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First Nesting Records in Southwestern Louisiana for American Oystercatchers (*Haematopus palliatus*) and Reddish Egrets (*Egretta rufescens*), with Implications for Dredge Spoil Island Restoration

Will Selman[1,3] and Bruce E. Davis[1,2]

ABSTRACT.—American Oystercatchers (*Haematopus palliatus*) and Reddish Egrets (*Egretta rufescens*) are coastal species of conservation concern known to nest along most of the Gulf of Mexico's coastline. However, there is a distributional gap in breeding records for both species between southeastern Louisiana and eastern Texas. Herein, we report on the first breeding records for each species from southwestern Louisiana at Rabbit Island (Cameron Parish, Louisiana), a small, marsh island in Calcasieu Lake. Suitable nesting habitat for American Oystercatchers (1 nesting pair) was present on the island via shell rake and for Reddish Egrets (6–12 pairs, min) in clumps of *Juncus roemerianus*; this is the first report of Reddish Egrets utilizing this plant species for nesting. A large scale island restoration project is slated for Rabbit Island and therefore, we provide restoration recommendations for conservation planners to improve habitat suitability for multiple bird guilds at this and other potential dredge spoil island projects. *Received 7 July 2014. Accepted 9 December 2014.*

Key words: American Oystercatcher, breeding distribution, island restoration, nesting, Reddish Egret, southwestern Louisiana.

The Chenier Plain of southwestern Louisiana is most widely known for providing valuable wintering habitat for waterbirds (e.g., waterfowl, shorebirds; Bellrose 1980, Bettinger 1984, Michot 1996), as well as critical stopover habitat for a large diversity and abundance of Neotropical migrants (Barrow et al. 2000). The region also provides valuable habitat for inland rookeries of wading birds but does not support the number of coastal waterbird colonies observed in the Deltaic Plain of southeastern Louisiana or in neighboring Texas (Chaney and Blacklock 2003, Michot et al. 2003). The region only has a small amount of suitable coastal waterbird nesting habitat (i.e., small islands that are relatively predator-free), whereas suitable habitat is more abundant in neighboring regions.

To date, there have been relatively few surveys of coastal waterbird colonies in southwestern Louisiana (primarily by fixed-wing aircraft and helicopter; Green et al. 2006, Fontenot et al. 2012), with one of the primary coastal waterbird colonies located on Rabbit Island (Cameron Parish, Louisiana; Fig. 1). Rabbit Island has been a focal point of recent research, because it hosts the only nesting colony of Brown Pelicans (*Pelecamus occidentalis*) in southwestern Louisiana (Selman et al. 2012; WS, unpubl. data). Even though prior studies have focused on Brown Pelicans at the island (Selman et al. 2012, Walter et al. 2013), relatively little is known about the remaining avifauna nesting there (Green et al. 2006).

While collecting data for a related study at Rabbit Island, we documented the first regional nesting records for American Oystercatchers (*Haematopus palliatus*) and Reddish Egrets (*Egretta rufescens*) in southwestern Louisiana and discuss the geographical and conservation importance of these records. Further, these records are important to consider, because many coastal islands, including Rabbit Island, are candidates for island restoration projects via beneficial use of dredge spoil material. We present recommendations for conservation planners to consider prior to, during, and following island restoration where significant bird colonies are present.

STUDY AREA

Rabbit Island is an 85-ha salt marsh island located in the middle of West Cove of Calcasieu Lake (Cameron Parish, Louisiana). The outer rim of the island is typically higher than the interior portion of the island, with some small shell beaches lining portions of the shoreline (typically <30 m in length; hereafter called

