

# WESTERN BIRDS



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## **ANNOTATED CHECKLIST OF BIRDS OF HALEAKALA NATIONAL PARK, MAUI, HAWAII**

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Haleakala National Park (Figure 1), especially its Crater District (Figure 2), is one of the natural areas in Hawaii most frequently visited by backpackers, day hikers and motorists. The Kipahulu District (Figure 3) of the park, a formally designated Wilderness Area, is not open to public access because it contains sensitive ecosystems with rare plants and animals. The park is Maui's largest nature reserve, and one of the largest such areas in the state. It contains many examples of endangered or rare plants, animals and ecosystems. The avifauna of the entire park, which consists of these two districts, is the subject of this paper.

No recent studies have focused intensively on the distribution and abundance of birds in Haleakala National Park. Dunmire (1961) listed and described the bird species present in Haleakala and Hawaii Volcanoes national parks, but gave little detailed information on distribution and abundance. The unpublished report (Warner 1967) of an expedition to Kipahulu Valley (now partly included in the Kipahulu District of Haleakala National Park) described the rediscovery of two endemic species of Hawaiian forest birds, but no other avifaunal surveys of Kipahulu took place until we began the work described here. Since our work was completed, the U.S. Fish and Wildlife Service has also completed its surveys of forest birds on the island of Maui (Scott et al. ms.), but their coverage of the park was less comprehensive than ours, and they were unable to survey areas repeatedly or at different seasons of the year. In 1975 the Cooperative National Parks Resources Studies Unit (CPSU) funded researchers at the University of Hawaii to conduct inventories of the biota in Hawaii's two national parks. The results of the avifaunal surveys of the Crater and Kipahulu districts of Haleakala National Park provided the basis for this checklist.

BIRDS OF HALEAKALA NATIONAL PARK

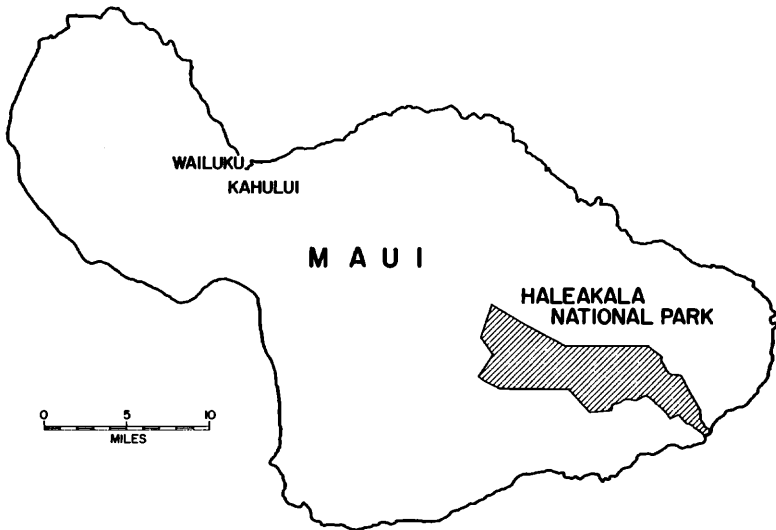
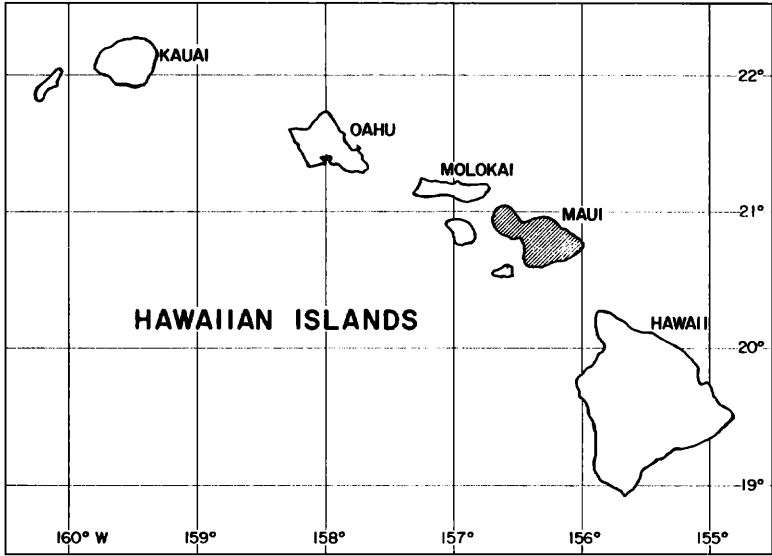


Figure 1. Location of the main Hawaiian Islands, the island of Maui, and Haleakala National Park.

