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Hebblewhite, M. and Merrill, E. H. 2011. Demographic balancing of migrant and resident ELK in a partially migratory population through forage–predation tradeoffs. – Oikos 120: 1860–1870.

Appendix A1

Kaplan-Meier seasonal and annual adult female survival estimates ϕ, February 2002 to October 2004, Ya Ha Tinda elk population, Banff National Park. n-risk is the number of elk at risk during the season/year. Survival rates marked with different letters (a, b) within a row are significantly different (log-rank χ^2-test (1) $p<0.05$). Summer is 184 days, winter 181 or 182 in 2003 (leap-year).

		Resident			Migrant		
Season	Bioyear	n-risk	Survival Rate ϕ	SE	n-risk	Survival Rate ϕ	SE
Winter	2001††	19	0.956†	0.025	20	0.956†	0.025
Annual	2002	33	0.944[a]	0.054	34	0.846[b]	0.086
Annual	2003	42	0.762[a]	0.065	62	0.835[b]	0.048
Summer	2004††	36	0.890[a]	0.067	48	0.875[a]	0.060
Summer	Mean	51	0.887[a]	0.062	64	0.868[a]	0.064
Winter	Mean	49	0.934[a]	0.039	62	0.955[a]	0.042
Annual	Mean	53	0.862[a]	0.032	68	0.840[a]	0.035

† one survival rate was estimated for both strategies because of small sample size of mortalities.

†† estimated assuming that survival in the unsampled portion of these two seasons was equal to the sampled portions.

Appendix A2

Pregnancy rates for migrant and resident elk in adult, yearling, and subadult age classes. Rates determined from PRS-B testing during late winter (Mar 4) 2002–2005, Ya Ha Tinda elk population, Banff National Park. The logistic model for pregnancy showed migrant pregnancy rates were higher than residents. Yearlings were age <1.5, subadults <2.5, adults ≥3 years.

Adult pregnancy	Resident			Migrant		
Rate	(%)	n	SE	(%)	n	SE
2002	0.67	15	0.031	0.75	16	0.027
2003	0.94	16	0.015	0.88	25	0.013
2004	0.71	14	0.032	0.96	25	0.008
2005	0.95	18	0.012	0.98	12	0.012
Mean adult	0.83	63	0.011	0.90†	78	0.007
Pooled across strategies						
Yearlings	0.17	6	0.010			
Subadults	0.75	11	0.020			

Appendix A3

Elk calf survival model selection results for elk calf survival during 2003 and 2004, including number of parameters (K), deviance, AICc, Akaike weight and

relative likelihood for each model, Ya Ha Tinda herd, Banff National Park. Season–summer only indicates that migrant and resident survival differed only in summer.

Model and rank	K	Deviance	ΔAICc	Weight
1. {ϕ(Season)}	2	6.762	0	0.526
2. {ϕ(Status, Season – Summer only)}	3	6.101	1.41	0.260
3. {ϕ(Year, Season)}	4	6.085	3.48	0.092
4. {ϕ(Status, Season)}	4	2.757	3.88	0.076
5. {ϕ(Status + Year, Season)}	8	4.55	6.01	0.026
6. {ϕ(Status, Season – Winter only)}	3	4.556	7.32	0.013
7. {ϕ(Year, Season – Summer only)	3	2.998	9.55	0.004
8. {ϕ(Constant)}	1	19.877	11.07	0.002

Appendix A4

Survival estimates averaged the top survival models including strategy, season, and yearly effects, using Akaike weights for migrant (n= 33) and resident (n= 46) elk calves during the 2003 and 2004 biological years Ya Ha Tinda elk population, Banff National Park, Alberta.

			Monthly†	
	ϕ	SE‡	†	SE‡
Resident				
Neonatal§	0.697	0.064	0.782	0.055
Sum-Win¶	0.266	0.055	0.853	0.061
Annual†	0.185	0.067	---	---
Migrant				
Neonatal§	0.615	0.078	0.719	0.062
Sum-Win¶	0.265	0.054	0.853	0.071
Annual†	0.163	0.082	---	---
2003				
Neonatal§	0.644	0.067	0.741	0.051
Sum-Win¶	0.23	0.077	0.838	0.061
Annual†	0.148	0.068	---	---
2004				
Neonatal§	0.748	0.083	0.821	0.072
Sum-Win¶	0.302	0.11	0.866	0.094
Annual†	0.226	0.093	---	---
Overall				
Neonatal§	0.696	0.054	0.782	0.056
Sum-Win¶	0.266	0.045	0.853	0.046
Annual†	0.185	0.049	---	---

Notes*:* βs for neonatal and sum-win interval derived from models. SE's for interval βs from the model. SE's for annual/monthly rates via the delta method.

†† provided to facilitate comparison between intervals, calculated from daily rates/ interval.

§ neonatal interval average 45 days, Jun 1 to July 15.

¶ Sum-Win survival is the estimate for 250 days, July 15 to March 22, extrapolated to the last 70 un-sampled days is the same using $\phi^{(320/250)}$.

† annual survival is the product of the interval specific estimates. See text for further details.