

## Performance Report

**State:** New Hampshire

**Grant:** F20AF11939

**Grant Type:** Survey and Inventory

**Grant Title:** NH – WILDLIFE RESEARCH AND MANAGEMENT (W-89-R-21)

**Period Covered:** July 1, 2022 – June 30, 2023

**Purpose/Target Name:** PROJECT 3 - BLACK BEAR RESEARCH AND MANAGEMENT

**Objective Name:** JOB 1 - HARVEST MORTALITY DATA COLLECTION, ENTRY AND ANALYSIS

**Objective Statement:** To collect and use data from harvested black bears as a source of bear population parameters, including but not limited to an index to population status, relative abundance, and distribution.

**Summary:** Data from 1,156 hunter-killed black bears were collected, entered, error checked and analyzed using Statistical Analysis Systems (SAS) software. Data were analyzed independently and merged into the long-term (1983-2022) data set for multi-year analysis. Premolars were collected from hunter-killed bears (95% of premolars collected) and bears that died due to non-harvest causes (5% of premolars collected). A total of 1,195 premolars from bears that died due to all causes were collected and submitted for aging in 2022. Mean and median ages were 3.1 and 2.5 years, respectively, for males and 5.3 and 4.5 years, respectively, for females. Despite minor variations between years, statewide and regional trends across both sexes appear to suggest relative stability in bear age class distributions. Age data are thought to reflect a bear population that has experienced modest growth over time. These data are essential to our bear population modeling efforts, as well as our bear management efforts.

**Target Date:** June 30<sup>th</sup> annually 2021-2025.

**Status of Progress:** On schedule.

**Significant Deviations:** None.

**Objective Approach:** Bear registration will be coordinated by the bear project leader. Bear registration and data recording will be conducted by field Conservation Officers, other approved Department staff, or approved private vendors, using supplies, materials, and data forms provided by the Department. Data collected from each bear will include: cause of death, date of death, town and Wildlife Management Unit of kill, location of kill, hunting method, bear sex, age, actual or estimated weight, teat length and lactation status of sows, number of days hunter hunted, and foods being consumed by the bear at time of harvest. Bear ages will be determined by a commercial laboratory through analysis of premolars collected during the registration of harvested bears. Bear age data will be entered into an existing bear harvest data set. Age data analysis will be conducted and contrasted to past years to assess and monitor bear recruitment, mortality, sex-specific harvest rates, and age-specific female survival rates. Collectively, these data will be used for population reconstruction and estimation, and to estimate the rate of population change. Age and sex attributes of harvested animals will also be used to assess the status of hunted populations. Finally, median age by sex will be monitored. General conclusions regarding relative regional bear abundance will be drawn based on harvest data and kill distribution.

Bear data will be entered into a harvest data set for analysis and summarized on a regional and/or wildlife management unit basis. Harvest data will be analyzed weekly during the bear season to provide Department staff and the interested public with in-season bear harvest updates. The statewide bear population will be estimated annually following receipt of bear age data from Matson's Laboratory. The annual bear population estimate will be based on several years of age and sex mortality data to ensure adequate sample sizes. The population estimate is derived from a change in age ratio model, and includes allocation of a statewide population estimate based on bear observation rates derived from deer hunters. A detailed explanation of New Hampshire's bear population modeling methodology is provided in Appendix 1.

**Results:** A total of 1,156 bears were harvested during the 2022 season, which was higher (+26%) than the preceding 5-year average of 920 bears. Harvest data was collected and recorded on a registration form (Fig. 1). A

total of 13,416 bear licenses were issued in 2022, 12% of which went to non-residents. Harvest and age data summarization efforts focus on data that are directly pertinent to annual bear management decision-making. Harvest data are summarized in Tables 1-19 and bear age data is summarized in Tables 20-25. Given the importance of this data to the bear management program, these data have been included as part of this annual summary report. Additional bear harvest information is included in the “2022 New Hampshire Wildlife Harvest Summary” (see NH Federal Aid Report W-89-R-21, Project I, Job 4, Appendix I).

### Harvest Distribution by Method

Tables 1, 2 and 3 provide a summary of bear harvest by method over the past 40 years. During 2022, the bear kill was distributed as follows: bait hunters-739 (64%), still hunters-348 (30%) and hound hunters-69 (6%). Percent harvest by method in recent years has averaged 58% by bait hunters, 30% by still hunters, and 12% by hound hunters. Continued increased participation in bait hunting, by both residents and nonresidents, has been evident for several years and has resulted in a declining percentage of the annual harvest taken via still hunting. In addition to this shift in effort, annual variations in method-specific harvest percentages are also influenced by annual changes in the distribution and abundance of food.

Of those bears taken by still hunters, 306 bears (88%) were taken by hunters prior to the start of the gun portion of the deer season. The remaining harvest by still hunters (42 bears; 12%) was taken during the muzzleloader (31 bears; 9%) and regular firearms (11 bears; 3%) deer seasons. This percentage was low than that achieved in 2021 when 23% of the still hunter harvest occurred during this same period. The difference between the two years was not unexpected given the change in fall mast conditions and higher hunter success rates early in the season (many hunters had already taken a bear by this point in the season). This level of still hunter harvest during the latter part of the season suggests that bears began entering dens during late October and early November due to low food availability. Bear seasons have become more liberalized in recent years in an effort to curb population growth in select management regions. All six bear management regions were open to bear hunting during the muzzleloader season and two were open (for 22 days) during the regular firearms season. A total of 585 female bears (Table 2) and 571 male bears (Table 3) were taken during the 2022 season.

### Harvest Sex Composition

The bear harvest sex ratio typically averages 1.2 males per female. Higher mortality rates for males result in females being more abundant than males in our bear population but this is rarely apparent in our harvest data. During poor mast years, female harvest tends to increase relative to male harvest, with the result being that females can approach or exceed males in the harvest. During years with average or abundant mast, males are more vulnerable than females to harvest and therefore account for a larger percentage of the harvest. The harvest sex ratio in 2022 of 1.0 males per female was below the long-term average reflecting higher female vulnerability (Table 4). In regions where the management goal is to lower the population, HSRs below 1.3 m:f appear to be advantageous in reducing density. Conversely, in regions where bear densities are at goal, HSRs heavier to males (1.4+ m:f) correspond well with population management objectives in those areas. The 2022 sex ratios for baiting, hounding and still hunting were 1.0, 0.7 and 1.0 males per female, respectively (Tables 5, 6, and 7).

### Geographic Distribution of Harvest

New Hampshire is divided into 6 bear management regions (Fig. 2), the names of which reflect their relative location in the state. The North, White Mountains and Central regions have higher bear densities and a long and active bear hunting tradition. This is in contrast to the Southwest-2 and the Southeast regions that were opened to hunting in the late 1990s. In 2022, harvest was similar and highest in the Central and White Mountains Regions with 342 (30%) and 314 (27%) bears, respectively (Table 8). The North region followed with 243 (21%) bears. This regional harvest distribution has remained consistent for the past several years and coincides well with current harvest objectives. During 2022, nearly half (57%) of the statewide harvest came from the Central and White Mountains regions where the season structure was intended to focus additional harvest pressure given the objective to reduce density. Regional harvest percentages for Southwest-1 and 2 (10% for both) remained consistent with recent averages (10% and 9%, respectively). Harvest in the Southeast remained low (1%). Tables 9 and 10 document regional bear harvest by sex.

An assessment of regional harvest by method reflects that the popularity and impact of bear hunting methods vary regionally across the state and are influenced by tradition, landscape and access. Traditionally, bait hunting for bear was most popular in the North and White Mountains and less prevalent in the more southern management regions (Tables 11, 12, and 13). However, increased participation in bear baiting has become more evident in

nearly all regions. Houndsmen take a lower percentage of the harvest in all regions compared to bait and still hunters, however, hunting bears with dogs is most widespread in the White Mountains and Central regions (Tables 14, 15, and 16). Still hunting for bear is the most prominent method of harvest in the southernmost regions (Tables 17, 18, and 19).

### Sex and Age Composition of Sampled Bears

A total of 1,195 premolars were collected and aged from known bear mortalities in New Hampshire during 2022. Statewide age distributions for females and males are provided in Tables 20 and 21, respectively. Bears between 1.5 and 5.5 years of age continue to comprise the greatest percentage of annual bear mortalities; however, there is considerable annual variation within these age class distributions. While there is no distinct pattern in mean ages over time (Tables 22 and 23), it is noted that mean male ages remain low and are generally lowest during years of increased harvest. It is noteworthy that changes in vulnerability stemming from annual flux in mast availability have the potential to mask differences in age distribution. During 2022, the mean age of female and male (5.3 and 3.1 years, respectively) mortalities was similar than the long-term average for females but lower for males (5.6 and 4.1 years, respectively) reported since 1993. Table 24 provides a regional synopsis of female mean ages over time. Data suggests that female populations, when compared to a statewide average of 5.6 years, were higher in the North, similar in the White Mountains and Central and lower in the remaining three management regions. However, it is important to acknowledge that variation in sample sizes between regions and years make it difficult to assess long-term trends.

Table 25 summarizes male and female median (50<sup>th</sup> percentile) ages. During 2022, statewide median ages for males and females were 2.5 and 4.5 years, respectively. This was lower than the long-term average for males (3.2 years) and consistent with the long-term average for females (4.6 years). Median age for both males and females often declines during high bear harvest years and will moderate during more average harvest conditions. The low median age for males indicates that male bears generally experience higher mortality rates compared to females. These higher rates of mortality are likely due to increased vulnerability associated with greater movement by males. Mean and median ages appear to be impacted by surges in cub production from year to year as well as the degree of vulnerability of bears to harvest. Generally, cohorts born during strong cub years can be successively followed across years in the age class distribution allowing interpretation of age data. The vulnerability of specific age classes of bears (e.g., old or young) to harvest likely changes from year to year depending on the distribution and abundance of food thereby impacting annual mean and median ages. The sensitivity of mean and median ages to changes in our bear population is unknown at this time.

### Population Modeling

Our 2023 modeling efforts (described in Appendix 1) indicate that NH male bears have a higher mortality rate than females. Annual harvest rates of male and female bears in New Hampshire are estimated at 33% and 17%, respectively (Appendix 2, page 1). The higher mortality rate on males has resulted in a bear population that is skewed to adult females (49% of total population and 64% of the adult population). Adult males and cubs (both sexes) account for 27% and 25% of the total estimated bear population, respectively. This skewed adult sex ratio is normal in a hunted bear population.

Long-term modeling (i.e., 1989-2022) using the Downing and Paloheimo & Fraser models indicates that the bear population has increased at rates of 4.3 and 2.4% per year, respectively (Figure 3). Our current 2022 bear population estimate is 6,355 animals (Figure 3, Appendix 2, page 2). Population modeling includes allocation of the statewide population estimate to regions based on bear observation rates derived from deer hunters surveyed during November (Appendix 2). This modeling effort will be replicated in 2024.

**Conclusions:** A thorough understanding of harvest impacts is critical to responsible management decision making both in terms of our ability to assess and our ability to predict impacts. Age data provide critically important insight into the status of bear populations. In the absence of these data, our ability to assess population status and promulgate responsible management recommendations would be severely constrained.

**Custom Qualitative Indicator/Output:** Data from harvested black bears has been collected, entered and analyzed. Bear population parameters, including population status, relative abundance and distribution have been determined.

**Recommendations:** Continue this job as planned.

**Submitted by:** \_\_\_\_\_

Andrew Timmins  
Game Programs Supervisor  
August 1, 2023

Table 1. NH total bear harvest by method (1983-2022).

YEAR	BAIT	HOUND	STILL	TOTAL
1983	14	77	147	238
1984	13	44	160	217
1985	13	26	54	93
1986	24	25	77	126
1987	42	39	179	260
1988	53	31	114	198
1989	85	38	118	241
1990	114	72	105	291
1991	15	29	79	123
1992	34	39	157	230
1993	52	51	171	274
1994	39	47	153	239
1995	72	55	301	428
1996	52	38	62	152
1997	69	64	202	335
1998	53	45	181	279
1999	117	69	313	499
2000	118	37	294	449
2001	169	63	295	527
2002	92	43	203	338
2003	274	67	462	803
2004	244	92	343	679
2005	179	65	190	434
2006	152	51	149	352
2007	278	60	278	616
2008	176	55	209	440
2009	372	91	295	758
2010	373	83	252	708
2011	193	70	155	418
2012	430	99	283	812
2013	309	99	164	572
2014	408	117	261	786
2015	379	110	265	754
2016	486	112	300	898
2017	322	107	158	587
2018	594	91	368	1053
2019	472	144	270	886
2020	756	113	315	1184
2021	531	116	245	892
2022	739	69	348	1156

Table 2. NH female bear harvest by method (1983-2022).

YEAR	BAIT	HOUND	STILL	TOTAL
1983	5	28	66	99
1984	0	12	75	87
1985	1	16	22	39
1986	5	9	33	47
1987	12	12	71	95
1988	9	13	38	60
1989	21	23	51	95
1990	30	30	52	112
1991	1	12	33	46
1992	10	18	63	91
1993	15	25	72	112
1994	9	27	67	103
1995	26	28	152	206
1996	11	19	25	55
1997	16	26	86	128
1998	16	29	79	124
1999	33	36	147	216
2000	39	13	138	190
2001	64	27	132	223
2002	25	24	92	141
2003	123	37	260	420
2004	113	39	161	313
2005	75	29	86	190
2006	45	31	63	139
2007	116	33	113	262
2008	64	34	94	192
2009	173	47	124	344
2010	173	46	126	345
2011	60	39	73	172
2012	177	57	142	376
2013	104	55	72	231
2014	177	56	124	357
2015	137	60	118	315
2016	214	56	147	417
2017	136	56	78	270
2018	273	49	186	508
2019	192	77	141	410
2020	372	60	144	576
2021	233	67	119	419
2022	367	41	177	585

Table 3. NH male bear harvest by method (1983-2022).

YEAR	BAIT	HOUND	STILL	TOTAL
1983	9	49	81	139
1984	13	32	85	130
1985	12	10	32	54
1986	19	16	44	79
1987	30	27	108	165
1988	44	18	76	138
1989	64	15	67	146
1990	84	42	53	179
1991	14	17	46	77
1992	24	21	94	139
1993	37	26	99	162
1994	30	20	86	136
1995	46	27	149	222
1996	41	19	37	97
1997	53	38	116	207
1998	37	16	102	155
1999	84	33	166	283
2000	79	24	156	259
2001	105	36	163	304
2002	67	19	111	197
2003	151	30	202	383
2004	131	53	182	366
2005	104	36	104	244
2006	107	20	86	213
2007	162	27	165	354
2008	112	21	115	248
2009	199	44	171	414
2010	200	37	126	363
2011	133	31	82	246
2012	253	42	141	436
2013	205	44	92	341
2014	231	61	137	429
2015	242	50	147	439
2016	272	56	153	481
2017	186	51	80	317
2018	321	42	182	545
2019	280	67	129	476
2020	384	53	171	608
2021	298	49	126	473
2022	372	28	171	571

Table 4. Sex composition of NH bear harvest by year (1983-2022).

YEAR	FEMALE	MALE	M:F RATIO	TOTAL
1983	99	139	1.4	238
1984	87	130	1.5	217
1985	39	54	1.4	93
1986	47	79	1.7	126
1987	95	165	1.7	260
1988	60	138	2.3	198
1989	95	146	1.5	241
1990	112	179	1.6	291
1991	46	77	1.7	123
1992	91	139	1.5	230
1993	112	162	1.4	274
1994	103	136	1.3	239
1995	206	222	1.1	428
1996	55	97	1.8	152
1997	128	207	1.6	335
1998	124	155	1.3	279
1999	216	283	1.3	499
2000	190	259	1.4	449
2001	223	304	1.4	527
2002	141	197	1.4	338
2003	420	383	0.9	803
2004	313	366	1.2	679
2005	190	244	1.3	434
2006	139	213	1.5	352
2007	262	354	1.4	616
2008	192	248	1.3	440
2009	344	414	1.2	758
2010	345	363	1.1	708
2011	172	246	1.4	418
2012	376	436	1.2	812
2013	231	341	1.5	572
2014	357	429	1.2	786
2015	315	439	1.4	754
2016	417	481	1.2	898
2017	270	317	1.2	587
2018	508	545	1.1	1053
2019	410	476	1.2	886
2020	576	608	1.1	1184
2021	419	473	1.1	892
2022	585	571	1.0	1156

Table 5. Sex composition of NH bears harvested over bait (1983-2022).

YEAR	FEMALE	MALE	M:F RATIO	TOTAL
1983	5	9	1.8	14
1984	0	13	.	13
1985	1	12	12.0	13
1986	5	19	3.8	24
1987	12	30	2.5	42
1988	9	44	4.9	53
1989	21	64	3.0	85
1990	30	84	2.8	114
1991	1	14	14.0	15
1992	10	24	2.4	34
1993	15	37	2.5	52
1994	9	30	3.3	39
1995	26	46	1.8	72
1996	11	41	3.7	52
1997	16	53	3.3	69
1998	16	37	2.3	53
1999	33	84	2.5	117
2000	39	79	2.0	118
2001	64	105	1.6	169
2002	25	67	2.7	92
2003	123	151	1.2	274
2004	113	131	1.2	244
2005	75	104	1.4	179
2006	45	107	2.4	152
2007	116	162	1.4	278
2008	64	112	1.8	176
2009	173	199	1.2	372
2010	173	200	1.2	373
2011	60	133	2.2	193
2012	177	253	1.4	430
2013	104	205	2.0	309
2014	177	231	1.3	408
2015	137	242	1.8	379
2016	214	272	1.3	486
2017	136	186	1.4	322
2018	273	321	1.2	594
2019	192	280	1.5	472
2020	372	384	1.0	756
2021	233	298	1.3	531
2022	367	372	1.0	739

Table 6. Sex composition of NH bears harvested over hounds (1983-2022).

YEAR	FEMALE	MALE	M:F RATIO	TOTAL
1983	28	49	1.8	77
1984	12	32	2.7	44
1985	16	10	0.6	26
1986	9	16	1.8	25
1987	12	27	2.3	39
1988	13	18	1.4	31
1989	23	15	0.7	38
1990	30	42	1.4	72
1991	12	17	1.4	29
1992	18	21	1.2	39
1993	25	26	1.0	51
1994	27	20	0.7	47
1995	28	27	1.0	55
1996	19	19	1.0	38
1997	26	38	1.5	64
1998	29	16	0.6	45
1999	36	33	0.9	69
2000	13	24	1.8	37
2001	27	36	1.3	63
2002	24	19	0.8	43
2003	37	30	0.8	67
2004	39	53	1.4	92
2005	29	36	1.2	65
2006	31	20	0.6	51
2007	33	27	0.8	60
2008	34	21	0.6	55
2009	47	44	0.9	91
2010	46	37	0.8	83
2011	39	31	0.8	70
2012	57	42	0.7	99
2013	55	44	0.8	99
2014	56	61	1.1	117
2015	60	50	0.8	110
2016	56	56	1.0	112
2017	56	51	0.9	107
2018	49	42	0.9	91
2019	77	67	0.9	144
2020	60	53	0.9	113
2021	67	49	0.7	116
2022	41	28	0.7	69

Table 7. Sex composition of NH bear harvested by still hunters (1983-2022).

YEAR	FEMALE	MALE	M:F RATIO	TOTAL
1983	66	81	1.2	147
1984	75	85	1.1	160
1985	22	32	1.5	54
1986	33	44	1.3	77
1987	71	108	1.5	179
1988	38	76	2.0	114
1989	51	67	1.3	118
1990	52	53	1.0	105
1991	33	46	1.4	79
1992	63	94	1.5	157
1993	72	99	1.4	171
1994	67	86	1.3	153
1995	152	149	1.0	301
1996	25	37	1.5	62
1997	86	116	1.3	202
1998	79	102	1.3	181
1999	147	166	1.1	313
2000	138	156	1.1	294
2001	132	163	1.2	295
2002	92	111	1.2	203
2003	260	202	0.8	462
2004	161	182	1.1	343
2005	86	104	1.2	190
2006	63	86	1.4	149
2007	113	165	1.5	278
2008	94	115	1.2	209
2009	124	171	1.4	295
2010	126	126	1.0	252
2011	73	82	1.1	155
2012	142	141	1.0	283
2013	72	92	1.3	164
2014	124	137	1.1	261
2015	118	147	1.2	265
2016	147	153	1.0	300
2017	78	80	1.0	158
2018	186	182	1.0	368
2019	141	129	0.9	270
2020	144	171	1.2	315
2021	119	126	1.1	245
2022	177	171	1.0	571

Table 8. NH total bear harvest by management region (1983-2022).

YEAR	NORTH	WT.MTN	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	TOTAL
1983	91	79	62	6	0	0	238
1984	79	65	69	4	0	0	217
1985	33	45	15	0	0	0	93
1986	38	64	23	1	0	0	126
1987	97	118	41	4	0	0	260
1988	76	85	37	0	0	0	198
1989	99	100	39	3	0	0	241
1990	108	125	58	0	0	0	291
1991	28	49	46	0	0	0	123
1992	55	88	84	3	0	0	230
1993	78	131	65	0	0	0	274
1994	48	84	104	3	0	0	239
1995	100	170	156	2	0	0	428
1996	46	57	49	0	0	0	152
1997	99	120	106	10	0	0	335
1998	68	94	95	16	5	1	279
1999	144	180	138	32	4	1	499
2000	116	162	143	21	7	0	449
2001	135	193	158	30	11	0	527
2002	65	101	124	38	7	3	338
2003	254	242	238	56	12	1	803
2004	158	227	177	88	27	2	679
2005	126	148	112	35	9	4	434
2006	65	108	99	49	23	8	352
2007	166	200	180	42	23	5	616
2008	113	136	137	35	18	1	440
2009	198	249	229	57	25	0	758
2010	183	233	227	52	13	0	708
2011	65	128	147	46	30	2	418
2012	185	229	264	76	57	1	812
2013	108	168	186	70	36	4	572
2014	160	234	268	62	56	6	786
2015	151	215	255	92	38	3	754
2016	164	282	293	89	69	1	898
2017	99	169	207	64	46	2	587
2018	198	300	326	109	111	9	1053
2019	143	266	298	98	74	7	886
2020	218	362	363	114	118	9	1184
2021	178	273	258	72	98	13	892
2022	243	314	342	115	129	13	1156

Table 9. NH female bear harvest by management region (1983-2022).

YEAR	NORTH	WT.MTN	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	TOTAL
1983	43	24	31	1	0	0	99
1984	28	29	30	0	0	0	87
1985	13	21	5	0	0	0	39
1986	10	23	14	0	0	0	47
1987	32	44	15	4	0	0	95
1988	22	24	14	0	0	0	60
1989	38	37	20	0	0	0	95
1990	38	45	29	0	0	0	112
1991	11	14	21	0	0	0	46
1992	20	32	38	1	0	0	91
1993	35	50	27	0	0	0	112
1994	23	29	49	2	0	0	103
1995	41	89	75	1	0	0	206
1996	16	14	25	0	0	0	55
1997	31	39	53	5	0	0	128
1998	29	41	45	8	1	0	124
1999	56	80	64	16	0	0	216
2000	54	62	64	10	0	0	190
2001	51	90	70	10	2	0	223
2002	29	44	52	13	2	1	141
2003	129	131	132	26	2	0	420
2004	67	110	85	45	5	1	313
2005	65	58	50	15	1	1	190
2006	26	27	52	21	8	5	139
2007	71	91	77	14	7	2	262
2008	58	57	55	18	3	1	192
2009	111	98	100	25	10	0	344
2010	100	98	113	31	3	0	345
2011	25	39	76	20	11	1	172
2012	96	96	128	29	27	0	376
2013	44	66	80	27	14	0	231
2014	79	107	124	20	25	2	357
2015	58	72	125	39	20	1	315
2016	84	130	136	37	30	0	417
2017	52	67	102	29	20	0	270
2018	92	151	172	50	42	1	508
2019	61	115	155	40	35	4	410
2020	124	171	172	45	61	3	576
2021	86	119	134	33	41	6	419
2022	108	171	187	50	66	3	585

Table 10. NH male bear harvest by management region (1983-2022).

YEAR	NORTH	WT.MTN	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	TOTAL
1983	48	55	31	5	0	0	139
1984	51	36	39	4	0	0	130
1985	20	24	10	0	0	0	54
1986	28	41	9	1	0	0	79
1987	65	74	26	0	0	0	165
1988	54	61	23	0	0	0	138
1989	61	63	19	3	0	0	146
1990	70	80	29	0	0	0	179
1991	17	35	25	0	0	0	77
1992	35	56	46	2	0	0	139
1993	43	81	38	0	0	0	162
1994	25	55	55	1	0	0	136
1995	59	81	81	1	0	0	222
1996	30	43	24	0	0	0	97
1997	68	81	53	5	0	0	207
1998	39	53	50	8	4	1	155
1999	88	100	74	16	4	1	283
2000	62	100	79	11	7	0	259
2001	84	103	88	20	9	0	304
2002	36	57	72	25	5	2	197
2003	125	111	106	30	10	1	383
2004	91	117	92	43	22	1	366
2005	61	90	62	20	8	3	244
2006	39	81	47	28	15	3	213
2007	95	109	103	28	16	3	354
2008	55	79	82	17	15	0	248
2009	87	151	129	32	15	0	414
2010	83	135	114	21	10	0	363
2011	40	89	71	26	19	1	246
2012	89	133	136	47	30	1	436
2013	64	102	106	43	22	4	341
2014	81	127	144	42	31	4	429
2015	93	143	130	53	18	2	439
2016	80	152	157	52	39	1	481
2017	47	102	105	35	26	2	317
2018	106	149	154	59	69	8	545
2019	82	151	143	58	39	3	476
2020	94	191	191	69	57	6	608
2021	92	273	258	39	57	7	473
2022	135	143	155	65	63	10	571

Table 11. NH regional total bear harvest by bait hunters (1983-2022).

