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SHORT COMMUNICATION

NOTE ON THE NATURAL AND CULTURAL HISTORY OF HURRICANE BALLS

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Introduction

Hurricane balls are natural phenomena of tropical storms and hurricane winds and waves and are found along the shoreline. Gunter Library at the Gulf Coast Research Laboratory (GCRL) is home to a small collection of hurricane balls which were found along the shore lines of barrier islands and marsh beaches by GCRL staff over the years. Hurricane balls come in many sizes (Figure 1), and large balls can be slightly larger than a standard basketball of 24.8 cm diameter (USA Basketball 2001). Large balls in the Gunter Library collection range from 34.5 cm diameter (Figure 1A, left side, from 1969 Hurricane Camille) to 53.5 cm diameter (Figure 1A, right side, from 2005 Hurricane Katrina). Small balls range from 4.0 to 11.0 cm diameter (Figure 1B).

Hurricane balls are objects of curiosity, local mythology, and conjecture concerning their origin. Found all over the world and composed of plant fibers native to their coastlines, these objects are called *beach balls*, *drift balls*, *grass balls*, *marsh balls*, *sea balls*, *vegetable balls*, *buffalo balls*, and *whale burps*. However, in south Mississippi, they are called *hurricane balls* (McAtee 1925, Olson 1963, Dubuisson 1969, Clawson 1998, Osis 2000, Ebbesmeyer 2004). This note reviews the scientific and popular literature available about hurricane balls with an emphasis on their cultural and natural history and speculates whether they may be indicators of coastal marsh health.

Hurricane Ball Myths and Local Cultural History

Hurricane balls have been reported from various areas of the United States, both inland and coastal. One of the first reports of the structure is from Ganong (1905), who provided an early review of "certain balls of vegetable matter found on the sandy bottoms of shallow ponds" and cited Thoreau in the classic work *Walden Pond* as finding considerable quantities of curious balls composed of fine grass or roots, perfectly spherical on the sandy bottom of Flint's Pond. Balls that varied from 3.81 to 7.62 cm in diameter washed up along the shores of a lake near Dawson, North Dakota, and were locally called "Buffalo balls" (McAtee 1925). The continual wave action apparently resulted in the formation of balls composed of stems, peduncles and seeds of widgeon grass, *Ruppia maritima*, algae, needles of coniferous trees, debris from chestnut burs, cones of evergreens, and other vegetable substances bound together in a solid firm mass (McAtee 1925).

Osis (2000) refers to similar structures as "beach balls" and reports that they are sold in local gift shops along the Oregon coast as "whale burps," "whale barf balls," or "whale fur balls." However, Osis (2000) dispels the whale regurgita-

