2022 SUMMER ROADSIDE SURVEY

PERFORMANCE REPORT
STATEWIDE WILDLIFE RESEARCH AND SURVEYS

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Kansas Department of Wildlife and Parks

Prepared by

Matt Peek

Furbearer Biologist

Jake George
Wildlife Division Director

Rich Schultheis
Wildlife Research Supervisor

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2022 Summer Roadside Survey

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Each year since 1980, conservation officers, district biologists, public lands and parks employees, and other selected Kansas Department of Wildlife and Parks (KDWP) personnel have been asked to participate in the Summer Roadside Survey. The survey takes place between the fourth week of July and the last week of September. Participants are asked to record all furbearers observed (dead or alive) while driving during their regular duties. Observations and mileage are recorded weekly (Appendix 1), and a Roadside Index (the number of animals observed per 1000 miles traveled) is calculated.

From 1980-1985, only raccoon observations were recorded. Additional species were added in 1986, and procedures and participating personnel have remained similar since that time. Data is analyzed for statewide estimates, but to assess regional variation in populations, it is also analyzed by physiographic province. A physiographic province is a geographic region with distinct habitat characteristics. Kansas has 12 physiographic provinces, but these are reduced to 6 for this survey in order to maintain respectable sample sizes in each physiographic province. (Appendix 2).

In 2022, 65 department employees returned usable surveys (Appendix 3). The number of participating KDWP employees since the survey began is provided in Figure 1. Participation by physiographic province is provided in Figure 2. Total miles driven and number of each species observed since 1980 are shown in Table 1. Annual Roadside Indices calculated from this data and their associated trend lines are presented in Figure 3 for the seven furbearer species most commonly observed. Caution should be exercised in drawing conclusions about species with small sample sizes (i.e. - low indices) such as bobcat and red fox. Figure 4 shows a relative comparison of annual Roadside Indices for several groups of furbearers. Again, caution must be used in interpreting this data. This figure is not meant to be a comparison of population levels (susceptibility to roadkill and/or observation may vary by species), rather it is a comparison of the relative change in indices over time.

Mean 2022 Roadside Indices by physiographic province are presented in **Table 2**. Duncan's Multiple Range Test (SAS GLM procedure) was used to compare indices among regions ($\alpha = 0.05$). In 2022, raccoon, opossum, striped skunk, coyote, and badger had enough observations to show statistically significant regional variation. A comparison of annual indices for each of these species by physiographic province is presented in **Figure 5.**

Comments:

The raccoon index has risen substantially since this survey began in 1980, and the highest index on record occurred this season. In the short term, and with consideration of landscape factors and data collected prior to this survey, it is fair to say the raccoon is now more abundant in Kansas than it's ever been in history. The coyote index has also risen sharply since the survey was initiated, but the coyote trajectory is approximately stable over the past 12 years. The bobcat index was in decline from the early 2000's through 2018, but has increased and maintained a

relatively stable level over the past three years. However, the number of bobcats observed is relatively small, causing some uncertainty in the reliability of using this technique alone for monitoring bobcats. The opossum has generally been stable over the survey period, whereas skunk has been in a gradual decline in recent years.

Statistical analysis of results by physiographic provinces allows us to assess where in the state some species are most (or least) abundant. Raccoon and opossum populations are highest in eastern and lowest in western Kansas. Coyote and skunk populations did not statistically differ by region. Badger populations were highest in western and northcentral Kansas.
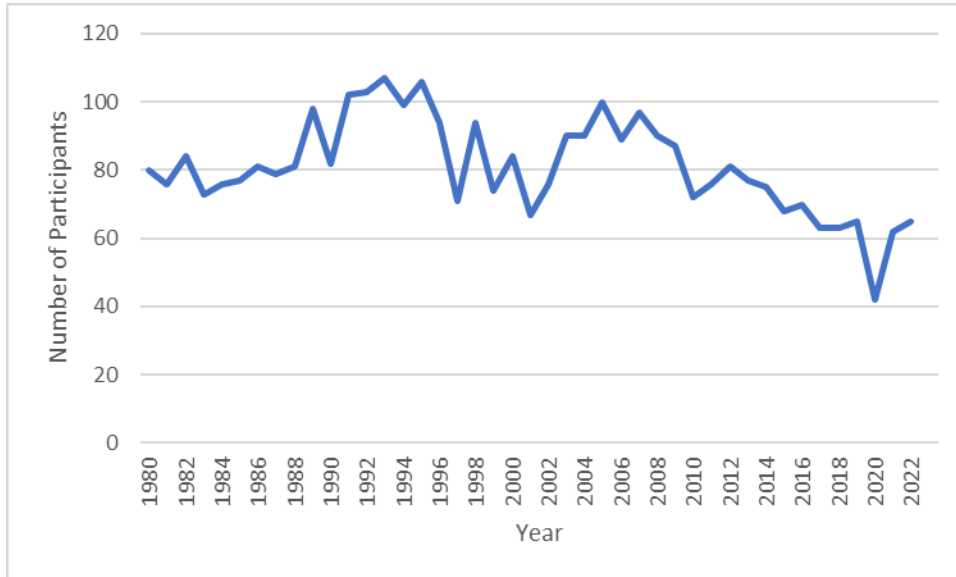

