Northwest Miramichi Management Plan
for Atlantic Salmon

Miramichi Watershed Management Committee

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1. Introduction:

The Miramichi Watershed Management Committee (MWMC) is a federation of stakeholder organizations who share a common interest in ensuring the conservation and wise use of the recreational fisheries in the Miramichi Recreational Fishery Area. Our goal is to optimize the social and economic benefits from the sustainable recreational fisheries within the Miramichi Recreational Fisheries Area, particularly to those participating or otherwise involved in the recreational fisheries and the local communities.

The Miramichi Watershed can be broken into two major sub-basins; the Northwest Miramichi River system and the Southwest Miramichi River system. The Northwest Miramichi system has a drainage area of 3,950 km^2 and encompasses approximately one third of the Miramichi Watershed (Blousfield 1955). It is made up of two principal rivers which share a common estuary, the Little Southwest Miramichi and the Northwest Miramichi which drain areas of 1,342 km^2 and 2,078 km^2, respectively. The Northwest Miramichi River has a major tributary, the Big Sevogle River which of itself drains an area of 799 sq. km. For the purpose of the Northwest Miramichi management plan, the discussion will pertain to the Little Southwest Miramichi, the Big Sevogle and Northwest Miramichi together. By comparison the Southwest Miramichi system has a drainage area of 7,700 km^2 and encompasses approximately two thirds of the Miramichi watershed (Blousfield 1955). It is made up of two river systems which share a common estuary, the Southwest Miramichi River and the Renous River.

The Miramichi River system has one of the largest Atlantic salmon runs in North America and supports both an aboriginal and a recreational fishery. The river has been closed to commercial fishing since 1984. The Northwest Miramichi system differs from the Southwest Miramichi system in that it experiences a proportionally larger harvest of Atlantic salmon. The majority of the pools are public, it has large sections of Crown Reserve angling opportunities and the majority of the First Nation harvests occur in the Northwest Miramichi estuary.

The current adult assessment for Atlantic salmon on the Miramichi River is primarily based on a mark and recapture methodology. For the separate branch estimates, Atlantic salmon returning to the Northwest Miramichi are tagged at the Fisheries and Oceans (DFO) trapnet at Cassilis and recaptured at the food fishery traps at Red Bank First Nation. The number of fish tagged, the number of fish recaptured and the total number of fish captured are used in an equation to estimate the population. In order to have good statistics however, a certain minimum number of marked fish must be recaptured. A hierarchical model has been developed, which includes other data such as seining and barrier estimates, to help improve the accuracy of the model. The hierarchical model also uses data from other years to improve the estimate in a year where the data is deficient.

The conservation spawning requirement for the Miramichi River and each branch separately is based on an egg requirement of 2.4 eggs/m^2 of spawning habitat (CAFSAC 1991). Based on average biological characteristics for salmon on the Miramichi, the conservation requirements are about 7,300 large salmon for the Northwest Miramichi (Chaput et al. 2001). Large salmon are mostly female (70% to 80%) and grilse are

mostly male (75% to 90%). The female grilse generally return in the early run and the fall run is mostly males.

Over the past 12 years the DFO adult stock assessment has indicated that the Northwest Miramichi system typically reaches less than 50% of its required spawning escapement in a given year.

This management plan is being proposed to ensure that the annual salmon run to the NW Miramichi River system is sustainable into the future while maintaining an aboriginal and recreational fishery.

2. Stock Status

2.1 Adults

Estimated adult returns to the Northwest Miramichi system from 1998-2009 average 3,600 salmon and 8,600 grilse and the range is between 2,000-8,000 salmon and 5,300-16,000 grilse, depending on the year. Based on the adult assessment, the Northwest Miramichi has met on average 50% (range 26% to 111%) of the conservation requirement during 2000 to 2009 whereas the Southwest Miramichi has averaged 103% (range 77% to 119%) of the conservation requirement during the same time period (CSAS 2010). Conservation has been met or exceeded on the Northwest Miramichi in only 1 out of 12 years and on the Southwest Miramichi in 7 out of 12 years from 1998 to 2009.

