NEW JERSEY INDPENDENT BEAR PANEL REPORT

MARCH 6, 2003

INTRODUCTION

Panel

On February 4, 2003, Department of Environmental Protection (DEP) Commissioner Bradley M. Campbell named scientists, governmental representatives and interested persons to serve on an independent bear panel. The purpose of the panel was to review the black bear population estimates of DEP's Division of Fish and Wildlife, and, if possible, make recommendations on management issues based upon their review of the estimates. The panel did not focus on hunting or the hunting debate.

In the series of public meetings on the bear population that the DEP had held around the State, citizens raised concerns about the adequacy and soundness of the population estimates. The independent review panel was designed to open the process to review by interested groups and ensure thoughtful deliberation of both data/modeling and appropriate management practices.

The members of the independent bear panel were: Louis Berchielli, biologist, New York Department of Environmental Conservation; George Howard, biologist, New Jersey Fish and Game Council; Dr. Lynn Rogers, biologist, Wildlife Research Institute - Minnesota; Dr. Allen Rutberg, biologist, Tufts University; Harry Spiker, biologist, Maryland Department of Natural Resources; Lynda Smith, Bear Citizen Group. Dante DiPirro, Counselor and Legal Policy Advisor to the Commissioner, New Jersey Department of Environmental Protection, chaired the panel on behalf of the Commissioner; his function was to preside over the panel and facilitate its work.

Three independent statistical experts-- Dr. Michael Conroy of the University of Georgia, Dr. Gary White of Colorado State University and Dr. Edwin Green of Rutgers University-- assisted the panel. They reviewed the data and modeling and provided their comments to the panelists.

Decision-making Process

This report and the recommendations contained in it represent the conscientious efforts of all the members of the panel and the statistical experts. The panel has been able to reach a consensus on a number of issues that are set forth in the first section of this report. The panel felt that it was important to attempt to reach consensus whenever possible to assist public debate on bear issues. Each panelist has been given the opportunity to include his or her own personal comments in the final section of the report.

SUMMARY OF FINDINGS AND RECOMMENDATIONS OF THE PANEL

Population Estimates

The Division of Fish and Wildlife recently projected a population of 3278 adult black bears in New Jersey. With the assistance of the consulting statistical experts, the panel reviewed the Division's study.

The panel was not able to reach a consensus on whether the Division of Fish and Wildlife's population estimate could be relied upon. Some panelists felt the estimate was reasonable. Others had concerns with the approach and assumptions that were too significant to accept the estimate without further inquiry. The consulting statistical experts also split on the issue of the population estimate's reliability.

The panel did agree that Fish and Wildlife staff has collected a good amount of data, handled and examined numerous bears, collected hair samples as part of monitoring and outfitted and tracked a good number of bears with radio collars.

The panel further agreed that further modeling and data collection is appropriate. Revised modeling should, at a minimum, address the following issues:

* assumptions used to expand population estimates;

* estimation of the area of influence around each hair snare;

* assumption of uniformity over the prime bear range;

* establishment of appropriate confidence interval;

* evaluation of baiting and whether it skews sampling by attracting bears into what is otherwise not their range;

* model selection evaluation of whether modeling selection results in an over or under estimation of population;

* data collection re: birth rate, death rate, age, gender, distribution, home range and movement;

* possible selection of several discrete areas (varying and representative) where rigorous sampling would be done; and

* establishment and analysis of population growth rate.

The panel would like to see these issues addressed in the next round of the Division's modeling. By addressing and building in these factors, this process should be able to arrive at population estimates and trend data that can be widely accepted.

In the meantime, the panel determined that it would be helpful if it could reach a consensus on a potential range in population, even if all that could be offered would be an estimate. To do so, the panel did not rely upon the Fish and Wildlife estimate. In order to arrive at a conservative estimate, the panel: started with the estimate of New Jersey field researcher, Patty McConnell, of 550 adult black bear in 1992; picked what it believed was a conservative estimated growth rate of 8.5% per year (reproductive rate less mortality rate); then multiplied this growth rate out each year through 2003; this calculation yielded a conservative estimate of approximately 1350 adult black bear through 2003.

