

Bobcat Population Analyses 2016

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Abstract

Age and reproductive data obtained from 5,683 bobcats harvested during the 1983-2014 seasons and data from the winter furbearer track survey were used to evaluate Wisconsin's bobcat population. Analysis suggested that fall population size in northern Wisconsin increased from about 1,600 to about 4,400 during the 1990s and early 2000s, stabilized during the mid 2000s, and declined to about 2,300 in recent years.

Methods

Successful hunters and trappers were required to register their bobcat at a DNR station and turn in the carcass at that time. The sex, date of harvest, and county of harvest were recorded for each carcass. A canine tooth was extracted and sent to Matson's Lab, Milltown, MT for processing and aging (determined by counting annuli in the cementum). Ovaries and uteri were removed from all female carcasses. Uteri were examined for the presence/numbers of placental scars. Bobcat population estimates and trends were determined by incorporating data on harvest size and composition and age-specific reproductive rates into Minnesota's Furbearer Population Model. Population trends simulated by the model were compared to data from the Winter Furbearer Track Count survey. To improve correlation between the model and the track count survey the model's initial population size was adjusted from 1,420 to 1,430 in 2014.

Results

Biological samples were obtained from 326 bobcats (212 males, 107 females, 7 unknown) during the 2015-16 season. Age information from those carcasses is not yet available. Data from the carcasses collected since 1983 are summarized in Tables 1 and 2.

The age structure of harvested bobcats changed substantially during 1983-2014 (Table 1). Adults (≥ 2.5 year old) comprised an average of 43% of the harvest during 1983-92, 58% during 1993-2002, and 69% during 2003-14. The increasing trend in the proportion of adults in the harvest over the past 32 years is likely primarily due to increasing selection for larger bobcats by harvesters; however, the extremely low proportion of juveniles and yearling in the harvest in 2010-2014 may reflect below average recruitment in recent years. Examination of 1,744 female reproductive tracts since 1983 showed mean pregnancy rates of 30% for yearlings and 70% for adults (Table 2). However, there has been considerable annual variation in pregnancy rates for both yearlings and adults, likely driven by variation in prey availability. Adult pregnancy rates during the past 8 years have averaged 56%, well below the long-term average. The mean number of placental scars per pregnancy since 1983 is 2.7.

Harvest, age, and reproduction data were incorporated into the Minnesota Furbearer Population Model. Analyses suggest that the fall bobcat population in northern Wisconsin fluctuated between 1,600 and 2,100 during the 1980s and early 1990s (Fig. 1). During 1993-2003, the population increased consistently due to conservative harvests. The model suggests that higher harvests in the mid 2000s, together with reduced reproduction in the late 2000s, reduced the population to about 2,300 bobcats. Winter track count surveys (Rees 2016) generally parallel population trends suggested by the model ($r = 0.93$). Three-year mean numbers of

bobcat tracks observed per transect increased substantially during 1993-2005 but then stabilized and declined. Recent declines in the number of bobcats run per day by hunters with dogs together with a decline in harvest per 1,000 trap-nights (Dhuey et al. 2015) are consistent with a population decline. However, questions remain about the effect of suboptimal weather during December 2015 on harvest success rates.

The fall 2016 population prediction from the model for the portion of Wisconsin north of State Highway 64 is approximately 2,200. The WDNR Furbearer Advisory Committee recommended a harvest of 225 bobcats north of Highway 64 and 150 bobcats south of Highway 64 for the 2016 season. The 2016-17 bobcat season will be the seventh year with a split season with period 1 occurring October 15th – December 25th and period 2 December 26th – January 31st. The quota will be allocated evenly between the two seasons. To prevent harvest from exceeding quota, a phone-in registration system is in place to allow for season closure if the harvest quota is met.

