

# Pelagic birds of the northern Gulf of Mexico

*A preliminary summary of distribution and abundance with comments on field identification*

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## Introduction

THE NORTHERN GULF OF MEXICO remains one of the least understood areas in North America as far as its bird life is concerned. It has been over 25 years since Lowery and Newman (1954) summarized the known distribution of avian species in the Gulf. In the meantime the Gulf has become used extensively as an oil-producing region with the attendant platforms providing a new undersea environment. Changes in the littoral environment from onshore development are also occurring.

Recently, birders have been making the not inconsiderable effort to explore offshore areas and return reliable sight records. Unfortunately, these areas have usually been chosen because of the convenience of their access rather than for their oceanographic features. A full and systematic study of the Gulf waters, comparable perhaps to the Canadian Atlantic studies described in Brown *et al.* (1975), seems desirable.

In view of the increasing interest nationwide in pelagic birds, and with an eye to establishing baseline data from which changes from a variety of environmental impacts may be measured, we have summarized published and submitted records of oceanic birds in the northern Gulf. We include as well four years of records collected by one of us (RWH). We have made no attempt to evaluate the accuracy of records submitted by others.

Since it is only in the Gulf that certain species (*e.g.* Gannet and boobies) are regularly sympatric, the standard field guides are often imprecise with respect to their identification. We therefore try to provide a discussion of characteristics which will facilitate field identification of birds seen at sea in the Gulf.

It must be emphasized that this is a preliminary account. Birders are only beginning to explore the Gulf. More than a decade of observations in the region will be required before we begin to understand the occurrence and distribution of these species.

## Materials and Methods

PUBLISHED RECORDS FROM THE excellent state references by Oberholser (1974), Lowery (1974), Imhof (1976) and Sprunt (1954, with addendum 1963) have been supplemented with records from the Florida, South Central and South Texas Region reports of *American Birds*. Bowman's (1978) "Species Index to Florida Bird Records" has been invaluable in searching that state's data. Other occurrence reports have been taken from the repository of sight records at the Museum of Natural Science, Louisiana State University (hereafter, L.S.U.), Baton Rouge, or from our own sightings in Alabama waters.

Since Mississippi lacks a recent comprehensive state reference (Burleigh's 1945 work mentions no pelagics), we cannot consider our coverage complete. We have, however, covered all published sightings in that state from 1974 to the present, as well as the entire sight record file at L.S.U.

Our own observations have been made from the Alabama Department of Conservation's Marine Resources Lab at Dauphin Island, using a 23-foot open boat fitted with twin 140-hp outboard engines. This craft is eminently stable, provides excellent visibility and photographic opportunities. With these engines it is fast enough (*ca.* 50-55 mph) in fair seas to chase down most seabirds, although jaegers and sulids routinely outrun us. Alternatively, during 1979 we have sometimes used a 60-foot chartered fishing vessel holding up to forty observers.

Binoculars (7 × 35) with a 300 mm lens on a 35 mm camera constitute the optical gear.

The area considered in this article is the Gulf of Mexico, north of the 26th parallel, (that is, from Port Isabel, Texas to Marco, Florida). The choice of species included is necessarily somewhat arbitrary. Our guiding principle has been to include those birds which spend some portion of their life entirely at sea, and which are not commonly found on land. Thus, Black Tern, a species which we have seen far out in the Gulf, is excluded. Similarly, Wilson's Phalarope is considered primarily a shore-bird and is not included with the pelagic phalaropes.

## Definitions

The number of sightings of each species offshore is usually too small to permit true evaluation of populations; we use the following terms:

*Abundance*, in declining sequence: abundant, common, uncommon, rare

*Frequency*, in declining sequence: Regular (every year), irregular, casual, accidental (fewer than five records for the Gulf).

*Seasonality*: noted where known.

A further category — "Historical" refers to species not recorded for at least 25 years.

## SPECIES ACCOUNTS

### ALBATROSSES: *Diomedidae*

#### *Yellow-nosed Albatross (Diomedea chlororhynchos)*

*Status:* Accidental.

**Texas** — May (1972) and October (1976 — an injured bird) both off S. Padre Island; an unidentified albatross was recorded 120 km off Galveston in November (1976).

**Louisiana** — May (1970 — Cameron Parish).

*Field Identification:* These are huge seabirds with heavy bills and long, narrow wings, unmistakable at reasonable range. Identification to species, however, can be quite difficult.

Any albatross in the Gulf will most likely be this species or the Black-browed Albatross (*Diomedea melanophris*). The latter has a pale bill with underwings *broadly bordered* in black. The Yellow-nosed, despite its name, has a bill which appears dark, the yellow being only on the dorsal ridge. The underwings are *narrowly edged* in black (scarcely visible on the trailing edge). See McDaniel (1973) or Warham *et al.* (1974) for further details.

### SHEARWATERS: *Procellariidae*

#### *Cory's Shearwater (Puffinus diomedea)*

*Status:* Regular but rare during Fall in recent years.

**Texas** — Unrecorded prior to 1975; since then at Port Aransas Snapper Banks: August (1977), September (1975 — identification perhaps not wholly positive), October (1976 — 45 or more birds, 1977), August - October (1978 — "a few"). **Alabama** — September (1973, 1979 — 15-20 birds during Hurricane *Frederic*). **Florida** — May (1978 — Cape San Blas), July (1977 — 7 birds in two sightings, C. W. Saunders, Jr., personal communication), August (1978), September (1976, 1977), and October (1978).

*Field Identification:* See Greater Shearwater, below.

#### *Greater Shearwater (Puffinus gravis)*

*Status:* Regular but uncommon in recent years in the eastern portions of the area.

**Texas** — August (1975) at the Port Aransas Snapper Banks. **Louisiana** — May (1972), July (1964), August (1971) and September (1970 — three birds). **Alabama** — July (1958, 1973 — 8 birds, 1974, 1977 — 5 birds in three sightings by RWH, 1978 — 1 bird seen by RWH), August (1973 — 17 birds in two sightings, 1977 — 6 birds seen by RWH, 1978 — 2 birds seen by RWH), September (1966 — a dying storm-blown bird, 1973 — 5 birds, 1977 — 2 birds seen by RWH), and December (1977 — 2 birds, R. E. Hayward, personal communication). This species was not seen by RWH, oddly enough, during Hurricane *Frederic* in September, 1979. **Florida:** January (1950 — a dead bird), April (1963), May (1970 — two sightings totaling 5 birds), July (1972), July (1972, 1976 — a dead bird, 1977), August (1973 — 8 birds, 1978), September (1975, 1976, 1977 — four sightings totaling 18-20 birds), October (1977 — 4 birds), and November (1974 — 27 off Panama City).