HALEAKALA NATIONAL PARK  
CRATER DISTRICT

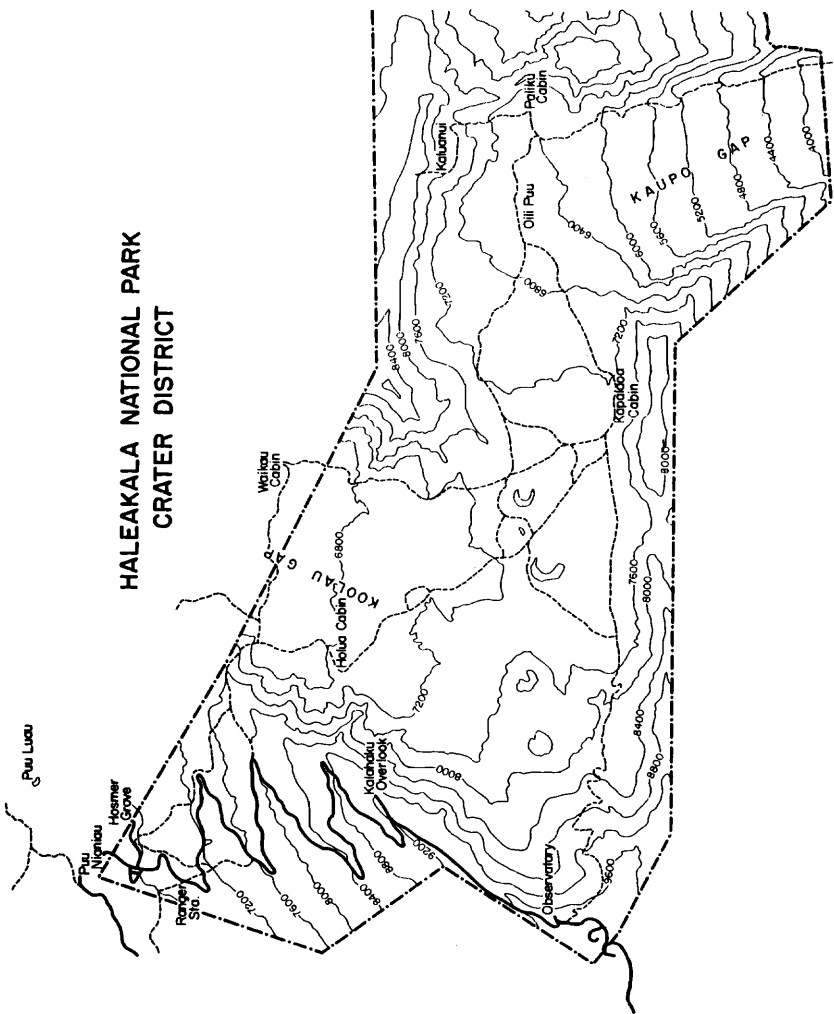


Figure 2. Crater District of Haleakala National Park, with elevation contours (in feet), trails, roads and place names.

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## METHODS

The checklist is based primarily on field work conducted in Haleakala National Park (Figure 1) from 1976 to 1980. During that period of time we spent 184 days in the field: 79 days in the Crater District and 105 days in the Kipahulu District. We have included the time spent by several biologists who assisted us in our surveys (see Acknowledgments). We also included information from the published literature, as cited in the text.

Nomenclature follows the AOU Checklist (AOU 1983), except as noted. Some Hawaiian names for species follow Pyle (1983). The biogeographic status (i.e., endemic, indigenous, exotic) is given for each species, and was determined from the literature. In this paper an endemic species or subspecies is one whose natural (i.e., deliberate or accidental human influence not involved) distribution is limited to the Hawaiian Archipelago or to a single island or group of islands in the archipelago. An indigenous species is

