

# Genus : Prosthogonimus

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# Prosthogonimus :Morphology

- The adult *Prosthogonimus* is flat and transparent with spines on the cuticle.
- An adult is about 8 mm long and 5 mm wide,
- The posterior end appears broader than the anterior end.
- The ventral sucker is about 2 mm away from the anterior end of the body.
- The pharynx lies beneath the anterior sucker, and is connected to the esophagus.
- The uterus occupies about half of the body at the posterior end.
- Two large testes lie between the ventral sucker and the posterior end of the body.
- The ovary contains multiple lobes and is between the ventral sucker and the testes.



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# *Prosthogonimus ovatus*

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## Morphology of Adult *Paragonimus westermani*

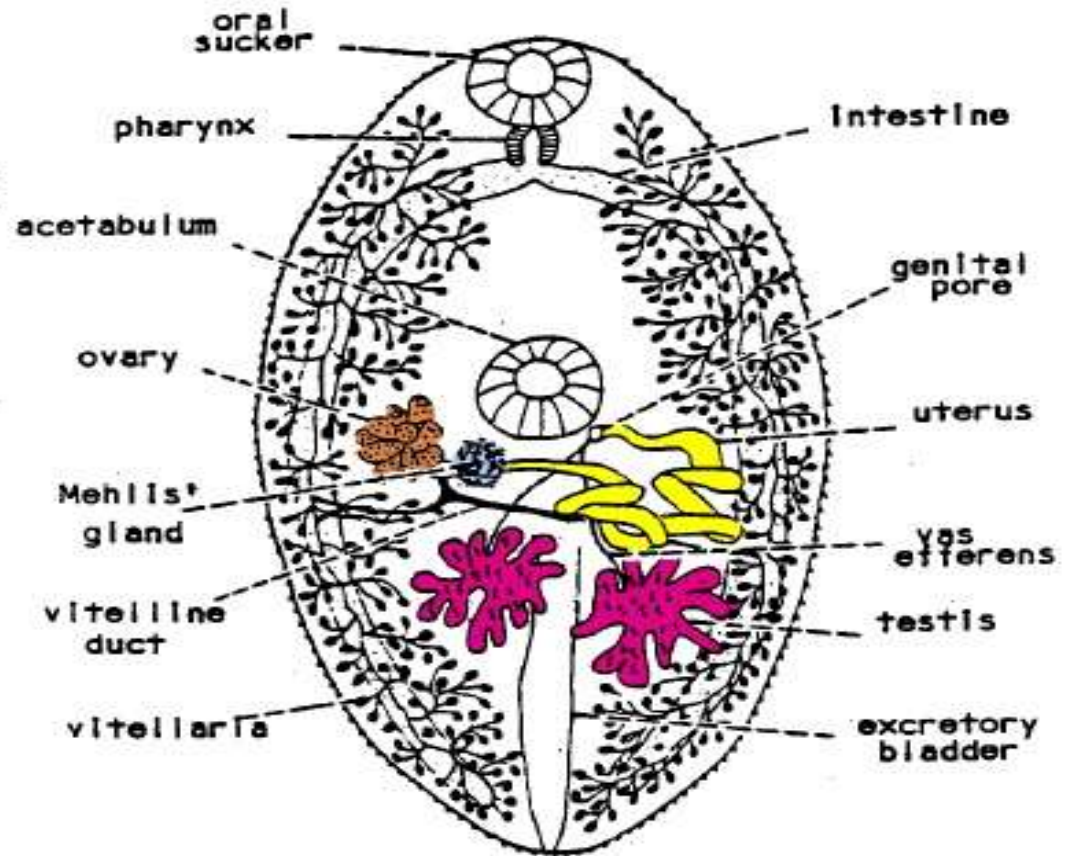
Adults are 8-12 mm long x 4-6 mm wide; 3-5 mm thick.

\_\_\_\_\_ is lobed and located on one side of the \_\_\_\_\_

Egg-filled \_\_\_\_\_ is on opposite side of acetabulum.

Characteristic structure is the extensive \_\_\_\_\_ - extend from anterior end to posterior end.

\_\_\_\_\_ are lobed and are located opposite each other in mid-posterior of body.



