YOUNGS BAY BENTHIC INVERTEBRATE STUDY 2023

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TABLE OF CONTENTS

INTRODUCTION	2
METHODS	2
RESULTS	3
DISCUSSION	6

LIST OF FIGURES

Figure

1.	Youngs Bay Net-Pen Sites	8
	Tide Point/Bornstein Site Stations	
3.	Yacht Club Site Stations	10
4.	Sediment Core Sampler	.11
5.	Benthic Invertebrate Sampler	.12

LIST OF TABLES

<u>Table</u>

1.	Tide Point Sedimentation Log	
2.	Bornstein Sedimentation Log	14
3.	Yacht Club Sedimentation Log	15
4.	Yacht Club Percent Grain Size Distribution, Total Organic Carbon, and Dominant	
	Species	16
5.	Tide Point/Bornstein Percent Grain Size Distribution, Total Organic Carbon, and	
	Dominant Species	16
6.	Average Densities of Youngs Bay Dominant Species	16
7.	2005-2023 Youngs Bay Total Organic Carbon Measurements	
8.	Yacht Club Benthic Invertebrate Densities and Diversities	
9.	Tide Point/Bornstein Benthic Invertebrate Densities and Diversities	17
10.	Youngs Bay Benthic Invertebrate Densities 2009-2023	18
11.	Yacht Club Most Dominant Benthic Invertebrate Species Per Station, 2017-2023	18
12.	Tide Point/Bornstein Most Dominant Benthic Invertebrate Species Per	
	Station, 2017-2023	18
13.	Total Dissolved Solids Measurements of Each Net Pen Site in Youngs Bay	18
14.	Youngs Bay Beggiatoa spp., Water Temperature, pH	18
15.	Yacht Club Wilcoxon Test Analysis, Outfall 001	
16.	Yacht Club Wilcoxon Test Analysis, Reference Station SUBC 004	21
17.	Yacht Club Wilcoxon Test Analysis, Perimeter Station SUBC 005	23
18.	Tide Point/Bornstein Wilcoxon Test Analysis, Outfall 003	25
19.	Tide Point/Bornstein Wilcoxon Test Analysis, Perimeter SUBC 009	
20.	Tide Point/Bornstein Wilcoxon Test Analysis, Perimeter SUBC 010	
21.	Tide Point/Bornstein Wilcoxon Test Analysis, Outfall 002	

Introduction

Clatsop County Fisheries (CCF) operates three net pen sites located in Youngs Bay west of Astoria, Oregon: Tide Point, Bornstein, and Yacht Club (Figure 1). The sites, in operation since 1987, rear and release juvenile salmon annually. These efforts are in accordance with the Select Area Fisheries Project and aim to maximize the return of hatchery produced fish. To meet the monitoring and reporting protocols of the National Pollutant Discharge Elimination System (NPDES) permit #101767 issued by the Oregon Department of Environmental Quality, Clatsop County submits the following biennial report.

To record any environmental impacts of the Youngs Bay net pen sites, sampling occurs at designated outfall, perimeter, and reference stations. The three outfall stations are located under each of the three fish pen sites; Tidepoint, Bornstein, and Yacht Club. The perimeter stations occur at points on the perimeter of the allotted mixing zone of each station (Figures 2 and 3). The data collected from both the outfall and perimeter stations are then compared with reference stations. The reference stations establish normal biological parameters for Youngs Bay. Due to the close proximity of the Tidepoint and Bornstein sites, they share reference and perimeter stations. In addition to these efforts, CCF staff also conducts additional sampling to ensure permit requirements are satisfied. Sampling occurred throughout the month of July 2023.

Methods

To document any anoxic conditions on the benthic surface layer, a core sample was taken under each individual net pen. The core sampler, designed by CCF staff, consists of a weighted 3.8 cm aluminum core with an attached flap valve at the apex of the frame (Figure 4). The tool was lowered to the bottom and upon retrieval the flap valve creates suction removing a portion of the uppermost layer of sediment. The sample was then examined for the presence of H_2S odor, a black surface layer, the presence/absence of living organisms, and the depth of the oxidized layer (Tables 1-3). Each sediment grab was deposited back into the water after the observations were completed.

To monitor any accumulation of organic matter from the net pens, sampling for grain size, and total organic carbon (TOC) occurred at designated outfall, perimeter, and reference stations (Figures 2 and 3). Utilizing the core sampler described above, samples for grain size composition and TOC were taken at the designated stations by removing approximately 4 cm of benthic sediment. The samples were stored in small plastic containers and refrigerated. The analytical lab of the School of Environmental and Forest Science at the University of Washington analyzed sediment samples for grain size distribution and TOC.

To study benthic invertebrate population characteristics of the outfall, perimeter, and reference stations, CCF staff engineered a larger weighted sampler made of aluminum and high-density polyethylene (HDPE) (Figure 5.). The tool utilizing a similar core and valve design, was lowered to the bottom at which time the rope was pulled up and down several times. This action utilized lead weights to drive the 7.6 cm aluminum core into the sediment. Upon retrieval, a ball valve located within the HDPE upper portion of the sampler created suction and in turn removed a portion of the benthic layer. Once on the deck, a ring attached to the ball was pulled, releasing pressure, and the aluminum portion of the sampler

was disconnected by loosening the attached hose clamps. Staff then pushed the sediment out with a small plunger, removing 5 cm of sediment from the uppermost portion of the sample.

Samples were kept in plastic buckets until all replicates for that station were collected. The samples were then rinsed with a 2-gallon hand pump sprayer through a 0.5 mm sieve. To preserve the invertebrates, the remaining matter was stored in small plastic jars containing a buffered formalin solution. After one week, each replicate was rinsed and preserved in ethanol until analyzed. The benthic invertebrates from each replicate were sorted and identified to the lowest possible taxonomic classification: generally, species.

In 2019, due to additional permit requirements, a log that includes water temperature, pH and the presence/absence of Beggiatoa spp. was established (Table 14). At each of the designated stations, the presence/absence of Beggiatoa spp., an anoxic bacterial mat, was observed by lowering an underwater HD camera probe to the bottom. The upper benthic layer was then visually inspected for Beggiatoa spp. on a handheld HD screen. At this time, both water temperature and pH readings were taken. Water temperature was recorded by lowering a thermometer 1 m below the surface and pH was taken with a digital pH meter. (table 14). Additional water quality monitoring included six 250 ml water samples taken – 1 upstream and 1 down stream of each site: Tidepoint, Bornstein, and the Yacht Club. Samples were refrigerated and promptly mailed to Alexin Analytical Laboratories Inc. for total dissolved solid analysis (Table 13).

Results

Tables 1-3 - Tide Point, Bornstein, and Yacht Club Sedimentation Logs

• Each individual net pen sediment sample at Tidepoint, Bornstein, and Yacht Club showed no H₂S odor or black surface layer. All samples contained living organisms.

 Table 4 – Yacht Club Percent Grain Size Distribution, Total Organic Carbon, and Dominant Species

- Sand dominated the grain size distribution at the Yacht Club stations with the highest percentage of 81.25 percent at outfall 001 and the lowest at reference station SUBC 003 with 70.75 percent. The highest percent of silt/clay was found at reference station SUBC 003 at 29.25 percent, while the lowest occurred at outfall 001 with 18.75 percent. Gravel was found at two reference stations, SUBC 001 at 6.34 percent and SUBC 002 at 2.95 percent.
- The total organic carbon (TOC) had a range of 9.72 mg/L at perimeter station SUBC 004 to 15.58 mg/L at perimeter station SUBC 005.
- Americorophium spp. was the dominant benthic invertebrate species in four out of the six stations at the Yacht Club site, with the largest concentration being 80,601 per square meter located at reference station SUBC 001. This is also the largest concentration of the species over the entire sampled area. Potamopyrgus antipodarum was the most dominant species found in outfall 001 and perimeter station SUBC 005.
- Table 5 Tide Point/Bornstein Percent Grain Size Distribution, Total Organic Carbon, and Dominant Species

- Sediment grain was predominantly sand at the Tide Point and Bornstein sites, with all stations above 64.41 percent (perimeter SUBC 010). Overall, the highest sand percentage was 74.05 percent at reference SUBC 007.
- The TOC was found to be the highest at perimeter station 010 at 26.84 mg/L, while the lowest was at reference station SUBC 007 at 7.03 mg/L.
- Americorophium spp. was the dominant benthic invertebrate species in four out of the seven stations (1 outfall, 1 perimeter, and 2 reference). The highest concentration occurred at the perimeter station SUBC 010 with Americorophium spp. at 64,000 per square meter and the lowest at Outfall 003 with 11,729 per square meter.
- Table 6 Average Densities of Youngs Bay Dominant Species per Outfall, Reference, and Perimeter Stations
 - It was found that Americorophium spp. held the highest average densities throughout the reference and the perimeter stations with 30,616 per square meter in the reference stations, and 38,631 per square meter over the perimeter stations. Potamopyrgus antipodarum was the dominant species found at the outfall stations, with 27,248 per square meter vs 16,912 at reference stations and 32,767 at perimeter stations.

 Table 7 – Youngs Bay Total Organic Carbon Measurements (mg/L.), 2005-2023

• Total organic carbon readings for all stations, with the exception of reference stations SUBC 001, SUBC 002, and perimeter station SUBC 010, were under their biennial averages from 2005-2023.

 Table 8- Yacht Club Benthic Invertebrate Densities and Diversities

• Perimeter station SUBC 005 had the highest invertebrate densities with 163,067 per square meter, was the most diverse with ten species, and the top three species comprised the lowest percentage of the overall population (86.4 percent). All other stations were within similar ranges containing six or seven species per station and the top three of those species comprising anywhere from 90.5 to 98.1 percent of the overall density.

Table 9- Tide Point / Bornstein Benthic Invertebrate Densities and Diversities

• Perimeter station SUBC 010 had the highest invertebrate densities at 105,263 per square meter. The top two of the six species found, Potamopyrgus antipodarum, and Americorophium spp. made up 97.4% of the total invertebrate density for SUBC 010. All other stations were within similar ranges containing between six and nine species with the top three of those species comprising anywhere from 82.7 percent to 98.2 percent of the overall population.

 Table 10- Youngs Bay Benthic Invertebrate Densities, 2009-2023

• Listed are the densities of the six most common benthic invertebrates over the last eight biennial sampling periods; Potamopyrgus antipodarum, Americorophium spp., Oligochaeta, Eogammarus confervicolus, Hobsonia florida, and Nereis limnicola. The top two benthic invertebrate species since sampling began in 2005 have been Potamopyrgus antipodarum and Americorophium spp.

 Table 11 – Yacht Club Most Dominant Benthic Invertebrate Species Per Station, 2017-2023

 In the four sampling periods occurring between 2017 – 2023, each perimeter, reference, and outfall station were dominated by either Potamopyrgus antipodarum or Americorophium spp. Data for SUBC 005 was not collected during 2017 or 2019.

Table 12 - Tide Point/Bornstein Most Dominant Benthic Invertebrate Species Per Station, 2017-2023

 In the four sampling periods occurring between 2017 – 2023, each perimeter, reference, and outfall station were dominated by either Potamopyrgus antipodarum, Americorophium spp., or Oligochaeta. Data for Outfall 002 was not collected during 2017 sampling.

 Table 13 – Total Dissolved Solids Measurements of Each Net Pen Site in Youngs Bay, 2023

 Table 14 – Young's Bay Beggiatoa spp., Water Temperature, pH- 2023

• Beggiatoa spp. was not present at any of the designated stations. Water temperature and pH were found to be within acceptable ranges.

 Table 15 – Outfall 001/ Reference Condition Comparisons (Wilcoxon Test)

• There was significant difference between the dominant species percent of sample between outfall 001 and the reference stations SUBC 001, SUBC 002, and SUBC 003. Among animals per sample (abundance), number of species per sample (taxa richness), and comparisons of individual species per sample, there was no significant difference between outfall station 001 and the reference stations.

 Table 16 – SUBC 004 / Reference Condition Comparisons (Wilcoxon Test)

• For perimeter station SUBC 004 there was statistical difference in the dominant species percent of sample when compared to reference stations SUBC 001, SUBC 002, and SUBC 003. There was no major difference in animals per sample and number of species per sample. When comparing individual species, there was significant difference between the reference stations and perimeter SUBC 004 with Eogammarus confervicolus.

Table 17 – SUBC 005 / Reference Condition Comparisons (Wilcoxon Test)

• Perimeter station SUBC 005 had a statistical difference in the number of species per sample and the dominant species percent of sample. When comparing individual species per sample Hobsonia florida, Eogammarus confervicolus, Nematoda, and Saduria entomon were found to have a notable difference between the perimeter and reference stations.

Table 18 – Outfall 003 / Reference Condition Comparisons (Wilcoxon Test)

• There was a statistical difference in the animals per sample (taxa richness) and the dominant species percent of sample. There were also notable differences in Americorophium spp. per

sample. No Eogammarus confervicolus were found at the outfall station but a few were present at the reference stations. Higher numbers of Cumacea were at the outfall in comparison to the reference stations.

Table 19 – SUBC 009 / Reference Condition Comparisons (Wilcoxon Test)

• Perimeter station SUBC 009 contained no Eogammarus confervicolus, while the reference stations had higher numbers, with SUBC 006 having the most at 28. The other species comparisons for this station were found to have no significant differences.

Table 20 – SUBC 010 / Reference Condition Comparisons (Wilcoxon Test)

• SUBC 010 and the reference stations were very similar in comparison with the exception of Potamopyrgus antipodarum and Americorophium spp. The two species were found in higher abundance at perimeter station SUBC 010.

Table 21 – Outfall 002 / Reference Condition Comparisons (Wilcoxon Test)

• There were no significant differences found between Outfall 002 and the reference stations SUBC 006, 007, and 008.

Discussion

The environmental monitoring of net pen salmon rearing is to ensure that the water body is suitable for fish rearing and that the accumulation of organic matter due to fish rearing is not creating a systemic impact on Youngs Bay. The fish in Youngs Bay are released as smolts, and only kept for part of the year. This allows the benthic environment time to recover. In addition to this, much of the rearing occurs during times of abundant rainfall and high flows, adding to the cleansing capability of an already turbulent, tidally influenced location. Furthermore, when considering the environmental impact of net pen rearing, researchers should also be cognizant of other anthropogenic influences in Youngs Bay; a bridge, fishing boats, a public boat ramp, an abandoned cannery, public usage of the net pen pier, and invasive species.

Core soil samples taken by Clatsop County Staff ensured that organic materials from fish rearing is not accumulating under each individual net pen (Tables 1-3). The accumulation of organic material would result in the absence of live animals, H_2S odor, and the disappearance of the oxidized layer. The visual inspection of each sample supports the notion that either the organic material from fish rearing is being absorbed at the rate of which it is produced, or the biproducts are being flushed away at a rate that does not allow accumulation to occur. The evidence of this is additionally supported by the absence of Beggiatoa spp. (Table 14). The lack of organic accumulation from continued fish rearing and acquired water quality data would suggest the Youngs Bay system is suitable for fish rearing (Table 13-14).

Increases of organic matter under both the net pens and within the perimeter of the allotted mixing zone could result in increases of total organic carbon (TOC). With the exception of perimeter station SUBC 009, outfall and perimeter stations were lower in TOC when compared to both their 2021 levels and the biennial averages from 2005 to 2023. Reference stations at both locations, Tidepoint/Bornstein and the

Yacht Club showed more variance with four of six stations increasing from 2021 levels and four of six registering lower than their biennial averages (Table 7).

Sediment grain size distribution was predominantly sand at all designated stations in Youngs Bay. The sediment at the Tide Point/Bornstein sites contained more gravel and woody debris (Tables 4-5). The bottom here is harder and is likely exposed to more currents. The Yacht Club site is partially protected from pilings upstream and a bridge downstream. This could aid in reducing current velocity and in turn, scour.

The Youngs Bay stations have been dominated by the amphipods, Americorophium spp. (predominately Americorophium salmonis) and by the invasive species the New Zealand mud snail, Potamopyrgus antipodarum. For several years, these benthic dwellers have competed for the role as the most prolific species in Youngs Bay (Table 10). Per net pen site, the dominance of the top two species at the Yacht Club site holds true for four of six stations (Table 11). Both perimeter station SUBC 005 and Outfall 001 are most densely populated by Potamopyrgus antipodarum. Oligochaeta are found further upstream at the Tide Point/Bornstein sites (Table 12). The presence of Oligochaeta upstream could be due to a number of environmental factors; habitat, water quality, nutrients etc. The past several years there has been a rotation amongst these three species in reference, perimeter, and outfall sites as the most prolific species per station (Table 12).

An increase in organic matter from fish rearing in Youngs Bay could result in a decrease in the number of species present. If one species were to benefit from organic waste at the pens, the species could outcompete other species occupying the same benthic habitat. This could result in a decrease in species diversity. At the Yacht Club site, the top three species comprise 86.4 to 98.1 percent of the population per station and average six to ten different species per station. At the Tidepoint/Bornstein location, the top three species account for anywhere from 82.7 to 94.9 percent of the population per station and contained an average of six to nine species per station (Tables 8-9). When comparing reference stations to perimeter and outfall stations the Wilcoxon test for statistical analysis equates to no significant differences in the number of species per sample, with the exception of perimeter station SUBC 005 (Tables 15-21). The perimeter station held a higher number of species per sample than the reference stations. This would suggest that the slight variation in species per sample is due to changing ecological conditions and not influences by any additional dynamics from the net pen sites. Further breakdown of taxonomic classification, may help solidify this principle. When comparing the outfall and perimeter to the reference stations, the majority of stations show no significant difference in specific species per sample, but there are some with statistically significant differences (Tables 15-21). Continued monitoring of species density and species per sample, will ensure species degradation doesn't occur as a result of the net pens.

Figures

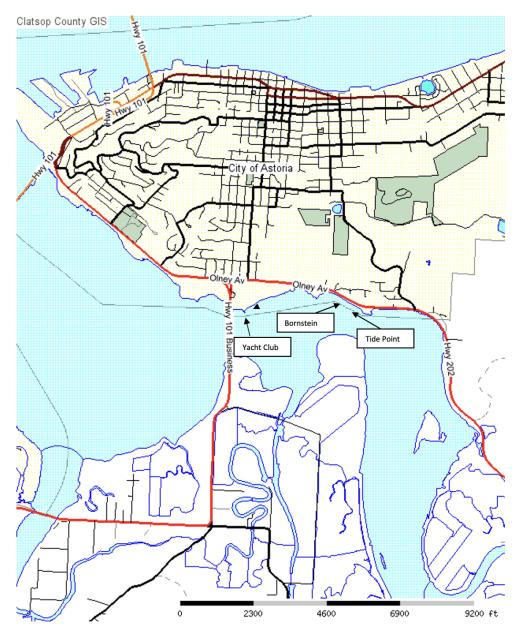
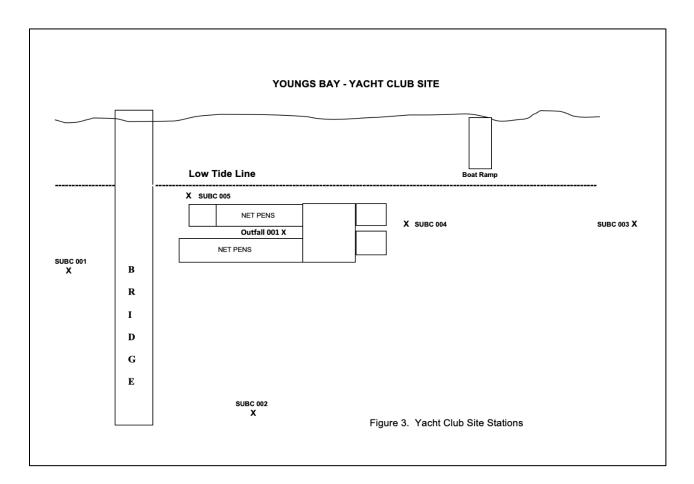
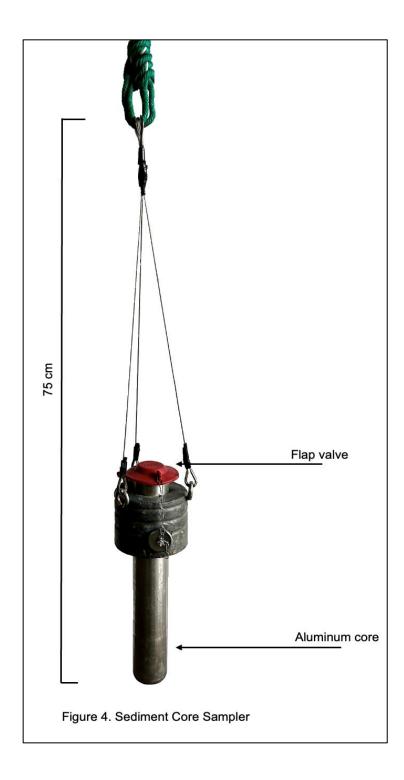
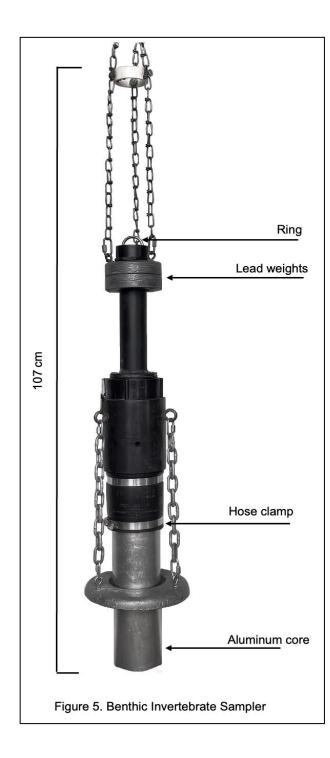


Figure 1. Youngs Bay Net Pen Sites

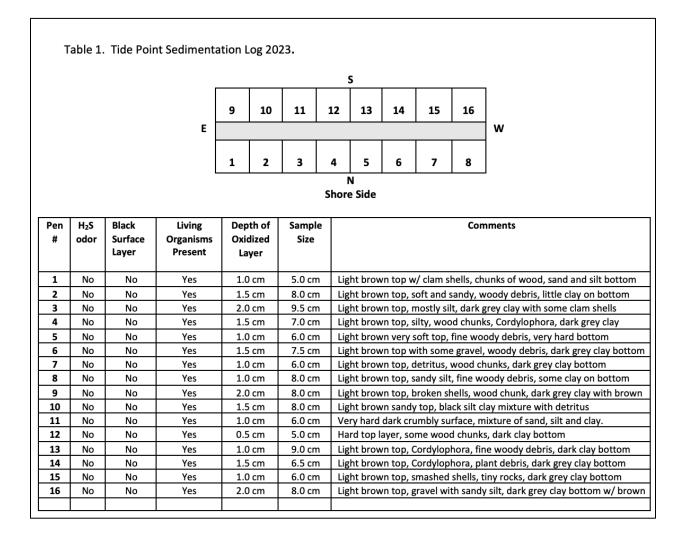
		YOUNGS BA	Y - TIDE POINT AND BOR	NSTEIN SITES	
			Low Tide Line		
	SUBC 009 X	Bornstein	X SUBC 010	Tide Point	X SUBC 006
SUBC 008 X					
			X SUBC 007		
		Figure 2. 1	īde Point/Bornstein Si	te Stations.	







