Fish Parasites as Indicators of Aquatic Resources

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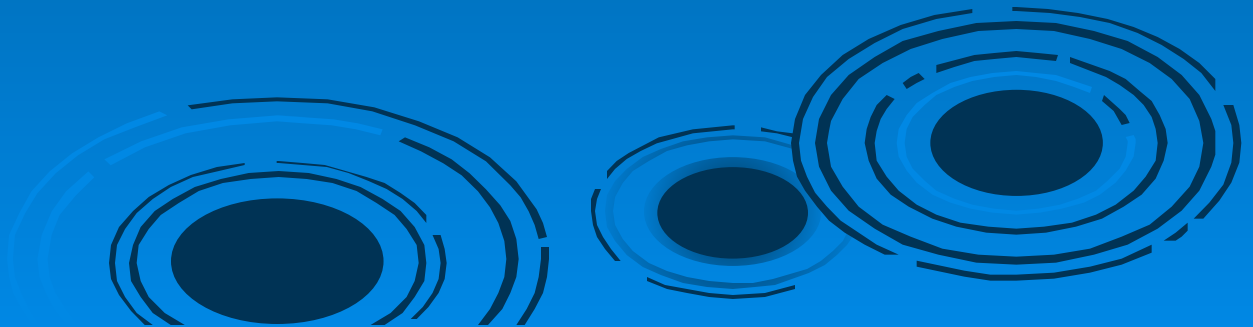


Abstract

- Biota utilizing fresh water, estuarine, and marine resources can be determined by various degrees of field surveys. When time is of the essence, and financial constraints demand more rapid responses for environmental assessments, literature reviews and federal and state reports can assist in plant and animal determinations of particular sites. To verify some of the available data, and to perhaps extend the data of organisms that may not be indicated, use of fish verified as in or around the site may be noted. The surveyor could then go to a checklist of parasites reported for these fish species (e.g. Hoffman, 1999, Anderson, 2000, Gibson, 1996), record these, then from the literature on these parasites, examine their life histories. The obtained data can add, measurably, to other species utilizing the site whether they are temporary or seasonal users of the site being studied (especially for birds, and invertebrates). For example a checklist for *Fundulus heteroclitus (Hoffman, 1999)* indicates that they are parasitized by 12 protozoa, seven monogenea, nine trematoda, two cestoidea, four nematoda, three acanthocephala, and five crustacea. The life histories of these parasites involve many intermediate and final hosts that could be added to the list of organisms that may be using the study site.

