

Sediment Composition

Sand was the most common substrate at all depths in all years' studies followed by rocky substrates. The relative frequency of sand and silt increased as depth zones deepened while rock and gravel decreased. There was a decrease in the amount of sand/gravel mixtures between 1989/90 and 2005-2009. There was also an increase in silt substrates however this difference is less pronounced when zone 4 is excluded from the analysis (Figures 1 and 2).

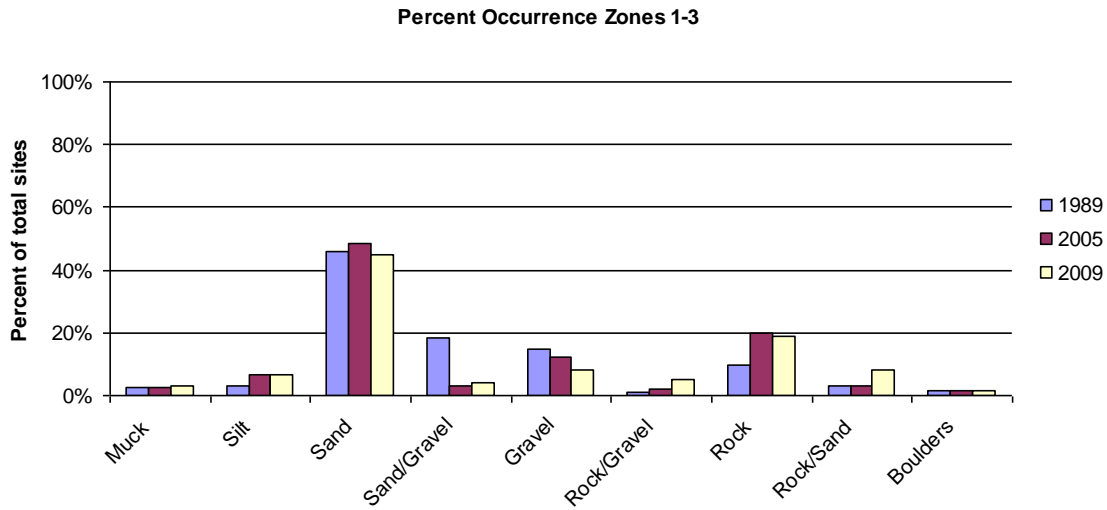
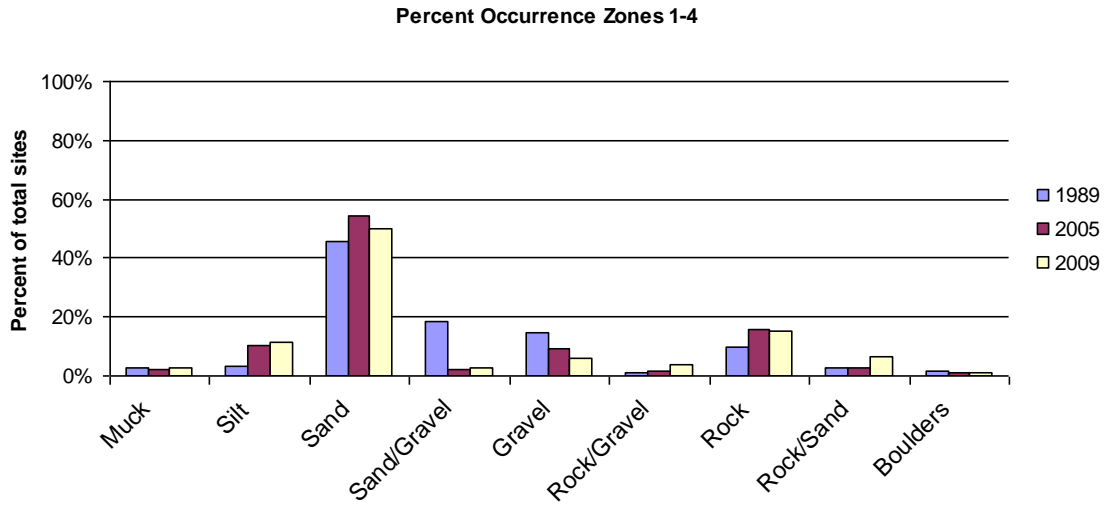


Figure 1. Percent of total quadrats with each classification of substrate.

