BEAR DIET AND HABITAT IN THE GREAT LAKES REGION, 1988 PROGRESS REPORT

Three hundred thirty-five black bear scats were collected by 140 people across the Great Lakes Region and sent to North Central Forest Experiment Station for analysis in 1988. All except 23 were collected during July through September. The number collected from each county is shown in Figure 1.

Thirty-six observers returned bear food survey forms, providing information on the distribution of major berry species and their productivity in 1988. This survey covered most of the scat collection area as is shown by the shaded portion of Figure 1. Many of the observers noted bear feeding activities in their areas and how it differed in this year of drought.

The data are in the computer, and the computer is programmed to group the data according to any combination of date and location. The sample size for this year was sufficient to analyze by month, by national park or forest (Tables 1-8), and by Bailey's ecoregions (Figure 2 and Table 9). As the sample size grows over the next couple years, we plan to analyze by smaller ecological areas or by any area useful to the cooperating agencies. The objective is to provide information that forest managers can easily use to make informed decisions concerning black bear habitat in the North Central States.

Tables 1-8 show a full listing of the items identified in 187 scats from the 7 national forests and Voyageurs National Park. These data and data for an additional 148 scats from surrounding state lands (Figure 1) were summarized by Bailey's ecoregions (Figure 2), showing only those foods that averaged at least 2% of the scat contents through the collection period (Table 9). This summary shows the importance of mast and berry production to the summer diets of bears in all three ecoregions.

Hazelnuts were very important this year in the boreal forests of Ecoregion 2111, especially in the Superior National Forest and Voyageurs National Park. Cherries were important throughout the scat collection region, especially in the northern hardwoods forests of Ecoregions 2112 and 2113 where black cherries are common.

Ant pupae and the most preferred species of green vegetation are highly digestible and are now known to be underrepresented in scats. This was learned in a companion study in which scats were analyzed from wild bears whose intake was closely observed. Poorly digestible vegetation was disproportionately represented in scats while the more digestible succulents were sometimes missed. For this reason, when identifying vegetation in scats, we recorded as unknowns the vegetative portions of scats that were too highly digested for identification rather than assuming that these were more digested forms of the identified vegetation. The ant portion of the diet is usually represented in scats by the few exoskeletons of ants that are ingested while eating ant pupae. The ant pupae are usually completely digested. Table 9 indicates that ants and vegetation (including grass) were important foods across the Great

Lakes Region. Ants are usually obtained from down and dead woody material rather than from anthills.

The value of this study will increase as sample sizes grow over the years. Larger sample sizes will provide more precise information on smaller ecological areas. We will identify the cover types that produce the major bear foods in each ecological area and the management practices that produce those cover types. Where forests are as extensive as they are in the Upper Great Lakes Region, food has been found to be the major factor influencing habitat quality. Where habitat is shrinking, it is even more important to maintain or increase habitat quality. Results of the continued survey will help refine the Black Bear Habitat Suitability Index Model for use in each forest and ecoregion. This will enable forest managers to more easily make informed decisions regarding bear habitat.

What is needed next is to continue the scat collections and analyses for another 2 years or so, covering the entire period of bear activity from spring to fall. As the data accumulate, we will work with plant community experts such as Dr. John Kotar of t he University of Wisconsin, Don Prettyman of the University of Minnesota, and others to wring as much out of the data as possible. These people will be especially helpful in identifying forest management practices that produce favorable cover types. We will put the information into a form easily useable by managers.

People who sent in scats and/or berry surveys are listed in the Appendix, showing where they obtained their scats. Again, many thanks to these people, their agencies, and their supervisors.

