

# When Black Noddies Aren't Black

How to identify birds when their namesake field marks go missing

Whilst patrolling the beaches of Midway Atoll in late Sept. 2019, something caught my eye. A black-and-white flutter flew past. I instinctively grabbed my camera, snapped a few photos, then watched in admiration. A bird I had never seen before was being chased by two White Terns. The bird was similar in plumage coloration to the Ruddy Turnstone, a common wintering species on Midway. But something wasn't right. The bird

I'd just seen was larger, with a greater wingspan, and a lighter bill. I was puzzled. The observation lasted just a few moments before the bird continued to the north, hotly pursued by the White Terns. I hoped to have another encounter, but that was my first and last sighting of this bird.

It took further investigation to nail the species. After some deliberation and consultation with ID expert Peter Pyle, all was revealed: a leucistic Black Noddy!

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Midway hosts the largest population of Black Noddies in the Northwestern Hawaiian Islands (Supplemental Photo 1), with an estimated 6,000 breeding pairs. The atoll has two Hawaiian names, *Kuaihelani*, which means “the backbone of heaven,” and *Pihemanu*,

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**Featured Photo—leucistic Black Noddy. Midway Atoll (Kuaihelani); Sept. 26, 2019.**

*Photo by © Marcia Blyth. As it flew past the photographer, this bird called to mind a Ruddy Turnstone, common on Pacific Ocean beaches. But it quickly became apparent that this striking bird wasn't a turnstone—or any sort of sandpiper at all.*





**Supplemental Photo 1.** Black Noddies, or *Noio*, are frequently seen on humanmade structures in the Northwestern Hawaiian Islands. (In the background, a Laysan Albatross comes in for a closer look.) Midway Atoll (Kuaihelani); May 17, 2019. Photo by © Marcia Blyth.

which translates as “the loud din of birds.” Together, these two names perfectly reflect the atoll’s cultural significance and large seabird population. The Black Noddy is known as *Noio* in Hawaiian; it was a beacon for long-ago Polynesian voyagers that the land, indicating *kupuna*, ancestors or elders, was near.

### The Kuaihelani (Midway) Bird

Normal plumage in the Black Noddy is mainly blackish with a white cap on the top of the head (Supplemental Photo 2). But this bird (Supplemental Photos 3, 4) has a black crown with a white band around the neck. It retains the partially white eye-ring and blackish color of a normal bird over much of the body. Also, the upper-wing feathers show great deviation with stark contrasting black feathers fractured with white. In direct comparison with a White Tern (Supplemental Photo 5), an overall tern-like body structure is evident; recent research shows that the White Tern and the noddies are close relatives.

Going deeper, we see that the tertials, greater coverts, primary coverts, some of the smaller coverts, and the outermost primaries are white. These contrast with the remaining dark coverts, secondaries, and primaries. The ventral sides of the wings are a mix of white and black vanes, with asymmetry between the pair of wings, particularly in the area of the under-wing primary coverts. The base of the tail and upper-tail coverts are white, with the rectrices broadly tipped dark. A yellow-orange bill with a black tip replaces the standard fully black bill (Supplemental Photos 3, 4).

These plumage and soft-part aberrations, along with what would be expected on Kuaihelani, lead to the ID of a leucistic Black Noddy.

### A Note on Terminology

The wide range of plumage aberrations and the varied interpretations of albinism and leucism have led to some confusion regarding terminology. Terms such as “partial albinism”



**Supplemental Photo 2.** This Black Noddy, a typical adult, is uniformly dark brown below; the cap is frosty white, and the bill is entirely black. Midway Atoll (Kuaihelani); July 10, 2019. Photo by © Marcia Blyth.





**Supplemental Photos 3, 4.** This is the same bird as in the Featured Photo, shown here in dorsal (Supplemental 3, top) and ventral (Supplemental 4, middle) aspects. See text for an analysis of the marks presented in these images. *Midway Atoll (Kuaihelani); Sept. 26, 2019. Photo by © Marcia Blyth.*

or “imperfect albinism” are at least inconsistent and sometimes contradictory; it was once common for albinism and leucism to be used interchangeably. It is challenging to compile accounts of such aberrations from historical literature in records that do not describe eyes and soft-parts.

Leucism is a broad term that describes the reduction or absence of melanin, which can be localized. In birds, leucism can be expressed as anything from a few white feathers to entirely white plumage, but it does not always affect soft-parts. All-white leucism is rarely encountered, and is genetically distinct from albinism.

Albinistic individuals lack all melanin, including eumelanin and pheomelanin throughout the body; they have pink eyes. Some birds with albinism can retain pigment from carotenoids, so they do not appear all-white.

Albinistic birds have poor eyesight and an overall reduced survival rate due to difficulty foraging and susceptibility to predators. Such birds are infrequently observed in the wild; albinistic mammals may not rely as much on eyesight, though, and are more commonly encountered. Leucistic birds do not have the same eyesight issues as albino birds, and are found much more often.