Returns to the Department of Natural Resources (DNR) Northwest protection barrier located in the headwaters of the Northwest Miramichi have remained relatively stable around 200 large salmon from 1988 to 2009. However, there was a substantial decline in the number of grilse counted at the barrier from 1988 to 2009, from a high of 1,600 in 1988 to a low of 315 in 2009.

Harvest records of Atlantic salmon are incomplete for both the First Nations Food, Social and Ceremonial (FSC) fishery and the recreational fishery (CSAS 2010). For the First Nations FSC fisheries, DFO assumes that the harvest of large salmon each year is approximately 600 fish, about 90% of the allocations in the fishery agreements. The annual harvest of small salmon from the First Nations FSC is assumed to be equal to the reported harvests from the trapnets and ranges from 794 to 2,568 fish (CSAS 2010). These assumptions are questionable however, as the estimated harvest via the First Nations FSC does not include Atlantic salmon captured by gill nets early each year. For the recreational fishery, the losses of large salmon were estimated using an assumed catch rate of 30% with 3% mortality from catch and release. The number of grilse harvested is based on previous angler surveys. Based on these values, losses of large salmon from the recreational fishery are just under 1% of the estimated annual returns of salmon and 25% of the returns of grilse. The need for increased egg deposition is considered great on the Northwest Miramichi where the egg losses from all fisheries are in the order of 21% of the returns, with 69% of these from large salmon losses (CSAS 2010).

2.2 Juveniles

Smolt production is currently measured from only one river on the Northwest Miramichi system, the Little Southwest Miramichi. Smolt production on the Little Southwest from 2005 to 2009 has been low between 0.8-1.7 smolts per 100 m^2 (65,000 to 138,000

smolts per year) and has never reached the smolt production target for the Miramichi River of 3.0 smolts per 100m^2. Smolt production was measured from the Northwest Miramichi System as a whole from 1998 to 2006 and ranged from 0.8 – 4.3 smolts per 100m^2 (133,000 to 722,000 smolts). Only in 2006 did smolt production exceed the target of 3.0 smolts per 100m^2. On average, smolt production from the Northwest Miramichi system is moderate. Alternately, the Southwest Miramichi has exceeded the smolt production targets in 4 out of 9 years from 2001 to 2009.

Historically the Northwest Miramichi system has slightly lower levels of fry (10 fry/100m^2 less) than the Southwest Miramichi. However, the Northwest Miramichi tends to have slightly higher levels of 1+ and 2+ parr per habitat area than the Southwest Miramichi. This difference may be because the electrofishing sites on the Northwest Miramichi tend to have better quality parr habitat than the sites on the Southwest Miramichi and the Northwest system tends to have cooler temperatures and therefore tends to produce more 3+ smolts than the Southwest Miramichi which produces more 2+ smolts.

There are variations in fry and parr production on the Northwest Miramichi system. In general, the Little Southwest Miramichi tends to have low to moderate fry and parr production, the Sevogle has moderate fry and parr production, while the headwaters of the Northwest Miramichi River has high fry and parr production. In the lower areas of the Northwest Miramichi main stem fry and parr levels are moderate.

3. Management Issues

3.1 Aboriginal Fisheries Strategy

When the Department of Fisheries and Oceans introduced the Aboriginal Fisheries Strategy, following the Supreme Court of Canada ruling on the Sparrow decision, the strategy was to fully engage the First Nation communities in the science collection, protection and management of the salmon resource. Funds were allocated to First Nations to conduct these activities and to harvest salmon as a community right. The program started with high expectations for fish wardens, monitoring of adult salmon runs and habitat improvement, but failed to fully meet the expectations of the First Nations, DFO and the angling community. Over the years with funding being held at the same level and with inflation eroding the value of the funds received, programs have suffered. The MWMC believes there is a desire from the general public to have the First Nation communities become full partners in the management and protection of the salmon resource and urges the local First Nations and DFO to renegotiate the Aboriginal Fisheries Strategy. Key components should include providing trained wardens that can patrol the whole watershed, having the First Nations as full partners in the collection and analysis of the stock assessment data and exploring new management strategies to protect the Atlantic salmon while deriving maximum benefits to the First Nation and local communities.

