

Identification of Parasites on Garing Fish (Tambroides) in Lubuk Larangan, Padang Pariaman Regency, West Sumatra

Ulfauza¹, Syofriani¹, Nazran², Azrita³, Hafrijal Syandri⁴

¹Department of Aquaculture Technology, Fisheries Business Expert Polytechnic, Jakarta

²Department of Aquaculture Technology, Marine and Fisheries Polytechnic, Sidoarjo

³Department of Biology Education, Bung Hatta University

⁴Department of Coastal and Marine Water Resources, Bung Hatta University



Abstract – The purpose of this study was to identify diseases in garing fish in the Lubuk larangan river. The research locations used were Nagari Guguak Kuranji Hilir, Sungai Limau District, Nagari Sikucur Barat, District V Koto Kampung, Nagari Lareh Nan Panjang Selatan, District VII Koto Sungai Sariak and Nagari Sicincin, District 2 x 11, six research environments were carried out from September to December 2021. Fish samples were tested in the laboratory at the Padang Fisheries Product Quarantine and Quality Control Center to calculate the parasite prevalence. The results of this study are the type of *Saprolegnia* sp was found at all lubuk larangan sample point locations with the highest prevalence of 30%. *Dactylogyrus* sp and *Trichodina* sp also continued to attack garing at all sample points with the second highest prevalence, namely 15%. *Aeromonas caviae* was found at 3 points, sikucur barat, lareh nan panjang selatan and sicincin 2x 11 enam lingkungan with a prevalence of 10%. *Plesiomonas shigelloides* was found in 2 locations, guguak kuranji hilir and Sicincin 2x11 enam lingkungan, while *Aeromonas sobria* attacked 3 sample locations, guguak kuranji hilir, 2x11 enam lingkungan and lareh nan panjang selatan with a prevalence rate of 8%. *Hafnia alvei*, *Actinobacillus linieressi* and *Argulus* sp prevalence rate of 5%. The highest prevalence at 30% indicates that the level of parasitic attack is generally with the usual infection. The results of Intensity of Ind/parasites were found as many as 28 at all sample points of the lubuk larangan river, the most commonly found in 2 x 11 enam lingkungan, parasites and the least in sikucur barat with an intensity of 6. For Ind/tail intensity at 4 sampling points garing fish (*Tor tambroides*) at 2.8 which means a low infection rate.

Keywords – Bacteria; garing fish; lubuk larangan.

I. INTRODUCTION

Garing fish as the name in Minang language includes fish in the Genus *Tor Tambroides* which are fish endemic to West Sumatra whose populations in nature are starting to become scarce and are even considered close to extinction, this occurs due to overfishing of all sizes and some using centrums electricity. Law Number 32 of 2009 concerning Environmental Protection and Management Article 1 Paragraph 30 explains that local wisdom, namely noble values that apply in the governance of community life, includes protecting and managing the environment in a sustainable manner¹. Local wisdom in Padang Pariaman Regency includes Lubuk larangan which is a conservation effort carried out by traditional leaders with the local community to produce mutually agreed customary law rules to preserve the river and the biota that live in it². For harvesting or unloading garing fish in Lubuk larangan, this is done at a predetermined time and the proceeds from the sale are used for the development of Nagari/village around lubuk larangan.

Efforts to conserve garing fish are inseparable from controlling diseases that attack these fish because almost all aquatic biota are susceptible to attack by various disease agents, infectious diseases caused by viruses, bacteria, fungi and parasites, worms and protozoa³. Identification of these diseases and parasites is the first step in preventing the spread and transmission to the fish itself

and to humans who consume these fish. Because this garing fish has a high economy with high demand in the international market, namely Malaysia, at a price of RM 100-400/kg². The purpose of this study was to identify diseases in garing fish in the Lubuk larangan river.

II. METHODOLOGY

The research locations used were Nagari Guguak Kuranji Hilir, Sungai Limau District, Nagari Sikucur Barat, District V Koto Kampung, Nagari Lareh Nan Panjang Selatan, District VII Koto Sungai Sariak and Nagari Sicincin, District 2 x 11, six research environments were carried out from September to December 2021. This study used garing fish caught in lubuk larangan Padang Pariaman Regency, West Sumatra. Fish samples were tested in the laboratory at the Padang Fisheries Product Quarantine and Quality Control Center.