YEAR	NORTH	WT.MTN	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	TOTAL
1983	10	3	1	0	0	0	14
1984	9	1	3	0	0	0	13
1985	8	5	0	0	0	0	13
1986	13	11	0	0	0	0	24
1987	29	12	1	0	0	0	42
1988	34	18	1	0	0	0	53
1989	53	29	3	0	0	0	85
1990	61	45	8	0	0	0	114
1991	6	9	0	0	0	0	15
1992	18	12	4	0	0	0	34
1993	29	19	4	0	0	0	52
1994	16	18	5	0	0	0	39
1995	32	31	9	0	0	0	72
1996	21	23	8	0	0	0	52
1997	36	23	8	2	0	0	69
1998	24	19	10	0	0	0	53
1999	62	39	15	1	0	0	117
2000	55	46	16	0	1	0	118
2001	67	65	29	4	4	0	169
2002	34	32	20	2	4	0	92
2003	138	87	38	8	3	0	274
2004	91	96	42	8	7	0	244
2005	72	72	24	7	4	0	179
2006	46	58	32	6	10	0	152
2007	106	102	56	6	7	1	278
2008	73	56	32	5	10	0	176
2009	127	143	82	10	10	0	372
2010	128	130	97	9	9	0	373
2011	40	68	60	7	16	2	193
2012	124	152	109	16	29	0	430
2013	84	93	88	21	22	1	309
2014	96	142	110	24	35	1	408
2015	99	123	112	22	22	1	379
2016	127	161	128	33	37	0	486
2017	79	95	89	32	27	0	322
2018	141	190	160	47	54	2	594
2019	95	152	136	45	43	1	472
2020	150	242	222	65	72	5	756
2021	128	163	140	39	57	4	531
2022	156	218	240	51	71	3	739

Table 12. NH regional female bear harvest by bait hunters (1983-2022).

YEAR	NORTH	WT.MTN	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	TOTAL
1983	4	1	0	0	0	0	5
1984	0	0	0	0	0	0	0
1985	0	1	0	0	0	0	1
1986	3	2	0	0	0	0	5
1987	8	4	0	0	0	0	12
1988	6	3	0	0	0	0	9
1989	16	5	0	0	0	0	21
1990	17	12	1	0	0	0	30
1991	1	0	0	0	0	0	1
1992	9	1	0	0	0	0	10
1993	8	6	1	0	0	0	15
1994	5	4	0	0	0	0	9
1995	11	10	5	0	0	0	26
1996	6	3	2	0	0	0	11
1997	10	3	2	1	0	0	16
1998	8	5	3	0	0	0	16
1999	19	9	4	1	0	0	33
2000	25	10	4	0	0	0	39
2001	25	26	12	1	0	0	64
2002	10	12	2	0	1	0	25
2003	61	41	18	3	0	0	123
2004	38	51	21	2	1	0	113
2005	35	27	10	3	0	0	75
2006	18	9	12	2	4	0	45
2007	46	46	18	4	2	0	116
2008	34	19	8	1	2	0	64
2009	69	56	36	6	6	0	173
2010	69	51	45	5	3	0	173
2011	14	12	24	3	6	1	60
2012	60	60	38	8	11	0	177
2013	35	27	34	2	6	0	104
2014	46	63	46	7	14	1	177
2015	32	35	50	8	12	0	137
2016	64	68	46	18	18	0	214
2017	43	29	38	14	12	0	136
2018	66	90	74	21	22	0	273
2019	37	64	57	16	18	0	192
2020	80	115	104	32	41	0	372
2021	62	65	64	19	21	2	233
2022	61	115	136	24	31	0	367

Table 13. NH regional male bear harvest by bait hunters (1983-2022).

YEAR	NORTH	WT.MTN	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	TOTAL
1983	6	2	1	0	0	0	9
1984	9	1	3	0	0	0	13
1985	8	4	0	0	0	0	12
1986	10	9	0	0	0	0	19
1987	21	8	1	0	0	0	30
1988	28	15	1	0	0	0	44
1989	37	24	3	0	0	0	64
1990	44	33	7	0	0	0	84
1991	5	9	0	0	0	0	14
1992	9	11	4	0	0	0	24
1993	21	13	3	0	0	0	37
1994	11	14	5	0	0	0	30
1995	21	21	4	0	0	0	46
1996	15	20	6	0	0	0	41
1997	26	20	6	1	0	0	53
1998	16	14	7	0	0	0	37
1999	43	30	11	0	0	0	84
2000	30	36	12	0	1	0	79
2001	42	39	17	3	4	0	105
2002	24	20	18	2	3	0	67
2003	77	46	20	5	3	0	151
2004	53	45	21	6	6	0	131
2005	37	45	14	4	4	0	104
2006	28	49	20	4	6	0	107
2007	60	56	38	2	5	1	162
2008	39	37	24	4	8	0	112
2009	58	87	46	4	4	0	199
2010	59	79	52	4	6	0	200
2011	26	56	36	4	10	1	133
2012	64	92	71	8	18	0	253
2013	49	66	54	19	16	1	205
2014	50	79	64	17	21	0	231
2015	67	88	62	14	10	1	242
2016	63	93	82	15	19	0	272
2017	36	66	51	18	15	0	186
2018	75	100	86	26	32	2	321
2019	58	88	79	29	25	1	280
2020	70	127	118	33	31	5	384
2021	66	98	76	20	36	2	298
2022	95	103	104	27	40	3	372

Table 14. NH regional total bear harvest by hound hunters (1983-2022).

YEAR	NORTH	WT.MTN	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	TOTAL
1983	47	27	3	0	0	0	77
1984	20	15	9	0	0	0	44
1985	11	9	6	0	0	0	26
1986	3	17	5	0	0	0	25
1987	7	27	5	0	0	0	39
1988	4	17	10	0	0	0	31
1989	10	15	13	0	0	0	38
1990	17	31	24	0	0	0	72
1991	0	12	17	0	0	0	29
1992	5	15	19	0	0	0	39
1993	8	25	18	0	0	0	51
1994	3	18	26	0	0	0	47
1995	8	27	20	0	0	0	55
1996	10	14	14	0	0	0	38
1997	11	28	25	0	0	0	64
1998	5	25	12	3	0	0	45
1999	8	35	20	6	0	0	69
2000	7	17	9	4	0	0	37
2001	15	17	29	2	0	0	63
2002	10	14	13	6	0	0	43
2003	18	23	24	2	0	0	67
2004	19	34	27	12	0	0	92
2005	18	17	25	5	0	0	65
2006	2	15	26	8	0	0	51
2007	17	11	26	6	0	0	60
2008	13	9	25	8	0	0	55
2009	22	24	41	4	0	0	91
2010	23	14	44	2	0	0	83
2011	10	15	35	10	0	0	70
2012	25	14	51	9	0	0	99
2013	10	39	41	9	0	0	99
2014	37	30	46	4	0	0	117
2015	29	25	38	18	0	0	110
2016	15	46	39	12	0	0	112
2017	10	41	46	10	0	0	107
2018	13	34	27	17	0	0	91
2019	19	52	52	21	0	0	144
2020	18	44	36	15	0	0	113
2021	22	44	37	13	0	0	116
2022	22	14	15	18	0	0	69

Table 15. NH regional female bear harvest by hound hunters (1983-2022).

YEAR	NORTH	WT.MTN	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	TOTAL
1983	21	5	2	0	0	0	28
1984	5	6	1	0	0	0	12
1985	8	4	4	0	0	0	16
1986	2	4	3	0	0	0	9
1987	3	6	3	0	0	0	12
1988	2	7	4	0	0	0	13
1989	7	11	5	0	0	0	23
1990	8	8	14	0	0	0	30
1991	0	5	7	0	0	0	12
1992	0	6	12	0	0	0	18
1993	3	10	12	0	0	0	25
1994	3	10	14	0	0	0	27
1995	4	12	12	0	0	0	28
1996	5	5	9	0	0	0	19
1997	4	11	11	0	0	0	26
1998	3	18	7	1	0	0	29
1999	5	19	10	2	0	0	36
2000	2	6	4	1	0	0	13
2001	7	6	13	1	0	0	27
2002	6	10	6	2	0	0	24
2003	13	11	13	0	0	0	37
2004	6	14	13	6	0	0	39
2005	10	7	11	1	0	0	29
2006	2	5	19	5	0	0	31
2007	8	6	16	3	0	0	33
2008	11	5	14	4	0	0	34
2009	13	8	24	2	0	0	47
2010	14	7	23	2	0	0	46
2011	4	9	22	4	0	0	39
2012	17	8	29	3	0	0	57
2013	3	24	22	6	0	0	55
2014	19	14	22	1	0	0	56
2015	16	11	24	9	0	0	60
2016	8	25	19	4	0	0	56
2017	5	23	24	4	0	0	56
2018	10	18	14	7	0	0	49
2019	10	23	34	10	0	0	77
2020	13	19	21	7	0	0	60
2021	14	22	24	7	0	0	67
2022	15	8	9	9	0	0	41

Table 16. NH regional male bear harvest by hound hunters (1983-2022).

YEAR	NORTH	WT.MTN	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	TOTAL
1983	26	22	1	0	0	0	49
1984	15	9	8	0	0	0	32
1985	3	5	2	0	0	0	10
1986	1	13	2	0	0	0	16
1987	4	21	2	0	0	0	27
1988	2	10	6	0	0	0	18
1989	3	4	8	0	0	0	15
1990	9	23	10	0	0	0	42
1991	0	7	10	0	0	0	17
1992	5	9	7	0	0	0	21
1993	5	15	6	0	0	0	26
1994	0	8	12	0	0	0	20
1995	4	15	8	0	0	0	27
1996	5	9	5	0	0	0	19
1997	7	17	14	0	0	0	38
1998	2	7	5	2	0	0	16
1999	3	16	10	4	0	0	33
2000	5	11	5	3	0	0	24
2001	8	11	16	1	0	0	36
2002	4	4	7	4	0	0	19
2003	5	12	11	2	0	0	30
2004	13	20	14	6	0	0	53
2005	8	10	14	4	0	0	36
2006	0	10	7	3	0	0	20
2007	9	5	10	3	0	0	27
2008	2	4	11	4	0	0	21
2009	9	16	17	2	0	0	44
2010	9	7	21	0	0	0	37
2011	6	6	13	6	0	0	31
2012	8	6	22	6	0	0	42
2013	7	15	19	3	0	0	44
2014	18	16	24	3	0	0	61
2015	13	14	14	9	0	0	50
2016	7	21	20	8	0	0	56
2017	5	18	22	6	0	0	51
2018	3	16	13	10	0	0	42
2019	9	29	18	11	0	0	67
2020	5	25	15	8	0	0	53
2021	8	22	13	6	0	0	49
2022	7	6	6	9	0	0	28

Table 17. NH regional total bear harvest by still hunters (1983-2022).

YEAR	NORTH	WT.MTN	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	TOTAL
1983	34	49	58	6	0	0	147
1984	50	49	57	4	0	0	160
1985	14	31	9	0	0	0	54
1986	22	36	18	1	0	0	77
1987	61	79	35	4	0	0	179
1988	38	50	26	0	0	0	114
1989	36	56	23	3	0	0	118
1990	30	49	26	0	0	0	105
1991	22	28	29	0	0	0	79
1992	32	61	61	3	0	0	157
1993	41	87	43	0	0	0	171
1994	29	48	73	3	0	0	153
1995	60	112	127	2	0	0	301
1996	15	20	27	0	0	0	62
1997	52	69	73	8	0	0	202
1998	39	50	73	13	5	1	181
1999	74	106	103	25	4	1	313
2000	54	99	118	17	6	0	294
2001	53	111	100	24	7	0	295
2002	21	55	91	30	3	3	203
2003	98	132	176	46	9	1	462
2004	48	97	108	68	20	2	343
2005	36	59	63	23	5	4	190
2006	17	35	41	35	13	8	149
2007	43	87	98	30	16	4	278
2008	27	71	80	22	8	1	209
2009	49	82	106	43	15	0	295
2010	32	89	86	41	4	0	252
2011	15	45	52	29	14	0	155
2012	36	63	104	51	28	1	283
2013	14	36	57	40	14	3	164
2014	27	62	112	34	21	5	261
2015	23	67	105	52	16	2	265
2016	22	75	126	44	32	1	300
2017	20	33	72	22	19	2	158
2018	44	76	139	45	57	7	368
2019	29	62	110	32	31	6	270
2020	50	76	105	34	46	4	315
2021	28	66	81	20	41	9	245
2022	65	82	87	46	58	10	348

Table 18. NH regional female bear harvest by still hunters (1983-2021).

YEAR	NORTH	WT.MTN	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	TOTAL
1983	18	18	29	1	0	0	66
1984	23	23	29	0	0	0	75
1985	5	16	1	0	0	0	22
1986	5	17	11	0	0	0	33
1987	21	34	12	4	0	0	71
1988	14	14	10	0	0	0	38
1989	15	21	15	0	0	0	51
1990	13	25	14	0	0	0	52
1991	10	9	14	0	0	0	33
1992	11	25	26	1	0	0	63
1993	24	34	14	0	0	0	72
1994	15	15	35	2	0	0	67
1995	26	67	58	1	0	0	152
1996	5	6	14	0	0	0	25
1997	17	25	40	4	0	0	86
1998	18	18	35	7	1	0	79
1999	32	52	50	13	0	0	147
2000	27	46	56	9	0	0	138
2001	19	58	45	8	2	0	132
2002	13	22	44	11	1	1	92
2003	55	79	101	23	2	0	260
2004	23	45	51	37	4	1	161
2005	20	24	29	11	1	1	86
2006	6	13	21	14	4	5	63
2007	17	39	43	7	5	2	113
2008	13	33	33	13	1	1	94
2009	29	34	40	17	4	0	124
2010	17	40	45	24	0	0	126
2011	7	18	30	13	5	0	73
2012	19	28	61	18	16	0	142
2013	6	15	24	19	8	0	72
2014	14	30	56	12	11	1	124
2015	10	26	51	22	8	1	118
2016	12	37	71	15	12	0	147
2017	4	15	40	11	8	0	78
2018	16	43	84	22	20	1	186
2019	14	28	64	14	17	4	141
2020	31	37	47	6	20	3	144
2021	10	32	46	7	20	4	119
2022	32	48	42	17	35	3	177

Table 19. NH regional male bear harvest by still hunters (1983-2022).

YEAR	NORTH	WT.MTN	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	TOTAL
1983	16	31	29	5	0	0	81
1984	27	26	28	4	0	0	85
1985	9	15	8	0	0	0	32
1986	17	19	7	1	0	0	44
1987	40	45	23	0	0	0	108
1988	24	36	16	0	0	0	76
1989	21	35	8	3	0	0	67
1990	17	24	12	0	0	0	53
1991	12	19	15	0	0	0	46
1992	21	36	35	2	0	0	94
1993	17	53	29	0	0	0	99
1994	14	33	38	1	0	0	86
1995	34	45	69	1	0	0	149
1996	10	14	13	0	0	0	37
1997	35	44	33	4	0	0	116
1998	21	32	38	6	4	1	102
1999	42	54	53	12	4	1	166
2000	27	53	62	8	6	0	156
2001	34	53	55	16	5	0	163
2002	8	33	47	19	2	2	111
2003	43	53	75	23	7	1	202
2004	25	52	57	31	16	1	182
2005	16	35	34	12	4	3	104
2006	11	22	20	21	9	3	86
2007	26	48	55	23	11	2	165
2008	14	38	47	9	7	0	115
2009	20	48	66	26	11	0	171
2010	15	49	41	17	4	0	126
2011	8	27	22	16	9	0	82
2012	17	35	43	33	12	1	141
2013	8	21	33	21	6	3	92
2014	13	32	56	22	10	4	137
2015	13	41	54	30	8	1	147
2016	10	38	55	29	20	1	153
2017	6	18	32	11	11	2	80
2018	28	33	55	23	37	6	182
2019	15	34	46	18	14	2	129
2020	19	39	58	28	26	1	171
2021	18	34	35	13	21	5	126
2022	33	34	45	29	23	7	171

Table 20. Female age class distribution by year for all aged bears 2013-2022.

AGE	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
0.5	7	7	6	4	1	12	5	5	2	15	64
1.5	38	53	43	48	40	73	56	75	73	64	563
2.5	42	68	47	79	45	107	50	134	57	138	767
3.5	28	53	57	60	43	62	53	72	53	63	544
4.5	28	41	36	58	25	71	45	78	32	73	487
5.5	20	34	23	34	30	27	48	52	46	32	346
6.5	19	17	33	33	19	36	30	37	18	41	283
7.5	12	21	21	30	11	29	23	21	25	35	228
8.5	11	18	15	19	12	16	19	22	19	38	189
9.5	9	10	9	16	11	18	18	21	26	28	166
10.5	5	10	7	12	17	16	20	22	26	22	157
11.5	10	14	6	8	6	15	11	12	14	11	107
12.5	4	11	7	9	4	9	13	7	12	13	89
13.5	2	2	7	4	3	5	5	5	2	9	44
14.5	3	5	7	5	3	2	2	3	8	2	40
15.5	1	1	3	2	4	3	1	4	0	2	21
16.5	1	1	0	1	0	2	7	3	4	1	20
17.5	0	2	0	2	1	2	4	1	3	2	17
18.5	0	2	1	0	2	2	4	2	1	4	18
19.5	1	2	1	1	0	1	1	1	0	1	9
20.5	0	0	1	1	1	0	1	1	0	1	6
21.5	0	0	0	0	0	0	1	1	1	0	3
22.5	0	0	0	0	0	1	0	0	0	0	1
23.5	0	1	0	0	1	0	1	0	1	0	4
24.5	0	0	0	0	0	0	0	0	0	0	0
25.5	0	0	1	0	0	0	1	0	0	1	3
Total	241	373	331	426	279	509	419	579	423	596	4176

Table 21. Male age class distribution by year for all aged bears, 2013-2022.

AGE	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
0.5	13	9	7	6	5	15	7	18	3	19	102
1.5	70	105	120	137	83	159	103	166	183	146	1272
2.5	93	128	87	161	68	193	94	213	75	250	1362
3.5	40	82	75	79	53	71	87	80	72	49	688
4.5	44	32	61	42	41	59	47	68	32	46	472
5.5	24	39	31	38	20	23	52	36	32	18	313
6.5	21	13	23	12	15	19	37	28	21	27	216
7.5	14	17	19	10	9	10	12	10	27	14	142
8.5	14	7	11	6	10	2	18	9	17	10	104
9.5	3	3	4	4	5	9	13	4	7	2	54
10.5	10	2	5	6	3	3	12	2	9	1	53
11.5	4	2	7	4	4	1	1	6	0	1	30
12.5	3	3	4	2	3	3	4	1	2	1	26
13.5	1	2	3	0	0	1	0	2	0	0	9
14.5	1	2	1	0	3	1	2	0	5	0	15
15.5	2	0	1	0	0	1	2	0	1	0	7
16.5	0	1	1	0	2	0	2	0	1	0	7
17.5	0	2	0	1	1	1	2	0	0	0	7
18.5	0	0	0	0	2	0	0	1	1	0	4
19.5	0	0	0	0	0	0	0	0	0	1	1
20.5	0	0	0	0	0	0	0	0	0	0	0
21.5	0	0	0	0	1	0	0	0	0	0	1
22.5	0	0	0	0	1	0	0	0	0	2	3
Total	357	449	460	508	329	571	495	644	488	587	4888

Table 22. Mean statewide female bear ages as derived from aged New Hampshire bears from all-cause mortality, 1993-2022.

Year	N	Mean	Std Dev	CV
1993	108	6.0	3.7	62.7
1994	95	6.2	4.7	75.4
1995	189	7.1	4.4	61.4
1996	53	5.2	3.2	61.5
1997	117	5.8	3.9	66.6
1998	111	5.5	4.0	72.4
1999	211	5.4	4.2	78.4
2000	194	5.3	3.8	72.7
2001	228	5.3	3.8	73.0
2002	139	6.0	4.4	73.5
2003	438	5.8	4.1	70.3
2004	328	5.7	4.1	71.9
2005	193	5.5	3.6	65.3
2006	145	5.8	4.3	73.0
2007	270	5.8	3.8	65.9
2008	193	5.3	3.9	73.3
2009	354	5.3	3.9	73.0
2010	355	5.6	4.0	71.6
2011	182	5.4	4.0	74.1
2012	400	5.2	3.9	74.9
2013	241	5.1	3.6	69.7
2014	373	5.3	3.9	73.1
2015	331	5.5	3.9	70.7
2016	426	5.3	3.5	65.6
2017	279	5.6	3.9	70.7
2018	509	5.0	3.6	72.2
2019	419	6.1	4.3	71.1
2020	579	5.0	3.5	70.2
2021	423	5.8	4.0	69.2
2022	596	5.3	3.7	70.0

Table 23. Mean statewide male bear ages as derived from aged New Hampshire bears from all-cause mortality, 1993-2022.

Year	N	Mean	Std Dev	CV
1993	165	4.3	3.5	82.4
1994	137	5.5	4.1	75.0
1995	209	4.5	3.4	74.8
1996	102	6.0	4.0	66.8
1997	194	4.4	3.4	75.5
1998	159	5.0	3.5	70.1
1999	290	3.9	2.9	73.8
2000	262	4.9	3.9	79.6
2001	334	3.7	2.6	72.1
2002	208	4.5	3.9	87.4
2003	415	3.3	2.2	65.8
2004	395	4.0	3.2	81.8
2005	267	4.0	2.8	70.7
2006	221	4.3	3.0	69.6
2007	366	3.2	2.2	68.0
2008	279	3.9	2.9	76.5
2009	442	3.4	2.7	77.5
2010	389	3.5	2.8	81.5
2011	268	4.4	3.3	74.4
2012	469	3.2	2.4	74.9
2013	357	4.1	2.8	70.1
2014	449	3.6	2.6	71.4
2015	460	3.9	2.7	69.6
2016	508	3.3	2.2	65.9
2017	329	4.1	3.4	81.6
2018	571	3.2	2.2	69.5
2019	495	4.3	2.9	68.2
2020	644	3.3	2.2	66.2
2021	488	3.7	2.9	76.6
2022	587	3.1	2.3	72.8

Table 24. Mean age of female New Hampshire bears by management region, which died due to all-cause mortality, 1986-2022.

Year	NORTH		WT. MTS.		CENTRAL		S. WEST-1		S. WEST-2		S.EAST	
	MeanAge	N	MeanAge	N	MeanAge	N	MeanAge	N	MeanAge	N	MeanAge	N
1986	5.1	11	5.7	23	5.5	14	.	0	.	0	.	0
1987	5.3	34	6.3	39	3.4	10	8.5	2	.	0	2.5	2
1988	4.8	21	6.0	22	4.5	14	.	0	.	0	.	0
1989	6.2	37	5.8	35	4.9	19	.	0	.	0	.	0
1990	5.8	36	5.9	45	4.5	25	1.5	1	.	0	.	0
1991	7.4	15	5.0	15	5.2	23	.	0	.	0	.	0
1992	5.2	21	5.2	31	4.7	36	2.5	1	.	0	.	0
1993	5.6	32	6.2	50	5.9	26	.	0	.	0	.	0
1994	6.4	23	6.5	25	6.2	45	3.0	2	.	0	.	0
1995	6.3	37	7.8	80	6.8	70	1.5	1	14.5	1	.	0
1996	7.0	15	4.3	14	4.5	24	.	0	.	0	.	0
1997	6.3	32	5.6	35	5.6	46	6.3	4	.	0	.	0
1998	5.5	26	5.6	38	5.5	39	4.1	7	5.5	1	.	0
1999	4.9	53	6.3	78	4.4	63	6.8	15	2.0	2	.	0
2000	6.0	55	5.2	63	4.8	65	5.0	11	.	0	.	0
2001	5.6	53	5.6	90	4.7	72	4.9	11	2.5	2	.	0
2002	7.0	30	7.4	43	4.8	52	4.7	11	4.5	2	1.5	1
2003	5.4	129	5.8	144	6.4	135	4.7	27	11.5	3	.	0
2004	5.1	71	6.0	115	5.5	90	6.5	46	3.5	5	4.5	1
2005	5.2	66	6.1	59	5.2	51	5.7	15	5.5	1	1.5	1
2006	7.3	26	5.4	30	5.8	52	6.0	21	3.9	10	5.0	6
2007	5.9	71	5.6	96	6.0	81	6.4	12	4.3	8	5.0	2
2008	5.4	56	5.2	56	4.9	57	6.6	20	4.8	3	10.5	1
2009	5.5	115	5.6	100	4.8	103	6.2	26	3.7	10	.	0
2010	5.6	101	6.0	102	5.4	116	4.5	30	5.0	6	.	0
2011	6.3	24	4.8	42	5.7	79	4.9	22	5.4	14	3.5	1
2012	5.4	102	5.9	103	4.6	134	5.2	32	4.4	28	.	0
2013	4.6	46	5.7	68	5.1	86	4.8	26	4.8	15	.	0
2014	5.3	84	5.4	109	5.6	129	5.0	20	4.5	29	4.5	2
2015	6.3	65	5.5	76	5.1	128	5.4	40	5.2	21	11.5	1
2016	5.1	86	5.6	131	5.2	139	6.2	40	4.0	30	.	0
2017	6.1	54	6.8	69	5.4	103	3.6	33	4.2	20	.	0
2018	5.1	97	4.9	148	4.9	172	6.3	48	4.5	41	1.8	3
2019	7.3	61	6.1	122	5.8	156	5.4	39	6.0	36	5.9	5
2020	4.9	130	4.9	169	5.5	174	4.7	45	4.6	58	3.8	3
2021	6.3	88	6.2	119	5.5	135	6.1	35	4.4	40	4.7	6
2022	6.1	113	5.5	176	5.3	190	4.9	49	4.2	65	3.8	3

Table 25. Median ages for male and female New Hampshire bears, which died due to all-cause mortality, 1986-2022.

