

**Baseline Data on
Macrofaunal Diversity and Abundance
in the Beach Face,
Critical Zone and Gunnison Beach,
Sandy Hook Unit, GNRA, 2008-2011**

Phase I: Prior to Operation of the Slurry Pipeline



(in fulfillment of Cooperative Agreement Number CA4520-99-007, Task No. J1775090014)

Submitted to:

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Photo Credits:

Plover feeding in the swash zone, Sandy Hook, Tony Pratt, March 30, 2008

**Characterization of the Macrofaunal Diversity and Abundance in the Beach Face,
Critical Zone and Gunnison Beach, Sandy Hook Unit, GNRA, 2008-2011
Phase I: Prior to Operation of the Slurry Pipeline**

EXECUTIVE SUMMARY

The collection of baseline measurements of the faunal assemblages in the beach faces at the Critical Zone and at Gunnison Beach establishes a characteristic abundance and distribution of amphipods (sand fleas), polychaetes (worms), and decapods (sand crabs) present during the spring and fall of 2008, 2009, 2010 and 2011. Populations increased from spring to fall surveys, with the greatest quantity found at the low tide position at both times. The vast majority of organisms found were sand crabs of less than 1cm in length. Sediments increased in grain size from the upper portions of the beach face to the lower portions of the beach face, with medium sand dominating the upper tide level locations whereas the low tide level positions had larger quantities of gravel and pebbles in addition to coarse to very coarse sand.

INTRODUCTION

Sandy Hook is a barrier spit that extends northerly for about 18 km (Fig. 1). The northernmost 10 km comprises the Sandy Hook Unit of Gateway National Recreation Area. The southern 12 km of Sandy Hook is lined with a massive seawall that eventually terminates within the Park. Because of a negative sediment budget and the impacts of the seawall, the area immediately to the north of the end of the seawall (Critical Zone) has had a history of erosion (Psuty and Pace, 2009). At times, components of the Park infrastructure (buildings, utilities, parking, the only road in this location) have been damaged as erosion has narrowed this portion of the spit and threatened to create an inlet. Approximately 5 km to the north of the Critical Zone, the orientation of the spit trends to the north-northwest and ambient wave energy decreases. The result of the change is a reduction of the transport capacity of the inshore waves and currents to produce an area of sediment accretion at Gunnison Beach (Fig. 1).

In a unique project to balance the sediment budget in the eroding Critical Zone, a pipeline has been constructed from Gunnison Beach to the Critical Zone with the intent to pump a sand slurry updrift and move sediment from the site of accumulation to the site of erosion (Fig. 1). Although it is intended to extract the sand from the recreational beach at Gunnison and place primarily in the recreational beach at the Critical Zone, there is a possibility that the sediment transfers may alter some of the feeding zones of the piping plover habitat that adjoins the recreational beaches (Goldin, 1993). The piping plover is on the New Jersey list of endangered species. It is a shorebird that nests in the habitat between the primary dunes and beach face.

In order to determine the magnitude of the possible impacts of the sediment manipulation and beach changes on plover feeding habitat, a baseline characterization of the diversity and abundance of beach macrofauna was conducted prior to any sediment movement. This report describes the data gathered over thirty eight months of monitoring prior to the beginning of the pipeline activity, currently planned for late fall 2011.

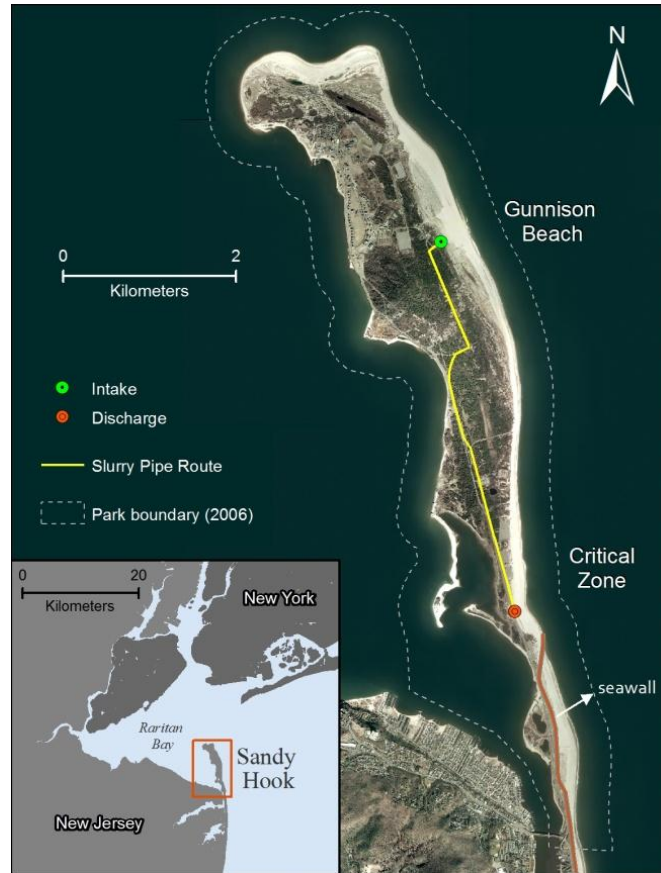


Figure 1 - Sandy Hook Unit of Gateway National Recreation Area

SAMPLING PROCEDURE

The major feeding area of the shorebird habitat is the beach face (Elias, et al., 2000) where the birds, such as the piping plover, forage for food during most of their life cycle. Their primary prey on this dynamic portion of the beach are marine macrofauna, consisting of worms, crustaceans, mollusks, insects, etc. (O'Brien, et al., 2006). Therefore, sampling of the beach face macrofauna was conducted at Gunnison and at the Critical Zone to provide a characterization of the ambient assemblages. Six sampling campaigns were accomplished over a period from July 2008 to September 2010. The field and laboratory methodology used to conduct the sampling, processing, and identification of macrofauna followed the guidelines provided on the *Protocol to Monitor the Intertidal Macrofauna: Quantifying Piping Plover Habitat Quality on Renourished Beaches at Sandy Hook Unit, GNRA* (Psuty, et al., 2009).

In addition, because testing of the slurry pipeline was scheduled to begin in November 2009, a limited sampling campaign supplemented the seasonal collection. The brief window permitted only one sampling campaign during the spring-tide, low tide position on the profile. This zone tended to have the greatest abundance of macrofauna in the past samples and was chosen in preference to other zones on the beach face. This was the only zone sampled prior to

the testing of the pipeline. Eventually, because of stormy and very cold weather, along with mechanical problems, the late fall operation of the slurry pipeline occurred during a very few days and very little impact was accomplished either at Gunnison or the Critical Zone.

BEACH TOPOGRAPHY AND SAMPLING POSITIONS

Three transect areas on the beach face were selected for monitoring in the Critical Zone as well as at Gunnison Beach. In the Critical Zone, the transects are located in the recreational beach, Transects P7 and PE2 , and in the shorebird protected area updrift (P3) of the potential sand slurry emplacement (Fig. 2). At Gunnison Beach, a transect is located at the site of sediment extraction (G3) and in the shorebird protected areas both updrift and downdrift (G1 and G5, respectively) of the pipeline intake (Fig. 3).

Specific elevations of the samplings were related to tide levels derived from the NOAA tide gauge at Sandy Hook. The beach face sampling locations are indicated by color-coded brackets corresponding to the swash zones of the tidal-position water-levels described in Figure 3. All of the beach profiles incorporate mean sea level (MSL at the Sandy Hook tidal station) as the vertical reference, relative to NAVD88. The collections of beach topographical surveys in the Critical Zone and at Gunnison beach are part of an ongoing monitoring project. The beach topographical surveys conducted nearest the date of macrofaunal sampling were used to create the profile at each transect and to plot the locations of the macrofaunal sampling (Figures 5-12).

Collecting was accomplished in late spring/early summer when the shorebirds were nesting and feeding, and in the early fall when the shorebirds were leaving the sites. The goal was to determine macrofauna diversity and abundance in the beach face at the time of the reproductive life cycle of the piping plovers and at the end of their presence at Sandy Hook. Three of the campaigns occurred near the beginning of the nesting season and three were done near the end of the plover presence on-site. An additional campaign was accomplished immediately prior to the planned testing of the pipeline toward the end of 2009:

1. July 7-23, 2008
2. October 3-29, 2008
3. May 4-27, 2009
4. September 3-29, 2009
5. December 1-3, 2009
6. April 26 – May 21, 2010
7. August 31 – September 19, 2010
8. May 6 – 31, 2011
9. September 18 – 30, 2011



Figure 2 - Location of the sampling transects and the protected nesting areas at the Critical Zone.



Figure 3 - Location of the sampling transects and the protected nesting areas at Gunnison Beach

The swash line present at four different tidal-position water-levels defined where the sampling occurred on the beach face (Fig. 4):

1. The highest of the predicted high tides - Spring Tide High Tide (STHT)
2. The lowest of the predicted high tides - Neap Tide High Tide (NTHT)
3. The highest of the predicted low tides - Neap Tide Low Tide (NTLT)
4. The lowest of the predicted low tides - Spring Tide Low Tide (STLT)

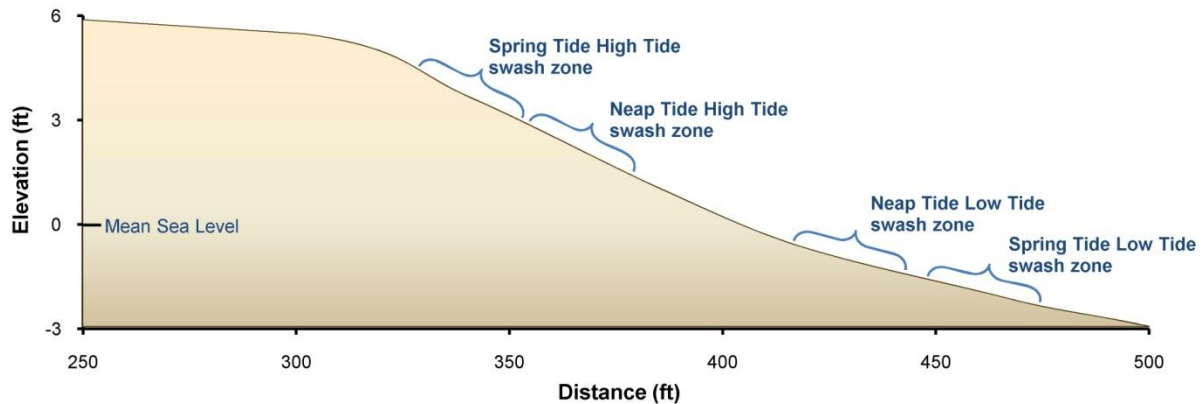


Figure 4 - Position of swash zones on the beach face during defined tidal stages.

RESULTS

The results of the several field campaigns are summarized below. The complete data set is presented in an appendix to this report, organized by site and in chronological order.

MACROFAUNA

The following profiles of the transects being characterized show the areas sampled for each of the sampling campaigns and their relationship to the beach face topography and the mean sea level. The count of organisms found are summarized in Table 1 by class and by a number of groupings: beach face location (tidal level swash zone), month and year, protection status (nesting or non-nesting area), sampling area (extraction/emplacement), and transect.

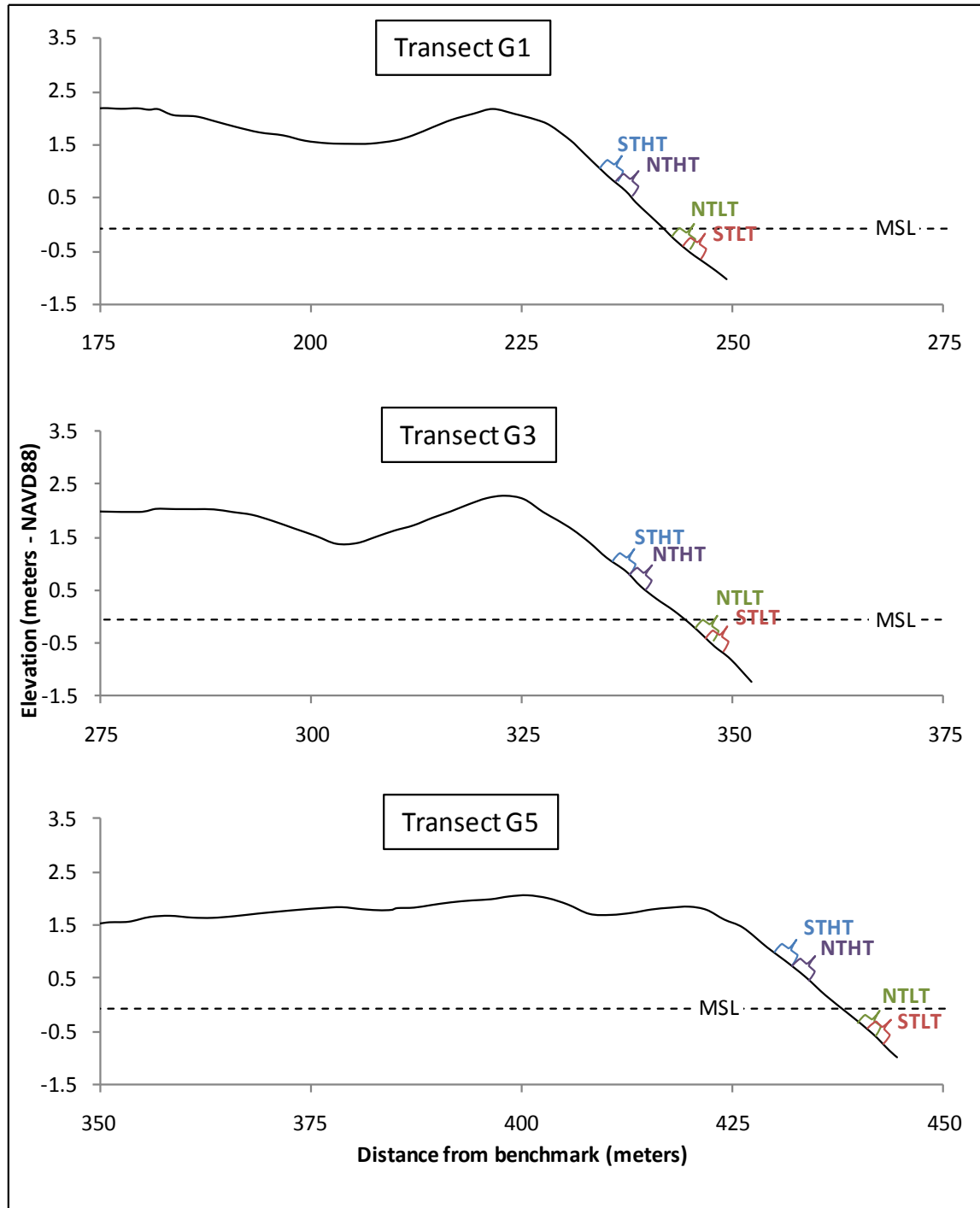


Figure 5 - Beach topography nearest the date of sampling and locations of macrofauna sampling at Gunnison Beach in July 2008. (All elevations referenced to NAVD88)

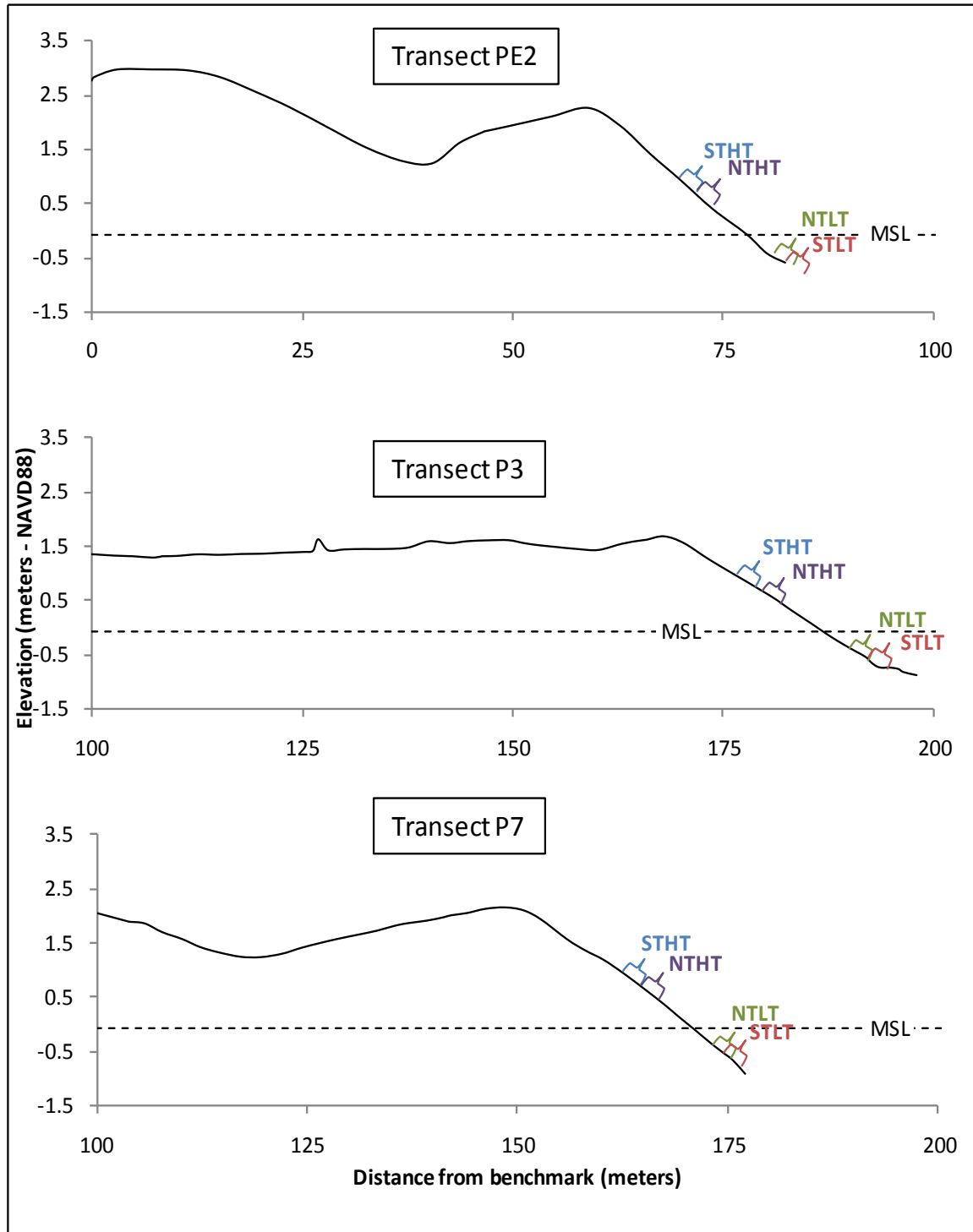


Figure 6 - Beach topography nearest the date of sampling and locations of macrofauna sampling at the Critical Zone in July 2008. (All elevations referenced to NAVD88)

