Supplementary material 1. Information collated from all 162 frugivorous tracking publications. Information includes, but is not limited to, species, weight, location, number of tags deployed and the quantity and quality of data collected.

Supplementary material 2. Information collated from the 67 frugivorous tracking publications which were used for estimating seed dispersal distances. Information includes, but is not limited to, species, weight, human footprint index, mean seed dispersal distance and maximum seed dispersal distance.

Supplementary material 3. A list of keywords associated with each of the publications in this study and the scientific journal in which each publication was published.

Supplementary figure 1. The mean body mass of volant and non-volant species in relation to their mean seed retention time (SRT). Data extracted from a total of 42 studies that calculated seed dispersal distances and covers 59 different animal species. SRT is an average over multiple seed types for each species for each study. Regression line for all species shows standard error with a 95% confidence interval.

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*Supplementary tables:*

Supplementary table 1. Summary statistics of the mass (g) of taxa tagged with different devices.

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Supplementary table 2. Summary statistics for the number of days tags were deployed for on different taxa and for different devices.

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Supplementary table 3. Summary statistics for the number of locations collected on different taxa and for different devices.

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Supplementary table 4a and 4b. 4a) AIC scores to determine the best model for predicting tracking method GLM with body mass and taxa as predictors. 4b) Coefficient output table for predicting tracking method GLM with body mass and taxa as predictors.

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Supplementary table 5a and 5b. 5a) AIC scores to determine the best model for predicting tracking method GLM with body mass and year as predictors for the subset of bird species. 5b) Coefficient output table for predicting tracking method GLM with body mass, year, and an interaction term as predictors for the subset of bird species.

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Supplementary table 6a and 6b. 6a) AIC scores to determine the best model for predicting tracking method GLM with body mass and year as predictors for the subset of mammal species. 6b) Coefficient output table for predicting tracking method GLM with body mass, year, and an interaction term as predictors for the subset of mammal species.

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Supplementary table 7a and 7b. 7a) AIC scores to determine the best model for predicting the number of tracking days GLM with tracking method and taxa as predictors. 7b) Coefficient output table for predicting the number of tracking days GLM with tracking method, taxa, and an interaction between the two as predictors.

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Supplementary table 8a and 8b. 8a) AIC scores to determine the best model for predicting the number of tracking locations GLM with tracking method and taxa as predictors. 8b) Coefficient output table for predicting the number of tracking locations GLM with tracking method, taxa, and an interaction between the two as predictors.

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Supplementary table 9a, 9b and 9c. 9a) Model selection output for the best fit model for mean seed dispersal distance GLM with body mass, volant, protected and HFI as predictors. 9b) AIC scores to determine the best model, with or without an interaction, for predicting mean seed dispersal distance GLM with body mass, volant and protected as predictors. 9c) Coefficient output table for mean seed dispersal distance GLM with body mass, volant and protected areas as predictors.

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Supplementary table 10a, 10b and 10c. 10a) Model selection output for the best fit model for maximum seed dispersal distance GLM with body mass, volant, protected and HFI as predictors. 10b) AIC scores to determine the best model, with or without an interaction term, for predicting maximum seed dispersal distance GLM with body mass and volant as predictors.10c) Coefficient output table for maximum seed dispersal distance GLM with body mass, volant and an interaction term as predictors.

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Supplementary table 11a and 11b. 11a) Output for Spearman's rank correlation test between body mass (g) and species average SRT (minutes). 11b) Coefficient output table for the linear model assessing the effect of body mass on the species average SRT.

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Supplementary table 12. The subset of studies used for each analysis and the reasoning behind the omission of certain studies.

