

FIELD IDENTIFICATION OF THE HAWAIIAN CREEPER ON THE ISLAND OF HAWAII

J. MICHAEL SCOTT, Patuxent Wildlife Research Center, U. S. Fish and Wildlife Service, Post Office Box 44, Hawaii National Park, Hawaii 96718

SHEILA CONANT, University of Hawaii at Manoa, Department of General Science, 2450 Campus Road, Honolulu, Hawaii 96822

H. DOUGLAS PRATT, Museum of Zoology, Louisiana State University, Baton Rouge, Louisiana 70893

The Hawaii race of the Hawaiian Creeper (*Loxops maculatus mana*) has recently been classified as endangered (USFWS 1975). As recently as 1972, so little was known about the bird's distribution and abundance that Berger (1972:137), in summarizing existing knowledge, was unable to state whether the species was uncommon or on the verge of extinction. Underlying the lack of information on this bird's status is the inability of many observers to consistently and correctly distinguish it from the abundant Hawaii race of the Amakihi (*Loxops virens virens*). Field identification of these two species is problematic on the islands of Oahu (Shallenberger and Pratt 1978) and Hawaii. The similarity of these two birds on the island of Hawaii has been previously mentioned by Henshaw (1902), Munro (1944) and Peterson (1961), but adequate field characters still have not been well documented. Because the creeper is classed as endangered and because identifications have often been uncertain, we herein identify and document the behavioral and morphological characters that have proved useful in identifying the Hawaii Creeper.

METHODS

We examined museum specimens of *L. v. virens* and *L. maculatus mana*. The colors of the throat, forehead, belly, nape, side, back and cheek were critically compared. The songs and calls of these species as well as those of the Akepa (*L. c. coccineus*) were recorded using a Dan Gibson parabolic microphone and cassette recorders. Audiospectrograms were made using Spectral Dynamics Model No. SD301-c, Real Time Analyzer with an analysis range of 0-10,000 Hz and a band width of 120 Hz.

We carefully observed Hawaii Creepers in the field for extended periods of time and characterized those features most useful in distinguishing them from Amakihi and other species similar in sound or appearance. During observations of birds thought to be creepers, we recorded the bases on which we made our identification. We noted whether songs, calls or movements initially caught our attention. The character that first indicated that the bird was a creeper was recorded as one of the following: call, song, foraging behavior, superciliary stripe,

