Supporting Information

Ball S, Caravaggi A, Butler F, Runway roadkill: a global review of mammal strikes with aircraft. Mammal Review.

Appendices S1, S2, S4, S5 and S6.

Appendix S3 can be found as a separate, excel file.

Appendix S1. Aviation authorities researched and/ or contacted in order to obtain mammal-strike data. Data were only available from six countries.

Country	Authority
Australia	Australian Transport and Safety Bureau
Brazil	Agencia Nacional de Avicao Civil
Canada	Transport Canada Civil Aviation
Chile	Dirección General de Aeronáutica Civil
China	Civil Aviation Administration of China
Columbia	República de Colombia Aeronáutica Civil
Egypt	The Egyptian Arabic Republic Ministry of Civil Aviation
France	Service Technique de l'aviation civile
Germany	Deutscher Ausschuss Zur Verhutung Von Vogelschlagen Im Luftverkehr E.V
Greece	HelleNIC Civil Aviation Authority
India	Directorate General of Civil Aviation- India
India	Directorate General of Civil Aviation- India
Italy	Ente Nazionale per 'Aviazione Civile
Japan	Ministry of Land, Infrastructure, Transport and Tourism- Civil Aviation Bureau
Morrocco	Office National des Aéroports (ONDA)
Nigeria	Nigerian Civil Aviation Authority
Poland †	Ministry for Infrastructure
Schipnol Airport	Schipnol Airport (Netherlands)
South Africa	South African Civil Aviation Authority
Spain	Agencia Estatal de Seguridad Aerea (AESA)
Thailand	The Civil Aviation Authority of Thailand
Turkey	Directorate General of Civil Aviation
UK	UK Civil Aviation Authority
United Arab Emirates	General Aviation Authority
USA	Federal Aviation Administration

† A summary report identifying mammal groups struck was provided from this organisation

Appendix S2. Retained variables across datasets for six countries, provided by aviation authorities.

	Date	**Location**	**Time**	**Phase of flight**	**Damage category**	**Damage cost**	**Species/ higher classification**	**Number of strikes**
Australia	X	X	X	X	X		X	X
Canada	X	X	X	X			X	X
France	X	X	X	X	X		X	X
Germany	X		X	X	X		X	X
UK	X	X		X			X	X
USA	X	X	X	X	X	X	X	X

Appendix S4. Mammal families involved in wildlife strike events with aircraft other than civil airplanes reported in organisational, grey and scientific literature, and the country or countries of occurrence.

Family	Taxon	Country/ Countries	References	Aircraft type (military/ helicopter)
Bovidae	Cattle	Australia, USA	Avisure database 2019, FAA database 2019	Civilian helicopter
Canidae	Carnivores (dogs)	USA	FAA database 2019	Military airplane, civilian helicopter
Chiropterans Emballonuridae Hipposideridae Molossidae Pteropodidae Vespertilionidae Unknown Chiroptera	Bats	Australia, USA	Peurach 2001, Zakrajsek & Bissonette 2005, Peurach et al. 2009, Washburn 2013, Washburn et al. 2013, 2014, 2017, ATSB database 2018, FAA database 2019	Military airplane, military helicopter, civilian helicopter
Cervidae	Deer	Norway, USA	Aas 1996, Zakrajsek & Bissonette 2005, FAA	Military airplane, civilian helicopter
Equidae	Horses	Australia	ATSB database 2018	Civilian helicopter
Felidae	Cats	USA	FAA database 2019	Military airplane
Leporidae	Lagomorphs	USA	FAA database 2019	Military airplane, civilian helicopter
Macropodidae	Macropods	Australia	ATSB database 2018	Powered Weight Shift
Mephitidae	Skunks	USA	FAA database 2019	Military airplane
Rodentia[X]	Rodents	USA	FAA database 2019	Military airplane
Vombatidae	Wombats	Australia	ATSB database 2018	Gyrocopter

[X] Denotes that lowest taxonomic classification provided was Order

Aas C (1996) Some characteristics of Bird Strikes to Military Aircraft in Norway 1985-1995. *Proceedings of Bird Strike Committee Europe Meeting.*, 71–79. Aviation Bird Office. University of Oslo, Oslo.

