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MDPI

Review

Which Traits Influence Bird Survival in the City? A review

Supplementary Materials

Table S1. All traits considered for selecting the literature were distributed under five broad trait groups. In total, 32 sub-traits were considered for this study. The broad description of these sub-traits is given below.

Trait Group	Specific Trait Studied
Ecological traits	Generalist-specialist, diversity, richness, density, composition, abundance, distribution, diet breadth, migration
Life history traits	Breeding period/timing, nesting success, clutch and brood size, mate choice, fledgling success, adult survival, fecundity
Physiological traits	Body size, mass and coloration, brain size, stress hormone response, reproductive hormone response, gonadal development
Behavioral traits	Song structure, boldness fear responses, feeding/behavioral innovation, Neophobia, foraging behavior, reproductive behavior, aggression
Genetic traits	Genetic expression of traits for immune responses, inflammatory responses, morphological features, behavioral responses, micro-evolutionary changes, genetic divergence and urban speciation

Table S2. List of publications reviewed for this study.

Trait Group	Paper Title	Authors	Year of Publication	Type of Study	Journal (Volume: Page Numbers)
Ecological traits	Avian trait specialization is negatively associated with urban tolerance	Corey Callaghan, Yanina Benedetti, John Wilshire and Federico Morelli	2020	Experimental study	Oikos. 129: 1541–1551
	Urban exploiters have broader dietary niches than urban avoiders	Facundo Palacio	2019	Experimental study	Ibis. 162: 42–49
	The phylogenetic and functional diversity of regional breeding bird assemblages is reduced and constricted through urbanization	Frank La Sorte, Christopher Lepczyk, Myla Aronson, Mark Goddard, Marcus Hedblom, Madhusudan Katti, Ian MacGregor-Fors, Ulla Mörtberg, Charles Nilon, Paige Warren, Nicholas Williams and Jun Yang	2018	Review	Diversity and Distributions. 24: 928–938
	A citizen-based platform reveals the distribution of functional groups inside a large city from the Southern Hemisphere: e-Bird and the urban birds of Santiago (Central Chile)	Pablo Gutiérrez-Tapia, Ignacio Azócar and Sergio Castro	2018	Experimental study	Revista Chilena de Historia Natural. 91: 3
	Non-linearities in bird responses across urbanization gradients: A meta-analysis	Péter Batáry, Kornélia Kurucz, Marcela Suarez-Rubio and Dan E. Chamberlain	2018	Review	Global Change Biology 24: 1046–1054
	What makes specialized food-caching mountain chickadees successful city slickers?	Dovid Kozlovsky, Emily Weissgerber and Vladimir Pravosudov	2017	Experimental study	Proceedings of Royal Society B.: Biological Sciences. 284: 20162613
	Global loss of avian evolutionary uniqueness in urban areas	Juan Diego Ibáñez-Álamo, Enrique Rubio, Yanina Benedetti and Federico Morelli	2017	Review	Global Change Biology. 23: 2990–2998
	Taxonomic diversity, functional diversity and evolutionary uniqueness in bird communities of Beijing's urban parks: Effects of land use and vegetation structure	Federico Morelli, Yanina Benedetti, Tongping Su, Wei Liang	2017	Experimental study	Urban Forestry & Urban Greening. 23: 84–92
	Bird communities along urbanization gradients: a comparative analysis among three neotropical cities	Lucas Leveau, Carlos Leveau, Mariana Villegas, Jaime Cursach and Cristián Suazo	2017	Review	Ornitologia Neotropical. 28: 77–87
	Urbanization and bird communities: spatial and temporal patterns emerging from southern South America	M. Isabel Bellocq, Lucas Leveau and Julieta Filloy	2017	Review	In Ecology and Conservation of Birds in Urban Environments. pp. 35–54

Urban conservation hotspots: predation release allows the grassland-specialist burrowing owl to perform better in the city	Natalia Rebolo-Ifrán, José Tella and Martina Carrete	2017	Experimental study	Scientific Reports. 7: 1–9
Nonrandom filtering effect on birds: species and guilds response to urbanization	Carmen Paz Silva, Roger Sepúlveda and Olga Barbosa	2016	Review	Ecology and Evolution. 6: 3711–3720
Effects of urbanization on breeding birds in European towns: impacts of species traits	Jukka Jokimäki, J. Suhonen, Marja-Lissa-Jokimäki-Kaisanlahti and P. Carbó-Ramírez	2016	Experimental study	Urban Ecosystems.19: 1565–1577
Urbanization is not associated with increased abundance or decreased richness of terrestrial animals-dissecting the literature through meta-analysis	Susanna Saari, Scott Richter, Michael Higgins, Martina Oberhofer, Andrew Jennings, Stanley H. Faeth	2016	Review	Urban Ecosystems. 19: 1251–1264
Evidence of evolutionary homogenization of bird communities in urban environments across Europe	Federico Morelli, Yanina, Benedetti, Juan Diego Ibáñez-Álamo, Jukka Jokimäki, Raivo Mänd, Piotr Tryjanowski, Anders Pape Møller	2016	Experimental study	Global Ecology and Biogeography. 25: 1284–1293
Urbanized birds have superior establishment success in novel environments	Anders Pape Møller, Mario Díaz, Einar Flensted-Jensen, Tomas Grim, Juan Diego Ibáñez-Álamo, Jukka Jokimäki, Raivo Mänd, Gábor Markó and Piotr Tryjanowski	2015	Experimental study	Oecologia. 178: 943–950
Avifauna and urban encroachment in time and space	Laura Rayner, Karen Ikin, Maldwyn Evans, Philip Gibbons, David Lindenmayer and Adrian Manning	2015	Experimental study	Diversity and Distributions. 21: 428–440
Insectivorous and open-cup nester bird species suffer the most from urbanization	Orsolya Máthé and Péter Batáry	2015	Experimental study	Bird Study. 62: 78–86
A global analysis of the impacts of urbanization on bird and plant diversity reveals key anthropogenic drivers	Myla Aronson, Frank La Sorte, Charles Nilon, Madhusudan Katti, Mark Goddard, Christopher Lepczyk, Paige Warren, Nicholas Williams, Sarel Cilliers, Bruce Clarkson, Cynnamon Dobbs, Rebecca Dolan, Marcus Hedblom, Stefan Klotz, Jip Louwe Kooijmans, Ingolf, Kühn, Ian MacGregor-Fors, Mark McDonnell, Ulla Mörtberg, Petr Pysek, Stefan Siebert, Jessica, Sushinsky, Peter Werner and Marten Winter	2014	Experimental study	Proceedings of the Royal Society B: Biological Sciences. 281: 20133330
Raptor presence along an urban–wildland gradient: influences of prey abundance and land cover	Stan Rullman and John Marzluff	2014	Experimental study	Journal of Raptor Research. 48: 257–272
A specialist in the city: the diet of barn owls along a rural to urban gradient	Sofi Hindmarch and John Elliott	2014	Experimental study	Urban Ecosystems. 18: 477–488