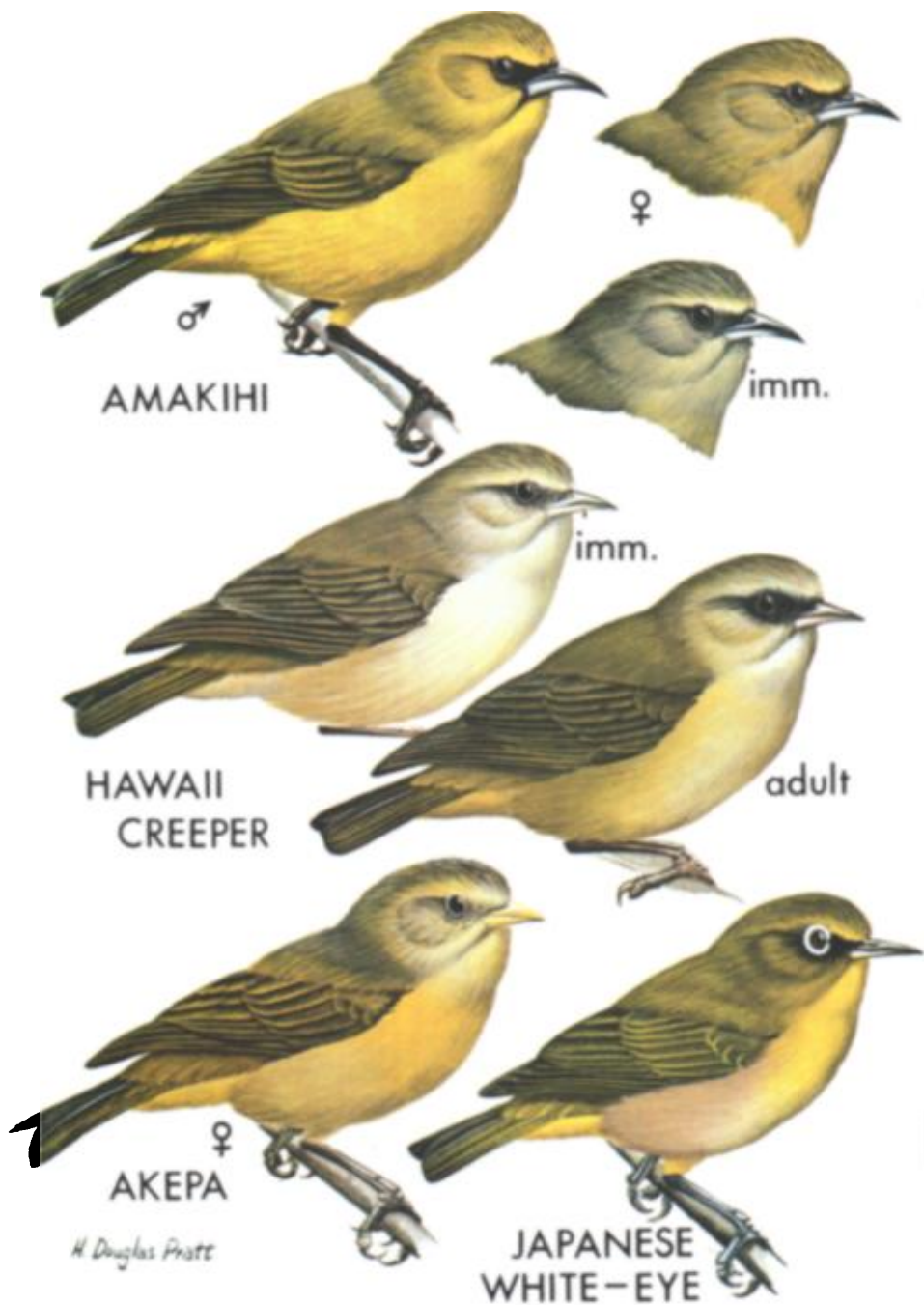


Plate 1. The Hawaii Creeper and three species that could be confused with it, the Amakihi, *L. virens* (adult male, adult female and immature); the Hawaii Akepa, *L. coccineus* (female); and the Japanese White-eye (*Zosterops japonicus*) are shown for quick comparison of morphological features that can be used to distinguish between them

bill shape, or eye patch. Finally, we recorded the character that confirmed the identification of a creeper or indicated that the bird was another species. Characters used to make this final identification included, in addition to those mentioned above, the color of lores and presence of an eye-ring. When an auditory cue initially suggested that a bird was a creeper, visual cues were sought to confirm the identification. Nomenclature follows that of Berger (1972) with changes to meet rulings by the International Commission on Zoological Nomenclature (1964 and 1974).

APPEARANCE AND BEHAVIOR

The Hawaii Creeper is a rather small bird 11-13 cm in length. Adults are not sexually dimorphic in color but immatures can be distinguished by the presence of a pale superciliary line. Both are drab gray-green birds. Other small green birds likely to be confused with creepers on the island of Hawaii include the above-mentioned Amakihi, female and immature Akepa, and the exotic Japanese White-eye (*Zosterops japonicus*; Plate 1 and Table 1). The Japanese White-eye is easily distinguished by its bright yellow throat and upper breast as well as the prominent white eye-ring. The female Akepa is drab gray-green with no dark patches in the face and a pale superciliary line. The conical, straw-yellow bill and relatively long, notched tail are diagnostic. The highly variable Amakihi is more difficult to distinguish and is dealt with in detail below.

General Coloration. Hawaii Creepers are a drab olive green above, with little of the yellowish coloration seen in many Amakihis. Below they are dull whitish washed with olive green on the flanks and breast. The throat is always white and contrasts with the greenish tones of the breast in adults. Immatures are much paler below, with less contrast between throat and breast. Further, young creepers usually show a prominent yellowish-white superciliary line. The Amakihi can be just as drab in color as the Hawaii Creeper, but never has a contrasting white throat. Unfortunately, this character is often difficult to see in the field.

Facial Features. The distribution of black in the faces of Hawaii Creepers and Amakihis gives them distinctive facial expressions that, once noticed, become very useful in forming a search image. The black lores of the Amakihi give it a masked appearance. The adult creeper possesses a broad mask of black or dark gray that extends to behind the eye. We called this an "eye patch." The effect is to enhance the apparent size of the eye and give the bird a wide-eyed or black eye appearance. Both Amakihis and immature Hawaii Creepers have superciliary lines, but that of the creeper is broader, bolder and appears yellowish-white rather than yellow as is usually the case in the Amakihi.

