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A global review of island endemic birds

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Although fewer than one-fifth of the world's bird species are restricted to islands, over 90% of bird extinctions during historic times have occurred on islands. The major identified cause has been the effects of exotic animal species introduced by man; the largest number of documented extinctions has occurred on islands of the Pacific Ocean.

Some 39% (402) of threatened bird species are restricted to islands and more than 90% of these are endemic to a single geopolitical unit. The largest numbers occurring in such units are in Indonesia (91) and the Philippines (34). As a region, the Pacific holds more threatened species (110) than any other, including almost half of those considered Endangered and over 40% of the Vulnerable species.

Most threatened island species are forest-dwelling. A high proportion of the Endangered species use seasonal/temperate forest. While habitat destruction now poses the greatest overall threat to island birds (affecting over half the species restricted to islands), the presence of introduced species threatens 30 of the 66 Endangered species.

Although immediate extinctions of island species can best be averted by mitigating the effects of introductions, the removal of native forests will be a more severe problem in the longer term. There is an urgent need for ecologists to provide detailed information on the habitats of both threatened and endemic species so that more appropriate and effective conservation programmes can be developed.

Islands are important for bird conservation: over 1750 species (some 17% of the world's bird species) are confined to islands and of these, 402 (23%) are threatened (i.e. at risk of global extinction), representing 39% of threatened birds worldwide. In addition, island birds have suffered the majority of bird extinctions which have occurred during historic times. The aims of this paper are to provide an up-to-date appraisal of the status of island endemic birds, to highlight those geographic regions where the most critical bird conservation problems occur and to identify the factors which endanger island birds, by considering both the current situation and the causes of extinction of island species.

Data sources and methods

Previous reviews of threatened island birds (e.g. King 1985) based their analyses on status as given by King (1978–1979). We use information on status gathered in 1987–1988 by Collar & Andrew (1988) and incorporate recent material on extinct species.

For this paper, 97 island species are presumed to have become extinct since 1600, the figure being derived from Stattersfield (1987) and Cowles (1987), with three additional species thought to be extinct by Collar & Andrew (1988), namely Woodford's Rail *Nesoclopeus woodfordi*, Javanese Wattled Lapwing *Vanellus macropterus*, and Caerulean Paradise-flycatcher *Eutrichomyias rowleyi* (see Appendix 1).

Information on the distribution and status of island endemics for this paper comes from two ICBP databases:

1. The Oceanic Islands Database (Phillips 1985) was initiated in 1985 in response to the need for a central database on island conservation, as identified by Kepler & Scott (1985). The aims of the database are to document conservation issues on islands smaller than 20,000 km^2 (i.e. equal to or smaller than New Caledonia), which support single-island endemic bird species. From the database, a series of conservation profiles has been published for the Caribbean (Johnson 1988); a similar series for the

Atlantic is being compiled (Johnson, unpubl. data), and the compilation of data on other regions is continuing as part of ICBP's Biodiversity Project (see Anon. 1988a, b).

2. The Threatened Species Database was developed to store and produce for publication the information collected by Collar & Andrew (1988).

All islands with threatened birds have been included in the analyses, with the exception of Tasmania, which the Threatened Species Database does not distinguish from Australia. Larger islands, such as Madagascar, Japan, New Zealand, Taiwan, Sri Lanka, Cuba and those within Indonesia and the Philippines, which were excluded from treatment in the Oceanic Islands Database because of the size criterion (see above), have been included in this paper. The organization of the source data precluded the possibility of separating certain island groups (e.g. Indonesia and the Philippines) into their constituent islands.

For the analyses, islands were assigned to the following regions: Atlantic, Caribbean, Indian and Pacific Oceans, Indonesia excluding Irian Jaya and including Borneo, Philippines, and New Guinea with Melanesia (see Appendix 1). Only two species, the Nicobar Pigeon *Caloenas nicobarica* and the Grey Imperial Pigeon *Ducula pickeringii*, have breeding ranges in more than one region. These were excluded for the regional analyses.

To assess degree of threat, *Red Data Book* (RDB) categories (as defined by Collar & Stuart 1985) have been assigned to threatened island species. This classification must be regarded as temporary; a more definitive treatment would require complete profiles of all species. Briefly, the RDB categories are as follows: *Extinct*—species not definitely seen in the wild during the past 50 years (the implications of this criterion are discussed more fully below); *Endangered*—taxa in danger of extinction if causal factors continue to operate; *Vulnerable*—taxa believed likely to move into the Endangered category if causal factors continue to operate; *Indeterminate*—taxa known to be Endangered, Vulnerable or Rare, but for which there is insufficient information to determine which category applies; *Rare*—taxa with a small world population, not Endangered or Vulnerable but at risk; *Insufficiently Known*—taxa suspected but not definitely known to belong to one of the above categories because of lack of information.

Habitat types (Table 4) and the major causes of rarity and decline (Table 5) were determined for each of the island species as far as was possible (for some species habitat and threat was not identified). All island endemics are vulnerable because of their restricted range. For some island species, this is a critical factor and limited range is assigned as a cause of rarity. In many cases, it was not possible to assign a single habitat or threat code (see Appendix 1). Species may utilize more than one habitat, e.g. the Solomons Sea Eagle *Haliaeetus sanfordi* (Brown & Amadon 1968), or be subject to more than one threat, e.g. Lord Howe Island Woodhen *Tricholimnas sylvestris* (King 1978–1979). In many cases, the data available do not provide conclusive evidence of which habitat or threat is most important. For some species, more than one habitat or threat was assigned and all assigned habitats and threats were used in the analyses. (Consequently, totals in each category in Tables 4 and 5 do not correspond to the numbers of threatened species.)

Island extinctions

The number of extinctions of island species over the past 400 years has been disproportionately high: estimates (e.g. King 1978–1979, Stattersfield 1987) suggest that during this time, over 90% of bird species extinctions occurred on islands. For an individual island species, the probability of extinction has therefore been some 40 times higher than that for continental species (1750 extant species, 97 extinct on islands, versus 7500 extant species, 11 extinct on continents).

These estimates can only be tentative as many species disappear unrecorded. For example, a recent investigation of the subfossil record of the Mascarene Islands unearthed seven new species of birds (Cowles 1987) presumed extinct since 1600. The figures therefore constitute a minimum list but the trends they show are probably representative of the true situation.

There is also a difficulty in deciding when to assume that a species is extinct (see Diamond 1987). If the CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) criterion of classifying extinct species as ones which have not been seen in the wild for more than 50 years is applied, many more would qualify than the 97 species presumed extinct for this paper. However, some of

the species unrecorded for more than half a century live in remote, little-visited places, or have secretive habits, and so can remain undetected for long periods. The Fiji Petrel *Pterodroma macgillivrayi* is a good example; formerly known from one specimen collected on Gau Island, Fiji, in 1855, it was not seen again until an adult was captured in 1984 on the same island (Watling & Lewanavanua 1985).

A distributional analysis of extinct island birds shows that some 32 islands or island groups have suffered avian extinctions since 1600. Comparing numbers on a regional basis (Table 1) shows that the Pacific islands have incurred the most extinctions (51), with about half of them (23) occurring this century. The islands of the Indian Ocean also have a high total (31); however, all but one of the species (Madagascar's Snail-eating Coua *Coua delalandei* possibly surviving into the 1930s and conceivably still extant today) disappeared prior to 1900.

Some islands have suffered particularly high losses. For example, the Hawaiian Islands in the Pacific have lost 34% of their endemics since Europeans arrived in 1778 (Kepler & Scott 1985). The total loss of Hawaiian endemic species attributed to man's activities is believed to be nearer 60% since at least 40 additional species, documented from fossil and subfossil remains, are believed to have become extinct following the earlier arrival of Polynesians 1500 years ago (Olson & James 1982). The Mascarene Islands (Mauritius, Rodrigues and Réunion) in the Indian Ocean have also sustained a high number of extinctions (28 species since 1600, including the seven discovered recently) representing over 50% of their endemic land avifauna.

An attempt to classify the likely causes of extinction for the 97 species presumed extinct since 1600 is summarized in Table 2 using a variety of sources, e.g. Cheke (1987), Forshaw & Cooper (1981), Fuller (1987), Greenway (1967), Ripley (1977), Williams & Given (1981).

Attributing causes of extinction remains largely a matter of speculation, particularly for species which disappeared more than a century ago, where there is little written information about their habits. Thus, for 41 species no cause was identified. Nevertheless, it is sometimes possible to assign the most likely causes as illustrated by the following three examples.

Olson (1977) has suggested that the Ascension Flightless Crake *Atlantisia elpenor* (extinct 1656) declined with the seabird colonies, themselves subject to persecution by man and introduced predators. Because there was little else on the island to sustain a native land bird, the crake may have subsisted as a scavenger on the colonies, and so its fate was indirectly sealed with that of its food source.