*Field Identification* Finch *et al.* (1978) remind us that the best mark is the white neck behind a grayish-brown (not black) cap. The white at the base of the tail can be quite indistinct. Cory's Shearwater has gray-brown cheeks, lacks the capped appearance and has a stout yellow bill. When visible, the dark belly smudge separates Greater from all other light-bellied shearwaters. Finally, Cory's is said to have a flight with much less flutter and glide. It uses more dynamic soaring, rising to great heights into the wind then gliding rapidly downward. Greater Shearwater, in contrast, "never soars or swoops as freely" (Palmer 1962). Finch (personal communication), however, disagrees with Palmer's (1962) statement that Greater Shearwater is seldom seen above the waves and rarely above the horizon.

*Comment:* Perhaps the most memorable record of Greater Shearwater is the Alabama occurrence in July 1958. The bird was described as having been seen from the Mobile Bay Pilot Ship for a month. It met its demise when it fell through a ventilator into the galley and hit the cook on the head.

#### *Sooty Shearwater (Puffinus griseus)*

*Status:* Uncertain; five sightings in the last 3 years.

**Texas** — April (1951), June (1937, 1952 — both found dead), and July (1976). **Louisiana** — August (1976 — 110 km offshore along a grass line, 4 birds). **Alabama** — May (1898 — 450 km inland, dead after a storm, 1979 — RWH, previously unpublished), September (1979, 3 seen by RWH during Hurricane *Frederic*) and December (1978 — a single bird carefully identified from shore during a Christmas Bird Count). **Florida** — January (1935 — dead, 1950), April (1951), and September (1978).

*Field Identification:* A darkish shearwater, typically fuscous on the back, smoke-gray on the belly; a few museum specimens (L.S.U. Museum of Natural Science) have an olive-brown color to the belly. This is probably not noticeable in the field. The silvery wing linings separate it from the large dark Pacific Ocean shearwaters. Lee's (1979) report of the collection of a South Trinidad Petrel (*Pterodroma arminjoniana*), off North Carolina and his comment that the bird was originally thought to be a Sooty Shearwater are eye-opening. While unrecorded in the Gulf, the South Trinidad Petrel should be kept in mind when Sooty Shearwaters are recorded (Lee, 1979; R. Rowlett, pers. comm.).

#### *Manx Shearwater (Puffinus puffinus)*

*Status:* Accidental.

**Texas** — February (1975 — skeletal remains of a bird banded in Scotland (!) during 1973 were found on N. Padre Island).

*Field Identification:* See Audubon's Shearwater, below.

*Comment:* Numerous records from the Atlantic Coast of Florida.

#### *Audubon's Shearwater (Puffinus lherminieri)*

*Status:* Casual year-round.

**Texas** — January (1947), February (1979 — 2 birds), March (1975), April (1955, 1964), May (1929), Septem-

ber (twice 1961, twice 1967), October (1978), November (1968, 1973), "winter" (1974-5), one without date. *Louisiana* — March (1972), May (1972 — 2 birds), July (1970), August (1954), September (1961 — several dead birds, 1970 — 15 birds). *Alabama* — July (1978), August (1978) off Dauphin Island. Photo. The absence of this species, despite substantial time afield (RWH) during and after Hurricane *Frederic* in September 1979 should be noted. *Florida* — July (1976), September (1975) — both northwest Florida.



Alabama's first Audubon's Shearwater, in flight off Dauphin Island, June 30, 1978. Note the contrast of dark above and light below. The longish tail and dark brown coloring in the wings are also characteristic. Photo/Charles D. Duncan.

**Field Identification:** Audubon's is a small shearwater entirely dark above and white below. The line of demarcation is sharp at the neck, unlike Manx Shearwater. Audubon's has dark undertail coverts whereas, except for the "black-vented" Pacific race, they are light in the Manx. The present species has a faster wingbeat, proportionately shorter wings and a longer tail than the slightly larger Manx. Little Shearwater (*Puffinus assimilis*) is smaller even than Audubon's. While unrecorded in the Gulf there have been recent Atlantic Coast reports. Its flight is reminiscent of an alcid, with very rapid whirring wing strokes and a shearwater flutter and glide. The back is essentially black (not rich, dark brown as is Audubon's) and there is more white on the side of the head. Legs and feet are lavender (flesh-colored in Audubon's) and the tail is quite short.

**Comment:** Of historical interest is Audubon's account, quoted in Bent (1922), of this species. While traveling in the Gulf of Mexico in 1826, Audubon's party found that Audubon's Shearwater, observed "daily since we left the mouth of the Mississippi," became so numerous off the western shores of Florida that the mate killed four with a single shot while collecting specimens. Apparently no such concentrations have been recorded in this century.

#### **Black-capped Petrel (*Pterodroma hasitata*)**

**Status:** Unrecorded with certainty in the Northern Gulf. One of us (RWH) saw a bird generally fitting the characteristics of this species in July (1976) at the 100 fathom curve, 60 km off Orange Beach, Alabama.

**Field Identification:** Rather like a small Greater Shearwater with more extensive white on the neck and tail and a genuinely black cap. The bird is about the size of a Manx Shearwater which, however, has shorter wings and is all dark above. The observer should be aware of the great rarity of this bird even in its usual range in the Caribbean Sea.

## **STORM-PETRELS *Hydrobatidae***

### **Black-bellied Storm-Petrel (*Fregetta tropica*)**

**Status:** Accidental and historical.

**Florida** — a single record at St. Marks in 1851. Seven specimens were captured from a vessel at anchor by using a hook and line (!). The birds were observed around the boat for two days. The total number seen was apparently not reported.

**Field Identification:** About the size of Leach's Storm-Petrel. The tail is slightly rounded (not forked). The upper parts, head and neck are deep mouse-gray. The underwings, flanks and undertail coverts are white with a dark gray band running from chest to feet dividing the belly lengthwise.

**Comment:** The St. Marks occurrence is the only North American record of this species, which is normally found in Antarctic waters. It breeds in South Georgia, the South Orkneys and South Shetland Islands. It is common near New Zealand. Shackleton and Stokes (1968) illustrate this species rather handsomely.

### **Leach's Storm-Petrel (*Oceanodroma leucorhoa*)**

**Status:** Casual, usually in summer.

**Texas** — May (1970 — captured alive), July (1976 — dead). **Louisiana** — September (1972), December (1956 — moribund in the middle of the Gulf). **Alabama** — July (1975 — RWH; possibly Harcourt's — 100 km offshore), October (1978 — 170 km inland, dead). **Florida** — June (1951), July (1975 — dead), August (1976).

**Field Identification:** See Wilson's and Harcourt's Storm-Petrels.

### **Harcourt's Storm-Petrel (*Oceanodroma castro*)**

**Status:** Casual May through October.

**Texas** — Five records, (all convincing, often specimens or photos), May (1965), June (1954, 1960, 1969), July (1968). **Florida** — August (1969 — dead), October (1977 — moribund).

**Field Identification:** Very similar to Leach's. Murphy (1936) states "I have learned no way to distinguish these two in the field." Suggested field marks concern the less forked tail (1/2" or less rather than 3/4" for Leach's); the black tips on white upper tail coverts (subtle but diagnostic) and a white rump unbroken by a longitudinal dark area as in Leach's. (This last mark is mentioned by Oberholser (1974), Pough (1951) and Stokes (1968) but ignored by other field guides.) Murphy (1936) describes the tail of the nominate race of the Atlantic as square; however note the caution about the tail shape below. Oberholser also states that Harcourt's in flight "executes fewer leaps and bounds than does Leach's. It also does not skim or 'dance' on the water as habitually as Wilson's." See the photograph in Fisher and Lockley (1954) and discussion below.

