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LAMPIRAN

Lampiran 1. Dokumentasi penelitian



Gambar. Proses Pengambilan sampel sedimen



Sampel sedimen yang sudah dikeringkan



Pembuatan larutan NaCl jenuh



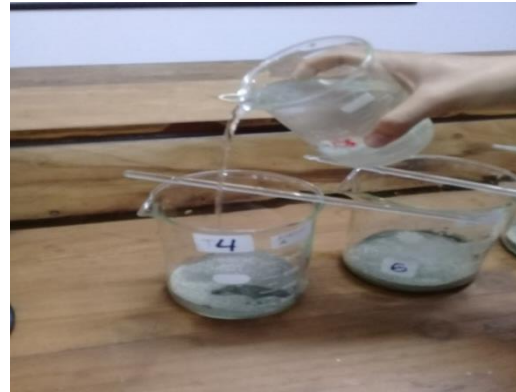
Proses penghalusan sampel sedimen



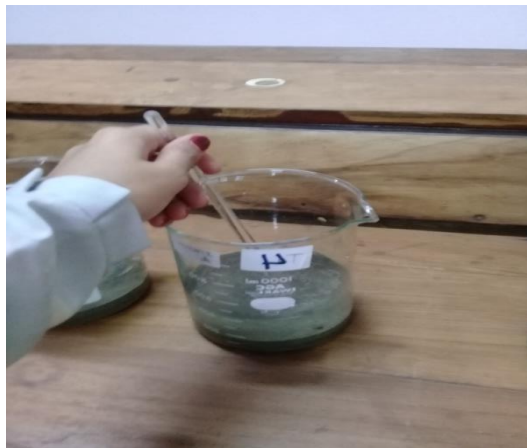
Penimbangan sedimen



Proses reparasi sampel



Pencampuran Larutan Naci



Proses pengadukan



Penambahan larutan H₂O₂



Proses pemisahan endapan



Penyaringan



Hasil penyaringan sampel

Lampiran 2. Data mikroplastik yang ditemukan pada perairan di kecamatan Burau, Kabupaten Luwu Timur

1. Stasiun 1

STASIUN	Komposisi Mikroplastik			
	NO	UKURAN	JENIS	WARNA
1	1	0,118	Fiber	Hitam
	2	0,013	Fiber	Hitam
	3	0,0136	Fiber	Biru
	4	0,0213	Fiber	Merah
	5	0,0219	Fiber	Biru
	6	0,037	Fiber	Biru
	7	0,0374	Fiber	Biru
	8	0,0381	Fiber	Merah
	9	0,056	Fiber	Putih
	10	0,063	Fiber	Biru
	11	0,0710	Fiber	Biru
2	1	0,0154	Fiber	Biru
	2	0,053	Fragmen	Bening
	3	0,012	Fragmen	Bening
	4	0,03	Fragmen	Bening
	5	0,011	Fragmen	Bening
	6	0,093	Fiber	Hitam
	7	0,0147	Fiber	Biru
	8	0,056	Fiber	Hitam

	9	0,0134	Fiber	Biru
	10	0,056	Fiber	Hitam
	11	0,09	Fragmen	Bening
	12	0,043	Filamen	Biru
	13	0,0144	Filamen	Biru
	14	0,051	Filamen	Biru
	15	0,015	Fragmen	Bening
	16	0,021	Film	Bening
	17	0,087	Fiber	Biru
	18	0,057	Fiber	Hitam
	19	0,05	Fragmen	Putih
	20	0,012	Fiber	Bening
2	1	0,0283	Filamen	Biru
	2	0,0260	Fragmen	Merah
	3	0,0150	Fragmen	Putih
	4	0,0240	Fragmen	Merah
	5	0,0250	Fragmen	Bening
	6	0,0220	Fragmen	Bening
3	1	0,025	Fragmen	Transparan
	2	0,022	Fragmen	Transparan
	3	0,094	Fiber	Hitam
	4	0,06	Fragmen	Transparan
	5	0,06	Fragmen	Transparan
	6	0,022	Fragmen	Transparan
	7	0,019	Fragmen	Transparan
	8	0,014	Fiber	Transparan
	9	0,04	Fragmen	Transparan
	10	0,036	Film	Transparan

