

Brown Boobies or brown boobies?

Our quiz birds all look fairly big. They have long, stout, and pointed bills; long and fairly broad but pointed wings; and fairly long, tapered tails. These characters combine to indicate boobies or gannets, collectively termed sulids (members of the family Sulidae). Basically, gannets are larger and occur in cold waters, whereas boobies are smaller and occur in warm waters. Six of the world's ten sulid species have occurred in North America, and identifica-

tion challenges in the group are not trivial. Additionally, most birders don't have much opportunity to see boobies at sea, at least in North America. They may

be difficult to identify, but at least they're unfamiliar! And what sorts of views do you get? Often a bird flies by a boat briefly and is gone, leaving heated debate and the hope that some hurriedly taken photos might resolve the identification. If you had difficulty with this quiz, I suspect you were not alone.

Let's start by determining what these birds *aren't*. As sulids go, all four seem to be of relatively light build. Also, the details of their upperpart color and pattern (Quiz Photos A and D) and leg and bill color (Quiz Photos B and C) rule out Northern Gannet, so we're dealing with boobies of some flavor, and predominantly brown ones at that. This rules out older ages of Masked, Blue-footed, and white-morph Red-footed Boobies, but still leaves plenty of room for confusion. Features to key into on a "brown booby" are overall pattern and contrast, especially neck/body and body/underwing contrast, plus bill/face and foot color, and tail pattern. Armed with this primer, let's look at the photographs.

Quiz Photo A

The uniformly dark-brown upperparts and lack of white on the rump and tail rule out Blue-footed Booby right away. So we're left with Brown, Red-footed, Masked, and Nazca Boobies. Nazca? The

Masked Booby was recently split into Masked Booby (widespread) and Nazca Booby (breeding primarily on the Galapagos Islands, but also in small numbers among Masked Booby colonies off western Mexico). Pitman and Jehl (1998) provided the rationale for recognizing two species, and the AOU accepted the split in 2000 (*Auk* 117:847–858). Adults and sub-adults can be dis-



Quiz Photo A—Late January.

tinguished by bill color, but no consistent differences have been established for distinguishing immatures in their first year of life (Pitman and Jehl 1998, Roberson 1998). Whether Nazca Boobies occur off California has been a topic of heated debate—at least in California. An immature booby in San Diego was confirmed by genetic analysis as a Nazca, but it was ship-assisted and the species is placed on California's supplemental list (Garrett and Wilson 2003). Back to the bird in Photo A.

Perhaps the most striking plumage contrast on our bird is where a whitish collar cuts up and isolates the dark-brown head and neck; there is a small whitish patch on the hindneck, too. This pattern is better for Masked Booby than Brown Booby, which has the whole neck and chest solidly dark brown; and it should eliminate Red-footed Booby. But immature Masked Boobies in field guides show broad white collars wrapping around the hindneck—which they do have, *mostly*. How-

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ever, up to 25% of first-cycle Masked Boobies in the eastern Pacific (race *californica*) lack white hindcollars; and 77% of first-cycle Nazca Boobies also lack white hindcollars (Roberston 1998; see supplemental photographs, this page). So, can we go further than immature Masked or Nazca? As in any identification, establishing a bird's age can be helpful. Because of potential year-round breeding by boobies, such as Maskeds at the nearest Mexican colony to California (Pitman and Ballance 2002), the use of plumage cycles is more meaningful than a seasonal-based terminology.

Boobies have one molt of head and body feathers per cycle (usually annual), but molt of the remiges (i.e., the flight feathers of the wing) is more complex and proceeds in waves that overlap in timing, a strategy known as step-wise molt. These waves each start with the inner primaries (P) and proceed outward, the first wave starting with P1 at about 8–10 months of age, the second wave starting again with P1 about 12 months later, before the first wave has finished. We can see that this bird has contrastingly darker and fresher inner primaries versus paler, more worn, and relatively pointed outer primaries, and that P5 is starting to grow in. The pointed outer primaries are typical juvenal feathers (and the blunter-tipped adult feathers usually don't get this faded and worn), so the bird is undergoing its second prebasic molt. But it has no white on the hindneck, back, or upperwing coverts, and it has a grayish bill. Hmm... Masked and Nazca Boobies of this age should have attained white spotting on the upperparts, and they usually have yellowish bills that can even show some diagnostic adult coloration.

