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ASEAN-FEN INTERNATIONAL FISHERIES SYMPOSIUM – 2017

To cite this article: 2018 *IOP Conf. Ser.: Earth Environ. Sci.* **137** 011001

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Preface

The 7th ASEAN-FEN International Fisheries Symposium was successfully held in Batu, East Java, Indonesia 7 – 9 November 2017. The conference was hosted by Faculty of Fisheries and Marine Science, Brawijaya University Malang Indonesia. The theme of this symposium was “Projecting ASEAN FEN Plus for Supporting Sustainable Aquaculture, Fisheries and Aquatic Ecosystems”, with focus on the advanced innovation to address to the newly emerged issues in aquaculture, fisheries and aquatic ecosystems for the synergies between socioeconomic development and protecting natural resources and the environment.

The conference was attended by over 500 researchers from different countries, who presented and discussed the results of their work within the framework of five main areas: 1. Aquaculture, 2. Sustainable fisheries and management, 3. Seafood processing and biotechnology, 4. Aquatic resources, biodiversity and environment, and 5. Fisheries Economic.

ASEAN-FEN IFS 2017 Committee received more than 120 manuscripts from participated universities and research institutes, and 106 manuscripts were accepted for publication. All of the papers were subjected to peer-review by qualified experts in the field selected by the conference committee. The papers selected depended on their quality and their relevancy to the conference.

We would like to thank all the authors who have contributed to this volume and also to the board members, organizing committee, reviewers, speakers, chairpersons, sponsors and all the conference participants for their support to the ASEAN-FEN IFS 2017.

Warm Regards,

Dr.Sc. Asep Awaludin Prihanto, S.Pi., MP.

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The host preference and impact of *Argulus japonicus* ectoparasite on cyprinids in Central Java, Indonesia

Kismiyati, P D Wulansari and N N Dewi

Department of Fish Health Management and Aquaculture Faculty of Fisheries and Marine,
Airlangga University, Jl. Airlangga 60115, Surabaya, East Java, Indonesia.

E-mail: kismiyati@fpk.unair.ac.id

Abstract. The most widely cultivated freshwater fish are from Familia Cyprinidae, among others goldfish (*Carassius auratus*), koi (*Cyprinus carpio*) and comet goldfish (*Carassius auratus auratus*). One of the constraints of freshwater fish cultivation is ectoparasite infestation *Argulus japonicus*. Financial losses have been experienced by some farmers, caused by these ectoparasitic infestations. This study was aimed to determine the impact of ectoparasite *Argulus japonicus* infestation on host (freshwater ornamental fish from Familia Cyprinidae), in order to find a preventive solution to treatment on the host. The results showed that prevalence of infested fish by *Argulus japonicus* were 57 % goldfish, 31 % comet fish and 65 % koi. Changes of histopathology on host were congestion, haemorrhage degeneration, epithelium erosion and inflammatory cell infiltration. The image of infected leukocytes infested by *Argulus japonicus* were 8.5 % of lymphocytes, 4.7 % neutrophils, 3.9 % monocytes, 1.45 % eosinophils and 0,17% basophils.

1. Introduction

One area of the *minapolitan* area development in Central Java that is based on aquaculture is Magelang regency. Here, the cultivation of freshwater ornamental fish being optimized are fish from the Cyprinidae family, such as koi fish, goldfish and comet fish. Disease is the main problem in fish farming, one of which is the *Argulus* ectoparasite, which is a major ectoparasite in fish from the Cyprinidae family with predilection of the gills, fins and skin (body surface) [1,2,3]. *Argulus* sucks blood and injects anti-coagulants that cause the immune response of the host to be disturbed [4]. These ectoparasites can also cause stunted growth and even death, resulting in the decreased production (weight) and quality of the ornamental fish that ultimately leads to economic losses for the cultivators.

The purpose of this study was to determine the prevalence, degree of infestation, histopathological changes and the description of leukocytes of goldfish, comet fish and koi fish due to *Argulus* infestation.

2. Methodology

The method used in this research is survey method, with the research taking place at the Center of Fish Culture in the Magelang regency of Central Java. Fish samples were taken from the Mungkid and Muntilan sub-districts from six cultivation ponds consisting of two goldfish farming ponds, two koi fish ponds and two fish comet fish ponds. 50 fish samples were taken from each pond, so that each type of fish amounted to 100 samples. After the prevalence is calculated, the degree of infestation is



then drawn up by blood to calculate the leukocyte image and the final stage of histopathologic preparation of the infected organs.

3. Results And Discussions

3.1. Prevalence, degree of infestation and leukocyte features

The results covering prevalence are presented in table 1. We can see that more than 80% are classified as always there [5], with the highest degree of infestation in koi fish and the highest percentage of lymphocytes that is more than 88 %.

Table 1. Prevalence, degree of infestation and overview of leucocytes of Cyprinidae fish.

