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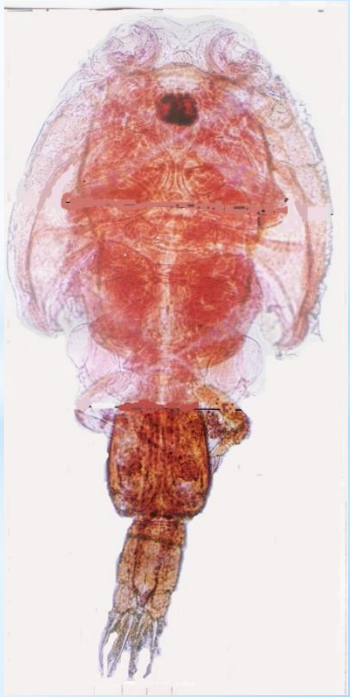
Dr. *Nisreen Ezz El-Dien Mahmoud*

* Biography

- **Nisreen has completed her Ph.D in 1994.**
- **Works as a professor of Parasitology in Faculty of Veterinary Medicine at Cairo University - Egypt.**
- **She is a leading specialist of fish parasites. Her scientific interests include problems related to parasitic diseases and pollution in fresh water and marine aquacultures.**
- **She is an active participant of the international scientific conferences and symposiums. She has published more than 60 papers in reputed journals.**
- **She is representing OMICS Group and its allied services in Egypt .She is an editorial board Member of 4 scientific journal including Oceanography: open Access and she is a member of organization committee of 3 international conferences including The International conference of Oceanography..**
- **She is The president of Egyptian Society of parasitology and pathology of Aquatic Animal.**

Research Interests

- General Parasitology.
- Fish Parasites.
- Parasitism in relation to aquatic pollution.
- Zoonotic parasites of fish.
- Problems of aquacultures
- Marine ectoparasites.



Recent Publications

1. Ehab, E. E., *Nisreen Ezz El-Dien, M.* and Mahmoud, A. M. (2002): Nodular cap disease in the red Oranda and red cap breeds of gold fish (*Carassius auratus*) associated with *Dermocystidium species. Bull. Eur. Ass. Fish Pathol., 22 (1): 7-14.*

2. Nisreen Ezz El-Dien, M.* (2004): The fresh water fish louse; *Argulus japonicus* (Thiele): first record and control in cultured common carp in Egypt. *J. Egypt. Vet. Med. Ass., 64 (1): 191-200.

3. Ibrahim, A.k.; Awad, W.S.; *Nisreen Ezz El-din, M.;* Hegazy, N.A.M.and Fahmy, M.M. (2004): Molecular and conventional diagnostic studies of Equine babesiosis caused by *B.equi* in Egypt. *Egypt. Vet. Med. Ass. Parasitol J., 2 (1):232-249.*

4. Ehab Elsayed, Mahmoud, M. A. and *Ezz El-Dien, N., M.*(2004): Ichthyophthiriasis: Atypical outbreak in two susceptible ornamental fish species in Egypt under the same environmental conditions. *29th Annual Eastern Fish Health Workshop; Atlantic Beach, North Carolina, 22-26 March 2004*.

., 26(5) 211-216

5. Nisreen Ezz El-dien, M.* and A. M. Mahmoud (2004): Parasitological and histopathological studies on *Anisakis simplex* larvae infection among some Egyptian marine fishes and experimental anisakiasis in mice. .. *Egypt. Vet. Med. Ass. Parasitol J,. 2 (1): 213-231.

6. Mahmoud, A. M., *Ezz El-Dien N. M.* and E. E. Elsayed (2004): Tissue Protozoa (*Myxobolus dermatobia*) from the eye of Tilapia zillii in Egypt. *Proc. 1st Int. Conf. Vet. Res. Div., NRC, Cairo. 307-314.*

7. Elsayed,E.E., *Ezz El Dien, N.*M and Mahmoud, M. A. (2006): An investigational approach to an outbreak of Ichthyophthiriasis in two ornamental fish species. *Bull. Eur. Fish Pathol.*

8.Elsayed,E.E., *Mahmoud.N.E*. and Mahmoud, M. A. (2006): Ichthyophthiriasis: Various Fish Susceptibility or Presence of More than one Strain of the Parasire?. *Nature and Science, 4(3):5-13.*

