

Table S1. Published measurements of body mass and device mass for studies examining the effect of instrumentation on birds.

Common name	Species	Body mass (g)	Device mass (g)	Reference
Cassin's auklet	<i>Ptychoramphus aleuticus</i>	164.3	3.05	Ackerman et al. (2004)
Mallard	<i>Anas platyrhynchos</i>	37.2	1.5	Bakken et al. (1996)
Mallard	<i>Anas platyrhynchos</i>	37.2	2	Bakken et al. (1996)
Mourning dove	<i>Zenaida macroura</i>	120.7	3.55	Berdean and Otis (2006)
Grouse	<i>Lagopus lagopus scotica</i>	593.8	25	Boag (1972)
Turkey	<i>Meleagris gallopavo</i>	58.3	1.8	Bowman et al. (2002)
Rock ptarmigan	<i>Lagopus mutus</i>	514.3	18	Cotter and Gratto (1995)
Rock ptarmigan	<i>Lagopus mutus</i>	521.7	12	Cotter and Gratto (1995)
Chinstrap penguin	<i>Pygoscelis antarcticus</i>	4155.5	39	Croll et al. (1991)
Chinstrap penguin	<i>Pygoscelis antarcticus</i>	4155.5	127	Croll et al. (1991)
Adelie penguin	<i>Pygoscelis adeliae</i>	4257.5	70	Culik and Wilson (1992)
Adelie penguin	<i>Pygoscelis adeliae</i>	3900	200	Culik et al. (1994)
Harlequin duck	<i>Histrionicus histrionicus</i>	563.5	16.3	Esler et al. (2000)
Blue-winged teal	<i>Anas discors</i>	375	15	Garrettson et al. (2000)
Blue-winged teal	<i>Anas discors</i>	384.6	15	Garrettson et al. (2000)
Pigeon	<i>Columba livia</i>	412.5	15.5	Gessaman and Nagy (1988)
Tippler pigeon	<i>Columba livia</i>	265.9	13.7	Gessaman et al. (1991)
Takahe	<i>Porphyrio mantelli</i>	2580	48.1	Godfrey et al. (2003)
Brush turkey	<i>Alectura lathami</i>	127	1.8	Göth and Jones (2001)
Macaroni penguin	<i>Eudyptes chrysolophus</i>	5175	21	Green et al. (2004)
Common eider duck	<i>Somateria mollissima</i>	1700	16.5	Guillemette et al. (2002)
Northern pintail	<i>Anas acuta</i>	946.5	8	Guyn and Clark (1999)
Lesser prarie-chicken	<i>Tympanuchus pallidicinctus</i>	788	12	Hagen et al. (2006)
Common murre	<i>Uria aalge</i>	943.05	7	Hamel et al. (2004)
Wood duck	<i>Aix sponsa</i>	658	6.6	Hepp et al. (2002)