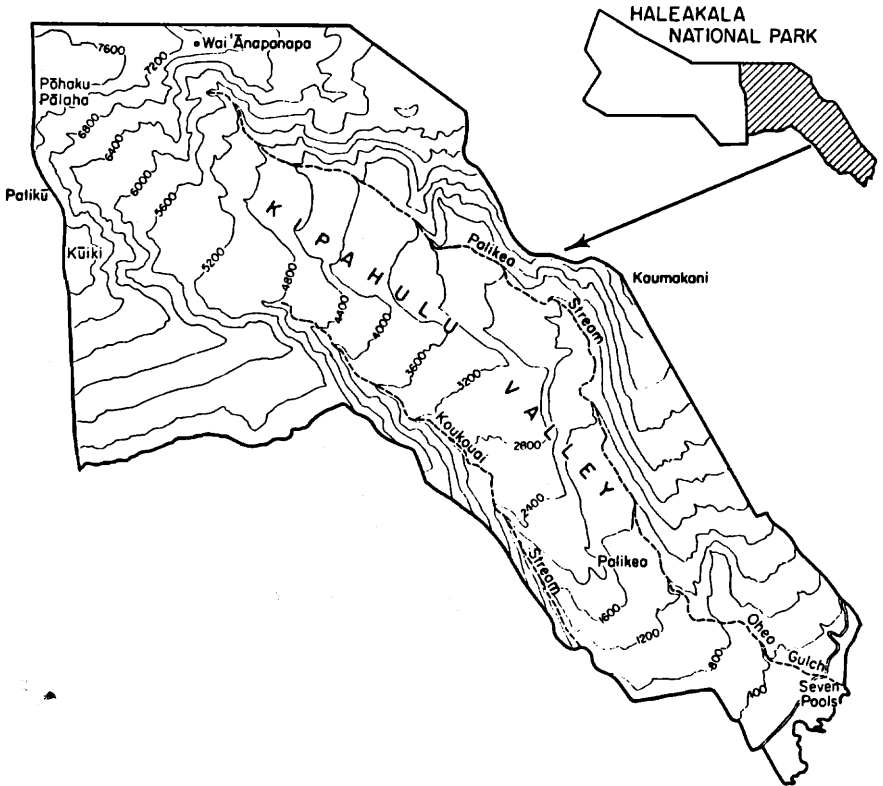


Figure 3. Kipahulu District of Haleakala National Park, with elevation contours (in feet) and place names.

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one whose natural distribution includes Hawaii and elsewhere in the world. An exotic species is one that has been deliberately or accidentally introduced to the Hawaiian Archipelago by human actions. Figures 2 and 3 show details of the two districts, including the place names used throughout the text.

We identified five habitat types in the Crater District by using Whiteaker's (1983) vegetation map for the area. Whiteaker identified 53 plant community types, but we combined these into five habitat types that were adequate for describing bird distributions. Figure 4 shows the distribution of the five vegetation types we will be using in this paper. Because no similar map of vegetation types for the Kipahulu District has been produced, our discussion of bird distribution in that district is more general.

For detailed discussions of avian distribution and abundance, the reader is referred to two additional reports. The first of these contains detailed distribution and abundance maps for the bird species found in the Crater District (Conant and Stemmermann 1979). The second is a brief report on the birds of the Kipahulu District, with maps of endangered species' distributions (Conant and Stemmermann 1980). These reports may be obtained from the authors.

### ANNOTATED CHECKLIST

#### Family Procellariidae — Shearwaters and Petrels

##### DARK-RUMPED PETREL *Pterodroma phaeopygia* (Hawaiian Petrel, Uau)

Endangered species; Hawaiian subspecies, *P. p. sandwichensis*, endemic. Recent studies by Simons (1983) indicate that nesting burrows within the park are found on the west rim from Red Hill to above Holua Cabin, on the eastern part of the south rim, and near the summit of Hanakauhi. Although Simons also found nesting colonies outside the park itself, most of the breeding population of this endangered bird is within the Crater District. Our observations include sightings on the south rim above Kapalaoa Cabin, although a one-night search during the breeding season revealed no burrows. We heard this bird at Puu Mamane about one hour after sunset in June 1976 and June 1977. G. Teves (pers. comm.) heard this species at Paliku 2-3 hours after sunset in June, July and August 1977. Simons estimated the total breeding population of this species on East Maui to be 575 pairs.

#### Family Phaethontidae — Tropicbirds

##### WHITE-TAILED TROPICBIRD, *Phaethon lepturus* (Koa e kea)

Indigenous. Breeds on Maui (Berger 1982:50), but no nests reported from Haleakala National Park. One to four birds observed frequently in Kaupo Gap, especially west wall, during this study. Birds landed on cliff face of west Kaupo Gap on two different occasions (June 1976, January 1977). In July 1977 three birds were observed at Paliku and one near Namana o ke Akua. Infrequently observed near waterfalls in Kipahulu Valley (T. Lind pers. comm.).

#### Family Fregatidae — Frigatebirds

##### GREAT FRIGATEBIRD, *Fregata minor* (Iwa)

Indigenous. Individuals observed flying over lower parts of Kipahulu Valley or just offshore of the mouth of the valley.

