

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Sunfish and Students Teacher Workshop



Sunfish and Students
New Teacher Workshop

Why Sunfish and Students??

- Students are engaged!
- High survival rate of live animals!
- Connect students to the outdoor world!
- Connect individual actions every day to life in the natural world.



Basic Timeline



August/September

- New teacher sign-ups
- Confirmations from continuing teachers.

October/November

- New teacher workshop
- Fish pick-up for continuing teachers

Fall through Spring

- Raise fish in your classrooms!

By end of May

- Release fish (Need permit for any location)

What DNR provides:



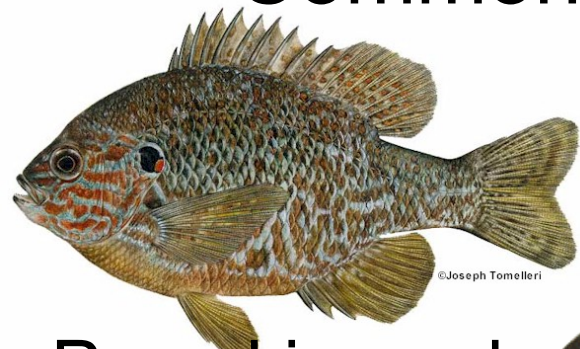
- New teachers:
 - ✓ All equipment and supplies needed.
 - ✓ Fish – Quantity/age/size varies every year.
 - ✓ Lesson Plans and Teachers Manual online.
 - ✓ Support and assistance as needed.
- Continuing teachers yearly receive:
 - ✓ Consumables such as water conditioners, filter media, and fish food.
 - ✓ Fish – Quantity/age/size varies every year.

What teachers will do:

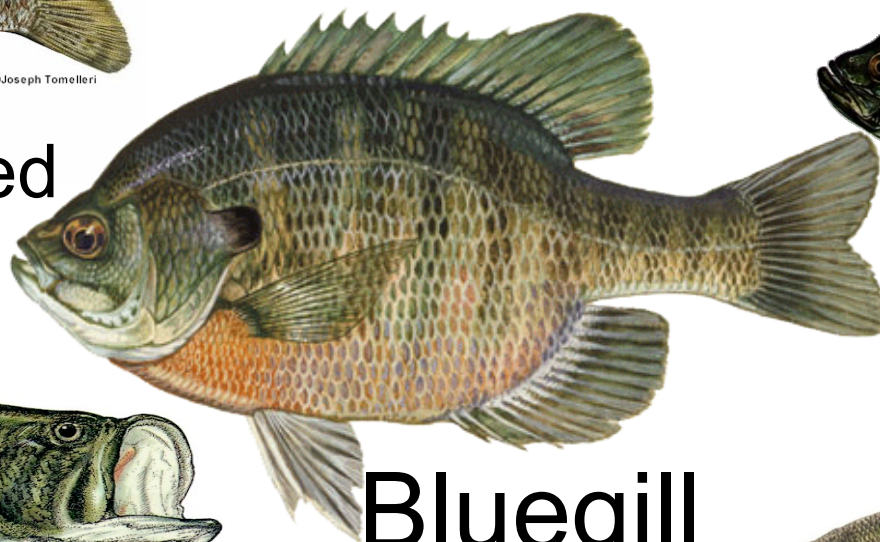


- Provide safe location for a 20 gallon-long glass aquarium and all supplies.
- Plan for care and maintenance from pick-up through the late spring.
- Have students participating in as much of care, maintenance and lessons as appropriate.
- Plan for and release sunfish in the spring, also obtaining additional permit.
- Provide Yearly Demographic Data on participating students.

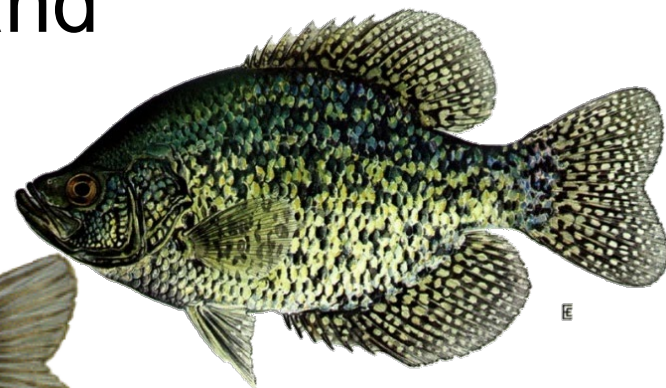
Common Members of the Sunfish Family found in Maryland