Common name	Species	Body mass (g)	Device mass (g)	Reference
Red grouse	<i>Canachites canadensis</i>	506.7	19	Herzog (1979)
Blackbird	<i>Turdus merula</i>	102.2	2.3	Hill et al. (1999)
Blue Grouse	<i>Dendragapus obscurus</i>	646.0	26.5	Hines and Zwickel (1985)
Lesser kestrel	<i>Falco naumanni</i>	152.5	4.25	Hiraldo et al. (1994)
Acorn woodpecker	<i>Melanerpes formicivorus</i>	80	3	Hooge (1991)
Acorn woodpecker	<i>Melanerpes formicivorus</i>	80	4.5	Hooge (1991)
Mallard	<i>Anas platyrhynchos</i>	1000	4	Houston and Greenwood (1993)
Mallard	<i>Anas platyrhynchos</i>	1010.1	10	Houston and Greenwood (1993)
Mallard	<i>Anas platyrhynchos</i>	1028.6	18	Houston and Greenwood (1993)
Royal penguin	<i>Eudyptes schlegeli</i>	4250	50	Hull (1997)
Royal penguin	<i>Eudyptes schlegeli</i>	4250	9	Hull (1997)
Chinstrap penguin	<i>Pygoscelis antarctica</i>	4155.5	20	Croll et al. (1996)
Canada goose	<i>Branta canadensis</i>	1990	26	Hupp et al. (2006)
Canada goose	<i>Branta canadensis</i>	3060	35	Hupp et al. (2006)
Cory's Shearwater	<i>Calonectris diomedea</i>	725	12	Igual et al. (2005)
Black-legged Kittiwakes	<i>Rissa tridacyla</i>	440	11	Irons (1998)
Ring-necked pheasant	<i>Phasianus colchicus</i>	897	28	Johnson and Berner (1980)
Great Snipe	<i>Gallinago media</i>	170.5	3.2	Kålås et al. (1989)
Common Tern	<i>Sterna hirundo</i>	128	8	Klaassen et al. (1992)
Florida Sandhill Cranes	<i>Grus canadensis</i>	3200	65	Klugman and Fuller (1990)
Chukar	<i>Alectoris chukar</i>	503.5	8.6	O'Hearn et al. (2005)
Bobwhite	<i>Colinus virginianus</i>	178	6.5	Osborne et al. (1997)
Gray partridge	<i>Perdix perdix</i>	370	15	Putala et al. (1997)
Barrow's Goldeneyes	<i>Bucephala islandica</i>	940.5	19.5	Robert et al. (2006)
Adelie penguin	<i>Pygoscelis adeliae</i>	4560	50	Ropert-Coudert et al. (2007)
Adelie penguin	<i>Pygoscelis adeliae</i>	4690	17	Ropert-Coudert et al. (2007)
Black Brant	<i>Branta bernicla</i>	1432	35	Sedinger et al. (1990)

Common name	Species	Body mass (g)	Device mass (g)	Reference
Black Brant	<i>Branta bernicla</i>	955	35	Sedinger et al. (1990)
Dickcissels	<i>Spiza americana</i>	30	0.7	Suedkamp Wells et al. (2003)
Barn owl	<i>Tyto alba</i>	350	3.5	Taylor (1991)
Humboldt Penguin	<i>Spheniscus humboldti</i>	4379	47.25	Taylor et al. (2001)
Thick billed murre	<i>Uria lomvia</i>	941	20.5	Paredes et al. (2005)
Northern spotted owl	<i>Strix occidentalis</i>	591	18.7	Paton et al. (1991)
Northern spotted owl	<i>Strix occidentalis</i>	662	18.7	Paton et al. (1991)
Northern spotted owl	<i>Strix occidentalis</i>	591	18.5	Paton et al. (1991)
Northern spotted owl	<i>Strix occidentalis</i>	662	18.5	Paton et al. (1991)
Northern Goshawk	<i>Accipiter gentilis</i>	660	10	Reynolds et al. (2004)
Northern Goshawk	<i>Accipiter gentilis</i>	660	19.5	Reynolds et al. (2004)
Great Cormorant	<i>Phalacrocorax carbo</i>	2310	36	Schmid et al. (1995)
Merlin	<i>Falco columbarius</i>	250	4	Sodhi et al. (1991)
Tawny owl	<i>Strix aluco</i>	520	10	Sunde (2006)
White-winged dove	<i>Zenaida asiatica</i>	153	3.65	Small et al. (2004)
White-winged dove	<i>Zenaida asiatica</i>	153	2.9	Small et al. (2004)
White-winged dove	<i>Zenaida asiatica</i>	153	3.7	Small et al. (2004)
Prairie Falcon	<i>Falco mexicanus</i>	752	14	Vekasy et al. (1996)
Adelie penguin	<i>Pygoscelis adeliae</i>	4400	20	Culik and Wilson (1991)
Adelie penguin	<i>Pygoscelis adeliae</i>	4050	35	Culik and Wilson (1991)
Little Penguin	<i>Eudyptula minor</i>	970	60	Gales and Green (1990)
Black-legged Kittiwakes	<i>Rissa tridactyla</i>	420	15.5	Heggøy et al. (2015)
Little auks	<i>Alle alle</i>	166.2	1	Kidawa et al. (2012)
Southern rockhopper penguin	<i>Eudyptes chrysocome</i>	2642	75	Ludynia et al. (2012)
Southern rockhopper penguin	<i>Eudyptes chrysocome</i>	2642	3.3	Ludynia et al. (2012)
Long-tailed ducks	<i>Clangula hyemalis</i>	678	7.4	Enstipp et al. (2015)
Northern pintail	<i>Anas acuta</i>	900	12	Hupp et al. (2015)

