

Species	Measurement	Device	Subset	Logger			Control			Duration	Direction		Reference	
				Mean	s.d.	n	Mean	s.d.	n		deleterious	d		
<i>Ptychoramphus aleuticus</i>	chick growth rate	External	Reproductive	1.95	1.56	27	3.37	2.19	17	g/day	25	-	-0.80	(Ackerman et al., 2004)
<i>Ptychoramphus aleuticus</i>	chick wing growth rate	External	Reproductive	2.46	0.69	47	2.85	0.29	33	mm/d	25	-	-0.71	(Ackerman et al., 2004)
<i>Ptychoramphus aleuticus</i>	Fledging success	External	Reproductive	61.12	45.22	75	89.99	30.14	68	%	30	-	-0.75	(Ackerman et al., 2004)
<i>Ptychoramphus aleuticus</i>	Pairs fledging second chick	External	Reproductive	4.43	20.75	46	18.16	37.12	61	%	114	-	-0.44	(Ackerman et al., 2004)
<i>Ptychoramphus aleuticus</i>	Pairs hatching second egg	External	Reproductive	4.47	19.16	46	24.70	42.71	61	%	84	-	-0.59	(Ackerman et al., 2004)
<i>Ptychoramphus aleuticus</i>	Pairs initiating second nest	External	Reproductive	6.29	23.64	46	39.31	47.62	61	%	45	-	-0.85	(Ackerman et al., 2004)
<i>Ptychoramphus aleuticus</i>	Peak fledging mass	External	Reproductive	118.90	24.75	50	148.30	15.92	44	g	37	-	-1.41	(Ackerman et al., 2004)
<i>Anas platyrhynchos</i>	Active phase RMR @ 1m/s wind, 10°C	Internal	Metabolic	1.38	0.18	6	1.35	0.20	6	W	1	+	-0.12	(Bakken et al., 1996)
<i>Anas platyrhynchos</i>	Active phase RMR @ 1m/s wind, 10°C	External	Metabolic	1.43	0.12	6	1.35	0.20	6	W	1	+	-0.50	(Bakken et al., 1996)
<i>Anas platyrhynchos</i>	Active phase RMR @ 1m/s wind, 15°C	Internal	Metabolic	1.29	0.13	6	1.21	0.11	6	W	1	+	-0.68	(Bakken et al., 1996)
<i>Anas platyrhynchos</i>	Active phase RMR @ 1m/s wind, 15°C	External	Metabolic	1.31	0.14	6	1.21	0.11	6	W	1	+	-0.87	(Bakken et al., 1996)
<i>Anas platyrhynchos</i>	Active phase RMR @ 1m/s wind, 20°C	Internal	Metabolic	1.14	0.09	6	1.20	0.09	6	W	1	+	0.73	(Bakken et al., 1996)
<i>Anas platyrhynchos</i>	Active phase RMR @ 1m/s wind, 20°C	External	Metabolic	1.10	0.07	6	1.20	0.09	6	W	1	+	1.32	(Bakken et al., 1996)
<i>Anas platyrhynchos</i>	Active phase RMR @ 1m/s wind, 25°C	Internal	Metabolic	0.90	0.10	6	0.99	0.06	6	W	1	+	1.20	(Bakken et al., 1996)
<i>Anas platyrhynchos</i>	Active phase RMR @ 1m/s wind, 25°C	External	Metabolic	0.97	0.14	6	0.99	0.06	6	W	1	+	0.20	(Bakken et al., 1996)
<i>Zenaida macroura</i>	% weight change	Internal	Condition	-2.98	7.86	13	3.36	7.15	10	%	21	-	-0.88	(Berdeen and Otis, 2006)
<i>Lagopus l. scoticus</i>	Daily activity	External	Behaviour	93.00	47.43	10	114.00	47.43	10	counts	18			(Boag, 1972)
<i>Lagopus l. scoticus</i>	Food intake	External	Behaviour	68.30	20.87	10	66.80	3.79	10	g	18			(Boag, 1972)
<i>Meleagris gallopavo</i>	Mass at end of deployment	External	Condition	922.00	147.59	11	904.00	9.56	21	g	37	-	0.22	(Bowman et al., 2002)
<i>Meleagris gallopavo</i>	Mass at end of deployment	Internal	Condition	889.00	466.44	10	904.00	9.56	21	g	37	-	-0.06	(Bowman et al., 2002)
<i>Lagopus mutus</i>	Survival	External	Reproductive	0.50	8.53	16	0.75	8.53	16	?	30	-	-0.03	(Cotter and Gratto, 1995)
<i>Pygoscelis antarcticus</i>	Foraging trip duration	External	Foraging	14.40	9.20	14	9.30	6.00	31	h	2			(Croll et al., 1991)
<i>Pygoscelis antarcticus</i>	Foraging trip duration	External	Foraging	11.20	7.20	8	9.30	6.00	31	h	2			(Croll et al., 1991)
<i>Pygoscelis antarctica</i>	Early Brooding Foraging Trip Duration	External	Behaviour	14.70	4.70	16	14.60	6.00	16	h	31			(Croll et al., 1996)
<i>Pygoscelis antarctica</i>	Early Brooding Nest Visit Duration	External	Behaviour	20.80	6.30	16	22.00	6.60	16	h	31			(Croll et al., 1996)
<i>Pygoscelis antarctica</i>	Late Brooding Foaging Trip Duration	External	Behaviour	7.90	1.70	6	7.60	1.10	5	h	31			(Croll et al., 1996)
<i>Pygoscelis antarctica</i>	Late Brooding Nest Visit Duration	External	Behaviour	1.30	1.90	5	14.30	5.70	5	h	31			(Croll et al., 1996)
<i>Pygoscelis antarctica</i>	Mid Brooding Foraging Trip Duration	External	Behaviour	11.50	7.00	10	9.10	2.70	14	h	31			(Croll et al., 1996)
<i>Pygoscelis antarctica</i>	Mid Brooding Nest Visit Duration	External	Behaviour	12.30	4.50	11	17.00	5.50	13	h	31			(Croll et al., 1996)
<i>Pygoscelis adeliae</i>	Jumping	Internal	Behaviour	5.60	19.85	2	18.50	28.00	5	s	41			(Culik and Wilson, 1991)
<i>Pygoscelis adeliae</i>	Jumping	External	Behaviour	15.80	21.26	5	18.50	28.00	5	s	41			(Culik and Wilson, 1991)
<i>Pygoscelis adeliae</i>	Unrest	Internal	Behaviour	14.10	23.69	2	9.10	22.40	5	s	41			(Culik and Wilson, 1991)
<i>Pygoscelis adeliae</i>	Unrest	External	Behaviour	32.80	70.08	5	9.10	22.40	5	s	41			(Culik and Wilson, 1991)

Species	Measurement	Device	Subset	Logger			Control			Duration	Direction		Reference	
				Mean	s.d.	n	Mean	s.d.	n		deleterious	d		
<i>Pygoscelis adeliae</i>	Swimming Speed	Internal	Metabolic	1.80	0.43	2	1.80	0.33	5	m/s	41	-	0.00	(Culik and Wilson, 1991)
<i>Pygoscelis adeliae</i>	Swimming Speed	External	Metabolic	2.05	0.36	5	1.80	0.33	5	m/s	41	-	0.81	(Culik and Wilson, 1991)
<i>Pygoscelis adeliae</i>	Cost of Transport	Internal	Metabolic	7.00	2.43	2	9.00	3.24	5	J/kg/m	41	+	0.76	(Culik and Wilson, 1991)
<i>Pygoscelis adeliae</i>	Cost of Transport	External	Metabolic	11.30	2.91	5	9.00	3.24	5	J/kg/m	41	+	-0.83	(Culik and Wilson, 1991)
<i>Pygoscelis adeliae</i>	Resting Energy Expenditure	Internal	Metabolic	5.05	0.12	2	8.40	1.33	5	W/kg	41	+	3.34	(Culik and Wilson, 1991)
<i>Pygoscelis adeliae</i>	Resting Energy Expenditure	External	Metabolic	10.40	1.90	5	8.40	1.33	5	W/kg	41	+	-1.36	(Culik and Wilson, 1991)
<i>Pygoscelis adeliae</i>	Power input	Internal	Metabolic	12.70	5.47	2	15.80	5.18	5	W/kg	41			(Culik and Wilson, 1991)
<i>Pygoscelis adeliae</i>	Power input	External	Metabolic	22.50	5.82	5	15.80	5.18	5	W/kg	41			(Culik and Wilson, 1991)
<i>Pygoscelis adeliae</i>	Time away from Nest	External	Reproductive	76.00	6.80	4	53.90	6.60	4	h	41	+	-3.81	(Culik and Wilson, 1992)
<i>Pygoscelis adeliae</i>	Field metabolic rate	External	Metabolic	14.80	6.20	4	16.10	3.00	4	kJ/day	41			(Culik and Wilson, 1992)
<i>Pygoscelis adeliae</i>	Swim speed	External	Metabolic	1.57	0.54	6	1.70	0.43	6	m/s	2	-	-0.29	(Culik et al., 1994)
<i>Pygoscelis adeliae</i>	Cost of transport, 1.2 m/s	External	Metabolic	10.80	5.72	6	9.40	2.62	6	J/kg/m	2	+	-0.34	(Culik et al., 1994)
<i>Pygoscelis adeliae</i>	Cost of transport, 1.4 m/s	External	Metabolic	9.79	5.63	6	8.99	3.79	6	J/kg/m	2	+	-0.18	(Culik et al., 1994)
<i>Pygoscelis adeliae</i>	Cost of transport, 1.6 m/s	External	Metabolic	9.37	4.19	6	8.58	2.86	6	J/kg/m	2	+	-0.24	(Culik et al., 1994)
<i>Pygoscelis adeliae</i>	Cost of transport, 1.8 m/s	External	Metabolic	9.29	4.09	6	9.26	4.37	6	J/kg/m	2	+	-0.01	(Culik et al., 1994)
<i>Pygoscelis adeliae</i>	Cost of transport, 2.0 m/s	External	Metabolic	11.15	4.82	6	9.85	3.56	6	J/kg/m	2	+	-0.34	(Culik et al., 1994)
<i>Pygoscelis adeliae</i>	Cost of transport, 2.2 m/s	External	Metabolic	10.54	4.31	6	9.82	2.86	6	J/kg/m	2	+	-0.22	(Culik et al., 1994)
<i>Pygoscelis adeliae</i>	Cost of transport, 2.4 m/s	External	Metabolic	10.88	2.27	6	10.09	2.81	6	J/kg/m	2	+	-0.34	(Culik et al., 1994)
<i>Pygoscelis adeliae</i>	Simming MR	External	Metabolic	17.00	8.77	6	16.10	7.31	6	W/kg	2	+	-0.12	(Culik et al., 1994)
<i>Pygoscelis adeliae</i>	Foraging trip duration, F, 2000	External	Foraging	25.90	9.07	17	19.60	4.33	13	h	365			(Dugger et al., 2006)
<i>Pygoscelis adeliae</i>	Foraging trip duration, F, 2001	External	Foraging	36.20	9.52	7	41.00	14.70	9	h	365			(Dugger et al., 2006)
<i>Pygoscelis adeliae</i>	Foraging trip duration, F, 2002	External	Foraging	55.10	15.26	11	40.40	11.22	14	h	365			(Dugger et al., 2006)
<i>Pygoscelis adeliae</i>	Foraging trip duration, F, 2003	External	Foraging	60.30	10.40	4	51.50	13.34	13	h	365			(Dugger et al., 2006)
<i>Pygoscelis adeliae</i>	Foraging trip duration, M, 2000	External	Foraging	20.30	4.12	21	18.20	3.61	13	h	365			(Dugger et al., 2006)
<i>Pygoscelis adeliae</i>	Foraging trip duration, M, 2001	External	Foraging	27.00	1.59	7	32.40	15.68	6	h	365			(Dugger et al., 2006)
<i>Pygoscelis adeliae</i>	Foraging trip duration, M, 2002	External	Foraging	41.70	14.40	16	35.50	10.46	13	h	365			(Dugger et al., 2006)
<i>Pygoscelis adeliae</i>	Foraging trip duration, M, 2003	External	Foraging	36.70	11.40	5	36.60	10.61	18	h	365			(Dugger et al., 2006)
<i>Histrionicus histrionicus</i>	Recapture rate	External	Reproductive	21.60	40.80	185	21.70	41.24	23	%	182	-	0.00	(Esler et al., 2000)
<i>Eudyptula minor</i>	Mass loss December	External	Condition	3.60	4.90	7	0.96	3.12	7	%/day	6	+	-0.69	(Gales et al., 1990)
<i>Eudyptula minor</i>	Mass loss September	External	Condition	1.70	6.80	7	0.30	4.00	6	%/day	6	+	-0.27	(Gales et al., 1990)
<i>Eudyptula minor</i>	CO2 production rate	External	Metabolic	2.21	0.18	7	2.74	0.21	4	mL/g/day	6			(Gales et al., 1990)
<i>Eudyptula minor</i>	Field metabolic rate	External	Metabolic	1348.80	111.60	6	1670.50	130.10	4	kJ/kg/day	6			(Gales et al., 1990)
<i>Eudyptula minor</i>	Water Influx rate December	External	Metabolic	295.00	86.80	7	473.60	79.30	7	ml/kg/day	6			(Gales et al., 1990)