Year	FEMALE		MALE	
	Med.Age	N	Med.Age	N
1986	5.5	48	3.5	90
1987	4.5	87	3.5	160
1988	4.5	57	3.5	133
1989	5.5	91	3.5	154
1990	5.5	107	3.5	185
1991	5.5	53	4.5	79
1992	3.5	89	3.5	139
1993	5.0	108	3.5	165
1994	5.5	95	4.5	137
1995	6.5	189	3.5	209
1996	4.5	53	4.5	102
1997	4.5	117	3.5	194
1998	4.5	111	4.5	159
1999	4.5	211	2.5	290
2000	4.5	194	3.5	262
2001	4.5	228	2.5	334
2002	4.5	139	3.5	208
2003	4.5	438	2.5	415
2004	4.5	328	3.5	395
2005	4.5	193	2.5	267
2006	5.5	145	3.5	221
2007	4.5	270	2.5	366
2008	4.5	193	2.5	279
2009	3.5	354	2.5	442
2010	4.5	355	2.5	389
2011	4.5	182	3.5	268
2012	3.5	400	2.5	469
2013	4.5	241	3.5	357
2014	4.5	373	2.5	449
2015	4.5	331	3.5	460
2016	4.5	426	2.5	508
2017	4.5	279	3.5	329
2018	4.5	509	2.5	571
2019	5.5	419	3.5	495
2020	4.5	579	2.5	644
2021	4.5	423	2.5	488
2022	4.5	596	2.5	587



**NEW HAMPSHIRE FISH AND GAME DEPARTMENT**  
 11 Hazen Drive, Concord, NH 03301

BER10003.P7  
 Rev. 6/10

### BEAR REGISTRATION FORM

**PLEASE PRINT ALL INFORMATION**

C.O. CALL #

SEAL #

**LICENSE TYPE:**

RESIDENT

NONRESIDENT

OTHER \_\_\_\_\_

YEAR

HUNTING LICENSE NUMBER

YEAR

BEAR PERMIT NUMBER (if different)

DATE CHECKED: \_\_\_/\_\_\_/\_\_\_

TIME CHECKED: \_\_\_:\_\_\_ AM  
 PM

LAST NAME

FIRST NAME

MI

MAILING ADDRESS

CITY

STATE

ZIP

DATE OF BIRTH

-   -

M or F

TELEPHONE: \_\_\_\_\_

STREET ADDRESS (IF DIFFERENT)

TOWN WHERE KILLED

LOCALITY WHERE KILLED (use Gazetteer referenced sites)

DATE OF KILL

-   -

BEAR WMU

EAR TAG #'s

-

TIME KILLED: \_\_\_:\_\_\_ AM  
 PM

SEX OF BEAR:  MALE  FEMALE

PREMOLAR COLLECTED:  YES  NO

ACTUAL DRESSED WEIGHT IF KNOWN (no estimates or whole weights): \_\_\_\_\_ LBS.

CAUSE OF DEATH:  HUNTER  CAR  NUISANCE  ILLEGAL  OTHER \_\_\_\_\_

HUNTING METHOD:  BAIT  STILL/STALK  HOUNDS - OWNER'S NAME \_\_\_\_\_

SPECIFICALLY HUNTING:  BEAR  DEER  OTHER \_\_\_\_\_ DAYS HUNTED: \_\_\_\_\_

WEAPON:  BOW  MUZZLELOADER  RIFLE  SHOTGUN  HANDGUN CALIBER \_\_\_\_\_

WERE YOU GUIDED:  YES  NO GUIDE NAME: \_\_\_\_\_

BEAR FEEDING ON:  ACORNS  BEECHNUTS  APPLES  CORN  OTHER \_\_\_\_\_

TEAT LENGTH: \_\_\_\_\_ LACTATING:  YES  NO  UNKNOWN

This statement is signed subject to the penalties for making unsworn false statement under RSA 641:3.

SIGNATURE OF INSPECTOR: \_\_\_\_\_ SIGNATURE OF HUNTER: \_\_\_\_\_

**PLEASE FORWARD TO CONCORD: ATTENTION BEAR PROJECT**

White copy - Wildlife

Yellow copy - Law Enforcement

Figure 1. New Hampshire bear registration form.

**Black Bear Management Region Key**

North	= WMUs A, B, C2, D1
White Mountains	= WMUs C1, D2, E, F
Central	= WMUs G, I1, J1, J2
Southwest-1	= WMUs H1, I2
Southwest-2	= WMUs H2, K
Southeast	= WMUs L, M

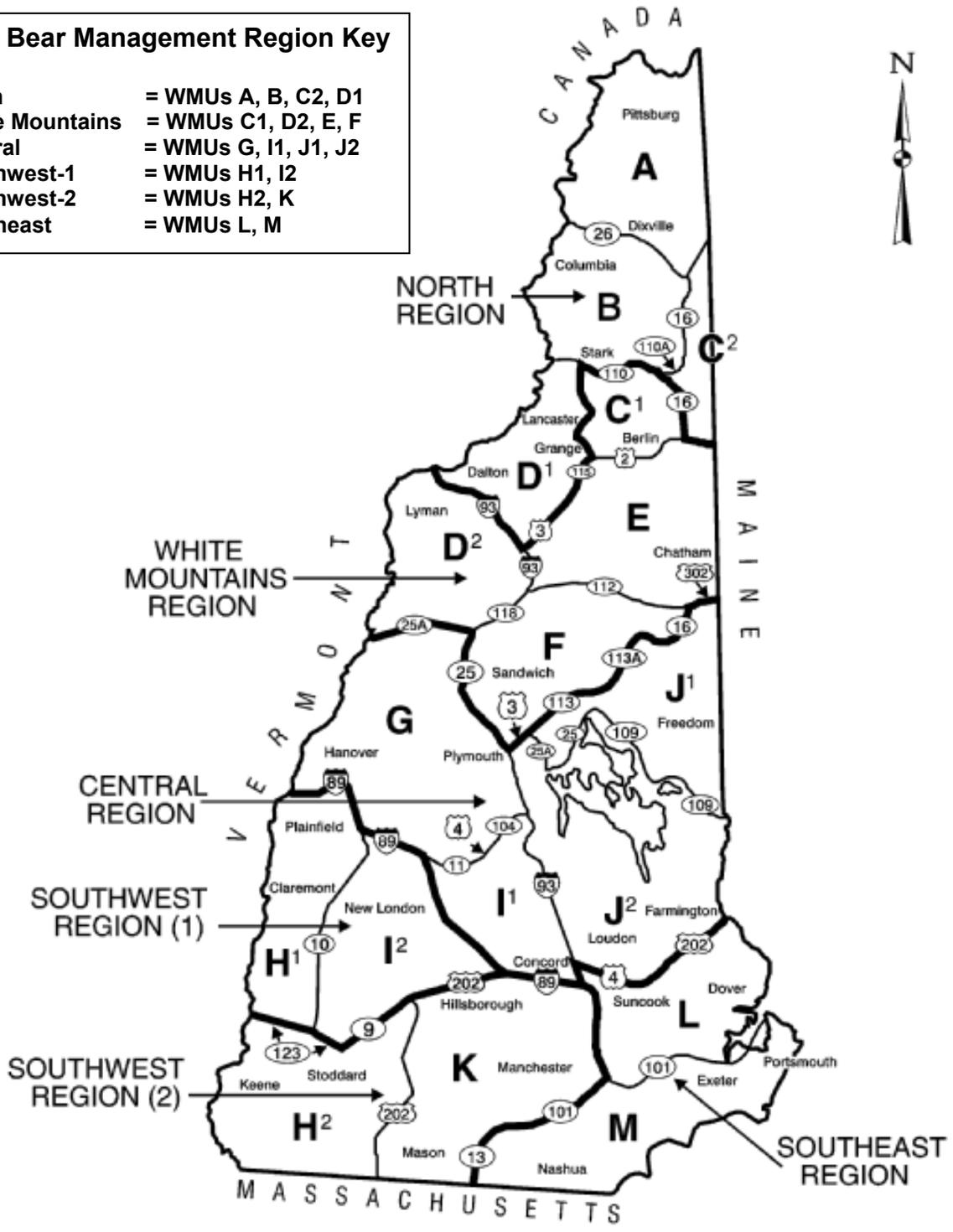


Figure 2. New Hampshire black bear management regions.

## Statewide Bear Population Estimates Based on Downing Reconstruction and Paloheimo & Fraser (3-Year) Models (1989-2022)

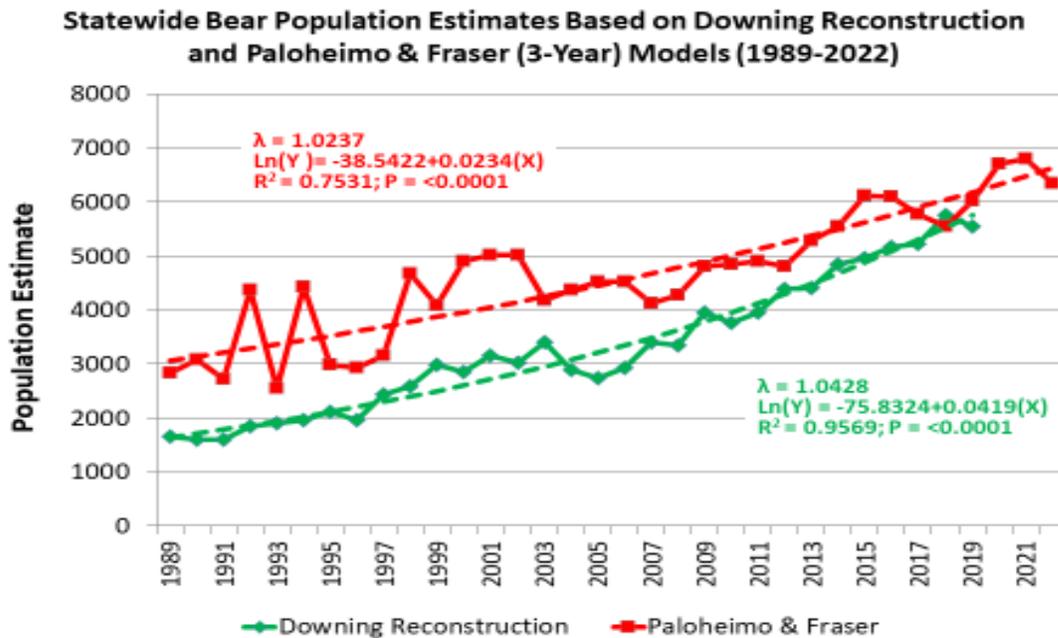


Figure 3. New Hampshire statewide bear population estimates developed using two models, 1989-2022. Both the Downing reconstruction and Paloheimo & Fraser (P&F) models utilize sex-specific age-at-harvest data to estimate population size and change in abundance over time. Downing reconstruction estimates a minimum population size and therefore produces an abundance estimate that is consistently lower than that of the P&F model. The Paloheimo & Fraser model utilizes 3-year blocks of mortality data to derive annual population estimates and statistics (e.g., data from 2020-2022 was used to provide estimate of population size in 2022). During the period 1989-2022, the Downing and P&F models indicated that the bear population was increasing at rates of 4.3 and 2.4% per year, respectively.

## Appendix 1. Bear Population Modeling

Since the mid-1990s, sex and age data from all documented bear mortalities have been used to model the age and sex structure of New Hampshire's bear population and to monitor trend changes (growth or decline). Ages are determined by tooth section analysis at Matson's Laboratory. Sex is determined by inspecting animals during registration.

Various approaches have and continue to be used in conjunction with one another to provide the most reliable estimate possible. One model used is that of Paloheimo & Fraser (1981) which utilizes harvest sex and age data to estimate sex-specific harvest rates based on differential vulnerability (determined by sex ratio change by age class). All bears  $\geq 1.5$  years old are used in this analysis as this represents the age where differential vulnerability based on sex begins. This model applies an estimated harvest rate (for each sex) to a known harvest level to estimate a pre-hunt population size.

A second model has been recently used in New Hampshire to estimate bear abundance; collectively, results of these two models are compared to allow for a better estimate of abundance and assessment of trend data, and to serve as a "checks and balances" to one another. This second model also uses age-at-harvest data to estimate population size through population reconstruction. Population reconstruction is a method of using demographic data (sex and age data acquired through harvest) to reproduce the historical trend in animal abundance (Downing 1980). This technique is a population estimation method that utilizes age-at-harvest data and backward addition of cohorts to estimate a minimum population size. Consecutive population estimates (from both models) over a specified period of time are then used to calculate rate of population change ( $\lambda$ ). This rate of change in abundance over time (aka population growth) is the result of birth, death, immigration and emigration on the demography of a population and one of the most important parameters to bear population management.

The above mentioned models are used to provide statewide estimates of bear abundance. The Department manages bear populations on a regional level (6 bear management regions) and each region has a unique population objective. Sample sizes (bear mortality data) are not sufficiently large to directly model regional bear populations therefore a statewide estimated population is partitioned into regional populations via bear observation rates. Observation rates are assumed to reflect relative bear densities and are used to allocate the statewide population estimate into regional densities. Bear observation rates are obtained via a statewide deer hunter survey each fall, where hunters record their observations of bears (and other wildlife species) along with the amount of time spent hunting. This measure of observation per unit effort is used to calculate regional bear observation rates.

Similarly to regional data inputs, the statewide bear population is modeled using pooled data from multiple years. This approach results in more robust sample sizes and helps remove annual variability associated with bear behavior and mortality rates. Bear population estimates and population statistics are derived utilizing 3-year blocks of mortality data (e.g., 2015-2017). While 5-year blocks of data were previously used, current sample sizes are adequate using 3-year blocks, which also better represents more recent conditions. The statewide population estimate is partitioned into regional density estimates utilizing bear observation rates (that are also pooled into 3-year blocks) collected by deer hunters during fall.

### Literature Cited:

Downing, R.L. 1980. Vital statistics of animal populations. Pages 247-267 in S.D. Schemnitz, editor. Wildlife management techniques manual. The Wildlife Society, Washington, D.C.

Paloheimo, J.E., and D. Fraser. 1981. Estimation of harvest rate and vulnerability from age and sex data. *J. Wildl. Manage.* 45:948-958.

Appendix 2, Page 1.

2022 BEAR POPULATION ESTIMATION USING 3 YEARS OF MORTALITY AND MAIL SURVEY DATA  
 PALOHEIMO AND FRASER HARVEST RATE ESTIMATION  
 LISTING OF 2020-22 AGE-SPECIFIC MORTALITY INPUT DATA

AGE	MALES	FEMALES	YEAR OF ENTRY	HUNTING EFFORT IN YEAR OF ENTRY	CUMULATIVE EFFORT
1.5	495	213	2021	10.17	10.17
2.5	538	330	2020	10.17	30.51
3.5	201	190	2019	10.17	50.85
4.5	146	184	2018	10.17	71.19
5.5	86	130	2017	10.17	91.53
6.5	76	96	2016	10.17	111.87
7.5	51	81	2015	10.17	132.21
8.5	36	79	2014	10.17	152.55
9.5	13	77	2013	10.17	172.89
10.5	12	70	2012	10.17	193.23
11.5	7	37	2011	10.17	213.57
12.5	4	32	2010	10.17	233.91
13.5	2	16	2009	10.17	254.25
14.5	5	13	2008	10.17	274.59
15.5	1	6	2007	10.17	294.93
16.5	1	8	2006	10.17	315.27
19.5*	5	21	2005	30.51	376.29

\* - WEIGHTED MEAN AGE (POOLED DATA FOR AGES 17.5 TO 25.5)

2022 BEAR POPULATION ESTIMATION USING 3 YEARS OF MORTALITY AND MAIL SURVEY DATA  
 PALOHEIMO AND FRASER HARVEST RATE ESTIMATION  
 SUMMARY OF ESTIMATOR RESULTS FOR 2020-22 HARVEST DATA

NUMBER OF AGE CLASSES SAMPLED -----	=	17
NUMBER OF MALES IN HARVEST SAMPLE ---	=	1679
NUMBER OF FEMALES IN HARVEST SAMPLE -	=	1583
TOTAL INDIVIDUALS IN HARVEST SAMPLE -	=	3262
ESTIMATED P (PROBABILITY OF CAPTURE) -----	=	0.028853686
ESTIMATED U (DIFFERENTIAL VULNERABILITY) -	=	0.010461367
VARIANCE OF P -----	=	0.000005394
VARIANCE OF U -----	=	0.000001246
COVARIANCE OF P AND U -----	=	0.000000739
INSTANTANEOUS HARVEST RATE OF MALES -----	=	0.400
INSTANTANEOUS HARVEST RATE OF FEMALES -----	=	0.187
ISOLATED ANNUAL HARVEST RATE OF MALES -----	=	33.0% (80% CI IS = 30.3% TO 35.5%)
ISOLATED ANNUAL HARVEST RATE OF FEMALES --	=	17.1% (80% CI IS = 14.5% TO 19.6%)

BEAR POPULATION ESTIMATION USING 3 YEARS OF MORTALITY AND MAIL SURVEY DATA  
 MINIMUM, MEAN AND MAXIMUM BEAR (AGE 1.5+) MORTALITY BY SEX AND 3-YEAR PERIOD

ESTIMATE YEAR	DATA YEARS	FEMALE			MALE			TOTAL		
		MINIMUM	MEAN	MAXIMUM	MINIMUM	MEAN	MAXIMUM	MINIMUM	MEAN	MAXIMUM
2022	2020-22	428	527.67	581	485	559.67	626	913	1087.3	1200

Appendix 2, Page 2.

2022 BEAR POPULATION ESTIMATION USING 3 YEARS OF MORTALITY AND MAIL SURVEY DATA  
 SUMMARY OF MAIL SURVEY BEAR OBSERVATION RATES AND REGIONAL POPULATION INDICES  
 (2020-22 DATA USED)

REGION	N	MEAN OBS. RATE	LAND AREA	REGIONAL POPULATION INDEX (%)
NORTH	3714	0.72	1407	14.18
W. MTN.	4161	1.60	1949	43.89
CENTRAL	13183	0.61	2320	19.92
S. WEST-1	3448	0.54	791	5.97
S. WEST-2	8846	0.68	1352	12.86
S. EAST	10700	0.19	1213	3.18

2022 BEAR POPULATION ESTIMATION USING 3 YEARS OF MORTALITY AND MAIL SURVEY DATA  
 BASED ON PALOHEIMO AND FRASER HARVEST RATE ESTIMATES. STATEWIDE POPULATION ESTIMATES  
 AVAILABLE FROM 1985 TO PRESENT AND REGIONAL ESTIMATES USING MAIL SURVEY DATA FROM 1997  
 TO PRESENT. (2020-22 DATA USED)

REGION	80% LCL				BEST ESTIMATE				80% UCL			
	ADULT FEMALE	ADULT MALE	CUBS	TOTAL & (DENSITY)	ADULT FEMALE	ADULT MALE	CUBS	TOTAL & (DENSITY)	ADULT FEMALE	ADULT MALE	CUBS	TOTAL & (DENSITY)
NORTH	382	223	193	798 (0.57)	439	241	222	902 (0.64)	518	262	262	1042 (0.74)
W. MTN.	1182	692	598	2472 (1.27)	1358	745	686	2789 (1.43)	1603	811	810	3224 (1.65)
CENTRAL	537	314	271	1122 (0.48)	616	338	312	1266 (0.55)	728	368	368	1464 (0.63)
S. WEST-1	161	94	81	336 (0.42)	185	101	93	379 (0.48)	218	110	110	438 (0.55)
S. WEST-2	346	203	175	724 (0.54)	398	218	201	817 (0.60)	470	238	237	945 (0.70)
S. EAST	86	50	43	179 (0.15)	98	54	50	202 (0.17)	116	59	59	234 (0.19)
STATEWIDE	2694	1576	1362	5632 (0.62)	3093	1698	1564	6355 (0.70)	3652	1847	1846	7345 (0.81)

## Performance Report

**State:** New Hampshire

**Grant:** F20AF11939

**Grant Type:** Survey and Inventory

**Grant Title:** NH – WILDLIFE RESEARCH AND MANAGEMENT (W-89-R-21)

**Period Covered:** July 1, 2022 – June 30, 2023

**Purpose/Target Name:** PROJECT 3 - BLACK BEAR RESEARCH AND MANAGEMENT

**Objective Name:** JOB 2 - NON-HARVEST DATA COLLECTION, ENTRY AND ANALYSIS

**Objective Statement:** To collect, enter, analyze and use non-harvest bear data in the management of New Hampshire's bear resources. Non-harvest factors include but are not limited to non-harvest mortality, bear/human conflict frequencies, deer-hunter bear observation rates, annual hard and soft mast production surveys, and bear population parameters including productivity and mortality. The potential impacts of diseases, disorders and other bear health impacts on the bear population will be monitored and evaluated.

### Summary:

#### Non-Harvest Mortality Data Collection

A total of 133 non-hunting bear mortalities were reported in New Hampshire during 2022. This represents 12% of the legal bear harvest and 10% of total reported mortality in that year. Non-hunting bear mortality during 2022 was higher than that reported in 2021 and the recent 5-year average. The trend in non-harvest mortality generally mirrors that of harvest-related mortality. During low years, abundant food resources decrease the vulnerability of bears to both harvest and non-harvest related mortality. During years when food is scarce, vulnerability is increased thereby causing an increase in all-cause mortality. The majority (69%) of 2022 losses resulted from motor vehicle collisions (92). Other non-hunting losses resulted from bears killed due to conflict (32), illegal take (4) and other (3) causes. The number of bears killed due to conflict in 2022 was notable higher compared to 2021 (18 bears) which correlates with the difference in mast abundance and conflict levels between the two years. Since 1985, 2,298 non-hunting bear losses have been documented in New Hampshire. These data were summarized based on cause of death, sex of bear, regional distribution and annual and monthly occurrences. With the exception of 2003, 2004, 2012, 2018, 2020 and 2022 (all poor food years), annual non-hunting losses have remained relatively stable.

#### Bear-Human Conflict Frequencies

Documented complaints were entered into a *Bear Conflict Report* developed in ArcGIS Survey123. This approach has to increased efficiency in data entering and data analysis and allows responding biologist to collect a variety of data variables related to bear-human conflicts that influence annual frequencies. Specifically, the data being collected will provide metrics to the level and type of attractants that drive annual complaints and better document agency response.

Department biologist and USDA Wildlife Services partners documented 673 categorized bear-human conflicts during the 2022 calendar year. Bear complaints represent an important consideration in New Hampshire bear management decision-making. Human tolerance towards bears and our collective willingness to accommodate bears, represent important management thresholds. Actual and potential bear conflicts figure prominently in the formulation of season proposals. Expanding human development and strong bear populations, coupled with human fear and ignorance combined with bear adaptability and intelligence, add to the complexity of modern bear management programs. Extreme caution should be used in interpreting conflict bear data. Methods for gathering data change as do motivations for reporting conflicts. Interpretation of complaint data is further complicated by changes in natural food production, which directly influences bear behavior and disposition to pursue certain foraging opportunities. Finally, learned behaviors that are repeated in subsequent years and/or passed on to progeny, likely influence bear complaint frequencies, at least on a local level.

#### Deer-Hunter Bear Observation Rates

Bear observation data were solicited from 18,000 firearms deer hunters during 2022. A total of 1,610 individuals responded to the survey and provided useable data. Hunters recorded effort expended and the number of bears observed while deer hunting during the 11-day muzzleloader season and/or the first 12 days of the regular firearms deer season. Statewide, survey results provided 14,059 hunter days and 68,297 hours of hunter effort yielding 300 bear observations. Observation rates for the period 2020-2022 were used to partition the statewide estimated bear population into regional densities.

### Bear Population Parameters

During the past grant segment, a sample of radio-marked female black bears were maintained in an effort to assess bear population parameters in west-central New Hampshire. Four bears were actively monitored during 2022-2023. A total of 36 female bears have been captured and fitted with VHF radio and/or GPS data loggers as part of this monitoring effort since June 2002. Four females were checked in their den during March 2023 to assess productivity, cub/yearling survival, growth and condition. At the end of the 2022 breeding season, 1 female was expected to birth cubs. Three females that had cubs in 2022 were handled in their dens with yearlings during winter 2023.

