

## Rationale for Pro-Active Harvest Management for the Bluenose-East Caribou Herd

**GNWT-ENR, Updated Dec. 2014**

### 1. Overview:

A June 2013 calving photo-survey of the Bluenose-East (BNE) caribou herd resulted in estimates of 68,000 adult caribou (1.5 year old or older) in the herd, a significant decline from over 100,000 adult caribou estimated from a similar June survey in 2010. This represents an annual rate of decline of 13%. Demographic analysis suggests that the decline is in large part due to a combination of low natural survival rates and harvest. Harvest of this herd has likely increased in recent years, in part due to severe harvest restrictions on the Bathurst herd in 2010. Estimated/reported BNE harvest has averaged ca. 2800/year, primarily cows, since 2010. This harvest may be under-reported and could be at least 4000/year.

There are parallels between the decline of the Bathurst herd 2003-2006 and the 2010-2013 decline of the BNE herd. The potential exists for an accelerated decline in the BNE herd similar to that of the Bathurst herd 2006-2009, where a relatively constant harvest from a declining herd increased the herd's rate of decline. There is an opportunity to apply lessons from declines in other herds and to manage pro-actively.

General guidance on harvest management for this herd can be drawn from the draft 2014 management plan for the Cape Bathurst, Bluenose-West and Bluenose-East herds from the Advisory Committee for Cooperation on Wildlife Management (ACCWM). The Wek'eezhii Renewable Resources Board (WRRB) provided recommendations in Oct. 2010 for the BNE herd (harvest target of 2800 caribou and 85% bulls). The Sahtu Renewable Resources Board (SRRB) issued similar recommendations for voluntary harvest management for this herd in late 2006 (4% of the herd and 80% bulls), when the herd was estimated at about 66,000. A Dec. 2014 letter from the ACCWM to ENR on BNE harvest recommended a voluntary harvest limit of 2800, mostly bulls.

Based on ENR's harvest rule of thumb document on shaping harvest to a herd's risk status, particularly its size and trend, the BNE herd would be assessed as being at medium-high risk, based on its rapid decline rate of 13% 2010-2013, intermediate population size, recent harvest estimates, reduced recruitment, and low adult survival rate. In addition, recon survey results from June 2014 suggest the decline has continued and may have accelerated. A recommended harvest rate of 2% (1200-1300 caribou) or less, with a high emphasis on bull harvest (at least 80%) would be consistent with the herd's status and trend 2010-2013. A bull-focused harvest target in place for the 2014-2015 hunting season would greatly lessen the likelihood of further rapid decline in the BNE herd.

### 2. Bluenose-East and Neighbouring Herds: a Comparison of Numbers During Decline

A comparison of declines in the BNE herd 2010-2013 and the Bathurst herd between 2003 and 2006 shows a number of similarities (Table 1). The annual rate of decline was about 12-14% in both cases. In the Cape Bathurst and Bluenose-West herds, the annual rate of decline was a similar 12-14% from 2000 to 2006. In the Bathurst herd, the rate of decline then accelerated to 23% by 2009. At lower numbers, the Bathurst decline was increasingly driven by an annual harvest estimated at 4,000-6,000 (primarily cows), in addition to a declining natural trend. From a herd of 128,000, this would have been 3-5% of the herd, but by 2009 the same harvest would have been 12-19% of a herd of 32,000.

Although harvest of the BNE herd has not always been reliably documented, harvest likely increased after 2010 and the major reduction of the Bathurst harvest. Traditionally this herd was hunted most by Deline harvesters; the average annual reported Deline harvest was 1260 caribou (60% cows) 1995-2005. Tlicho hunters and other hunters in the North Slave region generally hunted the more accessible Bathurst herd until 2010. The estimated/reported BNE harvest has averaged ca. 2800/year, primarily cows, since 2010. This harvest is viewed as under-reported and may be at least 4000/year. Harvest from the Bluenose-East herd at 68,000 of 2800-4000/year is 4-6% of the herd. If the BNE herd continues to decline at 13%/year, it would number about 46,000 in 2016, and the same harvest of 2800-4000 would then be 6-9% of the herd.