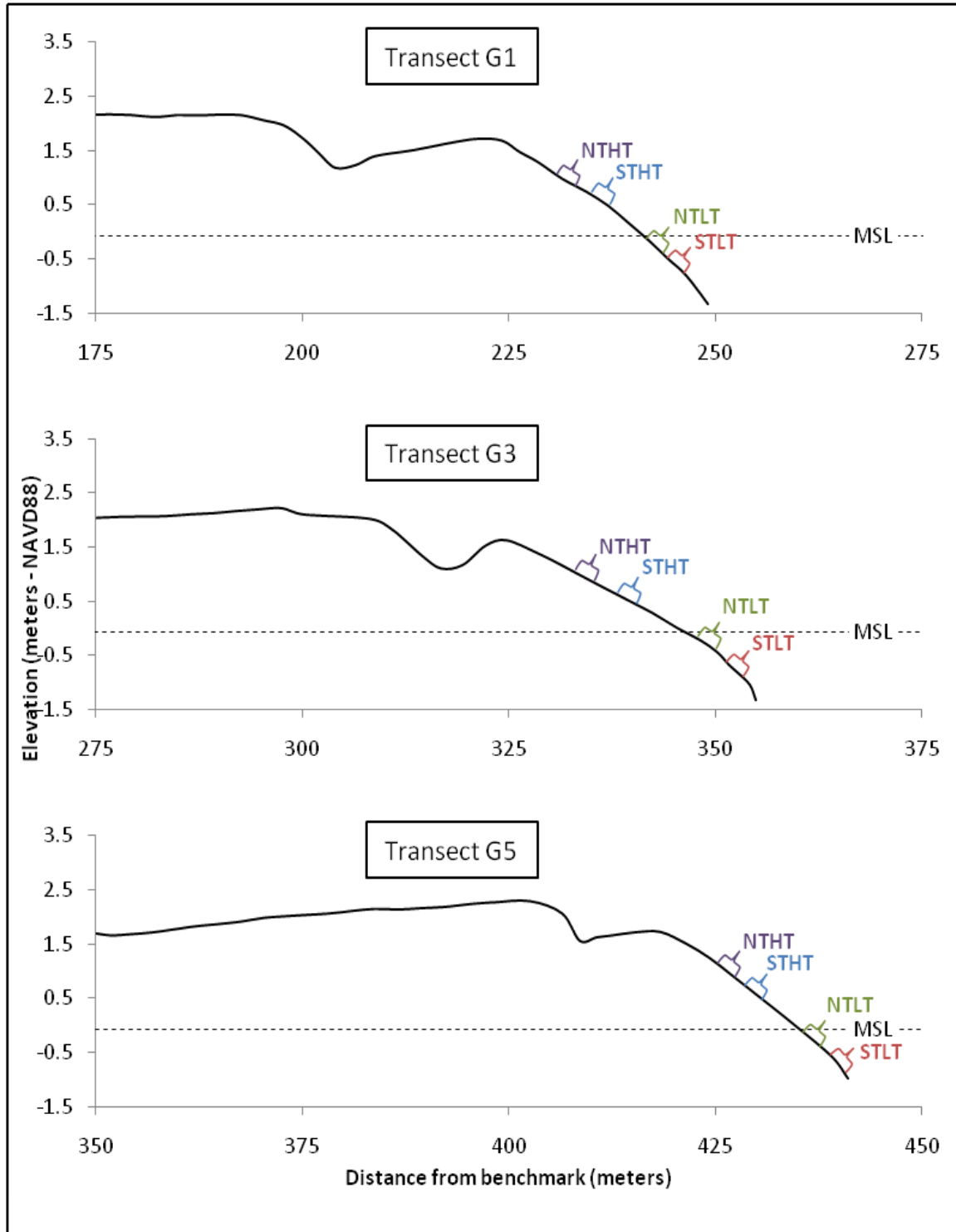


Figure 7 - Beach topography nearest the date of sampling and locations of macrofauna sampling at Gunnison Beach in October 2008. (All elevations are referenced to NAVD88)

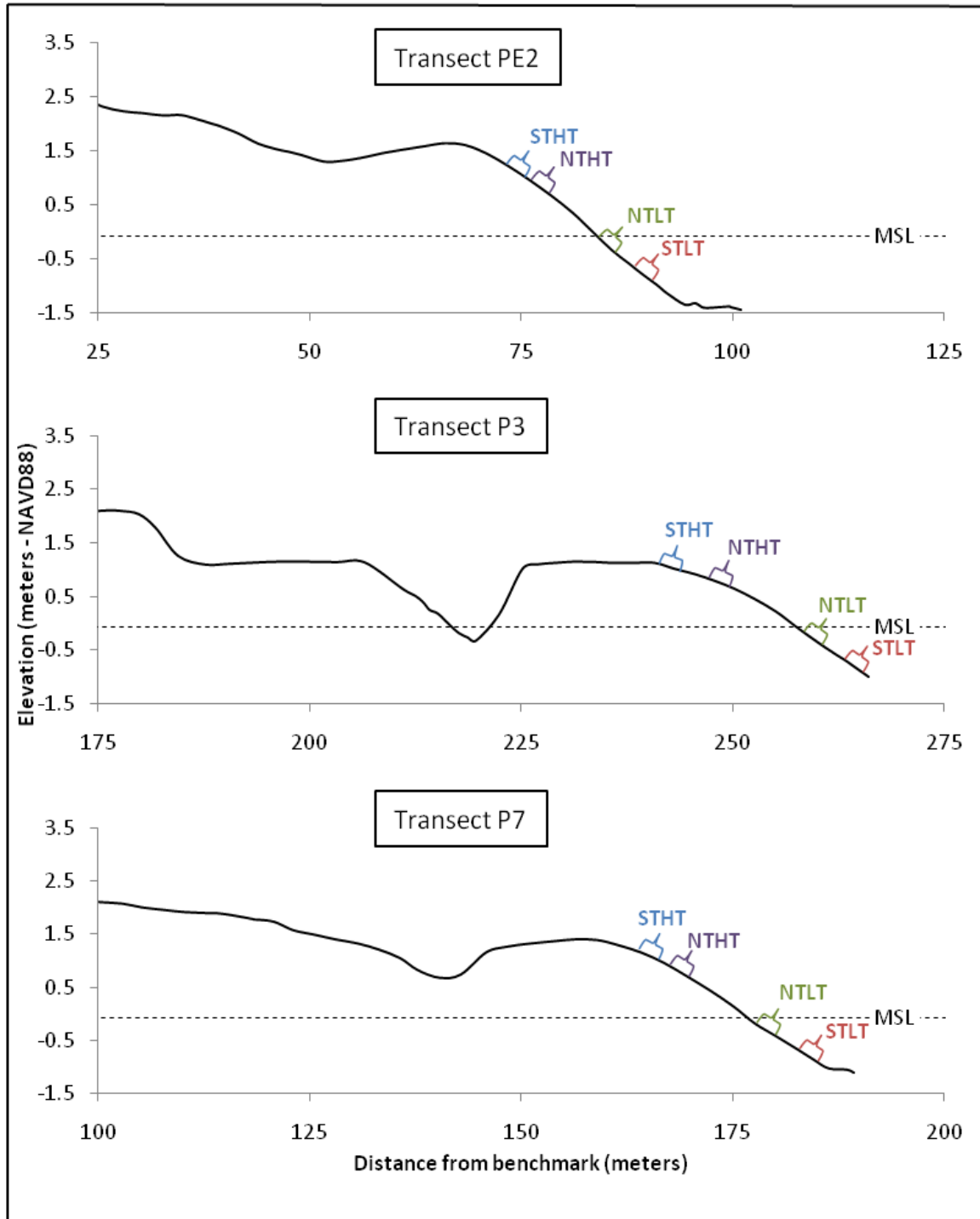


Figure 8 - Beach topography nearest the date of sampling and locations of macrofauna sampling at the Critical Zone in October 2008. (All elevations referenced to NAVD88)

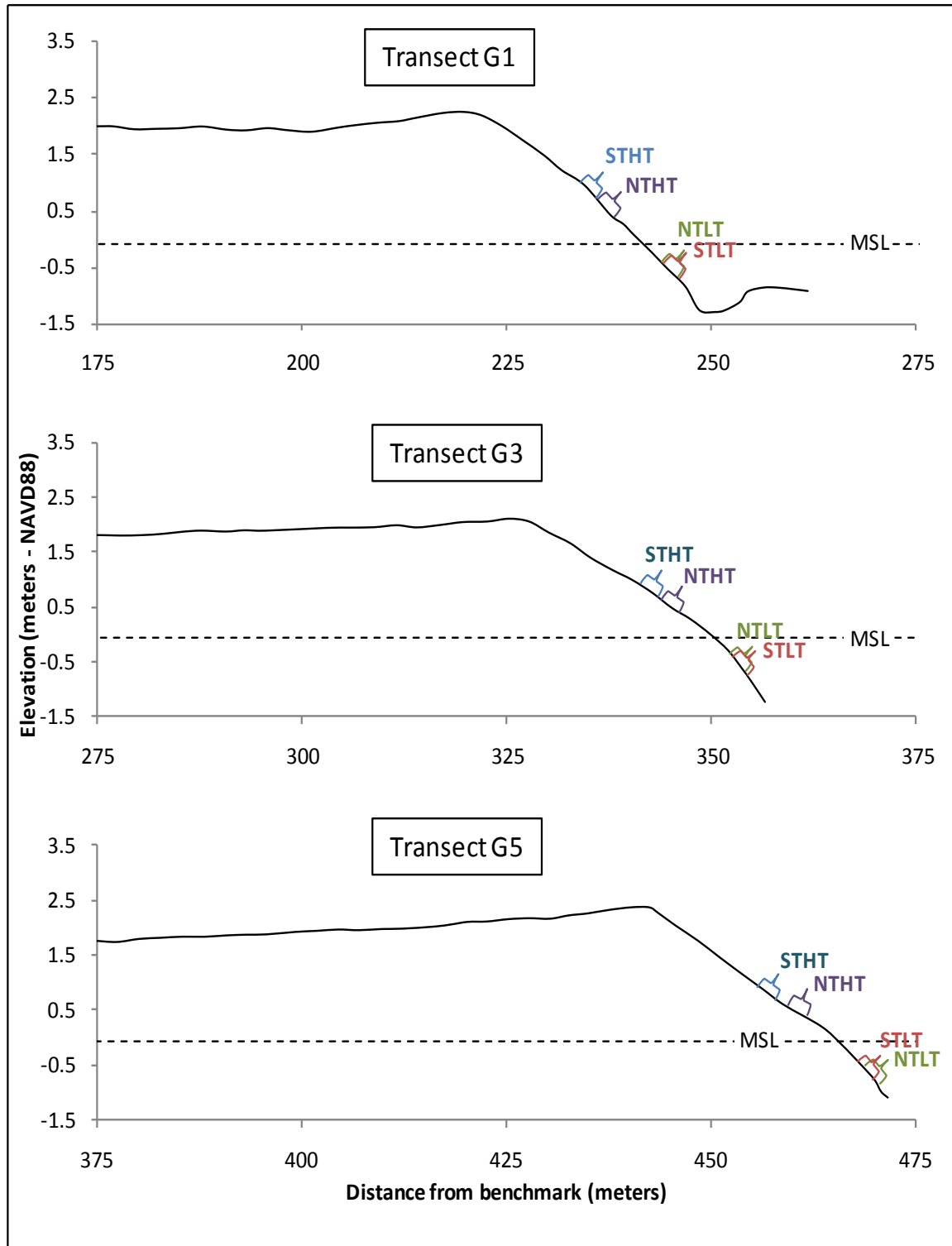


Figure 9 - Beach topography nearest the date of sampling and locations of macrofauna sampling at Gunnison Beach in May 2009. (All elevations referenced to NAVD88)

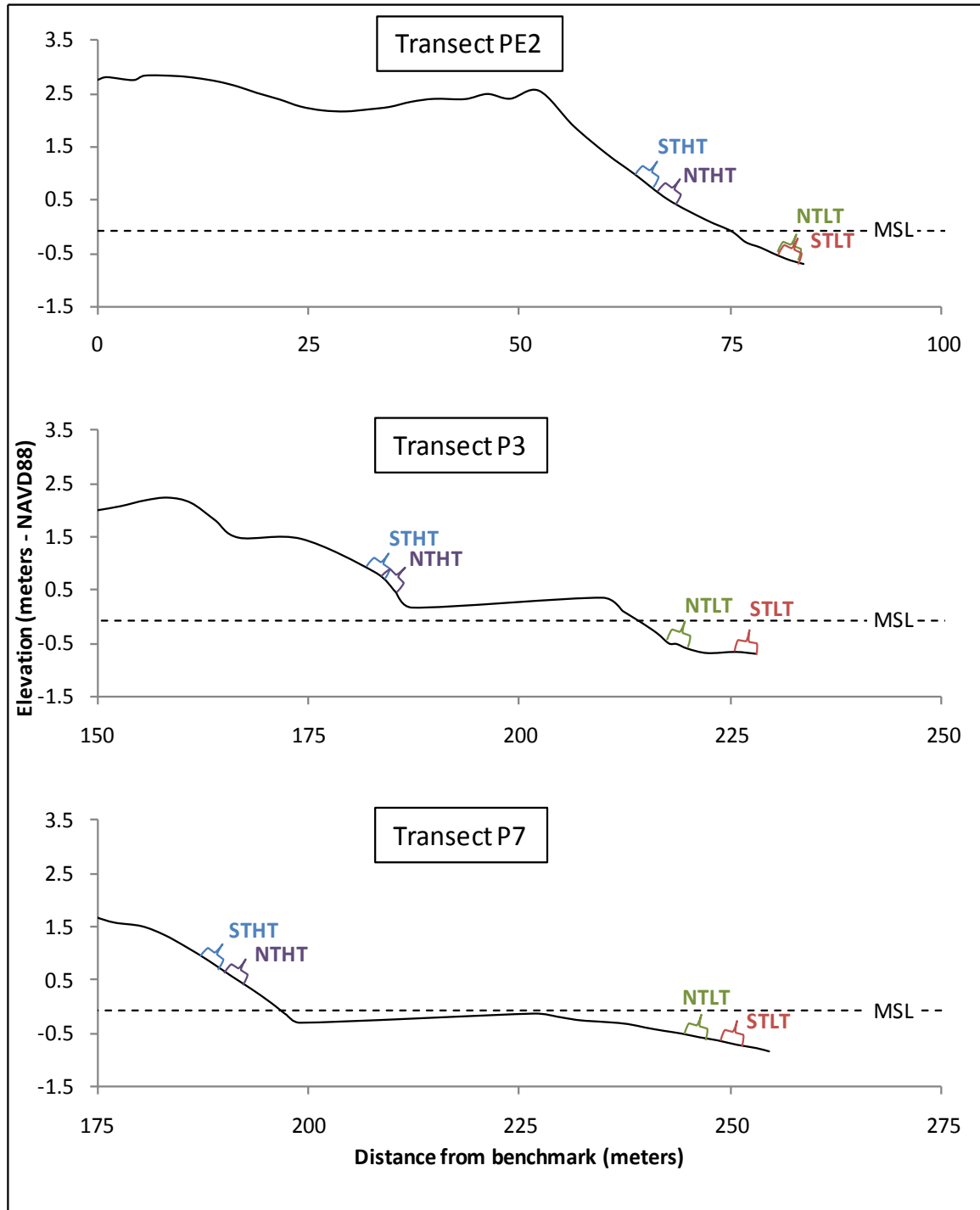


Figure 10 - Beach topography nearest the date of sampling and locations of macrofauna sampling at the Critical Zone in May 2009. (All elevations referenced to NAVD88).