### Mast Production Surveys

Subjective mast assessments were conducted by Fish and Game biologists and partners for 11 important New Hampshire mast species in 18 New Hampshire wildlife management units (WMUs). A total of 221 useful mast scores were provided. Production scores for 6 of 10 staple bear foods assessed were below long-term production means and scores for the remaining 4 species were consistent or above long-term means. This indicates that 2022 was a poor year overall in terms of mast production and the availability of bear foods. Hunter observation data regarding bear food consumption were also analyzed. These data parallel mast survey results.

**Target Date:** June 30<sup>th</sup> annually 2021-2025.

**Status of Progress:** On schedule.

**Significant Deviations:** None.

**Objective Approach:** Collection of non-harvest related bear data will be coordinated by the bear project leader. Standard bear registration forms will be used to report non-harvest bear mortality data including bears shot as nuisance animals, motor vehicle kills, and other incidental losses. All non-harvest data will be entered into an existing electronic bear data set for analysis. Non-harvest data will be analyzed and incorporated into various technical reports and articles including annual performance reports, research reports, annual harvest summaries, and popular articles. Wildlife health related issues pertinent to bear management will be assessed and evaluated. The Department will work through the Northeast Wildlife Disease Cooperative (NWDC) to conduct necessary disease and parasite diagnostics and testing, and to gain access to technical support with wildlife health issues and educational resources.

The Department will continue to collect productivity and mortality data in west/central New Hampshire, using telemetered female bears. Mature wild female bears will be trapped, immobilized, and radio-marked annually to maintain a study population of approximately 12 adult female bears. Objectives of this monitoring effort include but are not limited to quantification of: 1) breeding intervals, 2) annual productivity, 3) annual adult and cub survival, 4) denning phenology, 5) home range size, 6) seasonal activity patterns, and 7) conflict behavior.

Department field staff annually submit several hundred conflict bear complaint report forms to USDA, Wildlife Services, who work in partnership with the Department on a cooperative animal damage control project. Bear-human complaint data will be used to annually quantify the nature, extent, and distribution of bear/human conflicts in New Hampshire. Results are used as a factor in consideration of regional management needs and are incorporated into our biennial season setting process. From 10-20 black bears will be trapped and handled annually during conflict response. Said bears will be destroyed or immobilized, ear tagged, and translocated. During this handling, a premolar is removed for aging purposes, sex is determined, weight is estimated, sows are assessed for lactation, and the general health and condition of the animal is assessed. Tagging facilitates monitoring of bear movements and behavior.

Approximately 30 staff members of the Department and related agencies including wildlife biologist, technicians, and regional foresters will perform mast assessments during July-October of each segment year. Assessments will consist of at least 2 location checks per regional staff member per assessment period. Mast production will be subjectively ranked on a scale of 1 (poor) to 10 (excellent). Surveys will focus on the following species: *Abies* spp., *Corylus* spp., *Fagus* spp., *Malus* spp., *Picea* spp., *Prunus* spp., *Quercus* spp., *Rubus* spp., *Sorbus* spp., and *Vaccinium* spp. Results will be tallied on standardized data forms, which will be collected and summarized by the bear project leader. A minimum of 25 reports per assessment period is anticipated. Approximately 8 department biologists will also annually quantify acorn and beechnut production as part of a regional collaborative mast survey initiative being conducted by several northeast states. Eleven permanently established plots will be surveyed each fall using standardized mast assessment methodologies. Results will be forwarded to the bear project biologist for analysis and incorporation into a multi-state database. Survey results will be used as an aid in the interpretation of harvest and non-harvest mortality data, and bear/human conflict data. Results will also be correlated to reproductive data of radio-marked female bears. Survey results will be disseminated to the public in the form of popular articles and news releases, in order to enhance public awareness of and appreciation for black bears and their population dynamics. Hunter surveys may be employed to quantify hunter activities and to assess management option preferences.

## **Results:**

### Non-Harvest Mortality Data Collection

Of the 133 bears reported to have died in New Hampshire due to non-hunting causes in 2022, 92 were struck by motor vehicles, 32 were dispatched due to conflicts, 4 were killed illegally and 5 died of other causes (Table 1). A total of 2,298 non-hunting bear mortalities in New Hampshire have been reported since 1985 (an average of 60 bears per year). Overall, 1,553 (68%) were killed by motor vehicles and 510 (22%) were killed as conflict animals (Table 1).

Table 2 provides a regional summary of non-hunting bear mortality since 1985. Tables 3 and 4 provide a regional summary of female and male losses, respectively. Both sexes show a relatively similar trend in regional distribution. This trend roughly mirrors the distribution of bears in New Hampshire. The greatest loss by non-harvest causes typically occurs in the Central region, followed by the White Mountains and North regions. Bears of unknown sex are summarized in Table 5.

Male bears constitute 63% of non-hunting losses of known sex bears when summed from 1985-2022 (Table 6). A similar comparison of hunted bears over this same time period reveals that males constitute 55% of the harvest. Males account for 73% of conflict bear removals and 60% of vehicle collisions (Table 6). This reflects the greater extent and frequency of male travel, as compared to the higher range fidelity and smaller home ranges of females. Tables 7 and 8 provide a regional summary of non-hunting losses by cause and by sex, respectively. The regional distribution of losses is relatively consistent with our regional population trends.

Overall, 74% of non-hunting bear losses occur during June-October (Table 9). Notably, male losses begin earlier (April-June) than female losses. Additionally, male losses are higher than female losses during all months. This likely reflects the increased movement of males. Conflict bear losses peak in June and July while motor vehicle kills peak in early fall (Table 10). Presumably, the fall peak in motor vehicle kills reflects heightened movement associated with fall feeding.

### Bear/Human Conflict Frequencies

A total of 673 bear-human conflicts were reported and categorized by type in 2022 (Table 11). Complaints were categorized as: agricultural conflict (loss of chickens or fowl, corn damage, livestock loss, etc.), general conflict (bird feeder damage, trashcan/dumpster raiding, etc.), public safety concerns (campground bears and/or bears that demonstrated a lack of human fear), intentional feeding of bears, reports of injured/sick/diseased bears or routine sightings (non-conflict). The vast majority of complaints related to general conflicts (371; bears accessing garbage and birdfeeders) and agricultural conflicts (196; primarily bears raiding unprotected chicken coops). The geographic distribution of complaints was based on bear management regions (Figure 2). The Central (273) and White Mountains (186) reported the most complaints.

The vast majority of bear-human conflicts in the state result in a site visit by biologist or bear program technician to provide technical assistance, education and loan of conflict abatement materials. Based on site visits, the primary food attractant(s) at most locations where a conflict occurred was unsecured garbage (315), unprotected or poorly-

housed chickens/fowl (119), and/or birdfeeders (72; Table 12). Other items, including agricultural feed (21), beehives (13), corn (11), or livestock (2) was also present but in significantly lower frequency. Garbage, chickens, and birdfeeders continue to serve as a significant cause of perennial bear-human conflicts in the state. In response to these conflicts, biologist and technicians provided/loaned abatement materials including electric fence (76), motion-activated alarms (68), pyrotechnics (20), bear-proof garbage containers (8) and/or bear education pamphlets (135; Table 13). The goal of the abatement material loan program is demonstrate to the public the effectiveness of these tools and to foster a greater sense of responsibility by the public regarding bear-human conflict prevention.

Select bears that became persistent conflict animals or represented a threat to property (e.g., livestock, growing crops, etc.) or human safety were captured and either translocated or destroyed in an effort to alleviate bear/human conflicts. A total of 12 bears were trapped, immobilized, tagged, translocated (1) or dispatched (11) by the bear project leader or another wildlife biologist during this grant segment.

### Deer-Hunter Bear Observation Rates

A total of 1,610 individuals responded to the survey and provided useable measures of hunter effort and bear observations during the 2022 deer season. Assuming 95% of the 18,000 potential recipients actually received the survey, this equals a response rate of 9.9%. On a regional basis, the number of hunter-days ranged from 1,211 to 4,218; total hours of effort ranged from 5,673 to 20,898; and total bears observed ranged from 24 to 76 during 2022 (Table 14). Statewide, the mean bear observation rate during 2022 averaged 0.66 bears/100 hunter hours. Mean observation rates varied by region and ranged from 1.02 bears/100 hunter hours in the White Mountains to 0.32 bears/100 hunter hours in the Southeast (Table 15).

Figure 3 provides 3-year mean deer-hunter bear observation rates for 1995-2022. Observation rates of bears increased or remained relatively stable in all bear management regions from 1995 to approximately 2002. The decline in observation rates between 2002 and 2004 in several regions suggests that populations may have shown slight decline during the high harvest and poor food years of 2003 and 2004. It is possible that early denning by bears in those years explains the decline in observation rates as bears may have denned prior to the November deer season (thereby decreasing sightability). During the period 2005-2011, observation rates remained generally stable (considered stable despite slight annual changes) in the North, White Mountains and Southeast regions. During this same time period, observation rates in the Central and Southwest-1 regions increased and then leveled off and rates in the Southwest-2 region increased and then steadily declined. During 2011-2017, observation rates in the North and Southwest-2 region increased steadily. Observation rates in the White Mountains and Central regions showed more annual variation (periods of increase followed by periods of decrease or stability). Observation rates in the Southwest-1 and Southeast regions remained generally stable over that time period. Observation rates in most regions were low during 2018 (presumably due to poor food and early denning) but increased in all areas during 2019. Highly abundant fall foods (particularly acorns) during fall 2019, resulted in bears remaining active into late November resulting in an increase sighting rate by deer hunters. During 2020, observation rates in Central, Southwest-1, Southwest-2 and Southeast Regions remained consistent with previous levels while rates in the North declined. During 2021-2022, observation rates in all regions (except the Southeast) increased but then sharply declined (in 2022). The Southeast Region is the exception as observation rates have steadily increased since 2016. The notable decline in observation rates in nearly all regions last fall was likely influenced by early denning. However, this trend also correlates with the recent decline in the estimated statewide bear population.

Annual variation in bear observation rates, due to food distribution and abundance and denning phenology, is expected. Due to these reasons, bear observation rates serve as indices to relative regional bear population abundance and rate of change. To account for variation, 3-year mean observation rates are used for bear population analysis.

It is assumed that regional bear observation rates reflect relative regional bear densities and thereby serve as a meaningful index to population abundance. However, regional differences in observation rates may be influenced by annual events that impact bear sightability, including food distribution and abundance and denning phenology. We tend to see bear observation rates decline during years of abundant food and increase during below average food years. When these data are used for analysis, rates are pooled into 3-year periods to reduce the variability associated with annual fluctuations in mast abundance and corresponding bear sightings. Deer-hunter bear observation rates were used to partition the estimated statewide bear population into regional densities. These regional densities are provided in NH Federal Aid Report W-89-R-21, Project 3, Job 1, Appendix 2, Page 2.

## Bear Population Parameters

Thirty-three (36) female black bears have been captured and telemetered in west-central New Hampshire since June 2002 as part of a population-monitoring program (Table 16). Productivity and mortality data are being collected on bears to meet the objectives of this monitoring effort (*see Objective Approach*). Reproductive profiles for study animals during 2021 and 2022 are provided in Tables 17a and 17b, respectively. Reproductive histories on study animals for the period 2003 through 2020 were provided in NH Federal Aid Reports W-89-R-8-21, Project 3, Job 2. These histories are used to assess reproductive status of these bears on an annual basis.

During 2022, 1 female was expected to produce cubs in January 2023 (Table 17b). This female produced 2 cubs for a mean productivity rate of 2.0 cubs per female (Table 18). Cubs included one male and one female that weighed 8.0 and 7.0 pounds, respectively. It is recognized that the reproductive data presented in this report is based on very low sample size. Efforts will be made during the next year to increase the population of study bears in an effort to acquire more meaningful results based on larger sample size.

Den checks on sows with yearlings are typically performed to determine annual cub survival rates. Data was collected on the females (sow 121, 632-633, and 150.250) with yearlings during March 2023. Cub survival rate was 71% in 2022.

The annual survival rate of adult females during 2022 was 100% (Table 20). Most adult female mortalities (13 of 14) since 2003 have been the result of hunter harvest during fall. Since 2002, 8 females have slipped their radio collars, 6 females had their collars removed due to neck irritation caused by collar rub, 14 collars have either stopped transmitting a VHF signal, malfunctioned or have given off intermittent or weak signal (preempting the ability to locate bears in den) and 1 collar was removed from a bear for other reasons. Once these females slip their collars and/or radio contact is lost, these bears are censored from analysis. Ten of these bears have been recaptured and subsequently added back into the study.

## Mast Production Surveys

**Field Checks:** Survey participants provided production data on 11 important New Hampshire hard and soft mast species across 18 WMUs (see data form, Figure 1). Data were transferred to a WMU/species matrix (Table 21). Mean scores for each matrix block were then calculated and listed in Table 22. This was done to prevent multiple scores from the same WMU/species combination from unduly influencing statewide means. A statewide mean for each species was generated (Table 23) from data in Table 22. Tables 21, 22 and 23 summarize 2022 mast survey data. As reflected in Table 21, mast ranks were generally similar for the same species within a given WMU. This reflects well on the scoring assessment of participants, as independent samples typically yielded comparable results. As was the case during previous years, mast values for most species tended to be relatively similar across WMU boundaries. Thus a good acorn year in southern NH generally reflects a good acorn year throughout the state.

**Food Usage by Harvested Bears:** Four prominent bear foods (acorns, beechnuts, apples and corn) were included in this analysis. These foods were chosen because they are considered bear staples and because their use appears to be a direct function of their availability.

Table 24 tracks reported acorn use over the past decade. Acorn production, mostly by northern red oak, was poor throughout the state during fall 2022 (Table 22 and 23) and use of acorns by harvested bears reflected as much (Table 24). Acorn usage was below the long-term average in all regions except Southwest-2. The production scores for oak in WMUS H2 and K (Southwest-2 Region) were low (Table 21), however, a number of hunter's reported that bears were feeding on acorns at time of harvest. It is possible that hunter's misinterpreted bear foraging activity.

Beechnuts, which constitute a critical bear resource in the northern half of New Hampshire, also experienced very poor production during fall 2022. As indicated in Tables 23 and 25, beech crops historically appeared to cycle every other year, with even years typically being high use (abundance) years and odd years being off-years. This cycle deviated in 2010 and 2011 and has since reestablished a more biennial production schedule with strong nut production occurring during odd numbered years. Data related to beechnut usage by bears last fall also reflected poor nut production as usage was below long-term averages in all regions (Table 25).

Apple production was average during 2022 (Table 22) but relatively heavily utilized by bears in most areas where present (Table 26). When compared to the long-term averages, usage of apples by bears was above the long-term

trends in all regions (Table 26). While it is difficult to measure, the presence of acorns and beechnuts influences to what degree bears forage on apples. Because hard mast is significantly higher in fat and protein compared to apples, bears typically select hard mast over apples and other soft mast when available. Table 23 also suggests that apples (like beech) have more recently been experiencing a distinct cyclical trend with production being stronger in odd years and weaker in even years, however that trend has become less evident during the past three years (crops have been moderately consistent). Production trends for all species have inconsistencies and it will be interesting to watch apple production trends over time.

We assume that annual corn production is stable and that change in use by bears, as observed through hunter harvest data (Table 27), is driven by the relative abundance of other foods, particularly beechnuts in the north and acorns in the south. However, soft mast species (i.e., apples, blackberries, cherries and mountain ash berries) can have an influence on this trend. In more northern regions, we would anticipate relatively high corn use during off-beech years and lower corn use during strong beech years. We anticipate the same relationship with acorns in the central and southern regions of the state.

Corn use during 2022 was high and greater than the long-term average in most regions (Table 27). Usage was consistent with average in the White Mountains and Southwest-1 Regions but higher than average in remaining regions. Corn usage rates in recent years (e.g., years with more average food availability) suggest that bears likely have learned to recognize corn as a readily available, valuable and consistent fall food source which is used each year regardless of the abundance of more natural food sources. It may become increasingly difficult to interpret or predict the annual use of corn by bears.

Mast production scores for most of the remaining species assessed during annual mast surveys fluctuate from year to year with no apparent cyclic pattern (Table 23). Mountain ash and beaked hazelnuts are two notable exceptions, and appear to cycle very similarly to beech producing abundant biennial crops. Production scores for these two species tend to be high during odd-numbered years and low during even-numbered years. Recognizing this long-term trend, production by beaked hazel was pretty good in 2022.

**Conclusions:** Non-hunting bear mortality constitutes an important component of overall bear mortality in New Hampshire. Consequently, information on the composition, distribution and extent of non-hunting mortality is critically important to our bear modeling and bear management decision-making efforts.

Experience indicates that maintaining bear populations at compatible levels with human interests is key to the long-term interests of our bear resources. Bear complaints constitute our best index to bear/human compatibility (i.e., cultural carrying capacity). Thus knowledge of bear complaint frequencies is critical to the successful management of New Hampshire's bear population.

Deer-hunter bear observation rates serve as a critical component of the methodology used to estimate regional bear densities. A thorough understanding of relative bear abundance is essential to responsible bear management. In the absence of these data, our ability to establish and meet long-term management plans and to formulate effective management proposals would be reduced. Bear sighting indices by firearm deer hunters appear to provide a useful index to relative regional bear abundance. This conclusion is based on the regional distribution of the New Hampshire bear harvest, the perceived abundance and distribution of regional bear habitat and, the results of bear density studies in New Hampshire and neighboring states (density estimates in Maine, Vermont and Massachusetts are very consistent with our own independent density estimates based in part on our firearms sighting index). Firearm deer hunters represent a large and stratified sample population from which sighting data can be obtained in a cost-effective manner. Given the large sample sizes and multiple years of data, our annual firearms deer hunter survey provides our best current source of bear observation data across the state.

Bear density estimates serve as the basis for bear management decision-making in New Hampshire. The use of deer-hunter bear observation rates to partition a modeled statewide bear population across the 6 bear management regions may be suspect in some regions during certain years. Specifically, there is concern in more northern regions, where variability in food production and distribution and the early onset of bear denning could negatively impact the reliability of hunter observation rates as a dependable index to bear abundance. Our current method of estimating bear density through the use of harvest data/observation rates was previously validated through field-study (summarized in NH Federal Aid Report W-89-R-9, Project 3, Job 2). Quantitative New Hampshire regional bear population goals have been defined in the "New Hampshire Game Management Plan: 2016-2025". Therefore, research designed to validate the methods used to estimate regional bear densities have assisted the Department in effectively meeting the population objectives outlined in the plan. Furthermore, growing interest in black bears from the state's hunting and non-hunting public increases the importance of precise bear population management.

Annual monitoring of radio-marked female bears is useful for verifying the estimated population vital rates currently used in modeling New Hampshire's black bear population. Reproductive, survival, denning phenology, home range and activity data obtained from local bears allow us to assess the impact that annual variability in food distribution and abundance has on survival, reproductive success, movement, condition and vulnerability of bears. Knowledge obtained from these data and their interactions are useful when interpreting annual bear mortality, mast production and bear/human conflict data.

Mast surveys that rely on a subjective ranking system appear to provide a useful index to annual mast production. When common species are considered, trends are similar between subjective mast production scores and hunter observation data. Results are consistent with our intuition and our geographic and temporal knowledge of New Hampshire. These data are useful to our bear management efforts and to a host of other Department interests. Low costs associated with the generation of these data are important in the justification of this job. Mast data sheds light on annual and regional differences in mast production, which are essential to good data interpretation. The importance of these data will further increase as we continue to conduct studies which reflect on bear productivity, mortality and behavior.

**Custom Qualitative Indicator/Output:** Non-harvest bear data including mortality, bear/human conflicts, deer-hunter bear observation rates, hard and soft mast production and population parameters have been collected, entered and analyzed. Potential impacts of parasites, diseases and other bear health impacts on the bear population have been evaluated.

**Recommendations:** Continue this job as planned.

**Submitted by:** \_\_\_\_\_

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August 1, 2023

Table 1. New Hampshire non-hunting bear mortality by cause, 1985-2022.

<b>YEAR</b>	<b>ILLEGAL</b>	<b>CONFLICT</b>	<b>OTHER</b>	<b>VEHICLE</b>	<b>Total</b>
1985	1	2	0	16	19
1986	4	5	2	11	22
1987	0	0	7	26	33
1988	7	2	1	19	29
1989	6	7	3	24	40
1990	5	2	0	30	37
1991	7	3	1	15	26
1992	7	10	1	15	33
1993	5	9	4	14	32
1994	1	9	1	10	21
1995	7	11	1	33	52
1996	5	6	0	22	33
1997	1	11	1	29	42
1998	0	10	0	24	34
1999	0	28	5	25	58
2000	0	11	1	29	41
2001	3	20	1	43	67
2002	1	5	3	30	39
2003	4	30	0	102	136
2004	4	13	4	94	115
2005	8	14	2	36	60
2006	1	4	2	20	27
2007	2	18	2	49	71
2008	3	11	1	52	67
2009	6	10	1	53	70
2010	6	10	3	65	84
2011	3	10	3	36	52
2012	4	28	6	64	102
2013	0	10	2	38	50
2014	2	13	9	47	71
2015	7	10	6	63	86
2016	3	22	3	66	94
2017	4	12	2	27	45
2018	6	29	2	82	119
2019	3	21	7	41	72
2020	2	44	8	50	104
2021	0	18	3	61	82
2022	4	32	5	92	133
<b>Total</b>	<b>132</b>	<b>510</b>	<b>103</b>	<b>1553</b>	<b>2298</b>

Table 2. New Hampshire non-hunting bear mortality by management region, 1985-2022.

YEAR	MANAGEMENT REGION						Total
	NORTH	WT-MTS	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	
1985	4	7	6	1	1	0	19
1986	11	6	3	1	1	0	22
1987	8	9	10	2	1	3	33
1988	4	9	11	4	1	0	29
1989	13	16	7	3	1	0	40
1990	10	15	9	3	0	0	37
1991	9	7	7	2	1	0	26
1992	5	12	8	6	1	1	33
1993	7	11	10	2	2	0	32
1994	6	10	5	0	0	0	21
1995	13	18	9	8	3	1	52
1996	9	12	9	1	2	0	33
1997	10	13	16	1	2	0	42
1998	3	18	10	2	1	0	34
1999	12	21	16	5	4	0	58
2000	7	15	16	2	1	0	41
2001	15	20	20	8	3	1	67
2002	9	9	9	4	7	1	39
2003	28	57	34	8	8	1	136
2004	25	32	43	8	5	2	115
2005	17	20	17	2	3	1	60
2006	1	10	7	2	6	1	27
2007	20	19	19	6	3	4	71
2008	9	15	29	6	3	5	67
2009	12	25	17	8	5	3	70
2010	14	27	33	3	7	0	84
2011	4	14	20	9	4	1	52
2012	22	27	36	10	6	1	102
2013	6	11	20	2	9	2	50
2014	17	18	24	4	8	0	71
2015	20	17	21	11	14	3	86
2016	16	31	30	6	10	1	94
2017	6	13	13	7	5	1	45
2018	20	29	33	11	15	11	119
2019	19	13	21	4	8	7	72
2020	28	24	31	10	10	1	104
2021	17	15	22	11	12	5	82
2022	20	41	43	8	13	8	133
Total	476	686	694	191	186	65	2298

Table 3. New Hampshire non-hunting female bear mortality by region and year, 1985-2022.

YEAR	MANAGEMENT REGION						Total
	NORTH	WT-MTS	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	
1985	1	0	1	0	0	0	2
1986	3	1	1	0	0	0	5
1987	4	2	4	0	0	2	12
1988	1	3	4	0	0	0	8
1989	3	5	1	1	0	0	10
1990	2	6	2	1	0	0	11
1991	4	2	3	1	0	0	10
1992	1	2	3	0	0	0	6
1993	1	1	4	0	1	0	7
1994	1	2	2	0	0	0	5
1995	5	8	5	2	1	0	21
1996	1	2	2	0	0	0	5
1997	2	6	6	1	0	0	15
1998	1	3	6	1	0	0	11
1999	2	7	1	0	3	0	13
2000	5	5	4	1	0	0	15
2001	3	6	9	2	0	0	20
2002	3	0	3	0	0	0	6
2003	12	24	11	1	1	0	49
2004	10	15	14	4	2	1	46
2005	7	4	4	0	1	0	16
2006	0	4	2	2	2	1	11
2007	9	11	12	2	1	2	37
2008	2	1	5	2	1	1	12
2009	7	11	5	2	2	0	27
2010	4	11	8	0	4	0	27
2011	2	5	8	2	4	0	21
2012	11	8	13	6	1	0	39
2013	4	2	8	0	1	1	16
2014	11	7	9	1	4	0	32
2015	11	7	9	5	1	2	35
2016	7	12	12	5	2	0	38
2017	2	4	5	4	1	1	17
2018	8	9	14	5	7	3	46
2019	3	8	7	2	3	3	26
2020	14	5	10	3	1	0	33
2021	11	4	7	3	3	2	30
2022	11	14	15	2	6	4	52
Total	189	227	239	61	53	23	792

Table 4. New Hampshire non-hunting male bear mortality by region and year, 1985-2022.

