# TRUE ISLANDS

*General points*

The filenames match those that are stored in the data files within the repository. The numbers at the end of the filenames correspond to the dataset numbers in Table S1 in the Supplementary Information of the paper. The full references for the source papers can be found there also.

For all datasets, we have removed introduced species, but for some datasets we include alternative versions with them included. Give the large number of introduced species in certain datasets, and the provision of alternative versions with these include, we do not detail the number of introduced species removed from the true island datasets.

### Azeria(2004)\_noAliens – 26.

Twenty-six islands in the Dahlak Archipelago, Southern Red Sea, Eritrea.

We removed the one island (Dahlak Kebir) from the dataset as the authors only sampled a very small part of it, whereas the others were fully surveyed.

Focuses on resident, land bird breeding species, and migrants and vagrants excluded.

African Reed (Mangrove warbler)(Acrocephalus\_b.\_avicenniae) taken to be African reed warbler (Acrocephalus baeticatus).

One introduced species removed. We removed Kori bustard also as we assumed it was a mistake.

### Baiser et al (2017) Cape Verde Birds\_current\_noAliens - 27

Birds on islands in Cape Verde.

This dataset was originally from Baiser et al. (2017). They “extracted presence/absence data from a database of (breeding) bird species on 152 oceanic islands compiled by Blackburn et al. (2004) and Cassey et al. (2007) from species lists, field guides, and literature.” Excluded are vagrants, birds that only overwinter, and migrants that don’t breed.

As part of this paper, we have used a range of literature sources to update the datasets (see Appendix S1 in the supplementary information).

We did not include I.Do.Rombo as it seems to be multiple islets.

The status of the kite species is very complex, with lots of conflicting literature! Essentially some sources say there is just Red Kite (which is almost certainly extinct), but more recent sources say, actually, you have the endemic red kite subspecies (NW Islands only) and a breeding population of black kites (probably formerly widespread but only actually mentioned in the SE Islands) and both these species are complicated by the red kite ssp. We include kites as extinct on all islands in current dataset, but present on the various islands in the historic version.

Alternative versions including alien species (Baiser et al (2017) Cape Verde Birds\_current\_withAlien) and historic extinctions (Baiser et al (2017) Cape Verde Birds\_historic) were compiled.

Baiser, B., Valle, D., Zelazny, Z. & Burleigh, J.G. (2017) Non-random patterns of invasion and extinction reduce phylogenetic diversity in island bird assemblages. *Ecography*, 41, 361–374.

Blackburn, T.M., Cassey, P., Duncan, R.P., Evans, K.L. & Gaston, K.J. (2004) Avian extinction and mammalian introductions on oceanic islands. *Science*, 305, 1955–1958.

Cassey, P., Lockwood, J.L., Blackburn, T.M. & Olden, J.D. (2007) Spatial scale and evolutionary history determine the degree of taxonomic homogenization across island bird assemblages. *Diversity and Distributions*, 13, 458–466.

### Baiser et al (2017) Cook Islands Birds\_current\_noAliens - 28

Birds on islands in the Cook Islands.

This dataset was originally from Baiser et al. (2017).

As part of this paper, we have used a range of literature sources to update the datasets (see Appendix S1 in the supplementary information).

Note that several of the “islands” here are atolls, and there is some discrepancy between sources in regard to the area of these islands.

Alternative versions including alien species (Baiser et al (2017) Cook Islands Birds\_current\_withAlien), historic extinctions (Baiser et al (2017) Cook Islands Birds\_historic) and prehistoric extinctions (Baiser et al (2017) Cook Islands Birds\_Prehistoric\_steadman) were compiled. A version of the current bird fauna excluding alien species and also excluding marine species (Baiser et al (2017) Cook Islands Birds\_Modern\_steadman) was also compiled. The latter two versions only included the eight main islands with fossil data in Steadman (2006).

### Baiser et al (2017) Galapagos Birds\_current – 29

Birds on islands in the Galapagos.

As part of this paper, we have used a range of literature sources to update the datasets (see Appendix S1 in the supplementary information).

### Baiser et al (2017) Hawaii Birds\_current\_noAliens - 30

Birds on islands in Hawaii.

As part of this paper, we have used a range of literature sources to update the datasets (see Appendix S1 in the supplementary information).

*Moho\_braccatus, Myadestes\_myadestinus, Moho\_bishopi*, and *Hemignathus\_lucidus* included in original current dataset but removed here as all three seem to be now definitely considered extinct.

Note that several species have been placed in new genera in recent years (e.g. *Hemignathus* species placed in *Akialoa*) but we have stuck with the BirdTree taxonomy.

