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LAMPIRAN

Lampiran 1. Frekuensi panjang total, frekuensi terhitung, logaritma natural frekuensi terhitung dan selisih logaritma terhitung pada ikan tembang *(Sardinella gibbosa)* di sekitar perairan Kab. Barru.

Cohort I.

No.	Interval Kelas			TK	F	F x TK	TK-$\bar{L}$	$(TK-\bar{L})^2$	$F(TK-\bar{L})^2$	$-(TK-\bar{L})^2/2S^2$	$EXP-(TK-\bar{L})^2/2S^2$	Fc	LnFc	ΔLnFc	TK+dL/2
1	100	-	105	102.5	52	5330	-13.9122	193.5497	10064.5839	-1.5994	0.2020	27.1404	3.3010	0.9430	105
2	105	-	110	107.5	75	8062.5	-8.9122	79.4276	5957.0665	-0.6563	0.5187	69.6904	4.2441	0.5299	110
3	110	-	115	112.5	91	10237.5	-3.9122	15.3054	1392.7929	-0.1265	0.8812	118.3838	4.7739	0.1167	115
4	115	-	120	117.5	109	12807.5	1.0878	1.1833	128.9774	-0.0098	0.9903	133.0372	4.8906	-0.2965	120
5	120	-	125	122.5	111	13597.5	6.0878	37.0611	4113.7867	-0.3063	0.7362	98.9045	4.5942	-0.7096	125
6	125	-	130	127.5	86	10965	11.0878	122.9390	10572.7544	-1.0159	0.3621	48.6431	3.8845		130
∑					**524**	**61000**			**32229.9618**						

n	524
dL	5
$n \times dL$	2620
$S\sqrt{2\pi}$	19.5021
S	7.7787
$2S^2$	121.0151
S^2	60.5076
$\bar{L}$	116.4122

$$\bar{L}=\frac{\sum(TK\times F)}{\sum F} \qquad S^2=\frac{\sum F(TK-\bar{L})^2}{\sum F-1} \qquad dL=\frac{\text{panjang tertinggi-panjang terendah}}{\text{jumlah individu kelas}}$$

$\pi = 3{,}1415$

n = jumlah individu tiap kelas

$$Fc=\frac{n\times dL}{S\sqrt{2\pi}}\times \exp -(TK-\bar{L})^2/2S$$

Lampiran 2. Frekuensi panjang total, frekuensi terhitung, logaritma natural frekuensi terhitung dan selisih logaritma terhitung pada ikan tembang *(Sardinella gibbosa)* di sekitar perairan Kab. Barru.

Cohort II.

No.	Interval Kelas			TK	F	FxTK	TK-$\bar{L}$	$(TK-\bar{L})^2$	F(TK-$\bar{L}$)^2	-(TK-$\bar{L}$)^2/2S^2	EXP-(TK-$\bar{L}$)^2/2S^2	Fc	LnFc	∆LnFc	TK+dL/2
7	130	-	135	132.5	78	10335	-12.9381	167.3932	13056.6710	-1.3243	0.2660	36.4432	3.5958	0.8258	134.9167
8	135	-	140	137.5	83	11412.5	-7.9381	63.0127	5230.0530	-0.4985	0.6074	83.2255	4.4216	0.4302	139.9167
9	140	-	145	142.5	94	13395	-2.9381	8.6322	811.4227	-0.0683	0.9340	127.9681	4.8518	0.0347	144.9167
10	145	-	150	147.5	128	18880	2.0619	4.2516	544.2080	-0.0336	0.9669	132.4807	4.8864	-0.3609	149.9167
11	150	-	155	152.5	103	15707.5	7.0619	49.8711	5136.7227	-0.3946	0.6740	92.3441	4.5255	-0.7565	154.9167
12	155	-	160	157.5	79	12442.5	12.0619	145.4906	11493.7545	-1.1510	0.3163	43.3382	3.7690		159.9167
∑					**565**	**82172.5**			**36272.8319**						

n	565
dL	4.8333
n×dL	2730.8333
$S\sqrt{2\pi}$	19.9312
S	7.9498
$2S^2$	126.3994
S^2	63.1997
$\bar{L}$	145.4381

$$\bar{L}=\frac{\sum(TK\times F)}{\sum F} \qquad S^2=\frac{\sum F(TK-\bar{L})^2}{\sum F-1} \qquad dL=\frac{\text{panjang tertinggi-panjang terendah}}{\text{jumlah individu kelas}}$$

