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A SEDIMENTOLOGICAL ANALYSIS OF SEAGRASS BED SUBSTRATE FROM BAY COUNTY, FLORIDA



Daniel C. Phelps, (P.G. # 1203), Michelle M. Lachance and
James G. Sparr

INTRODUCTION

In May 2007 the Florida Geological Survey's Coastal Research Program (FGS-CRP) was contacted by the Florida Fish and Wildlife Conservation Commission (FWC) regarding the granulometric processing of seabed sediment samples as part of a project to repair prop scarring in sea grass beds. The intent was to characterize the nature of the seabed sediments in the affected area so that sediment matching could be facilitated. Personnel from the FDEP's Division of Recreation and Parks (FDEP-DRP), at the request of the FWC, collected a total of 13 seabed samples from two locations in the state waters of Bay County. Six samples were collected from the first site and seven from the second. These two sample locations are shown on Figure 1.

SEDIMENT SAMPLE COLLECTION

The sediment samples were collected by the FDEP-DRP on May 29, 2007 from a kayak. Location coordinates were established using a Garmin Etrex Legend GPS receiver. Samples were collected at high tide by scooping individual surficial sediment samples from various scars at the two locations selected. Samples were secured in zip lock bags as they were being collected.

SEDIMENT SAMPLE PROCESSING

The sieve nest used in sample processing by the FGS-CRP is illustrated on [Table 1](#). All granulometric analyses were conducted using the general guidelines of the American Society for Testing and Materials (ASTM) (2000a, 2000b) and specific procedures advanced by the FGS sedimentology laboratory (Balsillie, 1995, 2002a, 2002b, Balsillie and Tanner, 1999; Balsillie, et al. 1999; Balsillie et al. 2002a; Balsillie et al. 2002b; Balsillie and Dabous, 2003). Samples were oven dried, initially weighed, then wet sieved through a 230 sieve (0.63 mm or 4 phi), oven dried again and reweighed with the weight loss being assigned to the fine fraction. The sample was then dry sieved with the portion of the pan fraction obtained during dry sieving also assigned to the fine fraction. No samples exhibited a sufficiently significant percentage of fines to support further characterization using the methodology of Folk (1974) and Galehouse (1971).

Cumulative grain size distribution curves reflect the total grain size distribution (GSD) of each sediment sample. The weight of the fine fraction, consisting of the weight loss from wet sieving plus weight of the fraction passing through the sieve nest to the pan was, as noted above, assigned to the finer than 4 phi fraction.

DATA ANALYSIS AND RESULTS

GSD curves are presented for the seabed samples both individually and collectively for the two site locations shown on [Figure 1](#). This data can be accessed from [Table 2](#). [Figures 2 and 3](#) illustrate the collective frequency curves for site one, Tyndall, and site two, Spanish Shanty, respectively.

At site one, Tyndall, the six samples collected ranged in weight from 37.406 to 79.944 grams. For those six samples the minimum mean grain size was 1.899 phi (0.2681 mm), and the maximum mean grain size was 2.055 phi (0.2407 mm). The average grain size of those samples was 1.969 phi

(0.2554 mm). Munsell colors for the samples were 5Y 7/1 and 5Y 7/2.

At site two, Spanish Shanty, the seven samples collected ranged in weight from 30.556 to 93.320 grams. For those seven samples the minimum mean grain size was 1.912 phi (0.2658 mm) and the maximum mean grain size was 1.939 phi (0.2607 mm). The average grain size of those samples was 1.926 phi (0.2631 mm). Munsell colors for the samples were 5Y 7/2, 5Y 8/1 and 2Y 8/2.

A PowerPoint Presentation has been prepared that summarized these finding. It is provided as [Appendix A](#).

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