Several seabird species removed where only found to breed on offshore islets, not the islands themselves.

Alternative versions including alien species (Baiser et al (2017) Hawaii Birds\_current\_withAlien), historic extinctions (Baiser et al (2017) Hawaii Birds\_historic) and prehistoric extinctions (Baiser et al (2017) Hawaii Birds\_noMarine\_Prehistoric) were compiled. A version of the current bird fauna excluding alien species and also excluding marine species (Baiser et al (2017) Hawaii Birds\_noMarine\_Modern) was also compiled.

### Baiser et al (2017) Lesser Antilles Birds\_current\_noAliens - 31

Birds on islands in the Lesser Antilles.

As part of this paper, we have used a range of literature sources to update the datasets (see Appendix S1 in the supplementary information).

Guadeloupe considered include both Grande-Terre and Basse-Terre.

San Andreas and Providencia were originally included as Lesser Antilles in Blackburn et al, but classified as "toward Colombia" in Baiser et al, so are not included here.

Lots of species are either recent colonists (so in the current but not historic dataset) or are native to the archipelago but have been introduced to other islands by humans.

Alternative versions including alien species (Baiser et al (2017) Lesser Antilles Birds\_current\_withAlien) and historic extinctions (Baiser et al (2017) Lesser Antilles Birds\_historic) were compiled.

### Baiser et al (2017) Marianas Birds\_current\_noAliens - 32

Birds on islands in the Marianas.

As part of this paper, we have used a range of literature sources to update the datasets (see Appendix S1 in the supplementary information).

The status of Guam rail is complex. It is extinct on Guam, but has been introduced to Rota. However, it’s not considered entirely self-sustaining yet (i.e. it requires some management to survive). As such, we have not included it as introduced on that island.

Guam crow has very ambiguous recent data. The best data seem to suggest it went extinct on Guam, got reintroduced, but all the reintroduced birds died, so it’s extinct again (and treated as extinct in the current dataset). It’s still present on Rota.

Alternative versions including alien species (Baiser et al (2017) Marianas Birds\_current\_withAlien), historic extinctions (Baiser et al (2017) Marianas Birds\_historic) and prehistoric extinctions (Baiser et al (2017) Marianas Birds\_Prehistoric\_steadman) were compiled. A version of the current bird fauna excluding alien species and also excluding marine species (Baiser et al (2017) Marianas Birds\_Modern\_steadman) was also compiled. The latter two versions only included the five main islands with fossil data in Steadman’s (2006) Table 8-4.

Steadman, D.W. (2006) *Extinction and biogeography of tropical Pacific birds*. University of Chicago Press, Chicago.

### Baiser et al (2017) Society Islands Birds\_current\_noAliens - 33

Birds on islands in the Society Islands.

As part of this paper, we have used a range of literature sources to update the datasets (see Appendix S1 in the supplementary information).

Species such as common myna are probably present on nearly all islands, as are things like reef egret, but given the lack of precise information we have erred on the side of caution and only included them on islands where we found definitive proof.

Alternative versions including alien species (Baiser et al (2017) Society Islands Birds\_current\_withAlien) and historic extinctions (Baiser et al (2017) Society Islands Birds\_historic) were compiled.

### Bengtson & Bloch (1983) Birds Breeding - 34

Birds on islands in the Faroe Islands.

The surveys observed 105 species (land birds, freshwater birds and larids) during the census, but they only present data (that we use) of the 41 regularly breeding land and freshwater species. The excluded 64 species include marine species, not regularly breeding species, non-breeding visitors, and rare visitors. We have taken definite breeding + and probably breeding (+) species. Hooded crow taken to be carrion crow.

We have sourced data from the appendix of the source paper.

### Bradstreet & McCracken (1978) noAliens - 35

Birds on the St. Lawrence Islands, Canada.

Data sourced from Hager (1997), originally from Bradstreet & McCracken. Bird species were considered to breed on the islands if records indicated possible, probable or confirmed breeding evidence, or if the same species were seen repeatedly on an island during early summer months (i.e., nesting season) and if that island occurred within the species' breeding range.

Northern oriole taken to be Baltimore oriole as the former has been split; common gallinule taken to be common moorhen as the two were not fully split until 2011.

Bradstreet, M.S.W. & McCracken, J.D. (1978) Avifaunal survey St. Lawrence Islands National Park. Unpublished report for Parks Canada, c/o St. Lawrence Islands National Park Mailorytown Landing Ontario, Canada, p. 343.

Hager, H.A. (1997) Conservation of species richness: are all umbrella species of similar quality? Thesis. The University of Guelph, Ontario, Canada.