Let's backtrack here. As well as no white on the upperparts and the odd bill color, there's a wedge of dark brown on the body sides *behind* the pale neck collar—something a Masked or Nazca shouldn't have. And the collar and hind-



Immature (first-cycle) **Masked or Nazca Booby**. The solidly dark-brown upperparts and neck pattern resemble Quiz bird A, but note the stouter and pale-yellowish bill. The primaries look to be of the same generation, with the outers fairly pointed, indicating a first-cycle bird. Plumage features shown by this individual are equivocal for Masked or Nazca, highlighting the problem posed by some first-cycle birds that reach California. *Isla San Benedicto, Mexico; 11 February 1988. © Steve N. G. Howell.*



Immature (first-cycle) **Masked Booby**. Note the uniformly worn juvenal upperwings and the faded, rather pointed outer primaries. Masked Booby populations other than those in the eastern tropical Pacific do show a bold white hindcollar, and often a white rump patch (see Quiz Photo B). Also note the stout yellowish bill. *Ascension Island, equatorial Atlantic Ocean; 13 April 2002. © Steve N. G. Howell.*

neck patch are not really white, but rather more like a very pale brown. Brown pigment, especially on poorer-quality juvenal feathers, is prone to bleaching, and the brown on juvenile Brown Boobies is no exception: The neck contrast on this bird is between fresh, dark-brown second-cycle feathers (which would be mostly white on a Masked or Nazca) and bleached juvenal feathers. Now that we look harder, the bill, as well as being grayish, is relatively slender—also better for Brown Booby, or for Red-footed... Since we've had to backtrack from Masked or Nazca, perhaps we should reconsider Red-footed, just to be sure. And immature Red-footed often has a dark partial breast band, not unlike our bird. But a Red-footed this advanced in its second prebasic molt is unlikely to be such a dark, chocolate-brown on its head and neck (most are a warmer and paler brown), and the tail of our bird shows no white tip—which would be a good feature for Red-footed. Furthermore, our bird looks a little bulky and broad-winged for the lightly built Red-footed. Still, this isn't an easy ID based on a single photo. I photographed (and studied at length) this second-cycle Brown Booby at Puerto Peñasco, Sonora, Mexico, on 22 January 2003.

Quiz Photo B

A ventral view this time, and with the bird looking at us it's hard to see

much detail of bill shape or color. Still, the bird is too brown for any plumage of Masked, Nazca, or Blue-footed. The bright-pink foot is pretty noticeable, and points straight away toward Red-footed Booby. Could it be that easy? Adult Brown Boobies have yellowish feet; *The Sibley Guide* labels the feet of a first-year Brown as "drab yellowish"; and the feet of the juvenile Brown Booby in the National Geographic Society (NGS) guide are of an indeterminate color. In my experience, first-cycle Brown Boobies of both Atlantic and eastern Pacific populations have pink



Quiz Photo B—Mid-February.

feet (Howell and Webb 1995; see supplemental photograph, this page). But an immature Red-footed's feet could also look like those of our bird, so what else can we see? The strongest plumage contrast on our bird is that of a broad, pale panel on the underwing coverts, which contrasts with the darker body. This is a good mark for immature Brown vs. Red-footed, as shown by *The Sibley Guide* (the NGS guide juvenile Brown shows an extremely dark, and atypical, underwing). And if we look a little harder, it may be possible to detect a hint of contrast between the darker chest and paler underparts, where an adult Brown would show contrast. So, a first-cycle Brown Booby, which I photographed off Manzanillo, Colima, Mexico, on 18 February 2005.

Quiz Photo C

Yes, another “brown booby” in flight, Quiz Photo C—Late April.