Lampiran 3. Uji statistik

1. Bentuk Mikroplastik

Tabel Analysed stasiun 1

One-way analysis of variance	
P value	0,1332
P value summary	ns
Are means signif. different? (P < 0.05)	No
Number of groups	3
F	2,544
R square	0,3611

ANOVA Table	SS	df	MS
Treatment (between columns)	1904	2	952,1
Residual (within columns)	3369	9	374,3
Total	5273	11	

Tukey's Multiple Comparison Test	Mean Diff,	q	Significant? P < 0,05?	Summary	95% CI of diff
Fiber vs Fragmen	8,750	0,9045	No	ns	-29,45 to 46,95
Fiber vs Film	30,00	3,101	No	ns	-8,201 to 68,20
Fragmen vs Film	21,25	2,197	No	ns	-16,95 to 59,45

Tabel Analysed stasiun2

One-way analysis of variance	
P value	< 0,0001
P value summary	***
Are means signif. different? (P < 0.05)	Yes
Number of groups	3
F	31,95
R square	0,8765

ANOVA Table	SS	df	MS
Treatment (between columns)	58879	2	29440
Residual (within columns)	8294	9	921,5
Total	67173	11	

Tukey's Multiple Comparison Test	Mean Diff,	q	Significant? P < 0,05?	Summary	95% CI of diff
Fiber vs Fragmen	-126,3	8,318	Yes	***	-186,2 to -66,31
Fiber vs Film	37,50	2,471	No	ns	-22,44 to 97,44
Fragmen vs Film	163,8	10,79	Yes	***	103,8 to 223,7

Tabel Analysed stasiun3

One-way analysis of variance	
P value	0,0013
P value summary	**
Are means signif. different? (P < 0.05)	Yes
Number of groups	3
F	15,18
R square	0,7713

ANOVA Table	SS	df
Treatment (between columns)	22813	2
Residual (within columns)	6763	9
Total	29575	11

Tukey's Multiple Comparison Test	Mean Diff,	q	Significant? P < 0,05?	Summary	95% CI of diff
Fiber vs Fragmen	-43,75	3,192	No	ns	-97,87 to 10,37
Fiber vs Film	62,50	4,560	Yes	*	8,376 to 116,6
Fragmen vs Film	106,3	7,752	Yes	**	52,13 to 160,4

Tabel Analysed stasiun4

One-way analysis of variance	
P value	0,1309
P value summary	ns
Are means signif. different? (P < 0.05)	No
Number of groups	3
F	2,570
R square	0,3635

ANOVA Table	SS	df	MS		
Treatment (between columns)	32579	2	16290		
Residual (within columns)	57044	9	6338		
Total	89623	11			

Tukey's Multiple Comparison Test	Mean Diff,	q	Significant? P < 0,05?	Summary	95% CI of diff
Fiber vs Fragmen	-127,5	3,203	No	ns	-284,7 to 29,70
Fiber vs Film	-58,75	1,476	No	ns	-215,9 to 98,45
Fragmen vs Film	68,75	1,727	No	ns	-88,45 to 225,9

Tabel Analysed Transform all Data

One-way analysis of variance	
P value	0,1421
P value summary	ns
Are means signif. different? (P < 0.05)	No
Number of groups	3
F	2,442

R square	0,3518
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ANOVA Table	SS	df	MS
Treatment (between columns)	290738	2	145369
Residual (within columns)	535669	9	59519
Total	826406	11	

Tukey's Multiple Comparison Test	Mean Diff,	q	Significant? P < 0,05?	Summary	95% CI of diff
Fiber vs Fragmen	-288,8	2,367	No	ns	-770,5 to 193,0
Fiber vs Film	71,25	0,5841	No	ns	-410,5 to 553,0
Fragmen vs Film	360,0	2,951	No	ns	-121,7 to 841,7