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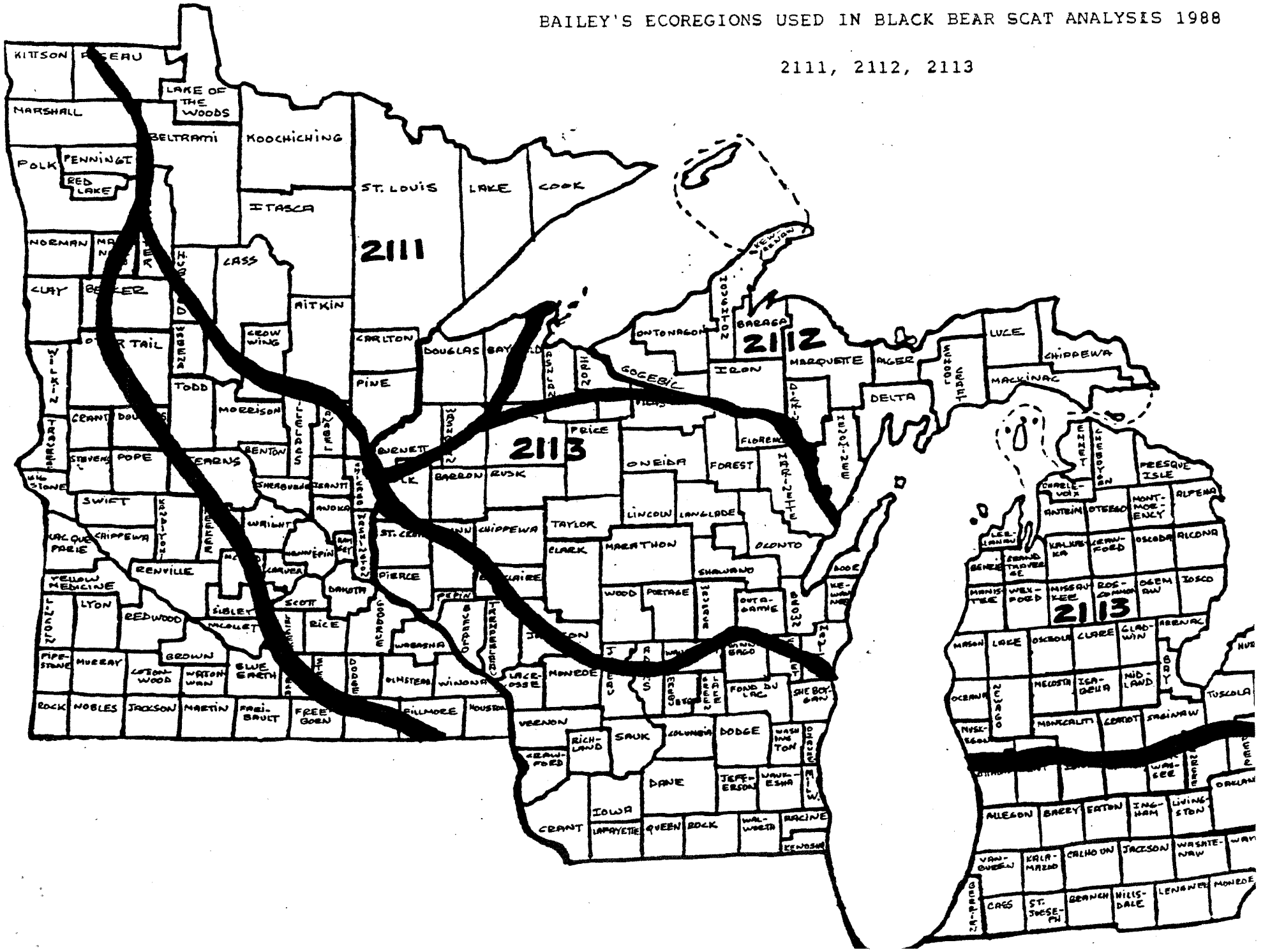
BAILEY'S ECOREGIONS USED IN BLACK BEAR SCAT ANALYSIS 1988