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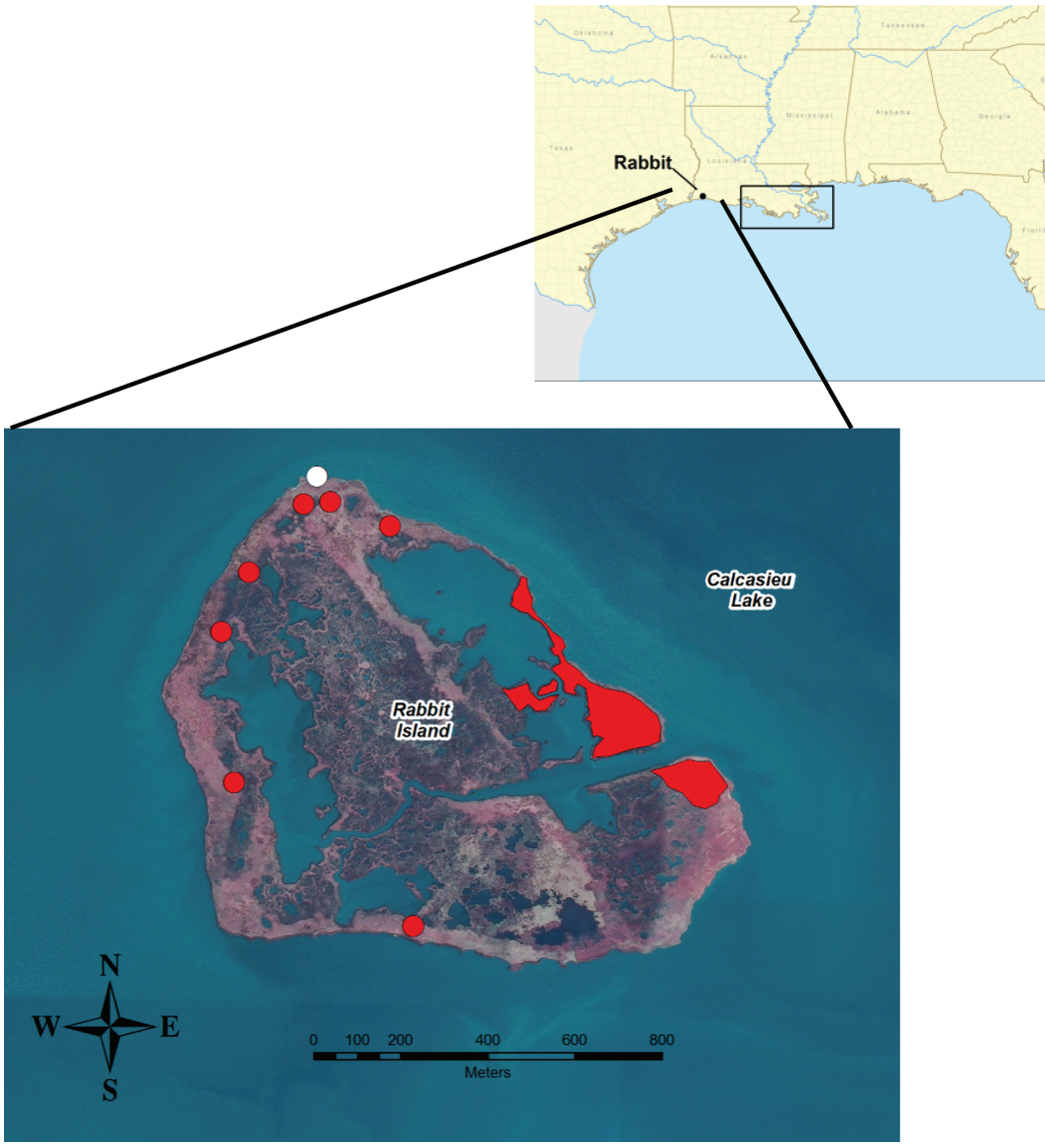

FIG. 1. Geographic location of Rabbit Island (Cameron Parish, Louisiana) and region of other American Oystercatchers and Reddish Egrets in southeastern Louisiana (black box). Below, aerial image of Rabbit Island (Cameron Parish, Louisiana), with markers representing the nesting location of American Oystercatchers (white marker) and Reddish Egrets (red markers). For the latter, red polygons represent multiple nesting observations throughout the nesting season, whereas red circles represent single observations.