### Haila et al 1983\_birds - 36

Birds on islands in the Vargskär archipelago, Finland.

As one-visit censuses were used, it was difficult for the source paper authors to determine breeding status. Species list seemingly includes summer migrant breeders as well as residents. Not every island was sampled each year, so we took the records from 1979 as this was the only year all 44 islands were sampled. For the larger islands (> 16ha) that were sampled as transects, the authors list species recorded on the transects and additional species found during their sampling – we have included both.

Only possible to find 27 islands from the dataset in the Global Island Database, on which calculate the isolation metrics.

### Nuddsetal(1996)FathomFiveIslandsBirds - 37

Birds on islands in the Fathom Five Islands.

Data taken from Hager (1997). Bird species were considered to breed on the islands if records indicated possible, probable or confirmed breeding evidence, or if the same species were seen repeatedly on an island during early summer months (i.e., nesting season) and if that island occurred within the species' breeding range.

From Appendix B1: We have included possible (A), probable (B) and confirmed (c) breeding species; common gallinule taken to be common moorhen as the two were not fully split until 2011.

Hager, H.A. (1997) Conservation of species richness: are all umbrella species of similar quality? Thesis. The University of Guelph, Ontario, Canada.

Nudds, T.D., Bogart, J.P., Britton, D., Hager, H.A., Middleton, A.L.A., Potter, D.N. et al. (1996) *Species-area relations of woody plants, vertebrates and selected invertebrates on islands in Georgian Bay: the role of national parks in evaluating null models of biodiversity. Final report of the Guelph Biological Inventory of the Georgian Bay Islands*. Report to Parks Canada, Fathom Five National Marine Park, Ontario, Canada.

### Nuddsetal(1996)GeorgianBayBirds\_noAliens - 38

Birds on islands in the Georgian Bay.

Data taken from Hager (1997). Bird species were considered to breed on the islands if records indicated possible, probable or confirmed breeding evidence, or if the same species were seen repeatedly on an island during early summer months (i.e., nesting season) and if that island occurred within the species' breeding range.

From Appendix B2: We have included possible (A), probable (B) and confirmed (c) breeding species; common gallinule taken to be common moorhen as the two were not fully split until 2011. There is an island in Appendix B2 (38) that is not listed in the island table list (p85) and this island has thus been excluded.

Only possible to find five islands from the dataset in the Global Island Database, on which to base isolation values.

Hager, H.A. (1997) Conservation of species richness: are all umbrella species of similar quality? Thesis. The University of Guelph, Ontario, Canada.

Nudds, T.D., Bogart, J.P., Britton, D., Hager, H.A., Middleton, A.L.A., Potter, D.N. et al. (1996) *Species-area relations of woody plants, vertebrates and selected invertebrates on islands in Georgian Bay: the role of national parks in evaluating null models of biodiversity. Final report of the Guelph Biological Inventory of the Georgian Bay Islands*. Report to Parks Canada, Fathom Five National Marine Park, Ontario, Canada.

### OConnell et al (2020) - Wakatobi - 39

This dataset summarizes all (breeding) bird species present on nine islands in the Wakatobi archipelago, South-east Sulawesi. The data are entirely derived from information provided in O’Connell *et al*. (2020). Details regarding data collection methods and determination of breeding and introduced species can be found in this paper. Taxonomy for all species in the dataset has been retrospectively matched to Jetz *et al*. (2012).

Importantly, unlike other datasets which are derived from extensive fieldwork on the islands involved, the Wakatobi islands are poorly-explored. As such, the database is derived exclusively from fieldwork completed by the authors, plus a few historical records published by Hartert (1903). Fieldwork effort differed between islands; as such an appreciation of survey work completed on each island is important when interpreting the database. Table 1 summarizes the number of fieldwork days completed on each island.

Table 1 – *Number of days fieldwork completed in each of the nine islands in the Wakatobi archipelago dataset. Derived from supplementary information in O’Connell et al. (2020).*

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Island name** | Wangi-wangi | Oroho | Kapota | Hoga | Kaledupa | Tomia | Lintea Selatan | Binongko | Runduma |
| **# days fieldwork** | 41 | 7 | 3 | 26 | 33 | 37 | 3 | 22 | 10 |

The number of days completed in some of the smaller islands is quite low, but species diversity on these small islets is also expected to be low. All introduced species (rock dove, Eastern spotted dove, and barred dove) have been removed. No historic or prehistoric extinct species are known from the islands. Three species in the dataset require special attention:

* Yellow-crested Cockatoo (*Cacatua sulphurea*) is a Critically Endangered species highly imperilled by the illegal pet trade. As such, this species has been removed from the published version of the dataset.
* Wangi-wangi White-eye (*Zosterops nov*.) is a unique, as-yet-undescribed species that cannot be placed on the Jetz et al (2012) phylogeny. As such, we replace it with another locally-occuring White-eye species (*Zosterops consobrinorum*) in this database as a proxy, to allow coarse comparative metrics to be applied in its stead. It should be noted, however, that although this rough proxy is appropriate for the analysis in this study, it is not assumed that *Z. consobrinorum* is a close evolutionary relative, and should not be treated as such.
* O'Connell et al. recognize both Z. chloris & Z. flavissimus (sister species) in the study area. Z. flavissimus is not recognized by Jetz (2012) so both species lumped together here.

