49:285–303, 1979). Alternate explanations are that the identical song males are either: (1) parent-offspring pairs, in which case the male offspring learn their songs from their fathers, or (2) siblings or unrelated males reared in the same locality, learning their songs from the same adult male, returning to the same area to breed, establishing adjacent territories and singing identical songs. I do not possess enough data to comment on the possible validity of these hypotheses.

Acknowledgments.—I would like to thank the Huron-Clinton Metropolitan Authority for permission to work in Kensington Metropark, and W. L. Thompson, J. T. Armstrong, E. Shy, D. Ewert, D. Martin, J. W. Hardy, N. Flood and an anonymous reviewer for many helpful comments on earlier drafts of this manuscript.—L. DAVID BELETSKY, *Dept. Biological Sciences, Wayne State Univ., Detroit, Michigan 48202.* *Accepted 5 Jan. 1982.*

Wilson Bull., 94(3), 1982, pp. 381–385

Documentation and status of Cory's Shearwater in the western Gulf of Mexico.—Cory's Shearwater (*Puffinus diomedea*) has only been reported in the western Gulf of Mexico (W of longitude 94°) since 1975, when several birds were observed and one photographed about 64 km ESE from Port Aransas, Texas, by Scott Holt (Univ. Texas Marine Lab., pers. comm.) on 6 September 1975. Prior to this, the only published record for the entire Gulf of Mexico proper was a sighting off the Alabama coast in September 1973 (Imhof, Alabama Birds, 2nd ed., Univ. Alabama Press, Alabama, 1976; Duncan and Havard, Am. Birds 34: 123, 1980). Although Murphy (Serial Atlas of the Marine Environment: Distribution of North Atlantic Birds, Am. Geogr. Soc., 1967) listed four specimens taken from the Cuban Straits off the Florida Keys, there is no documented specimen for the Gulf proper.

Specimen description.—On 12 August 1980, I found a dead female Cory's Shearwater (Univ. Dallas collection No. 2575) washed ashore on Mustang Island, 6 km S of Port Aransas, Nueces Co., Texas. This was 2 days after the passage of Hurricane Allen through the western Gulf and 96 km N of where the eye of the storm made landfall on the south Texas coast. Other pelagic species found dead the same day and within 2 km of the shearwater included three Sooty Terns (*Sterna fuscata*) and an Audubon's Shearwater (*P. lherminieri*). The previous day a dead Manx Shearwater (*P. puffinus*) (most unusual) and Brown Booby (*Sula leucogaster*) were found in this area (Webster, Am. Birds 35:201–204, 1981). No other Cory's Shearwater was encountered during this time.

The specimen was preserved as a study skin and subsequently identified as *P. d. diomedea* (Mediterranean race) by George E. Watson of the National Museum of Natural History, Washington, D.C. The plumage exhibited signs of extensive molt and heavy wear, with the feather bases showing especially on the secondaries and "rump." The condition of the plumage and distance from the Mediterranean at that time of year are evidence that the bird was an immature, prebreeding individual, in agreement with Forsythe (Wilson Bull. 92:265–266, 1980; specimen off South Carolina in July 1973) and Jouanin et al. (Oiseau 47:351–358, 1977; banded specimens of the eastern Atlantic race, *P. d. borealis*, recovered off Rhode Island and in the Atlantic Ocean away from their nesting grounds). The present specimen and previous western Atlantic specimen records (Murphy 1967, Jouanin et al. 1977, Forsythe 1980) suggest that the smaller Mediterranean subspecies may be more regular in southern U.S. waters compared to the *borealis* subspecies.