ATSB database (2018) *Wildlife strikes*. Australian Transport Safety Bureau. https://www.atsb.gov.au/publications/2018/ar-2018-035/, Canberra ACT.

Avisure database (2019) Fatalities and Destroyed Aircraft due to Wildlife Strikes. *https://www.avisure.com/about-us/fatalities-and-destroyed-aircraft-due-to-wildlife-strikes-1912-to-present/*.

FAA database (2019) *Wildlife strikes.* Federal Aviation Administration. https://wildlife.faa.gov/home.

Peurach S (2001) High-altitude collision between an airplane and a Hoary bat, Lasiurus cinereus. *Bat Research News* 44: 2–3.

Peurach S, Dove C, Stepko L (2009) A decade of U.S. Air Force bat strikes. *Human- Wildlife Conflicts* 3: 199–207.

Washburn BE (2013) Wildlife Strikes With Military Rotary-Wing Aircraft During Flight Operations Within the United States. *Wildlife Society Bulletin* 38: 311–320.

Washburn BE, Cisar PJ, Devault TL (2013) Wildlife strikes to civil helicopters in the US , 1990 – 2011. *Transportation Research Part D* 24: 83–88.

Washburn BE, Cisar PJ, DeVault TL (2014) Wildlife strikes with U.S. military rotarywing aircraft deployed in foreign countries. *Human-Wildlife Interactions* 8: 251–260.

Washburn BE, Cisar PJ, DeVault TL (2017) Impact locations and damage to civil and military rotary-wing aircraft from wildlife strikes. *Human-Wildlife Interactions* 11: 23–32.

Zakrajsek E, Bissonette J (2005) Ranking the risk of wildlife species hazardous to military aircraft. *Wildlife Society Bulletin* 33: 258–264.

Appendix S5. Strike numbers and percentages of each mammal family involved in strikes in the USA, Australia, Germany and France.

Family	Number of strikes	% of Strikes	% of Damaging Strikes	Reporting country
Antilocapridae	7	0.11%	0.56%	USA (Source: FAA 1990-2018)
Bovidae	9	0.14%	0.84%	
Canidae	844	12.67%	7.06%	
Castoridae	4	0.06%	0.0%	
Cervidae	1099	16.50%	86.91%	
Chiroptera (5 families)	2541	38.15%	1.39%	
Cricetidae	35	0.53%	0.0%	
Dasypodidae	44	0.66%	0.09%	
Didelphidae	292	4.38%	0.09%	
Echimyidae	2	0.03%	0.0%	
Equidae	4	0.06%	0.37%	
Erethizontidae	17	0.26%	0.0%	
Felidae	38	0.57%	0.0%	
Herpestidae	3	0.05%	0.0%	
Leporidae	765	11.48%	0.93%	
Mephitidae	504	7.57%	0.0%	
Mustelidae	17	0.26%	0.09%	
Procyonidae	143	2.15%	0.37%	
Sciuridae	264	3.96%	0.28%	
Suidae	3	0.05%	0.19%	
Tayassuidae	2	0.03%	0.09%	
Unknown	24	0.36%	0.74%	
Bovidae	4	0.26%	2.27%	Australia (Source: ATSB 2008-2017)
Canidae	45	2.88%	3.98%	
Chiroptera (4 families)	1,240	79.24%	63.07%	
Leporidae	152	9.72%	2.27%	
Macropodidae	103	6.59%	28.41%	
Muridae	2	0.13%	0.00%	
Peramelidae	8	0.51%	0.00%	
Phalangeridae	4	0.26%	0.00%	
Tachyglossidae	5	0.32%	0.00%	
Vombatidae	1	0.06%	0.00%	
Canidae	23	16.43%	0%	Germany (Source: DAVVL e.V 2010-2018)
Cervidae	1	0.71%	100%	
Chiroptera (1 family)	3	2.14%	0%	
Leporidae	111	79.29%	0%	
Mustelidae	2	1.43%	0%	
Canidae	26	20.63%	25%	France (Source: DGAC 2016-2018)
Cervidae	2	1.59%	25%	
Erinaceidae	2	1.59%	0%	
Leporidae	89	70.63%	50%	
Mustilidae	1	0.79%	0%	
Unknown	2	1.58%	0%	
Chiroptera	4	3.17%	0%	

Appendix S6. Strike numbers and percentages for each mammal family involved in strikes in Canada and the UK.