Leg Color. The tarsi of the Hawaii Creeper appear dark brown whereas those of the Amakihi are black. This character is evident only in good light at close range.

74 Table 1. Characters that can be used to distinguish Hawaii Creepers from Amakihi, Hawaii Akepas, and Japanese White-eyes.

CHARACTER	HAWAII CREEPER	AMAKIHI	AKEPA	JAPANESE WHITE-EYE
Song	Quavering, descending trill Soft <i>sweet</i>	Loud monotone trill Nasal <i>cheep</i>	Loose irregular trills Two-syllable <i>cheetleep</i>	No trills; varied, imitative Sharp, high, thin notes; usually several strung together
Foraging Behavior	Slowly moves over larger branches and trunks of trees	Usually forages among foliage or smaller limbs, frequently in flowers	Forages in outer canopy, probing among axils of leaves, rarely in flowers	Variable – may forage among foliage, small limbs, twigs and flowers, or rarely in larger limbs and trunks
Posture	Parallel to foraging substrate	Variable	Very upright posture	Variable
Bill	Slightly decurved; lower mandible paler than upper	Sharply decurved, degree of curvature may vary with age and sex; appears black at a distance but has pale blue-gray area at base of lower mandible	Straight, conical; straw yellow	Straight, warbler-like bill

HAWAII CREEPER

HAWAII CREEPER

Bill. The Hawaii Creeper's bill is only slightly decurved and is brownish white throughout except for a dusky tinge along the culmen. It appears pale at a distance and never looks bluish at the base. The more strongly decurved bill of the Amakihi looks black at a distance, but at close range exhibits a pale blue area at the base of the lower mandible. Adult male Amakihis have significantly longer beaks than either adult females or immatures of either sex (van Riper 1978). Curvature is also most pronounced in adult males.

Foraging Behavior. The Hawaii Creeper's slow movements while gleaning insects on large branches and trunks of trees have been considered important in distinguishing the species from similar birds (Henshaw 1902, Peterson 1961). We have found this character to be unreliable, however, if relied upon to the exclusion of other features especially for brief sightings. Infrequently the Amakihi and Japanese White-eye forage creeper-like on large limbs or trunks. Their movements are usually quicker and jerkier, and these species move between foraging substrates more frequently than do creepers. When moving upward on a vertical substrate the Amakihi and white-eye flick their wings more and, unlike the creeper, usually move to the smaller branches or foliage. Any bird that consistently creeps over trunks and branches for long periods is very likely the Hawaii Creeper.

Recent comparative studies of the foraging behavior of some Hawaii island forest birds allow generalizations about the foraging substrates and positions of the Amakihi, Akepa, creeper, and white-eye (Conant in prep).

The Hawaii Akepa usually forages in the upper canopy within a meter of its outer edge. The Amakihi forages in the lower and middle canopy, and in the perimeter of the canopy, but is frequently found in the middle crown area. Both of these species are usually found on twiglets and on the foliage, while the Hawaii Creeper is found foraging on the larger branches of the crown interior at the middle and upper levels. Finally, the Japanese White-eye forages at the perimeter of the lower and middle canopy.

Although the above characterizations are useful, none of these observed "preferences" for foraging areas within the habitat provides sufficient basis to finalize a field identification.

VOCALIZATIONS

Songs. The song of the Hawaii Creeper is a quavering, descending trill, frequently very soft and easily missed in the field. Perkins (1903), an acute observer with extensive field experience in Hawaii, never heard a creeper sing. We have heard the song on numerous occasions from December through August. The song most easily confused with the creeper's is that of the Akepa. However, the Akepa's song is loose and