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Supplementary table 13. List of 162 frugivore tracking studies included in the review. Information includes Type (if the study only tracked the frugivore or if it also estimated seed dispersal distances), Year of study, Tracking method, Location (the country where the study was carried out in) and Species.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Study***  ***/Reference*** | ***Type*** | ***Year*** | ***Tracking method*** | ***Location*** | ***Species*** |
| 1 | Track | 2002 | Radio Tracking | Cameroon | Brown cheeked hornbill |
| 1 | Track | 2002 | Radio Tracking | Cameroon | Black-casqued hornbill |
| 2 | Track | 2014 | GPS | Cameroon | White-thighed hornbill |
| 2 | Track | 2014 | GPS | Cameroon | Black-casqued hornbill |
| 3 | Track | 2008 | GPS | Congo | African bush elephant |
| 3 | Track | 2008 | GPS | Gabon |  |
| 4 | Track | 2011 | Radio Tracking | Madagascar | Madagascan rousette |
| 5 | Track | 2019 | GPS | Mauritius | Mauritian flying fox |
| 6 | Track | 2013 | Radio Tracking | South Africa | Wahlberg's epauletted fruit bat |
| 7 | Track | 2014 | Radio Tracking | South Africa | Wahlberg's epauletted fruit bat |
| 7 | Track | 2014 | Radio Tracking | South Africa | Peter's epauletted fruit bat |
| 8 | Track | 2017 | GPS | South Africa | Trumpeter hornbill |
| 9 | Track | 2016 | GPS | Canary Islands | Elenora falcon |
| 10 | Track | 2019 | Resource tracking | Gabon | African bush elephant |
| 11 | Track | 2012 | Radio tracking | Madagascar | Red-ruffed lemur |
| 12 | Track | 2017 | Radio Tracking | Borneo | Binturong |
| 13 | Track | 2018 | GPS | Mongolia | Bar-headed goose |
| 13 | Track | 2018 | GPS | China |  |
| 13 | Track | 2018 | GPS | India |  |
| 14 | Track | 2016 | Radio Tracking | Cyprus | Egyptian fruit bat |
| 15 | Track | 1998 | Radio Tracking | India | Indian short-nosed fruit bat |
| 16 | Track | 2018 | GPS | Malaysia | Asian elephant |
| 17 | Track | 2015 | GPS | Thailand | Lyle's flying fox |
| 18 | Track | 1994 | Radio Tracking | Thailand | Great hornbill |
| 18 | Track | 1994 | Radio Tracking | Thailand | Brown hornbill |
| 18 | Track | 1994 | Radio Tracking | Thailand | Wreathed hornbill |
| 19 | Track | 2004 | Radio Tracking | Vietnam | Pygmy Loris |
| 20 | Track | 1997 | Resource tracking | Japan | Japanese squirrel |
| 20 | Track | 1997 | Resource tracking | Japan | Field mouse |
| 21 | Track | 2000 | Radio Tracking | Belize | Little yellow-shouldered bat |
| 22 | Track | 1978 | Radio Tracking | Costa Rica | Seba's short-tailed bat |
| 23 | Track | 1986 | Radio Tracking | Costa Rica | Seba's short-tailed bat |
| 24 | Track | 1994 | Radio Tracking | Costa Rica | Resplendent Quetzal |
| 25 | Track | 1997 | Radio Tracking | Costa Rica | *Brycon guatemalensis* |
| 26 | Track | 2004 | Radio Tracking | Costa Rica | Three-wattled bellbird |
| 27 | Track | 2011 | Radio Tracking | Costa Rica | Blue-throated toucanet |
| 28 | Track | 2015 | Radio Tracking | Costa Rica | Thomas's fruit-eating bat |
| 29 | Track | 2007 | Radio Tracking | Costa Rica | Wood thrush |
| 30 | Track | 2007 | Radio Tracking | Costa Rica | Thomas's fruit-eating bat |
| 31 | Track | 2010 | Radio Tracking | Costa Rica | Commissaris's long-tongued bat |
| 32 | Track | 2006 | Radio Tracking | Costa Rica | Silver-throated tanager |