Leucism can make it hard for birders to accurately identify aberrant individuals. It is tempting to rely on plumage, but our judgment may be seriously affected when plumage deviates from the normal colors. Morphological features offer a more robust understanding of the characteristic traits of a species. Observing flight pattern and behavior such as foraging, along with hearing vocalizations and other sounds, can also help with identification. This is especially true for species with few records of this plumage aberration.

Many of this leucistic Black Noddy’s plumage features—the white collar, the wing stripe, and the white rump and tail—are strangely suggestive of a Ruddy Turnstone. We might speculate about whether there is some adaptive advantage to this pattern; see Paulson (2005). Could leucism like that of the noddy have been involved in the evolution of turnstone plumages?

### The Sighting in Context

This is not the first time that a leucistic Black Noddy has been recorded in the Northwestern Hawaiian Islands. Roger B. Clapp (1974), while working for the Pacific Ocean Biological Survey Program, noted an aberrant individual on Laysan Island in 1962. *Kauō* is a Hawaiian name for Laysan Island; it refers to the island’s egg shape as well as the abundance of life that hatches there. Clapp’s individual also showed highly patterned wings like the Kuaihelani bird, but displayed many other plumage differences. Also on Kauō, a purely white Black

Noddy was observed in 1993; and another white bird was recorded on Hawai'i Island in 1981 (Paton 1983).

It seems likely that relatively mild cases of leucism have been under-reported, due to the difficulty in confirming sightings in the remote Northwestern Hawaiian Islands. For me, this infrequent occurrence made observing a leucistic Black Noddy all the more memorable. I walked the beaches daily on Kuaihelani, and it was certainly serendipitous that I got a brief glimpse of this uniquely beautiful bird.

### Acknowledgments

I thank Jonathan Plissner for his direction in pursuing this unusual observation, and I thank Ted Floyd for his input during the

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**Supplemental Photo 5.** The leucistic noddy is shown here flying alongside a White Tern, a close relative of the noddies. Midway Atoll (Kuaihelani); Sept. 26, 2019. Photo by © Marcia Blyth.

editorial process. I am very grateful to Peter Pyle for quickly identifying this bird as a Black Noddy upon review of photographs, and for sharing insightful comments and his invaluable knowledge. Thanks also to the National Oceanic and Atmospheric Administration and the U. S. Fish and Wildlife Service for facilitating my work as part of the Hawaiian Monk Seal Research Program; this bird was sighted during a patrol. Relevant photos and work were conducted under National Marine Fisheries Service research permit no. 16632-02—Marcia Blyth.

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## A Black white Noddy

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A leucistic Black Noddy photographed by Marcia Blyth on Midway Atoll in Sept. 2019 (see pp. 56–58) is impressively similar in plumage pattern to that of a Ruddy Turnstone, resulting in some fascinating speculation about the evolution of adaptive plumages. While Marcia's Black Noddy shows dramatic plumage, the one in this analysis, photographed on Laysan Island, also in the Northwestern Hawaiian Islands, is spectacular in its own right, being completely and uniformly white. We still





would consider this a leucistic individual, rather than an albino, because its eyes appear dark, not pink. True albino birds—and mammals, for that matter—have a certain look about them, and this bird doesn't have it.

This is indeed a white noddy, as opposed to a White Noddy, another name for the White Tern. As is evident in Marcia's photos, White Terns also occur on Midway. Indeed, about 20,000 White Terns breed on Midway, five times as many as the number of Black Noddies ([tinyurl.com/Pyle-Pyle-seabirds](http://tinyurl.com/Pyle-Pyle-seabirds)). So how would we tell this bird from a White Tern?

We might immediately point to the pale orange bill and legs to eliminate a White Tern. But there is a problem—for this also eliminates the Black Noddy! Why couldn't this be a leucistic White Tern with those same features? Might not such a bird be five times as likely on Midway as a leucistic Black Noddy?

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**Leucistic Black Noddy, Northwestern Hawaiian Islands, Mar. 10, 1993.**  
 Photo by © Jeff Marks.

Anomalous birds, including hybrids, are instructive, as they force us to look at characters in a species that we might not otherwise appreciate. In the present case, we would do well to look at body shape and flight style. Black Noddies are very sleek, with an elongated look to the head and bill. White Terns, in contrast, have a rounded head, with a steeper forehead and broader-based bill. The White Tern's bill curves slightly upward to a sharp point, a highly specialized shape enabling the species to somehow catch and hold up to six fish at a time—all while in flight!

Our subject bird matches the Black Noddy in these structural aspects. Wing and tail shapes are similar in the two species, but one thing I've noticed on sitting White Terns is that their wing tips tend to curve upward, adding to their already angelic contour (Fairy Tern is another name in wide use for the species). Our subject bird presents a straight-winged look, however.

Another factor to consider is habitat. Our bird is sitting in a dense "Tournefortia" tree, a taxonomically vexing entity that today goes by

the official name of *Heliotropium foertherianum*. Along with the *Naupaka* bush (*Scaevola taccada*) of Hawaiian legend, the Tournefortia tree forms the primary native shrubbery in the atolls of the Northwestern Hawaiian Islands. If you observe White Terns closely, you will notice that they rarely if ever sit in dense shrubs like this. Rather, when they perch, it is usually on flat surfaces like buildings, air conditioners, and the tops of branches, where they famously lay their eggs without the slightest bit of nest material.

