

Results about the damages caused from parasitic disease of Gyrodactylosis in the fingerlings of the rainbow trout (*O.mykiss*)



Aquaculture and Fisheries

Keywords: *Oncorhynchus mykiss*, *Gyrodactylus salaris*, *Gyrodactylus* spp, parasite, fish, etc.

Ani Vodica¹, Vladimir Spaho²

¹Department of Animal Health, Food Safety and Veterinary Institute.
²Department of Aquaculture and Fisheries (Agriculture University of Tirana)

Abstract

The monogenean *Gyrodactylus* spp. is an important parasite of farmed fish in Europe because of the heavy damages and losses that induce. For this reason one of the main representative, *Gyrodactylus salaris* is listed in List III of pathogen in the Fish Health Directive 91/67/EEC. During 2013 are collected in Pogradec 200 fingerlings of rainbow trout (*Oncorhynchus mykiss*) to the purpose of identifying the presence of *Gyrodactylus* spp. parasite. The parasite was mostly observed on the back of the fish and mostly in the period from March to July because of the favoritism that comes from the water temperature..

Introduction

The monogenea *Gyrodactylus* spp. (Genus *Gyrodactylus*) is a fresh water parasite of trout and is one of the causes of health problems and big losses of production in trout cultivation mainly on fingerlings. For this reason is listed in List III of pathogen in the Fish Health Directive 91/67/EEC. Gyrodactylids attaches to the surface of their host by means of hooks and feed on host tissue. They are viviparous, and can reproduce both sexually and asexually.

Materials and Methods

200 Rainbow trout fingerlings were sampled during 2013 and stored immediately in 96% ethanol; they are controlled using a binocular microscope and stereomicroscope. Parasites were removed from the fish host and stored in 96% ethanol prior to further processing.

They are sampled, mainly fish with clinical signs of disease such as: mucous membrane in blue color in the body, ulcers, weakness and eyes introduced in orbits. Most of infested fish swim on the surface on their sides with the head out of water to breath air and performs of perpendicular movements.

Results and Discussions

The flat worm monogenetic trematode *Gyrodactylus* spp. is the causative agent of the disease. After measures with binocular micrometer we received these data for some of the morphologic indicators of the parasites. Total length 0, 30-0, 34 mm; body width 0, 08-0, 10 mm; disc diameter 0,100-0,120 mm; number of side hooks of the disk 1, 6; length of the side hooks 0,018-0, 20 mm; length of the central hooks 0,040-0,045 mm.

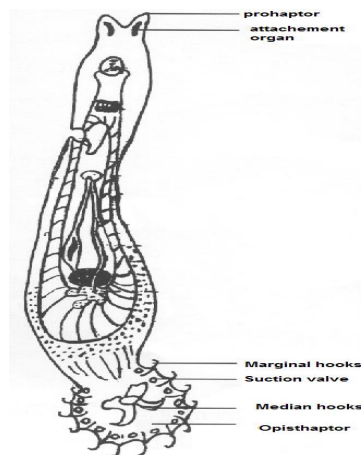


Fig. 1 Morphological features of *Gyrodactyluss. spp.*

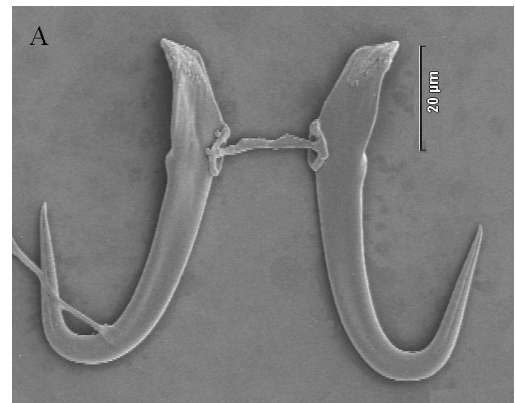


Fig 2. Central fixing hooks used in the identification of *Gyrodactylus* spp. in species levels.