Hartert, E. (1903). On the birds collected on the Tukang-Besi Islands and Buton, south-east of Celebes, by Mr. Heinrich Kuhn. *Novitates Zoologicae*, 10: 18–38.

Jetz, W., Thomas, G.H., Joy, J.B., Hartmann, K. & Mooers, A.O. (2012). The global diversity of birds in space and time. *Nature*, 491, 444–448.

O’Connell, D.P.O., Kelly, D.J., Kelly, S.B.A., Analuddin, K., Karya, A., Marples, N.M. & Martin, T.E. (2020). An assessment of the avifauna of the Wakatobi Islands, South-east Sulawesi, Indonesia: species recorded and taxonomic considerations. *Raffles Bulletin of Zoology*, 68: 574–587.

### Power (1972) chanb - 40

Birds on islands off the coast of southern California and northwestern Baja California, Mexico.

Dataset used in the Nestedness Calculator set of presence-absence matrices (Atmar & Patterson, 1985). Breeding or summer resident species of land. Source paper author states these data relate to numerous years and likely overestimate the richness of any given breeding season. Source paper author has excluded large raptors and large carrion feeders.

Four ‘islands’ (Ancapa, Los Coronados, Todos Santos and San Benito) are actually groups of small very close together islands, and the area value for these is the summed value.

Atmar, W. & Patterson, B.D. (1995) The nestedness temperature calculator: a Visual Basic program. AICS Research Chicago.

### Si et al (2017) TIL - 41

Data for 36 islands in Thousand Island Lake, China.

Data presented in Appendix (Table S3) of Si et al (2017). Birds sampled in breeding season annually from 2010-2014. Only breeding species recorded. High flying species (passing over) excluded. Only terrestrial breeding birds included – diving birds, ducks, gulls, herons and shorebirds whose habitat extensive rely on water removed.

*Zosterops japonicus* kept but the systematics for this species complex are very messy and have been changed multiple times over the last decade – currently *Z. japonicus* is not in China. *Garrulax cineraceus* and *Turdus merula* now split but splits not in Jetz.

*Pomatorhinus\_erythrogenys* taken to be *Pomatorhinus\_swinhoei* and *Yuhina\_castaniceps* taken to be *Yuhina\_torqueola*.

### Simaiakis et al (2012) all islands- 42

Breeding land bird species on 77 Aegean islands. Data originally sourced from the literature, Greek ornithological databases, and field expedition reports over the last 20 years.

Eastern orphean warbler (*Sylvia crassirostris*) changed to Western (*S. hortensis*) as former until recently considered a subspecies of latter and is not in BirdTree.

Here, we manually calculated isolation from the edge of the nearest island to the mainland

Oenanthe\_pleschanka removed as we could find no evidence of breeding in the area.

### Simberloff & Martin (1991) Haida Gwaii - 43

Land (presumably breeding) bird species of the Haida Gwaii islands [Queen Charlotte Islands]. A version of this dataset is used in the Nestedness calculator (NC) set of presence-absence matrices (Atmar & Patterson, 1995), where they took the version presented in Simberloff & Martin (1991). We initially used the Simberloff & Martin version, but found an updated version with more information in Martin et al. (1995) and have thus used this as the final analysed data.

Data from Table 1 and the appendix of Martin et al. Following Simberloff & Martin, we focused on islands 1-40 (Laskeek Bay and Juan Perez Sound). Different islands were sampled in different years using point counts (but species recorded outside point counts during excursions were also included in the totals, following the single-visit sampling procedure). Each island was visited once. *Sphyrapicus\_ruber* presences added in from Simberloff & Martin.

Note that until 1967 the largest island was actually connected to another large island at low tide, until the channel was dredged.

*Certhia familiaris* taken as *Certhia americana* as these have been split and the split *is* in Jetz.

Martin, J.-L., Gaston, A.J. & Simon, H. (1995) The effect of island size and isolation on old growth forest habitat and bird diversity in Gwaii Haanas (Queen Charlotte Islands, Canada). *Oikos*, 72, 115–131.

