

# The Little Shearwater (*Puffinus assimilis*) in the western North Atlantic

**A summary of the reported occurrence  
for the past century and an examination  
of at-sea identification of the cryptic  
black-and-white shearwaters  
found in these waters**

*David S. Lee*

FOR YEARS, TWO SPECIMEN RECORDS comprised the only late nineteenth century indication that the Little Shearwater (*Puffinus assimilis*) strayed into the western North Atlantic. The first published record is of a bird that struck a lighthouse on Sable Island, off Nova Scotia, September 1, 1896 (Dwight 1897; Am. Mus. Nat. Hist. 407683), while the second is actually an earlier record of a storm-exhausted bird picked up alive on Sullivan's Island, South Carolina, in August 1883 (Mus. Comp. Zool. 220051). This bird, mistakenly identified as an Audubon's Shearwater (*Puffinis lherminieri*), changed hands several times, and it was 40 years before it was correctly identified (Peters 1924). Another 60 years elapsed before a substantial number of western Atlantic reports emerged, although to date still fewer than 20 records are available. At present, there are scattered records for the northern Atlantic south to New York, the Carolinas, and Puerto Rico.

*Puffinus assimilis baroli*, the subspecies documented as straying north to England and into the western Atlantic, breeds on small islands off Madeira, the Selvagens, Canaries, and Azores (only one record). Additionally, James and Alexander (1984) report two "prospecting" Little Shearwaters in a Manx Shearwater (*Puffinus puffinus*) colony on Skomer Island, Dyfed, Wales. While the 1957 A.O.U. Check-list regards the North American records as *P. a. baroli*, this has apparently never been confirmed. Peters (1924) was cautious, pointing out that adequate material was lacking, and Dwight (1897) did not discuss subspecies at all. In examining the Nova Scotia specimen, it is clear to me that it is not *boydi* because of its short tail length, and not *elegans* because of its small size. The specimen compares favorably with a series of nine *baroli* I examined, and Murphy (1927) included this same specimen with a small Madeira series (N = 8) of *Puffinus assimilis* he studied. *P. l. boydi* breeds on the

Cape Verde Islands. Although it has been appropriately regarded as a race of Audubon's Shearwater, this population has endlessly been switched back and forth between *assimilis* and *lherminieri* by various authors. It is similar in size (Table 1) and appearance to the Little Shearwater, and earlier authors had considered it to be *P. assimilis*. Other races of the Little Shearwater occur in the southern oceans (*P. a. elegans* in the South Atlantic), but there is no indication of trans-equatorial movements. In fact, the species is generally regarded as rather sedentary, although little is actually known about its marine distribution. The species does at least regularly visit British waters (Sharrock and Sharrock 1976; Wallace and Bourne 1981). Furthermore, its nesting season and/or period of association with North Atlantic nesting islands is difficult to judge. Eastern North Atlantic breeding populations have never been inventoried, but they are certainly small (several thousand pairs of each of the two

forms, *baroli* and *boydi*, would be a generous estimate), further decreasing the probability of them being encountered at sea.

The Little Shearwater is perhaps a temperate-subtropical equivalent of the more tropical Audubon's Shearwater, but the ecological and temperature relationships of these two birds are rather difficult to define, particularly in the southern hemisphere. Some authors have considered them allopatric forms of a single species. Olson (1975), for example, was unable to find any structural differences in the skeletons of the two, while Bourne and Loveridge (1978) discuss two intermediate individuals of unknown breeding origin found on Ascension and St. Helena islands. Bourne (in Post 1964; Vaurie 1965) also suggested combining these two small shearwaters into a single species. Little Shearwaters are ecologically intermediate between the cold water Manx Shearwater and the tropical-subtropical Audubon's Shearwater, and geographically they occupy intermediate North Atlantic breeding sites as well. Nevertheless, Little Shearwaters occur over the cold Canary Current where they nest in the winter, while the Manx frequents the warm Atlantic current (Bourne *pers. comm.*) and nests in the summer. In external appearance and flight characters, however, Little Shearwaters are intermediate in some aspects but not others (see below; Fig. 4). The small "black-and-white" shearwaters present an extremely intriguing and complex worldwide faunal mosaic that will continue to present interpretive problems for

both taxonomists and bird watchers for the foreseeable future. Here I simply intend to provide additional sight records of the Little Shearwater, summarize its reported occurrence in the western North Atlantic, and present several previously unmentioned clues and problems in at-sea identification of the cryptic North Atlantic "black-and-white" shearwaters.