Tables



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			L	1	2	3	4	5	6	7	8]						
	N Shore Side																	
							51151	c side										
Pen	H₂S	Black	Living		oth of		nple				c	Comments						
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		Layer	Present	La	ayer													
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2	No	No	Yes		5 cm	3.5			. ,									
3	No	No	Yes		5 cm		cm	<u> </u>		17		on top with barnacles, some clay						
4	No	No	Yes	2.0 cm		2.0 cm		2.0 cm		2.0 cm		10.5	5 cm	Light b	rown to	p with c	oarse sa	and fine woody debris clay/silt
-	No	No		1.5 cm														
5		NO																
6	No	No	Yes Yes	-	5 cm 0 cm		cm cm	Silt top	o, some									
-	No No			3.		3.5		Silt top Light b	o, some rown to	p, coars	e sand,	voody debris, dark clay bottom						
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e N r Shore Side																			
Pen #	H₂S	Black	Living		Dept	h of	Sam	ple						Comn	nents				
	Odor	Surface	Organism		Oxidi		Siz	· ·											
	5401	Layer	Present		Lay														
_	•				• •			-+											
1 2	No No	No No	Yes Yes	+	2.0		6.0 4.5			brow brow									ut
2 3	No	No	Yes	+	2.0		9.0		_	brow	-				-			-	
4	No	No	Yes	+	0.5		6.5	-		brow				,					isms
5	No	No	Yes	╈	3.0		10 0												dy bits
6	No	No	Yes		0.5		6.5			brow									
7	No	No	Yes		2.0 cm		11.5	cm		brow									n
8	No No		Yes		2.5	cm	6.0												bottom
9	No	No	Yes		1.0	cm	4.0	cm	Light	brow	n top	layer,	sticks	s, clay	and s	silt			
10	No	No	Yes		1.5	cm	8.5	cm	Light	brow	n top	layer,	large	wood	d chur	nk, sa	nd an	d silt,	no clay
11	No	No	Yes		1.0	cm	4.0	cm	Light	brow	n top,	, smal	l grav	el, sor	ne pla	ant m	atter,	mostl	y silt
12	No	No	Yes		1.0	cm	10.0	cm	Light	brow	n top,	most	ly cla	, som	ne sar	ıd, wo	od ch	unks	
13	No	No	Yes	-	1.5		4.5			brow									
14	No	No	Yes	_	1.5		6.0			brow							and s	ilt	
15	No	No	Yes	_	2.0		9.0			brow									
16	No	No	Yes	+	1.0		4.0			brow									
17	No	No	Yes	_	0.5		5.5			tus th									
18	No	No	Yes	+	1.0		5.0 7.5			brow brow									
19 20	No No	No No	Yes Yes	+	2.0		5.0		0	brow				,			, ,		
20	No	No	Yes	╉	2.0		7.50												y btm
22	No	No	Yes	╈	0.5		3.5			brow							-		
23	No	No	Yes	+	1.5		4.5		-	brow							-		
24	No	No	Yes		2.0		8.0		-			-							ottom
25	No	No	Yes		1.5		12.0												v/ detritu
26	No	No	Yes		1.0	cm	7.0	cm	Light	brow	n top,	plant	t matt	er, sti	cks, s	mall g	ravel	dk cla	ay btm
27	No	No	Yes	\square	0.5	cm	8.0	cm		brow									
28	No	No	Yes		1.0		6.5			brow									
29	No	No	Yes	+	2.0		10.0			brow					-				
30	No	No	Yes	\downarrow	1.5		8.5		-	brow						-			m
31	No	No	Yes	\perp	1.0	cm	4.5	cm		brow					ottom nore s				

Table 4. 2023 Yacht Club Percent Grain Size Distribution, Total Organic Carbon, and Dominant Species.

				тос		Density
STATION	%Gravel	%Sand	%Silt/Clay	mg/L	Most Dominant Species	#/sq.meter
Outfall 001	0.00	81.25	18.75	12.26	Potamopyrgus antipodarum	48,361
SUBC 001 (Reference)	6.34	72.39	21.27	13.20	Americorophium spp.	80,601
SUBC 002 (Reference)	2.95	74.44	22.61	13.28	Americorophium spp.	28,451
SUBC 003 (Reference)	0.00	70.75	29.25	12.23	Americorophium spp.	32,120
SUBC 004 (Perimeter)	0.00	75.50	24.50	9.72	Americorophium spp.	27,669
SUBC 005 (Perimeter)	0.00	72.13	27.88	15.58	Potamopyrgus antipodarum	63,579

Table 5. 2023 Tide Point/Bornstein Percent Grain Size Distribution, Total Organic Carbon, and Dominant Species

				тос		Density
STATION	%Gravel	%Sand	%Silt/Clay	mg/L	Most Dominant Species	#/sq.meter
Outfall 002	10.77	70.56	18.67	18.00	Americorophium spp.	27,248
SUBC 008 (Reference)	0.00	67.43	32.58	14.37	Oligochaeta	17,865
SUBC 009 (Perimeter)	0.00	68.51	31.49	20.29	Potamopyrgus antipodarum	12,511
Outfall 003	18.49	67.77	13.74	14.02	Potamopyrgus antipodarum	11,729
SUBC 006 (Reference)	0.00	72.89	27.11	15.29	Americorophium spp.	25,443
SUBC 007 (Reference)	0.70	74.05	25.25	7.03	Americorophium spp.	12,090
SUBC 010 (Perimeter)	18.54	64.41	17.06	26.84	Americorophium spp.	64,000

Table 6. 2023 Average Densities of Youngs Bay Dominant Species.

SPECIES	OUTFALL	REFERENCE	PERIMETER	OVERALL
Potamopygrus antipodarum	27,248	16,912	32,767	24,176
Americorophium spp.	18,506	30,616	38,631	30,288
Oligochaeta	10,326	7,308	10,271	8,916
Eogammarus confervicolus	3,308	1,664	4,707	2,980
Nereis limnicola	882	1,504	1,068	1,226
Average Total/Sq.m	60,270	58,005	87,443	67,585
1st Species % of Population	45.21	52.78	44.18	44.81

Table 7. 2005-2023 Youngs Bay Total Organic Carbon Measurements (mg/L).

STATION	2005	2007	2009	2011	2013	2015	2017	2019	2021	2023	AVERAGE
Outfall 001	11.00	23.70	20.40	24.00	17.50	18.20	23.00	18.30	20.51	12.26	18.89
SUBC 001 (Reference)	11.50	13.70	10.60	14.60	18.20	10.00	9.70	2.00	12.90	13.20	11.64
SUBC 002 (Reference)	9.10	12.10	16.60	12.90	14.00	9.00	13.90	12.00	6.27	13.28	11.92
SUBC 003 (Reference)	16.90	12.10	12.80	14.70	14.80	12.30	12.00	25.40	11.20	12.23	14.44
SUBC 004 (Perimeter)	13.70	12.60	13.60	13.10	22.70	14.70	14.80	11.90	12.90	9.72	13.97
SUBC 005 (Perimeter)	N/A	18.80	15.58	17.19							
Outfall 002	24.70	20.20	21.60	67.50	N/A	N/A	N/A	18.90	25.60	18.00	28.07
SUBC 006 (Reference)	18.60	18.10	19.10	17.90	22.40	18.20	17.90	15.70	15.90	15.29	17.91
SUBC 007 (Reference)	14.80	8.30	10.70	7.40	10.30	8.70	9.20	7.30	6.02	7.03	8.98
SUBC 008 (Reference)	11.40	16.30	19.00	17.80	27.60	14.60	15.60	15.30	18.40	14.37	17.04
SUBC 009 (Perimeter)	18.20	16.20	14.90	16.60	16.40	15.40	17.10	19.60	16.00	20.29	17.07
SUBC 010 (Perimeter)	12.90	10.10	9.30	53.10	18.60	21.30	53.20	120.90	35.00	26.84	36.12
Outfall 003	31.10	19.50	44.50	44.90	21.30	27.70	14.50	56.80	28.70	14.02	30.30

Table 8. 2023 Yacht Club Benthic Invertebrate Denstities and Diversities.

	Outfall 001	SUBC 001	SUBC 002	SUBC003	SUBC 004	SUBC 005
TAXON	#/Sq.M	#/Sq.M	#/Sq.M	#/Sq.M	#/Sq.M	#/Sq.M
Potamopyrgus antipodarum	48,361	51,308	7,940	7,519	16,481	63,579
Hobsonia florida	782	782	60	60	1,263	1,444
Oligochaeta	25,263	19,549	120	361	6,556	22,677
Americorophium spp.	26,346	80,601	28,451	32,120	27,669	54,676
Eogammarus confervicolus	8,421	4,511	602	2,406	60	17,865
Nereis limnicola	1,323	2,105	481	722	1,624	1,083
Canuella canadensis	0	0	0	0	0	0
Corbicula fluminea	0	0	60	0	0	0
Gnorimosphaeroma insulare	0	180	0	0	0	782
Macoma balthica	0	0	0	0	0	0
Nematoda	0	0	0	0	0	421
Cumacea	0	0	0	0	60	60
Saduria entomon	0	0	0	0	0	481
Total/Sq.M	110,496	159,037	37,714	43,188	53,714	163,067
Number of Species	6	7	7	6	7	10
1st Species % of Population	43.8	50.7	75.4	74.4	51.5	39.0
1st + 2nd % of Population	67.6	82.9	96.5	91.8	82.2	72.5
1st+ 2nd + 3rd % of Population	90.5	95.2	98.1	97.4	94.4	86.4

Table 9. 2023 Tide Point/Bornstein Benthic Invertebrate Densities and Diversities.

	Outfall 003	SUBC 006	SUBC 007	SUBC 008	SUBC 009	SUBC 010	Outfall 002
TAXON	#/Sq.M	#/Sq.M	#/Sq.M	#/Sq.M	#/Sq.M	#/Sq.M	#/Sq.M
Potamopyrgus antipodarum	11,729	17,624	8,241	8,842	12,511	38,496	21,654
Hobsonia florida	481	602	301	1,504	1,203	481	902
Oligochaeta	962	1,323	4,632	17,865	11,188	662	4,752
Americorophium spp.	1,925	25,443	12,090	4,992	8,180	64,000	27,248
Eogammarus confervicolus	0	1,684	180	602	0	902	1,504
Nereis limnicola	180	301	4,571	842	842	722	1,143
Canuella canadensis	0	0	0	0	0	0	0
Corbicula fluminea	0	0	0	0	0	0	120
Gnorimosphaeroma insulare	0	60	0	120	0	0	0
Macoma balthica	0	0	0	0	60	0	0
Nematoda	0	60	0	241	241	0	0
Cumacea	421	60	180	0	361	0	0
Saduria entomon	0	0	0	0	0	0	0
Total/Sq.M	15,699	47,158	30,195	35,007	34,586	105,263	57,323
Number of Species	6	9	7	8	8	6	7
1st Species % of Population	74.7	54.0	40.0	51.0	36.2	60.8	47.5
1st + 2nd % of Population	87.0	91.3	67.3	76.3	68.5	97.4	85.3
1st+ 2nd + 3rd % of Population	93.1	94.9	82.7	90.5	92.2	98.2	93.6

Table 10. Youngs Bay Benthic Invertebrate Densities, 2009-2023.

Species	2009	2011	2013	2015	2017	2019	2021	2023
Potamopyrgus antipodarum	20,601	15,699	11,325	21,223	8,186	21,214	25,434	24,176
Americorophium spp.	22,115	8,692	18,723	35,873	5,020	17,839	17,839	30,288
Oligochaeta	10,471	4,426	9,662	4,969	1,039	2,260	12,131	8,916
Eogammarus confervicolus	907	767	60	1,704	421	1,213	1,772	2,980
Hobsonia florida	907	767	87	2,142	421	360	1,596	759
Nereis limnicola	416	1,117	661	1,897	355	1,072	990	1,226

Table 11. Yacht Club Most Dominant Benthic Invertebrate Species Per Station, 2017-2023.

	2017		2019		2021		2023	
Station	Species	Density	Species	Density	Species	Density	Species	Density
Outfall 001	P. antipodarum	16,180	P. antipodarum	43,970	Americorophium spp.	85,293	P. antipodarum	48,361
SUBC 001 (reference)	Americorophium spp.	12,271	P. antipodarum	11,007	Americorophium spp.	74,706	Americorophium spp.	80,601
SUBC 002 (reference)	P. antipodarum	962	Americorophium spp.	7,759	Americorophium spp.	7,759	Americorophium spp.	28,451
SUBC 003 (reference)	P. antipodarum	8,000	P. antipodarum	22,195	Americorophium spp.	25,022	Americorophium spp.	32,120
SUBC 004 (perimeter)	Americorophium spp.	13,594	P. antipodarum	42,827	Americorophium spp.	16,601	Americorophium spp.	27,669
SUBC 005 (perimeter)	N/A	N/A	N/A	N/A	P. antipodarum	54,857	P. antipodarum	63,579

Table 12. Tide Point/Bornstein Most Dominant Benthic Invertebrate Species Per Station, 2017-2023.

	2017		2019		2021		2023	
Station	Species	Density	Species	Density	Species	Density	Species	Density
Outfall 002	N/A	N/A	Americorophium spp.	37,293	Oligochaeta	24,120	Americorophium spp.	27,248
Outfall 003	P. antipodarum	10,226	Americorophium spp.	31,338	Americorophium spp.	58,466	P. antipodarum	11,729
SUBC 006 (reference)	P. antipodarum	6,015	Americorophium spp.	35,970	Americorophium spp.	47,759	Americorophium spp.	25,443
SUBC 007 (reference)	P. antipodarum	3,970	Oligochaeta	5,053	Oligochaeta	9,444	Americorophium spp.	12,090
SUBC 008 (reference)	P. antipodarum	3,609	P. antipodarum	12,692	Oligochaeta	19,308	Oligochaeta	17,865
SUBC 009 (perimeter)	P. antipodarum	6,316	P. antipodarum	21,714	Oligochaeta	13,474	P. antipodarum	12,511
SUBC 010 (perimeter)	P. antipodarum	13,474	P. antipodarum	37,534	Americorophium spp.	86,075	Americorophium spp.	64,000

Table 13. Total Dissolved Solids Measurements Of Each Net Pen Site in Youngs Bay, 2023.

Net Pen Site	Upstream (mg/L)	Downstream (mg/L)
TidePoint	4,925	4,925
Bornstein	4,975	5,300
Yacht Club	5,050	5,425

Table 14. Young's Bay Beggiatoa spp., Water Temperature, pH- 2023.

Station	Beggiatoa spp. Present	Water Temp C.	рН
Outfall 001	No	18	7.3
SUBC 001	No	18	7.3
SUBC 002	No	18	7.3
SUBC 003	No	18	7.3
SUBC 004	No	18	7.3
SUBC 005	No	18	7.3
Outfall 002	No	18	7.3
SUBC 006	No	18	7.3
SUBC 007	No	18	7.3
SUBC 008	No	18	7.3
SUBC 009	No	18	7.3
SUBC 010	No	18	7.3
Outfall 003	No	18	7.3

Table 15 Outfall 001 / Reference Condition Comparisons

Null Hypothesis: There is no difference Station Designation Number of Animals/Sample														
Number of Animals/Sample	e between	the Refe	rence S	tations a	nd Outfa	ll 001 in	the Nu	mber of A	nimals/	Sample		_		
	S	5UBC 001		S	UBC 002			SUBC003			utfall 00			
	1556	543	545	231	150	246	180	292		328	762	747	"= 0.05	
Excel Rank	12	8	9	3	1	4	2	6	4	7 1	11	10	\$8	Tabular Value
Matches	1	1	1	1	1	2	1	1			1	1	T= 28	
Wilcoxon Rank	12	8	9	3	1	4.5	2	6		7	11	10	T'= 11	
				T=	50 N=9					T=	28 N=3			Do Not Reject Null Hypothesis
Null Hypothesis: There is no differenc Station Designation	-	the Refe			nd Outfa UBC 002			mber of S SUBC003		-	utfall 00:	. 1		
Number of Species/Sample	7	5	6	5	5	6	5	6		6	6	6	"= 0.05	
Excel Rank	12	2	6	2	2	6	2	6	1	6	6	6	= 0.05 \$ 8	Tabular Value
Matches	1	4	6	4	4	6	4	6	1	6 6 8.5	6	6	T= 25.5	
Wilcoxon Rank	12	3.5	8.5	3.5	3.5	8.5	3.5	8.5	1	8.5	8.5	8.5	T'= 13.5	
				T=	52.5 N=9					T=	25.5 N=3			Do Not Reject Null Hypothesis
Null Hypothesis: There is no difference	o hotwoon	the Pofe	ronco 6	tations a	ad Outfa	ll 001 in	the Dor	minant Cn	aciac %	ofSamp	•			
Null Hypothesis: There is no differenc Station Designation		UBC 001			UBC 002			SUBC003			e utfall 00:	1		
Dominant Species % of Sample	61.89	54.88	67.89		76.67	71.95	71.11	73.97	77.24		40.29	44.44	"= 0.05	
Excel Rank	5	4	6	12	10	8	7	9		3	1	2	\$ 8	Tabular Value
Matches	1	1	1	1	1	1	1	1		1	1	1	T= 6	
Wilcoxon Rank	5	4	6	12	10	8	7	9	11	3	1	2	T'= 33	
				T=	72					T=	6			Reject Null Hypothesis
					N=9						N=3			
Null Hypothesis: There is no differenc	o botwoon	the Refe	ranca S	tations a	ad Outfa	ll 001 in	the Sne	cies indic	ated	<u>The don</u>	ninant sp	ecies may	not be the sa	me for every station
Station Designation		SUBC 001			UBC 002			SUBC003		o	utfall 00:	1		
Potamopy rgus antipodarum	512	216	125	45	29	58	27	52		165	307	332	"= 0.05	
Excel Rank	12	9	7	3	2	6	1	5		8	10	11	\$8	Tabular Value
Matches	1	1	1	1	1	1	1	1		1	1	1	T= 29	
Wilcoxon Rank	12	9	7	3	2	6	1	5	4	8	10	11	T'= 10	
				T=	49					8 T=	29			Do Not Reject Null Hypothesis
					N=9						N=3			
Null Uunathosis, Thoras is no difference		the Defe	*****	tations a	ad 0+fa	II 001 in	the Car	aine india	atad					
Null Hypothesis: There is no differenc Station Designation	-	UBC 001			UBC 002			SUBC003		0	utfall 00:	1		
Hobsonia florida	1	12	0	1	0	0	0	1	0	0 6 11	4	3	"= 0.05	
Excel Rank	6	12	1	6	1	1	1	6	1	11	10	9	\$ 8	Tabular Value
Matches	3	1	5	3	5	5	5	3	5	1	1	1	T= 30	
Wilcoxon Rank	7	12	3	7	3	3	3	7		11	10	9	T'= 9	
	7			T=	48					T=	30			Do Not Reject Null Hypothesis
	-				N=9					-	N=3	-		
Null Hypothesis: There is no differenc	e between	the Refe	rence S	tations a	nd Outfa	ll 001 in	the Spe	cies indic	ated					
Station Designation	-	UBC 001			UBC 002			SUBC003		0	utfall 00	1		
Oligochaeta	23	298	4	0	1	1	4	2	0	0 3	289	128	"= 0.05	
Excel Rank	9	12	7	1	3	3	7	5	1	6	11	10	\$8	Tabular Value
Matches	1	1	2	2	2	2	2	1	2	1	1	1	T= 27	
Wilcoxon Rank	9	12	7.5	1.5	3.5	3.5	7.5	5	1.5	6 T=	11	10	T'= 12	
				T=	51					T=	27			Do Not Reject Null Hypothesis
					N=9						N=3			
Null Hypothesis: There is no differenc	e between	the Refe	rence S	tations a	nd Outfa	ll 001 in	the Spe	cies indic	ated					
Station Designation		SUBC 001			UBC 002			SUBC003		0	utfall 00	1		
A second a second bit second a	963	7	370	181	115	177	128	216	190	133	110	195	"= 0.05	
Americorophium spp.	12	1	11	7	3	6	4	10		5	2	9	\$8	Tabular Value
Americorophium spp. Excel Rank	1	1	1	1	1	1	1	1		1	1	1	T= 16	
	1 ¹		11	7	3	6	4	10		5	2	9	T'= 23	
Excel Rank	12	1	11								16	:		
Excel Rank Matches		1	11	T=	62					T=	16			Do Not Reject Null Hypothesis
Excel Rank Matches		1		T=	62 N=9						N=3	1		Do Not Reject Null Hypothesis
Excel Rank Matches	12				N=9	ll 001 in	the Spe	cies indic				1		Do Not Reject Null Hypothesis
Excel Rank Matches Wilcoxon Rank	12 e between		rence S	tations a	N=9		the Spe	ecies indic SUBC003	ated	-		1		Do Not Reject Null Hypothesis
Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differenc	12 e between	the Refe	rence S	tations a	N=9 nd Outfa		the Spe		ated	-	N=3	1 85	"= 0.05	Do Not Reject Null Hypothesis
Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differenc Station Designation	12 Te between	the Refe SUBC 001	rence S	tations a S	N=9 nd Outfa UBC 002			SUBC003	ated 9 5	0 18 7	N=3 utfall 00:		"= 0.05 \$ 8	Do Not Reject Null Hypothesis Tabular Value
Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differenc Station Designation Eogammarus confervicolus	12 re between S 49	the Refe SUBC 001 0	rence S	tations a S 2	N=9 nd Outfa UBC 002 2	6	19	SUBC003 12	ated 9 5 1	0 18 7 1	N=3 utfall 00: 37	85	\$8 T=29	
Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differenc Station Designation Eogammarus confervicolus Excel Rank	12 e between 5 49 11	the Refe SUBC 001 0 1	rence S 26 9	tations a S 2 2 2 2 2.5	N=9 nd Outfa UBC 002 2 2 2 2.5	6 4	19 8	SUBC003 12 6	ated 9 5 1 5	0 18 7 1 7	N=3 utfall 00: 37 10 1 10	85 12	\$8	Tabular Value
Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differenc Station Designation Eogammarus confervicolus Excel Rank Matches	12 e between \$ 49 11 1	the Refe SUBC 001 0 1 1	rence S 26 9 1	tations a S 2 2 2 2	N=9 nd Outfa UBC 002 2 2 2 2	6 4 1	19 8 1	SUBC003 12 6 1	ated 9 5 1 5	0 18 7 1	N=3 utfall 00: 37 10 1	85 12 1	\$8 T=29	

ation Designation		SUBC 00	1	5	UBC 002	2		SUBC003	3	0	utfall 00	1		
lereis limnicola	6	10	19	2	3	3	2	9	1	3	15	4	"= 0.05	
Excel Rank	8	10	12	2	4	4	2	9	1	4	11	7	\$8	Tabular Value
Matches	1	1	1	2	3	3	2	1	1	3	1	1	T= 23	
Wilcoxon Rank	8	10	12	2.5	5	5	2.5	9	1	5	11	7	T'= 16	
				T=	55					T=	23			Do Not Reject Null Hypothesis
	-				N=9					-	N=3	-		
Null Hypothesis: There is no difference	e betwee	n the Ref	erence S	itations a	nd Outfa	all 001 in	the Spe	cies india	ated					
Station Designation		SUBC 00			UBC 002		•	SUBC003		0	utfall 00	1		
Corbicula fluminea	0	0	0	0	0	1	0	0	0	0	0	0	"= 0.05	
Excel Rank	1	1	1	1	1	12	1	1	1	1	1	1	\$8	Tabular Value
Matches	11	11	11	11	11	1	11	11	11	11	11	11	T= 18	
Wilcoxon Rank	6	6	6	6	6	12	6	6	6	6	6	6	T'= 21	
				T=	60					T=	18			Do Not Reject Null Hypothesis
	=				N=9					=	N=3	Ξ		
Null Hypothesis: There is no difference	e betwee	n the Ref	erence S	tations a	nd Outfa	all 001 in	the Spe	cies india	ated					
Station Designation	-	SUBC 00			UBC 002			SUBCOOS		о	utfall 00	1		
Gnorimosphaeroma insulare	2	0	1	0	0	0	0	0	0	0	0	0	"= 0.05	
Excel Rank	12	1	11	1	1	1	1	1	1	1	1	1	\$8	Tabular Value
Matches	1	10	1	10	10	10	10	10	10	10	10	10	T= 16.5	
Wilcoxon Rank	12	5.5	11	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	T'= 22.5	
				T=	61.5					Т=	16.5			Do Not Reject Null Hypothesis
	-				N=9					-	N=3	-		