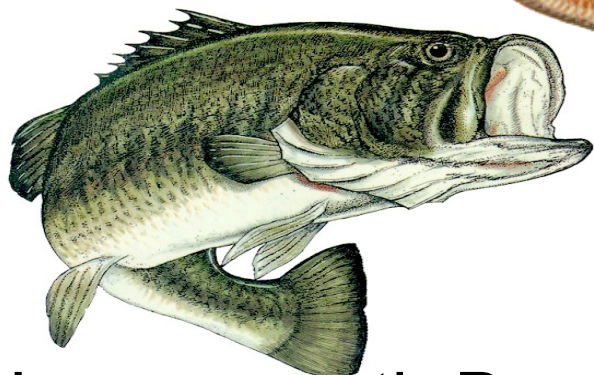
Pumpkinseed
Sunfish



Bluegill



Black Crappie

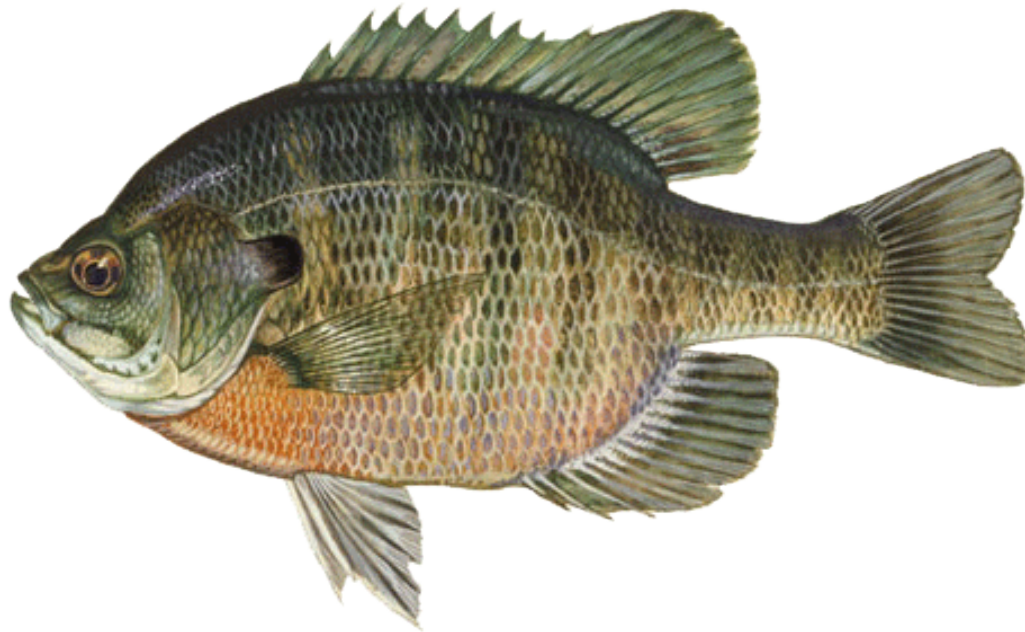


Large-mouth Bass



Small-mouth Bass

Why do we use bluegills?



They're colorful and very responsive to attention.

Why do we use bluegills?



Size: They won't get very big.

Why do we use bluegills?



They are resilient. They can tolerate wide ranges of:

- *Temperature*
- *Dissolved oxygen*
- *pH*

Why do we use bluegills?