Common name	Species	Body mass (g)	Device mass (g)	Reference
Northern pintail	<i>Anas acuta</i>	900	19	Hupp et al. (2015)
Little Penguin	<i>Eudyptula minor</i>	970	14	Agnew et al. (2013)
Little Penguin	<i>Eudyptula minor</i>	970	3.4	Agnew et al. (2013)
Greater sage-grouse	<i>Centrocercus urophasianus</i>	1750	22	Gibson et al. (2013)
Black-tailed Godwits	<i>Limosa limosa</i>	333.3	26	Hooijmeijer et al. (2014)
Spectacled eider	<i>Somateria scheri</i>	950	44	Sexson et al. (2014)
Black-legged Kittiwakes	<i>Rissa tridactyla</i>	402.7	20.98	Chivers et al. (2015)
Black-legged Kittiwakes	<i>Rissa tridactyla</i>	381.6	3.93	Chivers et al. (2015)
Common eider duck	<i>Somateria mollissima</i>	1735	46.55	Latty et al. (2016)
Common eider duck	<i>Somateria mollissima</i>	1735	40.5	Latty et al. (2016)
Lesser Black-backed Gulls	<i>Larus fuscus</i>	851	19	Thaxter et al. (2016)
Great Skua	<i>Stercorarius skua</i>	1346	19	Thaxter et al. (2016)
Prarie Falcon	<i>Falco mexicanus</i>	884.2	33.6	Steenhof et al. (2006)
Tufted puffin	<i>Fratercula cirrhata</i>	774	7.5	Whidden et al. (2007)
Tufted puffin	<i>Fratercula cirrhata</i>	774	9	Whidden et al. (2007)
Swainson's warbler	<i>Limnothlypis swainsonii</i>	15.5	0.42	Anich et al. (2009)
Common eider duck	<i>Somateria mollissima</i>	1920	42.5	Latty et al. (2010)
Hermit thrush	<i>Catharus guttatus</i>	30.8	0.75	Davis et al. (2008)
Pigeon	<i>Columba livia</i>	436	5	Irvine et al. (2007)
Pigeon	<i>Columba livia</i>	436	8	Irvine et al. (2007)
Golden-winged warbler	<i>Vermivora chrysoptera</i>	9.5	0.39	Streby et al. (2013)
Wood thrush	<i>Hylocichla mustelina</i>	50	1.5	Gow et al. (2011)
Bicknell's thrush	<i>Catharus bicknelli</i>	26.7	1.2	Townsend et al. (2012)
Northern wheatear	<i>Oenanthe oenanthe</i>	22.9	1.1	Arlt et al. (2013)
Northern wheatear	<i>Oenanthe oenanthe</i>	23.5	0.8	Arlt et al. (2013)
Northern bobwhite	<i>Colinus virginianus</i>	178	6	Terhune et al. (2007)
American kestrel	<i>Falco sparverius</i>	96.5	4.8	Pereia et al. (2009)

