2019 ABA Bird of the Year

On the biology, field identification, and general coolness of the Red-billed Tropicbird, *Phaethon aethereus*

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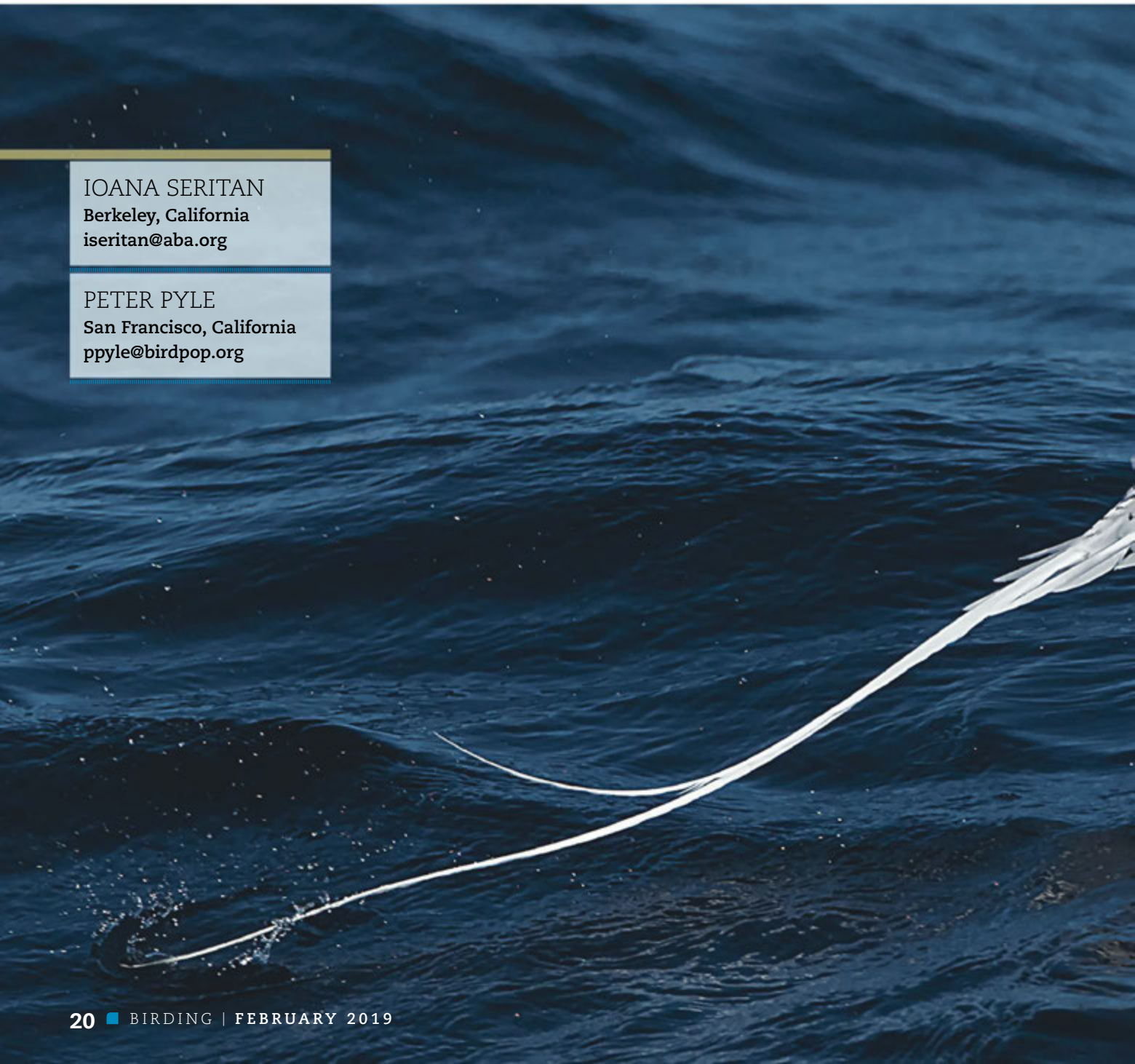


The Red-billed Tropicbird is one of three tropicbird species, all of which can be found in the ABA Area with a bit of legwork. Tropicbirds are a fun challenge to find, a beauty to look at, and an interesting evolutionary dilemma to consider. You may be lucky enough to see a pair engaging in courtship display at a breeding site, perhaps in Hawaii, or you may be graced with a sighting of a vagrant along the East or West coast of the continental U.S. Read on to learn more about tropicbirds in general and Red-billed Tropicbirds specifically—how to identify them, where to find them, and why they are no longer grouped with pelicans.