Anthropogenic noise decreases urban songbird diversity and may contribute to homogenization	Darren Proppe, Christopher Sturdy and Colleen Cassady St. Clair	2013	Experimental study	Global Change Biology. 19: 1075–1084
Bird traits in urban–rural gradients: how many functional groups are there?	Lucas Leveau	2013	Experimental study	Journal of Ornithology. 154: 655–662
Rural–urban gradient and land use in a millenary metropolis: how urbanization affects avian functional groups and the role of old villas in bird assemblage patterning	L. Vignoli, S. Scire` and M. A. Bologna	2013	Experimental study	Web Ecology. 13: 49–67
Urbanization drives a reduction in functional diversity in a guild of nectar-feeding birds	Anton Pauw and Kirsten Louw	2012	Experimental study	Ecology and Society. 17
What makes an urban bird?	Karl Evans, Dan Chamberlain, Ben Hatchwell, Richard Gregory and Kevin Gaston	2011	Experimental study	Global Change Biology. 17: 1365–2486
Monitoring urban environments on the basis of biological traits	Marie-Hélène Lizée, Jean-François Mauffrey, Thierry Tatoni and Magali Deschamps-Cottin	2011	Experimental study	Ecological Indicators. 11: 353–361
Urban biodiversity: patterns and mechanisms	Stanley H. Faeth, Christofer Bang, and Susanna Saari	2011	Review	Annals of the New York Academy of Sciences. 1223: 69–81
Birds in urban ecosystems: population dynamics, community structure, biodiversity, and conservation	Eyal Shochat, Susannah Lerman and Esteban Fernández-Juricic	2010	Review	Urban Ecosystem Ecology. 55: 75–86
Migrating to the city: responses of neotropical migrant bird communities to urbanization	Ian MacGregor-Fors, Lorena Morales-Pérez and Jorge Schondube	2010	Review	The Condor. 112: 711–717
Successful city dwellers: A comparative study of the ecological characteristics of urban birds in the Western Palearctic	Anders Pape Møller	2009	Experimental study	Oecologia. 159: 849–58
Feeding birds in our towns and cities: a global research opportunity	Darryl N. Jones and S. James Reynolds	2008	Review	Journal of Avian Biology. 39: 265–271
Suburban habitats and their role for birds in the urban-rural habitat network: Points of local invasion and extinction?	Robert Blair and Elizabeth Johnson	2008	Experimental study	Landscape Ecology. 23: 1157–1169
Does urbanization filter birds on the basis of their biological traits?	Solène Croci, Alain Butet and Philippe Clergeau	2008	Review	Condor. 110: 223–240
Living in the city: can anyone become an 'urban exploiter'?	Salit Kark, Andrew Iwaniuk, Adam Schalimtzek and Eran Banker	2007	Review	Journal of Biogeography. 34: 638–651
Functional homogenization effect of urbanization on bird communities	Vincent Devictor, Romain Julliard, Denis Couvet, Alexandre Lee and Frédéric Jiguet	2007	Experimental study	Conservation Biology. 21: 41–751

Urban influence on birds at a regional scale: A case study with the avifauna of northern Madrid province	David Palomino and Luis Carrascal	2006	Experimental study	Landscape and Urban Planning. 77: 276–290
Landscape features of red-tailed hawk nesting habitat in an urban/ suburban environment	William Stout, Stanley Temple and John Cary	2006	Experimental study	Journal of Raptor Research. 40: 181–192
From patterns to emerging processes in mechanistic urban ecology	Eyal Shochat, Paige S. Warren, Stanley H. Faeth, Nancy E. McIntyre and Diane Hope	2006	Review	Trends in ecology & evolution. 21: 186–191
Effect of urbanization on habitat generalists: starlings not so flexible?	Gwénaëlle Mennechez and Philippe Clergeau	2006	Experimental study	Acta Oecologica. 30: 182–191
Urban effects on native avifauna: a review	Jameson Chace and John Walsh	2006	Review	Urban Planning. 74: 46–69
Avifauna homogenization by urbanization: analysis at different European latitudes.	Philippe Clergeau, Solene Croci, Jukka Jokimäki, Marja-Liisa Kaisanlahti-Jokimäki and Marco Dinetti	2006	Experimental study	Biological Conservation. 127: 336–344
Evaluation of the "safe nesting zone" hypothesis across an urban gradient: a multi-scale study	Jukka Jokimäki, Marja-Liisa Kaisanlahti-Jokima¨ki, Alberto Sorace, Esteban Fernandez-Juricic, In˜aki Rodriguez-Prieto and Maria Jimenez	2005	Experimental study	Ecography. 28: 59–70
Responses of avian guilds to urbanization in a tropical city	Haw Lim and Navjot Sodhi	2004	Experimental study	Landscape and Urban Planning. 66: 199–215
Biotic impoverishment and homogenization in unfragmented forest understory communities.	Thomas Rooney, Shannon Wiegmann, David Rogers and D. M. Waller	2004	Experimental study	Conservation Biology. 18: 787–798
Common birds facing global changes: what makes a species at risk?	Romain Julliard, Fre´deric Jiguet and Denis Couvet	2003	Experimental study	Global Change Biology. 10: 148–154
Winter bird communities in urban habitats: a comparative study between central and northern Europe	Jukka Jokimäki, Philippe Clergeau and Marja-Liisa Kaisanlahti-JokimaÈki	2002	Experimental study	Journal of Biogeography. 29: 69–79
Are urban bird communities influenced by the bird diversity of adjacent landscapes?	Philippe Clergeau, Jukka Jokimäki and Jean-Pierre Savard	2002	Review	Journal of Applied Ecology. 38: 1122–1134
Avian species richness and numbers in the built environment: can new housing developments be good for birds?	Christopher Mason	2001	Experimental study	Human Exploitation and Biodiversity Conservation. 15: 2365–2378
Roof and ground nesting Eurasian Oystercatchers in Aberdeen	A Duncan, R Dun Can, R Rae, G W Rebecca & B J Stew Art	2001	Experimental study	Scottish Birds. 22: 1–8
Avifaunal Use of wooded streets in an urban landscape	Esteban Fernández-Juricic	2000	Experimental study	Conservation Biology. 14: 513–521

	Effects of human disturbance on spatial and temporal feeding patterns of Blackbird *Turdus merula* in urban parks in Madrid, Spain	Esteban Fernández-Juricic and José Luis Tellería	2000	Experimental study	Bird Study. 47: 13–21
	Biotic homogenization: a few winners replacing many losers in the next mass extinction	Michael McKinney and Julie Lockwood	1999	Review	Trends in Ecology & Evolution. 14: 450–453
	Relationship among breeding birds, habitat and residential development in Greater Tuscon, Arizona	Stephen Germaine, Steven Rosenstock, Raymond Schweinsburg and W. Scott Richardson	1998	Experimental study	Ecological Applications. 8: 680–691
	Land use and avian species diversity along an urban gradient	Robert Blair	1996	Experimental study	Ecological Applications. 6: 506–519
	The evolution of ecological specialization	Douglas Futuyama and Gabriel Moreno	1988	Review	Annual Review of Ecology and Systematics. 19: 207–233
	Effects of urbanization on avian community organization	Steven Beissinger and David Osborne	1982	Experimental study	The Condor. 84: 75–83
	Bird communities and the structure of urban habitats	Richard Lancaster and William Rees	1979	Experimental study	Canadian Journal of Zoology. 57: 2358–2368
Life history traits	Behavioural and reproductive flexibility of an invasive bird in an arid zone: A case of the Indian House Crow (*Corvus splendens*)	Reuven Yosef, Piotr Zduniak, Yelena Poliakov, Anastasia Fingerman	2019	Experimental study	Journal of Arid Environments. 168: 56–58
	Environmental factors affecting the reproductive rate of urban northern goshawks	Haruki Natsukawa, Kaname Mori, Shizuko Komuro, Takashi Shiokawa, and Jun Umetsu	2019	Experimental study	Journal of Raptor Research. 53: 377–386
	Urban environments are associated with earlier clutches and faster nestling feather growth compared to natural habitats	Kristen Marini, Ken Otter, Stefanie LaZerte and Matthew Reudink	2017	Experimental study	Urban Ecosystems. 20: 1291–1300
	The breeding performance of raptors in urban landscapes: a review and meta-analysis	Esther Kettel, Louise Gentle, John Quinn and Richard Yarnell	2017	Review	Journal of Ornithology. 159: 1–18
	Breeding success and productivity of urban and rural Eurasian sparrowhawks *Accipiter nisus* in Scotland	Michael Thornton, Ian Todd and Staffan Roos	2017	Experimental study	Écoscience. 24: 115–126
	Integrated behavioral and stable isotope data reveal altered diet linked to low breeding success in urban-dwelling blue tits (*Cyanistes caeruleus*)	Christopher Pollock, Pablo Capilla-Lasheras, Rona McGill, Barbara Helm and Davide Dominoni	2016	Experimental study	Scientific Reports. 7: 5014
	Long-term variation in laying date and clutch size of the Great tit (*Parus major*) in central Poland: a comparison between urban parkland and deciduous forest.	Jarosław Wawrzyniak, Adam Kaliński, Michał Glądalski, Mirosława Bańbura, Marcin Markowski, Joanna Skwarska, Piotr ZielińSki, Iwona Cyżewska and Jerzy Bańbura	2015	Experimental study	Ardeola. 62: 311–323