Simberloff, D. & Martin, J.L. (1991) Nestedness of insular avifaunas: simple summary statistics masking complex species patterns. *Ornis Fennica*, 68, 178–192.

### Simberloff & Martin (1991) Maddabrd\_noAliens - 44

Breeding bird species of the Maddalena Archipelago. We only focused on the 8 islands in the Maddalena group proper. The rest are in the Tuscan archipelago / Lavezzi group, which is much further north and could have a different source pool. Budelli was not included as it had only possible breeders and no regular breeders (see below).

Edited version of dataset used in the Nestedness calculator (NC) set of presence-absence matrices, where they took the version presented in Simberloff & Martin (1991). Simberloff & Martin sourced the data from Thibault et al. (1990) [which is in French], which we were eventually able to obtain.

We then used the data present in Thibault et al (1990), focusing on regular breeders only (as done by the source paper authors in some of their analyses). This was to ensure the islands had relatively consistent data (some islands were sampled more frequently and consequently had higher numbers of irregular breeders). Species sampled were “the terrestrial avifauna that nest and feed on islands.”

Simberloff, D. & Martin, J.L. (1991) Nestedness of insular avifaunas: simple summary statistics masking complex species patterns. *Ornis Fennica*, 68, 178–192.

Thibault, J.C., Martin, J.L. & Guyot, I. (1990) Les oiseaux terrestres nicheurs des Iles Mineures des Bouches-de-Bonifacio: analyse du peuplement. *Alauda*, 58, 173-185.

### Sin et al (2022) – West Sumatra & Riau-Lingaa – 45 & 46

Data available for 172 islands in South East Aisa, but only 94 are used in Sin et al. (2022) (these are the islands with sufficient sampling effort). From these 94, we have created two datasets / archipelagos: West Sumatra (continental) and Riau Lingaa (mixed continental and deep sea islands). Note, we have only included islands in each of these groups that are present in the 94 islands with sufficient sampling effort.

Bird lists for each island were compiled by the source paper authors via a comprehensive assessment of published lists. Smaller islands were also surveyed manually between 2019 and 2020, with some islands in West Sumatra also supplemented through surveys taken between 2015 and 2020.

Pelagic / marine species have not been included in either dataset as breeding data were not available for most islands.

*West Sumatra islands*

15 islands west of Sumatra. A mix of ‘deep sea’ (not connected to mainland during LGM) and continental islands. Here, night survey effort was relatively consistent across islands so we have included nocturnal species. Waterbirds also included.

*Riau-Lingaa islands*

26 islands in the Riau-Lingaa group, all classified as continental islands. Here, night survey effort not consistent, particularly on the smaller islands, and thus nocturnal species have been excluded. Waterbirds included.

### Borgesetal\_azores birds\_noAliens - 47

Birds on islands in the Azores.

Dataset originally produced by P.A.V.B and subsequently updated using a range of published sources (see Appendix S1 in the Supplementary information).

Residents + summer migrant breeders. Vagrants excluded.

*Puffinus\_baroli* changed to *Puffinus\_assimilis* as this is a new species and not in BirdTree.

Alternative versions including alien species (Borgesetal\_azores birds\_withAlien) were compiled.

### Borgesetal\_canary birds\_noAliens – 48

Birds on islands in the Canaries.

Dataset originally produced by P.A.V.B and subsequently updated using a range of published sources (see Appendix S1 in the Supplementary information), particularly Illera et al. (2016). Note that Illera et al class a lot of subspecies as species which we (as we are following BirdTree) do not.

Residents + summer migrant breeders. Vagrants excluded.

Several species are natural recent colonists and so in the current but not historic datasets.

Alternative versions including alien species (Borgesetal\_canary birds\_withAlien), historic extinctions (Borgesetal\_canary birds\_historic) and prehistoric extinctions (Borgesetal\_canary birds\_noMarine\_Prehistoric) were compiled. A version of the current bird fauna excluding alien species and also excluding marine species (Borgesetal\_canary birds\_noMarine\_Modern) was also compiled.

Baiser, B., Valle, D., Zelazny, Z. & Burleigh, J.G. (2017) Non-random patterns of invasion and extinction reduce phylogenetic diversity in island bird assemblages. *Ecography*, 41, 361–374.

### Kubota et al. Birds Ryukus\_noAliens - 49

Birds on islands in the Ryukyu Islands.

The Ryukyu Islands dataset was compiled by Y.K. and colleagues, with data sourced from published literature, checklists and observation databases. These data are from the subset of Ryukyu Islands (Okinawa and Kagoshima Prefecture) where there are bird checklists or sufficient observation data (68 islands). All but two islands are continental shelf (two are oceanic).