Figure 1. KDWP employee participation in the Roadside Survey since 1980.
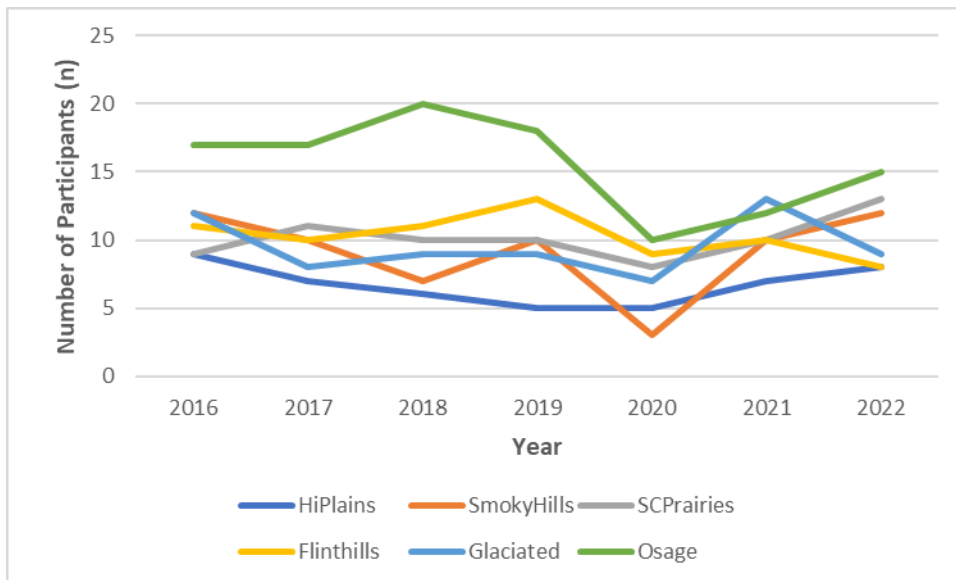

Figure 2. Employee participation in the Roadside Survey by Kansas physiographic province.

Table 1. Roadside Survey participation, mileage, and species observations since 1980.