YEAR	MANAGEMENT REGION						Total
	NORTH	WT-MTS	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	
1985	3	7	5	1	1	0	17
1986	6	4	2	1	1	0	14
1987	4	7	6	2	1	1	21
1988	3	6	7	2	1	0	19
1989	10	11	6	1	1	0	29
1990	8	9	7	2	0	0	26
1991	5	5	4	1	1	0	16
1992	4	10	5	6	1	1	27
1993	6	10	6	2	1	0	25
1994	5	8	3	0	0	0	16
1995	8	10	4	5	2	1	30
1996	8	10	7	1	2	0	28
1997	8	6	10	0	2	0	26
1998	2	15	4	1	1	0	23
1999	10	14	13	5	1	0	43
2000	2	9	12	1	1	0	25
2001	12	14	11	5	3	1	46
2002	6	9	5	3	7	1	31
2003	13	30	22	6	6	1	78
2004	13	16	28	4	3	1	65
2005	10	15	12	2	2	1	42
2006	1	6	4	0	4	0	15
2007	9	8	7	3	1	2	30
2008	6	14	24	3	2	4	53
2009	5	14	12	5	2	3	41
2010	9	16	22	3	3	0	53
2011	2	8	11	7	0	1	29
2012	11	17	21	4	4	1	58
2013	1	9	9	2	7	1	29
2014	5	11	14	3	4	0	37
2015	9	9	12	6	11	1	48
2016	8	15	16	1	8	1	49
2017	1	8	7	3	4	0	23
2018	11	17	18	6	7	8	67
2019	15	5	12	2	5	4	43
2020	12	16	18	7	7	1	61
2021	6	9	10	6	7	2	40
2022	8	18	12	5	6	2	51
Total	265	425	408	117	120	39	1374

Table 5. New Hampshire non-hunting bear mortality for bears of unknown sex, by region and year, 1985-2022 (table excludes years with no mortality reported).

YEAR	MANAGEMENT REGION						Total
	NORTH	WT-MTS	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	
1986	2	1	0	0	0	0	3
1988	0	0	0	2	0	0	2
1989	0	0	0	1	0	0	1
1995	0	0	0	1	0	0	1
1997	0	1	0	0	0	0	1
1999	0	0	2	0	0	0	2
2000	0	1	0	0	0	0	1
2001	0	0	0	1	0	0	1
2002	0	0	1	1	0	0	2
2003	3	3	1	1	1	0	9
2004	2	1	1	0	0	0	4
2005	0	1	1	0	0	0	2
2006	0	0	1	0	0	0	1
2007	2	0	0	1	1	0	4
2008	1	0	0	1	0	0	2
2009	0	0	0	1	1	0	2
2010	1	0	3	0	0	0	4
2011	0	1	1	0	0	0	2
2012	0	2	2	0	1	0	5
2013	1	0	3	0	1	0	5
2014	1	0	1	0	0	0	2
2015	0	1	0	0	2	0	3
2016	1	4	2	0	0	0	7
2017	3	1	1	0	0	0	5
2018	1	3	1	0	1	0	6
2019	1	0	2	0	0	0	3
2020	2	2	3	0	2	0	9
2021	0	2	5	2	2	1	12
2022	1	9	16	1	1	2	30
Total	22	33	47	13	13	3	131

Table 6. New Hampshire non-hunting bear mortality by cause and sex, 1985-2022.

SEX	CAUSE OF MORTALITY				Total
	ILLEGAL	CONFLICT	OTHER	VEHICLE	
FEMALE	47	138	34	573	792
MALE	83	364	58	869	1374
UNKNOWN	2	10	8	112	132
<b>Total</b>	132	512	100	1554	2298

Table 7. New Hampshire non-hunting bear mortality by region and cause, 1985-2022.

CAUSE	MANAGEMENT REGION						Total
	NORTH	WT-MTS	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	
ILLEGAL	30	28	36	21	17	0	132
CONFLICT	105	213	126	26	33	9	512
OTHER	31	29	29	5	1	5	100
VEHICLE	310	416	503	139	135	51	1554
<b>Total</b>	476	686	694	191	135	65	2298

Table 8. New Hampshire non-hunting bear mortality by region and sex, 1985-2022.

SEX	MANAGEMENT REGION						Total
	NORTH	WT-MTS	CENTRAL	S.WEST-1	S.WEST-2	S.EAST	
FEMALE	189	227	239	61	53	23	792
MALE	265	425	408	117	120	39	1374
UNKNOWN	22	34	47	13	13	3	132
<b>Total</b>	476	686	694	191	186	65	2298

Table 9. New Hampshire non-hunting bear mortality by sex and month, 1985-2022.

MONTH	SEX			Total
	FEMALE	MALE	UNKNOWN	
1	4	8	0	12
2	3	2	0	5
3	5	11	0	16
4	15	57	1	73
5	61	138	14	213
6	81	182	15	278
7	57	208	17	282
8	118	190	13	321
9	183	219	32	434
10	153	221	18	392
11	98	116	18	232
12	14	22	4	40
<b>Total</b>	792	1373	132	2298

Table 10. New Hampshire non-hunting bear mortality by cause and month, 1985-2022.

MONTH	CAUSE OF MORTALITY				Total
	ILLEGAL	CONFLICT	OTHER	VEHICLE	
1	1	0	2	9	12
2	2	0	1	2	5
3	0	3	3	10	16
4	1	20	2	50	73
5	4	89	10	110	213
6	9	110	14	145	278
7	6	123	7	146	282
8	9	70	11	231	321
9	41	49	26	318	434
10	16	33	11	332	392
11	41	13	11	167	232
12	2	2	2	34	40
<b>Total</b>	132	512	100	1554	2298

Table 11. Documented bear-human conflicts in New Hampshire by category and bear management region during 2022.

Region	Category						Total
	Agricultural Conflict	General Conflict	Public Safety	Intentional Feeding	Disease/ Injury	Sighting	
North	20	61	7	2	0	0	90
White Mtns	34	116	31	2	3	0	186
Central	82	147	34	1	2	7	273
Southwest-1	9	14	1	0	0	1	25
Southwest-2	32	18	4	0	1	1	56
Southeast	19	15	6	0	0	3	43
<b>TOTAL</b>	196	371	83	5	6	12	673

Table 12. Most frequent primary attractant present at documented bear-human conflicts (n=564) in New Hampshire during 2022. More than one primary attractant was possible at any given complaint and more infrequent attractants were not included in this summary.

Region	Category						Corn
	Chickens/ Fowl	Garbage	Birdseed	Beehives	Agricultural Feed	Livestock	
North	8	50	6	1	3	0	5
White Mtns	19	106	10	1	5	5	1
Central	48	133	34	6	11	3	2
Southwest-1	6	11	2	1	0	0	0
Southwest-2	22	8	11	2	2	4	2
Southeast	16	7	9	2	0	2	1
<b>TOTAL</b>	119	315	72	13	21	14	11

Table 13. Primary abatement materials provided at documented bear-human conflicts (n=307) in New Hampshire during 2022. More than one abatement tool was potentially loaned at any given complaint and less used tools were not included in this summary.

Region	Abatement Materials				
	Motion Alarm	Electric Fence	Pyrotechnics	Bear-Proof Garbage Can	Pamphlets
North	21	4	5	4	8
White Mtns	30	24	7	1	33
Central	12	34	6	2	72
Southwest-1	2	7	1	0	4
Southwest-2	2	3	0	1	12
Southeast	1	4	1	0	6
<b>TOTAL</b>	68	76	20	8	135

Table 14. Summary of deer hunter bear observations during November from the 2022 deer hunter mail survey by bear management region in New Hampshire.

Region	# Of Hunter Days	Total Hours Of Effort	Mean Hours Per Hunter Day (SE)	Total Bears Observed
North	1211	6445	5.32 (0.07)	48
White Mountains	1362	6628	4.87 (0.07)	52
Central	4218	20898	4.95 (0.04)	72
Southwest-1	1125	5673	5.04 (0.08)	24
Southwest-2	2972	14623	4.92 (0.05)	76
Southeast	3171	14030	4.42 (0.04)	28
Statewide	14059	68297	4.86 (0.02)	300

Table 15. Mean total bear observation rate (based on square-root transformation, corrected for bias) by deer hunters during November from the 2022 mail survey by bear management region in New Hampshire. Upper and lower limits represent 80% confidence limits.

Region	N	Total Number Of Bears Observed Per 100 Hunter Hours		
		Lower Limit	Mean	Upper Limit
North	1211	0.64	0.82	1.01
White Mountains	1362	0.82	1.02	1.22
Central	4218	0.27	0.32	0.37
Southwest-1	1125	0.29	0.40	0.51
Southwest-2	2972	0.50	0.60	0.71
Southeast	3171	0.26	0.35	0.44
Statewide	14059	0.46	0.50	0.55

Table 16. Summary of radio-marked female black bears in west-central New Hampshire, 2002-2022.

Ear Tag #	Collar Freq	Date Of Capture	Comments
051-052	150.592	6/1/02	Killed by hunter October 2004.
-	151.151	7/3/03	Collar removed during March 2006 den checks.
072-073	151.033	7/6/03	Dropped collar in August 2004.
067-068	149.220	7/23/03	Collar pulled March 2010, re-collared 7/11/11, killed by hunter fall 2016.
066-069	151.113	7/24/03	Killed by hunter fall 2003.
078-079	151.071	7/26/03	Killed by hunter fall 2003.
080-081	151.173	7/30/03	Killed by hunter October 2010.
049-050	150.846	7/10/04	Collar removed during March 2006 den checks, re-collared summer 2008, radio contact lost fall 2009.
084-085	151.113	7/21/04	Dropped collar in summer 2005.
099-100	151.092	7/29/04	Dropped collar in summer 2005.
045-046	151.131	6/29/05	Dropped collar in summer 2008, re-collared summer 2009. Taken by hunter Sept 2013 in Lyme.
043-044	149.139	6/30/05	Lost radio contact fall 2009, re-collared 7/9/11. Collar working intermittently during winter 2015 and spring 2016. Located in den March 2017. Signal weak. Lost radio contact summer 2017.
041-042	151.133	7/20/05	Killed by hunter fall 2007 in Lyme.
030-031	151.013	7/5/06	Dropped collar in summer 2008.
034-035	150.054	8/30/06	Slipped collar in den February 2011, lost radio contact. Killed by hunter fall 2011 in Lyme, NH.
020-021	150.132	7/24/07	Lost radio contact in summer 2011 due to collar malfunction. Located in a previously used den in March 2015 and collared. Dropped collar in October 2015 while feeding on a beech ridge. Located in previously used den in March 2017 and collared. Bear subsequently died prior to den emergence by an unknown cause of death.
049-050	150.846	6/27/08	Recaptured after having collar removed in March 2006, lost radio contact in fall 2009.
178-179	150.155	7/19/09	Killed by hunter fall 2010.
180-181	151.240	7/15/09	Killed by hunter Sept 2011 in Lyme, NH.
122-123	151.200	7/9/09	Lost radio signal during 2012/2013 denning season, collar signal picked up spring 2013, visual observation on bear during spring/summer 2013. Collar signal weak in March 2016. Radio contact lost during summer 2016.
146-147	150.8447	7/19/10	Radio collar stopped transmitting immediately after capture (July), lost contact since.
279-280	149.189	8/2/11	Had COY at time of capture, # of cubs unknown. Killed by hunter on 9/13/14 in Wentworth, NH.
116-117	150.114	6/12/11	Radio offline since spring 2012, collar dropped off 2012.
011-012	149.349	7/16/11	With 3 COY at time of capture. Removed from study in March 2016.
016-085	149.328	7/16/11	Lost radio contact fall 2016.
281-282	150.073	2/29/12	Denning bear found by logger, assumed daughter of radioed female (tag # 45/46), this bear was born in Jan 2009. Intermittent radio contact during winter 2015 and summer 2016. Observation via direct observation and camera consistent. Recaptured 8/16/17 and fitted with new collar. During spring 2018, only VHF portion of collar working. Recaptured July 2020 and fitted with new collar. Taken by hunter on 11/10/2021 in Lyme, NH.
232-233	151.344	5/29/13	Rehabilitated cub from 2012. Radio collared and released in Lyme. Traveled to Vermont shortly after release and has remained there since. Shot by Vermont homeowner at chicken pen in May 2016.
235-236	151.402	5/29/13	Rehabilitated cub from 2012. Radio collared and released in Lyme. Traveled north to Lisbon and Warren. Lost radio contact in spring 2015.

Table 16. Summary of radio-marked female black bears in west-central New Hampshire, 2002-2022 (cont.).

Ear Tag #	Collar Freq	Date Of Capture	Comments
241-241-664	Unknown	August 2016	Cub of sow 45-46. Born January 2012 and ear tagged as a yearling in March 2013. Collared for study in August 2016. Produced COY in 2015 and 2017. Collar not working spring 2018. Recaptured and collared in August 2018. Lost tag in right ear. New tag #664 placed in right ear March 2023.
256-257	150.250	5/29/13	Rehabilitated cub from 2012. Radio collared and released in Lyme. Collar went off line during winter 2016 but repeated camera contact remained through summer/fall 2016 and spring 2017. Bear fitted with new collar in March 2018. Collar removed in March 2019 due to irritated neck thus lost radio contact.
348-349	151.302	3/2/16	Denning bear found by logger, collared for study. Dropped collar fall 2016.
342-343	150.850	8/14/17	New adult sow added to study in 2017, trapped off Baker Hill Road, possibly related to BH3. Taken by hunter 11/2/19 in Lyme, NH.
344-345	150.200	8/16/17	New adult female added to study, with 3 cubs when captured. Collared removed in March 2019 during den visit due to irritated neck thus lost radio contact.
121	Unknown	August 2021	Bear was previously captured and ear tagged but not collared. Collared in August 2021.
632-633	151.150	August 2021	New bear captured and added to study in August 2021. GPS function on collar intermittent during spring/summer of 2022. VHF signal working properly.
--	151.250	August 2021	Bear was previously captured and ear tagged but not collared. Collared in August 2021.

Table 17a. Reproductive summary of radio-marked female black bears in west-central New Hampshire during 2021.

Ear Tag #	Reproductive Status In 2020	Reproductive Results In Jan/Feb 21*	Comments
241-242	Not Expecting 1/22	With 3 yearlings	All yearlings were male
281-282	Not Expecting 1/22	N/A	Taken by hunter November 10, 2021. Status of cubs unknown
121	Expecting 1/22	3 cubs born	
632-633	Expecting 1/22	1 cub born	
151.250	Expecting 1/22	3 cubs born	

\* Reproductive results for the calendar year for which data is being reported are acquired through den checks conducted during March the subsequent year.

Table 17b. Reproductive summary of radio-marked female black bears in west-central New Hampshire during 2022.

Ear Tag #	Reproductive Status In 2021	Reproductive Results In Jan/Feb 22*	Comments
241-242	Expecting 1/23	2 cubs born	Right ear tag missing, replaced with #664
121	Not Expecting 1/23	With 2 yearlings	Ran from den and did not handle, visual on 2 yearlings
632-633	Not Expecting 1/23	With one yearling	Could not remove from rock den, visual on sow and one yearling
151.250	Not Expecting 1/23	With 2 yearlings	Both yearlings female

\* Reproductive results for the calendar year for which data is being reported are acquired through den checks conducted during March the subsequent year.

Table 18. Annual summary of cubs produced by radio-marked female black bears in west-central New Hampshire, 2003-2022.

Year	# Females Expecting	# Cubs Born	Mean # Cubs Per Female	Comments
2003	3	3	1.0	
2004	4	6	1.5	
2005	6	13	2.2	
2006	2	4	2.0	
2007	3	5	1.7	
2008	2	5	2.5	
2009	6	11	1.8	Sow 43/44 was censored due to lost radio contact in fall 2009, did not handle in den.
2010	2	4	2.0	Sow 80/81 was censored - shot fall 2010, sow 146/147 censored due to lost radio collar as a result of collar failure.
2011	5	11	2.2	Sow 34/35 was censored due to lost radio contact in February 2011. Sow 180/181 was taken by a hunter in September 2011.
2012	5	9	1.8	
2013	5	13	2.6	Sow 45/46 was censored from analysis as she was taken by a hunter in fall 2013.
2014	6	13	2.2	Sow 279/280 was censored from analysis as she was taken by a hunter in fall 2014.
2015	6	14	2.3	Sow 256/257 gave birth to cubs in two consecutive years as the 2015 litter was lost by July of that year.
2016	2	5	2.2	Sows 232/233 and 67/68 were censored from analysis as they were killed in May and September, respectively. Sow 122/123 was also censored due to lost radio contact during summer 2016.
2017	4	9	2.3	
2018	3	6	2.0	Sow 281/282 was censored due to lost radio contact.
2019	1	--	--	Sow 342/343 that was expected to give birth Jan 2020 was taken by hunter fall 2019
2020	2	5	2.5	Sow 281/282 was recaptured and collared July 2020 and added back into study.
2021	3	7	2.3	
2022	1	2	2.0	

Table 19. Summary of annual black bear cub survival rates in west-central New Hampshire, 2004-2022.

Year	# Cubs Born	# Cubs Alive After Year 1	% Survival	
2004	3	3	100	
2005	6	3	50	All cub mortality occurred by July
2006	6	5	83	7 remaining cubs born in 2006 were censored due to inability to document their survival status in March 2007. Sows with ear tags 49/50 and 67/68 and sow with collar frequency 151.151 were censored. See table 16d for details.
2007	4	3	75	
2008	5	3	60	Sow 20/21 lost single cub by 6/2008. Sow 34/35 lost 1 cub in 8/2008.
2009	8	7	88	Sow 122/123 had 3 COY when captured in Summer 2009 therefore this is assumed to be this bear's litter size at time of birth.
2010	11	9	82	Sow 180/181 lost single cub by 6/2010.
2011	7	7	100	Sow 279/280 censored from analysis as starting litter size (Jan 2011) unknown.
2012	9	8	89	Sow 116/117 censored due to cub abandonment in March 2012 as a result of handling. These cubs were brought to rehabilitator in March 2012.
2013	7	3	43	Sow 20/21 was censored from analysis due to lost radio contact in 2011. Sows 11/12 and 281/282 lost litters and bred in consecutive year. Loss of litter for sow 11/12 was the result of researcher disturbance. Sow vacated den and cubs after handling completed in March 2013.
2014	10	10	100	Sow 67/68 was censored from analysis as its loss of litter in March 2014 was the result of researcher disturbance. Sow vacated den and cubs during den check. These cubs were brought to rehabilitator in March 2014 and released in June 2015.
2015	13	11	85	Sow 256/257 lost both cubs by July 2015.
2016	6	5	83	Sow 256/257 lost one cub by June 15. Sows 16/85 and 348/349 were censored from analysis due to lost radio contact.
2017	5	4	80	Sow 344/345 was included in this analysis as she was captured in August 2017 with 3 cubs. For data purposes, I am assuming that this is her starting litter size. This bear lost one cub presumably during fall 2017. Two cubs of sow 241/242 survived to age 1.
2018	6	2	33	Sows 256/257 and 281/282 lost their litters by summer 2018. Sow 342/343 lost 1 cub during year 1. Sow 43/44 was censored due to lost radio contact.
2019	3	2	67	Sow 241/242 lost 1 of 3 cubs during year 1. Sows 256/257 and 344/345 were censored as radio contact was lost with these bears in spring 2019 due to collar removal.
2020	0	-	-	Due to low sample size, no collared sows were expecting in January 2021.
2021	3	3	100	Sow 281-282 who birthed 2 cubs in January 2021 was killed in November 2021. Survival of these cubs could not be measured in March 2022 therefore these bears were censored from analysis.
2022	7	5	71	

Table 20. Annual survival summary for adult radio-marked female black bears in west-central New Hampshire, 2003-2022.

Year	# Females Alive At Start	# Females Alive At End Of Year	% Survival	Comments
2003	7	5	71	2 killed by hunters
2004	8	6 alive 1 unknown	86	1 killed by hunter 1 dropped collar
2005	9	7 alive 2 unknown	100	2 dropped collars
2006	9	8 alive 1 unknown	100	2 collars removed 3/06
2007	9	8	89	1 killed by hunter
2008	8	8	100	
2009	10	10	100	Radio contact was lost in late Fall 2009 with bears 43/44 and 49/50. Visual observation was made on these animals in spring 2010 therefore they were included in this analysis.
2010	10	8	80	2 collared bears were taken by hunters. Radio contact was lost with sows 34/35, 43/44 and 49/50 and collar was removed from sow 67/68. Visual observations were made on these bears during spring 2011 therefore survival data was included. Sow 146/147 was censored from analysis due to lost radio contact in July 2010.
2011	12	10	83	Sows 180/181 and 34/35 taken by hunters during fall 2011.
2012	9	9	100	Sow 116/117 was censored due to lost radio contact in spring 2012.
2013	8	7	88	Sow 45/46 was taken by a hunter in Sept 2013.
2014	11	10	91	Sow 279/280 was taken by a hunter in Sept 2014.
2015	10	10	100	Sow 235/236 was censored due to lost radio contact in spring 2015.
2016	7	4	57	Sows 16/85, 122/123 and 348/349 was censored due to lost radio contact during 2016. Sow 232/233 was shot in Vermont at a chicken pen in May 2016. Sow 67/68 was taken by a hunter in September 2016. Sow 20/21 died in March/April while denning due to unknown causes.
2017	6	6	100	
2018	6	6	100	While radio contact has been lost with sow 43/44, this bear has been observed during spring 2019 therefore this bear was included in this analysis.
2019	2	1	50	Sow 342/343 was taken by a hunter in November 2019. Sows 256/257 and 344/345 were censored as radio contact was lost with these bears in spring 2019 due to collar removal.
2020	2	2	100	
2021	5	4	80	Sow 281-282 was taken by a hunter in November 2021.
2022	4	4	100	

Table 21. Reported mast production scores for 11 New Hampshire hard and soft mast species, by wildlife management unit for summer and fall, 2022 [1=very poor, 10=very good].

WMU	OAK	BEECH	APPLE	BLACK BERRY	RASP-BERRY	BEAKED HAZEL	MTN ASH	BLUE BERRY	AMERICAN CHERRY	CHOKE CHERRY	CONIF CONES
A	N/A	1, 1	8, 6, 5	2, 3	3, 4	5, 7	1, 1	4, 4	6, 6	9	4
B	2, 2	1, 1	7, 6, 6, 5, 9	2, 3, 5	5, 4, 5	5, 7	1, 1	5, 4, 4, 2	3, 5	9, 7	4, 3
C1	2	2, 1	8, 5, 9	2, 3	2, 4	5, 7	1, 1	5, 4	3, 3	9, 7	4
C2	3, 2	1, 1	8, 7, 5, 9	3, 3	4, 4, 5	5, 7	1, 1	6, 4	4, 3	9, 7, 8	4, 3
D1	1, 2	1, 1	8, 5	3	2, 4	7, 7	1	4	7, 3	9, 7	4
D2	2	1	5	3	4	7	1	4	3	7	
E	2	1	7, 5	3	4	7	1	4	3	7	
F	2	1	5, 5	3	4	7	1	4	3	7	
G	3, 2, 4	1, 1	5, 5	4, 3, 3	4	7	1	4	3	7	
H1	3	3									
H2	3, 3.5	3, 3	4								
I1	2, 6, 5, 3	1, 1, 1, 1	5, 5, 6	6, 3, 5, 4	3, 3	2		4, 3	4		
I2											
J1	2, 3										
J2	2, 2, 3	1	6, 5	4	3, 5, 6			7, 7, 10			
K	3	3									
L	3, 6, 2, 3, 4	2	5, 6	3	4			8, 8	5	6	
M	4										
(n)	32	25	32	22	22	15	13	22	16	15	7

Table 22. Mean wildlife management unit mast production scores for 11 New Hampshire hard and soft mast species assessed during summer and fall, 2022 [1=very poor, 10=very good].

	OAK	BEECH	APPLE	BLACK BERRY	RASP-BERRY	BEAKED HAZEL	MTN ASH	BLUE BERRY	AMERICAN CHERRY	CHOKE CHERRY	CONIF CONES
A	N/A	1	6.3	2.5	3.5	6	1	4	6	9	4
B	2	1	6.6	3.3	4.7	6	1	3.8	4	8	3.5
C1	2	1.5	7.3	2.5	3	6	1	4.5	3	8	4
C2	2.5	1	7.3	3	4.3	6	1	5	3.5	8	3.5
D1	1.5	1	6.5	3	3	7	1	4	5	8	4
D2	2	1	5	3	4	7	1	4	3	7	
E	2	1	6	3	4	7	1	4	3	7	
F	2	1	5	3	4	7	1	4	3	7	
G	3	1	5	3.3	4	7	1	4	3	7	
H1	3	3									
H2	3.3	3	4								
I1	4	1	5.3	4.5	3	2		3.5	4		
I2											
J1	2.5										
J2	2.3	1	5.5	4	4.7			8			
K	3	3									
L	3.6	2	5.5	3	4			8	5	6	
M	4										
Score	2.7	1.5	5.8	3.2	3.9	6.1	1.0	4.7	3.9	7.5	3.8

Table 23. Mean statewide mast production scores for 10 New Hampshire hard and soft mast species, 2002-2022. A 10 and 20-year mean production score for each species is provided for comparison. This long-term mean helps account for the annual variability associated with mast crops to allow for comparison to an “average” year.