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<i>Eudyptula minor</i>	Water Influx rate September	External	Metabolic	159.90	36.80	7	306.60	47.00	6	ml/kg/day	6		(Gales et al., 1990)
<i>Columba livia</i>	Flight metabolic rate	External	Metabolic	222.13	34.48	8	157.60	21.70	8	kJ/h	1	+	-2.39 (Gessaman and Nagy, 1988)
<i>Columba spp</i>	Flight metabolic rate	External	Metabolic	14.60	4.30	4	14.00	2.50	3	mlCo2/g/h	1	+	-0.19 (Gessaman et al., 1991)
<i>Columba spp</i>	Flight metabolic rate	External	Metabolic	18.40	3.90	3	15.50	6.40	4	mlCo2/g/h	1	+	-0.62 (Gessaman et al., 1991)
<i>Porphyrio mantelli</i>	Behaviour: feed	External	Behaviour	75.57	9.08	5	75.36	5.98	6	%	6		(Godfrey and Bryant, 2003)
<i>Porphyrio mantelli</i>	Behaviour: preen	External	Behaviour	1.72	2.01	5	0.42	0.59	6	%	6		(Godfrey and Bryant, 2003)
<i>Porphyrio mantelli</i>	Behaviour: run	External	Behaviour	0.15	0.18	5	0.06	0.15	6	%	6		(Godfrey and Bryant, 2003)
<i>Porphyrio mantelli</i>	Behaviour: stand	External	Behaviour	8.45	4.41	5	10.34	7.10	6	%	6		(Godfrey and Bryant, 2003)
<i>Porphyrio mantelli</i>	Behaviour: walk	External	Behaviour	12.12	4.67	5	13.82	4.41	6	%	6		(Godfrey and Bryant, 2003)
<i>Porphyrio mantelli</i>	Field metabolic rate	External	Metabolic	1269.00	374.77	6	1179.00	311.09	6	kJ/day	6		(Godfrey and Bryant, 2003)
<i>Eudyptes chrysolophus</i>	Mass after foraging trip (female)	Internal	Condition	5.74	1.92	23	5.63	1.24	21	kg	247	-	0.07 (Green et al., 2004)
<i>Eudyptes chrysolophus</i>	Mass after foraging trip (male)	Internal	Condition	6.34	1.70	21	6.18	1.35	19	kg	247	-	0.11 (Green et al., 2004)
<i>Eudyptes chrysolophus</i>	Mass after migration (Female)	Internal	Condition	5.26	0.29	17	5.06	0.33	17	kg	247	-	0.67 (Green et al., 2004)
<i>Eudyptes chrysolophus</i>	Mass after migration (Male)	Internal	Condition	5.26	0.37	17	5.29	1.30	20	kg	247	-	-0.03 (Green et al., 2004)
<i>Eudyptes chrysolophus</i>	Foraging trip duration	Internal	Foraging	14.61	5.42	39	14.99	4.04	39	d	247		(Green et al., 2004)
<i>Eudyptes chrysolophus</i>	Foraging trip duration	Internal	Foraging	13.60	2.28	19	14.13	1.92	19	d	247		(Green et al., 2004)
<i>Eudyptes chrysolophus</i>	Fledging mass of chick (01/02)	Internal	Reproductive	3.47	0.32	11	3.36	0.35	105	kg	247	-	0.32 (Green et al., 2004)
<i>Eudyptes chrysolophus</i>	Fledging mass of chick (02/03)	Internal	Reproductive	3.52	0.33	18	3.36	0.35	105	kg	247	-	0.46 (Green et al., 2004)
<i>Somateria mollissima</i>	Clutch size	Internal	Reproductive	5.09	0.65	9	5.51	1.10	14	eggs	365	-	-0.46 (Guillemette et al., 2002)
<i>Somateria mollissima</i>	Hatching success	Internal	Reproductive	3.88	3.49	9	3.59	3.99	14	chicks	365	-	0.08 (Guillemette et al., 2002)
<i>Somateria mollissima</i>	Laying date	Internal	Reproductive	6.08	6.34	9	8.04	7.25	14		365	+	0.30 (Guillemette et al., 2002)
<i>Anas acuta</i>	Clutch size	External	Reproductive	6.86	7.20	36	7.08	13.94	115		50	-	-0.02 (Guyn and Clark, 1999)
<i>Anas acuta</i>	Egg volume	External	Reproductive	39.20	2.49	23	39.60	2.24	74		50	-	-0.18 (Guyn and Clark, 1999)
<i>Anas acuta</i>	Hatching success	External	Reproductive	6.50	1.78	15	6.50	1.73	31	chicks	50	-	0.00 (Guyn and Clark, 1999)
<i>Anas acuta</i>	Laying date (94)	External	Reproductive	135.00	15.86	13	132.00	17.20	74		50	+	-0.18 (Guyn and Clark, 1999)
<i>Anas acuta</i>	Laying date (95)	External	Reproductive	137.00	14.00	25	134.00	17.32	68		50	+	-0.18 (Guyn and Clark, 1999)
<i>Anas acuta</i>	Laying date (96)	External	Reproductive	132.00	16.63	12	142.00	17.17	102		50	+	0.59 (Guyn and Clark, 1999)
<i>Anas acuta</i>	Laying date (first clutch)	External	Reproductive	125.00	8.76	30	122.00	10.26	130		50	+	-0.30 (Guyn and Clark, 1999)
<i>Tympanuchus pallidicinctus</i>	Survival (summer)	External	Reproductive	0.67	0.60	72	0.67	0.90	144		91	-	0.00 (Hagen et al., 2006)
<i>Tympanuchus pallidicinctus</i>	Survival (winter)	External	Reproductive	0.65	0.55	72	0.62	1.02	144		91	-	0.04 (Hagen et al., 2006)
<i>Uria aalge</i>	Behaviour: preen	External	Behaviour	11.32	5.29	13	9.64	4.54	13		24		(Hamel et al., 2004)
<i>Uria aalge</i>	Behaviour: sit/sleep	External	Behaviour	65.41	11.34	13	61.22	15.87	13		24		(Hamel et al., 2004)
<i>Uria aalge</i>	Behaviour: Stand	External	Behaviour	22.22	12.09	13	27.25	15.87	13		24		(Hamel et al., 2004)