$\pi = 3{,}1415$

n = jumlah individu tiap kelas

$$Fc=\frac{n\times dL}{S\sqrt{2\pi}}\times \exp -(TK-\bar{L})^2/2S$$

Lampiran 3. Frekuensi panjang total, frekuensi terhitung, logaritma natural frekuensi terhitung dan selisih logaritma terhitung pada ikan tembang *(Sardinella gibbosa)* di sekitar perairan Kab. Barru.

Cohort III.

No.	Interval Kelas			TK	F	FxTK	TK-$\bar{L}$	$(TK-\bar{L})^2$	$F(TK-\bar{L})^2$	$-(TK-\bar{L})^2/2S^2$	$EXP-(TK-\bar{L})^2/2S^2$	Fc	LnFc	∆LnFc	TK+dL/2
13	160	-	165	162.5	57	9262.5	-8.5075	72.3769	4125.4845	-0.8372	0.4329	34.0212	3.5270	0.6949	164.9167
14	165	-	170	167.5	66	11055	-3.5075	12.3023	811.9514	-0.1423	0.8674	68.1594	4.2218	0.1165	169.9167
15	170	-	175	172.5	88	15180	1.4925	2.2277	196.0348	-0.0258	0.9746	76.5833	4.3384	-0.4618	174.9167
16	175	-	180	177.5	23	4082.5	6.4925	42.1530	969.5199	-0.4876	0.6141	48.2586	3.8766	-1.0401	179.9167
17	180	-	185	182.5	25	4562.5	11.4925	132.0784	3301.9603	-1.5277	0.2170	17.0549	2.8364	-1.6185	184.9167
18	185	-	190	187.5	9	1687.5	16.4925	272.0038	2448.0341	-3.1462	0.0430	3.3803	1.2180		189.9167
∑					**268**	**45830**			**11852.9851**						

n	268
dL	4.8333
n×dL	1295.3333
$S\sqrt{2\pi}$	16.4838
S	6.5748
$2S^2$	86.4551
S^2	43.2276
$\bar{L}$	171.0075

$$\bar{L} = \frac{\sum(TK \times F)}{\sum F}$$

$$S^2 = \frac{\sum F(TK-\bar{L})^2}{\sum F-1}$$

$$dL = \frac{\text{panjang tertinggi-panjang terendah}}{\text{jumlah individu kelas}}$$

$\pi = 3{,}1415$

n = jumlah individu tiap kelas

$$Fc = \frac{n \times dL}{S\sqrt{2\pi}} \times \exp -(TK-\bar{L})^2/2S$$

Lampiran 4. Penentuan nilai koefisien pertumbuhan (K), panjang asimptot (L∞) dengan menggunakan paket ELEFAN I (*electronic length frequency analysis*) yang terdapat dalam aplikasi FISAT II di Perairan kab. Barru.