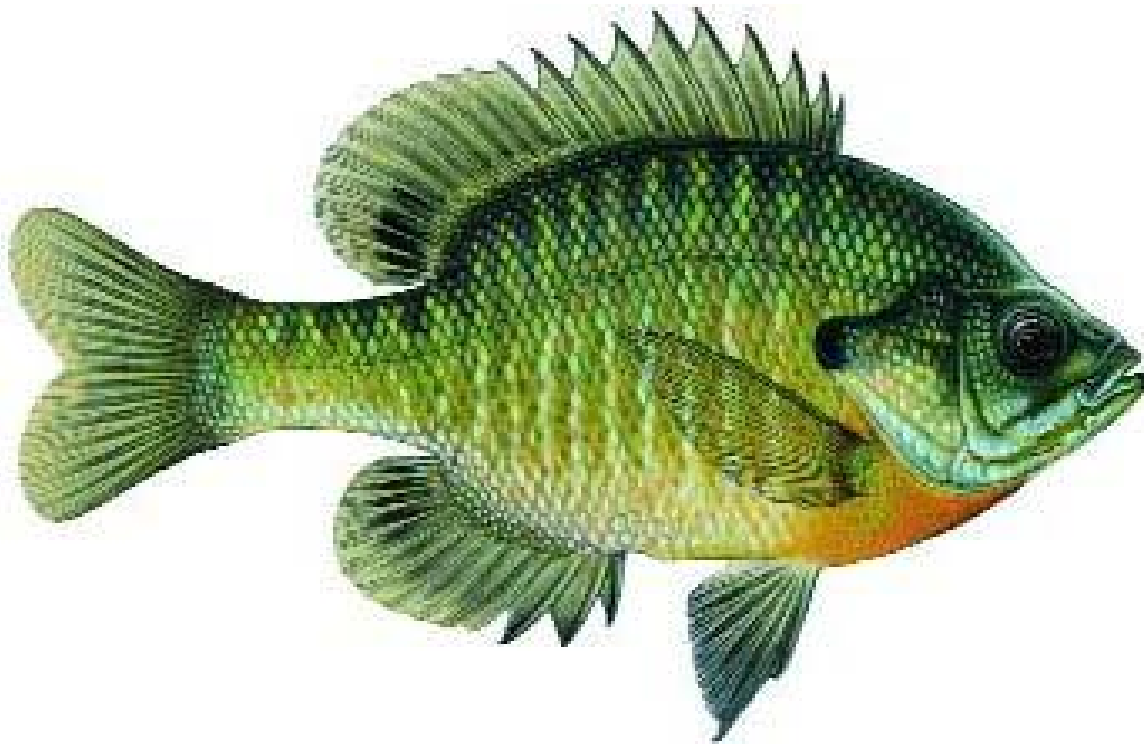
Readily available from the DNR hatchery.

Why do we use bluegills?

With permits, they can be released locally, almost anywhere in Maryland.