Covers breeding bird species – residents and summer breeding migrants. All vagrants, species only recorded on passage (i.e. during migration) and species only wintering on the islands were excluded. All sub-species grouped to species level.

*Parus\_minor* changed to *Parus\_major*. *Hierococcyx\_hyperythrus* lumped with *Cuculus\_fugax* (latter was split into three species but after BirdTree published). *Anas zonorhyncha* taken as *Anas\_poecilorhyncha* as former not in BirdTree. *Ninox japonica* taken as *Ninox scutulata* as former not in BirdTree. *Otus lempiji* taken to be *Otus semitorques*. *Sittiparus (Poecille) varius olivaceus* taken as *Sittiparus (Poecille) varius* as split into Iriomote tit not in BirdTree. *Acridotheres javanicus* (introduced) taken as *Acridotheres\_grandis* as former not in BirdTree.

Alternative versions including alien species (Kubota et al. Birds Ryukus\_withAlien) were compiled.

### Martin (2022) NZ\_current\_noAliens - 50

This dataset seeks to identify all bird species present (and historically/prehistorically present) on 22 New Zealand Islands, using a dataset previously compiled by Diamond (1984) as a foundation.

The presence of extant breeding species (including introduced species) on each island were determined by consulting maps and text in four sources; the IUCN Redlist (2021), Billerman et al. (2022), Robertson & Heather (2015) and New Zealand Birds Online (2022). Introduced species were classed as those with self-sustaining populations, as defined by these sources. Note that, in the case of New Zealand, native species within part of the archipelago can be introduced species in other areas due to the numerous conservation translocation projects which have been completed here. Taxonomy for all extant native and introduced species followed Jetz et al. (2012).

Lists of historic extinct breeding species (those considered extinct >1500AD) and prehistoric extinct breeding species (those considered extinct <1500AD) were obtained from Sayol et al. (2021) and additional literature searches. Once all species occurring outside of the study area range (e.g. outlying islands) were excluded, the spatial distribution of historical extinctions was determined by the above named sources, while spatial distributions of prehistoric extinctions was determined exclusively from New Zealand Birds Online (2022), which was the only source that provided detailed information on these species. Taxonomy for extinct species largely followed Sayol et al., with some changes to match with Jetz et al. where appropriate.

Note, as above, the status of birds in New Zealand can be complex, and in some cases a species can have a general status of “Native” but be introduced in certain Islands. Additionally, extant species can be extinct on some islands, and extinct species sometimes experienced staggered extinctions, with the last extinctions being historical but with extinctions on some islands being prehistorical.

Additional information is included in the notes column and the species-specific information below of the excel sheet. These indicate important data sources and highlight differences from the original Diamond (1984) dataset. Species with no edits from Diamond (1984) are not included in the accounts below.

*Area values*

The areas given in Diamond seemed quite coarse, so we collated area values from a range of sources (published papers, NZ Government statistics, Department of Conservation statistics, Google earth area measurer; all sources in separate file in DARs folder). In reality, makes very little difference. The ISAR (log-log) z value using Diamond area and new values is 0.10 and 0.11.

It is worth nothing that for a few of the smaller islands, Diamond may have actually been referring to island groups (Aldermen), i.e. groups of small islands. Here, we have only focused on specific islands, taking the largest island in each group (for species lists and area values). However, Tom M confirmed that it doesn’t make any difference to the species lists (i.e. if focusing on largest island or all in group) as he checked this.

Alternative versions including alien species (Martin (2022) NZ\_current\_withAlien), historic extinctions (Martin (2022) NZ\_historic) and prehistoric extinctions (Martin (2022) NZ\_prehistoric\_NOMarine) were compiled. A version of the current bird fauna excluding alien species and also excluding marine species (Martin (2022) NZ\_noMarine\_Modern) was also compiled.

Baiser, B., Valle, D., Zelazny, Z. & Burleigh, J.G. (2017) Non-random patterns of invasion and extinction reduce phylogenetic diversity in island bird assemblages. *Ecography*, 41, 361–374.

Literature cited:

Billerman, S.M., Keeney, B.K., Rodewald, P.G. & Schulenberg, T.S.(2022). *Birds of the World* Cornell Lab of Ornithology, Ithaca, NY, USA. Accessed 07/05/22 from: <https://birdsoftheworld.org/>

International Union for Conservation of Nature (2021). *The IUCN Red List of Threatened Species. Version 2021-3*. Accessed 07/05/22 from: <https://www.iucnredlist.org/>

Jetz, W., Thomas, G.H., Joy, J.B., Hartmann, K. & Mooers, A.O. (2012). The global diversity of birds in space and time. *Nature*, 491, 444–448.

