

# A Lesser Frigatebird (*Fregata ariel*) in California: a first for the state and fourth for North America

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## Abstract

This paper summarizes the occurrence and identification of California's first Lesser Frigatebird (*Fregata ariel*), a subadult female photographed on 15 July 2007 at Lanphere Dunes near Arcata, Humboldt County. This record is the fourth of this species for North America and the first in the eastern Pacific Ocean of the Western Hemisphere.

## Field encounter

On the evening of 15 July 2007, Marshall J. Iliff, C. J. Ralph, Peter Ralph, and Brian L. Sullivan were observing birds at the Lanphere Dunes, a unit of the Humboldt Bay National Wildlife Refuge, west of Arcata, Humboldt County, California (40° 53' 43" N, 124° 8' 58" W). The weather was unusually calm and warm, with approximately eighty percent cloud cover. At about 18:30 PST, Peter Ralph spotted a frigatebird (*Fregata* species) soaring roughly 100 m above the water and approximately 500 m distant, moving slightly southward and toward the observers, apparently investigating an active feeding flock of Common Murres (*Uria aalge*) and Brandt's Cormorants (*Phalacrocorax penicillatus*). He immediately alerted C. J. Ralph and Sullivan to the bird's presence, and Sullivan alerted Iliff. Within a minute, all were watching the bird through binoculars. Sullivan quickly trained a spotting scope on the bird and was able to age the bird as an immature by virtue of its largely white head. Iliff soon arrived, and we traded distant scope views of the bird as it drifted northward away from us.

**Figure 1.** Female Lesser Frigatebird, Lanphere Dunes, Humboldt County, California, 15 July 2007. In this image, note the bright pink bill, black "V" extending into the white of the central breast, and bright pink feet. Photograph by Marshall J. Iliff.



**Figure 2.** Female Lesser Frigatebird, Lanphere Dunes, Humboldt County, California, 15 July 2007. This image shows the distinctive pink bill to good advantage as well as the head pattern: a mostly white head with a dark hindneck, indicating an immature female. Photograph by Marshall J. Iliff.

We could only see the white chest and axillaries from this perspective, and we knew that better views would be needed to identify the bird to the species level. Sullivan had a camera, but the bird at that point was too distant to be photographed well. The frigatebird then drifted northward along the beach for about three minutes, banked inland about a kilometer north of us, and then turned inland and southward towards the Mad River Slough. The group then set out in pursuit, as the bird moved along the forest edge just inland from the slough.

C. J. Ralph phoned the local bird alert with the news, hoping that others would be able to help search. The frigatebird followed the edge of the interior riparian zone bordering the dune system, now heading southward toward the Ralph residence, flying at an altitude of approximately 30 m. Steven T. Kelling was at the Ralph residence and was alerted by phone to ready himself with camera, in the event that the frigatebird passed over the house. Iliff ran to the house (where his camera was located) to join Kelling in the search. The other three observers remained on the dunes where they could watch the bird's progress from a distance and coordinate the search with mobile phones.

The frigatebird halted its southward movement about halfway to the house and began to interact with a few Common Ravens (*Corvus corax*). The nature of this interaction was unclear, but the ravens were vocalizing from below the trees while the frigatebird appeared to take evasive flight tactics by diving and swooping just over the treeline. It was impossible to tell if the ravens were chasing the frigatebird or vice-versa, as we never actually saw the ravens. The frigatebird, however, was periodically in

view for the next ten minutes, diving and swooping over the distant treeline. Finally, the bird disappeared from view over the trees to the east. At this point, the three observers on the outer dunes decided to head inland towards the place where the bird was last seen. About ten minutes later from a position farther inland on the dunes, Peter Ralph relocated the bird again soaring over the same treeline, at which point it was watched through the spotting scope and photographed by Sullivan. After a few minutes of soaring, the frigatebird briefly perched in a large conifer. It quickly took flight again and began soaring but then disappeared into a large clearing that consisted of a sandy dune system bordered by conifers and dense undergrowth. Kelling and Iliff reassembled during this period, having tried unsuccessfully to find the bird from opposite sides of the dunes, as the frigatebird was so low over the treeline that it would have been visible only intermittently. Iliff and Kelling were reached by mobile phone and alerted to the bird's possible location.

