Appendix B from W. F. Morris et al., "Low Demographic Variability in Wild Primate Populations: Fitness Impacts of Variation, Covariation, and Serial Correlation in Vital Rates"

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Supplementary Table

Table B1

Literature estimates of temporal variation in adult and/or newborn survival of vertebrates

Species	Higher taxon	Relative variance in survival		
		Newborns	Adults	Reference
Columbia spotted frog	Amphibian/reptile	.00279	.0678ª	McCaffery and Maxell 2010
Desert tortoise	Amphibian/reptile	.00820	.16513	Morris and Doak 2002
Garter snake	Amphibian/reptile	.01415ª	.01137 ^b	D. Miller and A. Bronikowski, unpublished data
Tiger salamander	Amphibian/reptile	NA	.11100°	Church et al. 2007
Acorn woodpecker	Bird	.05021	.02457	Kendall 1998
Adelie penguin	Bird	NA	.08882	Jenouvrier et al. 2006
Barn owl	Bird	.01455°	.04910 ^d	Altwegg et al. 2007
Black-capped chickadee	Bird	NA	.00649	Gould and Nichols 1998
Emperor penguin	Bird	NA	.00615 ^d	Jenouvrier et al. 2005
European dipper	Bird	.01113	.17601	Loison et al. 2002
Mallard duck	Bird	.02392 ^d	.00715 ^e	Gould and Nichols 1998
Northern spotted owl	Bird	NA	.01193	Franklin et al. 2000
Red-tailed tropicbird	Bird	.00000	.01271	Doherty et al. 2004
Roseate tern	Bird	NA	.02984	Gould and Nichols 1998
Semipalmated sandpiper	Bird	NA	.26419	Hitchcock and Gratto-Trevor 1997
Snow petrel	Bird	NA	$.02660^{d}$	Jenouvrier et al. 2005
Bighorn sheep	Mammal/ungulate	.11200e	$.00678^{f}$	Gaillard and Yoccoz 2003
Caribou	Mammal/ungulate	0	.00760	Gaillard and Yoccoz 2003
Moose	Mammal/ungulate	.08392	0	Gaillard and Yoccoz 2003
Mountain goat	Mammal/ungulate	.04209	.00260	Gaillard and Yoccoz 2003
Roe deer	Mammal/ungulate	.10141°	.01594 ^f	Gaillard and Yoccoz 2003
Fur seal	Mammal/carnivore	.03700	.04700 ^g	Forcada et al. 2008
Island fox	Mammal/carnivore	.14722	.12587	Bakker et al. 2009
Weddell seal	Mammal/carnivore	.03430	.05978 ^g	Hadley et al. 2006

Note: Relative variance is the interannual variance first corrected for sampling variation and then divided by the maximum possible value given the mean survival. NA = not available.

^a Only adult females were included.

^b Values for five sites were averaged.

^c Variation in seasonal survival of breeding adults from the Oak Pond population was converted to annual variation (assuming that survival in different seasons was independent) and then averaged for males and females.

^d Values for males and females were averaged.

^e Mean female survival values presented for 24 regions were averaged.

^f Average values from two populations were used. Recently, Johnson et al. (2010) reported that across two populations (Langley and Mono) of the Sierra Nevada subspecies of bighorn sheep (*Ovis canadensis sierrae*), the average relative variabilities of newborn and adult survival were 0.12 and 0.080, respectively. These values are still consistent with the Pfister (1998) hypothesis, although less so than the values of Gaillard and Yoccoz (2003) reported here, but the Johnson et al. (2010) estimate of relative variability of adult survival is higher than the corresponding estimates for any of the primate species included here.

^g Only breeding adults were included.

Literature Cited Only in Appendix B

- Bakker, V. J., D. F. Doak, G. W. Roemer, D. K. Garcelon, T. J. Coonan, S. A. Morrison, C. Lynch, K. Ralls, and R. Shaw. 2009. Incorporating ecological drivers and uncertainty into a demographic population viability analysis for the island fox. Ecological Monographs 79:77–108.
- Church, D. R., L. L. Bailey, H. M. Wilbur, W. L. Kendall, and J. E. Hines. 2007. Iteroparity in the variable environment of the salamander *Ambystoma tigrinum*. Ecology 88:891–903.
- Doherty, P. F., E. A. Schreiber, J. D. Nichols, J. E. Hines, W. A. Link, G. A. Schenk, and R. W. Schreiber. 2004. Testing life history predictions in a long-lived seabird: a population matrix approach with improved parameter estimation. Oikos 105:606–618.
- Forcada, J., P. N. Trathan, and E. J. Murphy. 2008. Life history buffering in Antarctic mammals and birds against changing patterns of climate and environmental variation. Global Change Biology 14:2473–2488.
- Franklin, A. B., D. R. Anderson, R. J. Gutierrez, and K. P. Burnham. 2000. Climate, habitat quality, and fitness in northern spotted owl populations in northwestern California. Ecological Monographs 70:539–590.
- Hadley, G. L., J. J. Rotella, R. A. Garrott, and J. D. Nichols. 2006. Variation in probability of first reproduction of Weddell seals. Journal of Animal Ecology 75:1058–1070.
- Hitchcock, C. L., and C. Gratto-Trevor. 1997. Diagnosing a shorebird local population decline with a stagestructured population model. Ecology 78:522–534.
- Jenouvrier, S., C. Barbraud, and H. Weimerskirch. 2005. Long-term contrasted responses to climate of two Antarctic seabird species. Ecology 86:2889–2903.
- ——. 2006. Sea ice affects the population dynamics of Adelie penguins in Terre Adelie. Polar Biology 29: 413–423.
- Johnson, H. E., L. S. Mills, T. R. Stephenson, and J. D. Wehausen. 2010. Population-specific vital rate contributions influence management of an endangered ungulate. Ecological Applications 20:1753–1765.
- Loison, A., B. E. Sæther, K. Jerstad, and O. W. Rostad. 2002. Disentangling the sources of variation in the survival of the European dipper. Journal of Applied Statistics 29:289–304.
- McCaffery, R. M., and B. A. Maxell. 2010. Decreased winter severity increases viability of a montane frog population. Proceedings of the National Academy of Sciences of the USA 107:8644–8649.