So What is Tonight About?

1. Briefly review the NC Black Bear Management Plan.
2. Share data and information about our bear populations.
3. Describe development of “Zones” in the Coastal Bear Management Unit.
4. Discuss with hunters the status and opportunities regarding bear hunting rules, seasons, future needs and desires.
5. Get input from you on the future of bear management!
We are going high tech!

Each attendee was given an electronic device that they could use to anonymously answer questions throughout the night. The statewide summary of audience answers are included in this presentation.
Are you a hunter? (for any species)

91% Yes
9% No
Please tell us your age range...

- 24 & Under: 9%
- 25-40: 23%
- 41-55: 27%
- 56-70: 31%
- 71+: 9%
How far did you travel to get to this meeting?

- 20% <10 Miles
- 41% 10-25 Miles
- 28% 26-50 Miles
- 8% 51-100 Miles
- 3% >100 Miles
Review of North Carolina Black Bear Management Plan
Plan Approach

• History
• Current Status
• Future management

• Biologically-sound principles
• Formalizes Process:
  • Goal
  • Objectives
  • Addressing bear issues
Plan Goal

“Use science-based decision making and biologically-sound management principles to manage black bear populations in balance with available habitats and human expectations to assure long-term existence and hunting opportunities.”
Plan Objectives

Seven Statewide Management Objectives
The Plan Identifies Three Regional Black Bear Management Units (BMU)

Population objectives were developed for each unit.
NORTH CAROLINA BLACK BEAR
MANAGEMENT PLAN
2012-2022

North Carolina Wildlife Resources Commission
Review of North Carolina Bear Population Data and Information
What are “Data”? 

Facts or information (measurements or statistics) used to calculate, analyze, or plan something.

Examples:
Number of bears harvested
Number of Hunters
Square miles of huntable land in each county
Where Do We Get Our Data?

Most of it comes from you, our Bear Hunters!
We know we send you lot’s of stuff......
Why Do We Need Data?

We need data to effectively measure, monitor, and manage our bear populations.

- Monitor Population trends
- Determine effects of hunting regulations
- Manage people (response, defense of hunting, etc.)
We’re working for you, so please:

• Report your bear harvest
• Respond to mail surveys
• Submit a tooth from the bear you harvest
Do you consider yourself a bear hunter?

- Yes: 72%
- No: 28%
If you are a bear hunter, do you hunt species other than bear?

- Yes: 90%
- No: 10%
If you hunt, on average, how many days do you hunt bear each year?

*E-Stamp Survey – Survey of all NC bear e-Stamp license holders*
How many days did you hunt bears?

(2015 e-Stamp Survey)

- 1 to 5: 64% With Dogs, 57% Still/Stand
- 6 to 10: 19% With Dogs, 22% Still/Stand
- 11 to 20: 13% With Dogs, 13% Still/Stand
- More than 20: 5% With Dogs, 8% Still/Stand
Statewide Harvest Data
What do you think the statewide bear harvest was in 2015?

A. < 500
B. 500 - 1000
C. 1000 - 2000
D. 2000 – 3000
E. > 3000

[Bar chart showing percentages for each option]
2015 Statewide Black Bear Harvest

E. > 3000

Total Harvest

- 121
- 325
- 1080
- 1663
- 3118
If you bear hunted last season, did you kill a bear?

Yes, I did 34%
No, I did not 66%
2014-2015 Hunter Harvest Survey
Hunter Success Statewide

84%
16%
0% 10% 20% 30% 40% 50% 60% 70% 80% 90%

0 Bears

1 Bears

North Carolina Wildlife Resources Commission
Statewide Hunter Success #s

**Bear Hunter Success**
- 0 Bears: 84%
- 1 Bear: 16%

**Deer Hunter Success**
- 0 Deer: 54%
- 1+ Deer: 46%
If you bear hunted last season, could you have killed a bear but chose not to shoot it?

- Yes, I could have: 65%
- No, I did not have the opportunity: 35%
If you chose not to shoot, Why?

A. I was waiting for a larger bear (saving my “tag”).

B. I let another adult shoot it.

C. I let a youth hunter shoot it.

D. Several of these applied to me.

E. Other reasons.
If you chose not to shoot, why?

- Waiting for a Larger Bear: 16%
- Let another adult shoot it: 2%
- Let a youth hunter shoot it: 14%
- Several of these apply to me: 37%
- Other Reasons: 31%
If your bag limit had been two bears, would you have chosen to shoot a bear?