### Summary of western North Atlantic records

#### *Northern Atlantic*

The Little Shearwater records summarized from the 1940s to 1960s by Post (1967) were from far offshore (between 44–50°N and 40–33°W) in the central North Atlantic. All four are from cold-water areas. Dates of these sightings are August 15, 1943, December 8, 1943, November 23, 1948, and August 13, 1951. Brown's (1972) sightings are from the southeastern Grand Banks on February 28, 1971 (one bird 42°56'N 50°47'W), March 1, 1971 (one bird 43°05'N, 50°47'W and one bird 43°26'N, 50°07'W), March 5, 1971 (two birds 43°17'N, 51°28'W, and two birds 43°21'N, 51°26'W), and because of their proximity to land are more reasonably regarded as North American records. The 1896 Sable Island bird is obviously also a record associated with inshore waters. When Dwight (1897) reported that record it was considered quite unusual because *Puffinus assi-*

*milis* was believed to be confined essentially to New Zealand and Australia, and the few records from the Madeira Islands were regarded as strays. The Sable Island specimen is not a vagrant young of the year because it is in active body and wing molt. The fifth primaries are barely out of their sheaths, and the inner ones (1–4) are new. A sighting of a possible Little Shearwater is presented by Ryan (1967) and also included by Post (1967) in an addendum to his study of 1964; the bird was about five miles off Jones Beach, Nassau County, New York on January 2, 1967, and Peterson (1980) includes a Maine occurrence. I assume it is based on a record from off Bar Harbor, Maine, of up to four small shearwaters reported with an extremely fast shallow flap and very brief moments of scaling very low over the water (July 3 and 10, 1971 *Am. Birds* 25(5):830).

#### *The Carolinas*

Steve Planania and I saw two or four small "black-and-white" shearwaters on November 14, 1978, 85 kilometers south southeast of Oregon Inlet, North Carolina (35°11'N, 75°03'W), which we suspected were Little Shearwaters. Two shearwaters were seen on separate occasions on and near the inner edge of the Gulf Stream. Although the birds were only viewed as they flew away, and their face patterns were not observed, it was apparent that they were not Audubon's or Manx shearwaters because of the combination of small size, rapid

**Table 1. Comparative measurements and weights of the three species of small black-and-white shearwaters known from the North Atlantic.**

	<i>P. assimilis baroli</i>	<i>Puffinus lherminieri boydi</i>	<i>P. lherminieri lherminieri</i>	<i>Puffinus puffinus puffinus</i>
Wing span	—	—	652 (555–712) (N 34)	778 (749–822) (N 13)
Wing cord				
male	184 (176–190) (N 7)	182 (173–193) (N 14)	192 (187–203) (N 25)	222 (211–235) (N 8)
female	179 (170–185) (N 6)	180 (172–187) (N 11)	195 (185–207) (N 25)	232 (225–237) (N 4)
Total length	250–300 <sup>(*)</sup>	—	339 (294–356) (N 29)	374 (342–403) (N 14)
Tail	72 (67–78) (N 14)	96 (85–105) (N 25)	96 (83–116) (N 50)	82 (75–90) (N 12)
Tail as % of total length	26%	—	28%	22%
Bill				
male	26 (24–28) (N 8)	25 (22–26) (N 14)	30 (27–33) (N 25)	36 (34–38) (N 8)
female	25 (24–26) (N 6)	24 (22–27) (N 11)	28 (24–31) (N 25)	34 (32–36) (N 4)
Tarsus	37 (36–39) (N 14)	33 (33–36) (N 25)	38 (35–43) (N 50)	42 (40–46) (N 12)
Middle toe	41 (37–44) (N 12)	40 (33–42) (N 25)	44 (40–48) (N 50)	48 (46–50) (N 11)
Weight	—	—	212 (156–261) (N 25)	412 (338–503) (N 13)
Percentage with white on 1/3 of under-tail coverts	100% (N 9)	60% (N 25)	63% (N 50)	100% (N 12)

*P. assimilis* from Cramp (1977), total length for various races (\*) from Harrison (1983), *P. l. boydi* from specimens examined, other measurements from birds collected off North Carolina coast (all North Carolina State Museum). Mean (range) and (N = sample size). Lengths in millimeters, weight in grams.

wingbeat and very short tails. Thus, they were identified largely by process of elimination. "The birds flew only about one meter above the surface, alternating a rapid flapping and short, gliding flight pattern. . . . When we first saw them from a distance, we thought they were Alcids; . . . At no time were we closer than 30 m, and at this distance the birds appeared virtually tailless" (Lee and Platania 1979).

