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LAMPIRAN

Lampiran 1. Parameter oseanografi pada setiap waktu pengamatan.

Waktu Pengamatan	Suhu (C˚)	Salinitas (ppt)	Derajat Keasaman	Kecepataan Arus (m/s)	Kekeruhan (NTU)	Sedimentasi (mg/cm^2/hari)	Fosfat (mg/l)	Nitrat (mg/l)
Pekan ke-0 (28/12/2021)	29	30	8,3	0,0336	0,68	-	0,0189	0.006
	30	30	8,3	0,0435	1,55	-	0,0196	0.0069
	30	30	8,1	0,0568	0,54	-	0,0192	0.0064
Rata-rata ± SE	**29,67 ± 0,33**	**30 ± 0**	**8,23 ± 0,67**	**0,0446 ± 0,0067**	**0,9233 ± 0,3159**	**-**	**0,0192 ± 0,0002**	**0.0064 ± 0.0003**
Pekan ke-2 (11/1/2022)	30	31	8,6	0,1099	0,92	34,87	0,0194	0.0127
	30	32	8,5	0,0625	0,45	27,93	0,0199	0.0141
	30	32	8,6	0,0813	0	17,42	0,0211	0.0132
Rata-rata ± SE	**30 ± 0**	**31,67 ± 0,33**	**8,57 ± 0,33**	**0.0846 ± 0.0138**	**0,4567 ± 0,2656**	**26,74 ± 5,07**	**0,0201 ± 0,0005**	**0.0133 ± 0.0004**
Pekan ke-4 (25/1/2022)	31	31	8,6	0,1493	0,64	64,29	0,0298	0.023
	30	32	8,5	0,1515	0,6	114,48	0,0326	0.0227
	31	32	8,5	0,1408	0,64	115,89	0,032	0.0198
Rata-rata ± SE	**30,67 ± 0,33**	**31,67 ± 0,33**	**8,53 ± 0,33**	**0,1472 ± 0,0032**	**0.6267 ± 0.0133**	**98.22 ± 16,97**	**0.0315 ± 0.0009**	**0.0218 ± 0.001**
Pekan ke-6 (8/2/2022)	28	29	8,5	0,0781	0	21,60	0,024	0.102
	28	30	8,4	0,0541	0,54	17,60	0,017	0.098
	28	30	8,4	0,0709	0,28	21,56	0,021	0.095
Rata-rata ± SE	**28 ± 0**	**29,67 ± 0,33**	**8,43 ± 0,33**	**0,0677 ± 0,0071**	**0,2733 ± 0,1559**	**20,25 ± 1,32**	**0,0207 ± 0,002**	**0.0983 ± 0.002**

Lampiran 2. Hasil uji statistik kepadatan dan jumlah jenis ikan karang herbivora dengan menggunakan uji *One-Way Anova.*

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Kepadatan	Pekan ke-0	5	3.80	3.114	1.393	-.07	7.67	1	9
	Pekan ke-2	5	2.20	2.168	.970	-.49	4.89	0	5
	Pekan ke-4	5	6.20	3.271	1.463	2.14	10.26	1	10
	Pekan ke-6	5	2.60	.894	.400	1.49	3.71	2	4
	Total	20	3.70	2.830	.633	2.38	5.02	0	10
Jumlah_Jenis	Pekan ke-0	5	2.60	1.517	.678	.72	4.48	1	5
	Pekan ke-2	5	1.40	1.140	.510	-.02	2.82	0	3
	Pekan ke-4	5	2.60	1.140	.510	1.18	4.02	1	4
	Pekan ke-6	5	1.40	.548	.245	.72	2.08	1	2
	Total	20	2.00	1.214	.271	1.43	2.57	0	5

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Kepadatan	.999	3	16	.419
Jumlah_Jenis	1.000	3	16	.418

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Kepadatan	Between Groups	48.600	3	16.200	2.502	.096
	Within Groups	103.600	16	6.475		
	Total	152.200	19			
Jumlah_Jenis	Between Groups	7.200	3	2.400	1.846	.179
	Within Groups	20.800	16	1.300		
	Total	28.000	19			

Lampiran 3. Hasil uji statistik pengaruh kehadiran ikan karang herbivora terhadap dinamika tutupan alga Pulau Barranglompo menggunakan uji *t-student.*