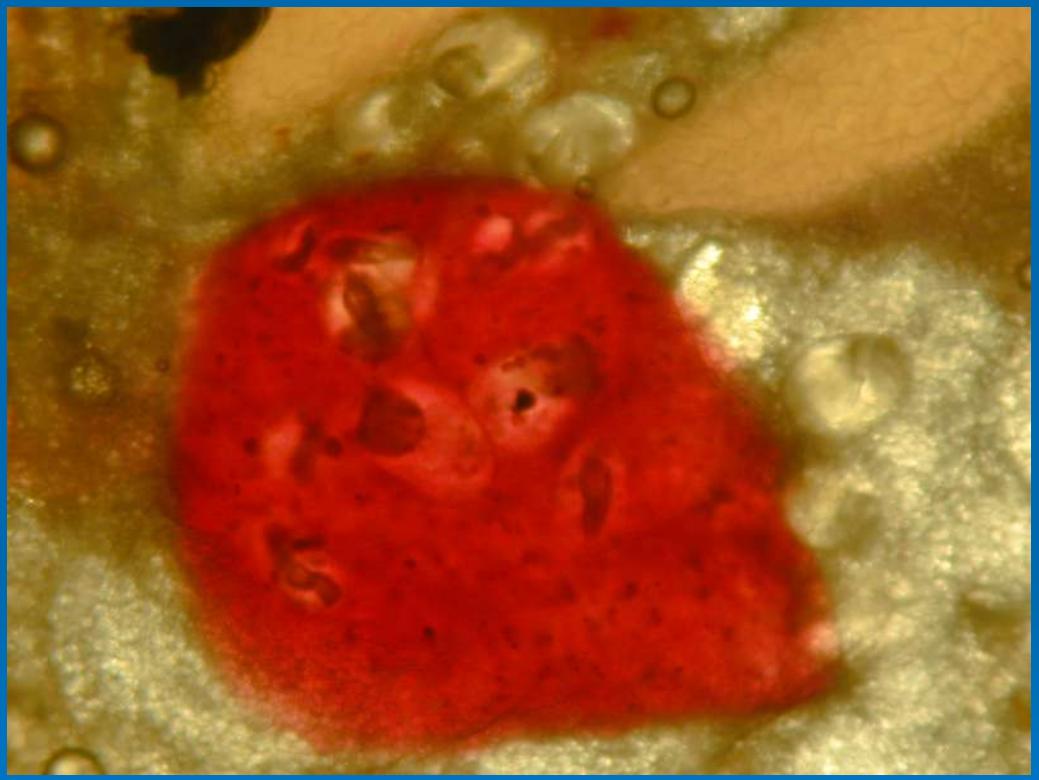
Fundulus diaphanus, banded killifish

- **Protozoa**
  - ***Myxobolus diaphanous***
  - ***M. funduli***
  - ***M. subtecalis***
- **Monogenea**
  - ***Ancyrocephalus angularis***
  - ***Gyrodactylus avalonis***
  - ***G. prolongis***
  - ***g. stegurus***
  - ***Salsuginis angularis***
  - ***S. funduli***

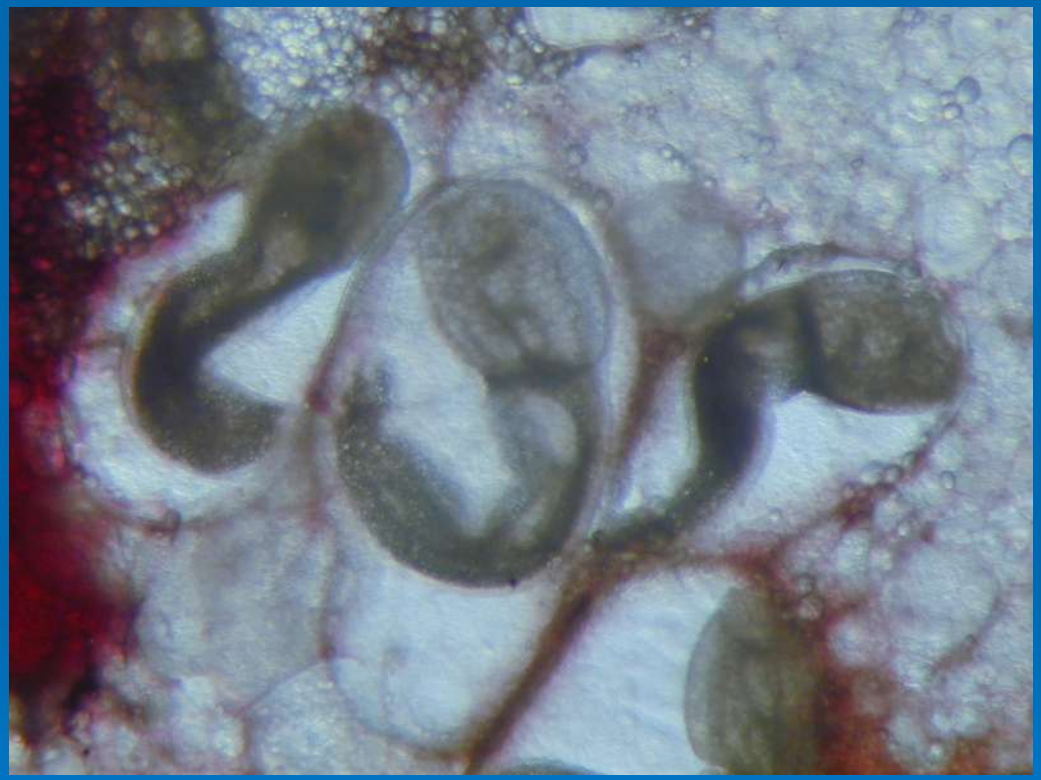
Fundulus diaphanus (cont.)