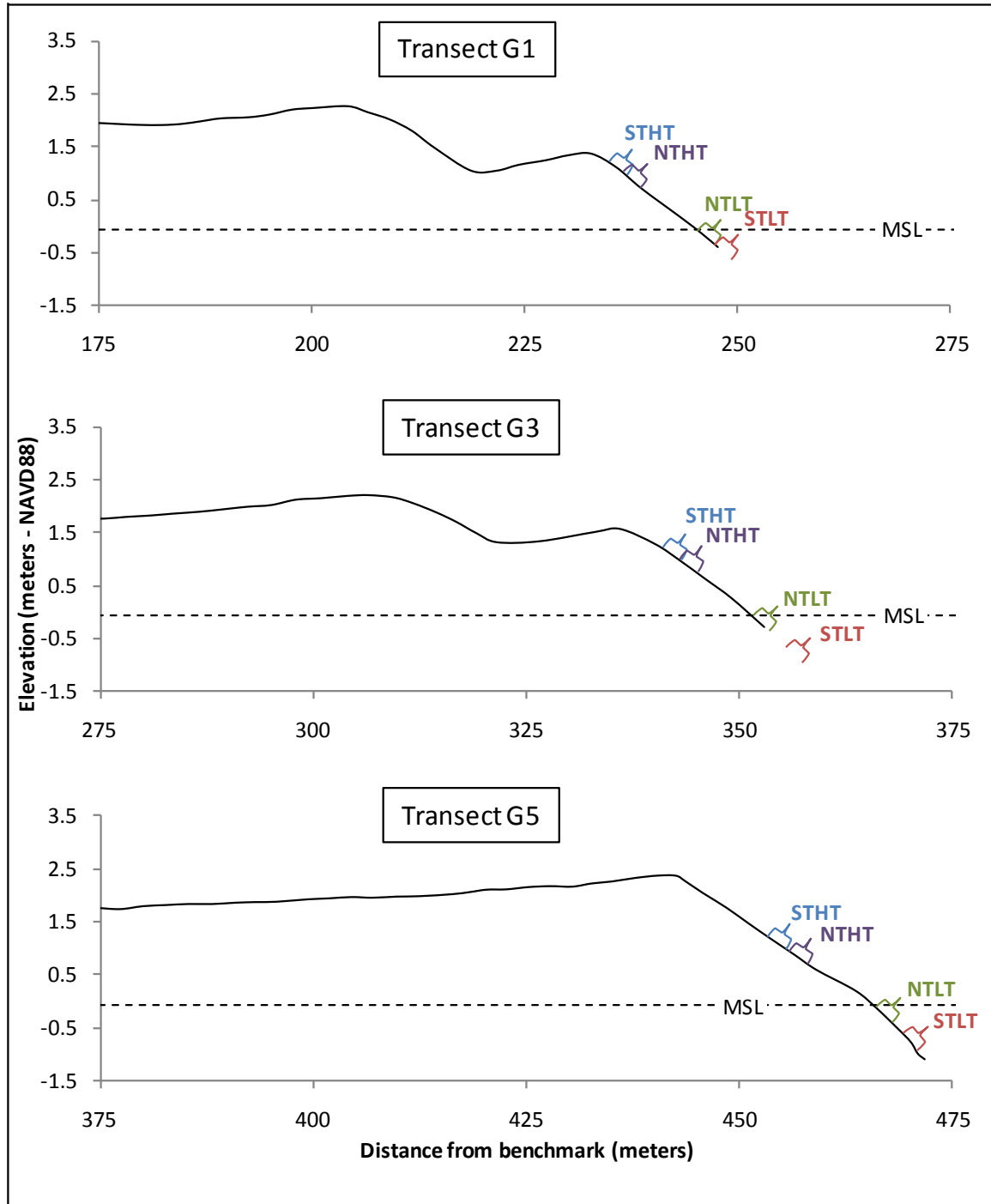


Figure 11 - Beach topography nearest the date of sampling and locations of macrofauna sampling at Gunnison Beach in September 2009. (All elevations referenced to NAVD88)

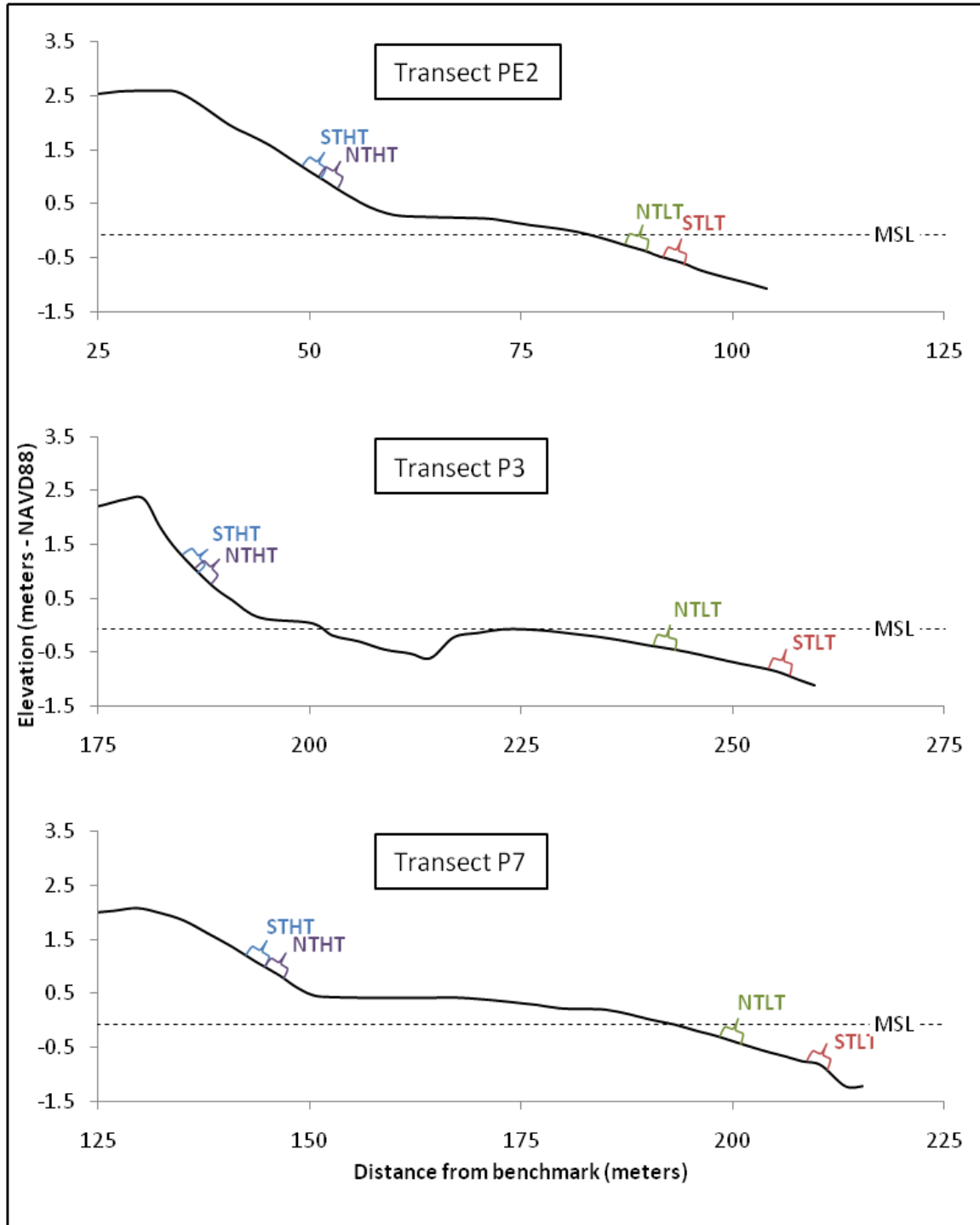


Figure 12 - Beach topography nearest the date of sampling and locations of macrofauna sampling at the Critical Zone in September 2009. (All elevations referenced to NAVD88)

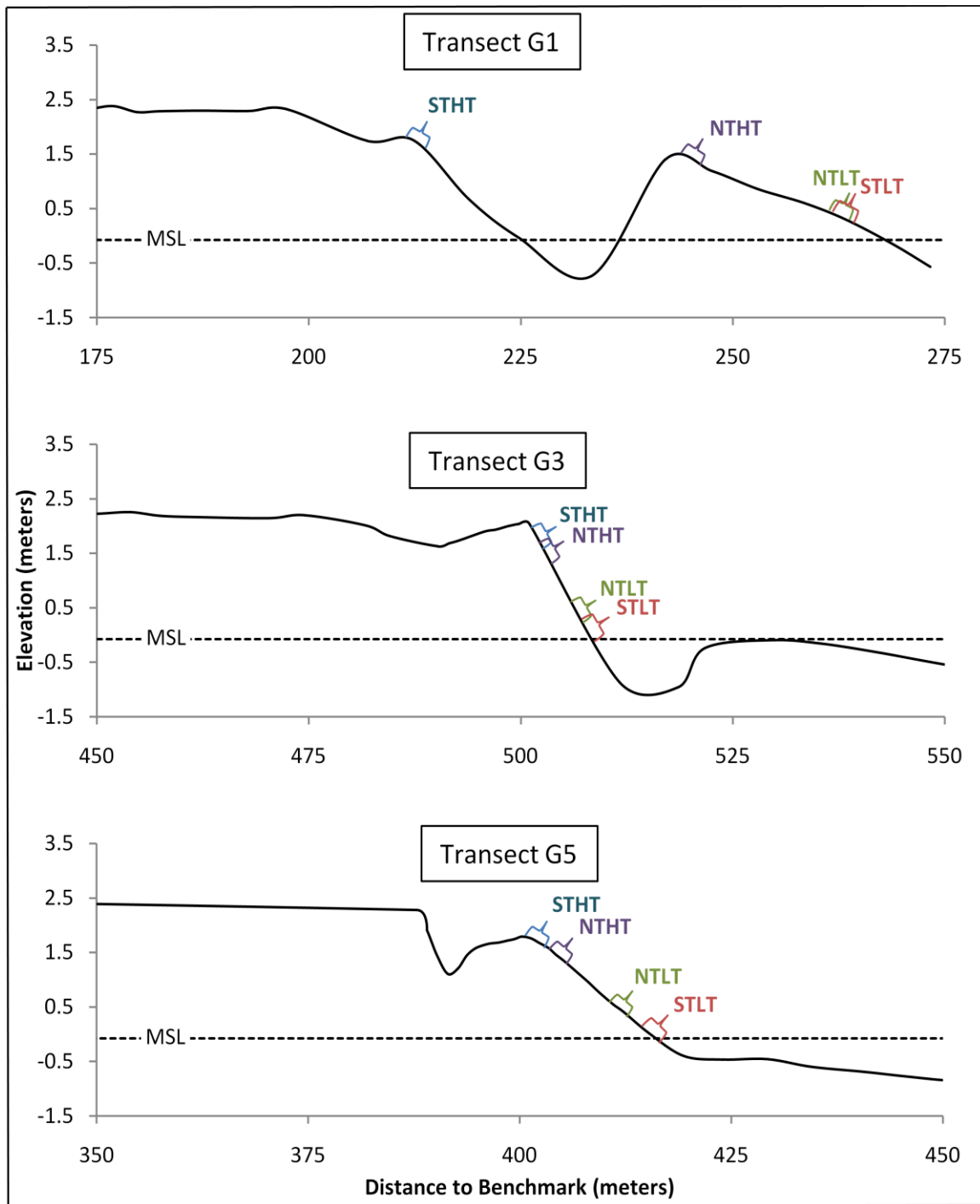


Figure 13 - Beach topography nearest the date of sampling and locations of macrofauna sampling at Gunnison Beach in May 2010. (All elevations referenced to NAVD88)

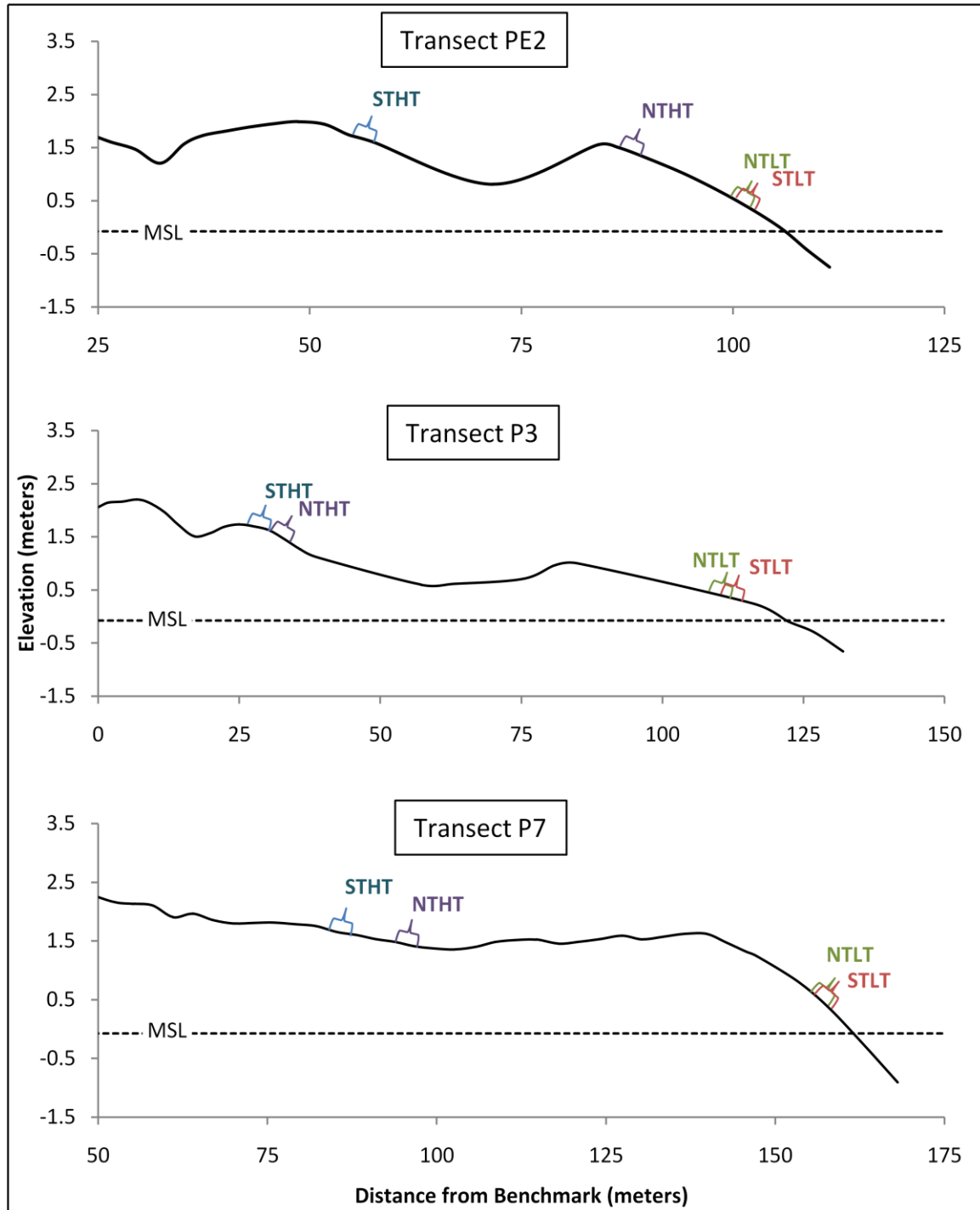


Figure 14 - Beach topography nearest the date of sampling and locations of macrofauna sampling at the Critical Zone in May 2010. (All elevations referenced to NAVD88)

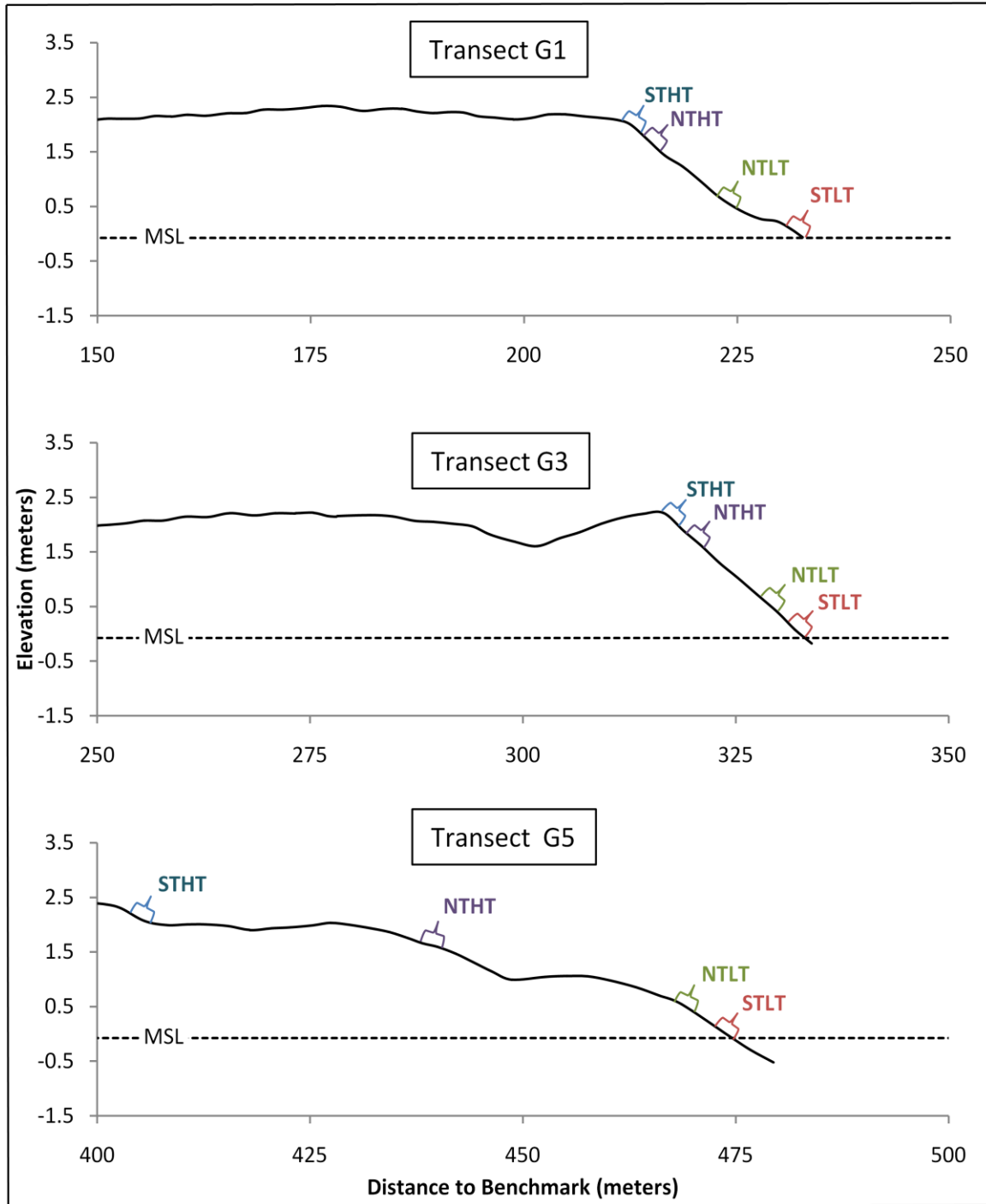


Figure 15 - Beach topography nearest the date of sampling and locations of macrofauna sampling at Gunnison Beach in September 2010. (All elevations referenced to NAVD88)