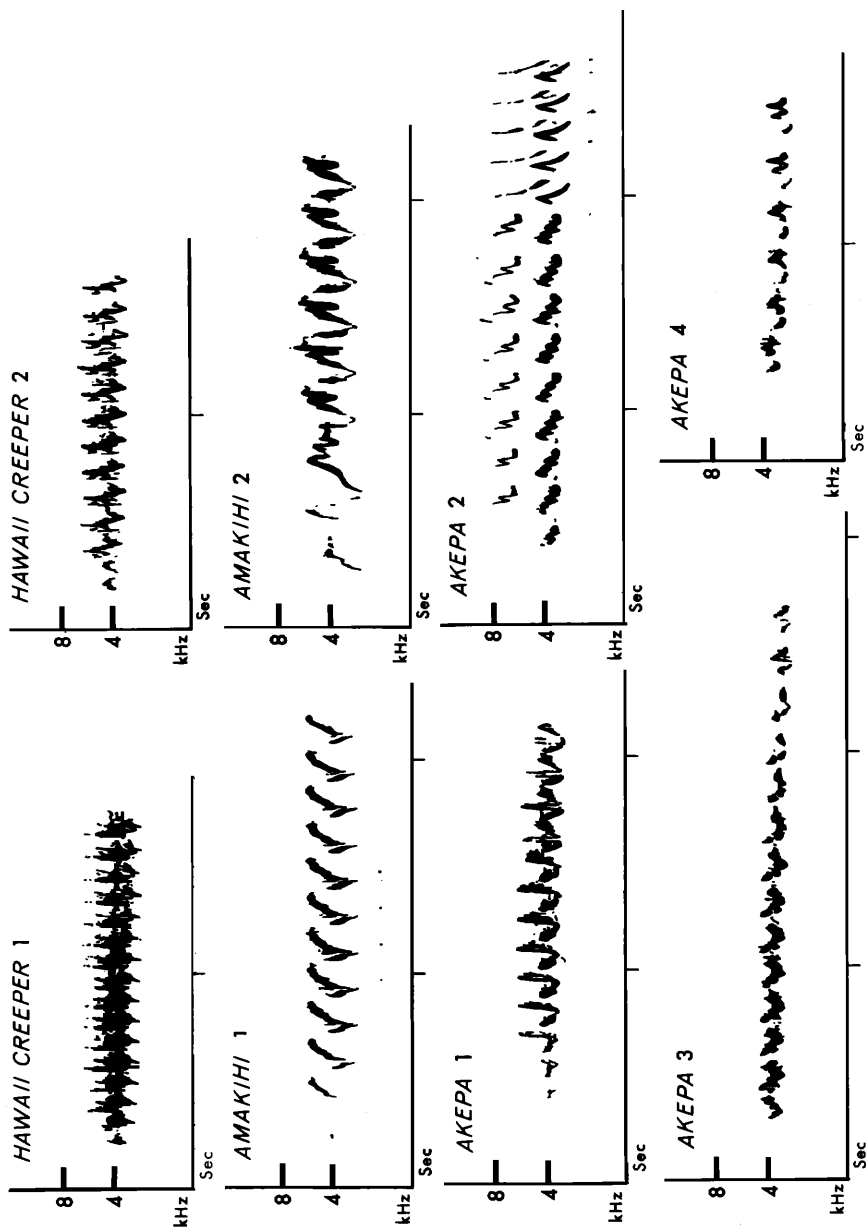


Figure 1. Songs of three similar *drepanidids* from the island of Hawaii.

lackadaisical and is not so stereotyped, often changing pattern from one song to the next. The song of the Amakihi is a slower and choppy trill, with the individual notes more distinct than in either the Akepa's or the creeper's song (Figure 1).

Calls. The usual call of the Hawaii Creeper is a quiet *sweet*, easily missed among louder calls and songs. Family groups of creepers, however, produce a loud, distinctive chatter of wheezy notes in short series: *whit-whit* . . . *whi-whi-whit* etc. (Figure 2), resembling calls of the Pygmy Nuthatch (*Sitta pygmaea*) of western North America. Such family-group calls are frequently heard in the spring and early summer when fledged young are still following parents. The Amakihi possesses a variety of calls, many resembling those of other species. The call most frequently given is a single raspy *zhee* or *sweek* that will remind birders from North America of the call of the Blue-gray Gnatcatcher (*Poliioptila caerulea*). Other calls include an inquisitive upslurred *queet* and various short chirps and tweets. A calling Amakihi will often give a variety of calls in a single bout of vocalization, whereas Hawaii Creepers usually repeat the same call monotonously. The Akepa's call is a high-pitched, two-note, whistled *cheedlee*, not likely to be confused with the calls of the Hawaii Creeper but similar to some Amakihi calls (Figure 3).