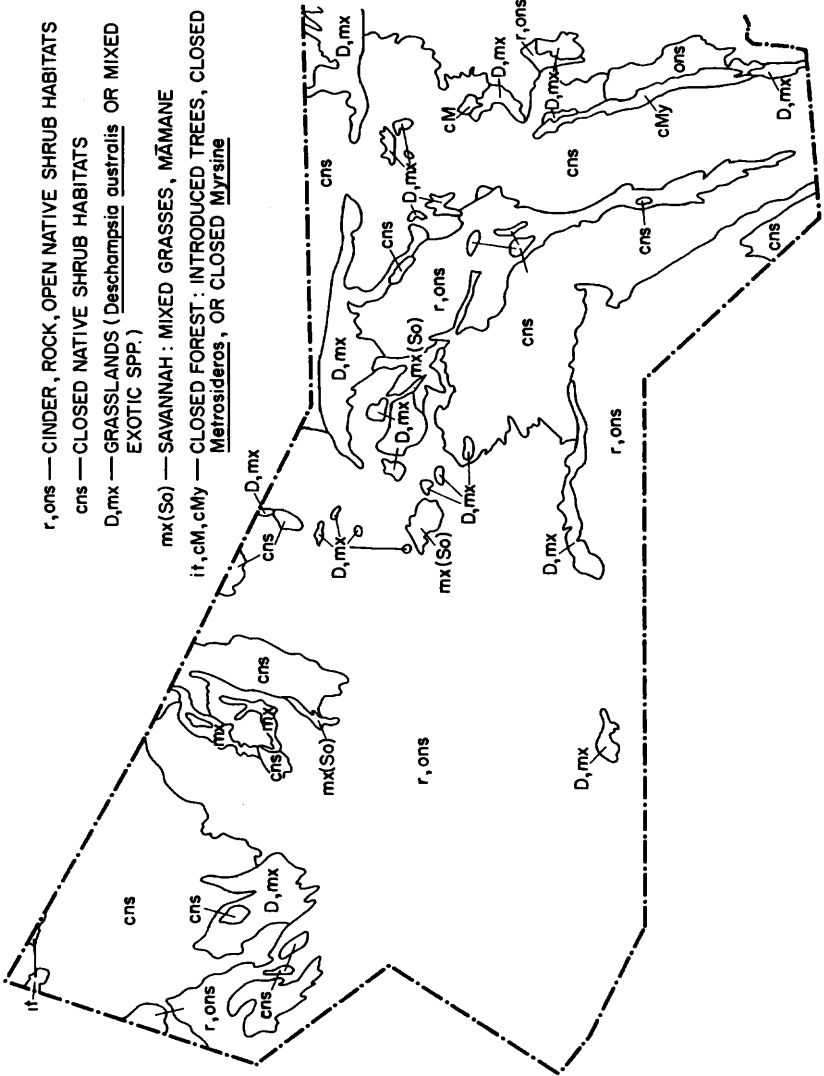


Figure 4. Distribution of five major vegetation types in the Crater District of Haleakala National Park (modified from Whiteaker 1983).

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### Family Anatidae — Ducks and Geese

#### HAWAIIAN GOOSE, *Nesochen sandvicensis* (Nene)

Endemic; endangered. May be seen flying throughout the areas of open vegetation in the park (i.e., all but closed forest). Particularly common in eastern half of Crater, especially the Paliku area. Frequently observed in alpine grasslands on Kalapawili Ridge and Kuiki. Total population estimated at 80-100 birds in the Crater District.

### Family Phasianidae — Quails, Pheasants and Francolins

#### GRAY FRANCOLIN, *Francolinus pondicerianus*

Exotic. Rare in Crater District although probably expanding its range into the xeric shrublands from the Kaupo Gap area. Observed in west Kaupo Gap twice during this study: once at about 1520 m elevation (C.W. Smith pers. comm.), and later at 1770 m (J.I. Kjargaard pers. comm.). Frequently observed on Kaupo Ranch (ranch hand pers. comm.).

#### CHUKAR, *Alectoris chukar*

Exotic. Frequently observed and widely distributed throughout closed native shrub habitats, grasslands and savannah. Particularly abundant in the closed native shrub on the northwest border of the Crater District (Kalapawili Ridge).

#### RING-NECKED PHEASANT, *Phasianus colchicus*

Exotic. Widely dispersed in all open vegetated areas in the Park and at edges of forested regions.