Action Plan:

The First Nation communities of Red Bank and Eel Ground should begin negotiations with the Department of Fisheries and Oceans to strengthen the Aboriginal Fisheries Strategy to demonstrate true co-management of the salmon resource. Additional resources need to be placed in the agreement to fulfill some of the primary objectives of the strategy, such as fully qualified wardens, dedicated science staff and informed management advisors. Many of the identified shortfalls that follow in this document could be resolved by a better Aboriginal Fisheries Strategy that provides accountability for the funds received, proper training for all aboriginal staff and shared management authority.

3.2 Adult Stock Assessment

Separate branch estimates show a much higher return of both grilse and salmon per unit area to the Southwest Miramichi relative to the Northwest Miramichi. However, there are uncertainties regarding the estimates of abundance on the Miramichi. The issue over the previous 4 years is that the number of marked fish that are recaptured on the Northwest Miramichi has been low which leads to less confidence in the adult assessment for this system. The Northwest Miramichi has an earlier run (late May to mid-June) than the Southwest Miramichi and it may be inadequately sampled by the assessment trapnets. Additionally, the mark-recapture methodology for the Northwest Miramichi is conducted by the use of a DFO index trap at Cassilis as the tagging station and a Redbank First Nation FSC trap as the recapture station. The First Nation FSC traps functions primarily as food fishery traps, are not always fished consistently through the week and are not in place for the entire year. Traps are typically put in between mid-June to mid-July and removed in September or October. Ideally, the FSC traps would be put in at the same time as the DFO Cassilis index trap, in late May and run until late October and be fished every day. Lower number of recaptures result in less precise and potentially biased assessments. Another issue with the use of traps is that they must be raised during high water events or may be washed out by high water, and this is typically when a large number of salmon move into the river. However, this is unavoidable or the trap could be washed out and counts lost for days afterward while the trap is rebuilt. Another issue with the separate branch estimates is estuary drift; some fish spend considerable time in the estuary before ascending the rivers and as a result it is fairly common for fish to be initially caught in one estuary sampling trap and then recaptured in the other. For example, a fish may be tagged at Cassilis and then later captured at Millerton, which makes the calculations for the mark-recapture more difficult.

In order to attempt to increase the numbers of tags recaptured for the adult stock assessment, other methods of recapturing tagged fish have been implemented. Capturing adult salmon by seining allows many different tributaries to be sampled, and provides numbers of marked and unmarked fish, which is required in order to achieve the estimate. Additionally it lessens the exchange factor of fish moving from one system to the next because fish are recaptured upriver. In 2009 and 2010, angling camps participated in a pilot project run through the MSA to try to use angler catch data to improve the adult assessment, since anglers can fish in all water conditions. After a fish was angled, camp guides recorded the size (grilse or salmon), tag number, marks (adipose punches), adipose clips and the number of fish harvested or released. This program allowed an estimate to be derived using a mark-recapture methodology using the number of tagged fish at the DFO traps, recaptures and total catch by anglers.

The issue with these two methods of deriving an adult assessment, particularly on the Northwest Miramichi, is that the proportion of marked fish that are recaptured by angling and seining is much lower than at the recapture traps, which increases the estimate of fish returning. The reason for this may be that the trapnets are intercepting fewer adults early in the season. This could be possibly due to heavy gaspereau catches, different movement patterns (quicker ascent) or tagged fish having a higher mortality rate early in the season.

Action Plan:

Continue mark-recapture technique on Northwest Miramichi with Cassilis as the marking station and Red Bank First Nation FSC trap as the recapture station. The Red Bank First

Nation trapnet is extremely important in the collection of data for the adult stock assessment in addition to harvesting fish for FSC.

Funding for First Nations Traps FSC fishery be made available early enough so that traps can be put in place at the beginning of the season in conjunction with the DFO trapnet.

