

Birds and Mammals Recorded from the Mariana Islands

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Abstract There have been 163 species of birds and 29 species of mammals documented to occur in the Mariana Islands. Changes from past lists reflect many recent records, archaeological excavations, and extinctions. The number of resident bird and mammal species is low, but a large number of migrant or vagrant species are recorded.

Key words: Marianas, birds, mammals.

The vertebrate fauna of the Northern Mariana Islands are not well known because most of the islands are small and remote. Recent work by the Division of Fish and Wildlife, the U.S. Fish and Wildlife Service, and independent researchers has greatly increased data on the status and distribution of birds, mammals, and lizards. Eldredge (1991) recently compiled a checklist of marine mammals in Micronesia. Reichel and Glass (1991) compiled an updated checklist of birds for the Marianas and an extensive bibliography of the original references and earlier work. The addition of many new records, the further decline of birds on Guam, and archaeological excavations on Rota have resulted in significant recent changes to the list of birds. Also, recent trips to the northern islands have allowed us to assess the status of the few resident mammals. I have compiled a revised checklist of the birds and mammals that have been recorded in the Marianas.

Methods and Study Area

The Marianas Archipelago stretches 812 km north-south in the western Pacific between 13°14' and 20°32'N latitude. The Archipelago contains 15 islands in two arcs. The southern arc from Guam to Farallon de Medinilla contains older islands of upthrust coral limestone. The northern arc comprises nine islands of more recent volcanic origin ranging in size from approximately 2.5 (Uracas) to 48 km² (Pagan).

I compiled checklists of all known birds and mammals recorded in the Marianas from ear-

lier checklists, literature, unpublished reports on file at the Division of Fish and Wildlife (DFW), and the Division of Aquatic and Wildlife Resources, Guam (DAWR). I followed the bird taxonomy, and with a few exceptions, the common names of Sibley and Monroe (1990). Mammal taxonomy follows that of Honacki *et al.* (1982). New bird records compiled by DFW since Stinson *et al.* (1991) will be described elsewhere. The bird list is largely a revision of that compiled by Reichel and Glass (1991), with the additions of new records, changes in status, and recent archaeological discoveries. In some cases I have changed the abundance listed for islands where new information has become available, species on Guam have further declined, or where I disagreed with their assessment. I did not distinguish between common and abundant species. Reichel and Glass (1991) provided an extensive bibliography with the original citations for each island record. I have listed the most recent or helpful references for each species. Citations of papers "in prep." usually indicated there have been additional records since earlier published papers. I have excluded those species for which only hypothetical records exist, and included only those with reasonably good documentation. The listings of marine mammals are largely derived from Eldredge (1991) with the addition of reports from DFW files.

Results

Species listed which need further explanation(†) are discussed below. Authorities listed

for a scientific name are placed in parentheses “(···)” if the genus listed is different from the original genus name. Islands where the species have been reported are abbreviated in order of their location from south to north as follows: GU = Guam, RO = Rota, AG = Aguiguan, TI = Tinian, SA = Saipan, ME = Medinilla, AN = Anatahan, SR = Sarigan, GG = Guguan, AL = Alamagan, PA = Pagan, AR = Agrihan, AS = Asuncion, MA = Maug, UR = Uracas. An indication of abundance follows each island abbreviation as follows: c = common, u = uncommon, r = rare, h = hypothetical (uncertain identification, or lacks documentation), x = historical extinction, e = prehistoric extinction, and d = confined domestic herds are present, but no feral populations are known to exist. In cases where the status is uncertain more than one indicator may be used (rx = rare or extinct). No indication of abundance is listed for many of the marine mammals because little data is available. For birds and terrestrial mammals, the listing of islands is followed by an indication of status. “Resident” status means the species is known to breed on at least one island. Species identified in subfossil remains are assumed to have been residents. Species identified as “migrants” appear more or less annually during migration. “Visitors” appear less frequently than regular migrants. “Accidentals” are species far from their normal range which have been recorded only once. Introduced species are residents that became established through intentional or unintentional introductions by man to the islands.

1. List of Birds (class AVES) Reported in the Mariana Islands

Order CRACIFORMES Family Megapodiidae

Micronesian Megapode [*Megapodius laperouse* Gaimard, 1823]: GU-x, RO-e, AG-u, TI-x, SA-r, ME-h, AN-u, SR-c, GG-c, AL-r, PA-u, AR-r, AS-r, MA-c, UR-r; resident; (Stinson and Glass, 1992).

Order GALLIFORMES Family Phasianidae

Black Francolin [*Francolinus francolinus* (Lin-

naeus, 1766)]: GU-u; introduced resident; (Drahos, 1977; DAWR files).

Blue-breasted Quail [*Coturnix chinensis* (Linnaeus, 1766)]: GU-u; introduced resident; (DAWR files; Jenkins, 1983).

Red Junglefowl* [*Gallus gallus* (Linnaeus, 1758)]: GU-x, RO-rx, AN-rx, AL-rx, PA-rx; introduced resident; (Pratt *et al.*, 1987; Reichel and Glass, 1991).

misc. introductions* [Phasianidae spp.]: GU-x, SA-x; failed introductions; (Reichel and Glass, 1991; U.S. Navy, 1949?).

Order ANSERIFORMES Family Anatidae

Tundra Swan [*Cygnus columbianus* (Ord, 1815)]: RO-r; accidental; (Stinson *et al.*, 1991).

Eurasian Wigeon [*Anas penelope* Linnaeus, 1758]: GU-r, TI-r, SA-r PA-r; migrant; (Glass *et al.*, 1990; Stinson and Reichel, in prep.).

American Wigeon [*Anas americana* Gmelin, 1789]: GU-r; accidental; (Maben and Wiles, 1981).

Falcated Duck [*Anas falcata* Georgi, 1775]: SA-r; visitor; (Glass *et al.*, 1990).

Gadwall [*Anas strepera* Linnaeus, 1758]: GU-r, TI-r, SA-r; migrant; (Glass *et al.*, 1990; Wiles *et al.*, 1993).