### Family Charadriidae — Plovers

#### LESSER GOLDEN-PLOVER, *Pluvialis fulva*. (Kolea)

Regular migrant. Nomenclature follows Connors (1983). Widely distributed in shrublands and grasslands of the Park, including alpine grasslands and boggy areas. Present August through April; some birds may overwinter.

### Family Scolopacidae — Sandpipers

#### WANDERING TATTLER, *Heteroscelus incanus* (Ulili)

Regular migrant. Observed in streams in Kipahulu Valley, usually near stream mouth, but once as high as 800 m.

### Family Columbidae — Doves and Pigeons

#### ROCK DOVE, *Columba livia* (Pigeon)

Exotic. Five birds observed roosting in a lava tube near Holua Cabin (F.G. Howarth pers. comm.).

#### SPOTTED DOVE, *Streptopelia chinensis* (Chinese Dove, Lace-necked Dove)

Exotic. Observed in lowlands of Kipahulu Valley, especially wet exotic forest.

#### ZEBRA DOVE, *Geopelia striata* (Barred Dove)

Exotic. Like the Spotted Dove, observed in lowlands of Kipahulu Valley. This species is more often observed in open fields and along roadsides than in the wet exotic forests.

### Family Tytonidae — Barn-Owls

#### COMMON BARN-OWL, *Tyto alba*

Exotic. Uncommon in shrublands and grasslands (including alpine grasslands on Kalapawili Ridge and Kuiki). Most frequently observed near southeast end of Crater District and near Hosmer Grove.

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### Family Strigidae — Typical Owls

#### SHORT-EARED OWL, *Asio flammeus* (Pueo, Hawaiian Owl)

Hawaiian subspecies, *A. f. sandwichensis*, endemic. Uncommon in shrublands and grasslands, at forest edges and in forests, especially in the eastern part of the Crater District, along Halemauu Trail and Hosmer Grove. Also observed in alpine grassland on Kalapawili Ridge and Kuiki during this study.

### Family Alaudidae — Larks

#### EURASIAN SKYLARK, *Alauda arvensis*

Exotic. Found throughout grasslands and open shrublands, including alpine regions, in the park. Less common within Crater itself than on the northwest slope (Kalapawili Ridge).

### Family Muscicapidae — Thrushes, Babblers, etc.

#### MELODIOUS LAUGHING-THRUSH, *Garrulax canorus* (Hwa-mei, Chinese Thrush)

Exotic. Uncommon; several birds observed on Kaupo Trail at about 1200 m during this study; reported from Halemauu Trail head by Smith (1975). Common below 1000 m in Kipahulu Valley, rare in the upper portions.

#### RED-BILLED LEIOTHRIX, *Leiothrix lutea* (Leiothrix, Pekin Hill Robin, Japanese Hill Robin)

Exotic. Seasonally abundant (i.e., present in June 1976 and March 1977, absent January 1977) in Paliku area. Also observed in and adjacent to Hosmer Grove in this study. Reported from Halemauu Trail head, Hosmer Grove and east of Puu Nianiau by Smith (1975). Probably present though not common in most wet forests. Relatively common throughout Kipahulu Valley.

### Family Mimidae — Mockingbirds

#### NORTHERN MOCKINGBIRD, *Mimus polyglottos*

Exotic. Occurs in dry forest, grasslands and shrublands, including cliff faces, throughout Crater District. Reported from Halemauu Trail head, Hosmer Grove, Puu Nianiau by Smith (1975).

### Family Sturnidae — Mynas and Starlings

#### COMMON MYNA, *Acridotheres tristis*

Exotic. A few birds present at occupied buildings in the Park outside the Crater itself (e.g., Park Headquarters), Hosmer Grove and Halemauu Trail head. Relatively common in cattle pastures and campgrounds of lower Kipahulu District.

### Family Zosteropidae — White-eyes

#### JAPANESE WHITE-EYE, *Zosterops japonicus* (Mejiro)

Exotic. Common (in sparsely vegetated areas) to abundant (in forested areas) throughout most of the Park, absent from grasslands and aeolian habitats (e.g., cinder and rock at Puu o Pele). Probably the most abundant bird in the Park.

### Family Emberizidae — Cardinals, Blackbirds, etc.

#### NORTHERN CARDINAL, *Cardinalis cardinalis*

Exotic. Uncommon; observed in Kaupo Gap during July 1977. Also reported from Hosmer Grove and Puu Nianiau by Smith (1975). Somewhat more common below about 1000 m in Kipahulu District.