Re-examine the hierarchical model for the stock assessment to account for the lack of marked fish in the early run. The review would assess what is necessary to increase the precision of the annual return estimate, and also look at the accuracy / dependability of predicting future MSW returns using previous year Grilse estimates.

Continue adult seining and angler catch data programs to get additional numbers on recaptured and unmarked fish to improve the adult assessment. The original target set for the seining program had been to sample 1000 Grilse and 500 Salmon. To further increase the number of fish that are sampled and possibly begin to develop a relationship between catch and the number of fish that may be moving during high water conditions when the traps are raised, the MWMC will encourage more camps to participate in the angler catch program as well as open it individual anglers that wish to contribute.

Continue DNR Northwest Protection barrier to maintain the long-term data set on adult salmon numbers and to protect the adults in the headwaters of the Northwest.

The measurable goals are for the Northwest Miramichi system to meet conservation levels for egg deposition and spawning escapement 80% of the time.

3.3 Juvenile Stock Assessment

The electrofishing program on the Northwest Miramichi system provides the best indication of the relative egg deposition in previous years and there is a long data set to compare over time. Juvenile densities have not been reliable at projecting smolt runs or subsequent adult returns as pre-smolt survival over winter appears to have a great influence on the number of smolts migrating each spring. Smolt estimates for the Northwest Miramichi have not been conducted since 2006, but smolts are not always a good indicator of adult abundance, since marine survival can also be variable as seen in the low number of grilse returning to the Southwest Miramichi in 2009, despite good smolt production in 2008.

One concern that has been raised is that the sampling effort on the lower reaches of the two rivers is relatively low. Given that the greatest proportion of the system's total habitat area lies within those 5th & 6th order stream sections, it would be beneficial to add a few sampling sites in order to obtain a better picture of the overall health of juvenile populations.

Action Plan:

Increase the current number of electrofishing sites on the Northwest Miramichi system by five (7%). Three of these would be on the Little Southwest in the area between Dennis Pool and Blackmore Pool. Two would be on the Northwest, one below Vickers's Lane and one upstream of the Smoker Bk. confluence.

Maintain the smolt wheel program on the Little Southwest and initiate a program to estimate smolt production on both the Sevogle and the Northwest Miramichi above the Sevogle confluence. The Northwest and Sevogle have higher fry and parr densities than the Little Southwest and therefore may have higher smolt production. (This initiative is already part of MSA's work plan for 2011)

Estimate smolt production for the entire Northwest Miramichi system by using the Cassilis trapnet. This will be used to determine if the Northwest Miramichi is reaching the target of 3.0 smolts per 100m^2. Smolt production is the true measure of what the freshwater habitat can produce and can be used to predict grilse and salmon returns, provided marine survival does not fluctuate drastically.

Review recent efforts to estimate smolt production from the Southwest Miramichi to assess the factors which contribute to annual variability in abundance of Atlantic salmon.

Continue the supplementation of fry to the Northwest Miramichi system by the Miramichi Salmon Conservation Centre, focusing on low density areas.

The measurable goals are for the Northwest Miramichi system to produce smolt numbers that meet or exceed 3.0 smolts/100m^2 80% of the time and have juvenile densities equivalent to or above 20 yearling parr/100m^2 and fry densities equivalent to or above 50 fry/100m^2, 80% of the time.

3.4 Recreational Fishing

Recreational salmon angling on the Northwest Miramichi system commences April 15 and closes September 15, September 30 or October 15, depending on the section of river. The riparian zone of the Northwest Miramichi is mainly crown land and except for the crown leases and crown reserve waters, is open to public angling. The crown reserve waters and angling leases are in the upper reaches of the watershed and offer excellent angling opportunities with controlled access. Anglers are permitted to have 8 tags for the season that can be placed only on grilse and they can tag 1 grilse per day. All large salmon must be released and anglers are permitted to hook and release a maximum of 4 fish per day, but once a grilse is killed and tagged, then angling must cease for the day. Without adequate angler survey data it is difficult to know how many grilse are being harvested on the Northwest Miramichi, but many believe that the harvest is high in proportion to the number of grilse returning. The annual Crown Reserve statistics indicate a high angler catch rate on these stretches.