| 32 | Track | 2006 | Radio Tracking | Costa Rica | Orange-billed nightingale-thrush |
| 32 | Track | 2006 | Radio Tracking | Costa Rica | White-throated thrush |
| 33 | Track | 1978 | Radio Tracking | Panama | Jamaican fruit bat |
| 34 | Track | 1991 | Radio Tracking | Panama | Jamaican fruit bat |
| 35 | Track | 2005 | Radio Tracking | Panama | Spiny rat |
| 36 | Track | 2006 | Radio Tracking | Panama | White-throated round-eared bat |
| 37 | Track | 2008 | Radio Tracking | Panama | Agouti |
| 38 | Track | 2016 | GPS | Panama | White-faced capuchin monkey |
| 38 | Track | 2016 | GPS | Panama | Black-handed spider monkey |
| 39 | Track | 2006 | Radio Tracking | Panama | Chestnut short-tailed bat |
| 40 | Track | 2018 | GPS | France | Roe deer |
| 41 | Track | 2012 | Radio tracking | Menorca | Lilford’s wall lizard |
| 42 | Track | 2011 | Radio Tracking | Portugal | Wood mouse |
| 43 | Track | 2013 | Radio Tracking | Sweden | Siberian jay |
| 44 | Track | 2005 | Radio Tracking | USA | Swainson’s thrush |
| 44 | Track | 2005 | Radio Tracking | USA |  |
| 45 | Track | 2018 | GPS | Canada | Grizzly bear |
| 46 | Track | 2005 | Radio Tracking | Dominican Republic | Hispaniolan parrot |
| 47 | Track | 1994 | Radio Tracking | USA | White-crowned pigeon |
| 48 | Track | 2014 | Radio Tracking | USA | Japanese white eye |
| 49 | Track | 1998 | Radio Tracking | Mexico | Lesser long-nosed bat |
| 50 | Track | 2001 | Radio Tracking | Mexico | Keel-billed toucan |
| 51 | Track | 2014 | Radio Tracking | Mexico | Highland yellow-shouldered bat |
| 52 | Track | 1978 | Radio tracking | Mexico | Jamaican fruit bat |
| 53 | Track | 2016 | Radio Tracking | USA | Cedar waxwing |
| 53 | Track | 2016 | Radio Tracking | USA | American robin |
| 54 | Track | 2018 | Radio Tracking | USA | Swainson’s thrush |
| 54 | Track | 2018 | Radio Tracking | USA | Cray catbird |
| 55 | Track | 2005 | Radio tracking | USA | American robin |
| 56 | Track | 1997 | Radio Tracking | Puerto Rico | Red fig-eating bat |
| 57 | Track | 2009 | Radio Tracking | USA | Clarks Nutcracker |
| 58 | Track | 2010 | Radio Tracking | USA | Clarks Nutcracker |
| 59 | Track | 2016 | Radio Tracking | USA | Clarks Nutcracker |
| 60 | Track | 1997 | Radio Tracking | New Zealand | North Island Kaka |
| 61 | Track | 2008 | Radio Tracking | New Zealand | New Zealand pigeon |
| 62 | Track | 2010 | Radio Tracking | New Zealand | North island robin |
| 63 | Track | 1987 | Radio Tracking | Papa New Guinea | Buff-tailed sicklebill |
| 64 | Track | 2002 | Radio Tracking | Papa New Guinea | Lesser bare-backed bat |
| 65 | Track | 2008 | Radio Tracking | Bolivia | Little yellow-shouldered bat |
| 66 | Track | 2010 | Radio Tracking | Bolivia | Red-fronted macaw |
| 67 | Track | 2003 | Radio Tracking | Brazil | Gervais's fruit-eating bat |
| 67 | Track | 2003 | Radio Tracking | Brazil | Striped hair-nosed bat |
| 67 | Track | 2003 | Radio Tracking | Brazil | Silky short-tailed bat |
| 67 | Track | 2003 | Radio Tracking | Brazil | Seba's short-tailed bat |
| 67 | Track | 2003 | Radio Tracking | Brazil | Striped-headed round-eared bat |
| 67 | Track | 2003 | Radio Tracking | Brazil | White-throated round-eared bat |
| 67 | Track | 2003 | Radio Tracking | Brazil | Fringed-lipped bat |