Family	Number of strikes	% of total Strikes	Reporting country
Canidae	83	20.85%	Canada (Source: Transport Canada 2008-2018)
Cervidae	19	4.77%	
Chiroptera (1 family)	34	8.5%	
Cricetidae	10	2.51%	
Didelphidae	3	0.75%	
Erethizontidae	3	0.75%	
Felidae	1	0.25%	
Geomyidae	18	4.52%	
Leporidae	79	19.84%	
Mephitidae	64	16.08%	
Muridae	2	0.50%	
Mustelidae	4	1.00%	
Procyonidae	21	5.27%	
Sciuridae	34	8.5%	
Unknown	23	5.77%	
Bovidae	14	12.17%	UK (Source: CAA 1990-2018)
Canidae	20	17.39%	
Cervidae	11	9.57%	
Chiroptera (1 family)	1	0.87%	
Erinaceidae	1	0.87%	
Felidae	1	0.87%	
Leporidae	60	52.17%	
Mustelidae	3	2.61%	
Unknown	4	3.48%	

Appendix S3. Relevant articles that were retained from the literature survey.

Original	Paper Number	Author	Title	Source	Year	Volume	Issue	Start_page	End_page	
Yes	1	Barras, S., Wright, S.,	Civil Aircraft Collisions with Birds and Other Wildlife in Ohio, 1990-1999	Ohio Journal of Science	2002	102	2	2	7	
Yes	2	Biondi, K., Belant, J., Devault, T., Martin, J., Wang, G.,	Integrating mammalian hazards with management at U . S . civil airports : a case study .	Human-Wildlife Interactions	2014	8		31	38	
Yes	3	Biondi, K., Belant, J., Devault, T., Martin, J., Wang, G.,	Bat incidents with U . S . civil aircraft	Acta Chiropterologica	2013	15	1	185	192	
Yes	4	Biondi, K., Belant, J., Martin, J., Devault, T., Wang, G.,	White-Tailed Deer Incidents With U.S Civil Aircraft	Wildlife Society Bulletin	2011	35	3	303	309	
Yes	5	Cleary, E., Dolbeer, R., Wright, S. *	Wildlife strikes to civil aircraft in the United States 1990-2005	Bird Strike Committee Proceedings; Other Bird Strike and Aviation Materials	2006	NA	NA	1	64	
Yes	6	Crain, A., Belant, J., Devault, T.,	Carnivore incidents with U . S . civil aircraft	Transportation Research Part D	2015	36		160	166	
Yes	7	Devault T., Belant J., Blackwell B., Seamans T.	Interspecific variation in wildlife hazards to aircraft: implications for airport wildlife management	Wildlife Society Bulletin	2011	35	4	394	402	
Yes	8	Dolbeer, R ., Wright, S., Weller, J., Beigier, M. *	Wildlife strikes to civil aircraft in the United States 1990-2012	National Wildlife Strike Database Serial Report No 18,	2013	18	NA	NA	NA	
Yes	9	Dolbeer, R.,	Birds and aircraft: fighting for airspace in crowded skies	Proceedings of the Vertebrate Pest Conference	2000	19	19	37	43	
No	10	Dolbeer, R., and Begier M*	Wildlife Strikes to Civil Aircraft in the United States 1990-2017.	Wildlife Aircraft Strike Database, Serial Report 24 FAA	2019	24	NA	NA	NA	
Yes	11	Dolbeer, R., Wright, S.,	Safety management systems : how useful will the FAA National Wildlife Strike Database be?	Human- Wildlife Conflicts	2009	3	2	167	178	
Yes	12	Dolbeer, R., Wright, S., Cleary, E.,	Ranking the Hazard Level of Wildlife Species to Aviation	Wildlife Society Bulletin	2000	28	2	372	378	
No	13	Dolbeer, R., Wright, S., Weller, J., Anderson, A., Beigier, M. *	Wildlife Strikes to Civil Aircraft in the United States 1990- 2014	Wildlife Aircraft Strike Database, Serial Report 21	2015	21	NA	1	101	
No	14	Dolbeer, R., Wright, S., Weller, J., Beigier, M. *	Wildlife Strikes to Civil Aircraft in the United States 1990- 2013	Wildlife Aircraft Strike Database, Serial Report 20	2014	20	NA	1	98	
Yes	15	Drey, K., Martin, J., Belant, J., Devault, T., Blackwell, B.,	Interactions Between Wildlife and Civil Aircraft in Mississippi	Southeastern Naturalist	2014	13	1	156	165	
Yes	16	Hauptfleisch, M., Avenant, N., Tsowaseb, A.,	Aircraft – wildlife collisions at two major Namibian Airports from 2006 – 2010	South African Journal of Wildlife Research	2013	43		177	184	
Yes	17	Kelly, T., Sleeman, P., Coughlan, N., Dillane, E., Callaghan, M.,	Bat collisions with civil aircraft in the Republic of Ireland over a decade suggest negligible impact on aviation safety	European Journal of Wildlife Research	2017	63		23	26	
No	18	Kitowski, I.,	The Impact on Aviation Operations at Polish Civil Airfields Caused by Mammals	Bezpieczeństwo i Technika Pożarnicza	2016	42	2	57	63	
No	19	MacKinnon, B., Sowden, R., Dudley, S.,	Sharing the Skies- An Aviation Industry Guide to the Mangement of Wildlife Hazards	Transport Canada	2004	NA	NA	1	366	
No	20	Mendonca, F., Huang, C., Carney, T., Johnson, M.	Assessing the risks : An analysis of wildlife-strike data at the three busiest Brazilian airports	International Journal of Aviation, Aeronautics, and Aerospace	2018	5	5	3	38	
No	21	Noaves, W., Grossmann, N., Pimentel, D., Prada, M.	Terrestrial mammal and reptile hazards in an airport in the Brazilian Amazon	Human-Wildlife Interactions	2016	10	1	122	127	
Yes	22	Parsons, J., Blair, D., Luly J., Robson S.	Flying-fox (Megachiroptera: Pteropodidae) flight altitudes determined via an unusual sampling method:aircraft strikes in Australia	Acta Chiropterologica	2008	10	2	377	379	

