Global Veterinaria 15 (3): 325-327, 2015
ISSN 1992-6197

DOI: 10.5829/idosi.gv.2015.15.03.9688

Study on Copepod Parasite, *Lernaeenicus longiventris* in *Mugil cephalus* from Karachi Coast of Pakistan

[1]Zubia Masood, [2]Fariha Mengal, [2]Shagufta Saddozai, [2]Nosheen Rafique,
[3]Wali Muhammad Achaczai, [2]Nighat Din, [2]Humera Zahid, [2]Wajeha Razzaq and [2]Farhat Iqbal

[1]Department of Zoology, University of Karachi, Karachi-75270, Pakistan
[2]Department of Zoology, Sardar Bahadur Khan Women University, Quetta, Pakistan
[3]Department of Zoology, University of Balochistan, Quetta, Pakistan

Abstract: A commercially important mullet species,*Mugil cephalus* was collected to study the infestation of copepod parasites on 27th August 2013 at Karachi coast of Pakistan. A total of 46 fish specimens were examined for parasitic infestation. Among them,seven specimens were seems to be infected withcopepod parasites. When these infested fish species were examined microscopically, it was observed that a large numbers of copepods were attached firmly to skin, fins and gill arches of each infested fish sample. The copepod parasites, which were collected from some infected *Mugil cephalus* were identified as *Lernaeenicus longiventris*. *Lernaeenicus* parasites mostly exploit the growth of fish through inhibiting reproduction.Thus, from the obtained results, it had been proved that *Lernaeenicus* parasites can lead to severe economic loss in differentcommercial important marine species along Pakistan coast.

Key words: *Lernaeenicus longiventris* · Host (Mullet Fish) · *Mugil cephalus*

INTRODUCTION

Fish parasites are a group of organisms that cause poor health in fish. Fish when infected with a parasite is called the host. Some parasites lay eggs, while some have suckers for attachment. Parasites have the ability to change their nature immunologically and biochemically, therefore, they can survive inside another organism and cannot be digested or killed [1]. The parasitic infections are sometimes found to be very lethal and can increase mortality of many fishes in aquatic environment [2].

A mullet species, *Mugil cephalus* of the family Mugilidaeare inexpensively important food fishes. Recently, many types of parasites are creating serious pathogenic problems in mullet fish in both fresh and marine environments. Among these parasites, copepodfamily is commonly found on fishes cultured in saltywater [3] and therefore, a risk to the increasing industry of fish culture [4]. Parasites actually don't kill *Mugil cephalus*, unless theyarise in large numbers, however, the growth rate and market value of this mullet species can be reduced to certain extent [5, 6].Though, not all parasites want to keep their hosts alive, because there are some parasites with multistage life cycles that go to some trouble to kill their host [7, 8]. Fish with large numbers of parasites will be thin andtheir body color becomes darkened, also extensive abrasions appear with loosing and sloughing on its skin. Severe destruction of the gills occurs as well as losses and mortalities up to 50% [9, 10]. Losses associated with disease are the result of direct mortality due to secondary infections [11, 12].

Keeping in view the importance of commercially landing mullet species that is *Mugil cephalus*, the present study wasaim to identify the parasite of *Mugil cephalus* at the fishing areas of the Karachi coast. In determining the parasitic species, economically important fish with high commercial and environmental attributes will provide better culture condition for them. This will also help to solve some of the problems of fish diseases that can disturb their health and productivity, both in the wild and fish culture state.

Corresponding Author: Dr. Zubia Masood, Department of Zoology, Sardar Bahadur Khan Women University, Quetta, Pakistan.

MATERIALS AND METHODS

In the present study,a total of 46 freshly dead specimens of *Mugil cephalus* were collected from the landings along the Karachi coast of Pakistanon dated 27th August 2013 and examined for parasitic contamination. Among them, seven specimens were infected, from which a total of 18 parasites were obtained. These infested fisheswere then brought intothe laboratory, where they examinedmicroscopically, which revealsthat a large numbers of copepods were attached firmly with the skin, fins and gill arches. These copepodparasiteswere collected from these infected *Mugil cephalus* specimens and identified under the microscopes.

RESULTS AND DISCUSSION

In the present investigation, copepod specimens were collected from the body surface regions such as skin, fins and gill arches. Based on our morphological observations, the lernaeid parasitic copepod was identified as *Lernaeenicus longiventris* as shown in Figures 1-4, respectively. This species was originally described by Wilson [13]. Thus, our present finding of *L. longiventris* in this study is the documented of Lernaeopodidae copepods recorded on Karachi coast.

On a single host fish, a maximum number of three to five parasites were infested. Generally, these parasites were found attached to the skin, head (Near the eyes, on the operculum, maxilla and mandible) as well as also on the caudal peduncle (Figures 1-3). Most of the parasites examined were living though the host fishes were dead when brought to the laboratory.

