MEMORANDUM

TO: Brian Wakeling – Game Management Bureau Chief

CC: Fish and Wildlife Commission – Lesley Robinson (Chair), Patrick Tabor (Vice Chair), Jana Waller, Pat Byorth, KC Walsh, Brian Cebull, William Lane

FROM: Region 1 Game Management Staff- Neil Anderson (Wildlife Manager), Ethan Lula (Wildlife Biologist), Mike Ebinger (Wildlife Biologist), Tonya Chilton-Radandt (Wildlife Biologist)

SUBJECT: Spring Black Bear Harvest in Relation to Established and Potential Season Dates

January 14, 2022,

During the 2022-2023 biennial season setting process, increased interest in spring black bear hunting seasons was expressed by sportsmen, the non-hunting public, and members of the Fish and Wildlife Commission. One tentative proposal was released for public comment following the Dec 14th commission meeting which would extend the spring season end date from May 31 to June 15 in BMU/Elk-Deer Hunting District 130. Given this proposal and increased attention to black bear seasons, this memorandum was drafted to provide biological information relevant to the management of the species as it relates to the existing spring season dates and possible extension. The data presented here is informational only; intended to provide context and scientific data to wildlife decision makers tasked with balancing the public's diverse wildlife interests with the long-term sustainability and health of the resource.

Black bear harvest in HD 130 is typically greater in the spring season that the fall. In 2021, females comprised 26% of the harvest with approximately 79% of the total harvest occurring in the spring. A total of 42 black bears were harvested (Table 1).

Table 1. *HD 130 (Swan) black bear harvest, 2021.*

Season	Female	Male	Total
Spring	9	24	33
Fall	2	7	9
Total	11	31	42

Black bears are one of the most highly valued game species within Region One, accounting for approximately 38% of Montana's total black bear harvest (Table 2). Hunting is regulated through the purchase of a general species-specific license and three established seasons (spring, archery-only, and general). Given that black bear populations are difficult to monitor using traditional methods (e.g. aerial surveys), harvest is closely monitored through mandatory reporting and carcass inspection. There are eight bear management units (BMUs) within Region One, all with an established spring season April 15 –

May 31. The start of spring season generally coincides with den emergence, with males tending to emerge earlier than females, and terminating as an increased proportion of females and cubs emerge from hibernation.

Table 1. *Annual black bear harvest in Region One in relation to statewide harvest (2011- 2021).*

Year	Statewide Harvest	R1 Harvest	% R1 of Statewide Harvest
2011	1429	515	36.04%
2012	1433	592	41.31%
2013	1382	498	36.03%
2014	1411	605	42.88%
2015	1619	663	40.95%
2016	1551	630	40.62%
2017	1392	507	36.42%
2018	1451	529	36.46%
2019	1467	567	38.65%
2020	1603	508	31.69%
2021	1981	733	37.00%
Average	1520	577	38.01%

During the last decade, the reported annual harvest of black bears in Region One has exhibited an upward trend (Figure 1). Consistent with this trend, spring harvest has increased to nearly double that observed in 2010 (Figure 2). While this trend alone may not indicate a change in population (positive or negative) it is important to recognize that spring harvest has increased substantially during the last ten years.

Spring harvest of black bears in Region One follows a relatively predictable pattern that coincides with den emergence, the progression of snowmelt and forage green-up. Following the April 15 season opener, black bear harvest steadily increases and peaks between May 15 and May 31 (season close). A similar trend can be observed in spring harvest data from Region Two (Figure 3). While there are notable differences between these two regions that influence bear abundance and harvest, overall harvest trend is similar and provides the most appropriate comparison to evaluate potential changes to season length, given that spring season in Region Two extends to June 15.

Figure 1. Annual black bear harvest in Region One 1990-2020.