K\L∞	190.00	193.00	196.00	199.00	202.00	205.00	208.00	211.00	214.00	217.00	220.00	223.00	226.00	229.00	232.00	235.00	238.00	241.00
0.10	0.001	0.002	0.002	0.004	0.009	0.008	0.02	0.01	0.023	0.032	0.024	0.026	0.029	0.026	0.026	0.093	0.093	0.093
0.15	0.003	0.008	0.011	0.028	0.011	0.022	0.024	0.088	0.116	0.053	0.125	0.12	0.049	0.049	0.068	0.254	0.371	0.293
0.20	0.008	0.009	0.027	0.1	0.051	0.049	0.139	0.059	0.047	0.143	0.293	0.293	0.32	0.356	0.043	0.042	0.042	0.042
0.25	0.023	0.025	0.059	0.095	0.047	0.124	0.156	0.356	0.341	0.341	0.042	0.038	0.038	0.113	0.231	0.231	0.231	0.231
0.30	0.035	0.047	0.036	0.15	0.166	0.341	0.313	0.038	0.062	0.113	0.231	0.231	0.231	0.225	0.26	0.973	0.973	0.767
0.35	0.014	0.144	0.132	0.313	0.507	0.054	0.113	0.113	0.225	0.225	0.225	0.26	0.767	0.767	0.767	0.767	0.84	0.088
0.40	0.114	0.132	0.507	0.054	0.113	0.11	0.225	0.225	0.177	0.767	0.767	0.767	0.84	0.84	0.088	0.085	0.085	0.085
0.45	0.214	0.507	0.095	0.11	0.11	0.177	0.177	0.767	0.84	0.84	0.84	0.806	0.085	0.085	0.078	0.078	0.159	0.159
0.50	0.427	0.095	0.11	0.177	0.177	0.665	0.84	0.840	0.806	0.806	0.085	0.078	0.078	0.078	0.159	0.159	0.159	0.159
0.55	0.095	0.075	0.087	0.194	0.728	0.84	0.806	0.806	0.078	0.078	0.078	0.078	0.159	0.159	0.159	0.159	0.183	0.183
0.60	0.075	0.087	0.194	0.728	0.806	0.806	0.738	0.078	0.078	0.078	0.159	0.159	0.159	0.159	0.183	0.183	0.183	0.183
0.65	0.082	0.194	0.698	0.698	0.738	0.738	0.078	0.078	0.078	0.159	0.159	0.159	0.183	0.183	0.183	0.183	0.183	0.183
0.70	0.079	0.698	0.639	0.738	0.738	0.078	0.078	0.078	0.159	0.159	0.159	0.183	0.183	0.183	0.183	0.183	0.183	0.183
0.75	0.186	0.639	0.738	0.738	0.078	0.078	0.078	0.159	0.159	0.159	0.183	0.183	0.183	0.183	0.183	0.183	0.183	0.183

K	**0.50**
L∞	**211.00**
log (-to)	**-0.7167**
to	**-0.1920**
SS	**1**
SL	**147.5**
Rn	**0.840**

$$\log(-to) = -0.3922 - 0.2752 \times (\log L\infty) - 1.038 \times (\log k)$$

Lampiran 5. Hubungan antara panjang ikan tembang *(Sardinella gibbosa)* pada berbagai tingkat umur di sekkitar perairan kab. Barru.

L∞	K	to	t	L(t)
211.00	0.50	-0.1920	-0.1920	0
211.00	0.50	-0.1920	0	19.31
211.00	0.50	-0.1920	1	94.74
211.00	0.50	-0.1920	2	140.48
211.00	0.50	-0.1920	3	168.23
211.00	0.50	-0.1920	4	185.06
211.00	0.50	-0.1920	5	195.27
211.00	0.50	-0.1920	6	201.46
211.00	0.50	-0.1920	7	205.21
211.00	0.50	-0.1920	8	207.49
211.00	0.50	-0.1920	9	208.87
211.00	0.50	-0.1920	10	209.71
211.00	0.50	-0.1920	11	210.22
211.00	0.50	-0.1920	12	210.52
211.00	0.50	-0.1920	13	210.71
211.00	0.50	-0.1920	14	210.83
211.00	0.50	-0.1920	15	210.89
211.00	0.50	-0.1920	16	210.94
211.00	0.50	-0.1920	17	210.96
211.00	0.50	-0.1920	18	210.98
211.00	0.50	-0.1920	19	210.99
211.00	0.50	-0.1920	20	210.99

( ) *umur ikan dengan pertambahan ukuran tertinggi*

$$L(t) = L\infty\ (1\text{-}exp^{-K(t-to)})$$

$$L(t) = 211{,}00\ (1\text{-}exp^{-0{,}50(t+0.1920)})$$

Lampiran 6. Nilai hasil Yield Per Recruitment Relative (Y/R') dan Laju Eksploitasi (E) Ikan tembang *(Sardinella gibbosa)* di Perairan Kab. Barru