On December 28, 1984, I had the opportunity to make detailed observations of a Little Shearwater under good sea conditions, helping to compensate for the frustrations of the encounter in 1978. This sighting also occurred off Oregon Inlet, North Carolina (35°16'N, 74°46'W) (Lee 1987). The bird was seen twice in profile flight from distances of about 30 meters and once sitting on the surface. In flight the bird was dark dorsally, so much so it was difficult to follow it visually once it was more than 50–60 meters from the boat. The dark dorsal coloration contrasted sharply with the white ventral surface, perhaps more so than in other shearwaters I have seen. It had a short tail that was more rounded than that of an Audubon's Shearwater, but not as rounded as might be expected from illustrations in field guides. The wings looked proportionally short, perhaps narrow, and the overall size was suggestive of a large storm-petrel. The underside of the bird in flight showed nothing diagnostic other than the short tail. The flight path was a series of short, occasionally tilting glides, followed by a rapid volley of wingbeats. This individual had no gaps in its primaries or secondaries indicating absence of active flight-feather molt. The bird was lost, but then relocated several minutes later resting on the surface. At maximum distance I assumed the bird to be a Bonaparte's Gull (*Larus philadelphia*) because the white on the face and sides of the neck dominated from my three-quarters frontal view. The dark eye was clearly in a field of white, and the bill was small and dark. With binoculars, however, I could see it was the shearwater, and the black on the crown and forehead looked greatly reduced from this angle. On approach the bird took wing and again displayed the characters described above.

On February 21, 1985, two, possibly three, small black-and-white shearwaters were seen in 1000 fathom water off Oregon Inlet. Unfortunately, sea conditions made prolonged views impos-

sible. Derb Carter, who accompanied me on this trip, saw one bird that I did not see, and he stated that it was a very small shearwater. Another bird seen by both of us was too far away for any meaningful observations. The third sighting was of dorsal glimpses of a small, compact, banking, black-and-white shearwater with a short tail. It was seen three times as its flight path brought it above a large cresting wave. Although the bird was only about 30 yards away, waves prevented observation of all but the gliding arch of its flight path. Thus the wing motion and flight cadence were not noted.

Water temperatures and depth for my three North Carolina sightings are as follows: November 14, 1978, 17.5°C, 24.4°C, and 200 fathoms; December 28, 1984, 23.3°C, and 1200 fathoms; February 21, 1985, 21.7°C, and 1000 fathoms.

Tim Koebal (*pers. comm.*) saw 15 small shearwaters, which he made out to be Little Shearwaters, 37 miles east of Diamond Shoals on August 16, 1987. They had white undertail coverts and a buzzy wing beat that reminded him of a Razorbill (*Alca torda*). A single specimen record for South Carolina is available (Peters 1924). This is the only storm-related record, but there is no indication that an August storm would have moved this bird any great distance, although it could have transported it across the Gulf Stream. The precise date of collection is unknown and, checking with the U.S. Weather Bureau, I found that there were two hurricanes off South Carolina in August 1883. The first was tracked between August 18 and 28 and the second between August 24 and 31. Both had their reported origin between the 70° and 68° parallel, moving between Bermuda and the mainland, but neither actually came ashore. A third tropical storm came ashore just above the South Carolina line on September 11, 1883. The original label, however, stated only "Summer, ♂, Sullivans Id., S.C. Disabled and exhausted but not dead. Taken after a storm on the Florida coast." The August 1883 date was actually provided later by Wayne, who may have supplied it from memory.

#### *Tropical*

The single Puerto Rican sight record (Raffaele 1983) is the only indication of

tropical occurrence of Little Shearwaters in the North Atlantic, while the date, January 30, 1977, is within a general late summer-winter western Atlantic period of occurrence that seems to be emerging.