Yes	23	Parsons, J., Blair, D., Luly J., Robson S.	Bat Strikes in the Australian Aviation Industry	The Journal of Wildlife Management	2009	73	4	526	529
No	24	Satheesan, S., Grubh, R., Piments, R.,	An updated list of birds and bat species involved in collision with aircraft in India	Journal of Bombay Natural History	1992	89	1	129	132
Yes	25	Schwarz, K., Beant, J., Wang, G.,	Behavioral Traits and Airport Type Affect Mammal Incidents with U . S . Civil Aircraft	Environmental Management	2014	54		908	918
Yes	26	Usman, B., Adefalu, L., Oladipo F., Opeloyeru A.	Bird/ Wildlife strike control for after air transportation in Nigeria	Ethiopian Journal of Environmental Studies and Mangement	2012	5	3	305	313
Yes	27	Washburn, B., Bernhardt, G., Kutschbach-Brohl, L.,	Using dietary analyses to reduce the risk of wildlife-aircraft collisions	Human-Wildlife Interactions	2011	5	2	204	209
Yes	28	Wright, S., Dolbeer, R.,	Percentage of wildlife strikes reported and species identifed under a voluntary reporting system	Bird Strike Committee Proceedings; USA/ Canada 7th Annual Meeting	2005	NA	NA	NA	NA	
Yes	29	Wright, S., Dolbeer, R., Montoney, A.,	Deer on airports: an accident waiting to happen	Proceedings of the Eighteenth Vertebrate Pest Conference	1988	NA	NA	90	95
No	30	Kasso, M., Balakrishnan, M.,	Ecological and Economic Importance of Bats (Order Chiroptera)	ISRN Biodiversity	2013	2013	NA	1	9
No	31	Voigt, C., Currie, S., Fritze, M., Roeleke M., Lindecke, O.,	Conservation Strategies for Bats Flying at High Altitudes	BioScience	2018	68	6	427	435
No	32	Fagerstone, K., Clay, W.,	Overview of USDA Animal Damage Control efforts to manage overabundant deer	Wildlife Society Bulletin	1997	25	2	413	417
No	33	Dolbeer, R., Beiger, M., Wright, S.,	Animal ambush: The challenge of managing wildlife hazards at general aviation airports	Proceedings of the 53rd Corporate Aviation Safety Seminar	2008				
No	34	Wenning, K., Begier, M., Dolbeer, R.A	Wildlife hazard management at airports : fifteen years of growth and progress for wildlife services	Proceedings of the 21st Vertebrate Pest Conference	2004			295	301
No	35	Kelly,T. Allan, J.,	Ecological effects of aviation	The Ecology of Transportation: Managing Mobility for the Environment	2006			5	24
No	36	Cleary, E., Dolbeer, R., Wright, S. *	Wildlife strikes to civil aircraft in the United States 1990-2003	Wildlife Aircraft Strike Database, Serial Report 10 FAA	2004			1	56
No	37	Metscher, D.S, Coyne, W.B., Reardon, J.M.,	An analysis of the barriers found in reporting wildlife strike incidents to the FAA national wildlife strike database for civilian aviation	International Journal of Professional Aviation Training & Testing Research	2007	1	1	37	57
No	38	Cleary, E., Dolbeer, R., Wright, S. *	Wildlife strikes to civil aircraft in the United States 1990-2005	Wildlife Aircraft Strike Database, Serial Report 12	2006				
No	39	VerCauteren, K.C, Dolbeer, R.A, Gese, E.M.,	Identification and management of wildlife damage	The wildlfe techniques manual	2005			740	778
No	40	Dolbeer, R.A., Franklin, A.B.,	Population management to reduce the risk of wildlife-aircraft collisions	Wildlife in Airport Environments: Preventing Animal-Aircraft Collisions through Science-Based Management	2013			67	75
No	41	Cleary, E., Dolbeer, R., Wright, S. *	Wildlife strikes to civil aircraft in the United States 1990-2004	Wildlife Aircraft Strike Database, Serial Report 11 FAA	2005				
No	42	Dove, C. J., Rotzel, N.C., Heacker, M., Weigt, L.A.,	Using DNA barcodes to identify bird species involved in birdstrikes	Journal of Wildlife Management	2008	72	5	1231	1236
No	43	Simons, R.R.L., Gale, P., Horign, V., Snary, E.L., Breed, A.C.,	Potential for introduction of bat-borne zoonotic viruses into the EU: A review	Viruses	2014	6	5	2084	2121