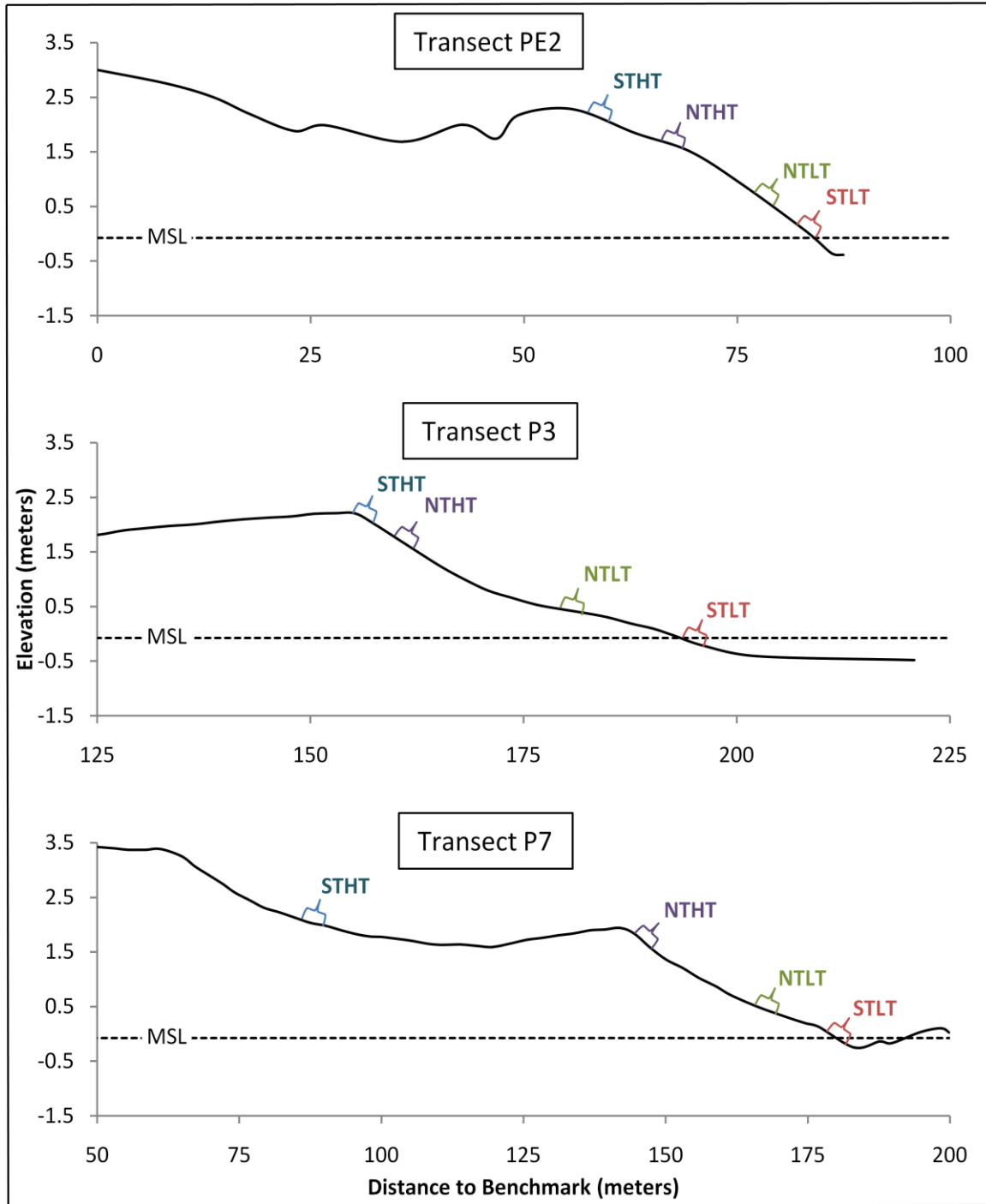


Figure 16 - Beach topography nearest the date of sampling and locations of macrofauna sampling at the Critical Zone in September 2010. (All elevations referenced to NAVD88)

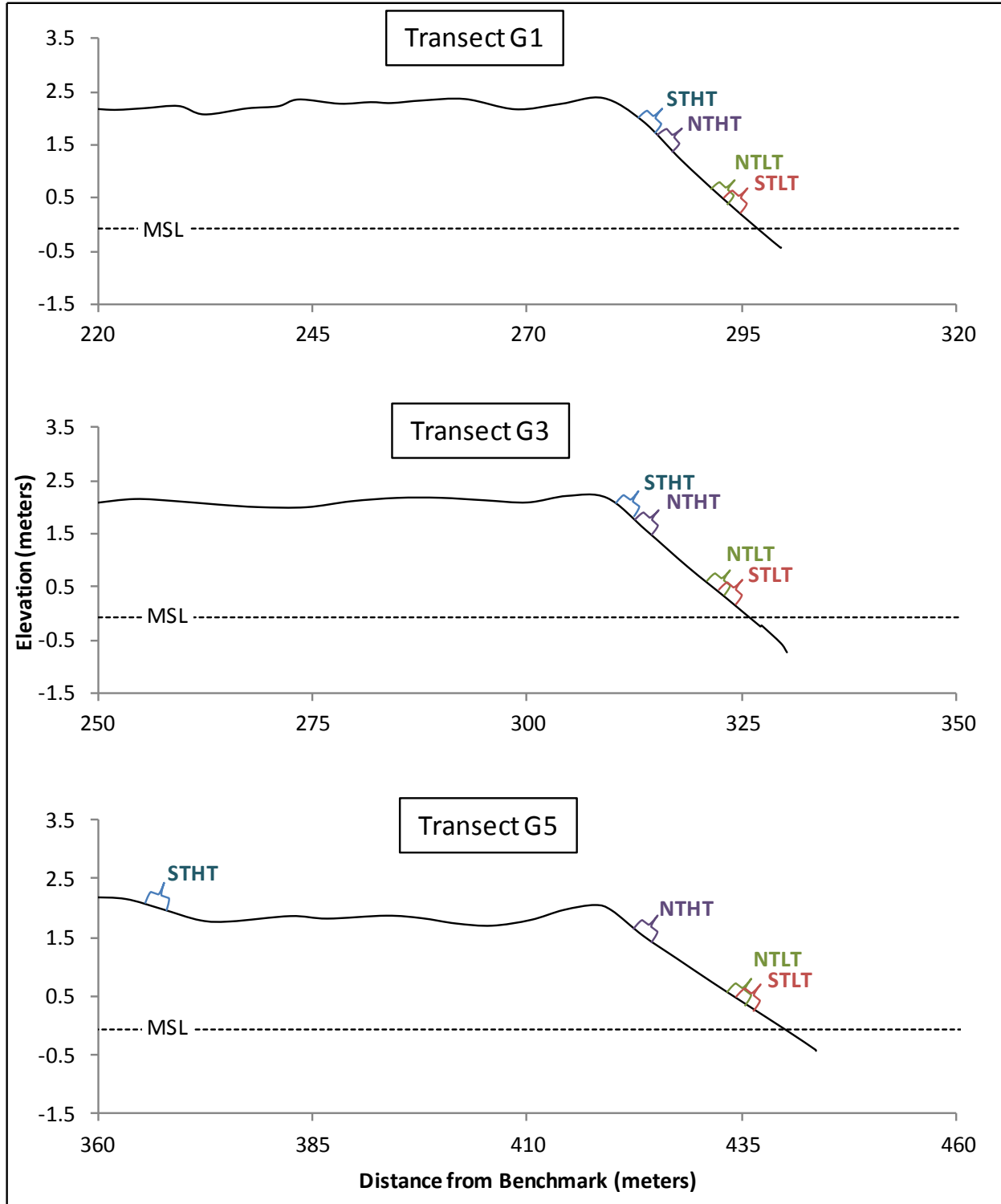


Figure 17 - Beach topography nearest the date of sampling and locations of macrofauna sampling at Gunnison Beach in May 2011. (All elevations referenced to NAVD88)

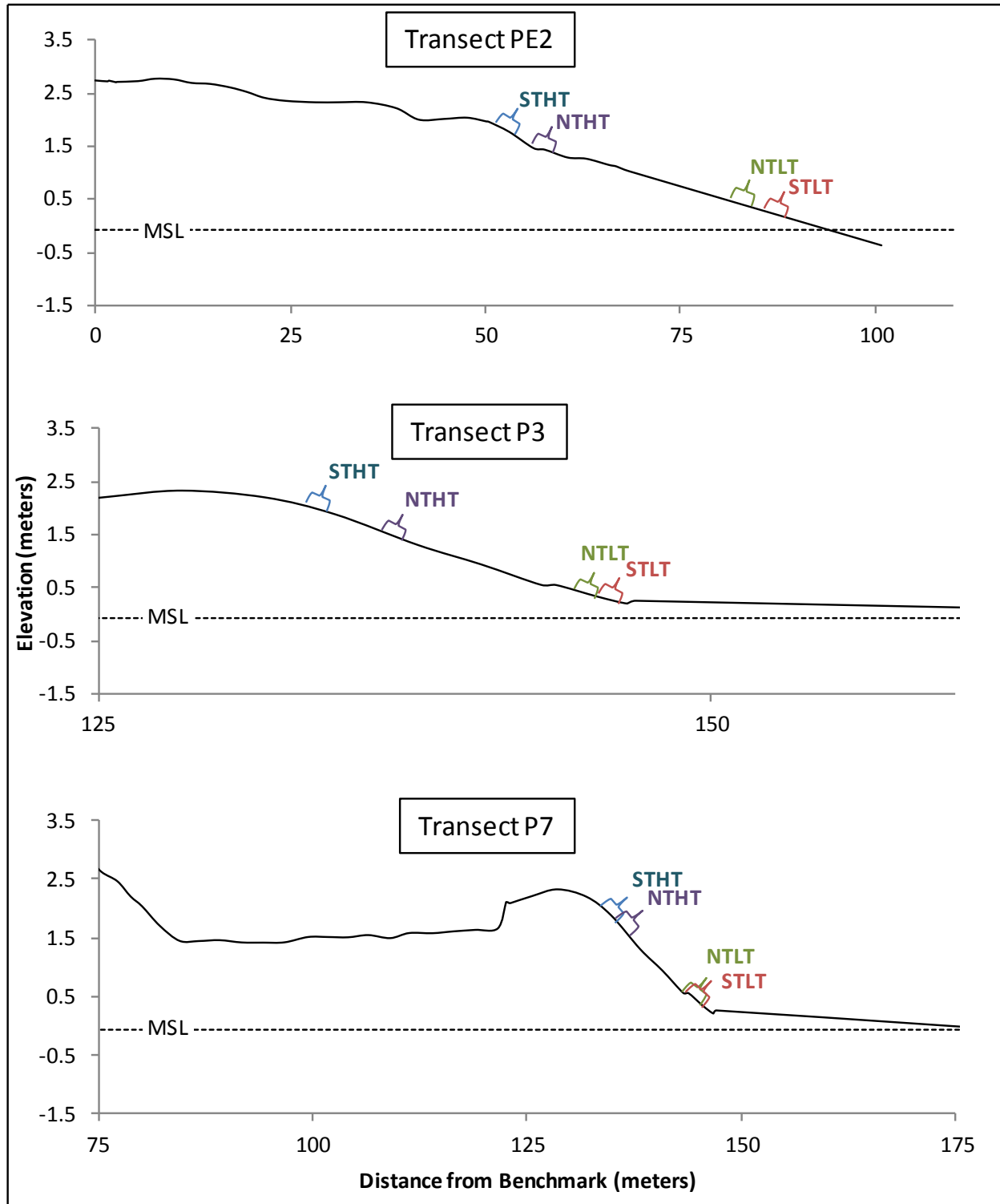


Figure 18 - Beach topography nearest the date of sampling and locations of macrofauna sampling at the Critical Zone in May 2011. (All elevations referenced to NAVD88)

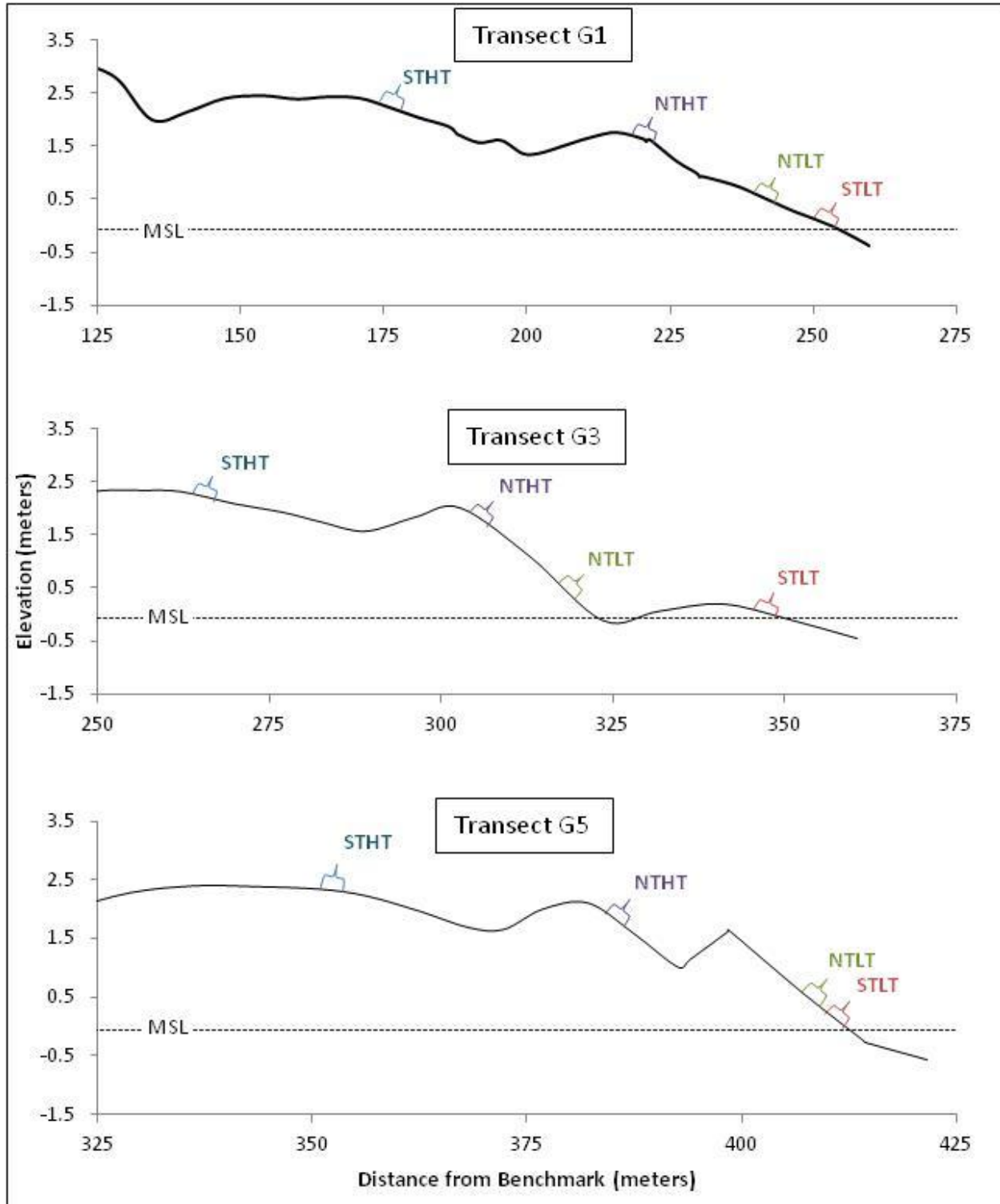


Figure 19 - Beach topography nearest the date of sampling and locations of macrofauna sampling at Gunnison Beach in September 2011. (All elevations referenced to NAVD88)

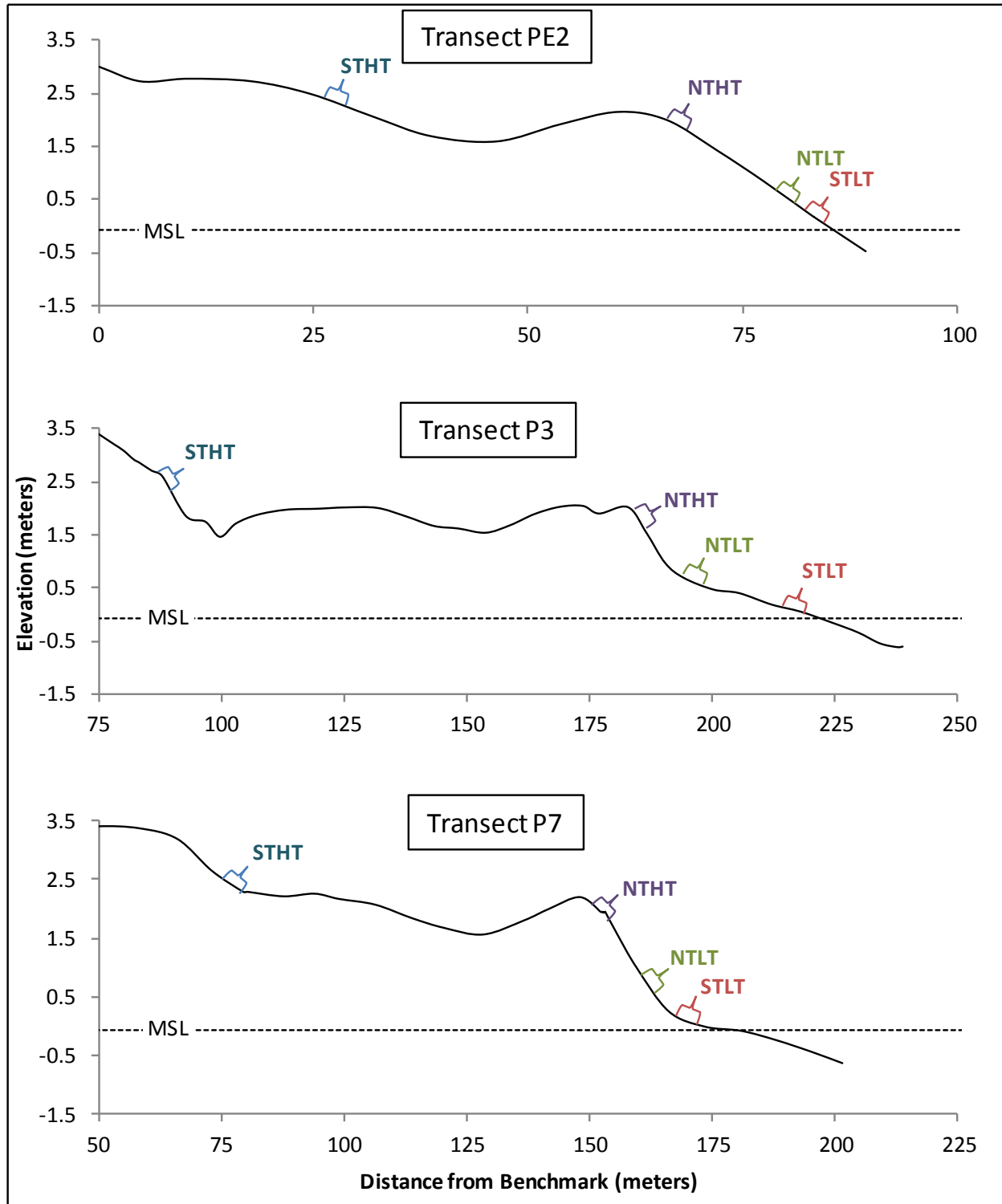


Figure 20 - Beach topography nearest the date of sampling and locations of macrofauna sampling at the Critical Zone in September 2011. (All elevations referenced to NAVD88)

Table 1 - Total organisms recovered in all sampling campaigns; subdivided by spatial and temporal variables.