9. Fahmy, M. M. ; Small, E. B;Ashmawy. K., *Mahmoud.N.E, M*. and Mona-Khatab, H. M. (2007): *Pseudoapiosoma moroni gen. n. sp. n*. described from Striped bass and white perch in Chesapeake Bay; Maryland USA. *17th Conference of the Egyptian-German Society of Zoology Dresden-Germany, 25th-31st July at the technical University in Dresden, Germany.*

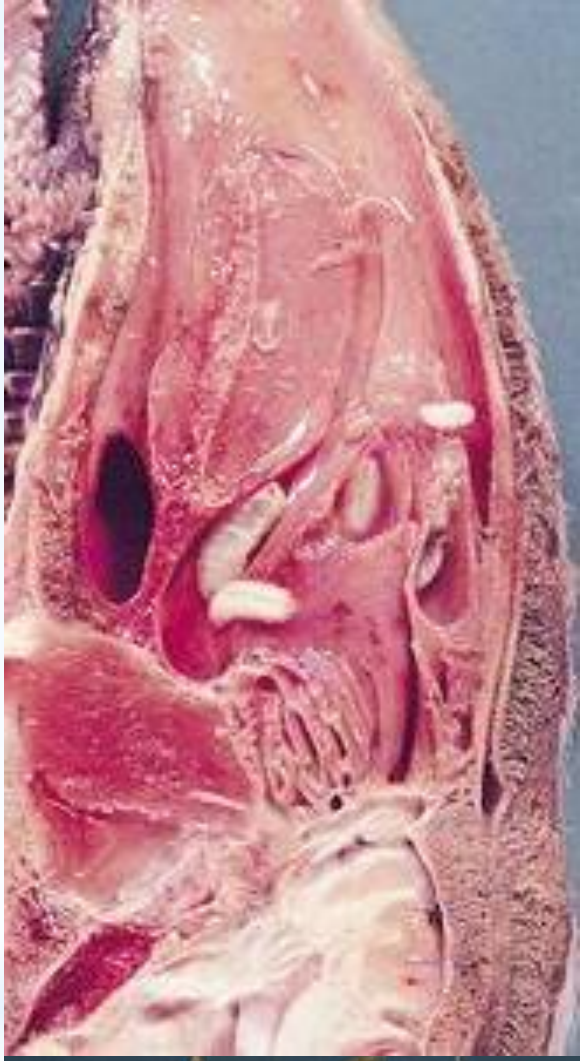
10. MAHMOUD.N.E. ; EL-Dakhly, KH. M .AND Fahmy, M. M (2008) *:* New host records for crustacean species among marine water fishes for the first time in Egypt with histopathological studies. *J. Egypt. Vet. Med. Assoc.68 (4):73-91.*

11.Fahmy, M. M., N. E. Mahmoud, K. M. El-Dakhly, H. Mona Khattab, and T. Yanai," An Investigation into marine Ciliates with establishment of a new genus Phyllopharyngean americana Nov.Gen.,Nov. Spec.,". Journal of Animal and Veterinary Advances,, vol. 8, issue 4, pp. 663-669., 2013.

12..Mahmoud, N. E., M. F. M. Badawy, and M. M. Fahmy, "Investigations on Mass Mortalities among Oreochromis niloticus at Mariotteya Stream, Egypt: Parasitic Infestation and Environmental Pollution Impacts",Aquaculture Research & Development, vol. 5, issue 2, pp. 12-19, 2013.

13.Mahmoud, N. E., M. K. Alhindy, and M. M. Fahmy, "Trypanorhynch Cestodes infecting Mediterranean Sea Fish, Egypt: Callitetrarhynchus gracilis (Pintner, 1931) as a bioindicator of heavy metals pollution.",.,1St International conference on oceanography Orlando, Fl, US A, 2013. , Orlando, Fl, USA, 2013. , 2, pp. 213, 2013.

Science of Parasitology



Monogenean parasites as causative agents of serious fish diseases

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***Fish are an indispensable source of protein for humans. Development of aquaculture during the last decades has resulted in greater attention being paid to problems posed by parasites and their importance for fishery. Beside direct losses caused by mortality, parasites may have considerable impacts on growth and behavior of fish, also their resistance to other stressing factors.**

*** Monogeneans,are the most important ectoparasites of fish so will be dealt with their diagnosis through morphological identification.**

Monogenea causing little apparent damage in fish population may become causative agents of diseases leading to:

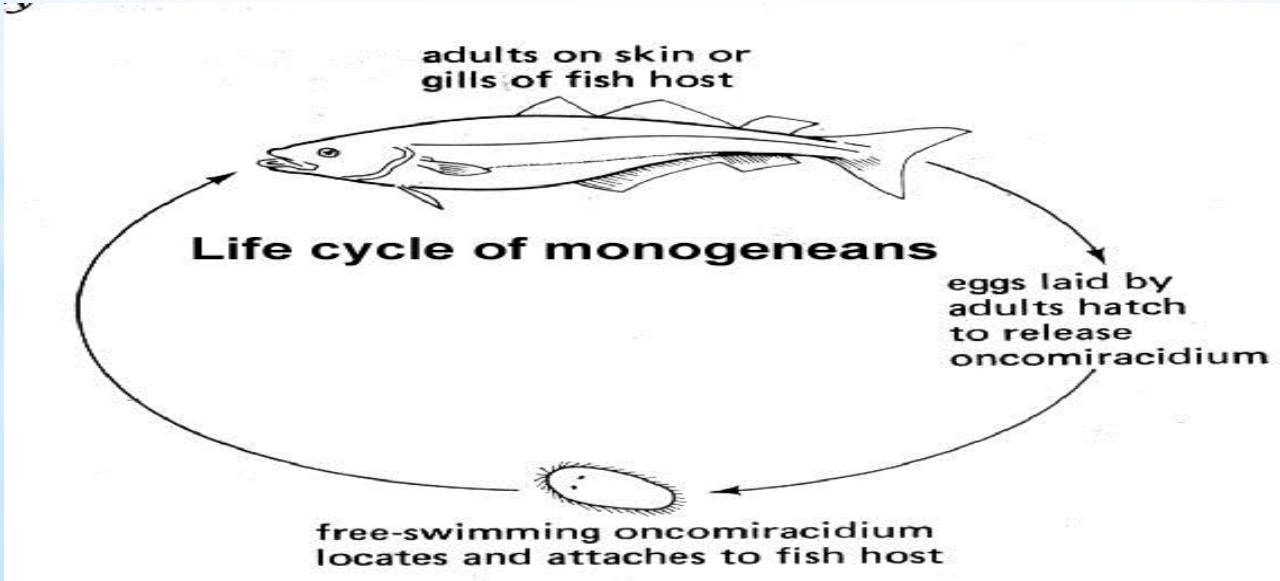
- Pathological changes or
- Reduction in the marked value of fish different lesions according to the type of parasites
- Major gaps still exist in the knowledge of biology, diagnosis and control of fish parasites.
- Studies on immunity in parasitic infections, use of molecular technology in diagnostics and development of new vaccines against the most pathogenic parasites are very promising area of future research .

Monogenetic Trematodes

Ectoparasites of cold blooded vertebrates ,exceptionally parasitizing crustaceans, aquaticmammals.

Monogenea are usually found on skin , some inhabit gill chambers , mouth cavity .most are browsers and feeding on blood and dermal or gill debris.

Monogenea can complete their life cycle on fish without involving other species.(Direct life cycle)

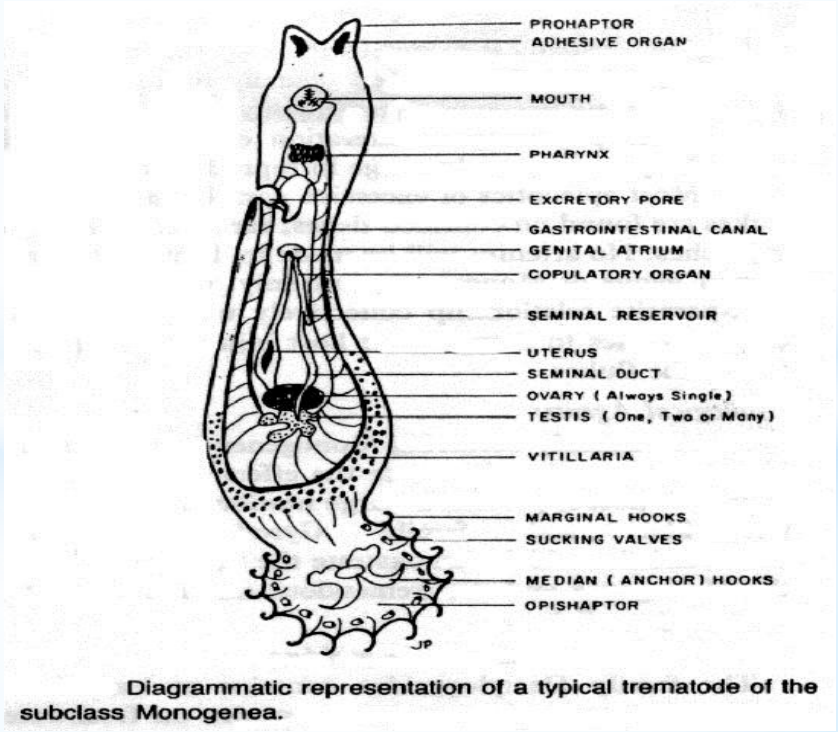


Morphologically

The majority are too small to be seen by naked eye ,some may reach 5 mm in length.