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<i>Aix sponsa</i>	Early incubation mass	External	Condition	553.70	44.15	15	576.50	44.35	13	g	60.5	-	-0.53	(Hepp et al., 2002)
<i>Aix sponsa</i>	Late incubation mass	External	Condition	544.00	31.06	14	566.80	46.42	12	g	70.5	-	-0.61	(Hepp et al., 2002)
<i>Aix sponsa</i>	Incubation constancy	External	Reproductive	81.00	5.42	15	81.60	5.41	13	%	81.5	-	-0.11	(Hepp et al., 2002)
<i>Aix sponsa</i>	incubation period	External	Reproductive	31.50	1.39	12	30.80	2.08	12	d	81.5	+	-0.41	(Hepp et al., 2002)
<i>Aix sponsa</i>	Recess frequency	External	Reproductive	2.10	0.39	15	2.10	0.36	13		81.5			(Hepp et al., 2002)
<i>Canachites canadensis</i>	Daily movement distance (early spring)	External	Foraging	113.00	77.00	25	139.00	97.00	19	m	67			(Herzog, 1979)
<i>Canachites canadensis</i>	Daily movement distance (late spring)	External	Foraging	140.00	85.00	25	135.00	76.00	11	m	67			(Herzog, 1979)
<i>Canachites canadensis</i>	Daily movement distance (summer)	External	Foraging	123.00	72.00	25	152.00	110.00	10	m	67			(Herzog, 1979)
<i>Canachites canadensis</i>	Daily movement distance (winter)	External	Foraging	49.00	45.00	25	44.00	36.00	12	m	67			(Herzog, 1979)
<i>Turdus merula</i>	Brood weight	External	Reproductive	63.50	2.87	6	63.20	5.26	19	g	122	-	0.06	(Hill et al., 1999)
<i>Turdus merula</i>	Brood wing length	External	Reproductive	65.20	2.82	6	64.80	4.82	19	mm	122	-	0.09	(Hill et al., 1999)
<i>Turdus merula</i>	Clutch size	External	Reproductive	3.69	0.60	16	3.79	0.64	24		122	-	-0.16	(Hill et al., 1999)
<i>Turdus merula</i>	Condition index	External	Reproductive	0.97	0.04	6	0.98	0.07	19		122	-	-0.06	(Hill et al., 1999)
<i>Turdus merula</i>	Daily survival for nests	External	Reproductive	0.95	0.06	20	0.96	0.04	54		122	-	-0.15	(Hill et al., 1999)
<i>Turdus merula</i>	Daily survival to fledge	External	Reproductive	0.95	0.07	14	0.97	0.06	37		122	-	-0.24	(Hill et al., 1999)
<i>Turdus merula</i>	Daily survival to hatch	External	Reproductive	0.96	0.08	20	0.96	0.07	54		122	-	0.00	(Hill et al., 1999)
<i>Turdus merula</i>	Egg volume	External	Reproductive	7.09	0.41	10	7.13	0.46	15	mlCo2/g/h	122	-	-0.09	(Hill et al., 1999)
<i>Turdus merula</i>	Parental visits to nest	External	Reproductive	6.54	1.89	3	6.70	1.32	4	per h	122	-	-0.12	(Hill et al., 1999)
<i>Turdus merula</i>	Prop. Time off nest	External	Reproductive	0.59	0.12	3	0.72	0.04	4		122			(Hill et al., 1999)
<i>Turdus merula</i>	Season adj. nest survival	External	Reproductive	0.95	0.06	20	0.95	0.06	39		122	-	0.03	(Hill et al., 1999)
<i>Turdus merula</i>	Weight difference	External	Reproductive	6.16	2.93	6	5.73	2.69	19		122			(Hill et al., 1999)
<i>Dendragapus obscurus</i>	Brood size at hatching	External	Reproductive	4.40	5.42	15	4.00	4.11	10	chicks	291	-	0.08	(Hines and Zwickerl, 1985)
<i>Dendragapus obscurus</i>	Clutch size	External	Reproductive	5.00	4.12	21	4.90	4.65	15	eggs	291	-	0.02	(Hines and Zwickerl, 1985)
<i>Falco naumanni</i>	Chick-feeds/h	External	Reproductive	0.89	0.22	3	0.95	0.13	2		49	-	-0.40	(Hiraldo et al., 1994)
<i>Falco naumanni</i>	Clutch size	External	Reproductive	4.60	0.50	7	4.20	0.90	29		49	-	0.49	(Hiraldo et al., 1994)
<i>Falco naumanni</i>	Copulation period	External	Reproductive	83.70	9.50	4	79.30	5.20	6	d	49			(Hiraldo et al., 1994)
<i>Falco naumanni</i>	Copulations per season	External	Reproductive	235.20	32.70	4	361.50	47.40	6		49			(Hiraldo et al., 1994)
<i>Falco naumanni</i>	Fledged young	External	Reproductive	1.50	1.30	10	1.70	1.00	71		49	-	-0.19	(Hiraldo et al., 1994)
<i>Falco naumanni</i>	Mate-feeds/h	External	Reproductive	0.44	0.13	2	0.49	0.04	3		49	-	-0.79	(Hiraldo et al., 1994)
<i>Melanerpes formicivorus</i>	Aggression	External	Behaviour	0.02	0.01	5	0.01	0.01	5					(Hooge, 1991)
<i>Melanerpes formicivorus</i>	Aggression	External	Behaviour	0.01	0.01	5	0.01	0.01	5					(Hooge, 1991)
<i>Melanerpes formicivorus</i>	Defense	External	Behaviour	0.01	0.01	5	0.02	0.01	5					(Hooge, 1991)
<i>Melanerpes formicivorus</i>	Defense	External	Behaviour	0.01	0.01	5	0.02	0.01	5					(Hooge, 1991)

Species	Measurement	Device	Subset	Logger		Control		Duration	Direction		Reference			
				Mean	s.d.	n	Mean		s.d.	n	Units			
<i>Melanerpes formicivorus</i>	Eat	External	Behaviour	0.04	0.02	5	0.04	0.01	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Eat	External	Behaviour	0.07	0.04	5	0.04	0.01	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Fly	External	Behaviour	0.08	0.03	5	0.08	0.02	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Fly	External	Behaviour	0.05	0.03	5	0.08	0.02	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Fly catch	External	Behaviour	0.03	0.02	5	0.03	0.01	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Fly catch	External	Behaviour	0.02	0.01	5	0.03	0.01	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Glean	External	Behaviour	0.08	0.05	5	0.08	0.03	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Glean	External	Behaviour	0.10	0.05	5	0.08	0.03	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Move	External	Behaviour	0.02	0.02	5	0.01	0.01	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Move	External	Behaviour	0.00	0.01	5	0.01	0.01	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Preen	External	Behaviour	0.08	0.03	5	0.08	0.02	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Preen	External	Behaviour	0.13	0.04	5	0.08	0.02	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Sit	External	Behaviour	0.09	0.03	5	0.08	0.02	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Sit	External	Behaviour	0.16	0.04	5	0.08	0.02	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Vigilance	External	Behaviour	0.60	0.20	5	0.62	0.24	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Vigilance	External	Behaviour	0.68	0.22	5	0.62	0.24	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	waka	External	Behaviour	0.01	0.02	5	0.01	0.01	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	waka	External	Behaviour	0.01	0.01	5	0.01	0.01	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Work stores	External	Behaviour	0.06	0.04	5	0.05	0.02	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Work stores	External	Behaviour	0.02	0.01	5	0.05	0.02	5			(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Daily movement distance	External	Foraging	47.30	19.74	5	41.98	16.15	5	m		(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Daily movement distance	External	Foraging	27.84	13.75	5	41.98	16.15	5	m		(Hooge, 1991)		
<i>Melanerpes formicivorus</i>	Daily movement distance	External	Foraging	21.22	17.54	5	41.98	16.15	5	m		(Hooge, 1991)		
<i>Anas platyrhynchos</i>	Clutch size	External	Reproductive	10.70	1.22	6	10.40	1.41	8		106	-	0.24	(Houston and Greenwood, 1993)
<i>Anas platyrhynchos</i>	Clutch size	External	Reproductive	10.10	1.06	7	10.40	1.41	8		106	-	-0.26	(Houston and Greenwood, 1993)
<i>Anas platyrhynchos</i>	Clutch size	External	Reproductive	10.20	1.70	8	10.40	1.41	8		106	-	-0.14	(Houston and Greenwood, 1993)
<i>Anas platyrhynchos</i>	Clutch size	External	Reproductive	10.70	1.21	3	10.40	0.79	7		106	-	0.37	(Houston and Greenwood, 1993)
<i>Anas platyrhynchos</i>	Clutch size	External	Reproductive	10.00	0.73	6	10.40	0.79	7		106	-	-0.57	(Houston and Greenwood, 1993)
<i>Anas platyrhynchos</i>	Clutch size	External	Reproductive	9.60	0.79	7	10.40	0.79	7		106	-	-1.09	(Houston and Greenwood, 1993)
<i>Anas platyrhynchos</i>	Clutch size	External	Reproductive	9.50	2.12	2	9.30	0.49	6		106	-	0.24	(Houston and Greenwood, 1993)
<i>Anas platyrhynchos</i>	Clutch size	External	Reproductive	9.50	1.47	6	9.30	0.49	6		106	-	0.20	(Houston and Greenwood, 1993)
<i>Anas platyrhynchos</i>	Clutch size	External	Reproductive	9.00	0.79	7	9.30	0.49	6		106	-	-0.48	(Houston and Greenwood, 1993)