The materials used in this study were samples of live garing fish totaling 40 individuals, alcohol formalin acetic acid (AFA) (P.3) (DA/H.3/SKIPM-P), Ag NO3 2% (Silver Nitrate) (P .1) (DA/H.3/SKIPM-P) and physiological NaCl (M.31) (DA/H.1/SKIPM-P). The tools used for catching fish are nets, buckets, plastic packing, while the tools used for parasite testing (media and reagents) are dissecting sets, petridishes, beaker glass, object glass, cover glass, microscope (40x lens). The method for taking garing fish samples was to determine the location of Lubuk larangan, coordinate with regional officials and traditional leaders, then survey the location of the Lubuk larangan river. After being determined and approved, fish were caught with a total of 40 fish with 10 fish for each point of distribution.

Data obtained from the identification of parasites in garing fish tested in the laboratory were analyzed descriptively to calculate the parasite prevalence. The level of intensity and prevalence⁴ which are presented in tables 1 and 2 cited in (Maulana et al., 2017). Prevalence and intensity were calculated using the Kabata⁵ formula.

$$Prevalence (\%) = \frac{\Sigma \text{ Number of fish infected with parasites}}{\Sigma \text{ number of fish examined}} \times 100\%$$

$$Intensity (ind/tail) = \frac{\Sigma \text{ Parasites found}}{\Sigma \text{ Infected fish}}$$

Table 1. Criteria for the prevalence of parasitic infections according to William and Bunkley⁶

No.	Tingkat serangan	Keterangan	Prevalensi
1.	Always	Very badly infected	100-99%
2.	Almost always	Severe infection	98-90%
3.	Usually	Moderate infection	89-70%
4.	Very often	Very mild infection	69-50%
5.	Generally	Common infection	49-30%
6.	Often	Frequent infections	29-10%
7.	Sometimes	Infection sometimes	9-1%
8.	Seldom	Rare infection	>1-0,1%
9.	Very rarely	Infections are very rare	>1-0,01%
10.	Almost never	Never infection	>PO, 0,1%

Table 2. Intensity criteria

No.	Tingkat Infeksi	Intensitas (ind/ekor)
1.	Very low	<1
2.	Low	1-5
3.	Currently	6-55
4.	Critical	51-100
5.	Awfully	>100
6.	Super infection	>1000

III. RESULT AND DISCUSSION

The results of the study were issued from a laboratory test for parasite identification in gariang fish in the laboratory at the Padang Fisheries Product Quarantine and Quality Control Center taken from 4 locations of the lubuk larangan distribution points, namely Guguak Kuranji Hilir, Sikucur Barat, Lareh Nan Panjang Selatan and Sicincin 2x11 Six Lingkung as much as From 40 tails, 10 types of parasites were found which were then classified into 3 parts, namely bacteria, fungi and parasites. For bacteria there are 6 types of *Hafnia alvei*, *Plesiomonas shigelloides*, *Aeromonas sobria*, *Actinobacillus liniernessi*, *Aeromonas caviae*, *Klebsiella pneumoniae*. There is only 1 type of mushroom, namely *Saprolegnia* sp. As for the parasite group, namely *Dactylogyrus* sp, *Trichodina* sp, *Argulus* sp. Parasites of the type *Argulus* sp are only found in gariang fish in the Sicincin 2x11 Six Lingkung and West Sikucur banish distributions.

Presenting the data in table 3 refers to Nofila et al., (2020) for the identification of the type of parasite that attacks the gariang fish for the distribution location of Lubuk larangan which is calculated using the prevalence formula, namely with an average prevalence for *Hafnia alvei* bacteria of 5% found in 1 gariang fish in Guguak Kuranji Hilir and 1 Sicincin gariang fish 2x11 six circles. *Plesiomonas shigelloides* 8% was found in 1 fish at Guguak Kuranji Hilir and 2 fish at Lareh Nan Panjang Selatan. *Aeromonas sobria* with an average prevalence of 8% attacking gariang fish in Guguak Kuranji Hilir, Sicincin 2x11 six neighborhoods and South Lareh Nan Panjang. *Actinobacillus liniernessi* attacks fish in guguak kuranji downstream and fish in South Lareh Nan Panjang with an average prevalence of 5%. For *Aeromonas caviae* bacteria attack gariang fish in the distribution of Sicincin 2x11 six enclosures, Lareh Nan Panjang South and West Sukucur with an average prevalence of 10%. *Klebsiella pneumoniae* Sicincin 2x11 bacteria in six environments and West Sukucur with an average prevalence of 5%.

For the results of identification of fungal attacks with the type of *Saprolegnia* sp found at all 4 points of distribution of lubuk larangan with an average prevalence of 30%. While the paratites *Dactylogyrus* sp and *Trichodina* sp were found at all fish distribution points in Lubuk larangan with an average prevalence of 15% and *Argulus* sp 5% were found in Sicincin 2x11 six enclosures and West Sukucur.