Common Teal [*Anas crecca* Linnaeus, 1758]: GU-r, RO-r, TI-h, SA-r, PA-r; migrant; (Glass *et al.*, 1990).

Mallard [*Anas platyrhynchos* Linnaeus, 1758]: SA-r, SR-r, PA-r; visitor; (DFW files; Glass *et al.*, 1990).

Mariana Mallard [*A. p. oustaleti* Salvadori, 1894]: GU-x, TI-x, SA-x; resident; (Reichel and Lemke, in prep.).

Spot-billed Duck [*Anas poeciloryncha* Forster, 1781]: GU-r, SA-r; visitor; (DFW files; Wiles *et al.*, 1987).

Northern Pintail [*Anas acuta* Linnaeus, 1758]: GU-c, RO-r, TI-r, SA-c, PA-r; migrant; (Glass *et al.*, 1990; Stinson and Reichel, in prep.).

Garganey [*Anas querquedula* Linnaeus, 1758]: GU-r, TI-r, SA-r; migrant; (Glass *et al.*, 1990; Stinson and Reichel, in prep.).

Northern Shoveler [*Anas clypeata* Linnaeus, 1758]: GU-r, TI-r, SA-r, PA-r; migrant; (Glass *et al.*, 1990).

Rota Duck [Anatidae spp.]: RO-e; prehistoric

resident; (Steadman, 1992).

Common Pochard [*Aythya ferina* (Linnaeus, 1758)]: GU-r, SA-r; migrant; (Stinson *et al.*, 1991).

Tufted Duck [*Aythya fuligula* (Linnaeus, 1758)]: GU-c, RO-r, TI-r, SA-c, PA-u; migrant; (Glass *et al.*, 1990; Stinson and Reichel, in prep.).

Greater Scaup [*Aythya marila* (Linnaeus, 1758)]: SA-r; visitor; (Glass *et al.*, 1990).

Red-breasted Merganser [*Mergus serrator* Linnaeus, 1758]: TI-r; accidental; (Stinson *et al.*, 1991).

Order UPUPIFORMES

Family Upupidae

Eurasian Hoopoe [*Upupa epops* Linnaeus, 1758]: SA-r; accidental; (Stinson *et al.*, 1991).

Order CORACIIFORMES

Family Alcedinidae

Common Kingfisher [*Alcedo atthis* (Linnaeus, 1758)]: GU-r; accidental; (Wiles *et al.*, 1993).

Family Dacelonidae

Micronesian Kingfisher[#] [*Todiramphus cinnamominus* (Swainson, 1821)]: GU-x; resident; (DAWR files).

Collared Kingfisher [*Todiramphus chloris* (Boddaert, 1783)]: RO-c, AG-c, TI-c, SA-c, SR-c, AL-c, PA-c, AR-c, AS-c, MA-c; resident; (DAWR files).

Order PSITTACIFORMES

Family Psittacidae

undescribed parrot [Psittacidae spp.]: RO-e; prehistoric resident; (Steadman, 1992).

Order APODIFORMES

Family Apodiidae

Guam Swiftlet [*Collocalia [vanikorensis] bartschi* (Mearns, 1909)]: GU-r, RO-x, AG-c, SA-c; resident; (DAWR, DFW files).

Fork-tailed Swift [*Apus pacificus* (Latham, 1802)]: GU-r, RO-r, SA-r; visitor; (DAWR files; Glass *et al.*, 1990; Wiles *et al.*, 1993).

Order STRIGIFORMES

Family Strigidae

Short-eared Owl [*Asio flammeus* (Pontoppidan, 1763)]: GU-r, RO-r, TI-r, SA-r, PA-r; visitor;

(DAWR files; Glass *et al.*, 1990).

Order COLUMBIFORMES

Family Columbidae

Rock Pigeon[#] [*Columba livia* Gmelin, 1789]: GU-u, RO-r, TI-r, SA-r, PA-x; introduced; (DAWR, DFW files; Reichel and Glass, 1991).

Island Collared-Dove [*Streptopelia bitorquata* (Temminck, 1810)]: GU-r, RO-c, AG-u, TI-c, SA-c, ME-h; introduced; (DAWR files; Engbring *et al.*, 1986).

White-throated Ground-Dove [*Gallicolumba xanthonura* (Temminck, 1823)]: GU-x, RO-c, AG-c, TI-c, SA-c, ME-h, AN-u, SR-u, GG-u, AL-u, PA-c, AR-u, AS-r; resident; (DAWR, DFW files).

giant ground-dove [*Gallicolumba* new spp.]: RO-e; prehistoric resident; (Steadman, 1992).

Mariana Fruit-Dove [*Ptilinopus roseicapilla* (Lesson, 1831)]: GU-x, RO-c, AG-c, TI-c, SA-c; resident; (DAWR files; Engbring *et al.*, 1986).

Micronesian Imperial-Pigeon [*Ducula oceanica* (Lesson and Garnot, 1826)]: RO-e; prehistoric resident; (Steadman, 1992).

Order GRUIFORMES

Family Rallidae

Guam Rail[#] [*Gallirallus owstoni* (Rothschild, 1895)]: GU-x, RO-i; TI-e?; resident; (DAWR, DFW files; Steadman, pers. comm.).

White-browed Crake [*Porzana cinerea* (Vieillot, 1819)]: GU-x, RO-e; resident; (Pratt *et al.*, 1987; Steadman, 1992).

swamphen? [cf. *Porphyrio*? spp.]: RO-e; prehistoric resident; (Steadman, 1992).

Mariana Common Moorhen [*Gallinula chloropus* (Linnaeus, 1758)]: GU-u, RO-e, TI-u, SA-u, PA-x; resident; (Steadman 1992, Stinson *et al.*, 1990).

Common Coot [*Fulica atra* Linnaeus, 1758]: GU-r, TI-r, SA-r; visitor; (Hachisuka *et al.*, 1932; Hartert, 1898).