Immature (first-cycle) **Brown Booby**. Note the subtle underbody contrast, which mirrors the adult pattern; the dirty whitish wing-linings; pinkish feet; grayish bill; and early development of an adult-like pale-yellowish face, perhaps indicating a female. (Adult male Browns have bluish faces, females have yellowish faces.) *Ascension Island, equatorial Atlantic Ocean; 9 April 2005.* © Steve N. G. Howell.



Quiz Photo C—Late April.

but this one looks a little different—again. (And you thought boobies were those funny birds you saw displaying on the Galapagos Islands, not these identification nightmares!) The choice quickly comes down to Brown vs. Red-footed, as other boobies have white bellies. It's difficult to be sure with this angle, but the underparts look pale brownish right up through the chest (there is no line of demarcation, as on Brown Booby), and the dark underwings contrast distinctly with the pale body—but this could be an artifact of shadow. Still, both of these features point toward Red-footed Booby. The bill is pinkish with a dark tip, which confirms the ID as an immature Red-footed Booby, probably in its second plumage cycle. (Juvenile Red-footeds have gray bills and adults have pale-blue bills, but in between the bills are pink, as shown on the NGS guide plate.) Another feature shown by this bird, and noted by Howell and Webb (1995) as a Red-footed field mark, is the whitish tail tip. Usually,

the central rectrices (i.e., the flight feathers of the tail) are tipped white on immature and brown-morph Red-footeds (at least those in the eastern tropical Pacific); this mark can be striking and is something not shown by normal Brown Boobies of any age. Red-footed is also the smallest and lightest booby, often holding its wings crooked like this bird—but evaluating such features from photographs is always risky. I photographed this Red-footed Booby in the eastern tropical Pacific, off southern Mexico, on 30 April 1995.

Quiz Photo D

Another mostly brown booby flying away. The head, neck, and belly are distinctly paler brown than the back and upperwings; there is contrasting white on the rump and tail; and the bill is a rather nondescript color that might be grayish or pinkish. For better or for worse, we can't see the feet. A quick check of the field guides suggests the plumage patterns we see (especially on the rump and tail) best fit a juvenile Blue-footed Booby. However, the bill of our bird looks “pale” and the head and underbody look relatively pale and warm brown, neither of which



Quiz Photo D—Mid-February.

quite fits juvenile Blue-footeds shown in the Sibley and NGS guides (which show dark-gray bills and white bellies). And we see in the books that there is a white-tailed brown morph of Red-footed Booby; what do immatures of that look like? I hear you groan, but let's stick with this and we can figure it out.

Are there other clues we can use? Having

learned that molt was useful for Quiz Photo A, let's check the wings of our bird: Sure enough, the inner primaries are newer and darker, one or two middle primaries are growing in, and the outer five primaries are older, worn, and pointed, as is typical of juvenal feathers. This indicates our bird is starting its second prebasic molt and is about a year old, which helps a lot. At this stage of primary molt, the juvenal tail won't yet have been molted. Juvenile Red-footed Boobies of all morphs have dark-brown tails tipped with whitish, not the extensive white tail base shown by this bird—whose pattern is typical of all ages of Blue-footed. The head and neck are bleached juvenal feathers that started out darker brown; the apparently pale-brownish belly is an artifact of shadow and early morning sun reflection; and the bill has probably paled from the dark-gray of a fresh juvenile and is also reflecting sunlight. These considerations highlight the dangers and problems of attempting to make identifications from single photographs. Seeing the bird in life would be much better!

You may have noticed that the Brown Booby in Quiz Photo A, in a similar stage of primary molt, had also molted most of its head and neck out of juvenal plumage, unlike this Blue-footed. Whether this is a species-specific difference or simply individual variation is not known, and points to how little we still know about molt sequences and timing in many non-passerines. So we have identified a first-cycle Blue-footed Booby, this one photographed by Chris Wood off Manzanillo, Colima, Mexico, on 18 February 2005.

Literature Cited

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