Species	Measurement	Device	Subset	Logger			Control			Duration	Direction		Reference	
				Mean	s.d.	n	Mean	s.d.	n		Units	(d)		
<i>Anas platyrhynchos</i>	Inter-clutch interval	External	Reproductive	17.00	8.57	6	19.00	5.94	8	d	106		(Houston and Greenwood, 1993)	
<i>Anas platyrhynchos</i>	Inter-clutch interval	External	Reproductive	19.60	7.67	7	19.00	5.94	8	d	106		(Houston and Greenwood, 1993)	
<i>Anas platyrhynchos</i>	Inter-clutch interval	External	Reproductive	17.90	5.66	8	19.00	5.94	8	d	106		(Houston and Greenwood, 1993)	
<i>Anas platyrhynchos</i>	Inter-clutch interval	External	Reproductive	6.30	1.04	3	7.10	1.06	7	d	106		(Houston and Greenwood, 1993)	
<i>Anas platyrhynchos</i>	Inter-clutch interval	External	Reproductive	7.30	1.71	6	7.10	1.06	7	d	106		(Houston and Greenwood, 1993)	
<i>Anas platyrhynchos</i>	Inter-clutch interval	External	Reproductive	7.30	0.53	7	7.10	1.06	7	d	106		(Houston and Greenwood, 1993)	
<i>Anas platyrhynchos</i>	Inter-clutch interval	External	Reproductive	7.00	1.41	2	9.70	4.65	6	d	106		(Houston and Greenwood, 1993)	
<i>Anas platyrhynchos</i>	Inter-clutch interval	External	Reproductive	8.00	1.96	6	9.70	4.65	6	d	106		(Houston and Greenwood, 1993)	
<i>Anas platyrhynchos</i>	Inter-clutch interval	External	Reproductive	8.40	3.44	7	9.70	4.65	6	d	106		(Houston and Greenwood, 1993)	
<i>Eudyptes schlegeli</i>	Body composition	External	Condition	2.90	2.30	5	4.50	2.10	6	%	25	-	-0.81	(Hull, 1997)
<i>Eudyptes schlegeli</i>	Body composition	External	Condition	5.70	3.60	5	4.20	3.80	7	% difference	25	-	0.44	(Hull, 1997)
<i>Eudyptes schlegeli</i>	Body composition	External	Condition	-4.90	3.90	7	4.20	3.80	7	% difference	25	-	-2.55	(Hull, 1997)
<i>Eudyptes schlegeli</i>	Foraging trip duration	External	Behaviour	24.90	2.50	7	22.90	1.70	16	d	25			(Hull, 1997)
<i>Eudyptes schlegeli</i>	Foraging trip duration	External	Behaviour	15.50	2.80	8	15.90	2.60	9	d	25			(Hull, 1997)
<i>Eudyptes schlegeli</i>	Foraging trip duration	External	Behaviour	20.10	4.30	8	15.90	2.60	9	d	25			(Hull, 1997)
<i>Eudyptes schlegeli</i>	Foraging trip duration	External	Behaviour	3.30	1.80	10	3.90	2.40	10	d	25			(Hull, 1997)
<i>Eudyptes schlegeli</i>	Foraging trip duration	External	Behaviour	5.00	2.00	3	3.90	2.40	10	d	25			(Hull, 1997)
<i>Eudyptes schlegeli</i>	Mass gained	External	Condition	32.40	11.90	7	46.00	9.10	15	%	25	-	-1.42	(Hull, 1997)
<i>Eudyptes schlegeli</i>	Mass gained	External	Condition	36.20	8.00	8	33.30	10.20	9	% difference	25	-	0.33	(Hull, 1997)
<i>Eudyptes schlegeli</i>	Mass gained	External	Condition	31.90	11.20	8	33.30	10.20	9	% difference	25	-	-0.14	(Hull, 1997)
<i>Eudyptes schlegeli</i>	Mass gained	External	Condition	8.00	9.00	10	10.60	5.20	10	% difference	25	-	-0.37	(Hull, 1997)
<i>Eudyptes schlegeli</i>	Mass gained	External	Condition	15.90	3.20	3	10.60	5.20	10	% difference	25	-	1.18	(Hull, 1997)
<i>Eudyptes schlegeli</i>	Water influx	External	Metabolic	148.00	19.80	5	77.40	7.00	6	ml/kg/day	25			(Hull, 1997)
<i>Eudyptes schlegeli</i>	Water influx	External	Metabolic	194.40	16.70	5	191.40	45.40	7	ml/kg/day	25			(Hull, 1997)
<i>Eudyptes schlegeli</i>	Water influx	External	Metabolic	201.10	28.10	7	191.40	45.40	7	ml/kg/day	25			(Hull, 1997)
<i>Branta canadensis</i>	Clutch size	Internal	Reproductive	4.50	1.44	19	4.80	1.42	103	# eggs	365	-	-0.21	(Hupp et al., 2006)
<i>Branta canadensis</i>	Clutch size	Internal	Reproductive	4.90	1.42	24	4.80	1.42	103	# eggs	365	-	0.07	(Hupp et al., 2006)
<i>Branta canadensis</i>	Julian Date of nest initiation	Internal	Reproductive	124.30	6.68	31	124.50	6.90	152	LSQM	365	+	0.03	(Hupp et al., 2006)
<i>Branta canadensis</i>	Julian Date of nsxt initiation	Internal	Reproductive	126.50	6.68	31	124.50	6.90	152	LSQM	365	+	-0.29	(Hupp et al., 2006)
<i>Branta canadensis</i>	Mean Egg volume	Internal	Reproductive	107.90	6.10	19	107.70	6.73	101	cm^3	365	-	0.03	(Hupp et al., 2006)
<i>Branta canadensis</i>	Mean Egg volume	Internal	Reproductive	109.10	6.37	24	107.70	6.73	101	cm^3	365	-	0.21	(Hupp et al., 2006)

Species	Measurement	Device	Subset	Logger		Control		Duration	Direction		Reference	
				Mean	s.d.	n	Mean	s.d.	n	Units	(d)	
<i>Calonectris diomedea</i>	$\delta^{13}\text{C}$ blood	External	Foraging	-18.10	0.14	6	-18.01	0.36	16		365	(Igual et al., 2005)
<i>Calonectris diomedea</i>	$\delta^{13}\text{C}$ feather P1	External	Foraging	-17.43	0.53	9	-17.09	0.90	22		365	(Igual et al., 2005)
<i>Calonectris diomedea</i>	$\delta^{13}\text{C}$ feather S8	External	Foraging	-15.62	1.45	9	-15.32	0.99	22		365	(Igual et al., 2005)
<i>Calonectris diomedea</i>	$\delta^{15}\text{N}$ blood	External	Foraging	11.17	0.22	6	11.32	0.27	16		365	(Igual et al., 2005)
<i>Calonectris diomedea</i>	$\delta^{15}\text{N}$ feather P1	External	Foraging	11.64	0.72	9	11.98	0.92	22		365	(Igual et al., 2005)
<i>Calonectris diomedea</i>	$\delta^{15}\text{N}$ feather S8	External	Foraging	13.91	1.40	9	13.69	1.28	22		365	(Igual et al., 2005)
<i>Rissa tridacyla</i>	Chick-growth rate	External	Reproductive	16.24	2.31	13	16.64	2.55	45	g/d	13	- -0.16 (Irons, 1998)
<i>Phasianus colchicus</i>	Dispersal Distance	External	Behaviour	1.20	2.47	38	1.20	3.00	36	km	49	(Johnson and Berner, 1980)
<i>Gallinago media</i>	Clutch Volume Index	External	Reproductive	186.90	5.69	19	189.60	7.07	10		6	- -0.45 (Kålås et al., 1989)
<i>Gallinago media</i>	Weight of incubating females	External	Reproductive	183.60	5.72	23	179.10	7.70	12	g	15	- 0.72 (Kålås et al., 1989)
<i>Accipiter gentilis</i>	all bird weight change (adults inc)	External	Condition	25.40	23.80	14	21.40	19.10	14	g	13.1	- 0.19 (Kenward, 1978)
<i>Accipiter gentilis</i>	juvenile weight change	External	Condition	22.50	25.40	10	7.10	31.10	7	g	15.3	- 0.59 (Kenward, 1978)
<i>Sterna hirundo</i>	Energy Expenditure	External	Condition	368.00	58.00	5	343.00	37.00	5	kJ/day	2.26	+ -0.57 (Klaassen et al., 1992)
<i>Alectoris chukar</i>	Agonistic	Internal	Behaviour	12.00	3.46	12	9.00	6.93	12	s /25 min	77	(O'Hearn et al., 2005)
<i>Alectoris chukar</i>	Maintenance (excl. preeeing)	Internal	Behaviour	643.00	58.89	12	640.00	62.35	12	s /25 min	77	(O'Hearn et al., 2005)
<i>Alectoris chukar</i>	Maintenance (incl. preening)	Internal	Behaviour	697.00	62.35	12	692.00	65.82	12	s /25 min	77	(O'Hearn et al., 2005)
<i>Alectoris chukar</i>	Pacing	Internal	Behaviour	789.00	58.89	12	796.00	58.89	12	s /25 min	77	(O'Hearn et al., 2005)
<i>Alectoris chukar</i>	Preening	Internal	Behaviour	54.00	3.46	12	52.00	6.93	12	s /25 min	77	(O'Hearn et al., 2005)
<i>Alectoris chukar</i>	Total non-pacing	Internal	Behaviour	711.00	58.89	12	704.00	58.89	12	s /25 min	77	(O'Hearn et al., 2005)
<i>Alectoris chukar</i>	Unobserved	Internal	Behaviour	9.00	6.93	12	5.00	3.46	12	s /25 min	77	(O'Hearn et al., 2005)
<i>Alectoris chukar</i>	absolute basophils	Internal	Condition	500.00	200.86	6	339.00	206.48	8		77	+ -0.85 (O'Hearn et al., 2005)
<i>Alectoris chukar</i>	absolute basophils	Internal	Condition	165.00	172.03	10	155.00	151.79	13		77	+ -0.07 (O'Hearn et al., 2005)
<i>Alectoris chukar</i>	absolute eosinophils	Internal	Condition	0.00	0.00	6	30.00	75.80	8		77	+ 0.56 (O'Hearn et al., 2005)
<i>Alectoris chukar</i>	absolute eosinophils	Internal	Condition	16.00	34.79	10	8.50	30.65	13		77	+ -0.24 (O'Hearn et al., 2005)
<i>Alectoris chukar</i>	absolute lymphocytes	Internal	Condition	2700.00	1067.98	6	3056.00	537.40	8		77	+ 0.48 (O'Hearn et al., 2005)
<i>Alectoris chukar</i>	absolute lymphocytes	Internal	Condition	5483.00	1745.58	10	4222.00	1885.70	13		77	+ -0.72 (O'Hearn et al., 2005)
<i>Alectoris chukar</i>	absolute monophils	Internal	Condition	191.67	191.55	6	113.75	90.51	8		77	+ -0.59 (O'Hearn et al., 2005)
<i>Alectoris chukar</i>	absolute monophils	Internal	Condition	141.00	141.07	10	93.85	167.66	13		77	+ -0.31 (O'Hearn et al., 2005)
<i>Alectoris chukar</i>	Absolute neutrophils	Internal	Condition	5570.00	1832.22	6	5382.00	1351.99	8		77	+ -0.13 (O'Hearn et al., 2005)
<i>Alectoris chukar</i>	Absolute neutrophils	Internal	Condition	4395.00	2188.30	10	3982.00	2015.50	13		77	+ -0.21 (O'Hearn et al., 2005)
<i>Alectoris chukar</i>	Body fat score	Internal	Condition	1.80	0.55	12	1.80	0.53	11		77	- 0.00 (O'Hearn et al., 2005)
<i>Alectoris chukar</i>	Body fat score	Internal	Condition	2.20	0.63	10	2.10	0.64	14		77	- 0.16 (O'Hearn et al., 2005)
<i>Alectoris chukar</i>	estimated basophils	Internal	Condition	3.00	2.28	6	4.75	1.95	8		77	+ 0.90 (O'Hearn et al., 2005)

