

NEWELL SHEARWATER

Puffinus newelli

Other: Townsend's (Newell's) Shearwater, 'A'o

monotypic

breeding visitor, endemic, threatened

Newell Shearwater has been considered an endemic Hawaiian breeding taxon within a worldwide group of small shearwaters including Manx Shearwater (*P. puffinus*), Townsend Shearwater (*P. auricularis*), and several others. Austin et al. (2004) indicated, based on DNA evidence, that a population of shearwaters breeding in the Austral Is (*myrtae*; Bourne 1959) may be closer to Newell Shearwater than to Little Shearwater (*P. assimilis*), with which it was originally placed, but more study is needed to confirm this. The AOU (1998) considers Newell Shearwater a subspecies of Townsend Shearwater, which breeds on islands off Baja California, but other taxonomists ([Synonymies](#)) along with Pyle (1988), Austin et al. (2004), and Brooke (2004) considered it a separate species, and we follow this opinion here.

Newell Shearwaters breed only in the *Southeastern Hawaiian Islands*, primarily in burrows on steep forested mountain slopes at medium elevation. Adults return to the breeding grounds during the first week of April and most depart in early fall, primarily toward the south and east. Wintering range is poorly understood, although Newell Shearwaters have been recorded in the tropical Pacific in an area defined by 8-12° N and 160-120° W (Pitman 1986, Spear et al. 1995). Farther afield, Newell Shearwaters have been collected at Guam and Saipan in the Mariana Is, Wake I (Rauzon et al. 2008), Johnston Atoll (USNM 544600), and American Samoa (Jouanin 1956, King and Gould 1967, Amerson and Shelton 1976, Drahos 1977, Grant et al. 1994, Ainley et al. 1997b), and one reached California in Aug 2007 (Unitt et al. 2009). General summaries of the biology and natural history of Newell Shearwater in Hawaii can be found in Greenway (1967), Banko (1980b), USFWS (1983b), Ainley et al. (1997b, 2001), and BLI (2009); Banko (1979) summarized 47 known specimens, 17 of which were collected at sea.

Newell Shearwaters are found in the fossil and subfossil deposits of O'ahu and other islands (Olson and James 1982b, James 1987, Burney et al. 2001). The early Hawaiians knew this shearwater well, as the 'a'o, reflecting its call (Bryan and Seale 1901). By 1891 four specimens had been collected on Kaua'i (Stejneger 1887, 1888) and in 1894 native Hawaiians brought several live shearwaters to Brother Mathias Newell on Maui. One of these specimens was saved (BPBM 4292) and became the type specimen for Henshaw's (1900c) description of *Puffinus newelli* (Munro 1944; *E* 2:9-11); W.A. Bryan at the same time described one of the Kaua'i specimens (BPBM 1100 [formerly "9307"]) and named it *gayi* after the collector, Francis Gay, but withdrew the name upon seeing Henshaw's paper (Bryan 1901a). For over a half-century subsequent reports of it virtually ceased (Bryan 1908, 1915) and some feared it was approaching extinction (Peters 1931, Munro 1944). A report of two adults with chicks in burrows at Kilauea Pt., Kaua'i 8 Sep 1946 (*E* 7:45), was questioned by King and Gould (1967; see also Banko 1980b), and unsubstantiated (but probably valid, in retrospect) offshore sightings were reported in 1938 (*E* 13:22), 1939 (*E* 2:11), and 1947 (Fisher 1951). Interest revived in 1954 when a Newell Shearwater flew into a sugar refinery in Aiea, O'ahu 22 May 1954 and died at the Honolulu Zoo (Richardson 1955; skin AMNH 468881, skeleton BPBM

6715). A few other specimens were then collected on Kaua'i in 1956-57 (BPBM 145093; *E* 17:44, Ripley 1957, King and Gould 1967, Banko 1980b) and ornithologists turned to learning more about this enigmatic population. It was listed as a Federally Threatened Species by the USFWS in 1975.

