

**SUBJECT:** Approval of bear harvest quotas for the 2009 season.

**FOR:** JANUARY, 2009 BOARD MEETING

**TO BE PRESENTED BY:** Keith Warnke, Big Game Biologist

**SUMMARY:**

The department recommends a bear harvest quota of 4,585 and an overall permit level of 7,310 for the 2009 season. In individual management units the recommended 2008 permit level is: A) 2,580; B) 1,300; C) 2,200; D) 1,230.

This permit level represents more than a 60% increase in bear harvest permits with increases occurring in all management zones.

The results of a two-year cooperative study of Wisconsin black bears indicate the population is likely more than two times larger than previously thought. The DNR-funded mark-recapture study was conducted by the University of Wisconsin – Madison Wildlife Ecology graduate student, Dave MacFarland, under the guidance of Dr. Timothy Van Deelen. Members of the Wisconsin Bear Hunters Association provided valuable assistance by gathering data and providing research supplies and funding.

Regulated hunting is the primary management tool for Wisconsin’s black bear population. Interest in bear hunting remains high as evidenced by the over 81,000 individuals who applied for a kill tag or preference point in 2008. Harvest quotas are determined using the department’s bear population model to assess the effects of various harvest levels on the bear population estimate. Most department bear research and management activities are directed towards managing bear populations within zones and developing harvest strategies to maintain populations at or near prescribed goals.

Tribal harvest declarations will be incorporated into final permit availability when they are received.

**RECOMMENDATION:**

Approval of bear harvest quotas for the 2009 hunting season.

**LIST OF ATTACHED MATERIALS:**

- No  Fiscal Estimate Required
- No  Environmental Assessment or Impact Statement Required
- No  Background Memo

- Yes  Attached
- Yes  Attached
- Yes  Attached

**APPROVED:**

*Tom Hauge*  
 Bureau Director, Tom Hauge

*Laurie Osterndorf*  
 Administrator, Laurie Osterndorf

*Matt Frank*  
 Secretary, Matt Frank

*12/30/08*  
 Date

*12/30/08*  
 Date

*12/30/08*  
 Date

cc: Laurie J. Ross - AD/8  
 Cons. Cong. Executive Comm. - 4 - LS/8  
 Kurt Thiede - 6 - LS/8  
 Tom Hauge - WM/6

Bill Vander Zouwen - WM/6  
 Diane Brookbank - CS/1  
 GLIFWC & Tribes - 14 - WM/6  
 Robert Rolley - SS/RC

Bob Manwell - CE/7  
 Reg. WM Sups. - 5 - WM/6  
 JoAnne Farnsworth - WM/6  
 Randy Stark - LE/8

## CORRESPONDENCE/MEMORANDUM

DATE: December 18, 2008

TO: Natural Resources Board Members

FROM: Matt Frank *MF*

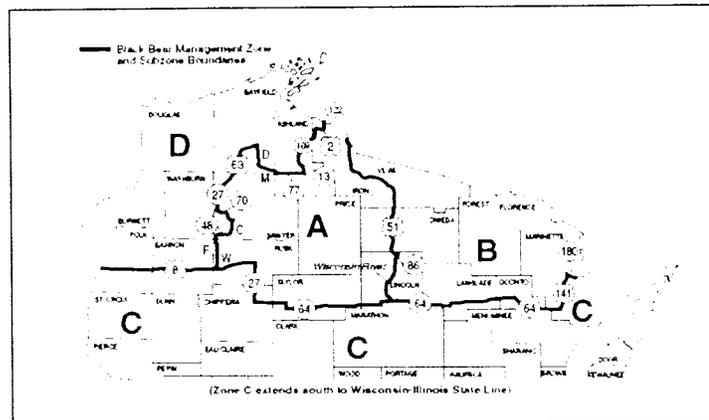
SUBJECT: 2009 Bear Season Quotas

FILE REF: 2300

**Background:**

The department recommends a bear harvest quota of 4,585 and an overall permit level of 7,310 for the 2009 season. In individual management units the recommended 2008 permit level is: A) 2,580; B) 1,300; C) 2,200; D) 1,230.

Regulated hunting is the primary management tool for Wisconsin's black bear population. Harvest is managed by the number of bear harvest permits issued each of Wisconsin's four bear management zones. Public interest in bear hunting remains high as evidenced by the over 81,000 individuals who applied for a kill tag or preference point in 2008.



Bear populations are monitored using a variety of biological indices including age structure of harvested bears, harvest permit success rates, agricultural and nuisance complaints, and visitation at bear bait stations. In addition to these indices, WDNR uses a population model to develop estimates of bear population size, that also incorporates field research and mark/recapture studies into the model as data is acquired.

The bear population model used in Wisconsin was originally developed in Minnesota. The model incorporates information about population parameters that affect population size in known ways. These include sex and age composition of harvested bears, age-specific reproductive rates, and rates of natural mortality. The size and composition of harvests is known from mandatory harvest registration. Estimates of rates of reproduction and natural mortality are based on bear research conducted in Wisconsin and neighboring states. The model, which combines estimates of these parameters, is used to estimate population size by fitting the simulated population trends to the observed trends in the bait station index. A copy of the 2008 bear population analysis using this data is attached to this memo.

Bait station surveys are conducted annually in the counties comprising Wisconsin's northern and central bear range. These surveys provide an index of population trends for correlation with population estimates. Each survey transect consists of 50 bait stations that are placed at 0.5 mile intervals along roads. Bait stations are checked 7 days later to determine the percentage visited by bears. The survey is conducted June 15 – July 15 to correspond with the breeding season when most bears are within their

home ranges. The average visitation rate along transects is calculated each year and three-year running averages are used as an index of population trends.

