

## 'TIWI

## *Drepanis coccinea*

Other: *Olokele* (Kaua'i), *Iiwipopolo* (juvenile)

monotypic

### **native resident, endemic**

Because of its bright plumage and spectacular carmine bill, the 'Tiwi is the best-known endemic Hawaiian landbird. C. Clerke (*in King 1779*) makes first post-contact mention of this "bright scarlet bird" for which "the native name in *eeeeeve*", and also recorded first-cycle 'Tiwis "to be either a young bird, or a variety of the foregoing... variegated with red, brown, and yellow". It was the first Hawaiian endemic species to be formally described, as "*Certhia coccinea*" by George Forster (1780), who had accompanied Cook's second voyage with his father, and was given four 'Tiwi specimens and a Hawaiian lei made out of 'Tiwi feathers by shipmates recently returned from the third voyage (Medway 1981). Although Medway, Stresemann (1950), and others (e.g., AOU 1983) have assumed that the type locality for Forster's material was probably Kaua'i, where the species was noted for sale but not seen in the wild by Cook in Jan 1778 (see below), it is evident from Forster's essay that they were collected on the island of Hawai'i in early 1779 (Olson 1989b), where all of the other type specimens from Cook's voyage were apparently collected. Forster assumed it was a member of the "tree-runner" family (*Certhiidae*) and indicated why he believed it was not a bird-of-paradise (*Paradisaeidae*). The generic name *Vestiaria* was suggested by Latham and Fleming (formerly by Jarocki 1821) based upon the well-known use of 'Tiwi feathers in the ornamental garments of native Hawaiians (*cf.* Forster 1781, Malo 1838, Brigham 1899, Conant 2005), and was used by most authors through the 2000s (see [Synonymies](#)). However, as the 'Tiwi is very close to mammos in structure, it was merged with *Drepanis* by Gray (1849) and some subsequent authors including Pratt (2005, 2014), followed by the AOU (2015). The duller plumage of first-cycle individuals misled Dole (1879) into naming a separate species, "*Drepanis rosea*" (see Stejneger 1887a, Wilson 1890a, Olson 1994); native Polynesians also thought young individuals a different species (Perkins 1903). The highly curved beak of the 'Tiwi may indicate a specialization for flowers of the Lobeliaceae family, which dominated Hawaiian flora in prehistoric times (Peale 1848; Spieth 1966; Berger 1972, 1981); it now feeds on a variety of fruits and nectar, including those of exotic plant species such as *Pasiflora* (Scott and Kepler 1985). An interesting record is of a hybrid 'Tiwi X '[Apapane](#) captured in the Upper Waiakea Forest Reserve, Hawai'i I 28 May 2011 and released (Knowlton et al. 2014).

The 'Tiwi was formerly a breeding resident on all six *Southeastern Hawaiian Islands* with forested mountains. Early naturalists (Peale 1848; Finsch 1880; Wilson and Evans 1899; Rothschild 1900; Henshaw 1902a; Perkins 1893, 1903; Bryan 1915; Munro 1944) indicated that it was the most conspicuous native landbird on most or all of these islands, being found from sea level (at least during winter storms) to the highest-elevation forests. Since at least the 1880s (Wilson 1890a) 'Tiwis have been known to migrate up and down slope following flower phenology (see also Ralph & Fancy 1995, Hess et al. 2001, Simon et al. 2002). Storm-blown birds were frequently (now occasionally) recorded at sea level and "numbers" were reported from *Ni'ihau* after a gale on Kaua'i,

presumably in the late 1800s (Wilson and Evans 1899). However, 'Tiwi populations have since declined in both range and abundance on all islands (Scott and Kepler 1985, Ralph and Fancy 1995, BLI 2009, Gorresen et al. 2009), have been extirpated as breeding residents from Lana'i and probably Moloka'i, and by the 2000s-mid 2010s had become very rare on O'ahu, probably due to low resistance to avian diseases (Atkinson et al. 1995, Fancy and Ralph 1998, Jarvi et al. 2001, VanderWerf 2013a, BLI 2016; *HFW* 8[3]:1,11). It was listed as endangered on O'ahu, Moloka'i, and Lana'i by the State of Hawaii in 1986, and the species overall is considered vulnerable by BLI (2016). Banko (1979, 1981b) summarizes 505 museum specimens located and details the status of the 'Tiwi on all islands through the late 1970s.