The largest populations of Newell Shearwater are now known to breed on *Kaua'i* (Sincock and Swedberg 1969; see [Table](#) for rough estimates per island). Colonies and nests of Newell Shearwater are found in tangled vegetation among cliffs and steep valleys (Sincock and Swedberg 1969), usually below those of Dark-rumped Petrel in elevation (Bryan and Seale 1901), and are extremely difficult to locate and monitor; thus, population estimates of breeding Newell Shearwaters are virtually impossible to calculate. Based on observations at sea in the 1980-1990s, Spear et al. (1995) estimated a total population of 84,000 birds (confidence interval 57-115,000) and 18-19,000 breeding pairs, the majority undoubtedly on Kaua'i, where a population of 15,000 pairs was estimated based on studies in the early to mid 1990s (Ainley et al. 1995, 1997b). During the 2000s researchers on Kaua'i undertook intensive surveying using radar-sensing techniques to monitor activity based on evening and morning flights to sea (Day and Cooper 1995, Day et al. 2003b; see also Doughty 1972), and using auditory detection techniques throughout the island (Wood et al. 2001, Holmes and Troy 2008, Deringer and Holmes 2009, Holmes et al. 2009). These most recent surveys located 7 active and 3 inactive colonies, with 5 of the 7 active colonies located in the remote nw. interior, including Hono o Na Pali, Upper Limahuli Preserve, and Wainiha Valley. The other two colonies are in remote mountains in the ec. portion of Kaua'i, above Lihue. The inactive colonies, at Anahola, Kahili, and Kaluahonu, were known to be active in 1983-1994 (Ainley et al. 1995), but had been abandoned; all three are located at lower elevations and in less-native vegetation than the other colonies and perhaps were affected more severely by mammalian predation (BLI 2009, Holmes et al. 2009). [Short-eared](#) and/or [Barn](#) owls have also been recorded foraging near colonies and taking shearwaters (Byrd and Telfer 1980b).

Beginning in the early 1960s, grounded fledglings were increasingly reported on lighted highways and hotel grounds of Kaua'i at night (*E* 21:60-61 probably refers to Newell's Shearwaters; *E* 27:101-103; Banko 1980b). Residents began to pick up the birds and release them to sea; e.g., a security guard at one hotel in Lihue picked up 200 birds 22 Oct-11 Nov 1967, liberating them the morning after pickup (Sincock and Swedberg 1969). In 1976 DOFAW staff launched the Shearwater Aid Program in which the public could bring downed shearwaters to receiving stations at firehouses and hotels (Scott et al. 1988; *E* 39:71). Each day wildlife officials took the birds to Kilauea Point NWR for analysis, banding, and release. During the first year 879 shearwaters were turned in 29 Sep-6 Dec (*AB* 33:218, *E* 39:71) and another 144 were recorded as dead on highways or elsewhere. More than 90% of these were fledglings. The program (dubbed "SOS" for "Save Our Shearwaters") has continued successfully each fall. Recoveries increased to 2,220 in 1987 and 1,716 in 1991 but dropped abruptly to 1000 in 1992 and have declined steadily to 300-400 during 2000-2005 (Rana Productions 2004, Holmes et al. 2009), representing a >72% decrease since 1993 (Ainley et al. 2001, Day et al. 2003b, BLI 2009). The decline could be related to various factors including destruction of breeding habitat and reduction of lights after Hurricane *Iniki* devastated Kaua'i in November 1992 (*AB* 47:153), other mitigation of lighting practices (Byrd and Zeillemaker 1981, Reed et

al. 1985, Telfer et al. 1987), and/or declining populations or reproductive success based on increased urbanization and predation by feral cats (Day et al. 2003b, Holmes et al. 2009). At any rate, the combination of a ~75% decline in radar and SOS fallout from 1993-2008 (Day et al. 2003, Holmes et al. 2009), plus the recent discovery of three colonies known to be abandoned that were active 15-30 years ago, highlights the significant decline of this species on Kaua'i in recent decades. Ainley et al. (2001) modeled population trends relative to all of these factors and concluded that Newell Shearwaters were declining by 30-60% per decade, due to a combination of predation at nesting colonies and collisions of birds with man-made structures. Further mitigation practices concerning power lines and poles were being debated toward the end of the 2000s.