Kurungan	% Tutupan Alga			
	Pekan ke-0	Pekan ke-2	Pekan ke-4	Pekan ke-6
Terbuka 1	40,71	61,35	62,14	57,33
Terbuka 2	49,08	53,81	47,67	64,42
Terbuka 3	52,42	59,25	67,13	68,37
Terbuka 4	53,57	56,16	56,18	64,57
Terbuka 5	70,07	68,79	69,00	65,57
Tertutup 1	64,26	67,50	67,97	68,34
Tertutup 2	51,46	71,61	69,07	69,75
Tertutup 3	37,03	31,86	47,18	50,76
Tertutup 4	48,14	49,57	47,02	40,73
Tertutup 5	56,63	65,69	59,34	75,43

Group Statistics

	Perlakuan	N	Mean	Std. Deviation	Std. Error Mean
Pekan ke-0	Terbuka	5	53.1700	10.70411	4.78703
	Tertutup	5	51.5040	10.12184	4.52662
Pekan ke-2	Terbuka	5	59.8720	5.75823	2.57516
	Tertutup	5	57.2460	16.47832	7.36933
Pekan ke-4	Terbuka	5	60.4240	8.69107	3.88677
	Tertutup	5	58.1160	10.73903	4.80264
Pekan ke-6	Terbuka	5	64.0520	4.07856	1.82399
	Tertutup	5	61.0020	14.61500	6.53603

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Pekan ke-0	Equal variances assumed	.003	.958	.253	8	.807	1.66600	6.58832	-13.52669	16.85869
	Equal variances not assumed			.253	7.975	.807	1.66600	6.58832	-13.53495	16.86695
Pekan ke-2	Equal variances assumed	6.376	.036	.336	8	.745	2.62600	7.80631	-15.37538	20.62738
	Equal variances not assumed			.336	4.963	.750	2.62600	7.80631	-17.48641	22.73841
Pekan ke-4	Equal variances assumed	.563	.474	.374	8	.718	2.30800	6.17837	-11.93935	16.55535
	Equal variances not assumed			.374	7.667	.719	2.30800	6.17837	-12.04787	16.66387
Pekan ke-6	Equal variances assumed	12.948	.007	.449	8	.665	3.05000	6.78576	-12.59800	18.69800
	Equal variances not assumed			.449	4.619	.673	3.05000	6.78576	-14.83480	20.93480

Lampiran 4. Hasil analisis regresi linear sederhana.

1) Ikan Karang Herbivora terhadap Tutupan Alga

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.119129
R Square	0.014192
Adjusted R Square	-0.04058
Standard Error	8.334128
Observations	20

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	17.99839	17.99839	0.259127	0.616904
Residual	18	1250.239	69.45769		
Total	19	1268.237			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	60.60703	3.047613	19.88672	1.06E-13	54.20424	67.00983	54.20424	67.00983
X Variable 1	-0.34098	0.669846	-0.50905	0.616904	-1.74828	1.066311	-1.74828	1.066311

2) Ikan Karang Herbivora Jenis *Chlorurus bowersi* terhadap Tutupan Alga

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.21610632
R Square	0.04670194
Adjusted R Square	-0.0062591
Standard Error	8.19555357
Observations	20

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	59.229124	59.229124	0.88181752	0.36013561
Residual	18	1209.00777	67.1670984		
Total	19	1268.2369			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	58.45225815	2.08167269	28.07946631	2.5758E-16	54.07882601	62.82569029	54.07882601	62.82569029
Jenis *Chlorurus bowersi*	-3.090806452	3.291413522	-0.939051391	0.360135608	-10.00580968	3.824196768	-10.00580968	3.824196768

3) Ikan Karang Herbivora Jenis *Chlorurus sordidus* terhadap Tutupan Alga

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.30798958
R Square	0.09485758
Adjusted R Square	0.04457189
Standard Error	7.98587298
Observations	20

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	120.301884	120.301884	1.88637327	0.18647804
Residual	18	1147.93501	63.7741673		
Total	19	1268.2369			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	58.816 8421	1.83208 491	32.103 7752	2.4178 E-17	54.967 7745	62.665 9097	54.967 7745	62.665 9097
Jenis *Chlorurus sordidus*	11.253 1579	8.19333 28	1.3734 5305	0.1864 7804	-5.9603 956	28.466 7114	-5.9603 956	28.466 7114