<u>The anterior end:</u> 3-4 lobes bearing opening of cephalic glands and occasionally pits or suckers (prohaptor)

<u>The posterior end</u> opisthaptor provided with chitinoid structure of various kinds and shapes



Diagrammatic representation of a typical trematode of the subclass Monogenea.

In Monopisthocotylea →single opisthaptor, with 1 or 2 pairs of anchors+(14-16) hooklets

e.g :Gyrodactylids & Dactylogyrids

In polyopisthocotylea→ with will developed opisthaptor bearing many clamps and

e.g:Diclidophorids &microcotylids

Hooks on opisthaptor are responsible for much of the damage to the host, penetrating into the surface layers of skin or gills causing trauma if found in large numbers.

***paired cephalic subpharengeal ganglion or ring around oesophagoes +3 – 4 pairs of nerve trunk.**
***1-2 pairs of eye spots (consist of accumulation of pigmented goblet cells ,anterior to which lies refractile lens)**
***Eye may found in larvae only then either break down into scattered pigmented granules or completely disappear.**

Eggs of oviparous monogenea *Either enter the water or remain attaching themselves to the host skin or gills by pedicles and filaments. Time of development, 2 days--→3 weeks (temp

Identification of Monogenea: is by body size , anterior structures , opisthaptor structures with accompanying armament, structures of alimentary system, structure of reproductive system, host species, and location on host.

Monogenea are hermaphrodites
*Testes-→1 , 2 or numerous in posterior end and behind the ovary.
* Viteline glands present only in oviparous worm.

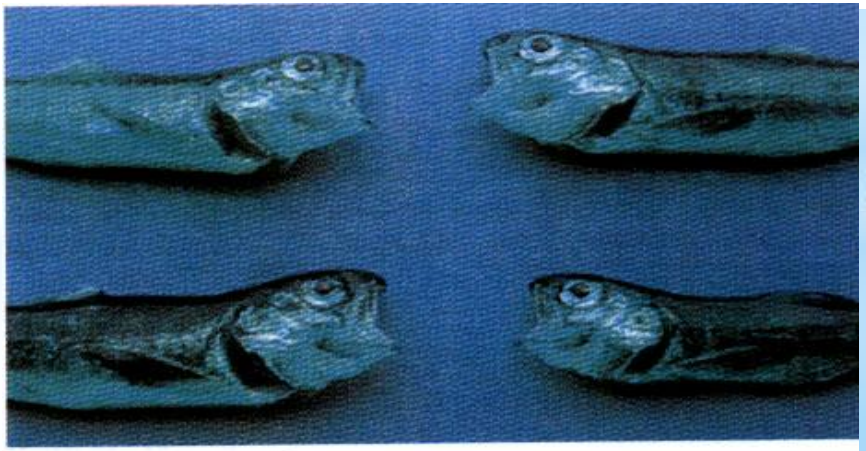
Disease signs

Signs of excessive parasitism with monogenea depend on

1-the species of fluke involved
2-location on the host.
3-environmental factors such as temp.,ph ,salinity and other physical factors.

Disease signs due to gill Monogenea

loss of gill function and behavioral characteristics indicating partial suffocation. fish become lethargic ,swim near the surface ,seek the sides of the bond and refuse food



Mortality due to asphexia caused by gill infestation with monogenea

Monopisthocotylea

Family Dactylogyridae

*Contain at least 7 genera and over 150 species on fresh and marine water fishes

Found commonly on gills , lay eggs(with no uterus) only an ootype structure containing one egg at atime. , have eye spots , one pair of anchors and about 16 marginal hooklets

* The genus most commonly found on fish is Dactylogyrus, Its species known as gill flukes (about 100 identified species