No	44	Dolbeer, R.A, Wright, S.E, Weller, J., Begier, M.J.,*	Wildlife strikes to civil aircraft in the United States 1990-2008	Wildlife Aircraft Strike Database, Serial Report 15 FAA	2009		1	61
No	45	Dolbeer, R.A., Wright, S.E.,*	Wildlife strikes to civil aircraft in the United States 1990-2007	Wildlife Aircraft Strike Database, Serial Report 14 FAA	2008		1	56

Country	Mammal_Focus?	Strike_Event(s)?	Management_Focus?	Management topic	Cervidae?	Canidae?	Chiroptera?	Small_Mamm?	Other?	Notes
USA	No	Yes	No		Yes	No	No	No	No	
USA	Yes	Yes	Yes	Exclusion/ Hazard	Yes	Yes	Yes	No	Yes	
USA	Yes	Yes	No		No	No	Yes	No	No	
USA	Yes	Yes	No	Incidents	Yes	No	No	No	No	
USA	Yes	Yes	No	Incidents	Yes	Yes	Yes	Yes	No	
USA	Yes	Yes	No		No	Yes	No	No	No	
USA	Yes	Yes	Yes	Hazard	Yes	Yes	No	No	Yes	
USA	Yes	Yes	No	Incidents	Yes	Yes	Yes	No	Yes	
USA	Yes	Yes	No	Incidents	Yes	No	No	No	No	
USA	Yes	Yes	No	Incidents	Yes	Yes	Yes	Yes	Yes	
USA	Yes	Yes	Yes	Hazard	Yes	Yes	No	No	Yes	
USA	Yes	Yes	Yes	Hazard	Yes	Yes	No	No	No	
USA	Yes	Yes	No	Incidents	Yes	Yes	Yes	No	Yes	
USA	Yes	Yes	No	Incidents	Yes	Yes	Yes	No	Yes	
USA	No	Yes	Yes	Hazard	Yes	Yes	No	No	No	
Namibia	No	Yes	No		No	Yes	No	No	Yes	
Ireland	Yes	Yes	No		No	No	Yes	No	No	
Poland	Yes	Yes	Yes	incidents	Yes	Yes	No	No	Yes	
Canada	Yes	Yes	Yes	Hazard	Yes	Yes	No	No	Yes	
Brazil	Yes	Yes	Yes	Incidents	No	No	No	No	No	
Brazil	Yes	Yes	No	Incidents	No	No	Yes	No	Yes	
Australia	Yes	Yes	No		No	No	Yes	No	No	