As 90% of egg deposition comes from large salmon, grilse are primarily required to fertilize the eggs of female salmon and the harvesting of grilse shouldn't affect reproductive success since one male grilse can fertilize several female salmon and precocious male parr can also fertilize adult salmon eggs. However, when there are not enough female salmon to meet egg deposition requirements, then the eggs from female grilse become important to add to the spawning escapement. Both from this premise of directly contributing extra eggs to the system, and from their support and promotion of Salmon conservation it is noted that anglers can have a significant role to play in the rebuilding of the Atlantic Salmon stocks of the Northwest Miramichi system.

This was aptly demonstrated in 2010 when the run of MSW's was predicted to be well below spawning requirements. Restrictions were requested by concerned NGO's and

were subsequently placed on angler harvest in late June, with the headwater areas totally catch and release from July 1 until the end of the season, and a one month catch and release restriction for the lower reaches of the two rivers being implemented during the month of July. Many anglers were already abiding by a personal catch & release philosophy, retaining only a few or none of their catch during the course of the season; as is evidenced by the 2009 Crown Reserve statistics report which shows a release rate of 30% on Grilse caught. For others it was viewed as an unwelcome imposition, more so by the timing of the restriction with licenses already bought and trip plans made as opposed to the intent and purpose behind it. What the experience did do for all concerned was bring the issue of the need for serious conservation measures on the Northwest Miramichi system to the forefront.

And with it, the MWMC believes, an acknowledgement that while the primary focus needs to be on increasing the numbers of large salmon; until such time as spawning escapement requirements are being met, catch and release, whether voluntary or via restrictions, can and should play a part in the restoration effort.

Also stemming from last season's experience is another angling issue that needs resolution. The concept of allocating 8 tags per angler without knowing how many or where this allocation will be applied leaves little room to effectively manage a river without closing or severely restricting angling harvest opportunities, as was the case in 2010 on the Northwest Miramichi. The angler survey reports are not being returned to DNR in sufficient numbers to adequately estimate river by river exploitation rates. Ideally an annual allocation of grilse should be determined for each river in New Brunswick and a licensing system implemented that ensures that a particular river is not over-exploited.

Action Plan:

Begin development of an angler tag system for Grilse that would lend itself to river specific harvest allocations.

Some suggestions that have been made with regard to this topic include:

- Offer a salmon angling licence with no tags and sell tags for specific rivers based on the allowable harvest. Tags could be sold one at a time and an angler would only purchase an additional tag if the first one was used and on small rivers or restricted rivers a lottery draw could be implemented.
- Use the same system as is currently in place with 8 tags, but in rivers where restricted harvest is warranted, make anglers use multiple tags to tag a grilse.
- Issue a special tag for crown reserve waters where harvest rates are well documented and exploitation can be controlled.
- Adopt a similar model as in Newfoundland where rivers are color-coded depending on the level of restriction required and in a package of 8 tags there would be a mixture of colored tags with perhaps only 1 tag or no tag be designated for use on marginal rivers.

Upgrade the annual angler catch & effort survey methodology and put sufficient resources into securing statistically usable data to support the principal of river specific harvest allocations. The raw data on the number of surveys returned and the actual catch & effort information supplied should be available online as one means of giving back to the angler and hence encouraging more voluntary participation (every year a plea is made by DNR to fill out and return the surveys but no feedback is ever received).

If an angler does not return a survey they should not be issued a license the following year.