- **Trematoda**
  - ***Allocreadium commune***
  - ***Asymphlodora* sp.**
  - ***Clinostomum complanatum***
  - ***Crassiphiala bulboglossa***
  - ***Creptotrema funduli***
  - ***Diplostomulum* sp.**
  - ***Homalometron pallidum***
  - ***Neascus pyriformis***
  - ***Neascus* sp.**
  - ***Ornithodiplostomum ptychocheilus***
  - ***Petasiger* sp.**
  - ***Posthodiplostomum minimum***
  - ***Rhipidocotyle septpapillata***

Trematodes

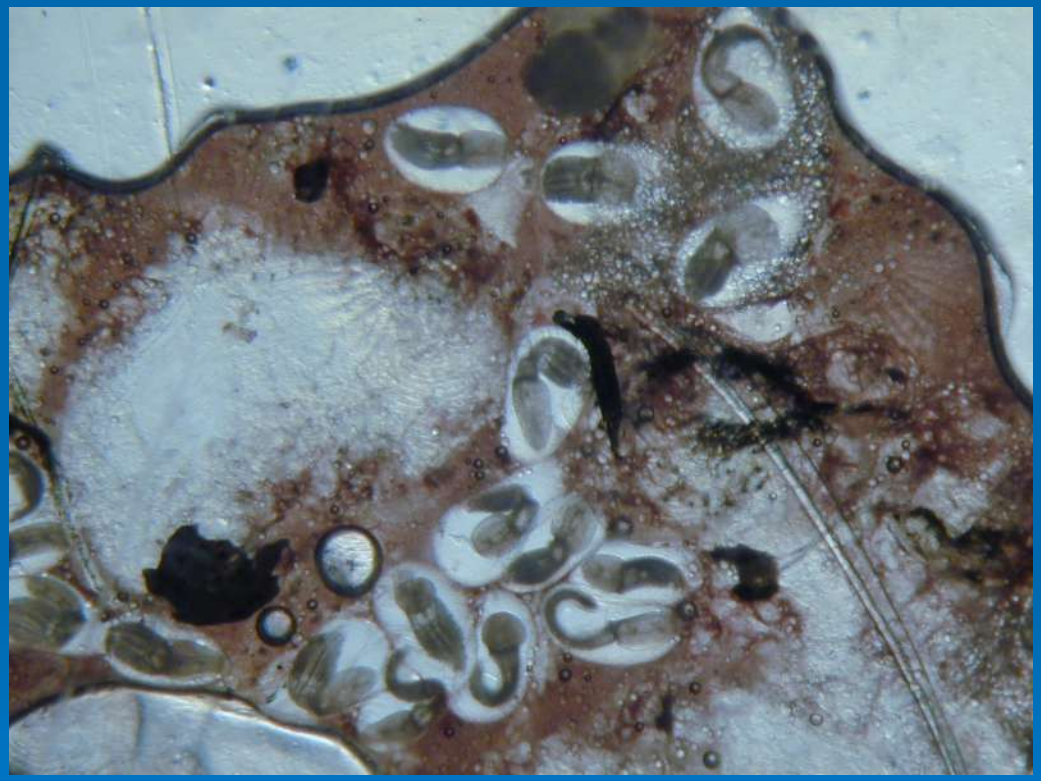


Trematodes