Species	Measurement	Device	Subset	Logger			Control			Duration	Direction		Reference	
				Mean	s.d.	n	Mean	s.d.	n		deleterious	d		
<i>Alectoris chukar</i>	estimated basophils	Internal	Condition	1.70	1.77	10	2.00	2.09	13	77	+	0.16	(O'Hearn et al., 2005)	
<i>Alectoris chukar</i>	estimated eosinophils	Internal	Condition	0.00	0.00	6	0.25	0.62	8	77	+	0.57	(O'Hearn et al., 2005)	
<i>Alectoris chukar</i>	estimated eosinophils	Internal	Condition	0.20	0.41	10	0.17	0.25	13	77	+	-0.10	(O'Hearn et al., 2005)	
<i>Alectoris chukar</i>	estimated lymphocytes	Internal	Condition	37.80	10.39	6	34.75	7.72	8	77	+	-0.37	(O'Hearn et al., 2005)	
<i>Alectoris chukar</i>	estimated lymphocytes	Internal	Condition	54.40	15.81	10	50.08	17.20	13	77	+	-0.27	(O'Hearn et al., 2005)	
<i>Alectoris chukar</i>	estimated monophils	Internal	Condition	2.00	2.01	6	1.25	0.93	8	77	+	-0.55	(O'Hearn et al., 2005)	
<i>Alectoris chukar</i>	estimated monophils	Internal	Condition	1.40	1.26	10	1.10	1.77	13	77	+	-0.20	(O'Hearn et al., 2005)	
<i>Alectoris chukar</i>	Estimated WBC	Internal	Condition	9.67	2.42	6	9.30	1.77	10	77	+	-0.19	(O'Hearn et al., 2005)	
<i>Alectoris chukar</i>	Estimated WBC	Internal	Condition	10.00	1.93	10	8.46	2.38	13	77	+	-0.73	(O'Hearn et al., 2005)	
<i>Alectoris chukar</i>	haematocrit	Internal	Condition	42.70	6.58	10	44.50	4.90	10	77			(O'Hearn et al., 2005)	
<i>Alectoris chukar</i>	haematocrit	Internal	Condition	40.80	6.04	10	45.31	7.36	13	77			(O'Hearn et al., 2005)	
<i>Alectoris chukar</i>	heterophils/polymphils	Internal	Condition	57.17	7.15	6	59.00	7.44	8	77	+	0.27	(O'Hearn et al., 2005)	
<i>Alectoris chukar</i>	heterophils/polymphils	Internal	Condition	42.30	14.67	10	46.84	15.86	13	77	+	0.31	(O'Hearn et al., 2005)	
<i>Alectoris chukar</i>	Mass	Internal	Condition	443.96	26.99	12	450.89	32.70	11	g	77	-	-0.24	(O'Hearn et al., 2005)
<i>Alectoris chukar</i>	Mass	Internal	Condition	549.67	23.53	10	546.80	31.54	14	g	77	-	0.11	(O'Hearn et al., 2005)
<i>Alectoris chukar</i>	Mass/tarsus	Internal	Condition	8.34	0.45	12	8.50	0.63	11	g/mm	77	-	-0.31	(O'Hearn et al., 2005)
<i>Alectoris chukar</i>	Mass/tarsus	Internal	Condition	9.55	0.35	10	9.49	0.60	14	g/mm	77	-	0.12	(O'Hearn et al., 2005)
<i>Alectoris chukar</i>	Egg volume	Internal	Reproductive	21.17	0.54	6	21.78	1.20	6	cm^3	77	-	-0.72	(O'Hearn et al., 2005)
<i>Alectoris chukar</i>	Eggs per female	Internal	Reproductive	35.20	4.16	6	30.00	17.64	6		77	-	0.44	(O'Hearn et al., 2005)
<i>Colinus virginianus</i>	Dried lean	External	Condition	63.10	5.48	47	65.40	4.11	47	g	84			(Osborne et al., 1997)
<i>Colinus virginianus</i>	Dried lean	External	Condition	63.80	4.93	38	65.40	4.11	47	g	84			(Osborne et al., 1997)
<i>Colinus virginianus</i>	Fresh carcass	External	Condition	215.50	20.57	47	224.00	15.77	47	g	84	-	-0.47	(Osborne et al., 1997)
<i>Colinus virginianus</i>	Fresh carcass	External	Condition	215.50	17.26	38	224.00	15.77	47	g	84	-	-0.52	(Osborne et al., 1997)
<i>Colinus virginianus</i>	Lipid	External	Condition	15.30	6.17	47	18.60	6.17	47	g	84	-	-0.54	(Osborne et al., 1997)
<i>Colinus virginianus</i>	Lipid	External	Condition	14.70	4.93	38	18.60	6.17	47	g	84	-	-0.70	(Osborne et al., 1997)
<i>Colinus virginianus</i>	Water	External	Condition	137.20	10.97	47	140.30	8.91	47	g	84			(Osborne et al., 1997)
<i>Colinus virginianus</i>	Water	External	Condition	137.00	9.86	38	140.30	8.91	47	g	84			(Osborne et al., 1997)
<i>Uria lomvia</i>	mass change females	External	Condition	-18.50	11.64	21	3.94	3.80	16	g/day	91	-	-2.52	(Paredes et al., 2005)
<i>Uria lomvia</i>	mass change males	External	Condition	-27.01	11.70	15	-3.98	2.48	15	g/day	91	-	-2.82	(Paredes et al., 2005)
<i>Uria lomvia</i>	chick attendance females	External	Reproductive	8.90	1.57	19	9.90	1.01	13	h	91			(Paredes et al., 2005)
<i>Uria lomvia</i>	chick attendance males	External	Reproductive	12.30	3.44	16	14.50	1.08	13	h	91			(Paredes et al., 2005)
<i>Uria lomvia</i>	duration of chick rearing	External	Reproductive	20.69	2.85	40	21.15	2.53	22	days	91			(Paredes et al., 2005)
<i>Uria lomvia</i>	feeding/day females	External	Reproductive	0.90	0.57	19	2.70	0.97	13		91	-	-2.46	(Paredes et al., 2005)

Species	Measurement	Device	Subset	Logger			Control			Duration	Direction		Reference	
				Mean	s.d.	n	Mean	s.d.	n		deleterious	d		
<i>Uria lomvia</i>	feeding/day males	External	Reproductive	0.90	0.88	16	2.50	0.87	13		-	-1.90	(Paredes et al., 2005)	
<i>Uria lomvia</i>	food provisioning rates	External	Reproductive	2.20	0.65	35	2.46	0.92	26	meals/d	-	-0.34	(Paredes et al., 2005)	
<i>Uria lomvia</i>	foraging trips/day females	External	Reproductive	1.90	0.74	19	4.00	0.97	13				(Paredes et al., 2005)	
<i>Uria lomvia</i>	foraging trips/day males	External	Reproductive	2.00	0.88	16	3.70	1.05	13				(Paredes et al., 2005)	
<i>Uria lomvia</i>	trip duration females	External	Reproductive	1.80	2.09	19	1.40	1.33	13	h			(Paredes et al., 2005)	
<i>Uria lomvia</i>	trip duration males	External	Reproductive	4.60	1.96	16	2.20	1.41	13	h			(Paredes et al., 2005)	
<i>Perdix perdix</i>	Climbing power	External	Metabolic	6.65	2.28	14	9.26	1.42	14	W	1		(Putaala et al., 1997)	
<i>Perdix perdix</i>	Climbing speed	External	Metabolic	1.79	0.71	14	2.52	0.30	14	m/s	1	-	-1.39	(Putaala et al., 1997)
<i>Perdix perdix</i>	Flight speed	External	Metabolic	3.43	0.67	14	3.79	0.49	14	m/s	1	-	-0.64	(Putaala et al., 1997)
<i>Perdix perdix</i>	Takeoff angle	External	Metabolic	31.60	11.22	14	42.30	5.61	14	degrees	1			(Putaala et al., 1997)
<i>Bucephala islandica</i>	Alert	External	Behaviour	15.00	7.60	5	14.50	3.67	6	%	35			(Robert et al., 2006)
<i>Bucephala islandica</i>	Feeding	External	Behaviour	24.60	10.96	5	43.20	7.35	6	%	35			(Robert et al., 2006)
<i>Bucephala islandica</i>	Locomotion	External	Behaviour	10.00	5.14	5	11.30	7.59	6	%	35			(Robert et al., 2006)
<i>Bucephala islandica</i>	Maintenance	External	Behaviour	50.50	13.42	5	31.00	9.55	6	%	35			(Robert et al., 2006)
<i>Bucephala islandica</i>	Preening	External	Behaviour	17.30	11.63	5	10.80	3.92	6	%	35			(Robert et al., 2006)
<i>Bucephala islandica</i>	Resting	External	Behaviour	33.20	17.44	5	20.10	10.53	6	%	35			(Robert et al., 2006)
<i>Pygoscelis adeliae</i>	Foraging trip duration	External	Foraging	35.60	4.80	7	32.90	4.30	7	h	2			(Ropert-Coudert et al., 2007)
<i>Pygoscelis adeliae</i>	Foraging trip duration	External	Foraging	37.50	19.10	7	32.90	4.30	7	h	2			(Ropert-Coudert et al., 2007)
<i>Phalacrocorax carbo</i>	energy required to swim at 1.4-1.8m/s	External	Condition	35.10	10.78	4	31.40	10.82	4	W/kg	1	+	-0.40	(Schmid et al., 1995)
<i>Branta bernicla nigricans</i>	Mass Loss (Females)	External	Condition	4.80	4.70	5	6.30	6.75	3	%	28.5	+	0.32	(Sedinger et al., 1990)
<i>Branta bernicla nigricans</i>	Mass Loss (Males)	External	Condition	3.20	2.60	4	4.60	5.14	5	%	28.5	+	0.37	(Sedinger et al., 1990)
<i>Branta bernicla nigricans</i>	Daily E Expenditure (Females)	External	Metabolic	741.00	111.80	5	738.00	100.46	3	kJ/Kg	28.5	+	-0.03	(Sedinger et al., 1990)
<i>Branta bernicla nigricans</i>	Daily E Expenditure (Males)	External	Metabolic	474.00	74.00	4	540.00	91.68	5	kJ/Kg	28.5	+	0.89	(Sedinger et al., 1990)
<i>Zenaida asiatica</i>	Agonistic Females	External	Behaviour	0.55	1.23	11	0.71	1.01	14	frequency	21			(Small et al., 2004)
<i>Zenaida asiatica</i>	Agonistic Females	Internal	Behaviour	0.70	1.33	10	0.69	1.05	13	frequency	21			(Small et al., 2004)
<i>Zenaida asiatica</i>	Agonistic Females	Internal	Behaviour	0.50	0.54	10	0.50	0.80	12	frequency	21			(Small et al., 2004)
<i>Zenaida asiatica</i>	Agonistic HY	External	Behaviour	2.55	2.42	11	2.50	3.14	14	frequency	21			(Small et al., 2004)
<i>Zenaida asiatica</i>	Agonistic HY	Internal	Behaviour	1.10	1.55	10	1.31	1.48	13	frequency	21			(Small et al., 2004)
<i>Zenaida asiatica</i>	Agonistic HY	Internal	Behaviour	3.30	3.10	10	0.83	1.42	12	frequency	21			(Small et al., 2004)
<i>Zenaida asiatica</i>	Agonistic Males	External	Behaviour	3.09	4.74	11	2.79	7.45	14	frequency	21			(Small et al., 2004)
<i>Zenaida asiatica</i>	Agonistic Males	Internal	Behaviour	1.50	2.91	10	1.31	2.34	13	frequency	21			(Small et al., 2004)
<i>Zenaida asiatica</i>	Agonistic Males	Internal	Behaviour	1.60	3.13	10	2.67	4.78	12	frequency	21			(Small et al., 2004)
<i>Zenaida asiatica</i>	Alert Females	External	Behaviour	18.18	16.95	11	21.86	13.58	14	frequency	21			(Small et al., 2004)