Year	(n)	Miles	Raccoon	Opossum	Striped Skunk	Coyote	Badger	Bobcat	Red Fox	Gray Fox	Swift Fox	Beaver	Mink	Muskrat	River Otter	Spotted Skunk	Weasel	Armadillo	Woodchuck	Porcupine
1980	80	241752	606																	
1981	76	302309	829																	
1982	84	324956	991																	
1983	73	359309	876																	
1984	76	271213	1018																	
1985	77	293312	971																	
1986	81	313547	1078	1348	1109	146	70	12	14	1	12	0	11		0	1	0	2	1	0
1987	79	305812	1192	1680	1237	149	87	9	19	0	11	1	10		0	1	0	2	2	0
1988	81	301140	989	1264	931	204	78	17	21	0	9	6	10		0	0	0	2	6	0
1989	98	359834	1580	1415	1168	217	67	8	20	0	17	9	3		0	0	0	6	2	2
1990	82	300465	1276	1122	922	128	70	14	34	3	5	5	11		0	1	0	8	3	0
1991	102	352063	1904	2063	1556	246	136	16	44	1	10	3	19		0	0	2	13	4	2
1992	103	377202	1898	1655	1301	235	94	27	52	0	23	6	10		0	0	2	21	12	2
1993	107	374677	2290	2023	1463	241	100	26	49	0	15	18	36		0	0	0	77	10	5
1994	99	353089	2562	1661	1198	245	92	30	55	2	26	8	7		0	0	1	62	7	0
1995	106	390159	3174	1826	1457	287	110	51	62	1	10	9	11		0	3	1	88	8	2
1996	94	384811	2142	1369	1159	195	87	48	81	0	1	3	10	7	0	0	0	134	10	0
1997	71	325653	1965	1726	1405	262	145	49	86	1	2	4	10	5	0	0	0	285	7	3
1998	94	385924	2648	2204	1719	393	187	60	71	6	5	6	14	15	0	0	1	260	18	3
1999	74	300904	2703	2459	1699	330	102	42	64	1	3	3	8	11	0	0	0	242	25	8
2000	84	364139	3288	1974	1820	480	133	85	64	11	1	12	13	24	1	0	0	453	13	2
2001	67	287980	1719	967	1032	284	71	57	42	0	6	4	7	6	1	0	0	257	18	8
2002	76	321335	2511	1383	1449	404	107	51	86	2	6	13	4	6	0	0	0	597	13	15
2003	90	368408	3289	1804	1819	469	167	82	82	1	22	11	6	2	1	0	0	820	12	5