Fig. 1: *Lernaeenicus longiventris* on skin of *Mugil cephalus*.

Fig. 2: Three *Lernaeenicus longiventris* on body of *Mugil cephalus*.

Fig. 3: *Lernaeenicus longiventris* near caudal fin of *Mugil cephalus*.

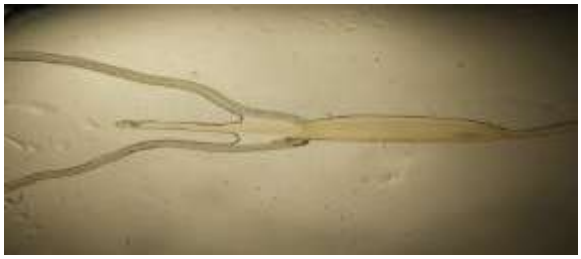

Fig. 4: Microscopic view of *Lernaeenicus longiventris*.

This is the first report on the occurrence of an infection by parasitic copepod; *Lernaeenicus longiventris* on the *Mugil cephalus* fish from the Karachi coast of Pakistan. Such mass infestation of pennellid copepod on fish is possibly uncommon, but not unintended. Parasites on the body of fish may lead to severe economic loss in the commercial species of the marine fishes of Pakistan and particularly *Mugil cephalus* of the present study.

CONCLUSION

From the present study, it was concluded that the parasitic infection causes the damages of the fishes and decrease its market value which was source of the earning. It was suggested that proper method of preservation and treatment to the community may be given to avoid the fish corrosion.

REFERENCES

1. Robert B. and S.R. Jackson, 2001. Water in a changing world, Ecological Applications, 11(4): 1027-1045.
2. Ahmed, M.S., 1994. Trypanosomiasis in common carp, *Cyprinus carpio* L., PhD. Thesis, Zoological Institute, Catholic University Leuven, Belgium.
3. Noor-El- Deen, A.E., O.K. Abdel-Hady, S.I. Shalaby and S.Z. Mona, 2012. Field Studies on Caligus Disease among Cultured *Mugil cephalus* in Brackish Water Fish Farms. Life Sci. J., 9(3): 733-737
4. Ruckert, S., H.W. Palm and S. Klimpel, 2008. Parasite fauna of seabass (*Lates calcarifer*) under mariculture conditions in Lampung Bay, Indonesia. J. Appl. Ichthyol., 24: 321-327
5. Eissa, I.A.M., A.S. Diab and A.F. Badran, 1996. Studies on some internal parasitic diseases among wild and cultured *Oreochromisniloticus*. 7th Sci. Cong., 17-19. Fac. Vet. Med., Assiut, Egypt, pp: 274-289.
6. Eissa, I.A.M., M.S. Gado, A.M. Laila and A.E. Noor-El-Deen, 2010. Field studies on the prevailing external parasitic diseases in natural male and monosex tilapia in Kafr El-Sheikh governorate fish farms. Proc. 5th Inter. Conf. Vet. Res. Div., NRC, Cairo, Egypt, pp: 185-92.
7. Milinski-Manfred, M., 1985. Risk of Predation of Parasitized Sticklebacks (*Gasterosteus aculeatus* L.) Under Competition for Food. Behaviour, 93(14): 203-216.
8. LoBue, C.P. and M.A. Bell, 1993. Phenotypic manipulation by the cestodeparasite *Schistocephalus solidus* of its intermediate host, *Gasterosteusaculeatus*, the three spine stickleback. American Naturalist, 142: 725-735.
9. Woo, P.T.K., 1995. Fish diseases and disorders. CAB, Int. Wallingford, Oxon, Uk..
10. Eissa, I.A.M., 2004. Parasitic fish diseases in Egypt. Dar El-Nahda El-Arabia publishing, 2nd Edition. 23 Abd El- KhalakTharwat St. Cairo, Egypt.
11. Lin, C.C., J.S. Ho and S.N. Chen, 1994. Two species of Caligus (Copepoda, Caligidae) parasitic on black sea bream (*Acanthopagrus schlegeli*) cultured in Taiwan. Fish Pathology, 29: 253-264.
12. Ho, J.S., 2000. The major problem of cage aquaculture in Asia relating to sea lice. In: Cage Aquaculture in Asia, Proceedings of the First International Symposium on Cage Aquaculture in Asia (Eds. Liao, I. and C. Lin,), Asian Fisheries Society, Manila and World Aquaculture Society, Southeast Asian chapter, Bangkok, pp: 13-19.
13. Wilson, C.B., 1917. North American parasite copepoda belonging to the Lernaeidae, with revision of the entire family. Proc. US.natn. Mus., 53: 1-150.