Order CICONIIFORMES

Family Scolopacidae

Swinhoe's Snipe [*Gallinago megala* Swinhoe, 1861]: GU-u, RO-u, TI-u, SA-u; migrant; (Glass *et al.*, 1990; Stinson *et al.*, in prep.).

Common Snipe [*Gallinago gallinago* (Linnaeus, 1758)]: GU-r, RO-r, SA-r; migrant; (Stinson *et*

- al.*, 1991; Takatsukasa and Yamashina, 1931; Wiles *et al.*, 1993).
- Black-tailed Godwit [*Limosa limosa* (Linnaeus, 1758)]: GU-r, SA-r; visitor; (Glass *et al.*, 1990).
- Bar-tailed Godwit [*Limosa lapponica* (Linnaeus, 1758)]: GU-u, SA-u; migrant; (Glass *et al.*, 1990; Stinson *et al.*, in prep.).
- Little Curlew [*Numenius minutus* Gould, 1841]: GU-r, SA-r; visitor; (Glass *et al.*, 1990).
- Whimbrel [*Numenius phaeopus* (Linnaeus, 1758)]: GU-c, RO-u, TI-u, SA-c, ME-h, AN-r, GG-u, PA-u, AS-u; migrant; (Stinson *et al.*, in prep.).
- Bristle-thighed Curlew [*Numenius tahitiensis* (Gmelin, 1789)]: GU-r, SA-r, GG-r; visitor; (Glass *et al.*, 1990; Stinson *et al.*, in prep.).
- Eurasian Curlew [*Numenius arquata* (Linnaeus, 1758)]: GU-r, SA-r; visitor; (Stinson *et al.*, 1991; Wiles *et al.*, 1993).
- Far Eastern Curlew [*Numenius madagascariensis* (Linnaeus, 1766)]: GU-r, SA-r; visitor; (Hartert 1898; Stinson *et al.*, 1991).
- Common Redshank [*Tringa totanus* (Linnaeus, 1758)]: GU-r, SA-r, AR-h; visitor; (DFW files; Glass *et al.*, 1990; Wiles *et al.*, 1987).
- Marsh Sandpiper [*Tringa stagnatilis* (Bechstein, 1803)]: GU-r, TI-r, SA-r; migrant; (Beck, 1985; Stinson *et al.*, in prep.).
- Common Greenshank [*Tringa nebularia* (Gunnerus, 1767)]: GU-r, SA-r, PA-r; migrant; (Glass *et al.*, 1990; Stinson *et al.*, in prep.).
- Greater Yellowlegs [*Tringa melanoleuca* (Gmelin, 1789)]: RO-r; accidental; (Glass *et al.*, 1990).
- Green Sandpiper [*Tringa ochropus* Linnaeus, 1758]: SA-r; visitor; (DFW files; Stinson *et al.*, 1991).
- Wood Sandpiper [*Tringa glareola* Linnaeus, 1758]: GU-u, RO-r, TI-r, SA-u, PA-r; migrant; (Glass *et al.*, 1990; Stinson *et al.*, in prep.).
- Terek Sandpiper [*Tringa cinerea* (Guldenstadt, 1775)]: GU-r, SA-r, PA-r; visitor; (Stinson *et al.*, 1991; Stinson *et al.*, in prep.).
- Common Sandpiper [*Tringa hypoleucos* Linnaeus, 1758]: GU-u, RO-u, SA-u, AN-u, PA-u; migrant; (Stinson *et al.*, 1991; Stinson *et al.*, in prep.).
- Grey-tailed Tattler [*Tringa brevipes* (Vieillot, 1816)]: GU-c, RO-u, TI-u, SA-c, SR-r, PA-u; migrant; (Stinson *et al.*, 1991; Stinson *et al.*, in prep.).
- Wandering Tattler [*Tringa incana* (Gmelin, 1789)]: GU-c, RO-u, TI-u, SA-u, ME-u, AN-u, SR-u, GG-u, PA-u, AR-u, AS-u, MA-u, UR-u; migrant; (Glass *et al.*, 1990; Stinson *et al.*, in prep.).
- Ruddy Turnstone [*Arenaria interpres* (Linnaeus, 1758)]: GU-c, RO-c, TI-c, SA-c, AN-u, SR-u, GG-u, PA-u, AR-u, AS-u, MA-u, UR-u; migrant; (Glass *et al.*, 1990; Stinson *et al.*, in prep.).
- dowitcher spp. [*Limnodromus* spp.] SA-r; visitor; (Wiles *et al.*, 1993).
- Great Knot [*Calidris tenuirostris* (Horsfield, 1821)]: GU-r, SA-r; visitor; (Stinson *et al.*, 1991; Wiles *et al.*, 1993).
- Sanderling [*Calidris alba* (Pallas, 1764)]: GU-u, SA-r; visitor; (Glass *et al.*, 1990; Stinson *et al.*, in prep.).
- Little Stint [*Calidris minuta* (Leisler, 1812)]: SA-r; visitor; (Glass *et al.*, 1990).
- Rufous-necked Stint [*Calidris ruficollis* (Pallas, 1776)]: GU-u, RO-r, SA-u; migrant; (Glass *et al.*, 1990; Stinson *et al.*, in prep.; Williams and Grout, 1985).
- Temminck's Stint [*Calidris temminckii* (Leisler, 1812)]: SA-r; visitor; (Glass *et al.*, 1990; Stinson *et al.*, in prep.).
- Long-toed Stint [*Calidris subminuta* (Middendorff, 1853)]: GU-r, SA-r; visitor; (Stinson *et al.*, 1991; Wiles *et al.*, 1993).
- Pectoral Sandpiper [*Calidris melanotos* (Vieillot, 1819)]: GU-r, TI-r, SA-r; visitor; (Glass *et al.*, 1990; Stinson *et al.*, in prep.).
- Sharp-tailed Sandpiper [*Calidris acuminata* (Horsfield, 1821)]: GU-u, RO-u, SA-u, PA-r; migrant; (Glass *et al.*, 1990; Stinson *et al.*, in prep.).
- Dunlin [*Calidris alpina* (Linnaeus, 1758)]: GU-r, SA-r; visitor; (Stinson *et al.*, in prep.; Williams and Grout, 1985).
- Curlew Sandpiper [*Calidris ferruginea* (Pontoppidan, 1763)]: GU-r, accidental; (Wiles *et al.*, 1987).
- Ruff [*Philomachus pugnax* (Linnaeus, 1758)]: GU-r, RO-r, SA-r; visitor; (Glass *et al.*, 1990; Stinson *et al.*, in prep.).