Species	Measurement	Device	Subset	Logger			Control			Duration	Direction		Reference
				Mean	s.d.	n	Mean	s.d.	n		Units	(d)	
<i>Zenaida asiatica</i>	Alert Females	Internal	Behaviour	23.50	30.93	10	17.08	8.08	13	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Alert Females	Internal	Behaviour	18.70	12.65	10	18.08	9.91	12	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Alert HY	External	Behaviour	17.46	8.95	11	21.00	18.11	14	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Alert HY	Internal	Behaviour	16.30	16.67	10	14.58	17.49	13	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Alert HY	Internal	Behaviour	15.80	10.53	10	10.00	7.48	12	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Alert Males	External	Behaviour	18.27	21.49	11	22.86	39.03	14	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Alert Males	Internal	Behaviour	12.10	13.63	10	15.92	24.12	13	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Alert Males	Internal	Behaviour	17.10	21.22	10	18.50	19.81	12	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Comfort Females	External	Behaviour	9.82	8.46	11	11.29	7.07	14	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Comfort Females	Internal	Behaviour	8.10	6.20	10	10.62	5.91	13	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Comfort Females	Internal	Behaviour	8.80	5.15	10	8.17	4.54	12	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Comfort HY	External	Behaviour	8.27	4.34	11	7.43	5.31	14	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Comfort HY	Internal	Behaviour	7.60	4.24	10	5.39	4.72	13	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Comfort HY	Internal	Behaviour	6.00	2.47	10	4.33	3.33	12	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Comfort Males	External	Behaviour	4.64	3.45	11	4.50	5.13	14	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Comfort Males	Internal	Behaviour	2.10	3.19	10	5.85	7.79	13	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Comfort Males	Internal	Behaviour	6.60	6.17	10	5.92	6.30	12	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Flying Females	External	Behaviour	3.09	5.14	11	5.64	6.44	14	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Flying Females	Internal	Behaviour	9.30	24.16	10	4.60	5.77	13	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Flying Females	Internal	Behaviour	5.06	5.06	10	6.33	6.10	12	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Flying HY	External	Behaviour	3.55	5.17	11	5.79	9.77	14	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Flying HY	Internal	Behaviour	4.70	10.75	10	6.08	16.04	13	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Flying HY	Internal	Behaviour	6.79	6.80	10	1.67	1.97	12	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Flying Males	External	Behaviour	3.00	4.97	11	11.36	31.43	14	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Flying Males	Internal	Behaviour	5.50	10.06	10	6.31	15.18	13	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Flying Males	Internal	Behaviour	5.80	12.97	10	4.17	10.46	12	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Foraging Females	External	Behaviour	1.64	2.29	11	0.64	1.09	14	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Foraging Females	Internal	Behaviour	1.40	2.21	10	0.69	1.69	13	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Foraging Females	Internal	Behaviour	1.10	2.50	10	2.00	2.39	12	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Foraging HY	External	Behaviour	0.64	1.13	11	1.07	1.87	14	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Foraging HY	Internal	Behaviour	0.90	1.52	10	0.39	0.87	13	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Foraging HY	Internal	Behaviour	2.85	2.85	10	1.42	3.15	12	frequency	21		(Small et al., 2004)
<i>Zenaida asiatica</i>	Foraging Males	External	Behaviour	0.27	0.90	11	0.21	0.60	14	frequency	21		(Small et al., 2004)

Species	Measurement	Device	Subset	Logger		Control		Duration	Direction		Reference			
				Mean	s.d.	n	Mean	s.d.	n	Units	(d)			
<i>Zenaida asiatica</i>	Foraging Males	Internal	Behaviour	1.20	3.13	10	0.62	1.19	13	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Foraging Males	Internal	Behaviour	0.40	1.26	10	0.58	1.39	12	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Interaction Females	External	Behaviour	0.00	0.00	11	0.00	0.00	14	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Interaction Females	Internal	Behaviour	0.00	0.00	10	0.00	0.00	13	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Interaction Females	Internal	Behaviour	0.00	0.00	10	0.00	0.00	12	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Interaction HY	External	Behaviour	0.00	0.00	11	0.07	0.26	14	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Interaction HY	Internal	Behaviour	0.00	0.00	10	0.00	0.00	13	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Interaction HY	Internal	Behaviour	0.00	0.00	10	0.25	0.87	12	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Interaction Males	External	Behaviour	0.00	0.00	11	0.00	0.00	14	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Interaction Males	Internal	Behaviour	0.10	0.32	10	0.08	0.29	13	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Interaction Males	Internal	Behaviour	0.10	0.32	10	0.00	0.00	12	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Resting Females	External	Behaviour	0.36	0.66	11	0.93	1.38	14	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Resting Females	Internal	Behaviour	0.20	0.63	10	0.23	0.61	13	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Resting Females	Internal	Behaviour	0.20	0.41	10	0.83	1.59	12	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Resting HY	External	Behaviour	0.18	0.40	11	0.71	1.38	14	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Resting HY	Internal	Behaviour	0.40	0.51	10	0.54	0.65	13	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Resting HY	Internal	Behaviour	0.50	0.70	10	0.92	1.18	12	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Resting Males	External	Behaviour	0.55	0.53	11	0.79	1.05	14	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Resting Males	Internal	Behaviour	1.10	1.58	10	1.15	1.33	13	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Resting Males	Internal	Behaviour	0.80	0.92	10	0.67	0.97	12	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Walking Females	External	Behaviour	4.36	6.10	11	4.71	6.55	14	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Walking Females	Internal	Behaviour	5.40	10.06	10	2.23	1.98	13	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Walking Females	Internal	Behaviour	5.40	6.51	10	4.00	3.15	12	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Walking HY	External	Behaviour	2.73	3.02	11	5.71	6.02	14	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Walking HY	Internal	Behaviour	2.70	3.92	10	1.39	1.80	13	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Walking HY	Internal	Behaviour	2.50	2.47	10	2.33	3.33	12	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Walking Males	External	Behaviour	7.09	10.85	11	4.21	7.11	14	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Walking Males	Internal	Behaviour	3.80	5.57	10	3.46	4.83	13	frequency	21	(Small et al., 2004)		
<i>Zenaida asiatica</i>	Walking Males	Internal	Behaviour	3.70	5.91	10	5.50	9.39	12	frequency	21	(Small et al., 2004)		
<i>Falco columbarius</i>	reproductive success 1988	External	Reproductive	3.70	1.56	3	4.00	0.94	22		52.5	-	-0.31	(Sodhi et al., 1991)
<i>Falco columbarius</i>	reproductive success 1989	External	Reproductive	3.20	1.79	5	3.80	1.53	26		52.5	-	-0.40	(Sodhi et al., 1991)
<i>Falco columbarius</i>	reproductive success 1990	External	Reproductive	4.00	1.40	4	3.90	1.44	23		52.5	-	0.07	(Sodhi et al., 1991)
<i>Puffinus griseus</i>	mass at second capture	External	Condition	784.40	48.52	9	852.70	48.50	15	g	45	-	-1.47	(Söhle, 2003)