**Comment:** This species is described as the warm water version of the Leach's Storm-Petrel found in the Eastern Atlantic. The authors are surprised that the specimen record should show more of this species than the Leach's. Are we missing sight records because of identification difficulties? More photographs are badly needed before the *Hydrobatidae* in the Gulf

are understood. We also urge submission of "Oceanodroma sp.?" when Harcourt's cannot be eliminated with certainty.

#### **Wilson's Storm-Petrel (*Oceanites oceanicus*)**

**Status:** Regular from April to September; common, sometimes abundant, in the eastern portions of the Gulf.

**Texas** — April (1961), June (1912), "summer" (1940). **Louisiana** — Lowery (1974) mentions no records specifically but states that small numbers are seen from April to September. Recently the species has been reported eleven times in 15 years, as many as 17 at a time (September 1970). **Alabama** — Previously published: May (1974) and August (1946, 1974); by the authors: (May (1978 — 25+ birds), June (1978, 1979), July (1975 — 2 birds, 1976, 1977 — 3 birds, twice 1978 — 100+ and 20, 1979), August (1979 — 3 birds). **Florida** — April (1953 — 2 birds, 1977), May (1950 — 4 birds, 1963 — 12 to 15 birds, 1977), June (1950, 1977), July (1971), August (1968), September (1950).

**Field Identification:** Finch *et al.* (1978) provide an excellent discussion of storm-petrel characters. To summarize, Leach's has long pointed wings sharply bent at the wrist in comparison to the "racquet-like" rounder wings of this species. Leach's is described as sooty-brown while Wilson's is distinctly blacker, a feature accentuating the white rump of the Wilson's. The forked tail of the Leach's is "hard to see and a very poor field mark." When visible, the yellow webs between the toes separate Wilson's from all except the very different White-faced Petrel (*Pelagodroma marina*) (unrecorded in the Gulf).

For those experienced with the storm-petrels, Leach's flies with a more butterfly-like and erratic flight, suggesting perhaps a nighthawk. Wilson's wing stroke is faster and shallower (more "fluttery").

**Comment:** A bird originally identified as this species inland at Marianna, Florida in September (1975) is now considered to have perhaps been a Harcourt's (how was Leach's eliminated?) and is officially an unidentified storm-petrel. Another unidentified storm-petrel (without a forked tail) was seen in October (1978) at a salt marsh near Wakulla, Florida.

#### **TROPICBIRDS: Phaethontidae**

##### **White-tailed Tropicbird (*Phaethon lepturus*)**

**Status:** Casual, nearly year-round.

**Texas** — March (1963, 1969 — R. W. Clapp, pers. comm.), May (1960), June (1945 — 2 birds, 1967), July (1935), August (1936, 1937, 1973), October (1978), November (1957, 1966 — 2 birds) and December (1929). **Louisiana** — also claims the August 1973 record as it was in Sabine Pass, the Texas/Louisiana border. **Alabama** — August (1969) and October (1958) — both at the head of Mobile Bay. **Florida** — May (1919), August (1977 — dying).

**Field Identification:** In full plumage, this species could be confused only with the Red-billed Tropicbird (*Phaethon aethereus*) which is as yet unrecorded in the Gulf. The two occurrences of *P. aethereus* on the east coast of Florida are considered most unusual. Kincaid in Oberholser (1974) warns that many individuals lack the long streamer tails and can be easily confused with Royal Terns (*Sterna maxima*). See Stallcup (1976) for further discussion of tropicbird identification.



Masked Booby, adult in flight. [Photographed at Tower Island, Galapagos Archipelago./Thomas H. Davis.]

#### **BOOBIES AND GANNETS: Sulidae**

##### **Blue-faced [Masked] Booby (*Sula dactylatra*)**

**Status:** Regular, common.

**Texas** — Over 45 records from January to October, though primarily it seems in the warm weather months (Oberholser, 1974). Eight were found oiled during the Ixtoc I oil spill, August, 1979, C. Sanchez, USFWS, personal communication. **Louisiana** — Sixteen records, from May to September with four sightings in December (three in 10 days in the same waters). **Mississippi** — July 1979, September (1978). **Alabama** — First recorded in 1971, regular, perhaps common, since then. The graph below indicates the seasonal distribution of records published by others and all of our own sightings. **Florida** — March (1976), May (1933 — immature), July (1950 — 2 birds, 1971 — 2 birds, 1979), August (1977, 1978), September (1974, 1977, 1978 — two sightings).

**Field Identification:** The adults pose no difficulty, but immatures require caution. This species is smoke-colored with poorly defined but quite noticeable light areas at the base of the neck and tail. The belly is light and again not sharply defined. The bill, described by Palmer (1962) as slaty in the immatures, is depicted as orange or straw-colored in most field guides. In photographs of Gulf region birds it seems light. First-year Gannets are quite similar and especially confusing as they are often seen in our area while shedding their juvenal plumage (after February). They have an upper back which is generally



Immature Masked Booby taking flight, June, 1978. The light areas at the base of the neck, tail and belly are all visible. Notice the double-pointed appearance typical of this family. Photo/Howard M. Einspahr.

dark (with some white feathers). The head and neck vary individually but change from patchy dark and light to mostly white (Palmer, 1962). The immature Blue-faced [Masked] Booby is distinguished by a broad white patch on the upper back, present when the head and neck are dark, a combination not found in the Gannet. An important mark in all plumages is the feathered "chin" of the Gannet, extending forward of the eye when viewed from the side. This gives the appearance of a rearward-pointing "V" to the posterior portion of the bill. In all boobies, the chin is unfeathered and no such "V" is seen.

**Comment:** This is certainly *the* booby of the Northern Gulf, recorded in all months except November. A recent paper by Ortego (1978), suggests that the ecosystem created by off-shore oil rigs is favorable to this species and accounts for its presence in the more western regions of the area. Our experience is that in Alabama this bird can be found within sight of land in summer when warm, clear water moves close to shore. It would be helpful if more observers submitting records mentioned whether the birds they see were in adult or immature plumage. Sanchez, personal communication, estimates that 100 birds were affected by Ixtoc I for every one found. If true, the projected 800 oiled Blue-faced Boobies could represent a significant portion of the species in the Gulf; Boswell (1978) estimated about 2000 Blue-faced Boobies on the Alacran Reef, off Yucatan during September 1975. R. W. Clapp (pers. comm.).

**Blue-footed Booby (*Sula nebulosus*)**

**Status:** Accidental, autumn.

**Texas** — October (1976 — photographed) on S. Padre Island.

**Field Identification:** The adults are distinguished by their bright blue feet and dark bill. The underwing coverts are brown (mostly white in Blue-faced Booby). The white collar extends to the back (unlike the Blue-faced Booby immature). In the immatures the fuscous extends across the breast and onto the belly while in the Blue-faced Booby it is confined to the throat (Palmer, 1962). Overall, the adults show *less* white than adult Blue-faced Boobies but immatures show *more* than immature Blue-faced.