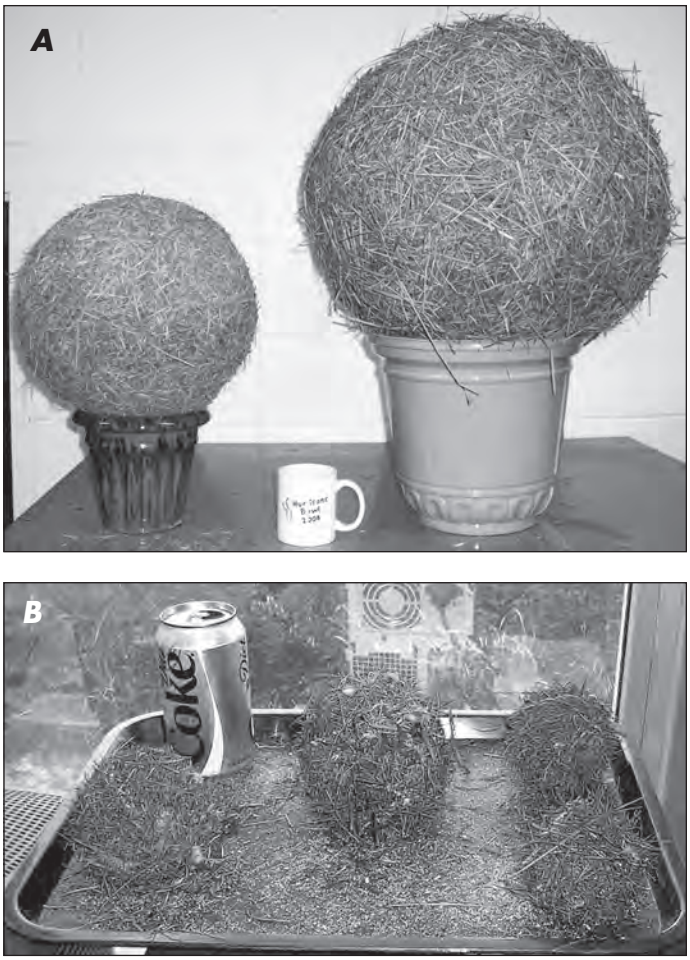

Figure 1. *Hurricane balls housed at the Gunter Library, GCRL, The University of Southern Mississippi. A. The hurricane ball on the left (34.5 cm diameter) was collected after Hurricane Camille in 1969 on Horn Island, and the larger ball (53.5 cm diameter) on the right was found near Weeks Bayou marsh along East Beach Drive in Ocean Springs in spring 2006 after Hurricane Katrina. B. A small collection of different sized hurricane balls (4.0-11.0 cm diameter) found by GCRL staff along the shores of south Mississippi coasts and barrier islands.*

tion myth and describes them as made of vegetation such as sea grass or dune grass mixed with fishing line, snail egg casings, pine needles, seaweed or twigs. The "Betsy balls" displayed at the Audubon Nature Center formerly located east of New Orleans are composed of compacted and woven marsh grass and are named for the 1965 hurricane that made landfall at the mouth of the Mississippi River (Audubon Nature Institute 2004). Finally, Ebbesmeyer (2004) called the thousands of green globs resembling Brillo® pads washed ashore at Plaice Cove, New Hampshire, in June 2002 "sea knitting." He speculated that heavy rains washed nitrates and phosphates from sewage and fertilizers into the ocean, creating an explosion of seaweed growth, and pulsating wave and currents knitted the balls, which consisted of seaweed, sand, and shell fragments (Ebbesmeyer 2004).

Hurricane Ball Natural History

A number of scientists and others report finding hurricane balls such as those seen in Figure 1 during the months following extreme weather events. Along the Mississippi and Louisiana coast and barrier islands, hurricane balls are round or egg-shaped and composed of plant materials such as marsh grasses (*Spartina* spp. and *Juncus roemerianus*) and pine straw formed around a core of plant fibers, roots, or occasionally small pieces of storm debris. The wave and wind action forms a very complex woven structure with plant fibers laced into a sturdy and durable spherical or elliptical object and they can vary in size (Figure 1A and B) but when lifted, they all sprinkle sand.

The formation of hurricane balls was early on speculated to be due to wave action in shallow water on both lake and coastal shores (McAtee 1925). Croneis and Grubbs (1939) compared the formation of siliceous nodules found in the Niagaran dolomite quarries to that of modern "sea balls" and "lake balls." They postulated that the "rolling action of the submerged portions of waves upon the fibrous substances resting lightly upon sandy bottoms" resulted in the genesis of lake balls or sea balls, and while the organic material of the balls may differ, the physical conditions of their formation are similar.

The formation of two sea balls found along the Florida Gulf coast (Olson 1957, 1963) was presumed to be due to wave conditions which tend to work the plant mass into a compact ball-like form. DeVries (1969) speculated that the "spheroidal to ellipsoidal accretionary bodies" composed of dead salt-marsh plants found along groins and jetties in Gulfport, Mississippi, following Hurricane Betsy were formed by heavy surf activity that rolled the floating marsh grass debris into spherical and ellipsoidal masses.