4) Ikan Karang Herbivora Jenis *Ctenochaetus Striatus* terhadap Tutupan Alga

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.19040219
R Square	0.03625299
Adjusted R Square	-0.0172885
Standard Error	8.24034625
Observations	20

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	45.9773825	45.9773825	0.67710079	0.42135494
Residual	18	1222.25951	67.9033062		
Total	19	1268.2369			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	60.604 0444	2.36849 479	25.587 5776	1.3197 E-15	55.628 0215	65.580 0673	55.628 0215	65.580 0673
Jenis *Ctenochaetus striatus*	-1.0648 212	1.29404 694	-0.8228 613	0.4213 5494	-3.7835 13	1.6538 7054	-3.7835 13	1.6538 7054

5) Ikan Karang Herbivora Jenis *S. frenatus* terhadap Tutupan Alga

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.00373085
R Square	1.3919E-05
Adjusted R Square	-0.0555409
Standard Error	8.39384444
Observations	20

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.01765289	0.01765289	0.00025055	0.98754513
Residual	18	1268.21924	70.4566246		
Total	19	1268.2369			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	59.3863158	1.92567998	30.8391406	4.9234E-17	55.3406123	63.4320193	55.3406123	63.4320193
Jenis *S. frenatus*	-0.1363158	8.61190269	-0.0158288	0.98754513	-18.229252	17.9566204	-18.229252	17.9566204

6) Ikan Karang Herbivora Jenis *S. ghobban* terhadap Tutupan Alga

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.30575683
R Square	0.09348724
Adjusted R Square	0.04312542
Standard Error	7.9919158
Observations	20

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	118.563967	118.563967	1.85631179	0.1898568
Residual	18	1149.67293	63.8707182		
Total	19	1268.2369			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	61.6138158	2.42545445	25.402 9985	1.4984E-15	56.518 1251	66.709 5065	56.5181251	66.7095065
Jenis *S. ghobban*	-2.7928947	2.04988315	-1.3624653	0.1898568	-7.0995394	1.5137 4996	-7.0995394	1.5137 4996

7) Ikan Karang Herbivora Jenis *S. hypselopterus* terhadap Tutupan Alga

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.22865224
R Square	0.05228185
Adjusted R Square	-0.0003692
Standard Error	8.17153299
Observations	20

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	66.3057682	66.3057682	0.99298853	0.33222125
Residual	18	1201.93113	66.7739515		
Total	19	1268.2369			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	58.5305507	2.01606086	29.032 1348	1.4303 E-16	54.294964	62.76614	54.29496	62.76614
Jenis *S. hypselopterus*	1.13193237	1.13592161	0.9964881	0.3222125	-1.2545504	3.51841 5	-1.25455	3.518415

8) Ikan Karang Herbivora Jenis *S. niger* terhadap Tutupan Alga

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.13574254
R Square	0.01842604
Adjusted R Square	-0.0361059
Standard Error	8.31621013
Observations	20

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	23.3685785	23.3685785	0.33789471	0.56825534
Residual	18	1244.86832	69.1593509		
Total	19	1268.2369			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	60.1726923	2.3065017	26.088 2931	9.3923 E-16	55.326 9121	65.018 4726	55.3269121	65.0184726
Jenis *S. niger*	-1.1331319	1.94934972	-0.5812871	0.5682 5534	-5.2285637	2.9622 9993	-5.2285637	2.962299 3

9) Ikan Karang Herbivora Jenis *S. quoyi* terhadap Tutupan Alga

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.29672501
R Square	0.08804573
Adjusted R Square	0.0373816
Standard Error	8.01586639
Observations	20

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	111.662842	111.662842	1.7378318	0.20394368
Residual	18	1156.57405	64.254114		
Total	19	1268.2369			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	59.9215789	1.83896587	32.5843888	1.8584E-17	56.058055	63.7851029	56.058055	63.7851029
Jenis *S. quoyi*	-10.841579	8.22410539	-1.3182685	0.20394368	-28.119783	6.43662533	-28.119783	6.43662533