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Red-billed Curassow	<i>Crax blumenbachii</i>	3538.5	46	Bernardo et al. (2011)
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	67.7	2.1	Vukovich and Kilgo (2009)
Northern cardinal	<i>Cardinalis cardinalis</i>	45	1.6	Barron et al. (2013)
Thick-billed murre	<i>Uria lomvia</i>	928.7	3.6	Elliott et al. (2012)
Thick-billed murre	<i>Uria lomvia</i>	928.7	1.8	Elliott et al. (2012)
Common murre	<i>Uria lomvia</i>	988.7	3.6	Elliott et al. (2012)
Common murre	<i>Uria lomvia</i>	988.7	1.8	Elliott et al. (2012)
Great tit	<i>Parus major</i>	16	0.8	Snijders et al. (2017)
Little Penguin	<i>Eudyptula minor</i>	1172	22	Ritchie et al. (2010)
Northern gannett	<i>Sula bassana</i>	3000	14	Vandenabeele et al. (2014)
Northern gannett	<i>Sula bassana</i>	3000	30	Vandenabeele et al. (2014)
Common swift	<i>Apus apus</i>	40	1.2	Bowlin et al. (2010)
Common swift	<i>Apus apus</i>	40	0.5	Bowlin et al. (2010)
Purple martin	<i>Progne subis</i>	48.5	1.5	Stutchbury et al. (2009)
Wood thrush	<i>Hylocichla mustelina</i>	51	1.5	Stutchbury et al. (2009)
Savannah sparrow	<i>Passerculus sandwichensis</i>	19	0.815	Rae et al. (2009)
Whinchat	<i>Saxicola rubetra</i>	15.4	0.63	Blackburn et al. (2016)
Eurasian Hoopoe	<i>Upupa epops</i>	69.5	1.32	van Wijk et al. (2016)
Golden-winged Warblers	<i>Vermivora chrysoptera</i>	9	0.45	Streby et al. (2015)
Ovenbirds	<i>Seiurus aurocapilla</i>	19	0.45	Streby et al. (2015)
Ruby-throated Hummingbirds	<i>Archilochus colubris</i>	3.78	0.24	Zenzal et al. (2014)
Ruby-throated Hummingbirds	<i>Archilochus colubris</i>	3.78	0.22	Zenzal et al. (2014)
Western grebe	<i>Aechmophorus occidentalis</i>	1258.8	26	Mills et al. (2016)
Barn swallow	<i>Hirundo rustica</i>	18.6	0.77	Scandolara et al. (2014)
Barn swallow	<i>Hirundo rustica</i>	18.2	0.68	Scandolara et al. (2014)
Common murre	<i>Uria lomvia</i>	1000	7	Wanless et al. (1988)
Common murre	<i>Uria lomvia</i>	1092.9	7.65	Wanless et al. (1988)

Common name	Species	Body mass (g)	Device mass (g)	Reference
Razorbill	<i>Alca torda</i>	728.6	7.65	Wanless et al. (1988)
African penguin	<i>Spheniscus demersus</i>	3000	18	Wilson et al. (1986)
Common yellowthroat	<i>Geothlypis trichas</i>	12.7	1.09	Sykes et al. (1990)
Adelie penguin	<i>Pygoscelis adeliae</i>	3900	15.7	Ballard et al. (2001)
Adelie penguin	<i>Pygoscelis adeliae</i>	3900	0.2	Ballard et al. (2001)
Adelie penguin	<i>Pygoscelis adeliae</i>	3900	25.4	Ballard et al. (2001)
Bald Eagles	<i>Haliaeetus leucocephalus</i>	5350	160	Buehler et al. (1995)
Bald Eagles	<i>Haliaeetus leucocephalus</i>	5350	65	Buehler et al. (1995)
Greater prairie-chicken	<i>Tympanuchus cupido</i>	908	14	Burger et al. (1991)
Greater prairie-chicken	<i>Tympanuchus cupido</i>	920	20	Burger et al. (1991)
Little penguins	<i>Eudyptula minor</i>	1020	20	Chiaradia et al. (2005)
Western burrowing owls	<i>Athene cunicularia</i>	141.2	5	Conway and Garcia (2005)
Western burrowing owls	<i>Athene cunicularia</i>	141.2	4.6	Conway and Garcia (2005)
Wood duck	<i>Aix sponsa</i>	635	1.6	Davis et al. (2001)
Wood duck	<i>Aix sponsa</i>	635	1.1	Davis et al. (2001)
Wood duck	<i>Aix sponsa</i>	635	0.17	Davis et al. (2001)
Willow grouse	<i>Lagopus lagopus</i>	516	15	Erikstad (1979)
Little penguins	<i>Eudyptula minor</i>	1100	16	Fallow et al. (2009)
Northern pintails	<i>Anas acuta</i>	825	20.5	Fleskes (2003)
King penguin	<i>Aptenodytes patagonicus</i>	12800	27	Froget et al. (2004)
Greater sage-grouse	<i>Centrocercus urophasianus</i>	1745	20	Gregg et al. (2007)
Greater sage-grouse	<i>Centrocercus urophasianus</i>	29.5	1.1	Gregg et al. (2007)
Greater sage-grouse	<i>Centrocercus urophasianus</i>	29.5	0.85	Gregg et al. (2007)
Little penguin	<i>Eudyptula minor</i>	1105	17	Healy et al. (2004)
American woodcock	<i>Scolopax minor</i>	219	4	Horton and Causey (1984)
Eastern wild turkey	<i>Meleagris gallopavo</i>	4222	1.5	Hubbard et al. (1998)
Eastern wild turkey	<i>Meleagris gallopavo</i>	4222	2	Hubbard et al. (1998)