Let's start with some general context on the tropicbird family. Tropicbirds are pelagic, meaning "open ocean," birds that look kind of like glorified terns. Their most famous physical features are the long tail plumes they grow as adults. The Red-billed Tropicbird is joined by the White-tailed and Red-tailed tropicbirds to make up the monotypic family Phaethontidae within the order Phaethontiformes. The latest *ABA Checklist*, updated in December 2018, lists the White-tailed Tropicbird as Code 2 (regularly occurring but range-restricted), while Red-tailed and Red-billed are both Code 3 (rare but annual); before Hawaii was added to the ABA Area in late 2016, White-tailed was Code 3 and Red-tailed was Code 4 (casual).

The **Red-billed Tropicbird** has been the ABA's logo for close to 50 years, and it is the 2019 ABA Bird of the Year. This adult was photographed off southern California, where the species is a regular but uncommon visitor, primarily 50–100 miles offshore; by contrast, Red-tailed Tropicbirds are more frequently encountered 100+ miles off the coast. Red-billeds can also be found around the Channel Islands in the fall, where courting pairs are occasionally observed. With global ocean warming, it seems only a matter of time before they, along with two or three species of boobies, are found breeding in California. *Ventura County, California; September 6, 2018. Photo by © David Pereksta.*

These three photos show the same first-cycle Red-billed Tropicbird. Although the yellow bill is a characteristic feature of adult White-tailed Tropicbirds, note the barred back lacking a carpal bar and especially the black greater primary coverts, diagnostic in all plumages. This individual has just begun the second prebasic molt, having dropped inner primaries, and is thus probably about nine months old. The back is likely a mixture of juvenile and formative feathers, similar in pattern overall, although with the bars on the juvenile feathers slightly thicker. In the other two tropicbirds, the formative feathers are white, lacking bars. The juvenile rectrices are retained on this bird, being short with black crescent-shaped markings near the tip. *Nantucket, Massachusetts; August 24, 2014. Photo by © Ian Davies.*

TOP: An adult Pomarine Jaeger (left) chases the first-year Red-billed Tropicbird (right) off Massachusetts, providing a thrill to lucky observers on a pelagic trip. After being harassed by jaegers at sea, tropicbirds return to nesting grounds—to be harassed by frigatebirds! *Nantucket, Massachusetts; August 24, 2014. Photo by © Ian Davies.*

BOTTOM: With a view like this, one might be excused for imagining that tropicbirds are relatives of terns and other seabirds. Recent "deep taxonomy" research shows that the tropicbirds, now in their own order, are most closely related to the Sunbittern of the New World tropics and the Kagu of New Caledonia! *Nantucket, Massachusetts; August 24, 2014. Photo by © Ian Davies.*

Depending on the species and the time of year, these birds can be found soaring above the (mostly) equatorial and subtropical reaches of the Pacific, Atlantic, and Indian oceans. All three species spend most of the year at sea, only coming to land to breed. At sea they busy themselves plunge-diving for fish, squid, and krill, and they will occasionally nab flying fish that dare to try the sky (Schulenberg 2019). Vagrancy is a relatively normal part of tropicbirds' lifestyle. They have to fly hundreds of miles to make their pelagic living. Sure, they might breed on an equatorial island. But that hasn't stopped one persistent Red-billed Tropicbird from returning to Maine every summer for at least 14 years (see Duchesne 2014)!

For birds that spend most of their lives on the wing, perching and walking become less necessary. Tropicbirds' legs are placed very far back on their bodies for swimming, and their legs are short, making them awkward on the ground. If they end up grounded, they usually have to use their wings to push themselves forward (DCNA 2019). Tropicbirds share this awkwardness on land with some other aquatic birds, such as grebes. However, the shape of their feet is completely different from the lobed toes of grebes.

Tropicbirds have totipalmate feet, meaning all four of their toes are webbed and pointed forward (Pen 2016). Some other marine birds, including pelicans, gannets, and cormorants, also have totipalmate feet. In fact, all of these webbed-foot marine birds used to be placed together in the order Pelecaniformes. With more recent studies, ornithologists have revised our understanding of these birds. The gannets and boobies now have been placed in their own order, Suliformes, with the tropicbirds getting another, Phaethontiformes.