- Yes, Probably: 46%
- No, the bag limit didn't matter: 41%
- Maybe, I'm not sure: 13%
Last season, did you participate in a bear hunt using dogs?

Statewide Attendees Response

- Yes: 64%
- No: 36%

2015 e-Stamp Survey

- Hunt with Dogs: 36%
- Still/Stand Hunt: 64%
Use of Dogs for Harvesting Bears (2013-2015 Reported Harvest)

- No Dogs: 32.0%
- With Dogs: 68.0%
Successful Bear Hunters Statewide
(2015 e-Stamp Survey)

Used Bait as a Hunting Method

- Used bait as one of their hunting methods: 58%
- Never used bait as a hunting method: 42%
Use of Bait by Method (2015 e-Stamp Survey)

Hunters Using Dogs: 64% No Use of Bait, 36% Use of Bait

Stand/Still Hunters: 60% No Use of Bait, 40% Use of Bait
Sow harvest is important to population management!

In general, 40 - 44% of the harvest can be females before experiencing population declines.
Sex Ratio of Harvested Bears (2013-2015)

- Female: 40%
- Male: 60%
Regional Black Bear Management Units

Mountain BMU

Piedmont BMU

Coastal BMU
Which Bear Unit(s) do you hunt in?

A. Mountain
B. Piedmont
C. Coastal
D. Coastal and Mountain
E. Different combinations

Statewide Attendee Responses

- Mountain: 24%
- Piedmont: 4%
- Coastal: 48%
- Coastal & Mountain: 19%
- Different combinations: 4%
Bear Management Unit
Population Objective Statements

Mountain Objective

Stabilize the Mountain Bear Population at the current level.

Piedmont Objective

Manage the PBMU as a “limited bear population zone”.

Coastal Objective

Maintain the Coastal Bear Population at current levels.
So, let’s talk briefly about Bear Population Management!

Based on the current “best science” to maintain a stable population:

• We can harvest approximately 22-27% of our minimum bear population estimate annually (huntable population*).

• 40-44% of the harvest level can be females (sows) before we expect to experience population declines.

*Huntable population represents the estimate of bears in areas where they can be legally hunted. Examples of bears not represented in this estimate are bears found on National Parks, Wildlife Refuges, large black bear sanctuaries and significant urban areas.
So, for NC’s best current data that translates to:

**Mountain Region**
2014 Minimum Hunttable Population Estimate: 5,917
- Current 3 yr. average harvest = 1,013 (17%)
- Current 3 yr. average female harvest is: 39%

**Coastal Region**
2014 Minimum Hunttable Population Estimate: 11,259
- Current 3 yr. average harvest = 1,842 (16%)
- Current 3 yr. average female harvest is: 40%
So, using our best current data:

**Mountain Region**
2014 Minimum Huntable Population Estimate: 5,917
• Possible 289-585 more bears in the harvest (3 yr. avg.)
• Of which, 116-234 can be female bears

**Coastal Region**
2014 Minimum Huntable Population Estimate: 11,259
• Possible 635-1198 more bears in the harvest (3 yr. avg.)
• Of which, 254-479 can be female bears
Recent Regulatory Changes

- Baiting (hunting with the aid of unprocessed foods)
- New county seasons
- 75 lbs. cub weight law (statutory change)
Piedmont Bear Management Unit (PBMU)

Objective: To manage the PBMU as a “limited bear population zone”
Piedmont Bear Management Unit
Bear Hunting Seasons
2015 Reported Bear Harvest in the PBMU
2015 Piedmont Hunting Methods

• With Dogs = 4 (Franklin, Granville, Person and Warren)
2013-2015 Harvest Sex Ratios
PBMU

FEMALE: 19%
MALE: 81%
Mountain Bear Management Unit (MBMU) and Bear Hunting Season

Estimated Huntable Population: 5,917
Fluctuation in harvest due primarily to mast crops. Abundant mast typically results in lower harvest.
2014 was the highest recorded mast crop on record!
2013-2015 Harvest Sex Ratios
MBMU

