**Gyrodactylus** and *Dactylogyrus*

I. **Causative Agent and Disease**
   The genus *Gyrodactylus* contains many species but *G. salmonis* is a common parasite of salmonids in North America. This small (0.2 mm) monogeneic fluke attaches to gills, fins and skin epithelium using an attachment organ known as an opisthaptor armed with a pair of large hooks and 16 marginal hooklets. The head of the worm is bilobed, lacks eyespots and produces live young. Heavy infestations by the parasite can result in destruction of the gills or skin epithelium due to mechanical damage caused by the attachment organ. The genus *Dactylogyrus* is found on the gills of mostly cyprinid fishes and is also very small (0.3 mm). *Dactylogyrus* is recognized by a four-lobed head with four eyespots. The opisthaptor consists of one conspicuous pair of large hooks and up to 12 smaller hooklets. When the worm is present in large numbers, gill hyperplasia and necrosis can result.

II. **Host Species**
   The genus *Gyrodactylus* has many species in Eurasia and North America that cause infestations in both marine and freshwater fish. In Alaska they are commonly seen as external parasites of salmonids in the wild and also in the hatchery environment. The genus *Dactylogyrus* is found worldwide parasitizing mostly cyrinid fishes in freshwater.

III. **Clinical Signs**
   The skin of fish infested with *Gyrodactylus* may become mottled, necrotic and dark with excess mucus production. Infestation of the gills often results in lamellar hyperplasia, also accompanied by excessive mucus production and rapid respiratory movements. Heavy body infestations cause fin erosion with flashing behavior and lethargy. Gill infestations of *Dactylogyrus* produce clinical signs very similar to *Gyrodactylus*.

IV. **Transmission**
   Horizontal transmission occurs between fish by physical contact in crowded environments or when the flukes are present in the water seeking a host fish. Both genera are hermaphroditic. *Gyrodactylus* produces live young that attach to the same or different host. *Dactylogyrus* releases fertilized eggs that hatch in the water column producing juveniles that likely attach to a different host.

V. **Diagnosis**
   Diagnosis is made by observing the parasites in wet mounts of skin scrapes or gill tissues. *Gyrodactylus* has no eyespots, is viviparous and embryos with well developed hooks may be seen inside the body of the adults. Dactylogyrid flukes have 4 eyespots and contain visible eggs.

VI. **Prognosis for Host**
   Prognosis for the host is good if infestations are not excessive. If extensive mechanical damage occurs to the fins, skin and/or gills the fish become very susceptible to secondary infections with opportunistic pathogens. Formalin treatments are used in the hatchery environment to eliminate these external flukes from fish.

VII. **Human Health Significance**
   There are no human health concerns associated with *Gyrodactylus* or *Dactylogyrus*. 
**HELMINTHS**

*Gyrodactylus* attached to gill lamellae by hooks

*Gyrodactylus* with visible internal embryos (arrow)

Adult *Gyrodactylus*

Stained *Dactylogyrus* with 4 eye spots