2004	90	353245	2836	1845	1776	439	152	52	144	2	39	0	5	2	0	0	0	860	20	11
2005	100	388468	2615	1985	1439	481	152	55	82	3	11	6	5	1	0	0	1	816	25	9
2006	89	344109	2483	1611	1213	481	110	39	67	2	11	4	11	6	0	0	2	696	20	8
2007	97	413668	3597	2002	1674	438	155	38	118	1	13	6	3	2	0	0	0	622	18	9
2008	90	342780	2799	1619	1550	446	189	43	57	0	8	7	8	1	0	0	1	504	19	4
2009	87	341709	3105	2226	1848	473	149	38	63	1	7	8	7	7	0	0	0	587	15	5
2010	72	263043	2242	1438	1084	319	100	22	52	1	9	2	13	13	0	0	0	391	9	6
2011	76	285394	2849	1565	1223	472	94	35	36	0	14	3	5	13	0	0	0	128	11	6
2012	81	301497	2420	1290	1239	584	107	28	52	3	3	11	5	5	0	0	0	n/a	12	3
2013	77	285402	2049	880	943	422	67	24	34	0	0	5	3	0	0	0	0	n/a	3	1
2014	75	275638	2097	1108	1063	437	76	26	47	0	9	4	4	0	0	0	0	n/a	4	1
2015	68	249345	2214	1324	926	389	85	15	28	0	7	2	6	2	0	0	0	n/a	3	0
2016	70	261086	1645	1063	665	356	104	25	32	0	17	5	2	1	0	0	0	n/a	5	2
2017	63	242586	2248	1245	817	457	98	15	33	0	11	7	15	13	0	0	0	n/a	6	0
2018	63	235015	2157	1058	689	373	73	13	37	0	17	1	7	6	0	0	0	n/a	2	0
2019	65	238415	2510	1100	735	340	60	18	32	0	4	9	18	14	0	0	0	n/a	3	3
2020	42	149444	1311	660	389	274	42	23	42	0	7	3	12	9	0	0	0	n/a	4	1
2021	62	209675	2069	780	493	336	59	29	39	0	7	3	18	8	0	0	0	n/a	1	4
2022	65	238333	2672	1070	754	430	87	32	65	0	16	15	3	9	3	0	0	n/a	5	4
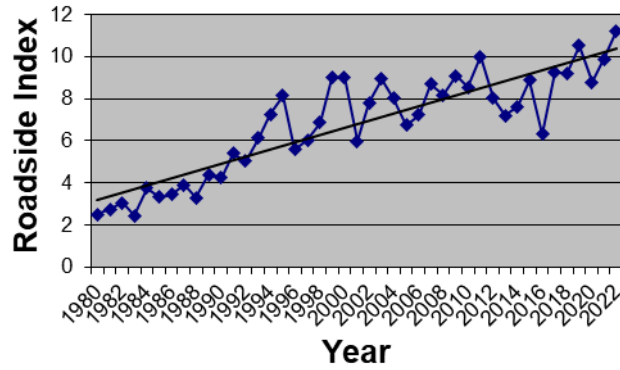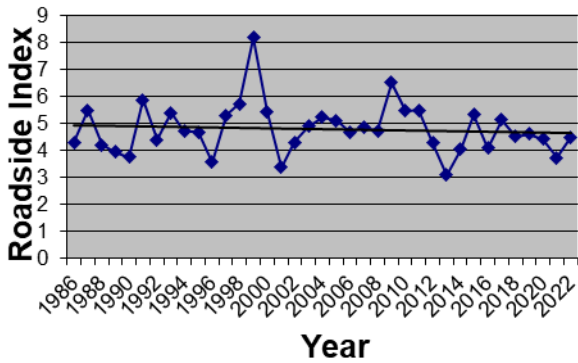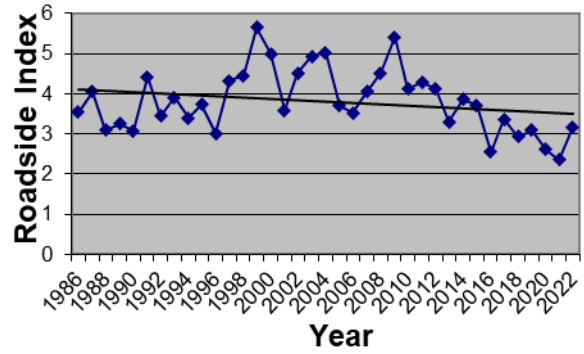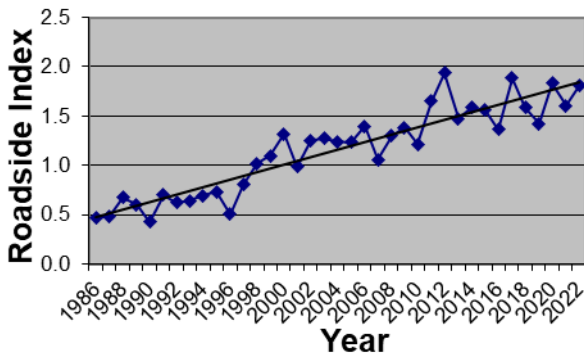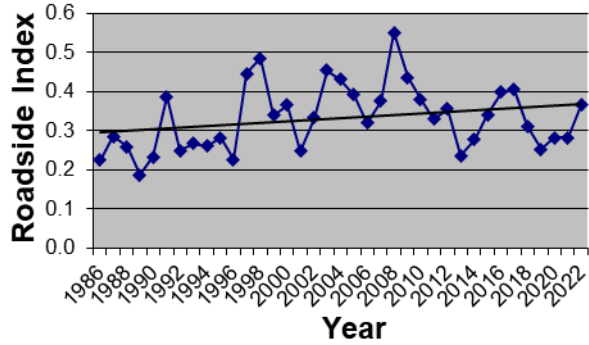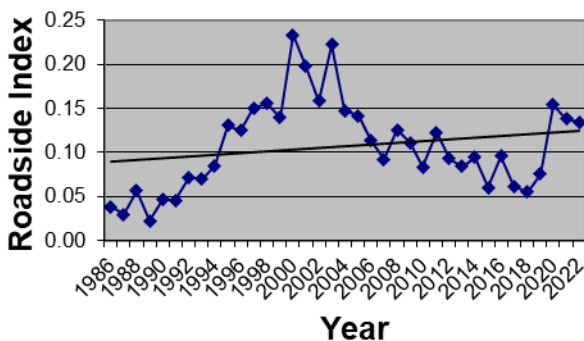
Figures 3a-g. Population trend of various furbearer species based on annual Roadside Indices.