Raffaele kindly provided me with the following details of the Puerto Rican record:

Don Erdman reported to me by phone that on 1/30/77 in Mayaguez Bay from 9:00–10:00 a.m. he saw 3 Little Shearwater for almost 1 hour from shore. Virtually no glide except turning. Almost no tail. The bill was very hard to see, very small and dark. The white on the side of head really stood out. The back is kind of brownish between Bridled and Sooty. No more than about 10" in size. Came to almost 50 yards from shore, seen w/ binocs. Shearwaters sometimes have dark color coming down by neck; this had some, but not much. Tremendous storms in midwest Atlantic at the time.

In addition there is one possible Florida record that has not previously been available. It was supplied to me by Robert D. Barber. What follows is an excerpt from a letter he sent to me in October 1985.

In regards to the blue legged, black and white shearwater that I mentioned picked up dead on the beach. The date was 18 August 1971, and I found the bird on Playlinda Beach, which is now Canaveral National Seashore, just east of Titusville Fla. on the mainland. As I mentioned at the time I was perhaps one notch above a novice birder and had no knowledge of seabirds whatsoever and presumed it was Audubon's. The bird appeared to be fairly freshly dead (little odor), but something had eaten most of the breast meat. I did measure the bird and came up with an overall length of 11.75 in. and wingspan of 23.75 in., which was close to what Peterson gave for Audubon's (12 in.). In retrospect these measurements could have been inflated due to the gaping hole in the breast and belly. I noted the leg color as "powder blue", and I do remember that the legs were darker on the front or back but can't remember which. I also noted that the upperparts were "jet black" and the underparts "pure white" but did *not* note the undertail-coverts. I also did not note the color of the feathering around the eye, but I do not remember it being surrounded in white but was at least partially or wholly within the dark feathering on the side of the head.

Neither of these records appear to be well enough documented to indicate anything other than possible occurrence in tropical waters. There are no other records of *assimilis* type shearwaters from the tropics (Bourne *pers. comm.*).

## Comparisons of black-and-white shearwaters

Off the southeast coast of North America the most common species of this cryptic group is, of course, Audubon's Shearwater. It is documented as occurring off North Carolina from April 23 through November 7, with lingering immature birds present to early December and one record for late January. Generally, North Carolina's offshore waters are regarded as the northern limit of regular dispersal from the Caribbean nesting grounds. Post (1967) summarizes 38 records from Virginia north, most of which are July and August beach wrecks. Individuals have been found regularly but not commonly north to Rhode Island, and still farther north and east in the Gulf Stream, and yet there are no satisfactory records from the eastern North Atlantic (see B.O.U. 1971). Bourne (*pers. comm.*) points out two dubious, but not necessarily erroneous records of Audubon's Shearwater for Britain—an old specimen supplied by Gould to the British Museum in 1881 which was said to have been killed off Devonshire, and a second bird said to have been found alive, but being persecuted by gulls on a beach in Sussex. The latter had been discounted because it passed through the hands of a fraudulent taxidermist. Yet even including the British records of Audubon's Shearwaters, its normal and extreme dispersal remains comparatively modest for a seabird. Most local records are from mid-March through April 17, and from throughout December. Post (1967) summarizes past records from the northwestern North Atlantic south to Florida. It is assumed that the bulk of the Manx Shearwater migration, however, occurs far offshore, since south of Maryland the species is seldom encountered consistently or in numbers. All North American specimens are of the nominate race. The Little Shearwater is apparently an infrequent transoceanic migrant, seen irregularly and locally, and only in late fall and winter. The North Carolina sightings have been after the mass exodus of Audubon's Shearwaters, with two records during the same general period as the fall migration of Manx Shearwaters. The majority of records to the north are also from a period when stray Audubon's Shearwaters would not be expected to occur. Dates of records to the north and south of North Carolina, however, sug-

gest that in the western Atlantic the Little Shearwater's season of occurrence may be quite protracted, extending from late August through early March. This period corresponds rather closely to the non-breeding season of North Atlantic populations as presently understood. Excluding the single South Carolina and Puerto Rican birds, all have been associated with waters that are cold due to location or season.