Table 1. *Distribution of extinct birds between regions and major island groups*

	Numbers extinct	
Region/Island group	1600–1899	This century
Pacific Ocean	28	23
Indonesia	0	2
Indian Ocean	30	1
Philippines	0	1
Caribbean Sea	2	1
New Guinea and Melanesia	2	3
Atlantic Ocean	3	1
Totals	65	32

Table 2. *Likely causes of extinction of island bird species in the last 400 years*

Cause	No. species
Introduced species (including diseases)	34
Habitat destruction (by humans)	19
Human disturbance (and competition for food)	1
Hunting	25
Natural causes	1 (?+1)
Cause not identified	41

For approx. 50% of species more than one threat has been identified.

Hockey (1987) has speculated that in the case of the Canarian Black Oystercatcher *Haematopus meadewaldoi* (presumed extinct 1913) the availability of suitable nesting sites was probably the factor that ultimately limited the species's population and naturally kept the numbers low. However, progressive desertification in the Canaries led to man's increased dependence on marine resources, and it was therefore most likely that human competition for food and disturbance led to the species's eventual demise.

Bengtson (1984) has suggested that the Great Auk *Alca impennis* (extinct 1844) was never very numerous and was restricted to a relatively narrow climatic zone. It seems likely that a climatically severe period coincided with man's increased hunting pressure; these combined factors may have overwhelmed the species.

Overall, it seems that there have been three main causes of extinction: (i) introduced species (in particular predators and browsing animals), (ii) direct persecution by man and (iii) habitat destruction. Human disturbance and natural causes hardly feature at all. For many species two or even all three of these causes may contribute. However, it is introduced species which have led to extinctions of the greatest number of island bird species. The most detrimental introduced species are mammalian predators: rats, cats, dogs and pigs, with monkeys being important in Mauritius, e.g. for Pigeon Hollandais *Alectroenas nitidissima* (extinct 1835) and Mauritius Parrot *Lophopsittacus mauritianus* (extinct 1675). Browsing animals (especially goats and rabbits), which destroy the habitat, have been especially significant for some species e.g. Laysan Rail *Porzanula palmeri* (extinct 1944) and Laysan Millerbird *Acrocephalus familiaris* (extinct 1912–1923). Both disappeared because rabbits denuded their island.

The second most common (contributory) cause of extinction is hunting. This includes hunting for food (both birds and eggs), for feathers and, in some cases, for museum specimens. In the case of the Hawaii Mamo *Drepanis pacifica* (extinct 1899), it has been estimated that 80,000 Mamos had to be sacrificed to make the famous royal cloak worn by Kamehameha I (Fuller 1987). Hunting for museum collections dealt the final blow to the spectacular Huia *Heteralocha acutirostris* (extinct 1907) (Williams & Given 1981).

The third most common cause of extinction is habitat destruction by man, mostly of forest. For example, the almost complete deforestation of the islands of Cebu in the Philippines and Sangihe in Indonesia resulted in the extinction of their forest-dependent endemic birds, the Four-coloured Flowerpecker *Dicaeum quadricolor*

(Cebu, extinct 1906) and Caerulean Paradise-flycatcher *Eutrichomyias rowleyi* (Sangihe, presumed extinct 1978) (Whitten *et al.* 1987).

Current status of island species

Distribution of island endemics

The most recent review of threatened birds (Collar & Andrew 1988) lists over one thousand threatened species, or approximately 11% of the world's avifauna. Of these, 469 (46%) threatened species are found on islands and 402 (39%) are *restricted* to islands (Appendix 1), the difference of 67 species being ones which have both island and continental distributions.

A high proportion of threatened island species are concentrated in a few geopolitical units: a total of 92 such units have one or more threatened species; 11 of these (Cuba, Hawaiian Islands, Indonesia, Marquesas Islands, Mauritius, New Zealand, Papua New Guinea, Philippines, São Tomé and Príncipe, Seychelles and Solomons) support over half the threatened species restricted to islands. Over 90% of threatened species restricted to islands are endemic to their geopolitical units, with a few island groups having particularly large numbers of threatened endemics (e.g. Indonesia 91, and the Philippines 34). Some 25 islands support a single threatened endemic only.

After Indonesia and the Philippines (Table 3), the islands of the Pacific Ocean support the largest number of threatened species (110). Although, when compared to the Atlantic islands, this constitutes a much lower proportion of the endemics occurring in the region (38% and 50%, respectively) it nonetheless accounts for 27% of threatened species restricted to islands.

Degree of threat

Of the 402 species restricted to islands, the greatest number of those considered Endangered or Vulnerable occur within the Pacific region: 31 of the 66 Endangered

Table 3. *Distribution of endemic and threatened island birds between regions and major island groups*

Regions/major island group	No. threatened species by RDB category[1]						Approx no. endemics	% endemics threatened
	E	V	I	R	K	Total		
Pacific Ocean	31	29	5	44	1	110	290	38
Indonesia and Borneo (excluding Irian Jaya and associated islands)	5	16	30	30	3	84	390	22
Indian Ocean	17	10	8	26	5	66	200	33
Philippines	3	4	10	15	2	34	180	19
Caribbean Sea	7	7	1	14	2	31	140	22
New Guinea and Melanesia	1	4	17	23	5	50	500	10
Atlantic Ocean	2	1	4	18	0	25	50	50
Total	66	71	75	170	18	400	1750	23

[1] RDB categories are: E = Endangered, V = Vulnerable, I = Indeterminate, R = Rare, K = Insufficiently Known (see Methods).

species and 29 of the 71 Vulnerable species (Table 3). These include a wide range of species, such as the severely endangered Barred-wing Rail *Nesoclopeus poeciloptera*, which is only known from Fiji, and which may even be extinct as a result of predation by introduced mongooses (Hay 1986); and the New Caledonian endemic Kagu *Rhynochetos jubatus*, belonging to a monotypic family and therefore regarded as a high priority for conservation action.

The numbers of species in each of the RDB categories of greatest threat (Endangered, Vulnerable, Indeterminate, Rare) do not occur in similar proportions between the regions used in Table 3 ($\chi^2_{15} = 75{\cdot}69$, $P < 0{\cdot}001$; Atlantic and Caribbean regions combined). There is a particularly high number of Indeterminate species in Indonesia, New Guinea/Melanesia and in the Philippines, reflecting the lack of detailed knowledge of the birds of these regions; the high number of Endangered species in the Pacific and Indian Oceans, and the low numbers in New Guinea/Melanesia, also contribute to this regional variation.

With 170 species in total, the Rare category contains the largest number for all regions (Table 3), but the numbers in each region are close to expected values in the chi-squared test. The Rare category signifies that a species has a small world population, but is not Endangered or Vulnerable. In practice, many such species simply have a restricted range and are regarded as being at risk as a function of this, without necessarily showing recent or current declines. For example, the world's smallest flightless bird, the Inaccessible Rail *Atlantisia rogersi*, is restricted to Inaccessible Island in the Tristan da Cunha group, where it is permanently at risk from the potential introduction of mammalian predators (Collar & Stuart 1985). Not all Rare species have stable populations: the population size of the Christmas Imperial Pigeon *Ducula whartoni* (Christmas Island, Indian Ocean) has apparently fluctuated and is not yet secure (Collar & Andrew 1988); until the introduction of cats after permanent settlement in 1815 (Stonehouse 1962), the Ascension Frigatebird *Fregata aquila* bred in large numbers on Ascension Island. It now breeds only on the 3 ha Boatswainbird Islet just off the coast of Ascension Island (Collar & Stuart 1985).

Habitat requirements

The majority of threatened island birds are forest species (Table 4). Rainforest supports 200 (50%) of the threatened species. Lowland and montane forests contribute almost equally, being used by 101 and 112 species, respectively (42 species use both types; 29 rainforest species could not be assigned to the lowland/montane division). The other major forest-type, seasonal/temperate forest, supports 113 species. In total, forests of all categories support 310 species, accounting for 77% of threatened island endemics.

The numbers of species in each of the RDB categories of greatest threat (Endangered, Vulnerable, Indeterminate, Rare) are not evenly distributed between the major habitat-types (rainforest, seasonal/temperate forest and 'others') ($\chi^2_6 = 43{\cdot}89$, $P < 0{\cdot}001$). Perhaps surprisingly, the largest contributions to this chi-squared value arise because there are considerably fewer Endangered species in rainforest than expected, and more in seasonal/temperate forest. The converse seems to apply to Indeterminate species. This may reflect the accessibility of these habitats to humans: seasonal/temperate forest is generally more accessible for survey work, so that fewer species will be known poorly enough to warrant being classed as Indeterminate. Accessibility and proximity to habitation may also lead to more pronounced effects from introduced predators. There may also be differences in survival of introduced species between seasonal/temperate forest and rainforest habitats, because many introductions involve species which originated in temperate

Table 4. *Habitats used by threatened island endemic bird species*

Habitat	Number of species by RDB category[1]					
	E	V	I	R	K	Total
Rainforest	18	33	55	85	9	200
Seasonal/temperate forest	33	23	5	49	3	113
Grassland/heathland/scrub	12	8	4	27	4	55
Arid zones	0	1	0	4	0	5
Inland wetlands/rivers	3	4	4	11	4	26
Coasts/estuaries/mangroves	3	6	1	7	1	18
Small islands	6	9	4	11	0	30
Unknown	0	0	8	0	2	10

[1] For definitions see Table 3 and Methods.

zones. Ecological differences may occur between the bird species involved, such as the proportion of ground-nesting species in each of the habitats, or the occurrence of flightlessness.