As ornithologists rapidly improve our understanding of avian "deep taxonomy," surprises abound. For example: Ducks and grouse are members of a particular group; doves, flamingos, and grebes are members of another grouping; and falcons, parrots, and songbirds constitute yet another assemblage. The tropicbirds, too, have gotten in on the action. Their highly pelagic life history led us astray all these years, causing us to assume that they had affinities with other ocean birds. But a 2014 paper by Erich D. Jarvis and 104 (!) coauthors indicates that tropicbirds are most closely related to the Sunbittern (not a bittern) of inland Neotropical waterways and the Kagu of the forested uplands of New Caledonia. To read more about recent research on tropicbirds relations, see the articles in the Referenc-

Red-billed Tropicbirds nest in a scrape on the ground on equatorial islands, such as the British Virgin Islands. They can lay eggs at any time from November to August, depending on many factors, including the age of the birds and availability of food. Once an egg is laid, incubation takes an average of 43 days, and chick-rearing takes an average of 85. *Little Tobago Island, Trinidad and Tobago; December 7, 2013. Photo by © John Drummond.*

es section by Kennedy and Spencer (2004), Ericson et al. (2006), and Hackett et al. (2008).

Now that we have a better understanding of the tropicbird story, let's turn our attention to what makes the Red-billed Tropicbird special.

What's in a Name?

The standard English name of the Red-billed Tropicbird is efficient if somewhat unimaginative. The species is a tropical bird with a red bill. The scientific name, though, is a poetical fragment, lovely and powerful. *Phaethon* derives from an old Greek image of the sun as a blazing chariot being driven through the sky, while *aethereus*, as you may have surmised, is related to our word "ethereal." So the Red-billed Tropicbird blazes through the heavens like a flaming chariot. That's the ticket.

Molts and Plumages

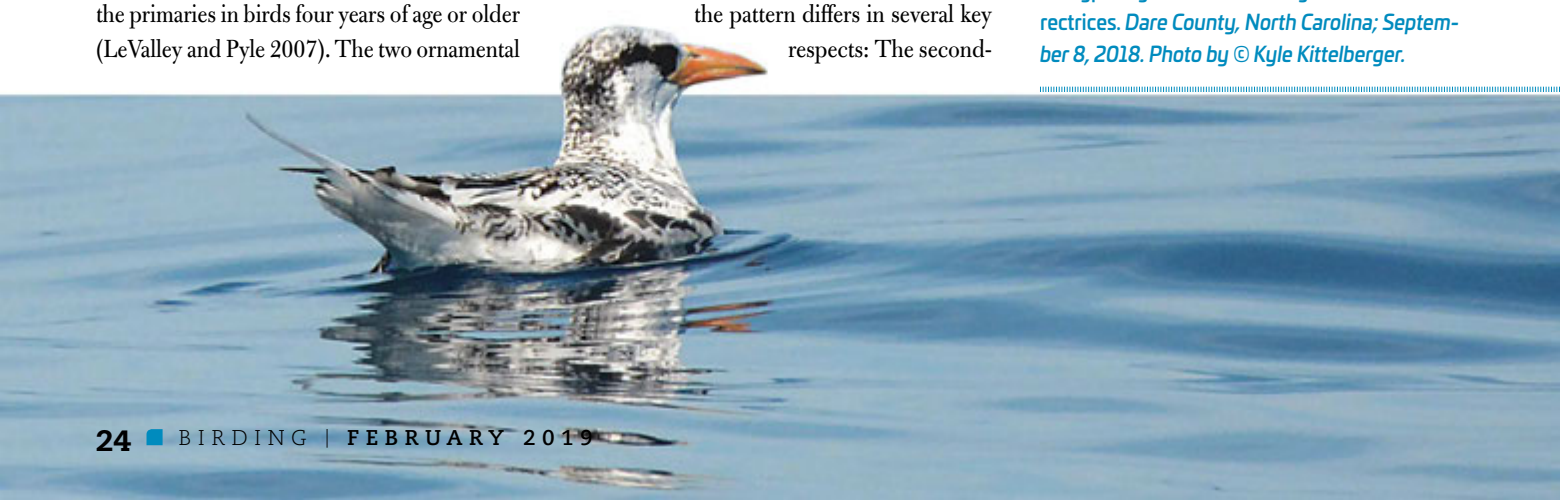
All three tropicbirds share similar molting strategies, likely evolved from an ancestral tropicbird. These include a partial preformative molt 5–8 months after hatching and incomplete-to-complete prebasic molts, but no inserted prealternate molts thereafter (Pyle 2008). Gould et al. (1974) documented nine-month breeding and molt cycles in some central Pacific Red-tailed Tropicbird populations, which led to unfounded presumptions that all tropicbirds have nine-month molt cycles, which in turn led to overreaching proclamations that the annual molt cycles can be any length in *all* bird species. In reality, molt cycles among the world's birds are by and large a year in length, reflecting seasonal cycles, whether cold–hot or dry–wet. Adult tropicbirds can exhibit an elaborate molting pattern called Staffelmauser, whereby up to four waves of molt may proceed through the primaries in birds four years of age or older (LeValley and Pyle 2007). The two ornamental central rectrices of breeding adults also show an interesting pattern of replacement, with one feather dropping just after egg-laying and the second one 4–6 months later, resulting in both feathers being fully grown for the next courtship season (Veit and Jones 2004).