Table 16 SUBC 004 / Reference Condition Comparisons

Null Hypothesis: There is no difference	between	the Refe	rence S	tations a	nd SUBC	004 in t	he Num	ber of Ar	imals/S	ample				
Station Designation		UBC 001			UBC 002			SUBC 003			UBC 004			
Number of Animals/Sample	1556	543	545	231	150	246	180	292	246	227	326	340	"= 0.05	
Excel Rank	12	10	11	4	1	5	2	7	5	3 1	8	9	\$8	Tabular Value
Matches	1	1	1	1	1	2	1	1			1	1	T= 20	
Wilcoxon Rank	12	10	11	4	1	5.5	2	7	5.5	3 T=	8	9	T'= 19	
				T=	58					T=	20			Do Not Reject Null Hypothesis
					N=9						N=3			
Null Hypothesis: There is no difference			rence S			004 in t			ecies/S					
Station Designation		UBC 001	~		UBC 002	~		SUBC 003			UBC 004	_	"	
Number of Species/Sample	7	5	6	5	5	6	5	6	4	5		5	"= 0.05	Tabular Value
Excel Rank Matches	11 2	2 6	8 3	2 6	2 6	8 3	2 6	8 3	1 1	5 2 6	11 2	2 6	\$8 T= 20.5	
	11.5	4.5	9	4.5	4.5	9	4.5	9			11.5	4.5	T= 20.5	
Wilcoxon Rank	11.5	4.5	9	4.5 T=	4.5 57.5	9	4.5	9	1	4.5 T=	20.5	4.5	1 - 18.5	Do Not Reject Null Hypothesis
				1-	N=9						20.3 N=3			Do Not Reject Null Hypothesis
					11-5						11-5			
Null Hypothesis: There is no difference	between	the Refe	rence S	tations ar	nd SUBC	004 in t	he Dom	inant Spe	cies % c	of Sample				
Station Designation	S	UBC 001		s	UBC 002			SUBC 003			UBC 004			
Dominant Species % of Sample	61.89	54.88	67.89	78.35	76.67	71.95	71.11	73.97	77.24	50.66	46.01	57.35	"= 0.05	
Excel Rank	5	3	6	12	10	8	7	9	11	2	1	4	\$8	Tabular Value
Matches	1	1	1	1	1	1	1	1	1	1	1	1	T= 7	
Wilcoxon Rank	5	3	6	12	10	8	7	9		2	1	4	T'= 32	
				T=	71					T=	7			Reject Null Hypothesis
	-				N=9					-	N=3	-		
										The dor	ninant sp	ecies m	ay not be the	same for every station
Null Hypothesis: There is no difference			rence S				•		ted					
Station Designation		UBC 001			UBC 002			SUBC 003			UBC 004			
Potamopyrgus antipodarum	512	216	125	45	29	58	27	52		72	106	96	"= 0.05	
Excel Rank	12	11	10	3	2	6	1	5	4	7 1	9	8	\$ 8	Tabular Value
Matches	1	1	1	1	1	1	1	1			1	1	T= 24	
Wilcoxon Rank	12	11	10	3	2	6	1	5	4	7	9	8	T'= 15	
	12			-						-	24			
	12			T=	54					T=	24			Do Not Reject Null Hypothesis
	12			T=	54 N=9					T=	24 N=3			Do Not Reject Null Hypothesis
		the Refe	rence S		N=9	004 in t	he Sner	ies indica		T=				Do Not Reject Null Hypothesis
Null Hypothesis: There is no difference	e between			tations a	N=9 nd SUBC		-		ted		N=3			Do Not Reject Null Hypothesis
Null Hypothesis: There is no difference Station Designation	e between	UBC 001		tations ar S	N=9 nd SUBC UBC 002		-	SUBC 003	ted		N=3 SUBC 004	8	"= 0.05	
Null Hypothesis: There is no difference Station Designation Hobsonia florida	e between S 1	UBC 001 12	0	tations ar S 1	N=9 nd SUBC UBC 002 0	0	0	SUBC 003 1	ted		N=3 SUBC 004 9	8	"= 0.05 \$ 8	
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank	e between	UBC 001 12 12	0 1	tations ar S 1 6	N=9 nd SUBC UBC 002	0 1	0	SUBC 003 1 6	ted 0 1	4	N=3 5UBC 004 9 11	10	\$8	
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches	e between S 1 6 3	UBC 001 12 12 1	0 1 5	tations an S 1 6 3	N=9 nd SUBC UBC 002 0 1 5	0 1 5	0 1 5	SUBC 003 1 6 3	ted 0 1	4	N=3 5UBC 004 9 11 1	10 1		
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank	e between S 1 6 3 7	UBC 001 12 12	0 1	tations ar S 1 6	N=9 nd SUBC UBC 002 0 1 5 3	0 1	0	SUBC 003 1 6	ted 0 1 5 3	4 9 1 9	N=3 5UBC 004 9 11 1 1	10 1 10	\$8 T=30	Tabular Value
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches	e between S 1 6 3	UBC 001 12 12 1	0 1 5	tations an S 1 6 3 7	N=9 nd SUBC UBC 002 0 1 5	0 1 5	0 1 5	SUBC 003 1 6 3	ted 0 1 5 3	4 9 1 9	N=3 5UBC 004 9 11 1	10 1	\$8 T=30	
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches	e between S 1 6 3 7	UBC 001 12 12 1	0 1 5	tations an S 1 6 3 7	N=9 nd SUBC UBC 002 0 1 5 3 48	0 1 5	0 1 5	SUBC 003 1 6 3	ted 0 1 5 3	4 9 1 9	N=3 5UBC 004 9 11 1 11 30	10 1 10	\$8 T=30	Tabular Value
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches	2 between 5 1 6 3 7	UBC 001 12 12 1 1 12	0 1 5 3	tations an S 1 6 3 7 T=	N=9 md SUBC UBC 002 0 1 5 3 48 N=9	0 1 5 3	0 1 5 3	SUBC 003 1 6 3 7	ted 0 1 5 3	4 9 1 9	N=3 5UBC 004 9 11 1 11 30	10 1 10	\$8 T=30	Tabular Value
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches Wilcoxon Rank	between S 1 6 3 7 2 between	UBC 001 12 12 1 1 12	0 1 5 3	tations an S 1 6 3 7 T= tations an	N=9 md SUBC UBC 002 0 1 5 3 48 N=9	0 1 5 3	0 1 5 3 he Spec	SUBC 003 1 6 3 7	ted 0 1 5 3 ted	4 9 1 9 T=	N=3 5UBC 004 9 11 1 11 30	10 1 10	\$ 8 T= 30 T'= 9	Tabular Value Do Not Reject Null Hypothesis
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference	between S 1 6 3 7 2 between	UBC 001 12 12 1 12 12	0 1 5 3	tations an S 1 6 3 7 T= tations an	N=9 nd SUBC UBC 002 0 1 5 3 48 N=9 nd SUBC	0 1 5 3	0 1 5 3 he Spec	SUBC 003 1 6 3 7	ted 0 1 5 3 ted	4 9 1 9 T=	N=3 5UBC 004 9 11 1 11 30 N=3	10 1 10 31	\$8 T=30	Tabular Value Do Not Reject Null Hypothesis
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank	2 between 1 6 3 7 2 between S 23 8	UBC 001 12 12 1 12 1 12 1 12 1 12 12	0 1 5 3 rence S 4 6	tations an S 1 6 3 7 T= tations an S 0 1	N=9 nd SUBC 002 0 1 5 3 48 N=9 nd SUBC UBC 002 1 3	0 1 5 3 004 in t 1 3	0 1 5 3 he Spec 4 6	SUBC 003 1 6 3 7 ies indica SUBC 003	ted 0 1 5 3 ted 0 1	4 9 1 9 T= 32 10	N=3 SUBC 004 9 11 1 1 30 N=3 SUBC 004	10 1 10 31 9	\$ 8 T= 30 T'= 9 " = 0.05 \$ 8	Tabular Value Do Not Reject Null Hypothesis
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta	2 between 1 3 7 2 between S 23 8 1 1 1 1 2 3 3 7 5 1 1 1 1 1 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1	UBC 001 12 12 1 12 1 12 1 12 1 12 1 12 1 2 2 8 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1	0 1 5 3 rence S 4 6 2	tations an S 1 6 3 7 T= tations an S 0	N=9 nd SUBC 002 0 1 5 3 48 N=9 nd SUBC UBC 002 1	0 1 5 3 004 in t	0 1 5 3 he Spec 4 6 2	SUBC 003 1 6 3 7 ies indica SUBC 003 2 5 1	ted 0 1 5 3 ted 0 1 2	4 9 1 9 T= 32 10 1	N=3 SUBC 004 9 11 1 1 30 N=3 SUBC 004 46	10 1 10 31 9 1	\$ 8 T= 30 T'= 9 "= 0.05 \$ 8 T= 30	Tabular Value Do Not Reject Null Hypothesis
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank	2 between 1 6 3 7 7 5 between 5 23 8 1 8 1 8	UBC 001 12 12 1 12 1 12 1 12 1 12 12	0 1 5 3 rence S 4 6	tations an S 1 6 3 7 T= tations an S 0 1 2 1.5	N=9 md SUBC 002 0 1 5 3 48 N=9 md SUBC 002 1 3 2 3.5	0 1 5 3 004 in t 1 3	0 1 5 3 he Spec 4 6	SUBC 003 1 6 3 7 7 ies indica SUBC 003 2 5	ted 0 1 5 3 ted 0 1 2	4 9 1 9 T= 32 10	N=3 SUBC 004 9 11 1 1 30 N=3 SUBC 004 46 11 1 1	10 1 10 31 9	\$ 8 T= 30 T'= 9 " = 0.05 \$ 8	Tabular Value Do Not Reject Null Hypothesis Tabular Value
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches	2 between 1 3 7 2 between S 23 8 1 1 1 1 2 3 3 7 5 1 1 1 1 1 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1	UBC 001 12 12 1 12 1 12 1 12 the Refe UBC 001 298 12 1 1	0 1 5 3 rence S 4 6 2	tations an S 1 6 3 7 T= tations an S 0 1 2	N=9 md SUBC 002 0 1 5 3 48 N=9 md SUBC UBC 002 1 3 2 3.5 48	0 1 5 3 004 in t 1 3 2	0 1 5 3 he Spec 4 6 2	SUBC 003 1 6 3 7 ies indica SUBC 003 2 5 1	ted 0 1 5 3 ted 0 1 2	4 9 1 9 T= 32 10 1	N=3 SUBC 004 9 11 1 30 N=3 SUBC 004 46 11 1 11 30 30 SUBC 004 46 11 1 30 30 30 30 30 30 30 30 30 30	10 1 10 31 9 1	\$ 8 T= 30 T'= 9 "= 0.05 \$ 8 T= 30	Tabular Value Do Not Reject Null Hypothesis
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches	2 between 1 6 3 7 7 5 between 5 23 8 1 8 1 8	UBC 001 12 12 1 12 1 12 1 12 the Refe UBC 001 298 12 1 1	0 1 5 3 rence S 4 6 2	tations an S 1 6 3 7 T= tations an S 0 1 2 1.5	N=9 md SUBC 002 0 1 5 3 48 N=9 md SUBC 002 1 3 2 3.5	0 1 5 3 004 in t 1 3 2	0 1 5 3 he Spec 4 6 2	SUBC 003 1 6 3 7 ies indica SUBC 003 2 5 1	ted 0 1 5 3 ted 0 1 2	4 9 1 9 T= 32 10 1 10	N=3 SUBC 004 9 11 1 1 30 N=3 SUBC 004 46 11 1 1	10 1 10 31 9 1	\$ 8 T= 30 T'= 9 "= 0.05 \$ 8 T= 30	Tabular Value Do Not Reject Null Hypothesis Tabular Value
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank	2 between 5 1 6 3 7 2 2 8 1 8	UBC 001 12 12 1 12 the Refe UBC 001 298 12 1 12 12	0 1 5 3 rence S 4 6 2 6.5	tations an S 1 6 3 7 T= tations an S 0 1 2 1.5 T=	N=9 md SUBC 0 1 5 3 48 N=9 md SUBC UBC 002 1 3 2 3.5 48 N=9	0 1 5 3 004 in t 1 3 2 3.5	0 1 5 3 he Spec 4 6 2 6.5	SUBC 003 1 6 3 7 ies indica SUBC 003 2 5 1 5 5	ted 0 1 5 3 ted 0 1 2 1.5	4 9 1 9 T= 32 10 1 10	N=3 SUBC 004 9 11 1 30 N=3 SUBC 004 46 11 1 11 30 30 SUBC 004 46 11 1 30 30 30 30 30 30 30 30 30 30	10 1 10 31 9 1	\$ 8 T= 30 T'= 9 "= 0.05 \$ 8 T= 30	Tabular Value Do Not Reject Null Hypothesis Tabular Value
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference	between 1 6 3 7 2 between 5 23 8 1 8 2 23 8 1 8 2 23 8 1 8 2 2 2 3 8 1 2 2 3 8 1 2 2 3 2 2 3 2 2 3 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3	UBC 001 12 12 1 12 1 12 UBC 001 298 12 1 12 the Refe the Refe	0 1 5 3 rence S 4 6.5 rence S	tations an 5 1 6 3 7 T= tations an 5 0 1 2 1.5 T= tations an	N=9 md SUBC 0 1 5 3 48 N=9 md SUBC 02 1 3 2 3.5 48 N=9 md SUBC 02 1 3 2 3.5 48 N=9	0 1 5 3 004 in t 1 3 2 3.5 004 in t	0 1 5 3 he Spec 4 6.5 he Spec	SUBC 003 1 6 3 7 ies indica SUBC 003 2 5 1 5 ies indica	ted 0 5 3 ted 0 1 2 1.5	4 9 1 9 T= 32 10 1 10 T=	N=3 SUBC 004 9 11 1 1 30 N=3 SUBC 004 46 11 1 1 30 N=3 N=3	10 1 10 31 9 1	\$ 8 T= 30 T'= 9 "= 0.05 \$ 8 T= 30	Tabular Value Do Not Reject Null Hypothesis Tabular Value
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation	e between 1 6 3 7 2 between 5 23 8 1 8 2 between 5 23 8 1 8 2 2 3 8 1 5 5 5 5 5 5 5 5 5 5 5 5 5	UBC 001 12 12 1 12 1 12 1 12 UBC 001 298 12 1 12 12 12 12 12 12 12 12	0 1 5 3 rence S 4 6 2 6.5	tations an S 1 6 3 7 T= tations an S 0 1 2 1.5 T= tations an S	N=9 md SUBC 0 1 5 3 48 N=9 md SUBC 002 1 3 2 3.5 48 N=9 md SUBC 002 1 3 2 3.5 48 N=9 md SUBC 002 0 1 5 5 5 5 5 5 5 5 6 7 7 8 8 8 9 9 7 8 8 8 8 8 9 9 7 8 8 8 8 8 8 8 8 9 9 8 8 8 8 8 8 8 8 8 8 8 8 8	0 1 5 3 004 in t 1 3 2 3.5 004 in t	0 1 5 3 he Spec 6.5	SUBC 003 1 6 3 7 ies indica SUBC 003 2 5 1 5 ies indica SUBC 003	ted 0 1 5 3 ted 0 1 2 1.5	4 9 1 9 T= 32 10 1 10 T=	N=3 SUBC 004 9 11 1 11 30 N=3 SUBC 004 46 11 1 30 N=3 SUBC 004 500004	10 1 10 31 9 1 9	\$ 8 T= 30 T'= 9 " = 0.05 \$ 8 T= 30 T'= 9	Tabular Value Do Not Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp.	between S 1 6 3 7 7 S between S 23 8 1 8 2 8 1 8 2 963	UBC 001 12 12 1 12 1 12 1 12 UBC 001 298 12 1 12 12 12 12 12 12 12 12	0 1 5 3 * rence S 4 6.5 * rence S 370	tations an 5 1 6 3 7 T= tations an 5 0 1 2 1.5 T= tations an 5 0 1 2 1.5 T= 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	N=9 md SUBC 002 0 1 5 3 48 N=9 md SUBC 002 1 3 2 3.5 48 N=9 md SUBC 002 1 3 2 3.5 48 N=9 md SUBC 002 1 3 2 3.5 48 N=9 md SUBC 002 1 3 5 48 N=9 MEC 002 1 3 5 48 N=9 MEC 002 1 3 5 48 N=9 MEC 002 1 3 5 48 N=9 MEC 002 1 3 5 48 N=9 MEC 002 1 3 5 48 N=9 MEC 002 1 3 5 48 N=9 MEC 002 1 3 5 48 N=9 MEC 002 1 3 5 48 N=9 MEC 002 1 1 3 5 48 N=9 MEC 002 1 1 3 5 48 N=9 MEC 002 1 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1	0 1 5 3 004 in t 3 2 3.5 004 in t	0 1 5 3 he Spec 6.5 he Spec 128	SUBC 003 1 6 3 7 ies indica SUBC 003 2 5 ies indica SUBC 003 216	ted 0 1 5 3 ted 0 1 2 1.5 ted 190	4 9 1 9 T= 32 10 1 10 T= (115)	N=3 SUBC 004 9 11 1 1 30 N=3 SUBC 004 46 11 1 1 30 N=3 SUBC 004 46 11 1 30 N=3 SUBC 004 46 11 1 30 N=3 SUBC 004 46 11 1 30 N=3 SUBC 004 46 11 1 30 N=3 SUBC 004 46 11 1 30 N=3 SUBC 004 46 11 1 30 N=3 SUBC 004 46 11 1 30 N=3 SUBC 004 46 11 11 30 N=3 SUBC 004 45 SUBC 004 45 SUBC 004 45 SUBC 004 45 SUBC 004 11 30 N=3 SUBC 004 15 SUBC	10 1 10 31 9 1 9 195	\$ 8 T= 30 T'= 9 " = 0.05 \$ 8 T= 30 T'= 9	Tabular Value Do Not Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank	between S 1 6 3 7 between S 23 8 1 8 between S 963 12	UBC 001 12 12 1 12 the Refe UBC 001 298 12 1 12 the Refe UBC 001 7 1	0 1 5 3 * rence S 4 6 2 6.5 * * rence S 370 11	tations an 5 1 6 3 7 T= tations an 2 1.5 T= tations an 5 0 1 2 1.5 T= 1.5 7 7 7 7 7 7 7 7 7 7 7 7 7	N=9 md SUBC 002 0 1 5 3 48 N=9 md SUBC 002 1 3 2 3.5 48 N=9 md SUBC 002 1 3 2 3.5 48 N=9 md SUBC 002 1 3 2 3.5 48 N=9 md SUBC 002 1 3 2 3.5 48 N=9 md SUBC 002 1 3 2 3.5 48 N=9 MBC 002 1 3 2 3.5 48 N=9 MBC 002 1 3 2 3.5 48 N=9 MBC 002 1 3 2 3.5 48 N=9 MBC 002 1 3 2 3.5 48 N=9 MBC 002 1 3 2 3.5 48 N=9 MBC 002 1 3 2 3.5 48 N=9 MBC 002 1 3 48 N=9 MBC 002 1 3 5 48 N=9 MBC 002 1 3 5 48 N=9 MBC 002 1 3 5 48 N=9 MBC 002 1 3 5 48 N=9 MBC 002 1 3 5 48 N=9 MBC 002 1 3 5 48 N=9 MBC 002 1 3 5 48 N=9 MBC 002 1 1 5 48 N=9 MBC 002 1 1 5 48 N=9 MBC 002 1 1 5 48 N=9 MBC 002 1 1 5 48 N=9 MBC 002 1 1 5 48 N=9 MBC 002 1 1 5 48 N=9 MBC 002 1 1 5 48 N=9 MBC 002 1 1 5 48 N=9 MBC 002 1 1 5 48 N=9 1 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1	0 1 5 3 004 in t 3 2 3.5 004 in t 177 6	0 1 5 3 4 6 2 6.5 4 6.5 128 4	SUBC 003 1 6 3 7 ies indica SUBC 003 2 5 1 5 ies indica SUBC 003 216 10	ted 0 1 5 3 ted 0 1 2 1.5 ted 190 8	4 9 1 9 T= 32 10 1 10 T= 115 2	N=3 SUBC 004 9 11 1 30 N=3 SUBC 004 46 11 1 1 30 N=3 SUBC 004 46 11 1 30 N=3 SUBC 004 5	10 1 10 31 9 1 195 9	\$ 8 T= 30 T'= 9 " = 0.05 \$ 8 T= 30 T'= 9 " = 0.05 \$ 8	Tabular Value Do Not Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches	ebetween S 1 6 3 7 7 23 1 1 8 23 9 63 12 1	UBC 001 12 12 1 12 1 12 the Refe UBC 001 298 12 1 12 the Refe UBC 001 7 1 1	0 1 5 3 rence S 4 6 2 6.5 rence S 370 11 1	tations an 5 1 6 3 7 T= tations an 5 0 1.5 T= tations an 5 1.5 T= 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	N=9 nd SUBC 002 0 1 5 3 48 N=9 nd SUBC 002 1 3 2 3.5 48 N=9 nd SUBC 002 1 5 2 2 2	0 1 5 3 004 in t 1 3 2 3.5 004 in t 177 6 1	0 1 5 3 he Spec 6.5 he Spec 128 4 1	SUBC 003 1 6 3 7 ies indica SUBC 003 2 5 1 5 ies indica SUBC 003 2 5 1 5 ies indica 1 5 1 1 5 1 1 5 1 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1	ted 0 1 5 3 ted 0 1 2 1.5 ted 1900 8 1	4 9 1 9 T= 32 10 1 10 T= 115 2 2	N=3 SUBC 004 9 11 1 1 30 N=3 SUBC 004 46 11 1 1 30 N=3 SUBC 004 46 11 1 30 N=3 SUBC 004 46 11 1 30 N=3 SUBC 004 46 11 1 30 N=3 SUBC 004 46 11 1 30 N=3 SUBC 004 46 11 11 30 N=3 SUBC 004 15 SUBC 004 15	10 1 10 31 9 1 9 1 9 1 9 1 9 1 9 1	\$ 8 T= 30 T'= 9 "= 0.05 \$ 8 T= 30 T'= 9 "= 0.05 \$ 8 T= 16.5	Tabular Value Do Not Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank	between S 1 6 3 7 between S 23 8 1 8 between S 963 12	UBC 001 12 12 1 12 the Refe UBC 001 298 12 1 12 the Refe UBC 001 7 1	0 1 5 3 * rence S 4 6 2 6.5 * * rence S 370 11	tations an S 1 6 3 7 T= tations an S 0 1 2 1.5 T= tations an S 1.5 T= tations an S 1.5 T= 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	N=9 nd SUBC 002 0 1 5 3 48 N=9 nd SUBC 0UBC 002 1 3 2 3.5 48 N=9 nd SUBC 0UBC 002 115 2 2 2.5	0 1 5 3 004 in t 3 2 3.5 004 in t 177 6	0 1 5 3 4 6 2 6.5 4 6.5 128 4	SUBC 003 1 6 3 7 ies indica SUBC 003 2 5 1 5 ies indica SUBC 003 216 10	ted 0 1 5 3 ted 0 1 2 1.5 ted 1900 8 1	4 9 1 9 T= 32 10 1 10 T= 115 2 2 2.5	N=3 SUBC 004 9 11 1 1 30 N=3 SUBC 004 46 11 1 1 30 N=3 SUBC 004 46 11 5 1 5 1 5	10 1 10 31 9 1 195 9	\$ 8 T= 30 T'= 9 " = 0.05 \$ 8 T= 30 T'= 9 " = 0.05 \$ 8	Tabular Value Do Not Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis
Null Hypothesis: There is no difference Station Designation Hobsonia florida Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches	ebetween S 1 6 3 7 7 23 1 1 8 23 9 63 12 1	UBC 001 12 12 1 12 1 12 the Refe UBC 001 298 12 1 12 the Refe UBC 001 7 1 1	0 1 5 3 rence S 4 6 2 6.5 rence S 370 11 1	tations an S 1 6 3 7 T= tations an S 0 1 2 1.5 T= tations an S 1.5 T= tations an S 1.5 T= 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	N=9 nd SUBC 0 1 5 3 48 N=9 nd SUBC 0UBC 002 1 3 2 3.5 48 N=9 nd SUBC 0UBC 002 115 2 2.5 61.5	0 1 5 3 004 in t 1 3 2 3.5 004 in t 177 6 1	0 1 5 3 he Spec 6.5 he Spec 128 4 1	SUBC 003 1 6 3 7 ies indica SUBC 003 2 5 1 5 ies indica SUBC 003 2 5 1 5 ies indica 1 5 1 1 5 1 1 5 1 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1	ted 0 1 5 3 ted 0 1 2 1.5 ted 1900 8 1	4 9 1 9 T= 32 10 1 10 T= 115 2 2 2.5	N=3 SUBC 004 9 11 1 1 30 N=3 SUBC 004 46 11 1 1 30 N=3 SUBC 004 46 11 5 1 5 1 5 16.5	10 1 10 31 9 1 9 1 9 1 9 1 9 1 9 1	\$ 8 T= 30 T'= 9 "= 0.05 \$ 8 T= 30 T'= 9 "= 0.05 \$ 8 T= 16.5	Tabular Value Do Not Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis
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Station Designation		SUBC 001	L	9	UBC 002	2	:	SUBC 003			UBC 004	4		
Nereis limnicola	6	10	19	2	3	3	2	9	1	4	13	10	"= 0.05	
Excel Rank	7	9	12	2	4	4	2	8	1	4 6 1	11	9	\$8	Tabular Value
Matches	1	2	1	2	2	2	2	1			1	2	T= 26.5	
Wilcoxon Rank	7	9.5	12	2.5	4.5	4.5	2.5	8	1	6 T=	11	9.5	T'= 12.5	
				T=	51.5					T=	26.5			Do Not Reject Null Hypothesi
	-				N=9					-	N=3			
Null Hypothesis: There is no differe	nce between	the Refe	erence S	tations a	nd SUB	C 004 in 1	the Spec	ies indica	ted	-		-		
station Designation		SUBC 001	L	5	UBC 002	2	1	SUBC 003			SUBC 004	4		
Corbicula fluminea	0	0	0	0	0	1	0	0		0	0	0	"= 0.05	
Excel Rank	1	1	1	1	1	12	1	1		1	1	1	\$8	Tabular Value
Matches	11	11	11	11	11	1	11	11		11	11	11	T= 18	
Wilcoxon Rank	6	6	6	6	6	12	6	6	6	6 T=	6	6	T'= 21	
				T=	60					T=	18			Do Not Reject Null Hypothes
					N=9						N=3			
Null Hypothesis: There is no differe Station Designation		SUBC 001			UBC 002		•	SUBC 003		S	SUBC 004	4		
Gnorimosphaeroma insulare	2	0	1	0	0	0	0	0	0	0	0	0	"= 0.05	
Excel Rank	12	1	11	1	1	1	1	1	1	1	1	1	\$8	Tabular Value
Matches	1	10	1	10	10	10	10	10		10	10	10	T= 16.5	
Wilcoxon Rank	12	5.5	11	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	T'= 22.5	
				T=	61.5					T=	16.5			Do Not Reject Null Hypothesi
					N=9						N=3	_		
Null Hypothesis: There is no differe	nce between	the Refe	erence S	tations a	nd SUB	004 in 1	the Spec	ies indica	ted					
Station Designation		SUBC 001	L	9	UBC 002	2		SUBC 003	3	S	SUBC 004	4		
Cumacea	0	0	0	0	0	0	0	0	0	0 1	1	0	"= 0.05	
	1	1	1	1	1	1	1	1			12	1	\$8	Tabular Value
Excel Rank	11	11	11	11	11	11	11	11	11	11	1	11	T= 24	
			6	6	6	6	6	6	6	6	12	6	T'= 15	
Matches	6	6	0	•										
Excel Rank Matches Wilcoxon Rank		6	0	T=	54					6 T=	24			Do Not Reject Null Hypothes

