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### FIRST MODERN RECORD OF THE WHITE-TAILED EAGLE IN HAWAII

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The White-tailed Eagle (*Haliaeetus albicilla*) is distributed widely in northern Europe and Asia (Forsman 1999), where it breeds from western Greenland, Iceland, and Scandinavia to the Russian Far East and Attu in the Aleutian Islands (AOU 1998); the members of this genus are commonly called sea-eagles. During the 1950 and 1960s, the White-tailed Eagle declined dramatically in many regions of Europe because of environmental contaminants, habitat loss, persecution, and human disturbance, and the species was eventually listed as threatened by the International Union for the Conservation of Nature (IUCN 2006). After intensive conservation actions and successful reintroductions in its historic range, the White-tailed Eagle was downlisted to a species of least concern (IUCN 2006). It is a year-round resident in most portions of its range, but seasonal movements are evident in fringe populations (Forsman 1999). Mullarney et al. (1999) reported that most adults are resident except in far northern Eurasia, while juveniles are more migratory. Here I report the first White-tailed Eagle observed in the Hawaiian Islands, describe its prey selections, and briefly review the fossil record of the genus *Haliaeetus* in Hawaii.

At about 12:45 on 5 March 2007, I observed a White-tailed Eagle at a distance of approximately 50 m, soaring just below the crest of the 200-m coastal cliffs in Kilauea Point National Wildlife Refuge, Kauai. The eagle was heading west, soaring on the updrafts produced by onshore winds striking the cliffs. Staying close to the cliff edge, it followed the curve of the cliffs, then turned and headed east, again passing in front of me, this time at a higher altitude and slightly more distant. It continued east and then turned south (inland), and I lost sight of the bird. I observed the bird through Swarovski 10 × 42 EL binoculars and photographed the bird with a Canon EOD 20D equipped with a 100–300 mm Canon telephoto lens (Figure 1).

The White-tailed Eagle was brown overall with a dull whitish head, which did not contrast sharply with the body plumage, and a relatively short wedge-shaped tail, whiter than the head. Neither the head nor tail was immaculate white. The eagle had a large yellow beak and yellow eyes. Since no eagle normally occurs in the Hawaiian Islands, its overall large size and large broad wings with flared outer primaries were very impressive.

The photographs were of a quality sufficient to estimate the bird's minimum age and degree of molt in the primary feathers. Eagles of the genus *Haliaeetus* molt by the pattern of *Staffelmauser*, a strategy in which one wave of molt begins before the preceding wave has been completed (Pyle 2006). Because each wave is incomplete, the number of waves indicates the bird's minimum age (Pyle 2005). The photographs suggest that on the left wing P2, P4, P6, P8, and possibly P10 are newer and darker than the other primaries, implying five waves of *Staffelmauser*. Molt in the two wings appears to be asymmetrical. The right wing appears to have new, dark feathers only at P4, P9 and possibly at P7. The overall coloration and patterns of remigial molt indicate this bird is at least five years old (adult plumage). Young birds have dark-edged rectrices, while in the final subadult stage the rectrices have dark terminal tips (Forsman 1999, Mullarney et al. 1999).

This bird was almost certainly observed on Kauai as early as 30 December 2006, when Cindy Granholm and Dale McBeath saw "what appeared to be an eagle" on a rock jutting above a tidepool on the north coast of Kauai approximately 3.2 km east

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Figure 1. White-tailed Eagle on Kilauea Point National Wildlife Refuge, Kauai, Hawaii.

