

Wisconsin Department of Natural Resources  
Natural Resources Board Agenda Item

**SUBJECT:** Elk herd update and approval of the 2022 elk season quotas.

**FOR:** May 2022 Board meeting

**TO BE PRESENTED BY:** Josh Spiegel, Wildlife Biologist

**SUMMARY:**

This item will update the board on the 2021 elk hunting season and current northern elk herd population projections. The DNR will also request approval of a recommendation for an 8 bull quota for the 2022 season in the northern elk management zone.

**RECOMMENDATION:** That the board approve the 2022 elk season quota.

**LIST OF ATTACHED MATERIALS (check all that are applicable):**

Background memo

Type name of attachment if applicable

Type name of attachment if applicable

Type name of attachment if applicable

Approved by	Signature	Date
Eric Lobner, Bureau Director	<small>DocuSigned by:</small> <i>Eric Lobner</i> <small>49A5E090CF88465...</small>	5/2/2022   12:20 PM CDT
Tami Ryan, Deputy Division Administrator	<small>DocuSigned by:</small> <i>Tami Ryan</i> <small>F0E3A496A01C401...</small>	5/2/2022   12:56 PM CDT
For Preston D. Cole, Secretary	<small>DocuSigned by:</small> <i>Sarah Barry</i> <small>A7D70DC3770642F...</small>	5/3/2022   10:36 AM CDT

Sarah Barry

cc: Board Liaison – AD/8

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by Sarah Barry

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**CORRESPONDENCE/MEMORANDUM**

DATE: April 28, 2022

TO: Natural Resources Board Members

FROM: Secretary Preston D. Cole

SUBJECT: Approval Request for 2022 Elk Harvest Quota

The following 2022 elk harvest quota recommendation and herd status update is provided to the Natural Resources Board for consideration and approval. The 2022 elk hunting season is being proposed for the Northern Elk Management Zone with a harvest objective of 8 bull elk, with permits split evenly between state licensed hunters (4) and Ojibwe tribes (4).

**Background**

The first modern-day elk hunting season in Wisconsin was approved in 2018 following the population of the northern elk herd surpassing 200 individuals for the first time since the reintroduction in 1995. Per Administrative Code, the 2018 and 2019 bull harvest quota was set at 5% of the total population estimate.

The Department and the NRB recognized the need for greater flexibility in the quota setting process to allow current research, elk herd metrics, and public input to have a greater role in the quota process. As a result, the rule requiring the bull harvest quota to be equal to 5% of the population was eliminated prior to the 2020 hunting season. This rule modification provided the Department flexibility to manage the elk population using herd metrics including bull:cow ratios, bull age structure, population growth rates, impacts of winter severity and other mortality causes, and public input based on hunter satisfaction, nuisance conflicts, and elk viewing opportunities.

**2022 Northern Herd Status**

The 2022 post-calving population estimate (Table 1.) for the northern elk herd is 336 (280-394) elk. This includes approximately 255 elk greater than one year old and 81 calves projected to be born in 2022 (Table 2). This estimate represents an increase of 1.2% over the 2021 post-calving estimate of 332 (296-365). Herd growth is predicted to be below the long-term average in 2022 as 22 known adult elk were lost to various causes including legal hunter harvest (7), age and overwinter body condition (5), wolf mortality (4), brainworm/parasites (2), and 1 elk was lost to each of the following: vehicle collision, trapping/handling incident, and pregnancy complication. Estimated losses for 2021-22 include 35 calves and 14 additional unknown adult elk, through unknown natural mortality. It is important to note, that the number of bulls in the population has not increased since 2020, in part due to the harvest but also due to natural mortality that has occurred. With a steady number of bulls and increasing cow numbers, the bull:cow ratio has continued to decline since the inception of the first elk hunting season in 2018.