Figure 4a-c. Relative annual Roadside Indices of select furbearer species groups.

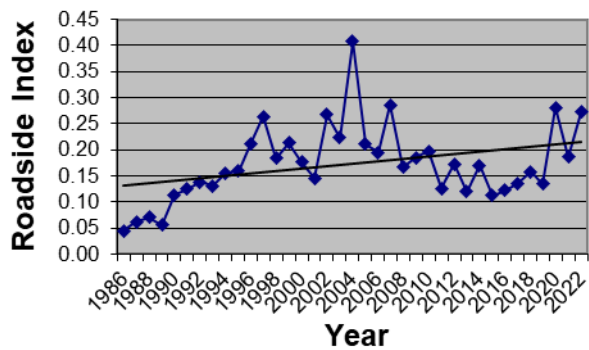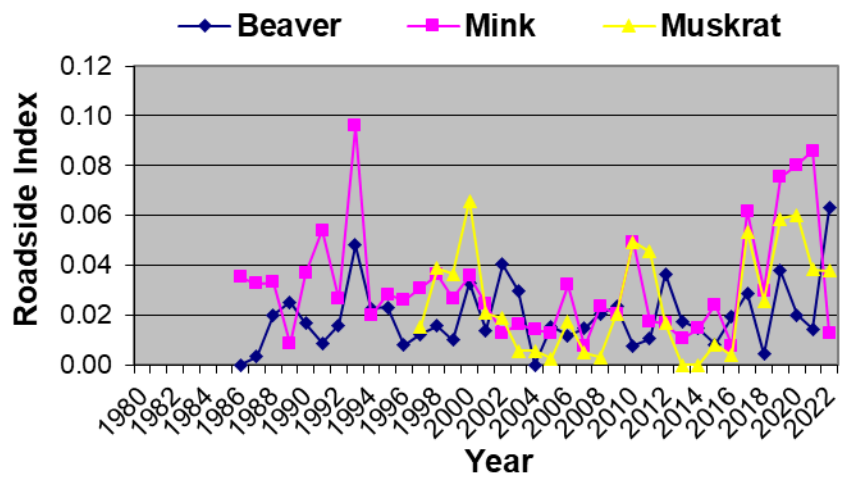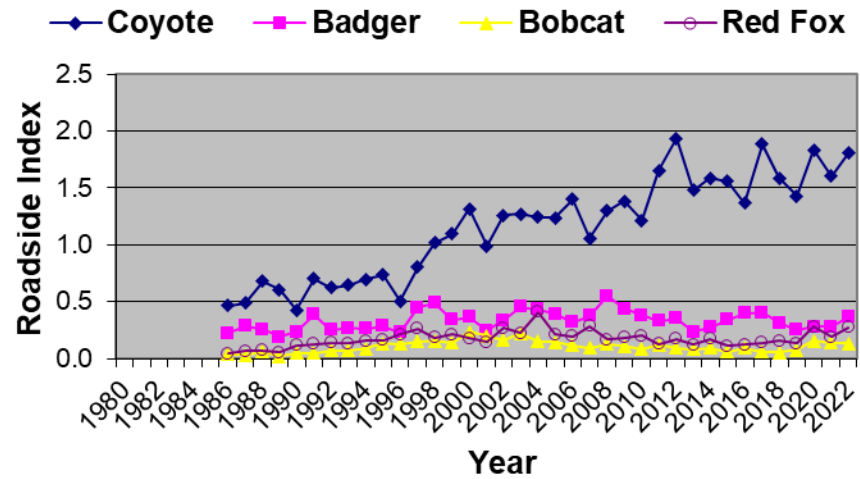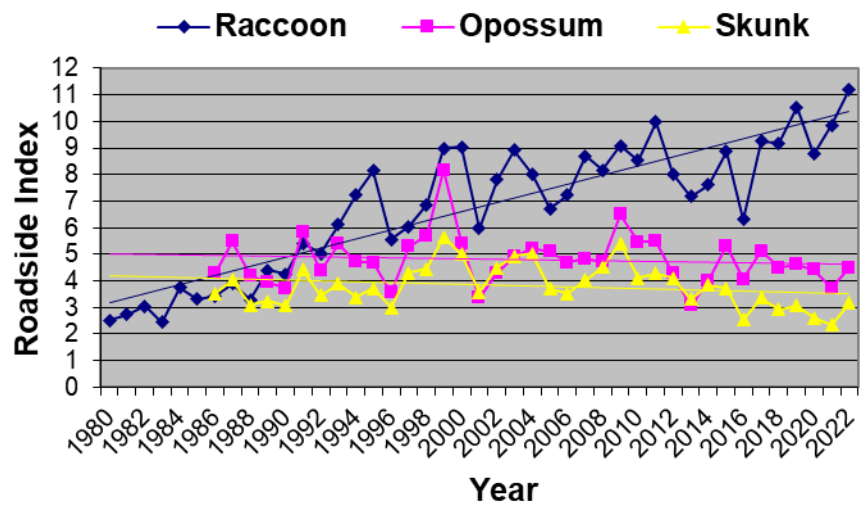Table 2. Mean 2022 Roadside Index of selected furbearer species by physiographic province.