shell rakes). Dominant interior vegetation on the island includes *Spartina alterniflora* (smooth cordgrass), *Distichlis spicata* (saltgrass), and *Spartina patens* (saltmeadow cordgrass), while vegetation near the exterior of the island includes *S. alterniflora*, *D. spicata, Juncus roemerianus* (needlegrass rush), *Spartina cynosuroides* (big cordgrass), and *Iva frutescens* (Jesuit's bark). Marsh elevations vary throughout the island by 0.3–0.5 m (elevation max: 0.57 m asl; B. Richard, pers. comm.) and create varying habitats ranging from completely vegetated marsh to open tidal ponds. A bayou enters the island from the eastern side, which permits

tidal exchange to multiple ponds of different sizes on the interior of the island.

Surrounding Rabbit Island is the shallow bottom estuary of West Cove which averages ≤1.82 m, with the cove surrounded by brackish and salt marshes owned by both public (Sabine National Wildlife Refuge) and private landowners. Prior to the initial creation of Calcasieu Pass in 1874 by the U.S. Army Corps of Engineers (Quinn 1897), a ≤1.5-m deep shoal at the mouth of Calcasieu Pass likely limited excessive saltwater intrusion (Louisiana Coastal Wetlands Conservation and Restoration Task Force 2002). Following the widening and deepening of the Calcasieu Ship Channel in 1937 (Louisiana Coastal Wetlands Conservation and Restoration Task Force 2002), greater tidal exchange and increased salinities occur throughout the region. Thus, the Calcasieu Lake estuary has been converted to a moderate to high salinity estuary.

OBSERVATIONS

American Oystercatchers.—While conducting a shoreline survey of Rabbit Island from an offshore boat on 27 February 2013, we observed a pair of American Oystercatchers (AMOY) on a shell rake (15 m in length) on the northern tip of the island (Fig. 1). We made the next observation on 13 March 2013 while walking a line-transect on the exterior portion of the island when a single AMOY was located in the same location the pair was previously observed. Upon further inspection of the location, three eggs were observed in a scrape on the shell rake near its highest point (Fig. 2a). One week later, only two eggs were observed at the same location (18 March 2013) with both adults attending the nest. We made five additional observations later of one or two adult AMOYs in the area via shoreline survey from an offshore boat with binoculars or walking line-transects (27 Mar, 8 Apr, 16 Apr, 22 Apr, 4 May). On 8 May 2013, two adults and one chick were observed. The chick appeared to be at or near fledging, with this reproductive attempt considered successful as further observations were not made of adults or chick at the island.

On 14 January 2014, we observed two AMOYs present at the island. On 26 February 2013, three eggs were observed near the same nest location as 2013; upon close inspection, two eggs were found in the scrape and another was ~2.5 m downslope of the scrape (Fig. 2b). Later on 26 February, two eggs were observed in the scrape and the lone egg

FIG. 2. Photograph of nesting location of American Oystercatchers in 2013 and 2014 (photograph 26 Feb 2014) and specific location of nest scrape. A close up of the 2014 scrape and three eggs is below (described in text).

was not found. On 13 March 2014, one chick was observed hiding on the edge of the grass and thereafter, two chicks were observed hiding on grass margins on 17 March. Between 17–21 March, the activities were checked daily from offshore, with one or more adults and chicks observed each day. By 31 March, we only observed one chick (upright and mobile) with a single adult, but on 3 April 2014, two adults and two large, mobile chicks were observed. One of the chicks was observed flying, with both chicks likely fledging and indicating another successful reproductive attempt by AMOYs at this site in 2014.