IDENTIFICATION PROCESS

A birder's initial identification of a bird in the field is not always correct. The percentage of times this first impression proves accurate will vary with the observer's familiarity with the species in question, how well the bird was heard or seen, and the person's degree of concentration at the time of the observation. Discussions with individuals who had initially misidentified birds as creepers revealed that the Amakihi most often caused confusion. Recognizing these problems, Scott documented those features that 1) attracted his attention to a bird; 2) suggested that it

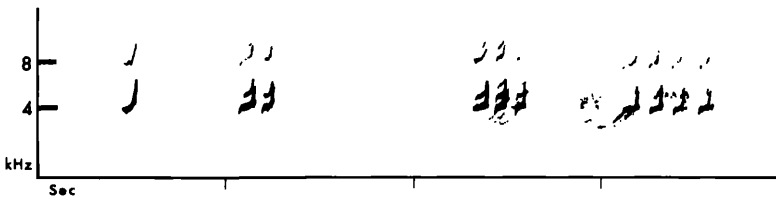


Figure 2. An approximately 3-second segment of chattering notes of a Hawaii Creeper accompanying a small, presumably family, group. The chatter continued in like manner for some minutes. Recorded 3 May 1977 on west slope of Hualalai, ca. 1600 m.

HAWAII CREEPER

was a creeper; and 3) confirmed or denied the initial identification (Table 2). Of the 72 birds initially identified as creepers, 53 (73.6%) were verified as being Hawaii Creepers and 22.2% were identified as some other species. Of the latter, 12 (16.7%) were found to be Amakihis, 3 (4.2%) Japanese White-eyes, 1 (1.4%) an Akepa, and 3 (4.2%) unknown. For creeper identifications that subsequently proved to be correct, the character that first suggested that the bird was a creeper was foraging behavior in 54.7% of the cases and call in 30.2%. Other features such as song, superciliary line or bill shape were used far less frequently at this stage of identification (Table 2). The feature most often used to confirm the identification of a Hawaii Creeper was bill shape (64.2%), but throat color, facial features, foraging behavior, song and calls were also used.

Foraging behavior was used to identify 14 (87.5%) of the supposed Hawaii Creepers that turned out to be some other species. Bill shape was used in 9 (56.2%) of the mistaken identifications to establish the true identity of the bird. Song, facial features, throat coloration and presence of an eye-ring were used in other cases.

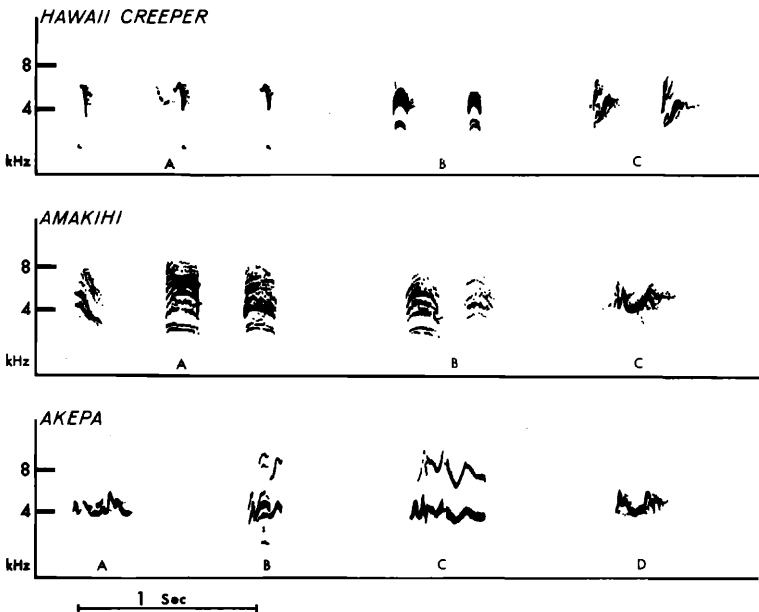


Figure 3. Call notes of three *drepanidids* from the island of Hawaii. Calls that are grouped were uttered in the time sequence shown. Single calls are arranged to facilitate comparisons, and were not uttered in the pattern shown.

HAWAII CREEPER

Table 2. Characters used in identifying 72 birds that were initially identified as being Hawaiian Creepers. Three of these birds were never confirmed as to species.