Following Hurricane Camille, GCRL geologist Walter Siler (Figure 2A) found numerous "drift balls" on the shores of Horn and Ship Islands, two barrier islands off the coast of Mississippi, and described them as "accretionary masses of debris formed in very shallow water as a result of wave or current action." Dubuisson (1970) stated that Siler believed the drift balls were composed of marsh grasses from the Louisiana marshlands near Breton and Chandeleur Sounds. These drift balls can be carried by waves and tides throughout the northern Gulf of Mexico with many being concentrated on Mississippi's barrier islands (Figure 2B). Local science educator Leona M. Clawson found about 1,500 hurricane balls along the Mississippi coastal beaches and barrier islands during the months following Hurricane Camille. She set forth a "McCaughan Theory" to describe the mechanical motion of water within waves and their role in forming these objects (Clawson 1998).

Hurricane Balls, Marsh Health, and Barrier Islands

Hurricane balls have been considered to be a negative indicator of marsh health and a warning sign that wetlands and marshes are in distress (Audubon Nature Institute

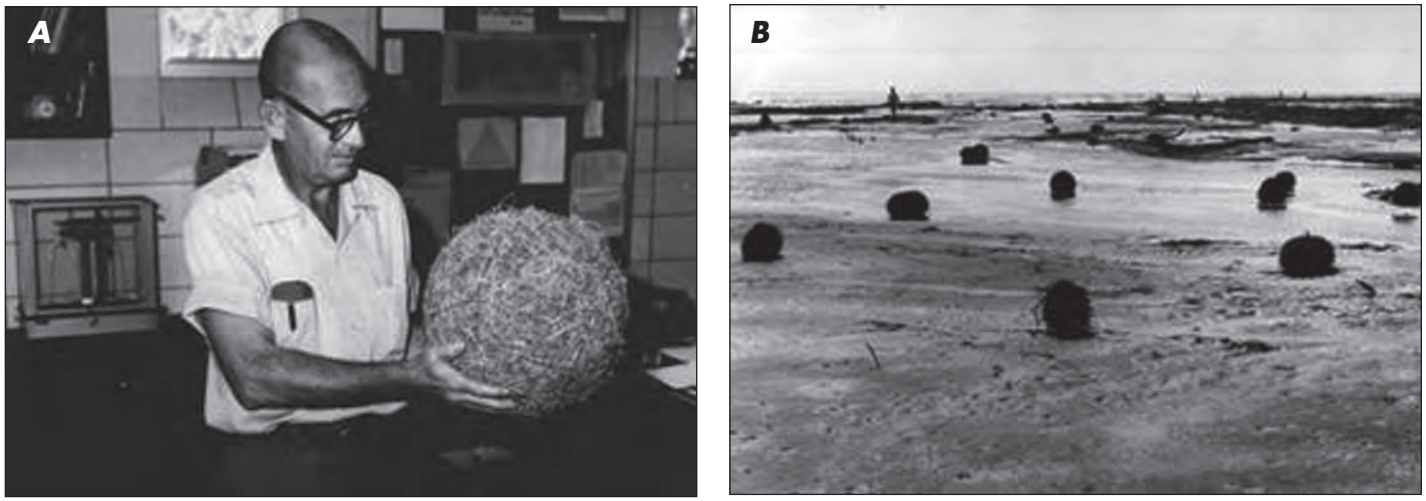

Figure 2. *A. Former Gulf Coast Research Laboratory geologist Walter Siler examines a Hurricane Camille ball. B. Many hurricane balls (sizes not available) washed ashore on Ship Island following Hurricane Camille.*

2004). Hurricanes are known to impact and deform marshes; for example, Hurricane Andrew's impact on the Louisiana marshes included marsh balls created as the marsh was piled, rolled, and deformed (Loveland and McPherson 1998). The marshes on Timbalier Island in Terrebonne Parish, Louisiana, were "stripped of exposed vegetation and the substrate was scoured, and in some areas the marsh was peeled up in strips and formed into 'balls' that were deposited some distance away" during Hurricane Andrew (Penland et al. 2003). This research identified a condition called compressed marsh which is described as a loss of surface area causing the marsh to push together like an accordion. Nearly 25 cm (10 in) of sediment carried by storm surge during Hurricane Andrew was deposited on the floating marsh, causing it to sink (Penland et al. 2003).