Table 1. A comparison of herd size, decline and harvest from the Bathurst and BNE herds

Item	Bathurst herd	Bluenose-East herd
<u>Estimated Herd Size (Extrapolated)</u>	2003: 186,000 2006: 128,000 2009: 32,000 2012: 35,000	2010: 103,000 2013: 68,000
<u>Rate of Decline (Annual)</u>	2003-2006: 12% 2006-2009: 23% 2009-2012: ± stable	2010-2013: 13%
<u>Estimated harvest</u>	2008-2009: est. 4000-6000 (mostly cows) 2010-2013: est. 200-300, 40% cows	Average Deline harvest 1999-2005: 1260 (60% cows) – Sahtu harvest study Average harvest 2010-2013: est. 2800 (mostly cows). May be higher (4000).
<u>Cow Survival Rate (model)</u>	2006: 75% 2009: 67% 2012: 78% (stable herd – at least 80%)	2012: 73%  (stable herd – at least 80%)

A comparison of declines and harvest reduction in the Cape Bathurst, Bluenose-West and Bathurst herds from 2000 to 2012 (Fig. 1) indicates that all three herds declined rapidly in the early 2000s. In all three herds, substantive harvest restriction did not occur until the herds had declined to much reduced size. All three declines were initially driven by natural factors, including low calf recruitment, but accelerated at lower numbers by high harvest (primarily cows). All three herds stabilized once harvest was substantially reduced; improved calf recruitment contributed to stabilization. Earlier reduction of harvest and a shift to a bull-dominated harvest might have resulted in reduced decline and recovery starting at a greater herd size in these three herds. If proactive harvest management can be taken for the Bluenose-East herd, the likelihood of further decline could be significantly reduced.

Additional detail is provided in the following pages on harvest recommendations from the ACCWM draft management plan, SRRB and WRRB recommendations for the BNE herd, and ENR's rule of thumb approach applied to the BNE herd in 2013.

### Cape Bathurst, Bluenose-West & Bathurst Herds 2000-2012

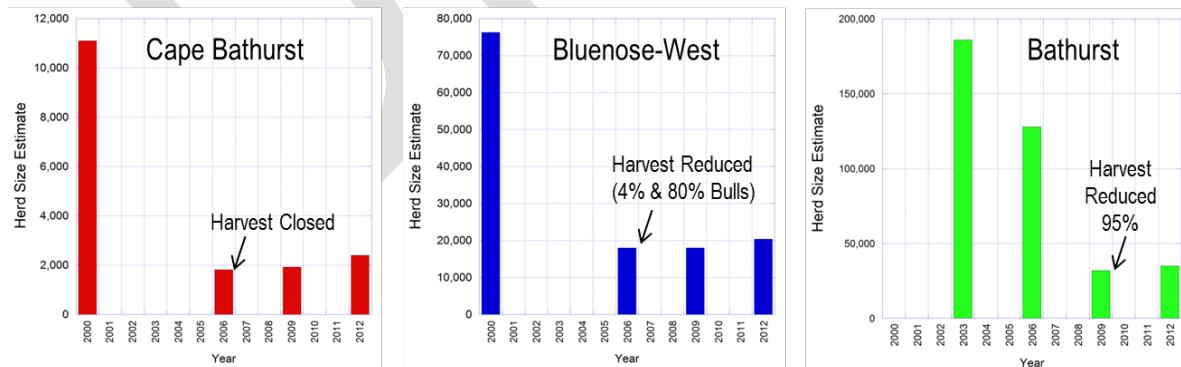


Fig. 1. Population trend and harvest reduction in the Cape Bathurst, Bluenose-West and Bathurst herds 2000-2012.