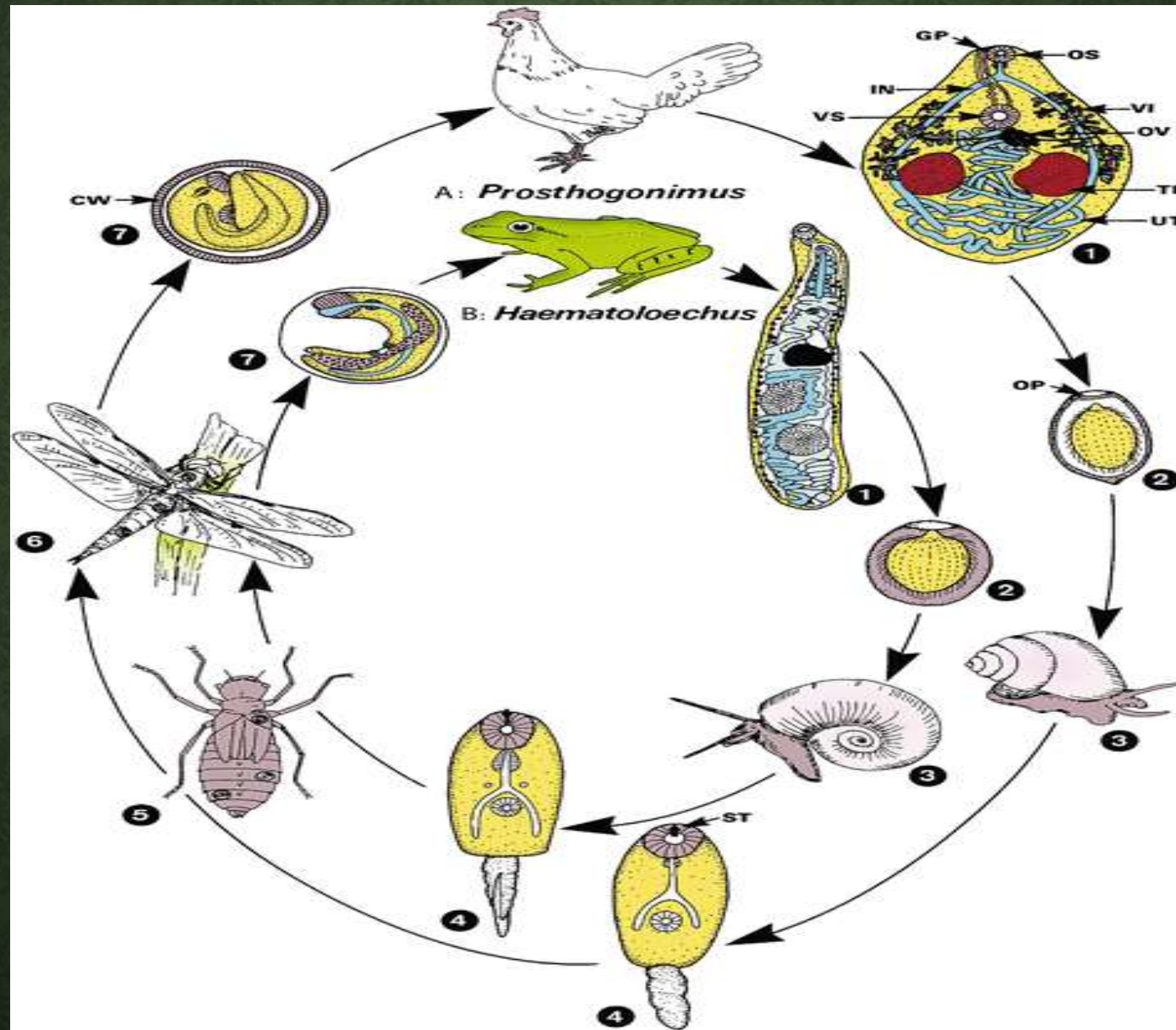
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# *Prosthogonimus* : Parts of body

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# Prosthogonimus : Life cycle

- *Prosthogonimus* has a complex and indirect life cycle having two intermediate hosts, a **freshwater snail** and a **dragonflies**.
- The fluke eggs shed in the feces and developed after getting into an aquatic environment.
- These eggs fall to the bottom and are eaten by aquatic snails.
- Inside the snails they develop to **miracidia** that penetrate the intestine's wall and develop to **sporocysts**.
- Sporocysts multiply asexually to **daughter sporocysts** and then **cercariae**.
- Mature cercariae leave the snail through its feces and swim in the water.
- The cercariae find a **dragonfly larva** and penetrate into its body through the anus.
- They encyst in the muscles of the abdominal wall and form infective **metacercariae**.
- Chicken, ducks, goose and other birds become infected eating both contaminated dragonflies, either naiads or adult.
- Inside the birds gut the metacercariae release the young flukes, which migrate to the **bursa of Fabricius** and later on to the **oviduct** through the cloaca , where they complete development to mature flukes and start producing eggs.