	Demography, traits and vulnerability to urbanization: can we make generalizations?	Leone Brown and Catherine Graham	2015	Experimental study	Journal of Animal Ecology. 73: 434–440
	Individual-based measurements of light intensity provide new insights into the effects of artificial light at night on daily rhythms of urban-dwelling songbirds	Davide Dominoni, Esther Carmona-Wagner, Michaela Hofmann, Bart Kranstauber and Jesko Partecke	2014	Experimental study	Journal of Animal Ecology. 83: 681–692
	Fearing the feline: domestic cats reduce avian fecundity through trait-mediated indirect effects that increase nest predation by other species	Colin Bonnington, Kevin Gaston and Karl Evans	2013	Experimental study	Journal of Applied Ecology. 50: 15–24
	Artificial Night Lighting Affects Dawn Song, Extra-Pair Siring Success and Lay Date in Songbirds	Bart Kempenaers, Pernilla Borgstro¨m, Peter Loe¨ s, Emmi Schlicht and Mihai Valcu	2010	Experimental study	Current Biology. 20: 1735–1739
	Avian productivity in urban landscapes: a review and meta-analysis	Daniel Chamberlain, Arthur Cannon, M. P. Toms, David Leech, Ben Hatchwell and Kevin Gaston	2009	Review	Ibis. 151: 1–18
	Group composition and reproductive success of cooperatively breeding white-winged choughs (*Corcorax melanorhamphos*) in urban and non-urban habitat	Nadeena Beck and Robert Heinsohn	2006	Experimental study	Austral Ecology. 31: 588–596
	Nesting success and life-history attributes of bird communities along an urbanization gradient	Joseph Reale and Robert Blair	2005	Experimental study	Urban Habitats. 3: 1–24
	Small -scale differences in the breeding ecology of urban and rural Magpies (*Pica pica*)	Anton Antonov and Dimitrinka Atanasova	2003	Experimental study	Ornis Fennica. 80: 21–30
	Habitat-specific growth and fitness In Carrion Crows (*Corvus Corone Corone*)	Heinz Richner	1989	Experimental study	The Journal of Animal Ecology. 427–440
Physiological traits	Urbanization induces bird color homogenization	Lucas M. Leveau	2019	Experimental study	Landscape and Urban Planning 192: 103645.
	Exploring the influence of urbanization on morph distribution and morph-specific breeding performance in a polymorphic african raptor	Petra Sumasgutner, Sanjo Rose, Ann Koeslag and Arjun Amar	2018	Experimental study	Journal of Raptor Research. 52: 19–30
	Urban Raptor Communities: Why Some Raptors and Not Others Occupy Urban Environments	Clint Boal	2018	Review	In Urban Raptors: pp. 36–50
	City Lifestyles: Behavioral Ecology of Urban Raptors	Cheryl Dykstra	2018	Review	In Urban Raptors: pp. 18–35

Mechanisms associated with an advance in the timing of seasonal reproduction in an urban songbird	Adam Fudickar, Timothy Greives, Mikus Abolins-Abols, Jonathan Atwell, Simone Meddle, Guillermo Friis, Craig Stricker and Ellen Ketterson	2017	Experimental study	Frontiers in Ecology and Evolution. 5: 85
Brain size and urbanization in birds	Anders P. Møller and Johannes Erritzøe	2015	Experimental study	Avian Research 6: 8
Stressful city sounds: glucocorticoid responses to experimental traffic noise are environmentally dependent	Scott Davies, Nicole Haddad and Jenny Ouyang	2017	Experimental study	Biological Letters. 13: 20170276
Seasonal and urban effects on the endocrinology of a wild passerine	Anja Russ, Susanne Reitemeier, Anne Weissmann, Jutta Gottschalk, Almuth Einspanier and Reinhard Klenke	2015	Experimental study	Ecology and Evolution. 5: 5698–5710
Urbanization, oxidative stress and inflammation: a question of evolving, acclimatizing or coping with urban environmental stress	Caroline Isaksson	2015	Review	Functional Ecology. 29: 913–923
The effects of light pollution on biological rhythms of birds: an integrated, mechanistic perspective	Davide Dominoni	2015	Review	Journal of Ornithology. 156: 409–418
Advanced seasonal reproductive development in a male urban bird is reflected in earlier plasma luteinizing hormone rise but not energetic status	Scott Davies, Hirbod Behbahaninia, Mathieu Giraudeau, Simone Meddle, Kyle Waites and Pierre Deviche	2015	Experimental study	General and Comparative Endocrinology. 224: 1–10
Does urban life change blood oxidative status in birds?	David Costantini, Timothy Greives, Michaela Hau and Jesko Partecke	2014	Experimental study	Journal of Experimental Biology. 217: 2994–2997
Variation in adrenocortical stress physiology and condition metrics within a heterogeneous urban environment in the song sparrow *Melospiza melodia*	Melissa Grunst, John Rotenberry and Andrea Grunst	2014	Experimental study	Avian Biology. 45: 574–583
Differences in the reproductive hormone rhythm of tree sparrows (*Passer montanus*) from urban and rural sites in Beijing: The effect of anthropogenic light sources	Shuping Zhang, Xiaoyu Chen, Jingruo Zhang and Hongchang Li	2014	Experimental study	General and Comparative Endocrinology. 206: 24–29
Long-term effects of chronic light pollution on seasonal functions of European blackbirds (*Turdus merula*).	Davide Dominoni, Michael Quetting and Jesko Partecke	2013	Experimental study	PLoS ONE. 8: e85069
Artificial light at night advances avian reproductive physiology	Davide Dominoni, Michael Quetting and Jesko Partecke	2013	Experimental study	Proceedings of Royal Society B: Biological Sciences. 280: 20123017