10) Ikan Karang Herbivora Jenis *S. rivulatus* terhadap Tutupan Alga

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.05676942
R Square	0.00322277
Adjusted R Square	-0.0521537
Standard Error	8.38036615
Observations	20

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	4.08723184	4.08723184	0.05819736	0.81209477
Residual	18	1264.14966	70.2305368		
Total	19	1268.2369			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	59.2757895	1.92258785	30.8312515	4.9457E-17	55.236823	63.3149967	55.236823	63.3149967
Jenis *S. rivulatus*	2.07421053	8.59807425	0.24124129	0.81209477	-15.989673	20.1380942	-15.989673	20.1380942

Lampiran 5. Hasil analisis PCA kehadiran ikan karang herbivora dengan dinamika tutupan alga dan parameter lingkungan.

Summary statistics:

Variable	Observations	Obs. with missing data	Obs. without missing data	Minimum	Maximum	Mean	Std. deviation
Suhu	4	0	4	28.000	30.667	29.583	1.134
Salinitas	4	0	4	29.667	31.667	30.750	1.067
pH	4	0	4	8.233	8.567	8.442	0.150
Arus	4	0	4	0.045	0.147	0.086	0.044
Kekeruhan	4	0	4	0.273	0.923	0.570	0.276
Sedimentasi	4	0	4	0.000	98.222	36.304	42.821
Nitrat	4	0	4	0.006	0.098	0.035	0.043
Fosfat	4	0	4	0.019	0.031	0.023	0.006
T. Alga	4	0	4	53.170	64.052	59.380	4.536
Ctenochaetus sriatus	4	0	4	2.000	13.000	5.750	5.188
S. niger	4	0	4	1.000	8.000	3.500	3.109
S. ghobban	4	0	4	2.000	6.000	4.000	1.633
S. quoyi	4	0	4	0.000	1.000	0.250	0.500
Chlorurus sordidus	4	0	4	0.000	1.000	0.250	0.500
Chlorurus bowersi	4	0	4	0.000	3.000	1.500	1.291
S. rivulatus	4	0	4	0.000	1.000	0.250	0.500
S. frenatus	4	0	4	0.000	2.000	0.500	1.000
S. hypselopterus	4	0	4	0.000	10.000	2.500	5.000

Principal Component Analysis:

Eigenvalues:

	F1	F2	F3
Eigenvalue	8.971	5.211	3.818
Variability (%)	49.838	28.952	21.210
Cumulative %	49.838	78.790	100.000

Eigenvectors:

	F1	F2	F3
Suhu	-0.159	0.339	0.213
Salinitas	-0.266	0.134	0.267
pH	-0.305	-0.142	0.125
Arus	-0.313	0.132	-0.088
Kekeruhan	0.142	0.392	0.070
Sedimentasi	-0.298	0.156	-0.142
Nitrat	0.004	-0.336	-0.329
Fosfat	-0.263	0.207	-0.201
T. Alga	-0.197	-0.320	-0.176
Ctenochaetus sriatus	-0.243	0.129	-0.318
S. niger	0.317	0.137	0.009
S. ghobban	-0.184	0.360	0.075
S. quoyi	0.279	0.240	0.030
Chlorurus sordidus	0.279	0.240	0.030
Chlorurus bowersi	0.268	0.109	-0.278
S. rivulatus	-0.083	-0.143	0.467
S. frenatus	-0.083	-0.143	0.467
S. hypselopterus	-0.248	0.246	-0.187

Factor loadings:

	F1	F2	F3
Suhu	-0.478	0.774	0.416
Salinitas	-0.797	0.305	0.521

pH	-0.914	-0.323	0.245
Arus	-0.938	0.301	-0.171
Kekeruhan	0.425	0.895	0.137
Sedimentasi	-0.892	0.357	-0.278
Nitrat	0.013	-0.767	-0.642
Fosfat	-0.789	0.473	-0.392
T. Alga	-0.590	-0.731	-0.343
Ctenochaetus sriatus	-0.727	0.294	-0.621
S. niger	0.950	0.312	0.017
S. ghobban	-0.550	0.823	0.146
S. quoyi	0.835	0.548	0.058
Chlorurus sordidus	0.835	0.548	0.058
Chlorurus bowersi	0.803	0.248	-0.542
S. rivulatus	-0.248	-0.327	0.912
S. frenatus	-0.248	-0.327	0.912
S. hypselopterus	-0.742	0.561	-0.366