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### Family Fringillidae — Finches, Hawaiian Honeycreepers

#### Subfamily Fringillinae — Fringilline Finches

##### HOUSE FINCH, *Carpodacus mexicanus* (Linnet, Papayabird)

Exotic. Common to abundant throughout the Crater District except in wet forests. By far the most abundant bird in shrublands, grasslands and dry forests in the Crater. Occasionally observed in very large flocks (500 or more birds). Uncommon in lower Kipahulu Valley.

#### Subfamily Drepanidinae — Hawaiian Honeycreepers

##### MAUI PARROTBILL, *Pseudonestor xanthophrys*

Endemic. Observed at Lake Waianapanapa, in Kipahulu Valley at about 1700 m, and on Kuiki at about 2040 m. Other recent sightings have been made in the Koolau Forest Reserve just outside park boundaries (Conant 1981, Carothers et al. 1983, Scott et al. ms.).

##### COMMON AMAKIHI, *Hemignathus virens*

Endemic species; *H.v. wilsoni* (Maui Amakihi) endemic to Maui, Molokai and Lanai. Uncommon in shrublands on northwest slope (i.e., from Park Headquarters to Puu Nianiau, including Hosmer Grove).

##### NUKUPUU, *Hemignathus lucidus*

Endemic; *H.l. affinis* (Maui Nukupuu) endemic to Maui. Two sightings in Kipahulu Valley: one (by Conant) at 1460 m in August of 1978, one (by M.S. Kjargaard) at 1470 m in March 1979. These and other sightings reported by Conant (1981).

##### AKEPA, *Loxops coccineus*

Endemic; *L.c. ochraceus* (Maui Akepa) endemic to Maui. Recent sightings outside of Haleakala National Park were reported by Scott and Sincok (1977). We saw one bird at about 1900 m in Kipahulu Valley in August 1979.

##### MAUI CREEPER, *Paroreomyza montana* (Alauwahio)

Endemic to Maui Island. Uncommon but widespread in wet forests of the Park, including Paliku region and Hosmer Grove. Somewhat more common above 1000 m to tree line in Kipahulu District.

##### CRESTED HONEYCREEPER, *Palmeria dolei* (Akohekohe)

Endemic to Maui and Molokai. Molokai population extirpated since late 1800s. Found in Kipahulu District and the Kuiki region of the Crater District from tree line to as low as 1100 m in Kipahulu Valley, but usually above 1680 m in the winter months.

##### APAPANE, *Himatione sanguinea*

Endemic; *H.s. sanguinea* endemic to main Hawaiian Islands. Present in shrublands and dry forests; abundant in wet forest. Probably the most abundant native bird in the park.

##### IIWI, *Vestiaria coccinea*

Endemic. Uncommon in wet forests. Observed at Hosmer Grove, Paliku, Kuiki, Kaluanui and Kalapawili Ridge in the Crater District, and throughout the upper portions (above 1000 m) of Kipahulu Valley.

### Family Estrildidae — Waxbills and Mannikins

##### NUTMEG MANNIKIN, *Lonchura punctulata* (Spotted Munia, Ricebird)

Exotic. Uncommon; observed in July 1977 at Paliku and in Kaupo Gap. Also reported from Hosmer Grove and Puu Nianiau (Smith 1975). Common but not abundant in cattle pastures in lower (below 500 m) part of Kipahulu Valley.

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### WARBLING SILVERBILL, *Lonchura malabarica*

Exotic. Observed in lower Kipahulu Valley in 1978 (Conant 1983). No observations made during this study.

## STRUCTURE AND ECOLOGY OF THE AVIFAUNA

### Native Birds

During our surveys we found 11 (34%) endemic (including endemic subspecies), 4 (13%) indigenous, and 17 (53%) exotic birds in Haleakala National Park. In the Crater District there were 7 endemic, 2 indigenous and 13 exotic species, whereas the Kipahulu District had 9 endemic, 4 indigenous and 13 exotic species. Table 1 lists the species and their presence or absence in the two districts. Kipahulu District, with its extensive, nearly undisturbed rain forests, is clearly a more important area for the endangered and rare forest birds, whereas the Crater District is an important area for Dark-rumped Petrel and Nene.

Since the arrival of Europeans, three endemic Hawaiian birds formerly found on Maui have apparently been extirpated (Hawaii Audubon Society 1981). The Ou (*Psittirostra psittacea*) is likely to have been found in Haleakala National Park. Dramatic changes in vegetation within the Crater District caused by feral pigs (*Sus scrofa*) and especially feral goats (*Capra hircus*) have probably been responsible for eliminating suitable habitat for several forest birds from the Crater District (e.g., Akepa, Nukupuu, Maui Parrotbill and Crested Honeycreeper). Although these birds may still be

Table 1. Birds found in Haleakala National Park, Crater and Kipahulu districts, 1976-1980 (\* = endangered, C = Crater District, K = Kipahulu District).