**Brown [White-bellied] Booby (*Sula leucogaster*)**

**Status:** Regular in summer, uncommon to casual, year-round.

**Texas** — March (1977), May (1974), June (1940, 1972, 1979), August (1961 — two sightings, 1967, 1975), September (1967, 1971 — injured, 1976). **Louisiana** — January (1901 — 3 birds), April (1929, 1976), July (1946 — two sightings, 1973), September (1884, 1951), November (1961). **Alabama** — January (1979 — 8 birds in two sightings), April (1969 — 7 birds, 1978 — 4 birds), June (1970, 1977, 1979), July (1969, 1975, 1976 — 2 birds, 1978 — 3 birds total on two occasions, 1979 — 4 birds), August (1961, 1977 — 2 birds each on two occasions, 1978 — 4 birds total on two occasions). **Florida** — January (1949, 1968), March (1976), April (1957, 1973 — 4 birds), May (1949, 1953, 1968), July (1950, 1956 — 2 birds, 1958 — an immature, H. M. Stevenson, pers. comm., 1959, 1962, 1979 — 2 birds in separate sightings, one a subadult, H. M. Stevenson, pers. comm. all off northwest Florida), August (1970). **Middle Gulf** — January (1951 — 4 birds), March (1951), April (1951), August (1951 — "a few"), September (1951 — 3 birds).

**Field Identification:** Again only the immatures should pose any problem. In this species the dark brown head and sharply demarcated white belly of the adult is suggested in the immature. Yellow feet and lack of white flecking on the dorsal surface eliminate immature Gannet (which in some plumages can have the dark head/light belly pattern as well). See also Red-footed Booby, below.

**Comment:** Pough (1951) and Bull and Farrand (1977) both mention this as the most common Gulf booby. Our experience indicates that the Masked Booby is much more likely to be seen.

**Red-footed Booby (*Sula sula*)**

**Status:** Accidental.

**Texas** — A specimen prior to 1910, and August (1968). **Louisiana** — November (1940 — an immature taken as a specimen off the mouth of Bayou Scofield). **Alabama** — January (1980, an adult, feeding with Gannets, carefully identified from shore, C. D. Cooley, pers. comm.). (communications).

**Field Identification:** A poorly understood species with at least three adult phases: a white phase with black-tipped flight feathers; a brown phase usually but not always with a white tail; and a gray phase. All share the bright red feet and a pale blue bill. The immatures are gray-brown, sometimes with a slightly darker breast band and usually with a paler belly. In flight, it is extremely difficult to distinguish from the immature Brown Booby which has somewhat shorter wings. (The wing length for Red-footed Booby given by Tuck and Heinzel, 1978 must surely be in error). When comparison is available, Red-footed Boobies appear to be only about three-fourths the size of Gannet, the only other White-tailed sulid. Murphy (1936) mentions that the rectrices of the Red-footed Booby are distinctly narrower than those of the Brown Booby. [One seen, Dry Tortugas, May 1979 was very decidedly paler than immature Brown Booby, a dull sandy brown, palest on neck and breast — D. W. Finch, pers. comm.].



Red-footed Booby, dark phase adult in flight. [Photographed at Tower Island, Galapagos/Thomas H. Davis.]

**Gannet (*Morus bassanus*)**

**Status:** Common to abundant in winter in the eastern portions of the region, but less so proceeding west.

**Texas** — "Usually rare and irregular on the upper and central coast; casual on the lower coast," extreme dates September to May according to Oberholser (1974). **Louisiana** — Lowery (1974) mentions at least 15 records from 1960 to 1974, all in winter. **Alabama** — common in win-





Immature Gannet off Dauphin Island, February 1979. Note the contrast between head and belly causing possible confusion with Brown Booby. The light colored bill, and rearward-pointing "V" appearance of the face are distinctive. See the text for complete description. Photo/Charles D. Duncan.



Sub-adult Gannet [Cox's Ledge, Rhode Island] showing white body plumage but dark plumage remaining in primaries and secondaries. Photo/Thomas H. Davis.

ter, from October to April, casual to July. An extra seasonal record in September, 1960. Sightings by RWH are summarized in the graph below. **Florida** — common in winter with as many as 500 seen in a morning. Recent records from August (1979, an injured subadult, and an adult flying from Pensacola toward the Gulf) and September (1978 — an injured subadult) suggest the possibility of their presence during all seasons. R. A. Duncan (pers. comm.).

**Field Identification:** Largest of the *Sulidae*. The black wing markings are restricted to the tips. Although Gannets are seemingly unmistakable, we offer a note of caution: we were surprised recently to see a distant "Gannet" wheeling off Ft. Morgan, Alabama, in June as we were aware of their summer rarity. The bird turned out to be a handsomely marked Caspian Tern (*Sterna caspia*). Finch *et al.* (1978) mention Gannets mistaken for albatrosses. The ever-present need for size comparison is greatly amplified over open water.

The immature Gannets depicted in Robbins *et al.* (1966) and Pough (1951) are not typical of those seen in the Gulf. In this area, by December the bird has developed a white area at the base of the tail. The bird is splotched brown and white with a faint demarcation across the chest between the dark head and light belly, reminiscent of the immature Brown Booby. The bill and feet are light colored. Two April specimens from the Gulf, in the collection of the Florida State Museum (Gainesville), are much lighter than the December specimens. They are still streaked on head and belly and have a substantial light area on the collar. Bills are bluish.

## PHALAROPES: *Phalaropodidae*

### Red Phalarope (*Phalaropus fulicarius*)

**Status:** F. M. Weston (1953) calls the species "regular, sometimes common in winter." Recent published records, however, indicate that it is casual.

**Texas** — Despite several inland records the only pelagic record is in March (1977 — 11 birds including 4 females in "good" plumage). **Louisiana** — September (1961 — collected after Hurricane *Carla*) is the only pelagic record. **Mississippi** September (1978 — off Biloxi). **Alabama** — Imhof (1976) quotes Weston (1953), discussed below. Apparently there have been no published records since then of pelagic sightings. However, RWH observed a female of this species in alternate (breeding) plumage in May (1976) 100 km off the Alabama coast. **Florida** — Weston (1953) reports flocks numbering into the thousands from 50-80 km offshore, rarely as close as 8 km. Sightings are from October to March. Since that paper there have been reports in May (1965 — a lone bird in alternate plumage), and November (1975).

### Northern Phalarope (*Lobipes lobatus*)

**Status:** Casual and rare.

**Texas** — "Rare along central and lower coasts, casual on upper coast" in fall; casual on central coast in spring according to Oberholser (1974). No mention of offshore sightings. **Alabama** — Despite several autumn records on the coast or inland, a September (1973 — 6 birds 15 km south of Dauphin Island) sighting is the only pelagic record. **Florida** — January (1976), March (1918 — 11 birds, 300 km off Tampa), May (1963 — 4 birds, 1972), June (1965), July (1963 — collected), November (1959 — 2 birds).