For 2011 maintain the catch and release restriction for all the headwater reaches within the system. This restriction would have the following boundaries;

- On the Little Southwest – Beginning at the lower end of Charlie's Rock stretch and moving upstream; plus on the Lower North Branch of the Little Southwest – from the start of the Adam's stretch and moving upstream.
- On the Big Sevogle - those waters on both the North Branch and the South Branch upstream from the start of the Cruikshank stretch.
- On the Northwest - those waters above the closed area around the Miner's Bridge on Route 425

Develop and implement a "warm water protocol" for all rivers. The protocol needs to clearly outline the restrictions that would be implemented as water temperatures increase. Restrictions may escalate as temperatures rise and could include reducing daily hook and release limits, closing specific pools, restricting angling to mornings only and as a final measure – total closure. It is important to note that a total closure of angling can be detrimental to salmon stocks because people will abandon their camps and lodges and the pools will not be protected against poachers who can harvest significant quantities of salmon in a short period of time and erase any benefits that would derive from an angling closure.

3.5 First Nation Fishing

It is firmly established that the First Nation Community has first rights to harvest salmon after conservation targets have been met. Salmon is very important to these communities as it is a traditional connection to the land and a way of life. Many First Nation Communities in New Brunswick, such as those along the Saint John River and the Northumberland Strait rivers south of Miramichi, have lost this right to harvest salmon because conservation levels are not being met in their rivers. It is important that the First Nation Communities of Red Bank and Eel Ground maintain this right to harvest fish for food and ceremonial purposes and to accomplish this it is important that conservation targets are being met**.** Fishing for salmon by First Nations is conducted mostly in the estuary by trap nets and/or gill nets and a limited amount is harvested by angling in freshwater. The two First Nations sign agreements annually with Fisheries and Oceans that sets out a harvest plan for the fishery and DFO financially compensates the First Nations to sign these agreements. The number of salmon that is allowed to be harvested has not changed over time and is not tied to salmon abundance.

Action Plan:

First Nations allocations to be linked to salmon abundance**.**

First Nations must be given the first allocation of salmon after conservation and this number should be allocated each year based on the DFO prediction of salmon returns.

The annual financial compensation given to each First Nation Community should be increased to account for past inflation and tied to the cost of living index.

Agreements should be signed and funds transferred to the bands by early March so First Nations can implement their harvest plan in a timely fashion.

First Nation communities be encouraged to harvest one-sea-winter salmon (grilse) only, which are mostly males, and release the large salmon, which are mostly females, except for the ceremonial requirements of a few large fish. This measure is necessary to ensure that adequate spawning escapement is achieved. To harvest only one-sea-winter salmon, selective gear needs to be used so the large female salmon can be released. This can be achieved using trap nets, but the traps need to be fished intensively to catch enough one-sea-winter salmon to meet the needs of the First Nations. The trap nets also play an important role in assessing the returning salmon numbers so DFO can make predictions for the next season to establish a safe harvest level. Selective harvest by both First Nations is integral to the success of this management plan and as gill nets are non-selective gear their use should be discontinued. It is anticipated that First Nation Communities, being the user group with the most at stake regarding maintaining adequate numbers of salmon to sustain their right to harvest, will be looking to lead this initiative.

3.6 Protection

An adequate protection program is a perennial need on the Northwest Miramichi system as elsewhere, and concern is routinely raised that both DFO and DNR are scaling back their capacity via staff reductions, budget limitations etc. Given that enforcement is an integral part of management it is appropriate to include the subject here. Illegal harvests are a continuing concern and can potentially jeopardize any progress made from the positive management steps being undertaken.

Action Plan:

DFO, in conjunction with DNR, and involving the Native Guardian program as well as the MWMC Protection Committee as appropriate, will undertake a preseason planning initiative to define what resources are available, assess the needs, and layout a comprehensive & coordinated enforcement plan for the 2011 season.

Both DFO & DNR to implement a ticketing system for minor offences. This progressive step to free up both staff and time for more field enforcement work has been “on the drawing board” within both agencies for some time. The benefits are well recognized and with staffing cutbacks etc. it is imperative that it put in place.

Both DFO & DNR to examine how new and evolving technologies can be adopted to assist in salmon protection. The MWMC views the use of increasing technology as essential in helping to off set the loss in capacity.

That the possession of untagged fish become a major offense.

That resident tags be issued with only Medicare numbers being used in the identification area.