2. Warna

Table Analyzed	Stasiun 1
One-way analysis of variance	
P value	0,5744
P value summary	ns
Are means signif. different? (P < 0.05)	No
Number of groups	6
F	0,7936
R square	0,2485

ANOVA Table	SS	df	MS
Treatment (between columns)	2078	5	415,6
Residual (within columns)	6283	12	523,6
Total	8361	17	

Tukey's Multiple Comparison Test	Mean Diff,	q	Significant? P < 0,05?	Summary	95% CI of diff
Transparan vs Biru	15,00	1,135	No	ns	-47,77 to 77,77
Transparan vs Hitam	21,67	1,640	No	ns	-41,10 to 84,43
Transparan vs Merah	26,67	2,018	No	ns	-36,10 to 89,43
Transparan vs Putih	26,67	2,018	No	ns	-36,10 to 89,43
Transparan vs Hijau	33,33	2,523	No	ns	-29,43 to 96,10
Biru vs Hitam	6,667	0,5046	No	ns	-56,10 to 69,43
Biru vs Merah	11,67	0,8831	No	ns	-51,10 to 74,43
Biru vs Putih	11,67	0,8831	No	ns	-51,10 to 74,43
Biru vs Hijau	18,33	1,388	No	ns	-44,43 to 81,10
Hitam vs Merah	5,000	0,3785	No	ns	-57,77 to 67,77
Hitam vs Putih	5,000	0,3785	No	ns	-57,77 to 67,77
Hitam vs Hijau	11,67	0,8831	No	ns	-51,10 to 74,43

Merah vs Putih	0,0	0,0	No	ns	-62,77 to 62,77
Merah vs Hijau	6,667	0,5046	No	ns	-56,10 to 69,43
Putih vs Hijau	6,667	0,5046	No	ns	-56,10 to 69,43

Table Analyzed	Stasiun 2
One-way analysis of variance	
P value	0,2160
P value summary	ns
Are means signif. different? (P < 0.05)	No
Number of groups	6
F	1,670
R square	0,4104

ANOVA Table	SS	df	MS
Treatment (between columns)	226524	5	45305
Residual (within columns)	325467	12	27122
Total	551990	17	

Tukey's Multiple Comparison Test	Mean Diff,	q	Significant? P < 0,05?	Summary	95% CI of diff
Transparan vs Biru	275,0	2,892	No	ns	-176,7 to 726,7
Transparan vs Hitam	285,0	2,997	No	ns	-166,7 to 736,7
Transparan vs Merah	300,0	3,155	No	ns	-151,7 to 751,7
Transparan vs Putih	316,7	3,330	No	ns	-135,1 to 768,4
Transparan vs Hijau	315,0	3,313	No	ns	-136,7 to 766,7
Biru vs Hitam	10,00	0,1052	No	ns	-441,7 to 461,7
Biru vs Merah	25,00	0,2629	No	ns	-426,7 to 476,7
Biru vs Putih	41,67	0,4382	No	ns	-410,1 to 493,4
Biru vs Hijau	40,00	0,4207	No	ns	-411,7 to 491,7
Hitam vs Merah	15,00	0,1578	No	ns	-436,7 to 466,7
Hitam vs Putih	31,67	0,3330	No	ns	-420,1 to 483,4
Hitam vs Hijau	30,00	0,3155	No	ns	-421,7 to 481,7
Merah vs Putih	16,67	0,1753	No	ns	-435,1 to 468,4
Merah vs Hijau	15,00	0,1578	No	ns	-436,7 to 466,7
Putih vs Hijau	-1,667	0,01753	No	ns	-453,4 to 450,1

Table Analyzed	Stasiun 3
One-way analysis of variance	
P value	0,3175
P value summary	ns
Are means signif. different? (P < 0.05)	No
Number of groups	6
F	1,326