Australia	Yes	Yes	No		No	No	Yes	No	No
India	Yes	Yes	No	Incidents	No	No	Yes	No	No
USA	Yes	Yes	Yes	Behaviour	Yes	Yes	Yes	No	Yes
Nigeria	No	Yes	No		No	No	Yes	No	Yes
USA	Yes	Yes	Yes	Habitat	No	No	No	Yes	No
USA	No	Yes	No	Reporting	No	No	No	No	No
USA	Yes	Yes	No	Incidents	Yes	No	No	No	No
NA	No	Yes	No		No	No	Yes	No	No
	Yes	Yes	No		No	No	Yes	No	No
USA	Yes	Yes	Yes	Population control	Yes	No	No	No	No
USA	No	Yes	Yes	Incidents	Yes	Yes	No	No	No
USA	No	Yes	Yes	Incidents	Yes	No	No	No	No
	Yes	Yes	No		Yes	Yes	Yes	Yes	Yes
USA	Yes	Yes	No	Incidents	Yes	Yes	Yes	Yes	Yes
USA	Yes	Yes	Yes	Reporting	Yes	Yes	Yes	No	Yes
USA	Yes	Yes	No	Incidents	Yes	Yes	Yes	No	Yes
USA	No	Yes	Yes	Damage	No	No	No	No	Yes
USA	Yes	Yes	Yes	Population control	Yes	No	No	No	No
USA	Yes	Yes	No	Incidents	Yes	Yes	Yes	Yes	Yes
USA	Yes	Yes	No	Identification	No	No	Yes	No	No
	Yes	Yes	No		No	No	Yes	No	No

USA	Yes	Yes	No	Incidents	Yes	Yes	Yes	Yes	Yes
USA	Yes	Yes	No	Incidents	Yes	Yes	Yes	Yes	Yes

Appendix S3. Bibliographic details from mammal strike publications obtained from the literature review. Variables are explained on the '