	CREEPERS					
	First		Second		Confirming	
	N	%	N	%	N	%
Call	18	34.0	16	30.2	2	3.8
Song	7	13.2	8	15.1	4	7.6
Movement	28	52.8	0	-0-	0	-0-
Foraging behavior	0	-0-	29	54.7	0	-0-
Bill shape	0	-0-	0	-0-	34	64.2
Mask	0	-0-	0	-0-	0	-0-
Throat color	0	-0-	0	-0-	8	15.1
Eye patch	0	-0-	0	-0-	5	9.4
Eye ring	0	-0-	0	-0-	0	-0-
Total	53		53		53	

	OTHER SPECIES					
	First		Second		Confirming	
	N	%	N	%	N	%
Call	1	6.3	1	6.3	0	-0-
Song	1	6.3	1	6.3	1	6.3
Movement	14	87.5	14	87.5	0	-0-
Foraging behavior	0	-0-	0	-0-	0	-0-
Bill shape	0	-0-	0	-0-	9	56.3
Mask	0	-0-	0	-0-	2	12.5
Throat color	0	-0-	0	-0-	1	6.3
Eye patch	0	-0-	0	-0-	0	-0-
Eye ring	0	-0-	0	-0-	3	18.8
Total	16		16		16	

DISCUSSION

Clearly Peterson's (1961) statement that "it is virtually safe to call any small greenish bird with no white eye-ring an Amakihi unless proven otherwise" is not valid. Field identifications of the Hawaii Creeper should involve as many characters as possible. If the throat cannot be seen, the distribution of black in the face or shape of the bill may be helpful. Behavioral cues, especially vocalizations, become more useful with increasing familiarity with the birds. Even veteran observers in Hawaii do not expect to positively identify *every* small, green bird they see, but we believe the criteria outlined here will greatly increase the number of such birds that can be identified to species.

The reader should be cautioned that the subspecies of creeper on the other Hawaiian Islands differ widely among themselves in appearance and behavior and present special field problems of their own. We refer the interested observer to Shallenberger and Pratt (1978) for identification of the Oahu race.

ACKNOWLEDGMENTS

Discussions with the members of the Hawaii Forest Bird Survey Teams from 1976 to 1978 were very helpful in determining those features which observers found useful in identifying creepers. Tonnie L. C. Casey and Charles van Riper were particularly helpful. C. John Ralph provided slides and prints of creepers and Amakihi which H. Douglas Pratt used in making the color plate. Tonnie L. C. Casey, Cameron B. Kepler and C. J. Ralph offered comments on earlier drafts of this paper. We wish to thank James L. Gullede for making the audiospectrograms.

LITERATURE CITED

- Berger, A. J. 1972. Hawaiian birdlife, Univ. Press Hawaii, Honolulu, Hawaii.
- Henshaw, H. W. 1902. Complete list of the birds of the Hawaiian possessions with notes on their habits. Thos. G. Thrum. Honolulu.
- International Commission on Zoological Nomenclature 1964. International zoological nomenclature adopted by the XV International Congress of Zoology. Int. Trust Zool. Nomenclature, London.
- International Commission on Zoological Nomenclature. 1974. Amendments to the International Code of Zoological Nomenclature adopted since the XVI International Congress of Zoology, Washington, 1963. Bull. Zool. Nomenclature 31:77-89.
- Munro, G. C. 1944. Birds of Hawaii. Bridgeway Press, Rutland, Vermont.
- Peterson, R. T. 1961. A field guide to western birds. Houghton Mifflin Co., Boston.
- Perkins, R. C. L. 1903. Vertebrata (Aves), Pages 368-465 in D. Sharp, ed. Fauna Hawaiiensis, vol. 1, part 4. Univ. Press, Cambridge, England.
- Shallenberger, R. J. and H. D. Pratt 1978. Recent observations and field identification of the Oahu Creeper (*Loxops maculata maculata*). Elepaio 38:135-140.
- U. S. Fish and Wildlife Service. 1975. Listing of endangered and threatened fauna. Federal Register 40:44149-44151.
- van Riper, C., III 1978. The breeding biology of the Amakihi (*Loxops virens*) and Palila (*Psittirostra bailleui*) on Mauna Kea, Hawaii. Unpubl. Ph.D. dissertation, Univ. Hawaii, Honolulu, Hawaii.