

At-Risk Watersheds in New Brunswick

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Introduction

One of the most common environmental concerns the Conservation Council of New Brunswick (CCNB) hears from New Brunswickers is about the changes they see in our rivers and streams. Our rivers, lakes and streams are in dire need of good stewardship, but good stewardship is nowhere to be found.

Reports are regularly made to CCNB about the spring freshets that course down our rivers with unprecedented fury, scouring river banks, tearing trees out by their roots and flooding homes and properties. CCNB staff also hear about disconcertingly low levels of water in the dog days of summer, which strand paddlers on gravel bars and broil fish fry trapped in puddles where streams once flowed. For example, a study of water flow in the Restigouche River and its tributaries has found that deforestation in that watershed has resulted in earlier and greater snowmelt and water flows, and low discharge later in summerⁱ.

It is no exaggeration to say that water is our lifeblood. Yet New Brunswick's freshwater ecosystems continue to be degraded because of a collective failure to appreciate the complexity and diversity of rivers. This complexity and diversity include processes which connect upstream with downstream, which connect the river with its floodplains, and which link river channels with the water table.

When there are too many clearcuts in a river's headwaters, the ecosystem has difficulty retaining water, resulting in unstable and damaging flows of water. With the 500% increase in heavy downpours brought to us by climate changeⁱⁱ, spring freshets are increasingly destructive, unleashing a cascade of consequences from bank erosion to the destruction of young populations of fish fryⁱⁱⁱ.

Riparian buffer strips are commonly used to reduce the negative effects of overland water flow on watercourse water quality and flow, habitats and biodiversity, and movement corridors for wildlife. However, riparian buffer strips may not protect watercourses from unnatural and detrimental increases in sedimentation, temperature, organic inputs, nutrient loss, and erosion if they are too narrow or if too much adjacent forest is removed.

Research from Quebec has shown that when more than 50% of a watershed is clearcut (or equivalent-clearcut^{iv}) there is a moderate probability that peak flow will be severe enough to modify the watercourse morphology and aquatic habitat^v. These effects are known to last for 35 years^{vi}, because young forests do not effectively regulate water quality and flow. Amplifying the effects of erosion, overland runoff, and sedimentation on water quality and aquatic habitats is the fact that extreme storm events have become 5 times more frequent during the last 10 years in New Brunswick^{vii}.

Crown forest cover in New Brunswick watersheds

Using data provided by the Department of Natural Resources, CCNB has undertaken an analysis of all watersheds in the province to calculate the amount of Crown (public)

forest within each watershed that is less than 35 years old. This analysis of Crown forest age in New Brunswick watersheds has shown 30 watersheds are at risk by having young forests cover at least 40% of the drainage area. These “at risk” watersheds are located within five of the province’s thirteen principal catchment basins: Restigouche River, Chaleur Bay, Nepisquit River, Miramichi River, and Saint John River (Figure 1). The details of which watersheds are located within which catchment basins are in Table 1.

The South Branch Nepisquit River, with 62% of the land base covered in Crown forest less than 35 years old, is the most critically affected watershed (Figure 2). The extent of young forest in that watershed can be contrasted with the adjacent low risk Portage Brook Composite watershed, for example, which contains only 12.5% young Crown forests (Figure 3). CCNB analysis shows that the Nepisquit River and the headwaters of the Restigouche, Northwest Miramichi, Jemseg, and Canaan Rivers are themselves at-risk because of the large number of watersheds within each catchment basin that are at-risk.

Recommendation

New Brunswick currently enjoys relatively abundant and clean freshwater, although forest management practices do not prioritize protecting this resource. Clearly, several watersheds in New Brunswick may soon be insufficiently forested to protect against unstable flows of water, especially as the climate continues to change. To protect rivers and lakes in New Brunswick there must first be an acknowledgement by New Brunswick legislators of the necessity of holistically protecting water quality and aquatic habitat, even if it impedes conventional economic endeavours.