Original	Paper Number	Author	Title	Source	Year	Volume	Issue	Start_page	End_page
Yes	46	Barras, S., Seamans, T.,	Habitat Management Approaches for Reducing Wildlife Use of Airfields	Proceedings of the Vertebrate Pest Conference	2002	20			
Yes	47	Blackwell, B., DeVault, T., Fernández-juricic, E., Dolbeer, R.,	Wildlife collisions with aircraft : A missing component of land-use planning for airports	Landscape and Urban Planning	2009	93	NA	1	9
Yes	48	Devault, T., Kubel, J., Glista, D., Rhodes, O.,	Mammalian hazards at small airports in Indiana : impact of perimeter fencing	Human- Wildlife Conflicts	2008	2	2	240	247
Yes	49	Dolbeer, R.,	The History of Wildlife Strikes and Management at Airports	Wildlife in Airport Environments: Preventing Animal-Aircraft Collisions through Science-Based Management.	2013	NA	NA	1	10
Yes	50	Finch, S., Pennell, C., Kerby, J., Cave, V.,	Mice find endophyte-infected seed of tall fescue unpalatable – implications for the aviation industry	Grass and Forage Science	2015	71	Aug	569	666
Yes	51	Hauptfleisch, M., Avenant, N.,	Integrating small mammal community variables into aircraft-wildlife collision management plans at Namibian airports	Integrative Zoology	2015	10	6	151	530
Yes	52	Hesse, G., Rea, R., Booth, A.,	Wildlife management practices at western Canadian airports	Journal of Air Transport Management	2010	16	4	185	190
Yes	53	Hesse, G., Rea, R., Booth, A., Green, C.,	Wildlife Sightings at Western Canadian Regional Airports : Implications for Risk Analyses	Human Dimensions of Wildlife	2012	17	NA	295	300
Yes	54	Iglay, R, Schwarz, K., Belant, J., Martin, J., Wang, G., Devault, T.,	Large Mammal Use of Seminatural Grasslands and Implications for Aviation Strike Risk	Journal of Fish and Wildlife Mangement	2018	9	1	222	227
Yes	55	Khalafallah, A., El-rayes, K., Asce, M.,	Optimizing Airport Construction Site Layouts to Minimize Wildlife Hazards	Journal of Management in Engineering	2006	4		176	185
Yes	56	Lima, S., Blackwell, B., Devault, T., Juricic, F,	Animal reactions to oncoming vehicles : a conceptual review	Biological Reviews	2015	90	1	60	76
Yes	57	Scheideman, M., Rea, R., Hesse, G., Soong, L, Green, C., Sample, C., Booth, A.,	Use of wildlife camera traps to aid in wildlife management planning at airports		2017	11	4	408	419
Yes	58	Schmidt, J., Washburn, B., DeVault, T., Seamans, T.,	Do Native Warm-season Grasslands Near Airports Increase Bird Strike Hazards ?	The American Midland Naturalist	2013	170	1	144	157
Yes	59	Scott, C., Richard, A., Richard, B.,	Bird and small mammal use of mowed and unmowed vegetation at John F. Kennedy International Airport, 1998 to 1999	Proceedings of the Vertebrate Pest Conference	2000	19			
Yes	60	Seamans, T.,	A review of deer control devices intended for use on airports	Bird Strike Committee-USA/Canada, Third Joint Annual Meeting	2001	NA	NA	1	6
Yes	61	Seamans, T., Barras, S., Bernhardt, G., Blackwell, B., Cepek, J.,	Comparison of 2 vegetation-height management practices for wildlife control at airports	Human-wildlife conflicts	2007	1	1	97	105
Yes	62	Vercauteren, K., Lavelle, M., Seamans, T.,	Excluding Mammals from Airports	Wildlife in Airport Environments: Preventing Animal–Aircraft Collisions Through Science-Based Management	2013			49	58
Yes	63	Witmer, G	Rodent population management at Kansas City International Airport	Human-Wildlife Interactions	2011	5	2	269	275
Yes	64	Witmer, G., Fantinato, J.,	Management of rodent populations at airports	USDA National Wildlife Research Center - Staff Publications	2003	2	Jan	350	358

Country	Mammal_Focus?	Strike_Event(s)?	Management_Focus?	Management topic	Cervidae?	Canidae?	Chiroptera?	Small_Mamm?	Other?
USA	No	No	Yes	Grassland/ Veget	No	No	No	Yes	No
USA	No	No	Yes	Habitat	No	No	No	No	No
USA	Yes	No	Yes	Exclusion	Yes	Yes	No	No	Yes
NA	No	No	No	History	No	No	No	No	No
NA	Yes	No	Yes	Grassland/ Veget	No	No	No	Yes	No
Namibia	Yes	No	Yes	Grassland/Veget	No	No	No	Yes	No
Canada	No	No	No	Exclusion/ Habita	No	No	No	No	No
	Canada	No	Yes	Hazard	Yes	Yes	No	No	Yes
USA	Yes	No	Yes	Grassland/ Veget	Yes	Yes	No	No	No
NA	Yes	No	Yes	Exclusion	Yes	No	No	No	No
NA	No	No	No		No	No	No	No	No
Canada	Yes	No	Yes	Survey methods	Yes	Yes	No	No	Yes
USA	Yes	No	Yes	Habitat/Vegetati	No	No	No	Yes	No
USA	Yes	No	Yes	Grassland/ Veget	No	No	No	Yes	No
USA	Yes	No	Yes	Exclusion	Yes	No	No	No	No
USA	Yes	No	Yes	Grassland/ Veget	No	No	No	Yes	No
USA	Yes	No	Yes	Exclusion	Yes	Yes	No	No	No
USA	Yes	No	Yes	Grassland/ Veget	No	No	No	Yes	No
USA	Yes	No	Yes	Grassland/ Veget	No	No	No	Yes	No