Urban-like night illumination reduces melatonin release in European blackbirds (*Turdus merula*): implications of city life for biological time-keeping of songbirds	Davide Dominoni, Wolfgang Goymann, Barbara Helm and Jesko Partecke	2013	Experimental study	Frontiers in Zoology. 10: 60
The Effects of Low Levels of Light at Night Upon the Endocrine physiology of Western Scrub-Jays (*Aphelocoma californica*)	Stephan Schoech, Reed Bowman, Thomas Hahn, Wolfgang Gotmann, Ingrid Schwabl and Eli Bridge	2013	Experimental study	JEZ-A Ecological and Integrative Physiology. 319: 527–538
Hormones in the city: Endocrine ecology of urban birds	Frances Bonier	2012	Review	Hormones and Behavior. 61: 763–772
The effect of acute stress and long-term corticosteroid administration on plasma metabolites in an urban and desert songbird	Scott Davies, Natalie Rodriguez, Karen Sweazea and Pierre Deviche	2012	Experimental study	Physiological and Biochemical Zoology. 86: 47–60
Multiple indices of body condition reveal no negative effect of urbanization in adult house sparrows.	Veronika Bókony, Gábor Seress, Szabolcs Nagy, Ádám Lendvai and András Liker	2012	Experimental study	Landscape and Urban Planning. 104: 75–84
Brains and the city: big-brained passerine birds succeed in urban environments	Alexei Maklakov, Simone Immler, Alejandro Gonzalez-Voyer, Johanna Rönn and Niclas Kolm	2011	Experimental study	Biology Letters. 7: 730–732
Plasma corticosterone of city and desert Curve-billed Thrashers, (*Toxostoma curvirostre*), in response to stress-related peptide administration	H. Bobby Fokidis and Pierre Deviche	2011	Experimental study	CBP: Molecular and Integrative Physiology. 159: 32–38
Brain Arginine Vasotocin immunoreactivity differs between urban and desert Curve-billed Thrashers, *Toxostoma curvirostre*: relationships with territoriality and stress physiology	H. Bobby Fokidis and Pierre Deviche	2011	Experimental study	Brain, Behavior and Evolution. 79: 84–97
Variation in baseline corticosterone levels of Tree Sparrow (*Passer montanus*) populations along an urban gradient in Beijing, China	Shuping Zhang, Fumin Lei, Shenglin Liu, Dongming Li, Cong Chen and Peizhe Wang	2011	Experimental study	Journal of Ornithology. 152: 801–806
Levels of antioxidants in rural and urban birds and their consequences	Anders Pape Møller, Johannes Erritzøe and Filiz Karadas	2010	Experimental study	Oecologia. 163: 35–45
Sensory ecology: Night lights alter reproductive behavior of Blue tits	Travis Longcore	2010	Experimental study	Current Biology. 20: R893–R895
Corticosterone and corticosteroid binding globulin in birds: Relation to urbanization in a desert city	H. Bobby Fokidis, Miles Orchinik and Pierre Deviche	2009	Experimental study	General and Comparative Endocrinology. 160: 259–270

	Supersize Me: Does Anthropogenic Food Change the Body Condition of Silver Gulls? A Comparison Between Urbanized and Remote, Non-urbanized Areas	Heidi Auman, Catherine Meathrel and Alastair Richardson	2008	Experimental study	Waterbirds. 31: 122–126
	Lean birds in the city: body size and condition of house sparrows along the urbanization gradient	A. Liker, Z. Papp, V. Bókony, Á. Z. Lendvai	2008	Experimental study	Journal of Animal Ecology. 77: 789–795
	Urban flight: understanding individual and population-level responses of Nearctic–Neotropical migratory birds to urbanization	Amanda Rodewald and Daniel Shustack	2008	Experimental study	Journal of Animal Ecology. 77: 83–91
	Brain size predicts the success of mammal species introduced into novel environments	Daniel Sol, Sven Bacher, Simon Reader and Louis Lefebvre	2008	Experimental study	The American Naturalist. 172: 63–71
	Stress and the city: Urbanization and Its Effects on the Stress Physiology in European Blackbirds	Jesko Partecke, Ingrid Schwabl and Eberhard Gwinner	2006	Experimental study	Ecology. 87: 1945–1952
	Big brains, enhanced cognition, and response of birds to novel environments	Daniel Sol, Richard P. Duncan, Tim M. Blackburn, Phillip Cassey and Louis Lefebvre	2005	Experimental study	Proceedings of the National Academy of Sciences USA. 102: 5460–5465
	Adaptive phenotypic plasticity and the successful colonization of a novel environment	Pamela Yeh and Trevor Price	2004	Experimental study	The American Naturalist. 164: 531–542
	Hematological parameters and stress index in Rufous-coloured sparrows dwelling in urban environments	Gricelda Ruiz, Mario Rosenmann and Francisco Fernando Novoa	2002	Experimental study	The Condor. 104: 162–166
	The ecology of Western Gulls in habitats varying in degree of urban influence	Raymond Pierotti and Cynthia Annett	2001	Experimental study	In Avian Ecology and Conservation in an Urbanizing World. pp. 307–329
	Differences in the timing of reproduction between urban and forest European blackbirds (*Turdus merula*): result of phenotypic flexibility or genetic differences?	Jesko Partecke, Thomas Van't Hof and Eberhard Gwinner	2000	Experimental study	Proceedings of Royal Society London. Series B: Biological Sciences. 271: 1995–2001
Behavioral traits	Variation in boldness and novelty response between rural and urban predatory birds: The Chimango Caracara, *Milvago chimango* as study case	Laura Biondi, G. M. Fuentes, R. S. Córdoba, Maria Bó, Matilde Cavalli, Carla Paterlini, Melina Castano and German García	2020	Experimental study	Behavioral Processes. 173: 104064
	Urban gulls adapt foraging schedule to human-activity patterns	Anouk Spelt, Oliver Soutar, Cara Williamson, Jane Memmott, Judy Shamoun-Baranes Peter Rock and Shane Windsor	2020	Experimental study	Ibis. 163: 274–282
	City gulls and their rural neighbours: changes in escape and agonistic behaviour along a rural-to-urban gradient	Olga Pavlova and Torsten Wronski	2020	Experimental study	Advances In Environmental Research. p.33