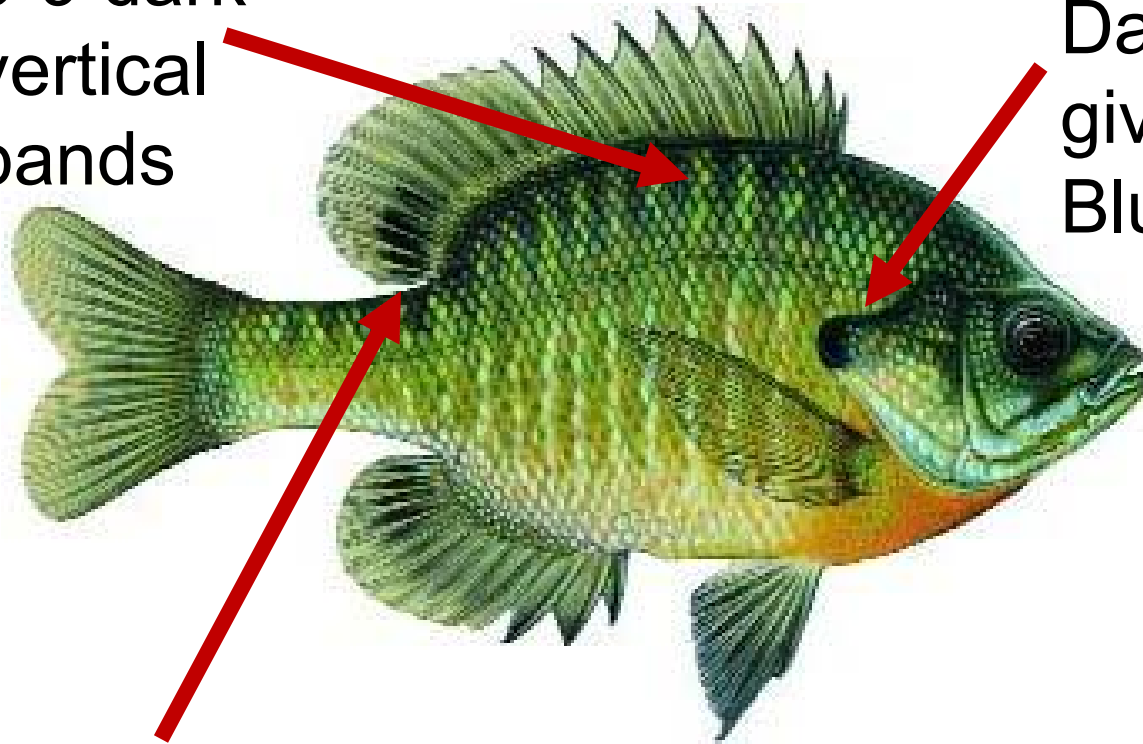
Life Span



- Many are prey during first year
- Can live 5-8 years
- Some as long as 11 years

Identification: Colors

5-9 dark
vertical
bands



Dark spot on Gill Cover
gives it the name
Bluegill

Dark spot on end
of dorsal fin

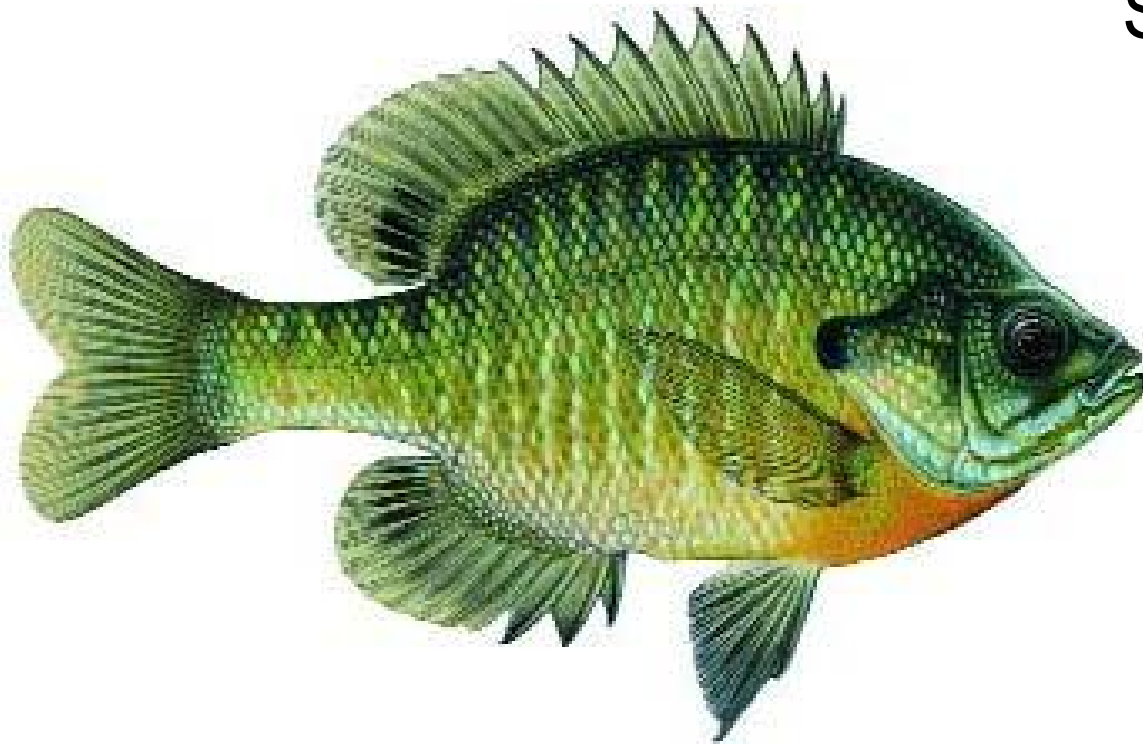


*Male: Bright
Red/Orange
on breast
(fades in fall)*



*Female or
Juveniles:
Less color,
yellow or
light pink
on breast*

Identification: Shape



Shape:

- Oval shaped
- Deep body when seen from the side, half as deep as they are long.
- Laterally compressed, very narrow when seen from above

Identification: Size



- Average size is 4-6"
- Average weight is less than $\frac{1}{2}$ lb
- MD Records are 13" and 4 lbs