Thinking the bird had perched, Sullivan and Peter Ralph headed off on a trail to get a closer look, planning to meet Iliff and Kelling at this location, while C. J. Ralph remained atop a dune in case the bird took flight again. After a short hike, the first observers arrived at the sandy area. Iliff and Kelling arrived at about the same time, and all began scanning the surrounding area for the perched frigatebird. After a few minutes, Sullivan spotted the bird perched 20 m high in a Douglas-fir, just 100 m away. Joined by C. J. Ralph, we enjoyed excellent scope views of the perched bird and discussed the field marks. Knowing that better photographs would be required to make a positive identification, Iliff moved closer to the bird, and Sullivan waited for flight shots in case the bird took off. Iliff was able to approach within a reasonable distance and obtained good photographs of the bird perched (Figures 1-2). After ten minutes of observation, the frigatebird took flight and headed westward, directly over the observers' heads,

and Iliff and Sullivan were able to get a series of flight shots (Figures 3-8). Carol Ralph arrived just in time to see the bird overhead as it disappeared low over the western treeline and headed toward the ocean.

Numerous birders arrived shortly thereafter, and we searched until dusk with no further sign of the frigatebird. Subsequent searches by others the following morning and next day up and down the coast failed to relocate the bird. We were uncertain of the species identification until later that evening, when we consulted Harrison (1984) and Harrison (1987); photographs in the latter source reminded us that the pinkish bill was nearly diagnostic for Lesser Frigatebird (*F. ariel*), a species that we had suspected during the observation based on the prominent white axillary spurs.

## Description

The following description is based on notes written following the observation and on photographs.

The Humboldt County frigatebird was blackish overall, with prominent pale alar bars that reached the forewing and that appeared whitish-buff in the field. The underparts were largely blackish but with a prominent clean white breast, dusky head pattern (at a distance), and pale cinnamon on the upper breast (visible at a fair distance). White



**Figure 3.** Female Lesser Frigatebird, Lanphere Dunes, Humboldt County, California, 15 July 2007. As this bird leaves its perch in a Douglas-fir, it reveals its white hindcollar and developing blackish hood that has created a partial collar across the lower throat. This image also shows the pinkish orbital ring; Magnificent Frigatebird would be expected to show a bluish orbital ring. Photograph by Marshall J. Iliff.

spurs extended into the axillaries, but the underwing area was largely dark otherwise. The belly was black, with a dark extension pointing toward the lower breast.

**General shape and size**—Readily identifiable as a frigatebird by virtue of the long, forked tail, overall black and white coloration, sharply angled wings, and large size (Figures 1-8). Di-



**Figure 4.** Female Lesser Frigatebird, Lanphere Dunes, Humboldt County, California, 15 July 2007. This image shows that the cinnamon feathering below the throat fell largely below the pattern of dark plumage developing on the head. The narrow black collar appears as though it will extend across the throat as the plumage matures, creating a solid black hood; a dark throat in adult female plumage is shared by Magnificent Frigatebird but not Great Frigatebird. Photograph by Brian L. Sullivan.

rect comparison with other birds was not possible; its interactions with two Common Ravens occurred largely below the treeline.

**Head pattern**—The head pattern was one of the more striking features of the bird. Seen well in flight, the white face was framed by a dark nape and hindcrown, as well as a developing partial collar across the lower throat that imparted a ring-necked look (Figures 1–8). The hindcrown was totally black, contrasting with a bold pale collar on the hindneck. The overall impression was that the bird was in the process of becoming black-headed, with a pale hindneck and clean white chest. The hooded appearance was not quite complete, the black just shy of joining together at the lower throat.

**Breast pattern and coloration**—Although the breast was white overall, cinnamon feathering was present on the lower throat just below the partial black collar, particularly concentrated at the center (Figures 1, 4). Through the scope we were able to discern actual feathers, some being cinnamon and some being white, adjacent to each other, which argues against the possibility that this coloration was a result of staining. The impression was of an overall buff-cinnamon wash to the upper breast/lower throat, concentrated in the middle.

**Axillary pattern**—The axillaries had a prominent white “spur” comprised of wholly white feathers, whitest toward the base of the axillaries, with the patch narrowing toward the distal portion (Figures 5–7). In flight, this white patch in the axillaries was prominent and did not appear as mottled “scalloping,” a

pattern typical of female Magnificent Frigatebirds (*F. magnificens*), for instance.

**Belly pattern**—The lower belly was marked with a black inverted “V” that reached up through the central portion of the belly pointing toward the lower breast (Figures 1, 2).

**Hindneck pattern**—The hindneck was strongly marked with a pale collar, appearing whitish buff and well defined in the field (Figure 8).