**Field Identification:** Even our limited experience with phalaropes in winter plumages convinces us of the inadequacy of the usual guides. Much comment is usually made concerning bill length, Northern's is thinner and usually (Tuck and Heinzel, 1978; Stout, 1967; Robbins 1966) described as longer. Oberholser (1974), based on specimen measurements, indicates that the Red's bill is longer. CDD's measurements of eighteen specimens at the L.S.U. Museum of Natural Science, indicate the average exposed culmen length for females of either species is greater than for males. The Northern's bills average, for either sex, slightly longer than for the same sex of Red Phalarope. The difference, however, is slight (less than 2 mm) and comparable with the standard deviation of the measurements. We conclude that this is a misleading and unreliable field mark. In neither species is the bill longer than the head, as Palmer (1962) points out. Moreover the Red Phalarope's bill is often yellow only at the base and appears dark from a distance, a point absent from the field guides. The best marks seem to be the smaller size, more trim appearance and proportionately smaller head of Northern Phalarope in combination with its darker coloration, more obvious white wing stripe and the light stripes on a dark back. Finch *et al.* (1977) and Stout (1967) provide further details.

**Comment:** The absence of recent pelagic records is curious in light of Weston's findings. Nonetheless, at least in Alabama, commercial fishermen have described seeing large numbers of phalarope-like birds in the Gulf in winter.

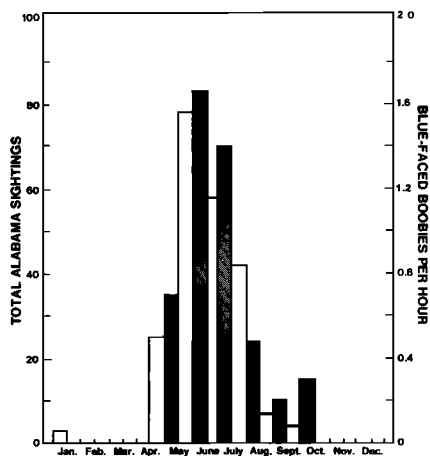


Figure 1

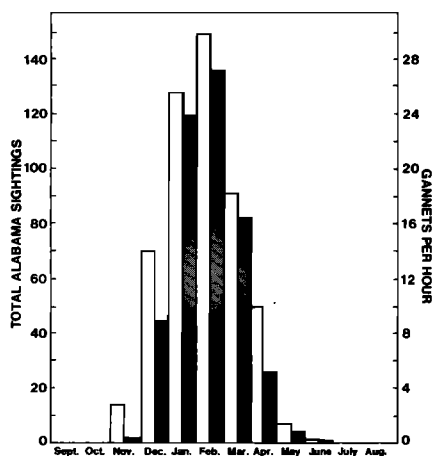


Figure 2

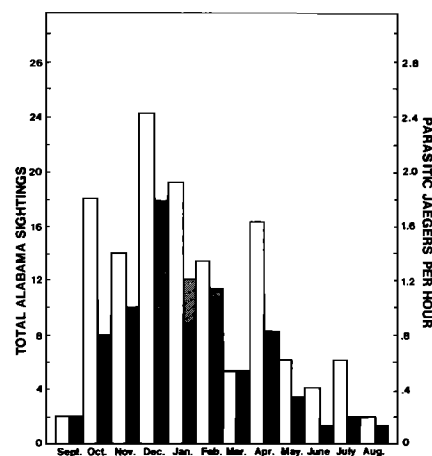


Figure 3

## JAEGERS: *Stercorariidae*

### Pomarine Jaeger (*Stercorarius pomarinus*)

**Status:** Regular, uncommon. Williams (1965) considers jaegers as most plentiful during April and November.

**Texas** — Uncommon to scarce in winter 30-150 km offshore according to Oberholser (1974). Recent sightings are in March (1974, 1975 — 2 sightings totaling 5 birds, 1976 — 4 birds, 1977), April - May (1974), October (1977), November (1976), December (1976). **Louisiana** — April (1952 — 2 birds, sightings twice in two days in different waters, 1962), May (1971 — 2 birds) and December (1976). In addition Williams (1965) mentions, but does not date, other records. **Alabama** — January (1979), April (1971 — immature), June (1979 — adult), August (1979), September (1973 — 3 immatures, 2 adults), October (1957 — adult), November (1974 — 2 birds, 1978), December (1976, 1978). **Florida** — February (1959), April (1968 — 4 birds), July (1959, 1960), August (1958), September (1948, 1950, 1953, 1963), September - October (1959), November (1960). **Middle Gulf** — March (1918 — “a few each day” — Helmuth, quoted in Williams (1965)).

**Field Identification:** See summary at the end of this genus.

### Parasitic Jaeger (*Stercorarius parasiticus*)

**Status:** Regular and common during winter, irregular year-round.

**Texas** — Rare, as a vagrant over Gulf waters and casual along the coast, according to Oberholser (1974). Recent records are March (1975 — 2 sightings), April (1976), December (1976 — 6 birds). **Louisiana** — January (1962 — 3 in seven days), April (1948 — 10 birds), May (1948), June (1958). Again, Williams' (1965) records are not dated. **Mississippi** — February (1961, 1962 — 5 birds), May (1972). **Alabama** — Imhof (1976) describes the bird as wintering off Alabama (September to May in the Gulf). Our own sightings are summarized below. The bird is often seen in the relatively fresh waters of Mobile Bay, not just in offshore waters. **Florida** — January (1959, 1962 — 3 sightings totaling five birds, 1972), February (1971), April (1956 — 7 birds, 1957, 1958, 1959, 1963, 1964 — 3 birds), May (1939, 1972 — 2 birds), June (1951, 1958 — 2 sightings totaling 3 birds, 1961 — 3 birds), July (1957 — 3 birds), September (1950, 1961,

1968), October (1964), November (1909), and December (1911, 1959, 1978).

**Field Identification:** See summary at the end of this genus.

### Long-tailed Jaeger (*Stercorarius longicaudus*)

**Status:** Casual.

**Texas** — March (1977), October (1977), November (1961, 1971). **Louisiana** — April (1958 — specimen collected). **Alabama** — September (1979, an adult seen by RWH one day before Hurricane *Frederic*). **Florida** — June (1910 — near Tampa).

**Field Identification:** See summary at the end of this genus.

**Comment:** Unidentified jaegers have been noted as follows:

**Texas** — July (1961), December (1976). **Louisiana** — April (1976 — 3 birds). **Mississippi** — June (1962), October (1976). **Florida** — February (1959), April (1968), May (1977 — “very late”), July (1960, 1977 — “amazingly early”), September (1948, 1977 — twice), October (1975), November (1960).