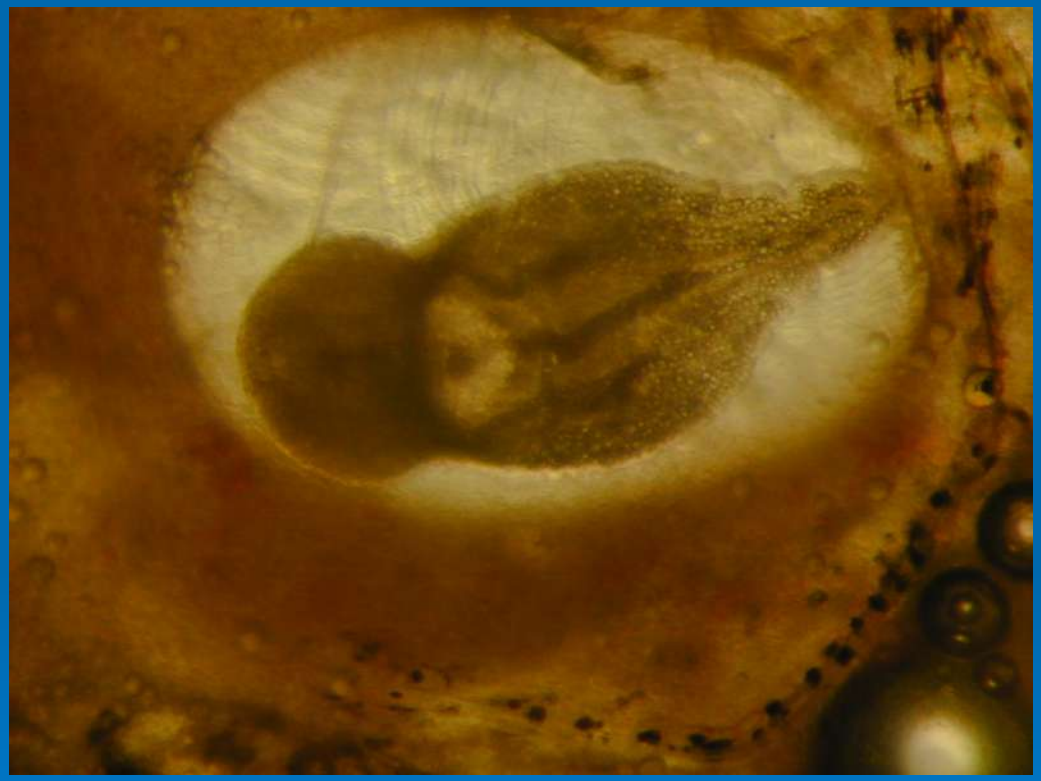


Trematodes

Trematodes



Trematodes



Fundulus diaphanus (cont.)

- **Cestoidea**
  - ***Bothriocephalus rarus***
  - ***Dilepis* sp.**
  - ***Parvitaenia* sp.**
  - ***Proteocephalus ambloplitis***
  - ***Proteocephalus* sp.**
- **Nematoda**
  - ***Cucullanus* sp.**
  - ***Cystidicola* sp.**
  - ***Eustrongylides* sp.**
  - ***Hedruris* sp.**
  - ***Rhabdochona* sp.**
  - ***Spiroxys* sp.**

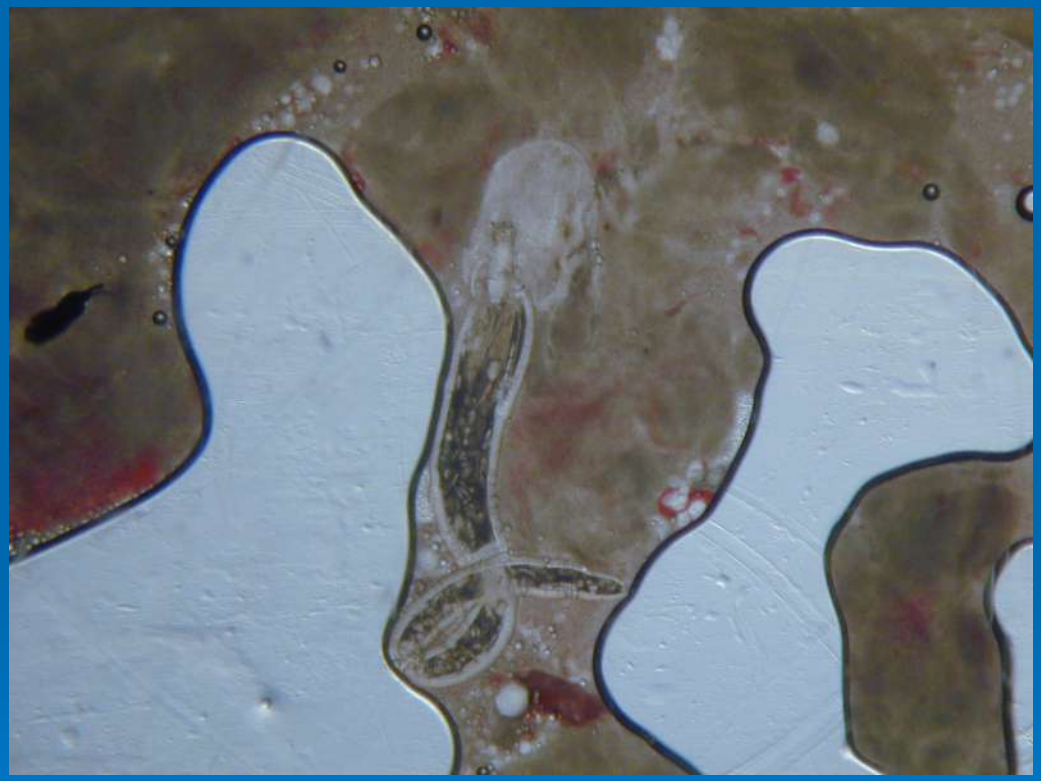
Nematodes

Nematodes

Fundulus diaphanus (cont.)