Urban herring gulls use human behavioural cues to locate food	Madeleine Goumas, Neeltje Boogert and Laura Kelley	2020	Experimental study	Royal Society open science. 7: p.191959
Behavioral responses of black-headed gulls (*Chroicocephalus ridibundus*) to artificial provisioning in China	Changzhang Feng and Wei Liang	2020	Experimental study	Global Ecology and Conservation. 21: p.e00873
Evidence for differing trajectories of songs in urban and rural populations	Dana Moseley, Jennifer Phillips, Elizabeth Derryberry and David Luther	2019	Experimental study	Behavioral Ecology. 30: 1734–1742
Risk-taking behavioral, urbanization and the pace of life in birds	Daniel Sol, Joan Maspons, Alejandro Gonzalez-Voyer, Ignacio Morales-Castilla, László Zsolt Garamszegi and Anders Pape Møller	2018	Experimental study	Behavioral Ecology and Sociobiology. 72: 59
Bird foraging is influenced by both risk and connectivity in urban parks	Darcy Visscher, Alan Unger, Heinrich Grobbelaar and Philip DeWitt	2018	Experimental study	Journal of Urban Ecology. 4: juy020
Escape behavior of birds in urban parks and cemeteries across Europe: Evidence of behavioral adaptation to human activity	Federico Morelli, Peter Mikula, Yanina Benedetti, Raphaël Bussière, Leszek Jerzak, Piotr Tryjanowski	2018	Experimental study	Science of the Total Environment, 631: 803–810
The comparative evidence for urban species sorting by anthropogenic noise	Gonçalo C. Cardoso, Yang Hu and Clinton D. Francis	2018	Experimental study	Royal Society open science, 5: 172059
Urban sparrows respond to a sexually selected trait with increased aggression in noise	Jennifer Phillips and Elizabeth Derryberry	2018	Experimental study	Scientific Reports. 8: 7505
Development of urban behaviour is associated with time since urbanization in a reed-nesting waterbird	Piotr Minias, Jan Jedlikowski and Radosław Włodarczyk	2018	Experimental study	Urban Ecosystems. 21: 1021–1028
Sub-lethal exposure to lead is associated with heightened aggression in an urban songbird	Stephanie McClelland, Renata Durães Ribeiroc, Howard Mielke, Myra Finkelstein, Christopher Gonzales, John Anthony Jones, Jan Komdeur, Elizabeth Derryberry, Emma Saltzberg and Jordan Karubian	2018	Experimental study	Science of the Total Environment. 654: 593–603
Neophilia, innovation and learning in an urbanized world: a critical evaluation of mixed findings	Andrea Griffin, Keilah Netto and Chloe Peneaux	2017	Review	Current Opinions in Behavioral Sciences. 17: 15–22
Flight initiation by Ferruginous Hawks depends on disturbance type, experience, and the anthropogenic landscape	Cameron Nordell, Troy Wellicome and Erin Bayne	2017	Experimental study	PLoS ONE. 12: e0177584
Signal information of bird song changes in human-dominated landscapes	Desirée Narango and Amanda Rodewald	2017	Experimental study	Urban Ecosystems. 21: 41–50

Rural-Urban differences in escape behavioral of European birds across a latitudinal gradient	Diogo Samia, Daniel Blumstein, Mario Díaz, Tomas Grim, Juan Diego Ibáñez-Álamo, Jukka Jokimäki, Kunter Tätte, Gábor Markó, Piotr Tryjanowski and Anders Pape Møller	2017	Experimental study	Frontiers in Ecology and Evolution. 5: 66
Urban Great tits (*Parus major*) show higher distress calling and pecking rates than rural birds across Europe	Juan Senar, Laszlo Garamszegi, Vallo Tilgar, Clotilde Biard, Gregorio Moreno-Rueda, Pablo Salmón, J. M. Rivas, Philipp Sprau, Niels Dingemanse, Anne Charmantier, Virginie Demeyrier, Helena Navalpotro and Caroline Isaksson	2017	Experimental study	Frontiers in Ecology and Evolution. 5: 163
Repeatability and degree of territorial aggression differs among urban and rural great tits (*Parus major*)	Samuel Hardman and Sarah Dalesman	2017	Experimental study	Scientific Reports. 8: 5042
Mountain chickadees adjust songs, calls and chorus composition with increasing ambient and experimental anthropogenic noise	Stefanie LaZerte, Ken Otter and Hans Slabbekoorn	2017	Experimental study	Urban Ecosystems. 20: 989–1000
Anthropogenic noise, but not artificial light levels predicts song behaviour in an equatorial bird	Adriana Dorado-Correa, Manuel Rodríguez-Rocha and Henrik Brumm	2016	Experimental study	Royal Society Open Science. 3: 160231
Differential nest-defense to perceived danger in urban and rural areas by female Eurasian sparrowhawk (*Accipiter nisus*)	Tomas Kunca, Reuven Yosef	2016	Experimental study	PeerJ. 4: e2070
Street smart: faster approach towards litter in urban areas by highly neophobic corvids and less fearful birds	Alison Greggor, Nicola Clayton, Antony Fulford and Alex Thornton	2016	Experimental study	Animal Behavior. 117: 123–133
Carrion Preference in Australian Coastal Raptors: Effects of Urbanisation on Scavenging	Victoria Thomson, Tim Stevens, Darryl Jones and Chantal Huijbers	2016	Experimental study	Sunbird: Journal of the Queensland Ornithological Society. 46: p.16
A synthesis of two decades of research documenting the effects of noise on wildlife	Graeme Shannon, Megan McKenna, Lisa Angeloni, Kevin Crooks, Kurt Fristrup, Emma Brown, Katy Warner, Misty Nelson, Cecilia White, Jessica Briggs, Scott McFarland and George Wittemyer	2016	Review	Biological Reviews. 91: 982–1005
Song adjustments by an open habitat bird to anthropogenic noise, urban structure, and vegetation	Jacob Job, Steve Kohler and Sharon Gill	2016	Experimental study	Behavioral Ecology. 27: 1734–1744

Heritability of fear of humans in urban and rural populations of a bird species	Martina Carrete, Jesús Martínez-Padilla, Sol Rodríguez-Martínez, Natalia Rebolo-Ifrán, Antonio Palma and José Tella	2016	Experimental study	Scientific Reports. 6, 31060
Scavenging opportunities modulate escape responses over a small geographic scale	Patricia Fleming and Philip Bateman	2016	Experimental study	Ethology. 123: 205–212
Urbanization affects neophilia and risk-taking at bird-feeders	Piotr Tryjanowski, Anders Pape Møller, Federico Morelli, Waldemar Biaduń, Tomasz Brauze, Michał Ciach, Paweł Czechowski, Stanisław Czyż, Beata Dulisz, Artur Goławski, Tomasz Hetmański, Piotr Indykiewicz, Cezary Mitrus, Łukasz Myczko, Jacek Nowakowski, Michał Polakowski, Viktoria Takacs, Dariusz Wysocki and Piotr Zduniak	2016	Experimental study	Scientific Reports. 6: 28575
Innovativeness and the effects of urbanization on risk-taking Behaviors in wild Barbados birds	Simon Ducatez, Jean-Nicolas Audet, Jordi Ros Rodriguez, Lima Kayello and Louis Lefebvre	2016	Experimental study	Animal Cognition. 20: 33–42
Eastern bluebirds alter their song in response to anthropogenic changes in the acoustic environment	Caitlin Knight and John Swaddle	2015	Experimental study	Integrative and Comparative Biology. 55: 418–431
Not so sexy in the city: urban birds adjust songs to noise but compromise vocal performance	David Luther, Jennifer Phillips and Elizabeth Derryberry	2015	Experimental study	Behavioral Ecology. 27: 332–340
Urban-associated drivers of song variation along a rural–urban gradient	Desirée Narango and Amanda Rodewald	2015	Experimental study	Behavioral Ecology. 27 608–616
Increased tolerance to humans among disturbed wildlife	Diogo Samia	2015	Review	Nature Communications. 6: 8877
The town bird and the country bird: problem solving and immunocompetence vary with urbanization	Jean-Nicolas Audet, Simon Ducatez and Louis Lefebvre	2015	Experimental study	Behavioral Ecology. 27: 637–644
Tolerance of disturbance by humans in long-time resident and recent colonist urban doves	Jemma Gendall, Alan Lill and Juliey Beckman	2015	Experimental study	Avian Research. 6: 7
Singing in the city: high song frequencies are no guarantee for urban success in birds	Maria Moiron, Cesar González-Lagos, Hans Slabbekoorn and Daniel Sol	2015	Experimental study	Behavioral Ecology. 26: 843–850
Boldness and urban dwelling in little ravens	Aaron Vines and Alan Lill	2014	Experimental study	Wildlife Research. 42: 590–597
Attention, habituation, and antipredator behaviour: implications for urban birds	Daniel Blumstein	2014	Review	Avian Urban Ecology. 41–53