There was no consensus that the 8.5 percent figure was in fact the correct number. Some panelists felt the number was low. Others noted that the number was not arrived at scientifically but was selected by the panelists in order to be able to present what was likely a conservative estimate. It was further noted that if the growth rate were in reality double that used, (i.e. 17%), the population estimate would exceed 3,000. The panel felt that providing this information, with the caveats stated herein, would at least provide some assistance to the public.

Population Trends

It appears to the panel that the number of bears in the State has increased, though it is not possible for the panel to evaluate what the growth trend is or determine if the increase is statistically significant. We will be attempting to determine this as the State goes forward with enhanced modeling over the next year.

Management Practices

The panel was able to reach consensus on the importance of bear management activities such as public education, aversive conditioning, response to nuisance complaints, enforcement of the prohibition on feeding bears, proper securing of garbage, cooperation between local, municipal and State enforcement officers and the need to change public attitudes towards bears and the bear population. More on these topics is contained in the comments of individual panelists at the conclusion of this report.

On-going Work

The panel believes that it can contribute to the process going forward and is willing to continue to serve if the Commissioner determines that it would be helpful. In this regard, the panel could work with Fish and Wildlife concerning modeling, data collection, review of modeling results, review of existing and potential management practices and any other bear-related issues.

INDIVIDUAL COMMENTS OF PANELISTS

Berchielli, Lou

I enjoyed the in person meeting of NJ's Independent Bear Panel. There were a lot of comments from the statisticians and from some members of the panel. Many comments were about assumptions and variables in the expansion rate which actually had nothing to do with the population estimate. The panel went over everyone's comments point by point and staff from the New Jersey Division of Fish and Wildlife provided detailed explanations or had significant data to successfully respond to all concerns.

In regards to the other consensus topics:

Education: Very important! The flyers "Living in Bear Country" and "Be a good neighbor" produced by NJ Fish and Wildlife are truly outstanding. Although education cannot solve all problems, I'm sure that these flyers and the don't feed bear messages from your agency have and will continue to reduce human bear problems. Additional educational needs can be identified with Human dimension efforts/surveys.

Enforcement: New Jersey now has a very good feeding prohibition that includes garbage. Public support needs to be maintained. Enforcement needs to develop.

Nuisance: The number of complaints will vary from year to year depending on education, weather etc. However home entries are serious and potentially dangerous. It is always very important to address any home entries.

Aversive Conditioning: A combination of aversive conditioning techniques will help many if not most bear human problem situations. The option of lethal control is still vital to assure human safety.
Unfortunately, I have no new suggestions on funding.

For population modeling, it would be excellent if New Jersey could expand it's marking and recapture of bears to reinforce future population estimates. Your staff has done an excellent job of capturing bears and collecting hairs, but more data should increase the acceptance of the estimates. As a biologist, I saw how the radio tracking of bears during the hair collection provided unique and extremely valuable supportive data for expanding the hair snare findings to a population estimate for the entire study area.

For determining expansion rates, it would be very valuable to New Jersey and all researchers and managers in the Northeast if staff could continue their outstanding research with radio collared female bears. New Jersey currently has excellent data but we all need to know if reproductive performance, cub survival rates or radio collared female bear survival rates change. We need to be able use current data in our adaptive management efforts.

Thank you for asking me to participate in New Jersey's Independent Bear Panel. Please let me know if I can be of further assistance.