- **Acanthocephala**
  - ***Acanthocephalus* sp.**
  - ***Leptorhynchoides thecatus***
  - ***Neoechinorhynchus cylindratus***
  - ***Neoechinorhynchus* sp.**
  - ***Octospiniferoides* sp.**
  - ***Pomphorhynchus bulbocolli***
- **Mollusca**
  - ***Elliptio complanata***
- **Crustacea**
  - ***Ergasilus lizae***

Acanthocephala



Acanthocephala

Fundulus majalis, striped killifish

- **Protozoa**
  - ***Chloromyxum renalis***
  - ***Myxobolus funduli***
  - ***Oodinium cyprinodontum***
- **Trematoda**
  - ***Ascocotyle angrense***
  - ***A. diminuta***
  - **Acanthocephala**
  - ***Rhadinorhynchus pristis***
- **Crustacea**
  - ***Argulus funduli***
  - ***Ergasilus manicatus***

Fundulus heteroclitus, mummichog

- Parasites
- Protozoa
  - *Eimeria funduli*
  - *Eimeria* sp.
  - *Glugea hertwigi*
  - *Kudoa* sp.
  - *Myxidium folium*
  - *Myxobolus bilineatum*
  - *M. funduli*
  - *M. hudsonius*
  - *M. subtecalis*
  - *Oodinium cyprinodontum*
  - *Plistophora* sp.
  - *Sphaerospora renalis*

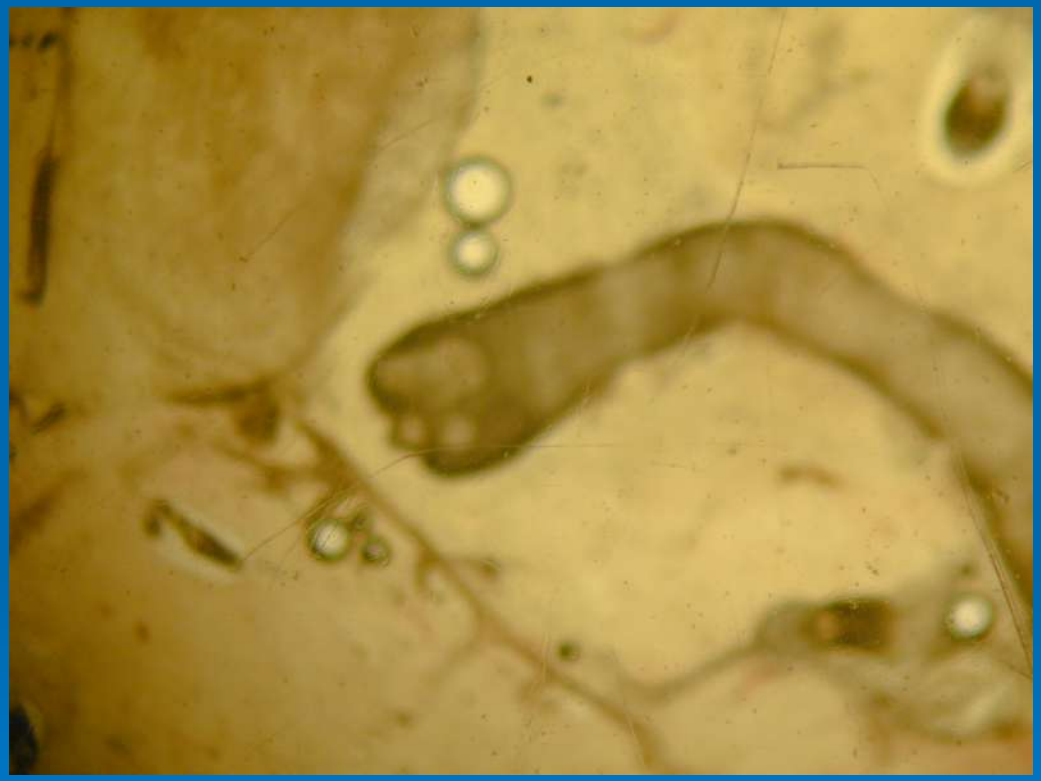
Fundulus heteroclitus (cont.)