New Zealand Birds Online (2022). New Zealand Birds Online. Accessed 07/05/22 from: <https://www.nzbirdsonline.org.nz/>

Robertson, H. & Heather, B. (2015). *The Hand Guide to the Birds of New Zealand. Second edition*. Penguin: Auckland.

### Zhao et al (2022) Zhoushan - 51

34 islands in Zhoushan archipelago, China. Data have been embargoed for a period of six months as are being used in a separate publication.

Seventy transects were surveyed for birds on 34 study islands, including 39 in forest habitats, 19 on farmland habitats, and 12 in mixed habitats. This study only considered breeding birds (resident and summer species) that mainly use terrestrial habitats on islands, excluding diving birds, ducks, and gulls whose habitats rely on or include water. In addition, nocturnal species (one species in this study: *Caprimulgus indicus*) were excluded.

# HABITAT ISLANDS

*General Points*

The filenames match those that are stored in the data files within the repository. The numbers at the end of the filenames correspond to the dataset numbers in Table S1 in the Supplementary Information of the paper. The full references for the source papers can be found there also.

Several datasets taken from the FragSAD database (Chase et al., 2019; further meta-data are available from there).

Chase, J.M., Liebergesell, M., Sagouis, A., May, F., Blowes, S.A., Berg, Å. et al. (2019) FragSAD: a database of diversity and species abundance distributions from habitat fragments. *Ecology*, 100, e02861.

battisti et al (2009) Anzio - 1

Birds in 13 oak forest fragments in central Italy (Anzio – Nettuno: southern sector of province of Rome). Only breeding birds surveyed, using line transect method. Data taken from Table 2 and the Appendix.

*Corvus corone cornix* taken as *Corvus corone* as hooded crow not in BirdTree.

### battisti et al (2009) cornicolan hills\_noAliens - 2

Birds in 20 oak forest fragments in central Italy (Cornicolan hills: between the Central Apennines and suburban area of Rome). Only breeding birds surveyed, using line transect method. Data taken from Table 2 and the Appendix.

One introduced species (*Phasianus colchicus*) removed.

*Corvus corone cornix* taken as *Corvus corone* as hooded crow not in BirdTree; *Passer\_italiae* not in BirdTree and taken as house sparrow.

### Berg\_1997\_birds - 3

Birds in forest fragments in central Sweden. Data taken from FragSAD database (code = Berg\_1997).

### Blake (1991) birds Illinois\_noAliens - 4

Species are all breeding residents (and the list does not include birds of prey or crows). The fragment in their table with the area listed as 5.6ha is (we presume) an error as in their Table 3 (and their other papers) it is given as 5.1ha, so we use 5.1ha in our analyses. We use the species list for the year 1980.

Two introduced species removed.

### CSV-brotons and herrando 2001 ECJ - 5

*Picus viridis* now split but the split is not in BirdTree.

### CSV-Cieslak & Dombrowski 1993 ECJ - 6

### Daily et al (2001) birds - 7

Phaethornis superciliosus taken as Phaethornis longirostris; Phaethornis longuemareus taken as Phaethornis\_striigularis; Pipra\_cornuta taken as Pipra\_mentalis; Schiffornis turdine and Platyrinchus mystaceus recently split but both not in BirdTree; Piranga flava taken as Piranga\_lutea; Saltator albicollis taken as Saltator\_striatipectus; Microcerculus Luscinia is a subspecies (not in BirdTree) and so we use the full species in BirdTree; Momotus momota split but split not in BirdTree; Zimmerius vilissimus split but split not in BirdTree

*Changed based on Osanna checks: Microcerculus philomela to Microcerculus marginatus*

### Dami\_2012 - 8

Birds in forest fragments in Nigeria. Data taken from FragSAD database (code = Dami\_2012).

Schoenicola platyurus taken as Schoenicola\_brevirostris; Emberiza tahapisi taken as is an new split not in BirdTree; Bubo\_africanus taken as Bubo cinerascens; Anthus novaeseelandiae now split but split not in BirdTree; Sheppardia bocagei now split but split not in BirdTree; Emberiza tahapisi now split but split not in BirdTree

CSV-dos Anjos and Bocon, 1999 ECJ - 9

Basileuterus\_culicivorus recently been split and nominate not in study area, but split not in BirdTree; Hirundinea ferruginea, Myiodynastes maculatus, Elaenia obscura, Tityra cayana recently been split and nominate not in study area, but split not in BirdTree

*Changed based on Osanna checks: Turdus nigriceps to Turdus subalaris; Euphonia musica to Euphonia cyanocephala*

### dos Anjos (2004) human-fragments - 10

*Basileuterus\_culicivorus* recently been split and nominate not in study area, but split not in BirdTree; *Tityra cayana* and *Myiodynastes maculatus* now also split but split not in BirdTree.