## Appendix: Guidance on recommended harvest for the Bluenose-East herd

### (A) ACCWM Draft Management Plan for Cape Bathurst, Bluenose-West & Bluenose-East herds:

A management plan for the Cape Bathurst, Bluenose-West and Bluenose-East caribou herds has been prepared by the ACCWM (Advisory Committee for Cooperation on Wildlife Management). The plan has not been finalized; however, guidance on recommended harvest for the Bluenose-East herd can be drawn from the draft plan.

Management actions on harvest and other actions in the ACCWM plan are to be guided by the herd's status in a coloured chart with four phases (Fig. 2a). The green zone is for herds at high numbers relative to historic highs, yellow is for increasing herds, orange for decreasing herds, and red for herds at low numbers. Thresholds for transitions between the 4 phases have been defined for each herd (Fig. 2b). Management actions related to harvest are listed in Fig. 2c.

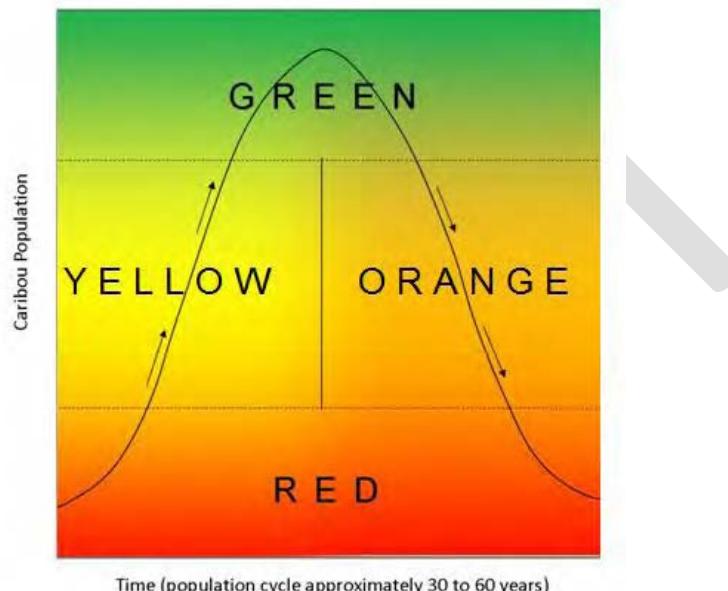


Fig. 2a. Caribou herd management according to 4 phases, from draft ACCWM management plan.

HERD	Historic High As measured by surveys	Threshold Between green & yellow/orange	Threshold Between red & yellow/orange
Cape Bathurst Herd	19,000	12,000	4,000
Bluenose-West Herd	112,000	60,000	15,000
Bluenose-East Herd	120,000	60,000	20,000

Fig. 2b. Thresholds between colour phases for the CB, BW and BNE herds, from draft ACCWM management plan.

**Green:**

- Support harvest by beneficiaries of a Land Claim and members of an Aboriginal people, with rights to harvest wildlife in the Region;
- Recommend that if subsistence needs are met resident harvest should be permitted (with limits);
- Potentially recommend resident (non-beneficiary), non-resident, sport hunts, and/or commercial harvests;

**Yellow:**

The population level is intermediate and increasing

Management actions include:

- Recommend easing limits on subsistence and then resident harvests;
- Consider recommending outfitter and commercial harvests at discretion of the ACCWM;

**Orange:**

The population level is intermediate and decreasing

Management actions include:

- Recommend a mandatory limit on subsistence harvest based on a TAH accepted by the ACCWM;
- Prioritize the collection of harvest information;
- Recommend no resident, outfitter or commercial harvest;
- Recommend a majority-bulls harvest, emphasizing younger and smaller bulls and not the large breeders and leaders;
- Recommend harvest of alternate species and encourage increased sharing, trade and barter of traditional foods, such as the use of community freezers;
- Recommend increased enforcement including community monitors;

**Red:**

The population level is low

Management actions include:

- Recommend harvest of alternate species and meat replacement programs, and encourage increased sharing, trade and barter of traditional foods;
- Prioritize the collection of harvest information;
- Review of mandatory limit for subsistence harvest for further reduction;
- Recommend increased enforcement including community monitors;
- Resident, commercial, or outfitter harvest remain closed.