In a cross-fostering experiment in spring 1978 and 1980 about 90 Newell Shearwater eggs were placed in Wedge-tailed Shearwater burrows at Kilauea Point, Kaua'i (Sincock et al. 1979, Byrd et al. 1984). Most eggs hatched and many chicks were banded and fledged successfully. One of the banded chicks returned as an adult in August 1987. Nesting was confirmed on 3 July 1997 when 3 unbanded adults and a nest with an egg were discovered near the Refuge headquarters area. One to two pair bred each year from 1997-2007, resulting in successful fledging of chicks (e.g., [HRBP 5304](#)) in all years except 1998. Artificial burrow tunnels (to exclude Wedge-tailed Shearwaters) were installed in this area in 1998 and have been used by these Newell Shearwaters. This incipient colony was likely derived from the fostering experiment of 1978-1980; the unbanded adults were possibly attracted to the area by calling birds that had originally been part of the foster program, or represent chicks from previous undetected nests. Twenty more artificial burrows were added and a social attraction project was initiated in the 2000s to try to encourage more prospecting and breeding at Kilauea (Joyce et al. 2008).

Elsewhere in the *Southeastern Hawaiian Islands*, Fisher (1951) observed three birds on *Ni'ihau* although there are no certain records of breeding there (*E* 16:46). On Lehua Islet N of Ni'ihau, however, VanderWerf et al. (2007) saw adults flying near the island at dusk, heard one calling at night, and found the dried carcass of a chick in 2002-2004. On *O'ahu*, Newell Shearwaters have been reported more than 40 times since 1954 (e.g., Richardson 1955, *E* 20:20-21, Banko 1980b, Conant 1980). Most have been grounded birds (roughly a third of 36 birds turned into the SLP rehabilitation facility in 1990-2003 died whereas the rest were banded and released) while a few were flying around bright lights at night. Birds were found throughout the island but particularly on the highway SW of the Pali Tunnel in upper Nu'uuanu Valley, where strong trade winds force them down and into the headlights of oncoming vehicles (*AB* 47:1152; *BPBM* 145112, *LSUMZ* 81425). As yet there has been no evidence of Newell Shearwaters breeding on O'ahu, although the inaccessible cliffs near the upper end of Nu'uuanu Valley provide the right habitat for a small, undiscovered colony.

The early Hawaiians knew the Newell Shearwater on *Moloka'i* until at least 1906 (*E* 2:11, Bryan 1908). Perkins (1903) found several at the head of a windward valley after a storm and a specimen was collected there early in the century (King and Gould 1967). The species was not reported subsequently until the summer of 1979 when numerous individuals were heard and seen in impenetrable ferns near the east end of Moloka'i (near the upper end of transect 14 on Figure 37 of Scott et al. 1986:35) during the HFBS (*E*

41:47). This remote area has not subsequently been visited by ornithologists. One or possibly two were reported calling in the central mountains near Kamakou 18 May 1988, and one was reported heard 17 Jun 1995 atop the ridge between Pelekunu and Wailau Valleys. Radar searching from Kalaupapa Peninsula in 2002 detected targets that likely were Newell Shearwaters entering Wai'ale'ia Valley (Day et al. in review). A grounded bird near Lana'i City, *Lana'i* 10 Oct 1983 (later released) is the only record for that island. Since the type specimen was collected in 1894, Newell Shearwaters were not reported on *Maui* until the early 1980s when two specimens was picked up at low-elevation locations (USNM 599499, BPBM 185260), and another found grounded on a road near Haiku was picked up, banded, and released. Radar censuses suggested that small numbers may nest on the slopes of Haleakala (Cooper and Day 2003), and this was confirmed by the discovery of a small colony in 2002-2004 near the headwaters of Pi'ina'au Stream, at 1550 m elevation, in a *Sadleria* fern grove, along the western walls of Ainahou Bowl and west Wailua Nui (Wood and Bily 2008).