Year	OAK	BEECH	APPLE	BLACK BERRY	RASP-BERRY	BEAKED HAZEL	MTN ASH	BLUE BERRY	AMERICAN CHERRY	CHOKE CHERRY	CONIF CONES
2022	2.7	1.5	5.8	3.2	3.9	6.1	1.0	4.7	3.9	7.5	3.8
2021	6.1	4.5	5.7	5.5	6.1	7.8	5.5	7.2	5	8.5	5.7
2020	6.9	1.3	5.0	5.4	4.9	2.6	1.0	4.8	2.6	3.1	7.6
2019	7.9	5	7.8	5.5	5.6	9.5	8.9	6.5	5.5	9	3.5
2018	2.4	1.1	3.6	5.3	4.8	2.1	1	4.4	4.3	5.4	1.6
2017	7.2	6.9	8.3	6.1	4.7	8.3	9.5	7.4	5.7	7.7	9.4
2016	8.2	1.2	4.4	5.3	3.1	1.6	1.0	4.8	3.8	6.0	4.2
2015	5.3	5.0	9.5	5.6	7.4	8.9	9.3	8.1	4.9	7.3	6.6
2014	5.9	1.3	4.1	6	7.7	5.7	4.6	5.8	1.7	7.3	6.4
2013	4.5	5.0	7.2	6.1	6.5	8.1	7.8	6.7	1.1	7.8	2.2
2012	5.3	1.8	2.3	4.8	3.9	3.5	2.1	6.3	1.8	4.4	5.3
2011	3.3	6.7	8.7	7.4	6.7	6.9	9.1	7.6	3.6	7.8	7.0
2010	6.5	2.1	4.6	5.8	4.6	2.3	1.2	4.9	4.8	7.3	2.4
2009	5.9	1.8	6.9	5.3	5.2	7.8	6.9	6.6	1.0	6.2	9.0
2008	7.0	5.3	7.7	8.1	7.7	7.5	3.2	8.8	5.8	8.5	7.0
2007	4.0	1.5	9.0	5.1	5.3	1.0	2.1	6.7	8.0	7.1	2.0
2006	5.3	6.7	5.9	8.1	5.9	9.0	9.4	7.9	2.3	6.8	8.1
2005	6.2	2.1	6.9	8.5	7.2	3.5	3.4	6.1	3.8	7.0	2.5
2004	3.8	3.4	3.8	4.6	5.1	6.2	8.3	5.7	6.4	7.5	6.9
2003	2.7	2.3	3.7	2.7	3.5	3.1	2.0	6.3	2.7	6.1	3.6
2002	5.5	5.3	3.7	6.6	3.4	6.8	8.3	6.6	4.9	7.6	6.2
10-Yr Avg *	6.0	3.3	5.8	5.6	5.5	5.8	5.1	6.2	3.6	6.7	5.3
20-Yr Avg	5.5	3.5	5.9	5.9	5.5	5.6	5.2	6.5	4.0	6.9	5.4

\*10 and 20-year average scores are based on data from 2012-2021 and 2002-2021, respectively

Table 24. The percentage of bears consuming acorns at the time of harvest as reported by New Hampshire bear hunters, and as broken out by bear management region and year, 2012-2022.

REGION	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
NORTH	7.6	1.9	11.9	1.3	3.7	4.0	0.5	1.4	6.9	2.8	0.4
WT.MTS	18.8	10.8	21.4	6.0	22.7	14.8	5.3	12.0	11.6	9.2	1.9
CENTRAL	47.0	15.7	41.0	19.2	25.6	21.3	10.4	20.5	18.7	18.6	4.4
S.WEST-1	30.3	11.4	37.1	29.3	34.8	20.3	11.9	32.7	35.1	33.3	13.9
S.WEST-2	17.5	22.2	16.1	13.2	26.1	13.0	9.9	18.9	20.3	27.6	20.9
S.EAST	100.0	25.0	33.3	33.3	100.0	0.0	11.1	42.9	33.3	61.5	15.4

Table 25. The percentage of bears consuming beechnuts at the time of harvest as reported by New Hampshire bear hunters, and as broken out by bear management region and year, 2012-2022.

REGION	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
NORTH	0.0	7.4	0.6	7.9	0.0	8.1	0.0	9.1	0.4	4.4	0.0
WT.MTS	0.4	28.7	1.3	18.6	2.5	27.2	0.3	17.7	1.6	12.5	0.9
CENTRAL	0.8	25.4	0.7	8.6	1.4	19.8	0.6	16.5	2.2	10.0	0.6
S.WEST-1	1.3	22.9	3.2	9.8	4.5	20.3	1.8	17.3	8.8	15.2	2.6
S.WEST-2	0.0	11.1	0.0	10.5	5.8	13.0	2.7	5.4	10.2	13.2	3.9
S.EAST	100.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	7.7	0.0

Table 26. The percentage of bears consuming apples at the time of harvest as reported by New Hampshire bear hunters, and as broken out by bear management region and year, 2012-2022.

REGION	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
NORTH	13.0	12.0	12.5	15.9	7.9	6.1	12.1	10.5	12.8	3.9	14.0
WT.MTS	4.8	4.8	7.7	11.6	3.9	6.5	10.3	3.8	4.4	2.6	7.6
CENTRAL	2.3	10.3	1.1	13.7	1.7	3.4	5.5	2.7	2.8	3.9	5.0
S.WEST-1	11.8	17.1	3.2	17.4	4.5	9.4	1.8	6.1	5.3	8.3	8.7
S.WEST-2	7.0	5.6	5.4	5.3	1.4	10.9	5.4	1.4	5.1	7.1	7.0
S.EAST	0.0	0.0	0.0	0.0	0.0	50.0	11.1	0.0	0.0	0.0	0.0

Table 27. The percentage of bears consuming corn at the time of harvest as reported by New Hampshire bear hunters, and as broken out by bear management region and year, 2012-2022.

REGION	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
NORTH	16.8	5.6	9.4	8.6	17.1	10.1	22.2	13.3	17.0	14.6	22.6
WT.MTS	17.5	9.0	12.0	14.4	13.5	8.9	19.0	9.8	16.3	11.7	14.6
CENTRAL	10.2	10.8	8.2	12.5	10.2	8.7	18.1	4.7	11.0	7.8	17.0
S.WEST-1	25.0	10.0	11.3	20.7	18.0	6.3	34.9	8.2	23.4	23.6	40.0
S.WEST-2	14.0	13.9	25.0	18.4	23.2	19.6	35.1	16.2	30.5	32.7	28.7
S.EAST	0.0	0.0	16.7	33.3	0.0	0.0	0.0	0.0	11.1	0.0	30.8

**2022 HARD AND SOFT MAST ASSESSMENT FORM**  
 RETURN TO BEAR PROJECT BY 20 OCTOBER

Submitted by: \_\_\_\_\_ Date Submitted: \_\_\_\_\_

**Assessed Species Should Only Include:** OAK (AS A SINGLE CLASS), BEECH, APPLE, RASPBERRY, BLACKBERRY, BLUEBERRY, MOUNTAIN ASH, BEAKED HAZEL, BLACK CHERRY, CHOKE CHERRY AND **CONIFER CONES (AS A SINGLE CLASS)**

TO RANK FRUIT PRODUCTION, CIRCLE THE APPROPRIATE NUMBER. NOTE THAT THE NUMBER BAR CORRESPONDS WITH THE VERBAL RANKING, THAT IS 1=very poor; 3=poor; 5.5=average; 8=good, and; 10=very good. MAKE ADDITIONAL COPIES OF THIS FORM AS REQUIRED. IDENTIFY WMU'S BY MAP ON BACK.

**SPECIES ASSESSED:** \_\_\_\_\_ **WMU ASSESSED:** \_\_\_\_\_

<b>VERY POOR</b>		<b>POOR</b>		<b>AVERAGE</b>		<b>GOOD</b>		<b>VERY GOOD</b>	
1	2	3	4	5	6	7	8	9	10

**SPECIES ASSESSED:** \_\_\_\_\_ **WMU ASSESSED:** \_\_\_\_\_

<b>VERY POOR</b>		<b>POOR</b>		<b>AVERAGE</b>		<b>GOOD</b>		<b>VERY GOOD</b>	
1	2	3	4	5	6	7	8	9	10

**SPECIES ASSESSED:** \_\_\_\_\_ **WMU ASSESSED:** \_\_\_\_\_

<b>VERY POOR</b>		<b>POOR</b>		<b>AVERAGE</b>		<b>GOOD</b>		<b>VERY GOOD</b>	
1	2	3	4	5	6	7	8	9	10

**SPECIES ASSESSED:** \_\_\_\_\_ **WMU ASSESSED:** \_\_\_\_\_

<b>VERY POOR</b>		<b>POOR</b>		<b>AVERAGE</b>		<b>GOOD</b>		<b>VERY GOOD</b>	
1	2	3	4	5	6	7	8	9	10

**SPECIES ASSESSED:** \_\_\_\_\_ **WMU ASSESSED:** \_\_\_\_\_

<b>VERY POOR</b>		<b>POOR</b>		<b>AVERAGE</b>		<b>GOOD</b>		<b>VERY GOOD</b>	
1	2	3	4	5	6	7	8	9	10

CIRCLE "YES" IF YOU HAVE INCLUDED COMMENTS ON THE BACK OF THIS FORM. YES

**Figure 1.** Mast survey data sheet.

Figure 2. New Hampshire black bear management regions.

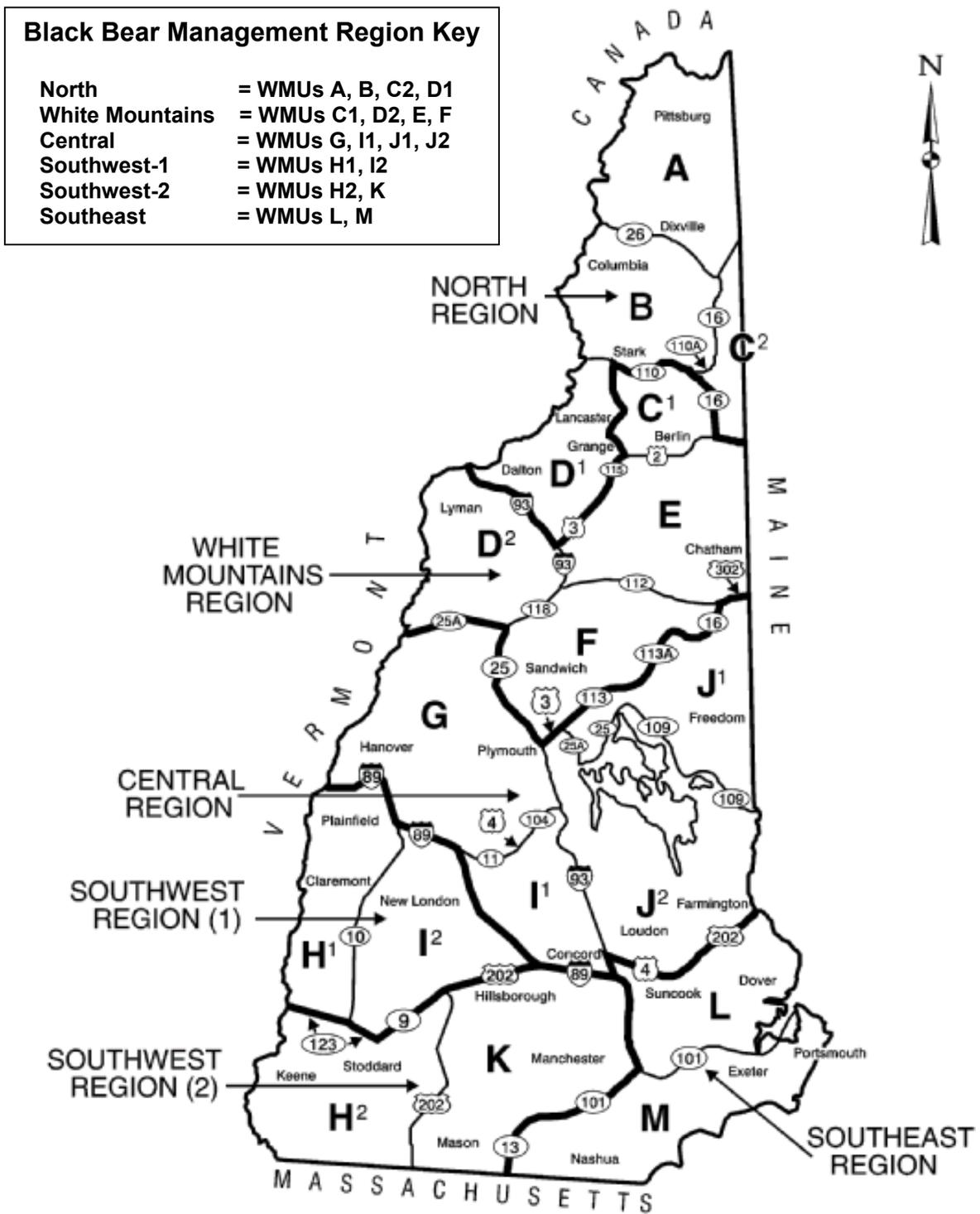


Figure 2. New Hampshire black bear management regions.

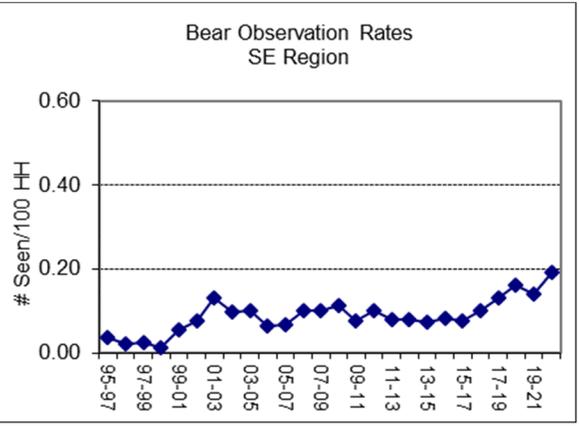
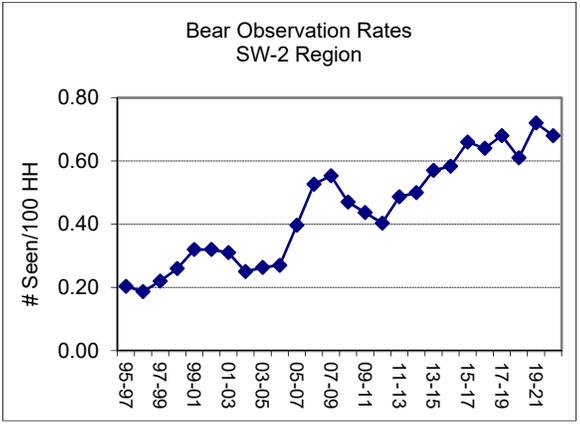
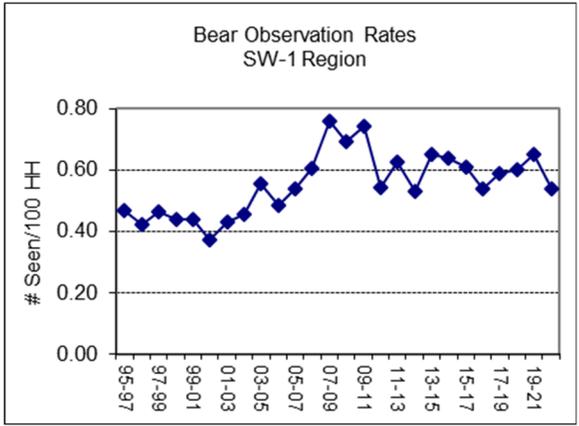
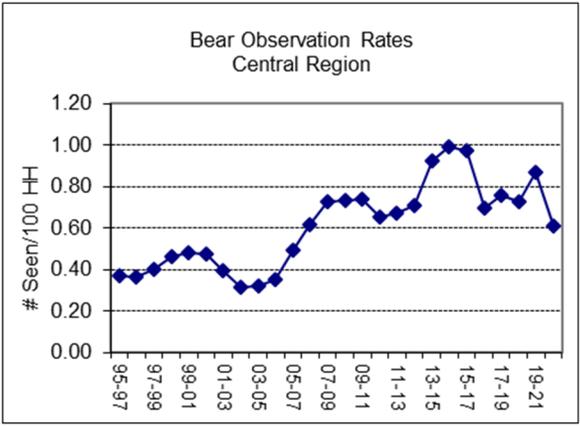
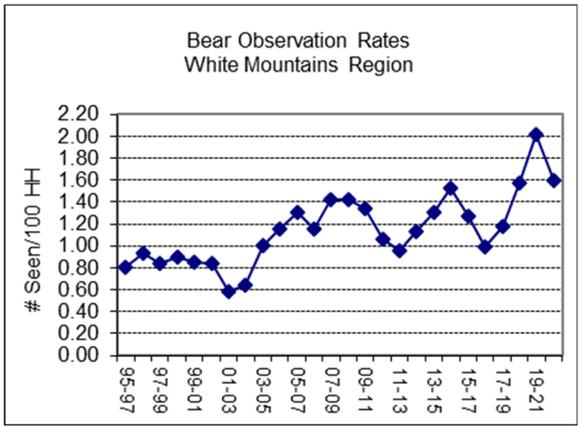
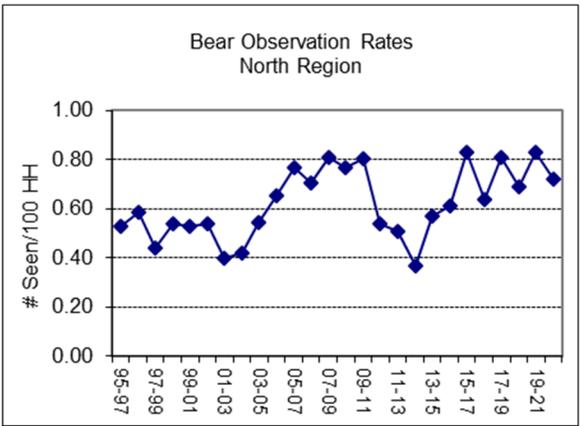


Figure 3. Regional 3-year mean black bear observation rates by November deer hunters in New Hampshire, 1995-2022.

## Performance Report

**State:** New Hampshire

**Grant:** F20AF11939

**Grant Type:** Survey and Inventory

**Grant Title:** NH – WILDLIFE RESEARCH AND MANAGEMENT (W-89-R-21)

**Period Covered:** July 1, 2022 – June 30, 2023

**Purpose/Target Name:** PROJECT 3 - BLACK BEAR RESEARCH AND MANAGEMENT

**Objective Name:** JOB 3 - FORMULATION OF BLACK BEAR POPULATION MANAGEMENT RECOMMENDATIONS

**Objective Statement:** To annually or biennially formulate bear management season recommendations.

**Summary:** Bear season recommendations are formulated based on data generated within this grant project. Season structure for 2022 was established in 2021. Biologically based seasons were again established in spring 2023 and will be in place through 2024. In addition to regulations regarding the structure of the bear season, rules related to the bag limit, reporting of harvested bears, bear baiting, distribution and allocation of baiting opportunities on state-owned or managed land, commercial guiding for bear, the use of dogs to take bear and wildlife depredation permits were reviewed and/or modified in spring 2023 and will be in place through 2024.

The New Hampshire Game Management Plan was revised and updated during the 2015 grant segment. This revised game management plan provides the Department's black bear management goals and objectives and will guide bear management recommendations for the period 2016-2025. This revised *New Hampshire Game Management Plan: 2016-2025* was provided in NH Federal Aid Report W-89-R-15, Project VIII, Job 2, Appendix I.

**Target Date:** June 30<sup>th</sup> annually 2021-2025.

**Status of Progress:** On schedule.

**Significant Deviations:** None.

**Objective Approach:** Mortality data, age class distribution data, relative abundance data, bear/human conflict frequency data, and other pertinent data will be summarized and evaluated in the context of existing regional bear management goals and objectives, as specified in our existing 10-year big game management plan. Preliminary biological recommendations will be formulated by the bear project biologist, for review, modification, and adoption by the Department Game Management Team. Game Management Team recommendations will be reviewed by Department staff, and finalized at a Wildlife Programs Committee meeting. Once finalized, management recommendations will be presented to the Commission for initial approval, presented at 3 to 5 public hearings for public input, and presented to the Commission for final approval into rule. Only those costs incurred up to, and including, development of a final season recommendation will be charged to the grant.

**Results:** The bear project biologist and Department's Game Management Team formulated initial bear season recommendations and rule proposals during January 2023, based on all available data. These proposals were provided to Law Enforcement and regional wildlife staff for review and input during late January. Proposals were reviewed and modified at a Wildlife Programs Committee meeting in February and presented to the Commission in that same month. Proposals were then presented at three public hearings (Concord, Keene, and Lancaster) in late March and early April. Public input resulted in season proposal modifications. Proposals subsequently continued through the rule-making process under RSA 541-A and will be established as Department rules for implementation during the 2023 and 2024 bear hunting seasons (Appendices 1-4). These rule changes proposals expanded opportunities for hunters to report harvested bears by creating bear registration stations and lengthened the bear still hunting season in the Southeast Region by 23 days. An additional notable change will allow hunters to purchase an additional bear tag for use in the White Mountains Region, however this change will not go into effect until 2024. The bear season rules and regulations are included in Appendices 1-4.

**Conclusions:** Our management recommendations, rule-making and planning for bear management is science-driven and accommodating of public input, interests and preferences. The final rules are generally reflective of Department recommendations based on biological and social considerations.

**Custom Qualitative Indicator/Output:** Bear management season recommendations have been formulated on an annual or biennial basis.

**Recommendations:** Continue this job as planned.

**Submitted by:** \_\_\_\_\_

Andrew Timmins  
Game Programs Supervisor  
August 1, 2023

## **Appendix 1. Bear Season Rules for 2022-2023**

### **Fis 301.05 Bear Kill Reports**

All persons reporting a bear kill to a New Hampshire conservation officer, fish and game personnel, or registration agent authorized by the director shall provide the following information on the "Bear Registration Form" subject to the penalties for making unsworn false statements under RSA 641:3:

(a) The hunter's:

- (1) Hunting license type, whether resident, non-resident, or other;
- (2) Hunting license number;
- (3) Bear permit number, if different;
- (4) Indication to having a permit to use dogs to take bear;
- (5) Indication to having viewed the bear hunting education materials on the department website;
- (6) Name;
- (7) Mailing and street address;
- (8) Date of birth; and
- (9) Telephone number;

(b) The wildlife management unit and town where the bear was killed and specific locality within the town;

(c) The cause of death;

(d) The date and time of kill;

(e) Whether or not a pre-molar was collected;

(f) The dressed weight and sex of the bear;

(g) If female, lactation status;

(h) Ear-tag numbers if present;

(i) The method of hunting used, such as bait, hound, still hunting, or stalking;

(j) The number of days spent hunting for bear;

(k) The weapon type, and caliber, if appropriate;

(l) Whether a guide was employed and, if yes, the guide's name and guide tag number;

(m) If the bear was killed over hounds, the name of the owner(s) of the hounds; and

(n) The signature of the hunter subject to the penalties for making unsworn false statements under RSA 641:3.

**Appendix 1. Bear Season Rules for 2022-2023 (Cont.)**

**Fis 301.06 Bear Season.**

Fis 301.06 Bear Season.

(a) Wild black bear shall be taken only in the places and during the times set forth in Table 300.1 below by means of:

- (1) Firearms of a size larger than .22 caliber rimfire;
- (2) Crossbow or bow and arrow meeting the minimum requirements of Fis 301.041;
- (3) A shotgun loaded with a single ball; or
- (4) Muzzleloaders not less than .40 caliber.

(b) Except as provided in RSA 207:7-a, bear shall not be taken by a bow, crossbow, or firearm while the person is in or on a motorized vehicle.

(c) For purposes of this section the state shall be divided into wildlife management units, as described in Fis 301.02.

(d) No person shall take a bear with the aid and use of bait except as provided by, and in accordance with, RSA 207:3-d, Fis 307.01, Fis 307.02, and Table 300.1 below.