Common name	Species	Body mass (g)	Device mass (g)	Reference
King penguin	<i>Aptenodytes patagonicus</i>	13220	0.8	Jackson and Wilson (2002)
Pacific golden-plover	<i>Pluvialis fulva</i>	173	1.65	Johnson et al. (2004)
Goshawk	<i>Accipiter gentilis</i>	1137	10	Kenward et al. (1999)
Goshawk	<i>Accipiter gentilis</i>	1137	18	Kenward et al. (1999)
Goshawk	<i>Accipiter gentilis</i>	1137	14	Kenward et al. (1999)
Mallard	<i>Anas platyrhynchos</i>	1082	20	Korschgen et al. (1984)
Redhead	<i>Aythya americana</i>	990	20	Korschgen et al. (1984)
Northern pintail	<i>Anas acuta</i>	825	20	Korschgen et al. (1984)
Common goldeneye	<i>Bucephala clangula</i>	800	20	Korschgen et al. (1984)
Ring-necked duck	<i>Aythya collaris</i>	680	20	Korschgen et al. (1984)
Canvasback	<i>Aythya valisineria</i>	1190	20	Korschgen et al. (1984)
Canvasback	<i>Aythya valisineria</i>	45.8	1.8	Korschgen et al. (1996)
Canvasback	<i>Aythya valisineria</i>	45.8	4	Korschgen et al. (1996)
Attwater's prairie-chicken	<i>Tympanuchus cupido</i>	500	15	Lockwood et al. (2005)
Mallard	<i>Anas platyrhynchos</i>	1082	2	Mauser and Jarvis (1991)
Mallard	<i>Anas platyrhynchos</i>	1082	2.3	Mauser and Jarvis (1991)
Common murres	<i>Uria aalge</i>	901	35	Meyers et al. (1998)
Great tit	<i>Parus major</i>	17.6	0.9	Naef-Daenzer (1993)
Garden warbler	<i>Sylvia borin</i>	13.9	0.9	Naef-Daenzer (1993)
Blue tit	<i>Cyanistes caeruleus</i>	10.5	0.62	Naef-Daenzer (1993)
Crested tit	<i>Lophophanes cristatus</i>	11.1	0.62	Naef-Daenzer (1993)
Crested tit	<i>Lophophanes cristatus</i>	11.1	0.57	Naef-Daenzer (1993)
Coal tit	<i>Parus ater</i>	9.3	0.57	Naef-Daenzer (1993)
Coal tit	<i>Parus ater</i>	9.3	0.5	Naef-Daenzer (1993)
Coal tit	<i>Parus ater</i>	9.3	0.45	Naef-Daenzer (1993)
Coal tit	<i>Parus ater</i>	9.3	0.44	Naef-Daenzer (1993)
Coal tit	<i>Parus ater</i>	9.3	0.39	Naef-Daenzer (1993)