Table 17 SUBC 005 / Reference Condition Comparisons

Station Designation		n the Refer	ence 3ta							÷ .				
itation Designation		SUBC 001			SUBC 002			SUBC 00		1	UBC 005			o
Number of Animals/Sample	1556	543	545	231	150	246	180	292	246	1414	582	715	"= 0.	
Excel Rank	12	7	8	3	1	4	2	6	4	11	9	10	\$8	Tabular Value
Matches	1	1	1	1	1	2	1	1	2	1	1	1	T= 30	1
Wilcoxon Rank	12	7	8	3	1	4.5	2	6	4.5	11	9	10	T'= 9	
				T=	48					T=	30			Do Not Reject Null Hypothesi
	•				N=9					•	N=3		•	
Null Uunathasia Thava is no differenc		a tha Dafa		tions and		r in the	Numbo	r of 5 no.						
Aull Hypothesis: There is no different atation Designation		SUBC 001	ence sta		SUBC 002			SUBC 00			UBC 005			
Number of Species/Sample	7	5	6	5	5	6	5	6	4	9	8	10	= = 0.	05
Excel Rank	9	2	6	2	2	6	2	6	1	11	10	12	\$ 8	Tabular Value
Astehos	1	4	3	4	4	3	4	3	1	1	1	1	T= 33	
via ches													T'= 6	
Wilcoxon Rank	9	3.5	7	3.5	3.5	7	3.5	7	1	11	10	12	1-6	
				T=	45 N=9					T=	33 N=3			Reject Null Hypothesis
					N=9						11-5			
Iull Hypothesis: There is no difference	e betweer		ence Sta					•					•	
tation Designation		SUBC 001	C-		SUBC 002			SUBC 00			UBC 005	a		
Dominant Species % of Sample	61.89	54.88	67.89	78.35	76.67			73.97	77.24	45.69			" = 0.	
Excel Rank	5	4	6	12	10	8	7	9	11	3	2	1	\$ 8 T= 6	Tabular Value
Matches	1	1	1	1	1	1	1	1	1	1	1	1		
Vilcoxon Rank	5	4	6	12	10	8	7	9	11	3	2	1	T'= 33	
	1		-	T=	72	-		-		T=	6	•		Reject Null Hypothesis
					N=9						N=3			
					IN=9					The domi		ies ma	y not be the same	for every station
Iull Hypothesis: There is no difference	e betwee	n the Refer	ence Sta	tions and	ISUBC 00	5 in the	Species	indicate	d					
tation Designation		SUBC 001			SUBC 002			SUBC 00	3	S	UBC 005			
Potamopyrgus antipodarum	512	216	125	45	29	58	27	52	46	646	193	218	"= 0.	05
Excel Rank	11	9	7	3	2	6	1	5	4	12	8	10	\$ 8	Tabular Value
Vatches	1	1	1	1	1	1	1	1	1	1	1	1	T= 30	
	1	9	7		2	6				1			T'= 9	
Wilcoxon Rank	11	Э	/	3		b	1	5	4	12	8	10	1-9	
	•			T=	48					T=	30			Do Not Reject Null Hypothesi
					N=9						N=3			
Null Hypothesis: There is no difference	e betwee	n the Refer	ence Sta	tions and	ISUBC 00	5 in the	Species	indicate	d				_	
Station Designation		SUBC 001			SUBC 002			SUBC 00	3	S	UBC 005			
Hobsonia florida	1	12	0	1	0	0	0	1	0	14	4	6	" = 0.	05
				6	1	1	1	6	1	12	9		\$ 8	Tabular Value
	6	11	1			-	-							
Excel Rank	6	11 1	1		5	5	5	2					T= 21	
Excel Rank Matches	3	1	5	3	5	5	5	3	5	1	1	1	T= 31 T'- o	
Excel Rank Matches	:			3 7	3	5 3	5 3	3 7		1 12	1 9	1	T'= 8	
ixcel Rank Matches Vilcoxon Rank	3	1	5	3	3 47				5	1	1 9 31	1		
Excel Rank Matches Wilcoxon Rank	3 7	1	5	3 7	3				5	1 12	1 9	1	T'= 8	
Excel Rank Watches Wilcoxon Rank Null Hypothesis: There is no differenc	3 7	1 11 n the Refer	5 3	3 7 T=	3 47 N=9	3 15 in the	3 Species	7 indicate	5 3 d	1 12 T=	1 9 31 N=3	1	T'= 8	
Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differenc	3 7	1 11	5 3	3 7 T=	3 47 N=9	3 15 in the	3 Species	7	5 3 d	1 12 T=	1 9 31	1	T'= 8	
Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differenc Station Designation	3 7	1 11 n the Refer	5 3	3 7 T=	3 47 N=9	3 15 in the	3 Species	7 indicate	5 3 d	1 12 T=	1 9 31 N=3	1	T'= 8	Reject Null Hypothesis
Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differenc Station Designation Dligochaeta	3 7 ce betwee	1 11 n the Refe r SUBC 001	5 3 rence Sta	3 7 T= tions and	3 47 N=9 ISUBC 002	3 95 in the	3 Species	7 indicate SUBC 00	5 3 d 3	1 12 T=	1 9 31 N=3	1 10	T'= 8	Reject Null Hypothesis
Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differenc Station Designation Dligochaeta Excel Rank	3 7 ce between 23	1 11 the Refer SUBC 001 298 12	5 3 rence Sta 4	3 7 T= tions and	3 47 N=9 ISUBC 002 SUBC 002 1	3 15 in the 1	3 Species 4	7 indicate SUBC 00 2	5 3 d 3 0	1 12 T= \$ 134	1 9 31 N=3 UBC 005 94	1 10 149	T'= 8 "= 0. \$ 8	Reject Null Hypothesis 05 Tabular Value
Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differenc Station Designation Dilgochaeta Excel Rank Matches	3 7 23 8 1	1 11 suffer Refer SUBC 001 298 12 1	5 3 rence Sta 4 6 2	3 7 T= tions and 0 1 2	3 47 N=9 ISUBC 002 1 3 2	3 55 in the 1 3 2	3 Species 4 6 2	7 indicate SUBC 00 2 5 1	5 3 d 3 0 1 2	1 12 T= \$ 134 10 1	1 9 31 N=3 UBC 005 94 9 1	1 10 149 11 1	T'= 8 "= 0. \$ 8 T= 30	Reject Null Hypothesis 05 Tabular Value
Excel Rank Matches Wilcoxon Rank	3 7 ce between 23	1 11 the Refer SUBC 001 298 12	5 3 rence Sta 4 6	3 7 T= tions and 0 1 2 1.5	3 47 N=9 SUBC 002 1 3 2 3.5	3 95 in the 1 3	3 Species 4 6	7 indicate SUBC 00 2 5	5 3 d 3 0 1	1 12 T= \$ 134 10 1 10	1 9 31 N=3 UBC 005 94 9 1 9	1 10 149 11	T'= 8 "= 0. \$ 8	Reject Null Hypothesis 05 Tabular Value
Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differenc Station Designation Dilgochaeta Excel Rank Matches Wilcoxon Rank	3 7 23 8 1	1 11 suffer Refer SUBC 001 298 12 1	5 3 rence Sta 4 6 2	3 7 T= tions and 0 1 2	3 47 N=9 ISUBC 002 1 3 2 3.5 48	3 55 in the 1 3 2	3 Species 4 6 2	7 indicate SUBC 00 2 5 1	5 3 d 3 0 1 2	1 12 T= \$ 134 10 1	1 9 31 N=3 UBC 005 94 9 1 9 30	1 10 149 11 1	T'= 8 "= 0. \$ 8 T= 30	Reject Null Hypothesis 05 Tabular Value
ixcel Rank Matches Vilcoxon Rank Jull Hypothesis: There is no differenc tation Designation Digochaeta ixcel Rank Matches Vilcoxon Rank	3 7 23 8 1 8	1 11 suffer Refer SUBC 001 298 12 1	5 3 rence Sta 4 6 2	3 7 T= tions and 0 1 2 1.5	3 47 N=9 SUBC 002 1 3 2 3.5	3 55 in the 1 3 2	3 Species 4 6 2	7 indicate SUBC 00 2 5 1	5 3 d 3 0 1 2	1 12 T= \$ 134 10 1 10	1 9 31 N=3 UBC 005 94 9 1 9	1 10 149 11 1	T'= 8 "= 0. \$ 8 T= 30	Reject Null Hypothesis 05 Tabular Value
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Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differenc Station Designation Digochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differenc	23 8 1 8	1 11 suche Refer SUBC 001 298 12 1 12	5 3 rence Sta 4 6 2 6.5	3 7 T= tions and 0 1 2 1.5 T= tions and	3 47 N=9 ISUBC 002 1 3 2 3.5 48 N=9	3 5 in the 1 3 2 3.5 5 in the	3 Species 4 6 2 6.5 Species	7 indicate SUBC 00 2 5 1 5 5	5 3 d 3 0 1 2 1.5 d	1 12 T= 134 10 1 10 T=	1 9 31 N=3 UBC 005 94 9 1 9 30	1 10 149 11 1	T'= 8 "= 0. \$ 8 T= 30	Reject Null Hypothesis 05 Tabular Value
Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Digochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation	23 8 1 8 6 6 6 7	1 11 the Refer SUBC 001 298 12 1 12	5 3 erence Sta 4 6 2 6.5 erence Sta	3 7 T= tions and 0 1 2 1.5 T= tions and	3 47 N=9 ISUBC 002 1 3 2 3.5 48 N=9 ISUBC 002 SUBC 002	3 5 in the 1 3 2 3.5 5 in the	3 Species 4 6 2 6.5 Species	7 indicate SUBC 00 2 5 1 5 indicate SUBC 00	5 3 d 3 0 1 2 1.5 d 3	1 12 T= \$ 134 10 1 10 T= \$	1 9 31 N=3 UBC 005 94 9 1 9 30 N=3	1 10 149 11 1	T'= 8 "= 0. \$ 8 T = 30 T'= 9	Reject Null Hypothesis
Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Digochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp.	23 8 1 8 26 between 8 963	1 11 5UBC 001 298 12 1 12 12 12 5UBC 001 7	5 3 • eence Sta 6.5 • eence Sta 370	3 7 T= tions and 0 1 2 1.5 T= tions and	3 47 N=9 ISUBC 002 1 3 2 3.5 48 N=9 ISUBC 002 SUBC 002 115	3 55 in the 1 3 2 3.5 55 in the 177	3 Species 4 6 2 6.5 Species 128	7 indicate SUBC 00 2 5 1 5 indicate SUBC 00 216	5 3 d 1 2 1.5 d 3 3 190	1 12 T= \$ 134 10 1 10 T= \$ 455	1 9 31 N=3 UBC 005 94 9 1 9 30 N=3 UBC 005 230	1 10 149 11 1 11 2224	T'= 8 "= 0. \$ 8 T = 30 T'= 9	Reject Null Hypothesis
Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Digochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank	3 7 23 8 1 8 1 8 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	1 11 SUBC 001 298 12 1 12 12 12 12 5UBC 001 7 1	5 3 eence Sta 4 6 2 6.5 eence Sta 370 10	3 7 T= tions and 0 1 2 1.5 T= tions and 181 5	3 47 N=9 SUBC 002 1 3 2 3.5 48 N=9 SUBC 002 SUBC 002 115 2	3 5 in the 1 3 2 3.5 5 in the 177 4	3 Species 4 6 2 6.5 Species 128 3	7 indicate SUBC 00 2 5 1 5 indicate SUBC 00 216 7	5 3 d 3 0 1 2 1.5 d 3 190 6	1 12 T= 34 10 1 10 1 10 T= \$ 455 11	1 9 31 N=3 UBC 005 94 9 1 9 30 N=3 UBC 005 230 9	1 10 149 11 1 11 2224 8	T'= 8 "= 0. \$ 8 T = 30 T'= 9 "= 0. \$ 8	Reject Null Hypothesis 05 Tabular Value Do Not Reject Null Hypothesi 05 Tabular Value
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Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differenc Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank	23 8 1 8 963 12 1 1 12 1 12 23 8 9 49 9 9 9	1 11 298 12 1 12 12 12 12 12 11 12 5UBC 001 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 3 4 6 2 6.5 7 7 9 10 10 10 10 10 10 10 26 8	3 7 T= tions and 0 1 2 1.5 T= tions and 181 5 1 5 T= tions and 2 2	3 47 N=9 ISUBC 002 1 3 2 3.5 48 N=9 ISUBC 002 115 2 1 2 50 N=9 ISUBC 002 SUBC 002 2 2 2	3 5 in the 1 3 2 3.5 5 in the 1 4 1 4 5 in the 2 5 in the 4 5 in the 4 5 in the 4 4 5 in the 4 4 5 in the 4 4 5 in the 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	3 Species 4 6 2 6.5 Species 128 3 1 3 Species 19 7	7 indicate SUBC000 2 5 indicate SUBC00 216 7 1 7 indicate SUBC00 12 6	5 3 4 0 1 2 1.5 6 1 6 1 6 1 6 1 6 1 6 1 5 5	1 12 T= 334 10 1 10 1 10 T= \$ 455 11 1 11 T= \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	1 9 31 N=3 UUBC 0005 94 9 1 9 30 N=3 9 1 9 28 N=3 N=3 UUBC 0005 54 10	1 10 149 11 1 11 11 224 8 1 8 104 11 1	T'= 8 "= 0. \$ 8 T = 30 T'= 9 "= 0. \$ 8 T = 28 T'= 11 "= 0. \$ 8 T = 28	Reject Null Hypothesis Contrabular Value
Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Digochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Excel Rank Matches Wilcoxon Rank Excel Rank Matches Excel Rank Matches Excel Rank Matches Excel Rank Matches Micoxon Rank	3 7 ce between 23 8 1 963 12 1 12 ce between 49 9 1	1 11 11 11 12 12 12 12 12 12 12 12 12 12	5 3 *ence Sta 4 6.5 *ence Sta 10 1 10 1 10 * ***********************	3 7 T= tions and 1 2 1.5 T= tions and 5 1 5 T= tions and 2 2 2 2	3 47 N=9 ISUBC 002 1 3 2 3.5 48 N=9 ISUBC 002 115 2 1 2 50 N=9 ISUBC 002 2 2 2 2 2 2	3 5 in the 1 3 2 3.5 5 in the 1 77 4 1 4 5 in the 5 in the 4 1 4 1 4 1 4 1 4 1 1 4 1 1 3.5	3 Species 4 6 2 6.5 Species 128 3 1 3 Species 19 7 1	7 indicate SUBC00 2 5 indicate SUBC00 216 7 1 7 indicate SUBC00 12 6 1	5 3 0 1 2 1.5 d d 3 190 6 1 6 1 6 1 6 1 6 1 5 1	1 12 T= S 134 10 1 10 T= S 455 11 1 11 T= S 139 12 1	1 9 31 N=3 94 9 1 9 30 N=3 230 9 1 9 2230 9 1 9 228 N=3 UBC 005 54 10 1	1 10 149 11 1 11 11 224 8 1 8 104 11 1	T'= 8 "= 0. \$ 8 T = 30 T'= 9 "= 0. \$ 8 T = 28 T'= 11 "= 0. \$ 8 T = 28 T'= 11 "= 0. \$ 8 T = 33 T = 33	Reject Null Hypothesis Contrabular Value

Null Hypothesis: There is no difference between the Reference Stations and SUBC 005 in the Species indicated