Sincerely,
Lou Berchielli
New York State DEC

Howard, George

The meeting of the Bear Panel held at the DEP offices in Trenton on Feb. 28th proved to be very worthwhile. It is my opinion that this panel, which was organized and facilitated by DEP, has the potential of making a positive contribution to Black Bear management policies in New Jersey. The members of the panel were very knowledgeable regarding various aspects of Black Bear biology and population determination methodologies. All panel members appeared to make a serious effort to undertake the task at hand, which was primarily to review and critique the New Jersey Division of Fish & Wildlife's black bear population data, and the methodology utilized by bear research biologists Carr and Burguess to determine the number of black bears occupying the primary bear range in New Jersey as of February 2003. Additional topics related to black bears in New Jersey which were discussed to some extent, included bear management, research , and funding activities, which were felt to be essential to the existence of a sizeable bear population co-existing with New Jersey's human population now and in future years.
There was a thorough discussion related to the written comments received from the three statisticians involved, Green, White and Conroy, as well as the written document provided by one of the panel members, Dr. Lynn Rogers. All aspects of the written comments related to the New Jersey bear population research conducted by Carr and Burguess were adequately addressed and resolved by the panel members present. Many worthwhile suggestions concerning future refining of New Jersey bear population research methodologies were put forth, utilizing the written reports and bear research data from Maryland, New York and Pennsylvania provided by the panelists. A consensus population range of between 2,000 and 3,200 bears occupying New Jersey's primary bear range in February 2003 was arrived at by the panel. It is my opinion that the 2,000 figure derived from the old data is too low, but that the consensus range of 2,000 to 3,200 is acceptable. It was revealing to me that most of the original criticism of the data related more to an absence of documentation, which was on hand but not included in the original Carr and Burguess report, than to flaws in methodology or data interpretation. I feel that this criticism was adequately addressed by the Fish & Wildlife biologists and the bear biologists on the panel.

There was general agreement related to the importance of black bear management activities related to such topics as public education, nuisance bear policies and techniques for abatement, aversive conditioning of problem bears, enforcement of regulations related to feeding of bears, proper garbage disposal in bear country, cooperation in bear enforcement between local, municipal and state enforcement officers, and the need to change public attitudes towards bears and bear populations. While black bear damage concerns and their remediation were given little attention at this meeting, bear damage

concerns will be a very important factor concerning the maintenance of sizeable bear populations in the future. One of the last issues which were discussed to some extent was related to the level of funding needed to conduct future bear management and research activities. While given only cursory attention by the panel, adequate funding is probably the most important problem related to the future of New Jersey's bear population. It must be recognized that, just as with other forms of wildlife such as white-tailed deer, waterfowl, and beaver, there is a cost related to maintaining the black bear as a viable part of New Jersey's natural resource base. How large that cost will be, and how that cost is met, should be determined soon and could be a topic for future panel deliberations.

In general the bear panel meeting conducted of February 28th related to New Jersey's research and management efforts proved to be most worthwhile and could serve as a very positive start toward meaningful dialogue between the various factions of New Jersey citizens who have differing opinions concerning black bears, and who have a real need to be informed as to the "facts of life" regarding the Black Bear's place in our heavily developed State in the 21st century.

Addendum to Comments of George Howard:

As far as growth trends are concerned here was certainly evidence presented which indicated a large increase in bear numbers in northern New Jersey in recent years. While a statistically significant exact number of bears is more difficult to arrive at, the population research data collected to date and discussed Friday [at the panel's meeting of February 28, 2003] would certainly substantiate an increasing growth trend. Statistically significant numbers might be nice to have to satisfy a statistician's curiosity but would be largely inconsequential as far as management is concerned. The use of the term statistically significant is meaningless. If the population trend of going from 550 to 2-3,000 is not statistically significant then nothing is. One of the statisticians said that the trend was exponential.

One issue which was given cursory treatment during Friday's meeting, and which I feel should at least be mentioned in the report, is that there is a cost associated with having large populations of wildlife in our state, particularly populations of large omnivores such as black bears. These costs must be addressed satisfactorily if bears are to continue to share our environment with us. A significant funding source to address issues such as law enforcement, nuisance bears, agricultural damage, bear research activities, public education, and the management issued discussed Friday, etc are essential to the future of black bears in our state and should at least be mentioned in the report.