*Epizootiology

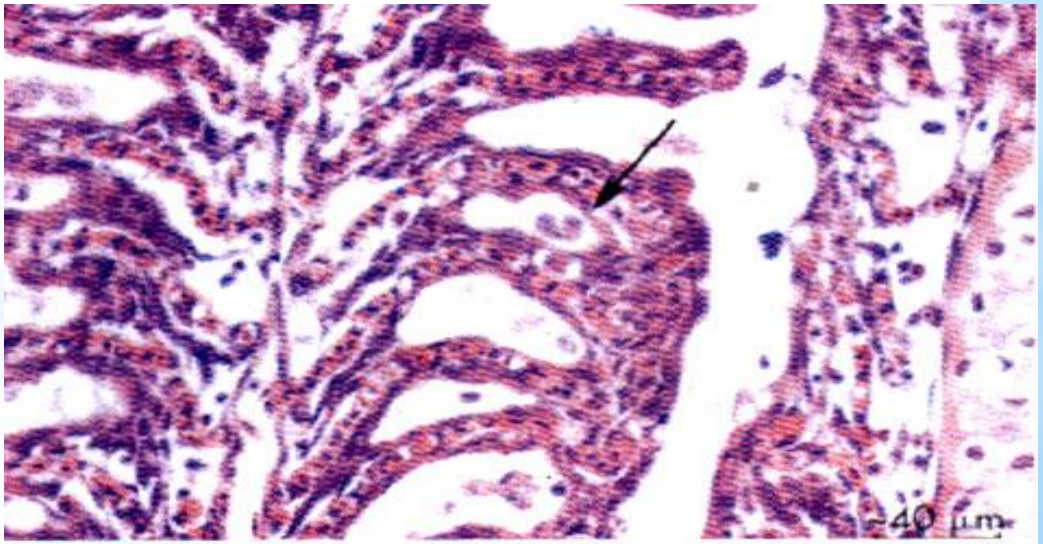
Transmission of Monogenea from fish to fish is by direct contact, eggs of *Dactylogyrus* are not adapted to remain on the host of the parent some remain attached to the gill epithelium, hatch and take up habitation on the parents host most are swept away by water to become free swimming larvae searching for new host.

Histopathological changes

The affected gills may have areas of thickened mucus ,hyperplasia ,petechial hemorrhages and necrosis.
*secondary infection with fungus and bacteria may be present.

Dactylogyrids are particularly serious parasites of cyprinids.

*Feed on blood and can cause severe damage to gills.
Signs can be mistaken for those caused by oxygen deficiency or other gill infection.



Hyperplasia of gill lamellae

Recorded Dactylogayrid among fish species in Egypt

- *Cichlidogyrus arthracanthus*

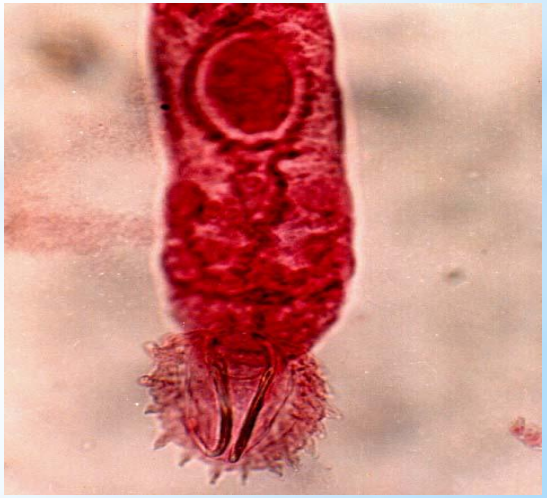
Recorded from Nile Tilapia ,reach 0.8 mm long

Family Gyrodactylidae

Characterized by having 8 pairs of marginal hooks on the opisthaptor, with 1 or 2 median hooks and the copulatory organ is a corona of chitinized hooks. . The most common genus on fresh and marine fishes is Gyrodactylus

*Are small rarely over 0.4 mm in length. viviparous in the v shaped uterus.
Gyrodactylus Usually found on the skin and fins , rarely on the gills.

*Large group with 4 genera and over 95 identified species.