Finally, were our bird to take off, you would note a purposeful flight style befitting the trim profile of a Black Noddy. White Terns, by contrast, do a lot of hovering, including directly over bystanders, at which time one has to wonder whether they are checking human heads and hats for potential nesting sites.

So it's really rather black and white. We can safely say that this white noddy is a Black Noddy, rather than a White Noddy. A similar analysis, relying on characters of shape, habitat, and profile, would likewise rule out a white Blue-gray Noddy or white Brown Noddy as well. 🌍



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### A Spectrogram Is Worth a Thousand Words

a review by **Laurn Benedict**

### Peterson Field Guide to Bird Sounds of Western North America

by **Nathan Pieplow**

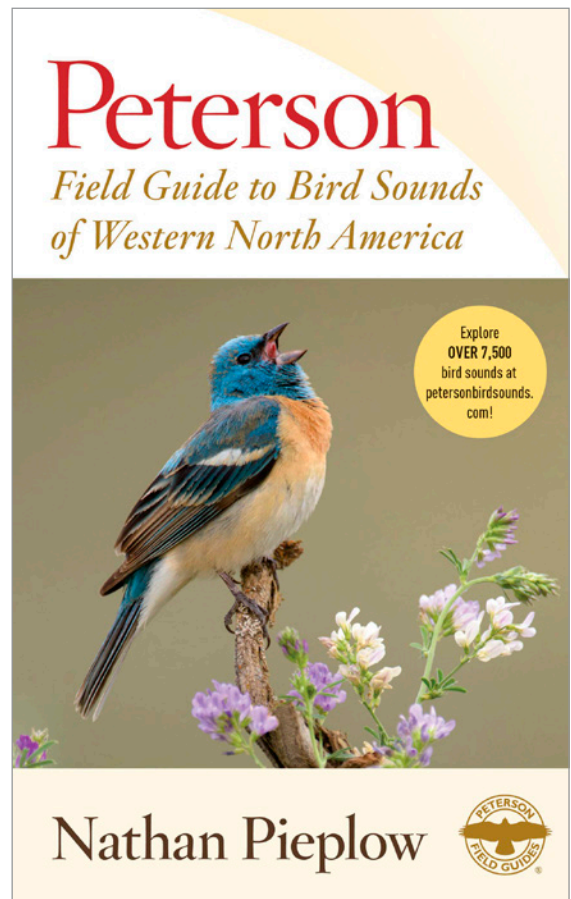
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Full disclosure: I'm a spectrogram junkie. What, you may ask, is a spectrogram? It's a way of visualizing sound. By applying algorithms with sophisticated names like "fast Fourier transform" to audio files, one can produce an image that represents a sound. Why might we want to do this? Human ears are reasonably good at discerning changes in sound timing and pitch, but for most of us, they're not great. I can't listen to the trill of a Dark-eyed Junco and make out how many times the base note was repeated. Nor can I tell exactly how wide a frequency sweep the Brown-headed Cowbird produces. But when I examine these sounds on a spectrogram, I see all that and more. Spectrograms help us to dive deep into the intricacies of avian vocalizations. And when used in conjunction with good old-fashioned ear-birding techniques, they can open up new ways to hear and engage with birds. (See the article by Tessa Rhinehart, beginning on p. 50, of this issue for more on applications of sound spectrograms.)

Knowing the power of spectrograms, I was excited to dive into Nathan Pieplow's latest book, the *Peterson Field Guide to Bird Sounds of Western North America*. This is the follow-up and companion to his *Peterson Field Guide to Bird Sounds of Eastern North America*, which came out in 2017 (and was reviewed in this column by Marky Mutchler). Both guides present impressively comprehensive overviews of the sounds of North American birds. They do this with written descriptions and spectrograms that illustrate the varied vocal repertoires of over 500 species per guide. In addition, there is a dedicated website where users can look and listen simultaneously in order to practice linking sounds with the images that describe them. I was pleased to find that the Western guide includes even more species than the Eastern guide, and the accompanying online library has 7,500+ audio examples. Each species account also includes an illustration of the bird's plumage, but appearance is not the focus of this work. Here, sounds are the stars of the show.

The format of this field guide is unique, and pages filled with spectrograms might be daunting to some readers. Knowing this, Pieplow provides a comprehensive introduction to avian sounds and spectrographic images. The first 33 pages of the book explain how to use the guide, how birds produce sound, how spectrograms represent sound, and why avian sounds are so varied. Pieplow

explains what to listen for when identifying sounds, and he describes variation in song form and timing. The classic Peterson field guides offered a breakthrough in birding by pointing out the visual field marks that distinguish species—does it have a wing bar? An eye-ring? A crest? This guide does the same with sounds. I expect that readers will find themselves listening for the acoustic field marks that Pieplow points out—was that a warble or a trill? Is there a pause between each phrase? Was that two birds duetting?



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