Respectfully submitted,
George P. Howard, Certified Wildlife Biologist
Member – New Jersey Independent Black Bear Panel

Rogers, Lynn

Critique by Lynn Rogers of a report by Patrick Carr and Kelcey Burguess (2003) entitled "Estimation of Population Size of Black Bears in Northern New Jersey"

Commissioner Bradley Campbell and Counselor Dante Di Pirro of the Department of Environmental Protection deserve a public thank you for recognizing the need to examine New Jersey's bear population data and convening an impartial panel of scientists and interested parties to accomplish that task. New Jersey's bear population has obviously increased in the last three decades, but the size and rate of that increase are in question. I hope these comments are helpful to the Commissioner and the DEP.

Based on 12 years (1980-1992) of intensive field research, New Jersey researcher Patty McConnell estimated New Jersey's black bear population to be 575 in 1996. Projecting forward (page 79), she estimated that the population would reach 675 in 2001 and 875 in 2006 and stated that these estimates were for the entire state of New Jersey (McConnell et al. 1997).

Carr and Burguess (2003) used McConnell's data and other data to make a different population estimate. They estimated that the population within the primary range of Sussex, Warren, Passaic, and Morris Counties grew at a rate of 8.5 percent per year and reached 1,146 bears in 2001 (page 1 of Carr and Burguess 2003).

Carr and Burguess (2003, page 8) used other methods to estimate the statewide population in 2001 at 930, 1,363, 1,777, and 1,800. They picked 1,777 as their official estimate for 2001 without revealing why this number was selected over the others. The authors rightly showed that the bear range in New Jersey has expanded, but their population estimates are questionable because the estimation procedures are based on unsupported claims and exaggerated reproductive rates as I will detail below. Essential data is left out of the report, and the authors use as support for their methods misquotes from published works and references to their own unpublished internal reports that have not undergone peer review, were not made available to the panelists, and may suffer from the same shortcomings as Carr and Burguess 2003. After selecting 1,777 as their estimate for 2001, they used that estimate as the basis for projecting population growth into 2002 and 2003, using a population growth rate of 36 percent, which is nearly twice as high as has ever been reported for any bear population. The resulting population estimates were 2,406 bears in 2002 and 3,278 bears in 2003. They did not include confidence limits for their growth rate and population estimates. We seriously considered this unusual population growth rate in our panel meeting of February 28, 2003, after we were told that Pennsylvania harvested a quarter of its population each year, lost another 1-2 percent as road-kills and still saw the population grow at 6-8 percent per year for a total growth rate of 27-30 percent per year. However, Pennsylvania bear biologist Mark Tenent told us at the Eastern Black Bear Workshop on March 3, 2003, that those figures are grossly exaggerated. He said that the population in Pennsylvania's primary bear range in the Poconos is held stable by a 20 percent harvest rate. Applying the lower 20 percent growth rate to New Jersey's questionable 2001

population estimate of 1,777, yields population estimates of 2,132 in 2002 and 2,556 in 2003.

One of the problems I encountered in Carr and Burguess (2003) was exaggerated reproductive rates. The authors included yearling females, which have never been known to produce cubs, and two-year-old females, which only occasionally produce surviving cubs. Age of first reproduction is a very sensitive parameter in calculations of population growth. When I recalculated population growth without these large age classes (yearlings and two-year-olds), population growth rate was less than half that claimed by the authors. The authors state that they attempted to eliminate yearlings by stating that only 80 percent of the bears older than one year were of reproductive age, but this still includes two-year-olds. Moreover, including these two large age classes and then attempting to deduct one or two of them is faulty science that exaggerates reproductive rate. Age of first reproduction is the most sensitive parameter in calculations of population growth rate. The authors dismissed the lower rates published by McConnell et al (1997) as a result of her 1980-1992 New Jersey study without stating why they were now assuming a higher reproductive rate for this species in the same area of the state.

Moreover, in estimating death rates, the authors estimated mortality at only 110 percent of known mortality and presented no information on the source of their known mortality. It seems highly unrealistic that the authors were aware of 90 percent of the bear deaths in New Jersey. This would not take into account natural deaths that the authors did not discover or the public did not inform them about. New Jersey has plenty of forested areas where sick or wounded bears might retreat to and not be noticed by the public. It would not take into account deaths from unreported or illegal shootings of bears by landowners. And it would not take into account deaths in which bears were hit by cars and died out of sight. The authors did not present any data to support their decision to estimate actual mortality as only 110 percent of known mortality. The decision appears to be entirely arbitrary and unrealistic. Actual mortality could be double, triple, or quadruple the known mortality. There is no way to estimate this. Selecting an unrealistically low mortality rate compounds the problems of exaggerated reproductive rates and further inflates population growth estimates.