(e) Dogs may be used for taking bear only in the places and during the times set forth in Table 300.1 below:

Table 300.1

Open Season Dates for the Taking of Wild Black Bear in 2023 and 2024

Wildlife Management Unit	Without Aid of Bait or Dogs	With Aid of Bait	With Aid of Dogs
A	9/01/2023 to 11/07/2023 9/01/2024 to 11/12/2024	9/01/2023 to 9/28/2023 9/01/2024 to 9/28/2024	9/18/2023 to 11/07/2023 9/23/2024 to 11/12/2024
B	9/01/2023 to 11/07/2023 9/01/2024 to 11/12/2024	9/01/2023 to 9/28/2023 9/01/2024 to 9/28/2024	9/18/2023 to 11/07/2023 9/23/2024 to 11/12/2024
C1	9/01/2023 to 11/30/2023 9/01/2024 to 11/30/2024	9/01/2023 to 10/05/2023 9/01/2024 to 10/05/2024	9/18/2023 to 11/07/2023 9/23/2024 to 11/12/2024
C2	9/01/2023 to 11/07/2023 9/01/2024 to 11/12/2024	9/01/2023 to 9/28/2023 9/01/2024 to 9/28/2024	9/18/2023 to 11/07/2023 9/23/2024 to 11/12/2024
D1	9/01/2023 to 11/07/2023 9/01/2024 to 11/12/2024	9/01/2023 to 9/28/2023 9/01/2024 to 9/28/2024	9/18/2023 to 11/07/2023 9/23/2024 to 11/12/2024
D2	9/01/2023 to 11/30/2023 9/01/2024 to 11/30/2024	9/01/2023 to 10/05/2023 9/01/2024 to 10/05/2024	9/18/2023 to 11/07/2023 9/23/2024 to 11/12/2024
E	9/01/2023 to 11/30/2023 9/01/2024 to 11/30/2024	9/01/2023 to 10/05/2023 9/01/2024 to 10/05/2024	9/18/2023 to 11/07/2023 9/23/2024 to 11/12/2024
F	9/01/2023 to 11/30/2023 9/01/2024 to 11/30/2024	9/01/2023 to 10/05/2023 9/01/2024 to 10/05/2024	9/18/2023 to 11/07/2023 9/23/2024 to 11/12/2024
G	9/01/2023 to 11/30/2023 9/01/2024 to 11/30/2024	9/01/2023 to 10/05/2023 9/01/2024 to 10/05/2024	9/18/2023 to 11/07/2023 9/23/2024 to 11/12/2024
H1	9/01/2023 to 11/07/2023 9/01/2024 to 11/12/2024	9/01/2023 to 9/28/2023 9/01/2024 to 9/28/2024	9/18/2023 to 11/07/2023 9/23/2024 to 11/12/2024

**Appendix 1. Bear Season Rules for 2022-2023 (Cont.)**

H2	9/01/2023 to 11/07/2023 9/01/2024 to 11/12/2024	9/01/2023 to 9/28/2023 9/01/2024 to 9/28/2024	None
I1	9/01/2023 to 11/30/2023 9/01/2024 to 11/30/2024	9/01/2023 to 10/05/2023 9/01/2024 to 10/05/2024	9/18/2023 to 11/07/2023 9/23/2024 to 11/12/2024
I2	9/01/2023 to 11/07/2023 9/01/2024 to 11/12/2024	9/01/2023 to 9/28/2023 9/01/2024 to 9/28/2024	9/18/2023 to 11/07/2023 9/23/2024 to 11/12/2024
J1	9/01/2023 to 11/30/2023 9/01/2024 to 11/30/2024	9/01/2023 to 10/05/2023 9/01/2024 to 10/05/2024	9/18/2023 to 11/07/2023 9/23/2024 to 11/12/2024
J2	9/01/2023 to 11/30/2023 9/01/2024 to 11/30/2024	9/01/2023 to 10/05/2023 9/01/2024 to 10/05/2024	9/18/2023 to 11/07/2023 9/23/2024 to 11/12/2024
K	9/01/2023 to 11/07/2023 9/01/2024 to 11/12/2024	9/01/2023 to 9/28/2023 9/01/2024 to 9/28/2024	None
L	9/01/2023 to 11/30/2023 9/01/2024 to 11/30/2024	9/01/2023 to 9/28/2023 9/01/2024 to 9/28/2024	None
M	9/01/2023 to 11/30/2023 9/01/2024 to 11/30/2024	9/01/2023 to 9/28/2023 9/01/2024 to 9/28/2024	None

(f) In accordance with RSA 208:22, III, dogs shall not be run from bait for the purpose of taking bear after September 10, 2023 or September 15, 2024.

(g) Wild black bear may be taken by the aid and use of not more than 6 dogs, after obtaining a permit pursuant to Fis 1102.12.

(h) Training of bear dogs shall be in accordance with Fis 305.02.

(i) In addition to the requirements in RSA 207:3-e, no person shall use telemetry equipment to track or locate bear dogs within 300 feet of a building occupied as a person's principal place of abode.

(j) Licensed guides may guide for taking bear during the open season as specified in Fis 301.06(c), Fis 301.06(d), and Fis 301.06(e). The person licensed for guiding shall, prior to guiding, obtain from the department a permit to guide bear hunters. There shall be a limit of 50 permits per season to guide for taking bear as specified in Fis 1102.06.

(k) Each licensed guide who has been issued a permit to take a bear as described in Fis 1102.06 shall be issued 8 bear guide tags described in Fis 1102.07 subject to the following:

(1) All bear taken by hunters through the assistance of a licensed guide shall be tagged with both the hunter's bear tag and a bear guide tag from the guide who assisted the hunter;

(2) Section A of the bear guide tag shall be signed by the hunter and securely affixed to the carcass of the bear immediately upon killing the bear;

(3) Section A of the bear guide tag shall remain attached to the bear carcass or parts thereof until such time as the bear has been tagged by a New Hampshire conservation officer, fish and game personnel, or registration agent authorized by the director pursuant to paragraph (p) below

(4) Section B of the bear guide tag shall be completely filled out and retained by the guide for his or her records; and

(5) Bear guide tags shall be used to tag only those bears taken by clients of the guide to whom the tags were issued and shall be non-transferable between guides.

(l) No bear shall be taken without the appropriate bear tag.

(m) Immediately upon killing a bear, the licensee shall fill in the appropriate bear tag, sign the tag, and attach the tag to the bear.

## **Appendix 1. Bear Season Rules for 2022-2023 (Cont.)**

(n) The bear tag shall contain the following:

- (1) The licensee's name and street address;
- (2) The date and time of kill; and
- (3) The wildlife management unit in which the kill occurred.

(o) A bear registration station shall be allowed if:

(1) The proposed location has adequate facilities and is easily accessible. Adequate facilities and easily accessible means that the location has adequate space for parking and registering or weighing bear, is a safe distance away from the highway or road, and is located on or near a main route of travel for hunters;

(2) The hours of operation and location of the proposed station will minimize inconvenience to hunters needing to register a bear by being open during early morning, later into the evening, and open on weekend days; and

(3) The applicant shall not have been convicted of any fish and game violation within the past 7 years.

(p) Bear registration agents shall provide the following information on a "Bear Registration Station Agreement":

(1) The station owner or operator's name;

(2) Date of agreement;

(3) Name, physical address, mailing address, county, and telephone number of the station owner or operator's establishment;

(4) The owner or operator's home address and telephone number; and

(5) The hours and days of operation of the proposed registration station.

(q) The bear registration station owner, operator, and employees shall print legibly, accurately, and completely when filling out the bear registration form described in Fis 301.05.

(r) The bear registration station owner or operator shall sign the agreement in the presence of a witnessing department staff member, who shall also sign the agreement.

(s) Registration station agreements shall not be transferable upon change of ownership and shall not be assigned to any other party.

(t) By signing the agreement, applicants shall agree to abide by the statutes and rules governing bear registration reports and the collection of biological samples and shall sign subject to the penalties for making unsworn false statements under RSA 641:3.

(u) Any person who kills wild bear pursuant to this section shall, within 24 hours, exhibit the whole bear or the following body parts of a bear to a New Hampshire conservation officer, fish and game personnel, or registration agent for tagging with a numbered seal:

(1) Entire carcass, skinned or quartered, excluding viscera;

(2) Legs and feet;

(3) Intact skull;

## **Appendix 1. Bear Season Rules for 2022-2023 (Cont.)**

(4) Hide; and

(5) Sex organs, including teats from females so that a positive sex determination can be made.

(v) At the time of tagging, the conservation officer, fish and game personnel, or registration agent shall remove a tooth from such bear and record other information as specified in Fis 301.05.

(w) If requested, any person who kills a wild black bear shall be required to take fish and game personnel back to the kill site, the site of carcass evisceration, or both for purposes such as verification of kill site or to obtain required biological samples left behind.

(x) Beginning with the 2024 bear season, no person shall take more than 2 wild black bear in a calendar year, as follows:

(1) One bear shall be permitted to be taken statewide; and

(2) One bear shall be permitted to be taken only in wildlife management units C1, D2, E, or F.

(y) No person shall take bear by trapping or snaring.

(z) No person shall possess the carcass or any part of the carcass of a wild black bear without the bear tag or registration seal attached to it or by special permission of the executive director or the executive director's agent.

(aa) No person shall possess a bear, or any parts of the carcass of a bear given to the person by another, unless each piece or package given to such person is clearly marked or labeled with the date of its receipt and the name and address of the donor.

(ab) Nothing in this section shall prohibit a licensed hunter who has used his or her archery or firearm bear tag from accompanying a licensed apprentice hunter or an unlicensed minor under the age of 16, while the apprentice hunter or minor is taking bear.

## **Appendix 2. Rules Related to Wildlife Depredation Permit and Training of Bear Dogs for 2022-2023**

### **Fis 304.04 Wildlife Depredation Permits.**

(a) In accordance with RSA 207:26, a commercial grower whose crops are being damaged by wildlife may submit an "Application for a Wildlife Depredation Permit", using the form specified in Fis 304.05, to the executive director.

(b) Applications for wildlife depredation permits shall be submitted by email, regular mail, fax, or hand delivery to the:

New Hampshire Fish and Game Department  
Animal Damage Control, Wildlife Division  
Adopted 05/23/2023 31  
11 Hazen Drive  
Concord, New Hampshire 03301

(c) Commercial growers with a history of wildlife damage may apply for, receive, and employ wildlife depredation permits prior to actual and substantial damage, as specified on their permit. "History of wildlife damage" means that previous wildlife depredation permits have been issued.

(d) The granting of the wildlife depredation permit shall be contingent upon a site review by the fish and game department animal damage control specialist, if necessary to confirm actual and substantial damage. "Substantial damage" means damage to at least 10 percent of crops.

(e) Depredation permits shall not be issued if the fish and game department will supply non-lethal methods such as repellents, pyrotechnics, and fencing that will prevent damage.

(f) The species, number, and sex of wildlife taken under this permit shall be determined by the executive director based on the cause, extent, and type of damage.

(g) The dates seasonally and the times daily when wildlife may be taken under this permit shall be determined by the executive director based on the type of crop being damaged and safety considerations associated with shooting at night.

(h) The commercial grower shall sign the "Wildlife Depredation Tag" and the "Wildlife Depredation Report Card" upon issuance to the agent, and the agent shall sign the tag and report card immediately upon taking wildlife.

(i) Wildlife shall only be taken in the actual area where damage is occurring and within 100 feet outside that area.

(j) A person, upon killing wildlife under a wildlife depredation permit, shall immediately fill out, sign, and attach the wildlife depredation tag to the carcass. Once tagged, the carcass may be legally transported.

(k) A person, upon killing wildlife under a wildlife depredation permit, shall immediately sign and complete the wildlife depredation report card using the form specified in Fis 304.05.

(l) Within 24 hours of a kill, the commercial grower shall mail a completed wildlife depredation report card to the:

New Hampshire Fish and Game Department  
Animal Damage Control, Wildlife Division  
11 Hazen Drive  
Concord, NH 03301

(m) A person, upon killing an animal under a depredation kill permit, shall call fish and game wildlife division at 603-271-2461 between 8:00 AM and 4:30 PM no later than the first business day immediately following the date of kill and provide their name, the time and town of the kill, and the name of the depredation permit holder.

(n) A person attempting to take an animal under a depredation permit shall have on their person a copy

## **Appendix 2. Rules Related to Wildlife Depredation Permit and Training of Bear Dogs for 2022-2023 (Cont.)**

of the permit letter sent to the commercial grower on whose land they are attempting to kill an animal.

(o) Deer, bear, or turkey taken under wildlife depredation permits shall become property of the commercial grower, to be utilized or given away at their discretion, except that antlers with more than 4 total points, taken from deer between August 1 and March 31, must be turned over to the department within 10 business days.

(p) Wildlife, other than deer, bear, or turkey, shall be disposed of, if inedible, or given to a person in need of food assistance or to a charitable institution, such as a food bank.

(q) Within 14 days of the expiration date listed on the permit, the commercial grower shall mail all unused wildlife depredation tags and reports to the:

NH Fish and Game Department  
Animal Damage Control, Wildlife Division  
11 Hazen Drive  
Concord, NH 03301

**Fis 305.02 Training of Bear Dogs.** Training of bear dogs in accordance with RSA 207:12-a shall be as follows:

(a) Training shall be prohibited from March 1 through June 30 statewide; and

(b) Training shall be prohibited during the open season in wildlife management units open to the taking of bear by any method.

## **Appendix 3. Wildlife Baiting Rules for 2022-2023**

**Fis 307.01 Baiting for Wildlife.**

(a) In addition to the requirements specified in RSA 207:3-d, a person engaged in the act of baiting furbearing animals or game animals with the exception of gray squirrel shall be in compliance with Fis 307.

(b) No person shall engage in the act of baiting furbearing animals or game animals with the exception of gray squirrel from April 15 to August 31.

(c) Pursuant to RSA 207:3-d II, "no person shall engage in the act of baiting on the property of another unless he has secured from the owner or occupant of the property upon which the bait is to be deposited a permit in writing signed by the owner or occupant" and complied with the other requirements specified in RSA 207:3-d.

(d) The permit to be used for baiting on the property of another shall be a "Permit to Bait Wildlife" form provided by the department as described in Fis 1102.04, and signed by the owner or occupant in (c).

(e) Permit applications to bait wildlife on lands other than state owned or managed lands shall not be considered unless received by the department or are postmarked on or before the first Monday in August if baiting for bear, or received by the department or are postmarked on or before the first Monday in October for all other species, except:

(1) Applicants may apply beginning December 1 for permits to bait coyote for the year following; and

(2) Permits to bait bear shall be issued by the executive director or his designated agents after the application deadlines as necessary to assist in addressing nuisance bear issues.

### **Appendix 3. Wildlife Baiting Rules for 2022-2023 (Cont.)**

(f) Two copies of the completed and signed permit to bait on lands other than state owned or managed lands shall be submitted in hand or by mail to the:

N. H. Fish and Game Department  
Wildlife Division  
11 Hazen Drive  
Concord, NH 03301

and shall include a map or copy thereof showing the specific location of said bait site.

(g) The permittee shall also distribute copies of the completed and signed permit as follows:

- (1) One copy shall be retained by the permittee; and
- (2) One copy shall be left with the landowner.

(h) No bait shall be placed unless the permit with map have been submitted to the ~~W~~wildlife ~~D~~ivision or until 3 days have elapsed after the date of postmark if mailed.

(i) A person with a current hunting license shall be allowed a maximum of 2 active bait sites for private use and a licensed N.H. hunting guide shall in addition be allowed a maximum of 6 active bait sites for commercial use.

(j) No person other than the permittee listed on a permit to bait wildlife shall place bait or add any material to bait previously placed, under said permit.

(k) All permits to bait wildlife shall expire no later than December 31 following the date of issuance unless an earlier date has been specified on the permit form except as provided by (e)(1).

(l) A permit to bait wildlife shall be valid for a single permittee only and shall have only that permittee's name entered on the permit.

(m) A person placing bait shall post a sign bearing his or her name and address at each bait site, in a clearly visible manner not higher than 6 feet off the ground, on an identification sign made of durable material at least 3 inches by 6 inches in size.

(n) The sign specified in (m) above may bear the names of not more than 2 other persons permitted to take furbearing animals or game animals by aid and use of bait.

(o) No identification sign placed in compliance with this section shall be altered by the substitution or changing of the names listed thereon.

(p) No person other than the permittee authorized to place bait at a site shall remove, alter, or destroy any identification sign posted in compliance with (m) above.

(q) A licensed hunting guide authorized under the provisions of Fis 1106.03 and Fis 1300 shall not be required to post the names of paying clients attempting to take coyote, furbearing animals, or game animals over lawful commercial baits placed by him.

(r) No person shall place bait in public waters or on ice covered public waters.

(s) No person, except licensed hunting guides in accordance with (q) above, shall take furbearing animals or game animals by the aid or use of bait unless they are identified on the sign identified in (m) and (n).

(t) Upon the request of any conservation officer, a permittee or an applicant to bait shall accompany the conservation officer to the proposed or existing bait site for purposes such as, but not limited to, determining the actual location of the bait site and compliance with the provisions of RSA 207:3-d and Fis 307.

### **Appendix 3. Wildlife Baiting Rules for 2022-2023 (Cont.)**

(u) The refusal of a permittee or an applicant to comply with the provisions of (s) shall be grounds for the denial of the application, if pending, or the revocation of the permit if previously issued.

(v) A baited area as defined in RSA 207:1, II-b shall be considered an active bait site until any and all bait material is completely removed from the site.

(w) From the close of the season to take bear with the aid and use of bait as specified in Fis 307.02 through December 15, baiting for coyote shall be restricted to the use of meat, animal parts, carrion, or fish.

#### **Fis 307.02 Baiting for Black Bear.**

(a) In addition to the requirements of RSA 207:3-d and Fis 307.01 relative to the use of bait, black bear may be taken by the aid and use of bait subject to the following:

- (1) WMUs H1, H2, I2, K, L, and M shall open September 1 and close September 21;
- (2) WMUs A, B, C2, D1, G, I1, J1, and J2, shall open on September 1 and close September 28;
- (3) WMUs C1, D2, E, and F shall open on September 1 and close October 5;
- (4) No person shall place bait for the purpose of attracting and taking bear at more than 2 bait sites; and
- (5) A licensed N.H. hunting guide authorized to guide bear hunters under the provisions of Fis 301.06 (j) shall be allowed a maximum of 2 active bait sites for private use and a maximum of 6 bait sites for commercial use subject to the following:
  - a. Any bear taken off a commercial bait site permitted to a licensed N.H. hunting guide shall be tagged with a bear guide tag issued to the guide permitted to use that site; and
  - b. Bear guide tags shall not be used to tag bear taken at bait sites permitted for private use.

(b) For the 2016 black bear baiting season and for all subsequent black bear baiting seasons, no person shall establish, tend, or hunt over a bait containing chocolate or any cocoa derivative, except as provided in (c), below.

(c) White chocolate may be used as bait.

#### **Fis 307.05 Baiting Wildlife on State-Owned or Managed Lands.**

(a) A person may bait wildlife in accordance with RSA 207:3-d, Fis 307.01, Fis 307.02, and Fis 307.03 on lands assigned to or managed by the department, including:

- (1) Property of the fish and game department;
- (2) Property of the department of natural and cultural resources, division of state parks and division of state forests;
- (3) Property of the department of transportation;
- (4) Property of the department of environmental services, division of water;
- (5) Federal property such as the White Mountain National Forest (WMNF); and
- (6) Private property for which the fish and game department has authorization to issue permits to bait wildlife only after the applicant obtains permission in writing to do so from the fish and game department.

### **Appendix 3. Wildlife Baiting Rules for 2022-2023 (Cont.)**

(b) The maximum number of active bait sites for private and commercial use on state owned and managed lands and other lands combined shall be as described in Fis 307.01(h), except:

- (1) No person shall engage in the act of baiting furbearing or game animals, with the exception of gray squirrel, at more than 2 bait sites on state owned or managed lands within any individual WMU;
- (2) Licensed New Hampshire hunting guides may be allowed up to 3 active bait sites for commercial use on state owned or managed lands within any individual WMU; and
- (3) No person, to include licensed New Hampshire hunting guides, shall have more than one active bait site within an individual trapping unit as described in Fis 303.13(c).

(c) Each year baiting permits shall be awarded on state owned or state managed lands for which the department has authority to award such permits on a first come-first serve basis by postmark or hand delivered, except for the Connecticut Lakes Headwaters Forest (CLHF), as provided by Fis 307.05(k).

(d) Applicants for a baiting permit on state owned and managed lands shall make application on a "Permit to Bait Wildlife" form provided by the department as described in Fis 1102.04.

(e) Permit applications to bait furbearing animals or game animals, with the exception of gray squirrel, on state owned and managed lands shall be accepted at any time, except:

- (1) Applicants may apply beginning December 1 for permits to bait coyote for the year following to be effective from January 1 to December 31 of the year following;
- (2) Permit applications for baiting bear and deer shall not be considered unless received by the department or are postmarked between the first Monday in June and the first Monday in August; and
- (3) Permits to bait bear shall be issued by the executive director or his designated agents after the application deadlines in (e)(2) as necessary to assist in addressing nuisance bear issues, to be effective on the date of issuance for the period set forth in the permit, not to exceed 60 days.

(f) Applicants for award of baiting permits on state owned or managed lands shall submit one copy of the application to the:

N.H. Fish and Game Department  
Law Enforcement Division  
11 Hazen Drive  
Concord, NH 03301

and shall include a topographic map or copy thereof showing the specific location of said bait site.

(g) Permits awarded to bait wildlife on state owned or managed lands shall become effective on the first day of legal baiting of the year of issuance of the permit and shall be valid for the baiting season in that calendar year except as provided by (e)(1) and (e)(3) above.

(h) In addition to the rules specified in Fis 307.01, the following rules for baiting wildlife on state owned or managed lands shall apply:

- (1) Non-edible or non-digestible materials shall not be used as bait;
- (2) Containers used to hold bait such as barrels, plastic bags, pails, and boxes and any bait material shall be removed from the property by the end of the open season for taking the species by the use of bait or upon expiration of the permit, whichever occurs first;

### **Appendix 3. Wildlife Baiting Rules for 2022-2023 (Cont.)**

(3) No person shall erect, build, or use a tree stand or observation blind that damages or destroys a tree by inserting into the tree any metallic, ceramic, or other object used as part of a ladder or observation deck nor shall any person cut any tree in connection with any of the activities regulated under this section;

(4) All temporary blinds, platforms, or other structures shall be removed from the property when the permit expires;

(5) No baits shall be placed within 300 feet of a dwelling, roadway, pathway, trail, or designated campsites; and

(6) Permittees shall comply with Fis 307.01(m).

(i) Failure to comply with these rules shall, after notice and opportunity for a hearing in accordance with Fis 200, result in permit revocation and no issuance of a permit for one year. Persons subject to permit revocation may appeal said revocation by requesting, in writing to the executive director, a hearing in accordance with Fis 200.

(j) A permit to bait wildlife on state owned or managed lands shall be valid for a single permittee only and shall have only that permittee's name entered on the permit.

(k) Beginning in 2017 and in subsequent years, up to 50 permits to bait bear and up to 20 permits to bait other species on the Connecticut Lakes Headwaters Forest (CLHF) shall be awarded by lottery as follows:

(1) Baiting permits on the CLHF shall be issued on the basis of 11 CLHF trapping units described in Fis 303.13;

(2) A maximum of 7 bait sites, with no more than 5 bear bait sites and 2 bait sites for all other species shall be permitted on any one trapping unit in the CLHF;

(3) No person shall be permitted more than one bait site on the CLHF in a calendar year except a licensed N.H. hunting guide may be permitted up to 3 bait sites on the CLHF but shall not have more than one bait site per trapping unit in a calendar year;

(4) Applicants for the CLHF baiting permit lottery shall complete the "Lottery Application to Bait Wildlife on the Connecticut Lakes Headwaters Forest (CLHF)" form supplied by the department by providing the following information:

a. The date of application;

b. Name of the applicant;

c. Mailing address of the applicant;

d. Date of birth of the applicant;

e. Telephone number of the applicant;

f. If a licensed N.H. hunting guide, his or her current guide's license number and an indication of whether or not they were issued bear guide tags for the current year as described in Fis 1102.06;

g. A ranking of CLHF trapping unit preferences; and

h. The species, meaning bear, deer, or coyote, for which the applicant wishes to bait for in each trapping unit;

(5) Each lottery application for the CLHF lottery shall be for a single person or licensed N.H. hunting guide and shall be non-transferable;

### **Appendix 3. Wildlife Baiting Rules for 2022-2023 (Cont.)**

(6) No person shall submit more than one application except licensed N.H. hunting guides may submit up to a maximum of 3 applications;

(7) Lottery applications shall be submitted to the:

New Hampshire Fish and Game Department  
Wildlife Division  
11 Hazen Drive  
Concord, N.H. 03301

Lottery applications may be submitted beginning the first Monday in April and shall be received at that location by 4:00 pm on the first Friday in May, or postmarked no later than midnight on the fourth Wednesday in April;

(8) Illegible applications and incomplete applications shall be returned and not considered, however, corrected applications may be resubmitted prior to the deadlines specified in Fis 307.05(k)(7);

(9) The lottery for permits to bait bear and other species on the CLHF shall be held on or before the 12<sup>th</sup> day following the close of the application period as specified in Fis 307.05(k)(7) and be based on random, hand selection of applications at the fish and game region 1 office;

(10) Based on the order of selection, applicants shall be offered a baiting permit(s) as follows:

a. Applicants shall be offered a baiting permit(s) for bear or other species for the highest ranked trapping unit(s) indicated on their application(s) that have not been previously filled;

b. Selection of applicants shall continue until all species-specific baiting opportunities in all trapping units have been filled, or no more eligible applicants are available;

c. Successful applicants will be notified by mail within 7 working days of the trapping unit-and species baiting opportunities awarded them;

d. Successful CLHF lottery applicants shall complete and submit an application for a permit to bait wildlife on state owned and managed lands in accordance with Fis 307.05(d), (e), and (f) for each trapping unit and species opportunity awarded them in the lottery noting on the form that the application for a permit to bait wildlife is for a site awarded in the CLHF lottery, and providing the CLHF trapping unit number in which the site is located; and

e. Following the lottery, any baiting permits as specified in (k) not issued in the lottery by species and trapping unit shall be distributed on a first come-first serve basis at the fish and game department region 1 office; and

(11) Baiting on the CLHF shall be in compliance with RSA 207:3-d, Fis 307.01, Fis 307.02, and Fis 307.03.

## **Appendix 4. Hunting and Other Game Licenses and Permits for 2022-2023**

### **Fis 1102.04 Baiting Wildlife.**

(a) A person may bait wildlife in accordance with RSA 207:3-d on lands other than their own, only after obtaining permission in writing to do so from the owner or occupant of the land where baiting is to be done. Said permission shall be obtained using a "Permit to Bait Wildlife" form supplied by the department or obtained from the department's website, [www.wildlife.state.nh.us](http://www.wildlife.state.nh.us).