Reddish Egrets.—Between 27 March and 29 August 2013, 13 sample periods were completed to survey Reddish Egrets (REEG) on Rabbit Island. During each sample period, we completed a survey of the entire shoreline perimeter and subsequently completed a subsample of perimeter point counts (n = 10 points surveyed per sample

period from 20 available survey points; WS and BED, unpubl. data). A comprehensive survey of the island to identify all nests of REEG was never completed during any sampling period because of the sampling design. For these sampling periods, we made observations of multiple nesting Reddish Egrets (REEG) via shoreline survey from boat ($n = 4$) or via perimeter point counts ($n = 71$). On 27 March 2013, eight REEGs were observed in a mixed species wading bird colony containing Tricolored Herons (*Egretta tricolor*), Roseate Spoonbills (*Platalea ajaja*), Snowy Egrets (*Egretta thula*), and Great Egrets (*Ardea alba*) on the eastern side of the island and ~100 m north of a tidal bayou that enters the island. Additional observations of REEGs were made between 8 April and 20 May 2013, with most of the observations centered in this same vicinity; a maximum of 12 individuals were observed on 8 May 2013. Chicks were confirmed on 4 June 2013, with observations of chicks and adults continuing until 29 August 2013 (max of 10 individuals observed on 29 Aug 2013). In all observations, REEGs were present in mixed wading bird colonies, with the nesting habitat of all observations located in needlegrass rush (*Juncus roemerianus*) and nests situated above ground level.

DISCUSSION

Value of Observations.—Based on our observations, a single pair of AMOYs nested at the same site on the northern end of Rabbit Island in 2013 and 2014. It is probable that observations from both years represent the same nesting pair, because the nest site was situated in nearly the same location for both years (i.e., same territory; Nol 1989). Even though we confirmed nesting of REEGs on Rabbit Island, it is difficult to quantify the number of total nests constructed or fledglings produced on the island during the 2013 nesting season. We observed 12 as the maximum number of individuals during any sampling period. Thus, we presume that at least 6, and as many as 12 nests, were located on the island in 2013. Because of imperfect visibility and only sampling a subset of perimeter points in each survey, we suspect that more nests could have been present on the island. Large colonies are somewhat rare, with only 3 colonies in Louisiana and 11 in Texas known to number >20 nests (Vermilion and Wilson 2009, M. Seymour, pers. comm.). Follow-up surveys should attempt a census for REEG on the island.

Prior aerial surveys and studies at Rabbit Island have not documented nesting by either AMOYs or REEGs. This may be because of 1) difficulty detecting the species via aerial surveys or 2) a recent geographical expansion. First, it is possible that both species would have been missed by prior aerial surveys. AMOYs nest early in the year (Feb to early May) and thus would have been missed by prior coastal waterbird aerial surveys flown later in the year, typically between May–July (Green et al. 2006, Fontenot et al. 2012). Nesting REEG and AMOY were also likely missed during aerial surveys because of their cryptic coloration and ability to blend in with the surrounding area better than other larger or brightly-colored nesting waterbirds (i.e., Brown Pelicans, white egrets, Roseate Spoonbills; Rogers et al. 2005, Green et al. 2008). We also suspect that because lower numbers of REEGs (10–20 individuals) and AMOYs (3–4 including fledglings) occur on Rabbit Island among vastly larger numbers of other more common and visible species (e.g., Laughing Gulls [*Leucophaeus atricilla*], Snowy Egrets, and Tricolored Herons), their presence may have been masked further by the more apparent species. For REEGs, a single ground count of Rabbit Island was made in May 2004 and none were detected during these surveys (C. Green, pers. comm.). This indicates that colonization of REEG on Rabbit Island may have occurred over the last decade via natural expansion. For AMOYs, there are breeding records east and west of Rabbit Island, as well as prior observations during the breeding season in southwestern Louisiana (B. Vermilion, pers. comm.; WS, pers. obs.). Therefore, it is likely that AMOYs have been breeding at Rabbit Island and other potential locations in southwestern Louisiana.