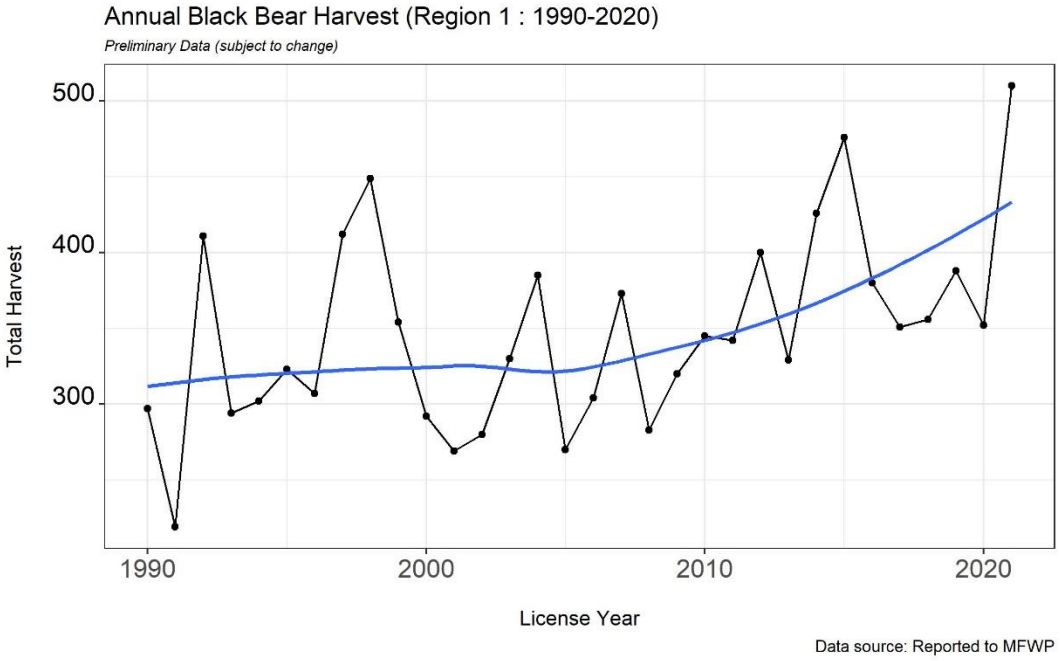


Figure 2. Reported spring black bear harvest in Region One (1990-2021) with male (blue line) and female (red line) harvest over time.