| 67 | Track | 2003 | Radio Tracking | Brazil | Lesser bulldog bat |
| 68 | Track | 2003 | Radio Tracking | Brazil | Agouti |
| 69 | Track | 2008 | Radio Tracking | Brazil | Little yellow-shouldered bat |
| 70 | Track | 2011 | Radio Tracking | Brazil | Black eared opossum |
| 71 | Track | 2013 | Radio Tracking | Brazil | Seba's short-tailed bat |
| 71 | Track | 2013 | Radio Tracking | Brazil | Great fruit-eating bat |
| 72 | Track | 2014 | Radio Tracking | Brazil | Dekeyser's nectar bat |
| 72 | Track | 2014 | Radio Tracking | Brazil | Pallas's long-tongued bat |
| 73 | Track | 2016 | Radio Tracking | Brazil | Pale-breasted thrush |
| 73 | Track | 2016 | Radio Tracking | Brazil | Rufous-bellied thrush |
| 74 | Track | 2009 | Radio Tracking | Brazil | Blue manakin |
| 74 | Track | 2009 | Radio Tracking | Brazil | White-shouldered fire-eye |
| 74 | Track | 2009 | Radio Tracking | Brazil | Rufous-breasted leaftosser |
| 75 | Track | 2013 | Radio tracking | Brazil | White-bearded manakin |
| 76 | Track | 2013 | Radio Tracking | Chile | Austral thrush |
| 77 | Track | 2016 | Radio Tracking | Chile | Monito del monte |
| 78 | Track | 2017 | GPS | Colombia | South American tapir |
| 79 | Track | 2018 | GPS | Colombia | White-footed tamarin |
| 80 | Track | 2007 | Radio Tracking | Ecuador | Chestnut short-tailed bat |
| 80 | Track | 2007 | Radio Tracking | Ecuador | Seba's short-tailed bat |
| 81 | Track | 1991 | Radio tracking | French Guiana | Seba's short-tailed bat |
| 82 | Track | 2007 | Radio tracking | French Guiana | Dwarf little fruit bat |
| 83 | Track | 1999 | Radio Tracking | French Guiana | Bare-tailed woolly opossum |
| 84 | Track | 2007 | Radio Tracking | French Guiana | Dwarf little fruit bat |
| 85 | Track | 1992 | Radio Tracking | French Guiana | White-crowned manakin |
| 85 | Track | 1992 | Radio Tracking | French Guiana | Golden-headed manakin |
| 85 | Track | 1992 | Radio Tracking | French Guiana | White-fronted manakin |
| 85 | Track | 1992 | Radio Tracking | French Guiana | White-bearded manakin |
| 85 | Track | 1992 | Radio Tracking | French Guiana | Thrush-like manakin |
| 86 | Track | 2018 | Radio Tracking | Peru & Ecuador | Shining sunbeam hummingbird |
| 87 | Track | 2009 | GPS | Venezuela | Oilbird |
| 88 | Track | 2021 | Radio tracking | Brazil | Little yellow-shouldered bat |
| 89 | Track | 2020 | GPS | Brazil | White-lipped peccary |
| 90 | Track | 2020 | GPS | Tanzania | Straw-coloured fruit bat |
| 91 | Track | 2018 | GPS | Gabon | African forest elephant |
| 92 | Track | 2022 | GPS | Panama | White-faced capuchin monkey |
| 92 | Track | 2022 | GPS | Panama | Kinkajou |
| 92 | Track | 2022 | GPS | Panama | Coati |
| 92 | Track | 2022 | GPS | Panama | Black-handed spider monkey |
| 93 | Track | 2021 | GPS | Myanmar | Indian flying fox |
| 94 | Track | 2020 | GPS | Australia | Little red flying fox |
| 94 | Track | 2020 | GPS | Australia | Black flying fox |
| 94 | Track | 2020 | GPS | Australia | Grey-headed flying fox |
| 95 | Track | 2020 | Radio tracking | Costa Rica | Pygmy fruit-eating bat |
| 96 | Seed | 2000 | Radio tracking | Cameroon | White-thighed hornbill |
| 96 | Seed | 2000 | Radio tracking | Cameroon | Black-casqued hornbill |
| 97 | Seed | 2009 | GPS | Congo | African forest elephant |
| 98 | Seed | 2016 | GPS | Ghana | Straw-coloured fruit bat |