The shell rake nesting habitat used by AMOYs on Rabbit Island is similar to nesting habitat described previously for the species where individuals nest on sand or shell beaches mostly void of vegetation, with shell rake considered an important nesting habitat for AMOYs in the region (S. Heath, pers. comm.) and throughout their range (American Oystercatcher Working Group et al. 2012). However, this habitat type is rare on the island (~291 m of shell rake habitat in 3810 m of shoreline [7.6%]; measured with GoogleEarth measuring tool). AMOYs in Texas nest extensively on shell rake habitat similar to what we observed on Rabbit Island, with no

individuals nesting on Gulf beaches in Texas (S. Heath, pers. comm.). It is also not uncommon to find the same birds nesting in the same territory and potentially the same area over consecutive years (Tomkins 1954, Nol 1989). It appears that three chicks were fledged over 2 years from one nest site at Rabbit Island; this represents a relatively high fledgling rate compared to prior studies which found on average one chick fledged per 4 years (Nol 1989).

Reddish Egrets have been observed nesting on islands along the Gulf Coast (both man-made and natural islands) and in mixed bird colonies similar to our observations at Rabbit Island (Vermillion and Wilson 2009). However, REEGs at Rabbit Island were nesting off the ground in patches of needlegrass rush, which is different than previously described nesting habitat. Prior reports include REEGs nesting on bare sand or in bushes or trees, including mangroves (*Avicennia germinans, Rhizophora mangle*), prickly-pear cactus (*Opuntia* sp.), goatbush (*Castela erecta*), Spanish dagger (*Yucca* sp.), and seaside tansy (*Borrichia* sp.; Lowther and Paul 2002, Chaney and Blacklock 2003).

Our observations of nesting at Rabbit Island for both species represent significant geographical breeding records. For AMOYs, the nearest nesting records are ~135 km to the east at Marsh Island (Marsh Island Wildlife Refuge, Iberia Parish, Louisiana; M. Seymour, pers. comm.) and ~130 km to the west at East Galveston Bay (Galveston County, Texas; S. Heath, pers. comm.). The nearest nesting records for REEG are ~253 km to the east at Last Island (Isles Dernieres Barrier Island Refuge, Terrebonne Parish, Louisiana) and 110 km to the west at East Galveston Bay (Galveston County, Texas; Vermillion and Wilson 2009). Therefore, both breeding observations reported herein essentially act as the midpoint between prior nesting records and thus, link populations of AMOY and REEG from southeastern Louisiana to eastern Texas.

With the documentation of both species nesting on the island, future detailed studies should be initiated to determine 1) annual breeding success of both species on Rabbit Island and 2) if additional breeding areas or populations exist in southwestern Louisiana. Further, these observations emphasize a need for more current breeding distribution and abundance data for these two species throughout their respective ranges.

Island Restoration Recommendations.—Currently, a large-scale restoration project is planned for Rabbit Island. This project plans to use dredge spoil from the Calcasieu Ship Channel to raise the elevation of the island and to make higher nesting areas (i.e., elevated platforms) primarily for Brown Pelicans, as well as to armor the northeastern side of the island with rock rip-rap. These measures will ensure that occasional pelican nest overwashing is discontinued and prevent the eastern rim from breaking through to a tidal pond, respectively.

For this and other island restorations to be considered successful, it must not only preserve the structural integrity of the island, but it should also ensure the future biological function of the island. The discussion of structural stability and engineering design is beyond the scope of this paper, but in unison to this, careful attention should be given to the biology of the island by collecting data prior to the restoration (pre-data; e.g., vegetative data, bird species usage, nesting species inventory, and nesting habitat usage). Collection of pre-data provides baseline information to better guide restoration plans and should include data collection on bird species diversity and abundance, sensitive habitats to consider (e.g., shell rake), and habitats/vegetation that should be replicated; pre-data will also permit species or habitat comparisons following the restoration. We recommend that collection of pre-data be considered in plans for island restoration in these habitats.

