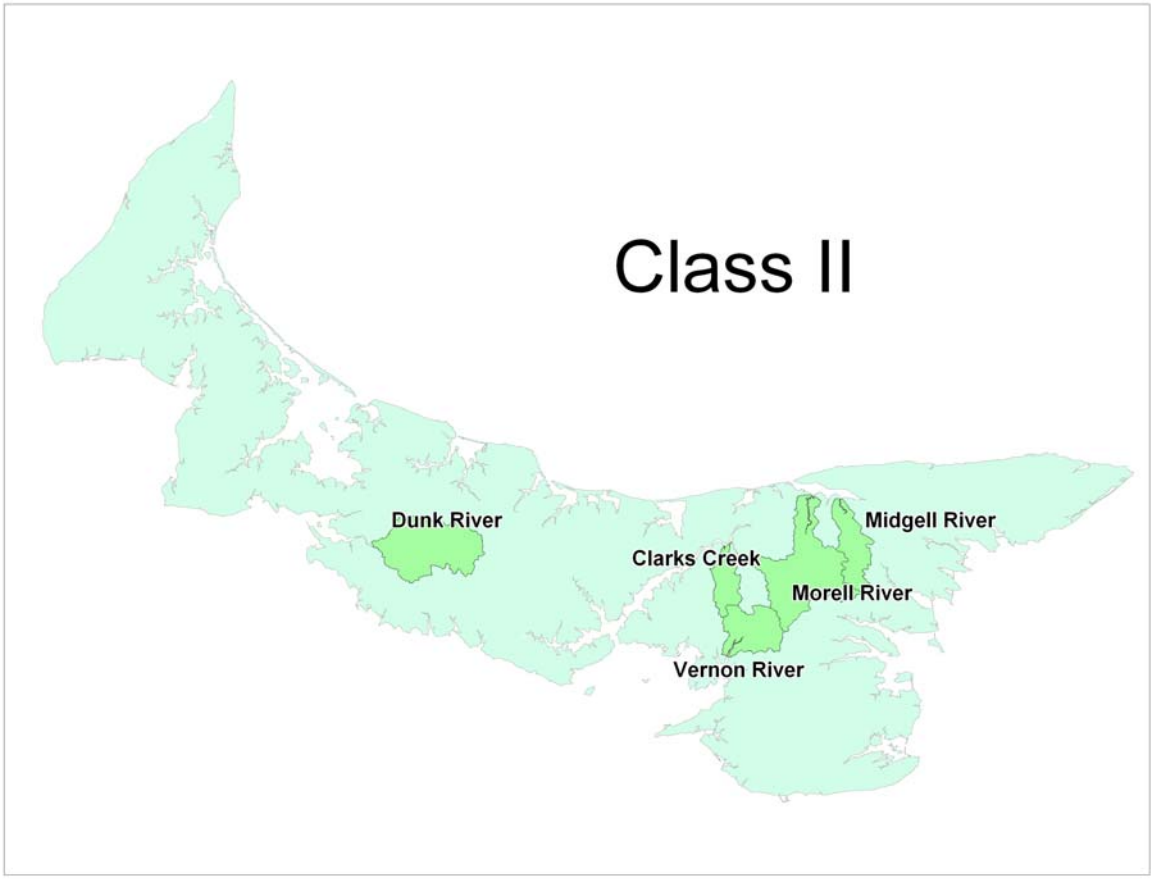

Figure 2. Class II salmon rivers in Prince Edward Island.

professional trapper to do the required management. In the past, water quality has been an issue in sections of several of these streams (temperature, oxygen, or pesticides) and all need specific management (Section 5.2). Populations of salmon in both Vernon River and Clarks Creek remain in jeopardy since no redds were counted in 2008 and thus one year class will be missing. Geographic locations of Class II rivers are shown in Figure 10.

- Clarks Creek
- Dunk River
- Midgell River
- Morell River
- Vernon River

4.3 Class III Rivers – Atlantic Salmon on the Verge of Disappearing

Populations of Atlantic salmon in these streams are very low. Unless immediate intervention occurs, runs in most of these rivers cannot be expected to survive more than a few years. Blockages to instream movement and/or sediment input plague most of them.