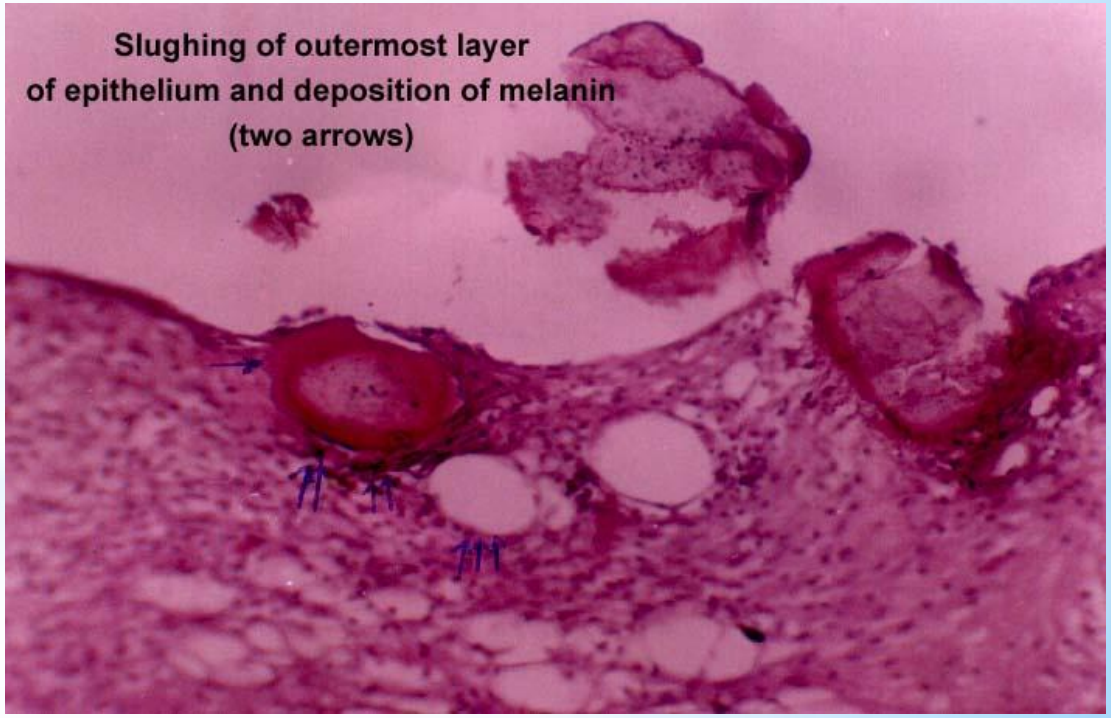
Disease signs due to Skin- inhabiting monogenea

Affected fish rub against the bottom or sides of the holding facility. Flash frequently and some may develop white to gray-white areas of thickening mucous on the skin especially behind he fins.

Histopathology

Skin and fins may be some what ultered with evidence of trauma and area where scales and epithelium ooze pinkish serous fluid.