**Field Identification of jaegers:** We defer to the greater experience of Finch *et al.* (1978) and suggest the reader study their comments. Adult birds are readily identifiable based on tail shape. For immatures, size, when compared to nearby gulls and, to the experienced eye, manner of flight are helpful. The Pomarine is said to have a heavy, purposeful stroke while the Parasitic's is more buoyant. The Pomarine's wing appears quite broad where it meets the body. Parasitic's is narrower, more pointed and angular. Plumage characters, according to Finch *et al.* are ambiguous in the immatures. Separating Parasitics from Long-taileds may not be possible in the field for subadult birds. First-year Parasitics appear somewhat rusty in contrast to the gray of similar Long-taileds.

**Comment:** Pomarine Jaeger seems more common in the western Gulf while Parasitic is most often found off Alabama. The surprising number of unidentified (presumably immature) jaegers off Florida is also interesting. Off the Florida *Atlantic* Coast Pomarine outnumbers the Parasitic substantially. Williams' summary of Gulf records lists 85 Parasitic to 43 Pomarine to 6 Long-tailed jaegers. The reader should be aware that Pomarine and Parasitic jaegers occur not just in a light phase and a dark phase but also in many intermediate phases.

**skua, sp.?** (*Catharacta skua* or *C. maccormicki*)

*Status:* Accidental.

**Louisiana** — June (1968 — a single sight record of two birds in northern Chandeleur Sound). The birds are reported as Great Skua (*Catharacta skua*) but could as well be South Polar Skua (*C. maccormicki*).

*Field Identification:* Skuas are heavily bodied, square-tailed jaegers with a large pure-white patch at the base of the primaries. Veit (1978) has recently described differences between *C. skua* (larger and deeper bill, golden “hackling”) and *C. maccormicki* (small bill, light gray underparts, pale mantle, light collar). See also Buckley *et al.* (1976).

*Comment:* Skuas have also been noted in more southerly Gulf waters including the upper Florida Keys in November (1973).

**GULLS and TERNS: Laridae**

**Black-legged Kittiwake** (*Rissa tridactyla*)

*Status:* Regular and rare in winter, accidental at other seasons.

**Texas** — “Casual visitor to upper coast and inland lakes” according to Oberholser (1974) with extreme dates of November 11 and March 31. Recently, February (1974), March (1974 — two sightings), November (1976 — two sightings, 1977), December (1974, 1976 — 12 birds). **Louisiana** — January (1954, 1972), April (1970), October (1977), November (1977), December (1971 — two sightings, 1976 — two sightings in the same waters — 25 days apart, 120 km south of Sabine River: a maximum of 4 birds). **Mississippi** — January to February (1969), March (1962), October (1961), December (1977), December to January (1975-76). **Alabama** — January (1980 — an immature feeding with Bonaparte’s Gulls near shore, C. D. Cooley, pers. comm.) and September (1979 — an adult during Hurricane Frederic). **Florida** — May (1958, 1968), August (1966), November (1958).

*Field Identification:* A medium-sized gull, most likely to be confused in our area with the smaller Bonaparte’s Gull (*Larus philadelphia*) which shares its buoyant flight. Adult Bonaparte’s flashes white wedges on the leading primaries while the present species has “paint-dipped” well-defined black tips on the first few primaries. In immature birds the kittiwake is recognized by a dark collar or yoke on the hind neck, dark leading primaries and a dark “V” across the wings. Bonaparte’s immature has pinkish legs, lacks the collar and shows more white in the primaries. Both species have a post-ocular spot.

**Sabine’s Gull** (*Xema sabini*)

*Status:* Casual.

**Texas** — September (1969), October (1889 — a specimen, 1964, 1973, 1976), December (1951). **Louisiana** — September (1976), December (1976). **Alabama** April (1971), July (1965), October (1979 — P. Kilpatrick, pers. comm.), November (1978).

*Field Identification:* Adults unmistakable. The immature is perhaps similar to the immature Black-legged Kittiwake but has a dark back, a forked tail and flashes much more white in the wings. Sabine’s Gull is smaller than the kittiwake, essentially the same size as Bonaparte’s Gull.

**Arctic Tern** (*Sterna paradisaea*)

*Status:* Accidental.

**Texas** — April (1975 — twice, totaling 9 birds), August (1968 — Port Aransas) and September (1961 — after Hurricane *Carla*). The April (1975) records are of four or five birds at Bolivar Flats on April 12th and 20th and three others (also April 20!) at Port Aransas. **Florida** — July (1979 — an adult seen for two days at St. George Island).

*Field Identification:* Separate carefully from other light-bodied black-capped terns (Forster’s, Common and Roseate) This bird has grayish underparts becoming white at the narrow border of the black cap. The wing tips are described as translucent or “windowed” in contrast to the darker, opaque wings of the Common Tern. The head is rounder and the neck short and thick in flight. Standing birds are seen to have short legs and a slightly longer tail than the Common or Forster’s Tern See also the following species.

**Roseate Tern** (*Sterna dougallii*)

*Status:* Casual.

**Texas** — “Rare to casual” along the coast from December to August (Oberholser, 1974). Recently recorded in March (1974 — Aransas Bay, 1976 — Texas City Dike). **Louisiana** — Conclusively identified in January (1974), December - January (1974-5) both at Cameron and September (1976 — Baratavia Pass). See Lowery (1974) for other sight records. **Alabama** — April (1950 — 6 birds, 1974 — H. M. Einspahr, pers. comm.) and August (1978 — R. R. Reid, Jr., pers. comm.), September (1979 — 3 birds, A. L. Miller, pers. comm.). **Florida** — “A rare migrant on the Gulf Coast” according to Howell (1932), quoted in Sprunt (1954). More recently: April (1958 — 2 at Pensacola) and November (1948).