Silvereyes decrease acoustic frequency but increase efficacy of alarm calls in urban noise	Dominique Potvin, Raoul Mulder and Kirsten Parris	2014	Experimental study	Animal Behavior. 98: 27–33
Boldness of urban Australian magpies and local traffic volume	Isaac Gravolin, Michelle Key and Alan Lill	2014	Experimental study	Avian Biology Research. 7: 244–250
Urban noise affects song structure and daily patterns of song production in Red-winged Blackbirds (*Agelaius phoeniceus*)	Lyndsay Cartwright, Dallas Taylor, David Wilson and Patricia Fraser	2014	Experimental study	Urban Ecosystems. 17: 561–572
Urban and colorful male house finches are less aggressive	Masaru Hasegawa, Russell Ligon, Mathieu Giraudeau, Mamoru Watanabe and Kevin McGraw	2014	Experimental study	Behavioral Ecology. 25: 641–649
Pedestrian density influences flight distances of urban birds	Peter Mikula	2014	Experimental study	Ardea. 102: 53–60
A comparison of problem-solving success between urban and rural house sparrows	Sándor Papp, Ernö Vincze, Bálint Preiszner, András Likér and Veronika B	2014	Experimental study	Behavioral Ecology and Sociobiology. 69: 471–480
Change in flight initiation distance between urban and rural habitats following a cold winter	Anders Pape Møller, Tomas Grim, Juan Diego Ibáñez-Álamo, Gábor Markó and Piotr Tryjanowski	2013	Experimental study	Behavioral Ecology. 24: 1211–1217
Sleepless in town—Drivers of the temporal shift in dawn song in urban European blackbirds	Anja Nordt and Reinhard Klenke	2013	Experimental study	PLoS ONE. 8: e71476
Tolerance of human approaches by Common mynas along an urban–rural gradient	Ashlee McGiffin, Alan Lill, Juliey Beckman and Christopher Johnstone	2013	Experimental study	EMU—Austral Ornithology. 113: 154–160
Urbanization and its implications for avian aggression: a case study of urban black kites (*Milvus migrans*) along Sagami Bay in Japan	Dana Galbreath, Tomohiro Ichinose, Tomoyuki Furutani, Wanglin Yan and Hiroyoshi Higuchi	2013	Experimental study	Landscape Ecology. 29: 169–178
Immediate, independent adjustment of call pitch and amplitude in response to varying background noise by silvereyes (*Zosterops lateralis*)	Dominique Potvin and Raoul Mulder	2013	Experimental study	Behavioral Ecology. 24: 1363–1368
Urban noise influences vocalization structure in the House wren *Troglodytes aedon*	Priscilla Redondo, Gilbert Barrantes and Luis Sandoval	2013	Experimental study	Ibis. 155: 621–625
Escape behaviour of birds provides evidence of predation being involved in urbanization	A. P. Møller J. D. Ibáñez-Álamo	2012	Experimental study	Animal Behavior. 84: 341–348
Dealing with urban noise: vermilion flycatchers sing longer songs in noisier territories	Alejandro Ariel Ríos-Chelén, Esmeralda Quirós-Guerrero, Diego Gil and Constantino Macías Garcia	2012	Experimental study	Behavioral Ecology and Sociobiology. 67: 145–152

Birdsongs keep pace with city life: changes in song over time in an urban songbird affects communication	David Luther and Elizabeth Derryberry	2012	Experimental study	Animal Behavior. 83: 1059–1066
Song convergence in multiple urban populations of silvereyes (*Zosterops lateralis*)	Dominique Potvin and Kirsten Parris	2012	Experimental study	Ecology and Evolution. 2: 1977–1984
How Noisy Does a Noisy Miner Have to Be? Amplitude Adjustments of Alarm Calls in an Avian Urban 'Adapter'	He´ le`ne Lowry, Alan Lill and Bob Wong	2012	Experimental study	PLoS ONE. 7: e29960
Exploring or avoiding novel food resources? The novelty conflict in an invasive bird	Daniel Sol, Andrea Griffin, Ignasi Bartomeus and Hayley Boyce	2011	Experimental study	PLoS ONE. 6: e19535
Geographically pervasive effects of urban noise on frequency and syllable rate of songs and calls in silvereyes (*Zosterops lateralis*)	Dominique Potvin, Kirsten Parris and Raoul Mulder	2011	Experimental study	Proceedings of Royal Society. B: Biological Sciences. 278: 2464–2469
Response to predation risk in Urban and rural House sparrows	Ga´ bor Seress, Veronika Bo´ kony, Ja´ nos Heszberge and Andra´s Liker	2011	Experimental study	Ethology. 117: 896–907
Behavioral syndromes break down in urban Song sparrow populations.	Jennifer Scales, Jeremy Hyman and Melissa Hughes	2011	Experimental study	Ethology. 117: 887–895
Urban noise predicts song frequency in Northern cardinals and American robins	Kerri Seger-Fullam, Amanda Rodewald and Jill Soha	2011	Experimental study	Bioacoustics. 20: 267–276
Serins respond to anthropogenic noise by increasing vocal activity	Mario Díaz, Antonio Parra and Clemente Gallardo	2011	Experimental study	Behavioral Ecology. 22: 332–336
The Rufous-Collared Sparrow *Zonotrichia capensis* utters higher frequency songs in urban habitats	Paola Laiolo	2011	Experimental study	Revista Catalana d'Ornitologia. 27: 25–30
Interspecific variation in fear responses predicts urbanization in birds	Anders Pape Møller	2010	Experimental study	Behavioral Ecology. 21: 365–371
Bird songs and anthropogenic noise: Are urban songs adaptive?	Erwin Nemeth and Henrik Brumm	2010	Experimental study	The American Naturalist. 176: 465–475
Behavioral syndromes in urban and rural populations of Song sparrows	Jackson Evans, Kyle Boudreau and Jeremy Hyman	2010	Experimental study	Ethology. 116: 588–595
Tolerance of human disturbance by urban Magpie-larks	Kim Kitchen, Alan Lill and Megan Price	2010	Experimental study	Australian Field Ornithology. 27: 1
Antipredator strategies of house finches: are urban habitats safe spots from predators even when humans are around?	Anna Valcarcel and Esteban Fernández-Juricic	2009	Experimental study	Behavioral Ecology and Sociobiology. 63: 673
Flight distance of urban birds, predation, and selection for urban life	Anders Pape Møller	2008	Experimental study	Behavioral Ecology and Sociobiology. 63: 63–75