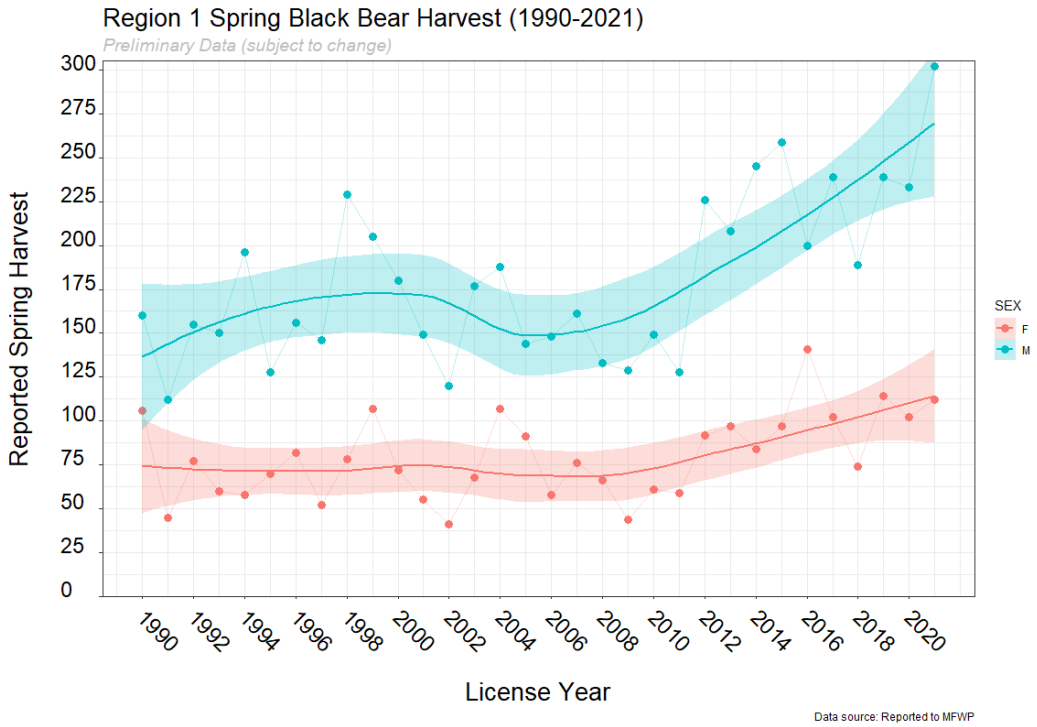
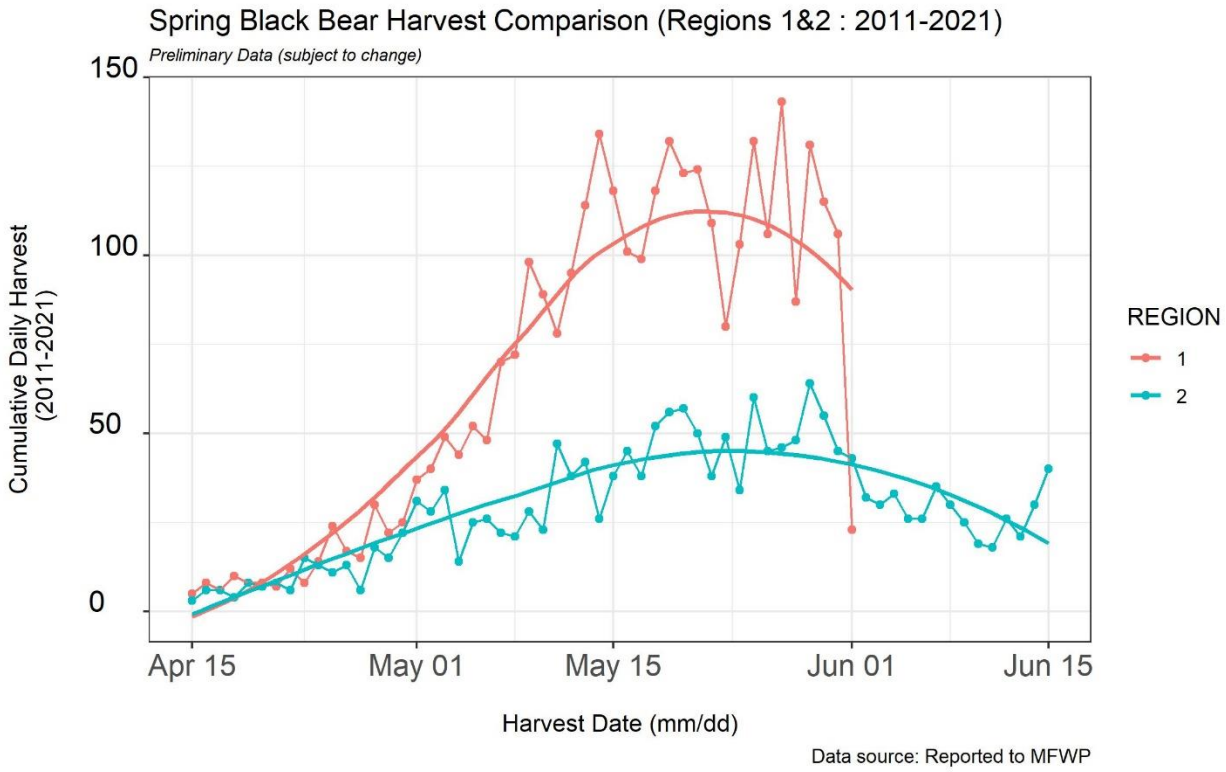