Literature Cited

- Rees Lohr, J. 2016. Winter track counts, 1977-2016. Pages 129-136 in J. Kitchell and B. Dhuey (editors). Wisconsin Wildlife Surveys: August 2016. Wisconsin Department of Natural Resources, Bureau of Science Services, Madison, WI.
- Dhuey, B., J. Rees and J. Olson. 2015. Bobcat hunter/trapper survey, 2014. pages 118-131 in J. Kitchell and B. Dhuey (editors). Wisconsin Wildlife Surveys: August 2015. Wisconsin Department of Natural Resources, Bureau of Science Services, Madison, WI.

Table 1. *Ages of bobcats harvested in Wisconsin, 1983-2014.*

Year	No. Aged	Percent in age class						
		Kits	1	2	3	4	5	6+
1983	84	23.8	31.0	14.3	13.1	6.0	3.6	8.3
1984	97	25.8	25.8	10.3	13.4	13.4	6.2	5.2
1985	168	32.1	30.4	10.7	7.1	5.4	7.1	7.1
1986	158	27.9	27.9	11.4	7.0	8.2	4.4	13.3
1987	221	31.7	26.7	16.7	10.4	3.6	2.3	8.6
1988	127	34.7	30.7	10.2	8.7	4.7	3.2	7.9
1989	103	23.3	26.2	17.5	12.6	9.7	3.9	6.8
1990	86	44.2	23.3	15.1	7.0	3.5	2.3	4.6
1991	57	26.3	28.1	24.6	12.3	7.0	0.0	1.8
1992	181	21.6	28.2	16.6	9.9	9.4	6.6	7.7
1993	129	23.3	23.3	17.8	19.4	3.9	7.8	4.7
1994	153	23.5	24.8	15.7	9.8	7.8	6.5	11.8
1995	77	23.4	19.5	13.0	13.0	6.5	10.4	14.3
1996	109	26.6	21.1	18.3	9.2	11.0	2.8	11.0
1997	139	23.0	18.7	22.3	10.8	10.1	5.0	10.1
1998	169	26.6	23.1	17.2	10.1	8.9	2.4	11.8
1999	140	28.6	15.0	16.4	13.6	10.0	7.9	8.6
2000	227	20.7	18.1	15.9	14.5	12.3	6.2	12.3
2001	111	15.3	17.1	26.1	23.4	7.2	3.6	7.2
2002	162	14.2	17.9	20.4	16.7	16.0	7.4	7.4
2003	257	17.5	12.8	16.0	17.9	16.0	8.6	11.3
2004	295	22.0	19.3	12.5	12.9	9.5	10.2	13.6
2005	388	19.6	18.8	14.4	15.0	10.8	8.0	13.4
2006	266	12.8	21.1	16.2	16.5	12.0	4.9	16.5
2007	351	21.4	19.7	18.8	11.1	8.5	6.8	13.7
2008	292	16.1	21.9	22.6	15.4	7.2	4.5	12.3
2009	214	15.9	16.8	21.5	18.7	9.3	5.1	12.6
2010	241	10.0	8.7	34.0	14.9	9.1	8.7	14.1
2011	211	5.2	15.6	28.0	17.5	12.8	7.1	13.7
2012	169	16.0	8.3	13.0	18.9	14.8	13.0	16.0
2013	119	10.1	16.8	21.0	16.8	12.6	4.2	18.5
2014	182	14.3	14.3	19.8	11.5	14.3	8.2	17.6
Total/Mean	5,683	20.5	20.1	17.9	13.7	9.8	6.3	11.6

Table 2. *Reproductive rates of female bobcats harvested in Wisconsin, 1983-2014.*