- Male: 61%
- Female: 39%
2014 had the highest mast crop on record for the mountain area and subsequently the lowest bear harvest since 2005.
If we look at success in a more “normal” mast year (2013) it mirrors statewide and coastal success rates.
Hunters who indicated that they participated in at least 1 hunt using these methods.
MBMU Harvest by Hunting Method
(3 Year Average Reported Harvest)

- Still/Stand: 25%
- With Dogs: 75%
Coastal Bear Management Unit (CBMU)

Estimated Huntable Population: 11,259
Coastal Bear Management Unit 2016 Hunting Seasons
Coastal Bear Management Unit
Reported Harvest (5 Yr. Trend)

2011 2012 2013 2014 2015

Coastal Unit
Linear (Coastal Unit)

NORTH CAROLINA
WILDLIFE
RESOURCES
COMMISSION
2013-2015 Harvest Sex Ratios
CBMU

- Female: 40%
- Male: 60%
Fall 2014 Hunter Success CBMU (Hunter Harvest Survey)

- 0 Bears: 85%
- 1 Bear: 15%
CBMU Hunting Method
(2015 e-Stamp Survey)

Hunters who indicated that they participated in at least 1 hunt using these methods.

- Still/Stand: 64%
- With Dogs: 36%
CBMU Harvest by Hunting Method
(3 Year Average Reported Harvest)

- Still/Stand: 36%
- With Dogs: 64%
Development of Zones in the Coastal Bear Management Unit
Coastal Bear Management Unit (CBMU)
Why Develop CBMU Zones?

Biologists, commissioners, and hunters have all recognized there are major differences across the Coastal Bear Management Unit.

- Bear Population Levels
- Land Use (Available Habitat)
- Hunter Desires and Management Preferences
- Levels of Human / Bear Conflicts (Agriculture)
2015 CBMU Bear Seasons

- Nov. 6 - Nov. 14 & Dec. 14 - Dec. 26
- Nov. 7 - Nov. 14 & Dec. 14 - Dec. 26
- Nov. 9 - Nov. 14 & Dec. 14 - Dec. 26
- Nov. 9 - Jan. 1
- Dec. 7 - Dec. 26
Development of CBMU Zones

• These 5 bear seasons are not bear management areas or units.
• Instead, they reflect season dates established over time that were based on:
  - Bear Population Recovery / Expansion
  - Hunter Access
  - Hunter Desire and Input
  - Local Law
Development of CBMU Zones

So, to create zones we needed to start from scratch......
Development of CBMU Zones

So, to create zones we needed to start from scratch......

Because:
The existing bear seasons should not drive us toward a conclusion.
We needed to conduct a cluster (or grouping) analysis based on variables that impact bear management and that are available for each county within the CBMU.

So, what is a cluster analysis?
Development of CBMU Zones

In simplest terms:

A cluster analysis is an formula that determines similarities and differences between items based on identified variables and then groups them accordingly.

So, let’s look at a simple cluster analysis......
Sampled Males
Over 500 lbs.
Development of CBMU Zones

1. What are most important variables with regard to bear management?

2. And, which ones are available at the county level?

We made a list........
Development of CBMU Zones
Available Variables

Four Broad Categories of Variables
• Biological
• Harvest
• Habitat
• Hunter Access and “Bear Refugia”
Development of CBMU Zones

Available Variables

Four Broad Categories of Variables

• Biological (5)
• Harvest (6)
• Habitat (1)
• Hunter Access and “Bear Refugia” (4)

16 potential variables were identified for consideration
We ran 62 different cluster analyses with different combinations of the 16 available variables, and cluster groups ranging from 2 to 5.

We determined that only 5 of the 16 available variables were providing meaningful results in cluster analysis.

We did not allow the process to force geographic clustering.
Development of CBMU Zones

Evaluated Variables

The 5 variables that demonstrated the ability to significantly influence clustering of counties were:

- Bear land cover
- Harvest per huntable area
- Ratio of sanctuary to non-sanctuary
- Average weight of sampled males
- Hunter success rate
Development of CBMU Zones

Evaluated Variables

• Bear Land Cover:
  - Deciduous forest
  - Mixed forest
  - Wetland
* Agriculture influence on the landscape ???
Development of CBMU Zones

Evaluated Variables

• Bear Land Cover:
  - Deciduous forest
  - Mixed forest
  - Wetland
  - “Edible” planted crop (3-year average)
Percent Bear Land Cover
Harvest per Huntable Area (kill/sq. mile)
Bear Sanctuaries

Designated Black Bear Sanctuaries
- Government Owned
- The Nature Conservancy
- Private

Non-Designated Black Bear Sanctuaries
- De-Facto
- WRC Game Lands No Current Bear Hunting

NORTH CAROLINA
WILDLIFE
RESOURCES COMMISSION
Percent
Sanctuary
Final Zone Development

We ran multiple cluster analysis and found that Dare County was heavily influencing the clusters.