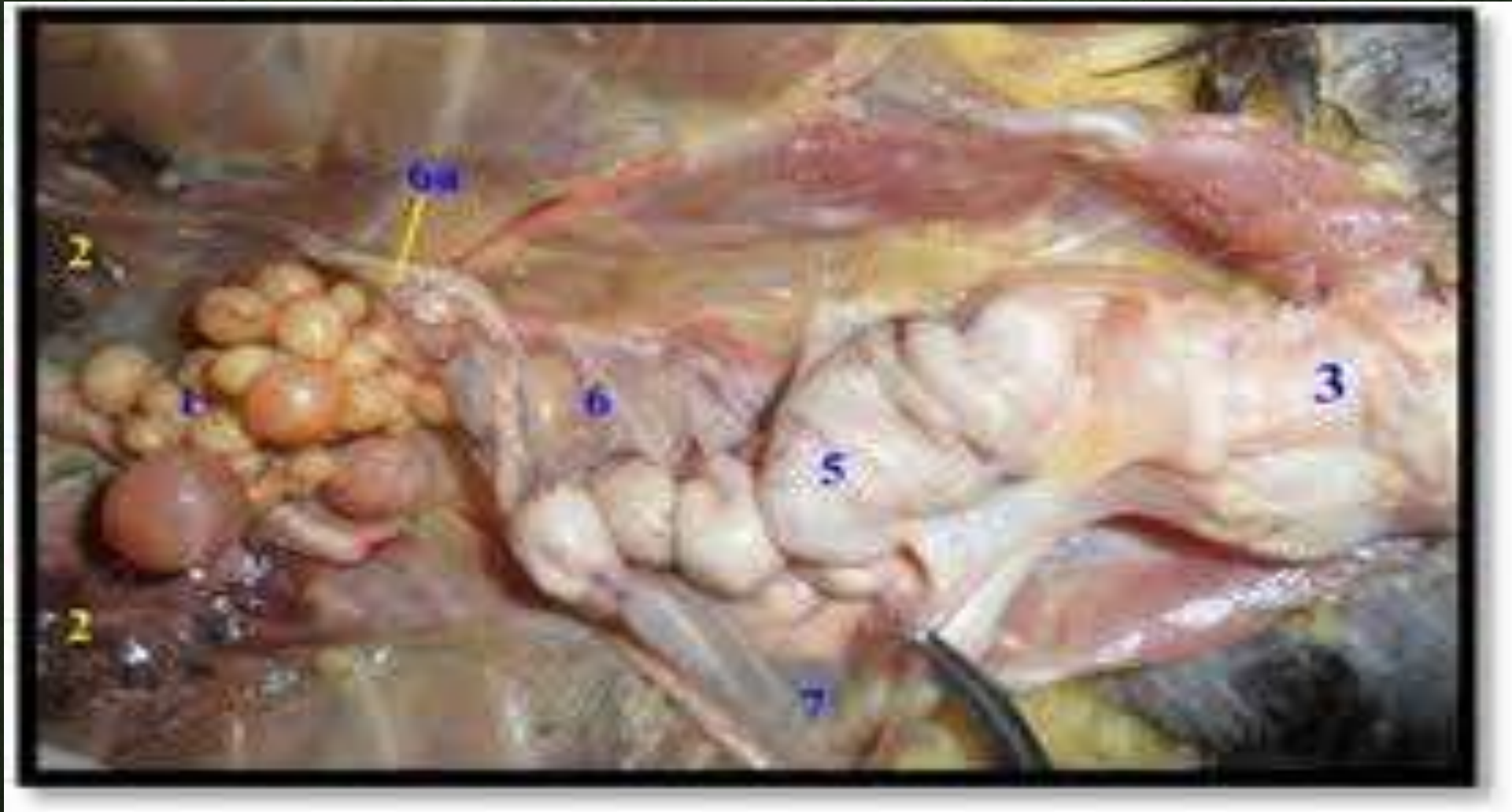


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# *Prosthogonimus* : life cycle

# Prosthogonimus : Pathogenesis

- *Prosthogonimus* is more harmful for chicken, turkey and other free ranging birds .
- A **severe** infections in hens cause **impair egg laying, eggs with no shells at all**.
- Most harm is damage of the birds oviduct tissues and disturbance in peristaltic motility.
- The inflammation can spread to the whole abdomen and cause peritonitis.
- Typical symptoms include **lime discharge from the cloaca** that may contain flukes, and soiling of the feathers around the vent.
- Heavily affected birds lose appetite and refuse feeding, become listless and thirsty, walk abnormally.
- Difficult breathing and have a tense and hot abdomen are other clinical sign.



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*Prosthogonimus* : in oviduct

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# Prosthogonimus : Diagnosis

- Diagnosis can be confirmed through eggs found in the cloacal discharge.
- Adult flukes can be detected in the oviducts, cloaca or bursa of Fabricius after necropsy of sick or dead birds.

Яйцо *Prosthogonimus ovatus*



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*Prosthogonimus* : Egg

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# Prosthogonimus : Prevention & control

- Elimination of the humid environments to prevent development of naiads.
- To keep the birds indoors in the cool morning hours or after heavy rains or storms, when the dragonflies are an easy prey for the birds.
- Birds with suspected symptoms must be culled.
- Chemical control of the snails with molluscicides such as copper sulphate, sodium pentachlorophenate, niclosamide, etc.
- Control of the naiads or the dragonflies with larvicides/ insecticides is not recommended , it would be extremely harmful for the environment.