In juvenile plumage, Red-billed and other tropicbirds show broad dusky bars to the back feathers. In Red-billed, the pattern to these juvenile feathers does not differ markedly from those of later plumages, although the bars are wider (Pyle 2008). There is also more black present on the nape and on the outer webs of juvenile outer primaries than on basic feathers. The central rectrices of juveniles are short, with small crescent marks near the tip; the bill is yellow to grayish, gradually becoming red during the first year. The preformative molt creates little change to the plumage of Red-billed Tropicbirds—but more so to the plumages of White-tailed and Red-billed tropicbirds. The shape, condition, and extent of black on the juvenile outer primary (p10) can be used to age birds into the second year, when this feather is replaced at the end of the second prebasic molt. Thereafter, the number and configuration of primary sets (referred to as "arrested waves") in the wings can help determine minimum age.

Adult Red-billed Tropicbirds are straightforward to identify, thanks to the combination of a red bill, a barred back, and long white central rectrices. The primary coverts, outer primaries, and tertials are also marked black, contributing to a boldly marked upper-wing pattern in flight. Adult Red-tailed Tropicbirds, by contrast, show primarily white backs and upperparts and thinner red central rectrices. The adult White-tailed Tropicbird shares a bold upper-wing pattern with Red-billed, but the pattern differs in several key respects: The secondary coverts are largely black, forming a transverse black bar (similar to the M pattern of many tubenoses), and the back and primary coverts are white, lacking any black. Juvenile and first-year tropicbirds can be harder to identify, but the black juvenile primary coverts of the Red-billed are diagnostic and an easy-to-evaluate field mark. Bill color varies by age in tropicbirds, changing from yellowish in juvenile plumage to orange during the first year or two and bright red in adult Red-billed Tropicbirds. For the Red-tailed Tropicbird, bill color varies from black in juveniles to red in adults; for the White-tailed, it varies from grayish olive in juveniles to yellow in adults.

Finding the Bird of the Year

Birders hoping to see the 2019 Bird of the Year have two main options: trekking to a breeding site or hoping for a vagrant. Breeding sites can be difficult to reach, because Red-billed Tropicbirds tend to nest on islands, in inaccessible areas such as steep cliff faces,



The Red-billed Tropicbird is rare but annual off the U.S. East Coast. Sightings are most common off North Carolina, with its long tradition of excellent pelagic coverage. Particularly impressive has been a Red-billed Tropicbird that has returned to waters off Maine for 14 years at this writing. On the bird in this image, the black mottling to the crown, the black marks to the outer rectrices, and the orange bill indicate a second-year individual, perhaps still undergoing the second prebasic molt. The central rectrices may still be growing or may have completed growth; in second basic plumage, these are typically 40–60% the length of adult central rectrices. *Dare County, North Carolina; September 8, 2018. Photo by © Kyle Kittelberger.*

The Red-billed Tropicbird is the tropicbird species that birders will most likely see off the coast of California. Vagrants to the West Coast are most reliably found around the Channel Islands in the fall, although sightings are not restricted to those islands. On this adult, note that the two central rectrices are uneven in length, a result of the alternate molt of these feathers, ensuring that they will be of even length by the time the next courting and breeding season for the individual commences. *Los Angeles County, California; August 25, 2018. Photo by © Thomas A. Benson.*

rocky outcroppings, and remote atolls. In the Atlantic, Red-billed Tropicbirds can be found breeding in the British Virgin Islands, Puerto Rico, and islands along the South American coast. In the Pacific, you can find them on the Galapagos and on islands in the Gulf of California (Schulenberg 2019).