| 99 | Seed | 2009 | Radio tracking | Kenya | Stripe-cheeked greenbul |
| 99 | Seed | 2009 | Radio tracking | Kenya | Taita thrush |
| 99 | Seed | 2009 | Radio tracking | Kenya | Hartlaub's turaco |
| 100 | Seed | 2018 | Radio tracking | Madagascar | Common brown lemur |
| 101 | Seed | 2017 | GPS | Madagascar | Madagascan flying fox |
| 102 | Seed | 2011 | GPS | South Africa | Trumpeter hornbill |
| 103 | Seed | 2014 | GPS | South Africa | Trumpeter hornbill |
| 104 | Seed | 2017 | GPS | South Africa | African bush elephant |
| 105 | Seed | 2016 | GPS | South Africa | Red-billed teal |
| 105 | Seed | 2016 | GPS | South Africa | Egyptian geese |
| 105 | Seed | 2016 | GPS | South Africa |  |
| 106 | Seed | 2009 | Radio tracking | Borneo | Common palm civet |
| 107 | Seed | 2007 | Radio tracking | Hong Kong | Red-whiskered Bulbul |
| 107 | Seed | 2007 | Radio tracking | Hong Kong | Light-vented Bulbul |
| 107 | Seed | 2007 | Radio tracking | Hong Kong | Chinese Hwamei |
| 108 | Seed | 2019 | GPS | India | Wreathed Hornbill |
| 108 | Seed | 2019 | GPS | India | Great Hornbill |
| 109 | Seed | 2015 | GPS | India | Asian elephant |
| 110 | Seed | 2007 | Radio tracking | Israel | Yellow-vented Bulbul |
| 110 | Seed | 2007 | Radio tracking | Israel | Tristram's Grackle |
| 111 | Seed | 2010 | GPS | Israel | Egyptian fruit bat |
| 112 | Seed | 2009 | Radio tracking | Japan | Orii's flying fox |
| 113 | Seed | 2016 | GPS | Japan | Raccoon Dog |
| 114 | Seed | 2010 | GPS | Japan | Asiatic black bear |
| 115 | Seed | 1996 | Resource tracking | Japan | Field mouse |
| 116 | Seed | 2008 | Resource tracking | Japan | Field mouse |
| 116 | Seed | 2008 | Resource tracking | Japan | Japanese squirrel |
| 117 | Seed | 2011 | GPS | Malaysia | Malayan tapir |
| 117 | Seed | 2011 | Radio tracking | Malaysia | Malayan tapir |
| 118 | Seed | 2008 | GPS | Sri Lanka | Asian elephant |
| 118 | Seed | 2008 | GPS | Myanmar |  |
| 119 | Seed | 1988 | Radio tracking | Costa Rica | Black-faced solitaire |
| 119 | Seed | 1988 | Radio tracking | Costa Rica | Black and yellow phainoptila |
| 119 | Seed | 1988 | Radio tracking | Costa Rica | Prong-billed barbet |
| 120 | Seed | 2000 | Radio tracking | Costa Rica | Ochre-bellied flycatcher |
| 121 | Seed | 2015 | Radio tracking | Costa Rica | Blue-crowned manakin |
| 121 | Seed | 2015 | Radio tracking | Costa Rica | White-ruffed manakin |
| 122 | Seed | 2011 | GPS | Panama | Keel-billed toucan |
| 122 | Seed | 2011 | GPS | Panama | Chesnut Mandibled Toucan |
| 123 | Seed | 2012 | Resource tracking | Panama | Agouti |
| 124 | Seed | 2018 | Resource tracking | Austria | Common pine vole |
| 124 | Seed | 2018 | Resource tracking | Austria | Bank vole |
| 124 | Seed | 2018 | Resource tracking | Austria | Yellow-necked mouse |
| 124 | Seed | 2018 | Resource tracking | Austria | Common dormouse |
| 124 | Seed | 2018 | Resource tracking | Austria | Wood mouse |
| 124 | Seed | 2018 | Resource tracking | Austria | Edible dormouse |
| 125 | Seed | 2016 | GPS | France | Roe deer |
| 125 | Seed | 2016 | GPS | France | Wild Boar |
| 125 | Seed | 2016 | GPS | France | Red Deer |
| 126 | Seed | 2012 | Radio tracking | Germany | Blackbird |
| 127 | Seed | 2015 | GPS | Netherlands | Mallard |
| 128 | Seed | 2019 | GPS | Germany | Mallard |