Table 1. Post-calving population estimate for the northern elk herd between 2020-2022

Post-Calving	2020	2021	2022
Cows	140 (122-147)	167 (154-180)	175 (156-195)
Bulls	80 (65-92)	81 (74-87)	80 (67-92)
Calves	77 (58-88)	84 (68-98)	81 (57-107)
<b>Total</b>	<b>297 (245-327)</b>	<b>332 (296-365)</b>	<b>336 (280-394)</b>
Calves:100 Cows	55 (48-60)	50 (44-54)	46 (37-55)
Bulls:100 Cows	57 (53-63)	49 (48-48)	46 (43-47)

Table 2. Pre-calving population estimate for the northern elk herd between 2020-2022.

Pre-Calving	2020	2021	2022
Cows	123 (106-128)	147 (134-160)	153 (132-169)
Bulls	60 (47-73)	51 (45-58)	57 (42-74)
Calves	37 (27-47)	59 (54-64)	49 (35-65)
<b>Total</b>	<b>221 (180-248)</b>	<b>257 (233-282)</b>	<b>259 (209-308)</b>
Calves:100 Cows	30 (25-37)	40 (40-40)	32 (27-38)
Bulls:100 Cows	49 (44-57)	35 (34-36)	37 (32-44)

### Proposed 2022 Quota

The model used to project the population in 2021 was again used in 2022. Included in the model, were updates to inputs and variables, including information from the 2021-22 elk year. Similar to last year, the starting point of the model was verified by field staff to provide the most accurate information for projections. The model again used objectives identified by the Elk Advisory Committee. The objectives and associated values that are used for managing the elk population in the northern herd, include:

1. Maintain a bull:cow ratio  $\geq 40:100$  (46:100 in 2022)
2. Increase the total number of bulls in the herd from 2022-2026 (80 bulls in 2022)
3. Increase the total number of mature bulls in the herd from 2022-2026 (34 mature bulls in 2022).  
Mature bulls (3.5+years of age) have been identified as being essential for breeding success to ensure long-term population growth as well as to support important elk-viewing opportunities and local tourism.
4. Maintain a population growth rate  $\geq 10\%$  over a two-year period

Office of Applied Science (OAS) modeling, along with Wildlife Management ground truthing through surveys, visuals, and fieldwork, has allowed the Elk Advisory Committee and the Department to review multiple potential quota scenarios for a period from 2022-2025 (Table 3) to evaluate the impacts of harvest mortality on the stated objectives. Objective threshold numbers, shown in Table 3, were established in 2021. In the modeling process, various starting quotas for 2022 were set at 4, 8, or 12 to adequately interpret harvest impacts of evenly spaced harvest levels over time. Anticipating expectations to increase the quota as the population grows, annual quotas were allowed to increase each year in the model (ex. 8,8,10,12 for years 2022-2025, respectively) if each of the four previously identified objectives were met through population projections. If any of these objectives were not met, the corresponding years quota remained steady, without increase. stable 4-year quota projections of 4, 8, and 12 are also shown for comparison's sake.

Table 3. Annual quota impacts to elk population metrics with projections for Post-Calving 2026.

Annual Quotas	Bulls:100 Cows	Mature Bulls:100 Cows	Total Bulls	Mature Bulls	Total population	% Growth 2022-2026
4,4,6,8	51 (33-69)	30 (17-40)	115 (75-157)	67 (38-90)	447 (249-640)	33% (-11%-62%)
8,8,10,12	44 (27-62)	23 (11-33)	100 (62-141)	52 (26-74)	432 (236-624)	29% (-16%-58%)
12,12,14,14	38 (22-56)	17 (7-27)	86 (50-128)	39 (15-61)	418 (224-611)	24% (-20%-55%)
4,4,4,4	53 (36-72)	32 (19-42)	121 (81-163)	73 (43-95)	453 (255-646)	35% (-9%-64%)
8,8,8,8	47 (30-65)	26 (14-35)	106 (67-148)	58 (31-80)	438 (241-631)	30% (-14%-60%)
12,12,12,12	40 (24-58)	19 (8-28)	90 (54-132)	43 (19-64)	422 (228-615)	26% (-19%-56%)