Species	Measurement	Device	Subset	Logger			Control			Duration	Direction		Reference	
				Mean	s.d.	n	Mean	s.d.	n		deleterious	d		
<i>Puffinus griseus</i>	mass at second Recapture	External	Condition	797.00	62.60	16	750.60	54.00	9	g	175	-	0.81	(Söhle, 2003)
<i>Spiza americana</i>	Change in fecal glucocorticoid levels	External	Condition	102.30	30.63	5	6.10	30.63	5	ng/g	1	+	-3.51	(Wells et al., 2003)
<i>Spiza americana</i>	Mass change	External	Condition	6.40	4.25	5	9.80	1.79	5	g	27	-	-1.17	(Wells et al., 2003)
<i>Strix aluco</i>	Incubating female	External	Condition	610.00	46.25	3	594.00	44.69	27	g	365	-	0.37	(Sunde, 2006)
<i>Strix aluco</i>	Late nestling female	External	Condition	540.00	1428.71	7	546.00	45.62	37	g	365	-	-0.01	(Sunde, 2006)
<i>Strix aluco</i>	Late nestling male	External	Condition	403.00	21.80	6	405.00	21.58	22	g	365	-	-0.10	(Sunde, 2006)
<i>Strix aluco</i>	Non-breeding female	External	Condition	564.00	49.20	9	579.00	48.92	23	g	365	-	-0.32	(Sunde, 2006)
<i>Strix aluco</i>	Non-breeding male	External	Condition	480.00	29.41	10	482.00	29.05	15	g	365	-	-0.07	(Sunde, 2006)
<i>Strix aluco</i>	Mean clutch size female	External	Reproductive	3.19	1.35	14	3.18	1.59	30		365	-	0.01	(Sunde, 2006)
<i>Strix aluco</i>	Mean clutch size m & f	External	Reproductive	3.05	1.10	6	3.44	0.98	24		365	-	-0.40	(Sunde, 2006)
<i>Strix aluco</i>	Mean clutch size male	External	Reproductive	2.92	1.39	12	3.26	1.47	32		365	-	-0.24	(Sunde, 2006)
<i>Tyto alba</i>	# young	External	Reproductive	4.30	2.20	6	4.70	1.96	6		90	-	-0.21	(Taylor, 1991)
<i>Tyto alba</i>	mass of young	External	Reproductive	382.50	36.71	26	375.30	30.16	28	g	90	-	0.22	(Taylor, 1991)
<i>Spheniscus humboldti</i>	foraging trip duration	External	Foraging	9.40	1.80	22	7.20	1.50	30	h	68.5			(Taylor et al., 2001)
<i>Spheniscus humboldti</i>	overnight trip duration	External	Foraging	25.50	2.80	22	22.90	2.10	30	h	68.5			(Taylor et al., 2001)
<i>Falco mexicanus</i>	1991 Female Nest attendance	External	Reproductive	33.10	13.86	3	39.40	14.10	9	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1991 Female Nest attendance	External	Reproductive	12.60	5.54	3	18.20	5.70	9	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1991 Female Territory attendance	External	Reproductive	45.10	9.76	2	47.50	9.90	9	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1991 Female Territory attendance	External	Reproductive	34.80	11.74	2	41.90	11.70	9	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1991 Male Nest attendance	External	Reproductive	16.70	8.40	9	19.50	8.31	3	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1991 Male Nest attendance	External	Reproductive	11.70	5.10	9	6.90	5.02	3	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1991 Male Territory attendance	External	Reproductive	29.00	8.40	9	33.20	8.49	2	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1991 Male Territory attendance	External	Reproductive	32.70	9.00	9	30.30	8.91	2	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1992 Female Nest attendance	External	Reproductive	35.90	15.19	6	41.00	11.76	6	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1992 Female Nest attendance	External	Reproductive	10.00	6.12	6	9.60	5.37	8	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1992 Female Prey caching	External	Reproductive	0.10	0.07	6	0.05	0.07	6	items/h	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1992 Female Prey caching	External	Reproductive	0.03	0.05	6	0.02	0.06	8	items/h	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1992 Female Prey delivery	External	Reproductive	0.11	0.07	6	0.04	0.07	6	items/h	365	-	1.04	(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1992 Female Prey delivery	External	Reproductive	0.17	0.12	6	0.09	0.11	8	items/h	365	-	0.74	(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1992 Female Territory attendance	External	Reproductive	54.70	10.53	6	61.20	8.33	6	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1992 Female Territory attendance	External	Reproductive	50.20	12.74	6	46.20	11.31	8	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1992 Male Nest attendance	External	Reproductive	17.10	8.20	8	17.40	10.47	8	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1992 Male Nest attendance	External	Reproductive	8.00	4.81	8	2.90	5.63	6	% time	365			(Vekasy et al., 1996)

Species	Measurement	Device	Subset	Logger			Control			Duration	Direction		Reference	
				Mean	s.d.	n	Mean	s.d.	n		deleterious	d		
<i>Falco mexicanus</i>	1992 Male Prey delivery	External	Reproductive	0.23	0.11	8	0.26	0.14	8	items/h	365	-	-0.25	(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1992 Male Prey delivery	External	Reproductive	0.31	0.11	8	0.23	0.12	6	items/h	365	-	0.74	(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1992 Male Territory attendance	External	Reproductive	43.10	8.20	8	44.30	10.75	8	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1992 Male Territory attendance	External	Reproductive	39.30	8.77	8	30.20	9.80	6	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1993 Female Nest attendance	External	Reproductive	51.00	13.68	3	51.30	13.44	2	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1993 Female Nest attendance	External	Reproductive	12.30	5.37	3	11.80	5.37	2	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1993 Female Prey caching	External	Reproductive	0.16	0.07	3	0.07	0.07	2	items/h	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1993 Female Prey caching	External	Reproductive	0.05	0.05	3	0.03	0.04	2	items/h	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1993 Female Prey delivery	External	Reproductive	0.08	0.07	3	0.14	0.07	2	items/h	365	-	-1.11	(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1993 Female Prey delivery	External	Reproductive	0.15	0.12	3	0.25	0.11	2	items/h	365	-	-1.09	(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1993 Female Territory attendance	External	Reproductive	65.00	9.53	3	55.80	9.48	2	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1993 Female Territory attendance	External	Reproductive	37.30	11.43	3	37.30	11.31	2	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1993 Male Nest attendance	External	Reproductive	18.10	8.06	2	12.30	8.14	3	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1993 Male Nest attendance	External	Reproductive	9.60	4.95	2	12.50	4.85	3	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1993 Male Prey delivery	External	Reproductive	0.26	0.11	2	0.27	0.09	3	items/h	365	-	-0.13	(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1993 Male Prey delivery	External	Reproductive	0.19	0.11	2	0.15	0.12	3	items/h	365	-	0.44	(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1993 Male Territory attendance	External	Reproductive	32.00	8.20	2	28.10	8.31	3	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1993 Male Territory attendance	External	Reproductive	33.50	4.95	2	33.90	8.66	3	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1994 Female Nest attendance	External	Reproductive	37.40	1.40	4	36.60	13.47	6	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1994 Female Nest attendance	External	Reproductive	16.70	5.60	4	14.70	5.39	6	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1994 Female Prey caching	External	Reproductive	0.09	0.08	4	0.09	0.07	6	items/h	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1994 Female Prey caching	External	Reproductive	0.01	0.06	4	0.03	0.05	6	items/h	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1994 Female Prey delivery	External	Reproductive	0.15	0.08	4	0.13	0.07	6	items/h	365	-	0.29	(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1994 Female Prey delivery	External	Reproductive	0.16	0.12	4	0.12	0.12	6	items/h	365	-	0.37	(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1994 Female Territory attendance	External	Reproductive	62.10	9.80	4	46.60	16.90	6	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1994 Female Territory attendance	External	Reproductive	45.20	11.80	4	35.80	11.27	6	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1994 Male Nest attendance	External	Reproductive	13.50	8.08	6	12.30	9.40	4	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1994 Male Nest attendance	External	Reproductive	9.20	4.90	6	12.50	5.80	4	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1994 Male Prey delivery	External	Reproductive	0.24	0.12	6	0.20	0.12	4	items/h	365	-	0.37	(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1994 Male Prey delivery	External	Reproductive	0.17	0.12	6	0.13	0.12	4	items/h	365	-	0.37	(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1994 Male Territory attendance	External	Reproductive	32.00	8.57	6	23.40	8.60	4	% time	365			(Vekasy et al., 1996)
<i>Falco mexicanus</i>	1994 Male Territory attendance	External	Reproductive	33.80	8.57	6	23.80	9.00	4	% time	365			(Vekasy et al., 1996)
<i>Uria aalge</i>	Time away from site	External	Reproductive	141.00	12.25	6	155.00	34.00	4	min				(Wanless et al., 1988)

Species	Measurement	Device	Subset	Logger			Control			Duration	Direction		Reference	
				Mean	s.d.	n	Mean	s.d.	n		(d)	deleterious		
<i>Uria aalge</i>	Time away from site	External	Reproductive	428.00	97.98	6	155.00	34.00	4	min	-	-	(Wanless et al., 1988)	
<i>Rissa tridactyla</i>	Number of checks brood unattended	External	Reproductive	1.10	3.74	14	0.00	0.00	5		3	-	0.36	(Wanless, 1992)
<i>Rissa tridactyla</i>	Number of checks brood unattended	External	Reproductive	24.00	20.24	10	12.80	20.57	5		3	-	0.59	(Wanless, 1992)
<i>Rissa tridactyla</i>	Number of checks pair together	External	Reproductive	0.40	0.77	15	0.40	0.45	5		3			(Wanless, 1992)
<i>Rissa tridactyla</i>	Number of checks pair together	External	Reproductive	1.30	3.37	14	0.40	0.45	5		3			(Wanless, 1992)
<i>Rissa tridactyla</i>	Number of checks pair together	External	Reproductive	0.00	0.00	10	0.60	0.89	5		3			(Wanless, 1992)
<i>Rissa tridactyla</i>	Number of Trips	External	Reproductive	2.50	0.77	15	3.40	0.45	5		3			(Wanless, 1992)
<i>Rissa tridactyla</i>	Number of Trips	External	Reproductive	2.30	0.37	14	2.80	0.45	5		3			(Wanless, 1992)
<i>Rissa tridactyla</i>	Number of Trips	External	Reproductive	2.00	0.63	10	2.00	0.00	5		3			(Wanless, 1992)
<i>Rissa tridactyla</i>	Total time away	External	Reproductive	8.10	1.94	15	8.50	0.89	5	h	3			(Wanless, 1992)
<i>Rissa tridactyla</i>	Total time away	External	Reproductive	8.60	3.74	14	7.70	2.01	5	h	3			(Wanless, 1992)
<i>Rissa tridactyla</i>	Total time away	External	Reproductive	13.80	3.48	10	9.40	4.02	5	h	3			(Wanless, 1992)
<i>Rissa tridactyla</i>	Trip duration	External	Reproductive	5.20	1.94	15	4.40	1.57	5	h	3			(Wanless, 1992)
<i>Rissa tridactyla</i>	Trip duration	External	Reproductive	3.90	2.88	13	3.40	1.79	5	h	3			(Wanless, 1992)