Fig. 2c. Proposed actions on harvest, from the draft ACCWM management plan.

Based on the ACCWM draft plan, if the herd is defined as being in the orange (declining) zone, then actions could include a limit on subsistence harvest, including a Total Allowable Harvest (TAH), and a majority-bulls harvest, in addition to closure of resident and commercial harvest. A Dec. 2014 letter from the ACCWM to ENR on BNE harvest recommended a voluntary harvest limit of 2800, mostly bulls, for winter 2014-2015.

### (B) WRRB Recommendations for BNE herd Oct. 2010

In Oct. 2010, the WRRB issued a report with 60 recommendations on monitoring and management of barren-ground caribou in Wek'eezhii. Most were focused on the Bathurst herd but some were focused on the Bluenose-East herd. At that time, exact Bluenose-East survey numbers had not yet been released for 2010 surveys of the herd. These recommendations were not put into action when the 2010 surveys resulted in estimates of a herd with an increasing trend and numbers exceeding 100,000. The recommendations were for a harvest target of 2,800 caribou and 85% bulls.

From Report on a Public Hearing Held by the Wek'eezhii Renewable Resources Board, 22-26 March 2010 & 5-6 August 2010, Behchokö, NT & Reasons for Decisions Related to a Joint Proposal for the Management of the Bathurst Caribou Herd:

**Recommendation #15:** The Board proposes the establishment of a harvest target of 2800 Bluenose-East caribou per year for the 2010/11, 2011/12 and 2012/13 harvesting seasons. The annual harvest target and its

allocation should be finalized in discussions between the existing wildlife co-management boards and Aboriginal governments in the Sahtu, Dehcho and Tåîchô. The Tåîchô Government should determine distribution of the allocation within Tåîchô communities.

**Recommendation #16:** The Board recommends the harvest of Bluenose-East caribou should target an 85:15 bull/cow harvest ratio, i.e. the annual harvest of Bluenose-East caribou cows should be less than 420.

**Recommendation #17:** The Board recommends that if the Tåîchô Government and/or ENR have information to suggest that the harvest of Bluenose-East caribou has or will in the near future exceed the target by 10% or more, then regulations should be put in place to close all harvesting in areas occupied by the Bluenose-East herd.

**Recommendation #18:** The Board recommends that if the Tåîchô Government and/or ENR have information to suggest that the harvest of Bluenose-East caribou has or will or in the near future materially exceed 420 cows, then regulations should be put in place to close all harvesting in areas occupied by the Bluenose-East herd.

### (C) SRRB Recommendations for BNE herd Dec. 2006

A July 2006 survey provided an estimate of 66,400 non-calf caribou in the Bluenose-East herd, a decline of approximately 36 percent from 104,000 in 2000. Environment and Natural Resources (ENR) and the Sahtu Renewable Resources Board (SRRB) met with the Sahtu communities to obtain input on limiting harvest. SRRB recommended a voluntary total allowable harvest be set at 4% of the 2006 herd estimate until a new population estimate was available in 2009, with a voluntary harvest limit of females at 20% (letter from SRRB to ENR Dec. 2006). This would have been 2,656 caribou and 531 cows/year, a harvest limit similar to the WRRB recommendations of Oct. 2010.