	Polychaeta	Malacostraca	Bivalvia	Insecta
Grand total	529	3039	161	73
Beach face location				
STHT	3	111	5	33
NTHT	63	100	16	25
NTLT	203	1742	81	8
STLT	260	1086	59	7
Month/year				
July 2008	22	96	5	23
October 2008	34	123	4	2
May 2009	120	7	24	2
September 2009	93	1599	3	7
December 2009*	5	21	0	0
Apr/May 2010	98	139	0	17
September 2010	29	531	47	2
May 2011	2	26	68	10
September 2011	131	518	10	10
Nesting area				
Yes	218	1322	68	28
No	311	1717	93	45
Sampling Area				
Critical Zone	238	1200	47	45
Gunnison	291	1839	114	28
Transect				
G1	65	325	47	8
G3	145	720	56	12
G5	81	794	11	8
PE2	57	826	12	24
P3	72	203	10	12
P7	109	171	25	9

* Samples collected in December 2009 are from the STLT beach face location only and are not included in the above subdivisions/totals. The organisms in the class malacostraca consisted of amphipods (sand fleas) and decapods (sand crabs); the former preferring the dry upper beach face (STHT and NTHT) and the later the wet lower beach face (STLT and NTLT). Insects, mostly winged, were found on the upper beach face. September 2009's exceptionally high number of malacostraca was primarily composed of sand crabs. Sand crabs are usually found in groups and

not evenly distributed in the beach face. This appears to be an atypical amount and is not representative of the findings in September of other years.

MACROFAUNA DATA SUMMARY

The data indicate that macrofaunal assemblages are greater in number later in the year. This is due to an increase in the count of organisms belonging to the class Malacostraca (sand crabs and sand fleas). The vast majority of these being sand crabs of a length less than 1 cm. Another result of the data collected show the organisms are more concentrated at the low tide positions. Both polychaete worms and sand crabs are the primary organisms found at this section of the beach face. It is also noted that non-nesting areas had about 32% more organisms than nesting areas. Of all organisms found the vast majority (about 80%) are from the class Malacostraca (sand crabs and sand fleas).

SEDIMENTS

Each sample was processed to generate a series of descriptive statistics. The statistical values include mean grain size, standard deviation, skewness, and kurtosis. The data are reported in Phi units utilizing the Wentworth classification of sediment size classes illustrated in Table 2.

Most of the sediments on the beach face have a mean grain size in the medium sand category, 1 to 2 Phi (Table 3). However, many of the sediment samples in the lower portion of the beach face, those areas in the low tide zones, have mean grain sizes that are in the category of fine gravel, -1 to -2 Phi, or coarse to very coarse sand, 1.0 to -1.0 Phi. Standard deviation is a measure of the sorting of the sediment sample. Well-sorted sediments have a tight grouping about the mean measure, small standard deviation, whereas poorly sorted sediments have a very broad distribution of sizes, a higher standard deviation value. Well-sorted sediment samples have a standard deviation value less than 0.5, whereas moderately well-sorted and moderately sorted sediments have values range to 1.4, and poorly-sorted sediments are greater than 1.4. Sorting is poorest at the low tide levels on the profiles. Skewness is a measure of the asymmetry of the sample, with positive values indicating an abundance of coarser sediments and negative values representing a shift toward finer sediments. Most of the samples have very minor skewness values except for the samples from the low tide position. They tend to have the largest skewness of sediments on the profile for the sampling period, indicative of the largest admixture of coarse sediments in the sample.

Table 2 - Descriptive and metric grain sizes, related to

Millimeters	μm	Phi (φ)	Wentworth size class	
4096		-20		
1024		-12	Boulder (-8 to -12φ)	
256		-10		
64		-8	Pebble (-6 to -8φ)	
16		-6		
4		-4	Pebble (-2 to -6φ)	
3.36		-2		
2.83		-1.75		Gravel
2.38		-1.50	Gravel	
2.00		-1.25		
1.68		-1.00		
1.41		-0.75		
1.19		-0.50	Very coarse sand	
1.00		-0.25		
0.84		-0.00		
0.71		0.25		
0.59		0.50	Coarse sand	
1/2		0.75		
0.50	500	1.00		
0.42	420	1.25		
0.35	350	1.50	Medium sand	Sand
0.30	300	1.75		
1/4		2.00		
0.25	250	2.25		
0.210	210	2.50		
0.177	177	2.75	Fine sand	
0.149	149	3.00		
1/8		3.25		
0.125	125	3.50		
0.105	105	3.75	Very fine sand	
0.088	88	4.00		
0.074	74	4.25		
1/16		4.50		
0.0625	63	4.75		
0.0530	53	5	Coarse silt	
0.0440	44	6		
0.0370	37	7		
1/32		8		
0.0310	31	9	Medium silt	
1/64		10	Fine silt	
0.0156	15.6	11	Very fine silt	
1/128		12		
0.0078	7.8	13		
1/256		14		
0.0039	3.9			Mud
0.0020	2.0			
0.00098	0.98			
0.00049	0.49			
0.00024	0.24			
0.00012	0.12			
0.00006	0.06		Clay	

		Critical Zone											
		PE2				P3				P7			
		STLT	NLT	NTHT	STHT	STLT	NLT	NTHT	STHT	STLT	NLT	NTHT	STHT
July 2008	mean	-1.550	1.192	1.498	1.329	-1.101	1.079	1.498	1.327	-1.082	1.074	1.278	1.356
	std dev	1.271	0.761	0.400	0.558	1.111	0.896	0.399	0.595	1.284	0.892	0.581	0.508
	skew.	5.763	-0.074	0.002	-0.014	1.402	0.043	0.002	-0.048	2.177	0.048	0.000	-0.005
October 2008	mean	0.353	1.232	1.028	1.422	0.422	1.263	1.372	1.703	-0.226	0.382	1.711	1.376
	std dev	1.081	0.468	0.554	0.444	1.057	0.487	0.495	0.405	1.684	1.372	0.507	0.690
	skew.	-0.540	0.005	0.022	0.002	-0.689	0.004	0.003	0.001	4.479	-1.684	0.005	-0.130
May 2009	mean	-0.902	1.653	-0.082	1.134	0.230	0.718	0.561	1.428	-0.213	0.601	1.079	0.628
	std dev	1.493	0.580	0.955	0.519	1.000	0.939	0.730	0.601	1.226	1.442	0.647	0.630
	skew.	4.398	-0.011	-0.317	-0.006	-0.535	-0.312	0.036	-0.053	-0.275	-0.625	0.019	-0.008
Sep 2009	mean	1.438	0.361	1.419	0.366	1.380	0.160	1.693	0.406	1.539	0.938	1.051	-0.219
	std dev	0.666	1.089	0.435	1.120	0.671	1.274	0.416	1.078	0.594	1.073	1.258	1.685
	skew.	-0.048	-0.551	0.002	-0.966	-0.015	-3.263	0.000	-0.866	-0.011	-1.124	-7.276	4.327
Dec 2009	mean	0.493				-0.103				0.496			
	std dev	1.281				1.430				1.280			
	skew.	-2.866				-2.813				-2.852			
Apr/May 2010	mean	0.215	1.400	1.280	1.398	0.135	0.793	1.668	1.472	0.758	1.206	1.307	1.434
	std dev	1.282	0.384	0.391	0.510	0.915	0.730	0.387	0.342	1.407	0.510	0.494	0.594
	skew.	-0.934	0.000	0.000	-0.007	-0.353	-0.137	0.000	-0.001	-7.313	-0.003	-0.006	-0.157
Sep 2010	mean	0.249	1.076	1.349	1.527	-0.142	1.340	1.583	1.393	-0.082	1.500	1.310	1.376
	std dev	1.463	0.923	0.596	0.656	1.551	0.670	0.407	0.546	1.608	0.543	0.628	0.591
	skew.	-2.991	-0.507	-0.065	-0.070	3.700	-0.034	0.000	-0.019	-0.490	-0.013	-0.057	-0.022
May 2011	mean	0.179	1.285	1.773	1.627	-0.341	0.189	1.052	1.305	-0.783	-0.195	-0.783	0.163
	std dev	1.022	1.132	0.513	0.321	0.858	0.529	0.519	0.424	1.319	1.303	1.319	0.989
	skew.	-0.401	-3.529	-0.012	0.000	0.004	-0.006	-0.004	0.003	-0.313	-1.196	-0.313	-0.549
Sep 2011	mean	0.435	0.794	1.834	1.567	0.819	0.705	1.384	1.384	1.234	-0.314	1.605	1.262
	std dev	1.168	1.404	0.465	0.467	0.984	0.994	0.395	0.486	0.770	1.304	0.421	0.671
	skew.	-0.429	-2.234	-0.003	0.001	-0.354	-1.023	0.000	-0.014	-0.302	-0.972	0.003	-0.090

Table 3a - Grain size parameters for the Critical Zone, 2008 through 2011, sediment samples, in Phi units. (only the STLT beach face location was sampled in December 2009).

		Gunnison Beach											
		GB1				GB3				GB5			
		STLT	NLT	NTHT	STHT	STLT	NLT	NTHT	STHT	STLT	NLT	NTHT	STHT
July 2008	mean	-0.626	0.870	1.175	1.392	-0.532	0.853	1.297	1.193	-0.250	0.871	1.202	1.303
	std dev	1.053	0.834	0.651	0.547	1.226	0.865	0.600	0.516	1.181	0.826	0.592	0.562
	skew.	-0.175	-0.087	-0.019	-0.026	0.423	-0.189	-0.020	0.003	-1.702	-0.079	-0.003	-0.009
October 2008	mean	-0.277	1.526	0.592	-0.247	-1.233	1.361	0.253	1.090	-0.247	0.634	0.969	1.030
	std dev	1.387	0.423	0.995	1.364	1.264	0.402	0.744	0.481	1.241	0.714	0.401	0.441
	skew.	-0.806	0.000	-1.563	-1.640	3.015	0.000	0.016	0.002	-1.084	-0.187	0.001	0.003
May 2009	mean	-0.081	0.615	1.153	0.885	-0.854	-0.059	0.763	-0.146	-0.706	-1.050	0.769	1.303
	std dev	0.956	1.076	0.505	0.483	1.350	1.576	0.609	1.244	1.249	1.313	0.602	0.562
	skew.	-0.314	-1.472	0.011	0.007	0.633	-1.192	0.010	0.101	-0.107	3.081	0.010	-0.009
Sep 2009	mean	1.755	0.895	0.902	-0.297	1.110	0.752	1.090	1.090	1.298	0.794	1.049	-0.249
	std dev	0.654	0.880	0.639	1.384	0.836	0.783	0.482	0.482	0.616	0.597	0.451	1.247
	skew.	-0.020	-0.393	-0.070	-0.621	-0.158	-0.351	0.003	0.003	-0.009	-0.041	0.005	-1.099
Dec 2009	mean	0.189				0.663				0.401			
	std dev	1.050				0.693				1.071			
	skew.	-0.929				-0.106				-2.242			
Apr/May 2010	mean	0.678	1.121	0.434	1.136	0.558	0.429	0.483	0.306	1.115	0.595	0.841	1.036
	std dev	0.833	0.509	0.834	0.407	0.820	1.021	0.696	0.652	0.641	1.071	0.537	0.446
	skew.	-0.295	0.001	-0.247	-0.002	-0.281	-0.574	-0.056	-0.017	-0.082	-1.645	-0.007	0.001
Sep 2010	mean	0.856	1.398	1.155	1.402	-0.192	0.213	0.721	1.090	0.113	1.240	1.173	0.988
	std dev	0.996	0.515	0.618	0.487	1.501	1.206	1.141	0.676	1.423	0.850	0.489	0.720
	skew.	-0.957	-0.004	-0.077	-0.011	-1.626	0.653	-3.326	-0.106	2.834	-0.219	-0.016	-0.177
May 2011	mean	0.755	-0.012	1.028	1.097	0.370	-0.098	1.358	1.188	-0.167	0.133	1.239	1.289
	std dev	0.982	1.182	0.435	0.458	0.893	1.153	0.430	0.384	1.002	0.806	0.481	0.504
	skew.	-0.516	-2.195	-0.005	-0.001	-0.447	-0.704	0.001	0.001	-0.467	-0.168	-0.001	-0.014
Sep 2011	mean	0.122	0.450	1.686	1.599	0.999	0.155	1.137	1.390	1.280	0.158	1.358	1.223
	std dev	1.333	0.742	0.321	0.411	1.036	0.710	0.706	0.467	0.843	0.549	0.432	0.432
	skew.	-1.168	-0.017	0.001	0.001	-1.488	-0.121	-0.055	-0.003	-0.639	-0.029	0.000	0.002

Table 3b - Grain size parameters for Gunnison Beach, 2008 through 2011, sediment samples, in Phi units. (only the STLT beach face location was sampled in December 2009).

ACKNOWLEDGEMENTS

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Appendix A: Number of Organisms on Beach Face, Organized by Locational and Seasonal Variables.



Figure A1- Sites of sampling for macrofauna and sediments on the beach face along profiles in the Critical Zone and in Gunnison Beach.

Table A1- Distribution and abundance of macrofauna on the beach face during the various tidal phases at Gunnison Beach and as the Critical Zone during the sampling period.

Key to column headings:

Index – unique number assigned to each row for sorting purposes

Date – date sample was taken

Season – season sample was taken (used for grouping of data)

Area – CZ for Critical Zone and GB for Gunnison Beach

Trans – identification of transect sampled

Nesting – Y for yes, N for No if transect was in a nesting area (used for grouping of data)

Zone – beach face zone sampled (STLT – spring tide low tide, NTLT – neap tide low tide,
STHT – spring tide high tide, NTHT – neap tide high tide)

Polychaeta – class of marine worms

Malacostraca – class of crabs and amphipods

Bivalvia – class of bi-valves (clams/mussels)

Insecta – class of insects

Total – total of organisms for that sample

INDEX	DATE	SEASON	AREA	TRANS	NESTING	LOC	Polychaeta	Malacostraca	Bivalvia	Insecta	Total
1	7/7/2008	SPR/SUM	CZ	PE2	N	STLT		0			0
2	7/7/2008	SPR/SUM	CZ	PE2	N	STLT		1			1
3	7/7/2008	SPR/SUM	CZ	PE2	N	STLT		0	2		2
4	7/7/2008	SPR/SUM	CZ	P7	N	STLT		0			0
5	7/7/2008	SPR/SUM	CZ	P7	N	STLT	1	0	1		2
6	7/7/2008	SPR/SUM	CZ	P7	N	STLT		0			0
7	7/8/2008	SPR/SUM	CZ	P3	Y	STLT		0			0
8	7/8/2008	SPR/SUM	CZ	P3	Y	STLT		2			2
9	7/8/2008	SPR/SUM	CZ	P3	Y	STLT		0			0
10	7/8/2008	SPR/SUM	GB	G5	Y	STLT		0			0
11	7/8/2008	SPR/SUM	GB	G5	Y	STLT		1			1
12	7/8/2008	SPR/SUM	GB	G5	Y	STLT		1			1
13	7/9/2008	SPR/SUM	GB	G1	Y	STLT	14	0			14
14	7/9/2008	SPR/SUM	GB	G1	Y	STLT	2	0			2
15	7/9/2008	SPR/SUM	GB	G1	Y	STLT		0			0
16	7/9/2008	SPR/SUM	GB	G3	N	STLT	2	1	1		4
17	7/9/2008	SPR/SUM	GB	G3	N	STLT		0			0
18	7/9/2008	SPR/SUM	GB	G3	N	STLT	2	0			2
19	7/10/2008	SPR/SUM	CZ	PE2	N	NTLT		0			0
20	7/10/2008	SPR/SUM	CZ	PE2	N	NTLT		0			0
21	7/10/2008	SPR/SUM	CZ	PE2	N	NTLT		0			0
22	7/10/2008	SPR/SUM	CZ	P7	N	NTLT		0			0
23	7/10/2008	SPR/SUM	CZ	P7	N	NTLT	1	0			1
24	7/10/2008	SPR/SUM	CZ	P7	N	NTLT		0			0
25	7/11/2008	SPR/SUM	CZ	P3	Y	NTLT		1			1
26	7/11/2008	SPR/SUM	CZ	P3	Y	NTLT		0		1	1
27	7/11/2008	SPR/SUM	CZ	P3	Y	NTLT		1			1
28	7/11/2008	SPR/SUM	GB	G5	Y	NTLT		0		1	1
29	7/11/2008	SPR/SUM	GB	G5	Y	NTLT		0			0
30	7/11/2008	SPR/SUM	GB	G5	Y	NTLT		1			1
31	7/14/2008	SPR/SUM	GB	G1	Y	NTLT		0			0
32	7/14/2008	SPR/SUM	GB	G1	Y	NTLT		0			0
33	7/14/2008	SPR/SUM	GB	G1	Y	NTLT		0			0
34	7/14/2008	SPR/SUM	GB	G3	N	NTLT		0			0
35	7/14/2008	SPR/SUM	GB	G3	N	NTLT		1			1
36	7/14/2008	SPR/SUM	GB	G3	N	NTLT		0			0
37	7/16/2008	SPR/SUM	CZ	PE2	N	NTHT		0			0
38	7/16/2008	SPR/SUM	CZ	PE2	N	NTHT		0			0
39	7/16/2008	SPR/SUM	CZ	PE2	N	NTHT		0			0
40	7/16/2008	SPR/SUM	CZ	P7	N	NTHT		0			0
41	7/16/2008	SPR/SUM	CZ	P7	N	NTHT		0		1	1
42	7/16/2008	SPR/SUM	CZ	P7	N	NTHT		0			0
43	7/17/2008	SPR/SUM	CZ	P3	Y	NTHT		5		1	6
44	7/17/2008	SPR/SUM	CZ	P3	Y	NTHT		6			6
45	7/17/2008	SPR/SUM	CZ	P3	Y	NTHT		7			7