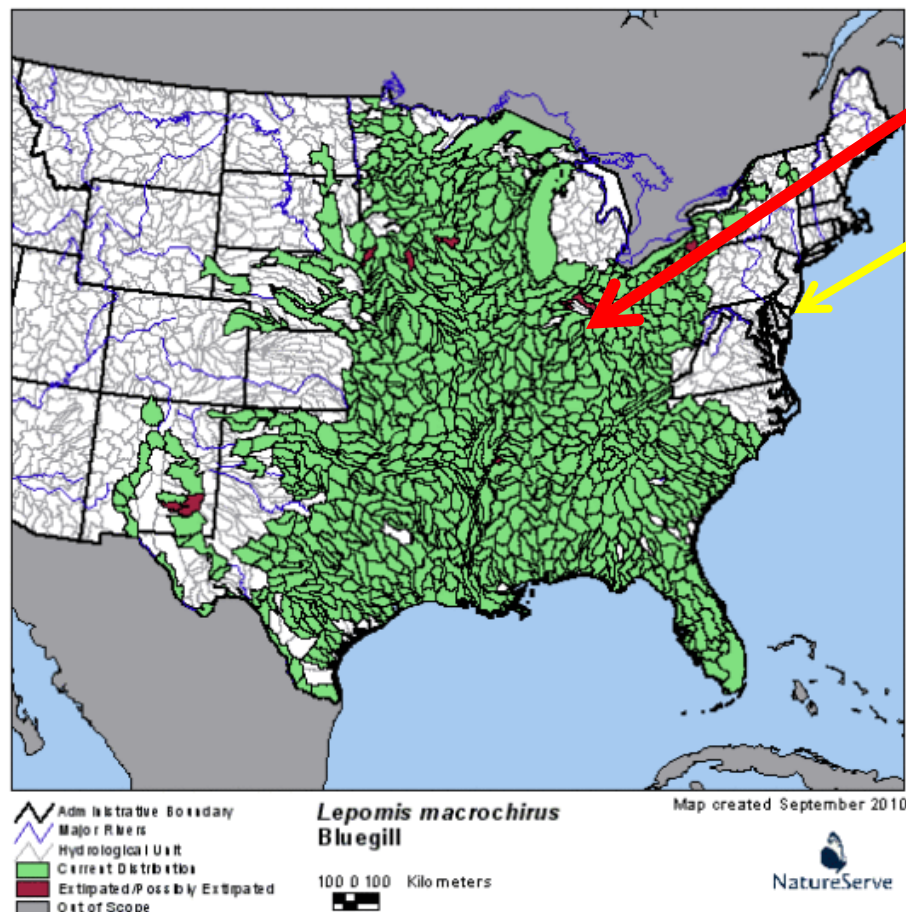
The rule.....



....The exception



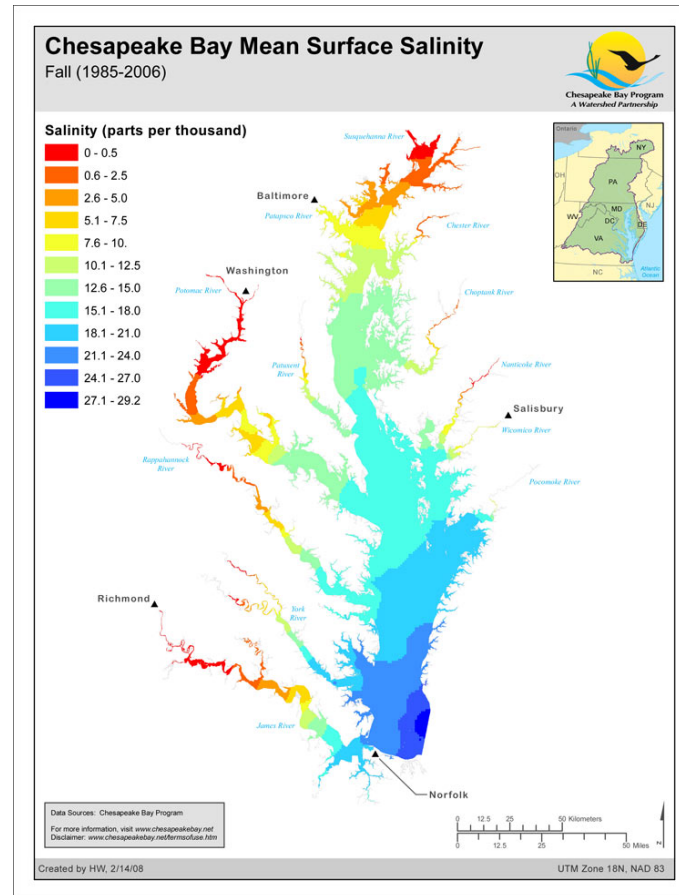
Native range



- Native only to part of US
- Non-Native, Introduced, but Not Invasive Species to Chesapeake Bay region
- Considered Invasive in parts of US and around the world.