Hair Snare and Capture-Recapture Data

Another problem arises in the authors' assumption that their hair snares had an effective area of 6.5 square miles. This figure was based on home ranges in McConnell's study in the primary range. However, Carr and Burguess placed hair snares outside the primary range where bear densities are likely lower. In areas of lower bear density, home ranges expand because there are fewer social constraints on foraging widely. Further, many of the bears in outlying areas are young bears dispersing from the primary range. These bears roam widely, traveling many miles before settling. Thus, the effective area around the hair snares was likely larger than the 6.5 square miles claimed by the authors. Carr stated that some of the home ranges of females were less than 6.5 square miles and that some females that were within the supposed effective radius did not visit the baits and leave hair samples. Nevertheless, males roam more widely and home ranges vary with

food supply and age. The assumed size of the effective area around Carr and Burguess's hair snares is little more than a guess. Miscalculating the effective area can be a huge source of error in estimating population size. For example, if their hair snares sampled bears from only twice the area that the authors assumed, the resulting estimate would be twice as high as the actual population. Since the 6.5 square mile figure is not a result of actual measurement in the areas where they used it, the authors were unable to calculate confidence limits, which means there is no way to judge the validity of the population estimates obtained in this way. Further, the authors state that the hair snare data were not gathered systematically. Consequently, the data cannot meet the criteria and assumptions needed for proper population estimation and are a poor basis for management. Carr and Burguess (2003) used combinations of hair snare and capture-recapture data to estimate the 2001 population at 930, 1,363, 1,777, and 1,800 bears and selected 1,777 as the estimate they preferred.

Carr mentioned on February 28 that he caught nearly as many bears in two years as McConnell caught in twelve years. He did not qualify that, though, by saying that he had seven technicians and huge budget while McConnell often worked alone or with a single technician. Thus, the number of captures per year is more a measure of effort than of population growth. It is obvious that the range and number of bears has increased in New Jersey, but the comparison that Carr made cannot be used to quantify the increase.

New Jersey has a need to obtain solid population data with proper confidence limits. There is a need to determine (1) how reproductive rates vary with mothers' age and with annual changes in natural food supply, (2) population age structure, (3) causes and rates of mortality for male and female cubs, yearlings, subadults, and adults, and (3) movements of bears in prime range and outside that range (4) how movements change with age, sex, and season, and with annual changes in food supply. Without movement data, it is difficult to assess the accuracy of capture-recapture data as were gathered by the authors by hair snares, etc. Biases in the data cannot be corrected by just increasing the sample size, they can be eliminated only by understanding the biases and correcting for them, and this can only be done by studying movement patterns and how they vary with the factors mentioned above. Population estimates based on capture-recapture data without movement data can vastly overestimate bear populations. In my own study area in Minnesota, my capture-recapture data produced population estimates that were double to triple the actual population. These discrepancies in my own data set were revealed when I placed radio-collars on the bears and found that I had been sampling bears from a much larger area than I thought. There is a need for additional radio-tracking and field study in New Jersey. McConnell's data set is growing old, and the population estimates from Carr and Burguess provide an unreliable basis for management decisions. For example, suppose that hunting were initiated in 2003 with the goal of stabilizing population size at the 2002 level. Reducing the population from Carr and Burguess' estimated size of 3300 for 2003 to their estimated size of about 2400 for 2002 would require a harvest of 900 bears. If Carr and Burguess estimates were correct, then 900 bears could be harvested every year. Now, suppose that the true population sizes in those years were 1400 and 1200 as estimated by McConnell. Harvesting 900 bears would reduce the population to 500, and any failure to recognize the severity of the errors could

lead to further depletion and endangerment of the population as happened in the mid-1900's.