	nce betwee													
Station Designation		SUBC 001			SUBC 00	2		SUBC 00	3	S	UBC 005			
Nereis limnicola	6	10	19	2	3	3	2	9	1	8	4	6	"= 0.05	
Excel Rank	7	11	12	2	4	4	2	10	1	9	6	6 7 2	\$8	Tabular Value
Matches	2	1	1	2	2	2	2	1	1	1	1	2	T= 22.5	
Wilcoxon Rank	7.5	11	12	2.5	4.5	4.5	2.5	10	1	9	6	7.5	T'= 16.5	
				T=	55.5					T=	22.5			Do Not Reject Null Hypothesis
	-				N=9					:	N=3	-		
Null Hypothesis: There is no differen	ice betwee		ence Sta	tions an			-			:		:		
Station Designation		SUBC 001			SUBC 00			SUBC 00			UBC 005	0		
Corbicula fluminea	0	0	0	0	0	1	0	0	0	0	0		"= 0.05	
Excel Rank		1	1	1	1	12	1	1	1	1	1	1	\$8	Tabular Value
Matches	11	11	11	11	11	1	11	11	11	11	11	11	T= 18	
Wilcoxon Rank	6	6	6	6	6	12	6	6	6	6	6	6	T'= 21	
				T=	60					T=	18			Do Not Reject Null Hypothesis
	-				N=9						N=3	-		
Null Hypothesis: There is no differen	nce betwee	n the Refer	ence Sta	tions an	dSURCO)5 in the	Species	indicate	d					
Station Designation	1	SUBC 001			SUBC 00			SUBC 00		s	UBC 005	I		
Gnorimosphaeroma insulare	2	0	1	0	0	0	0	0	0	12	0	1	"= 0.05	
Excel Rank	11	1	9	1	1	1	1	1	1	12	1	1 9 2	\$ 8	Tabular Value
Matches	1	8	2	8	8	8	8	8	8	1	8	2	T= 26	
Wilcoxon Rank	11	4.5	9.5	4.5	4.5	4.5	4.5	4.5	4.5	12	4.5	9.5	T'= 13	
WIICOXUIT NATIK	11	4.5	9.5	4.5 T=	4.5 52	4.5	4.5	4.5	4.5	T=	26		1 - 13	Do Not Reject Null Hypothesis
				1=	52					1=				Do Not Reject Null Hypothesis
	ie betwee		ence Sta	tions an			•				N=3	-		
	nce betwee	n the Refer	ence Sta	tions an			•	indicate		S	N=3 UBC 005	I		
Null Hypothesis: There is no differer Station Designation Nematoda	nce betwee		ence Sta 0	tions an 0	d SUBC 0		•			5 4		2	"= 0.05	
Station Designation	nce betwee	SUBC 001			d SUBC 00	2	•	SUBC 00)3		UBC 005	2 11	"= 0.05 \$ 8	Tabular Value
Station Designation Nematoda	nce betwee	SUBC 001 0	0	0	d SUBC 00 SUBC 00	2	0	SUBC 00 0	03 0	4	UBC 005 1	2 11		Tabular Value
Station Designation Nematoda Excel Rank Matches	nce betwee	SUBC 001 0 1	0 1	0 1 9	d SUBC 00 SUBC 00 0 1	2 0 1	0 1	SUBC 00 0 1	03 0 1 9	4 12 1	UBC 005 1 10	2 11	\$ 8 T= 33	Tabular Value
Station Designation Nematoda Excel Rank	nce betwee	SUBC 001 0 1 9	0 1 9	0 1	d SUBC 00 SUBC 00 0 1 9	2 0 1 9	0 1 9	SUBC 00 0 1 9	03 0 1	4 12	UBC 005 1 10 1	2 11 1 11	\$8	Tabular Value Reject Null Hypothesis
Station Designation Nematoda Excel Rank Matches	nce betwee 0 1 9	SUBC 001 0 1 9	0 1 9	0 1 9 5	d SUBC 00 SUBC 00 0 1 9 5	2 0 1 9	0 1 9	SUBC 00 0 1 9	03 0 1 9	4 12 1 12	UBC 005 1 10 1 10	2 11 1	\$ 8 T= 33	
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank	Cce between 0 1 9 5	SUBC 001 0 1 9 5	0 1 9 5	0 1 9 5 T=	d SUBC 00 SUBC 00 0 1 9 5 45 N=9	2 0 1 9 5	0 1 9 5	SUBC 00 0 1 9 5)3 0 1 9 5	4 12 1 12	UBC 005 1 10 1 10 33	2 11 1 11	\$ 8 T= 33	
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen	Cce between 0 1 9 5	SUBC 001 0 1 9 5 n the Refer	0 1 9 5	0 1 9 5 T=	d SUBC 00. 0 1 9 5 45 N=9 d SUBC 00	2 0 1 9 5 05 in the	0 1 9 5	SUBC 00 0 1 9 5 indicate	03 1 9 5	4 12 1 12 T=	UBC 005 1 10 1 10 33 N=3	2 11 1 11	\$ 8 T= 33	
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation	cce betwee	SUBC 001 0 1 9 5 n the Refer SUBC 001	0 1 9 5	0 1 9 5 T=	d SUBC 00. 0 1 9 5 45 N=9 d SUBC 00. SUBC 00.	2 0 1 9 5 5 05 in the 2	0 1 9 5	SUBC 00 0 1 9 5 indicate SUBC 00	0 0 9 5 9 5	4 12 1 12 T=	UBC 005 1 10 1 10 33 N=3 UBC 005	2 11 1 11	\$ 8 T= 33 T'= 6	
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Cumacea	nce betwee 0 1 9 5 nce betwee 0	SUBC 001 0 1 9 5 n the Refer SUBC 001 0	0 1 9 5 ence Sta	0 1 9 5 T= tions and	d SUBC 00 SUBC 00 0 1 9 5 45 N=9 d SUBC 00 0	2 0 1 9 5 05 in the 2 0	0 1 9 5 • Species 0	SUBC 00 0 1 9 5 indicate SUBC 00 0	13 0 1 9 5 ed 13 0	4 12 1 12 T=	UBC 005 1 10 1 10 33 N=3 UBC 005 0	2 11 1 1 11 11	\$ 8 T= 33 T= 6	Reject Null Hypothesis
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Cumacea Excel Rank	the between the be	SUBC 001 0 1 9 5 n the Refer SUBC 001 0 1	0 1 9 5 ence Sta 0 1	0 1 9 5 T= tions and 0 1	d SUBC 00 SUBC 00 1 9 5 45 N=9 d SUBC 00 0 1	2 0 1 9 5 5 05 in the 2 0 1	0 1 9 5 • Species 0 1	SUBC 00 0 1 9 5 indicate SUBC 00 0 1	3 0 1 9 5 5 8 d 0 1	4 12 1 12 T=	UBC 005 1 10 1 33 N=3 UBC 005 0 1	2 11 1 1 11 11 11 12	\$ 8 T= 33 T'= 6 " = 0.05 \$ 8	
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Cumacea Excel Rank Matches	acce betwee 0 1 9 5	SUBC 001 0 1 9 5 5 n the Refer SUBC 001 0 1 1	0 1 9 5 ence Sta 0 1 1	0 1 9 5 T= tions and 0 1 1	d SUBC 00 SUBC 00 0 1 9 5 45 N=9 d SUBC 00 0 1 11	2 0 1 9 5 05 in the 2 0 1 1	0 1 9 5 • Species 0 1 11	SUBC 00 0 1 9 5 indicate SUBC 00 0 1 1	13 0 1 9 5 5 6 d 13 0 1 11	4 12 1 12 T= 5 0 1 11	UBC 005 1 10 1 33 N=3 UBC 005 0 1 11	2 11 1 11 11 12 12	\$ 8 T= 33 T= 6 "= 0.05 \$ 8 T= 24	Reject Null Hypothesis
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen	ace between 0 1 9 5 ace between 0 1 1 1 6	SUBC 001 0 1 9 5 n the Refer SUBC 001 0 1	0 1 9 5 ence Sta 0 1	0 1 9 5 T= tions and 0 1 11 6	d SUBC 00 SUBC 00 0 1 9 5 45 N=9 d SUBC 00 0 1 11 6	2 0 1 9 5 5 05 in the 2 0 1	0 1 9 5 • Species 0 1	SUBC 00 0 1 9 5 indicate SUBC 00 0 1	3 0 1 9 5 5 8 d 0 1	4 12 1 12 T= SI 0 1 11 6	UBC 005 1 10 1 33 N=3 UBC 005 0 1 11 6	2 11 1 11 11 12 1 12	\$ 8 T= 33 T'= 6 " = 0.05 \$ 8	Reject Null Hypothesis Tabular Value
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Cumacea Excel Rank Matches	acce betwee 0 1 9 5	SUBC 001 0 1 9 5 5 n the Refer SUBC 001 0 1 1	0 1 9 5 ence Sta 0 1 1	0 1 9 5 T= tions and 0 1 1	d SUBC 00 SUBC 00 0 1 9 5 45 N=9 d SUBC 00 0 1 11	2 0 1 9 5 05 in the 2 0 1 1	0 1 9 5 • Species 0 1 11	SUBC 00 0 1 9 5 indicate SUBC 00 0 1 1	13 0 1 9 5 5 6 d 13 0 1 11	4 12 1 12 T= 5 0 1 11	UBC 005 1 10 1 33 N=3 UBC 005 0 1 11	2 11 1 11 11 12 12	\$ 8 T= 33 T= 6 "= 0.05 \$ 8 T= 24	Reject Null Hypothesis
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Cumacea Excel Rank Matches Wilcoxon Rank	ace betwee 1 9 5 ace betwee 1 1 1 5 1 1 1 5 1 1 5 1 1 5 1 1 5 1 1 5 1 1 1 5 1 1 1 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1	SUBC 001 0 1 9 5 5 SUBC 001 1 11 6	0 1 9 5 ence Sta 0 1 11 6	0 1 9 5 T= tions and 0 1 11 6 T=	d SUBC 00 SUBC 00 0 1 9 5 45 N=9 d SUBC 00 0 1 11 6 54 N=9	2 0 1 9 5 05 in the 2 0 1 11 6	0 1 9 5 • Species 0 1 11 6	SUBC 00 0 1 9 5 indicate SUBC 00 0 1 11 6	03 0 9 5 93 03 1 11 6	4 12 1 12 T= SI 0 1 11 6	UBC 005 1 10 1 10 33 N=3 UBC 005 0 1 11 6 24	2 11 1 11 11 12 1 12	\$ 8 T= 33 T= 6 "= 0.05 \$ 8 T= 24	Reject Null Hypothesis Tabular Value
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Cumacea Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen	ace betwee 1 9 5 ace betwee 1 1 1 5 1 1 1 5 1 1 5 1 1 5 1 1 5 1 1 5 1 1 1 5 1 1 1 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1	SUBC 001 0 1 9 5 5 subc 001 0 1 11 6 n the Refer	0 1 9 5 ence Sta 0 1 11 6	0 1 9 5 T= tions and 0 1 11 6 T=	d SUBC 00 SUBC 00 0 1 9 5 45 N=9 d SUBC 00 0 1 11 6 54 N=9 d SUBC 00 0 1 11 6 54 N=9 d SUBC 00 0 1 1 1 1 1 1 1 1 1 1 1 1 1	2 0 1 9 5 05 in the 2 0 1 11 6 05 in the	0 1 9 5 • Species 0 1 11 6 • Species	SUBC 00 0 1 9 5 indicate SUBC 00 0 1 11 6 indicate	33 0 1 9 5 8 d 33 0 1 11 6	4 12 1 12 T= 0 1 11 6 T=	UBC 005 1 10 1 10 33 N=3 UBC 005 0 1 11 6 24 N=3	2 11 1 11 11 12 1 12	\$ 8 T= 33 T= 6 "= 0.05 \$ 8 T= 24	Reject Null Hypothesis Tabular Value
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Cumacea Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation	Acce between 0 1 9 5 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SUBC 001 0 1 9 5 5 SUBC 001 0 1 11 6 n the Refer SUBC 001	0 1 9 5 ence Sta 0 1 11 6 ence Sta	0 1 9 5 T= tions and 11 6 T= tions and	d SUBC 00 SUBC 00 0 1 9 5 45 N=9 d SUBC 00 0 1 11 6 54 N=9 d SUBC 00 SUBC 00 SUBC 00 SUBC 00	2 0 1 9 5 0 5 1 11 6 0 5 1 11 6 0 5 5 1 11 6	0 1 9 5 • Species 0 1 11 6 •	SUBC 00 0 1 9 5 indicate SUBC 00 0 1 11 6 indicate SUBC 00 0 1 11 6	13 0 1 9 5 14 0 10 11 6 11 6	4 12 1 12 T= 5 0 1 11 6 T= 5	UBC 005 1 10 1 10 33 N=3 UBC 005 0 1 11 6 24 N=3 UBC 005	2 11 1 11 11 12 1 12	\$ 8 T= 33 T= 6 " = 0.05 \$ 8 T= 24 T= 15	Reject Null Hypothesis Tabular Value
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Station Designation Saduria entomon	Acce betwee 0 1 9 5 Acce betwee 0 1 11 6 Acce betwee 0 1 10 1 10 10 10 0 0	SUBC 001 0 1 9 5 n the Refer SUBC 001 0 1 11 6 n the Refer SUBC 001 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	0 1 9 5 ence Sta 0 1 11 6 ence Sta	0 1 9 5 T= tions and 1 1 6 T= tions and	d SUBC 00 SUBC 00 0 1 9 5 45 N=9 d SUBC 00 0 1 11 6 54 N=9 d SUBC 00 0 1 11 6 54 N=9 d SUBC 00 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	2 0 1 9 5 0 5 1 11 6 0 5 5 1 1 6 0 5 5 1 1 6 0 2 0 1 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 5 5 0 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 1 9 5 5 0 1 1 9 5 5 1 1 1 9 5 5 1 1 1 9 5 5 1 1 1 1	0 1 9 5 • Species 0 1 11 6 • Species 0	SUBC 00 0 1 9 5 indicate SUBC 00 0 1 11 6 indicate SUBC 00 0 0 0 1 0 0 1 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	03 0 1 9 5 6 6 1 11 6 13 0 1 11 6 13 0 1 11 0 1 10 1 10 1 10 10	4 12 1 12 T= S(0 1 11 6 T= S(2	UBC 005 1 10 1 10 33 N=3 UBC 005 0 1 11 6 24 N=3 UBC 005 2	2 11 1 11 11 12 1 12 1 12	\$ 8 T= 33 T= 6 " = 0.05 \$ 8 T= 24 T'= 15 " = 0.05	Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Cumacea Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Saduria entomon Excel Rank	acce betwee 0 1 9 5 acce betwee 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SUBC 001 0 1 9 5 SUBC 001 0 1 11 6 SUBC 001 0 1 SUBC 001 0 1	0 1 9 5 5 0 1 11 6 2 1 2 1 2 1	0 1 9 5 T= tions an 0 1 11 6 T= tions an 0 1	d SUBC 00 SUBC 00 0 1 9 5 45 N=9 d SUBC 00 0 1 11 6 54 N=9 d SUBC 00 0 1 11 6 54 N=9 d SUBC 00 0 1 1 1 1 1 1 1 1 1 1 1 1 1	2 0 1 9 5 5 5 5 5 5 5 5 5 5 1 11 6 7 5 5 5 5 7 5 7 11 9 5 5 7 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	0 1 9 5 8 9 5 8 9 5 8 9 1 11 6 8 8 9 5 8 9 5 8 9 5 8 9 5 8 9 5 8 9 5 8 9 5 8 9 5 8 9 5 8 9 8 9	SUBC 00 0 1 9 5 5 indicate SUBC 00 0 1 11 6 indicate SUBC 00 0 1	23 0 1 9 5 sed 13 0 1 11 6 33 0 1	4 12 1 12 T= 5 0 1 11 6 T= 5 2 10	UBC 005 1 10 1 10 33 N=3 UBC 005 0 1 11 6 24 N=3 UBC 005 2 10 UBC 005 1 11 10 10 10 10 10 10 10 10	2 11 1 11 11 12 1 12 1 12 4 12	\$ 8 T= 33 T= 6 " = 0.05 \$ 8 T= 24 T= 15 " = 0.05 \$ 8	Reject Null Hypothesis Tabular Value
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Cumacea Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Staduria entomon Excel Rank Matches	acce betwee 0 1 9 5 acce betwee 0 1	SUBC 001 0 1 9 5 5 SUBC 001 0 1 11 6 SUBC 001 0 1 9 9	0 1 9 5 ence Sta 0 1 11 6 ence Sta 0 1 9	0 1 9 5 T= tions an 0 1 11 6 T= tions an 0 1 9	d SUBC 00. SUBC 00. 0 1 9 5 45 N=9 dSUBC 00. 0 1 11 6 54 N=9 dSUBC 00. 0 1 11 6 54 N=9 dSUBC 00. 0 1 1 9 5 45 N=9 1 1 1 1 5 45 N=9 1 1 1 1 1 1 1 1 1 1 1 1 1	2 0 1 9 5 5 5 5 5 5 5 5 5 1 1 6 7 5 5 1 1 6 7 5 5 5 5 1 9 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0 1 9 5 Species 0 1 11 6 Species 0 1 9	SUBC 00 0 1 9 5 SUBC 00 0 1 11 6 sUBC 00 0 1 1 9	 3 3 4 4 5 5 6 7 7 8 1 1 6 7 8 9 9 	4 12 1 12 T= 0 1 11 6 T= \$ 2 10 2	UBC 005 1 10 1 10 33 N=3 UBC 005 0 1 11 6 24 N=3 UBC 005 2 10 2 10 2	2 11 1 11 11 12 1 12 1 12 4 12	\$ 8 T= 33 T= 6 "= 0.05 \$ 8 T= 24 T= 15 "= 0.05 \$ 8 T= 33	Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Cumacea Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Staduria entomon Excel Rank Matches	acce betwee 0 1 9 5 acce betwee 0 1	SUBC 001 0 1 9 5 SUBC 001 0 1 11 6 SUBC 001 0 1 SUBC 001 0 1	0 1 9 5 5 0 1 11 6 2 1 2 1 2 1	0 1 9 5 T= tions an 0 1 11 6 T= tions an 0 1 9 5	d SUBC 00 SUBC 00 0 1 9 5 45 N=9 d SUBC 00 0 1 11 6 54 N=9 d SUBC 00 0 1 11 6 54 N=9 d SUBC 00 0 1 1 5 5 5 5 5 5 5 5 5 5 5 5 5	2 0 1 9 5 5 5 5 5 5 5 5 5 1 11 6 7 5 5 5 5 7 5 7 11 9 5 5 7 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	0 1 9 5 5 8 Species 0 1 11 6 Species 0 1 11 6	SUBC 00 0 1 9 5 5 indicate SUBC 00 0 1 11 6 indicate SUBC 00 0 1	23 0 1 9 5 sed 13 0 1 11 6 33 0 1	4 12 1 12 T= 0 1 11 6 T= Si 2 10 2 10.5	UBC 005 1 10 1 10 33 N=3 UBC 005 0 1 11 6 24 N=3 UBC 005 2 10 2 10 2 10 1 11 10 1 10 1 10 1 10 1 10 1 10 1 10 1 10 1 10 1 10 1 10 10	2 11 1 11 12 1 12 1 12 4 12 1 12	\$ 8 T= 33 T= 6 " = 0.05 \$ 8 T= 24 T= 15 " = 0.05 \$ 8	Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis Tabular Value
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Cumacea Excel Rank Matches	acce betwee 0 1 9	SUBC 001 0 1 9 5 5 SUBC 001 0 1 11 6 SUBC 001 0 1 9 9	0 1 9 5 ence Sta 0 1 11 6 ence Sta 0 1 9	0 1 9 5 T= tions an 0 1 11 6 T= tions an 0 1 9	d SUBC 00. SUBC 00. 0 1 9 5 45 N=9 dSUBC 00. 0 1 11 6 54 N=9 dSUBC 00. 0 1 11 6 54 N=9 dSUBC 00. 0 1 1 9 5 45 N=9 1 1 1 1 5 45 N=9 1 1 1 1 1 1 1 1 1 1 1 1 1	2 0 1 9 5 5 5 5 5 5 5 5 5 1 1 6 7 5 5 1 1 6 7 5 5 5 5 1 9 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0 1 9 5 Species 0 1 11 6 Species 0 1 9	SUBC 00 0 1 9 5 SUBC 00 0 1 11 6 sUBC 00 0 1 1 9	 3 3 4 4 5 5 6 7 7 8 1 1 6 7 8 9 9 	4 12 1 12 T= 0 1 11 6 T= \$ 2 10 2	UBC 005 1 10 1 10 33 N=3 UBC 005 0 1 11 6 24 N=3 UBC 005 2 10 2 10 2	2 11 1 11 11 12 1 12 1 12 4 12	\$ 8 T= 33 T= 6 "= 0.05 \$ 8 T= 24 T= 15 "= 0.05 \$ 8 T= 33	Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis

Table 18 Outfall 003 / Reference Condition Comparisons

Null Hypothesis: There is no difference	between	the Refe	rence S	tations ar	nd Outfa	ll 003 in	the Nu	nber of A	nimals/	Sample				
Station Designation		UBC 006			UBC 007			SUBC 008	-		utfall 003	3		
Number of Animals/Sample	590	114	80	140	174	188	172	259	151	85	77	99	"= 0.05	
Excel Rank	12	5	2	6	9	10	. 8	11		-	1	4	\$8	Tabular Value
Matches	1	1	1	1	1	1	1	1	1	3 1	1	1	T= 8	
Wilcoxon Rank	12	5	2	6	9	10	8	11			1	4	T'= 31	
				T=	70					3 T=	8			Reject Null Hypothesis
	-				N=9					-	N=3	-		
Null Hypothesis: There is no difference			rence S			ll 003 in			-					
Station Designation		UBC 006			UBC 007			SUBC 008			utfall 00			
Number of Species/Sample	8	5	3	6	7		7	8	6	6			"= 0.05	
Excel Rank	11	2	1	4	9	4	9	11	6 4 5	4	4	2	\$8	Tabular Value
Matches	2	2	1	5	2	5	2	2			5	2	T= 14.5	
Wilcoxon Rank	11.5	2.5	1	6	9.5	6	9.5	11.5	6	6	6	2.5	T'= 24.5	
				T=	63.5					T=	14.5	i		Do Not Reject Null Hypothesis
					N=9						N=3			
Null Hypothesis: There is no difference	hetween	the Refe	ronco S	tations ar	d Outfa	II 003 in	the Do	ninant Sn	ocios %	ofSamn	•			
Station Designation		UBC 006	ence 3		UBC 007	1005 11		SUBC 008			utfall 003			
Dominant Species % of Sample	53.73	63.16	50	34.29		38.3	41.86				85.71	-	"= 0.05	
Excel Rank	7	8	6	1	5	2	3	11	4	10	12	9	\$ 8	Tabular Value
Matches	1	1	1	1	1	1	1	1		10	1	1	T= 31	···· · · · · · · · · · · · · · · · · ·
Wilcoxon Rank	7	8	6	1	5	2	3	11	4		12	9	T'= 8	
		-	-	- T=	47	-	-			T=	31		-	Reject Null Hypothesis
	•				N=9						N=3			,,,,,,,
										The dor	ninant sp	ecies ma	iy not be the sa	me for every station
Null Hypothesis: There is no difference	between	the Refe	rence S	tations ar	nd Outfa	ll 003 in	the Spe	cies indic	ated	_		-		
Station Designation	S	UBC 006		S	UBC 007			SUBC 008		-	utfall 003	3		
Potamopy rgus antipodarum	223	30	40	36	29	72	72	28	47 6	60	66	69	"= 0.05	
Excel Rank	12	3	5	4	2	10	10	1			8	9	\$8	Tabular Value
Matches	1	1	1	1	1	2	2	1		1	1	1	T= 24	
Wilcoxon Rank	12	3	5	4	2	10.5	10.5	1	6		8	9	T'= 15	
				T=	54					T=	24			Do Not Reject Null Hypothesis
					N=9						N=3			
AL					10.10									
Null Hypothesis: There is no difference		UBC 006	rence s		UBC 007	II 003 IN		SUBC 008			utfall 003			
Station Designation Hobsonia florida	10	000000	0	2	2	1	11	10 sobc			utraii 00: 1	6	"= 0.05	
Excel Rank		1	1	6	6	3	11	10	4 8	1 3	3	9	= 0.05 \$ 8	Tabular)/alua
			1		0	5	12							
	10 2		2		2	3	1							Tabular Value
Matches	2	2	2	2	2	3	1 12	2	1	3	3	1	T= 17	Tabular value
			2 1.5	2 6.5	6.5	3 4	1 12		1 8	3 4	3 4			
Matches	2	2		2	6.5 61			2	1 8	3	3 4 17	1	T= 17	Do Not Reject Null Hypothesis
Matches	2	2		2 6.5	6.5			2	1 8	3 4	3 4	1	T= 17	
Matches	2 10.5	2 1.5	1.5	2 6.5 T=	6.5 61 N=9	4	12	2 10.5	1 8	3 4	3 4 17	1	T= 17	
Matches Wilcoxon Rank	2 10.5 between	2 1.5	1.5	2 6.5 T=	6.5 61 N=9	4	12 the Spe	2 10.5	1 8 ated	3 4 T=	3 4 17	1 9	T= 17	
Matches Wilcoxon Rank Null Hypothesis: There is no difference	2 10.5 between	2 1.5 the Refer	1.5	2 6.5 T=	6.5 61 N=9 nd Outfa	4	12 the Spe	2 10.5 cies indic	1 8 ated	3 4 T=	3 4 17 N=3	1 9	T= 17	
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation	2 10.5 between	2 1.5 the Refe r UBC 006	1.5 rence S	2 6.5 T= Stations ar	6.5 61 N=9 nd Outfa	4 Il 003 in	12 the Spe	2 10.5 cies indic SUBC 008	1 8 ated 72 11	3 4 T= 0 1 3	3 4 17 N=3 utfall 003	1 9	T= 17 T'= 22	
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta	2 10.5 between S 22	2 1.5 the Refer UBC 006 0	1.5 rence S 0	2 6.5 T= Stations ar St	6.5 61 N=9 nd Outfa UBC 007 32	4 II 003 in 19	12 the Spe 21	2 10.5 cies indic SUBC 008 204	1 8 ated 72 11 1	3 4 T= 0 1 3 1	3 4 17 N=3 utfall 003	1 9 3 10	T= 17 T'= 22 " = 0.05 \$ 8 T= 12	Do Not Reject Null Hypothesis
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank	2 10.5 between S 22 8 1 8	2 1.5 the Refer UBC 006 0 1	1.5 rence S 0 1	2 6.5 T= Stations ar SI 26 9	6.5 61 N=9 d Outfa UBC 007 32 10	4 II 003 in 19 6	12 the Spe 21 7	2 10.5 cies indic SUBC 008 204 12	1 8 ated 72 11 1	3 4 T= 0 1 3	3 4 17 N=3 utfall 003 5 4	1 9 3 10 5	T= 17 T'= 22 " = 0.05 \$ 8	Do Not Reject Null Hypothesis
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank	2 10.5 between S 22 8 1	2 1.5 the Refer UBC 006 0 1 2	1.5 rence S 0 1 2	2 6.5 T= Stations ar SI 26 9 1	6.5 61 N=9 d Outfa UBC 007 32 10 1	4 II 003 in 19 6 1	12 the Spe 21 7 1	2 10.5 cies indic SUBC 008 204 12 1	1 8 ated 72 11 1	3 4 T= 0 1 3 1 3	3 4 17 N=3 utfall 00: 5 4 1	1 9 3 10 5 1	T= 17 T'= 22 " = 0.05 \$ 8 T= 12	Do Not Reject Null Hypothesis
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank	2 10.5 between S 22 8 1 8	2 1.5 the Refer UBC 006 0 1 2	1.5 rence S 0 1 2	2 6.5 T= Stations ar SI 26 9 1 9	6.5 61 N=9 Md Outfa UBC 007 32 10 1 10	4 II 003 in 19 6 1	12 the Spe 21 7 1	2 10.5 cies indic SUBC 008 204 12 1	1 8 ated 72 11 1 11	3 4 T= 0 1 3 1 3	3 4 17 N=3 utfall 003 5 4 1 4	1 9 3 10 5 1	T= 17 T'= 22 " = 0.05 \$ 8 T= 12	Do Not Reject Null Hypothesis Tabular Value
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank	2 10.5 between 1 S 22 8 1 8	2 1.5 the Refer UBC 006 0 1 2 1.5	1.5 rence S 0 1 2 1.5	2 6.5 T= 3 3 26 9 1 9 T=	6.5 61 N=9 UBC 007 32 10 1 10 66 N=9	4 II 003 in 19 6 1 6	12 the Spe 21 7 1 7	2 10.5 cies indic SUBC 008 204 12 1 12	1 8 ated 72 11 1 11	3 4 T= 0 1 3 1 3	3 4 17 N=3 utfall 000 5 4 1 4 12	1 9 3 10 5 1	T= 17 T'= 22 " = 0.05 \$ 8 T= 12	Do Not Reject Null Hypothesis Tabular Value
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference	2 10.5 between 5 22 8 1 8 9 9 9 9 9 9 9 9 9	2 1.5 the Refer UBC 006 0 1 2 1.5 the Refer	1.5 rence S 0 1 2 1.5	2 6.5 T= 3 3 3 26 9 1 9 T= 3 3 3 5 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5	6.5 61 N=9 UBC 007 32 10 1 10 66 N=9 ad Outfa	4 19 6 1 6	12 the Spe 21 7 1 7 *	2 10.5 cies indic SUBC 008 204 12 1 12 cies indic	1 8 ated 72 11 1 11	3 4 T= 0 1 3 1 3 T=	3 4 17 N=3 utfall 003 5 4 1 4 12 N=3	1 10 5 11	T= 17 T'= 22 " = 0.05 \$ 8 T= 12	Do Not Reject Null Hypothesis Tabular Value
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation	2 10.5 between 22 8 1 8 between	2 1.5 the Refer UBC 006 0 1 2 1.5 the Refer UBC 006	1.5 rence S 0 1 2 1.5 rence S	2 6.5 T= itations ar 26 9 1 9 T= itations ar	6.5 61 N=9 d Outfa UBC 007 32 10 1 10 66 N=9 d Outfa UBC 007	4 11 003 in 19 6 1 6	12 the Spe 21 7 1 7 8 the Spe	2 10.5 cies indic SUBC 008 204 12 1 12 cies indic SUBC 008	1 8 ated 72 11 1 11	3 4 T= 0 1 3 1 3 T=	3 4 17 N=3 utfall 000 5 4 1 4 12 N=3 utfall 000	1 9 10 5 1 3 3	T= 17 T'= 22 " = 0.05 \$ 8 T= 12 T'= 27	Do Not Reject Null Hypothesis Tabular Value
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp.	2 10.5 5 22 8 1 8 between 5 317	2 1.5 the Refet UBC 006 0 1 2 1.5 the Refet UBC 006 72	1.5 rence S 0 1 2 1.5 rence S 34	2 6.5 T= stations ar 26 9 1 9 T= stations ar SI 3 48	6.5 61 N=9 d Outfa UBC 007 32 10 1 10 66 N=9 uBC 007 86	4 11 003 in 19 6 1 6 1 8	12 the Spe 21 7 1 7 * the Spe 49	2 10.5 cies indic SUBC 008 204 12 1 12 1 2 2 cies indic SUBC 008 9	1 8 ated 72 11 1 11 3 ated 25	3 4 T= 0 1 3 1 3 T= 0 19	3 4 17 N=3 002 5 4 1 4 12 N=3 utfall 002 1	1 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10	T = 17 T'= 22 " = 0.05 \$ 8 T = 12 T'= 27 " = 0.05	Do Not Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank	2 between 22 8 1 5 22 8 1 8 between 5 317 12	2 1.5 the Refer UBC 006 0 1 2 1.5 the Refer UBC 006 72 10	1.5 rence S 0 1 2 1.5 rence S 34 6	2 6.5 T= 3 3 3 26 9 1 9 T= 3 3 4 8 48 7	6.5 61 N=9 UBC 007 32 10 1 10 66 N=9 UBC 007 86 11	4 11 003 in 19 6 1 6 1 6 1 6 7 9	12 the Spe 21 7 1 7 the Spe 49 8	2 10.5 cies indic: SUBC 008 204 12 1 12 1 2 cies indic: SUBC 008 9 2	1 8 72 11 1 11 25 5	3 4 T= 0 1 3 1 3 T= 0 19 4	3 4 17 N=3 utfall 003 5 4 1 4 12 N=3 utfall 003 1 1	1 9 10 5 1 3 12 3	T= 17 T'= 22 " = 0.05 \$ 8 T= 12 T'= 27 " = 0.05 \$ 8	Do Not Reject Null Hypothesis Tabular Value
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Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank	2 between 22 8 1 5 22 8 1 8 between 5 317 12	2 1.5 the Refer UBC 006 0 1 2 1.5 the Refer UBC 006 72 10	1.5 rence S 0 1 2 1.5 rence S 34 6	2 6.5 T= 3 26 9 1 9 T= 3 3 3 48 7 1 7	6.5 61 N=9 d Outfa UBC 007 32 10 1 10 66 N=9 d Outfa UBC 007 86 11 1 1	4 11 003 in 19 6 1 6 1 6 1 6 7 9	12 the Spe 21 7 1 7 the Spe 49 8	2 10.5 cies indic: SUBC 008 204 12 1 12 12 cies indic: SUBC 008 9 2	1 8 72 11 1 11 11 25 5 1 5	3 4 T= 0 1 3 1 3 T= 0 0 19 4 1 4	3 4 17 N=3 utfall 003 5 4 1 4 12 N=3 utfall 003 1 1 1 1	1 9 10 5 1 3 12 3	T= 17 T'= 22 " = 0.05 \$ 8 T= 12 T'= 27 " = 0.05 \$ 8	Do Not Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches	2 10.5 between 1 22 8 1 8 between 1 317 12 1	2 1.5 the Refet UBC 006 0 1 2 1.5 the Refet UBC 006 72 10 1	1.5 rence S 0 1 2 1.5 34 6 1	2 6.5 T= 3 26 9 1 9 T= 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	6.5 61 N=9 d Outfa JJBC 007 32 10 1 10 66 N=9 d Outfa UBC 007 86 11 1 1 11 70	4 11 003 in 19 6 1 6 1 6 1 003 in 67 9 1	12 the Spe 21 7 1 7 the Spe 49 8 1	2 10.5 cies indic SUBC 008 204 12 1 12 cies indic SUBC 008 9 2 1	1 8 72 11 1 11 11 25 5 1 5	3 4 T= 0 1 3 1 3 T= 0 19 4 1	3 4 17 N=3 utfall 003 5 4 1 4 12 N=3 utfall 003 1 1 1 1 8	1 9 9 100 5 11 100 100 100 100 100 100 100 10	T= 17 T= 22 " = 0.05 \$ 8 T= 12 T'= 27 " = 0.05 \$ 8 T= 8	Do Not Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches	2 10.5 between 1 22 8 1 8 between 1 317 12 1	2 1.5 the Refet UBC 006 0 1 2 1.5 the Refet UBC 006 72 10 1	1.5 rence S 0 1 2 1.5 34 6 1	2 6.5 T= 3 26 9 1 9 T= 3 3 3 48 7 1 7	6.5 61 N=9 d Outfa UBC 007 32 10 1 10 66 N=9 d Outfa UBC 007 86 11 1 1	4 11 003 in 19 6 1 6 1 6 1 003 in 67 9 1	12 the Spe 21 7 1 7 the Spe 49 8 1	2 10.5 cies indic SUBC 008 204 12 1 12 cies indic SUBC 008 9 2 1	1 8 72 11 1 11 11 25 5 1 5	3 4 T= 0 1 3 1 3 T= 0 0 19 4 1 4	3 4 17 N=3 utfall 003 5 4 1 4 12 N=3 utfall 003 1 1 1 1	1 9 9 100 5 11 100 100 100 100 100 100 100 10	T= 17 T= 22 " = 0.05 \$ 8 T= 12 T'= 27 " = 0.05 \$ 8 T= 8	Do Not Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches	2 between 1 8 between 1 8 between 1 8 between 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 1.5 the Refet UBC 006 0 1 2 1.5 the Refet UBC 006 72 10 1 10	1.5 o 1 2 1.5 34 6 1 6	2 6.5 T= stations ar 26 9 1 9 T= stations ar 51 48 7 1 7 7 T=	6.5 61 N=9 d Outfa UBC 007 1 10 66 N=9 d Outfa 10 11 11 70 N=9	4 19 6 1 6 1 6 7 9 1 9	12 the Spec 21 7 1 7 7 the Spec 8 1 8	2 10.5 cies indic SUBC 008 204 12 1 12 cies indic SUBC 008 9 2 1 2	1 8 ated 72 11 1 1 1 1 3 ated 5 5 1 5	3 4 T= 0 1 3 1 3 T= 0 0 19 4 1 4	3 4 17 N=3 utfall 003 5 4 1 4 12 N=3 utfall 003 1 1 1 1 8	1 9 9 100 5 11 100 100 100 100 100 100 100 10	T= 17 T= 22 " = 0.05 \$ 8 T= 12 T'= 27 " = 0.05 \$ 8 T= 8	Do Not Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches Wilcoxon Rank	2 between 5 22 8 1 8 between 5 317 12 1 12 between	2 1.5 the Refet UBC 006 0 1 2 1.5 the Refet UBC 006 72 10 1 10	1.5 o 1 2 1.5 34 6 1 6	2 6.5 T= stations ar 26 9 T= stations ar 51 48 7 1 7 T= stations ar	6.5 61 N=9 d Outfa UBC 007 1 10 66 N=9 d Outfa 10 11 11 70 N=9	4 19 6 1 6 1 6 1 9 9 1 9	12 the Spe 21 7 1 7 the Spe 8 1 8 the Spe	2 10.5 cies indic SUBC 008 204 12 1 12 cies indic SUBC 008 9 2 1 2	1 8 72 11 1 11 11 25 5 1 5	3 4 T= 0 1 3 1 3 T= 0 19 4 1 4 T=	3 4 17 N=3 utfall 003 5 4 1 4 12 N=3 utfall 003 1 1 1 1 8	1 9 3 10 5 1 3 12 3 1 3 1 3	T= 17 T= 22 " = 0.05 \$ 8 T= 12 T'= 27 " = 0.05 \$ 8 T= 8	Do Not Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches Wilcoxon Rank Matches Wilcoxon Rank	2 between 5 22 8 1 8 between 5 317 12 1 12 between	2 1.5 the Refer UBC 006 0 1 2 1.5 the Refer UBC 006 72 10 1 10 the Refer	1.5 o 1 2 1.5 34 6 1 6	2 6.5 T= stations ar 26 9 T= stations ar 51 48 7 1 7 T= stations ar	6.5 61 N=9 d Outfa JJBC 007 32 10 1 10 66 N=9 d Outfa 1 1 1 1 70 N=9 d Outfa	4 19 6 1 6 1 6 1 9 9 1 9	12 the Spe 21 7 1 7 the Spe 8 1 8 the Spe	2 10.5 cies indic SUBC 008 204 12 1 12 cies indic SUBC 008 9 2 1 2 cies indic	1 8 72 11 1 11 11 25 5 1 5	3 4 T= 0 1 3 1 3 T= 0 19 4 1 4 T=	3 4 17 N=3 s 4 1 4 12 N=3 utfall 000 1 1 1 1 8 N=3	1 9 3 10 5 1 3 12 3 1 3 1 3	T= 17 T= 22 " = 0.05 \$ 8 T= 12 T'= 27 " = 0.05 \$ 8 T= 8	Do Not Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation	22 8 10.5 22 8 1 8 between 5 317 12 1 12 1 12 5	2 1.5 the Refer UBC 006 0 1 2 1.5 the Refer UBC 006 72 10 1 10 the Refer UBC 006	1.5 o 1 2 1.5 34 6 1 6 rence S 34 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9	2 6.5 T= 3 3 3 4 3 7 1 7 7 7 5 3 3 4 8 7 1 7 5 5 3 5 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5	6.5 61 N=9 d Outfa JBC 007 32 10 1 10 66 N=9 d Outfa JBC 007 86 11 1 1 1 N=9 d Outfa JBC 007 86 11 1 1 9 d Outfa JBC 007 1 0 0 d Outfa JBC 007 32 10 0 0 0 d Outfa JBC 007 32 10 0 0 0 d Outfa JBC 007 32 10 10 0 0 d Outfa JBC 007 32 10 10 0 66 N=9 d Outfa JBC 007 1 1 0 0 66 N=9 d Outfa JBC 007 1 1 0 0 66 N=9 d Outfa JBC 007 1 0 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 0	4 1003 in 19 6 1 6 1 6 1 9 1 9 1 9 1 003 in 1003 in 1005 i	12 the Spe 21 7 1 7 the Spe 8 1 8 the Spe	2 10.5 cies indic: SUBC 008 204 12 1 12 cies indic: SUBC 008 SUBC 008	1 8 72 11 1 11 11 25 5 1 5 3 4 4 4 4	3 4 T= 0 1 3 1 3 T= 0 19 4 1 4 T=	3 4 17 N=3 utfall 003 5 4 1 4 12 N=3 utfall 003 1 1 1 8 N=3 utfall 003	1 9 3 10 5 1 3 12 3 1 3 1 3 3	T= 17 T= 22 " = 0.05 \$ 8 T= 12 T= 27 " = 0.05 \$ 8 T= 8 T'= 31	Do Not Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches Wilcoxon Rank Matches Wilcoxon Rank	22 between 1 5 22 8 1 5 317 12 1 12 5 5 317 12 1 12 5 317 12 1 12 1 12 12 12 12 12 12	2 1.5 the Refet UBC 006 0 1 2 1.5 the Refet UBC 006 72 10 1 10 the Refet UBC 006 10	1.5 0 1 2 1.5 34 6 1 6 rence S 34 6 1 6 34 6 1 6 34 6 1 6 34 6 34 6 34 6 34 6 6 6 6 6 8 8 8 8 8 8 8 8 8 8 8 8 8	2 6.5 T= 3 26 9 1 9 T= 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	6.5 61 N=9 d Outfa JJBC 007 32 10 1 10 66 N=9 d Outfa JJBC 007 86 11 1 1 1 1 70 N=9 d Outfa UBC 007 86 11 1 9 0 N=9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4 19 6 1 6 1 6 1 9 1 9 1 9 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	12 the Spe 21 7 1 7 the Spe 8 1 8 the Spe 8	2 10.5 cies indic SUBC 008 204 12 1 12 cies indic SUBC 008 9 2 1 2 2 cies indic SUBC 008 1	1 8 72 11 1 11 11 25 5 1 5	3 4 T= 0 1 3 1 3 T= 0 0 1 4 1 4 T= 0 0 1 0 1 1 1 3 1 1 3 1 1 3 1 1 3 1 1 3 1 1 3 1 1 3 1 1 3 1 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1	3 4 17 N=3 utfall 003 5 4 1 4 12 N=3 utfall 003 1 1 1 8 N=3 utfall 003 0	1 9 9 100 5 1 100 5 1 100 5 11 100 100 100 10	T = 17 T = 22 " = 0.05 \$ 8 T = 12 T = 27 " = 0.05 \$ 8 T = 8 T' = 31 " = 0.05	Do Not Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis Tabular Value Reject Null Hypothesis
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches Wilcoxon Rank Matches Wilcoxon Rank	2 between 1 22 8 1 5 22 8 1 8 between 1 317 12 1 22 8 1 1 1 12 12 12 12 12 12 12 1	2 1.5 the Refer UBC 006 0 1 2 1.5 the Refer UBC 006 72 10 1 10 the Refer UBC 006 10 11	1.5 0 1 2 1.5 34 6 1 6 1 6 9	2 6.5 T= 26 9 1 9 T= 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	6.5 61 N=9 Nd Outfa UBC 007 32 10 1 10 66 N=9 N=9 N=0 N=9 N=9 N=9 N=9 N=9 N=9 N=9 N=9 N=9 N=9	4 19 6 1 6 1 6 1 9 1 9 1 1003 in 67 9 1 9 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1	12 the Spe 21 7 1 7 7 the Spe 8 1 8 the Spe 8 10	2 10.5 cies indic SUBC 008 204 12 1 12 cies indic SUBC 008 9 2 1 2 2 cies indic SUBC 008 1 5	1 8 ated 72 11 1 1 1 1 1 3 ated 25 5 1 5 5 1 5 3 4 3 5 4 1 5	3 4 T= 0 1 3 1 3 T= 0 19 4 1 4 T= 0 0 1 4 1 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1	3 4 17 N=3 utfall 003 5 4 1 4 12 N=3 utfall 003 1 8 N=3 utfall 003 1	1 1 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10	T = 17 T = 22 " = 0.05 \$ 8 T = 12 T = 27 " = 0.05 \$ 8 T = 8 T = 31 " = 0.05 \$ 8	Do Not Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis Tabular Value Reject Null Hypothesis
Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches Wilcoxon Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Eogammarus confervicolus Excel Rank Matches	2 between 1 22 8 1 5 22 8 1 8 between 1 317 12 1 22 8 1 1 1 1 22 1 1 1 1 22 1 1 1 1 22 1 1 1 1 22 1 1 1 22 2 2 8 1 1 2 2 2 8 1 1 2 2 2 8 1 1 2 2 2 8 1 1 2 2 2 8 1 1 2 2 2 8 1 1 2 2 2 8 1 1 2 2 2 8 1 1 2 2 2 8 1 1 2 2 2 8 1 1 1 2 2 1 1 1 2 2 1 1 1 2 2 1 2 2 1 1 2 2 2 1 2 2 2 1 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2	2 1.5 the Refer UBC 006 0 1 2 1.5 the Refer UBC 006 72 10 1 10 the Refer UBC 006 10 11 1	1.5 0 1 2 1.5 34 6 1 6 9 1	2 6.5 T= 3 26 9 1 9 T= 3 3 48 7 1 7 T= 3 5 5 5 5 5 5 5 5 6	6.5 61 N=9 Nd Outfa UBC 007 32 10 1 10 66 N=9 Nd Outfa 11 11 70 N=9 Nd Outfa 2 8 d Outfa 13 11 70 N=9 NBC 007 8 6 11 1 1 0 0 0 7 8 1 1 1 0 0 0 7 1 1 0 0 0 7 1 0 1 0 0 0 0	4 19 6 1 6 1 6 1 9 1 9 1 1003 in 67 9 1 9 1 0 1 4	12 the Spe 21 7 1 7 7 the Spe 8 1 8 the Spe 8 10 1	2 10.5 cies indic SUBC 008 204 12 1 12 cies indic SUBC 008 9 2 1 2 2 1 2 2 cies indic SUBC 008 9 2 1 2 3	1 8 72 11 1 1 1 1 25 5 1 5 3 4 4 4 4 4 6	3 4 T= 0 1 3 1 3 T= 0 19 4 1 4 T= 0 0 1 4 1 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1	3 4 17 N=3 utfall 003 5 4 1 4 12 N=3 utfall 003 1 1 1 8 N=3 utfall 003 1 4	1 9 9 100 5 1 100 5 1 100 100 100 100 100 100	T = 17 T = 22 T = 22 T = 22 T = 27 T = 27 T = 27 T = 27 T = 31 T = 31 T = 0.05 \$ 8 T = 31	Do Not Reject Null Hypothesis Tabular Value Do Not Reject Null Hypothesis Tabular Value Reject Null Hypothesis

tation Designation	9	SUBC 006	5	S	SUBC 007	7	:	SUBC 008	3	0	utfall 00	3		
lereis limnicola	4	1	0	27	21	28	8	4		1	2	0	"= 0.05	
Excel Rank	7	3	1	11	10	12	9	7	5	3	5	1	\$8	Tabular Value
Matches	2	2	2	1	1	1	1	2		2	2	2	T= 10.5	
Wilcoxon Rank	7.5	3.5	1.5	11	10	12	9	7.5	5.5	3.5	5.5	1.5	T'= 28.5	
				T=	67.5					T=	10.5			Do Not Reject Null Hypothesis
	-				N=9					-	N=3			
Null Hypothesis: There is no differe	nce between	the Refe	erence S	tations a	nd Outfa	all 003 in	the Spe	cies indic	ated	_				
Station Designation	9	SUBC 006	5	S	SUBC 007	7	:	SUBC 008	3	0 0	utfall 00	3		
Gnorimosphaeroma insulare	1	0	0	0	0	0	0	2			0	0	"= 0.05	
Excel Rank	11	1	1	1	1	1	1	12	1	1	1	1	\$8	Tabular Value
Matches	1	10	10	10	10	10	10	1		10	10	10	T= 16.5	
Wilcoxon Rank	11	5.5	5.5	5.5	5.5	5.5	5.5	12	5.5	5.5	5.5	5.5	T'= 22.5	
				T=	61.5					T=	16.5			Do Not Reject Null Hypothesis
lull Hypothesis: There is no differer	i nce between	the Refe	erence S	tations a	N=9 nd Outfa	all 003 in	the Spe	cies indic	ated		N=3			
	-	the Refe						cies indic SUBC 008		o	N=3 utfall 00)3		
Station Designation	-				nd Outfa					0			"= 0.05	
Station Designation Nematoda		SUBC 006	5	5	nd Outfa	7		SUBC 008		0 0 1	utfall 00		"= 0.05 \$ 8	Tabular Value
Station Designation Nematoda Excel Rank	0	UBC 006	6 0	0	nd Outf a SUBC 007 0	7 0	3	SUBC 008 1	3 0 1 9	0 1 9	utfall 00 0	0 1 9	\$8 T= 15	Tabular Value
Station Designation Nematoda Excel Rank Vlatches	0 1	SUBC 006 1 10	6 0 1	0 1	nd Outfa SUBC 007 0 1	7 0 1	3 12	SUBC 008 1 10	3 0 1 9 5	0 1 9 5	utfall 00 0 1		\$8 T= 15	Tabular Value
Station Designation Nematoda Excel Rank Matches	0 1 9	1 10 2	0 1 9	0 1 9	nd Outfa SUBC 007 0 1 9	7 0 1 9	3 12 1	SUBC 008 1 10 2	3 0 1 9 5	0 1 9 5	utfall 00 0 1 9	0 1 9	\$8 T= 15	Tabular Value Do Not Reject Null Hypothesis
Station Designation Nematoda Excel Rank Matches	0 1 9	1 10 2	0 1 9	0 1 9 5	nd Outfa 5UBC 007 0 1 9 5	7 0 1 9	3 12 1	SUBC 008 1 10 2	3 0 1 9 5	0 1 9 5	utfall 00 0 1 9 5	0 1 9	\$8 T= 15	
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank	0 1 9 5	5UBC 006 1 10 2 10.5	0 1 9 5	0 1 9 5 T=	nd Outfa SUBC 007 0 1 9 5 63 N=9	7 0 1 9 5	3 12 1 12 12	SUBC 008 1 10 2 10.5	0 1 9 5	0 1 9 5 T=	utfall 00 0 1 9 5 15 N=3	0 1 9 5	\$8 T= 15	
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differe	0 1 9 5 nce between	5UBC 006 1 10 2 10.5 the Refe	5 0 1 9 5 5	0 1 9 5 T= tations a	nd Outfa SUBC 007 0 1 9 5 63 N=9 nd Outfa SUBC 007	7 0 1 9 5 5 all 003 in 7	3 12 1 12 the Spe	SUBC 008 1 10 2 10.5 cies indic SUBC 008	3 0 1 9 5 5 ated	0 1 9 5 T=	utfall 00 0 1 9 5 15 N=3 utfall 00	0 1 9 5	\$ 8 T= 15 T'= 24	
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Cumacea	0 9 5 nce between	5UBC 006 1 10 2 10.5 the Refe	5 0 1 9 5 5 erence S	0 1 9 5 T= tations a 9	nd Outfa 5UBC 007 0 1 9 5 63 N=9 nd Outfa 5UBC 007 2	7 0 1 9 5 all 003 in 7 1	3 12 1 12 the Spe	SUBC 008 1 10 2 10.5 cies indic SUBC 008 0	3 0 1 9 5 5 ated 3 0	0 1 9 5 T= 0 3	utfall 00 0 1 9 5 15 N=3 utfall 00 2	0 1 9 5 13 2	\$ 8 T= 15 T'= 24	Do Not Reject Null Hypothesis
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Cumacea	0 9 5 nce between 1 7	SUBC 006 1 10 2 10.5 the Refe SUBC 006 0 1	5 0 1 9 5 5 errence S 5 0 1	0 1 9 5 T= tations a 0 1	nd Outfa 5UBC 007 0 1 9 5 63 N=9 nd Outfa 5UBC 007 2 9	7 0 1 9 5 5 all 003 in 7 1 7	3 12 1 12 the Spe	SUBC 008 1 10 2 10.5 cies indic SUBC 008 0 1	3 0 1 9 5 5 ated 3 0 1	0 1 9 5 T= 0 3 12	utfall 00 0 1 9 5 15 N=3 utfall 00 2 9	0 1 9 5 13 2 9	\$ 8 T= 15 T'= 24	
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Cumacea Excel Rank	0 9 5 nce between	5UBC 006 1 10 2 10.5 the Refe	5 0 1 9 5 5 erence S	0 1 9 5 T= tations a 9	nd Outfa 5UBC 007 0 1 9 5 63 N=9 nd Outfa 5UBC 007 2	7 0 1 9 5 all 003 in 7 1	3 12 1 12 the Spe	SUBC 008 1 10 2 10.5 cies indic SUBC 008 0	3 0 1 9 5 ated 3 0 1 6	0 1 9 5 T= 0 3 12 1	utfall 00 0 1 9 5 15 N=3 utfall 00 2	0 1 9 5 13 2	\$ 8 T= 15 T'= 24 " = 0.05 \$ 8 T= 32	Do Not Reject Null Hypothesi:
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Cumacea Excel Rank Matches	0 9 5 nce between 1 7	SUBC 006 1 10 2 10.5 the Refe SUBC 006 0 1	5 0 1 9 5 5 errence S 5 0 1	0 1 9 5 T= tations a 0 1	nd Outfa 5UBC 007 0 1 9 5 63 N=9 nd Outfa 5UBC 007 2 9	7 0 1 9 5 5 all 003 in 7 1 7	3 12 1 12 the Spe	SUBC 008 1 10 2 10.5 cies indic SUBC 008 0 1	3 0 1 9 5 ated 3 0 1 6 3.5	0 1 9 5 T= 0 3 12 1 12	utfall 00 0 1 9 5 15 N=3 utfall 00 2 9	0 1 9 5 13 2 9	\$ 8 T= 15 T'= 24 "= 0.05 \$ 8	Do Not Reject Null Hypothesis
Null Hypothesis: There is no differen Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differen Station Designation Cumacea Excel Rank Matches Wilcoxon Rank	nce between 7 2	SUBC 006 1 10 2 10.5 the Refe SUBC 006 0 1 6	5 0 1 9 5 5 errence S 5 0 1 6	0 1 9 5 T= tations a 0 1 6	nd Outfa SUBC 007 0 1 9 5 63 N=9 nd Outfa SUBC 007 2 9 3	7 0 1 9 5 all 003 in 7 1 7 2	3 12 1 12 the Spe 0 1 6	SUBC 008 1 10 2 10.5 cies indic SUBC 008 0 1 6	3 0 1 9 5 ated 3 0 1 6 3.5	0 1 9 5 T= 0 3 12 1	utfall 00 0 1 9 5 15 N=3 utfall 00 2 9 3	0 1 9 5 13 2 9 3	\$ 8 T= 15 T'= 24 " = 0.05 \$ 8 T= 32	Do Not Reject Null Hypothesi:

