Scientific Name: *Dugesia polychroa* Schmidt, 1861

Common Name: flatworm

Taxonomy: Available through ITIS

Identification: This uniform to irregularly pigmented brown flatworm exhibits a rounded to somewhat triangular head that narrows slightly at the neck. The two eyes are located close to the anterior end and spaced further apart than in the North American native *D. tigrina*. Posterior to the eyes there are two unpigmented auricular sensory organs near the lateral margins that barely protrude from the body and are not especially pointed. The single pharynx is completely white. Cocoons are brown, round, and occur on a stock. (Kenk 1972; Pennak 1989; Wienzierl et al. 1998)

Size: Average length in a population varies between 4.5 and 10 mm depending on the time of year but maximum size can reach 20 mm (Reynoldson and Davies 1970; Kenk 1972; Boddington and Mettrick 1974).

Native Range: *D. polychroa* is primarily found in western Europe. However, its Palearctic range encompasses all of Europe, northern Asia, and northern Africa within the Mediterranean basin (de Vries 1985; Mills et al. 1993).

Nonindigenous Occurrences: *D. polychroa* occurred for the first time within the Great Lakes basin in Lake Ontario in 1968 (Ball 1969; Mills et al. 1993).

Means of Introduction: *D. polychroa* was very likely introduced in ballast water to North America (Ball 1969; Mills et al. 1993).

Status: Established where recorded.

Ecology: *D. polychroa* is hermaphroditic. Different lineages of: a) diploid sexual individuals; and b) polyploid, pseudogamous, parthenogenetic individuals exist. In the latter type of lineage, reproduction occurs when unfertilized eggs develop. Sperm is still required to trigger initial egg development, but genetic material from the sperm is not incorporated. Interbreeding between the two different types of lineages sometimes occurs when sperm produced by parthenogens fertilizes sexual individuals. When copulations take place, both individuals involved transfer and receive sperm. Self fertilization does not occur (Beukeboom et al. 1996; Peters et al. 1996; Weinzierl et al. 1998).

D. polychroa is iteroparous, reproducing many times in a lifetime. In the field, each adult in established populations produces around 0–8 young in a breeding season, but with unlimited food and little competition, each adult can produce around 30– 45 young. Populations in Toronto Harbour, Canada remain low over winter; expand rapidly in spring and summer; peak in August; and then decline. The breeding season in this locality is around 10 weeks long (Boddington and Mettrick 1974; Reynoldson 1977; Bladon and Calow 1987).

Distribution of *D. polychroa* in Toronto Harbour, Canada is limited mostly by pollution. In cleaner areas densities can reach up to 2200 individuals per m^2. In this harbor *D. polychroa* feeds predominantly on tubificid oligochaetes and supplements its diet with gastropods, isopods, and amphipods. In some British habitats this flatworm mainly consumes gastropods, supplemented by amphipods, asellids, and sometimes chironomids. Differences in relative contribution of food items between British populations and North American ones are probably related to prey availability and competition with other predators. In British habitats, competition with other triclads and leeches is very common (Reynoldson and Davies 1970; Boddington and Mettrick 1974**;** Reynoldson and Piearce 1979; Seaby et al. 1996).

D. polychroa typically occurs in littoral zones, especially in rocky regions of productive lakes. In The Netherlands it is only found in waters above pH of 6.0. It rarely occurs in waters of chlorinity above 2‰ and cannot survive permanently in salinities of 3.8‰ and more, although chlorinity up to 6.6‰ can be tolerated for short periods of time. *D. polychroa* is relatively thermophilic and requires temperatures of 10–23ºC to complete a full life cycle. Its ability to tolerate increased salt concentrations decreases as temperature increases. It requires water temperatures of 10ºC or more for egg case production and does not grow in water temperatures below 5ºC (Reynoldson et al. 1965; Reynoldson and Davies 1970; Boddington and Mettrick 1974; Van der Velde et al. 1986; Seaby et al. 1996).

Impact of Introduction

A) Realized: In Toronto Harbour, Canada *D. polychroa* coexists with *D. tigrina* but the latter is always found at lower densities than the former (Boddington and Mettrick 1974).

B) Potential: Unknown.

Remarks: In the Great Lakes, *D. polychroa* benefits from changes in substrate due to increased interstitial space and increased biodeposition provided by introduced mussels in the genus *Dreissena* (Ricciardi et al. 1997).

D. polychroa is synonymous with *D. lugubris*, *Planaria polychroa*, and *P. lugubris*.

Voucher Specimens:

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Other Resources:

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Group: Flatworm - Does not fit groups available

Lake(s): Lake Ontario

Genus: *Dugesia* (synonymous with *Planaria*)

Species: *polychroa* (synonymous with *lugubris*)

Common Name: flatworm

Status: Established

Freshwater/Marine: All (only very low salinities tolerated)

Pathway: Shipping

Exotic/Transplant: Exotic