	An animal geography of avian feeding habits in Peterborough, Ontario	Michael Campbell	2008	Experimental study	Area. 40: 472–480
	Birdsong and anthropogenic noise: implications and applications for conservation	Hans Slabbekoorn and Erwin Ripmeester	2007	Review	Molecular Ecology. 17: 72–83
	Daytime noise predicts nocturnal singing in urban robins	Richard Fuller, Philip Warren and Kevin Gaston	2007	Experimental study	Biology Letters. 3: 368–370
	Disturbances by dog barking increase vigilance in coots *Fulica atra*	Christoph Randler	2006	Experimental study	Journal of Wildlife Research, 52: 265–270
	Cities Change the Songs of Birds	Hans Slabbekoorn and Ardie den Boer-Visser	2006	Experimental study	Current Biology. 16: 2326–2331
	Comparison of foraging behaviour of small, urban-sensitive insectivores in continuous woodland and woodland remnants in a suburban landscape	Patricia Hodgson, Kristine French and Richard Major	2006	Experimental study	Wildlife Research. 33: 591–603
	Urban bioacoustics: it's not just noise	Paige warren, Madhusudan Katti, Michael Earmann and Anthony Brazel	2005	Review	Animal Behavior. 71: 491–502
	Linking optimal foraging behavior to bird community structure in an urban-desert landscape: field experiments with artificial food patches	Eyal Shochat, Susannah Lerman, Madhusudan Katti and David Lewis	2004	Experimental study	The American Naturalist. 164: 232–243
	The impact of environmental noise on song amplitude in a territorial bird	Henrik Brumm	2004	Experimental study	Journal of Animal Ecology. 73: 434–440
	Song Sparrow *(Melospiza melodia)* song varies with urban noise	William Wood and Stephen Yezerinac	2004	Experimental study	The Auk. 123: 650–659
	Behavioral flexibility and invasion success in birds	Daniel Sol, Sarah Timmermans and Louis Lefebvre	2002	Experimental study	Animal Behavior. 63: 495–502
Genetic traits	Urban colonization is driven by a mixture of evolutionarily conserved and labile traits	David Duchene, Carolina Pardo-Diaz and Maider Iglesias-Carrasco	2020	Experimental study	bioRxiv. 2020
	Elevated immune gene expression is associated with poor reproductive success of urban Blue tits	Pablo Capilla-Lasheras, Davide M. Dominoni, Simon Babayan, Peter O'Shaughnessy, Magdalena Mladenova, Luke Woodford, Christopher Pollock, Tom Barr, Francesco Baldini and Barbara Helm	2017	Experimental study	Frontiers in Ecology and Evolution. 5: 64
	Transcriptome analysis of a wild bird reveals physiological responses to the urban environment	Hannah Watson, Elin Videvall, Martin Andersson and Caroline Isaksson	2016	Experimental study	Scientific Reports. 7: 44180
	Urban driven phenotypic changes: empirical observations and theoretical implications for eco-evolutionary feedback	Marina Alberti, John Marzluff and Victoria Hunt	2016	Review	Biological Sciences. 372: 20160029

	Candidate gene polymorphisms for behavioral adaptations during urbanization in blackbirds	Jakob Mueller, Jesko Partecke, Ben Hatchwell, Kevin Gaston and Karl Evans	2013	Experimental study	Molecular Ecology. 22: 3629–3637
	Is urbanization of European blackbirds (*Turdus merula*) associated with genetic differentiation	Jesko Partecke, Eberhard Gwinner and Staffan Bensch	2006	Experimental study	Journal of Ornithology. 147: 549–552
Ecological/ life history traits	Generalists are the most urban-tolerant of birds: a phylogenetically controlled analysis of ecological and life history traits using a novel continuous measure of bird responses to urbanization	Corey Callaghan, Richard Major, John Wilshire, John Martin, Richard Kingsford and William Cornwell	2019	Experimental study	Oikos, 128: 845–858
	The traits that predict the magnitude and spatial scale of forest bird responses to urbanization intensity	Grant Paton, Alexandra Shoffner, Andrew Wilson and Sara Gagne	2019	Experimental study	PloS ONE. 14: e0220120
	Productivity, Mortality, and Management of Urban Peregrine Falcons in Northeastern North America	Marcel Gahbauer, David Bird, Kathleen Clark, Tom French, Daniel Brauning, F. Arthur Mcmorris	2015	Experimental study	The Journal of Wildlife Management. 79: 10–19
	Hard times in the city-attractive nest sites but insufficient food supply led to low reproduction rates in a bird of prey	Petra Sumasgutner, Erwin Nemeth, Graham Tebb, Harald Krenn and Anita Gamauf	2014	Experimental study	Frontiers in Zoology. 11: p.48
Ecological/ life history/ behavioral traits	The influence of urbanization on diversity and trait composition of birds	Peter Meffert and Frank Dziock	2013	Experimental study	Landscape Ecology. 28: 943–957
Life history/Behavioral traits	Reproductive phenology of urban birds: Environmental cues and mechanisms	Pierre Deviche and Scott Davies	2014	Review	Oxford University Press. pp. 98–115
Physiological/ Ecological traits	Increased sedentariness in European blackbirds following urbanization: A consequence of local adaptation	Jesko Partecke and Eberhard Gwinner	2007	Experimental study	Ecology. 88: 882–890
Physiological/ Life history traits	Sex in the city: sexual selection and urban colonization in passerines	Maider Iglesias-Carrasco, David Duchêne, Megan Head, Anders Møller and Kristal Cain	2019	Experimental study	Biology Letters. 15: 20190257
	Urban versus forest ecotypes are not explained by divergent reproductive selection	Aude Caizergues, Arnaud Gre′goire and Anne Charmantier	2018	Experimental study	Proceedings of the Royal Society B: Biological Sciences. 285: 20180261
Physiological/ Behavioral traits	Effect of acute stressor on reproductive behavior differs between urban and rural birds	Mikus Abolins-Abols, Sydney Hope and Ellen Ketterson	2016	Experimental study	Ecology and Evolution. 6: 6546–6555.
	Linking bird species traits to vegetation characteristics in a future urban development zone: implications for urban planning	Karen Ikin, Emma Knight, David Lindenmayer, Joern Fischer and Adrian Manning	2012	Experimental study	Urban Ecosystems. 15: 961–977

Physiological/ Life history/ Behavioral traits	Hormonal, behavioral, and life-history traits exhibit correlated shifts in relation to population establishment in a novel environment	Jonathan Atwell, Gonc¸alo Cardoso, Danielle Whittaker, Trevor Price and Ellen Ketterson	2014	Experimental study	The American Naturalist. 184: 147–160
Behavioral/ Ecological traits	Urbanization, environmental stabilization and temporal persistence of bird species: a view from Latin America	Lucas M. Leveau	2018	Review	PeerJ 6: e6056
	Behavioral and Ecological Keys to Urban Colonization by Little Ravens (*Corvus mellori*)	Alan Lill and Emma Hales	2015	Experimental study	The Open Ornithology Journal. 8: 22–31
	Links between fear of humans, stress and survival support a non-random distribution of birds among urban and rural habitats	Natalia Rebolo-Ifrán, Martina Carrete, Ana Sanz-Aguilar, Sol Rodríguez-Martínez, Sonia Cabezas, Tracy A. Marchant, Gar Bortolotti and José Tella	2014	Experimental study	Scientific Reports. 5: 13723
	Behavioural and ecological predictors of urbanization	Anders Pape Møller	2013	Review	Avian urban ecology.54–68
	Microhabitat selection and singing behavior patterns of male House finches (*Haemorhous mexicanus*) in urban parks in a heavily urbanized landscape in the Western U.S.	Esteban Fernández-Juricic, Rachael Poston, Karin De Collibus, Timothy Morgan, Bret Bastain, Cyndi Martin, Kacy Jones and Ronald Treminio	2005	Experimental study	Urban Habitats. 3: 49–69
Behavioral/Physiological traits	Avian anthrophobia? Behavioral and physiological responses of house finches (*Haemorhous mexicanus*) to human and predator threats across an urban gradient	Melinda Weaver, Russell Ligon, Melanie Mousel and Kevin McGraw	2018	Experimental study	Landscape and Urban Planning. 179: 46–54
	Inter-Individual Variability in Fear of Humans and Relative Brain Size of the Species Are Related to Contemporary Urban Invasion in Birds	Martina Carrete and José L. Tella	2011	Experimental study	PloS one. 6: e18859
	Evolution on a local scale: developmental, functional, and genetic bases of divergence in bill form and associated changes in song structure between adjacent habitats	Alexander Badyaev, Rebecca Young, Kevin Oh and Clayton Addison	2008	Experimental study	Evolution. 62: 1951–1964
Behavioral/ Physiological/ Life history traits	Urbanization is associated with divergence in pace-of-life in Great tits	Anne Charmantier, Virginie Demeyrier, Marcel Lambrechts, Samuel Perret and Arnaud Grégoire	2017	Experimental study	Frontiers in Ecology and Evolution. 5: 53
	Impacts of urban areas and their characteristics on avian functional diversity	Emily O. Hagen, Oskar Hagen, Juan D. Ibáñez-Álamo, Owen L. Petchey and Karl L. Evans	2017	Review	Frontiers in Ecology and Evolution 5: 84