Causes of rarity and decline

The most important factor threatening island species is habitat destruction (Table 5), affecting over 50% of threatened island species. Given the number of extinctions attributable to introductions, it is of interest that introduced species now appear to be a major threat to only 20% of threatened island endemics, a much smaller proportion than might be expected and a considerably smaller proportion than the 41% of island species which are at risk simply by having a limited range. Other factors (hunting, trade, human disturbance, natural causes and fisheries) each affect less than 10% of threatened island birds. For 59 species, no reason for rarity or decline could be attributed, indicating that further field research is necessary.

Table 5. *Causes of rarity and decline of island endemic bird species*

Threat	Number of species by RDB category[1]					
	E	V	I	R	K	Total
Habitat destruction	36	50	32	81	7	206
Limited range	23	26	33	78	5	165
Introduced species	30	20	3	22	1	76
Hunting	5	8	0	20	2	35
Trade	6	3	0	7	0	16
Human disturbance	5	2	0	2	1	10
Natural causes	2	5	0	4	0	11
Fisheries	1	0	0	0	1	2
Unknown	9	3	24	20	8	64

[1] For definitions see Table 3 and Methods.

A chi-squared test on RDB categories of greatest threat against the major causes of rarity and decline (habitat destruction, limited range, introduced species, and hunting) is significant ($\chi^2_9 = 43{\cdot}96$, $P < 0{\cdot}001$). In this case, the largest contribution arises because considerably more Endangered species are affected by introduced species than would be expected. Two factors may contribute to this. First, the effects of introduced species have in many cases been operating over a long period. Second, the effects of other factors, especially habitat destruction (which was identified as a threat for half the species affected by introductions), exacerbate the problems associated with introduced species, mainly by allowing introduced species to invade the habitat but also by reducing reproductive success or recruitment below critical levels. As would be expected, few Endangered species are affected solely by having a limited range, since this alone would not warrant categorizing a species as Endangered.

Discussion

The major cause of extinction of island species over the past 400 years, namely introductions, now ranks only third (following habitat destruction and limited range) among the factors currently affecting island endemic birds. The rate of introductions of exotic species to islands has probably declined, and many of the potential introductions to predator-free islands have already occurred (Temple 1985). In addition, there are now measures to prevent the introduction of alien species, because awareness of the consequences of such events has greatly increased, and some measures have been developed to eradicate those introduced competitors and predators already established.

The legacy from past introductions still seriously threatens a large number of species. For the 66 Endangered species (most imminently threatened with extinction), the presence of exotic species remains an important threat. Many of these 66 species will become extinct, unless action is taken to avert the threats they face. Examples where concerted efforts are already being taken include well-documented cases such as the Freira *Pterodroma madeira* on Madeira, the subject of an intensive campaign to control rat predation (Grimmett 1987), and the endemic avifauna of Guam, severely affected by (and probably doomed to extinction because of) the introduced Brown Tree Snake *Boiga irregularis* (Savidge 1987).

Major efforts should be made to ensure the protection of forests on island groups which support large numbers of threatened endemic species. Effective conservation strategies for 11 geopolitical units (see p.171) would secure 57% of threatened species on islands. These 11 countries should be given priority by international conservation organizations and aid-agencies interested in maintaining global biodiversity.

There is enormous variation in the level of documentation available on the status of endemics and in the sophistication of the existing conservation infrastructures within the countries supporting them. In Hawaii, for instance, there is a wealth of information on the endemic forest birds (Scott *et al.* 1986) and there are recovery plans for several threatened species, although their implementation is hampered by lack of federal resources (King *et al.* 1989) and for some species the causes of rarity still remain obscure. There was, until recently, little up-to-date knowledge of the endemic avifauna of São Tomé and Príncipe, although the forests of south-west São Tomé had been recognized as one of the two major priorities for forest conservation in the Afrotropical and Malagasy realm since 1985 (see Collar & Stuart 1988). Considerable work has been undertaken to gather information on the status of

endemics and their habitats (Jones & Tye 1988) and to develop a conservation strategy using the survey information (Jones *et al.* 1989). In contrast, documentation on Philippine birds is only now receiving equivalent scrutiny (e.g. Dickinson *et al.*, unpubl. data), which would be expected to give rise to further species recovery programmes (like that already under way for the Philippine Eagle *Pithecophaga jefferyi*, Lewis 1986) and more extensive recommendations for the protection of critical sites.

In addition to the obvious need for conservation action on threatened island species, there is an urgent need for further information. Firm statements about the number of species threatened can only be reliably made when there is clear evidence that non-threatened species are indeed secure (Diamond 1987). Ideally the RDB categories applied in this paper would be based on the more comprehensive reviews of species which will be compiled for full *Red Data Book* accounts. However, even if comprehensive literature searches were complete, few threatened species have been surveyed adequately for truly informed management decisions to be made (Green & Hirons, in press), and quantitative data on habitat requirements or particular ecological factors critical for their survival are generally lacking.

There is also a pressing need for detailed information on the current status of the habitat of each threatened species and the rate at which it is being lost. Even without this information, there is no doubt that island endemic species remain under severe threat. The unavoidable conclusion from these analyses is that the native forests of these islands must be protected from continuing destruction if the majority of threatened island species are to avoid extinction.

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Appendix 1: List of threatened and extinct island endemic birds

Regions (first character of each line, corresponding to classification used in Table 3): A Atlantic Ocean; I Indian Ocean; P Pacific Ocean; C Caribbean; F Philippines; D Indonesia and Borneo; N New Guinea and Melanesia; * species occurs in more than one region. **Habitats**: R rainforest; S seasonal forest; O other habitats. **Threats**: D habitat destruction; I introduced species; E exploitation; L limited range; H human disturbance; N natural causes.

