

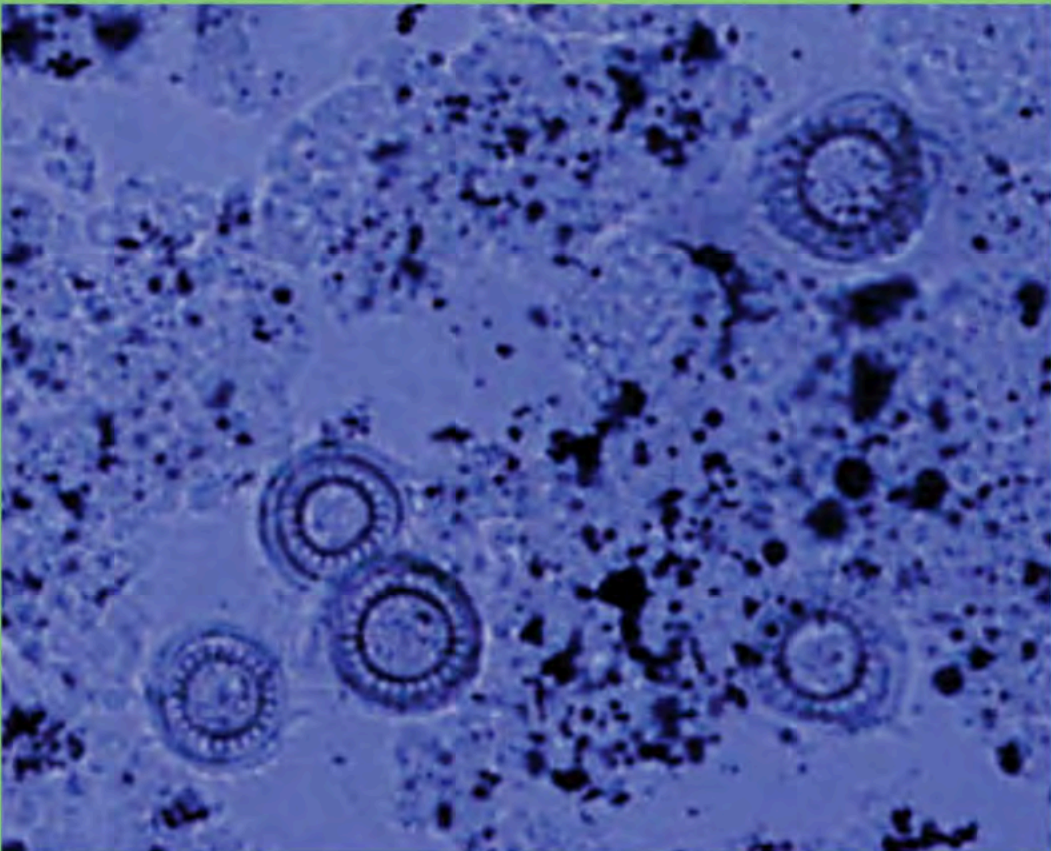
# CORRELATION OF WATER QUALITY ON THE ECTOPARASYTE INFECTION LEVEL OF DUMBO CATFISH (*Clarias sp*)

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## ABSTRACT

Fish disease is an obstacle in the cultivation of Dumbo catfish (*Clarias sp.*) which can result in fish death. The need for information on how to prevent and treat fish diseases is very necessary. This study aims to determine the effect of aeration duration on water quality, ectoparasite intensity, prevalence, dominance, survival and condition factors, then correlate water quality with ectoparasite intensity. This study used a Complete Randomized Design (CRD) with five treatments and four replications. Treatment includes aeration 0 hours/day, 6 hours/day, 12 hours/day, 18 hours/day and 24 hours/day. Data analysis using ANOVA of a certain level of significance. If there is a noticeable difference from each treatment, proceed to the DUNCAN test. Test the correlation of water quality with ectoparasite intensity. The correlation value of oxygen solubility in ectoparasite intensity is 0.828, acidity (pH) is 0.849, ammonia is -0.888, nitrite is -0.592. The prevalence value of P0 and P1 is 0%, P2 is 89%, P3 and P4 is 100%. The intensity of ectoparasites in Dumbo catfish (*Clarias sp.*), at P0 is 2, P1 is 13, P2 is 75, while at P3 and P4 is >100. The dominance of ectoparasites that infect is *Trichodina sp.* by 71.7-100% and *Dactylogyrus sp.* by 0-28.4%.