The last three scenario keeps the quota constant across years. The rest of the scenarios use a defined 2022 quota, with the quota in subsequent years increasing by 2 bulls if all the following conditions are met:

1. The total population has increased by 10% over the previous 2 years
2. The combined number of spikes, raghorns, and mature bulls exceeds 72 (projected 2021 minimum post-calving bull count)
3. There are a minimum of 40 bulls: 100 cows (Elk Management Plan recommends managing for 40 to 60 bulls: 100 cows)
4. The number of mature bulls exceeds 38 (projected minimum number of 2021 post-calving mature bulls)

The results of this modeling effort indicate that annual bull harvest quotas greater than 8 over the 2022 – 2025 harvest period resulted in a less than desirable growth rate in the overall population and more specifically reduced total bulls, as well as lowering mature bull numbers on the landscape. Paired with the 2022 population growth rate, data, and information, the Department is recommending 8 bulls as the preferred quota with a 1:1(100% success) permit to quota ratio for the 2022 elk hunting season which was recommended by the Elk Advisory Committee.

It is important to note the impacts of the various quota scenarios identified in Table 3 are projected to have a relatively small impact on the overall population growth over the four-year period. However, the impacts to the bull population are more concerning and the focus of the Elk Advisory Committee and Department's quota recommendation.

From 2018 to 2022, the bull:cow ratio has declined from approximately 100:100 to 46:100 and the number of bulls has been reduced by approximately 18% over the same time. While the decline in bull numbers is not overly concerning from a biological standpoint at this time, the Elk Advisory Committee and Department feel annual harvests above 8 bulls currently may erode the bull population and have long-term impacts on the herd, both biologically and socially.

Impacts to breeding success have not been well documented, however, the potential for negative impacts to occur is a real possibility, especially in isolated sub-groups that only have one or two breeding age bulls tending the harems. These sub-groups typically see greater calf and adult survival than the larger herd groups. In total, these estimated 121 elk comprised roughly 46% of the current northern herd (Table 1) and are relatively young in age structure. If these isolated bulls are harvested, breeding success may be significantly reduced, or eliminated for the year, and have a long-term impact on population growth.

Concerns from the public have been received by the department through the recent elk management plan input process regarding a reduction in elk viewing opportunities and "rut" activity since the inception of the elk hunting seasons. Elk viewing and elk-related tourism should also be taken into consideration when managing Wisconsin's elk herds and balancing harvest opportunities with non-hunting enjoyment of the resource which is critical for the long-term success of the reintroductions.

### **2021 Elk Hunt Summary**

The completion of the 2021 elk hunting season marked the fourth modern-day Wisconsin elk hunting season, following 2018, 2019, and 2020. A harvest quota of 8 bulls was approved by the Natural Resources Board (NRB) in May 2021. Eight harvest permits were evenly split between state licensed hunters (4) and Ojibwe tribes (4) in accordance with treaty rights. Like the previous 3 years, one of the state-issued tags was awarded through a Rocky Mountain Elk Foundation (RMEF) raffle, with the remaining three tags being issued through a random draw. 25,215 applications were received for inclusion in the state draw and over 1,800 tickets were sold for the RMEF raffle.

2021 marked the second year in which elk hunters were encouraged to hunt throughout the entire northern zone as the reintroduction efforts had concluded. All four state licensed hunters had opportunities at mature bulls, with 3 bulls ultimately being taken. One mature bull and a spike were taken from the Clam Lake area, and one mature bull was harvested on the Flambeau River State Forest. The Ojibwe tribes harvested 4 elk in 2021, 3 spikes and a righthorn. In total, 7 legal bull elk were harvested during the 2021 season, following harvests of 8 in 2018, 10 in 2019, and 5 in 2020.

## **2022 Season Dates and Application Period**

A combination of state statues and administrative code set the elk season dates, which in 2022 would be October 15 to November 13 and December 8-16. The application period opened March 1 and runs through May 31.

**Drafter:** Joshua Spiegel