ORNITHOLOGICAL SURVEY
OF THE
PROPOSED ACCESS ROADS
AND
ALTERNATE WELL SITES 2 AND 3

DLNR DESIGNATED GEOTHERMAL RESOURCE SUBZONE
MIDDLE EAST RIFT ZONE OF KILAUEA
PUNA DISTRICT, ISLAND OF HAWAI'I
February 26, 1990

by

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PREPARED FOR:
TRUE/MID PACIFIC GEOTHERMAL VENTURE
INTRODUCTION

This report presents the results of a field survey for birds along the proposed access roads to well sites 2 and 3, and on the well sites themselves, in the geothermal resource subzone, Puna Forest Reserve, Puna, Hawaii. The survey was conducted on 16 February 1990. At the time of the survey, the following species of birds were listed by the U.S. Fish and Wildlife Service (USFWS 1983a) and by the State of Hawaii (DLNR 1986) as endangered or threatened, and were known or suspected to exist on the island of Hawaii (Pratt et al. 1987):

Akiapolaau (Hemignathus munroi)
Hawai‘i Creeper (Oreomystis mana)
Hawai‘i Akepa (Loxops coccineus coccineus)
Palila (Loxioideas bailleui)
Ou (Psittirostra psittacea)
Hawaiian Crow (Corvus hawaiiensis)
Hawaiian Hawk (Buteo solitarius)
Hawaiian Duck (Anas wyvilliana)
American Coot (Fulica americana alai)
Common Moorhen (Gallinula chloropus sandvicensis)
Nene (Nesochen sandvicensis)
Black-necked Stilt (Himantopus mexicanus knudseni)
Dark-rumped Petrel (Pterodroma phaeopygia sandwichensis)
Newell’s Shearwater (Puffinus newelli) (threatened only)

No attempt was made to survey the site for mammals, although the Hawaiian Hoary Bat (Lasiurus cinereus semotus), with populations on the island of Hawaii, is listed as an endangered species by both the U.S. Fish and Wildlife Service and the State of Hawaii (op. cit.).

METHODS

The survey entailed 5 hours of observation by 2 individuals (10 person-hours). Birds were detected by sight and sound while observers walked along the surveyor's trails for the proposed access roads and well sites. Special attention was directed at the canopy to spot old or active nests of the Hawaiian Hawk. Detections by motionless observers also occurred during three minute periods at numbered surveyor's stakes (TR 61-B2 and TR 61-D through N and corners for well site 3; TR 61-B3 through B8 and corners for well site 2). The survey was conducted between 1000 and 1600. The weather was warm and partly cloudy.

Data on previous sightings of endangered species and other native species of birds in or near the study site were obtained by reviewing the literature and consulting the U.S. Fish and Wildlife Service, State of Hawaii Division of Forestry and Wildlife, and the Bishop Museum.

SUMMARY OF SIGNIFICANT FINDINGS

No endangered birds or nests were detected along either proposed access road or on either well site.
DETAILED FINDINGS

Table 1 contains the species list of birds detected along the road to and at well site 2. Table 2 contains the species list of birds associated with the road and well site 3. No endangered birds were detected, and no nests (old or active) of the Hawaiian Hawk were seen.

Four species of native birds (non-endangered) were detected. Two of these, the Apapane and Common Amakihi, were seen and heard along both roads and at both well sites. Each species was detected at the beginning and end of each road, suggesting a broad distribution in the study area. They were associated with flowering ohia-lehua (Metrosideros polymorpha) trees, which occurred widely but not continuously along the road and well sites. There were 37 detections of Apapanes and 19 detections of Common Amakihis.

Two of the species of native birds (non-endangered) were detected only where well site 2 joins with the proposed access road (Stake TR 61-B7). There were 2 individuals of the Elepaio in this location, and one Omao. No obvious differences in vegetation were apparent between this location and others where these two species were not detected.

Four species of introduced birds were also detected. These included the Japanese White-eye, House Finch, Northern Cardinal, and Melodious Laughing-thrush. With the exception of the Melodious Laughing-thrush, heard only at the beginning of the proposed road leading to well site 3, all species were detected along both roads and at both well sites.

DISCUSSION

Endangered Species. The apparent absence of endangered or threatened birds on the study site is consistent with previous studies in the area and knowledge of habitat requirements. The seabirds (Dark-rumped Petrel, Newell's Shearwater) and waterbirds (Hawaiian Duck, Black-necked Stilt, American Coot, Common Moorhen) would not be expected in the rain forest habitat of the study site (USFWS 1983b, 1985). The Hawaiian Goose and the Palila also have specialized habitat requirements that do not include low elevation ohia-lehua rain forest (Perkins 1903, Scott et al. 1986). The Hawaiian Crow, which used to be found in wet ohia-koa forests (Scott et al. 1986), has never been detected in the Puna District (Perkins 1903). The absence of koa (Acacia koa), mamane (Sophora chrysophylla), or naio (Myoporum sandwicense) trees in the project area means that the Akiapolaau, which co-occurs with these trees (Scott et al. 1986), would not be expected in the project area.