Family Charadriidae

Eurasian Oystercatcher [*Haemantopus ostrale-*

gus Linnaeus, 1758]: GU-r; accidental; (Maben and Wiles, 1981).
 Black-winged Stilt [*Himantopus himantopus* (Linnaeus, 1758)]: GU-r, SA-r; visitor; (Stinson *et al.*, 1991; Wiles *et al.*, 1993; Stinson *et al.*, in prep.).
 Pacific Golden Plover [*Pluvialis fulva* (Gmelin, 1789)]: GU-c, RO-c, AG-u, TI-c, SA-c, ME-h, AN-c, SR-u, GG-c, AL-u, PA-c, AR-u, AS-u, UR-u; migrant; (Stinson *et al.*, in prep.).
 Grey Plover [*Pluvialis squatarola* (Linnaeus, 1758)]: GU-u, RO-r, SA-r; migrant; (Stinson *et al.*, in prep.).
 Common Ringed Plover [*Charadrius hiaticula* Linnaeus, 1758]: GU-r, SA-r; visitor; (Glass *et al.*, 1990; Stinson *et al.*, in prep.).
 Little Ringed Plover [*Charadrius dubius* Scopoli, 1786]: GU-r; visitor; (Wiles *et al.*, 1993).
 Kentish Plover [*Charadrius alexandrinus* Linnaeus, 1758]: GU-r, SA-r; visitor; (Glass *et al.*, 1990).
 Mongolian Plover [*Charadrius mongolus* Pallas, 1776]: GU-r, RO-r, TI-h, SA-u; migrant; (DFW files; Stinson *et al.*, in prep.).
 Greater Sand Plover [*Charadrius leschenaultii* Lesson, 1826]: GU-r, RO-r, SA-r; visitor; (Glass *et al.*, 1990; Stinson *et al.*, in prep.).

Family Glareolidae

Oriental Pratincole [*Glareola maldivarum* Forster, 1795]: RO-r, SA-r; visitor; (Glass *et al.*, 1990).

Family Laridae

Long-tailed Jaeger [*Stercorarius longicaudus* Vieillot, 1819]: SA-r; visitor; (DFW files).
 Herring Gull [*Larus argentatus* Pontoppidan, 1763]: AR-h, MA-r; visitor; (Glass *et al.*, 1990).
 Slaty-backed Gull [*Larus schistisagus* Stejneger, 1884]: GU-r; visitor; (Wiles *et al.*, 1993).
 Common Black-headed Gull [*Larus ridibundus* Linnaeus, 1766]: GU-r, SA-r; visitor; (Glass *et al.*, 1990; Stinson and Reichel, in prep.).
 Laughing Gull [*Larus atricilla* Linnaeus, 1758]: SA-r; accidental; (Stinson *et al.*, 1991).
 Gull-billed Tern [*Sterna nilotica* Gmelin, 1789]: GU-r, SA-h; visitor; (Wiles *et al.*, 1993).
 Great Crested Tern [*Sterna bergii* Lichtenstein, 1823]: GU-r, RO-r, SA-r; visitor; (Glass *et al.*, 1990).

Black-naped Tern [*Sterna sumatrana* Raffles, 1822]: GU-r, RO-h, PA-h; visitor; (Reichel and Glass, 1991; Drahos, 1977).
 Common Tern [*Sterna hirundo* Linnaeus, 1758]: GU-r, SA-r, PA-h; visitor; (Glass *et al.*, 1990; Stinson and Reichel, in prep.).
 Little Tern [*Sterna albifrons* Pallas, 1764]: GU-u, RO-u, SA-u; migrant; (Reichel *et al.*, 1989; Stinson and Reichel, in prep.).
 Grey-backed Tern [*Sterna lunata* Peale, 1848]: TI-r, GG-c, AL-r, UR-r; resident; (Clapp and Hatch, 1986; Reichel, 1991).
 Sooty Tern [*Sterna fuscata* Linnaeus, 1766]: GU-u, RO-u, AG-c, TI-u, SA-u, ME-u, AN-u, SR-u, GG-c, AL-u, AR-u, AS-c, MA-u, UR-c; resident; (Reichel, 1991).
 Whiskered Tern [*Chlidonias hybridus* (Pallas, 1811)]: GU-r, SA-r; visitor; (Glass *et al.*, 1990; Wiles *et al.*, 1993).
 White-winged Tern [*Chlidonias leucopterus* (Temminck, 1815)]: GU-r, TI-r, SA-r; visitor; (Stinson *et al.*, 1991; Stinson and Reichel, in prep.).
 Brown Noddy [*Anous stolidus* (Linnaeus, 1758)]: GU-c, RO-c, AG-c, TI-u, SA-c, ME-c, AN-u, SR-c, GG-c, AL-c, PA-c, AR-c, AS-c, MA-c, UR-c; resident; (Reichel, 1991).
 Black Noddy [*Anous minutus* Boie, 1844]: GU-u, RO-u, AG-u, TI-u, SA-u, ME-c, AN-u, SR-u, GG-c, AL-u, PA-u, AR-u, AS-u, MA-c; resident; (Reichel, 1991; Wiles *et al.*, 1993).
 Blue Noddy [*Procelsterna cerulea* (Bennett, 1840)]: RO-e; prehistoric resident; (Steadman, 1992).
 Common White Tern [*Gygis alba* (Sparrman, 1786)]: GU-r, RO-c, AG-c, TI-c, SA-c, ME-c, AN-r, SR-u, GG-c, AL-c, PA-c, AR-c, AS-c, MA-c, UR-c; resident; (Reichel, 1991).