So we removed it and ran the analyses again.

So let’s look at the one that fit the best.....
Final Zone Development

* Our BEST Analysis was 3 Clusters with 3 Variables:
  Bear Land Cover, Harvest per Huntable Area, and Percent Sanctuary

*The only Anova with pairwise testing resulting in 9 out of 9 (100%) of cluster comparisons being significantly different (P<0.05).
Science and Statistics can’t tell you the complete answer to every question.....
This map was next evaluated using expert elicitation of WRC biological staff.

We asked them to provide recommendations based on their management knowledge and field experience in these counties.

To Produce a Final Map of CBMU Zones
Final Zone Development

BEST Analysis 3 Clusters with 3 Variables:
Final Zone Development

BEST Analysis 3 Clusters with 3 Variables:
Final Zone Development

BEST Analysis 3 Clusters with 3 Variables:
Final Zone Development

BEST Analysis 3 Clusters with 3 Variables:
Final Zone Development

BEST Analysis 3 Clusters with 3 Variables:
CBMU Biological Zones
Do you think these zones look like reasonable bear management zones for our coastal unit?

A. Yes.
B. No.
C. I’m Not Sure.
Do you think these zones look like reasonable bear management zones for our coastal unit?

- Yes: 76%
- No: 3%
- I'm Not Sure: 21%
So, now let’s talk about information for each of these zones!
Which CBMU Zone do you most hunt in?

- Mostly Zone 1: 25%
- Mostly Zone 2: 54%
- Mostly Zone 3: 10%
- Mostly Zone 4: 6%
- Equally in more than 1 Zone: 5%
2016 CBMU Bear Seasons
How our current bear seasons overlay on the CBMU Zones!
<table>
<thead>
<tr>
<th>Zone</th>
<th>Number of Counties</th>
<th>Total Land Area (Square Miles)</th>
<th>Huntable Land (Square Miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>1,459</td>
<td>635  (44%)</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>9,275</td>
<td>8,141  (88%)</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>7,959</td>
<td>7,252  (91%)</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>1,486</td>
<td>1,289  (87%)</td>
</tr>
</tbody>
</table>
CBMU Zone Comparisons (3 Year Average Reported Harvest)

Zone 1:
- % of Total CBMU Bear Harvest: 23%
- % CBMU Huntable Land: 4%

Zone 2:
- % of Total CBMU Bear Harvest: 55%
- % CBMU Huntable Land: 47%

Zone 3:
- % of Total CBMU Bear Harvest: 10%
- % CBMU Huntable Land: 42%

Zone 4:
- % of Total CBMU Bear Harvest: 11%
- % CBMU Huntable Land: 7%
CBMU Zone Comparisons
(3 Year Average Reported Harvest)

- Zone 1: 0.68 Kill/Sq. Mile of Huntable Area
- Zone 2: 0.13 Kill/Sq. Mile of Huntable Area
- Zone 3: 0.03 Kill/Sq. Mile of Huntable Area
- Zone 4: 0.16 Kill/Sq. Mile of Huntable Area
CBMU Zone Comparisons

Zone 1: 4.12
Zone 2: 1.18
Zone 3: 0.42
Zone 4: 1.45

(2015 e-stamp)
Which CBMU Zone do you hunt most in?

A. Mostly Zone 1
B. Mostly Zone 2
C. Mostly Zone 3
D. Mostly Zone 4
E. Equally in more than 1 Zone
CBMU Zone 1 Harvest Trend

16% of the 2015 Statewide Harvest!
27% of the 2015 CBMU Harvest!