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46	7/17/2008	SPR/SUM	GB	G5	Y	NTHT	13		13
47	7/17/2008	SPR/SUM	GB	G5	Y	NTHT	2		2
48	7/17/2008	SPR/SUM	GB	G5	Y	NTHT	5	1	6
49	7/18/2008	SPR/SUM	GB	G1	Y	NTHT	4		4
50	7/18/2008	SPR/SUM	GB	G1	Y	NTHT	6		6
51	7/18/2008	SPR/SUM	GB	G1	Y	NTHT	6		6
52	7/18/2008	SPR/SUM	GB	G3	N	NTHT	1		1
53	7/18/2008	SPR/SUM	GB	G3	N	NTHT	1	1	2
54	7/18/2008	SPR/SUM	GB	G3	N	NTHT	0	1	1
55	7/21/2008	SPR/SUM	CZ	PE2	N	STHT	0	1	1
56	7/21/2008	SPR/SUM	CZ	PE2	N	STHT	1	2	3
57	7/21/2008	SPR/SUM	CZ	PE2	N	STHT	0	2	2
58	7/21/2008	SPR/SUM	CZ	P7	N	STHT	0		0
59	7/21/2008	SPR/SUM	CZ	P7	N	STHT	0		0
60	7/21/2008	SPR/SUM	CZ	P7	N	STHT	0		0
61	7/22/2008	SPR/SUM	CZ	P3	Y	STHT	4		4
62	7/22/2008	SPR/SUM	CZ	P3	Y	STHT	4		4
63	7/22/2008	SPR/SUM	CZ	P3	Y	STHT	3	2	5
64	7/22/2008	SPR/SUM	GB	G5	Y	STHT	2		2
65	7/22/2008	SPR/SUM	GB	G5	Y	STHT	1		1
66	7/22/2008	SPR/SUM	GB	G5	Y	STHT	1	1	2
67	7/23/2008	SPR/SUM	GB	G1	Y	STHT	5	1	6
68	7/23/2008	SPR/SUM	GB	G1	Y	STHT	4	1	5
69	7/23/2008	SPR/SUM	GB	G1	Y	STHT	5	3	8
70	7/23/2008	SPR/SUM	GB	G3	N	STHT	0	3	3
71	7/23/2008	SPR/SUM	GB	G3	N	STHT	0	1	1
72	7/23/2008	SPR/SUM	GB	G3	N	STHT	0		0
73	10/3/2008	SUM/FAL	CZ	PE2	N	NTHT	0		0
74	10/3/2008	SUM/FAL	CZ	PE2	N	NTHT	0	1	1
75	10/3/2008	SUM/FAL	CZ	PE2	N	NTHT	0		0
76	10/3/2008	SUM/FAL	CZ	P7	N	NTHT	0		0
77	10/3/2008	SUM/FAL	CZ	P7	N	NTHT	0		0
78	10/3/2008	SUM/FAL	CZ	P7	N	NTHT	0		0
79	10/3/2008	SUM/FAL	CZ	P3	Y	NTHT	0	1	1
80	10/3/2008	SUM/FAL	CZ	P3	Y	NTHT	3		3
81	10/3/2008	SUM/FAL	CZ	P3	Y	NTHT	2		2
82	10/2/2008	SUM/FAL	GB	G5	Y	NTHT	0		0
83	10/2/2008	SUM/FAL	GB	G5	Y	NTHT	0		0
84	10/2/2008	SUM/FAL	GB	G5	Y	NTHT	0		0
85	10/2/2008	SUM/FAL	GB	G3	N	NTHT	0		0
86	10/2/2008	SUM/FAL	GB	G3	N	NTHT	0		0
87	10/2/2008	SUM/FAL	GB	G3	N	NTHT	0		0
88	10/2/2008	SUM/FAL	GB	G1	Y	NTHT	0		0
89	10/2/2008	SUM/FAL	GB	G1	Y	NTHT	0		0
90	10/2/2008	SUM/FAL	GB	G1	Y	NTHT	0	1	1
91	10/6/2008	SUM/FAL	CZ	PE2	N	NTLT	0		0
92	10/6/2008	SUM/FAL	CZ	PE2	N	NTLT	2		2
93	10/6/2008	SUM/FAL	CZ	PE2	N	NTLT	2		2
94	10/6/2008	SUM/FAL	CZ	P7	N	NTLT	0		0
95	10/6/2008	SUM/FAL	CZ	P7	N	NTLT	0		0

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96	10/6/2008	SUM/FAL	CZ	P7	N	NTLT	0	0
97	10/7/2008	SUM/FAL	CZ	P3	Y	NTLT	0	0
98	10/7/2008	SUM/FAL	CZ	P3	Y	NTLT	2	2
99	10/7/2008	SUM/FAL	CZ	P3	Y	NTLT	1	1
100	10/8/2008	SUM/FAL	GB	G5	Y	NTLT	1 1	2
101	10/8/2008	SUM/FAL	GB	G5	Y	NTLT	3	3
102	10/8/2008	SUM/FAL	GB	G5	Y	NTLT	0	0
103	10/8/2008	SUM/FAL	GB	G3	N	NTLT	17	17
104	10/8/2008	SUM/FAL	GB	G3	N	NTLT	4	4
105	10/8/2008	SUM/FAL	GB	G3	N	NTLT	11	11
106	10/7/2008	SUM/FAL	GB	G1	Y	NTLT	0	0
107	10/7/2008	SUM/FAL	GB	G1	Y	NTLT	0	0
108	10/7/2008	SUM/FAL	GB	G1	Y	NTLT	1	1
109	10/13/2008	SUM/FAL	CZ	PE2	N	STLT	1	1
110	10/13/2008	SUM/FAL	CZ	PE2	N	STLT	0	0
111	10/13/2008	SUM/FAL	CZ	PE2	N	STLT	0	0
112	10/13/2008	SUM/FAL	CZ	P7	N	STLT	2 4	6
113	10/13/2008	SUM/FAL	CZ	P7	N	STLT	3 2	5
114	10/13/2008	SUM/FAL	CZ	P7	N	STLT	0	0
115	10/14/2008	SUM/FAL	CZ	P3	Y	STLT	0	0
116	10/14/2008	SUM/FAL	CZ	P3	Y	STLT	1	1
117	10/14/2008	SUM/FAL	CZ	P3	Y	STLT	5 0	5
118	10/15/2008	SUM/FAL	GB	G5	Y	STLT	6	6
119	10/15/2008	SUM/FAL	GB	G5	Y	STLT	15 1	16
120	10/15/2008	SUM/FAL	GB	G5	Y	STLT	4 2	6
121	10/15/2008	SUM/FAL	GB	G3	N	STLT	1 2	3
122	10/15/2008	SUM/FAL	GB	G3	N	STLT	2	2
123	10/15/2008	SUM/FAL	GB	G3	N	STLT	2 0	2
124	10/14/2008	SUM/FAL	GB	G1	Y	STLT	1 1	2
125	10/14/2008	SUM/FAL	GB	G1	Y	STLT	1 35	36
126	10/14/2008	SUM/FAL	GB	G1	Y	STLT	2 11	13
127	10/27/2008	SUM/FAL	CZ	PE2	N	STHT	1	1
128	10/27/2008	SUM/FAL	CZ	PE2	N	STHT	0	0
129	10/27/2008	SUM/FAL	CZ	PE2	N	STHT	0	0
130	10/27/2008	SUM/FAL	CZ	P7	N	STHT	0	0
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132	10/27/2008	SUM/FAL	CZ	P7	N	STHT	0	0
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134	10/27/2008	SUM/FAL	CZ	P3	Y	STHT	1	1
135	10/27/2008	SUM/FAL	CZ	P3	Y	STHT	0	0
136	10/29/2008	SUM/FAL	GB	G5	Y	STHT	0	0
137	10/29/2008	SUM/FAL	GB	G5	Y	STHT	0	0
138	10/29/2008	SUM/FAL	GB	G5	Y	STHT	0	0
139	10/29/2008	SUM/FAL	GB	G3	N	STHT	2	2
140	10/29/2008	SUM/FAL	GB	G3	N	STHT	0	0
141	10/29/2008	SUM/FAL	GB	G3	N	STHT	1	1
142	10/29/2008	SUM/FAL	GB	G1	Y	STHT	0	0
143	10/29/2008	SUM/FAL	GB	G1	Y	STHT	0	0
144	10/29/2008	SUM/FAL	GB	G1	Y	STHT	0	0
145	5/4/2009	SPR/SUM	CZ	PE2	N	STLT	1 0	1

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146	5/4/2009	SPR/SUM	CZ	PE2	N	STLT	1	0	1
147	5/4/2009	SPR/SUM	CZ	PE2	N	STLT	11	0	11
148	5/4/2009	SPR/SUM	CZ	P7	N	STLT		0	0
149	5/4/2009	SPR/SUM	CZ	P7	N	STLT		0	0
150	5/4/2009	SPR/SUM	CZ	P7	N	STLT	1	0	1
151	5/5/2009	SPR/SUM	CZ	P3	Y	STLT	1	0	1
152	5/5/2009	SPR/SUM	CZ	P3	Y	STLT		0	0
153	5/5/2009	SPR/SUM	CZ	P3	Y	STLT	1	0	1
154	5/5/2009	SPR/SUM	GB	G1	Y	STLT	3	0	3
155	5/5/2009	SPR/SUM	GB	G1	Y	STLT	1	0	1
156	5/5/2009	SPR/SUM	GB	G1	Y	STLT	3	0	3
157	5/6/2009	SPR/SUM	GB	G3	N	STLT		0	0
158	5/6/2009	SPR/SUM	GB	G3	N	STLT		0	0
159	5/6/2009	SPR/SUM	GB	G3	N	STLT	4	0	4
160	5/6/2009	SPR/SUM	GB	G5	Y	STLT		0	0
161	5/6/2009	SPR/SUM	GB	G5	Y	STLT		0	0
162	5/6/2009	SPR/SUM	GB	G5	Y	STLT		0	0
163	5/7/2009	SPR/SUM	CZ	PE2	N	STHT	2		2
164	5/7/2009	SPR/SUM	CZ	PE2	N	STHT	0		0
165	5/7/2009	SPR/SUM	CZ	PE2	N	STHT	0	1	1
166	5/7/2009	SPR/SUM	CZ	P7	N	STHT	0		0
167	5/7/2009	SPR/SUM	CZ	P7	N	STHT	0	1	1
168	5/7/2009	SPR/SUM	CZ	P7	N	STHT	0		0
169	5/7/2009	SPR/SUM	CZ	P3	Y	STHT	0		0
170	5/7/2009	SPR/SUM	CZ	P3	Y	STHT	0	1	1
171	5/7/2009	SPR/SUM	CZ	P3	Y	STHT	0		0
172	5/8/2009	SPR/SUM	GB	G1	Y	STHT	0		0
173	5/8/2009	SPR/SUM	GB	G1	Y	STHT	0		0
174	5/8/2009	SPR/SUM	GB	G1	Y	STHT	0		0
175	5/8/2009	SPR/SUM	GB	G3	N	STHT	0		0
176	5/8/2009	SPR/SUM	GB	G3	N	STHT	0		0
177	5/8/2009	SPR/SUM	GB	G3	N	STHT	0		0
178	5/8/2009	SPR/SUM	GB	G5	Y	STHT	0	1	1
179	5/8/2009	SPR/SUM	GB	G5	Y	STHT	0	1	1
180	5/8/2009	SPR/SUM	GB	G5	Y	STHT	0		0
181	5/13/2009	SPR/SUM	CZ	PE2	N	NTHT	0		0
182	5/13/2009	SPR/SUM	CZ	PE2	N	NTHT	0		0
183	5/13/2009	SPR/SUM	CZ	PE2	N	NTHT	0		0
184	5/13/2009	SPR/SUM	CZ	P3	Y	NTHT	2	0	2
185	5/13/2009	SPR/SUM	CZ	P3	Y	NTHT		0	0
186	5/13/2009	SPR/SUM	CZ	P3	Y	NTHT	2	0	2
187	5/13/2009	SPR/SUM	CZ	P7	N	NTHT	16	0	16
188	5/13/2009	SPR/SUM	CZ	P7	N	NTHT	13	0	13
189	5/13/2009	SPR/SUM	CZ	P7	N	NTHT	29	0	29
190	5/14/2009	SPR/SUM	GB	G1	Y	NTHT		0	0
191	5/14/2009	SPR/SUM	GB	G1	Y	NTHT		0	0
192	5/14/2009	SPR/SUM	GB	G1	Y	NTHT		0	0
193	5/14/2009	SPR/SUM	GB	G3	N	NTHT		0	0
194	5/14/2009	SPR/SUM	GB	G3	N	NTHT		0	0
195	5/14/2009	SPR/SUM	GB	G3	N	NTHT		0	0

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196	5/14/2009	SPR/SUM	GB	G5	Y	NTHT	0		0
197	5/14/2009	SPR/SUM	GB	G5	Y	NTHT	0		0
198	5/14/2009	SPR/SUM	GB	G5	Y	NTHT	0		0
199	5/18/2009	SPR/SUM	CZ	P3	Y	NTLT	1	1	2
200	5/18/2009	SPR/SUM	CZ	P3	Y	NTLT	1	0	1
201	5/18/2009	SPR/SUM	CZ	P3	Y	NTLT		2	2
202	5/18/2009	SPR/SUM	CZ	P7	N	NTLT	6	0	6
203	5/18/2009	SPR/SUM	CZ	P7	N	NTLT	1	1	2
204	5/18/2009	SPR/SUM	CZ	P7	N	NTLT	1	0	1
205	5/19/2009	SPR/SUM	CZ	PE2	N	NTLT	4	0	4
206	5/19/2009	SPR/SUM	CZ	PE2	N	NTLT	4	0	4
207	5/19/2009	SPR/SUM	CZ	PE2	N	NTLT	11	0	11
208	5/19/2009	SPR/SUM	GB	G1	Y	NTLT		0	2
209	5/19/2009	SPR/SUM	GB	G1	Y	NTLT		0	6
210	5/19/2009	SPR/SUM	GB	G1	Y	NTLT		0	1
211	5/20/2009	SPR/SUM	GB	G3	N	NTLT		1	9
212	5/20/2009	SPR/SUM	GB	G3	N	NTLT	2	0	2
213	5/20/2009	SPR/SUM	GB	G3	N	NTLT		0	
214	5/20/2009	SPR/SUM	GB	G5	Y	NTLT		0	
215	5/20/2009	SPR/SUM	GB	G5	Y	NTLT		0	
216	5/20/2009	SPR/SUM	GB	G5	Y	NTLT		0	1
217	9/3/2009	SUM/FAL	GB	G5	Y	NTHT	1	1	2
218	9/3/2009	SUM/FAL	GB	G5	Y	NTHT	0		0
219	9/3/2009	SUM/FAL	GB	G5	Y	NTHT	1		1
220	9/3/2009	SUM/FAL	GB	G3	N	NTHT	0		1
221	9/3/2009	SUM/FAL	GB	G3	N	NTHT	0		0
222	9/3/2009	SUM/FAL	GB	G3	N	NTHT	3		3
223	9/3/2009	SUM/FAL	GB	G1	Y	NTHT	0		0
224	9/3/2009	SUM/FAL	GB	G1	Y	NTHT	0		0
225	9/3/2009	SUM/FAL	GB	G1	Y	NTHT	0		0
226	9/4/2009	SUM/FAL	CZ	P7	N	NTHT	0		0
227	9/4/2009	SUM/FAL	CZ	P7	N	NTHT	0		0
228	9/4/2009	SUM/FAL	CZ	P7	N	NTHT	0		0
229	9/4/2009	SUM/FAL	CZ	P3	Y	NTHT	0		0
230	9/4/2009	SUM/FAL	CZ	P3	Y	NTHT	0		0
231	9/4/2009	SUM/FAL	CZ	P3	Y	NTHT	0		0
232	9/4/2009	SUM/FAL	CZ	PE2	N	NTHT	0		0
233	9/4/2009	SUM/FAL	CZ	PE2	N	NTHT	0		1
234	9/4/2009	SUM/FAL	CZ	PE2	N	NTHT	0		2
235	9/17/2009	SUM/FAL	GB	G1	Y	STLT	11		11
236	9/17/2009	SUM/FAL	GB	G1	Y	STLT	16		16
237	9/17/2009	SUM/FAL	GB	G1	Y	STLT	33		33
238	9/17/2009	SUM/FAL	CZ	PE2	N	STLT	13	75	88
239	9/17/2009	SUM/FAL	CZ	PE2	N	STLT	2	64	66
240	9/17/2009	SUM/FAL	CZ	PE2	N	STLT	3	86	90
241	9/18/2009	SUM/FAL	GB	G5	Y	STLT		128	128
242	9/18/2009	SUM/FAL	GB	G5	Y	STLT		83	83
243	9/18/2009	SUM/FAL	GB	G5	Y	STLT		92	92
244	9/18/2009	SUM/FAL	GB	G3	N	STLT		30	30
245	9/18/2009	SUM/FAL	GB	G3	N	STLT		18	18