Gyrodactylid monogenea recorded from fish in Egypt

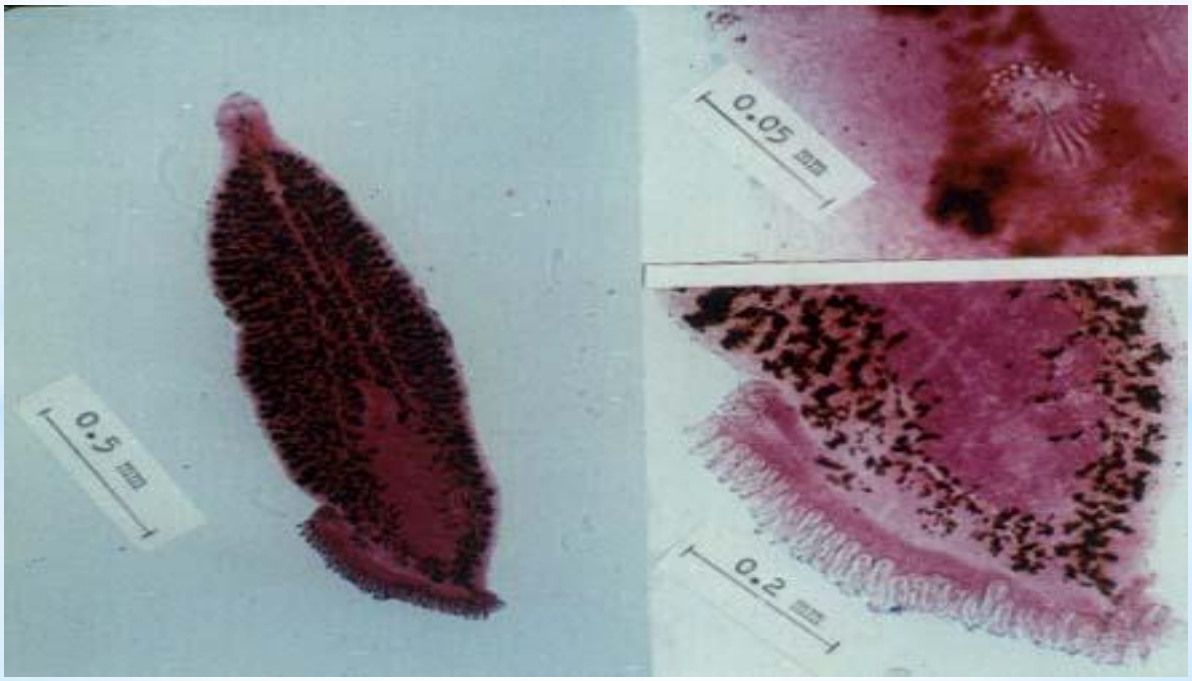


Polyopithocotylea

Some polyopithocotylid monogenea recorded among marine water fish in Egypt.