ENDANGERED SPECIES

I	*Tachybaptus rufolavatus* Alaotra Grebe: Madagascar	O	D	-	E	-	-	
I	*Diomedea amsterdamensis* Amsterdam Albatross: Amsterdam Island	O	-	-	-	L	-	
A	*Pterodroma cahow* Cahow: Bermuda	O	-	-	-	L	HN	
A	*Pterodroma madeira* Freira: Madeira	O	-	I	-	L	H	
P	*Puffinus auricularis* Townsend's Shearwater: Hawaiian Islands, Revillagigedos Islands	O	D	I	-	L	-	
I	*Sula abbotti* Abbott's Booby: Christmas Island	R	D	-	-	L	-	
I	*Fregata andrewsi* Christmas Frigatebird: Christmas Island	R	D	-	-	L	-	
I	*Aythya innotata* Madagascar Pochard: Madagascar	O	-	I	E	-	-	
I	*Haliaeetus vociferoides* Madagascar Fish Eagle: Madagascar	O	D	-	E	-	H	
I	*Eutriorchis astur* Madagascar Serpent-eagle: Madagascar	R	D	-	-	-	-	
F	*Pithecophaga jefferyi* Philippine Eagle: Philippines	R	D	-	E	-	H	
I	*Falco punctatus* Mauritius Kestrel: Mauritius	S	D	I	-	L	-	
P	*Rallus owstoni* Guam Rail: Guam	R	-	I	-	L	-	
P	*Tricholimnas sylvestris* Lord Howe Island Woodhen: Lord Howe Island	S	-	I	-	L	-	
P	*Nesoclopeus poeciloptera* Barred-wing Rail: Fiji	S	-	I	-	L	-	
P	*Notornis mantelli* Takahe: New Zealand	O	-	I	-	-	-	
N	*Rhynochetos jubatus* Kagu: New Caledonia	R	D	I	-	-	-	
P	*Haematopus chathamensis* Chatham Island Oystercatcher: Chatham Islands	O	-	I	-	L	H	
P	*Thinornis novaeseelandiae* New Zealand Shore Plover: New Zealand	O	-	I	-	-	H	
P	*Himantopus novaezealandiae* Black Stilt: New Zealand	O	D	I	-	-	-	
I	*Nesoenas mayeri* Pink Pigeon: Mauritius	S	D	I	-	L	-	
P	*Zenaida graysoni* Socorro Dove: Revillagigedos Islands	S	-	I	-	-	-	
C	*Leptotila wellsi* Grenada Dove: Grenada	O	D	I	-	L	-	
C	*Geotrygon caniceps* Grey-headed Quail-dove: Cuba, Dominican Republic	R	D	-	-	-	-	
P	*Gallicolumba erythroptera* Society Islands Ground-dove: Society Islands, Tuamotu Archipelago	S	-	I	-	L	-	
P	*Ptilinopus huttoni* Rapa Fruit-dove: Tubuai Islands	S	D	-	-	-	-	
D	*Cacatua moluccensis* Salmon-crested Cockatoo: Indonesia	R	-	-	E	L	H	
D	*Cacatua alba* White Cockatoo: Indonesia	R	-	-	E	L	H	
F	*Cacatua haematuropygia* Red-vented Cockatoo: Philippines	R	-	-	E	-	H	
D	*Cacatua goffini* Tanimbar Corella: Indonesia	R	-	-	E	L	H	
I	*Psittacula eques* Mauritius Parakeet: Mauritius	S	D	I	-	L	-	
C	*Amazona vittata* Puerto Rican Amazon: Puerto Rico	R	D	I	-	-	N	
C	*Amazona arausiaca* Red-necked Amazon: Dominica	R	D	-	-	-	-	
C	*Amazona imperialis* Imperial Amazon: Dominica	R	D	-	-	-	-	
P	*Strigops habroptilus* Kakapo: New Zealand	S	-	I	-	-	-	
I	*Centropus chlororhynchus* Green-billed Coucal: Sri Lanka	R	D	-	-	-	-	
P	*Sapheopipo noguchii* Okinawa Woodpecker: Okinawa	S	D	-	-	L	-	
D	*Pitta schneideri* Schneider's Pitta: Indonesia	R	D	-	-	L	-	
P	*Mimodes graysoni* Socorro Mockingbird: Revillagigedos Islands	S	-	I	-	-	-	
C	*Ramphocinclus brachyurus* White-breasted Thrasher: Martinique, St Lucia	S	D	-	-	-	-	
I	*Copsychus sechellarum* Seychelles Magpie-robin: Seychelles	S	D	I	-	-	-	
F	*Copsychus cebuensis* Black Shama: Philippines	R	D	-	-	L	-	
P	*Myadestes myadestinus* Kamao: Hawaiian Islands	S	-	-	-	-	-	
P	*Myadestes lanaiensis* Olomao: Hawaiian Islands	S	-	-	-	-	-	
P	*Myadestes palmeri* Puaiohi: Hawaiian Islands	S	-	-	-	-	-	
P	*Acrocephalus rehsei* Nauru Reed Warbler: Nauru	O	D	-	-	L	-	
I	*Acrocephalus rodericanus* Rodrigues Warbler: Mauritius	O	D	I	-	-	-	
I	*Nesillas aldabranus* Aldabra Warbler: Seychelles	O	-	I	-	-	-	
P	*Petroica traversi* Chatham Island Black Robin: Chatham Islands	S	D	-	-	-	-	
P	*Pomarea dimidiata* Rarotonga Monarch: Cook Islands	S	D	-	-	-	-	
P	*Pomarea nigra* Tahiti Monarch: Society Islands	S	D	-	-	-	-	
P	*Myiagra freycineti* Guam Flycatcher: Guam	S	-	I	-	-	-	
P	*Zosterops albogularis* White-breasted White-eye: Norfolk Island	S	D	I	-	-	-	
I	*Zosterops modestus* Seychelles White-eye: Seychelles	S	D	-	-	-	-	
P	*Moho braccatus* Kauai Oo: Hawaiian Islands	S	D	I	-	-	-	
P	*Moho bishopi* Bishop's Oo: Hawaiian Islands	S	D	I	-	-	-	
C	*Leucopeza semperi* Semper's Warbler: St Lucia	R	-	I	-	-	-	
P	*Paroreomyza maculata* Oahu Creeper: Hawaiian Islands	S	-	-	-	-	-	
P	*Hemignathus obscurus* Akialoa: Hawaiian Islands	S	-	-	-	-	-	
P	*Hemignathus lucidus* Nukupuu: Hawaiian Islands	S	-	-	-	-	-	
P	*Psittirostra psittacea* Ou: Hawaiian Islands	S	-	-	-	-	-	
I	*Foudia rubra* Mauritius Fody: Mauritius	S	D	I	-	-	-	
I	*Foudia flavicans* Rodrigues Fody: Mauritius	S	D	I	-	-	-	
P	*Aplonis cinerascens* Rarotonga Starling: Cook Islands	S	-	-	-	-	-	
D	*Leucopsar rothschildi* Bali Starling: Indonesia	S	D	-	E	L	H	
P	*Corvus hawaiiensis* Hawaiian Crow: Hawaiian Islands	S	-	-	-	-	-	

VULNERABLE SPECIES

P	*Apteryx owenii* Little Spotted Kiwi: New Zealand	S	D	I	-	L	N	
P	*Megadyptes antipodes* Yellow-eyed Penguin: Auckland Islands, Campbell Island, New Zealand	O	D	-	-	L	HN	
P	*Pterodroma axillaris* Chatham Island Petrel: Chatham Islands	O	-	-	-	L	N	
P	*Pterodroma defilippiana* Defilippe's Petrel: Desventuradas Islands, Juan Fernandez Islands	O	-	I	-	L	-	
P	*Pterodroma pycrofti* Pycroft's Petrel: New Zealand	O	D	I	-	L	-	
P	*Procellaria parkinsoni* Black Petrel: New Zealand	O	-	I	-	L	-	
P	*Puffinus newelli* Newell's Shearwater: Hawaiian Islands	O	D	I	-	L	H	
P	*Branta sandvicensis* Hawaiian Goose: Hawaiian Islands	O	-	I	-	L	-	
I	*Anas bernieri* Madagascar Teal: Madagascar	O	-	-	-	L	-	
C	*Buteo ridgwayi* Ridgway's Hawk: Dominican Republic, Haiti	R	D	-	-	-	-	
N	*Harpyopsis novaeguineae* New Guinea Harpy-eagle: Indonesia, Papua New Guinea	R	D	-	E	-	-	
D	*Spizaetus bartelsi* Javan Hawk-eagle: Indonesia	R	D	-	E	L	H	
D	*Megapodius bernsteinii* Sula Scrubfowl: Indonesia	R	D	-	-	L	-	
P	*Megapodius pritchardii* Niuafo'ou Megapode: Tonga	R	-	I	E	L	-	
D	*Macrocephalon maleo* Maleo: Indonesia	R	-	I	E	-	-	
P	*Lophura swinhoii* Swinhoe's Pheasant: Taiwan	R	D	-	-	-	-	
D	*Lophura inornata* Salvadori's Pheasant: Indonesia	R	D	-	-	-	-	
P	*Rallus okinawae* Okinawa Rail: Okinawa	S	D	-	-	L	-	
P	*Prosobonia cancellatus* Tuamotu Sandpiper: Tuamotu Archipelago	O	-	I	-	-	-	
I	*Sterna virgata* Kerguelen Tern: Crozet Islands, Kerguelen Islands, Prince Edward Island	O	-	I	-	-	-	
P	*Sterna albostriata* Black-fronted Tern: New Zealand	O	D	-	-	-	-	
A	*Columba thomensis* Maroon Pigeon: São Tomé e Príncipe	R	-	I	-	-	-	
I	*Columba torringtoni* Sri Lanka Woodpigeon: Sri Lanka	R	D	-	-	-	-	
D	*Columba argentina* Grey Woodpigeon: Indonesia, Borneo	R	D	-	-	L	-	
C	*Columba caribaea* Ring-tailed Pigeon: Jamaica	R	D	-	-	-	-	
P	*Didunculus strigirostris* Tooth-billed Pigeon: Western Samoa	S	D	-	E	-	-	
D	*Treron teysmanni* Sumba Green-pigeon: Indonesia	R	D	-	-	L	-	
D	*Treron psittacea* Timor Green-pigeon: Indonesia	S	D	-	E	L	-	
P	*Ducula galeata* Marquesas Imperial-pigeon: Marquesas Islands	S	D	I	-	-	-	
N	*Ducula goliath* Giant Imperial-pigeon: New Caledonia	R	D	-	E	-	-	
P	*Vini peruviana* Blue Lorikeet: Cook Islands, Society Islands, Tuamotu Archipelago	S	-	I	-	-	-	
P	*Vini ultramarina* Ultramarine Lorikeet: Marquesas Islands	S	D	I	-	-	-	
D	*Cacatua sulphurea* Yellow-crested Cockatoo: Indonesia	R	D	-	E	-	H	
D	*Loriculus catamene* Sangihe Hanging-parrot: Indonesia	R	D	-	-	L	-	
C	*Aratinga euops* Cuban Conure: Cuba	S	D	-	E	-	H	
D	*Centropus nigrorufus* Javan Coucal: Indonesia	O	D	-	-	-	-	
P	*Aerodramus leucophaeus* Tahiti Swiftlet: Society Islands	S	-	-	-	-	-	
P	*Sephanoides fernandensis* Juan Fernandez Firecrown: Juan Fernandez Islands	O	-	I	-	-	-	
D	*Halcyon australasia* Cinnamon-banded Kingfisher: Indonesia	S	D	-	-	-	-	
P	*Halcyon godeffroyi* Marquesas Kingfisher: Marquesas Islands	S	-	I	-	-	-	
F	*Halcyon hombroni* Blue-capped Wood Kingfisher: Philippines	R	-	-	-	L	-	
N	*Tanysiptera riedelii* Biak Paradise Kingfisher: Indonesia	R	-	-	-	L	-	
D	*Rhyticeros everetti* Sumba Hornbill: Indonesia	R	D	-	-	-	-	
I	*Coracina typica* Mauritius Cuckoo-shrike: Mauritius	S	D	I	-	-	-	
I	*Coracina newtoni* Réunion Cuckoo-shrike: Réunion	S	D	-	E	-	-	
I	*Hypsipetes olivaceus* Mauritius Black Bulbul: Mauritius	S	D	I	-	-	-	
I	*Myiophoneus blighi* Sri Lanka Whistling Thrush: Sri Lanka	R	D	-	-	-	-	
F	*Stachyris speciosa* Flame-templed Babbler: Philippines	R	D	-	-	L	-	
F	*Stachyris nigrorum* Negros Babbler: Philippines	R	D	-	-	L	-	
D	*Stachyris grammiceps* White-breasted Babbler: Indonesia	R	D	-	-	L	-	
I	*Garrulax cinereifrons* Ashy-headed Laughingthrush: Sri Lanka	R	D	-	-	-	-	