On *Kaua'i*, the 'Tiwi was first noted by Captain Cook, who remarked upon the "great numbers of skins" offered for sale by native Hawaiians at the ship off Waimea in 1778, "often tied up in bunches of twenty or more" (Cook and King 1784:207). Munro (1944) indicated that 'Tiwi and ['Apapane](#) were so numerous on the Kaholuamanu Plateau that "their wings keep up a continual buzz", and Perkins (1903, 1913) observed "thousands" of 'Tiwi on the plateau on a single day (15 April 1894). By the 1940s, however, Munro (1944) indicated that they were greatly reduced from historical numbers. Richardson and Bowles (1964) deemed 'Tiwis "fairly common" on the Alaka'i Plateau in 1960, crudely estimating a population of 18,500 individuals inhabiting about 194 sq km of forests above 840 m elevation. Sincock et al. (USFWS 1983c) estimated about 26,000 on Kaua'i in 1968-1973, and Scott et al. (1986) estimated 5,400 during the [HFBS](#) in 1981, where Sincock et al. had estimated 7,800, indicating a slight population decline, although movements based on flower phenology could also account for this difference. Although 'Tiwis were still considered common in the Alaka'i by Denny (1999), subsequent surveys have indicated further declines in both range and populations there (Walther 1995, Fancy and Ralph 1998, Foster et al. 2004, Camp et al. *in* Gorresen et al. 2009, Paxton et al. 2016), the last authors estimating declines of 81% to 97% in the interior and exterior areas of the Alaka'i Plateau, respectively, between 2000 and 2012, to an overall population estimate of 2,603 birds in 2012. Single-day observations during 2010-2016 on the plateau also reflect this decline, with counts of up to 20 in 2011 (24 Mar) but no subsequent counts > 10 individuals. Lowland observations on Kaua'i include one found dead in the Makeweli Valley 29 Dec 1890 (E 67:29) and one near Kapa'a 16 Dec 1982.

'Tiwis were first noted on *O'ahu* in 1825 by Bloxam (1827b) and in 1837 by Deppe (Banko 1981b), who each collected two specimens in Nu'uauu Valley. By the late 1890s, Perkins (1903) noted that they had declined since Townsend (1839) and Deppe's visit and had become rare in the mountains near Honolulu but remained fairly plentiful in the n. Ko'olau and Wai'anae ranges (see also Seale 1900). By the early 1900s, however, they had also become scarce near Mt. Ka'ala in the Waianae range (W.A. Bryan 1905b), and they were considered extremely rare on O'ahu in the 1930s by Munro (in Gregory 1935, *E* 9:65; but see Northwood 1940). Banko (1981b), Shallenberger (1977b), and Shallenberger and Vaughn (1978) summarized observations on O'ahu between 1936 and 1978, generally noting small and declining populations in selected areas (primarily near Mt. Ka'ala and along the Poamoho Trail in the nc. Ko'olau range). During the 1980s-2000s small numbers (1-6) of 'Tiwi continued to be observed in both ranges (*cf.* Camp et al. *in* Gorresen et al. 2009), including the discovery of a small population (with a

juvenile, indicating local breeding) in seldom-visited valleys above Wahiawa in the c. Ko'olau range in 1996 (VanderWerf and Rohrer 1996); by 2000, however, this population could not be found (VanderWerf 2013b). The only observations during 2010-2016 were in the Nanikula Forest Preserve, s. Waianae Range, one in 2010 (VanderWerf 2013a) and one on 5-7 Jan 2013 ([HRBP](#) 6783). Lowland observations on O'ahu include one or more individuals observed five times near Sacred Falls at the base of the ne. Ko'olau Range in 1974-1975 and one below (E of) the Pali at upper Nu'uuanu Valley 13 Jan 1978 (*E* 39:10).