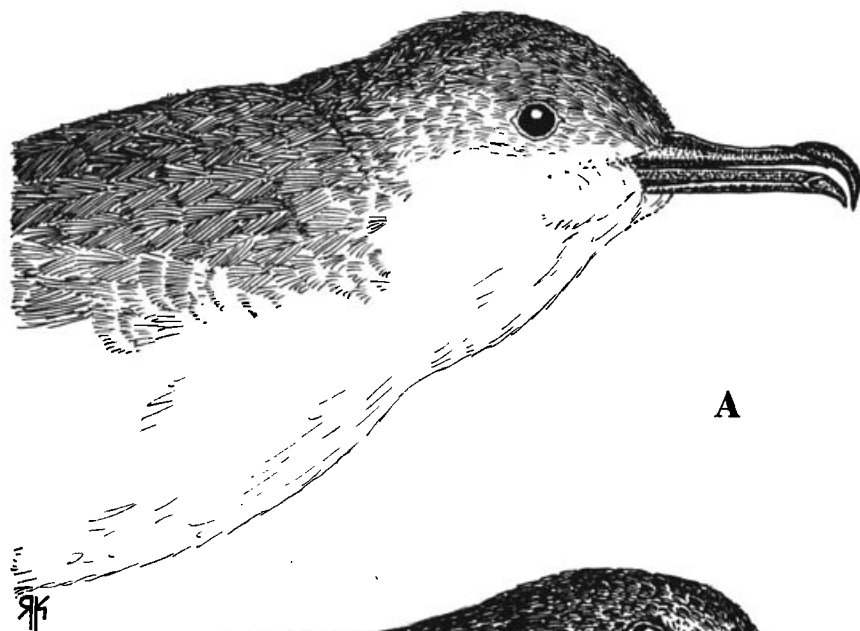
### Identification

Because of flight, size, and face markings, Little Shearwaters are more likely to be confused with Audubon's than with Manx. Table 1 presents comparative sizes of the three species. In dramatic contrast to the Little, the Manx is the largest, with dark face markings extending well below the eye, and with the slowest wingbeat of the three species. I have found Manx Shearwaters to be the slowest flyers as well. To provide some indication of speed, I should point out that we have been able to chase Manx Shearwaters down with boats, something we can only occasionally do with Audubon's, and that we have not been able to do with Little Shearwaters. Audubon's Shearwaters have an intermediate wingbeat while the Little has the fastest, and exhibits minimal soaring (Post 1964; Brown 1972; and *pers. obs.*). The cadence in soaring *versus* wingbeat of either the Manx or the Little should be apparent to anyone familiar with Audubon's Shearwaters in flight.

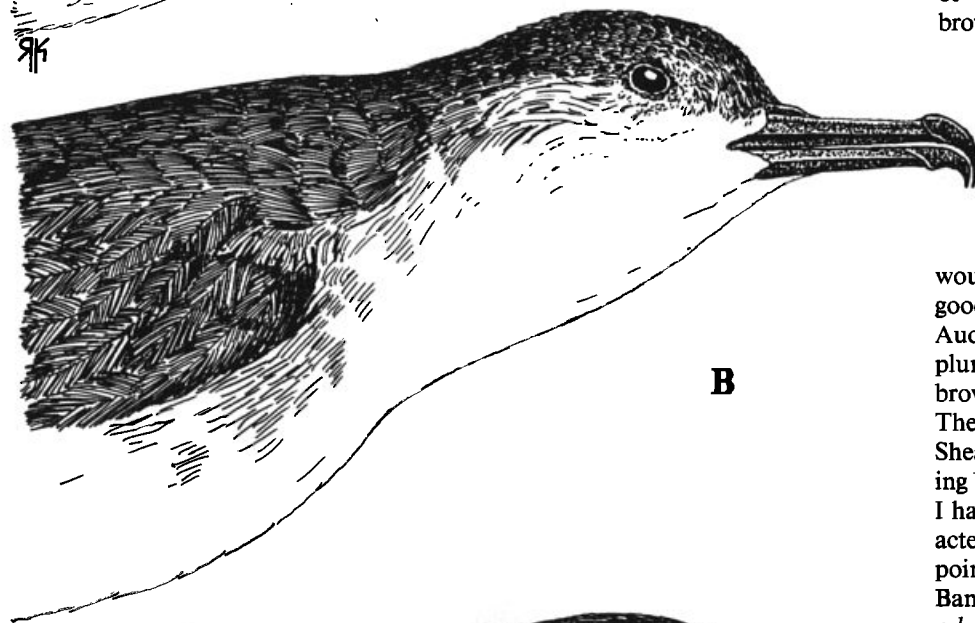
Curtis *et al.* (1985) present an excellent review of identification and identification problems of the smaller shearwaters from a British perspective. Their problem is compounded by variation in Manx Shearwaters, since there are three races of this species present in the eastern North Atlantic. Bourne (*pers. comm.*) suggests that *yelkouan* is a distinct species. The article is a good one and well worth studying, although much of the discussion is not pertinent to the western North Atlantic. They conclude that "small-shearwater identification demands a long apprenticeship." They provide some informative flight diagrams contrasting Manx and Little shearwaters and note that separation at all ranges is "best based on flight action, structure and size. At closer ranges and in lights revealing true plumage patterns and colours, other