P *Acrocephalus familiaris* Nihoa Reed Warbler O D - - - -
F *Rhinomyias albigularis* White-throated Jungle-flycatcher: Philippines R D - - L -
D *Ficedula harterti* Sumba Flycatcher: Indonesia R D - - L -
P *Pomarea mendozae* Marquesas Monarch: Marquesas Islands S D - - - -
P *Parus holsti* Yellow Tit: Taiwan R D - - - -
D *Nectarinia buettikoferi* Apricot-breasted Sunbird: Indonesia S D - - - -
D *Aethopyga duyvenbodei* Elegant Sunbird: Indonesia R D - - L -
I *Zosterops chloronothus* Mauritius Olive White-eye: Mauritius O D - - - -
P *Rukia ruki* Great Truk White-eye: Federated States of Micronesia O - - - L -
P *Apalopteron familiare* Bonin islands Honeyeater: Bonin Islands O - - - L -
P *Junco insularis* Guadalupe Junco: Guadalupe Island, S D - - - -
C *Melanospiza richardsoni* St Lucia Black Finch: St Lucia R - I - - -
P *Hemignathus munroi* Akiapolaau: Hawaiian Islands S - - - - -
P *Pseudonestor xanthophrys* Maui Parrotbill: Hawaiian Islands S - - - - -
C *Icterus bonana* Martinique Oriole: Martinique RS - - - -N
C *Icterus oberi* Montserrat Oriole: Montserrat RS D - - - --
C *Agelaius xanthomus* Yellow-shouldered Blackbird: Puerto Rico O D - - - N
P *Callaeas cinerea* Kokako: New Zealand S D I - - -
N *Astrapia mayeri* Ribbon-tailed Astrapia: Papua New Guinea R D - E - -
I *Urocissa ornata* Sri Lanka Magpie: Sri Lanka R D - - - -

RARE SPECIES

P *Diomedea albatrus* Short-tailed Albatross: Torishima O - - E L N
C *Pterodroma hasitata* Black-capped Petrel: Cuba, Dominican Republic, Haiti R - - - L -
P *Pterodroma magentae* Magenta Petrel: Chatham Islands O - - - L -
A *Pterodroma feae* Gon-gon: Cape Verde Islands, Madeira O - - E L -
P *Pterodroma phaeopygia* Dark-rumped Petrel: Galapagos Islands, Hawaiian Islands O D I - L -
P *Pterodroma cooki* Cook's Petrel: New Zealand O - I - L -
P *Procellaria westlandica* Westland Black Petrel: New Zealand O D I - - -
P *Phalacrocorax carunculatus* New Zealand King Cormorant: Chatham Islands, New Zealand O - - - - -
P *Nannopterum harrisi* Galapagos Flightless Cormorant: Galapagos Islands O - - - - N
A *Fregata aquila* Ascension Frigatebird: Ascension Island O - - - L -
C *Dendrocygna arborea* West Indian Whistling Duck: Bahama Islands, Cayman Islands, Cuba, Dominican Republic, Haiti, Jamaica, Leeward Islands, Puerto Rico, Virgin Islands O D - E - -
P *Anas aucklandica* New Zealand Brown Teal: Auckland Islands, Campbell Island, New Zealand O D I E - -
P *Anas wyvilliana* Hawaiian Duck: Hawaiian Islands O D I - L -
P *Anas laysanensis* Laysan Duck: Hawaiian Islands O - - - L -
N *Haliaeetus sanfordi* Solomons Sea Eagle: Solomon Islands R D - - - -
D *Spilornis kinabaluensis* Kinabalu Serpent-eagle: Borneo R D - - L -
I *Spilornis elgini* Dark Serpent-eagle: Andaman Islands R - - - L -
D *Accipiter nanus* Small Sparrowhawk: Indonesia R - - - L -
N *Accipiter brachyurus* New Britain Sparrowhawk: Papua New Guinea R D - - - -
N *Accipiter imitator* Imitator Sparrowhawk: Papua New Guinea, Solomon Islands R D - - - -
C *Accipiter gundlachii* Gundlach's Hawk: Cuba S D - E - -
P *Buteo galapagoensis* Galapagos Hawk: Galapagos Islands O - - - - -
P *Buteo solitarius* Hawaiian Hawk: Hawaiian Islands O - - E - -
I *Megapodius nicobariensis* Nicobar Scrubfowl: Nicobar Islands R - - E L -
P *Megapodius laperouse* Micronesian Megapode: Northern Marianas Islands, Palau R - I E - -
D *Megapodius wallacei* Moluccan Scrubfowl: Indonesia R - - E - -
N *Aepypodius bruijnii* Waigeo Brush-turkey: Indonesia R - - - L -
D *Lophura bulweri* Bulwer's Pheasant: Indonesia, Borneo R D - - - -
P *Syrmaticus mikado* Mikado Pheasant: Taiwan RS - - - L-
F *Polyplectron emphanum* Palawan Peacock-pheasant: Philippines R D - E - H
I *Mesitornis variegata* White-breasted Mesite: Madagascar S D I - L -
I *Mesitornis unicolor* Brown Mesite: Madagascar R D I - - -
I *Monias benschi* Subdesert Mesite: Madagascar O D - E - -
A *Atlantisia rogersi* Inaccessible Rail: Tristan da Cunha group O - - - L -
C *Cyanolimnas cerverai* Zapata Rail: Cuba O - - - L -
P *Nesophylax ater* Henderson Rail: Pitcairn Islands S - - - L -
A *Gallinula comeri* Gough Moorhen: Tristan da Cunha group O - - - L -
I *Charadrius thoracicus* Madagascar Plover: Madagascar O - - - L -
A *Charadrius sanctaehelenae* St Helena Plover: St Helena O D I - - N
P *Coenocorypha aucklandica* New Zealand Snipe: Antipodes Islands, Auckland Islands, Chatham Islands, Snares Island O - I - - -
A *Columba trocaz* Madeira Laurel Pigeon: Madeira S D I - - -
A *Columba bollii* Dark-tailed Laurel Pigeon: Canary Islands S D - - - -
A *Columba junoniae* White-tailed Laurel Pigeon: Canary Islands S D - - - -
C *Starnoenas cyanocephala* Blue-headed Quail-dove: Cuba S D - - - -
* *Caloenas nicobarica* Nicobar Pigeon: Andaman Islands, Indonesia, Nicobar Islands, Palau, Papua New Guinea, Philippines, Solomon Islands R D - E - -
N *Gallicolumba sanctaecrucis* Santa Cruz Ground-dove: Solomon Islands, Vanuatu R - - - - -
P *Gallicolumba rubescens* Marquesas Ground-dove: Marquesas Islands S - - - L -
N *Goura cristata* Western Crowned-pigeon: Indonesia R D - E - -
N *Goura scheepmakeri* Southern Crowned-pigeon: Indonesia, Papua New Guinea R D - E - H
N *Goura victoria* Victoria Crowned-pigeon: Indonesia, Papua New Guinea R D - E - -
D *Ptilinopus dohertyi* Red-naped Fruit-dove: Indonesia R D - - L -
P *Ptilinopus roseicapilla* Marianas Fruit-dove: Guam, Northern Marianas Islands S D I E - -
N *Drepanoptila holosericea* Cloven-feathered Dove: New Caledonia R D - E - -
F *Ducula mindorensis* Mindoro Imperial-pigeon: Philippines R D - - L -
P *Ducula aurorae* Society Islands Imperial-pigeon: Society Islands, Tuamotu Archipelago S - I - - -
I *Ducula whartoni* Christmas Imperial-pigeon: Christmas Island R D - E - -
* *Ducula pickeringii* Grey Imperial-pigeon: Indonesia, Borneo, Philippines R D - - L -
N *Eos cyanogenia* Biak Red Lory: Indonesia R D - - L -
D *Eos reticulata* Blue-streaked Lory: Indonesia R - - E L H
D *Eos histrio* Red-and-blue Lory: Indonesia R - - - L -
D *Lorius domicellus* Purple-naped Lory: Indonesia R - - E L H
P *Vini kuhlii* Scarlet-breasted Lorikeet: Kiribati, Tubuai Islands S - I - - -
P *Vini stepheni* Henderson Lorikeet: Pitcairn Islands S - - - L -
N *Psittaculirostris salvadorii* Salvadori's Fig-parrot: Indonesia R - - E L H
F *Prioniturus luconensis* Green-headed Racquet-tailed Parrot: Philippines R D - E - H
P *Cyanoramphus unicolor* Antipodes Parakeet: Antipodes Islands O - - - L -
C *Amazona versicolor* St Lucia Amazon: St Lucia R - - - L -
C *Amazona guildingii* St Vincent Amazon: St Vincent R - - - L -
P *Coccyzus ferrugineus* Cocos Cuckoo: Cocos Island R - - - L -
D *Otus angelinae* Javan Scops Owl: Indonesia R - - - L -
F *Otus mindorensis* Mindoro Mountain Scops Owl: Philippines R - - - L -
I *Otus insularis* Seychelles Scops Owl: Seychelles S D - - - -
A *Otus hartlaubi* São Tomé Scops Owl: São Tomé e Príncipe R D - - - -
C *Caprimulgus noctitherus* Puerto Rican Whippoorwill: Puerto Rico S D - - - -
I *Collocalia elaphra* Seychelles Swiftlet: Seychelles S - - - - H
P *Aerodramus sawtelli* Atiu Swiftlet: Cook Islands S - - - - -
C *Calypte helenae* Bee Hummingbird: Cuba S - - - - -
P *Halcyon ruficollaris* Mangaia Kingfisher: Cook Islands S - I - - -
P *Halcyon gambieri* Tuamotu Kingfisher: Tuamotu Archipelago S - - - - -
I *Brachypteracias leptosomus* Short-legged Ground-roller: Madagascar R D - - - -
I *Brachypteracias squamiger* Scaly Ground-roller: Madagascar R D I E - -
I *Atelornis crossleyi* Rufous-headed Ground-roller: Madagascar R D - - - -
I *Uratelornis chimaera* Long-tailed Ground-roller: Madagascar O - - - L -
I *Aceros narcondami* Narcondam Hornbill: Andaman Islands R - - - L -
F *Anthracoceros montani* Sulu Hornbill: Philippines R D - - - -
D *Megalaima javensis* Black-banded Barbet: Indonesia R D - - L -
P *Aphrastura masafuerae* Masafuera Rayadito: Juan Fernandez Islands S D - - - -
F *Pitta steerii* Steere's Pitta: Philippines R D - - - -
A *Alauda razae* Raso Lark: Cape Verde Islands O - - - L -
D *Coracina schistacea* Slaty Cuckoo-shrike: Indonesia R - - - - -
F *Coracina coerulescens* Black Cuckoo-shrike: Philippines R D - - - -
D *Coracina sula* Sula Cuckoo-shrike: Indonesia R - - - - -
F *Coracina ostenta* White-winged Cuckoo-shrike: Philippines R D - - - -
I *Phyllastrephus apperti* Appert's Greenbul: Madagascar S D - - - -
I *Phyllastrephus tenebrosus* Dusky Greenbul: Madagascar R D - - - -
I *Phyllastrephus cinereiceps* Grey-crowned Greenbul: Madagascar R D - - - -
I *Xenopirostris damii* Van Dam's Vanga: Madagascar S D - - L -
I *Xenopirostris polleni* Pollen's Vanga: Madagascar R D - - - -
P *Thryomanes sissonii* Socorro Wren: Revillagigedos Islands S - I - - -
P *Troglodytes tanneri* Clarion Wren: Revillagigedos Islands O - I - - -
F *Rhyacornis bicolor* Luzon Water-redstart: Philippines R D - E - -
D *Cochoa azurea* Javan Cochoa: Indonesia R D - - L -
A *Saxicola dacotiae* Fuerteventura Stonechat: Canary Islands O - - - L N
D *Saxicola gutturalis* Timor Bushchat: Indonesia S D - - L -
D *Zoothera schistacea* Slaty-backed Thrush: Indonesia R - - - L -
D *Zoothera peronii* Orange-banded Thrush: Indonesia S D - - L -
D *Zoothera everetti* Everett's Thrush: Borneo R - - - L -
P *Zoothera amami* Amami Thrush: Japan S D - - L -
D *Zoothera machiki* Fawn-breasted Thrush: Indonesia R - - - L -