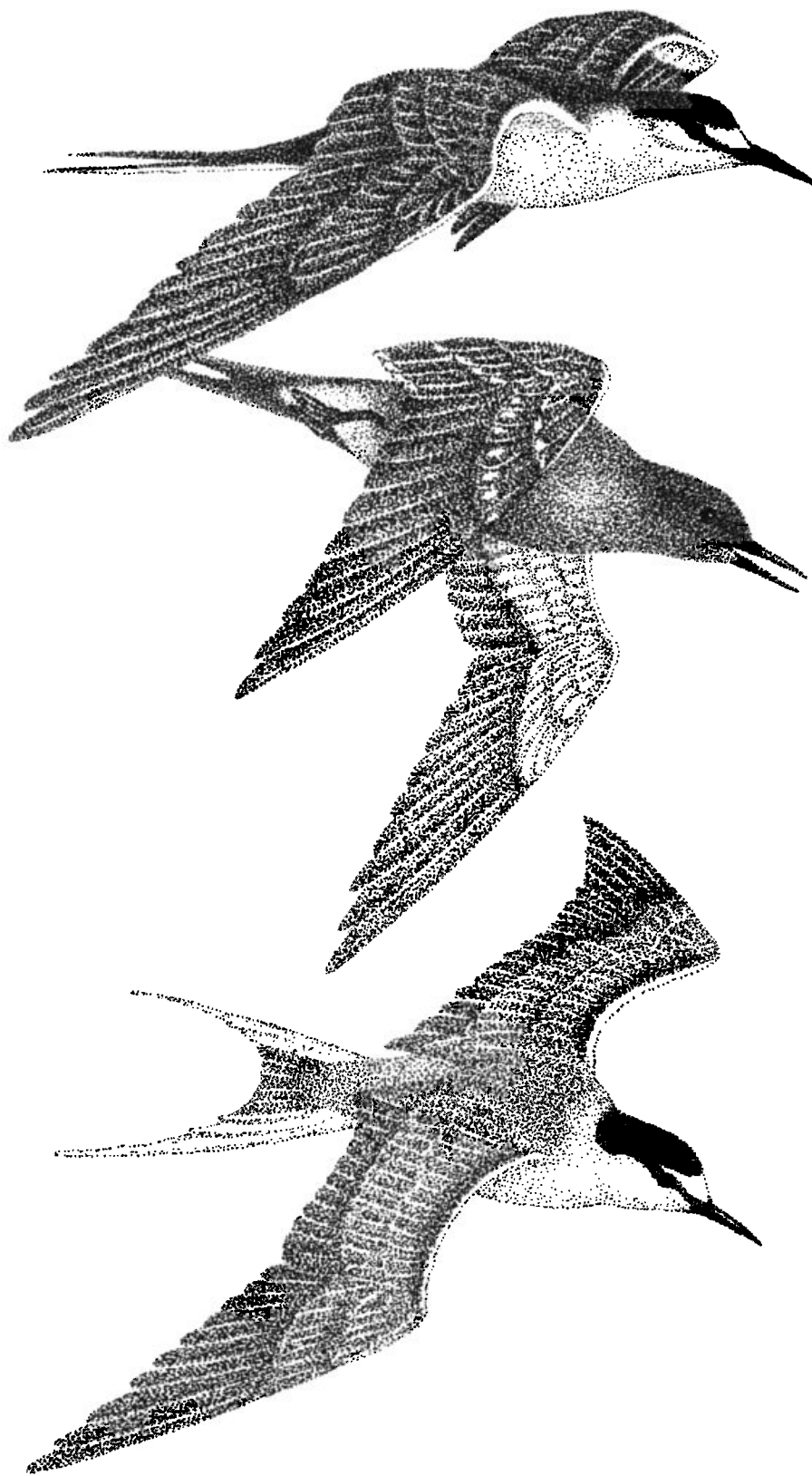
*Field Identification:* In all plumages, very similar to Common Tern (*S. hirundo*). *Summer:* Bill more extensively black (dark red only at basal third or less). The tail is all white (Common has gray outer rectrices), longer and more deeply forked Forster’s Tern (*S. forsteri*) can also have a very long tail streamers sometimes appearing very white, and its orange bill turns dark *after* the breeding season. *Winter:* The dark cap is more extensive than in Common, Forster’s, or Arctic, only the forehead and anterior portion of the crown becoming white Roseate Tern has somewhat shorter wings than the other two, resulting in a shallower, faster wing beat, suggesting the wing stroke of Least Tern (*Sterna albifrons*), (D. W. Finch, pers. comm.). The best marks in any plumage are the streamer tail extending beyond the wings at rest and the “chivy” or “chee-wee” whistle and “tearing of cloth” rasping call, the latter usually given near colonies.

**Sooty Tern** (*Sterna fuscata*)

*Status:* Breeds in western portions of the area, casual elsewhere from March to October especially after storms.

**Texas** — Uncommon on spoil banks and islands, nesting irregularly on the central coast, scarce along the lower coast and a rare straggler on the upper coast. **Louisiana** — An uncommon but regular breeder in the Chandeleurs. Lowery (1974) reports birds observed fairly often in offshore waters, as many as 18 individuals being seen on the wing. **Mississippi** — A single nest in June (1976)





Tuck  
Hayward

*Top — adult Sooty Tern, center — immature Sooty Tern, bottom — adult Bridled Tern. Drawing by Tuck Hayward.*



Sooty Terns in Alabama coastal waters, August, 1979.

on the Petit Bois Island spoil banks is the only breeding record. Also recorded June (1956), July (1979 — 14 adults and 5 immatures), September (1957), October (1978). **Alabama** — A casual visitor to coast and inland coastal plain in any season except winter, but especially in hurricane season. “Hundreds” were seen from Dauphin Island after Hurricane *Bob*, July (1979) — RWH. Five were seen well offshore a month later. **Florida** — May (1949 — a breeding pair at Tampa, 1967 — dead), June (1939, 1948 — dead, 1966), July (1979 — “several” at Gulf Breeze), August (1942 — two birds, 1969 — two dead after Hurricane *Camille*), September (1947, 1948, 1949, 1957, 1960), October (1958).

*Field Identification:* See following species.

#### **Bridled Tern (*Sterna anaethetus*)**

*Status:* Casual before 1976; regular, even common, since then.

**Texas** — May (1971 near sargassum belt 40 km offshore), September (1961 — twice in three days by different observers). **Louisiana** — July (1979 — 6 or 7 seen on a pelagic trip off Grand Isle), September (1961 — dead after hurricane *Carla*, 1965 — City Park Lake, Baton Rouge). **Alabama** — Previously July (1960 — 160 km offshore), and September (1932 — after a hurricane, 6 seen and a specimen). The authors first found this species near a sargassum line 50 km south of Sand Island Light in June 1978 and another pair 100 km away in July. We recorded this species regularly until September 1978 when our investigations were terminated by weather. During our 1979 investigations, no birds of this species were seen during a single trip in March. We found it regularly from mid-April, with a maximum of 25 birds in a single day during July. Sightings have been as close to shore as 2 km and are always associated with sargassum weed. The largest flock we have observed is 14 birds in June (1979). **Florida** — April (1938 — dead, 1977 — 3 birds 100 km offshore), June (1965 — 35 km off Panama City), July (1977), August (1950 — 6 birds), September (1976 — 3 birds, 1977 — 7 birds), and December (1945 — the only U.S. winter record?). The records since 1976 are all off Clearwater.

*Field Identification:* Similar to Sooty Tern in that both have dark backs and light bellies. This species has a distinctly gray-



Bridled Tern, 50 km off Dauphin Island. The photograph is the first of this species in Alabama. Formerly considered accidental, it is now seen regularly. The white collar on the hindneck, extent of the white forehead beyond the eye and the long tail are useful field marks. Photos/Charles D. Duncan.

brown back (mottled in the immature) whereas the Sooty's is truly black. Moreover, a white collar extends completely around the hindneck, separating the cap from the mantle, and the white of the forehead extends beyond the eye in this species. The tail is long and deeply forked in both species, but there is more white in the outer rectrices in Bridled Tern. Bridled Tern's flight is buoyant, with a quick wingstroke, reminiscent of that of the Black Tern (*Chlidonias niger*). Tuck and Heinzel (1978) call this the Brown-winged Tern, a useful mnemonic. The immature Sooty Tern is quite different, dark gray overall with small white splotches on the back and sometimes on the belly. The cap is completely undeveloped.

#### **Noddy Tern [Brown Noddy] (*Anous stolidus*)**

*Status:* Casual in summer, usually associated with hurricanes.