Common name	Species	Body mass (g)	Device mass (g)	Reference
Great tit	<i>Parus major</i>	16.43	0.475	Naef-Daenzer et al. (2001)
Coal tit	<i>Parus ater</i>	10.55	0.475	Naef-Daenzer et al. (2001)
Wild turkey	<i>Meleagris gallopavo</i>	4222	140	Nenno and Healy (1979)
Xantus' murrelet	<i>Synthliboramphus hypoleucus</i>	165	3.5	Newman et al. (1999)
Marbled murrelet	<i>Brachyramphus marmoratus</i>	220	2	Newman et al. (1999)
Canvasback	<i>Aythya valisineria</i>	1190	19.6	Olsen et al. (1992)
Mallard	<i>Anas platyrhynchos</i>	1082	8	Paquette et al. (1997)
Mallard	<i>Anas platyrhynchos</i>	1082	22	Paquette et al. (1997)
White-tailed tropicbird	<i>Phaethon lepturus</i>	370	2	Pennycuick et al. (1990)
White-tailed tropicbird	<i>Phaethon lepturus</i>	370	5	Pennycuick et al. (1990)
White-tailed tropicbird	<i>Phaethon lepturus</i>	370	7	Pennycuick et al. (1990)
White-tailed tropicbird	<i>Phaethon lepturus</i>	370	8	Pennycuick et al. (1990)
Spectacled eider	<i>Somateria fischeri</i>	1304	30	Petersen et al. (1995)
Wood thrush	<i>Hylocichla mustelina</i>	47.4	1.6	Powell et al. (1998)
Woodcock	<i>Scolopax minor</i>	219	4.16	Ramakka (1972)
King penguin	<i>Aptenodytes patagonicus</i>	13220	50	Ropert-Coudert et al. (2000)
Mallard	<i>Anas platyrhynchos</i>	1059	4	Rotella et al. (1993)
Mallard	<i>Anas platyrhynchos</i>	1045	9	Rotella et al. (1993)
Mallard	<i>Anas platyrhynchos</i>	1046	22	Rotella et al. (1993)
Mourning dove	<i>Zenaida macroura</i>	115	5.35	Sayre et al. (1981)
Zebra finch	<i>Taeniopygia guttata</i>	14.5	1.05	Schregardus et al. (2006)
Zebra finch	<i>Taeniopygia guttata</i>	14.5	0.45	Schregardus et al. (2006)
Mourning dove	<i>Zenaida macroura</i>	110.55	3.2	Schulz et al. (1998)
Mourning dove	<i>Zenaida macroura</i>	115.05	3.3	Schulz et al. (2001)
Mourning dove	<i>Zenaida macroura</i>	115.05	5	Schulz et al. (2001)
Mourning dove	<i>Zenaida macroura</i>	115.05	3.8	Schulz et al. (2001)
Humboldt penguins	<i>Spheniscus humboldti</i>	5000	22	Simeone et al. (2002)

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Ruffed grouse	<i>Bonasa umbellis</i>	450	19.5	Small and Rusch (1985)
Ring-necked pheasant	<i>Phasianus colchicus</i>	853.8	13.5	Synder (1985)
Ring-necked pheasant	<i>Phasianus colchicus</i>	853.8	15.3	Synder (1985)
Ring-necked pheasant	<i>Phasianus colchicus</i>	853.8	18.6	Synder (1985)
Common guillemot	<i>Uria aalge</i>	993	27	Tremblay et al. (2003)
Common guillemot	<i>Uria aalge</i>	1026	3	Tremblay et al. (2003)
Magellanic penguin	<i>Spheniscus magellanicus</i>	3700	160	Wilson et al. (2004)

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