C *Polioptila lembeyei* Cuban Gnatcatcher: Cuba O - - - L -
I *Acrocephalus sechellensis* Seychelles Warbler: Seychelles S - - - L -
N *Megalurus albolimbatus* Fly River Grassbird: Papua New Guinea O D - - - -
D *Rhinomyias colonus* Henna-tailed Jungle-flycatcher: Indonesia R - - - - -
D *Ficedula timorensis* Black-banded Flycatcher: Indonesia S D - - L -
D *Cyornis sandfordi* Matinan Flycatcher: Indonesia R - - - L -
F *Cyornis herioti* Blue-breasted Flycatcher: Philippines R - - - L -
I *Humblotia flavirostris* Grand Comoro Flycatcher: Comoro Islands S D - - - -
I *Terpsiphone corvina* Seychelles Paradise-flycatcher: Seychelles S D I - - -
F *Hypothymis helenae* Short-crested Monarch: Philippines R D - - L -
P *Pomarea iphis* Iphis Monarch: Marquesas Islands S - - - L -
P *Pomarea whitneyi* Fatu Iva Monarch: Marquesas Islands S - - - L -
N *Clytorhynchus hamlini* Rennell Shrikebill: Solomon Islands R D - - - -
P *Metabolus rugensis* Truk Monarch: Federated States of Micronesia S - - - - -
N *Monarcha brehmii* Biak Monarch: Indonesia R D - - L -
N *Myiagra atra* Biak Black Flycatcher: Indonesia R D - - L -
N *Pachycephala meyeri* Vogelkop Whistler: Indonesia R - - - L -
F *Rhabdornis grandis* Long-billed Creeper: Philippines R D - - - -
A *Dreptes thomensis* Giant Sunbird: São Tomé e Príncipe R D - - - -
D *Zosterops flavus* Javan White-eye: Indonesia, Borneo O D - - - -
D *Zosterops anomalus* Lemon-throated White-eye: Indonesia R - - - L -
D *Zosterops kuehni* Ambon Yellow White-eye: Indonesia R D - - L -
N *Zosterops luteirostris* Gizo White-yey: Solomon Islands R D - - - -
I *Zosterops mouroniensis* Mount Karthala White-eye: Comoro Islands O - - - L -
A *Speirops brunneus* Fernando Po Speirops: Bioko SF - - - L-
A *Speirops leucophaeus* Príncipe Speirops: São Tomé e Príncipe R - I - - -
P *Rukia longirostra* Great Pohnpei White-eye: Federated States of Micronesia O - - - L -
D *Heleia muelleri* Spot-breasted White-eye: Indonesia S D - - - -
P *Notiomystis cincta* Stitchbird: New Zealand S - - - L -
D *Philemon fuscicapillus* Dusky Friarbird: Indonesia R - - - - -
N *Melidectes princeps* Long-bearded Melidectes: Papua New Guinea R D - - H
C *Torreornis inexpectata* Zapata Sparrow: Cuba O D - - - -
A *Rowettia goughensis* Gough Bunting: Tristan da Cunha group O - - - L -
A *Nesospiza acunhae* Tristan Bunting: Tristan da Cunha group O - - - L -
A *Nesospiza wilkinsi* Grosbeak Bunting: Tristan da Cunha group S - - - L -
C *Dendroica vitellina* Vitelline Warbler: Cayman Islands, Swan Islands O D - - - -
C *Catharopeza bishopi* Whistling Warbler: St Vincent R - - - - -
C *Xenoligea montana* White-winged Ground-warbler: Dominican Republic, Haiti S D - - - -
P *Loxops coccineus* Akepa: Hawaiian Islands S - - - - -
P *Oreomystis bairdi* Akikiki: Hawaiian Islands S - - - - -
P *Telespyza ultima* Nihoa Finch: Hawaiian Islands O - - - L -
P *Telespyza cantans* Laysan Finch: Hawaiian Islands O - - - L -
P *Loxioides bailleui* Palila: Hawaiian Islands S - - - - -
P *Melamprosops phaeosoma* Poo Uli: Hawaiian Islands S - - - - -
P *Palmeria dolei* Crested Honeycreeper: Hawaiian Islands S - - - - -
A *Fringilla teydea* Blue Chaffinch: Canary Islands S D - - - -
F *Erythrura viridifacies* Green-faced Parrotfinch: Philippines O - - - L -
F *Erythrura coloria* Mindanao Parrotfinch: Philippines R D - - L -
I *Foudia sechellarum* Seychelles Fody: Seychelles S - - - L -
D *Basilornis galeatus* Helmeted Myna: Indonesia R - - - - -
D *Streptocitta albertinae* Bare-eyed Myna: Indonesia R - - - - -
F *Oriolus isabellae* Isabella Oriole: Philippines R D - - - -
I *Dicrurus fuscipennis* Grand Comoro Drongo: Comoro Islands R - - - - -
I *Dicrurus waldeni* Mayotte Drongo: Mayotte R D - - - -
P *Creadion carunculatus* Saddleback: New Zealand O - I - - -
N *Sericulus bakeri* Adelbert Bowerbird: Papua New Guinea R - - E - -
N *Paradigalla carunculata* Long-tailed Paradigalla: Indonesia R - - - L -
N *Epimachus fastuosus* Black Sicklebill: Indonesia, Papua New Guinea R - - E - -
N *Parotia wahnesi* Wahnes's Parotia: Papua New Guinea R D - - - -
N *Paradisaea decora* Goldie's Bird Of Paradise: Papua New Guinea R D - - - -
D *Corvus unicolor* Banggai Crow: Indonesia R D - - L -
D *Corvus florensis* Flores Crow: Indonesia S D - - L -
P *Corvus kubaryi* Marianas Crow: Guam, Northern Marianas Islands S - I - - -