The greatest needs with an expanding bear population is accurate population data and a vigorous public education program about bear behavior. Education is needed because the greatest problems that black bears face are human misconceptions that cause excessive fear. The number of bears that people will tolerate, sometimes called the social carrying capacity as opposed to biological carrying capacity, depends upon human attitudes. In Pennsylvania, a thousand people per square mile live in a housing development called Hemlock Farms. The people there became knowledgeable about bears, developed realistic attitudes, and peacefully coexist with three bears per square mile. That bear density is probably triple the density of bears found anywhere in New Jersey and is a higher density than is found in any national park or national forest. The people there became knowledgeable about bears and accepted them. As people replace misconceptions with facts, they move past their fears and become more willing to coexist with bears. Complaints about bears often decrease as bear numbers increase because as people become more familiar with bears, they become more comfortable seeing them.

Addendum to Comments of Lynn Rogers:

After talking with Stephanie Simek, I have more doubts about Pat Carr's hair snare and DNA data. Stephanie is the Assistant Bear Management Section Leader for the Florida Fish and Wildlife Conservation Commission. She gave a paper on March 4, 2003, at the Eastern Black Bear Workshop on the use of hair snares and DNA sampling to obtain population estimates. She has been working with this technique for about 10 years and was one of the first to use it. She obtained over 13,000 hair samples in Florida recently because of her advanced techniques. She has stopped using the nonsystematic methods Pat Carr used in New Jersey. She uses updated methods to improve her efficiency of marking animals with less bias regarding sex ratio and systematic sampling to enable better estimates of population density. Aside from the problems with the current nonsystematic data set, I wonder if it is clear to the public that the estimate of 1,777 bears for 2001 is based on data collected in 2001 and 2002. I'm not sure of Carr and Burguess' rationale for using that data set to estimate the 2001 population rather than the 2002 population. Perhaps they selected the mid-point of their data collection period, which would be late 2001 or early 2002. Selecting 2001 enabled them to project the population forward two years to 2003, leading to a higher estimate for 2003 than if they projected forward one year from 2002. There remain serious questions about the estimate of 1,777, given the shortcomings of the nonsystematic hair snare methods. Stephanie Simek can be reached at 850-922-9803 at Division of Wildlife, 620 South Meridian Street, Tallahassee, FL 32399. Her fax number is 850-921-1847, and her email address is stephanie.simek@fwc.state.fl.us.

Lynn Rogers, Ph.D.
Wildlife Research Biologist
Wildlife Research Institute

Rutberg, Allen

I would like to thank the Commissioner for convening a broadly-based panel to analyze and discuss data whose validity and interpretation is critical to the formation of wildlife policy. I believe efforts like these are essential to assure that wildlife is managed in the public interest.

Population

Estimating the size of wildlife populations is always difficult, but especially so when dealing with a semi-solitary, forest-dwelling animal like the black bear. The professional staff of the New Jersey Division of Fish and Wildlife are to be commended for their thoughtful, thorough, and far-sighted efforts to understand the population dynamics and behavior of the state's black bears.

That being said, the breadth in the range of estimates presented in this panel's report reflects the reality that scientific sampling and analytical procedures must be modified to produce estimates that can be presented with greater confidence. In my view, the modification that most needs to be effected is a change from the reliance on widely dispersed sampling locations to intensive sampling from a set of representative locations. This will avoid the unproductive and probably unresolvable arguments over the size of the area being sampled by each bait or trapping site, the outcome of which currently has dramatic effects on the overall population estimate. Models can be tinkered with; but unless we have confidence in the meaning of the data itself, the models' estimates are not reliable.

Education

Public education is the most important aspect of any black bear program. Sustained and intensive education regarding proper trash disposal, food storage, domestic animal and apiary management, and proper behavior in bear country are critical to reducing the likelihood of conflicts and incidents. Education provides short-term benefits by modifying human behavior so that ongoing conflicts are reduced (or prevented from occurring in the first place). By targeting educational programs in part at children, education provides long-term benefits – a citizenry for whom living appropriately in bear country is second nature.