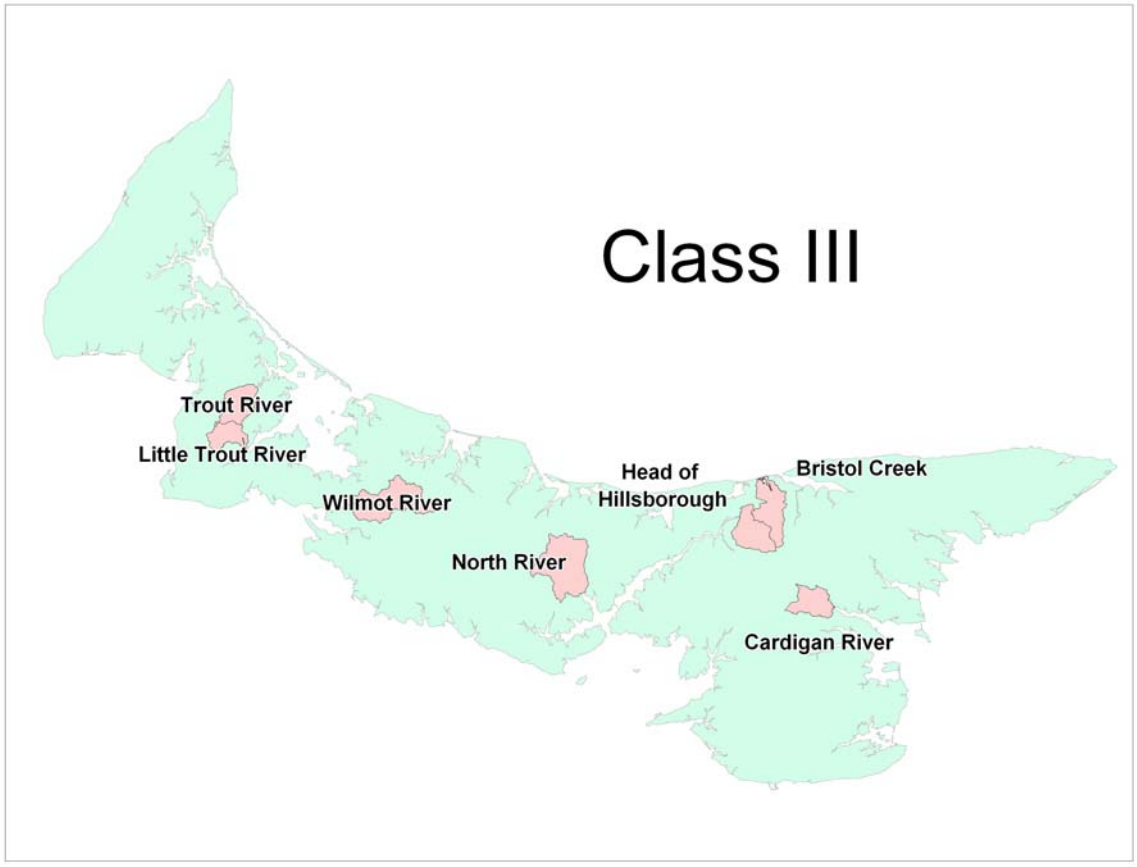

Figure 3. Class III salmon rivers in Prince Edward Island.

Recommended management for each is found in section 5.3 and geographic locations are shown in Figure 11.

- Bristol Creek
- Cardigan River
- Head of Hillsborough
- Little Trout River
- North River
- Trout River (Tyne Valley)/ Bank Brook
- Wilmot River

4.4 Class IV Rivers – Salmon Populations that have Disappeared since 2002

Populations of Atlantic salmon have disappeared from the following eleven rivers within the past six years. In many of these rivers, beaver blockages appear to have been the main reason for the disappearance of salmon, but some of the following drainage basins also have severe land use problems. If community groups continue with their efforts to re-establish and maintain good instream and riparian zone habitat and the limiting factors that caused the