To that end, CCNB has submitted a six-point action plan to the Department of Natural Resources, which includes emphasis on ensuring watersheds retain at least 50% forest cover. This action plan encourages watershed-level planning and forest management, maintaining sufficient forest cover to protect hydrological functions, comprehensively protecting intermittent and temporary streams, delineating no-harvest zones within riparian buffers for all rivers, lakes, and wetlands, increasing riparian buffers near steep slopes and in floodplains, and protecting vernal (temporary) pools. CCNB’s action plan can be obtained by mail or downloaded from www.conservationcouncil.ca.

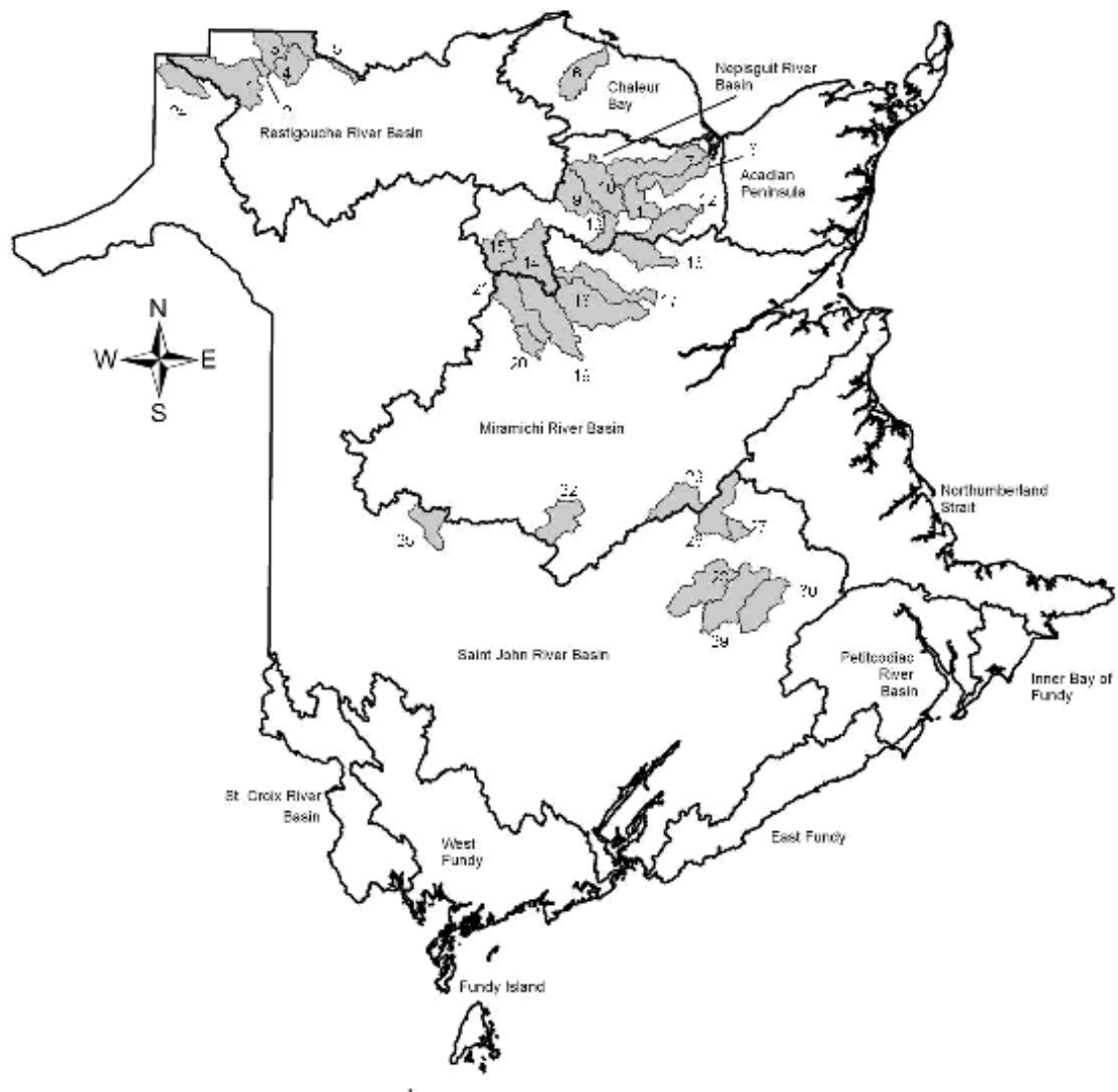


Figure 1. Principal catchment basins of New Brunswick including at-risk watersheds. Numbered watershed names are in Table 1.

Table 1. Principal catchment basins within which 30 “at-risk” watersheds are located. Numbers correspond to Figure 1.

Catchment Basin	Fig. 1 number	“At-risk” watersheds (at least 40% Crown forest cover <35 years)
Restigouche River	1	South Branch Kedgwick River
	2	West of States Brook Composite
	3	States Brook
	4	McDougall Brook
	5	Patapedia River
Chaleur Bay	6	Benjamin River
Nepisquit River	7	Middle River Headwaters
	8	Little River
	9	Forty Four Mile Brook
	10	Forty Mile Brook
	11	Nine Mile Brook
	12	Nepisquit Brook Composite
	13	Otter Brook Composite
	14	South Branch Nepisquit River
	15	Little South Branch Nepisquit River
Miramichi River	16	Tomogonops River
	17	North Branch Big Sevogle River
	18	South Branch Big Sevogle River
		Headwaters
	19	Lower North Branch Little Southwest
		Miramichi River
	20	Little North Pole Brook Composite
	21	North Pole Stream
	22	Burnt Land Brook
	23	Six Mile Brook
Saint John River	24	Wild Goose Branch
	25	Napadogan Brook
	26	Big Forks Stream
	27	Grey Brook Composite
	28	Coal Creek
	29	Forks Stream
	30	Alward Brook Composite