Enforcement of Provisions

New Jersey has taken a critical first step in passing legislation to outlaw the intentional feeding of black bears. Enforcement is critical; bears who associate trash cans and beehives with food represent one problem; those who directly associate human beings

with food are quite another, and far more serious, problem. Intentional feeding of bears guarantees that conflict will occur; it is a wise use of state funds to ensure that regulations aimed at avoiding conflict are enforced. Public education is key in this regard, as it is only through an educational program that informs the public of black bear "dos and don'ts" that authorities are likely to learn from educated citizens concerned about neighbors whose behavior in this regard may be inviting conflict for the entire neighborhood.

Aversive Conditioning

As first responders, it is important that local law enforcement officers are able to capably handle bear/human conflict calls. The keys to effective aversive conditioning are two-fold: to respond *at that point in time* when the bear is behaving in an inappropriate manner; and to use aversive techniques effectively. For instance, responding to a bear who has already raided the trash can or bird feeder and is headed back into the woods teaches the bear nothing. Firing rubber bullets at a bear who has treed – the appropriate response when approached by humans – punishes him for doing the right thing. A bear who is in the process of raiding a dumpster, and who refuses to flee at the approach of humans, is in the wrong place and behaving badly, and should be conditioned. This process requires that a local force be available to respond within a very short time of a complaint of inappropriate bear behavior. New Jersey must structure a system that permits local authorities to condition bears as perhaps the quickest route to conflict reduction

Smith, Lynda

Population Estimate

As the only non-biologist on the panel, representing the citizens of New Jersey, I took very seriously the responsibility of examining current population estimates and did not limit my review to the 2003 report by Patrick Carr and Kelcey Burguess. I also reviewed the Division's 1997 Black Bear Management Plan, the proceedings of the 15th and 16th Eastern Black Bear Workshops, and the status reports from other states presented at the 17th Eastern Black Bear Workshop. In addition, I attended the 17th EBBW and asked questions of other state's biologists regarding population growth rates and DNA hair snare estimates. My research and discussions have lead to the conclusion that the current estimate of over 3200 bears is not feasible.

On pages 10-11 of the 1997 Black Bear Management Plan, the 1996 population is estimated at 450-550 bears. On page 79, the 2006 estimate for New Jersey is projected at 900 bears. On page 36 of the proceedings of the 15th Eastern Black Bear Workshop (March 28-31, 1999), Robert Erickson of the NJ Division of Fish & Wildlife states that the fall 1997 estimate was 500-550 bears and is currently estimated at more than 600 animals. On page 46 of the proceedings of the 16th Eastern Black Bear Workshop (March 25-28, 2001), Patrick Carr estimates a 2001 population of 1146. With no additional research completed by 2001 and no data supplied, I question why this estimate of 1146 is so significantly higher than that of approximately 650 provided in the 1999 status report.

Looking at the current Carr and Burguess report, I note on page 1 that the authors assert a population of 450-550 in 1992, and attribute this to the 1997 BBMP. I have already demonstrated that the BBMP gives this figure for 1997, not 1992. The authors start with 550 in 1992, use a 1.085% growth rate (8.5% per year), and calculate a 2001 estimate of 1146 (as reported in the 2001 status report). Starting from 1992 instead of 1997 explains why there is a discrepancy between the 1999 estimate of 650 and the 2001 estimate of 1146. If one were to begin with 500-550 bears in 1997 and use 1.085% as used by McConnell in the 1997 BBMP and by Carr in the 2001 status report, the estimate would be 542-596 in 1998, 588-646 in 1999 (consistent with Erickson's status report in 1999), 637-700 in 2000, and 691-760 in 2001. Carrying forward at 1.085% per year yields 749-824 bears in 2002 and 812-894 bears in 2003.