(b) An applicant for a permit to bait wildlife shall supply the following on the "Permit to Bait Wildlife" form:

- (1) The name of the permittee;
- (2) The address of the permittee;
- (3) The telephone number of the permittee;
- (4) The date of birth of the permittee;
- (5) The species for which baiting will be allowed;
- (6) An indication as to whether the bait site is for private use or commercial use by a licensed N.H. hunting guide;
- (7) An indication as to whether the bait site is on lands other than state owned or managed land as described in Fis 307.01, or on state owned or managed lands as described in Fis 307.05;
- (8) An indication whether the bait site being applied for was awarded during the Connecticut Lakes Headwaters Forest lottery and if so, the trapping unit number in which the site is located;
- (9) The location of the land where baiting is to be allowed and described by the WMU as described in Fis 301.02, town, road, and property name or White Mountain National Forest District and trapping unit if on state owned or managed lands;
- (10) Directions to the exact location of the bait site;
- (11) Any stipulations to placing bait, listed by the landowner or land occupant;
- (12) Name and address of the landowner or land occupant printed in a legible manner;
- (13) Telephone number of the landowner or land occupant;
- (14) Date of issuance; and
- (15) The signature of the landowner or land occupant or, if public land, of the proper authority.

### **Fis 1102.06 Bear Guide Permit.**

(a) To be eligible to apply for a bear guide permit, a completed "Guide's License Application" shall be received at the department's licensing division by 4:00 p.m. on the third Friday in December, or be postmarked by the second Friday in December, in the year immediately prior to the year for which the bear guide permit is sought.

(b) A New Hampshire licensed guide shall make application to the New Hampshire fish and game department on Form F&G 401A by providing the following:

#### **Appendix 4. Hunting and Other Game Licenses and Permits for 2022-2023 (Cont.)**

- (1) Name, address, telephone number, and date of birth of applicant;
- (2) Type of guiding, whether with dogs, over bait, stalking, or still hunting;
- (3) An indication of whether the applicant seeks a group A or B bear guide permit; and
- (4) Signature of applicant, signed subject to the penalties for making unsworn false statements under RSA 641:3.

(c) Illegible applications and incomplete applications shall not be considered. Corrected applications may be resubmitted by the deadlines specified below.

(d) Permits shall be non-transferable.

(e) Permits shall expire on December 31st each year.

(f) A maximum of 50 bear guide permits, split into group A permits and group B permits, shall be issued per year.

(g) The following criteria shall apply to the issuance of group A bear guide permits by the department:

- (1) A maximum of 25 group A bear guide permits shall be issued by the department;
- (2) Applications shall be received at the department's wildlife division in the headquarters office in Concord between the first business day in January and the third Friday in January at 4:00 p.m. or postmarked by the second Friday in January each year;
- (3) Any licensed guide who held a bear guide permit for at least 5 of the 13 bear seasons from 2002 to 2014, inclusive, shall be eligible to apply for and obtain a group A bear guide permit;
- (4) Any eligible individual shall apply for and obtain a group A bear guide permit each year in order to remain eligible to apply for a group A bear guide permit in subsequent years;
- (5) If any eligible individual fails to apply for and obtain a group A bear guide permit, whether because the individual died or for any other reason, that individual shall no longer be automatically eligible for a group A permit;
- (6) If any eligible individual fails to apply for and obtain a group A bear guide permit, the group A bear guide permit previously associated with that individual shall be converted into a group B bear guide permit to be issued in accordance with paragraph (h) below, except any newly available group A bear guide permits shall be offered to those individuals on the group A bear guide permit waiting list in the manner described below in subparagraph (7) below;
- (7) The group A bear guide permit waiting list shall consist of a list of those individuals who apply for a group B bear guide permit beginning in 2015. The individuals on the list shall be awarded one point for each year they apply for group B bear guide permits. Any group A bear guide permit that is not issued pursuant to subparagraphs (3) through (6) above shall be offered to the individual on the group A bear guide permit waiting list who has the most points. If there are 2 or more individuals with the same high point score, the group A bear guide permit shall be awarded by random drawing of those individuals with the same score. Such drawing shall occur by February 15th of each year; and
- (8) The bear guide's license referenced in paragraph (a) above shall be issued by the first Monday in February for eligibility for a group A bear guide permit.

#### **Appendix 4. Hunting and Other Game Licenses and Permits for 2022-2023 (Cont.)**

(h) The following criteria shall apply to the issuance of group B bear guide permits by the department:

- (1) A maximum of X group B bear guide permits shall be issued by the department, where X shall equal 50 minus the number of group A bear guide permits issued that year;
- (2) Applications shall be received at the department's wildlife division in the headquarters office in Concord between the first business day in January and the third Friday in January at 4:00 p.m., or postmarked by the second Friday in January, each year;
- (3) If the number of applicants exceeds X, Group B bear guide permits shall be issued by a random drawing of the eligible applications;
- (4) The group B bear guide permit drawing shall occur by February 15th of each year; and
- (5) The guide's license referenced in paragraph (a) above shall be issued by the first Monday in February for eligibility for a group B guide permit.

#### **Fis 1102.07 Bear Guide Tags.**

(a) The "Bear Guide Tag", which is divided into 2 sections, shall be completed as follows:

- (1) The hunter shall provide the following on Section A:
  - a. Name of hunter killing the bear;
  - b. Address of hunter;
  - c. Hunting license number, including the prefix;
  - d. Name of the guide;
  - e. Guide's license number;
  - f. Date and time of kill;
  - g. Town of kill; and
  - h. Signature of the hunter, signed subject to the penalties for making unsworn false statements under RSA 641:3; and
- (2) The guide shall provide the following on Section B:
  - a. Name of the hunter killing the bear;
  - b. Address of hunter;
  - c. Hunting license number including prefix;
  - d. Name of guide;
  - e. Guide's license number;
  - f. Town of kill;
  - g. Sex of bear; and

h. Signature of guide, signed subject to the penalties for making unsworn false statements under RSA 641:3.

#### **Fis 1102.12 Use of Dogs to Take Bear.**

(a) Applicants for a permit to use dogs to take bear shall provide on a form provided by the department:

- (1) Name and address of applicant;
- (2) New Hampshire hunting license number and bear permit number;
- (3) Telephone number of applicant;
- (4) Date of birth of applicant;
- (5) Date of permit;
- (6) The individual frequency of each radio collar to be utilized while taking bear if applicable; and
- (7) Signature of applicant, signed subject to the penalties for making unsworn false statements under RSA 641:3.

**Appendix 4. Hunting and Other Game Licenses and Permits for 2022-2023 (Cont.)**

(b) Prior to hunting, the permittee shall distribute the copies of the permit as follows:

- (1) One copy shall be retained on the permittee while hunting bear with dogs; and
- (2) One copy shall be submitted to the N.H Fish and Game Department, Wildlife Division, 11 Hazen Drive, Concord, NH 03301.

(c) The permit to take bear with dogs shall become effective when one copy is presented in hand or postmarked and mailed in an envelope addressed to the N.H. Fish and Game Department, Wildlife Division, 11 Hazen Drive Concord, NH 03301 prior to the taking of a bear.

(d) A permit to take bear with dogs shall be valid for a single permittee only and have only the permittee's name entered on the permit.

(e) A permit to take bear with dogs shall expire at the end of the dog hunting season for bear as specified in Fis 301.06(e), in the year for which the permit was issued.

## Performance Report

**State:** New Hampshire

**Grant:** F20AF11939

**Grant Type:** Survey and Inventory

**Grant Title:** NH – WILDLIFE RESEARCH AND MANAGEMENT (W-89-R-21)

**Period Covered:** July 1, 2022 – June 30, 2023

**Purpose/Target Name:** PROJECT 3 - BLACK BEAR RESEARCH AND MANAGEMENT

**Objective Name:** JOB 4 - PROFESSIONAL EXCHANGE AND DISSEMINATION OF PROJECT INFORMATION

**Objective Statement:** To communicate with diverse bear management stakeholders and the general public interested in bear management in New Hampshire. To facilitate peer, legislative and public reviews of bear management programs. To maintain working relationships and information exchange with bear management professionals and to ensure that the bear project leader and other Department staff is employing the best available bear management methods and techniques. To prepare and disseminate bear management related information, reports and summaries to the public, U.S. Fish and Wildlife Service, and other partners and bear management stakeholders.

**Summary:** Bear grant information was widely distributed, using diverse methods and a wide variety of communication mediums, to ensure that target audiences and key constituents received pertinent information and messages. Program biologists continued to conduct an active educational outreach effort titled “*Learn to Live With Bears*”. Dissemination of grant information has been successful in 1) maintaining information flow and professional communications regarding bear management with peer state and provincial bear managers, 2) keeping stakeholders, partners and interested publics informed on and involved in the state’s bear management program, 3) increasing human tolerance and understanding of bears, and 4) decreasing the frequency of and potential for bear/human conflicts.

**Target Date:** June 30<sup>th</sup> annually 2021-2025.

**Status of Progress:** On schedule.

**Significant Deviations:** None.

**Objective Approach:** New Hampshire bear grant goals, accomplishments, and findings will be summarized in annual performance reports, research reports, annual harvest summaries, news releases and popular articles. Data generated under this project will be disseminated to partners, stakeholders and other interested publics through a wide variety of outlets. These will include: 1) an annual big game harvest summary, 2) formal presentations, 3) Department magazine articles, 4) news releases, 5) video public service announcements and news briefs, 6) media interviews, 7) assorted informational pamphlets, 8) letters, and, 9) phone conversations. Peer input and review meetings and professional conferences, technical work group meetings and training sessions will be attended and professional communications with peer state and provincial bear managers will occur as needed. The project biologist and other Department staff will participate in the delivery of targeted project information in bear sensitive areas, and in areas with a recent history of high bear/human conflicts. Site visits, media interviews, community meetings, and public presentations will be conducted as appropriate to deliver project information. Department staff will participate in bear conflict abatement as necessary to ensure continued support for statewide bear management efforts.

## **Results:**

### Grant Information Exchange and Distribution

During this segment, bear grant information was summarized and distributed in the “2022 New Hampshire Wildlife Harvest Summary” provided in NH Federal Aid Report W-89-R-21, Project 1, Job 4, Appendix 1. Grant information was routinely shared with coworkers, commissioners, legislative interests, peer professionals, politicians, stakeholders, hunters and the public in routine presentations, communications and correspondence. Educated constituents represent informed decision-makers who can and do have a positive impact on bear management decision-making. During this grant segment the project leader served as Chairman of the Northeast Black Bear Technical Committee (1/2020-12/2022) and participated in meetings with the technical committee and the Northeast Wildlife Administrators Association. Additionally, the project leader was appointed to the BearWise Taskforce Committee as a representative from the northeast.

Numerous media inquiries were fulfilled via interviews and dispersal of printed information. Articles and press releases were drafted and presentations were made as required to discuss bear biology and management. Routine requests for grant information were responded to on a daily basis. During this grant segment the project leader presented data generated under this grant to various audiences at a multitude of venues. Data generated under Jobs 1 and 2 of this grant specific to biology, management and research initiatives were presented at meetings, speaking engagements and/or field tours including 1 to wildlife students at the University of New Hampshire (UNH), 1 to the NH Bear Hunters Association, 1 to bee keeper groups, 2 to a NH-based conservation organization, 2 to New Hampshire communities, and 5 to reporters or radio talk shows.

### Public Outreach and Education

Bear Education Team members continued to invest in and strengthen our “Something’s Bruin in New Hampshire” educational outreach program and public awareness campaign. Multiple recently produced brochures and materials were reviewed, reprinted (see Appendix 1) and distributed during the past grant segment. Education materials were widely distributed to targeted communities and outlets, both through mailings and bulk deliveries, as well as through personal contact. Educational materials were also handed out at select public gatherings and Fish and Game events. Bear information provided on the Department web site was revised and updated as required. Staff members disseminated data generated under this grant via radio and television interviews, as well as through presentations to assorted clubs and organizations. Press releases and articles were utilized to promote public knowledge and awareness of and appreciation for New Hampshire black bears. Public feedback continues to indicate that grant efforts are having a positive impact on public attitudes and behavior.

**Conclusions:** Communications and education are key components of successful bear management in New Hampshire. Exchange of information with professional peers ensures that sound bear management decisions are made and that the project biologist and other Department staff are trained in the best available management methods and techniques. Well-informed, interactive constituents endorse responsible management decisions thereby promoting the diverse ecological and social values of bears. Public outreach and education initiatives enhance public tolerance towards and understanding of bears. These actions raise the threshold of cultural carrying capacity, allowing us to carry a greater or equal number of bears in the presence of a growing human population.

**Custom Qualitative Indicator/Output:** Communication with bear management stakeholders and the general public has occurred. Peer, legislative and public reviews of bear management programs has been facilitated. Working relationships and information exchange with bear management professionals, the project leader and staff has been maintained. Bear management information has been disseminated.

**Recommendations:** Continue this job as planned.

**Submitted by:** \_\_\_\_\_

Andrew Timmins  
Game Programs Supervisor  
August 1, 2023

# Appendix 1. New Hampshire Bear Education and Outreach Materials

## Protecting Poultry from Bears

**EXAMPLES OF ENERGIZERS AND FENCING COMPONENTS**

**MATERIALS WORKSHEET**

<b>FENCING</b>	
• Heavy Duty Fence	\$111-\$209
• Fence Conductor	\$13-\$72
<b>ENERGIZERS</b>	
• Solar	\$170-\$309
• Battery	\$89-\$249
• 110 Volt	\$95-\$250
<b>POSTS</b>	
• Thread-ins	\$3.50 each
<b>ACCESSORIES</b>	
• Voltage Tester	\$11-\$110
• Insulator	\$35-\$40
• Ground Rod	\$6-\$12
• Ground Rod Clamp	\$3
• Warning Signs	\$5

The products and price ranges provided in this brochure are intended for reference only. The N.H. Fish and Game Department or USDA Wildlife Services do not endorse or guarantee the use of these products over others not mentioned. Contact your local bears dealer for specific pricing and additional options.

For more information, please contact New Hampshire Fish and Game at 603-271-2461 or USDA Wildlife Services at 603-223-6832

**RAISING POULTRY IN NEW HAMPSHIRE**

**PREVENTING LOSS BY BEARS**

**KEEPING BEARS OUT REQUIRES A DIFFERENT APPROACH**

The popularity of raising backyard chickens and waterfowl has grown significantly in recent years, as people become interested in providing their own meat and fresh eggs. If poultry is not adequately contained and protected, loss to wildlife should be expected. Animals such as black bears now recognize chickens, ducks, and the associated poultry feed as an easily accessible food source. Many of the state's wildlife services are paying the price as an increasing number of landowners choose to kill wildlife as a means of defense against predation.

Most coops, pens, and runs are constructed with the intent of keeping poultry in and typically fail at keeping wildlife out. If poultry is not adequately contained and protected, loss to wildlife should be expected.

While it may be possible to build coops strong enough to keep out species such as foxes, raccoons, and bobcats, bears require a different approach because of their strength and agility. The most effective way to protect poultry from predation by bears is to establish a perimeter of electric fence. Bears honor electricity, and the use of electric fencing represents the most viable, long-term solution for protecting your investment from predatory loss.

**EFFECTIVE ELECTRIC FENCE OPTIONS**

Electric fencing represents a modest investment that will provide years of service protecting poultry from bears.

**COMPONENT FENCING**

A component fence system can be used around existing buildings and poultry runs. Combined with breed or group or well-bred or improved, it creates the most effective electrical perimeter for poultry protection. Electric fence should be 4" or 6" for poultry protection.

**POULTRY NETS**

Those who frequently move poultry to other grazing sites will appreciate the convenience of poultry net fences. These fences are portable, avoid predation from a variety of predators, and can be used to contain chickens. Fence come in a variety of lengths and consist of a post of conductive wire and plastic posts.

**RECOMMENDED PRACTICES FOR PROTECTING POULTRY**

- Utilize electric fence around poultry coops, pens, and runs.
- Keep the electric fence in good condition to ensure it is working properly.
- Maintain open space around coops and pens—bears tend to avoid areas without cover.
- Store poultry feed securely indoors or in airtight, odor-free, bear-proof containers.
- Feed poultry only the amount that can be consumed during a typical feeding—don't let feed accumulate in a coop or pen.
- The use of livestock guardian animals, such as dogs, can be highly effective in deterring predatory wildlife.
- Prevent aggression from growing into contact with fence.
- Ball electric fence as a rapid way to teach bears the effectiveness of the fence.

**PROTECT YOUR POULTRY INVESTMENT - GO ELECTRIC!**

## Avoiding Conflicts with Black Bears

**New Hampshire's Black Bear**

The American black bear (*Ursus americanus*), which has made a remarkable recovery from record low numbers in the mid-1800s, is now common throughout New Hampshire. The statewide bear population is estimated at 5,000, and regional densities average 0.6 bears/mi<sup>2</sup>.

Although black bears are generally shy and usually avoid humans, they are opportunistic and will seek out human-related foods, particularly when natural foods are limited. Minimizing conflicts between bears and people is critically important and a high priority for wildlife managers. Maintaining a strong and sustainable bear population into the future will depend on a public that is motivated to be responsible and proactive in securing food attractants.

Bears are part of our native heritage and, for many, serve as a symbol of wilderness and an indicator of quality, diverse habitat. Bears are highly intelligent, resourceful, and very effective at locating high-quality food resources. A black bear fighting typically leaves wildlife watches and tourists frustrated, particularly when they are from areas where bears are less common. From an ecological standpoint, bears serve important roles. As an opportunistic feeder, they help clean up carcasses of animals that die due to various causes. As an animal that feeds on a tremendous diversity of tree and shrub species, they serve as a significant seed disperser. Bears fill an essential niche and they are an important component of our landscape.

**IF YOU ENCOUNTER A BEAR**

**In Your Backyard**

- From a comfortable distance, make loud noises by shouting, banging pots and pans, or using an air horn to deter the bear from the area.
- When the bear leaves, remove potential attractants such as garbage, bird seed, or pet food.
- Ask neighbors to remove attractants.

**At a Close Encounter or in a Confined Area:**

- Begin repeating "Hey bear" in a calm voice, maintain eye contact, and slowly back away. Do not run or crouch down.
- Give the bear a clear escape route (do not corner it).

**Remember, conflicts with bears are a community issue. It is important to work together to remove bear attractants.**

11 HAZEN DR | CONCORD, NH 03301 | (603) 271-2461

**BLACK BEARS**

**HOW TO AVOID CONFLICTS, PROTECT YOUR PROPERTY, AND KEEP BEARS WILD**

While hundreds of bear conflicts are reported each year, most can be prevented by simply removing or securing common bear attractants.

**BIRD SEED**

- Only feed birds when bears are inactive, generally between December 1 and April 1
- Dispose of unused seed
- Store feeders indoors

**GARBAGE**

- Store garbage cans in a building, or secure them with an electric fence
- Take garbage to curb on morning of pickup

**GRILLS**

- Store grill inside when not in use

**POULTRY & LIVESTOCK**

- Do not allow animals to range free

**PET & LIVESTOCK FOOD**

- Store livestock and pet food inside
- Feed pets inside

**1 REMOVE & STORE**

- Clean up all bird seed by April 1. Visit [bearwise.org](http://bearwise.org) for feeder-free ways to attract birds year round

**2 SECURE & CLEAN**

- Keep sub-buildings and garage doors closed at all times
- Use bear-resistant dumpsters or garbage cans
- Dumpster lids/covers should be kept closed and latched
- Use airtight garbage cans and ammonia to control odor when storing in an outbuilding
- Burn off food residue
- Keep grease trap clean

**POULTRY & LIVESTOCK**

- Protect poultry and livestock with an electric fence

**PET & LIVESTOCK FOOD**

- If you feed your pets or livestock outside:
  - Clean dishes daily
  - Remove leftover food daily

For more information on black bears in New Hampshire, please visit us online at [wildnh.com](http://wildnh.com).

Visit [bearwise.org](http://bearwise.org) for printable resources and practical ways to keep people, animals, and property safe and bears wild.

## Bear Education Door Hangers

**Something's Bruin in Your Area**

LIVING WITH BEARS IN NEW HAMPSHIRE

**Prevent Negative Bear-Human Interactions**

- Only feed birds from December 1-April 1.
- Properly protect poultry, livestock, and bee hives with electric fencing.
- Secure and store garbage, pet and live stock food, and BBQ grills.
- Follow composting guidelines
- Remove food and its packaging from vehicles.
- **Never** feed bears.

Learn more about living with bears at [wildnh.com](http://wildnh.com)

NEED MORE INFORMATION?  
NH Fish & Game Department at 603-271-2461  
USDA Wildlife Services at 603-223-6832

TAKE RESPONSIBILITY - CLEAN UP LOCK UP

## Protecting Agricultural Items from Bear Damage

### Protect Your Agricultural Investment



The popularity of raising chickens and keeping bees, particularly as a hobby, has grown significantly in recent years. Most hives, chicken coops, and pens are constructed with the sole focus of keeping livestock enclosed but often fail at keeping wildlife out. Without protective barriers, loss by wildlife is unavoidable. Complaints of bears and other wildlife damaging coops, killing poultry, and damaging hives continues to increase. Preventing these conflicts will take a proactive effort.

The most effective way to protect poultry and hives from damage is to use an electric fence. The use of an electric fence is the most efficient and viable way to protect livestock.

Consider investing in the equipment that will protect your investment, as well as New Hampshire's wildlife.

#### EFFECTIVE ELECTRIC FENCE OPTIONS:

##### Component Fencing

A component fence system can be used around existing buildings, poultry runs or hives. Constructed with braided posts or rail on screw-in insulators, it includes four strands of electrified conductor at 8"-10" intervals for bears. Bottom strands can be 4"-6" for smaller predators.



##### Poultry Nets

Those who frequently move poultry or hives will appreciate the convenience of poultry net fences. These fences are portable and will provide protection from a variety of predators. Fences come in a 32' or 164' roll and consist of a grid of conductive wires and plastic supports.



#### MATERIAL WORKSHEET:

##### Fencing

- Poultry Net Fence \$93-\$200
- Fence Conductor \$17-\$66

##### Energizers

- Solar \$190-\$360
- Battery \$89-\$293
- 110 Volt \$95-\$200

##### Posts

- Tread-ins \$3 each

##### Accessories

- Voltage Tester \$12-\$112
- Insulators \$1.45-\$3.89
- Ground Rod \$6-\$11
- Ground Rod Clamp \$3
- Warning Signs \$3



NEED MORE INFORMATION? ASK US OR REACH OUT

NH Fish & Game Department at 603-271-2441  
USDA Wildlife Services at 603-223-6832



## Educating Campers and Hikers on Bear Conflict Abatement

### Campers and Hikers You're In Bear Country

Black bears are wild animals – follow these tips to avoid encounters at the campsite and on the trail!

- Select a campsite or facility that utilizes bear-proof dumpsters and bear-proof food storage containers.
- Most conflicts between bears and campers/hikers occur at locations that don't utilize proper bear-proof equipment and techniques.
- Store your food securely – options include in a bear-proof food storage container (e.g., bear canisters, bear boxes), a secure building or in a closed-up vehicle. Coolers are not bear-proof.
- If no other options are available, hang your food at least 10 feet off the ground and 5 feet out on a limb that will not support a bear.
- Maintain a clean campsite. Put all food away (including condiments) when not in use.
- Don't put food scraps and fat drippings in the campfire – either place in closed containers or dispose of in a bear-proof dumpster.
- Do not cook or eat in your tent. Keep food and cooking gear separate from your sleeping area.
- When hiking with food, keep your pack with you at all times.
- Never feed bears. Ever.



Normal trail noise typically alerts bears to your presence and prompts them to move, often without being noticed.

### But, what should you do if you do encounter a black bear?

- Keep your distance. If you find yourself close to a bear, begin repeating "hey bear" in a calm voice, maintain eye contact, and slowly back away. Do not run or climb trees.
- Never throw a bear food in an effort to prevent it from approaching or following you – that teaches a bear to approach for a food reward.
- Black bears will sometimes "bluff charge" when approached or if a person is in very close proximity. This is a common behavior and does not indicate that the bear will attack – you have simply gotten too close. Black bears are rarely aggressive or dangerous. Don't run from a bluff charging bear. Begin repeating "hey bear" in a calm voice, maintain eye contact and slowly back away.
- Report bear encounters to camp management.



More about bears:  
[wildnh.com](http://wildnh.com)  
[fs.usda.gov/whitemountain](http://fs.usda.gov/whitemountain)



## Living in Bear Country Poster



- **Never Feed Bears** – Feeding bears is prohibited in New Hampshire because it conditions them to approach humans and may establish conflict behavior. Always properly store food in bear-resistant containers, secure buildings or closed vehicles.
- **Garbage Kills Bears** – Bears allowed to access garbage can become habituated. Bears that exhibit persistent conflict behavior may have to be killed. Use bear-proof dumpsters. Don't burn food scraps or grease in campfires.
- **Separate Cooking/Eating Areas from Sleeping Areas** – Bears are attracted to food or other strong odors, like toothpaste and deodorant. Keep these odors away from your sleeping area. Change and stow clothing soiled with these odors before going to bed.
- **Leash and Control Your Pet** – Uncontrolled pets antagonize bears and can escalate a bear's defensive behavior.
- **Respect a Bear's Space** – Never approach a bear to take pictures. A bear may perceive your advance as a threat.
- **If You Encounter a Bear** – Remain standing and do not run. Maintain eye contact. Talk in a calm, nonthreatening voice and slowly back away. Report bear encounters to authorities.



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889-10007-0002

For more information visit: [wildnh.com](http://wildnh.com) or call: 1-888-SHYBEAR