3.7 Environmental Issues

There are other issues that influence the health of the salmon stocks in the Northwest Miramichi other than harvesting by man. The environment plays an important role in whether a river can support Atlantic salmon and habitat degradation has wiped out salmon runs across its historical range. A changing climate can make rivers too warm to support salmon and pollutants can affect salmon survival. Currently the two greatest

threats to the fresh water environment of the Northwest Miramichi system are mining and forestry. The Heath Steele mine had a major impact on salmon populations in the Northwest Miramichi and although it is now closed, water from the site has to be treated for eternity. Forestry can have a major impact on the river through road construction and harvesting operations that can cause siltation. By removing too much forest cover in an area the river can warm up faster and discharge is much quicker after a rain.

There are mining interests in the watershed and any mining development must be strictly controlled to prevent any damage to the river. We need to ensure that forestry operations are conducted in an environmentally sound manner to minimize the effects of road construction, to reduce the size of cut blocks and to protect the cold water springs that are critical to the salmon's survival during periods of warm weather. With the advent of global warming, we need more trees to shade the earth from the sun and reducing the annual cut and restricting the size of cut blocks will help remediate this situation. The Miramichi River Environmental Assessment Committee has been the watch dog on environmental affairs in the watershed, but the regulators must be diligent in ensuring no harm comes to the environment.

Action Plan:

A thermal map of the Northwest system to be developed which will identify all cold water inputs.

Using GIS modeling and DNR's forest harvest data base undertake an assessment of the extent of forest harvesting within the watershed's of both rivers. The assessment to be done on 3rd order streams and rolled up from that base.

3.8 Other Species

Since man has such a profound impact on the balance of nature, we must ensure that populations of all native fish, birds and animals are at sustainable levels and in balance with each other. Striped bass populations had been extremely low on the Miramichi and a strict management plan by DFO over the past decade has seen the recovery of this species, although there still remains a low number of older age fish. There is concern that the numbers of bass are far exceeding spawning requirements and this may affect salmon smolt survival as the smolt run from the Northwest Miramichi system is migrating through the striped bass spawning grounds when the bass are present. Another species of concern is the growing population of grey seals in Miramichi Bay and indeed, the whole Gulf of St. Lawrence. As the number of seals increase, they consume large quantities of fish and it can be assumed that salmon would be one of the species that are targeted. Invasive species may pose the largest threat to Atlantic salmon and currently smallmouth bass have been illegally introduced to Miramichi Lake on the Southwest Miramichi. If unchecked, smallmouth bass will spread throughout the Southwest Miramichi and eventually colonize the Northwest Miramichi and will become a major competitor of Atlantic salmon in the watershed.

Action Plan:

Reopen the Striped Bass fishery on the Miramichi in the spring of 2011. Appropriate regulations will need to be in place by May 15th. It is suggested that to ensure the larger spawners are not harmed, a size limit be set where only bass under 35 cm or 40 cm can be retained. A daily & possession limit for angling would also need to be set as well as an allocation for First Nations harvest by trap net. The majority of the smaller striped

bass in the Miramichi River appear to be males. Depending on the stock assessment numbers in 2011, the season could be extended to include other parts of the Gulf of St. Lawrence after July 1.

Establish a harvest for Grey Seals in Miramichi Bay to keep the population at a sustainable limit for the seals and the fish that they prey upon.

Eliminate the population of Smallmouth Bass from Miramichi Lake using all available means to prevent their spread. Undertake an initiative to increase public awareness on the issue of invasive species and strengthen curtailments to the importation of exotic species

4. *Review of Management Plan*

The Steering Committee of the Miramichi Watershed Management Committee will review the progress of the management plan and report back to the MWMC members.

5. *Public Information and Education*

Once the management plan has been finalized for 2011, public consultation will be needed to explain the changes and the reason for making them. It is important to have changes included in the NB angling guide and if changes are made after the printing, then an updated insert needs to be placed in the guide. Angler awareness seminars will be held at one or more venues on the Miramichi to allow a forum where anglers can ask questions. Press releases stating the changes will be needed for publication in provincial papers and should be carried on DNR, DFO, MWMC, ASF, NBSC and MSA websites.

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