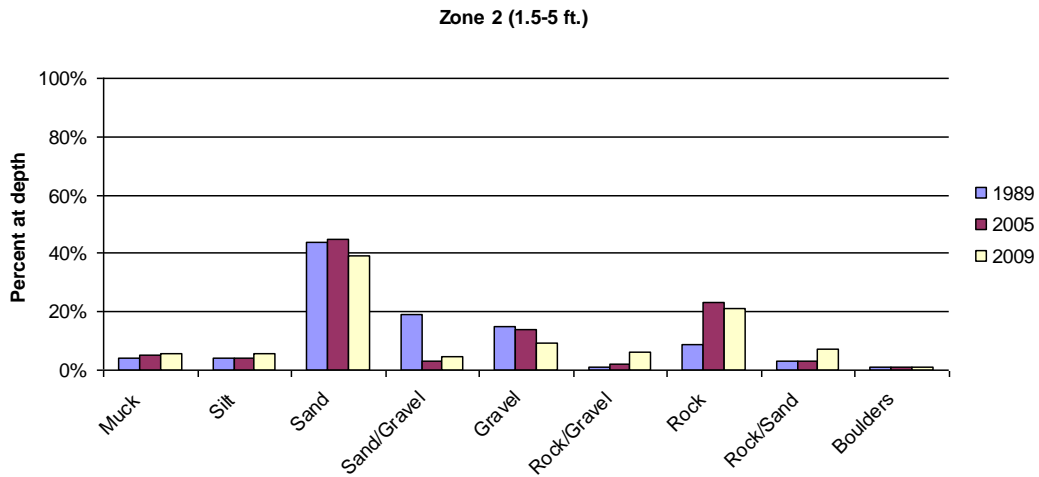
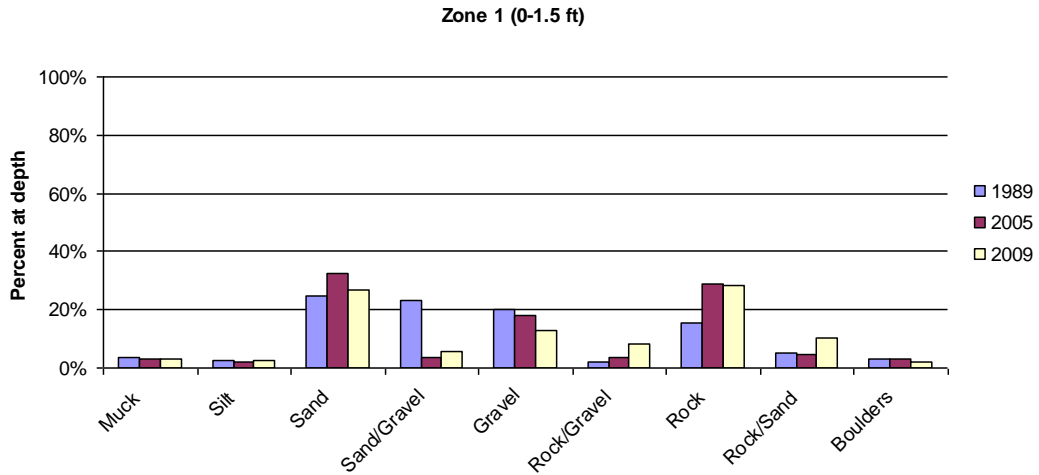


Figure 2. Percent of quadrats within each depth zone with each classification of substrate (see next page for remainder of Figure 2).