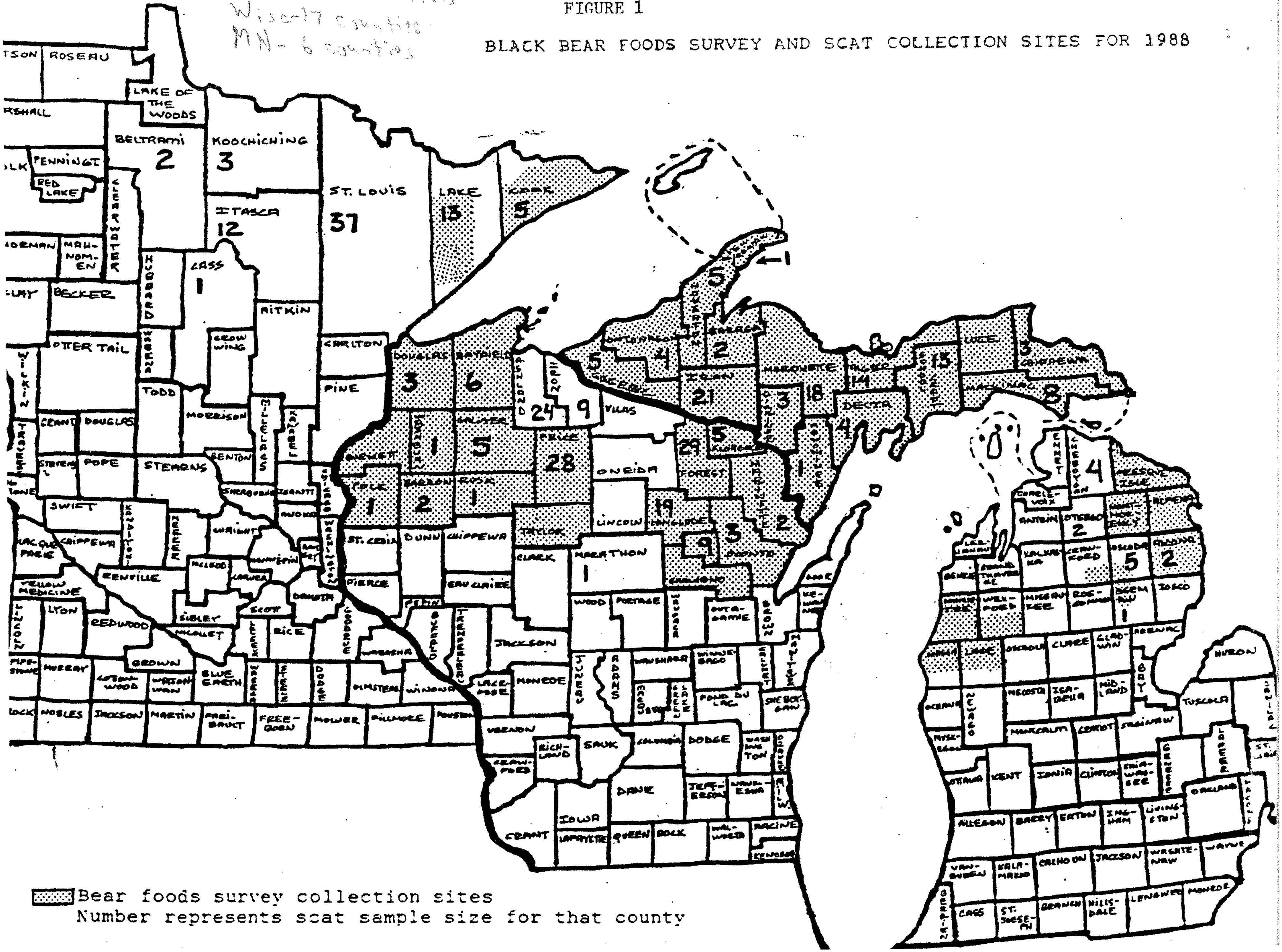
2111, 2112, 2113



Mich MP - 14 Counties
Wisc-17 counties
MN - 6 counties

FIGURE 1

BLACK BEAR FOODS SURVEY AND SCAT COLLECTION SITES FOR 1988



Bear foods survey collection sites
Number represents scat sample size for that county

Table 1.

BLACK BEAR SCAT CONTENTS. CHEQUAMEGON NATIONAL FOREST. 1988

	MAY (10)*	JUNE (0)	JULY (8)	AUGUST (18)	SEPTEMBER (2)
ANTS	1.19		13.10	13.05	0
ANT PUPAE	0		0	.33	0
APPLE SPP. FRUIT STEMS	0		0	0	1.00
APPLE SPP. SEEDS	0		0	.17	1.50
ASPEN SPP. LEAVES	.30		0	0	0
BEAR HAIR	.20		0	T	0
BEES	0		T	1.33	0
BIRCH SPP. SEEDS	0		T	0	0
BLUEBERRY SPP. BERRIES	0		2.91	0	0
BONE FRAGMENTS	0		T	0	1.00
CEDAR	0		0	T	0
CHERRY SPP. FRUIT STEMS	0		0	.33	0
CHERRY SPP. LEAVES	0		0	.17	0
CHERRY SPP. SEEDS	0		3.97	13.22	47.50
CORN KERNALS	0		0	0	0
FASCICLE CASES	0		T	0	1.50
GRASS SPP.	46.48		14.97	31.50	0
GRAVEL	0		0	7.28	0
INSECT LARVAE	1.09		1.59	.06	0
INSECT LEGS	0		T	0	0
INSECT PUPAE	.20		6.35	1.22	0
INTERRUPTED FERN LEAVES	.69		0	0	0
LICHENS	T		0	0	0
MAPLE SPP. LEAVES	0		.66	T	0
MAPLE SPP. SAMARAS	0		0	.18	0
MOSS	0		T	0	0
PAPER	.10		.10	0	0
PLASTIC	0		0	T	0
RED MAPLE LEAVES	0		2.26	5.11	0
RED SQUIRREL HAIR AND SKIN	0		5.36	0	0
RED SQUIRREL TOE NAILS	0		T	0	0
ROCKS	0		T	.44	0
RUBUS SPP. LEAVES	0		T	0	0
RUBUS SPP. SEEDS	0		4.64	8.11	6.50
STYROFOAM	0		0	T	0
THOROUGHLY DIGESTED PLANT MAT.	42.52		0	4.44	0
UNKNOWN	.40		0	4.11	0
UNKNOWN ANIMAL HAIR	1.29		0	1.00	41.00
UNKNOWN BARK	0		1.06	0	0
UNKNOWN BRISTLY FRUIT	0		0	.06	0
UNKNOWN BUD CASES	.89		.79	T	0
UNKNOWN CATKINS	1.09		0	0	0
UNKNOWN FERN LEAVES	T		0	0	0
UNKNOWN FRUIT SKINS	0		0	.55	0
UNKNOWN LEAVES	2.67		19.20	.33	0
UNKNOWN NUT SHELLS	0		0	T	0
UNKNOWN PINE NEEDLES	T		0	0	0
UNKNOWN SEEDS	T		.40	T	0
UNKNOWN STEMS	.79		9.94	.77	T
WILD CALLA LEAVES	.10		4.77	0	0
WILD SARSAPARILLA SEEDS	0		.26	5.28	0
WILD SARSAPARILLA BERRIES	0		5.96	0	0
WOODY DEBRIS	0		1.85	.44	0
	100.00		100.08	99.50	100.0

* Sample size

T Found only in trace (<1%) amounts that month.

Table 2.