*Turdus nigriceps* taken as *Turdus subalaris.*

### Edwards\_2010 – 11

Birds in fragments in Malaysia. Data taken from FragSAD database (code = Edwards\_2010).

Arachnothera modesta taken as Arachnothera affinis as split not in BirdTree; Lonchura\_malacca taken as Lonchura atricapilla; recently split but this is not in BirdTree. Luscinia calliope is a very rare record for north Borneo but is possible.

### CSV-Fernandez Juiricic 2000 ECJ\_noAliens - 12

Two introduced species removed.

Picus viridis now split but the split is not in BirdTree

### CSV-Ford 1987 ECJ\_noAliens - 13

Two introduced species removed, including little owl.

### CSV-Gillespie & Walter, 2001 ECJ - 14

Momotus momota, Aratinga strenua, Sittasomus griseicapillus, Campylorhynchus rufinucha recently split but split not in BirdTree; Caracara plancus taken as Caracara\_cheriway; Dendrocolaptes certhia taken as Dendrocolaptes\_sanctithomae

### CSV-Langrand (1995) ISAR\_justFRAGMENTS - 15

Apus\_barbatus taken as Apus\_balstoni.

Riparia paludicola now split but split not in BirdTree so not followed

### Martensen et al\_2012\_Cau - 16

Birds in forest fragments in central Sweden. Data taken from FragSAD database (code = Martensen\_2012).

Basileuterus\_culicivorus recently been split and nominate not in study area, but split not in BirdTree.

### Martensen et al\_2012\_RG - 17

Birds in forest fragments in central Sweden. Data taken from FragSAD database (code = Martensen\_2012).

Basileuterus\_culicivorus recently been split and nominate not in study area, but split not in BirdTree.

### Martensen et al\_2012)\_TAP - 18

Birds in forest fragments in central Sweden. Data taken from FragSAD database (code = Martensen\_2012).

Basileuterus\_culicivorus recently been split and nominate not in study area, but split not in BirdTree.

*Changed based on Osanna checks: Onychorhynchus coronatus* to *Onychorhynchus swainsoni,* split is in BirdTree but not done by authors

CSV-McCollin 1993 ECJ\_noAliens - 19

One introduced species removed.

### CSV-Simberloff & Martin 1991 ECJ - 20

### Ulrich\_2016\_birds - 21

Birds in cloud forest fragments in Kenya. Data taken from FragSAD database (code = Ulrich\_2016).

Andropadus milanjensis, Zosterops abyssinicus, Zosterops poliogastrus, Trochocercus cyanomelas, recently split but this is not in BirdTree.

### wang et al (2013) birds (resident and breeding) - 22

Take from DAR summary and not SG summary

Zosterops japonicus kept as this but the systematics for this species complex are very messy and have been changed multiple times over the last decade – currently Z.japonicus is not in China. Turdus merula now split but splits not in BirdTree. Garrulax poecilorhynchus taken as Garrulax\_berthemyi; Phylloscopus reguloides taken as Phylloscopus goodsoni; Terpsiphone paradisi recently split but this is not in BirdTree.

A few species (e.g. Sturnus nigricollis, Bradypterus luteoventris, Hemixos castanonotus) listed by authors as resident, but this seems unlikely, however we have followed the authors.

### CSV-Watson, 2003 ECJ - 23

Aphelocoma\_coerulescens taken as Aphelocoma californica (should actually now be Aphelocoma woodhouseii but this split from californica is not in BirdTree). Phaethornis superciliosus taken as Phaethornis longirostris. Pipilo erythrophthalmus taken as Pipilo maculatus. Piranga flava taken as Piranga\_hepatica. Colaptes auratus, Trogon elegans now split but split not in BirdTree.

David has confirmed this dataset is all correct (and we have used correct version) and area values match up etc.

### Wethered & Lawes 2005 Balgowan ECJ – 24

Guttera edouardi taken as Guttera\_pucherani; zosterops capensis a subspecies of z. virens which is a recent split and not in BirdTree so Zosterops pallidus used instead

### Wethered & Lawes 2005 Gilgoa ECJ – 25

Guttera edouardi taken as Guttera\_pucherani; zosterops capensis a subspecies of z. virens which is a recent split and not in BirdTree so Zosterops pallidus used instead