Family Axinidae

e.g. Allencotyla sp.
Recorded from gills of Morone sp

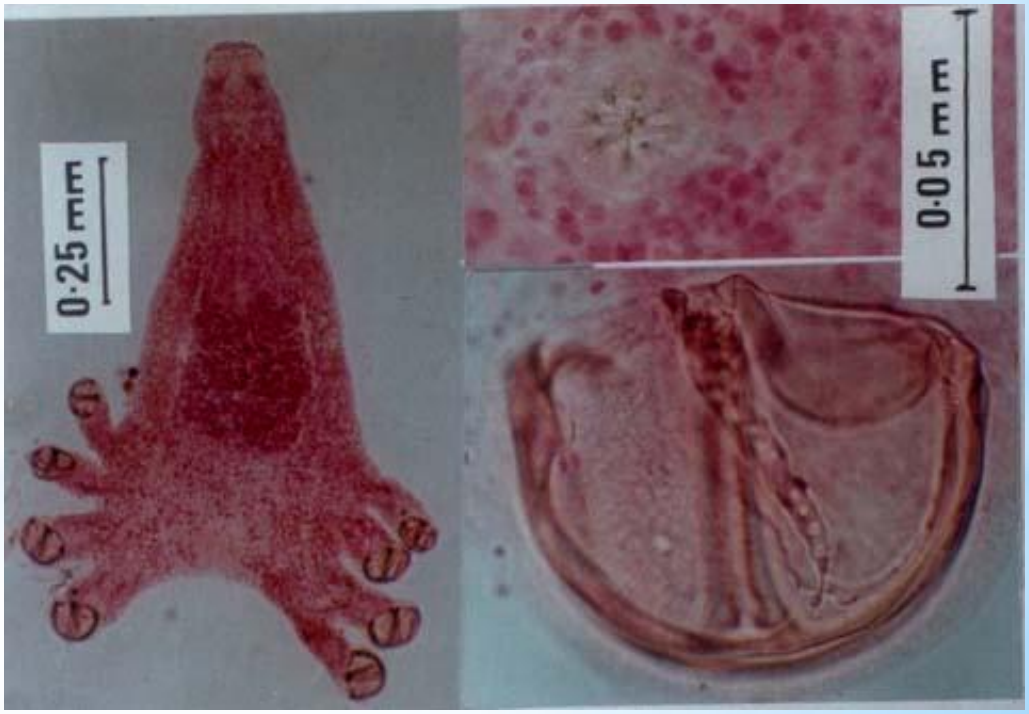


Family Diclidophoridae

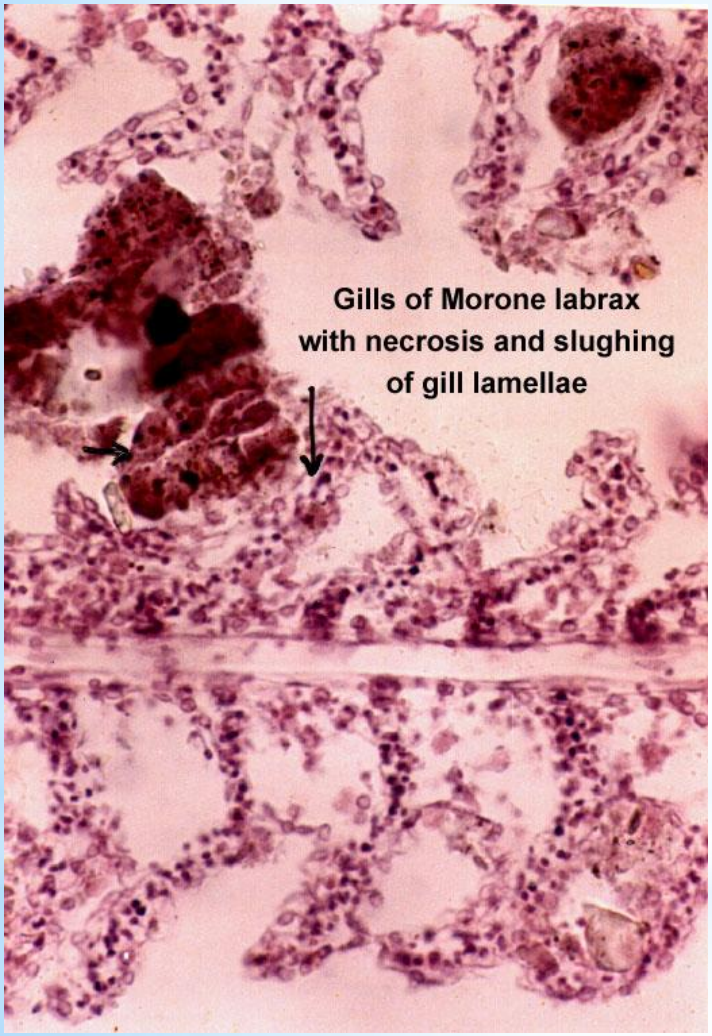
Choriocotyle sp. And

Diclidophora sp

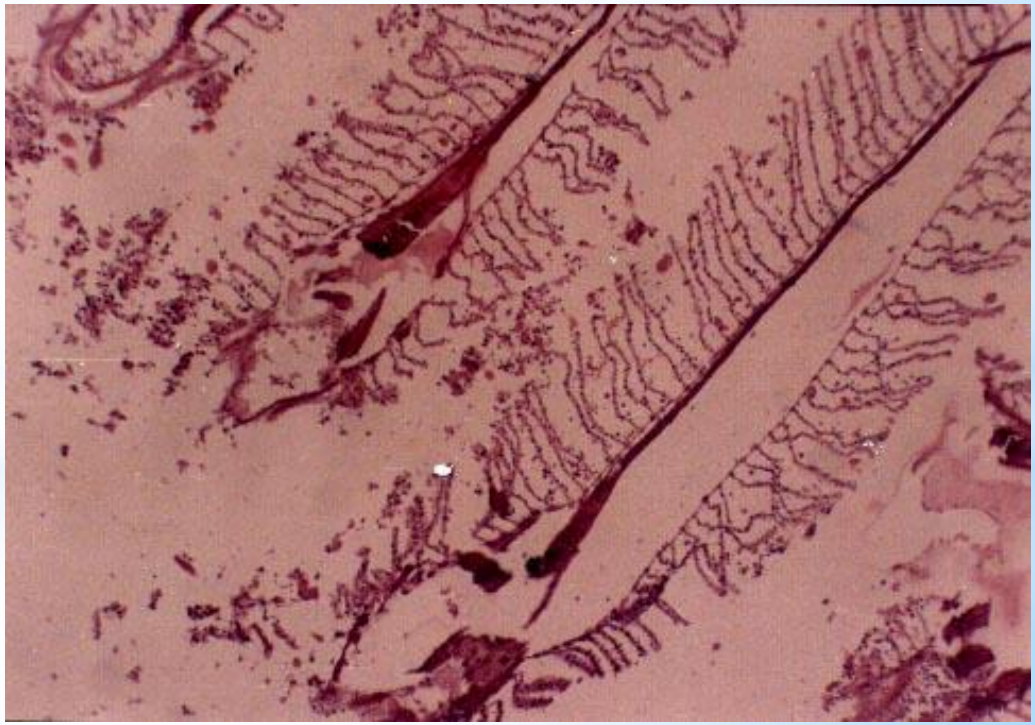
Recorded from skin and gills of Sparus sp.



Histopathology



It was found that Polyopithocotylid monogenea cause more sever damage than that caused by the monopithocotylids



Selected therapy for ectoparasites on fish

compound	Dose level	Time and method	Result
Formaline	250mg/L	1 hour bath	No oftener than every 3rd day
Potassium permanganate	2.5mg/L	indefinite	Used as an ulternate to formalin in pond
Sodium chloride	2.5%	indefinite	For fish acceptable to high salinity
Hydrogen peroxide	0.05%	20 minutes dip	Used under strect precautions
Acitic acid	5%	1 minute dip	Useful for aquarium fishes

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