Gyrodactylus spp. is a viviparous parasite. Based on some observations the new forms in the parasites body are found during spring and summer but different studies demonstrate that this kind of parasite is reproduced during November and December. This data demonstrate that the reproduction of this parasite occurs during the various part of the year. *Gyrodactilus* spp, is an ectoparasite, so it is located on fish skin. The spreading of the parasites in the body areas in contaminated fish:

- In the head area are found 257 parasites or 28% of total amount.
- In the dorsal area are found 316 parasites or 34% of total amount.

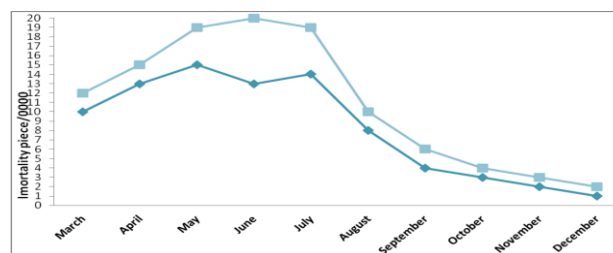
- c) In abdomen area are found 196 parasites or 22% of total amount.
 d) In the tail area are found 151 parasites or 16% of total amount.

From the obtained data is noticed that there is a tendency for a greater concentration of parasites in the back area, especially in the dorsal region near the dorsal fin. This is a very rich area with detached epidermal cells and mucus that are used by parasite as food. The average invasion is noticed to be 5 parasite/fish. After the systemic control of the fingerlings is observed that the disease begins in March. From March until July 2013 the intensity of the disease increases (Table 1). The water temperature plays a major role. Table 1 show the spreading of invasion in different months.

Month	Controlled fish	Infected fish	Invasion (%)
January	62	-	-
February	78	-	-
March	84	17	20
April	125	68	54
May	110	77	70
June	134	126	93
July	115	106	92
August	100	56	56
September	90	41	45
October	86	30	35
November	80	19	24
December	70	18	23

Table No. 1 Annual dynamics of Gyrodactylosis in the rainbow trout fingerlings.

Following the expectations, the damage caused by the parasite in fish is very high, since it is noticed a high number of mortality.



Graphic No. 1 Mortality in the fingerlings batteries in different months

Graphic No.1 shows the mortality according to months, in two fingerlings batteries. In the first battery, from March to December the mortality was 26, 68%, in the second one 33, 15%. In both batteries the mortality was greater in the summer period. During the autumn and winter the mortality decreases. With reference to measurement taken for some morphological characteristic it is observed a decrease of their average value in the infested fish. (Table No 2). Generally the infested fish show a poor growth and this is noticed in the table size fish too, if they survive from disease.

Fish with parasites	Fish without parasites
L. cm $8 \pm 2,9$	$8,5 \pm 3$
I. cm $7,1 \pm 2,8$	$7,7 \pm 3,1$
H. cm $1,7 \pm 0,7$	$1,8 \pm 0,8$
O. cm $3,2 \pm 1,1$	$3,5 \pm 1,5$
P g $9,42$	$10,3$

Table No. 2 The measurements of some morphological characteristic of controlled fish

Conclusions

A total of 200 pieces of rainbow trout (*O.mykiss*) are sampled in Pogradec during 2013 to check and identify the presence of the parasite *Gyrodactylus* spp. and based on morphological characteristics, it was highlighted the presence of the causative agent in 16 individuals, with clinical signs. Mostly the parasite has been present in the back area. The period when the parasite is facing the most is March to July, as a result of water temperature changing. Following the measurements taken for some morphologic indications are observed reduction of their average values in infected fish compared with healthy fish.

References

1. T.A. Bakke1, J. Cable2, P.D. Harris3.: The Biology Of Gyrodactylid Monogeneans: The ‘‘Russian-Doll Killers’’
2. C M Collins, T A Mo, K Buchmann, C O Cunningham: Diagnosis Of Gyrodactylus (Monogenea; Platyhelminthes) Infectin Salmonid Fish In Northern Europe, March 2002, Fisheries Research Services Report No 07/02.
3. Grethe Robertsen, Taxonomy And Systematics Of *Gyrodactylus Salaris* (Monogenea, Gyrodactylidae) Infecting Wild Populations Of Arctic Charr (*Salvelinus Alpinus*) In Norway, *Department Of Zoology Natural History Museum University Of Oslo* 2005.