The survival rate of fish at P0 was highest with a value of 89%, P1 at 84%, P2 at 71%, P3 and P4 rates at 0%. The value of the condition factor then P0 and P1 have a value of > 1, P2, P3 and P4 have a condition factor value of < 1. It is concluded that the longer aeration is given, the solubility of oxygen increases which results in an increase in the intensity and prevalence of ectoparasite infections, the pH of the water becomes neutral and decreases the content of ammonia and nitrite. There is a moderate to very strong correlation between water quality and ectoparasite intensity. There is an increase in the prevalence of infection, ectoparasite intensity and fish mortality so that it can reduce the survival and condition factors of Dumbo catfish (*Clarias sp.*).

## Research Results

A. Correlation of water quality to ectoparasite intensity

The value of the correlation coefficient describes how strong the relationship between two variables, namely variable x and variable y, so that knowing the correlation value can be used to determine and control variables for the desired purpose

Table 1. Coefficient Value of Water Quality Correlation to Ectoparasite Intensity

No	Parameter	Value(r) correlation (x-y)
1	DO ( $x_1$ )	0,828
2	pH( $x_2$ )	0,849
3	Amonia( $x_3$ )	-0,888
4	Nitrit ( $x_4$ )	-0,592

Table 2. Average and standard deviation on intensity and prevalence of ectoparasitic infection after aeration

Treatment	Ectoparasite intensity (Tail)	Prevalence of ectoparasites (%)
P0	2,3±0,23a	0±0a
P1	12,6±1,00a	0±0a
P2	75±12,95a	89±0,11b
P3	344±54,23b	100±0c
P4	375,1±28,94b	100±0c

*Different superscripts in the same column show very noticeable differences ( $p < 0.01$ )*

The value of the oxygen solubility correlation coefficient (DO) with ectorocyte intensity is positive 0.828 (very strong correlation) which means that the higher the oxygen solubility will cause the ectoparasite intensity to increase. The duration of aeration in the treatment will result in differences in dissolved oxygen that affect the number of obligate aerobic protozoan microorganisms

Table 3. Number of ectoparasites on the target organ

P	Name of the parasite	The number of the target organ (tail)		
		Gill	Fin	Mucus
P0	Dactylogyrus	0	0	0
	Trichodina	0	0	184
P1	Dactylogyrus	168	0	0
	Trichodina	319	0	520
P2	Dactylogyrus	1352	0	516
	Trichodina	1524	0	2611
P3	Dactylogyrus	1767	0	826
	Trichodina	2571	0	22388
P4	Dactylogyrus	1607	0	1395
	Trichodina	3865	213	22962

Table 4. Average and standard deviation on survival (SR) and condition factors (FK)

Treatment	Survival (SR) (%)	Condition Factors (%)
P0	89±3,66a	1,4±0,29a
P1	83,6±4,15a	1,03±0,17b
P2	71±3,11b	0,95±0,13b
P3	0±0c	0,55±0,6c
P4	0±0c	0,58±0,10c

*Different superscripts in the same column show very noticeable differences ( $p < 0.01$ )*

## Conclusion

The conclusion of this study is that the longer aeration is given, the solubility of oxygen will increase which results in an increase in the intensity and prevalence of ectoparasite infections, the pH of the water becomes neutral and decreases the content of ammonia and nitrite. There is a moderate to very strong correlation between water quality and ectoparasite intensity. There is an increase in the prevalence of infection, ectoparasite intensity and fish mortality so that it can reduce the survival and condition factors of Dumbo catfish (*Clarias sp.*).

## Suggestion

Further research can be carried out on other fish commodities that have additional breathing apparatus (Asborescent organs) such as catfish, gourami and snakehead fish. Materials can be found and tested that can create hypoxic environmental conditions to prevent and treat catfish from ectoparasite attacks.