Original	Paper Number	Author	Title	Source	Year	Volume		Start_page	End_page	Country	Mammal_Focus?
No	65	Aas, C.,	Some characteristics of Bird Strikes to Military Aircraft in Norway 1985-1995.	Proceedings of Bird Strike Committee Europe Meeting	1996	NA	NA	71	79	Norway	No
No	66	Peurach SC.	High-altitude Collision between an Airplane and a Hoary Bat , Lasiurus cinereus	Bat Research News	2001	44		2	3	USA	Yes
Yes	67	Peurach, S., Dove, C., Stepko, L.,	A decade of U.S. Air Force bat strikes	Human- Wildlife Conflicts	2009	3	2	199	207	USA	Yes
Yes	68	Washburn BE	Wildlife Strikes With Military Rotary-Wing Aircraft During Flight Operations Within the United States.	Wildlife Society Bulletin.	2013					USA	Yes
Yes	69	Washburn BE	Wildlife strikes to civil helicopters in the US , 1990 – 2011	Transportation Research Part D	2013	24		83	88	USA	Yes
Yes	70	Washburn BE, Cisar PJ, DeVault TL	Wildlife strikes with U.S. military rotarywing aircraft deployed in foreign countries	Human-Wildlife Interactions	2014	8		251	260	USA	Yes
Yes	71	Washburn BE, Cisar PJ, DeVault TL	Impact locations and damage to civil and military rotary-wing aircraft from wildlife strikes	Human-Wildlife Interactions	2017	11		23	32	USA	Yes
Yes	72	Zakrajsek, E., Bissonette, J.,	Ranking the risk of wildlife species hazardous to military aircraft	Wildlife Society Bulletin	2005	33	1	258	264	USA	Yes

Strike_Event(s)?	Management_Focus?	Management topic	Cervidae?	Canidae?	Chiroptera?	Small_Mamm?	Other?	Notes
Yes	No	Incidents	Yes	No	No	No	No	Military
Yes	No	Incidents	No	No	Yes	No	No	Military
Yes	No		No	No	Yes	No	No	Military
Yes	No	Incidents	No	No	Yes	No	No	Helicopters
Yes	No	Incidents	No	No	Yes	No	No	Helicopters
Yes	No	Incidents	No	No	Yes	No	No	Military/helicopters
Yes	no	Incidents	No	No	Yes	No	No	Military/helicopters
Yes	Yes	Hazard	Yes	No	No	No	No	Military

Variable name	Meaning
Paper Number	Unique internal numbering system to ID papers
Author	Publication author(s)
Title	Title of the publication
Source	publication source (journal, conference title, book, aviation authority publication)
Year	Year of publication
Volume	Source volume
Issue	Source issue number
Start page	First page of publication
End page	last page of publication
Country	Country (or countries) in which the study took place
Mammal_Focus?	Study focused either primarily on mammal species or the inclusion of mammal species in the article significantly contributes to the article/ findings (Yes/No)
Strike_Event(s)?	Study focused on strike events with aircraft i.e. either using/ reporting on existing strike data or confirming a strike incident
Management_Focus?	Study focused on management of wildlife at airfields
Topic	Overall topic of the paper e.g. summarising strike incidents
Cervidae?	Were members of the cervidae (Deer) either the focus of the study or included in strike data (Yes/No)
Canidae?	Were members of the Canidae (carnivorous dogs) either the focus of the study or included in strike data (Yes/No)?
Chiroptera?	Were members of the Chiroptera (bats) either the focus of the study or included in strike data (Yes/No)?
Small_Mamm?	Were small mammals (e.g. rodents) the focus of this study? Generally indicating their inclusion as a raptor control method?
Other?	Was another mammal family/ families either the focus of the study or included in strike data? (Yes/no)?
*	Paper authors followed by an astericks indicates that the publication is a series of FAA annual reports on wildlife strikes. Not all publications from all years were accessible.

Sheet descriptions

Sheet name	Description
Literature- Strike events	List of retained literature detailing stike events with civil airplanes. Used to create Table 1
Literature- Management	sit.ucc.ie
Literature- Strikes with other aircraft	List of literature detailing stike events with aircraft other than civil airplanes. Used in supplementary material.