Habitat

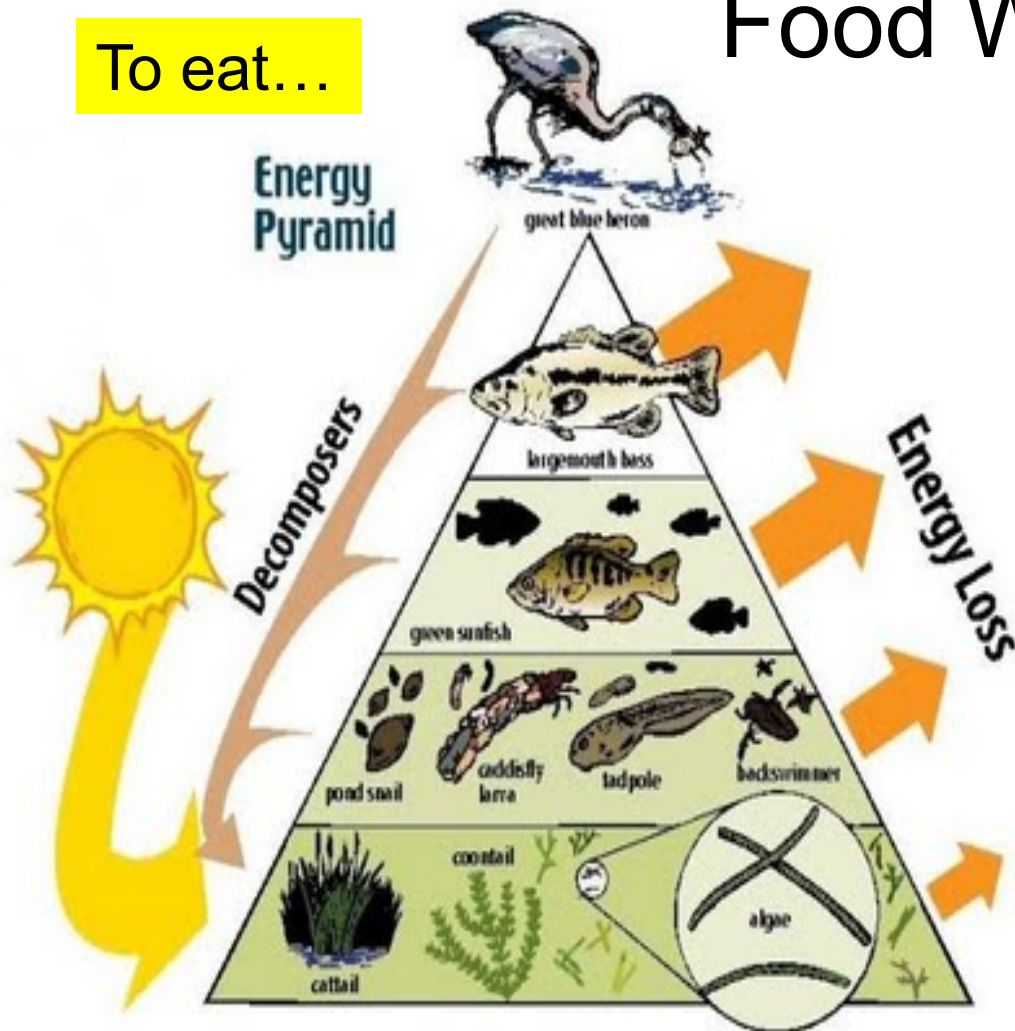
- Fresh, slow moving water
- Close to shorelines
- Plenty of cover to hide
- Salinity - 0-18 ppt



***Do not release into brackish or salt water without acclimating to salinity first!**

To eat...

Food Web



Anything that fits in their mouth and does not eat them first!