0, 221, 239, 499
Zone 1 Hunting Methods
(2015 e-Stamp Survey)

- Still/Stand: 62%
- With Dogs: 38%
Zone 1 Harvest by Hunting Methods
(2015 Reported Harvest)

Still/Stand: 47%
With Dogs: 53%
Zone 1 Harvested Bears by Method (2009-2015)
CBMU Zone 2 Harvest Trend

- 1976: 53
- 1979: 133
- 1982: 415
- 1985: 665
- 1988: 996
Zone 2 Hunting Methods
(2015 e-Stamp Survey)

- Still/Stand: 61%
- With Dogs: 39%
Zone 2 Harvest by Hunting Methods
(2015 Reported Harvest)

- Still/Stand: 34%
- With Dogs: 66%
Zone 2 Harvested Bears by Method (2009-2015)
Zone 3 Hunting Methods
(2015 e-Stamp Survey)

- Still/Stand: 69%
- With Dogs: 31%
Zone 3 Harvest by Hunting Methods
(2015 Reported Harvest)

- Still/Stand: 35%
- With Dogs: 65%
Zone 3 Harvested Bears by Method (2009-2015)
CBMU Zone 4 Harvest Trend
Zone 4 Hunting Methods
(2015 e-Stamp Survey)

- Still/Stand: 52%
- With Dogs: 48%
Zone 4 Harvest by Hunting Methods
(2015 Reported Harvest)

- Still/Stand: 33%
- W/Dogs: 67%
Zone 4 Harvested Bears by Method (2009-2015)
Discussion and Input Time!
Where you hunt the most....... 

A. The bear population is **INCREASING**
B. The bear population is **DECREASING**
C. The bear population is **STABLE**
D. I’m **NOT SURE**

![Chart showing percentage of responses]

- A: 59%
- B: 8%
- C: 22%
- D: 11%
How our current bear seasons overlay on the CBMU Zones!
Should Coastal Bear Seasons be aligned with the new Zones?

- Yes: 61%
- No: 20%
- Not Sure: 19%
Should we examine the mountain bear unit for biological Zones?

- Yes: 50%
- No: 31%
- Not Sure: 18%
On a given bear hunt, which is more important to you?

- The size and quality of the bear I harvest: 42%
- Chasing and/or seeing a lot of bears: 58%
Which is more important to you?

A. More time to hunt but fewer bears. (maybe lower harvest success rate)

B. Less time to hunt but more bears. (maybe higher harvest success rate)

C. Something in the middle.
Where you hunt the most....... 

A. The bear population should be **INCREASED**
B. The bear population should be **DECREASED**
C. The bear population should be **LEFT AS IS**
D. I’m **NOT SURE**
If necessary, what do you think would be the best way to increase the bear harvest?

- Increase Bag Limit to 2 Bears (no charge): 31%
- Purchase another opportunity after you harvest the 1st bear: 19%
- Increase the limit only in certain areas: 16%
- Increase the season length: 29%
- Something Else: 5%
Would you support this idea?

Allow any appropriately licensed hunter that is actively participating in a hunt to validate and reporting the harvest of a bear shot by an other appropriately licensed hunter participating in the same hunt (applies to both dog and still/stand hunts).
If a specific zone was allotted a “quota” of bears, would you prefer:

A. To establish harvest quotas for specific zones and require hunters to check total reported harvests online before hunting, and then stop hunting when quota is met.  
B. Require the issuance (sale) of a set number of authorizations per area/zone.  
C. I don’t like the idea of quotas at all!

- **A**: 11%  
- **B**: 9%  
- **C**: 80%
If you hunt with a group, what is the average number of hunters in your group?

- 28% for <5
- 39% for 6-10
- 27% for 11-20
- 4% for 21-30
- 2% for >30
Two Sanctuary Questions
*Asked in Sylva, Morganton, Thomasville and Raleigh*

1. Do you support the idea of opening bear sanctuaries to hunting?

- Yes: 53%
- No: 42%
- I'm not sure: 6%
2. If we opened selected sanctuaries would you prefer:

- **45%** Open up the sanctuary to permit hunts indefinitely
- **55%** Rotate permit hunt opportunities on different sanctuaries every couple of years
One Last Thing...
Is this type of forum helpful?

A. Yes  
B. No  
C. Not sure  

- Yes: 92%  
- No: 2%  
- Not Sure: 7%
Would you like to see more forums or something similar?

A. Yes  
B. No  
C. Not sure

![Bar chart showing the following percentages: Yes: 93%, No: 2%, Not Sure: 5%]