- **Trematoda**
  - ***Ascocotyle angrense***
  - ***A. diminuta***
  - ***Clinostonum complanatum***
  - ***Crepidostomum cooperi***
  - ***Diplostomulum nassa***
  - ***Echinochasmusschwartzi***
  - ***Homalometron pallidum***
  - ***Stephanoprora denticulate***
  - ***Tetracotyle* sp.**

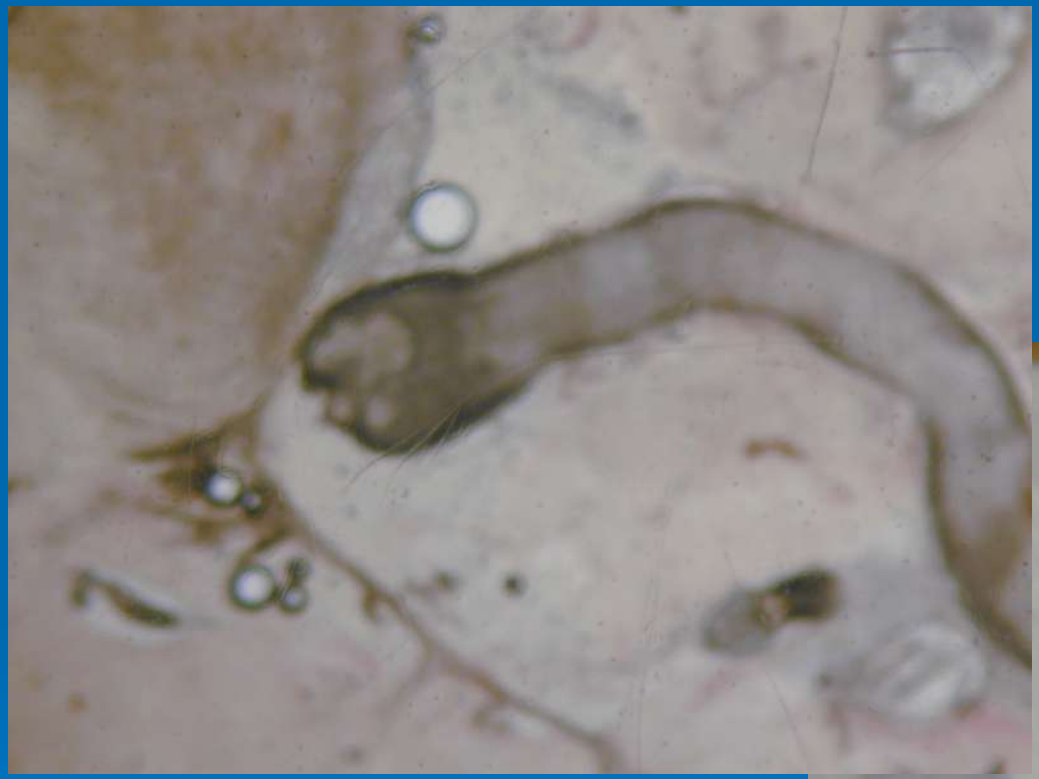
Fundulus heteroclitus (cont.)