BLACK BEAR SCAT CONTENTS, NICOLET NATIONAL FOREST, 1988

	JULY (8)*	AUGUST (20)	SEPTEMBER (10)
ANTS	7.64	3.94	0
ANT PUPAE	8.50	0	0
APPLE SPP. SEEDS	0	0	.20
ASPEN SPP. LEAVES	2.26	.10	.30
BASSWOOD LEAVES	0	T	0
BEAKED HAZELNUT SHELLS	0	3.65	2.72
BEAR HAIR	0	T	0
BEES	0	5.18	.40
BEETLES	0	T	0
BONE FRAGMENTS	T	.10	0
CEDAR	0	0	.40
CHERRY SPP. FRUIT	0	1.12	0
CHERRY SPP. LEAVES	2.14	.60	1.30
CHERRY SPP. SEEDS	15.44	34.40	68.60
CHERRY SPP. STEMS	0	T	0
CLOVER SPP. LEAVES	0	T	.30
CORN KERNALS	0	0	T
GRASS SPP	6.37	17.20	6.20
GRASS SPP. SEEDS	0	T	0
HAWKWEED SPP. LEAVES	0	.20	0
INSECTS	2.83	T	.40
INSECT LARVAE	.85	.25	0
INSECT WINGS	0	.05	0
JUNEBERRY SPP. SEEDS	.28	0	0
LABRADOR TEA LEAVES	.28	T	0
LEATHERLEAF LEAVES	0	.99	0
MAIANTHEMUM CANADENSE LEAVES	.71	0	T
MAPLE SPP. LEAVES	0	.30	.70
MAPLE SPP. SAMARAS	.71	.25	.40
PAPER	1.70	.10	0
QUAKING ASPEN LEAVES	0	.60	0
RED MAPLE LEAVES	.42	0	0
RED PINE BARK	.70	0	0
RED PINE NEEDLES	1.42	0	0
RHAMNUS SPP. FRUIT	0	.05	0
RUBUS SPP. FRUIT	0	1.22	0
RUBUS SPP. LEAVES	0	T	0
RUBUS SPP. SEEDS	0	9.20	5.60
SPRUCE SPP. NEEDLES	0	.10	0
STRAWBERRY SPP. LEAVES	0	0	T
SUGAR MAPLE LEAVES	.42	0	0
UNKNOWN	10.60	1.62	T
UNKNOWN ANIMAL HAIR	2.13	4.75	8.00
UNKNOWN BARK	0	.20	0
UNKNOWN BRISTLY FRUIT	0	T	0
UNKNOWN BUD CASES	0	T	0
UNKNOWN FERN LEAVES	5.10	0	0
UNKNOWN FRUIT SKINS	8.36	T	0
UNKNOWN LEAVES	.99	4.19	3.00
UNKOWN PINE CONES	T	.25	0
UNKNOWN SEEDS	0	.40	.90
UNKNOWN STEMS	.70	7.00	0
UNKNOWN TWIGS	0	.34	.30
WILD CALLA LEAVES	0	.59	0
WILD LETTUCE LEAVES	6.09	0	0
WILD SARSAPARILLA SEEDS	11.33	.54	0
WOODY DEBRIS	1.98	.59	0
	99.95	100.07	99.72

* Sample size

T Found only in trace (<1%) amounts that month.

Table 3.

BLACK BEAR SCAT CONTENTS, HIAWATHA NATIONAL FOREST 1988

	JULY (12)*	AUGUST (7)	SEPTEMBER (9)	OCTOBER (1)
ANTS	5.13	11.44	0	0
ANT PUPAE CASES	.67	0	0	0
APPLE SPP. FRUIT PIECES	0	0	5.55	0
APPLE SPP. FRUIT STEMS	0	0	.22	0
APPLE SPP. SEEDS	0	0	1.89	0
ASPEN SPP. LEAVES	0	5.71	.55	0
ARCTOSTAPHYLOS SPP. SEEDS	0	11.14	0	0
BEAKED HAZELNUT LEAVES	0	0	.11	0
BEECH LEAVES	0	0	.22	0
BEES	.84	0	0	0
BEETLES	0	0	T	0
BIRCH SPP. SEEDS	T	0	0	0
BLUEBERRY SPP. LEAVES	T	0	0	0
BONE FRAGMENTS	0	0	.55	0
CHERRY SPP. FRUIT SKINS	0	3.43	0	0
CHERRY SPP. FRUIT STEMS	0	0	3.11	0
CHERRY SPP. LEAVES	.17	.71	.78	6.00
CHERRY SPP. SEEDS	0	26.70	76.40	82.00
CORN KERNALS	0	0	.33	0
FAWN BONES	1.01	0	0	0
FAWN HAIR	5.05	0	0	0
FEATHERS	0	0	.11	0
FISH VERTEBRA	0	0	T	0
GRASS SPP.	14.14	1.57	2.22	0
GRAVEL	.25	0	0	0
HORNETS	.93	0	0	0
HORNET WINGS	.25	0	0	0
INSECT LARVAE	0	0	0	0
INSECT WINGS	T	T	0	0
JUNEBERRY SPP. BERRIES	.84	0	0	0
JUNEBERRY SPP. LEAVES	2.78	0	0	0
JUNEBERRY SPP. SEEDS	40.97	0	0	0
JUNEBERRY SPP. STEMS	7.57	0	0	0
LEATHERLEAF LEAVES	T	0	0	0
LICHENS	T	0	0	0
MAPLE SPP. LEAVES	0	5.71	0	0
MAPLE SPP. SAMARAS	.42	0	0	0
PEAVINE SPP. LEAVES	0	.30	0	0
QUAKING ASPEN LEAVES	4.21	0	0	0
RED MAPLE LEAVES	3.79	0	0	0
ROCKS	.58	0	0	0
RUBUS SPP. SEEDS	0	.86	0	0
THOROUGHLY DIGESTED PLANT MAT.	0	15.86	3.33	0
UNKNOWN	T	0	0	0
UNKNOWN ANIMAL HAIR	3.20	0	2.33	0
UNKNOWN BUD CASES	0	T	0	0
UNKNOWN FERN LEAVES	T	T	0	0
UNKNOWN FRUIT SKINS	T	0	0	0
UNKNOWN LEAVES	.84	2.71	.88	0
UNKNOWN PINE NEEDLES	0	.71	0	0
UNKNOWN SEEDS	.33	.14	0	0
UNKNOWN STEMS	1.77	12.85	1.33	12.00
WILD CALLA LEAVES	2.95	0	0	0
WILD SARSAPARILLA SEEDS	.84	0	0	0
WOODY DEBRIS	.42	.14	0	0
	99.95	99.98	99.91	100.00

* Sample size

T Found only in trace (<1%) amounts that month.