Distribution in the western Gulf.—Numerous cruises since 1975 in the western Gulf have

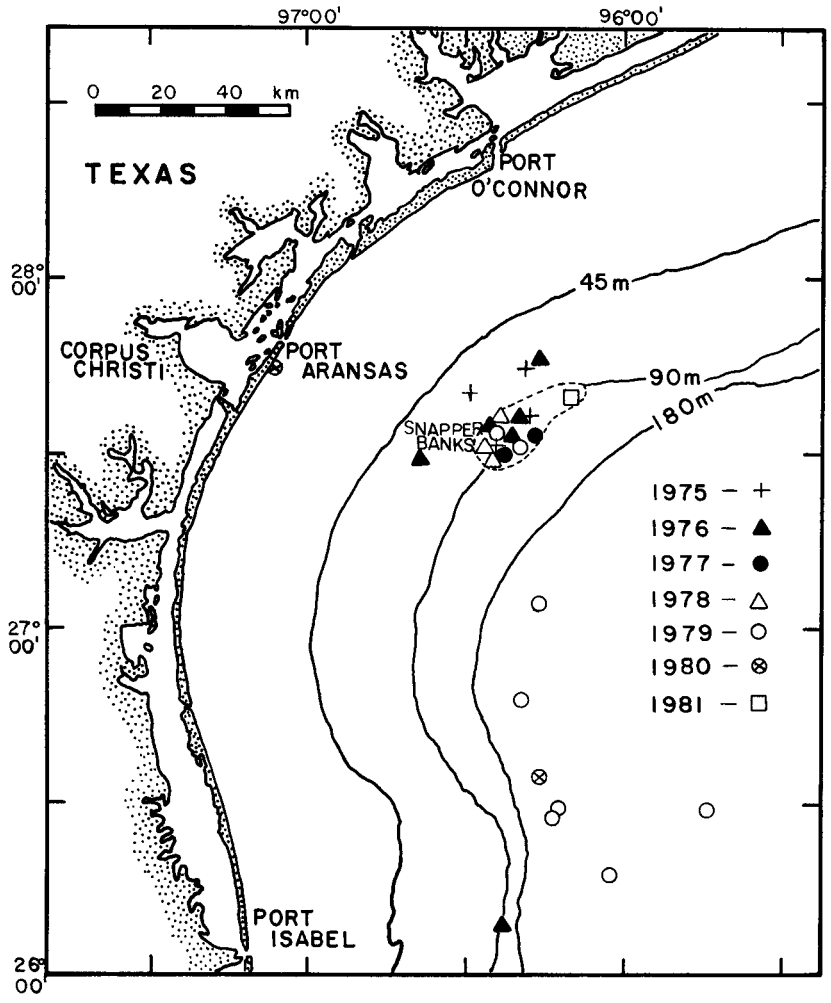

FIG. 1. Map of South Texas Offshore Continental Shelf, showing locations of Cory's Shearwater sightings over 1975–1981 in relation to water depth and distance offshore.

produced at least 24 sightings of Cory's Shearwater (Fig. 1). Coverage of the south Texas continental shelf was achieved from 1975–1978 in conjunction with monthly or trimonthly surveys by the Univ. Texas Marine Science Institute (MSI) for the Bureau of Land Management, Dept. Interior. Since 1975, Texas birders have regularly visited offshore fishing banks out of Port Aransas and Galveston, during many months of the year (see Am. Birds reports from 1976–1981). In 1979, staff from MSI again made extensive cruises over the western Gulf shelf to study the distribution of oil spilled from the Mexican oil well, IXTOC–1 (Amos, Ixtoc Oil Spill Rept., unpubl., Univ. Texas Mar. Sci. Inst., Port Aransas, Texas, 1980). In

1979 and 1980, U.S. Fish and Wildlife personnel made 12 aerial surveys of south Texas shelf water, which yielded significant sightings of Cory's Shearwaters (Hoffman et al., Northeast Gulf Sci. 5:55–57, 1981).

From the incidence of records Cory's Shearwater is the singularly most abundant and regularly-occurring shearwater species in the western Gulf during the summer–fall season. This is most surprising in view of the fact that Audubon's Shearwater nests much closer to this area (in the West Indies and Bahamas), and that the Greater Shearwater (*P. gravis*) also migrates in numbers along a route out in the western Atlantic similar to that of *P. diomedea* (see Murphy 1967). However, the Greater Shearwater has been reported in the western Gulf only three times in the entire 10-year period 1970–1980 (Arnold, Auk 92:394–395, 1975; Webster, Am. Birds 30:1125, 1976; Pulich, pers. obs.). Audubon's have been seen only about 10 times off the Texas coast during 1970–1980 (Duncan and Havard 1980; Pulich, specimen, 1980; Webster 1981; J. Bird, Univ. Texas MSI, pers. comm.). Moreover, neither species has been observed in large flocks like Cory's.