The only endangered or threatened birds that might be expected on the study site are those found in predominantly ohia forests. These are limited to the Hawaiian Hawk, O~y, Hawaii Akepa, and Hawaii Creeper. However, based on the Hawaii Forest Bird Survey conducted between 1976 and 1983, only the Hawaiian Hawk would expected on the study site (Scott et al. 1986). No Hawaii Akepa or Hawaii Creeper were detected in the Puna study area of the survey, these species having disappeared from low elevation native forests during the first half of the century (Munro 1944). Only a single O~y was detected during the Forest Bird Survey in the Puna area, but at an elevation of 700-900 m, higher than the elevation of the geothermal site. The O~ has not been confidently identified on the island of Hawaii since 1986 (USFWS, pers.
Only a single Hawaiian Hawk was detected during the Forest Bird Survey in the Puna area, and was rarer in this area than in other parts of the island. Nevertheless, this species has a wide ranging distribution and uses ohia forests (USFWS 1984, Scott et al. 1986). Thus the Hawaiian Hawk is an endangered species that may be present, at least occasionally, in the geothermal site.

**Mitigating actions for non-endangered native birds.** The Elepaio and Omao are the only native birds that were not widely distributed over the proposed project area. However, there is no need to relocate the road or well site 2, because the area around the point of detection was also an ohia rain forest into which the birds would probably move based on their preference for suitable habitat.

Nevertheless, some long-term mitigating actions may be considered. The results of this study, compared with the survey conducted for the proposed access road and well site 1 (Lamoureux et al. 1987), suggests the possibility that the road and drilling operations may affect native bird populations at some distance from the actual sites. The survey for the road and well site 1 established the presence of Omao in low numbers throughout, and a substantial population of Elepaio in one portion of the study area. No Elepaio or Omao were detected during the current survey along the road or in well site 3, the road and well site closest to active well site 1. Both observers could hear the drilling operation along much of the survey route. Noise could also be heard along the first half of the proposed road to well site 2. No noise was heard near well site 2 where the Omao and Elepaio were seen.

Appropriate detailed monitoring of the project region may generate knowledge useful for selecting future well sites that could minimize overall impact on native birds. Existing and pending sites will permit the impacts of noise and habitat fragmentation to be identified for these populations. This could be important, because even though the Omao and Elepaio are not endangered, the Omao occupies only 20% and the Elepaio about 30% of original ranges on the island of Hawaii (Scott et al. 1986). In addition, the populations of Apapane and Common ʻAmakihi in the Puna district are significant to island-wide conservation of native birds, because their presence at low elevations challenges the assumption that introduced diseases and mosquitoes limit most native birds to upper elevations (Scott et al. 1986, 1988).
LITERATURE CITED


TABLE 1. Species list of birds detected along the proposed access road and well site 2.

Endangered or Threatened Species

NONE

Other Native Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Subspecies/Locality</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apapane</td>
<td>(main island subspecies)</td>
<td>Himatome sanguinea</td>
</tr>
<tr>
<td>Common Amakihi</td>
<td>(Hawaii Island subspecies)</td>
<td>Hemignathus virens virens</td>
</tr>
<tr>
<td>Elepaio</td>
<td>(Hawaii Island subspecies)</td>
<td>Chasianpsia sandwichensis ridgwayi</td>
</tr>
<tr>
<td>Omao</td>
<td>(Hawaii Island species)</td>
<td>Myadestes obacurus</td>
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</tbody>
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Introduced Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japanese White-eye</td>
<td>Zosterops japonicus</td>
</tr>
<tr>
<td>Northern Cardinal</td>
<td>Cardinalis cardinalis</td>
</tr>
<tr>
<td>House Finch</td>
<td>Carpodacus mexicanus</td>
</tr>
<tr>
<td>Melodious Laughing-thrush</td>
<td>Garrulax canorus</td>
</tr>
</tbody>
</table>
TABLE 2. Species list of birds detected along the proposed access road and well site 3.

**Endangered or Threatened Species**

NONE

**Other Native Species**

- **Apapane** (main island subspecies)  *Himatione sanguinea sanguinea*
- **Common Amakihi** (Hawaii Island subspecies)  *Hemignathus virens virens*

**Introduced Species**

- **Japanese White-eye**  *Zosterops japonicus*
- **Northern Cardinal**  *Cardinalis cardinalis*
- **House Finch**  *Carpodacus mexicanus*
- **Melodious Laughing-thrush**  *Garrulax canorus*