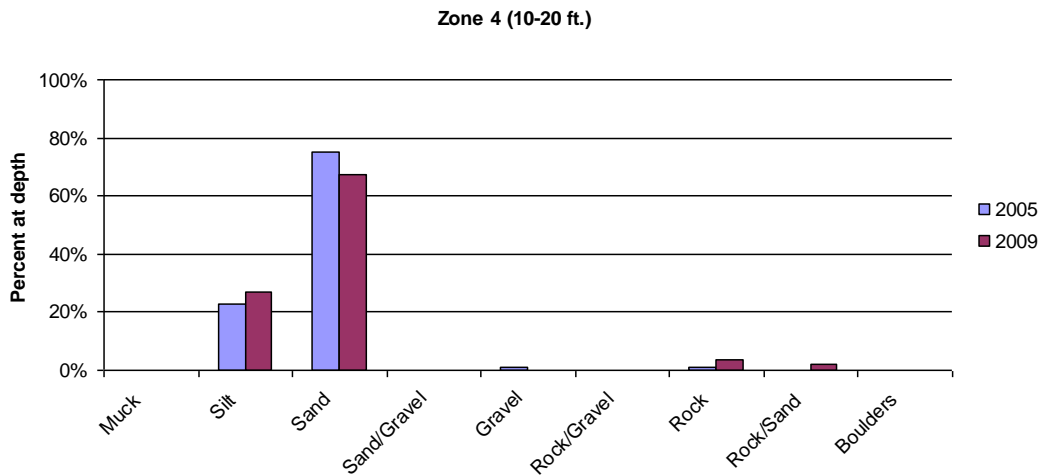
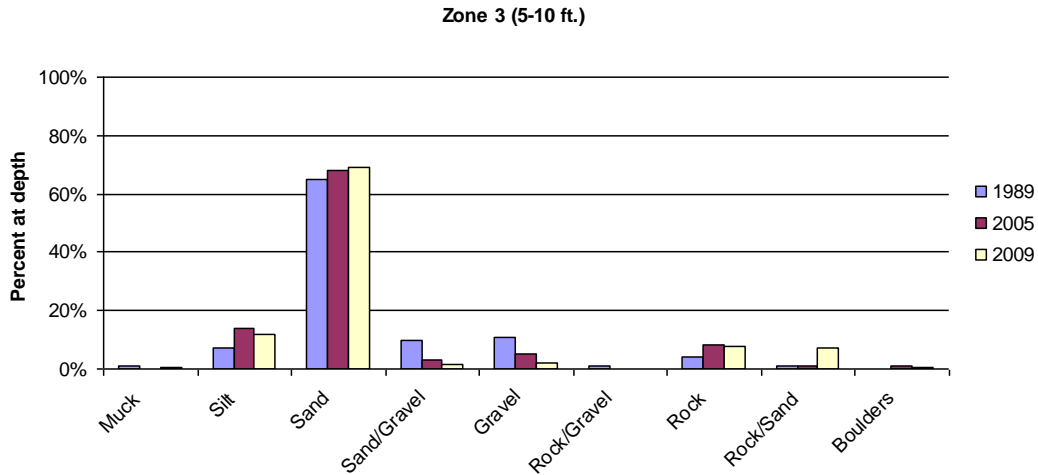


Figure 2 continued from previous page. **Percent of quadrats within each depth zone with each classification of substrate.**

Sediment Distribution

More pronounced differences are seen when looking at the percentage of each substrate type that were vegetated. In the 1989/90 study sand and silt were more heavily vegetated. The 2005 and 2009 studies showed a trend of increased vegetation on hard substrates like rock and gravel. Muck substrates were 100% vegetated in all three years studies. Muck substrates typically occurred in narrow inlets with shallow waters and protection from wave action. In all three studies vegetation decreased with increased density of the substrate. Muck and silt which have the lowest density were vegetated the most while rock and boulders (high density) were vegetated the least (Figure 3).