All reports of live Cory's Shearwaters have been from more than 50 km offshore, with the largest concentrations occurring on the outer continental shelf, 70–100 km out. The "Snapper Banks" (deep water rock formations) offshore from Port Aransas (Fig. 1) are now well known as sites where the species can predictably be found in season. On a trans-Gulf cruise from Port Aransas to Key West, Florida, I saw no Cory's Shearwaters between 28 September and 2 October 1978. However, between 19 August and 21 October, birders reported the species on several occasions at the Port Aransas Snapper Banks (Webster, Am. Birds 33:193–195, 1979).

Dates of occurrence for the western Gulf range from 26 June 1980 (Hoffman et al. 1981) to 10 November 1976 (Holt, pers. comm.). The seasonal peak has generally been in late September–early October (30+ birds, pers. obs.; 45+ birds, Webster, Am. Birds 31:197–199, 1977). However, between 20–22 August 1979, when IXTOC-1 oil was floating northwards towards the south Texas coast from the Bay of Campeche, Mexico, 150–200 Cory's Shearwaters were reported in association with pelagic fishes, sharks, dolphins and pilot whales (*Globicephala macrorhynca*), about 100 km E of South Padre Island, Texas, by Hoffman et al. (1981).

Hydrographic data collected during a 1976 cruise suggest a relationship between Cory's Shearwater distribution and water mass boundaries over the south Texas continental shelf. Over the period 10–16 September 1976, surface water salinities and temperatures showed the patterns in Fig. 2 (taken from Smith, pp. 53–75 *in* Chemical and Biological Survey of the South Texas Outer Continental Shelf, Third Quart. Rept. to Bur. Land Manage., Contract No. 08550-CT6-17, unpubl., Univ. Texas Marine Lab, Port Aransas, Texas, 1976). As noted in this figure, shearwaters were seen only near boundary areas between 36‰ and 35‰ water masses, while there was no obvious correlation with water temperature. Such boundary regions (fronts) between water masses of different densities are highly productive elsewhere for pelagic organisms (e.g., Patagonian Shelf off Argentina, Labrador Current off Canada; see Brown, pp. 1–39 *in* Behavior of Marine Animals, Vol. 4, J. Burger, B. Olla, and H. E. Winn, eds., Plenum Press, New York, New York, 1980). Similarly, the western Gulf continental shelf break could attract Cory's Shearwaters, in addition to the schools of pelagic fishes (e.g., tuna and mackerel) known to concentrate there (Hoffman et al. 1981).

Discussion.—Bourne (pp. 155–160 *in* Handbook of North American Birds, Vol. 1, R. S. Palmer, ed., Yale Univ. Press, New Haven, Connecticut, 1962) states that large numbers of *P. d. diomedea* and *P. d. borealis* cross the Atlantic in mid-summer, then move up the northeastern United States coast in fall, and congregate off New England and the Canadian maritime region (see Murphy 1967; Finch et al., Am. Birds 32:152, 1978) before returning to the eastern Atlantic in winter. The information herein demonstrates how Cory's Shearwaters

