Other: Brazilian Cardinal monotypic

naturalized (non-native) resident, long established

The Red-crested Cardinal is a monotypic species inhabiting n. Boliva and s. Brazil through n. Argentina (Ridgley and Tudor 1989). It has been introduced to Puerto Rico and Florida, in addition to the *Southeastern Hawaiian Islands* (Long 1981, Lever 1987, AOU 1998). Prior to 1966 it was known as "*P. cucullata*". Undocumented numbers were introduced to O'ahu and Kaua'i in 1928-1931, primarily by the Hul Manu (Caum 1933, Munro 1944, Swedberg 1967a; *E* 31:26; *PoP* 54[11]:13), from stock that had passed through San Francisco. Following introduction they expanded rather slowly throughout O'ahu and Kaua'i, and apparently spread naturally to most or all other *Southeastern Hawaiian Islands*, where they occurred in various abundances during the mid-2010s. They inhabit lowland areas, generally in drier habitats and beach parks, only as high as 400 m elevation (Shallenberger and Vaughn 1978), and they were not recorded in native forests during the HFBS (Scott et al. 1986).

Caum (1933) believed the Red-crested Cardinal "bids fair to become well established" on *O'ahu* during the first five years after introduction there in 1928-1931. Little documentation exists for their spread throughout the island, but by 1942 they were increasing in Honolulu gardens (*E* 3:9), by 1942 they "were everywhere on O'ahu" (*PoP* 54[11]:14), and by 1960 they were reported specifically from widespread localities around Honolulu and as far as Waimanalo, Kailua, Nanakuli, and Haleiwa (e.g., *E* 16:42, 17:86-87, 21:06). Shallenberger (1977c) reported them to be common around the Waianae Range but noticeably rare in similar habitat at the N end of the Ko'olau Range. By the 1980s-mid 2010s they appeared well established around the entire island, with up to 40-50 counted per day in larger parks and open areas, and a high count of 80 in the Kawainui Marsh area 18 Nov 2013. That the population took this long to expand on O'ahu is reflected by abundances recorded on the Honolulu Christmas Bird Count, which increased steadily from the 1940s through the 1990s before leveling off in the 2000-mid 2010s (Graph); on the Waipi'o Christmas Count, on the other hand, populations showed no significant trends from 1977 to 2007.

On *Kaua'i*, Red-crested Cardinals were apparently introduced to Lihue in 1928 (Munro 1944, Richardson and Bowles 1964) but were reported only sporadically and tentatively through 1960, and not observed by Richardson and Bowles themselves. By 1968 they showed up in Poipu, perhaps arriving naturally from O'ahu, and were soon noted spreading to the W and N. Around Lihue they increased dramatically between 1972 and 1992 (Graph) and were first noted at Huleia NWR in Jun 1975 (*E* 36:51). By the late 1970s they had been recorded W to Hanapepe (Berger 1981). Around Kapa'a, a few were noted prior to 1980 but populations apparently became established in 1985 and increased significantly through the 2000s (Graph) before perhaps leveling off by 2014. By the first half of the 1980s they were also noted at Kilauea NWR and Kokee NP, by the 1990s they had been recorded virtually around the island (Denny 1999), and by the early 2010s they appeared to still be increasing in abundance, with up to 50 per day observed at resorts and

other open areas. Red-crested Cardinals were observed during quick visits to *Ni'ihau* in 2000 and 2001, suggesting that they had colonized this island as well.

On *Moloka'i*, 15 Red-crested Cardinals were first noted at the W end of the island in 1963 (Pekelo 1964), indicating that they had spread there naturally from O'ahu. Unlike on other islands they appeared to spread quickly on Moloka'i in both range and numbers: by 1967 they were noted at Palaau and Kawela E of Kaunakakai (*E* 27:90), by 1968 they had spread E to Kamalo (*E* 28:82), and by the 1970-mid 2010s they were recorded commonly around the island including the Kalaupapa Peninsula and in Halawa Valley. The first observations on *Lana'i* were of single individuals near Napa and Manele in 1976 (Berger 1981) and by 1989 they were noted as widespread. Presumably populations increased to become common there during the 1990-2000s, as on other islands with drier habitat, and by the 2010s up to 15 per day were being recorded in appropriate habitats such as those around Manele Bay. Red-crested Cardinals were not recorded on *Kaho'olawe* during 1983 (Conant 1983a) but were reported there in the 1990s (Gon et al. 1992, Morin et al. 1998) and continued to be recorded there in low numbers (up to 9) on *Christmas Bird Counts* there through 2015.

The first report of a Red-crested Cardinal on *Maui* was of one on the road from Paia to Makawao during late summer 1951 (E 12:31). Documentation of their subsequent spread on this island is scarce but by the 1980s they were recorded uncommonly at scattered localities from Lahaina to Kapalua Beach in W Maui and to Kaupo along the coast S of Mt Haleakala (E 47:42, 48:57). Through the 2010s they appeared to be slowly increasing on Maui (cf. HAS 1989-2005), being noted mostly in smaller numbers (< 15) among the drier lowland portions of the island, but with high counts of 25 in Lahaina 30 Dec 2012 and 45 in Ka'anapali 15 Feb 2016. A report of one below the Haleakala NP Headquarters at about 2000 m elevation 1 Jan 1993 is unsubstantiated. On *Hawai'i I* one was reported from Captain Cook in summer 1961 (E 22:63) and they were indicated as local and in small numbers by 1966 (E 27:28), although these reports may have referred to the similar Yellow-billed Cardinal, which had not yet been recognized to species in Hawaii (see Account). Berger (1981) mentions Red-crested Cardinal for Kona (cf. E 34:95-96) that may also have referred to Yellow-billed Cardinal. Carefully identified Red-crested Cardinals were first reported in Hilo in 1976 (E 37:2) and a pair with juvenile was observed at the Hilo Arboretum 31 May 1979. Through the mid 2000s they continued to be reported in small numbers in the Hilo area and in Kilauea near Volcano NP, but by the 2010s reports had diminished. Three were reported from Paradise Park in Ke'eau in Feb 2013 and one present at Mahukona Beach Park in Jul-Dec 2016 (HRBP 6754-6755) may have been pairing up with a Yellow-billed Cardinal by the end of the year. Competition with Yellow-billed Cardinal may have prevented Red-crested Cardinals from spreading to more favored dry habitats on the W side of Hawai'i I.

Acronyms and Abbreviations

Literature cited

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