- **Cestoidea**
  - ***Cyclustera* sp.**
  - ***Proteocephalus* sp.**
- **Nematoda**
  - ***Contracaecum spiculigerum***
  - ***Dichelyne bullocki***
  - ***D. lintoni***
  - ***Eustrongylides* sp.**

Tapeworm



Tapeworm



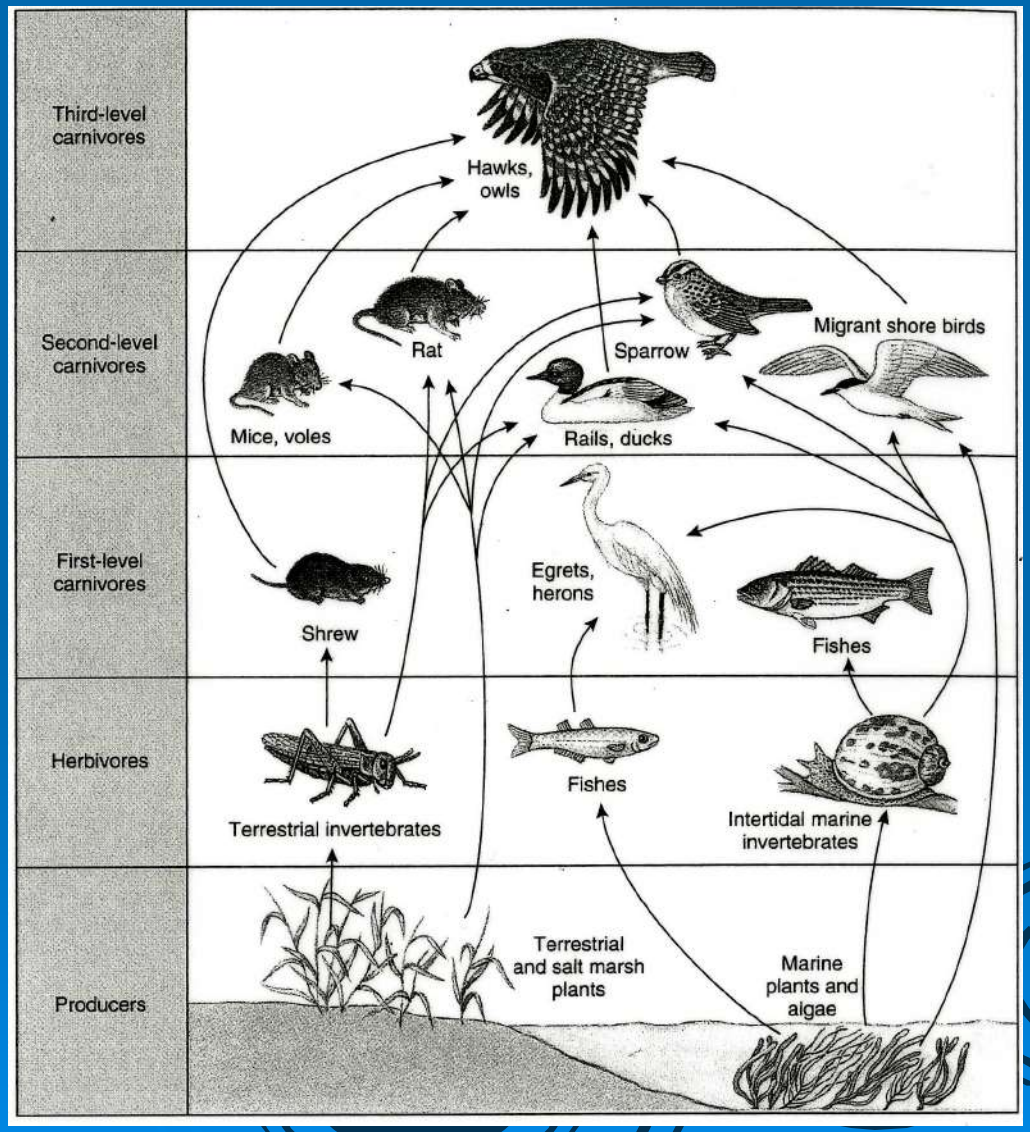
Fundulus heteroclitus (cont.)

- **Monogenea**
  - ***Gyrodactylus foxi***
  - ***G. prolongus***
  - ***G. stephanus***
  - ***Gyrodactylus* sp.**
  - ***Salsuginis angularis***
  - ***S. heteroclite***
  - ***Swingleus* sp.**

Fundulus heteroclitus (cont.)

- **Acanthocephala**
  - ***Fessisentis freidi***
  - ***Neochinorhynchus cylindratus***
  - ***N. rutili***
- **Crustacea**
  - ***Argulus funduli***
  - ***Ergasilus funduli***
  - ***E. lizae***
  - ***E. monicatus***
  - ***Livoneca ovalis***

Complexities of a Food Web

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