| 129 | Seed | 2018 | Resource tracking | Poland | European Jay |
| 130 | Seed | 2012 | Radio tracking | Spain | Eyed lizard |
| 131 | Seed | 2007 | Resource tracking | Spain | European Jay |
| 132 | Seed | 2017 | Resource tracking | Spain | European magpie |
| 133 | Seed | 2015 | Resource tracking | Spain | European Jay |
| 134 | Seed | 2007 | Radio tracking | Spain | Liford's wall lizard |
| 135 | Seed | 2013 | Radio tracking | USA | Japanese white eye |
| 135 | Seed | 2013 | Radio tracking | USA | Oma'o |
| 136 | Seed | 2018 | Resource tracking | USA | White-footed mouse |
| 136 | Seed | 2018 | Resource tracking | USA | Chipmunk |
| 136 | Seed | 2018 | Resource tracking | USA | Grey squirrel |
| 137 | Seed | 2016 | Radio tracking | USA | Wood thrush |
| 138 | Seed | 2011 | Radio tracking | Australia | Spiny-cheeked honeyeater |
| 139 | Seed | 2020 | GPS | Australia | Emu |
| 140 | Seed | 2007 | Radio tracking | Australia | Mistletoe bird |
| 141 | Seed | 2008 | Radio tracking | Australia | Painted honeyeater |
| 142 | Seed | 1991 | Radio tracking | Australia | Tooth-billed bowerbird |
| 143 | Seed | 2005 | Radio tracking | Australia | Cassowaries |
| 144 | Seed | 2018 | Radio tracking | New Caledonia | Red-vented bulbul |
| 145 | Seed | 2012 | Radio tracking | New Zealand | Kereru |
| 146 | Seed | 2003 | Resource tracking | Papa New Guinea | Cassowaries |
| 147 | Seed | 2019 | Radio tracking | Saipan | Bridled white eye |
| 147 | Seed | 2019 | Radio tracking | Saipan | Golden white eye |
| 147 | Seed | 2019 | Radio tracking | Saipan | Micronesian starling |
| 147 | Seed | 2019 | Radio tracking | Saipan | Maria Fruit dove |
| 147 | Seed | 2019 | Radio tracking | Saipan | White-throated ground dove |
| 148 | Seed | 2009 | Radio tracking | Brazil | Yellow-footed tortoise |
| 149 | Seed | 2011 | Radio tracking | Brazil | White-crowned manakin |
| 149 | Seed | 2011 | Radio tracking | Brazil | White-fronted manakin |
| 149 | Seed | 2011 | Radio tracking | Brazil | Golden-headed manakin |
| 149 | Seed | 2011 | Radio tracking | Brazil | Thrush-like manakin |
| 149 | Seed | 2011 | Radio tracking | Brazil | White-necked thrush |
| 150 | Seed | 2019 | Radio tracking | Chile | Monito del monte |
| 151 | Seed | 2012 | Radio tracking | Ecuador | Umbrellabird |
| 152 | Seed | 2016 | Radio tracking | Ecuador | White-crowned manakin |
| 153 | Seed | 2011 | Radio tracking | Ecuador | Many-banded aracari |
| 153 | Seed | 2011 | Radio tracking | Ecuador | Channel-billed toucan |
| 153 | Seed | 2011 | Radio tracking | Ecuador | White-throated toucan |
| 154 | Seed | 1993 | Radio tracking | French Guiana | Kinkajou |
| 155 | Seed | 2008 | Radio tracking | Peru | Yellow-footed tortoise |
| 156 | Seed | 2011 | Radio tracking | Peru | Black pacu |
| 157 | Seed | 2022 | Resource tracking | Poland | European Jay |
| 158 | Seed | 2021 | GPS | Gabon | African forest elephant |
| 159 | Seed | 2021 | GPS | Colombia | Oilbird |
| 160 | Seed | 2022 | GPS | Spain | Yellow-legged gull |
| 161 | Seed | 2020 | Radio tracking | Indonesia | Southeast Asian box turtle |
| 162 | Seed | 2021 | Resource tracking | Spain | European magpie |

Reference list for all 162 studies used in this review – Number corresponds to study number in Supplementary Table 13.

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