Hurricanes Katrina and Rita underscored the fragility of south Mississippi's and Louisiana's barrier islands, coastal marshes, and wetlands (Marris 2005). Louisiana and Mississippi need healthy marshes, sturdy barrier islands, and functioning wetlands to protect their fragile coastlines from the pounding waves and howling winds of tropical storms and hurricanes. However, Landsat satellite data from September and October 2005 showed Hurricanes Katrina and Rita transformed over 100 square miles of marsh to open water, with the most substantial marsh loss occurring east of the Mississippi River in St. Bernard and Plaquemines parishes, Louisiana (U.S. Geological Survey 2005). Hurricane ball formation requires a combination of dead marsh grass, as well as wind and waves from severe weather events. Whether or not the occurrence of these "curious objects" is a warning sign or indicator of coastal and barrier island marshes in distress is a topic of speculation and further research.

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Literature Cited

Audubon Nature Institute. 2000. Amy LeGeaux and the Betsy Ball. http://www.audubooninstitute.org/news/04_0000_Inc_betsyball.htm. (viewed on 5/24/2005).

Clawson, L.M. 1998. Hurricane balls. In: D.M. McCaughan, ed. Marine Resources and History of the Mississippi Gulf Coast, Volume Two, Mississippi's Coastal Environment. Mississippi Department of Marine Resources, Biloxi, MS, USA, p. 325-330.

Croneis, C. and D.M. Grubbs. 1936. Silurian sea balls. Journal of Geology 47:598-612.

DeVries, D.A. 1969. Grass-balls formed on a Mississippi beach during Hurricane Betsy. Geological Society of America Abstracts with Programs 6:10-11.

Dubuisson, M.L. 1970. Drift balls. Down South Magazine 19:12-13.

Ebbesmeyer, C. 2004. Stuff from Curt. The Drifting Seed 10:15.

Ganong, W.F. 1905. On balls of vegetable matter from sandy shores. Rhodora 7: 41-47.

Lovelace J.K. and B.F. McPherson. 1998. Effects of Hurricane Andrew (1992) on wetlands in southern Florida and Louisiana. United States Geological Survey Water Supply Paper 2425. United States Geological Survey, Washington, D.C. USA, 7 p. http://water.usgs.gov/nwsum/WSP2425/andrew.html. (viewed on 5/25/2005)

McAtee, W.L. 1925. Notes on drift, vegetable balls, and aquatic insects as a food product of inland waters. Ecology 6:288-302.

Marris, E. 2005. The vanishing coast. Nature 438:908-909.

Olson, F.C.W. 1957. A seaball from Escambia County, Florida. Quarterly Journal of the Florida Academy of Sciences 20: 93-94.

Olson, F.C.W. 1963. Remarks on seaballs from Florida and Hawaii. Quarterly Journal of the Florida Academy of Sciences 26:20-21.

Osis, V. 2000. Beach Balls. ORESU-G-00-003. Technical Report. Oregon Sea Grant, Corvalis, OR, USA, 1 p.

Penland, S., C. Zganjar, K. A. Westphal, P. Connor, J. List, and S. J. Williams. 2003. Impact of Hurricane Andrew on the Timbalier Islands Terrebonne Parish, Louisiana. United States Geological Survey Open File no. 1999, United States Geological Survey, Washington, D.C., USA, 15 p. http://pubs.usgs.gov/of/2003/of03-398/posters/pdf/cont_pdf/ti_andrew.pdf. (viewed on 5/18/2008).

USA Basketball. 2001. Rules of the game presented by State Farm™. http://www.usabasketball.com/rules/rules.html. (viewed on 5/21/2008)

US Geological Survey. 2005. USGS reports preliminary wetland loss estimates for Southeastern Louisiana from Hurricanes Katrina and Rita. 2 p. http://www.yubanet.com/cgi-bin/artman/exec/view.cgi/38/27426. (viewed 1/13/09).