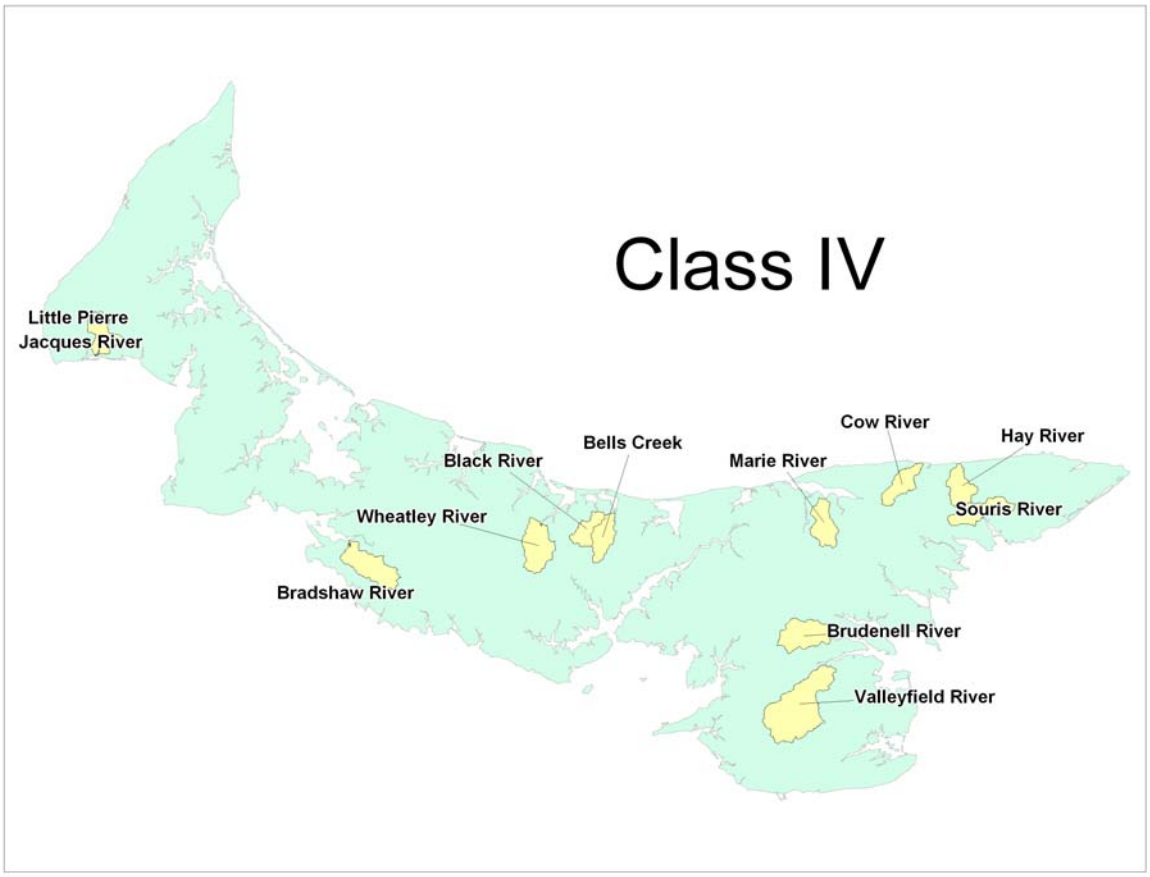

Figure 4. Class IV salmon rivers in Prince Edward Island.

salmon populations to disappear are mediated, some of the streams would be good candidates for restocking. Section 4.7 is an outline of how research could potentially play a role in the recovery of salmon populations in some Prince Edward Island rivers. Geographic locations of these rivers are shown in Figure 12.

- Bells Creek
- Black River
- Bradshaw River
- Brudenell River
- Cow Creek
- Hay River
- Little Pierre Jacques River

- Marie River
- Souris River
- Valleyfield River
- Wheatley River

4.5 Class V Rivers - Salmon Populations that Disappeared Before 2002

Prince Edward Island rivers that have lost salmon sometime during the past four to five decades are listed below. This list is likely not exhaustive, since it is rare that conversations with older anglers do not reveal other sites where salmon were caught. An interesting article with historical information about Atlantic salmon on Prince Edward Island is found in the October issue of Island Magazine (Dupuis 2008). Geographic locations of these river systems are shown in Figure 13.