Table 19 SUBC 009 / Reference Condition Comparisons

Null Hypothesis: There is no difference	between	the Refer	rence S	stations a	nd SUBC	009 in t	the Nu	mber of An	imals/	Sample		_		
Station Designation	S	SUBC 006		9	UBC 007			SUBC 008			SUBC 009)		
Number of Animals/Sample	590	114	80	140	174	188	172	259	151	100	180	295	"= 0.05	
Excel Rank	12	3	1	4	7	9	6	10	5	2	8	11	\$8	Tabular Value
Matches	1	1	1	1	1	1	1	1	1	1	1	1	T= 21	
Wilcoxon Rank	12	3	1	4	7	9	6	10	5	2	8	11	T'= 18	
				T=	57					T=	21			Do Not Reject Null Hypothesis
					N=9						N=3			
Null Hypothesis: There is no difference	-		rence S				the Nu	•	ecies/S			. :		
Station Designation		UBC 006			UBC 007	:		SUBC 008			SUBC 009			
Number of Species/Sample	8	5		6	7	6	7	8	6		7		"= 0.05	T-1-1-24-1-2
Excel Rank	11	2	1	3	6	3	6	11		6	6		\$8	Tabular Value
Matches	2	1 2	1	3	5	3	5 8	2	3	5	5	5 8	T= 24 T'= 15	
Wilcoxon Rank	11.5	2	1	4 T=	8	4	ð	11.5	4	8	8	8	1 - 15	
	1			1-	54 N=9					T=	24 N=3	1		Do Not Reject Null Hypothesis
					N-9						IN-3			
Null Hypothesis: There is no difference	between	the Refer	rence S	stations a	nd SUBC	009 in t	the Spe	cies indica	ed					
Station Designation		SUBC 006			SUBC 007			SUBC 008			SUBC 009	, [
Dominant Species % of Sample		63.16	50				41.86	5 78.76	47.68		31.67		"= 0.05	
Excel Rank	10	11	9	2	8	4	6	12	7	3	1	5	\$8	Tabular Value
Matches	1	1	1	1	1	1	1	1	1	1	1	1	T= 9	
Wilcoxon Rank	10	11	9	2	8	4	6	12	7	3	1	5	T'= 30	
				T=	69					T=	9			Do Not Reject Null Hypothesis
	=				N=9					=	N=3	=		
										The do	minant s	ecies ma	<u>y not be the sa</u>	me for every station
Null Hypothesis: There is no difference			rence S	stations a	nd SUBC	009 in t	the Spe	cies indica	ed			-		
Station Designation	S	5UBC 006		9	5UBC 007			SUBC 008			SUBC 009)		
Potamopyrgus antipodarum	223	30	40	36	29	72	72	28	47	36	55	117	"= 0.05	
Excel Rank	12	3	6	4	2	9	9	1	7	4	8	11	\$8	Tabular Value
Matches	1	1	1	2	1	2	2	1	1	2	1	1	T= 23.5	
Wilcoxon Rank	12	3	6	4.5	2	9.5	9.5	1	7	4.5	8	11	T'= 15.5	
				T=	54.5					T=	23.5			Do Not Reject Null Hypothesis
					N=9						N=3			
			_											
Null Hypothesis: There is no difference			rence S			009 in t	the Spe					. :		
Station Designation		SUBC 006	•		SUBC 007			SUBC 008			SUBC 009		" 0.05	
Hobsonia florida	10	0	0	2	2	1	11	10	4	1	7	12	"= 0.05	Tabular) (alua
Excel Rank	9 2	1 2	1 2	5 2	5 2	3 2	11 1	9 2	7 1	3 2	8 1	12 1	\$ 8 T= 23.5	Tabular Value
Matches						2 3.5				1	8	12	T= 23.5 T= 15.5	
Wilcoxon Rank	9.5	1.5	1.5	5.5 T=	5.5	3.5	11	9.5	/	3.5 T=			1 - 15.5	Do Not Reject Null Hypothesis
	1			1-	54.5 N=9					1 -	23.5 N=3			Do Not Reject Null Hypothesis
					14-5						11-5			
Null Hypothesis: There is no difference	between	the Refer	rence S	stations a	nd SUBC	009 in t	the Spe	cies indica	ed					
Station Designation	-	SUBC 006			5UBC 007		•	SUBC 008			SUBC 009) [
Oligochaeta	22	0	0	26	32	19	21	204	72	36	57	93	"= 0.05	
Excel Rank	5	1	1	6	7	3	4	12	10	8	9	11	\$8	Tabular Value
Matches	1	2	2	1	1	1	1	1	1	1	1	1	T= 28	
Wilcoxon Rank	5	1.5	1.5	6	7	3	4	12	10	8	9	11	T'= 11	
				T=	50					T=	28			Do Not Reject Null Hypothesis
	-				N=9					-	N=3	-		
Null Hypothesis: There is no difference	-		rence S				the Spe					=		
Station Designation	S	5UBC 006		9	5UBC 007			SUBC 008			SUBC 009)		
Americorophium spp.	317	72	34	48	86	67	49	9	25	21	49	66	"= 0.05	
Excel Rank	12	10	4	5	11	9	6	1	3	2	6	8	\$8	Tabular Value
Matches	1	1	1	1	1	1	2	1	1	1	2	1	T= 16.5	
Wilcoxon Rank	12	10	4	5	11	9	6.5	1	3	2	6.5	8	T'= 22.5	
	1			T=						T=	16.5	1		Do Not Reject Null Hypothesis
					N=9						N=3			
Null Hypothesis: There is no difference	-		rence S				the Spe			:				
Station Designation		5UBC 006			SUBC 007			SUBC 008			SUBC 009			
Eogammarus confervicolus	12	10	6	1	2	0	8	1	1	0	0	0	"= 0.05	
Excel Rank	12	11	9	5	8	1	10	5	5	1	1	1	\$ 8	Tabular Value
Matches	1	1	1	3	1	4	1	3	3	4	4	4	T= 7.5	
Wilcoxon Rank	12	11	9	6	8	2.5	10	6	6	2.5	2.5	2.5	T'= 31.5	
				T=	70.5					T=				Reject Null Hypothesis
					N=9						N=3			

tation Designation		SUBC 006	5	S	UBC 007	7		SUBC 008	8	S	UBC 009)		
lereis limnicola	4	1	0	27	21	28	8	4	2	4	5	5	"= 0.05	
Excel Rank	4	2	1	11	10	12	9	4	3	S 4 4 3 5 T=	7	7	\$8	Tabular Value
Vatches	4 3 5	1	1	1	1	1	1	3	1	3	2	2	T= 20	
Wilcoxon Rank	5	2	1	11	10	12	9	5	3	5	7.5	7.5	T'= 19	
				T=	58					T=	20			Do Not Reject Null Hypothesis
	-				N=9					-	N=3	-		
Null Hypothesis: There is no differenc	e between	the Refe	erence S	tations a	nd SUBC	: 009 in	the Spec	ies indica	ted	_		_		
Station Designation		SUBC 006	5	5	UBC 007	,		SUBC 008	8	S	UBC 009)		
Gnorimosphaeroma insulare	1	0	0	0	0	0	0	2	0	0 1	0	0	"= 0.05	
Excel Rank	11	1	1	1	1	1	1	12	1		1	1	\$8	Tabular Value
Matches	1	10	10	10	10	10	10	1	10	10	10	10	T= 16.5	
Vilcoxon Rank	11	5.5	5.5	5.5	5.5	5.5	5.5	12	5.5	5.5	5.5	5.5	T'= 22.5	
				T=	61.5					Т=	16.5			Do Not Reject Null Hypothesis
	-				N=9					-	N=3	-		
Null Hypothesis: There is no difference	e between	the Refe	erence S	tations a	nd SUBC	: 009 in	the Spec	ies indica	ted	_		-		
station Designation		SUBC 006	5	5	UBC 007	,		SUBC 008	8	S	UBC 009			
Vacoma balthica	0	0	0	0	0	0	0	0	0	1 12	0	0	"= 0.05	
Excel Rank	1	1	1	1	1	1	1	1	1	12	1	1	\$8	Tabular Value
Vatches	11	11	11	11	11	11	11	11	11	1	11	11	T= 24	
Wilcoxon Rank	6	6	6	6	6	6	6	6	6	12 T=	6	6	T'= 15	
				T=	54					Т=	24			Do Not Reject Null Hypothesis
	-				N=9					-	N=3	=		
Null Hypothesis: There is no differenc	e between	the Refe	erence S	tations a	nd SUBC	: 009 in	the Spec	ies indica	ted	-		=		
Station Designation		SUBC 006			UBC 007			SUBC 008			UBC 009			
Nematoda	0	1	0	0	0	0	3	1	0	0	3	1	"= 0.05	
Excel Rank	1 7 4	8	1	1	1	1	11	8	1	0 1 7 4 T=	11	8	\$8	Tabular Value
Matches	7	3	7	7	7	7	2	3	7	7	2	3	T= 24.5	
Wilcoxon Rank	4	9	4	4	4	4	11.5	9	4	4	11.5	9	T'= 14.5	
				T=	53.5					T=	24.5			Do Not Reject Null Hypothesis
					N=9						N=3			
Null Hypothesis: There is no differenc							•			-				
Station Designation		SUBC 006			UBC 007			SUBC 008		S	UBC 009			
Cumacea	1	0	0	0	2	1	0	0	0	S 1 7 4	4	1	"= 0.05	
Excel Rank	7	1	1	1	11	7	1	1	1	7	12	7	\$8	Tabular Value
Vatches	4	6	6	6	1	4	6	6	6		1	4	T= 29	
Wilcoxon Rank	8.5	3.5	3.5	3.5	11	8.5	3.5	3.5	3.5	8.5	12	8.5	T'= 10	
				T=	49					T=	29			Do Not Reject Null Hypothesis
	-				N=9						N=3	-		

Table 20 SUBC 010 / Reference Condition Comparisons

Null Hypothesis: There is no difference	between	the Refer	ence S	tations a	nd SUBC	010 in t	the Nun	ber of Ar	imals/S	Sample				
Station Designation	s	SUBC 006		S	UBC 007		_	SUBC 008			SUBC 01	o I		
Number of Animals/Sample	590	114	80	140	174	188	172	259	151	254	340	1156	"= 0.05	
Excel Rank	11	2	1	3	6	7	5	9	4	8	10	12	\$8	Tabular Value
Matches	1	1	1	1	1	1	1	1	1	1	1	1	T= 30	
Wilcoxon Rank	11	2	1	3	6	7	5	9	4	8	10	12	T'= 9	
				T=	48					T=	30			Do Not Reject Null Hypothesis
	=				N=9					-	N=3	=		
Null Hypothesis: There is no difference			ence S			010 in t				-				
Station Designation		SUBC 006			UBC 007			SUBC 008		1	SUBC 01	D		
Number of Species/Sample	8	5	3	6		6		8		6	6	6	"= 0.05	
Excel Rank	11	2	1	3	9	3	9	11	3	3	3	3	\$8	Tabular Value
Matches	2	1	1	6	2	6	2	2	6	6	6	6	T= 16.5	
Wilcoxon Rank	11.5	2	1	5.5	9.5	5.5	9.5	11.5	5.5	5.5	5.5	5.5	T'= 22.5	
				T=	61.5					T=	16.5			Do Not Reject Null Hypothesis
					N=9						N=3			
Null Hypothesis: There is no difference			ence S			010 in 1		•				-		
Station Designation		5UBC 006		-	UBC 007			SUBC 008			SUBC 01			
Dominant Species % of Sample	53.73	63.16		34.29	49.43	38.3	41.86		47.68	:	49.71		"= 0.05	
Excel Rank	8	10	7	1	5	2	3	12	4	9	6	11	\$8	Tabular Value
Matches	1	1	1	1	1	1	1	1	1	1	1	1	T= 26	
Wilcoxon Rank	8	10	7	1	5	2	3	12	4	9	6	11	T'= 13	
				T=	52					T=	26			Do Not Reject Null Hypothesis
					N=9						N=3			
										The do	minant s	pecies may	y not be the sa	me for every station
Null Hypothesis: There is no difference	-		ence S			010 in t								
Station Designation		SUBC 006			UBC 007			SUBC 008			SUBC 01			
Potamopyrgus antipodarum	223	30	40	36	29	72	72	28	47	97	169	374	"= 0.05	
Excel Rank	11	3	5	4	2	7	7	1		9	10	12	\$8	Tabular Value
Matches	1	1	1	1	1	2	2	1	1	1	1	1	T= 31	
Wilcoxon Rank	11	3	5	4	2	7.5	7.5	1	6	9	10	12	T'= 8	
				T=	47					T=	31			Reject Null Hypothesis
					N=9						N=3			
Null Hypothesis: There is no difference			ence S			010 in 1								
Station Designation		5UBC 006			UBC 007			SUBC 008			SUBC 010			
Hobsonia florida	10	0	0	2	2	1	11	10	4	1	2	5	"= 0.05	
Excel Rank	10	1	1	5	5	3	12	10		3	5	9	\$8	Tabular Value
Matches	2	2	2	3	3	2	1	2		2	3	1	T= 18.5	
Wilcoxon Rank	10.5	1.5	1.5	6	6	3.5	12	10.5	8	3.5	6	9	T'= 20.5	
	:								0	0.0	0	-		
				T=	59.5				U	T=	18.5			Do Not Reject Null Hypothesis
	I			T=	59.5 N=9				Ū					Do Not Reject Null Hypothesis
		de Defe			N=9						18.5			Do Not Reject Null Hypothesis
Null Hypothesis: There is no difference	e between		ence S	itations a	N=9 nd SUBC	010 in 1			ted	T=	18.5 N=3			Do Not Reject Null Hypothesis
Station Designation	e between S	SUBC 006		i tations a	N=9 nd SUBC UBC 007		-	SUBC 008	ted	T=	18.5 N=3 SUBC 010			Do Not Reject Null Hypothesis
Station Designation Oligochaeta	e between S 22	6UBC 006 0	0	stations a S 26	N=9 nd SUBC UBC 007 32	19	21	SUBC 008 204	ted 72	T=	18.5 N=3 SUBC 010 8	1	"= 0.05	
Station Designation Oligochaeta Excel Rank	e between S 22 8	SUBC 006 0 1	0 1	s tations a S 26 9	N=9 nd SUBC UBC 007 32 10	19 6	21 7	SUBC 008 204 12	ted 72 11	T= 2 4	18.5 N=3 SUBC 010 8 5	1 3	"= 0.05 \$ 8	Do Not Reject Null Hypothesis Tabular Value
Station Designation Oligochaeta Excel Rank Matches	e between S 22 8 1	0 0 1 2	0 1 2	Stations a S 26 9 1	N=9 nd SUBC UBC 007 32 10 1	19 6 1	21 7 1	SUBC 008 204 12 1	ted 72 11 1	T= 2 4 1	18.5 N=3 SUBC 010 8 5 1	1 3 1	"= 0.05 \$ 8 T= 12	
Station Designation Oligochaeta Excel Rank	e between S 22 8 1 8	SUBC 006 0 1	0 1	Stations and S 26 9 1 9	N=9 nd SUBC UBC 007 32 10 1 10	19 6	21 7	SUBC 008 204 12	ted 72 11	T= 2 4 1 4	18.5 N=3 SUBC 010 8 5 1 5	1 3	"= 0.05 \$ 8	Tabular Value
Station Designation Oligochaeta Excel Rank Matches	e between S 22 8 1	0 0 1 2	0 1 2	Stations a S 26 9 1	N=9 nd SUBC UBC 007 32 10 1 10 66	19 6 1	21 7 1	SUBC 008 204 12 1	ted 72 11 1	T= 2 4 1	18.5 N=3 SUBC 010 8 5 1 5 12	1 3 1	"= 0.05 \$ 8 T= 12	
Station Designation Oligochaeta Excel Rank Matches	e between S 22 8 1 8	0 0 1 2	0 1 2	Stations and S 26 9 1 9	N=9 nd SUBC UBC 007 32 10 1 10	19 6 1	21 7 1	SUBC 008 204 12 1	ted 72 11 1	T= 2 4 1 4	18.5 N=3 SUBC 010 8 5 1 5	1 3 1	"= 0.05 \$ 8 T= 12	Tabular Value
Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank	e between S 22 8 1 8	5UBC 006 0 1 2 1.5	0 1 2 1.5	Stations a S 26 9 1 9 T=	N=9 md SUBC UBC 007 32 10 1 10 66 N=9	19 6 1 6	21 7 1 7	SUBC 008 204 12 1 12	ted 72 11 1 11	T= 2 4 1 4	18.5 N=3 SUBC 010 8 5 1 5 12	1 3 1	"= 0.05 \$ 8 T= 12	Tabular Value
Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference	e between S 22 8 1 8 2 9 8	5UBC 006 0 1 2 1.5 the Refer	0 1 2 1.5	itations a S 26 9 1 9 T=	N=9 md SUBC UBC 007 32 10 1 10 66 N=9 md SUBC	19 6 1 6 010 in 1	21 7 1 7	SUBC 008 204 12 1 12 12	ted 72 11 1 11	T= 2 4 1 4 T=	18.5 N=3 SUBC 010 8 5 1 5 12 N=3	1 3 1 3	"= 0.05 \$ 8 T= 12	Tabular Value
Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation	between S 22 8 1 8 ebetween S	5UBC 006 0 1 2 1.5 the Refer 5UBC 006	0 1 2 1.5	itations and S 26 9 1 9 T= itations and S	N=9 nd SUBC UBC 007 32 10 1 10 66 N=9 nd SUBC UBC 007	19 6 1 6 010 in 1	21 7 1 7	SUBC 008 204 12 1 12 12 5 5 5 5 5 5 5 5 5 5 5 5 5 5	ted 72 11 1 11	T= 2 4 1 4 T=	18.5 N=3 SUBC 010 8 5 1 5 12 N=3 SUBC 010	1 3 1 3	" = 0.05 \$ 8 T= 12 T'= 27	Tabular Value
Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp.	2 between 5 22 8 1 8 2 between 5 317	SUBC 006 0 1 2 1.5 the Refer SUBC 006 72	0 1 2 1.5	itations and S 26 9 1 9 T= itations and S 48	N=9 nd SUBC UBC 007 32 10 1 10 66 N=9 nd SUBC UBC 007 86	19 6 1 6 010 in 1	21 7 1 7 the Spec	SUBC 008 204 12 1 12 2 2 2 2 2 2 2 2 3 2 3 3 3 3 3 3	ted 72 11 1 11 ted	T= 2 4 1 4 T= 144	18.5 N=3 SUBC 010 8 5 1 5 12 N=3 SUBC 010 151	1 3 1 3 769	" = 0.05 \$ 8 T= 12 T'= 27 " = 0.05	Tabular Value Do Not Reject Null Hypothesis
Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank	2 between 5 22 8 1 8 2 2 8 1 5 317 11	SUBC 006 0 1 2 1.5 the Refer SUBC 006 72 7	0 1 2 1.5 •ence S 34 3	Stations and S 26 9 1 9 T= Stations and S 48 4	N=9 nd SUBC UBC 007 32 10 1 10 66 N=9 nd SUBC UBC 007 86 8	19 6 1 6 010 in 1 67 6	21 7 1 7 the Spec 49 5	SUBC 008 204 12 1 12 2 2 2 2 2 2 2 2 2 2 2 3 2 2 3 3 3 3	ted 72 11 1 11 11 ted 25 2	T= 2 4 1 4 T= 144 9	18.5 N=3 SUBC 010 8 5 12 N=3 SUBC 010 151 10	1 3 1 3 769 12	" = 0.05 \$ 8 T= 12 T'= 27 " = 0.05 \$ 8	Tabular Value
Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches	e between S 22 8 1 8 2 between S 317 11 1 1	SUBC 006 0 1 2 1.5 the Refer SUBC 006 72 7 1	0 1 2 1.5 ••ence S 34 3 1	Stations and S 26 9 1 9 T= Stations and S 48 4 4 1	N=9 nd SUBC UBC 007 32 10 1 10 66 N=9 nd SUBC UBC 007 86 8 1	19 6 1 6 010 in 1 67 6 1	21 7 1 7 the Spec 49 5 1	SUBC 008 204 12 1 12 2 2 2 2 2 2 2 2 2 2 2 3 3 3 5 5 5 0 8 0 8 1 1 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	ted 72 11 1 11 11 ted 25 2 1	T= 2 4 1 4 T= 144 9 1	18.5 N=3 SUBC 010 8 5 12 N=3 SUBC 010 151 10 1	1 3 1 3 769 12 1	"= 0.05 \$ 8 T= 12 T'= 27 "= 0.05 \$ 8 T= 31	Tabular Value Do Not Reject Null Hypothesis
Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank	2 between 5 22 8 1 8 2 2 8 1 5 317 11	SUBC 006 0 1 2 1.5 the Refer SUBC 006 72 7	0 1 2 1.5 •ence S 34 3	itations a S 26 9 1 9 T= itations a S 48 4 1 4	N=9 nd SUBC UBC 007 32 10 1 10 66 N=9 nd SUBC UBC 007 86 8 1 8	19 6 1 6 010 in 1 67 6	21 7 1 7 the Spec 49 5	SUBC 008 204 12 1 12 2 2 2 2 2 2 2 2 2 2 2 3 2 2 3 3 3 3	ted 72 11 1 11 11 ted 25 2	T= T= T= T= 144 9 1 9	18.5 N=3 SUBC 010 8 5 1 5 12 N=3 SUBC 010 151 10 1 10	1 3 1 3 769 12	" = 0.05 \$ 8 T= 12 T'= 27 " = 0.05 \$ 8	Tabular Value Do Not Reject Null Hypothesis Tabular Value
Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches	e between S 22 8 1 8 2 between S 317 11 1 1	SUBC 006 0 1 2 1.5 the Refer SUBC 006 72 7 1	0 1 2 1.5 ••ence S 34 3 1	Stations and S 26 9 1 9 T= Stations and S 48 4 4 1	N=9 md SUBC 007 32 10 1 10 66 N=9 md SUBC UBC 007 86 8 1 8 47	19 6 1 6 010 in 1 67 6 1	21 7 1 7 the Spec 49 5 1	SUBC 008 204 12 1 12 2 2 2 2 2 2 2 2 2 2 2 3 2 2 3 3 3 3	ted 72 11 1 11 11 ted 25 2 1	T= 2 4 1 4 T= 144 9 1	18.5 N=3 SUBC 010 8 5 12 N=3 SUBC 010 151 10 1 10 31	1 3 1 3 769 12 1	"= 0.05 \$ 8 T= 12 T'= 27 "= 0.05 \$ 8 T= 31	Tabular Value Do Not Reject Null Hypothesis
Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches	e between S 22 8 1 8 2 between S 317 11 1 1	SUBC 006 0 1 2 1.5 the Refer SUBC 006 72 7 1	0 1 2 1.5 ••ence S 34 3 1	itations a S 26 9 1 9 T= itations a S 48 4 1 4	N=9 nd SUBC UBC 007 32 10 1 10 66 N=9 nd SUBC UBC 007 86 8 1 8	19 6 1 6 010 in 1 67 6 1	21 7 1 7 the Spec 49 5 1	SUBC 008 204 12 1 12 2 2 2 2 2 2 2 2 2 2 2 3 2 2 3 3 3 3	ted 72 11 1 11 11 ted 25 2 1	T= T= T= T= 144 9 1 9	18.5 N=3 SUBC 010 8 5 1 5 12 N=3 SUBC 010 151 10 1 10	1 3 1 3 769 12 1	"= 0.05 \$ 8 T= 12 T'= 27 "= 0.05 \$ 8 T= 31	Tabular Value Do Not Reject Null Hypothesis Tabular Value
Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches Wilcoxon Rank	e between S 22 8 1 8 22 8 1 8 22 8 1 8 317 11 1 1 1	SUBC 006 0 1 2 1.5 the Refer SUBC 006 72 7 1 7 7	0 1 2 1.5 ***********************************	Stations and S 26 9 1 9 T= Stations and S 48 4 1 4 T=	N=9 nd SUBC UBC 007 32 10 1 10 66 N=9 nd SUBC UBC 007 86 8 1 8 47 N=9	19 6 1 6 010 in 1 6 1 6	21 7 1 7 the Spec 49 5 1 5	SUBC 008 204 12 1 12 Stes indica SUBC 008 9 1 1 1	ted 72 11 1 11 11 ted 25 2 1 2	T= T= T= T= 144 9 1 9	18.5 N=3 SUBC 010 8 5 12 N=3 SUBC 010 151 10 1 10 31	1 3 1 3 769 12 1	"= 0.05 \$ 8 T= 12 T'= 27 "= 0.05 \$ 8 T= 31	Tabular Value Do Not Reject Null Hypothesis Tabular Value
Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference	2 between S 22 8 1 8 2 between S 317 11 1 1 2 between	SUBC 006 0 1 2 1.5 SUBC 006 72 7 1 7 the Refer	0 1 2 1.5 ***********************************	Stations all 26 9 1 9 T= Stations all 4 1 4 T= Stations all Stations all	N=9 nd SUBC UBC 007 32 10 1 10 66 N=9 nd SUBC UBC 007 86 8 1 8 47 N=9 nd SUBC 007 80 1 8 47 N=9	19 6 1 6 010 in 1 6 1 6	21 7 1 7 the Spec 49 5 1 5	SUBC 008 204 12 1 12 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3	ted 72 11 1 11 11 ted 25 2 1 2 2 1 2 2	T= 1 1 1 1 1 1 1 1 1 1 1 1 1	18.5 N=3 SUBC 010 8 5 12 N=3 SUBC 010 151 10 1 10 31 N=3	1 3 1 3 769 12 1 12	"= 0.05 \$ 8 T= 12 T'= 27 "= 0.05 \$ 8 T= 31	Tabular Value Do Not Reject Null Hypothesis Tabular Value
Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation	between S 22 8 1 8 2 between S 317 11 1 11 2 between S S S S S S S S S S S S	SUBC 006 0 1 2 1.5 SUBC 006 72 7 1 7 1 7 the Refer SUBC 006	0 1 2 1.5 34 3 1 3 3 *rence S	Stations all 26 9 1 9 T= Stations all 4 1 4 T= Stations all Stations all Stations all Stations all Stations all	N=9 nd SUBC UBC 007 32 10 1 10 66 N=9 nd SUBC UBC 007 UBC 007 UBC 007	19 6 1 6 010 in 1 6 1 6 010 in 1	21 7 1 7 * the Specent 5 5	SUBC 008 204 12 1 12 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	ted 72 11 1 11 11 11 ted 25 2 1 2 2 1 2	T= T= T= 144 9 1 9 T= T=	18.5 N=3 SUBC 010 8 5 12 N=3 SUBC 010 1 10 1 10 31 N=3 SUBC 010	1 3 1 3 769 12 1 12	" = 0.05 \$ 8 T= 12 T'= 27 " = 0.05 \$ 8 T= 31 T'= 8	Tabular Value Do Not Reject Null Hypothesis Tabular Value
Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Eogammarus confervicolus	e between S 22 8 1 8 2 2 8 1 8 2 2 8 1 8 2 2 8 1 8 2 2 8 1 1 8 2 2 8 1 1 1 1 1 1 1 1 1 1 1 1 1	SUBC 006 0 1 2 1.5 SUBC 006 72 7 1 7 1 7 SUBC 006 10	0 1 2 1.5 34 3 1 3 ******************************	itations and S 26 9 1 9 T= itations and S 48 4 1 4 1 4 T= itations and S 5 1	N=9 nd SUBC UBC 007 32 10 1 10 66 N=9 nd SUBC 007 86 8 1 8 47 N=9 nd SUBC 007 2	19 6 1 6 010 in 1 6 7 6 1 6 1 6 0 10 in 1 7 0	21 7 1 7 the Spee 49 5 1 5 1 5	SUBC 008 204 12 1 12 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	ted 72 11 1 11 11 ted 25 2 1 2 2 1 2 ted	T= T= T= 144 9 1 9 T= T=	18.5 N=3 SUBC 010 8 5 12 N=3 SUBC 010 1 10 1 10 31 N=3 SUBC 010 4	1 3 1 3 769 12 1 12 12 4	"= 0.05 \$ 8 T= 12 T'= 27 "= 0.05 \$ 8 T= 31 T'= 8	Tabular Value Do Not Reject Null Hypothesis Tabular Value Reject Null Hypothesis
Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Eogammarus confervicolus Excel Rank	Between S 22 8 1 8 2 8 317 11 1 11 2 Detween S 317 1 1 1 1 2 Detween S 12 12 12	SUBC 006 0 1 2 1.5 SUBC 006 72 7 1 7 the Refer 5UBC 006 10 11	0 1 2 1.5 34 3 1 3 ******************************	itations and S 26 9 1 9 T= itations and S 48 4 1 4 T= itations and S 1 2	N=9 nd SUBC UBC 007 32 10 11 10 66 N=9 nd SUBC UBC 007 86 8 1 8 47 N=9 nd SUBC UBC 007 2 5	19 6 1 6 010 in 1 6 1 6 010 in 1 0 1	21 7 1 7 the Spec 49 5 1 5 5 the Spec 8 10	SUBC 008 204 12 1 12 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	ted 72 11 1 11 11 25 2 1 2 1 2 ted 1 2 1 2	T= T= T= T= T= T= T= T= T= T=	18.5 N=3 SUBC 010 8 5 12 N=3 SUBC 010 151 10 1 10 31 N=3 SUBC 010 4 6	1 3 1 3 769 12 1 12 1 2 4 6	"= 0.05 \$ 8 T= 12 T'= 27 "= 0.05 \$ 8 T= 31 T'= 8 "= 0.05 \$ 8	Tabular Value Do Not Reject Null Hypothesis Tabular Value
Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Eogammarus confervicolus Excel Rank Matches	P between S 22 8 1 8 2 8 317 11 1 11 2 between S 317 11 1 2 between S 12 12 1	SUBC 006 0 1 2 1.5 the Refer SUBC 006 72 7 1 7 the Refer SUBC 006 10 11 1	0 1 2 1.5 34 3 1 3 3 ***ence S 6 8 1	stations and s 26 9 1 9 T= stations and s 48 4 1 4 T= stations and s 1 2 3	N=9 nd SUBC 10 11 10 66 N=9 nd SUBC 007 86 8 1 8 47 N=9 nd SUBC 007 2 5 1	19 6 1 6 010 in 1 6 1 6 010 in 1 0 1 1	21 7 1 7 the Spec 49 5 1 5 5 the Spec 8 10 1	SUBC 008 204 12 1 12 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	ted 72 11 1 11 11 25 2 1 2 1 2 ted 1 2 3	T= T= T= T= T= T= T= T= T= T=	18.5 N=3 SUBC 010 8 5 1 5 12 N=3 SUBC 010 151 10 1 10 31 N=3 SUBC 010 4 6 2	1 3 1 3 769 12 1 12 1 2 0 4 6 2	"= 0.05 \$ 8 T= 12 T'= 27 "= 0.05 \$ 8 T= 31 T'= 8 "= 0.05 \$ 8 T= 22	Tabular Value Do Not Reject Null Hypothesis Tabular Value Reject Null Hypothesis
Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Eogammarus confervicolus Excel Rank	Between S 22 8 1 8 2 8 317 11 1 11 2 Detween S 317 1 1 1 1 2 Detween S 12 12 12	SUBC 006 0 1 2 1.5 SUBC 006 72 7 1 7 the Refer 5UBC 006 10 11	0 1 2 1.5 34 3 1 3 ******************************	itations and S 26 9 1 9 T= itations and S 48 4 1 4 T= itations and S 1 2 3 3	N=9 nd SUBC UBC 007 32 10 1 10 66 N=9 nd SUBC UBC 007 2 5 1 5	19 6 1 6 010 in 1 6 1 6 010 in 1 0 1	21 7 1 7 the Spec 49 5 1 5 5 the Spec 8 10	SUBC 008 204 12 1 12 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	ted 72 11 1 11 11 25 2 1 2 1 2 ted 1 2 1 2	T= T= T= T= T= T= T= T= T= T=	18.5 N=3 SUBC 010 8 5 12 N=3 SUBC 010 151 10 1 10 31 N=3 SUBC 010 4 6 2 6.5	1 3 1 3 769 12 1 12 1 2 4 6	"= 0.05 \$ 8 T= 12 T'= 27 "= 0.05 \$ 8 T= 31 T'= 8 "= 0.05 \$ 8	Tabular Value Do Not Reject Null Hypothesis Tabular Value Reject Null Hypothesis
Station Designation Oligochaeta Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Americorophium spp. Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no difference Station Designation Eogammarus confervicolus Excel Rank Matches	P between S 22 8 1 8 2 8 317 11 1 11 2 between S 317 11 1 2 between S 12 12 1	SUBC 006 0 1 2 1.5 the Refer SUBC 006 72 7 1 7 the Refer SUBC 006 10 11 1	0 1 2 1.5 34 3 1 3 3 ***ence S 6 8 1	stations and s 26 9 1 9 T= stations and s 48 4 1 4 T= stations and s 1 2 3	N=9 nd SUBC 10 11 10 66 N=9 nd SUBC 007 86 8 1 8 47 N=9 nd SUBC 007 2 5 1	19 6 1 6 010 in 1 6 1 6 010 in 1 0 1 1	21 7 1 7 the Spec 49 5 1 5 5 the Spec 8 10 1	SUBC 008 204 12 1 12 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	ted 72 11 1 11 11 25 2 1 2 1 2 ted 1 2 3	T= T= T= T= T= T= T= T= T= T=	18.5 N=3 SUBC 010 8 5 12 N=3 SUBC 010 151 10 1 10 31 N=3 SUBC 010 4 6 2 6.5	1 3 1 3 769 12 1 12 1 2 0 4 6 2	"= 0.05 \$ 8 T= 12 T'= 27 "= 0.05 \$ 8 T= 31 T'= 8 "= 0.05 \$ 8 T= 22	Tabular Value Do Not Reject Null Hypothesis Tabular Value Reject Null Hypothesis