Correlations between variables and factors:

	F1	F2	F3
Suhu	-0.478	0.774	0.416
Salinitas	-0.797	0.305	0.521
pH	-0.914	-0.323	0.245
Arus	-0.938	0.301	-0.171
Kekeruhan	0.425	0.895	0.137
Sedimentasi	-0.892	0.357	-0.278
Nitrat	0.013	-0.767	-0.642
Fosfat	-0.789	0.473	-0.392
T. Alga	-0.590	-0.731	-0.343
Ctenochaetus sriatus	-0.727	0.294	-0.621
S. niger	0.950	0.312	0.017
S. ghobban	-0.550	0.823	0.146
S. quoyi	0.835	0.548	0.058
Chlorurus sordidus	0.835	0.548	0.058
Chlorurus bowersi	0.803	0.248	-0.542
S. rivulatus	-0.248	-0.327	0.912
S. frenatus	-0.248	-0.327	0.912
S. hypselopterus	-0.742	0.561	-0.366

Contribution of the variables (%):

	F1	F2	F3
Suhu	2.543	11.486	4.538
Salinitas	7.087	1.785	7.103
pH	9.313	2.006	1.571
Arus	9.810	1.740	0.767
Kekeruhan	2.015	15.363	0.488
Sedimentasi	8.869	2.442	2.019
Nitrat	0.002	11.276	10.797
Fosfat	6.932	4.301	4.035
T. Alga	3.884	10.245	3.083
Ctenochaetus sriatus	5.893	1.655	10.087
S. niger	10.056	1.873	0.008
S. ghobban	3.369	12.983	0.556
S. quoyi	7.767	5.755	0.087
Chlorurus sordidus	7.767	5.755	0.087
Chlorurus bowersi	7.182	1.181	7.705
S. rivulatus	0.684	2.053	21.782
S. frenatus	0.684	2.053	21.782
S. hypselopterus	6.143	6.047	3.505

Squared cosines of the variables:

	F1	F2	F3
Suhu	0.228	**0.599**	0.173
Salinitas	**0.636**	0.093	0.271
pH	**0.835**	0.105	0.060
Arus	**0.880**	0.091	0.029
Kekeruhan	0.181	**0.801**	0.019
Sedimentasi	**0.796**	0.127	0.077
Nitrat	0.000	**0.588**	0.412
Fosfat	**0.622**	0.224	0.154
T. Alga	0.348	**0.534**	0.118
Ctenochaetus sriatus	**0.529**	0.086	0.385
S. niger	**0.902**	0.098	0.000
S. ghobban	0.302	**0.677**	0.021
S. quoyi	**0.697**	0.300	0.003
Chlorurus sordidus	**0.697**	0.300	0.003
Chlorurus bowersi	**0.644**	0.062	0.294
S. rivulatus	0.061	0.107	**0.832**
S. frenatus	0.061	0.107	**0.832**
S. hypselopterus	**0.551**	0.315	0.134

Values in bold correspond for each variable to the factor for which the squared cosine is the largest

Factor scores:

	F1	F2	F3
Pekan ke-0	4.330	2.165	0.195
Pekan ke-2	-1.285	-1.293	3.086
Pekan ke-4	-3.851	2.220	-1.238
Pekan ke-6	0.806	-3.091	-2.043

Contribution of the observations (%):

	F1	F2	F3
Pekan ke-0	52.258	22.493	0.250
Pekan ke-2	4.603	8.026	62.371
Pekan ke-4	41.330	23.634	10.037
Pekan ke-6	1.810	45.848	27.342

Axes homogeneity index:

	Value
F1	0.500
F2	0.250
F3	0.500

Squared cosines of the observations:

	F1	F2	F3
Pekan ke-0	**0.799**	0.200	0.002
Pekan ke-2	0.129	0.130	**0.741**
Pekan ke-4	**0.697**	0.231	0.072
Pekan ke-6	0.045	**0.665**	0.290

Values in bold correspond for each observation to the factor for which the squared cosine is the largest