*Photo by Brenda Zaub*

of the refuge. Their description of the size and coloration of the bird's plumage, beak, legs, and feet suggested this eagle. Subsequently, on 4 January 2007 Fawne Frailey and Sebastian Romero observed an eagle, fitting the same description, feeding on a Laysan Albatross (*Phoebastria immutabilis*) within 1 km of the first sighting. A few other possible sightings were reported in February 2007, but no detailed description or photograph of this eagle was obtained until 5 March. I observed the eagle twice thereafter, on 8 March and on 2 May, as it soared over Kilauea Point. Through July 2007, I received several reports of eagle sightings on Kauai, two of which were confirmed by photographs: Jim Devries, Brad Schram, Daniel Grunenburg, and their birding colleagues observed and photographed the eagle near the Kawai'ele Bird Sanctuary on the south shore of Kauai on 22 March 2007, and Eric VanderWerf photographed the White-tailed Eagle in the same area on 20 April 2007.

White-tailed Eagles consume fish, birds, and carrion (Mullarney et al. 1999). During the seven months in which this bird was observed irregularly on Kauai, the only confirmed prey items were two adult Laysan Albatrosses, and the eagle was suspected in the predation of another three. Three Laysan Albatross carcasses with evidence of raptor predation were found in January 2007, and another two were seen in March 2007. On 8 March 2007 at approximately 17:10, the eagle was seen to attack and kill an adult Laysan Albatross on a remote, open, grassy portion of Kilauea Point National Wildlife Refuge. The adult albatross, a parent which had returned to feed its 34-day-old chick, was struck by the eagle shortly after it landed, according to the observer. When I arrived approximately 20 minutes later, the eagle was feeding on the albatross. When the eagle saw my truck approach to approximately 50 m, it took flight. The eagle had plucked and clipped the breast feathers, which were strewn on

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Figure 2. Laysan Albatross preyed upon by White-tailed Eagle, Kilauea Point National Wildlife Refuge, Kauai, Hawaii.

Photo by Brenda Zaub

the downwind side. The breast cavity was exposed, revealing that most of the pectoral muscle had been consumed. After photographing the albatross remains (Figure 2), I collected the carcass and submitted it to the U.S. Geological Survey's Biological Resources Division in Honolulu, Hawaii, where veterinarian Thierry Work performed a necropsy. He reported the albatross was "an adult male in good body condition with gross lesions indicative of predation by a large raptor (skeletonized sternum, ribs clipped off at base, skeletonized appendages, and missing internal organs with associated bleeding)."

Predation by eagles on albatrosses has been reported previously. A Steller's Sea-Eagle (*H. pelagicus*) was suspected of killing three adult Black-footed Albatrosses (*P. nigripes*) on Torishima Island in early February 2001 (F. Sato pers. comm.). In February 1960, seven Short-tailed Albatross (*P. albatrus*) chicks on Torishima Island were taken by a raptor (Fujisawa 1967). White-tailed Eagles have been seen on Torishima and Mukojima islands as recently as March 2008 (for the latter), and carcasses of Black-footed Albatrosses with evidence of raptor predation were observed. Additionally, in March 2008 several carcasses of Black-footed Albatrosses were found on Nakodajima Island, located 5 km south of Mukojima (T. Deguchi pers. comm.).

There are few records of any sea-eagles in the Hawaiian Islands. Historical records are of a Steller's Sea-Eagle at Midway and Kure atolls in early 1978 and another at Tern Island in 1983 (Balazs and Ralph 1979; R. L. Pyle pers. comm.). Predation on a Laysan Albatross was witnessed at Kure, and carcasses of both Laysan and Black-footed albatrosses were found with evidence of raptor predation (Balazs and Ralph 1979). Archeological remains of several specimens of *Haliaeetus* on three Hawaiian islands (Maui, Molokai, and Oahu) attest to the occurrence, and possible coloniza-

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tion, of this genus in the Hawaiian archipelago long ago (James and Olson 1991, Fleischer et al. 2000). These bones have been dated to a time preceding the arrival of the islands' first human colonists by at least 1300 years (James 1987). Fleischer et al. (2000) sequenced mitochondrial DNA from a nearly complete skeleton found in a cave on Maui in 1988. They found the DNA sequence very similar to that of a White-tailed Eagle and suggested that Maui eagle was conspecific, representing a disjunct Hawaiian population of the White-tailed Eagle.

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