Family Accipitridae

Osprey [*Pandion haliaetus* (Linnaeus, 1758)]: GU-r, SA-r, PA-r; visitor; (Stinson *et al.*, 1991; Wiles *et al.*, 1987).
 Black Kite [*Milvus migrans* (Boddaert, 1783)]: TI-r, PA-r; visitor; (Glass *et al.*, 1990; Stinson *et al.*, 1991).
 Chinese Goshawk [*Accipiter soloensis* (Horsfield, 1821)]: GU-r, RO-r, TI-r, SA-r; visitor; (Stinson and Reichel in prep.; Wiles *et al.*, 1993).
 Japanese Sparrowhawk [*Accipiter gularis*

(Temminck and Schlegel, 1844): GU-r; visitor; (Reichel, 1991).

Common Buzzard [*Buteo buteo* (Linnaeus, 1758)]: GU-h, AN-r, SR-r, PA-r; resident; (Reichel *et al.*, in press).

Family Falconidae

Common Kestrel [*Falco tinnunculus* Linnaeus, 1758]: SA-r; visitor; (Glass *et al.*, 1990).

Amur Falcon [*Falco amurensis* Radde, 1863]: SA-r, SR-r; visitor; (Glass *et al.*, 1990; Stinson *et al.*, 1991).

Peregrine Falcon [*Falco peregrinus* Tunstall, 1771]: GU-r, SA-r; visitor; (Wiles *et al.*, 1993).

Family Phaethontidae

Red-tailed Tropicbird [*Phaethon rubricauda* Boddaert, 1783]: GU-r, RO-u, AG-u, TI-u, SA-u, ME-u, SR-u, GG-c, PA-u, AR-u, AS-u, MA-c, UR-u; resident; (Reichel, 1991).

White-tailed Tropicbird [*Phaethon lepturus* Daudin, 1802]: GU-u, RO-u, AG-u, TI-u, SA-u, ME-u, AN-u, SR-u, GG-c, AL-u, PA-u, AR-c, AS-c, MA-c, UR-u; resident; (Reichel, 1991).

Family Sulidae

Masked Booby [*Sula dactylatra* Lesson, 1831]: GU-r, RO-u, AG-u, TI-u, SA-u, ME-c, AN-u, SR-u, AL-r, AS-u, MA-c, UR-c; resident; (Reichel, 1991).

Red-footed Booby [*Sula sula* Linnaeus, 1766]: GU-u, RO-c, AG-u, SA-u, ME-c, AN-u, SR-u, GG-c, AL-u, PA-u, AR-u, AS-u, MA-c, UR-u; resident; (Reichel, 1991).

Brown Booby [*Sula leucogaster* (Boddaert, 1783)]: GU-c, RO-c, AG-c, TI-c, SA-c, ME-c, AN-c, SR-c, GG-c, AL-c, PA-c, AR-c, AS-c, MA-c, UR-c; resident; (Reichel, 1991).

Family Phalacrocoracidae

Little Pied Cormorant [*Phalacrocorax melanoleucos* (Vieillot, 1817)]: SA-r, PA-r; visitor; (Glass *et al.*, 1990; Stinson *et al.*, 1991).

Great Cormorant [*Phalacrocorax carbo* (Linnaeus, 1758)]: GU-h, PA-r; visitor; (Glass *et al.*, 1990; Wiles *et al.*, 1993).

Family Ardeidae

Little Egret [*Egretta garzetta* (Linnaeus, 1758)]: GU-r, SA-r, PA-r; migrant; (Stinson and Rei-

chel, in prep.; Wiles *et al.*, 1993).

Pacific Reef-Egret [*Egretta sacra* (Gmelin, 1789)]: GU-c, RO-c, AG-c, TI-c, SA-c, ME-u, AN-u, SR-u, GG-u, AL-h, PA-u, AR-u, AS-u, MA-u; resident; (DFW files; Reichel and Glass, 1991).

Grey Heron [*Ardea cinerea* Linnaeus, 1758]: GU-r, RO-r, SA-r; visitor; (Stinson and Reichel, in prep.; Wiles *et al.*, 1993).

Great Egret [*Casmerodius albus* (Linnaeus, 1758)]: GU-r, SA-r; visitor; (Stinson and Reichel, in prep.; Wiles *et al.*, 1993).

Intermediate Egret [*Mesophoyx intermedia* (Wagler, 1829)]: GU-u, RO-u, TI-u, SA-u, GG-u, PA-u, AR-r, MA-r; migrant; (Glass *et al.*, 1990; Stinson and Reichel, in prep.).

Cattle Egret [*Bubulcus ibis* (Linnaeus)]: GU-c, RO-c, AG-u, TI-c, SA-c, GG-u, PA-c; migrant; (Glass *et al.*, 1990; Stinson and Reichel, in prep.).

Chinese Pond-Heron [*Ardeola bacchus* (Bonaparte, 1855)]: GU-r; visitor; (Wiles *et al.*, 1993).

Striated Heron [*Butoroides striatus* (Linnaeus, 1758)]: GU-r, SA-r; visitor; (Glass *et al.*, 1990; Wiles *et al.*, 1993).

Black-crowned Night-Heron [*Nycticorax nycticorax* (Linnaeus, 1758)]: GU-r, RO-r, TI-r, SA-r; visitor; (Glass *et al.*, 1990; Stinson and Reichel, in prep.).

Rufous Night-Heron [*Nycticorax caledonicus* (Gmelin, 1789)]: PA-r; visitor; (Glass *et al.*, 1990).

Yellow Bittern [*Ixobrychus sinensis* (Gmelin, 1789)]: GU-u, RO-c, AG-r, TI-c, SA-c; resident; (Engbring *et al.*, 1986).