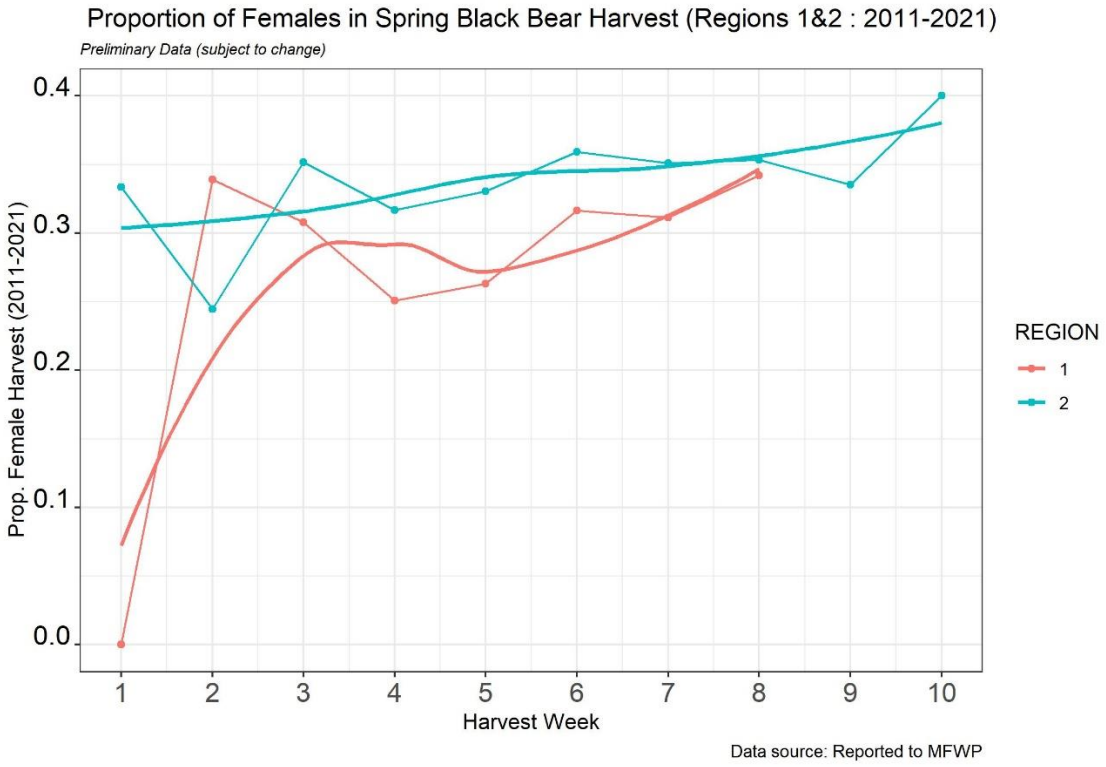
Figure 3. Cumulative daily spring harvest of black bears during the last 10 years (2011-2020) in Regions One (red) and Two (blue).



Within Region Two, black bear harvest begins to trend downward between June 1 and June 15. While this pattern may be the result of advancing green-up and increased bear dispersal, it may also relate to decreased hunter interest as bears begin to rub and shed their winter pelage. Despite a declining trend, approximately 23% of the cumulative 10-year spring harvest in Region Two has occurred between June 01 and June 15. If it is assumed that harvest in Region One would follow a similar harvest trend towards June 15, extending the current season for an additional two weeks would result in a significant increase in overall harvest.

In the absence of abundance data, biologists rely largely on harvest criteria to monitor black bear populations. An important criterion is the proportion of females in the total harvest, with negative population impacts expected if harvest of females were to exceed 40% of total harvest (Montana Fish, Wildlife and Parks. 1994). The proportion of females in harvest is assumed to increase as the season advances due to den emergence patterns and bear dispersal. Basic bear ecology shows that, while male black bears exit dens before any other sex/age cohort, female bears, particularly females with cubs, are the last to emerge from dens in the spring. Harvest data from the last 10 years in Regions One and Two support this assumption and indicates proportional female harvest trending towards 40% as season length progresses (Figure 4).

Figure 4. Proportion of female black bears harvested weekly during the spring seasons in Regions One (red) and Two (blue).



In summary, Region One supports some of most robust black bear populations in the state. As demonstrated by the 2022-2023 season setting process, and increasing ten-year trends in total and spring harvest, interest in black bear hunting opportunity in Region One remains high. While the biological implications of the observed harvest increase are difficult to assess in the absence of abundance estimates, a conservative approach to adjusting season dates is advisable. While ongoing efforts to develop and improve black bear population monitoring are being undertaken in Montana biologists must still rely on harvest data and established metrics until new tools are made available and tested. By comparing harvest trends for the past ten years alongside those of Region Two, it is anticipated that an extension of the spring season within Region One would result in a significant increase in black bear harvest. Additionally, given that the proportion of harvested females increases as the spring season progresses, a season extension has the potential to unintentionally influence population demographics and trend.

Literature Cited:

Montana Fish, Wildlife and Parks. 1994. Final environmental impact statement, management of black bears in Montana. Montana Fish, Wildlife, & Parks, Helena, Montana, USA.