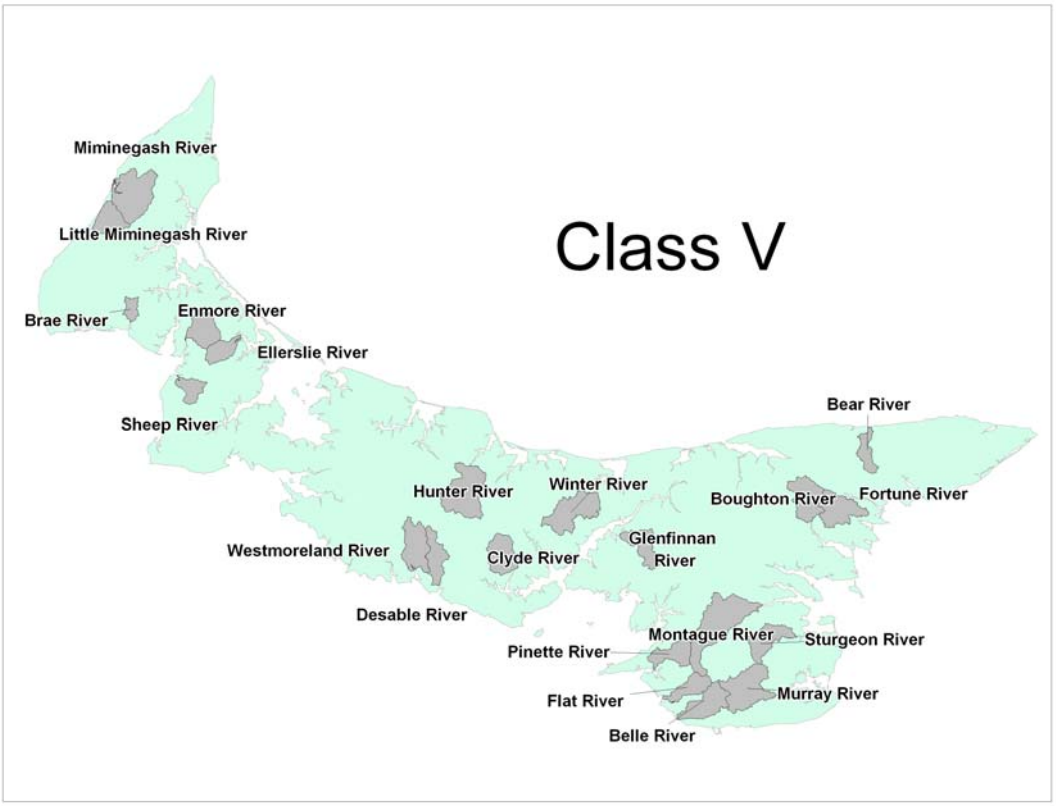

Figure 5. Class V salmon rivers in Prince Edward Island

- Bear River (I caught parr in this river in the late 1960s)
- Belle River (local landowner)
- Boughton River (the late Mr. Ross spoke of salmon trying to ascend the paddle wheel area of Ross's Mill)
- Brae River (Shawn Hill has a photo of multi-sea winter fish caught by a local angler on the Brae)
- Clyde River (reported to be a good river to poach; Mike Read caught salmon parr here)

- DeSable River (parr reported by late John Matheson)
- Ellerslie (Smith and Saunders research)
- Enmore River (electrofishing surveys)
- Flat River (local anglers and one salmon reputedly caught in autumn 2007)
- Fortune River (Fr. Charlie Cheverie reported salmon in the Fortune River)
- Glenfinnan River (great runs of multi-sea winter fish reported by the late Harold Jenkins)
- Hunter River (local anglers)
- Little Miminegash River (I caught parr here in the early 1970s)
- Miminegash River (I caught parr here in the early 1970s)
- Montague River (could have been strays from the Vallyfield River)
- Murray River (local anglers)
- Pinette River (local anglers)
- Sheep River (Albert Arsenault indicated that this river was known to have salmon)
- Sturgeon River (local anglers)
- Westmoreland (reported to the author by the former mill operator Jack Leard)
- Winter River (I was told by a person of aboriginal descent that the native people used to harvest salmon in the Winter River)

4.6 Class VI Rivers – Candidate Rivers for Semi-Natural Rearing

There are streams on Prince Edward Island that are large enough to provide locations for extensive angling if populations of salmon were available. The "kinks" of semi-natural rearing of Atlantic salmon were worked out using the Morell River as a research zone during the 1980s. If the will and resources are available, it would be relatively easy to re-establish excellent angling opportunities using established techniques and proper genetic stock. Spin-offs values to the economy would be substantial, as was the case when semi-natural rearing was being properly carried out in the Morell River. If resources, science, and knowledgeable personnel are not available and utilized, it would likely prove to be a waste of time and money to go this route again. The continued operation of a hatchery like the Cardigan facility would be imperative for this type of venture.

- Dunk River
- Morell River

4.7 Class VII Rivers – Research Rivers

An integral part of a salmon recovery program should include a research and monitoring component. Data on habitat changes and populations of salmonids should be collected on an annual basis for all rivers where work is being done. Some rivers should be considered research rivers where relevant questions can be answered, such as:

What impact is rainbow trout having on Atlantic salmon populations?
What are the limiting factors that seem to be preventing good over-wintering salmon parr survival on some rivers?
Why is hatching success so low in some rivers or tributaries?
What is the optimal and minimal depth of gravel in spawning areas?

How does pool location affect spawning locations?

Answers to these and other questions will lay the groundwork for future management direction in a Prince Edward Island salmon strategy. Regular monitoring of some parameters, such as seasonal water temperature, could be done by the watershed groups if data loggers were provided. It would be encouraging if researchers with graduate students could tackle some of the more perplexing problems.

Figure 6. Brook trout (top) and Atlantic salmon (middle) from the Morell River and a rainbow trout (bottom) from the Brudenell River.