Marsh islands such as Rabbit Island often provide a mosaic of habitats within a small spatial scale. This provides multiple breeding and foraging habitats for a diversity of bird habitat preferences and thus, careful attention should be given to a design with habitat mosaics. Consideration should also be given to habitats that are used by birds at disproportionally higher rates than the amount of habitat available. Numerous wading bird species used patches of needlegrass rush disproportionately on Rabbit Island (WS and BED, unpubl. data). Therefore, planners should incorporate certain structural or vegetative characteristics that are used in higher proportions by nesting birds. Similarly, for bare ground nesting birds, careful attention should be given to ensure that these areas remain undisturbed, with additional surrogate habitat (i.e., additional shell or limestone gravel sections) provided if areas are degraded during the restoration process. Also,

when island restorations consider birds in their plans, they are typically designed around the usage of a single, high-priority species (e.g., Brown Pelicans). However, as we have shown at Rabbit Island, there are often different habitat needs for other high priority bird species (i.e., AMOYs and REEGs) that utilize the same islands for nesting. In order for these species to be considered in the restoration plan, there has to be information given about the species known on the island (i.e., collection of pre-data).

Timing of breeding season relative to construction and the imminent structural integrity of the island should be considered by managers implementing island restoration projects. Planners may also consider island restoration on a ''piece-meal'' basis by focusing on the most needed items first (e.g., shoreline breakup) and then implementing other additions as needed. Even though this may not be the preferred method for construction efforts and channel dredge cycles, doing island restoration projects in this fashion may be both financially beneficial (by spreading costs over a longer period of time) and biologically beneficial; for the latter, a ''piece-meal'' restoration will benefit the birds using the island, because the entire island is not impacted at a single time. Last, each restoration project should include post-construction monitoring of bird species and habitats. This will ensure that if the desired outcomes are not achieved, they can be corrected prior to colony failure or long-term island abandonment. For example, if elevations are too high and lead to the colonization of undesired vegetation and/or predator species (see below), modifications via additional mechanical distribution of material or application of herbicide to undesirable vegetation can be completed.

If careful attention is given to these aspects of the restoration, the island should function closely to what it did prior to restoration, and it should improve the long-term stability of the island and long-term value of the island as a bird nesting area (e.g., Queen Bess Island, Jefferson Parish, Louisiana; Visser and Peterson 1994; WS, unpubl. data). However, if the structural and vegetative design of the island is not considered carefully prior to implementation, this could dramatically change bird usage of the island. This could happen via (1) altering the ephemeral and mosaic nature of islands that may leave habitats unsuitable for some of the existing bird species, (2) providing proper conditions for establishment of invasive vegetation that may be unsuitable for existing bird species (e.g., Chinese tallowtree [*Triadica sebifera*], common reed [*Phragmites australis*]), and (3) developing permanent habitats that make the area suitable for mesopredator species (i.e., coyotes, raccoons, opossums). The latter is of particular importance as a few predators may compromise the persistence of the entire colony as observed in other dredge-use restoration projects (Erwin and Beck 2007, Erwin et al. 2007).

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LITERATURE CITED

American Oystercatcher Working Group, E. Nol and R. C. Humphrey. 2012. American Oystercatcher (*Haematopus palliatus*). The birds of North America. Number 82.

Barrow, W. C., C. Chen, R. B. Hamilton, K. Ouchley, and T. J. Spengler. 2000. Disruption and restoration of *en route* habitat, a case study: the Chenier Plain. Studies in Avian Biology 20:71–87.

Bellrose, F. C. 1980. Ducks, geese, and swans of North America. Third Edition. Stackpole Books, Mechanicsburg, Pennsylvania, USA.

Bettinger, K. M. 1984. Relative abundances of avian species by habitat type on Rockefeller Wildlife Refuge, Louisiana. Thesis. Louisiana State University, Baton Rouge, USA.

Chaney, A. C. and G. W. Blacklock. 2003. Colonial waterbird and rookery island management plan. Coastal Bend Bays and Estuaries Program, Corpus Christi, Texas, USA.