Black Bittern [*Ixobrychus flavicollis* (Latham, 1790)]: GU-r; accidental; (Seale, 1901).

Family Fregatidae

Great Frigatebird[†] [*Fregata minor* (Gmelin, 1789)]: GU-u, RO-c, AG-r, TI-r, SA-r, ME-r, AN-r, SR-r, GG-c, AR-r, AS-r, MA-c, UR-u; resident; (DFW files; Reichel, 1991).

Lesser Frigatebird [*Fregata ariel* (Gray, 1845)]: GU-h, RO-r, SA-r, AS-h, MA-h; visitor; (DFW files; Reichel, 1991; Reichel and Glass, 1991).

Family Procellariidae

Tahiti Petrel [*Pseudobulweria rostrata* (Peale, 1848)]: GU-r; visitor; (Wiles *et al.*, 1987).

Black-winged Petrel [*Pterodroma nigripennis* (Rothschild, 1893)]: PA-r, AS-r; visitor; (Tanaka *et al.*, 1985).

White-necked Petrel [*Pterodroma cervicalis* (Salvin, 1891)]: GU-r; visitor; (Glass *et al.*, 1990).

Bonin Petrel [*Pterodroma hypoleuca* (Salvin, 1888)]: SA-r; visitor; (DFW files; Stinson *et al.*, 1991).

Juan Fernandez Petrel [*Pterodroma externa* (Salvin, 1875)]: GU-r; visitor; (Wiles *et al.*, 1993).

Bulwer's Petrel [*Bulweria bulweria* (Jardine and Selby, 1828)]: AG-u, SA-u, AR-u, AS-u, UR-u; visitor; (Glass *et al.*, 1990).

Streaked Shearwater [*Calonectris leucomelas* (Temminck, 1835)]: GU-r; visitor; (Reichel and Glass, 1991; Wiles *et al.*, 1987).

Wedge-tailed Shearwater [*Puffinus pacificus* (Gmelin, 1789)]: GU-u, AG-u, SA-u, ME-u, SR-u, GG-u, AL-u, AR-c, AS-c, MA-u; resident; (Glass *et al.*, 1990; Reichel, 1991).

Short-tailed Shearwater [*Puffinus tenuirostris* (Temminck, 1835)]: GU-c, SA-r; visitor; (DFW files; Glass *et al.*, 1990).

Christmas Shearwater [*Puffinus nativitatis* Str-eets, 1877]: AG-r, SA-r; visitor; (DFW files; Glass *et al.*, 1990).

Newell's Shearwater [*Puffinus auricularis newelli* Henshaw, 1900]: GU-r, SA-r; visitor; (Drahoš, 1977; Jouanin, 1956).

Audubon's Shearwater [*Puffinus lherminieri* Lesson, 1839]: GU-h, RO-r; visitor, prehistoric and possibly historical resident; (Steadman, 1992; Reichel and Glass, 1991; Wiles *et al.*, 1993).

Black-footed Albatross [*Diomedea nigripes* Audubon, 1849]: GU-h, SA-h, GG-h, PA-h, AR-x, AS-h, UR-h; visitor, former resident; (Jouanin, 1959; Reichel and Glass, 1991).

Laysan Albatross [*Diomedea immutabilis* Rothschild, 1893]: RO-r, UR-h; visitor; (Glass *et al.*, 1990; Reichel and Glass, 1991).

Leach's Storm-Petrel [*Oceanodroma leucorhoa* (Vieillot, 1818)]: GU-r, SA-r; visitor; (Glass *et al.*, 1990; Maben and Wiles, 1981).

Matsudaira's Storm-Petrel [*Oceanodroma matsudairae* Kuroda, 1922]: GU-u, SA-c, GG-c, PA-c, AR-c, AS-u, UR-c; visitor; (DFW files; Glass *et al.*, 1990).

Order PASSERIFORMES

Family Meliphagidae

Micronesian Honeyeater [*Myzomela rubrata* (Lesson, 1827)]: GU-x, RO-c, AG-c, TI-c, SA-c, AN-c, SR-c, GG-c, AL-c, PA-u, AR-c, AS-c, MA-r; resident; (Engbring *et al.*, 1986; Reichel and Glass, 1991; Savidge, 1987).

Family Corvidae

Mariana Crow [*Corvus kubaryi* Reichenow, 1885]: GU-r, RO-c; resident; (DAWR, DFW files).

Rufous Fantail [*Rhipidura rufifrons* (Latham, 1801)]: GU-x, RO-c, AG-c, TI-c, SA-c; resident; (Engbring *et al.*, 1986; Savidge, 1987).

Black Drongo [*Dicrurus macrocercus* (Vieillot, 1817)]: GU-u, RO-c; introduced; (DAWR, DFW files).

Tinian Monarch [*Monarcha takatsukasae* (Yamashina, 1931)]: TI-c; resident; (DFW files; Engbring *et al.*, 1986).

Guam Flycatcher [*Myiagra freycineti* Oustalet, 1881]: GU-x, RO-e; resident; (Savidge, 1987; Steadman, 1992).

Family Muscicapidae

Dusky Thrush [*Turdus naumanni* Temminck, 1820]: MA-r, UR-r; accidental; (Glass *et al.*, 1990).

Family Sturnidae

Micronesian Starling [*Aplonis opaca* (Kittlitz, 1833)]: GU-r, RO-c, AG-c, TI-c, SA-c, ME-h, AN-u, SR-c, GG-c, AL-c, PA-c, AR-c, AS-c, MA-c; resident; (DAWR, DFW files; Reichel and Glass, 1991).

White-cheeked Starling [*Sturnus cineraceus* Temminck, 1835]: SA-r; accidental; (Kishida, 1929).

Family Hirundinidae

Barn Swallow [*Hirundo rustica* Linnaeus, 1758]: GU-u, RO-u, TI-u, SA-u, UR-u; migrant; (Glass *et al.*, 1990; Stinson and Reichel, in prep.).