Table 4.

BLACK BEAR SCAT CONTENTS, VOYAGEURS NATIONAL PARK, 1988

	JULY (3)*	AUGUST (6)	SEPTEMBER (8)	OCTOBER (1)
ANTS	8.40	1.32	9.10	0
ASPEN SPP. LEAVES	0	.33	14.22	0
ASTER MACROPHYLLUM LEAVES	0	T	0	0
BEAKED HAZELNUT LEAVES	0	T	0	0
BEAKED HAZELNUT SHELLS	0	2.16	32.32	98.00
BEAR HAIR	0	T	.25	0
BIRCH BARK	0	4.97	0	0
BLUEBERRY SPP. BERRIES	6.06	5.64	.38	0
BLUEBERRY SPP. LEAVES	2.35	9.12	1.25	0
BLUEBERRY SPP. SEEDS	0	1.16	0	0
BLUEBERRY SPP. STEMS	0	1.32	0	0
BUNCHBERRIES	15.16	0	0	0
BUNCHBERRY LEAVES	0	0	T	0
BUNCHBERRY SEEDS	0	6.29	.13	0
CHERRY SPP. SEEDS	0	11.11	0	0
DOGWOOD SPP. SEEDS	2.70	0	0	0
DRAGONFLY WING	0	T	0	0
GRASS SPP.	5.05	10.94	13.85	1.00
HAWTHORN SPP. SEEDS	0	0	2.49	0
INSECTS	T	0	0	0
INTERRUPTED FERN LEAVES	T	.17	0	0
JACK PINE NEEDLES	0	3.98	0	0
JUNEBERRY SPP. SEEDS	5.05	0	0	0
MOSS	.68	0	0	0
RHAMNUS SPP. SEEDS	0	1.66	0	0
RUBUS SPP. SEEDS	3.36	1.66	0	0
SPHAGNUM MOSS	0	4.31	0	0
STRAWBERRY SPP. LEAVES	0	.17	0	0
STRAWBERRY SPP. SEEDS	0	1.16	0	0
THOROUGHLY DIGESTED PLANT MAT.	30.31	9.12	9.36	0
UNKNOWN BUDS	T	0	0	0
UNKNOWN FERN LEAVES	.68	0	.25	0
UNKNOWN LEAVES	0	.33	1.25	1.00
UNKNOWN NUT SHELLS	0	16.60	0	0
UNKNOWN NUT MEAT	0	0	3.12	0
UNKNOWN SPROUTS	0	T	0	0
UNKNOWN STEMS	0	0	1.00	0
UNKNOWN TWIGS	0	0	T	0
VIBURNUM RAFINESQUIANUM SEEDS	0	1.66	0	0
VIBURNUM SPP. SEEDS	0	.17	7.11	0
VIBURNUM SPP. STEMS	0	0	2.87	0
WILD SARSAPARILLA SEEDS	18.51	3.48	.88	0
WILD SARSAPARILLA UMBEL	T	0	0	0
WOODY DEBRIS	1.69	1.16	0	0
	100.00	99.99	99.83	100.00

* Sample size.
T Found only in trace (<1%) amounts that month.

Table 5.

BLACK BEAR SCAT CONTENTS, HURON-MANISTEE NATIONAL FOREST 1988

	JULY (1)*	AUGUST (0)	SEPTEMBER (6)
ANTS	0		1.86
BEES	0		8.84
BIRCH BARK	0		.35
BONE FRAGMENTS	T		0
CEDAR	0		1.83
CEDAR CONES	0		2.70
CORN KERNALS	0		9.16
GRASS SPP.	25.00		5.75
INSECTS	0		T
INSECT LARVAE	0		.36
MAPLE SPP. LEAVES	0		.36
QUAKING ASPEN LEAVES	0		.72
THOROUGHLY DIGESTED PLANT MAT.	0		39.89
UNKNOWN	0		8.08
UNKNOWN ANIMAL HAIR	75.00		.72
UNKNOWN CONE SCALES	0		T
UNKNOWN LEAVES	0		1.08
UNKNOWN NUT MEAT	0		3.23
UNKNOWN SEEDS	0		6.47
UNKNOWN STEMS	0		7.90
UNKNOWN TWIGS	0		.72
	100.00		99.99

* Sample size
T Found only in trace (<1%) amounts that month.

Table 6.