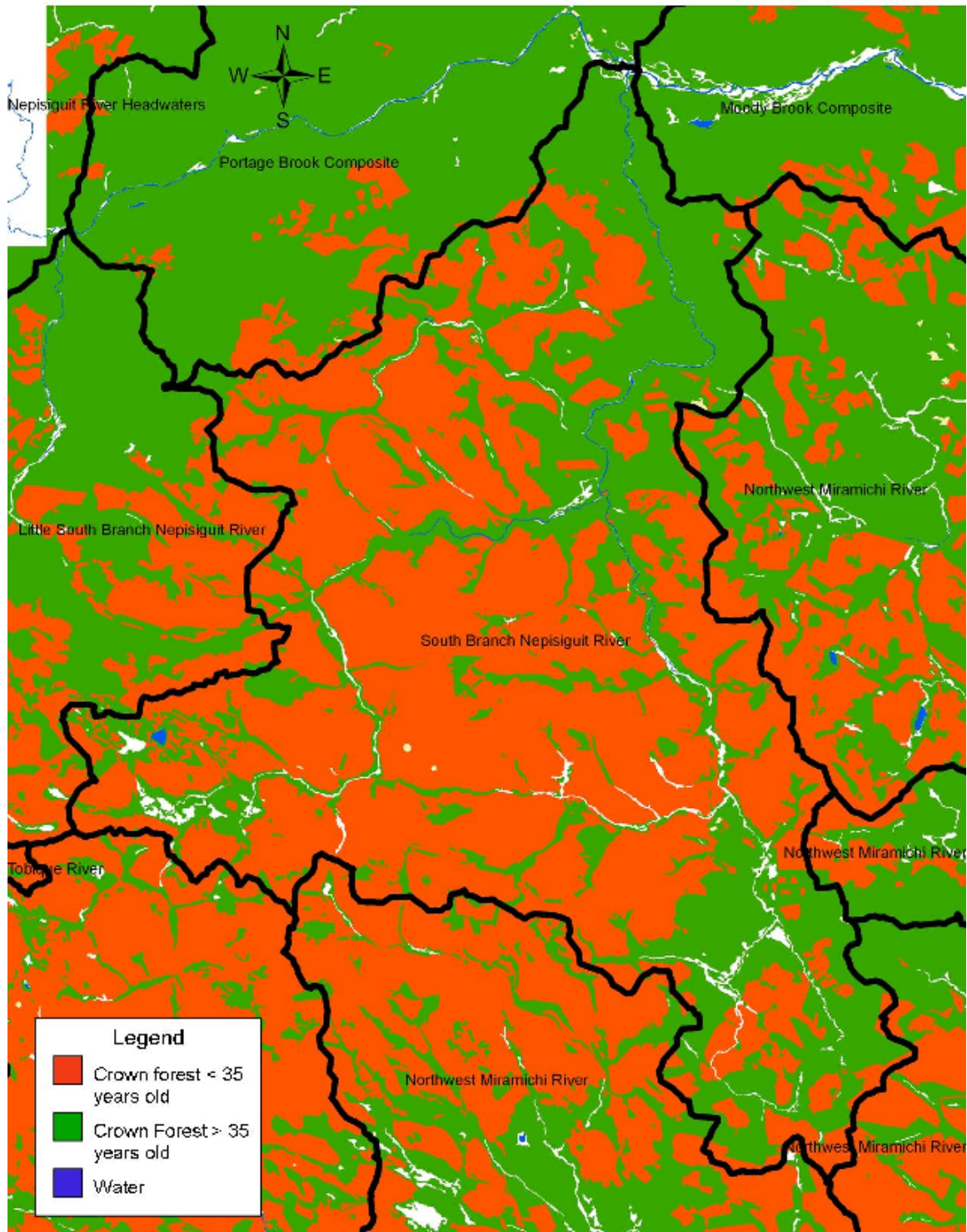


Figure 2. Area map of the critically “at-risk” South Branch Nepisiguit River watershed.