Family Zosteropidae

Bridled White-eye [*Zosterops conspicillatus* (Kittlitz, 1832)]: GU-x, RO-r, AG-c, TI-c, SA-c; resident; (DFW files; Engbring *et al.*, 1986; Sav-

idge, 1987).

Golden White-eye [*Cleptornis marchei* (Oustalet, 1889)]: AG-c, SA-c, TI-e; resident; (DFW files, Engbring *et al.*, 1986; Steadman, pers. comm.).

Family Sylviidae

Nightingale Reed-Warbler* [*Acrocephalus luscini* (Quoy and Gaimard, 1830)]: GU-x, AG-r, TI-e, SA-u, AL-u, PA-x; resident; (DFW files; Reichel *et al.*, 1992; Steadman, pers. comm.).

Famiy Passeridae

Eurasian Tree Sparrow [*Passer montanus* (Linnaeus, 1758)]: GU-c, RO-c, TI-c, SA-c; introduced; (Engbring *et al.*, 1986).

Black-backed Wagtail [*Motacilla lugens* (Gloger, 1829)]: GU-h, SA-r; visitor; (DFW files).

Yellow Wagtail [*Motacilla flava* Linnaeus, 1758]: RO-r; visitor; (Glass *et al.*, 1990).

Grey Wagtail [*Motacilla cinerea* Tunstall, 1771]: GU-r; visitor; (Maben and Wiles, 1981).
new parrot-finch [*Erythrura* spp.]: RO-e; prehistoric resident; (Steadman, 1992).

Black-headed Munia [*Lonchura malacca* (Linnaeus, 1766)]: GU-r; introduced resident; (DAWR files).

2. List of Mammals (Class MAMMALIA) Reported in the Marianas

Order INSECTIVORA

Family Soricidae

Musk Shrew [*Suncus murinus* (Linnaeus, 1766)]: GU-u, RO-c, TI-c, SA-c; introduced resident; (Barbehenn, 1974; Wiles *et al.*, 1990).

Order CHIROPTERA

Family Pteroodidae

Marianas Fruit Bat [*Pteropus mariannus* Desmarest, 1822]: GU-r, RO-c, AG-u, TI-rx, SA-rx, AN-c, SR-u, GG-u, AL-r, PA-u, AR-u, AS-u, MA-r; (DAWR, DFW files; Wiles *et al.*, 1989).

Little Mariana Fruit Bat* [*Pteropus takudae* Tate, 1934]: GU-x ?; (USFWS 1990).

Family Emballonuridae

Pacific Sheath-tailed Bat [*Emballonura semicaudata* (Peale, 1848)]: GU-x, RO-x, AG-r, MA-?; (DFW files; Lemke, 1986).

Order CARNIVORA

Family Canidae

Domestic Dog [*Canis familiaris* Linnaeus, 1758]: GU-c, RO-c, AG-rx, TI-c, SA-c, AL-rx, AR-r; domestic, introduced; (DFW files). A single male dog exists on Aguiguan.

Family Felidae

Domestic Cat [*Felis catus* Linnaeus, 1758]: GU-c, RO-c, AG-x, TI-c, SA-c, SR-r, PA-r; introduced; (DFW files).

Order CETACEA

Family Delphinidae

Short-finned Pilot Whale [*Globicephala macrohynchus* Gray, 1846]: GU; (Donaldson, 1983; Eldredge, 1991).

Risso's Dolphin [*Grampus griseus* (Cuvier, 1812)]: GU; (Miyazaki and Wada, 1978, *in* Eldredge, 1991).

Killer Whale [*Orcinus orca* (Linnaeus, 1758)]: GU; (Eldredge 1991; Kami and Hosmer, 1982).

Melon-headed Whale [*Peponocephala electra* (Gray, 1846)]: GU, SA; (DFW files; Donaldson, 1983; Eldredge, 1991).

Long-snouted Spinner Dolphin [*Stenella longirostris* (Gray, 1828)]: GU, AG, SA, PA, AR; common throughout Marianas waters; (DFW files; Eldredge, 1991).

Striped Dolphin [*Stenella coeruleoalba* (Meyen, 1833)]: GU, SA; (Eldredge, 1991).

Family Physeteridae

Pygmy Sperm Whale [*Kogia breviceps* (de Blainville, 1838)]: GU; (Eldredge, 1991; Kami and Lujan, 1976).

Dwarf Sperm Whale [*Kogia simus* (Owen, 1866)]: GU; (Eldredge, 1991).

Sperm Whale [*Physeter macrocephalus* Linnaeus, 1758]: GU; (Eldredge, 1991).

Family Ziphiidae

Cuvier's Beaked Whale [*Ziphius cavirostris* Cuvier, 1823]: "Mariana Islands"; (Masaki, 1972, *in* Eldredge, 1991).

Family Balaenopteridae

Sei Whale [*Balaenoptera borealis* Lesson, 1828]:

SA; (Masaki, 1972, *in* Eldredge, 1991).
 Bryde's whale [*Balaenoptera edeni* Anderson, 1878]: GU, "throughout the Marianas"; (Nishiwaki, 1966, *in* Eldredge, 1991).
 Humpback whale [*Megaptera novaengliae* (Borowski, 1781)]: GU, RO, "Mariana Islands"; (Eldredge, 1991; Leatherwood and Reeves, 1983).

Order SIRENIA
Family Dugongidae

Dugong [*Dugong dugon* (Muller, 1776)]: GU-r; visitor; (Eldredge, 1991).

Order ARTIODACTYLA
Family Suidae

Pig [*Sus scrofa* Linnaeus, 1758]: GU-c, RO-u, AG-x, TI-d, SA-d, AN-c, SR-c, PA-c, AR-c; introduced (DAWR, DFW files).

Family Cervidae

Philippine Deer* [*Cervus mariannus* (Kerr, 1792)]: GU-c, RO-c, TI-x, SA-u; introduced (DFW files).