Year	No. of carcasses	Pregnancy rates (%)		Mean number placental scars/preg.
		Yearlings	Adults	
1983	39	25	77	2.3
1984	31	11	59	2.6
1985	60	31	56	2.2
1986	49	33	70	2.6
1987	62	40	79	2.7
1988	35	72	94	3.1
1989	39	57	70	2.9
1990	23	27	70	3.1
1991	18	20	67	3.0
1992	58	38	71	2.4
1993	47	14	40	1.9
1994	40	27	75	2.8
1995	24	63	69	2.6
1996	35	71	92	2.8
1997	54	42	87	3.2
1998	50	29	75	2.7
1999	39	57	91	3.1
2000	73	44	72	3.3
2001	35	63	69	2.9
2002	65	54	90	3.0
2003	87	41	86	2.6
2004	95	32	74	3.0
2005	120	8	82	2.4
2006	91	32	67	2.6
2007	78	8	67	2.6
2008	77	0	41	2.2
2009	21	40	56	2.0
2010	65	0	54	2.3
2011	80	9	71	2.1
2012	52	14	49	2.2
2013	51	0	65	2.5
2014	51	0	56	2.7
Total/Mean	1,744	30	70	2.7

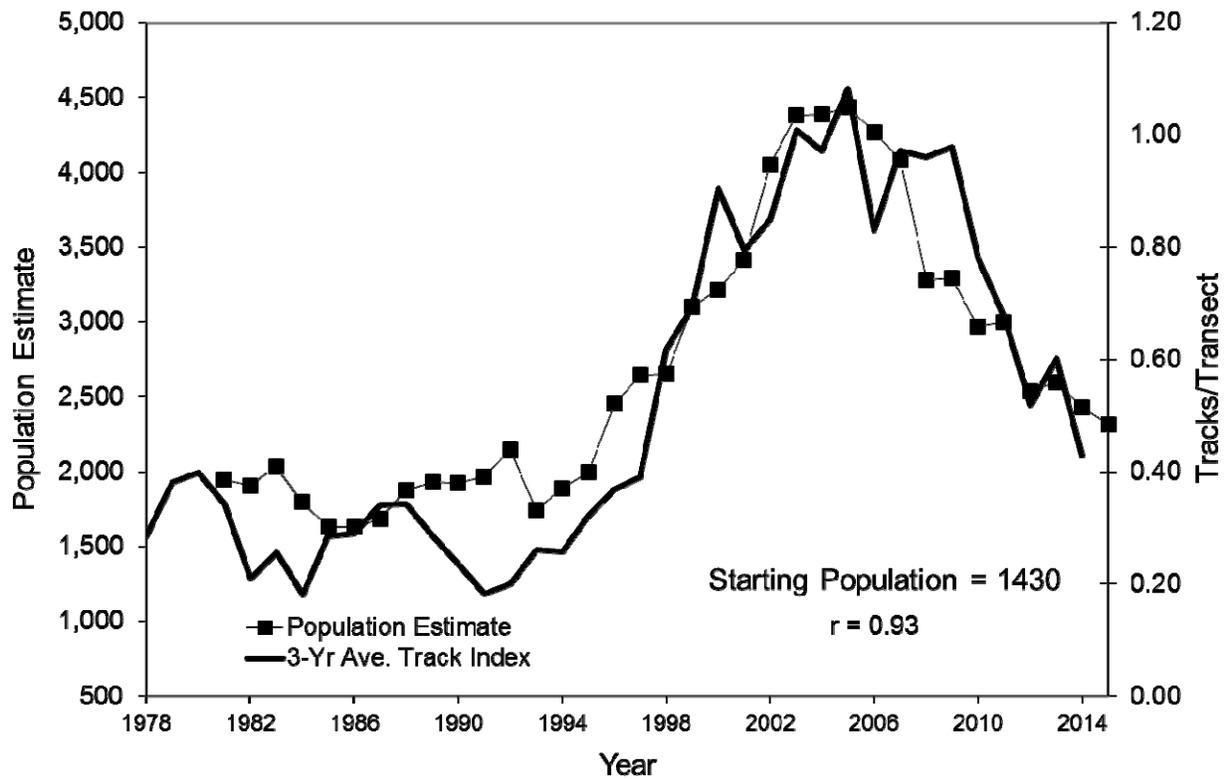


Figure 1. Prehunt bobcat population estimates for northern Wisconsin from the Furbearer Population Model and 3-year mean numbers of bobcat tracks observed per transect in winter track surveys, 1978-2015.