General literature on urban bird and trait changes	A meta-analysis indicates reduced predation pressure with increasing urbanization	Csaba Béla Eötvösa, Tibor Maguraa, Gábor L. Löveic	2018	Review	Landscape and Urban Planning. 180: 54–59
	A decadal review of urban ornithology and a prospectus for the future	John Marzluff	2016	Review	Ibis. 159: 1–13
	The relationship between habitat loss and fragmentation during urbanization: an empirical evaluation from 16 world cities	Zhifeng Liu, Chunyang He and Jianguo Wu	2016	Experimental study	PLoS One. 11: e0154613
	Invasive rats on tropical islands: their population biology and impacts on native species	Grant Harper and Nancy Bunbury	2015	Experimental study	Global Ecology and Conservation. 3: 607–627
	Urbanization tolerance and the loss of avian diversity	Daniel Sol, Cesar González-Lagos, Darío Moreira, Joan Maspons and Oriol Lapiedra	2014	Experimental study	Ecology Letters. 17: 942–950
	The challenges of urban living	Danielle Shanahan, Michael Strohbach, Paige Warren and Richard Fuller	2014	Review	Avian Urban Ecology. 1: 1–18
	Urbanization and the Predation Paradox: The Role of Trophic Dynamics in Structuring Vertebrate Communities	Jason D. Fischer, Sarah H. Cleeton, Timothy P. Lyons, and James R. Miller	2012	Review	Bioscience. 62: 809–818.
	Personality traits and behavioral syndromes in differently urbanized populations of House sparrows (*Passer domesticus*)	Veronika Bókony, Anna Kulcsar, Zoltan Toth and Andras Liker	2012	Experimental study	PLoS ONE. 7: e36639
	Urban birds have broader environmental tolerance	Frances Bonier, Paul Martin and John Wingfield	2007	Experimental study	Biology Letters. 3: 670–673
	Urbanization, biodiversity and conservation.	Michael Mckinney	2002	Review	BioScience. 52: 883–890
	Worldwide urbanization and its effects on birds. In avian ecology and conservation in an urbanizing world	John Marzluff	2001	Review	Avian Ecology and Conservation in an Urbanizing World. pp. 19–47.
	A historical perspective on urban bird research: trends, terms, and approaches	John Marzluff, Reed Bowman and Roarke Donnelly	2001	Review	In Avian Ecology and Conservation in an Urbanizing World. pp. 1–17
	Patterns in the structure of grassland butterfly communities along a gradient of human disturbance: further analysis based on the generalist/specialist concept.	Masahiko Kitahara, Kunihiko Sei and Koichi Fujii	2000	Experimental study	Population Ecology. 42: 135–144

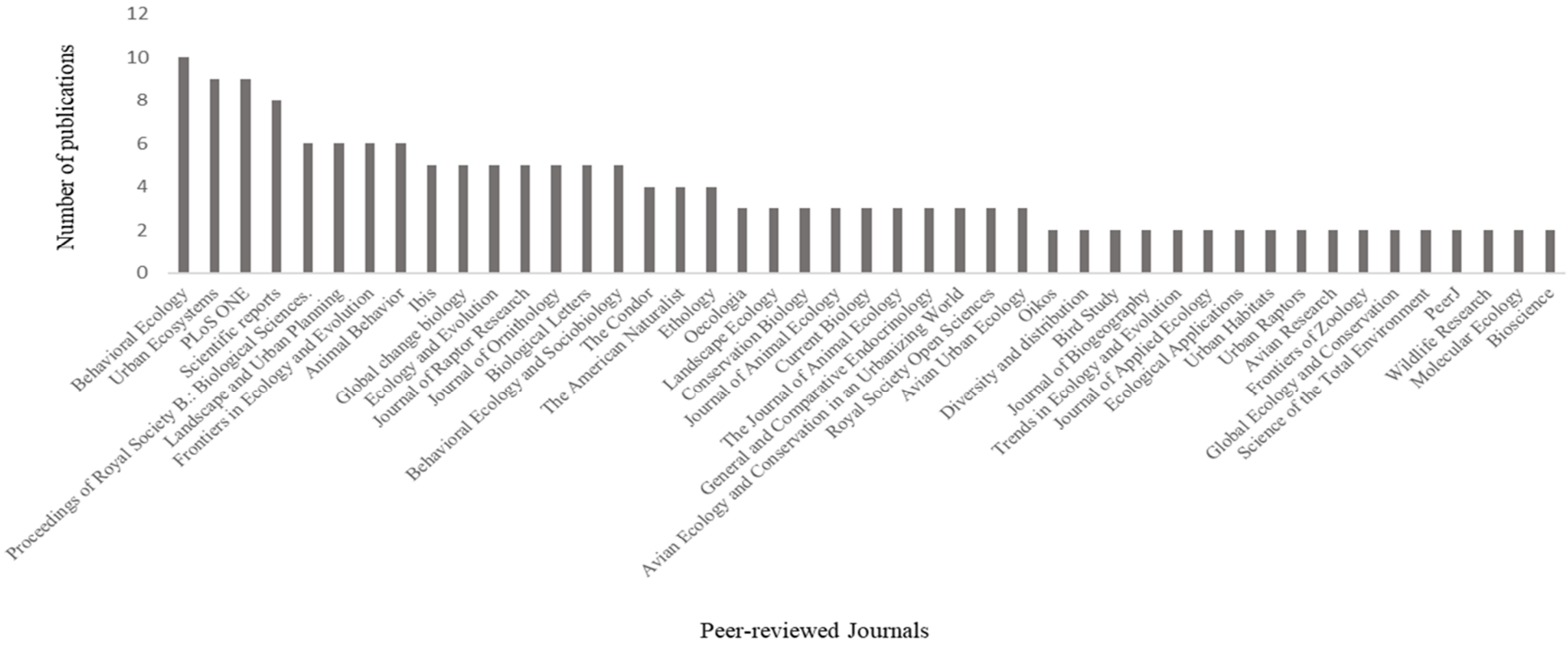

Figure S1. List of journals which published the (>1) articles reviewed in the current study.