characters are available to the expert eye, but most are subject to specific and subspecific overlap."

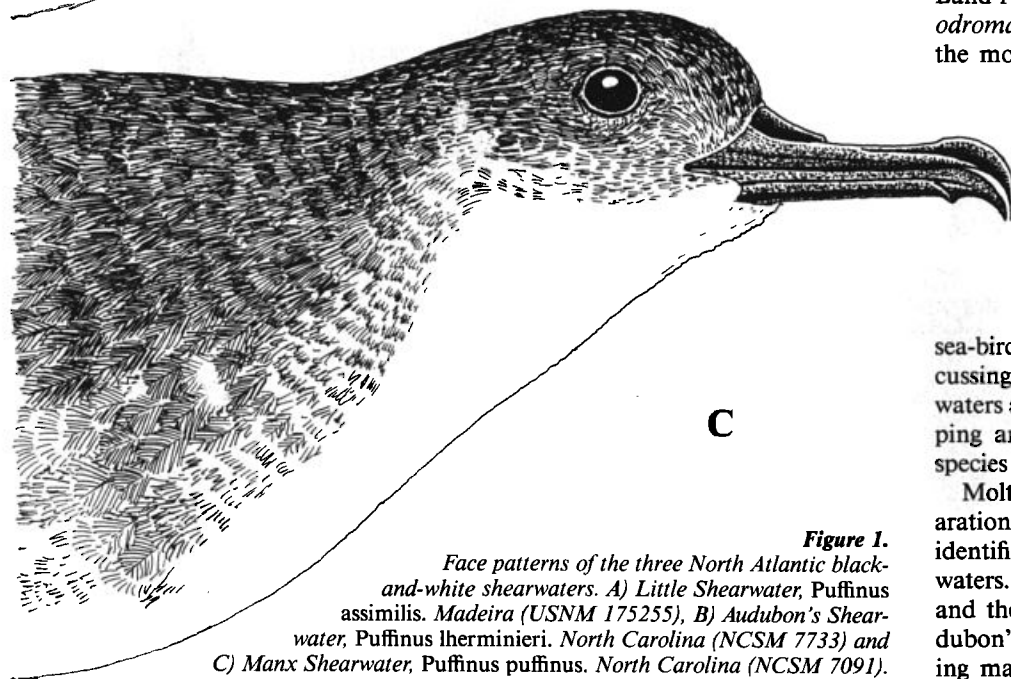
The tail of Audubon's is quite long compared to the tails of Manx and Little shearwaters, while the wings of Manx and Audubon's are proportionally longer than the Little Shearwater's. Face patterns are also a potential field character but should be used with caution. Examination of study skins shows that the face patterns depicted in field guides represent extremes. Contrary to field guides, the black on the face usually, but not always, stops below the eye on Little Shearwaters. On Audubon's it normally transects the lower eye lid, but this can be somewhat variable. Typically, the zone of demarcation is not sharp on any of these shearwaters (Fig. 1). On all species dark face mottling extends into the white plumage to a varying degree. A dark eye distinctly in a field of white should be a good field mark for positive Little Shearwater identification (see photo in James and Alexander 1984), especially if combined with other characters, but in spite of this being evident on my sighting of December 28, I do not expect this diagnostic character to be present on most birds. The nine North Atlantic Little Shearwater specimens I examined all have dark face mottling extending to the middle of the eye (Fig. 1). On the other hand, the extensive white on the sides of the neck of Little Shearwaters is striking; in the other two species the dark coloration extends laterally farther around the neck. This dark area continues down onto the breast on Audubon's and Manx; the amount is variable, but in the extreme it produces an incomplete breast band. This character, seldom depicted adequately in field guides, is usually less well-defined in Little Shearwaters, but is variable in all three species. Manx exhibit white at the base of their tail that extends around to the dorsal surface. Seen from above and when the bird is flying away, it gives the appearance of two round white dorsal spots on either side of the base of the tail. I have not seen this character mentioned or illustrated in the major field guides. The presence of white under-tail coverts should never be used as a primary field mark for any of the black-and-white shearwaters because many Audubon's collected off the North Carolina coast do not have completely dark under-tail coverts. Often the coverts are white for one quarter to three-quarters