Bangs (1911) thought that the 'Tiwi on **Moloka'i** was larger and tinged orange compared to other island populations, naming it "*V.c. suavis*", but most authors consider this just a result of variation among individuals, and that it was unlikely that populations of this "strong-flying" species would differentiate in Hawaii (Bryan and Greenway 1944, Amadon 1950; see [Synonymies](#)). Early naturalists (Rothschild 1900, Perkins 1903, Schauinsland 1906, W.A. Bryan 1908) indicated the 'Tiwi to be "frequent" in the forests of Moloka'i, just behind 'amakihi and 'Apapanes in abundance; W.A. Bryan (1908) noted them down to sea level in Wailau Valley along the north coast. But, as on other islands and with other native Moloka'i landbirds, there was a decline in abundance of 'Tiwi through the early 20<sup>th</sup> century. Munro (*in* Atkinson 1977) noted that it was "close to extinction" in 1907-1923 and (*in* Gregory 1928) failed to find them in 1928, and Richardson (1949) and Pekelo (*E* 23:64, 24:17-18, 24:46-48) also failed to observe any in 1948 and the early 1960s, respectively. During the 1970s-1980s singles or small numbers of 'Tiwi were observed on Moloka'i (e.g., Pratt 1973, Scott et al. 1977, Fancy and Ralph 1998), including 12 individuals recorded during the [HFBS](#) in 1980-1981, resulting in a breeding population estimate of 80 individuals (Scott et al. 1986). Substantiated records since 1990 were of one above Kamalo Gulch 23 May 1995 (Reynolds and Snetsinger 2001), three individuals throughout Moloka'i in 2004 (Camp et al. *in* Gorresen et al. 2009), and 1-3 recorded on the Kualapulu [Christmas Bird Count](#) at the Waikolu Lookout above Kawela in Dec 2013-2015. It could be near-extirpated as a breeding bird on Moloka'i, with records since 1950 involving winter visitors from other islands such as Maui (Reynolds and Snetsinger 2001; see below).

Munro (1944, 2007, *in* Gregory 1924, 1928, 1930) chronicles the declining population status of the 'Tiwi on **Lana'i**, from "common" in 1913, to "fairly common" and "probably increasing" in 1923, to "less in evidence" in 1927, to gone by 1929, the last observation being in 1928 (Munro 2007, *in* Gregory 1931). Thereafter it was widely presumed extirpated on Lana'i (e.g., Berger 1970, 1981; Scott et al. 1986). It was thus of some surprise that an archer, while on a hunt in the woods behind Lanai City on 1 Jun 1994, found the remains of a first-cycle 'Tiwi and "managed to photograph it before his cat nabbed it" ([HRBP](#) 1079, head only). We agree with Reynolds and Snetsinger (2001) that this likely represented a recent inter-island dispersal.

Populations of 'Tiwis on **Maui** and **Hawai'i** undoubtedly declined somewhat in size and range during the late 1800s and 1900s, although there is only localized evidence of this (Conant 1975, 1981; Banko and P.C. Banko 1980, Camp et al. 2009, Camp et al. *in* Gorresen 2009), and they are still regarded as common through the 2000s at higher elevations. They were common in Volcano NP in the 1940s but become rare there by mid-century (Balwin 1953, Conant et al. 1975). Scott et al. (1986) estimated total population sizes of 19,000 on Maui, including just 176 in the W Maui Mts, and 340,000

throughout Hawai'i. Data based on the Volcano [Christmas Bird Count](#) indicate an increase during the 1970s through 2000, followed by a general decline through 2014 ([Graph](#)). Declines were also noted in the Wai'akea and Ola'a Forest Reserves above Volcano NP during 1994-2008 (Camp et al. 2010b), while increases were noted in Hakalau Forest NWR during 1987-2007 (Camp et al. 2010a; see also Freed and Caan 2010 and Camp et al. 2014c, 2015). During 2010-2016, single-day counts of >100 were still being recorded on Hawai'i in kipukas in the Hilo and Upper Waiakea Forest Reserves, off Saddle Road (high count 194 on 24 Apr 2011) and at Hakalau NWR (high count 251 on 16 Feb 2016); on Maui up to 50 were being recorded in the remote Hanawi Natural Area Preserve (18 Mar 2011) and up to 90 in the Waikamoi Preserve (25 Mar 2015). Populations were found as low as 300-700 m on both islands, although these may have been supplemented by down-slope migrants rather than being sustainable. Recent lowland observations from Maui and Hawai'i include one observed near Pukalani, Maui, and later found dead with other birds after insecticide spraying 3 Aug 1993 (BPBM 179051); one in an ornamental tree nursery in Waimea, Hawai'i, 5 Apr 1995; one observed at Hapuna Beach, Hawai'i, 15 Mar 1998; and one at the Pu'ukohola Heiau NP, near Kawaihae, Hawai'i, 8-15 Dec 2011 ([HRBP](#) 6782).

#### [Acronyms and Abbreviations](#)

#### [Literature cited](#)

Citation: Pyle, R.L., and P. Pyle. 2017. The Birds of the Hawaiian Islands: Occurrence, History, Distribution, and Status. B.P. Bishop Museum, Honolulu, HI, U.S.A. Version 2 (1 January 2017) <http://hbs.bishopmuseum.org/birds/rlp-monograph/>