BLACK BEAR SCAT CONTENTS, OTTAWA NATIONAL FOREST, 1988

	JULY (3)*	AUGUST (8)	SEPTEMBER (3)
APPLE SPP. FRUIT PIECES	0	0	28.30
APPLE SPP. FRUIT STEMS	0	0	1.67
APPLE SPP. SEEDS	0	0	3.32
ASPEN SPP. LEAVES	0	.25	0
BEAR HAIR	0	T	0
BEES	0	2.50	0
BINDWEED	T	0	0
BONE FRAGMENTS	0	T	0
CHERRY SPP. FRUIT	0	1.87	0
CHERRY SPP. FRUIT SKINS	0	4.74	0
CHERRY SPP. FRUIT STEMS	0	.25	0
CHERRY SPP. LEAVES	0	3.62	0
CHERRY SPP. SEEDS	0	65.50	56.00
GRASS SPP.	0	7.24	0
INSECT PUPAE	0	0	2.00
INSECT WINGS	0	.12	0
JACK PINE NEEDLES	0	.75	0
MAPLE SPP. LEAVES	0	0	2.67
RED MAPLE LEAVES	.67	8.12	0
RUBUS SPP. SEEDS	0	0	6.00
SUGAR MAPLE LEAVES	1.26	0	0
THOROUGHLY DIGESTED PLANT MAT.	30.00	0	0
UNKNOWN	31.00	0	0
UNKNOWN BARK	6.00	0	0
UNKNOWN BUD CASES	T	0	0
UNKNOWN CATKINS	22.70	.12	0
UNKNOWN FRUIT PIECES	0	1.25	0
UNKNOWN LEAVES	T	1.12	0
UNKNOWN SEEDS	8.33	1.37	0
UNKNOWN STEMS	0	.63	0
WILD SARSAPARILLA SEEDS	0	.25	0
WOODY DEBRIS	0	.12	0
	99.96	99.82	99.96

Table 7.

BLACK BEAR SCAT CONTENTS, SUPERIOR NATIONAL FOREST, 1988

	MAY (11)*	JUNE (0)	JULY (3)	AUGUST (11)	SEPTEMBER (4)
ANIMAL SKIN	0		0	2.75	0
ANTS	7.27		4.33	.74	0
ASPEN SPP. LEAVES	3.63		0	0	0
ASPEN SPP. TWIGS	.18		0	0	0
BEAKED HAZELNUT HUSK	0		0	0	.75
BEAKED HAZELNUT LEAVES	T		0	0	3.00
BEAKED HAZELNUT MEAT	0		0	.74	23.50
BEAKED HAZELNUT SHELLS	0		T	23.31	60.50
BEES	0		1.00	1.46	0
BEETLES	T		0	0	0
BLUEBERRY SPP. BERRIES	0		13.33	.27	0
BLUEBERRY SPP. LEAVES	0		4.00	1.65	0
BLUEBERRY SPP. SEEDS	0		1.33	3.30	0
BONE FRAGMENTS	0		0	1.37	0
CANADA PLUM SEEDS	0		0	T	0
CHERRY SPP. FRUIT STEMS	0		0	.18	0
CHERRY SPP. LEAVES	0		0	.27	0
CHERRY SPP. SEEDS	0		T	20.99	0
CLOVER SPP. LEAVES	12.73		0	0	0
FEATHERS	0		2.00	4.04	0
GRASS SPP.	37.72		6.33	2.20	0
GRAVEL	T		0	0	0
HAWTHORN SPP. SEEDS	0		0	0	10.25
INSECT LARVAE	0		0	.36	0
INSECT PUPAE	0		0	.09	0
JUNEBERRY SPP. FRUIT SKINS	0		13.33	0	0
JUNEBERRY SPP. LEAVES	0		1.70	3.67	0
JUNEBERRY SPP. SEEDS	0		30.38	1.84	0
LABRADOR TEA LEAVES	0		0	T	0
LEATHERLEAF LEAVES	0		0	.09	0
LICHENS	0		0	T	0
PEAVINE SPP. LEAVES	0		0	0	T
QUAKING ASPEN LEAVES	26.50		0	0	0
ROCKS	0		0	.83	0
RUBUS SPP. LEAVES	0		0	.18	0
RUBUS SPP. SEEDS	0		3.33	.92	0
STRAWBERRY SPP. LEAVES	1.18		0	0	0
STRAWBERRY SPP. SEEDS	0		0	.27	0
THOROUGHLY DIGESTED PLANT MAT.	0		0	15.96	0
UNKNOWN	0		0	4.68	0
UNKNOWN BUD CASES	.91		0	0	0
UNKNOWN FRUIT SKINS	0		0	1.75	0
UNKNOWN LEAVES	.80		0	0	0
UNKNOWN SEEDS	0		1.70	.09	0
UNKNOWN SPROUTS	0		0	T	0
UNKNOWN STEMS	8.73		0	.65	0
WILD SARSAPARILLA SEEDS	0		17.30	5.32	0
WOODY DEBRIS	.45		0	0	2.00
	100.00		100.01	99.97	100.00

* Sample size

T Found only in trace (<1%) amounts that month.

Table 8.