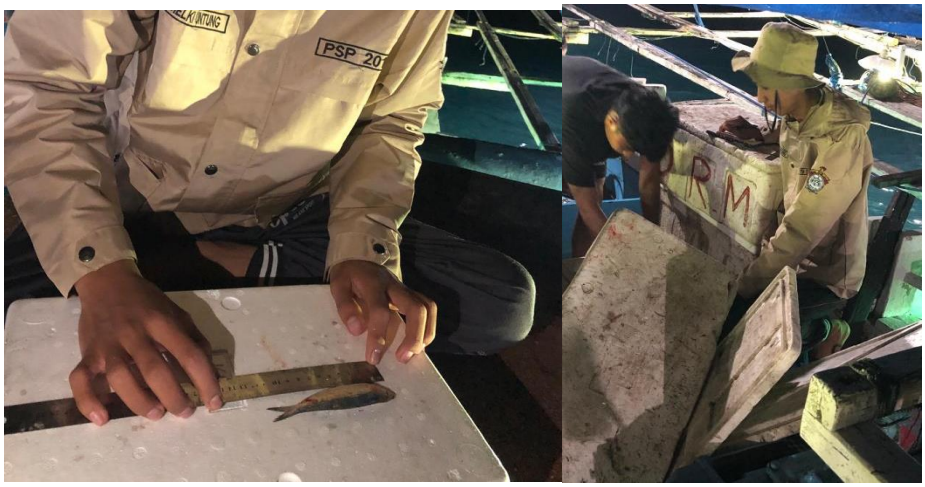
$L\infty$	211.00
Lc	140
M	0.68
K	0.50
M/K	1.36
U	0.337
$U^{M/K}$	0.228
3U	1.011
$3U^2$	0.340
U^3	0.038
Y/R'	**0.0564**

$$U = 1 - \frac{Lc}{L\infty} \qquad m = \frac{1-E}{M/K}$$

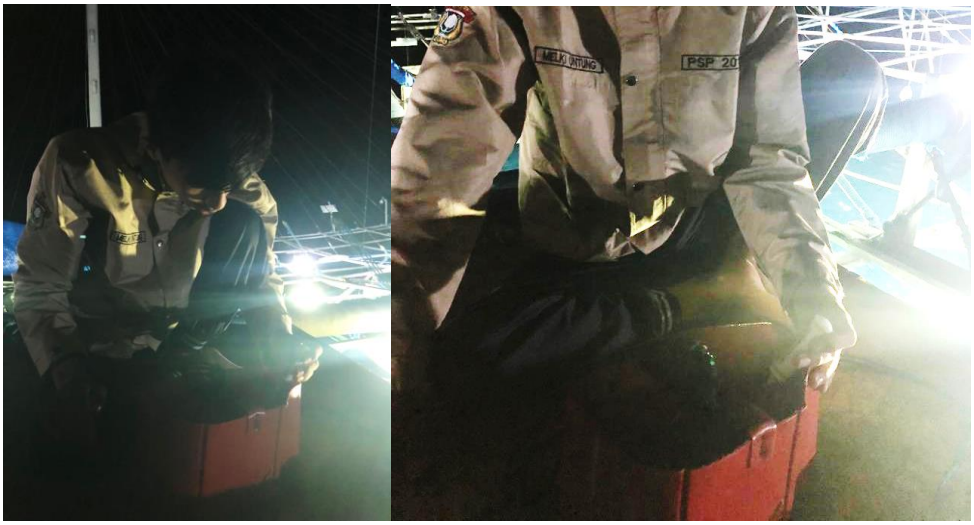
$$Y/R' = E \times U^{M/K}\left(1 - \frac{3U}{1+m} + \frac{3U^2}{1+2m} - \frac{U^3}{1+3m}\right)$$