Family Bovidae

Domestic Cattle [*Bos taurus* Linnaeus, 1766]: GU-d, RO-d, TI-d, SA-d, AL-c, PA-c, AG-r; introduced (DFW files).
 Asiatic Water Buffalo [*Bubalus bubalus* (Linnaeus, 1758)]: GU-r; introduced (DAWR files).
 Domestic Goat [*Capra hircus* Linnaeus, 1758]: GU-r, RO-d, AG-u, TI-d, SA-d, AN-c, SR-c, AL-c, PA-c, AR-c, MA-r; introduced (DAWR, DFW files). Two goats were sighted on Maug in 1987, but none were reported in 1988 or 1992.

Order RODENTIA
Family Muridae

House Mouse [*Mus musculus* Linnaeus, 1766]: GU-c, RO-u, TI-u, SA-u; introduced (DFW files; Wiles *et al.*, 1990).
 Polynesian Rat* [*Rattus exulans* (Peale, 1848)]: GU-u, RO-u?, AG-c, TI-r, SA-u, GG-c; introduced resident; (DFW files; Marshall, 1962).
 Norway Rat [*Rattus norvegicus* (Berkenhout, 1769)]: GU-u, TI-u, SA-c, UR-u; introduced resident; (DAWR, DFW files; Wiles *et al.*, 1990).

Roof Rat [*Rattus rattus* (Linnaeus, 1758)]: GU-c, RO-u ?, TI-c, SA-u ?; introduced resident; (DAWR, DFW files; Wiles *et al.*, 1990).

Discussion

Reichel and Glass (1991) listed 146 bird species, plus 11 hypotheticals. My bird list contains 163 documented species records including prehistoric extinctions recently discovered by Steadman (1992). Twenty-nine mammal species have been reported in the Marianas, including 15 terrestrial and 14 marine species. The only native land mammals in the Marianas are three bat species. The Polynesian rat is believed to have been introduced with aboriginal man at least 3000 years ago. The remaining mammals are all of more recent origins (after 1521). A brief discussion of selected species follows.

Red Junglefowl—The continued existence of populations of this species that have not been seriously diluted by interbreeding with feral domestic fowl is dubious. I have included this species, but cannot state that recent island reports do not result from recently feral domestic birds.

Phasianidae introductions—Reichel and Glass (1991) discuss several unsuccessful introductions on Guam including Common Pheasants (*Phasianus colchicus* Linnaeus, 1758) (Baker 1951), 200 Gray Francolin (*Francolinus pondicerianus* Gmelin, 1789), and "about 40" Chinese Bamboo Partridge (*Bambusicola thoracica* Temminck, 1815). I recently found an additional report of a release of 60 Common Pheasants on Saipan in the 1940's (U.S. Navy, 1949?). Recent reports indicate that, despite local prohibitions, individuals continue to release small numbers of pheasants on Saipan, but no wild population is known to exist.

Micronesian Kingfisher—This species is extinct in the wild but approximately 50 survive in captivity on the U.S. mainland.

Rock Pigeon—Reichel and Glass (1991) listed this species as uncommon on the larger southern islands. I have listed it as rare on Rota, Tinian, and Saipan because it is seen in small numbers but usually associated with backyard

coops. Although pigeons are widely raised by residents, truly wild populations appear to be very small, and may not be firmly established. Feral pigeons appear to be well established on Guam (G.J. Wiles, pers. comm.).

Guam Rail—This species is extinct in the wild on Guam, but is breeding well in captivity. An introduction program is planned to establish a wild population on Rota. Releases on Rota are scheduled to resume in 1993 after releases of small numbers in 1989 did not persist. A *Gallirallus*, species not yet determined, was recently discovered in subfossil remains from Tinian (Steadman, pers. comm.).

Great Frigatebird—Reichel (1991), citing an unsupported report about frigatebirds breeding on Maug, speculated that this species may breed in the Marianas. Breeding of this species was confirmed on Maug during the Chiba expedition in 1992 (DFW files; Stinson and Aldan, in prep.).

Nightingale Reed-Warbler—Since the publication of Reichel *et al.* (1992), a tiny remnant population of reed-warblers (*A.l. nijoi*) was rediscovered on Aguiguan where they were believed extinct (DFW files; R. Craig, pers. comm.).

Little Marianas Fruit Bat—Only three specimens exist, and present status is unknown. There have also been reports from local residents of small fruit bats on northern islands, but these have not been confirmed with specimens.

Pacific Sheath-tailed Bat—A tiny population of sheath-tailed bats persists on Aguiguan. Small bats, possibly this species, were observed on Maug in 1984, but none were seen there in 1992.

Philippine Deer—This species was brought to Guam from the Philippines in the 1770's and later to Rota and Saipan (Marche, 1889; Wiles *et al.*, 1990). Deer were introduced to Tinian from Rota and Saipan in the 1960's, but they were extirpated in the late 1970's or early 1980's (DFW files; Wiles *et al.*, 1990).

Polynesian Rat—*Rattus* spp. are reported for all the islands, and polynesian rats probably

account for most of these. However, the identity of rats on several islands needs confirmation with specimens.

The introduced mammals have had a profound and serious negative impact on the native flora and fauna. Rats are known to seriously impact birds through nest predation and competition for food. Removal of rats from islands in New Zealand has been shown to produce dramatic increases in the density of some forest birds (A. Saunders, pers. comm.). The most visible mammal impact is damage to the forest understory by feral goats, pigs and cattle. Damage is particularly severe where pigs and goats are found together. Islands exhibiting severe local damage include Aguiguan, Anatahan, Sarigan, Alamagan, and Pagan. In some locations damage involves the complete removal of the forest understory. On steep locations like the south slope of Anatahan, the resulting erosion has exposed tree roots and the forest is dieing. Feral ungulate damage to vegetation is believed to be at least partly responsible for the decline or extirpation of the Nightingale Reed-warbler on Aguiguan and Pagan (Reichel *et al.*, 1992). Control or eradication of feral ungulates will be essential if native plants and animals are to be preserved.

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