tation Designation		SUBC 006		S	SUBC 007	7	1	SUBC 008	3	S	UBC 010)		
lereis limnicola	4	1	0	27	21	28	8	4	2	3 4	6	3	"= 0.05	
xcel Rank	4 6	2	1	11	10	12	9	6	3	4	8	4	\$8	Tabular Value
Matches	2	1	1	1	1	1	1	2	1	2	1	2	T= 17	
Wilcoxon Rank	6.5	2	1	11	10	12	9	6.5	3	4.5	8	4.5	T'= 22	
				T=	61					T=	17			Do Not Reject Null Hypothesi
	-				N=9				·	•	N=3	-		
Null Hypothesis: There is no differe	nce between	the Refe	rence S	tations a	nd SUB(: 010 in t	he Spec	ies indica	ited	_		_		
Station Designation	9	SUBC 006		S	SUBC 007	,	1	SUBC 008	3	S	UBC 010)		
Gnorimosphaeroma insulare	1	0	0	0	0	0	0	2	0	0	0	0	"= 0.05	
Excel Rank	11	1	1	1	1	1	1	12	1	1	1	1	\$8	Tabular Value
Vatches	1	10	10	10	10	10	10	1	10	10	10	10	T= 16.5	
Wilcoxon Rank	11	5.5	5.5	5.5	5.5	5.5	5.5	12	5.5	5.5	5.5	5.5	T'= 22.5	
				_						T=	16.5			Do Not Reject Null Hypothesi
				T=	61.5						10.5			Do Not Reject Null Hypothesi
Null Hunnthesis: There is no differe	nce hetween	the Refe	rence S	·	N=9	010 in t	he Sner	ies indica	ited		N=3	I		Do Not Reject Null Hypothes
Station Designation	nce between	SUBC 006		tations a	N=9 nd SUBC	,	•	SUBC 008	3	s	N=3)	"= 0.05	DO NOL REJECTIVUII HYpothes
Null Hypothesis: There is no differe Station Designation Vematoda Evrel Rank	nce between	SUBC 006 1	0	tations a S O	N=9 nd SUBC 5UBC 007 0	0	3	SUBC 008 1	3 0	S	N=3 UBC 010 0) 0	"= 0.05 \$ 8	
Station Designation Nematoda Excel Rank	nce between	SUBC 006		tations a	N=9 nd SUB0 SUBC 007 0 1	,	•	SUBC 008	3 0 1	S 0 1	N=3) 0 1	\$8	Tabular Value
Station Designation Nematoda Excel Rank Matches	nce between 0 1 9	SUBC 006 1 10 2	0 1 9	tations a S O 1 9	N=9 nd SUBC 5UBC 007 0 1 9	0 1 9	3 12 1	SUBC 008 1 10 2	3 0 1 9	S 0 1 9	N=3 UBC 010 0 1 9) 0 1 9	\$8 T=15	
Station Designation Nematoda Excel Rank	nce between 0 1 9 5	SUBC 006 1 10	0 1	tations a S O 1 9 5	N=9 nd SUBC SUBC 007 0 1 9 5	, 0 1	3 12	SUBC 008 1 10	3 0 1 9	S 0 1 9 5	N=3 UBC 010 0 1 9 5) 0 1	\$8	Tabular Value
Station Designation Nematoda Excel Rank Matches	nce between 0 1 9	SUBC 006 1 10 2	0 1 9	tations a S O 1 9	N=9 nd SUBC 007 0 1 9 5 63	0 1 9	3 12 1	SUBC 008 1 10 2	3 0 1 9	S 0 1 9	N=3 UBC 010 0 1 9) 0 1 9	\$8 T=15	
station Designation Nematoda Excel Rank Matches	nce between 0 1 9 5	SUBC 006 1 10 2	0 1 9	tations a S O 1 9 5	N=9 nd SUBC SUBC 007 0 1 9 5	0 1 9	3 12 1	SUBC 008 1 10 2	3 0 1 9	S 0 1 9 5	N=3 UBC 010 0 1 9 5 15) 0 1 9	\$8 T=15	Tabular Value
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank	nce between 0 1 9 5	5UBC 006 1 10 2 10.5	0 1 9 5	tations a S 0 1 9 5 T=	N=9 nd SUBC 007 0 1 9 5 63 N=9	, 0 1 9 5	3 12 1 12	SUBC 008 1 10 2 10.5	3 0 1 9 5	S 0 1 9 5	N=3 UBC 010 0 1 9 5 15) 0 1 9	\$8 T=15	Tabular Value
Station Designation Nematoda Excel Rank Matches	nce between	5UBC 006 1 10 2 10.5	0 1 9 5 rence S	tations a S 0 1 9 5 T= tations a	N=9 nd SUBC 007 0 1 9 5 63 N=9	, 0 1 9 5 5	3 12 1 12	SUBC 008 1 10 2 10.5	3 0 1 9 5	S 0 1 9 5 5 T=	N=3 UBC 010 0 1 9 5 15) 0 1 9 5	\$8 T=15	Tabular Value
Station Designation Vematoda Excel Rank Vlatches Wilcoxon Rank Vull Hypothesis: There is no differe Station Designation	nce between	SUBC 006 1 10 2 10.5 the Refe	0 1 9 5 rence S	tations a S 0 1 9 5 T= tations a	N=9 nd SUBC 005 0 1 9 5 63 N=9 nd SUBC	, 0 1 9 5 5	3 12 1 12	SUBC 008 1 10 2 10.5	3 0 1 9 5	S 0 1 9 5 5 T=	N=3 UBC 010 0 1 9 5 15 N=3) 0 1 9 5	\$8 T=15	Tabular Value
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differe Station Designation Cumacea	nce between 0 1 9 5	5 UBC 006 1 10 2 10.5 the Refe 5 UBC 006	0 1 9 5	tations a S 0 1 9 5 T= tations a S	N=9 nd SUBC 007 0 1 9 5 63 N=9 nd SUBC 007 5 5 5 5 5 5 5 5 5 5 5 5 5	0 1 9 5 C 010 in t	3 12 1 12	SUBC 008 1 10 2 10.5 ies indica SUBC 008	3 0 1 9 5 5 nted 3 0 1	S 0 1 9 5 T= S 0 1	N=3 UBC 010 0 1 9 5 15 N=3) 0 1 9 5 5	\$ 8 T= 15 T'= 24	Tabular Value
Station Designation Nematoda Excel Rank Matches Wilcoxon Rank Null Hypothesis: There is no differe	nce between 0 1 9 5	5 UBC 006 1 10 2 10.5 the Refe 5 UBC 006 0	0 1 9 5 rence S	tations a S 0 1 9 5 T= tations a S 0	N=9 nd SUBC 007 0 1 9 5 63 N=9 nd SUBC 007 2	, 0 1 9 5 5 C010 in t	3 12 1 12 he Spec	SUBC 008 1 10 2 10.5 ies indica SUBC 008 0	3 0 1 9 5 5 nted 3 0 1 9	S 0 1 9 5 T= S 0 1 9	N=3 UBC 010 0 1 9 5 15 N=3 UBC 010 0) 0 1 9 5 5 0 0 0	\$ 8 T= 15 T'= 24 "= 0.05	Tabular Value Do Not Reject Null Hypothes
Station Designation Nematoda Excel Rank Vlatches Wilcoxon Rank Yull Hypothesis: There is no differe Station Designation Cumacea Excel Rank	nce between 9 5 nce between 1 10	5 UBC 006 1 10 2 10.5 the Refe 5 UBC 006 0 1	0 1 9 5 rence S 0 1	tations a S 0 1 9 5 T= tations a S 0 1	N=9 nd SUBC 007 0 1 9 5 63 N=9 nd SUBC 007 2 12	0 1 9 5 5 5 5 5 5 5 5 5 5 7 1 10	3 12 1 12 he Spec 0 1	SUBC 008 1 10 2 10.5 ies indica SUBC 008 0 1	3 0 1 9 5 5 nted 3 0 1 9	S 0 1 9 5 T= S 0 1 9	N=3 UBC 010 0 1 9 5 15 N=3 UBC 010 0 1) 0 1 9 5 0 0 1	\$ 8 T= 15 T'= 24 "= 0.05 \$ 8	Tabular Value Do Not Reject Null Hypothes
Station Designation Nematoda Excel Rank Vlatches Wilcoxon Rank Vull Hypothesis: There is no differe Station Designation Cumacea Excel Rank Vlatches	nce between 9 5 nce between 1 10 2	SUBC 006 1 10 2 10.5 the Refe SUBC 006 0 1 9	0 1 9 5 rence S 0 1 9	tations a 5 1 9 5 T= tations a 5 0 1 9	N=9 nd SUBC 007 0 1 9 5 63 N=9 nd SUBC 007 2 12 1	0 1 9 5 Collo in t 10 2	3 12 1 12 he Spec	SUBC 008 1 10 2 10.5 ies indica SUBC 008 0 1 9	3 0 1 9 5 5 nted 3 0 1 9	S 0 1 9 5 T= S 0 1 9 5 5	N=3 UBC 010 0 1 9 5 15 N=3 UBC 010 0 1 9) 0 1 9 5 0 0 1 9 0 1	\$ 8 T= 15 T'= 24 "= 0.05 \$ 8 T= 15	Tabular Value Do Not Reject Null Hypothes

Table 21 Outfall 002 / Reference Condition Comparisons

							,							
Null Hypothesis: There is no difference	between	the Refer	ence S	Stations a	nd Outfa	ll 002 in	the Nu	mber of A	nimals,	/Sample				
Station Designation		SUBC 006			UBC 007			SUBC 008			utfall 00	2		
Number of Animals/Sample	590	114	80	140	174	188	172	259	151	365	249	339	"= 0.05	
Excel Rank	12	2	1	3	6	7	5	9	4	11	8	10	\$ 8	Tabular Value
Matches	1	1	1	1	1	1	1	1	1	1	1	1	T= 29	
Wilcoxon Rank		2	1	3	6	7	5	9	4		8	10	T'= 10	
WILCOXOFF RATIK	12	Z	T			/	5	9	4	11		10	1 - 10	
	1			T=	49					T=	29	1		Do Not Reject Null Hypothesis
					N=9						N=3			
			_											
Null Hypothesis: There is no difference			ence S			ll 002 in	the Nu		•					
Station Designation		UBC 006			UBC 007			SUBC 008			utfall 00			
Number of Species/Sample	8	5	3	6			7	8		7		6	"= 0.05	
Excel Rank	11	2	1	3	8	3	8	11	3	8	3	3	\$8	Tabular Value
Matches	2	1	1	5	3	5	3	2	5	3	5	5	T= 19	
Wilcoxon Rank	11.5	2	1	5	9	5	9	11.5	5	9	5	5	T'= 20	
				T=	59					T=	19			Do Not Reject Null Hypothesis
	-				N=9					-	N=3	=		
Null Hypothesis: There is no difference	between	the Refer	ence S	Stations a	nd Outfa	ll 002 in	the Do	minant Sp	ecies %	of Samp	le			
Station Designation		SUBC 006			UBC 007			SUBC 008			utfall 00	2		
Dominant Species % of Sample	53.73	63.16	50	34.29	49.43		41.86		47.68	49.04	49.8	67.55	"= 0.05	
Excel Rank	9	10	8	1	49.43 6	2	141.80 3	12	47.08	49.04	49.8	11	= 0.03 \$ 8	Tabular Value
	1	10	1	1	1	1	1	12	4	1	1	1	τ= 23	
Matches	1									1				
Wilcoxon Rank	9	10	8	1	6	2	3	12	4	5	7	11	T'= 16	
	1			T=	55					T=	23			Do Not Reject Null Hypothesis
					N=9						N=3			
										<u>The dor</u>	ninant si	pecies ma	y not be the sa	me for every station
Null Hypothesis: There is no difference	between	the Refer	ence S	Stations a	nd Outfa	ll 002 in	the Sp	ecies indic	ated					
Station Designation	S	5UBC 006		S	UBC 007			SUBC 008	3		utfall 00			
Potamopyrgus antipodarum	223	30	40	36	29	72	72	28	47	179	90	91	"= 0.05	
Excel Rank	12	3	5	4	2	7	7	1	6	11	9	10	\$8	Tabular Value
Matches	1	1	1	1	1	2	2	1	1	1	1	1	T= 30	
Wilcoxon Rank	12	3	5	4	2	7.5	7.5	1	6	11	9	10	T'= 9	
				T=	48					T=				Do Not Reject Null Hypothesis
	•				N=9					•	N=3	=		
Null Hypothesis: There is no difference	hotwoon	the Refer	oncos	tations a	nd Outfa	ll 002 in	the Sn	acias indic	hote					
Station Designation		UBC 006	ence s		UBC 007		i ule sp	SUBC 008		: .	utfall 00			
Hobsonia florida	1		0	2	2		11						"= 0.05	
	10	0	0			1	11	10	4	5				T 1 1 1/1
Excel Rank	10	1	1	4	4	3	12	10	6	8	6	9	\$ 8	Tabular Value
Matches	2	2	2	2	2	1	1	2	2	1	2	1	T= 23.5	
Wilcoxon Rank	10.5	1.5	1.5	4.5	4.5	3	12	10.5	6.5	8	6.5	9	T'= 15.5	
				T=	54.5					T=	23.5			Do Not Reject Null Hypothesis
					N=9						N=3			
Null Hypothesis: There is no difference	between	the Refer	ence S	Stations a	nd Outfa	ll 002 in	the Sp	ecies indic	ated					
Station Designation	S	5UBC 006		S	UBC 007			SUBC 008	3		utfall 00			
Oligochaeta	22	0	0	26	32	19	21	204	72	55	16	8	"= 0.05	
Excel Rank	7	1	1	8	9	5	6	12	11	10	4	3	\$8	Tabular Value
Matches	1	2	2	1	1	1	1	1	1	1	1	1	T= 17	
Wilcoxon Rank	7	1.5	1.5	8	9	5	6	12	11	10	4	3	T'= 22	
	l í	1.5	1.5	T=	61	5	0			T=	17			Do Not Reject Null Hypothesis
	1			-	N=9						N=3	1		Do Not Neject Null Hypothesis
					11-3						11-3			
Null Hunothesis, These is an diff	hatura	the D-f		tations	ad 0		the C		atad					
Null Hypothesis: There is no difference	=		ence S				i ine Sp					. 1		
Station Designation	1	SUBC 006			UBC 007			SUBC 008			utfall 00			
Americorophium spp.	317	72	34	48	86	67	49	9	25		124		"= 0.05	
Excel Rank	12	7	3	4	8	6	5	1	2	9	10	11	\$8	Tabular Value
Matches	1	1	1	1	1	1	1	1	1	1	1	1	T= 30	
Wilcoxon Rank	12	7	3	4	8	6	5	1	2	9	10	11	T'= 9	
				T=	48					T=	30			Do Not Reject Null Hypothesis
	-				N=9					-	N=3	-		
Null Hypothesis: There is no difference	between	the Refer	ences	Stations a	nd Outfa	ll 002 in	the Sn	ecies indic	ated					
Station Designation		SUBC 006			UBC 007			SUBC 008		1 0	utfall 00	2		
Eogammarus confervicolus	12	10	6	1	2	0	8	1	, 1	18		2	"= 0.05	
-	1			2	2				2		5	2 5		Tabular Value
Excel Rank	11	10	8			1	9	2		12			\$8 T 24 F	Tabular Value
Matches	1	1	1	3	2	1	1	3	3	1	1	2	T= 24.5	
Wilcoxon Rank	11	10	8	3	5.5	1	9	3	3	12	7	5.5	T'= 14.5	
	1			T=	53.5					T=				Do Not Reject Null Hypothesis
					N=9						N=3			

Station Designation		the Refe			UBC 00	7		SUBC 008		0	utfall 00	2		
lereis limnicola	4	1	0	27	21	, 28	8	4			10		"= 0.05	
kcel Rank	5	2	1	11	10	12	8	5	3	6 7	9	4	" = 0.05 \$ 8 T= 20 T'= 19	Tabular Value
latches	2	1	1	1	1	1	1	2	1	1	1	1	T= 20	
/ilcoxon Rank	5.5	2	1	11	10	12	8	5.5	3	7	9	4	T'= 19	
	5.5	2	-	T=	58	12	0	5.5	5	́т=	20	-	. 15	Do Not Reject Null Hypothesis
	I			1-	N=9						N=3			Do Not Reject Null Hypothesis
Iull Hypothesis: There is no differen	ce between	the Refe	rence S	tations ar	nd Outfa	all 002 in	the Spe	cies indic	ated	_			_	
tation Designation	9	5UBC 006		S	UBC 00	7		SUBC 008		c	utfall 00	2		
Corbicula fluminea	0	0	0	0	0	0	0	0	0	2	0	0	"= 0.05	
xcel Rank	1	1	1	1	1	1	1	1	1	12	1	1	\$8	Tabular Value
/latches	11	11	11	11	11	11	11	11	11	1	11	11	T= 24	
Vilcoxon Rank	6	6	6	6	6	6	6	6	6	12	6	6	\$ 8 T= 24 T'= 15	
				T=	54					T=	24			Do Not Reject Null Hypothesis
					N=9					•	N=3		•	
Iull Hypothesis: There is no differen	ce between	the Refe	rence S	tations ar	nd Outfa	all 002 in	the Spe	cies indic	ated				_	
tation Designation	9	5UBC 006		S	UBC 00	7		SUBC 008			utfall 00	2		
inorimosphaeroma insulare	1	0	0	0	0	0	0	2	0	0	0	0	"= 0.05	
xcel Rank	11	1	1	1	1	1	1	12	1	1	1	1	\$8 T=16.5	Tabular Value
1atches	1	10	10	10	10	10	10	1	10	10	10	10	T= 16.5	
Vilcoxon Rank	11	5.5	5.5	5.5	5.5	5.5	5.5	12	5.5	5.5	5.5	5.5	T'= 22.5	
				T=	61.5					T=	16.5			Do Not Reject Null Hypothesis
	-				N=9					-	N=3		-	
			_	_										
Null Hypothesis: There is no differen	=		rence S									_		
itation Designation		SUBC 006			UBC 00			SUBC 008			utfall 00	2		
Vematoda	0	1	0	0	0	0	3	1	0	0	0	0	"= 0.05	
xcel Rank	1	10	1	1	1	1	12	10		1	1	1	\$8	Tabular Value
Aatches	9	2	9	9	9	9	1	2	9	9	9	9	\$ 8 T= 15 T'= 24	
Vilcoxon Rank	5	10.5	5	5	5	5	12	10.5	5	5 T=	5	5	T'= 24	
				T=	63					T=	15			Do Not Reject Null Hypothesis
					N=9						N=3			
lull Hypothesis: There is no differen	-		rence S									_		
tation Designation		SUBC 006			UBC 00			SUBC 008			utfall 00			
Cumacea	1	0	0	0	2	1	0	0	0	0 1 9 5	0	0	"= 0.05	
xcel Rank	10	1	1	1	12	10	1	1	1	1	1	1	\$8	Tabular Value
1atches	2	9	9	9	1	2	9	9	9	9	9	9	T= 15	
Vilcoxon Rank	10.5	5	5	5	12	10.5	5	5	5		5	5	\$ 8 T= 15 T'= 24	
				T=	63					T=	15			Do Not Reject Null Hypothesis
					N=9									