The first record of a Newell Shearwater on *Hawai'i I* came in early June 1968 when the identity of a live bird found at an unspecified locality was confirmed by Banko (1980b) following comparison with a specimen sent from the Bishop Museum. In 1972 a charred adult on egg was found in Makaopuhi Crater on the SE slope of Hawaii Volcanoes National Park, following an eruption (Kepler et al. 1979, Banko 1980b). On 27 Jun 1992 a flight of 75-100 vocalizing Newells were observed crossing the nearby coast NE of Kalapana just after dusk, and counts of up to 89 detections of shearwaters in Jul-Sep 1993 at Heiheiuhulu Crater above Kalapana and Pu'u Lena crater, 10 km N of Kalapana, suggested breeding colonies nearby (Reynolds and Ritchotte 1997; *AB* 47:1152). On the other side of the island, meanwhile, observers reported hearing and seeing Newell Shearwaters in the lowland ne. slopes of Mauna Kea and in the Kohala Mountains during 1976-1977, suggesting breeding in small dispersed colonies (*E* 38:131-132, Kepler et al. 1979, Day et al. 2003a). Reports of birds heard and a specimen (USNM 565260) from Kona in 1970-1972 (Banko 1980b), and 4 birds found grounded in Hilo May-Nov 1978-1993 (e.g., Conant 1980, specimens at BPBM), suggest that colonies may exist elsewhere on Hawai'i. Radar censuses (Reynolds et al. 1997a, Day et al. 2003a) may help elucidate this.

Beginning in 1900, when Henshaw (1902a) found them "numerous" in the channel between Moloka'i and Maui, Newell Shearwaters have been regularly observed in small numbers offshore of all Southeastern Islands but more commonly in the vicinity of the suspected breeding colonies, especially Kaua'i (e.g., [HRBP](#) 1308, 5234) during Apr-Nov (e.g., *E* 21:45, Richardson and Bowles 1964). Most single-day counts are of <10 but as many as 30 have been noted off Kaua'i and Ni'ihau (23 Sep 2008). One was noted from *Kaho'olawe* in Feb 1997 (Morin et al. 1998), the only report from this island.

Farther *at sea*, King (1970) recorded them in moderately low numbers during his surveys E and S of the Southeastern Hawaiian Islands in Mar 1964-Jun 1965; numbers peaked in Apr-May and were lowest in Nov-Feb, when only 12 (of 267 total) birds were recorded (*cf.* King 1967). Spear et al. (1999) recorded 17 individuals on transects SE to S of Hawaii during spring and fall surveys in 1984-1991, also with significantly more in spring than in fall. Rowlett (2002), during surveys throughout Hawaiian waters in Aug-Nov 2002, recorded 351 Newell Shearwaters on 17 of 93 observing days. Observations were heavily concentrated within a 370 km (200 nmi) radius of Kaua'i, with a high daily

count of 230 recorded on 24 Aug just north of the island. The only birds in northwestern waters were singles observed on four dates within 25 Aug-21 Oct in the vicinity of Nihoa (Rowlett 2002), and two observations during one-day trips S of *Midway* 4 Oct 1982 and 16 Nov 2000.

[Acronyms and Abbreviations](#)

[Literature cited](#)

Citation: Pyle, R.L., and P. Pyle. 2009. The Birds of the Hawaiian Islands: Occurrence, History, Distribution, and Status. B.P. Bishop Museum, Honolulu, HI, U.S.A. Version 1 (31 December 2009)
<http://hbs.bishopmuseum.org/birds/rlp-monograph/>