Black Bear Quotas

BMU 520

Population Estimates:

1) Mace & Chilton-Radandt (2011- Black Bear Harvest, Research and Management in Montana) estimated the BMU 520 population at 470 bears. This estimate was based on a habitat model recognizing that in Montana bear densities decline from the northwest to the southeast along a precipitation gradient.
2) Claire Simmons and I conducted a black bear hair DNA project across BMU 520 between 1999 and 2001. We estimated a population of 480 bears.
3) A third estimate of population size can be made by backdating the ages of all hunter killed and miscellaneous mortality bears. Since backdating builds on ages of bears harvested each year it takes 8+ years to achieve a reliable estimate. For 2010 BMU 520 population estimate was estimate was 528 bears, which is the most recent reliable estimate. The population may have declined to about 480 bears by 2012 and to 440 bears by 2013.

Population Objective:

Based on these population estimates we adopted a population objective of 500 bears for BMU 520.

A population of 500 bears has approximately 280 adult (2 year old and older) females.

Current (2013) estimated population of 440 has approximately 260 adult females

Reproductive Parameters for BMU 520 (used to estimate allowable mortality rate as described in Mace & Chilton Radandt):

Average age of first reproduction = 5.8

Average Reproductive Interval = 2.5

Average Litter Size = 1.8

Average cub production = 0.72/year

These parameters are used to calculate a maximum sustainable total mortality of 13%

Allowable ***total mortality*** (harvest plus miscellaneous) at objective population size (from Mace report) = 13% 500 x 0.13 = 65 bears

Allow maximum of 40% of mortality to be females = 26 females

Allowable ***total mortality*** (harvest plus miscellaneous) at current estimated size (from Mace report) = 13% 440 x 0.13 = 57 bears

Allow maximum of 40% of mortality to be females = 23 females

Current Average Female Harvest = 25 (Current female quota is 12 in spring and 10 in fall = 22)

Average Documented Miscellaneous mortality = 28% of harvest

Total Female Mortality Estimate (excluding unknown mortality) = 25 + (25 x 0.28) = 32 females

At the current mortality rate we appear to be slightly over harvesting black bears and that has likely resulted in a declining population.

Two other population parameters are also indicating that we are currently at the upper end of maximum mortality. Over the last 15 years the median age of harvested males has declined from 6 to 4 and the percent of subadult males in the harvest has jumped from 32% to 64%. These figures indicate that high hunting pressure has removed a high proportion of the older age males in the population. At the same time the percent females in the harvest has increased from about 34% to 44%. This would be expected in a high harvest situation. Males are typically more vulnerable to harvest. As male numbers are reduced harvest shifts to females.

All these population indicators indicate that there may need to be a reduction in the female harvest quota in the near future. Alternatively, the spring season could be closed May 15 each year.

There has been limited public input that the quota should be removed, and the spring season should run through June 15. On average females are harvested at a rate of one female/day after May 15. Over the last 10 years the average closing date has been May 26. Running the season to June 15 would essentially add 20 days to the average spring season and could result in a harvest of up to 20 additional females – a significant over harvest. Such high spring mortality could be partially offset by closing the fall bear season.

Black Bear Quotas

BMU 510

Population Estimates:

1) An estimate of population size can be made by backdating the ages of all hunter killed and miscellaneous mortality bear. It appears that this population ranges from 80 – 100 bears

Population Objective:

Based on the population estimates we adopted a population objective of 100 bears.

A population of 100 bears has approximately 55 adult (2 year old and older) females.

Reproductive Parameters for BMU 510 uses BMU 520 (used to estimate allowable mortality rate):

Average age of first reproduction = 5.8

Average Reproductive Interval = 2.5

Average Litter Size = 1.8

Average cub production = 0.72/year

Allowable ***total mortality*** (harvest plus miscellaneous) at objective population size (from Mace report) = 13% 100 x 0.13 = 13 bears

Allow a maximum of 40% of mortality to be females = 5 females

Current Average Female Harvest = 5 (Current female quota is 2 in spring and 2 in fall)

Average Documented Miscellaneous mortality = 7% of harvest

Total Female Mortality Estimate (excluding unknown mortality) = 5 + 5 x.07 = 5 females

At the current mortality rate we are harvesting bears at the appropriate rate for a population of 100 bears.

However, two other population parameters are indicating that we are currently at the upper end of maximum mortality. Over the last 15 years the median age of harvested males has held at 4 years of age and the percent of subadult males in the harvest has ranged from 50 to 70%. These figures indicate that high hunting pressure has removed a high proportion of the older age males in the population. At the same time the percent females in the harvest has exceeded 40% since 2010.

Spring comes early to BMU 510 and the high road density allows for easy access to spring bear concentration areas. Consequently, the quota is quickly filled. On average spring seasons only last 16 days. Quota elimination would quickly result in an unsustainable harvest of black bears.