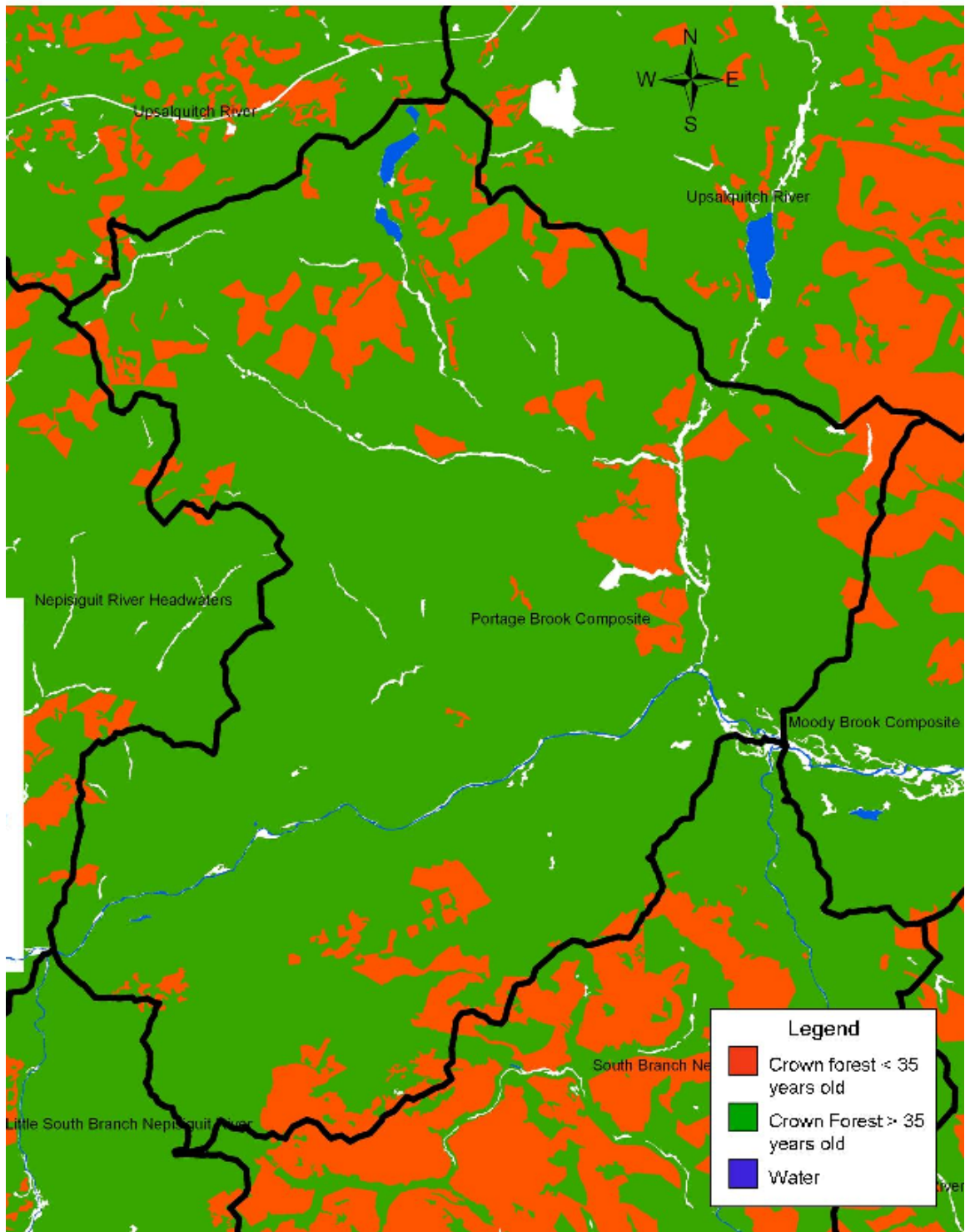


Figure 3. Area map of a sample low risk watershed, Portage Brook Composite.

ⁱ *An Atlantic Salmon Resource Development Strategy for the Restigouche River (N.B.)*. 1992. Prepared for the Restigouche Band Council by ASE Consultants Inc. and Hare Fisheries & Environmental Consultants Inc.

ⁱⁱ New Brunswick Department of the Environment (NBDENV). *Climate Action Plan 2007-2012*. See:

[http://www.gnb.ca/0009/0369/0015/0003-e.ppt#376.8.Climate Observations in NB](http://www.gnb.ca/0009/0369/0015/0003-e.ppt#376.8.Climate%20Observations%20in%20NB)

ⁱⁱⁱ *An Atlantic Salmon Resource Development Strategy for the Restigouche River (N.B.)*. 1992. Prepared for the Restigouche Band Council by ASE Consultants Inc. and Hare Fisheries & Environmental Consultants Inc.

^{iv} Langevin, R. and Plamondon, A. P. 2004. *Méthode de calcul de l'aire équivalente de coupe d'un bassin versant en relation avec le débit de pointe des cours d'eau dans la forêt à dominance résineuse*. Ministère des Ressources naturelles, de la Faune et des Parcs (MRNFP) du Québec.

^v Plamondon, A.P. 2004. *La récolte forestière et les débits de pointe : état des connaissances sur la prévision des augmentations des pointes, le concept de l'aire équivalente de coupe acceptable et les taux régressifs des effets de la coupe sur les débits de pointe*. Québec, Université Laval, pour le ministère des Ressources naturelles, de la Faune et des Parcs, 236 p.

^{vi} *Ibid.*

^{vii} New Brunswick Department of the Environment (NBDENV). *Climate Action Plan 2007-2012*. See:

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