Literature cited

- Ackerman, J. T., Adams, J., Takekawa, J. Y., Carter, H. R., Whitworth, D. L., Newman, S. H., Golightly, R. T. and Orthmeyer, D. L. (2004). Effects of radiotransmitters on the reproductive performance of Cassin's auklets. *Wildl. Soc. Bull.* **32**, 1229-1241.
- Bakken, G. S., Reynolds, P. S., Kenow, K. P., Korschgen, C. E. and Boysen, A. F. (1996). Thermoregulatory effects of radiotelemetry transmitters in mallard ducklings. *J. Wildl. Manag.* **60**, 669-678.
- Berdean, J. B. and Otis, D. L. (2006). Effects of subcutaneous transmitter implants on mourning doves. *Wildl. Soc. Bull.* **94**, 93-103.
- Boag, D. A. (1972). Effect of radio packages on behavior of captive red grouse. *J. Wildl. Manag.* **36**, 511-518.
- Bowman, J., Wallace, M. C., Ballard, W. B., Brunjes, J. H., IV, Miller, M. S. and Hellman, J. M. (2002). Evaluation of two techniques for attaching radio transmitters to turkey poultts. *J. Field Ornithol.* **73**, 276-280.
- Cotter, R. C. and Gratto, C. J. (1995). Effects of nest and brood visits and radio transmitters on rock ptarmigan. *J. Wildl. Manag.* **59**, 93-98.
- Croll, D. A., Osmek, S. D. and Bengtson, J. L. (1991). An effect of instrument attachment on foraging trip duration in chinstrap penguins. *Condor* **93**, 777-779.
- Croll, D. A., Jansen, J. K., Goebel, M. E., Boveng, P. L. and Bengtson, J. L. (1996). Foraging behavior and reproductive success in chinstrap penguins: the effects of transmitter attachment. *J. Field Ornithol.* **67**, 1-9.
- Culik, B. M. and Wilson, R. P. (1991). Swimming energetics and performance of instrumented Adelie penguins (*Pygoscelis adeliae*). *J. Exp. Biol.* **158**, 355-368.
- Culik, B. M. and Wilson, R. P. (1992). Field metabolic rates of instrumented Adélie penguins using double-labelled water. *J. Comp. Physiol. B* **162**, 567-573.
- Culik, B. M., Bannasch, R. and Wilson, R. P. (1994). External devices on penguins: how important is shape? *Marine Biology* **118**, 353-357.
- Dugger, K. M., Ballard, G., Ainley, D. G. and Barton, K. J. (2006). Effects of flipper bands on foraging behavior and survival of Adélie penguins (*Pygoscelis adeliae*). *Auk* **123**, 858-869.
- Esler, D., Mulcahy, D. M. and Jarvis, R. L. (2000). Testing assumptions for unbiased estimation of survival of radiomarked harlequin ducks. *J. Wildl. Manag.* **64**, 591-598.

- Gales, R., Williams, C. and Ritz, D.** (1990). Foraging behaviour of the little penguin, *Eudyptula minor*: initial results and assessment of instrument effect. *Journal of Zoology* **220**, 61-85.
- Gessaman, J. A. and Nagy, K. A.** (1988). Transmitter loads affect the flight speed and metabolism of homing pigeons. *Condor* **90**, 662-668.
- Gessaman, J. A., Workman, G. W. and Fuller, M. R.** (1991). Flight performance, energetics and water turnover of tippler pigeons with a harness and dorsal load. *Condor* **93**, 546-554.
- Godfrey, J. D. and Bryant, D. M.** (2003). Effects of radio transmitters: Review of recent radio-tracking studies. In *Conservation applications of measuring energy expenditure of New Zealand birds: Assessing habitat quality and costs of carrying radio transmitters*, (ed. M. Williams), pp. 83-95: New Zealand Department of Conservation.
- Green, J. A., Tanton, J. L., Woakes, A. J., Boyd, I. L. and Butler, P. J.** (2004). Effects of long-term implanted data loggers on macaroni penguins *Eudyptes chrysolophus*. *J. Avian Biol.* **35**, 370-376.
- Guillemette, M., Woakes, A. J., Flagstad, A. and Butler, P. J.** (2002). Effects of data-loggers implanted for a full year in female common eiders. *Condor* **104**, 448-452.
- Gwyn, K. L. and Clark, R. G.** (1999). Decoy trap bias and effects of markers in reproduction of Northern pintails. *J. Field Ornithol.* **70**, 504-513.
- Hagen, C. A., Sandercock, B. K., Pitman, J. C., Robel, R. J. and Applegate, R. D.** (2006). Radiotelemetry survival estimates of lesser prairie-chickens in Kansas: Are there transmitter biases? *Wildl. Soc. Bull.* **34**, 1064-1069.
- Hamel, N. J., Parrish, J. K. and Conquest, L. L.** (2004). Effects of tagging on behavior, provisioning, and reproduction in the common murre (*Uria aalge*), a diving seabird. *Auk* **121**, 1161-1171.
- Hepp, G. R., Folk, T. H. and Hartke, K. M.** (2002). Effects of subcutaneous transmitters on reproduction, incubation behavior, and annual return rates of female wood ducks. *Wildl. Soc. Bull.* **30**, 1208-1214.
- Herzog, P. W.** (1979). Effects of radio-marking on behavior, movements, and survival of spruce grouse. *J. Wildl. Manag.* **43**, 316-323.
- Hill, I. F., Cresswell, B. H. and Kenward, R. E.** (1999). Field-testing the suitability of a new back-pack harness for radio-tagging passerines. *J. Avian Biol.* **30**, 135-142.
- Hines, J. E. and Zwickel, F. C.** (1985). Influence of radio packages on young blue grouse. *J. Wildl. Manag.* **49**, 1050-1054.
- Hiraldo, F., Donázar, J. A. and Negro, J. J.** (1994). Effects of tail-mounted radio-tags on adult lesser kestrels. *J. Field Ornithol.* **65**, 466-471.
- Hooge, P. N.** (1991). The effects of radio weight and harnesses on time budgets and movements of acorn woodpeckers. *J. Field Ornithol.* **62**, 230-238.
- Houston, R. A. and Greenwood, R. J.** (1993). Effects of radio transmitters on nesting captive mallards. *J. Wildl. Manag.* **57**, 703-709.
- Hull, C. L.** (1997). The effect of carrying devices on breeding royal penguins. *Condor* **99**, 530-534.
- Hupp, J. W., Pearce, J. M., Mulcahy, D. M. and Miller, D. A.** (2006). Effects of abdominally implanted radiotransmitters with percutaneous antennas on migration, reproduction, and survival of Canada geese. *J. Wildl. Manag.* **70**, 812-822.
- Igual, J. M., Forero, M. G., Tavecchia, G., González-Solis, J., Martínez-Abraín, A., Hobson, K. A., Ruiz, X. and Oro, D.** (2005). Short-term effects of data-loggers on Cory's shearwater (*Calonectris diomedea*). *Marine Biology* **146**, 619-624.
- Irons, D. B.** (1998). Foraging area fidelity of individual seabirds in relation to tidal cycles and flock feeding. *Ecology* **79**, 647-655.
- Johnson, R. N. and Berner, A. H.** (1980). Effects of radio transmitters on released cock pheasants. *J. Wildl. Manag.* **44**, 686-689.
- Kålås, J. A., Løfaldli, L. and Fiske, P.** (1989). Effects of radio packages on great snipe during breeding. *J. Wildl. Manag.* **53**, 1155-1158.
- Kenward, R. E.** (1978). Radio transmitters tail-mounted on hawks. *Ornis Scandinavica* **9**, 220-223.
- Klaassen, M., Becker, P. H. and Wagener, M.** (1992). Transmitter loads do not affect the daily energy expenditure of nesting common terns. *J. Field Ornithol.* **63**, 181-185.
- O'Hearn, P. P., Romero, L. M., Carlson, R. and Delehanty, D. J.** (2005). Effective subcutaneous radiotransmitter implantation into the furcular cavity of chukars. *Wildl. Soc. Bull.* **33**, 1033-1046.
- Osborne, D. A., Frawley, B. J. and Weeks, H. P., Jr.** (1997). Effects of radio tags on captive northern bobwhite (*Colinus virginianus*) body composition and survival. *Am. Mid. Nat.* **137**, 213-224.
- Paredes, R., Jones, I. L. and Boness, D. J.** (2005). Reduced parental care, compensatory behaviour and reproductive costs of thick-billed murres equipped with data loggers. *Anim. Behav.* **69**, 197-207.
- Putala, A., Oksa, J., Rintamäki, H. and Hissa, R.** (1997). Effects of hand-rearing and radiotransmitters on flight of gray partridge. *J. Wildl. Manag.* **61**, 1345-1351.

- Robert, M., Drolet, B. and Savard, J.-P.** S. (2006). Effects of backpack radio-transmitters on female Barrow's goldeneyes. *Waterbirds* **29**, 115-120.
- Ropert-Coudert, Y., Wilson, R. P., Yoda, K. and Kato, A.** (2007). Assessing performance constraints in penguins with externally-attached devices. *Mar. Ecol. Prog. Ser.* **333**, 281-289.
- Schmid, D., Grémillet, D. and Culik, B. M.** (1995). Energetics of underwater swimming in the great cormorant (*Phalacrocorax carbo sinensis*). *Marine Biology* **123**, 875-881.
- Sedinger, J. S., White, R. G. and Hauer, W. E.** (1990). Effects of carrying radio transmitters on energy expenditure of Pacific black brant. *J. Wildl. Manag.* **54**, 42-45.
- Small, M. F., Rosales, R., Baccus, J. T., Weckerly, F. W., Phalen, D. N. and Roberson, J. A.** (2004). A comparison of effects of radiotransmitter attachment techniques on captive white-winged doves. *Wildl. Soc. Bull.* **32**, 627-637.
- Sodhi, N. S., Warkentin, I. G., James, P. C. and Oliphant, L. W.** (1991). Effects of radiotagging on breeding merlins. *J. Wildl. Manag.* **55**, 613-616.
- Söhle, I.** (2003). Effects of satellite telemetry on sooty shearwater, *Puffinus griseus*, adults and chicks. *Emu* **103**, 373-379.
- Sunde, P.** (2006). Effects of backpack radio tags on tawny owls. *J. Wildl. Manag.* **70**, 594-599.
- Taylor, I. R.** (1991). Effects of nest inspections and radiotagging on barn owl breeding success. *J. Wildl. Manag.* **55**, 312-315.
- Taylor, S. S., Leonard, M. L., Bones, D. J. and Majluf, P.** (2001). Foraging trip duration increases for Humboldt penguins tagged with recording devices. *J. Avian Biol.* **32**, 369-372.
- Vekasy, M. S., Marzluff, J. M., Kochert, M. N., Lehman, R. N. and Steenhof, K.** (1996). Influence of radio transmitters on prairie falcons. *J. Field Ornithol.* **67**, 680-690.
- Wanless, S.** (1992). Effects of tail-mounted devices on the attendance behaviour of kittiwakes during chick rearing. *J. Field Ornithol.* **63**, 169-176.
- Wanless, S., Harris, M. P. and Morris, J. A.** (1988). The effect of radio transmitters on the behavior of common murres and razorbills during chick rearing. *Condor* **90**, 816-823.
- Wells, K. M. S., Washburn, B. E., Millspaugh, J. J., Ryan, M. R. and Hubbard, M. W.** (2003). Effects of radio-transmitters on fecal glucocorticoid levels in captive dickcissels. *Condor* **105**, 805-810.