R square	0,3559
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ANOVA Table	SS	df	MS
Treatment (between columns)	96161	5	19232
Residual (within columns)	174050	12	14504
Total	270211	17	

Tukey's Multiple Comparison Test	Mean Diff,	q	Significant? P < 0,05?	Summary	95% CI of diff
Transparan vs Biru	128,3	1,846	No	ns	-202,0 to 458,7
Transparan vs Hitam	191,7	2,757	No	ns	-138,7 to 522,0
Transparan vs Merah	186,7	2,685	No	ns	-143,7 to 517,0
Transparan vs Putih	205,0	2,948	No	ns	-125,3 to 535,3
Transparan vs Hijau	205,0	2,948	No	ns	-125,3 to 535,3
Biru vs Hitam	63,33	0,9108	No	ns	-267,0 to 393,7
Biru vs Merah	58,33	0,8389	No	ns	-272,0 to 388,7
Biru vs Putih	76,67	1,103	No	ns	-253,7 to 407,0
Biru vs Hijau	76,67	1,103	No	ns	-253,7 to 407,0
Hitam vs Merah	-5,000	0,07191	No	ns	-335,3 to 325,3
Hitam vs Putih	13,33	0,1918	No	ns	-317,0 to 343,7
Hitam vs Hijau	13,33	0,1918	No	ns	-317,0 to 343,7
Merah vs Putih	18,33	0,2637	No	ns	-312,0 to 348,7
Merah vs Hijau	18,33	0,2637	No	ns	-312,0 to 348,7
Putih vs Hijau	0,0	0,0	No	ns	-330,3 to 330,3

Table Analyzed	Stasiun 4
One-way analysis of variance	
P value	0,0330
P value summary	*
Are means signif. different? (P < 0.05)	Yes
Number of groups	6
F	3,568
R square	0,5979

ANOVA Table	SS	df	MS
Treatment (between columns)	488811	5	97762
Residual (within columns)	328767	12	27397
Total	817578	17	

Tukey's Multiple Comparison Test	Mean Diff,	q	Significant? P < 0,05?	Summary	95% CI of diff
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Transparan vs Biru	413,3	4,325	No	ns	-40,69 to 867,4
Transparan vs Hitam	446,7	4,674	No	ns	-7,356 to 900,7
Transparan vs Merah	445,0	4,657	No	ns	-9,023 to 899,0
Transparan vs Putih	440,0	4,604	No	ns	-14,02 to 894,0
Transparan vs Hijau	458,3	4,796	Yes	*	4,311 to 912,4
Biru vs Hitam	33,33	0,3488	No	ns	-420,7 to 487,4
Biru vs Merah	31,67	0,3314	No	ns	-422,4 to 485,7
Biru vs Putih	26,67	0,2790	No	ns	-427,4 to 480,7
Biru vs Hijau	45,00	0,4709	No	ns	-409,0 to 499,0
Hitam vs Merah	-1,667	0,01744	No	ns	-455,7 to 452,4
Hitam vs Putih	-6,667	0,06976	No	ns	-460,7 to 447,4
Hitam vs Hijau	11,67	0,1221	No	ns	-442,4 to 465,7
Merah vs Putih	-5,000	0,05232	No	ns	-459,0 to 449,0
Merah vs Hijau	13,33	0,1395	No	ns	-440,7 to 467,4
Putih vs Hijau	18,33	0,1918	No	ns	-435,7 to 472,4

Tabel Analysed

Transform of All Data

One-way analysis of variance	
P value	< 0,0001
P value summary	***
Are means signif. different? (P < 0.05)	Yes
Number of groups	6
F	6,697
R square	0,3366
Bartlett's test for equal variances	
Bartlett's statistic (corrected)	190,0
P value	< 0,0001
P value summary	***
Do the variances differ signif. (P < 0.05)	Yes

ANOVA Table	SS	df	MS
Treatment (between columns)	574999	5	115000
Residual (within columns)	1,133e+006	66	17173
Total	1,708e+006	71	