A



B



C

**Figure 1.**  
Face patterns of the three North Atlantic black-and-white shearwaters. A) Little Shearwater, *Puffinus assimilis*. Madeira (USNM 175255), B) Audubon's Shearwater, *Puffinus lherminieri*. North Carolina (NCSM 7733) and C) Manx Shearwater, *Puffinus puffinus*. North Carolina (NCSM 7091).

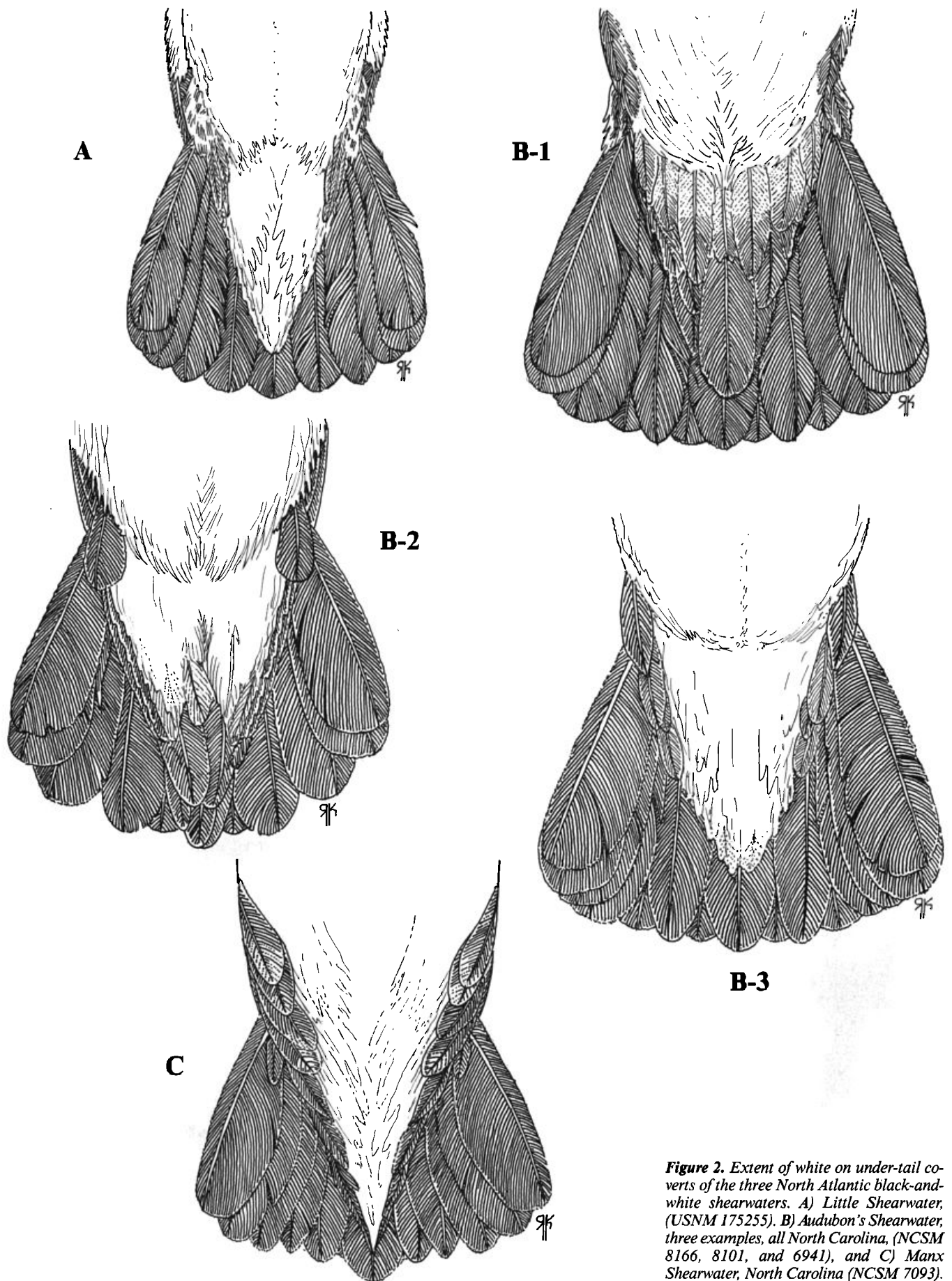
of the length of the tail, and in some, the under-tail coverts are totally white (Fig. 2). Furthermore, the Cape Verde shearwaters have mostly dark under-tail coverts, but in about half of the 25 I examined the white extends well down the under-tail coverts, adding still more confusion to an unreliable field mark.