**Bill**—The bill was strikingly pinkish or horn-pink in color (Figures 1–2).

**Orbital ring**—The pinkish orbital ring was readily apparent and well developed.

**Eyes**—The eyes were entirely dark. (Figure 2).

**Feet and legs**—The legs and feet were pinkish (Figures 1, 2).

## Discussion

The three prior records of Lesser Frigatebird for North America have involved two adult males and one adult female, and there are also three records for Great Frigatebird (*F. minor*) in North America (Table 1). The identification of immatures in various plumage stages is more problematic, and solid literature regarding the maturation process of frigatebirds is limited. We consulted the published literature

on frigatebird identification and solicited the opinions of experts familiar with any or all of the frigatebird species. The sources we found most helpful were Howell (1994), Harrison (1984), and James (2004).

Below we discuss the specific characters that led us to conclude the bird was a Lesser Frigatebird and allowed us to rule out the other contenders, combining known field characters of adults and the suspected development and maturation processes in frigatebirds with the logical developmental stages of immature females.

## Probability

In North America, the usual assumption has been that any vagrant frigatebird is most likely to be a Magnificent Frigatebird, which breeds in Florida and northern Mexico. Magnificent Frigatebird does have an extensive pattern of vagrancy, with records as far north as Alaska and Newfoundland (A.O.U. 1998). Most of these records fall between July and September, and California has well over 1000 records, mostly from invasion years at the Salton Sea and areas in southern California. At the time of our observation, on 15 July 2007, although we suspected that probability still favored Magnificent Frigatebird anywhere in North America in mid-July, we felt it essential to get close studies and photographs to eliminate other species, especially given



**Figure 5.** Female Lesser Frigatebird, Lanphere Dunes, Humboldt County, California, 15 July 2007. This image shows the prominent white axillary “spurs,” comprised of entirely white axillary feathers. Although Magnificent and Great Frigatebirds can have narrow scalloping on the axillaries in some plumages, only Lesser shows such large, white axillary patches that involve completely white feathers. The head pattern, bill color, and belly pattern also show well in this image. Photograph by Brian L. Sullivan.

that northern California may be as close to Hawaiian breeding grounds of Great Frigatebird as it is to those of Magnificent Frigatebird in Baja California Sur and Sonora.

In North America, three frigatebird species have occurred (Table 1), and arguably the

**Table 1.** Records of Great and Lesser Frigatebirds from the mainland United States.

Age, Sex, Species	Date	Location	Reference	Notes
ad. male Lesser Frigatebird	3 Jul 1960	Deer Isle, Hancock County, ME	Snyder 1961	Observed flying overhead; filmed
ad. female Lesser Frigatebird	11 Jul 2003	Basin, Big Horn County, WY	Faulkner 2006	Found moribund; photographs
ad. male Lesser Frigatebird	11 Sep 2005	Lake Erie Metropark, MI	Brennan and Schultz 2006	Flying past hawkwatch; photographs
immature female Lesser Frigatebird	15 Jul 2007	Lanphere Dunes, Humboldt County, CA	the present article	Observed in flight and perched; photographs
ad. male Great Frigatebird	3 Nov 1975	Perry, Noble County, OK	Heller and Barclay 1977, A.O.U. 1983, DeBenedictis 1992	Specimen
ad. female Great Frigatebird	13 Oct 1979	Moss Landing, Monterey County, CA	McCaskie and San Miguel 1999	Observed flying along shore; photographs
ad. or near-adult female Great Frigatebird	14 Mar 1992	Southeast Farallon Island, CA	Heindel and Patten 1996	Observed flying overhead; photographs

world's two other species—Christmas Frigatebird (*F. andrewsi*) and Ascension Frigatebird (*F. aquila*)—must be given due consideration, though both would seem unlikely to appear in North America, as they have small populations and very localized breeding ranges. However, Ascension Frigatebird has occurred as a long-distance vagrant to Scotland: an immature female was found moribund 9 July 1953 on the island of Tiree, Inner Hebrides, Argyllshire. Originally identified as Magnificent Frigatebird, it was reidentified fifty years later (Walbridge et al. 2003) and added to the British List (B.O.U. 2003). Ascension Frigatebird is more likely to be confused with Magnificent than with Lesser, but Christmas Frigatebird has some plumage similarities with Lesser and is discussed below.