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246	9/18/2009	SUM/FAL	GB	G3	N	STLT	18	1	19	
247	9/19/2009	SUM/FAL	CZ	P3	Y	STLT	4	6	10	
248	9/19/2009	SUM/FAL	CZ	P3	Y	STLT	3	3	6	
249	9/19/2009	SUM/FAL	CZ	P3	Y	STLT	5	0	5	
250	9/19/2009	SUM/FAL	CZ	P7	N	STLT	3	16	19	
251	9/19/2009	SUM/FAL	CZ	P7	N	STLT	1	8	9	
252	9/19/2009	SUM/FAL	CZ	P7	N	STLT	3	8	11	
253	9/21/2009	SUM/FAL	CZ	P3	Y	STHT	3		3	
254	9/21/2009	SUM/FAL	CZ	P3	Y	STHT	2		2	
255	9/21/2009	SUM/FAL	CZ	P3	Y	STHT	5	1	1	7
256	9/21/2009	SUM/FAL	CZ	P7	N	STHT	0			0
257	9/21/2009	SUM/FAL	CZ	P7	N	STHT	0			0
258	9/21/2009	SUM/FAL	CZ	P7	N	STHT	0			0
259	9/21/2009	SUM/FAL	CZ	PE2	N	STHT	1	1		2
260	9/21/2009	SUM/FAL	CZ	PE2	N	STHT	1	3		4
261	9/21/2009	SUM/FAL	CZ	PE2	N	STHT		0		0
262	9/22/2009	SUM/FAL	GB	G1	Y	STHT		0		0
263	9/22/2009	SUM/FAL	GB	G1	Y	STHT		0		0
264	9/22/2009	SUM/FAL	GB	G1	Y	STHT		1		1
265	9/22/2009	SUM/FAL	GB	G3	N	STHT		0		0
266	9/22/2009	SUM/FAL	GB	G3	N	STHT		0		0
267	9/22/2009	SUM/FAL	GB	G3	N	STHT		0		0
268	9/22/2009	SUM/FAL	GB	G5	Y	STHT		1		1
269	9/22/2009	SUM/FAL	GB	G5	Y	STHT		0		0
270	9/22/2009	SUM/FAL	GB	G5	Y	STHT		0		0
271	9/25/2009	SUM/FAL	CZ	P3	Y	NTLT	8	1		9
272	9/25/2009	SUM/FAL	CZ	P3	Y	NTLT	7	1		8
273	9/25/2009	SUM/FAL	CZ	P3	Y	NTLT	10	0		10
274	9/25/2009	SUM/FAL	CZ	P7	N	NTLT		1	1	2
275	9/25/2009	SUM/FAL	CZ	P7	N	NTLT	1	0		1
276	9/25/2009	SUM/FAL	CZ	P7	N	NTLT	3	1		4
277	9/28/2009	SUM/FAL	CZ	PE2	N	NTLT		167		167
278	9/28/2009	SUM/FAL	CZ	PE2	N	NTLT	2	188		190
279	9/28/2009	SUM/FAL	CZ	PE2	N	NTLT	3	94		97
280	9/28/2009	SUM/FAL	GB	G1	Y	NTLT	1	2		3
281	9/28/2009	SUM/FAL	GB	G1	Y	NTLT		0		0
282	9/28/2009	SUM/FAL	GB	G1	Y	NTLT		3		3
283	9/29/2009	SUM/FAL	GB	G3	N	NTLT	2	119		121
284	9/29/2009	SUM/FAL	GB	G3	N	NTLT	6	148		154
285	9/29/2009	SUM/FAL	GB	G3	N	NTLT	7	155		162
286	9/29/2009	SUM/FAL	GB	G5	Y	NTLT	1	1		2
287	9/29/2009	SUM/FAL	GB	G5	Y	NTLT	2	2		4
288	9/29/2009	SUM/FAL	GB	G5	Y	NTLT	1	0		1
289	4/26/2010	SPR/SUM	CZ	PE2	N	STLT				0
290	4/26/2010	SPR/SUM	CZ	PE2	N	STLT		1		1
291	4/26/2010	SPR/SUM	CZ	PE2	N	STLT				0
292	4/26/2010	SPR/SUM	CZ	P7	N	STLT				0
293	4/26/2010	SPR/SUM	CZ	P7	N	STLT				0
294	4/26/2010	SPR/SUM	CZ	P7	N	STLT				0
295	4/27/2010	SPR/SUM	GB	G1	Y	STLT	1	4		5

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296	4/27/2010	SPR/SUM	GB	G1	Y	STLT	2	1	3
297	4/27/2010	SPR/SUM	GB	G1	Y	STLT		3	3
298	4/27/2010	SPR/SUM	CZ	P3	Y	STLT		2	2
299	4/27/2010	SPR/SUM	CZ	P3	Y	STLT			0
300	4/27/2010	SPR/SUM	CZ	P3	Y	STLT		2	2
301	4/28/2010	SPR/SUM	GB	G5	Y	STLT			0
302	4/28/2010	SPR/SUM	GB	G5	Y	STLT		1	1
303	4/28/2010	SPR/SUM	GB	G5	Y	STLT	2		2
304	4/28/2010	SPR/SUM	GB	G3	N	STLT			0
305	4/28/2010	SPR/SUM	GB	G3	N	STLT			0
306	4/28/2010	SPR/SUM	GB	G3	N	STLT	1	1	2
307	5/4/2010	SPR/SUM	CZ	PE2	N	NTHT			0
308	5/4/2010	SPR/SUM	CZ	PE2	N	NTHT			0
309	5/4/2010	SPR/SUM	CZ	PE2	N	NTHT			1
310	5/4/2010	SPR/SUM	CZ	P3	Y	NTHT			2
311	5/4/2010	SPR/SUM	CZ	P3	Y	NTHT			0
312	5/4/2010	SPR/SUM	CZ	P3	Y	NTHT			0
313	5/4/2010	SPR/SUM	CZ	P7	N	NTHT			1
314	5/4/2010	SPR/SUM	CZ	P7	N	NTHT			1
315	5/4/2010	SPR/SUM	CZ	P7	N	NTHT			0
316	5/5/2010	SPR/SUM	GB	G1	Y	NTHT			0
317	5/5/2010	SPR/SUM	GB	G1	Y	NTHT			0
318	5/5/2010	SPR/SUM	GB	G1	Y	NTHT			1
319	5/5/2010	SPR/SUM	GB	G3	N	NTHT			0
320	5/5/2010	SPR/SUM	GB	G3	N	NTHT			2
321	5/5/2010	SPR/SUM	GB	G3	N	NTHT			0
322	5/5/2010	SPR/SUM	GB	G5	Y	NTHT		1	1
323	5/5/2010	SPR/SUM	GB	G5	Y	NTHT		2	1
324	5/5/2010	SPR/SUM	GB	G5	Y	NTHT		1	1
325	5/6/2010	SPR/SUM	CZ	PE2	N	NTLT			0
326	5/6/2010	SPR/SUM	CZ	PE2	N	NTLT			0
327	5/6/2010	SPR/SUM	CZ	PE2	N	NTLT			0
328	5/6/2010	SPR/SUM	CZ	P7	N	NTLT			0
329	5/6/2010	SPR/SUM	CZ	P7	N	NTLT			1
330	5/6/2010	SPR/SUM	CZ	P7	N	NTLT			0
331	5/7/2010	SPR/SUM	GB	G1	Y	NTLT		1	1
332	5/7/2010	SPR/SUM	GB	G1	Y	NTLT	1		1
333	5/7/2010	SPR/SUM	GB	G1	Y	NTLT			0
334	5/7/2010	SPR/SUM	GB	G3	N	NTLT	26	1	1
335	5/7/2010	SPR/SUM	GB	G3	N	NTLT	9		9
336	5/7/2010	SPR/SUM	GB	G3	N	NTLT	54		54
337	5/8/2010	SPR/SUM	GB	G5	Y	NTLT		17	17
338	5/8/2010	SPR/SUM	GB	G5	Y	NTLT		19	19
339	5/8/2010	SPR/SUM	GB	G5	Y	NTLT		38	38
340	5/8/2010	SPR/SUM	CZ	P3	Y	NTLT	1		1
341	5/8/2010	SPR/SUM	CZ	P3	Y	NTLT	1		1
342	5/8/2010	SPR/SUM	CZ	P3	Y	NTLT			0
343	5/20/2010	SPR/SUM	GB	G5	Y	STHT		8	1
344	5/20/2010	SPR/SUM	GB	G5	Y	STHT			0
345	5/20/2010	SPR/SUM	GB	G5	Y	STHT		15	15

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346	5/20/2010	SPR/SUM	CZ	PE2	N	STHT			0
347	5/20/2010	SPR/SUM	CZ	PE2	N	STHT	1	2	3
348	5/20/2010	SPR/SUM	CZ	PE2	N	STHT		1	1
349	5/20/2010	SPR/SUM	CZ	P7	N	STHT	2		2
350	5/20/2010	SPR/SUM	CZ	P7	N	STHT	1		1
351	5/20/2010	SPR/SUM	CZ	P7	N	STHT		1	1
352	5/20/2010	SPR/SUM	CZ	P3	Y	STHT	1		1
353	5/20/2010	SPR/SUM	CZ	P3	Y	STHT	7		7
354	5/20/2010	SPR/SUM	CZ	P3	Y	STHT	6		6
355	5/21/2010	SPR/SUM	GB	G1	Y	STHT			0
356	5/21/2010	SPR/SUM	GB	G1	Y	STHT	1		1
357	5/21/2010	SPR/SUM	GB	G1	Y	STHT	1		1
358	5/21/2010	SPR/SUM	GB	G3	N	STHT	1		1
359	5/21/2010	SPR/SUM	GB	G3	N	STHT			0
360	5/21/2010	SPR/SUM	GB	G3	N	STHT			0
361	8/31/2010	SUM/FAL	GB	G1	Y	NTHT			0
362	8/31/2010	SUM/FAL	GB	G1	Y	NTHT	2		2
363	8/31/2010	SUM/FAL	GB	G1	Y	NTHT	1		1
364	8/31/2010	SUM/FAL	CZ	PE2	N	NTHT		1	1
365	8/31/2010	SUM/FAL	CZ	PE2	N	NTHT			0
366	8/31/2010	SUM/FAL	CZ	PE2	N	NTHT			0
367	8/31/2010	SUM/FAL	CZ	P3	Y	NTHT			0
368	8/31/2010	SUM/FAL	CZ	P3	Y	NTHT			0
369	8/31/2010	SUM/FAL	CZ	P3	Y	NTHT			0
370	8/31/2010	SUM/FAL	CZ	P7	N	NTHT			0
371	8/31/2010	SUM/FAL	CZ	P7	N	NTHT			0
372	8/31/2010	SUM/FAL	CZ	P7	N	NTHT			0
373	9/1/2010	SUM/FAL	GB	G3	N	NTHT			0
374	9/1/2010	SUM/FAL	GB	G3	N	NTHT			0
375	9/1/2010	SUM/FAL	GB	G3	N	NTHT			0
376	9/1/2010	SUM/FAL	GB	G5	Y	NTHT			0
377	9/1/2010	SUM/FAL	GB	G5	Y	NTHT	9		9
378	9/1/2010	SUM/FAL	GB	G5	Y	NTHT			0
379	9/7/2010	SUM/FAL	GB	G5	Y	STLT	18		18
380	9/7/2010	SUM/FAL	GB	G5	Y	STLT	9		9
381	9/7/2010	SUM/FAL	GB	G5	Y	STLT	10		10
382	9/7/2010	SUM/FAL	CZ	PE2	N	STLT	16		16
383	9/7/2010	SUM/FAL	CZ	PE2	N	STLT	16	1	18
384	9/7/2010	SUM/FAL	CZ	PE2	N	STLT	13		13
385	9/8/2010	SUM/FAL	CZ	P7	N	STLT	9		9
386	9/8/2010	SUM/FAL	CZ	P7	N	STLT	17		17
387	9/8/2010	SUM/FAL	CZ	P7	N	STLT	5		5
388	9/8/2010	SUM/FAL	CZ	P3	Y	STLT	1	31	32
389	9/8/2010	SUM/FAL	CZ	P3	Y	STLT	11		11
390	9/8/2010	SUM/FAL	CZ	P3	Y	STLT	1	29	31
391	9/9/2010	SUM/FAL	GB	G1	Y	STLT	2	21	25
392	9/9/2010	SUM/FAL	GB	G1	Y	STLT	7	5	14
393	9/9/2010	SUM/FAL	GB	G1	Y	STLT	4	1	5
394	9/9/2010	SUM/FAL	GB	G3	N	STLT	3	3	18
395	9/9/2010	SUM/FAL	GB	G3	N	STLT	6	3	24

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396	9/9/2010	SUM/FAL	GB	G3	N	STLT	2	14	16
397	9/10/2010	SUM/FAL	GB	G5	Y	STHT		2	2
398	9/10/2010	SUM/FAL	GB	G5	Y	STHT		2	2
399	9/10/2010	SUM/FAL	GB	G5	Y	STHT			0
400	9/10/2010	SUM/FAL	CZ	P3	Y	STHT		1	1
401	9/10/2010	SUM/FAL	CZ	P3	Y	STHT			0
402	9/10/2010	SUM/FAL	CZ	P3	Y	STHT			0
403	9/10/2010	SUM/FAL	CZ	PE2	N	STHT			0
404	9/10/2010	SUM/FAL	CZ	PE2	N	STHT			0
405	9/10/2010	SUM/FAL	CZ	PE2	N	STHT			0
406	9/11/2010	SUM/FAL	GB	G1	Y	STHT			0
407	9/11/2010	SUM/FAL	GB	G1	Y	STHT			0
408	9/11/2010	SUM/FAL	GB	G1	Y	STHT			0
409	9/11/2010	SUM/FAL	GB	G3	N	STHT			0
410	9/11/2010	SUM/FAL	GB	G3	N	STHT	1		1
411	9/11/2010	SUM/FAL	GB	G3	N	STHT		1	1
412	9/11/2010	SUM/FAL	CZ	P7	N	STHT			0
413	9/11/2010	SUM/FAL	CZ	P7	N	STHT			0
414	9/11/2010	SUM/FAL	CZ	P7	N	STHT			0
415	9/16/2010	SUM/FAL	GB	G1	Y	NTLT	1		1
416	9/16/2010	SUM/FAL	GB	G1	Y	NTLT			0
417	9/16/2010	SUM/FAL	GB	G1	Y	NTLT			0
418	9/16/2010	SUM/FAL	CZ	PE2	N	NTLT		1	1
419	9/16/2010	SUM/FAL	CZ	PE2	N	NTLT		38	38
420	9/16/2010	SUM/FAL	CZ	PE2	N	NTLT		25	25
421	9/17/2010	SUM/FAL	CZ	P7	N	NTLT		51	51
422	9/17/2010	SUM/FAL	CZ	P7	N	NTLT		1	1
423	9/17/2010	SUM/FAL	CZ	P7	N	NTLT		35	35
424	9/17/2010	SUM/FAL	GB	G3	N	NTLT		4	4
425	9/17/2010	SUM/FAL	GB	G3	N	NTLT		17	17
426	9/17/2010	SUM/FAL	GB	G3	N	NTLT		17	17
427	9/19/2010	SUM/FAL	GB	G5	Y	NTLT		38	38
428	9/19/2010	SUM/FAL	GB	G5	Y	NTLT	1	26	27
429	9/19/2010	SUM/FAL	GB	G5	Y	NTLT		22	22
430	9/19/2010	SUM/FAL	CZ	P3	Y	NTLT		16	16
431	9/19/2010	SUM/FAL	CZ	P3	Y	NTLT		3	3
432	9/19/2010	SUM/FAL	CZ	P3	Y	NTLT		2	2
433	5/6/2011	SPR/SUM	CZ	P3	Y	NTHT			1
434	5/6/2011	SPR/SUM	CZ	P3	Y	NTHT			0
435	5/6/2011	SPR/SUM	CZ	P3	Y	NTHT			0
436	5/6/2011	SPR/SUM	GB	G5	Y	NTHT			0
437	5/6/2011	SPR/SUM	GB	G5	Y	NTHT			0
438	5/6/2011	SPR/SUM	GB	G5	Y	NTHT			0
439	5/9/2011	SPR/SUM	GB	G3	N	NTHT		1	1
440	5/9/2011	SPR/SUM	GB	G3	N	NTHT			1
441	5/9/2011	SPR/SUM	GB	G3	N	NTHT			0
442	5/9/2011	SPR/SUM	CZ	P7	N	NTHT			1
443	5/9/2011	SPR/SUM	CZ	P7	N	NTHT			0
444	5/9/2011	SPR/SUM	CZ	P7	N	NTHT			0
445	5/12/2011	SPR/SUM	GB	G5	Y	STHT			1