INDETERMINATE SPECIES

I *Pterodroma aterrima* Mascarene Black Petrel: Réunion O - - - L -
N *Pterodroma becki* Beck's Petrel: Papua New Guinea, Solomon Islands O - - - - -
P *Pterodroma macgillivrayi* Fiji Petrel: Fiji S - - - L -
N *Puffinus heinrothi* Heinroth's Shearwater: Papua New Guinea R - - - - -
A *Bostrychia bocagei* Dwarf Olive Ibis: São Tomé e Príncipe R D - - L -
N *Henicopernis infuscata* Black Honey-buzzard: Papua New Guinea R D - - - -
D *Turnix everetti* Sumba Button-quail: Indonesia O D - - L -
F *Turnix worcesteri* Worcester's Button-quail: Philippines O - - - L -
F *Rallus mirificus* Brown-banded Rail: Philippines O - - - L -
N *Tricholimnas lafresnayanus* New Caledonian Rail: New Caledonia R - I - - -
D *Aramidopsis plateni* Snoring Rail: Indonesia R D I - L -
D *Gymnocrex rosenbergii* Bald-faced Rail: Indonesia R D - - L -
D *Habroptila wallacii* Invisible Rail: Indonesia R - - - L -
I *Sarothrura watersi* Slender-billed Flufftail: Madagascar O - - - L -
N *Gallinula sylvestris* San Cristobal Mountain Rail: Solomon Islands R - - - L -
D *Scolopax celebensis* Sulawesi Woodcock: Indonesia R - - - L -
D *Scolopax rochussenii* Obi Woodcock: Indonesia R D - - L -
N *Columba pallidiceps* Yellow-legged Pigeon: Papua New Guinea, Solomon Islands R - I - - -
F *Gallicolumba platenae* Mindoro Bleeding-heart: Philippines R D - - L -
F *Gallicolumba keayi* Negros Bleeding-heart: Philippines R D - - L -
F *Gallicolumba menagei* Sulu Bleeding-heart: Philippines R - - - L -
N *Gallicolumba salamonis* Thick-billed Ground-dove: Solomon Islands R - - - - -
D *Gallicolumba hoedtii* Wetar Ground-dove: Indonesia R - - - L -
D *Ptilinopus granulifrons* Caruculated Fruit-dove: Indonesia O - - - L -
F *Ptilinopus arcanus* Negros Fruit-dove: Philippines R - - - L -
D *Charmosyna toxopei* Blue-fronted Lorikeet: Indonesia R - - - L -
N *Charmosyna diadema* New Caledonian Lorikeet: New Caledonia R - - - - -
D *Prioniturus mada* Buru Racquet-tailed Parrot: Indonesia R - - - L -
I *Psittacula caniceps* Nicobar Parakeet: Nicobar Islands R D - - - -
P *Aratinga brevipes* Socorro Conure: Revillagigedos Islands S - - - - -
D *Chrysococcyx rufomerus* Green-cheeked Bronze-cuckoo: Indonesia O - - - - -
F *Centropus steerii* Black-hooded Coucal: Philippines R D - - - -
I *Tyto soumagnei* Madagascar Red Owl: Madagascar R D - - - -
D *Tyto nigrobrunnea* Taliabu Owl: Indonesia R - - - - -
D *Tyto inexspectata* Minahassa Owl: Indonesia R - - - - -
D *Tyto sororcula* Lesser Masked Owl: Indonesia R - - - - -
D *Otus stresemanni* Sumatran Scops Owl: Indonesia R - - - L -
D *Otus alfredi* Flores Scops Owl: Indonesia R - - - - -
D *Eurostopodus diabolicus* Satanic Nightjar: Indonesia R - - - L -
D *Caprimulgus pulchellus* Salvadori's Nightjar: Indonesia R - - - - -
N *Halcyon bougainvillei* Moustached Kingfisher: Papua New Guinea, Solomon Islands R - - - - -
F *Pitta kochi* Whiskered Pitta: Philippines R D - - - -
N *Pitta superba* Superb Pitta: Papua New Guinea R D - - - -
N *Pitta anerythra* Solomons Pitta: Papua New Guinea, Solomon Islands R D - - - -
I *Neodrepanis hypoxantha* Yellow-bellied Sunbird-asity: Madagascar R D - - - -
D *Pycnonotus nieuwenhuisii* Wattled Bulbul: Indonesia R - - - - -
F *Hypsipetes siquijorensis* Mottle-breasted Bulbul: Philippines R D - - - -
A *Lanius newtoni* São Tomé Fiscal Shrike: São Tomé e Príncipe R D - - - -
C *Ferminia cerverai* Zapata Wren: Cuba O D - - - -
D *Cochoa beccarii* Sumatran Cochoa: Indonesia R D - - L -
D *Trichastoma perspicillatum* Black-browed Babbler: Indonesia R - - - - -
D *Trichastoma vanderbilti* Vanderbilt's Babbler: Indonesia R - - - - -
F *Leonardina woodi* Bagobo Babbler: Philippines R D - - L -
I *Crossleyia xanthophrys* Madagascar Yellowbrow: Madagascar R D - - - -
N *Phylloscopus amoenus* Kolombangara Warbler: Solomon Islands R D - - - -
I *Cisticola haesitata* Socotra Cisticola: Socotra O - - - - -
A *Amaurocichla bocagii* São Tomé Short-tail: São Tomé e Príncipe R D - - - -
P *Trichocichla rufa* Long-legged Warbler: Fiji S D - - - -
N *Gerygone hypoxantha* Biak Gerygone: Indonesia R D - - - -
D *Ficedula henrici* Damar Blue Flycatcher: Indonesia R - - - L -
D *Cyornis ruecki* Rueck's Blue Flycatcher: Indonesia O - - - - -
I *Newtonia fanovanae* Red-tailed Newtonia: Madagascar R D - - - -
D *Monarcha boanensis* Black-chinned Monarch: Indonesia R D - - L -
D *Monarcha everetti* White-tipped Monarch: Indonesia R D - - L -
N *Rhipidura malaitae* Malaita Fantail: Solomon Islands R - - - - -
D *Zosterops uropygialis* Golden-bellied White-eye: Indonesia O D - - L -
D *Madanga ruficollis* Rufous-throated White-eye: Indonesia R - - - L -
D *Lichmera notabilis* Black-chested Honeyeater: Indonesia O - - - L -
D *Myzomela kuehni* Crimson-hooded Honeyeater: Indonesia O - - - L -
N *Meliphaga vicina* Sudest Meliphaga: Papua New Guinea R - - - - -
N *Philemon brassi* Brass's Friarbird: Indonesia R - - - L -
P *Camarhynchus pauper* Floreana Tree-finch: Galapagos Islands S D - - - -
P *Camarhynchus heliobates* Mangrove Finch: Galapagos Islands O D - - - -
A *Neospiza concolor* São Tomé Grosbeak: São Tomé e Príncipe R D - - - -
N *Aplonis santovestris* Santo Mountain Starling: Vanuatu S - - - - -

INSUFFICIENTLY KNOWN SPECIES

I *Tachybaptus pelzelnii* Madagascar Little Grebe: Madagascar O D I - - -

I *Ardea humbloti* Madagascar Heron: Comoro Islands, Madagascar, Mayotte — O D - E - H
I *Amaurornis olivieri* Sakalava Rail: Madagascar — O D - E L -
D *Carpococcyx radiceus* Sunda Ground-cuckoo: Indonesia, Borneo — R D - - - -
N *Tyto aurantia* Golden Owl: Papua New Guinea — R - - - - -
I *Otus pauliani* Grand Comoro Scops Owl: Comoro Islands — R D - - - -
D *Batrachostomus harterti* Dulit Frogmouth: Indonesia, Borneo — R - - - - -
C *Colaptes fernandinae* Cuban Flicker: Cuba — S D - - - -
C *Tachycineta cyaneoviridis* Bahama Swallow: Bahama Islands, Cuba — S - - - - -
I *Monticola bensoni* Benson's Rockthrush: Madagascar — O - - - L -
F *Napothera rabori* Luzon Wren-babbler: Philippines — R - - - L -
D *Ficedula bonthaina* Lompobattang Flycatcher: Indonesia — R D - - L -
F *Hypothymis coelestis* Celestial Monarch: Philippines — R - - - - -
N *Zosterops meeki* Sudest White-eye: Papua New Guinea — R - - - - -
N *Zosterops sanctaecrucis* Nendo White-eye: Solomon Islands — O - - - - -
N *Woodfordia lacertosa* Sanford's White-eye: Solomon Islands — O - - - - -
P *Erythrura kleinschmidti* Pink-billed Parrotfinch: Fiji — S - - - - -
N *Amblyornis flavifrons* Golden-fronted Bowerbird: Indonesia — R - - - L -