## Age

Frigatebirds take many years to reach full maturity. Their plumage cycles may not necessarily correspond to calendar years, making their molt sequences more complicated than those of most birds. The primaries of the Humboldt County bird have been replaced at least twice (Figure 5), revealing the bird is in at least its third cycle (P. Pyle, pers. comm.). We know this because there is a gradation from pale to dark from p4 to p10, meaning that these second-cycle feathers have been replaced sequentially, the older inner primaries being palest. Moreover, the bird has replaced again p1–p3, those feathers being the newest, darkest, and freshest overall. Given the dearth of knowledge concerning the actual maturation process in frigatebirds we estimate this bird to be at least three years old and possibly considerably older based on the advanced state of its head pattern.

## Sex

We arrived at the conclusion that this bird

was an immature female primarily because the head pattern is suggestive of a bird that is in the process of developing a completely dark head. The color of the breast and underparts are consistent with those expected in an older immature female, approaching an adult female pattern. If the bird were a male, based on the plumage sequences of other frigatebird species, it should show some dark mottling on the white underparts by this age.

## Details of plumage and soft parts

Several features of the Humboldt County frigatebird helped us eliminate other frigatebird species from consideration. The combi-



**Figure 6.** Female Lesser Frigatebird, Lanphere Dunes, Humboldt County, California, 15 July 2007. The underwing and head pattern are also seen to good advantage in this image. Photograph by Brian L. Sullivan.

nation of close study through the spotting scope and reasonably good photographs have allowed us to look at all the pertinent field marks in detail.

**Head pattern**—The head pattern was that of an older female frigatebird that was becoming

entirely dark-headed, beginning with the lower margin of the black hood. The black partial collar across the lower throat was too extensive for female Great Frigatebird, which at most would have black extending to the edges of the throat. Our research indicates that the black partial collar effectively eliminates female Great Frigatebird from consideration. This crisply defined black half-collar may be diagnostic for immature female Lesser Frigatebirds (S. N. G. Howell, pers. comm.), but this requires further study. The extent to which immature males could show a similar pattern is unknown, but it seems likely that a male would show significant black mottling in the white breast, where the Humboldt County bird showed the typical plumage pattern of older females.

**Hindneck pattern**—The strong white collar on the hindneck is typical of older subadult and adult female Lesser Frigatebirds. Female Great Frigatebirds can have a pale collar, but this is atypical (P. Pyle pers. comm.). The prominence and whiteness of this collar strongly suggest Lesser rather than an atypical Great.

**Cinnamon feathering**—The cinnamon feathering on the lower throat just below the partial black collar strongly suggested a species other than Magnificent. While immature Magnificents lack cinnamon feathering altogether, this color is typical in Great and Lesser Frigatebirds. Our scope views indicated that breast feathers were both cinnamon and white. Great Frigatebirds are extensively cinnamon-headed in their first plumage cycle and retain some cinnamon feathering for at least the next two plumage cycles (i.e., Basic I and Basic II; Howell 1994; S. N. G. Howell, pers. comm.). There is considerably less information on the extent of cinnamon in subadult Lesser Frigatebird plumages, but juveniles begin with an extensively cinnamon head like a Great Frigatebird and presumably may retain it for up to two plumage cycles thereafter (James 2004). We can find no reference indicating that Magnificents can ever be tawny-headed, and we are of the opinion that this character alone may eliminate Magnificent from consideration. The larger Christmas Frigatebird has a tawny head in juvenal plumage and gradu-



Figure 7. Female Lesser Frigatebird, Lanphere Dunes, Humboldt County, California, 15 July 2007. The crisp division between the head and clean white belly is evident in this image, as are many of the other field marks discussed above. Photograph by Brian L. Sullivan.

ally loses this color over subsequent plumage cycles, but other plumage characteristics are not shared with Lesser.

**Belly pattern**—The black inverted “V” reaching up through the central portion of the belly and lower breast is typical of female Lesser and Magnificent but is not right for Great Frigatebird, which should show a more evenly “U-shaped” belly patch. Juvenal and immature Christmas Frigatebirds do not show this pattern and instead have pale or white bellies and often large wedges of dark feathering across the white of the upper breast (James 2004).