### (D) ENR Caribou Harvest Rule of Thumb Approach applied to BNE herd

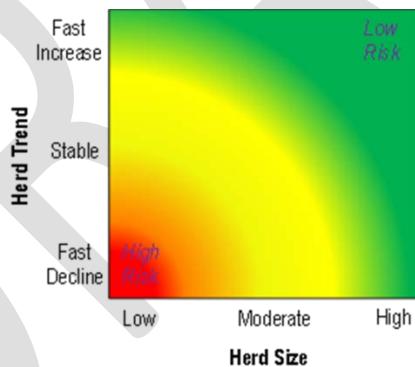


Fig. 3a. Caribou herd risk assessment based on relative population size and trend (from ENR rule of thumb summary).

In 2013, GNWT ENR developed a “rule of thumb” approach to recommended harvest for barren-ground caribou herds to help define an appropriate size and sex ratio of harvest depending on a herd’s risk status, and primarily on its size and trend. These were based on harvest modeling carried out for the Bathurst, Bluenose-East and other NWT herds, as well as recommendations for herds elsewhere in North America (Fig. 3a). Other indicators (e.g. caribou health & condition, calf recruitment) could be used to refine the risk assessment.

In this approach, a caribou herd is at highest risk of rapid decline in future if it is at low numbers and already declining rapidly, while a herd at high numbers and increasing rapidly is at lowest risk. Fig. 3b shows the recommended harvest rate and emphasis on harvesting bulls (over cows) associated with the herd’s risk assessment.

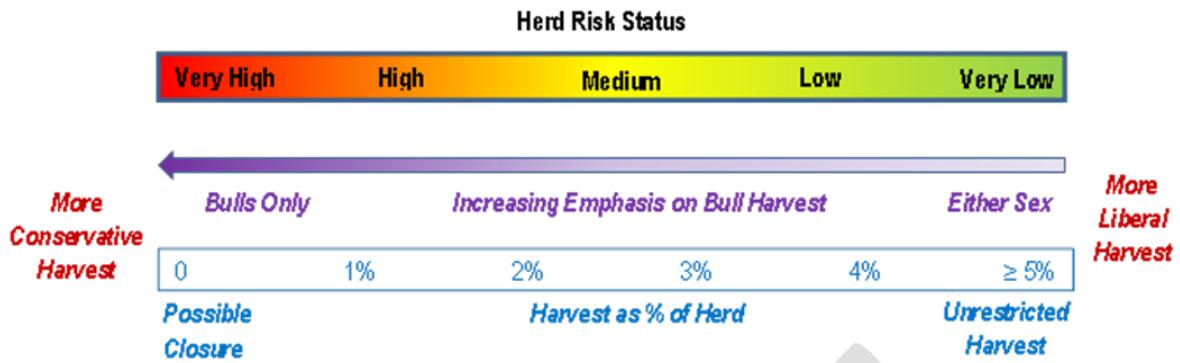


Fig. 3c. Recommended harvest rate (% of herd) and sex ratio (% bulls) depending on a caribou herd's risk status (from ENR rule of thumb summary).

Based on Fig. 3a, the Bluenose-East herd would be assessed in Dec. 2014 as being at medium-high risk, based on its rapid decline rate of 13% 2010-2013, intermediate population size, recent harvest estimates, reduced recruitment 2012-2014, reduced pregnancy rate in 2010 and 2012, and low adult survival rate. In addition, a June 2014 reconnaissance survey, while not providing a precise population estimate, suggests that the herd's rate of decline has at least continued and may have accelerated from 2013 to 2014. A recommended harvest rate of 2% or less, with a high emphasis on bull harvest (at least 80%) would be consistent with the herd's status and trend 2010-2014.

If the herd's 2013 population estimate of 68,000 is used, 2% of the herd would be 1360 caribou. If the herd is assumed to have continued to decline at 13%/year (as from 2010 to 2013), then the herd in 2014 would be at 59,160 caribou and 2% of the herd would be 1184 caribou. If the recon survey results from June 2014 are accurate, then the herd may number considerably less than 59,000. On balance, a harvest limit of 1200-1300 caribou with at least 80% bulls would be recommended based on the rule of thumb approach.