On page 8 of the 2003 report, it is now asserted that the 2001 population was 1777. This figure is used in calculations to estimate the 2003 population, which Carr and Burguess assert is 3278 adult bears. Even if one were to assume that the figure of 1777 for 2001 is correct, New Jersey's black bear population would have to increase at a rate of 36% per year from 2001-2003 to yield a current estimate of 3278. This phenomenal 36% annual growth rate cannot be substantiated by any other state agency and is highly suspect. Neighboring states show growth rates of 3%-20%. Maryland has exhibited a growth rate of approximately 10-12% (calculated from their status reports). Pennsylvania, with an estimated population of approximately 15,000 bears, has the highest rate of approximately 20%. With a much smaller population in New Jersey, a growth rate of 36% is neither scientifically sound nor believable.

In conclusion, I disagree with George Howard's assertion in this document that the panel agreed to range of 2000-3200 as the 2003 population estimate. A consensus was never reached at the February 28 meeting. I believe this number is much, much lower and would feel comfortable with a range of 900-1250 bears (starting with approximately 500 bears in 1996 and using 8.5%-14% as a reasonable growth rate).

After spending this much time explaining why I do not accept the current population estimate, I must mention that I firmly believe no matter what population estimate is put forth, the Division of Fish & Wildlife will recommend bear hunting and the Fish & Game Council, because of its inherent bias, will embrace the recommendation. George Howard correctly asserted at the February 28 meeting that the Fish & Game Council doesn't need an estimate in order to have a hunt. Also, it is interesting to note that the 1997 BBMP recommends a hunting season, even though the population was only between 450 and 550 bears back then. After strong opposition at public hearings (noted in the BBMP), this proposal was dropped until 2000, when it was reintroduced. Again, strong public opposition ended a hunt in 2000. It is foolish to attribute this opposition only to animal rights activists. A very large and diverse group of people opposed the hunt, including 29 towns in bear country that passed resolutions in opposition. Despite continuing public opposition, the Council will once again consider a hunt at its meeting on March 7. This has nothing to do with nuisance complaints or population estimates. It's all about trophy hunting.

Non-Lethal Management

I would like to provide the following recommendations for non-lethal black bear management:

1) Vigorously enforce the new law that prohibits feeding bears and allowing them access to garbage. This one step will significantly impact nuisance complaints.

2) Assist in converting to bear-proof trash cans and dumpsters by having the state negotiate discounted rates with suppliers.

3) Continue widespread public education efforts to reduce unwarranted fears. It is essential that the Division not contribute to media hysteria about bears by making inflammatory statements that overstate the risks of human injury and death. Fears must be put into perspective. I commend Lou Berchielli and the State of New York in their handling of this issue. A study conducted by Cornell was presented at the 17th EBBW that showed the public's acceptance of the risk of bears as "low" actually increased following the tragic event in Fallsburg in August 2002. This is a credit to their handling of the situation.

4) Improve the state's aversive conditioning program by purchasing "bear dogs." The Division should consider blackmouth curs and Karelian bear dogs. I suggest contacting Carrie Hunt at the Wind River Bear Institute, www.beardogs.org, for assistance with training.

5) Improve compliance by police officers with the aversive conditioning program by revising the current category system. The public opposes the destruction of bears who kill small livestock or bluff charge, both of which are normal bear behavior. A bluff charge is a sign of fear on the part of the bear and doesn't warrant his/her killing. Police officers may be more willing to respond if they know they will not be required to kill such bears. In other parts of the U.S. and Canada, bears are not killed for this natural behavior. For more information on non-lethal aversive conditioning, I recommend contacting Ainslie Willock and Sylvia Dolson of the JJ Whistler Bear Society in British Columbia, www.bearsmart.com. Sylvia wrote the guidebook on non-lethal bear management used in BC and elsewhere, and Ainslie coordinates training in these techniques as an independent consultant for the Humane Society of the United States. The Bear Education And Resource Group will urge police chiefs to assist more fully in the aversive conditioning effort.

6) Allow for latitude in the category system to provide the Division staff and police officers with the ability to use their personal judgment. For example, a sow with cubs who exhibits Category 1 behavior that is not severe should not be killed due the orphaning of her cubs. This has occurred several times, and the public is justifiably outraged, especially if the cubs aren't captured and taken to rehab.