EXTINCT SPECIES

P *Dromaius diemenianus* Kangaroo Islands Emu: Kangaroo Island (extinct 1803) - - - -
I *Aepyornis maximus* Great Elephantbird: Madagascar (1650) D - E -
P *Dinornis torosus* Brawny Great Moa: New Zealand (1670) D - E -
P *Eurapteryx gravis* Burly Lesser Moa: New Zealand (1640) D - E -
P *Megalaperyx didinus* South Islands Tokoweka: New Zealand (1785) D - E -
I *Pterodroma* sp. nov.: Rodrigues (1726) - - - -
P *Oceanodroma macrodactyla* Guadalupe Storm-petrel: Guadalupe (1912-1922) - I - -
P *Phalacrocorax perspicillatus* Spectacled Cormorant: Beringa Island (1852) - - E -
I *Borbonibis latipes* Réunion Flightless Ibis: Réunion (1773) - - - -
P *Ixobrychus novaezelandia* New Zealand Little Bittern: New Zealand (1900) - - - -
I *Nycticorax mauritianus* Mauritius Night-heron: Mauritius (by 1700) - - - -
I *Nycticorax megacephalus* Rodrigues Night-heron: Rodrigues (1761) - - - -
I *Nycticorax* sp. nov.: Réunion (by 1700) - - - -
I *Ciconia* sp. nov.: Réunion (?1674) - - - -
P *Cygnus sumnerensis* Chatham Islands Swan: Chatham Islands (1590-1690) - - - -
I *Alopochen mauritianus* Mauritian Shelduck: Mauritius (1698) - - - -
I Sheldgoose sp. nov.: Réunion (?1674) - - - -
I *Anas theodori* Mauritian Duck: Mauritius, ?Réunion (1696) - - - -
P *Mergus australis* Auckland Islands Merganser: New Zealand (1905) D I E -
P *Polyborus lutosus* Guadalupe Caracara: Guadalupe (1900) - - E -
I *Falco* sp. nov.: Réunion (?1674) - - - -
P *Coturnix novaezelandiae* New Zealand Quail: New Zealand (1875) - - - -
P *Rallus wakensis* Wake Islands Rail: Wake Island (1945) - - E -
P *Rallus dieffenbachii* Chatham Islands Banded Rail: Chatham Islands (1840) D I - -
P *Rallus modestus* Chatham Islands Rail: Chatham Islands (1900) - I - N
A *Atlantisia elpenor* Ascension Flightless Crake: Ascension Island (1656) - I E -
N *Tricholimnas lafresnayanus* New Caledonia Rail: New Caledonia (1904) - - - -
P *Porzanula palmeri* Laysan Rail: Laysan (1944) - I - -
N *Nesoclopeus woodfordi* Woodford's Rail: Bougainville (1936) - - - -
P *Porzana sandwichensis* Hawaiian Rail: Hawaii (1884) - I - -
P *Porzana monasa* Kosrae Crake: Kosrae (1827) - I - -
A *Gallinula nesiotis* Tristan Moorhen: Tristan da Cunha (1875-1900) - - - -
P *Gallinula pacifica* Samoan Woodhen: Savaii (1908-1926) - - - -
P *Porphyrio albus* Lord Howe Purple Gallinule: Lord Howe Island (1834) - - E -
I *Aphanapteryx bonasia* Red Rail: Mauritius (1700) - I - -
I *Aphanapteryx leguati* Rodrigues Rail: Rodrigues (1761) - - - -
I *Fulica newtoni* Mascerene Coot: Mauritius, Réunion (1693) - - - -
A *Haematopus meadewaldoi* Canarian Black Oystercatcher: Canary Islands (1913) - - - H
D *Vanellus macropterus* Javanese Wattled Lapwing: Java (1940) D - E -
F *Prosobonia leucoptera* Tahitian Sandpiper: Tahiti, Moorea (1773) - I - -
A *Alca impennis* Great Auk: Funk Island, Iceland, Faroes, St Kilda, Orkney Islands (1844) - - E ?N
I *Raphus cucullatus* Dodo: Mauritius (1665) - I E -
I *'Ornithaptera' solitaria* Réunion Solitaire: Réunion (1710-1715) - - E -
I *Pezophaps solitarius* Rodrigues Solitaire: Rodrigues (1765) - - E -
P *Columba versicolor* Bonin Wood Pigeon: Bonin Islands (1889) - - - -
P *Columba jouyi* Ryukyu Wood Pigeon: Ryukyu Islands (1936) - - - -
N *Microgoura meeki* Solomon Islands Crowned-pigeon: Choiseul (1904) - I - -
P *Ptilinopus mercierii* Marquesas Fruit-dove: Marquesas Islands (1922) - I - -
I *Alextroenas nitidissima* Pigeon Hollandais: Mauritius (1835) - I E -
I *'Alextroenas' rodericana* Rodrigues Pigeon: Rodrigues (1726) - I - -
N *Charmosyna diadema* New Caledonia Lorikeet: New Caledonia (1860) - - - -
P *Nestor productus* Norfolk Islands Kaka: Phillip Island (1851) - - E -
P *Cyanoramphus zealandicus* Black-fronted Parakeet: Tahiti (1844) - - - -
P *Cyanoramphus ulieranus* Raiatea Parakeet: Raiatea (1773) - - - -
I *Lophopsittacus mauritianus* Mauritius Parrot: Mauritius (1675) - I - -
I *'Lophopsittacus' bensoni* Mauritius Grey Parrot: Mauritius (1765) - I - -
I *'Necropsittacus' rodericanus* Rodrigues Parrot: Rodrigues (1761) - I - -
I *Mascarinus mascarinus* Mascarene Parrot: Réunion (1775) - - - -
I *Psittacula wardi* Seychelles Alexandrine Parrot: Seychelles (1870) D - E -
I *Psittacula exsul* Rodrigues Ring-necked Parakeet: Rodrigues (1876) - - - -
C *Ara tricolor* Cuban Red Macaw: Cuba (1885) - - E -
I *Coua delalandei* Snail-eating Coua: Madagascar (1930) D I E -
P *Sceloglaux albifacies* Laughing Owl: New Zealand (1914) D I - -
I *'Athene' murivora* Rodrigues Little Owl: Rodrigues (1726) - - - -
N *Aegotheles savesi* New Caledonia Owlet-frogmouth: New Caledonia (1880) - - - -
C *Siphonorhis americanus* Jamaica Least Pauraque: Jamaica (1859) - I - -
P *Halcyon miyakoensis* Ryukyu Kingfisher: Ryukyu Islands (1841) - - - -
P *Xenicus longipes* Bush Wren: New Zealand (1972) - I - -
P *Xenicus lyalli* Stephen Islands Wren: Stephen Island (1874) - I - -
I *Hypsipetes* sp. nov.: Rodrigues (?1600s) - - - -
P *Zoothera terrestris* Kittlitz's Thrush: Bonin Islands (1928) - I - -
C *Turdus ravidus* Grand Cayman Thrush: Grand Cayman Island (1938) D - - -
I Babbler sp. nov.: Rodrigues (?1600s) - - - -
P *Acrocephalus familiaris* Laysan Millerbird: Laysan (1912-1923) - I - -
D *Eutrichomyias rowleyi* Cærulean Paradise-flycatcher: Sangihe (1978) D - - -
P *Turnagra capensis* Piopio: New Zealand (1955) - I - -
F *Dicaeum quadricolor* Four-coloured Flowerpecker: Cebu Island (1906) D - - -
P *Zosterops strenua* Lord Howe White-eye: Lord Howe Island (1928) - I E -
P *Moho apicalis* Oahu Oo: Oahu (1837) D I E -
P *Moho nobilis* Hawaii Oo: Hawaii (1934) D I E -
P *Chaetoptila angustipluma* Kioea: Hawaii (1860) - - - -
P *Paroreomyza flammea* Kakawihie: Molokai (1963) - - - -
P *Hemignathus sagittirostris* Greater Amakihi: Hawaii (1900) D - - -
P *Rhodacanthis palmeri* Greater Koa-finch: Hawaii (1896) - - - -
P *Rhodacanthis flaviceps* Lesser Koa-finch: Hawaii (1891) - - - -
P *Psittirostra kona* Kona Grosbeak: Hawaii (1894) - - - -
P *Ciridops anna* Ula-ai-hawane: Hawaii (1892) - - - -
P *Drepanis pacifica* Hawaii Mamo: Hawaii (1899) D - E -
P *Drepanis funerea* Black Mamo: Molokai (1907) - - - -
P *Chaunoproctus ferreorostris* Bonin Grosbeak: Bonin Islands (1890) D I - -
P *Aplonis pelzelni* Pohnpei Mountain Starling: Pohnpei (1956) - - - -
P *Aplonis corvina* Kosrae Mountain Starling: Kosrae (1828) - I - -
P *Aplonis mavornata* Mysterious Starling: Mauke (1825) - I - -
P *Aplonis fusca* Norfolk Islands Starling: Norfolk Island (1925) - - - -
I *Necrospar rodericanus* Rodrigues Starling: Rodrigues (1726) - - - -
I *Fregilupus varius* Réunion Starling: Réunion (1850-1860) - I - -
P *Heteralocha acutirostris* Huia: New Zealand (1907) D I E -