BLACK BEAR SCAT CONTENTS, CHIPPEWA NATIONAL FOREST 1988

	JULY (3)*	AUGUST (9)	SEPTEMBER (2)
ANTS	25.23	1.89	0
ASPEN SPP. LEAVES	0	T	0
BEES	.99	0	0
BEAKED HAZELNUT MEAT	0	8.33	0
BEAKED HAZELNUT SHELLS	0	12.11	0
CHERRY SPP. FRUIT SKINS	2.76	0	0
CHERRY SPP. FRUIT STEMS	0	T	0
CHERRY SPP. LEAVES	10.74	1.00	0
CHERRY SPP. SEEDS	24.27	34.90	0
GRASS SPP.	1.76	9.00	.50
GRAVEL	0	.11	0
INSECT LARVAE	0	.33	.50
JUNEBERRY SPP. BERRIES	13.29	0	0
JUNEBERRY SPP. LEAVES	3.32	0	0
MAIANTHEMUM CANADENSE LEAVES	1.33	0	0
OATS	0	5.00	0
PEAVINE SPP. LEAVES	0	.78	0
RUBUS SPP. SEEDS	0	2.78	0
THOROUGHLY DIGESTED PLANT MAT.	0	4.00	0
UNKNOWN	0	10.33	48.00
UNKNOWN ANIMAL HAIR	0	.33	0
UNKNOWN BRISTLY FRUIT	T	0	0
UNKNOWN BUD CASES	.67	T	0
UNKNOWN CATKINS	0	.44	0
UNKNOWN LEAVES	.99	0	0
UNKNOWN NUT MEAT	0	0	5.00
UNKNOWN NUT SHELLS	0	0	46.00
UNKNOWN SEEDS	0	1.33	0
UNKNOWN SPROUTS	0	.22	0
UNKNOWN STEMS	.33	.55	0
WILD CALLA LEAVES	0	5.55	0
WILD SARSAPARILLA SEEDS	13.29	0	0
WOODY DEBRIS	.99	1.00	0
	99.96	99.98	100.00

* Sample size
T Found only in trace (<1%) amounts that month.

Table 9.

SCAT CONTENT ANALYSIS FOR BAILEY'S ECOREGIONS: 2111, 2112 AND 2113

	2111 (71)*	2112 (124)	2113 (140)
ANTS	5	4	5
APPLE SPP. FRUIT PIECES	2	4	2
APPLE SPP. SEEDS	3	2	
ASPEN SPP. LEAVES	2		
BEAKED HAZELNUT MEAT	3		
BEAKED HAZELNUT SHELLS	16	3	2
BEES		2	
BLUEBERRY SPP. LEAVES	2		
CHERRY SPP. FRUIT STEMS		2	
CHERRY SPP. SEEDS	12	33	20
CLOVER SPP. LEAVES	3		
CORN KERNALS	2	2	6
GRASS SPP.	11	7	20
QUAKING ASPEN LEAVES	5		
QUERCUS SPP. ACORN SHELLS			3
RED MAPLE LEAVES		2	
RHAMNUS SPP. SEEDS		2	
RUBUS SPP. SEEDS	2	3	5
SERVICEBERRY SPP. SEEDS	2	7	
SERVICEBERRY SPP. STEMS		2	
THOROUGHLY DIGESTED PLANT MAT.	6	5	8
UNKNOWN	3	2	2
UNKNOWN ANIMAL HAIR		2	4
UNKNOWN LEAVES			3
UNKNOWN NUT MEAT	2		
UNKNOWN NUT SHELLS	5		
UNKNOWN SEEDS		2	3
UNKNOWN STEMS	3	3	3
WILD CALLA LEAVES	2		2
WILD SARSAPARILLA SEEDS	5		3
	96	89	91

* Sample size

APPENDIX

SCAT AND BEAR FOOD SURVEY CONTRIBUTORS

	# OF SCATS COLLECTED	# OF SURVEYS SUBMITTED
VOYAGEURS NATIONAL PARK		
Bill Route	10	
Julie Sotsky	1	
Karin Kozie	6	
Peter Gogan et al.	1	
	18	0
SENEY NATIONAL WILDLIFE REFUGE		
Fred Fouse	1	
Andy Beechnau et al.	6	
John Hillard et al.	1	
	8	0
CHIPPEWA NATIONAL FOREST		
Barry Paulson	2	
Norm Peterson et al.	3	
Norm Matson	4	
Bart Tobin et al.	2	
Tim Turensky et al.	1	
Bob White	1	
Tom Suddendorf	1	
	14	0
HURON - MANISTEE NATIONAL FOREST		
C.Morey	3	
Damien Lunning	3	
Dennis Hall et al.	1	
Phil Huber	0	1
D. Munson	0	1
Chris Schumacher	0	1
Steve Sjorgra	0	1
Tim Sapak	0	1
	7	5
CHEQUAMEGON NATIONAL FOREST		
Dean Granholm	1	
Jim Sarrow	1	
John Straetz	1	
Leonard Stein	2	
John C. Bisbee	1	
G. Nelson et al.	1	
P. Ostrum	2	
Peter Hintz	2	
Mike Bablick	1	
Greg Kessler	19	
Kurt Schierenbeck	1	
Schultz	1	
Jeffery	2	
Mike Baker	1	
Dan Groebner	2	
E.C.P.	1	
	39	0
MENOMINEE INDIAN RESERVATION		
Adrian Miller Sr.	9	
	9	0