I doubt that the blue leg color of Little Shearwaters would be apparent under most sea conditions, or any more useful in the identification of flying birds than the blue legs of a Long-tailed Jaeger (*Stercoraris longicaudus*). Furthermore, the shearwaters' low flight, with infrequent tilting glides, would seldom provide a chance to see leg color. The difference between the black dorsal surface of Little Shearwaters and the deep brown of Audubon's is a subtle one, and

would probably not be useful even in good light; and after early September, Audubon's Shearwaters are in fresh plumage and have lost much of the brown cast to their dorsal coloration. The slightly smaller bill of the Little Shearwater seemed apparent on a resting bird I saw, but after examining skins I have trouble believing that this character would be useful. As previously pointed out in attempts at recognizing Band-rumped Storm-Petrels (*Oceanodroma castro*), flight path is probably the most useful aid in sorting cryptic

sea-birds (Lee 1984). All authors discussing identification of Little Shearwaters at sea have noted the rapid flapping and abbreviated soaring of this species in flight.

Molt sequence may be useful in separation, but does not provide positive identification of black-and-white shearwaters. Between the first week of July and the first week of September, Audubon's Shearwaters are actively molting major flight feathers, and gaps in



**Figure 2.** Extent of white on under-tail coverts of the three North Atlantic black-and-white shearwaters. A) Little Shearwater, (USNM 175255). B) Audubon's Shearwater, three examples, all North Carolina, (NCSM 8166, 8101, and 6941), and C) Manx Shearwater, North Carolina (NCSM 7093).



Figure 3. Audubon's Shearwaters off the North Carolina coast, August 1980. Note molt of primaries in some of the birds. Photo/Wayne Irvin.

the primaries are easily seen on most individuals encountered (Fig. 3). Young of the year apparently do not molt until the following season. North Atlantic Little Shearwaters molt flight feathers from May to September, and Manx Shearwaters molt during the winter months.

In summary, two of the main characters (face pattern and coloration of under-tail coverts) cited in North American field guides for recognition of Little and Audubon's shearwaters are not reliable. Audubon's may, and often does, have white under-tail coverts, and the white areas on the face and neck of Little Shearwaters are variable, but typically overlap with what is expected on Audubon's. Flight path and relative tail length are much more reliable field characters.

Through careful documentation it may eventually turn out that Little Shearwaters cross the ocean as regularly as do many of the other eastern Atlantic Procellariiformes (see Watson *et al.*, 1986). In the South Atlantic, the larger *Puffinus assimilis elegans*, which breeds on Gough Island and in the Tristan da

Cunha group, has been recorded off Argentina. In fact, transoceanic migratory movements may be exhibited by many pelagic organisms. For example, Scott (1984), through recent tag returns, has demonstrated transoceanic migration in the Blue Marlin (*Makaira nigricans*). Because the season of occurrence and geographical distribution of Little Shearwaters in the western North Atlantic are not well understood, it is hoped that bird studies will use extreme caution in reporting future sightings; a handful of indiscriminating reports would quickly, and perhaps permanently, mask distributional patterns emerging from the 16 to 20 records that have accumulated over the last century. At the same time, field observers should be aware that under good sea conditions, at close range, and in good light, records can be obtained that have a reasonable certainty of correctness, at least for individuals in typical plumage. Regardless of the ultimate systematic position assigned to the *assimilis/lherminieri* mosaic, field workers are in a position to make an important contribution to our understanding of

comparative marine distribution of these two cryptic forms.

#### ACKNOWLEDGMENTS

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