EXOTIC (17; 53%)	ENDEMIC <sup>1</sup> (11; 34%)	INDIGENOUS (4; 13%)
Chukar C, K	*Dark-rumped Petrel C	White-tailed
Gray Francolin C	*Nene C, K	Tropicbird C, K
Common Barn-Owl C, K	Short-eared Owl C, K	Great Frigatebird K
Rock Dove C	*Maui Parrotbill K	Lesser Golden-Plover C, K
Spotted Dove K	Common Amakihi C, K	Wandering Tattler K
Barred Dove K	*Nukupuu K	
Eurasian Skylark C, K	*Akepa K	
Melodious Laughing-thrush C, K	Maui Creeper C, K	
Red-billed Leiothrix C, K	*Crested Honeycreeper C,K	
Northern Mockingbird C	Apapane C, K	
Japanese White-eye C, K	Iiwi, C, K	
Common Myna C, K		
House Finch C, K		
Northern Cardinal C, K		
Nutmeg Mannikin C, K		
Warbling Silverbill K		

TOTALS: 17 families, 32 species, 15 native species

<sup>1</sup>Includes endemic subspecies

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found within the Kipahulu District, they cannot be seen in the areas where interested hikers are usually permitted to go. Native passerines in the Kipahulu District occur from tree line (usually about 2000 m) to as low as 500 m in Kipahulu Valley. The low elevation limit is considerably below the 850 m lower limit noted by the Kipahulu Valley Expedition (Warner 1967). It may be that this apparent range increase represents a seasonal difference which was not apparent in 1967.

Of the four common native passerines in the Kipahulu District, two, the Apapane and the Amakihi, are found in virtually all forested areas above approximately 500 m. The Iiwi and the Hawaiian Creeper were not found below about 1000 m. The Crested Honeycreeper was somewhat more limited in its distribution (see discussion below), and the remaining native passerines were very rare. Detailed descriptions including maps of other sightings of the rare species were reported by Conant (1981).

The Crater District provides relatively little suitable habitat for native forest passerines. Wet forest near Hosmer Grove and the Paliku Cabin area have the heaviest concentrations of these birds. However, habitat for nonpasserine native species, especially the endangered Dark-rumped Petrel and Nene, is considerable in extent.

### Seasonal Variation

Seasonal variation was observed in some species. Two species are absent during their non-breeding months, the Dark-rumped Petrel from November to February, and the Lesser Golden-Plover from late April to early August, although some first-year plovers may oversummer. Chukar chicks are common during late spring and summer, whereas the more secretive Ring-necked Pheasant and its offspring are less obvious during breeding months, January through July. Only two introduced passerines show much seasonal variation. House Finches are more obvious in spring and summer because they travel in large flocks (500 birds) during this time. Perhaps this behavior is related to the fruiting times of grasses, important food sources for this species. The second such species, Red-billed Leiothrix, is much more abundant in the Paliku area in late spring and early summer, undoubtedly in response to fruiting of Akala (*Rubus macraei*) shrubs and exotic plum trees (*Prunus cerasifera*).

Among the endemic forest birds, the Crested Honeycreeper showed an interesting seasonal variation in its distribution pattern. The upper elevation limits of this bird occur at the upper tree line, about 2070 m. In spring months, Crested Honeycreepers are found down to about 1680 m. In the summer, however, they may be found at lower elevations: sightings which occurred in August included several at 1430 m and one as low as 1100 m in Kipahulu Valley. At all times of the year, this species is decidedly more common above 1680 m, and at times seems to be particularly common in a band from the tree line to about 150 m lower elevation.

While nearly half the species in the Kipahulu District are exotic, only two (the Japanese White-eye and the Red-billed Leiothrix) are common throughout the region. The remaining exotics are most abundant either in the alpine grasslands or below about 1000 m in Kipahulu Valley, especially in cattle pastures at the bottom of the valley.

## Impacts of Exotic Birds

Long-established introduced species form the the largest contingent of the Crater District avifauna, in terms of both species composition and abundance. Changes in the structure and plant species composition of the various communities in the Crater District have undoubtedly facilitated the successful establishment of many of the exotic birds. Granivorous birds (Eurasian Skylark, Nutmeg Mannikin, Northern Cardinal, House Finch) and frugivorous or browsing birds (Red-billed Leiothrix, Chukar, Ring-necked Pheasant) are successful in dry forest or savannah communities. Some species appear to be using resources not used by native forms on Maui (e.g., seeds), whereas others may compete with native species.