Physiographic Prov.	Raccoon		Opossum		Skunk		Coyote		Badger	
High Plains	4.27	c	0.74	b	2.64	a	2.14	a	1.01	a
Smoky Hills	11.24	abc	2.71	b	3.51	a	2.13	a	0.88	a
Southcentral Prairies	9.20	bc	3.08	b	3.52	a	2.05	a	0.31	b
Flint Hills	9.93	abc	2.05	b	2.04	a	1.79	a	0.20	b
Glaciated Region	15.42	ab	7.52	a	3.60	a	1.37	a	0.08	b
Osage Questas	17.10	a	8.10	a	4.07	a	3.32	a	0.09	b
STWD	9.87		3.72		2.35		1.60		0.28	

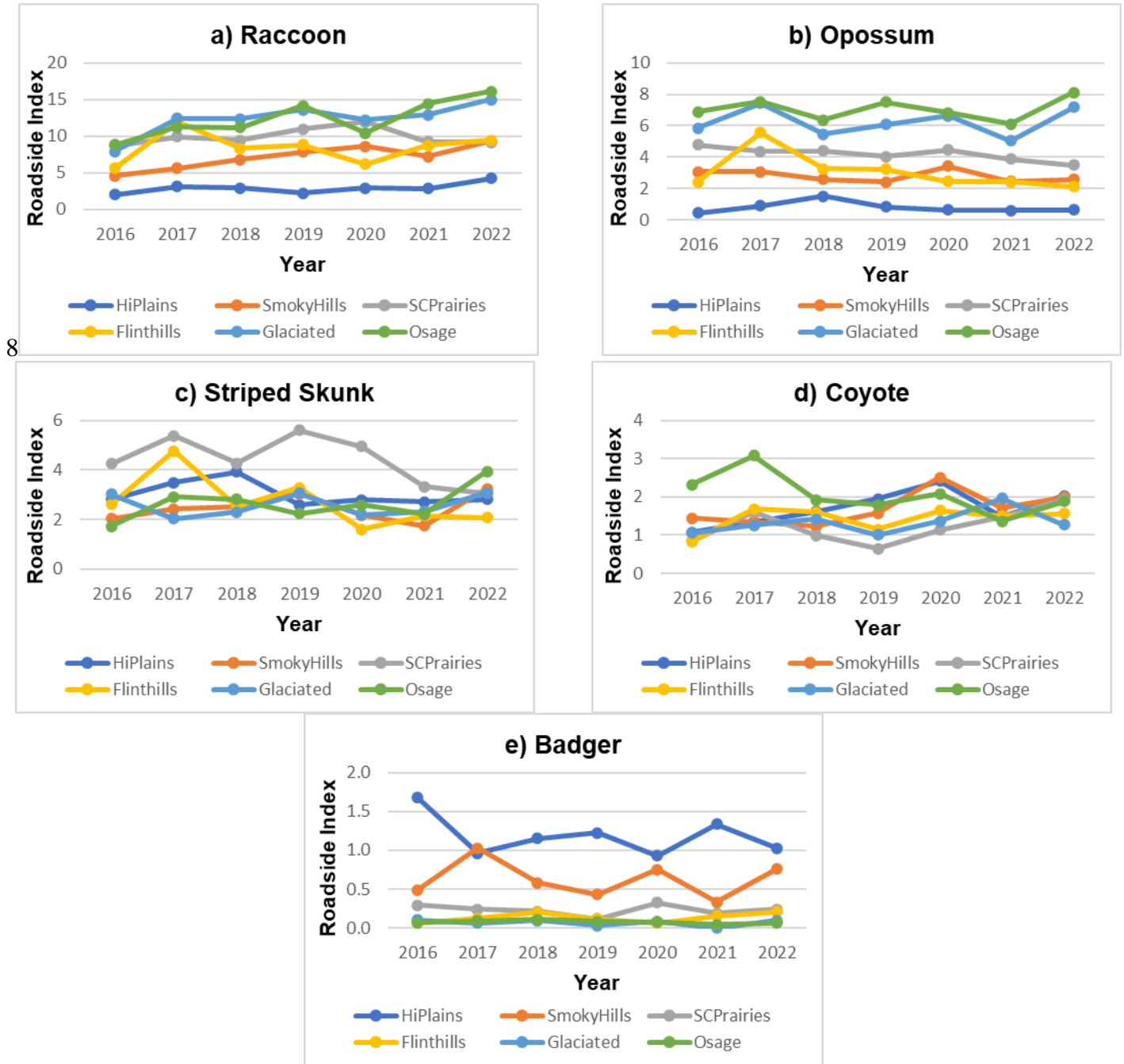Means with the same subscript are not significantly different (Duncan's Multiple Range Test)