**Texas** — June (1960 — two birds, 1964, 1975), August (1979 — oiled during the Ixtoc I. spill, C. Sanchez, U.S.F.&W.S., pers. comm.), September (1961), November (1890 — several dead). **Louisiana** — August (1942 — specimen at Sabine Nat'l Wildlife Ref.), September (1961 — dead after Hurricane *Carla*). **Mississippi** — September (1961 — two locations), July (1979 — “dead for some time”). **Alabama** — September (1974 — moribund after Hurricane *Carmen*), July (1979 — Hurricane *Bob*), September (1979 — during Hurricane *Frederic*). **Florida** — July (1923 — off Tampa) and month unrecorded (1947 — 150 km off Tampa).

*Field Identification:* A dark bodied tern with wedge-shaped tail and a light gray cap — the reverse of “normal” tern markings. The Black Noddy Tern (sometimes called White-capped Noddy, *Anous tenuirostris*) is smaller, darker bodied, longer and narrower-billed, and has a whiter cap, but is unrecorded with certainty in the northern Gulf.

*Comment:* A carefully photographed tern, presumably ill, was seen on Padre Island, Texas in June 1975. Identification as to species was not possible but the bird was either a Noddy Tern or a Black Noddy Tern. Size seemed to indicate the latter (*American Birds* 29:1004).

## AUKS AND RELATIVES: *Alcidae*

### Razorbill (*Alca torda*)

Status: Accidental.

**Florida** — April (1976) at St. George Island, and May (1979 — an immature male found dead on Santa Rosa Island — K. Arnold, pers. comm.).

**Field Identification:** One of the largest alcaids with an exceptionally deep thick bill and an uplifted tail in the water.

### Dovekie (*Alle alle*)

Status: Accidental and historical.

**Florida** — A single record — December (1939) at St. Andrews Bay.

**Field Identification:** A tiny bird with short, chunky body and a very small bill. The flight is described as “buzzy” or “whirring.”

### Ancient Murrelet (*Synthliboramphus antiquus*)

Status: Accidental and historical.

**Louisiana** — A single dying bird, May 6, (1954) on Lake Ponchartrain.

**Field Identification:** A small black and white bird with short pale bill and a white neck contrasting with a black throat.

**Comment:** Ancient Murrelets are found off the Pacific Coast and sometimes occur as stragglers well inland. In contrast, the preceding two species are birds of the North Atlantic rarely ranging to the Carolinas. Their presence in the Gulf is, simply, astonishing.

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## LITERATURE CITED

- BENT, A. C., 1922. Life Histories of North American Petrels and Pelicans and Their Allies. Dover, New York.  
BOSWALL, J., 1978. Birds of the Alacran Reef, Gulf of Mexico, *Bull B O.C.* 98:99-109.  
BOWMAN, M. C., 1978. Species Index to Florida Bird Records in

- Audubon Field Notes and American Birds*, Volumes 1-30, 1947-1976. Florida Ornithological Society, Gainesville.  
BROWN, R. G. B., D. N. NETTLESHIP, P. GERMAIN, C. E. TULL, and T. DAVIS, 1975. Atlas of Eastern Canadian Seabirds, with Supplement I by R. G. B. Brown, 1977. Canadian Wildlife Service, Ottawa.  
BULL, J. and J. FARRAND, 1977. The Audubon Society Field Guide to North American Birds, Eastern Region. Alfred A. Knopf, Inc., New York.  
BUCKLEY, P. A., R. O. PAXTON and D. A. CUTLER, 1976. Hudson-Delaware Region Report. *Am. Birds* 30:396.  
BURLEIGH, T. D., 1945. The Bird Life of the Gulf Coast Region of Mississippi. Mississippi Game and Fish Commission, Jackson.  
FINCH, D. W., W. C. RUSSELL and E. V. THOMPSON, 1978. Pelagic Birds in the Gulf of Maine. *Am. Birds* 32:140-155; 281-294.  
FISHER, J. and R. M. LOCKLEY, 1954. Sea-Birds. Collins, London  
HELMUTH, W. T., 1920. Extracts from Notes Made While In Naval Service. *Auk* 37:255-261.  
HOWELL, A. H., 1932. Florida Bird Life, Coward-McCann, Inc., New York.  
IMHOF, T. A., 1976. Alabama Birds, 2nd ed., University of Alabama Press, Tuscaloosa.  
LEE, D. S., 1979. Second Record of the South Trinidad Petrel (*Pterodroma arminjoniana*) for North America, *American Birds* 33 138-139.  
LOWERY, G. H., JR., 1974. Louisiana Birds, 3rd ed., Louisiana State University Press, Baton Rouge.  
LOWERY, G. H., JR., and R. J. NEWMAN, 1954. The Birds of the Gulf of Mexico, in The Gulf of Mexico, Its Origins, Waters and Marine Life, *U.S.F. & W.S. Bull.* 89:519-40.  
McDANIEL, J. W., 1973. Vagrant Albatrosses in the Western North Atlantic and Gulf of Mexico. *Am. Birds* 27:563-565.  
MURPHY, R. C., 1936. Oceanic Birds of South America. American Museum of Natural History, New York.  
OBERHOLSER, H. C., 1974. The Bird Life of Texas. E. B. Kincaid, ed. Vol. 1. University of Texas Press.  
ORTEGO, J. B., 1978. Blue-faced Boobies at an Oil Production Platform. *Auk* 95:762-763.  
PALMER, R. S., 1962. Handbook of North American Birds, Vol 1 Yale University Press, New Haven.  
POUGH, R. H., 1951. Audubon Water Bird Guide, Doubleday and Co., Garden City.  
ROBBINS, C. S., B. BRUUN and H. S. ZIM, 1966. Birds of North America, Golden Press, New York.  
SHACKLETON, K. and T. STOKES, 1968. Birds of the Atlantic Ocean, MacMillan Co., New York.  
SPRUNT, A., JR., 1954. Florida Bird Life, with addendum, 1963 Coward-McCann, Inc., and the National Audubon Society, New York.  
STALLCUP, R. W. 1976. Pelagic Birds of Monterey Bay, California *West. Birds* 7:113.  
STOUT, G. D., ed., 1967. The Shorebirds of North America, Viking Press, New York.  
TUCK, G. S. and H. HEINZEL, 1978. A Field Guide to the Seabirds of Britain and the World, Collins, London.  
VEIT, R. R., 1978. Some Observations of South Polar Skuas (*Catharacta maccormicki*) on Georges Bank. *Am. Birds* 32:300-302.  
WARHAM, J., W. R. P. BOURNE and H. F. I. ELLIOTT, 1974. Albatross Identification in the North Atlantic. *Am. Birds* 28:585-598.  
WESTON, F. M., 1953. Red Phalarope (*Phalaropus fulicarius*) Wintering Near Pensacola, Florida. *Auk* 41:601.  
WILLIAMS, L. E., JR., 1965. Jaegers in the Gulf of Mexico. *Auk* 82 19-25.

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