	# OF SCATS COLLECTED	# OF SURVEYS SUBMITTED
NICOLET NATIONAL FOREST		
John Lester	6	1
Stinski et al.	1	
Mike Peczynski	5	1
Joe Butsick	2	
Tom Matthiae	2	
Bill Reardon	1	
J. Madjewski	1	
James Ashbrenner et al.	4	
Joe Kastenholz	2	
Terry Retzlaff	1	
Don Vassar	1	
Larry Vassar	1	
G. Mayer et al.	2	
Jim Grant et al.	1	
C. Thomson et al.	1	
Mike Bancroft	1	
Jim Robl et al.	1	
Lori Erbs	1	
C. Osborne	1	
Linda Elko	1	
Bob Ellingson	0	1
Tim Anderson	0	1
Arnie Treml	0	1
Gary Zimmer	0	1
Wildlife crew et al.	2	
	38	6
HIAWATHA NATIONAL FOREST		
Kevin Doran	4	
Joe Carrick	2	
J. Bruce et al.	4	
G. Reeves	2	
Dennis Neitzke	5	
Cecil Ames	3	
Jim Marks	1	
Fred Fouse	3	
Tom Kurtz	2	
C. Dubovsky	1	
Donald Elsing	1	
	28	0
SUPERIOR NATIONAL FOREST		
Karin Kozie	2	
C. Stock	2	
John Wolf	5	
Todd Johnson	1	
Wayne Russ	1	
Brian Henry	1	
Chuck Mowitt	1	
Doris L. Gerdes	2	
Tim Rathje	1	
H. Sobiek	1	
Greg Wilker	8	1
Charlie Cowden	1	1
Lynn Rogers	3	1
	29	3
OTTAWA NATIONAL FOREST		
Paul Busch	5	
David Franzen	3	
Y. Inguanzo	1	
A.M. Saterstad	1	
R. Evans	1	
T. Johnson	1	
Frank Patrolero	2	
	14	0

	# OF SCATS COLLECTED	# OF SURVEYS SUBMITTED
WISCONSIN STATE LANDS		
Ed Slaminski	2	1
Steven Olson	6	
Richard Smith	3	1
James Ashbrenner et al.	7	
Colleen Gardner	4	
Jeff Wilson	12	
M. Winski	3	
Mike Bartz	1	
Roger Admundson	1	1
Jim Vokelek	2	
Sam Moore	6	
Ken Kolar	1	
Gary Kadlek	1	
Dunsmore et al.	1	
Jim Riemer	1	
Harold Schmude	1	
Fred Strand	2	1
Greg Kessler	13	
Joe Follis	1	
Kevin Morgan	1	1
Carl McIlguham	3	1
Randy McDonough et al.	1	
Jack Nedland	1	
Jerry Kryka	1	
C. Knudsen	1	
Ray Perez	1	1
Greg Stoll	0	1
Paul Koolker	0	1
Pat Savage	0	1
Cliff Wiita	0	1
Adrien Wydeven	0	1
	76	12
MINNESOTA STATE LANDS		
Christine Luek	1	
Karin Kozie	8	
Ed Lindquist	4	
	13	0
MICHIGAN STATE LANDS		
UPPER PENINSULA		
Jerry Mohlman et al.	7	
Doug Wagner	13	
Mike Koss	10	1
John Moon	3	
Phil Rygnaur	1	
Tom Bach	1	
Carl Brousseau	4	
Dan Jennings	1	
Dick Aartila	1	1
Leo Erickson	1	
Robert Aho	3	1
Dan Wilcox	1	
Fred Fouse	1	
A.C. Erno	3	
Jim Hammill	1	1
	50	4
LOWER PENINSULA		
Tom Carlson	0	1
Damien Lunning	1	
Glen Matthews	6	
	7	1

United States Department of Agriculture

Forest Service

North Central Forest Experiment Station
Kawishiwi Field Lab, SR 1, Box 7200
Ely, MN 55731

Reply to 4200, 2600

Date January 11, 1989

To: Forest Supervisors, Lakes States Forests

Re: Bear habitat relationships studies

Enclosed is a progress report on bear habitat work conducted across the Great Lakes Region in 1988. This was made possible by the efforts of 140 field personnel representing all 7 National Forests, 3 State Departments of Natural Resources, 1 National Park, and 1 Indian Reservation. Many thanks to these people and to the agency leaders who direct them.

The objective of this work is to provide information that forest managers can easily use to make informed decisions concerning black bear habitat in the North Central States. The steps toward accomplishing this are straightforward:

1. Analyze scats to identify important foods.

2. Determine the cover types that produce those foods.

3. Determine the forest management practices that produce those cover types.

This is the first widespread effort of this sort, and everyone's cooperation made this first year a success. What is needed now is to continue scat collection and analysis for at least another 2 years so we can average the data over years of good and poor berry crops.

The sample for 1988 was analyzed by national forest and by Bailey's ecoregions. As scat samples and berry surveys accumulate over the next 2 years, we will analyze the data for smaller ecological areas. We will also relate bear diets to bear productivity to assess habitat quality. Finally, we will refine the current "Black bear habitat suitability index model" for use in each national forest and each ecoregion.

A problem is that our operating funds took a massive cut this year, and this program is one that must be ended if new funding cannot be found. Bob Radtke of the Regional Office suggested that we contact the Lakes States Forests to determine how we can cooperate in continuing this project. We need $16,100 (approximately $2,300 per forest) to continue this through the next field season. We would

like to discuss with you opportunities to continue this cooperative project. We feel it will directly benefit each forest in implementing your forest management plans. For example, the results from this year document the importance of mast and berry production, and results of the continued survey can be applied to management prescriptions which benefit bears. For more information, please contact Bob Radtke at (414) 291-3612 or Lynn Rogers at (218) 365-4138.

Sincerely,

Lynn Rogers (for)

Tom Nicholls, Project Leader,
Wildlife Habitat Relationships Research

cc: Bob Radtke, RO
Forest Biologists, Lakes States Forests