Table 3. Results of the prevalence of parasites in gariang fish (*Tor Tambroides*) in lubuk larangan distribution

Parasites (Lab Test Parameters)	Prevalence (%) of lubuk larangan fish				Average prevalence (%)
	Guguak Kuranji ilir	Sicincin 2x11 enam lingkung	Lareh Nan Panjang Selatan	Sukucur Barat	
<i>Hafnia alvei</i>	10%	10%	0%	0%	5%
<i>Plesiomonas shigelloides</i>	10%	0%	20%	0%	8%
<i>Aeromonas sobria</i>	10%	10%	10%	0%	8%
<i>Actinobacillus lignieressi</i>	10%	0%	10%	0%	5%

Identification of Parasites on Garing Fish (*Tambroides*) in Lubuk Larangan, Padang Pariaman Regency, West Sumatra

<i>Aeromonas caviae</i>	0%	10%	10%	20%	10%
<i>Klebsiella pneumoniae</i>	0%	10%	0%	10%	5%
<i>Saprolegnia sp</i>	30%	30%	20%	40%	30%
<i>Dactylogyrus sp</i>	10%	20%	10%	20%	15%
<i>Trichodina sp</i>	10%	20%	10%	20%	15%
<i>Argulus sp</i>	0%	10%	0%	10%	5%

The results of the research for intensity gave different results at each location of the garing fish sample caught in the lubuk larangan distribution with a total of 40 fish. The highest intensity was 0.8 garing fish in sicincin 2 x 11 six enclosures, the second highest was garing fish in Guguak Kuranji Hilir and South Lareh Nan Panjang with an intensity of 0.7 and the lowest in West Sekucur with an intensity of 0.6.

Table 3. Intensity results of Ind/tail parasites on garing fish (*Tor Tambroides*) in lubuk larangan distribution

Sample location	Σ sampled/infected fish	Σ examined fish	Σ parasites found	Ind/tail intensity
Guguak Kuranji hilir	10	5	7	0.7
Sicincin 2x11 enam lingkung	10	5	8	0.8
Lareh Nan Panjang Selatan	10	5	7	0.7
Sukucur Barat	10	5	6	0.6
Σ	40	20	28	2.8

The various types of parasites found in the 4 locations of the Lubuk larangan River varied greatly, from the 20 fish identified there were 10 types of parasites which were classified into 3 parts namely bacteria, fungi and parasites. From the river location survey, it was found that the characteristics of the river bottom are rocks, sand and moss with a fairly heavy flow of water with a water temperature of 21-24°C in the distribution of Lubuk larangan, the prohibition of parasitic attacks can be influenced by internal and external factors such as temperature, water quality, community activities around the Lubuk larangan River. Prohibitions and types of food given to dried fish. For the Lubuk larangan garing fish, there are those that are used as tourist attractions, bathing places and places for family visits. Due to the high level of community activity in some parts of this ban, both the food factor that is given directly to the garing fish, household pollution and pollution of agricultural waste which results in a decrease in water quality has a direct impact on the garing fish. This greatly affects the increasing number of pathogens such as parasites, these conditions will make garing fish become stressed and susceptible to disease or infection with parasites⁷. In general, fish metabolism is closely related to temperature or water temperature, low temperatures decrease appetite, fish tend to be silent and result in fish being susceptible to parasitic infections.

According to Maulana et al.,⁷ the free water environment under normal conditions the number of fish attacked by pathogenic bodies is not large either in prevalence or intensity because the water quality has not undergone any fundamental changes which makes it difficult for fish to adapt. According to William and Bunkley⁶, the highest parasite *Saprolegnia sp* is 30% from the results of the prevalence of parasitic infection at 4 sample locations, with a general attack rate of normal infection. *Dactylogyrus sp* and *Trichodina sp* 15% with a frequent attack rate of frequent infection. Walid⁸ these two parasites infect the gills, skin surface or scales found in parrotfish. As for the parasite *Hafnia alvei* *Plesiomonas shigelloides*, *Aeromonas sobria*, *Actinobacillus lignieressi*, *Aeromonas caviae*, *Klebsiella pneumoniae* and *Argulus sp* with a prevalence below 10% the attack rate is sometimes accompanied by infection sometimes. According to Gufran et al.,⁹ free water environment under normal conditions the number of fish attacked by pathogenic bodies is not large both in prevalence and intensity because the water quality has not undergone a fundamental change which causes it difficult for fish to adapt. According to William and Bunkley⁶, the highest parasite *Saprolegnia sp* is 30% from the results of the prevalence of parasitic infection at 4 sample locations, with a general attack rate of normal infection. *Dactylogyrus sp* and *Trichodina sp* 15% with a frequent attack rate of frequent infection. Walid⁸ these two

parasites infect the gills, skin surface or scales found in parrotfish. As for the parasite *Hafnia alvei* *Plesiomonas shigelloides*, *Aeromonas sobria*, *Actinobacillus lignieressi*, *Aeromonas caviae*, *Klebsiella pneumoniae* and *Argulus* sp with a prevalence below 10% the attack rate is sometimes accompanied by infection sometimes. The intensity criteria (ind/tail) in the results of table 3 were obtained for all garing fish sampling points in Lubuk larangan < 1, namely 0.6-0.8 with a very low infection rate. So, this garing fish is still in normal condition