A few of the exotic species are rare (e.g., Gray Francolin, Melodious Laughing-thrush, Common Barn-Owl) and, at present, may have minimal impact on native forms, unless they are important as reservoirs of disease. However, several species (e.g., Chukar, Ring-necked Pheasant, Common Barn-Owl, Melodious Laughing-thrush, Northern Cardinal, Nutmeg Mannikin) may continue to expand their ranges, changing the situation.

Very little is known of the impact of the exotic bird species on native ecosystems, particularly the avifauna. The possibility of competition exists among at least three groups of native and exotic birds. Ground-nesting herbivores, the Chukar and the Ring-necked Pheasant, may exploit some of the same resources as the Nene. The Common Barn-Owl and the Short-eared Owl undoubtedly prey on some of the same mammal and bird species and may compete for food. Two common passerines, the Japanese White-eye and the Red-billed Leiothrix, and possibly the Melodious Laughing-thrush, may impact native forest bird populations via competition for food or as disease reservoirs.

Given continued impact of exotic biota, avifaunal structure and interspecies relationships will remain in a state of flux. Reduction of exotic species is desirable for the welfare of native birds, but impractical for many species. Native avifauna stands the best chance of survival if pristine, relatively intact native ecological communities are restored.

## ENDANGERED SPECIES MANAGEMENT

Simons (1983) has provided an excellent discussion of the various factors that must be considered in managing the habitat of the Dark-rumped Petrel. Major problems include predation and alteration of habitat by exotic organisms such as feral goats and various game birds. Predators—both natural (e.g., Short-eared Owl) and exotic (e.g., cats, mongoose) — appear to be an important problem for the species. However, it is not clear how these problems can best be solved. Certainly if resources are available an active predator control program within the important nesting areas should be a high priority.

The Nene, which apparently disappeared from Maui in the early 1900s (Berger 1982), is being reintroduced to Haleakala via the release of captive-raised birds. However, our census data do not indicate that these birds have established successfully self-maintaining populations. This conclusion is based on the fact that over 460 captive-raised birds have been released since

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1962, and our estimates indicate that the present population is less than 100 birds total. Similarly, recent research (Banko and Manuwal 1982) on the status, distribution and life history of this species indicates that the species will be able to establish self-maintaining populations only if appropriate management programs are implemented. Their results indicate that the primary aim of management should be to reduce predation by the introduced small Indian Mongoose (*Herpestes auropunctatus*). Reduction of populations of exotic game birds which may compete with the Nene for food and reduction of negative impact to ecosystems by feral ungulates are two other priorities discussed by Banko and Manuwal (1982). Careful and continuous monitoring of Nene populations will be essential to allow managers to keep abreast of the status of this bird. Clearly this is a species which has not been saved from extinction yet, and one for which intensive management will be required for some time, perhaps on a permanent basis.

While direct management (e.g., predator and feral mammal control) for endangered species should have a high priority, management of ecosystems to enhance habitat quality for native birds in general is also of great importance. We suggest that management efforts be concentrated on the elimination of feral ungulates and exotic plants. Another important priority for National Park Service management programs is their continued support and encouragement of basic research on the biology of native bird species, particularly endangered species, with emphasis on habitat requirements and factors affecting breeding success. Since we began this research there have been two excellent intensive studies of endangered species that have begun to meet management planners' needs, Simons (1983) on the Dark-rumped Petrel and Banko and Manuwal (1982) on the Nene. Research is also needed on the more successful exotic species, with the objectives of determining their effects on other ecosystem components. For example, Jacobi (1980) suggested that exotic game birds may have negative impacts on vegetation.

### SUMMARY

During field surveys of Haleakala National Park, we recorded 32 species in 17 families. Eleven species are endemic, and contain subspecies endemic to Maui Nui (i.e., Maui, Molokai and Lanai). Of four indigenous species present, two contain subspecies endemic to the Hawaiian archipelago. Among the 11 endemic species and subspecies, 6 (Nene, Dark-Rumped Petrel, Maui Parrotbill, Nukupuu, Akepa and Crested Honeycreeper) are on the Federal list of endangered species. Seventeen introduced species were observed in the park. Two of these, the Japanese White-eye and the House Finch, were widespread and abundant, but their impact on native bird populations is unknown. Ecological relationships of the avifauna and management programs for the endangered species are discussed.

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