The department has been interested in improving our bear population monitoring procedures for some time. In 2006, WDNR along with the Wisconsin Bear Hunters Association supported a two-year project at UW Madison to provide a population estimate of Wisconsin bears. The two-year, DNR-funded study was conducted by University of Wisconsin-Madison Wildlife Ecology graduate student Dave MacFarland under the guidance of Dr. Timothy Van Deelen.

In the bear study, some 2,200 baits marked with tetracycline were set out across the state's bear range in 2006. Tetracycline, when ingested, is harmless to bears but leaves a telltale line in a bear's bones. Successful bear hunters in 2006 and 2007 were asked to provide a section of a rib bone from bears they harvested for analysis. From those samples, the biologists were able to use a formula to calculate the estimated bear population.

Using tetracycline is a variation on a wildlife population estimating technique known as mark and recapture. Other examples of mark and recapture are banding of waterfowl and songbirds and radio collars or radio implants on other species.

The research estimates a bear population that 2-3 times larger than estimated using other techniques, but is believed to provide a more accurate number. The estimate developed from the research estimates the pre-hunting season bear population in the fall of 2006. The department will need to replicate the mark-recapture study on a regular basis in future years to accumulate a series of estimates that track population trends over time.

## **2009 Harvest Quotas and Permits**

Our recommended bear harvest quotas for 2009 incorporate the conclusions and recommendations of the recently completed research along with consideration of several other population indices we measure (including the bait station survey, hunter success rate, nuisance complaints, and time-to-kill statistics). Several sources of bias in the tetracycline marking study that could result in shifting the population estimate too high were discussed and taken into consideration by our department bear advisory committee (made up of DNR and UW biologists, hunters, Conservation Congress members, and tribal representatives). Analysis of other bear population indices indicates that our bear population has been increasing over the last decade. Additionally, hunter effort (days it takes to kill a bear) is lower in Wisconsin than in Minnesota or Michigan. Considering all potential sources of bias and other population indices, the DNR bear advisory committee recommended an upward adjustment to the population model to reflect the new population estimate. This resulted in a proposed permit level that is over 60% higher than 2008.

The Conservation Congress bear study committee has reviewed the department's draft recommendations and asked for increases to the DNR proposal in Zones B and C. Our final recommendations to the Natural Resources Board are as follows:

Zone A: Population model adjustment (based upon the tetracycline research) brought the September 2009 estimate up to 10,060 in Zone A. The harvest quota for Zone A was 1,100 bears in 2007. Preliminary harvest level was 1,026 (compared to 1,020 in 2007). The minimum number of preference points needed to get a kill tag in Zone A in 2007 was 7. The bait station survey shows an upward trend in recent years.

The bear advisory committee recommended a harvest quota of 1,700 bears for Zone A. Using permit success rates averaged over the last 3 years from Zone A, the bear advisory committee recommended 2,580 permits in Zone A in 2009.

Zone B: Population model adjustment brought the September 2009 estimate up to 4,500 in Zone B. The 2008 harvest quota was 700 bears and preliminary harvest figures show 656 bears harvested (compared to 513 in 2006) for a success rate of 77%. The minimum number of preference points needed to get a kill tag in Zone B in 2008 was 9. The bait station survey shows an upward trend in recent years. The bear advisory committee recommended a harvest quota of 900 bears for Zone B. Using a three-year permit success rate of 82%, the bear advisory committee recommended 1,100 permits in Zone B in 2009. The Conservation Congress bear study committee requested that the number of permits be increased to 1,300. The resulting harvest quota would be 1,075 (compared to 900). The Department believes that increasing the harvest quota in Zone B poses little long-term risk of a large decrease in the bear population. We support the Congress's request.

Zone C: Population model adjustment brought the September 2009 estimate up to 2,780 in Zone C. The 2008 preliminary bear harvest in Zone C is 632, compared to 565 in 2007. The harvest quota in 2008 was 600 and the success rate was 38%. The minimum number of preference points needed to get a kill tag in Zone C in 2008 was 4. In Zone C, hunting bear with dogs is not permitted leaving hunters there with baiting as the main option. The tendency of bears to come in to bait is greatly influenced by mast crops – specifically acorn production. This past fall's mast crop was abundant and bear hunting efficacy in Zone C was likely hampered. The DNR bait station survey indicates that the population in Zone C has declined recently but is still above goal. The DNR bear advisory committee recommended that the harvest quota be 800 bears in 2009. This would result in 2,040 permits. The Conservation Congress bear study committee requested that the number of permits be increased to 2,420. The resulting harvest quota would be 950 (compared to 800). The Department believes that increasing the harvest quota in Zone B poses little long-term risk of a large decrease in the bear population. However, bear hunting effort is concentrated along the northern border of Zone C where it abuts Zones A, B, and D. The Department is concerned that the level of increase in permits will result in hunter crowding issues and could result in areas where too many bears will be taken. The Department is willing to increase the harvest quota to 860 and the number of permits to 2200 in Zone C.

Zone D: Adjusting the population model for Zone D brought the September 2009 estimate up to 4,880 bears. The 2008 harvest quota was 550 bears, preliminary harvest was 573. The minimum number of preference points needed to get a kill tag in 2008 was 7. The department recommends a harvest quota of 950 bears in 2009 and a permit level of 1230; an increase of 71%.

Table 1. Proposed black bear harvest quotas and permit levels for the 2008 black bear season.

Bear Management Zone	2007 permit level	2008 harvest quota	2008 permit level
A	1,680	1,700	2,580
B	615	1,075	1,300
C	1,560	860	2,200
D	550	950	1,230
Total	4,405	4,585	7,310