Tukey's Multiple Comparison Test	Mean Diff,	q	Significant? P < 0,05?	Summary	95% CI of diff
Ttransparan vs Biru	207,9	5,496	Yes	**	50,68 to 365,1
Ttransparan vs Hitam	236,3	6,245	Yes	***	79,02 to 393,5
Ttransparan vs Merah	239,6	6,333	Yes	***	82,35 to 396,8
Ttransparan vs Putih	247,1	6,531	Yes	***	89,85 to 404,3
Ttransparan vs Hijau	252,9	6,686	Yes	***	95,68 to 410,1
Biru vs Hitam	28,33	0,7490	No	ns	-128,9 to 185,6
Biru vs Merah	31,67	0,8371	No	ns	-125,6 to 188,9

Biru vs Putih	39,17	1,035	No	ns	-118,1 to 196,4
Biru vs Hijau	45,00	1,190	No	ns	-112,2 to 202,2
Hitam vs Merah	3,333	0,08811	No	ns	-153,9 to 160,6
Hitam vs Putih	10,83	0,2864	No	ns	-146,4 to 168,1
Hitam vs Hijau	16,67	0,4406	No	ns	-140,6 to 173,9
Merah vs Putih	7,500	0,1983	No	ns	-149,7 to 164,7
Merah vs Hijau	13,33	0,3525	No	ns	-143,9 to 170,6
Putih vs Hijau	5,833	0,1542	No	ns	-151,4 to 163,1

Uji Statistik konsentrasi mikroplastik

1) Normalitas

KS normality test	
KS distance	0,2514
P value	0,0080
Passed normality test (alpha=0.05)?	No
P value summary	**
D'Agostino & Pearson omnibus normality test	
K2	3,363
P value	0,1861
Passed normality test (alpha=0.05)?	Yes
P value summary	ns
Shapiro-Wilk normality test	
W	0,8840
P value	0,0448
Passed normality test (alpha=0.05)?	Yes
P value summary	*
Sum	36,67

2) Uji one way Anova

One-way analysis of variance	
P value	0,0019
P value summary	**
Are means signif. different? (P < 0.05)	Yes
Number of groups	4
F	9,308
R square	0,6994

ANOVA Table	SS	df	MS
Treatment (between columns)	269731	3	89910
Residual (within columns)	115912	12	9659
Total	385644	15	

Tukey's Multiple Comparison Test	Mean Diff,	q	Significant? P < 0,05?	Summary	95% CI of diff
STASIUN 1 vs STASIUN 2	-262,5	5,342	Yes	*	-468,8 to -56,16
STASIUN 1 vs STASIUN 3	-173,8	3,536	No	ns	-380,1 to 32,59
STASIUN 1 vs STASIUN 4	-351,3	7,148	Yes	**	-557,6 to -144,9
STASIUN 2 vs STASIUN 3	88,75	1,806	No	ns	-117,6 to 295,1
STASIUN 2 vs STASIUN 4	-88,75	1,806	No	ns	-295,1 to 117,6
STASIUN 3 vs STASIUN 4	-177,5	3,612	No	ns	-383,8 to 28,84

Lampiran 4. Data warna mikroplastik

Warna mikroplastik berdasarkan bentuknya per stasiun

STASIUN	BENTUK	WARNA					jumlah
		BIRU	HIJAU	HITAM	MERAH	Putih	
A	FIBER	11		7	2	3	23
	FILM					2	2
	FRAGMEN				2	19	21
B	FIBER	22	2	20	10	7	61
	FILM			1		31	32
	FRAGMEN	5	1		2	156	164
C	FIBER	46		6	10	5	67

	FILM			2		17	19
	FRAGMEN				1	101	102
D	FIBER	27		6	8	17	58
	FILM			1		107	108
	FRAGMEN					162	162
TOTAL		111	3	43	35	627	816