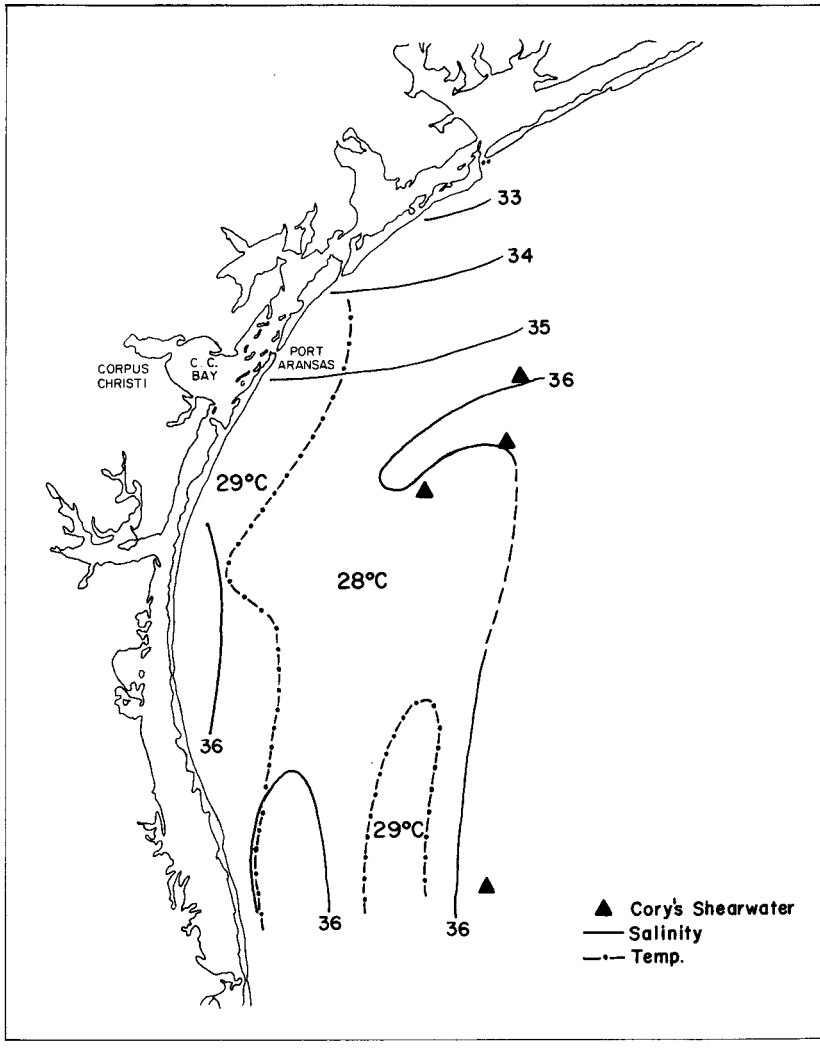

FIG. 2. Distribution of Cory's Shearwaters over South Texas Continental Shelf from 10–16 September 1976 in relationship to salinity and temperature of surface waters.

also regularly move into the western Gulf of Mexico during summer–autumn, in sharp contrast to other procellariids.

These observations provide further insight into the life history and ecology of this Atlantic Basin shearwater. Jouanin et al. (1977) had speculated that Cory's Shearwaters (from one particular colony of the *borealis* race) spent their first 5 years wandering the open ocean (north and south Atlantic), since banded nestlings did not return to their nesting grounds

until 5 years old and breeding did not occur until the birds were 6 years old. The congregating of these prebreeding wanderers in a remote, but specific, Gulf of Mexico pelagic zone illustrates how closely their distribution on the high seas is tied to their warm-water life cycle. The eco-physiological factors which regulate their dispersion over the high seas appear most intriguing when the routes taken by wandering Cory's Shearwaters are considered, such that some enter the Gulf of Mexico and others travel the Gulf Stream up the eastern U.S. coast.

Acknowledgments.—I thank A. W. O'Neil of Falfurrias and Ray Little of Portland, for information on pelagic birding trips. I am especially grateful to the following: Scott Holt (who first reported these birds in 1975), Jerry Bird, and Anthony Amos of Univ. Texas MSI, for kindly providing data on pelagic observations and for stimulating discussions; the late Eugene Eisenmann for comments on plumage of Cory's Shearwater; Warren Pulich, Sr., who preserved and examined the specimen and commented on an early draft of the manuscript; George E. Watson, for his subspecific identification of the specimen; Dennis Forsythe who reviewed the manuscript and provided significant reference material; and Jon Barlow, whose editorial review greatly improved the final manuscript. The Univ. Texas Marine Science Institute supported this work and provided ship time. This is contribution No. 509 of the University of Texas Marine Science Institute.—WARREN PULICH, JR., *Univ. Texas Marine Science Institute, Port Aransas, Texas 78373.* *Accepted 15 Sept. 1981.*