IV. CONCLUSION

The results of this study concluded are:

1. The type of *Saprolegnia* sp was found at all lubuk larangan sample point locations with the highest prevalence of 30%. *Dactylogyrus* sp and *Trichodina* sp also continued to attack garing at all sample points with the second highest prevalence, namely 15%.
2. *Aeromonas caviae* was found at 3 points, sikucur barat, lareh nan panjang selatan and sicincin 2x 11 enam lingkung with a prevalence of 10%. *Plesiomonas shigelloides* was found in 2 locations, guguak kuranji hilir and Sicincin 2x11 enam lingkung, while *Aeromonas sobria* attacked 3 sample locations, guguak kuranji hilir, 2x11 enam lingkung and lareh nan panjang selatan with a prevalence rate of 8%.
3. *Hafnia alvei*, *Actinobacillus lignieressi* and *Argulus* sp prevalence rate of 5%. The highest prevalence at 30% indicates that the level of parasitic attack is generally with the usual infection.
4. The results of Intensity of Ind/parasites were found as many as 28 at all sample points of the lubuk larangan river, the most commonly found in 2 x 11 enam lingkung, parasites and the least in sikucur barat with an intensity of 6.
5. For Ind/tail intensity at 4 sampling points garing fish (*Tor tambroides*) at 2.8 which means a low infection rate.

REFERENCES

- [1] Dani, A. P., Nugroho, F., & Amrifo, V. (2016). Kearifan Lokal Lubuk Larangan Sebagai Upaya Pelestarian Sumberdaya Perairan Di Nagari Sikucur Kecamatan V Koto Kampung Dalam Kabupaten Padang Pariaman Provinsi Sumatera Barat. *Terubuk*, 44(2), 89–99.
- [2] Batang, L., Kabupaten, U., Pariaman, P., Ulakan, B., & Pariaman, P. (2018). Identification Of Garing Fish (Genus Tor) In Forbidden Pool At. 3(2), 128–135.
- [3] Nofila, Z., Fahrimal, Y., & Daud, R. (2020). 1. Diversity Of Parasites On The Garing Fish (Tor Tambroides) In Jorong Ikan Banyak River, Gunung Omeh Subdistrict, Lima Puluh Kota Regency, West Sumatera Province. *Jurnal Medika Veterinaria*, 14(2), 99–105.
- [4] Zelmer, D. A., Williams, E. H., & Williams, L. B. (1998). Parasites Of Offshore Big Game Fishes Of Puerto Rico And The Western Atlantic. *The Journal Of Parasitology*, 84(2), 283. <https://doi.org/10.2307/3284483>
- [5] Kabata, Z. 1985. Parasites And Diseases Of Fish Cultured In The Tropics. Taylor And Francis, London.
- [6] Williams, E.H., L.B. Williams. 1996. Parasites Off Shore Big Game Fishes Of Puerto Rico And The Western Atlantic. Puerto Rico. Department Of Natural Environmental Resources And University Of Puerto Rico, Rio Piedras.
- [7] Maulana, D. M., Muchlisin, Z. A., & Sugito, S. (2017). Intensitas Dan Prevalensi Parasit Pada Ikan Betok (*Anabas Testudineus*) Dari Perairan Umum Daratan Aceh Bagian Utara. *Jurnal Ilmiah Mahasiswa Kelautan Dan Perikanan Unsyiah*, 2, 1 – 11. *Jurnal Ilmiah Mahasiswa Kelautan Dan Perikanan Unsyiah*, 2(1), 1–11.
- [8] Walid, K. 2015. Keragaman Parasit Pada Ikan Depik (*Rasbora Tawarensis*) Di Danau Laut Tawar Aceh Tengah. Skripsi. Fakultas Kedokteran Hewan, Universitas Syiah Kuala, Banda Aceh.
- [9] Ghufran, M.H. Kordi, K.A.B. Tancung. 2007. Pengelolaan Kualitas Air Dalam Budidaya Perairan. Rineka Cipta, Jakarta.