Pola persebaran warna mikroplastik perstasiun

Warna	BIRU	HIJAU	HITAM	MERAH	Putih	JUMLAH
STASIUN 1	11		7	4	24	46
STASIUN 2	27	3	21	12	194	257
STASIUN 3	46		8	11	123	188
STASIUN 4	27		7	8	286	328
JUMLAH	111	3	43	35	627	816
PESENTASI(%)	13,55	0,37	5,25	4,27	74,73	100

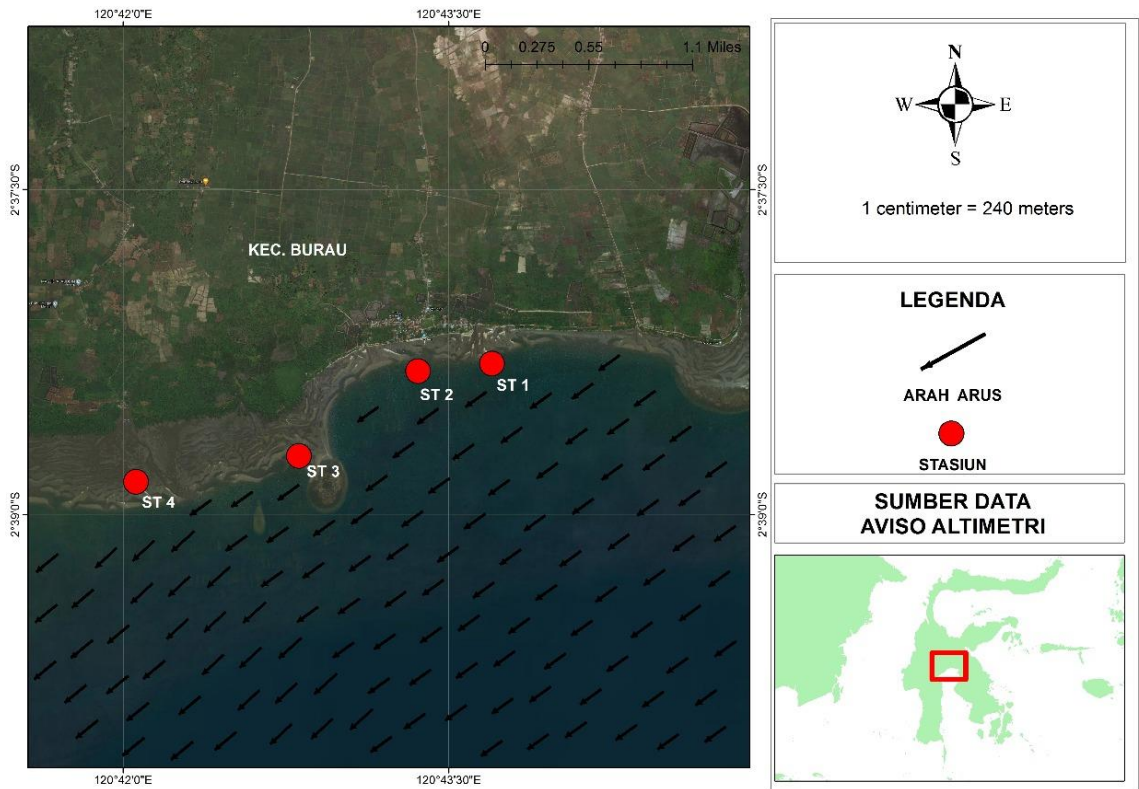
ukuran mikroplastik berdasarkan bentuknya

UKURAN MP	fiber		film		fragmen	
	K	B	K	B	K	B
Stasiun 1	0,11	3,66	0,21	0,36	0,05	0,9

Stasiun 2	0,14	0,85	0,15	0,42	0,04	0,738
Stasiun 3	0,75	4,87	0,11	0,94	0,03	2,91
Stasiun 4	0,12	7,10	0,01	0,116	0,12	1

Lampiran 5.

Pola Arus Pada Lokasi Penelitian



Gambar. Arah arus pada Bulan Maret 2020