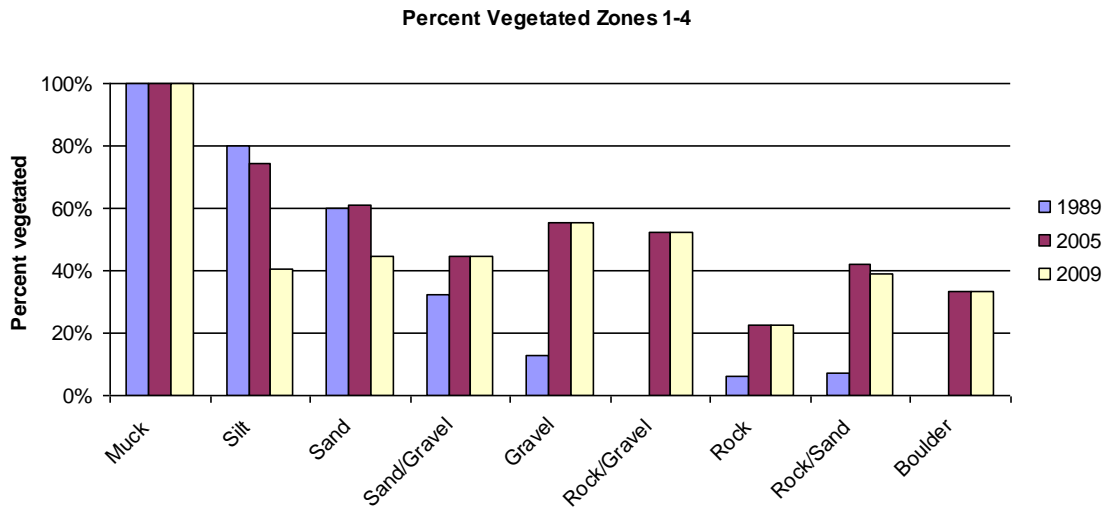
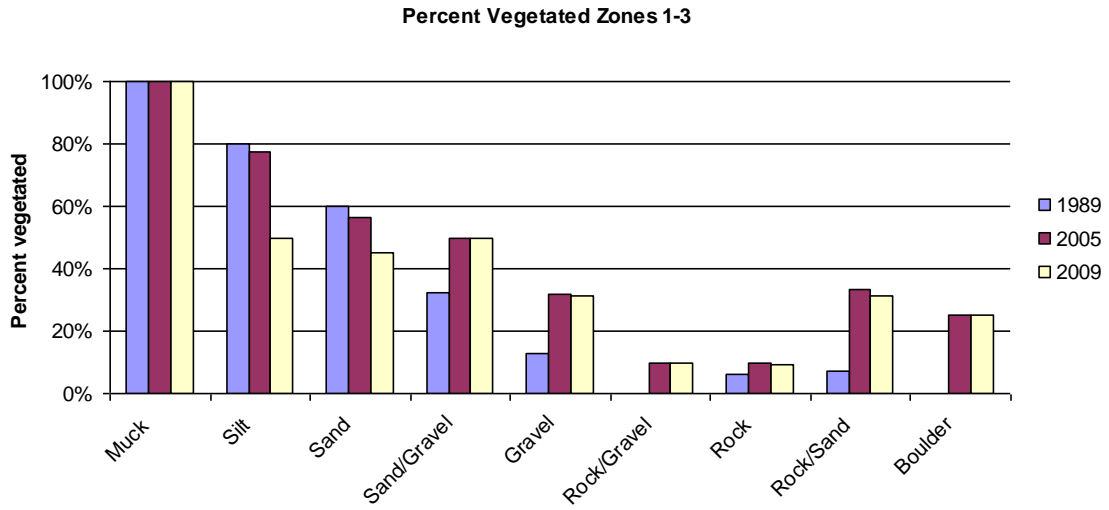


Figure 3. Percent of total quadrats with each substrate classification containing vegetation.