Infested <i>Argulus japonicus</i> Fish Species	Prevalence	Infestation Level	Lymphocyte	Neutrop hil	Monocyte	Eosinophils	Basophil
Koi	65	medium	89.5	4.9	3.98	1.45	0.17
Goldfish	57	heavy	88.3	5.95	3.9	1.70	0.15
Fish comet	31	medium	88.9	5.1	3.6	1.56	0.14

The highest prevalence was found in koi fish hosts, followed by goldfish and comet fish. Among the three species of ornamental fish, koi fish is proved to be the most susceptible to environmental changes and to *Argulus japonicus* ectoparasite, although the degree of infestation is moderate. In goldfish, the prevalence is lower but the degree of infestation is severe so that the impact is similar or even more severe. The comet fish was the most resistant to changes in aquatic environments and had the lowest prevalence value with a medium degree of infestation.

3.2. Pathological changes

The pathological changes seen were: congestion, ballooning degeneration, epithelial erosion, and inflammatory cell infiltration. An *Argulus japonicas* infestation causes a pathological change of congestion, indicated by the presence of thickened blood vessels with a darker red color due to the accumulation of blood cells and forming special patterns such as circles. In the change of ballooning degeneration, the cell looks enlarged and there is an empty space inside just like balloon cells. Erosion of the epithelium is indicated by the erosion of soft tissue on the pectoral fins [6].

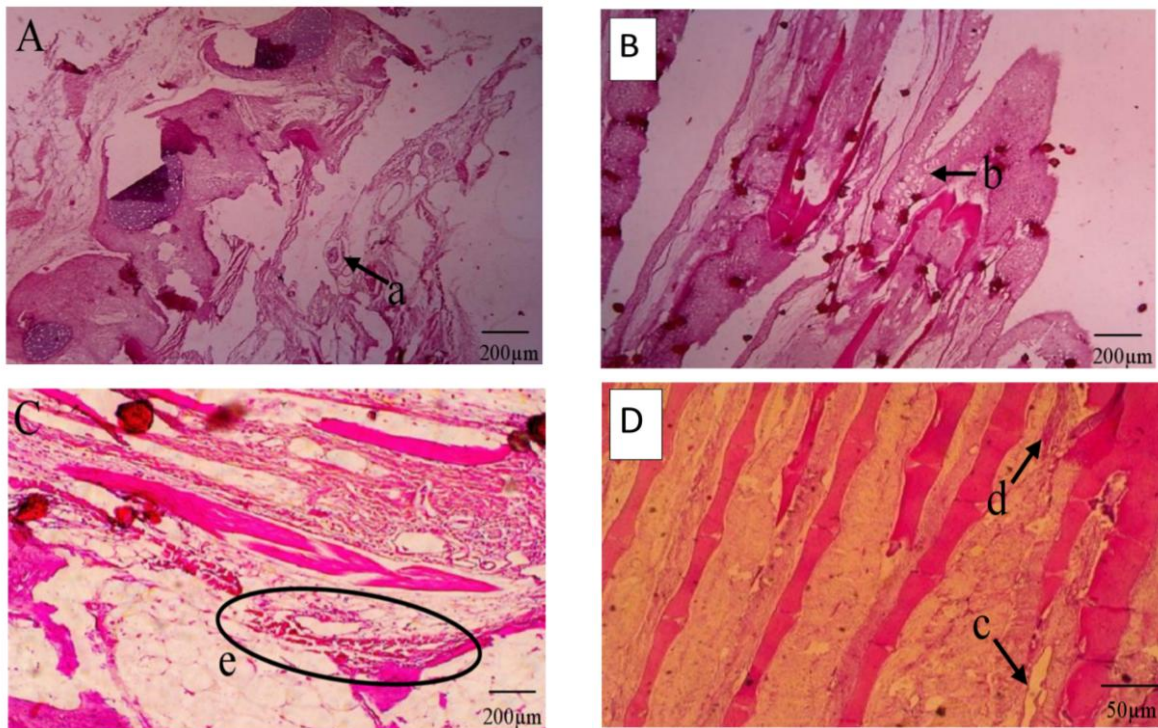


Figure 1. The histopathological features of koi fish infested by *Argulus* (A. pectoral fin organs in mild infestations (100 x magnification); B. caudal fin organs on moderate infestation (magnification 40x); C. skin organ on mild infestations (100 x magnification); a. congestion; b. ballooning degeneration; c. erosion of the epithelium).

4. Conclusion

As a conclusion, the highest prevalence was found in koi fish, this fish is most favored by *Argulus japonicus*. The most vulnerable host is the goldfish, with an average degree of infestation. The highest percentage of leukocytes is lymphocytes (more than 80 %). The dominant histopathological change due to the infestation of *Argulus japonicus* is congestion.

5. References

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