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446	5/12/2011	SPR/SUM	GB	G5	Y	STHT			0
447	5/12/2011	SPR/SUM	GB	G5	Y	STHT			0
448	5/12/2011	SPR/SUM	CZ	P3	Y	STHT			0
449	5/12/2011	SPR/SUM	CZ	P3	Y	STHT		1	1
450	5/12/2011	SPR/SUM	CZ	P3	Y	STHT			0
451	5/16/2011	SPR/SUM	CZ	P3	Y	STLT			0
452	5/16/2011	SPR/SUM	CZ	P3	Y	STLT			0
453	5/16/2011	SPR/SUM	CZ	P3	Y	STLT			0
454	5/16/2011	SPR/SUM	GB	G3	N	STLT	2		2
455	5/16/2011	SPR/SUM	GB	G3	N	STLT			0
456	5/16/2011	SPR/SUM	GB	G3	N	STLT	2		2
457	5/17/2011	SPR/SUM	GB	G5	Y	STLT			0
458	5/17/2011	SPR/SUM	GB	G5	Y	STLT	1		1
459	5/17/2011	SPR/SUM	GB	G5	Y	STLT			0
460	5/17/2011	SPR/SUM	CZ	P7	N	STLT			0
461	5/17/2011	SPR/SUM	CZ	P7	N	STLT			0
462	5/17/2011	SPR/SUM	CZ	P7	N	STLT		1	1
463	5/18/2011	SPR/SUM	CZ	PE2	N	STLT			0
464	5/18/2011	SPR/SUM	CZ	PE2	N	STLT			0
465	5/18/2011	SPR/SUM	CZ	PE2	N	STLT			0
466	5/18/2011	SPR/SUM	GB	G1	Y	STLT			0
467	5/18/2011	SPR/SUM	GB	G1	Y	STLT			0
468	5/18/2011	SPR/SUM	GB	G1	Y	STLT			0
469	5/19/2011	SPR/SUM	CZ	P7	N	STHT	1		1
470	5/19/2011	SPR/SUM	CZ	P7	N	STHT			0
471	5/19/2011	SPR/SUM	CZ	P7	N	STHT			0
472	5/19/2011	SPR/SUM	GB	G3	N	STHT			0
473	5/19/2011	SPR/SUM	GB	G3	N	STHT	1		1
474	5/19/2011	SPR/SUM	GB	G3	N	STHT			0
475	5/20/2011	SPR/SUM	CZ	PE2	N	STHT	1		1
476	5/20/2011	SPR/SUM	CZ	PE2	N	STHT			0
477	5/20/2011	SPR/SUM	CZ	PE2	N	STHT			0
478	5/20/2011	SPR/SUM	GB	G1	Y	STHT	1		1
479	5/20/2011	SPR/SUM	GB	G1	Y	STHT	1		1
480	5/20/2011	SPR/SUM	GB	G1	Y	STHT			0
481	5/24/2011	SPR/SUM	CZ	P3	Y	NTLT	1	2	3
482	5/24/2011	SPR/SUM	CZ	P3	Y	NTLT	1	1	2
483	5/24/2011	SPR/SUM	CZ	P3	Y	NTLT	1	1	2
484	5/24/2011	SPR/SUM	GB	G3	N	NTLT	1		1
485	5/24/2011	SPR/SUM	GB	G3	N	NTLT	1		1
486	5/24/2011	SPR/SUM	GB	G3	N	NTLT	1		1
487	5/26/2011	SPR/SUM	CZ	P7	N	NTLT		2	2
488	5/26/2011	SPR/SUM	CZ	P7	N	NTLT		11	11
489	5/26/2011	SPR/SUM	CZ	P7	N	NTLT		3	3
490	5/26/2011	SPR/SUM	GB	G5	Y	NTLT		1	1
491	5/26/2011	SPR/SUM	GB	G5	Y	NTLT	2	2	1
492	5/26/2011	SPR/SUM	GB	G5	Y	NTLT	2	1	2
493	5/27/2011	SPR/SUM	CZ	PE2	N	NTLT			0
494	5/27/2011	SPR/SUM	CZ	PE2	N	NTLT			1
495	5/27/2011	SPR/SUM	CZ	PE2	N	NTLT		1	1

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496	5/27/2011	SPR/SUM	GB	G1	Y	NTLT			14	14
497	5/27/2011	SPR/SUM	GB	G1	Y	NTLT			9	9
498	5/27/2011	SPR/SUM	GB	G1	Y	NTLT			9	9
499	5/31/2011	SPR/SUM	CZ	PE2	N	NTHT			1	1
500	5/31/2011	SPR/SUM	CZ	PE2	N	NTHT				0
501	5/31/2011	SPR/SUM	CZ	PE2	N	NTHT	4	6	1	11
502	5/31/2011	SPR/SUM	GB	G1	Y	NTHT				0
503	5/31/2011	SPR/SUM	GB	G1	Y	NTHT	3	1	1	5
504	5/31/2011	SPR/SUM	GB	G1	Y	NTHT				0
505	9/18/2011	SUM/FAL	CZ	PE2	N	NTHT	1			1
506	9/18/2011	SUM/FAL	CZ	PE2	N	NTHT				0
507	9/18/2011	SUM/FAL	CZ	PE2	N	NTHT				0
508	9/18/2011	SUM/FAL	CZ	P7	N	NTHT		1		1
509	9/18/2011	SUM/FAL	CZ	P7	N	NTHT				0
510	9/18/2011	SUM/FAL	CZ	P7	N	NTHT				0
511	9/19/2011	SUM/FAL	GB	G3	N	NTHT	1			1
512	9/19/2011	SUM/FAL	GB	G3	N	NTHT				0
513	9/19/2011	SUM/FAL	GB	G3	N	NTHT				0
514	9/19/2011	SUM/FAL	GB	G5	Y	NTHT				0
515	9/19/2011	SUM/FAL	GB	G5	Y	NTHT				0
516	9/19/2011	SUM/FAL	GB	G5	Y	NTHT	1			1
517	9/20/2011	SUM/FAL	CZ	P3	Y	NTHT	2			2
518	9/20/2011	SUM/FAL	CZ	P3	Y	NTHT		1		1
519	9/20/2011	SUM/FAL	CZ	P3	Y	NTHT	1	1		2
520	9/20/2011	SUM/FAL	GB	G1	Y	NTHT	2			2
521	9/20/2011	SUM/FAL	GB	G1	Y	NTHT	2			2
522	9/20/2011	SUM/FAL	GB	G1	Y	NTHT	2			2
523	9/21/2011	SUM/FAL	CZ	P7	N	NTLT		2		2
524	9/21/2011	SUM/FAL	CZ	P7	N	NTLT				0
525	9/21/2011	SUM/FAL	CZ	P7	N	NTLT				0
526	9/21/2011	SUM/FAL	CZ	P3	Y	NTLT	7			7
527	9/21/2011	SUM/FAL	CZ	P3	Y	NTLT	5			5
528	9/21/2011	SUM/FAL	CZ	P3	Y	NTLT	5			5
529	9/22/2011	SUM/FAL	CZ	PE2	N	NTLT		6		6
530	9/22/2011	SUM/FAL	CZ	PE2	N	NTLT		2		2
531	9/22/2011	SUM/FAL	CZ	PE2	N	NTLT		1		1
532	9/22/2011	SUM/FAL	GB	G1	Y	NTLT		56		56
533	9/22/2011	SUM/FAL	GB	G1	Y	NTLT		25		25
534	9/22/2011	SUM/FAL	GB	G1	Y	NTLT		35		35
535	9/23/2011	SUM/FAL	GB	G3	N	NTLT	2	27		29
536	9/23/2011	SUM/FAL	GB	G3	N	NTLT		57		57
537	9/23/2011	SUM/FAL	GB	G3	N	NTLT	1	23		24
538	9/23/2011	SUM/FAL	GB	G5	Y	NTLT		87		87
539	9/23/2011	SUM/FAL	GB	G5	Y	NTLT		47		47
540	9/23/2011	SUM/FAL	GB	G5	Y	NTLT		59		59
541	9/25/2011	SUM/FAL	CZ	P7	N	STLT	5	2	1	8
542	9/25/2011	SUM/FAL	CZ	P7	N	STLT	2	5		7
543	9/25/2011	SUM/FAL	CZ	P7	N	STLT	20			20
544	9/25/2011	SUM/FAL	CZ	PE2	N	STLT		6		6
545	9/25/2011	SUM/FAL	CZ	PE2	N	STLT		2		2

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546	9/25/2011	SUM/FAL	CZ	PE2	N	STLT	4	1	5
547	9/26/2011	SUM/FAL	GB	G1	Y	STLT	7	5	12
548	9/26/2011	SUM/FAL	GB	G1	Y	STLT	3	4	7
549	9/26/2011	SUM/FAL	GB	G1	Y	STLT	9	1	11
550	9/26/2011	SUM/FAL	GB	G3	N	STLT	4	5	9
551	9/26/2011	SUM/FAL	GB	G3	N	STLT	4	12	17
552	9/26/2011	SUM/FAL	GB	G3	N	STLT	3	5	9
553	9/27/2011	SUM/FAL	CZ	P3	Y	STLT	5	1	6
554	9/27/2011	SUM/FAL	CZ	P3	Y	STLT	1	9	12
555	9/27/2011	SUM/FAL	CZ	P3	Y	STLT	5		5
556	9/27/2011	SUM/FAL	GB	G5	Y	STLT	22	2	24
557	9/27/2011	SUM/FAL	GB	G5	Y	STLT	14	5	20
558	9/27/2011	SUM/FAL	GB	G5	Y	STLT	16	2	18
559	9/28/2011	SUM/FAL	CZ	PE2	N	STHT			0
560	9/28/2011	SUM/FAL	CZ	PE2	N	STHT		1	1
561	9/28/2011	SUM/FAL	CZ	PE2	N	STHT		3	3
562	9/28/2011	SUM/FAL	CZ	P7	N	STHT			0
563	9/28/2011	SUM/FAL	CZ	P7	N	STHT		1	1
564	9/28/2011	SUM/FAL	CZ	P7	N	STHT			0
565	9/29/2011	SUM/FAL	CZ	P3	Y	STHT			0
566	9/29/2011	SUM/FAL	CZ	P3	Y	STHT			0
567	9/29/2011	SUM/FAL	CZ	P3	Y	STHT			0
568	9/29/2011	SUM/FAL	GB	G5	Y	STHT			0
569	9/29/2011	SUM/FAL	GB	G5	Y	STHT			0
570	9/29/2011	SUM/FAL	GB	G5	Y	STHT		1	1
571	9/30/2011	SUM/FAL	GB	G3	N	STHT			0
572	9/30/2011	SUM/FAL	GB	G3	N	STHT			0
573	9/30/2011	SUM/FAL	GB	G3	N	STHT			0
574	9/30/2011	SUM/FAL	GB	G1	Y	STHT	3		3
575	9/30/2011	SUM/FAL	GB	G1	Y	STHT			0
576	9/30/2011	SUM/FAL	GB	G1	Y	STHT			0

Appendix B: Grain-Size Distribution of Samples from the Beach Face, Organized by Locational and Seasonal Variables.

All of the sediment sample are initially processed with a dispersant and water to remove soluble salts and adhesions. The samples are dried and weighed and run through a sonic sifter that agitates the sediments through a series of sieves to create a grain size distribution. The metrics include the weight and percentage of total weight in each of the sieves. The results are depicted in histogram format and in the form of a cumulative curve. Information on mean grain size, standard deviation, skewness and kurtosis are calculated and incorporated in the data files. All of these data files are produced as MS Excel files and are deposited with the Gateway data manager and are available in electronic format.

Grain-size data are organized by location, Gunnison Beach or the Critical Zone, and by Profiles in each of these sites. The data are further grouped by tidal phase location on the beach face, and by season of collection. The locational information is represented by the sites incorporated in Figure A1. The tidal phase locations on the profiles are represented by the categories incorporated in Table B1. The electronic version of this report has an attached folder that includes all of the grain-size data. They are accessed by clicking on one of the boxes in Table B1. Clicking on the box for Spring Tide – Low Tide (STLT), for example, will link to the grain-size data for each of the sampling campaigns at this site. All other grain size data are similarly accessible.

Table B1- Grain-size data showing tidal phase locations along the profiles.

Grain-Size Data at Macrofauna Sample Locations			
Gunnison Beach (Source)		Critical Zone (Deposition)	
Profile	Tidal Position	Profile	Tidal Position
G1	STLT	PE2	STLT
	NTLT		NTLT
	NTHT		NTHT
	STHT		STHT
G3	STLT	P7	STLT
	NTLT		NTLT
	NTHT		NTHT
	STHT		STHT
G5	STLT	P3	STLT
	NTLT		NTLT
	NTHT		NTHT
	STHT		STHT

The paper version of this report presents an example of the grain-size data, including metrics regarding percentage weight in each size category, mean, standard deviation, skewness, kurtosis, a histogram of the distribution, and a cumulative curve of the distribution.

Analyst Name: SHIPTON		Grain Size Analysis Data					
Sample	location:	CZ			Analysis Date:	10/25/2008	
	number:	PE2-STLT			Sampling Date:	10/13/2008	
Wet Weight							
Weight before	sonic sift:	83.64	Weight after:	83.55	% Retained:	0.999	
			calc. weight:	83.500			
sieves	sieve#	sieve empty	sieve+sample	majority	sample weight	weight %	cum. percent
-4	3				-	-	-
-3	4				-	-	-
-2	5		3.23		3.230	3.87	3.868
-1.75	6		0.73		0.730	0.87	4.743
-1.5	7		1.18		1.180	1.41	6.156
-1.25	8		1.22		1.220	1.46	7.617
-1	10		1.36		1.360	1.63	9.246
-0.75	12		1.74		1.740	2.08	11.329
-0.5	14		3.53		3.530	4.23	15.557
-0.25	16		5.11		5.110	6.12	21.677
0	18		7.37		7.370	8.83	30.503
0.25	20		13.04		13.040	15.62	46.120
0.5	25		10.5		10.500	12.57	58.695
0.75	30		8.88		8.880	10.63	69.329
1	35		5.72		5.720	6.85	76.180
1.25	40		4.83		4.830	5.78	81.964
1.5	45		3.07		3.070	3.68	85.641
1.75	50		2.82		2.820	3.38	89.018
2	60		3.54		3.540	4.24	93.257
2.25	70		1.75		1.750	2.10	95.353
2.5	80		1.98		1.980	2.37	97.725
2.75	100		1.28		1.280	1.53	99.257
3	120		0.53		0.530	0.63	99.892
3.25	140		0.07		0.070	0.08	99.976
3.5	170		0.01		0.010	0.01	99.988
3.75	200		0		-	-	99.988
4	230		0.01	0	0.01	0.01	100.000
5					0	-	100.000
6		fines	0		0	-	100.000
7					0	-	100.000
8					0	-	100.000
9					0	-	100.000
10					0	-	100.000
0.352799401	1.08117362	-0.54028677	3.687713972	total weight	83.500		
mean	std. dev.	skewness	kurtosis				

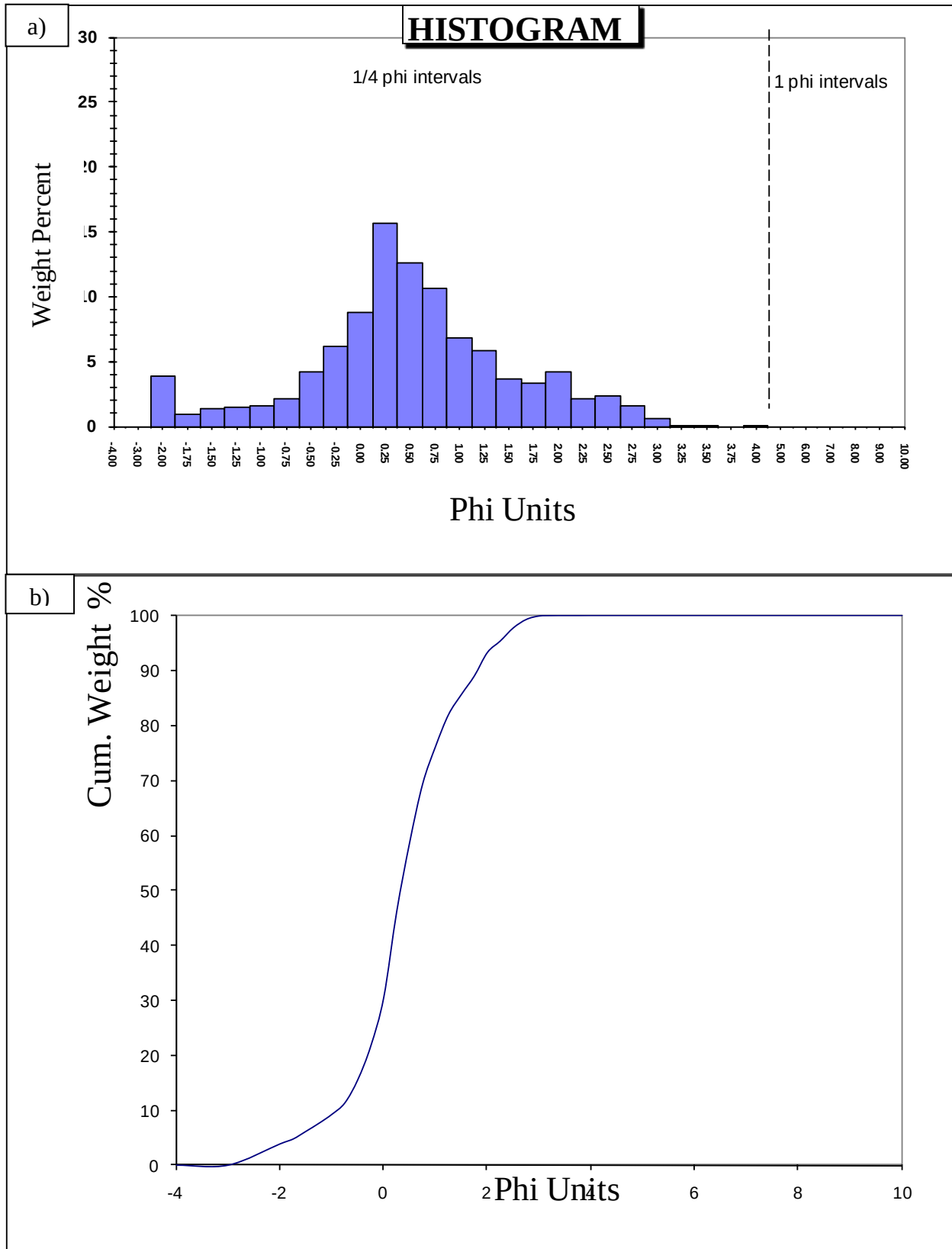


Figure B1- a) Histogram of the distribution of sediment grain size from the sample shown in Table B2.
b) Cumulative curve of the distribution of sediment grain size from the sample shown in Table B2.