**Axillary pattern**—Although immature Magnificent and to a lesser extent Great Frigatebirds can have white extending into the axillaries in immature plumages, these axillary spurs are never as bold or as extensive as on Lesser Frigatebird. The Humboldt County frigatebird showed an extensive, solidly white bulge protruding from the breast sides into the axillaries, consistent with female Lesser Frigatebird. On Magnificent or Great, the axillary spur tends to appear as pale scalloping rather than as a solid patch. The feathers comprising the spur appear to be wholly white, and not limited to pale fringes, as with Magnificent. Apparently, a small proportion of immature Great Frigatebirds can have extensive white axillaries approaching those of our bird (P. Pyle, pers. comm.), but this is not typical. Christmas Frigatebird in this age/sex

shows more extensive (longer) white axillary spurs than the Humboldt County bird.

**Orbital ring**—The well-developed pinkish orbital ring is a strong indicator of Lesser Frigatebird. Adult female Magnificents would have a gray or bluish orbital ring; female Great Frigatebird has a red orbital ring; and



Figure 8. Female Lesser Frigatebird, Lanphere Dunes, Humboldt County, California, 15 July 2007. This distant photograph was one of the first ones captured; it shows the extensive white collar that is a typical of Lesser Frigatebird. The pale carpal bars are typical of female frigatebirds of all species. Photograph by Brian L. Sullivan.

Magnificents can have fleshy or pinkish orbital rings, but only in rare young individuals. The exact colors of frigatebirds soft parts, and how these colors change with age, is a matter of some debate, but typically only Lesser Frigatebird has a bright pink orbital ring in

the latter stages of immaturity.

**Bill color**—The bill was strikingly pinkish or horn-pink (Figures 1–8). Although some Great Frigatebirds have been reported to have blue-gray, flesh-colored, or even pink bills (Howell 1994), older female Magnificents have blue-gray bills. Immature female Lesser and Christmas Frigatebirds both rather bright pinkish bills; however, they can be readily separated by differences in the shape of the white belly patch.

**Foot color**—The fairly bright pink feet of this bird, easily visible while it perched in the Douglas-fir, are probably not useful for identification, as Great, Magnificent, and Lesser Frigatebirds all have pinkish feet as adult females.

### Apparent patterns of vagrancy

Magnificent Frigatebirds have occurred as vagrants in North America primarily between June to mid-September in the West, with a peak in July and August (Mlodinow 1998) and May to October in the East, with an apparent peak in June (M. J. Iliff, unpub. data) but with the farther-flung birds appearing August–September.

Although there are now just four North American records, a relatively narrow window of vagrancy appears to be developing for Lesser Frigatebird in North America. Of the four records, three have occurred between 3

and 15 July! The lone outlier is the Michigan record from 11 September 2005; Brennan and Shultz (2006) suggested that its appearance could have been connected to the passage of Hurricane *Katrina* 12 days earlier. (*Katrina* originally formed as a tropical depression

southeast of Nassau, Bahamas, on 23 August and did not pass through the known range of Lesser Frigatebird, but the bird may have been influenced in some manner by this very large and powerful hurricane's movement.) Discussing the Wyoming record of 11 July 2003, Faulkner (2006) suggested that a low-pressure system that moved from the Gulf of Alaska through Wyoming had timing that was impressively coincident with the appearance of the Wyoming Lesser Frigatebird. Interestingly, many inland records of Magnificent Frigatebirds have no clear connection to tropical storm activity, and the same may be true of extralimital Lesser Frigatebird records as well. In mid-July 2007, a significant warm-water plume reached the northern California coast and could have had some connection to the wayward appearance of the Lesser Frigatebird there. Records of vagrant Lesser Frigatebirds come from Korea, Japan, and Kamchatka, and vagrancy to the Gulf of Alaska seems therefore plausible in this species. There are three Alaska records of *Fregata* from 26 June through July (Mlodinow 1998), and Lesser Frigatebird should be considered as a possibility in such cases.

Conversely, the emerging pattern of vagrancy for Great Frigatebird in North America falls largely outside the window of vagrancy for Magnificent and Lesser Frigatebirds. North America's first record was an adult male found grounded at Perry, Oklahoma on 3 November 1975 (A.O.U. 1983). The other two records both hail from California: an adult male off Moss Landing, Monterey County, 13 October 1979 (McCaskie and San Miguel 1999) and an adult or near-adult female at Southeast Farallon Island, San Francisco County, 14 March 1992 (Heindel and Patten 1996, see *American Birds* 46: 475 for a photograph). Thus, the three records fall largely outside the vagrancy window of Magnificent Frigatebird; although October is at the tail end of the vagrancy window for Magnificent, there are very few records of known or suspected vagrant Magnificent Frigatebirds between November and April.

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