E	Y/R'	m	$E.U^{M/K}$	1+m	1+2m	1+3m
0.05	0.0061	0.6985	0.0114	1.6985	2.3971	3.0956
0.10	0.0120	0.6618	0.0228	1.6618	2.3235	2.9853
0.15	0.0176	0.6250	0.0342	1.6250	2.2500	2.8750
0.20	0.0230	0.5882	0.0456	1.5882	2.1765	2.7647
0.25	0.0282	0.5515	0.0570	1.5515	2.1029	2.6544
0.30	0.0331	0.5147	0.0683	1.5147	2.0294	2.5441
0.35	0.0378	0.4779	0.0797	1.4779	1.9559	2.4338
0.40	0.0422	0.4412	0.0911	1.4412	1.8824	2.3235
0.45	0.0462	0.4044	0.1025	1.4044	1.8088	2.2132
0.50	0.0499	0.3676	0.1139	1.3676	1.7353	2.1029
0.55	0.0533	0.3309	0.1253	1.3309	1.6618	1.9926
0.60	0.0564	0.2941	0.1367	1.2941	1.5882	1.8824
0.65	0.0591	0.2574	0.1481	1.2574	1.5147	1.7721
0.70	0.0613	0.2206	0.1595	1.2206	1.4412	1.6618
0.75	0.0632	0.1838	0.1709	1.1838	1.3676	1.5515
0.80	0.0647	0.1471	0.1822	1.1471	1.2941	1.4412
0.85	0.0657	0.1103	0.1936	1.1103	1.2206	1.3309
0.90	0.0663	0.0735	0.2050	1.0735	1.1471	1.2206
0.95	0.0665	0.0368	0.2164	1.0368	1.0735	1.1103
1.00	0.0662	0.0000	0.2278	1.0000	1.0000	1.0000

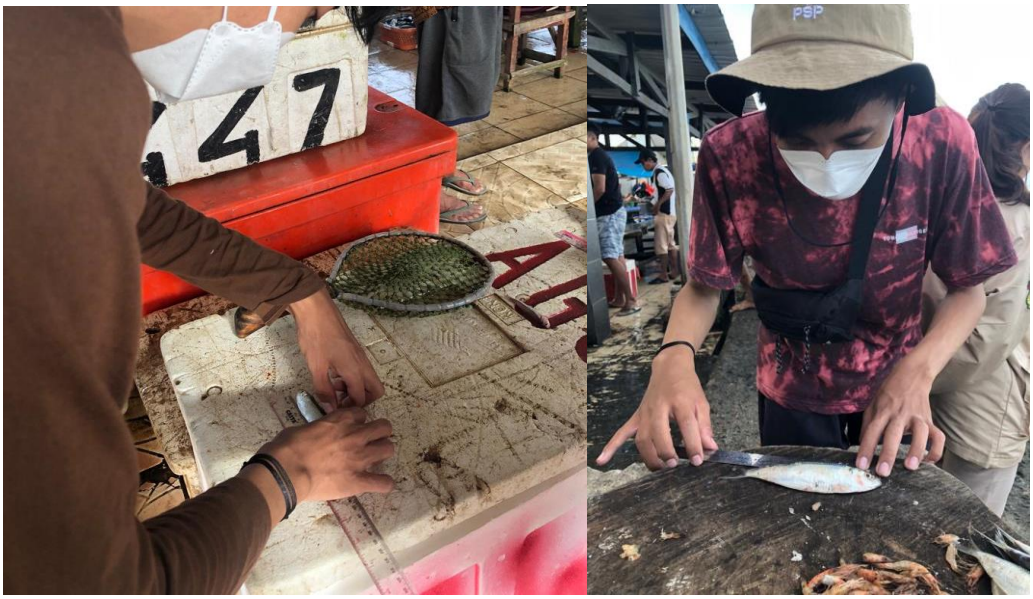
Lampiran 7. Foto kegiatan pengambilan dan pengukuran sampel selama di lokasi penelitian



Gambar 13. Pengukuran sampel ikan tembang *(Sardinella gibbosa)* diatas kapal.



Gambar 14. Pengukuran suhu perairan menggunakan termometer.



Gambar 15. Pengukuran sampel ikan tembang *(Sardinella gibbosa)* di PPI Kabupaten Barru.

Gambar 16. Pendaratan ikan tembang *(Sardinella gibbosa)* di PPI Sumpang Binagae Kab. Barru.