Birders hoping to tick these birds for their ABA Area lists may have to wait for or find a vagrant. Red-billed Tropicbirds from the Caribbean occasionally visit the East Coast. Sightings span the whole coast, although the most common sightings understandably come from our southern waters, ranging from Florida to North Carolina (Schulenberg 2019). This species can also be spotted off the shores of California, especially around the Channel Islands in the fall (Kaufman 2016). Even in tropical Hawaii, the Red-billed Tropicbird is a vagrant; you're much more likely to see White-tailed and Red-tailed tropicbirds, which breed there fairly commonly.

Breeding Biology

Birders who make the journey to see Red-billed Tropicbirds in their breeding habitat may be able to watch—and hear—their noisy courtship display. On Saba, an island in the Dutch Caribbean, tropicbirds congregate a few weeks before breeding to check out the nesting sites and find their mates. The birds call to each other to initiate courtship. Once a pair connects, they separate from the group and begin their courtship flight, during which they fly over and under each other, touch tail streamers, and spiral through the sky. The other tropicbird species share similar courtship "sky dances." After a pair establishes, they are usually monogamous until the death of one of the birds (Schulenberg 2019).

Red-billed Tropicbirds are asynchronous nesters, meaning they do not all nest at the same time. The Dutch Caribbean Nature Alliance (DCNA) explains in its guide to monitoring tropicbirds that the species can be found nesting from November to August. The time of laying depends on factors such as age, experience, and diet. Each female lays only one egg per year; the "nest" is a scrape in the ground. Incubation takes an average of 43 days, after which chicks are reared for about 85 days (Del Nevo 2010).

One of the biggest causes of nest failure to-

day is predation by feral cats and rodents. Conservation programs on the islands where these birds breed have to take introduced predators into account. A challenge of monitoring the nesting success of tropicbirds is that these birds are impressively long-lived. The DCNA tropicbird monitoring guide shares that Red-billed Tropicbirds may live longer than 23 years. So researchers have to be careful with their population estimates. Fewer chicks might hatch in a given year or even a whole stretch of years because of long-duration fluctuations in sea surface temperature and food availability; in this scenario, field monitors would continue to see high numbers of adults for a few years afterward, despite reduced population productivity. Numbers of tropicbirds at such sites might not decrease until the existing adults start to die. By that point, the season of reproductive failure would already be in the past. If the current breeding season were also subpar, it might lead to even larger decreases in the future (Del Nevo 2010). On a brighter note, many seabird populations are intrinsically cyclical, and some of the variation reflects natural booms and busts.

Due to the inaccessibility of most breeding sites, we don't have much historical knowledge of tropicbird populations. The recent synthesis by Schulenberg (2019) points out that since "many nesting sites now support fewer than 50 pairs, it is likely that this species was heavily impacted by both pre-Columbian and post-European contact." It's hard to precisely say how many tropicbirds currently fly over ABA Area waters. Some estimates put the global number of Red-billed Tropicbirds around 7,500 (Duchesne 2014), only a fraction of which occur in the ABA Area.

Whether you sign up for a pelagic trip to catch a vagrant off North Carolina shores, enjoy a front-row seat to a courtship flight in the Gulf of California, or simply enjoy this article, Red-billed Tropicbirds are guaranteed to titillate. They bring a tropical aura with them wherever they go. And as to where they'll show up next to attract Big Year birders and eager hobbyists, nobody knows.

Red-billed Tropicbirds are not a numerous bunch. Some estimates put the global number of Red-billed Tropicbirds at 7,500, only a fraction of which make their way to ABA Area waters. One of the challenges faced by tropicbirds is the introduction of nest predators, such as cats and rodents, to their remote breeding sites. Another challenge is the difficult-to-predict impact of climate change on their food sources and migratory patterns. Without much historical knowledge of this species' distribution, more research is needed to discover their current status—and what we can do to conserve these birds.
Puerto Ángel, Oaxaca; January 9, 2013.
Photo by © Ian Davies.

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