Erwin, R. M. and R. A. Beck. 2007. Restoration of waterbird habitats in Chesapeake Bay: Great Expectations or Sisyphus revisited? Waterbirds 30 (Special Publication 1):163–176.

Erwin, R. M., J. Miller, J. G. Reese. 2007. Poplar Island environmental restoration project: challenges in waterbird restoration on an island in Chesapeake Bay. Ecological Restoration 25:256–262.

Fontenot, W. R., S. W. Cardiff, R. A. Demay, D. L. Dittman, S. Hartley, C. W. Jeske, N. Lorenz, T. C. Michot, R. D. Purrington, M. Seymour, and W. G. Vermillion. 2012. A catalog of Louisiana's nesting seabird colonies. Report Number 34. Barataria-Terre-

bonne National Estuary Program, Thibodaux, Louisiana, USA.

GREEN, M. C., M. C. LUENT, T. C. MICHOT, C. W. JESKE, AND P. L. LEBERG. 2006. Statewide wading bird and seabird nesting colony inventory, 2004–2005. Louisiana Natural Heritage Program Report. Louisiana Department of Wildlife and Fisheries, Baton Rouge, Louisiana, USA.

GREEN, M. C., M. C. LUENT, T. C. MICHOT, C. W. JESKE, AND P. L. LEBERG. 2008. Comparison and assessment of aerial and ground estimates of waterbird colonies. Journal of Wildlife Management 72:697–706.

LOUISIANA COASTAL WETLANDS CONSERVATION AND RESTORATION TASK FORCE. 2002. Hydrologic Investigation of the Louisiana Chenier Plain. Louisiana Department of Natural Resources, Coastal Restoration Division, Baton Rouge, Louisiana, USA.

LOWTHER, P. E. AND R. T. PAUL. 2002. Reddish Egret (*Egretta rufescens*). The birds of North America. Number 633.

MICHOT, T. C. 1996. Marsh loss in coastal Louisiana: implications for management of North American Anatidae. Gibier Faune Sauvage Game Wildlife 13:941-957.

MICHOT, T. C., C. W. JESKE, J. C. MAZOUREK, W. G. VERMILLION, AND R. S. KEMMERER. 2003. Atlas and census of wading bird and seabird nesting colonies in south Louisiana, 2001. Final Report. U.S. Department of the Interior, U.S. Geological Survey, National Wetlands Research Center, Lafayette, Louisiana, USA.

NOL, E. 1989. Food supply and reproductive performance of the American Oystercatcher in Virginia. Condor 91:429–435.

QUINN, J. B. 1897. Improvement of mouth and passes of Calcasieu River, Louisiana. Pages 1768–1770 *in* Report of the chief of engineers. Part 2. U.S. Department of War, Army Corps of Engineers, Washington, D.C., USA.

ROGERS JR., J. A., P. S. KUBILIS, AND S. A. NESBITT. 2005. Accuracy of aerial surveys of waterbird colonies. Waterbirds 28:230–237

SELMAN, W., T. HESS JR., B. SALYERS, AND C. SALYERS. 2012. Short-term response of Brown Pelicans (*Pelecanus occidentalis*) to oil spill rehabilitation and translocation. Southeastern Naturalist 11:G1–G16.

TOMKINS, I. R. 1954. Life history notes on the American oyster-catcher. Oriole 19:37-45.

VERMILLION, W. G. AND B. C. WILSON. 2009. Gulf Coast Joint Venture conservation planning for Reddish Egret. Gulf Coast Joint Venture, Lafayette, Louisiana, USA.

VISSER, J. M. AND G. W. PETERSON. 1994. Breeding populations and colony site dynamics of seabirds nesting in Louisiana. Colonial Waterbirds 17:146–152.

WALTER, S. T., M. R. CARLOSS, T. J. HESS, JR., G. ATHREY, AND P. L. LEBERG. 2013. Movement patterns and population structure of the brown pelican. Condor 115:788–799.