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Figure 5a-e. Comparison of mean annual Roadside Indices of select furbearer species by Kansas physiographic province.

APPENDIX 1. 2022 Roadside Survey Form.

2022 SUMMER ROADSIDE SURVEY OF FURBEARERS AND OTHER MAMMALS

WEEK	RACCOON	OPOSSUM	STRIPED SKUNK	Coyote	Badger	Bobcat	Fox (specify: red, gray or swift)	Beaver	Mink	OTHER (SPECIFY)	Miles Driven
July 17 – July 23											
July 24 – July 30											
July 31 - Aug 6											
Aug 7 – 13											
Aug 14 – 20											
Aug 21 – 27											
Aug 28 – Sept 3											
Sept 4 – 10											
Sept 11 – 17											
Sept 18 – 24											

NAME (please print)_____   Circle one: NRO DB/tech PL Other   **County used most:** _____   **Physiographic Province used most (1-6):** _____
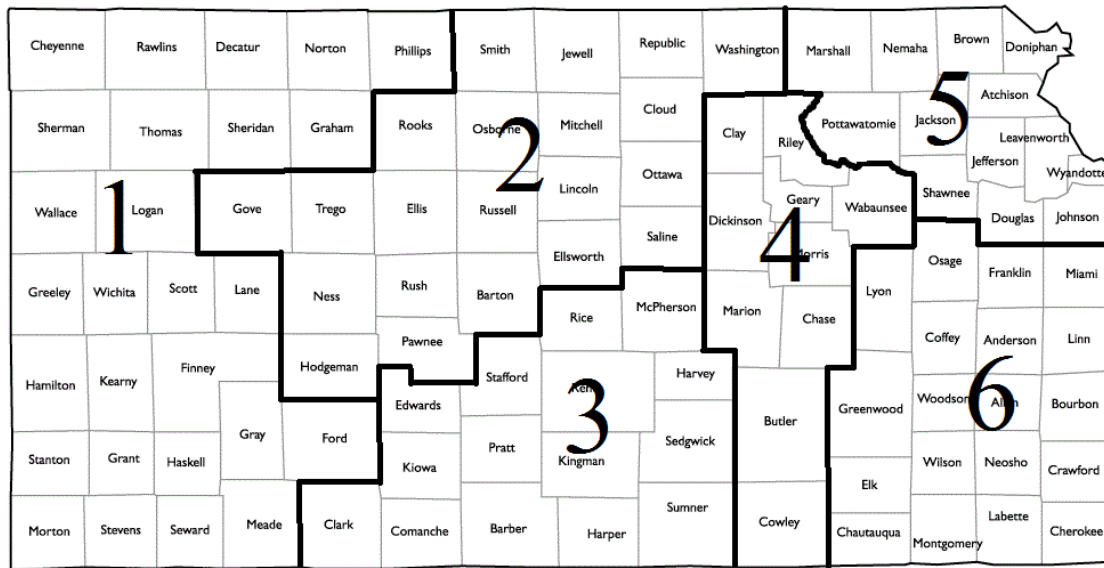
Comments (continue on back): _____

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Return to Matt Peek, KDWPT, P.O. Box 1525, Emporia, KS 66801, by **September 30.**

APPENDIX 2. Regions used to assess Roadside Survey data based on Kansas Physiographic Provinces.

1. High Plains
2. Smoky Hills
3. Southcentral Prairies
4. Flint Hills
5. Glaciated Region
6. Osage Questas

APPENDIX 3. 2022 Roadside Survey Participants by Physiographic Province and KDWP Division.