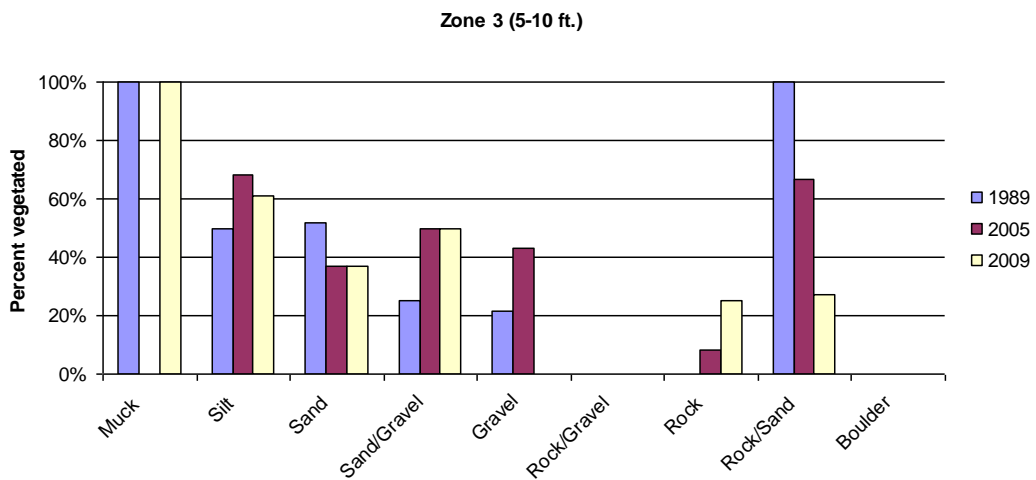
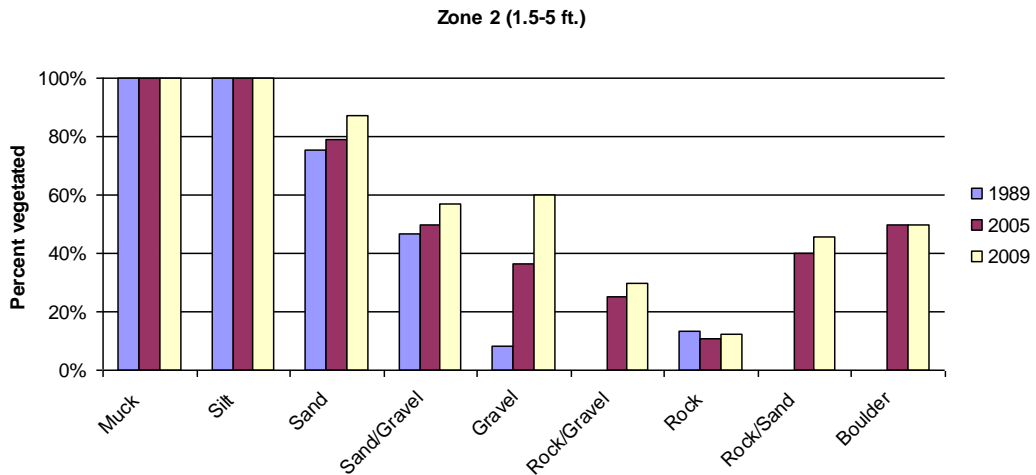
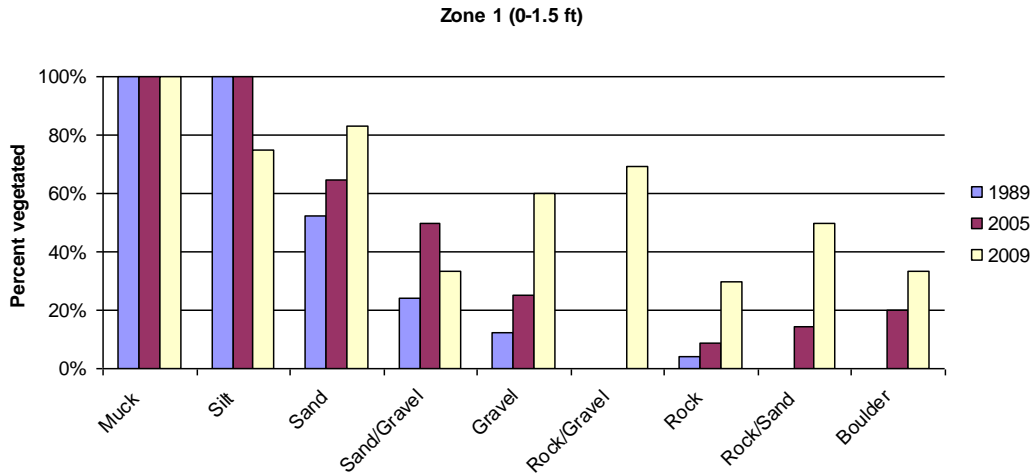


Figure 4. Percent of quadrats in each depth zone containing vegetation (see next page for remainder of Figure 4).

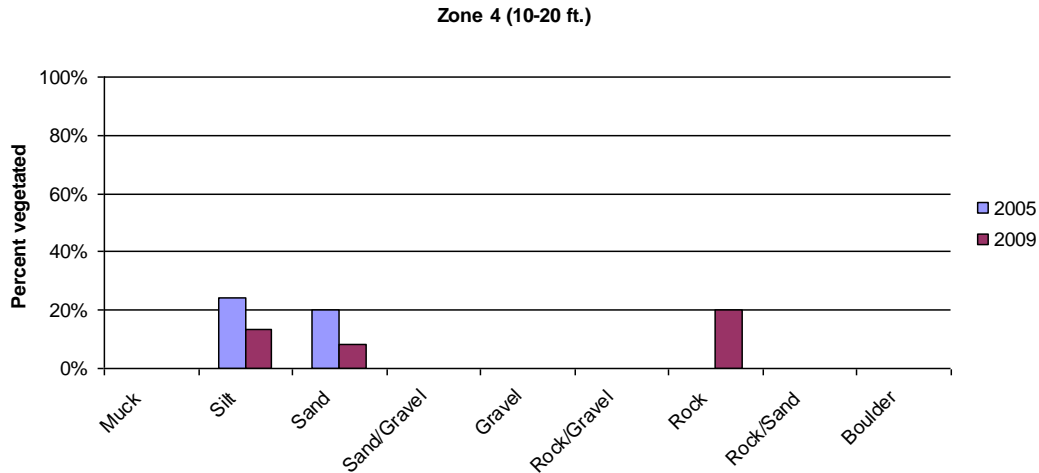


Figure 4. Percent of quadrats in each depth zone containing vegetation.