YEAR	PHYSIOGRAPHIC PROVINCE	DIVISION	NAME	YEAR	PHYSIOGRAPHIC PROVINCE	DIVISION	NAME
2022	1. High Plains	Wildlife	Aaron Baugh	2022	4. Flint Hills	Wildlife	Clint Thornton
2022	1. High Plains	Wildlife	Abby McGuire	2022	4. Flint Hills	Wildlife	Jeff Rue
2022	1. High Plains	Wildlife	Kevin Klag	2022	4. Flint Hills	Law Enforcement	Amanda Alexander
2022	1. High Plains	Wildlife	Kraig Schultz	2022	4. Flint Hills	Law Enforcement	Lance Hockett
2022	1. High Plains	Wildlife	Kurtis Meier	2022	4. Flint Hills	Law Enforcement	Tracy Cikanek
2022	1. High Plains	Law Enforcement	Kirk Andrews	2022	4. Flint Hills	Public Lands	Brent Konen
2022	1. High Plains	Public Lands	Jon Zuercher	2022	4. Flint Hills	Public Lands	Kurt Grimm
2022	1. High Plains	Public Lands	Luke Winge	2022	4. Flint Hills	Public Lands	Tyler Burt
2022	2. Smoky Hills	Wildlife	Andy Nelson	2022	5. Glaciated Region	Wildlife	Andy Friesen
2022	2. Smoky Hills	Wildlife	Brandon Tritsch	2022	5. Glaciated Region	Wildlife	Ben Couchman
2022	2. Smoky Hills	Wildlife	Eric Wiens	2022	5. Glaciated Region	Wildlife	Corey Alderson
2022	2. Smoky Hills	Wildlife	James Svaty	2022	5. Glaciated Region	Wildlife	Megan Smith
2022	2. Smoky Hills	Wildlife	Lucas Kramer	2022	5. Glaciated Region	Wildlife	Tim Urban
2022	2. Smoky Hills	Wildlife	Pat Riese	2022	5. Glaciated Region	Wildlife	Tyler Warner
2022	2. Smoky Hills	Law Enforcement	Daniel Haneke	2022	5. Glaciated Region	Law Enforcement	Aaron Scheve
2022	2. Smoky Hills	Law Enforcement	Scott Skucius	2022	5. Glaciated Region	Law Enforcement	Jeff Clouser
2022	2. Smoky Hills	Fisheries	Travis Riley	2022	5. Glaciated Region	Law Enforcement	Michael McGinnis
2022	2. Smoky Hills	Public Lands	Cale Hedges	2022	6. Osage Questas	Wildlife	Alex Lyon
2022	2. Smoky Hills	Public Lands	Jason Wagner	2022	6. Osage Questas	Wildlife	Don George
2022	2. Smoky Hills	Public Lands	Kent Hensley	2022	6. Osage Questas	Wildlife	Justin Harbit
2022	3. SC Prairies	Wildlife	Charles Cope	2022	6. Osage Questas	Wildlife	Logan Martin
2022	3. SC Prairies	Wildlife	Keith Murrow	2022	6. Osage Questas	Wildlife	Matt Peek
2022	3. SC Prairies	Wildlife	Logan Shoup	2022	6. Osage Questas	Wildlife	Vickie Cikanek
2022	3. SC Prairies	Wildlife	Steve Adams	2022	6. Osage Questas	Law Enforcement	Austin Sievert
2022	3. SC Prairies	Wildlife	Jon Beckmann	2022	6. Osage Questas	Law Enforcement	Colbe Austin
2022	3. SC Prairies	Law Enforcement	Clark Besthorn	2022	6. Osage Questas	Law Enforcement	Jim Bussone
2022	3. SC Prairies	Law Enforcement	Clinton Lee	2022	6. Osage Questas	Law Enforcement	Jonathan Rather
2022	3. SC Prairies	Law Enforcement	Ryan Smidt	2022	6. Osage Questas	Law Enforcement	Ross Uhrmacher
2022	3. SC Prairies	Law Enforcement	Ty Jaquess	2022	6. Osage Questas	Law Enforcement	Scott Leamon
2022	3. SC Prairies	Public Lands	Cliff Peterson	2022	6. Osage Questas	Public Lands	Rob Riggin
2022	3. SC Prairies	Public Lands	Jason Black	2022	6. Osage Questas	Public Lands	Ryan Lies
2022	3. SC Prairies	Public Lands	Todd Gatton	2022	6. Osage Questas	Public Lands	Zach Ramsay
2022	3. SC Prairies	Public Lands	Troy Smith				