- Algae
- Aquatic vegetation
- Zooplankton
- Insect/Insect larva
- Small crustaceans
- Fish eggs
(even other bluegill)
- Amphibian eggs
- Smaller fish

...or be eaten!

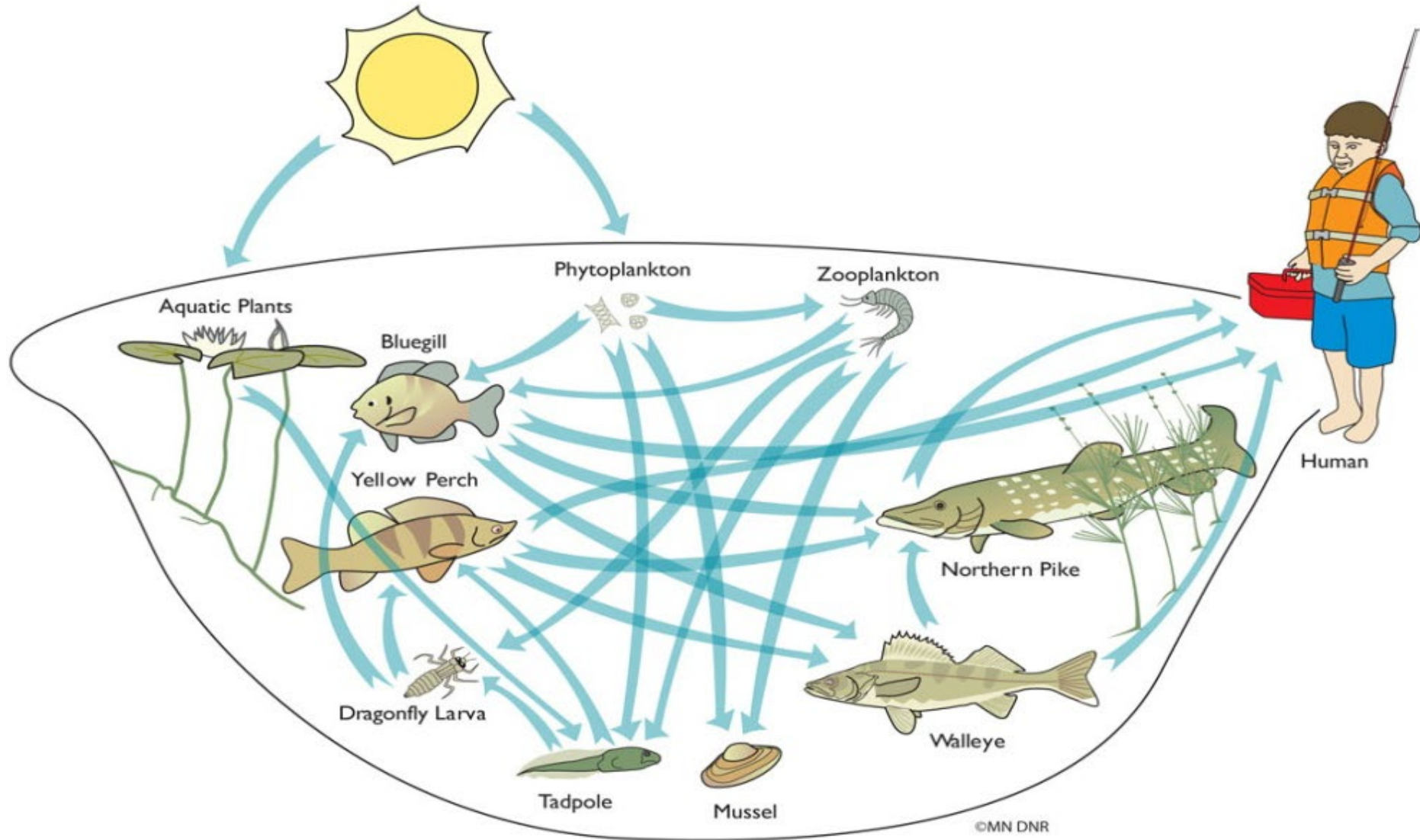


Food Web

- Eggs and young-of-the-year most vulnerable
- Seldom prey after two years+
- Spines make it hard to catch and swallow.
- Speed and quick turns helps evade predators.
- Body depth is larger than the mouth of most, except the largest predators: large birds, large fish, humans.

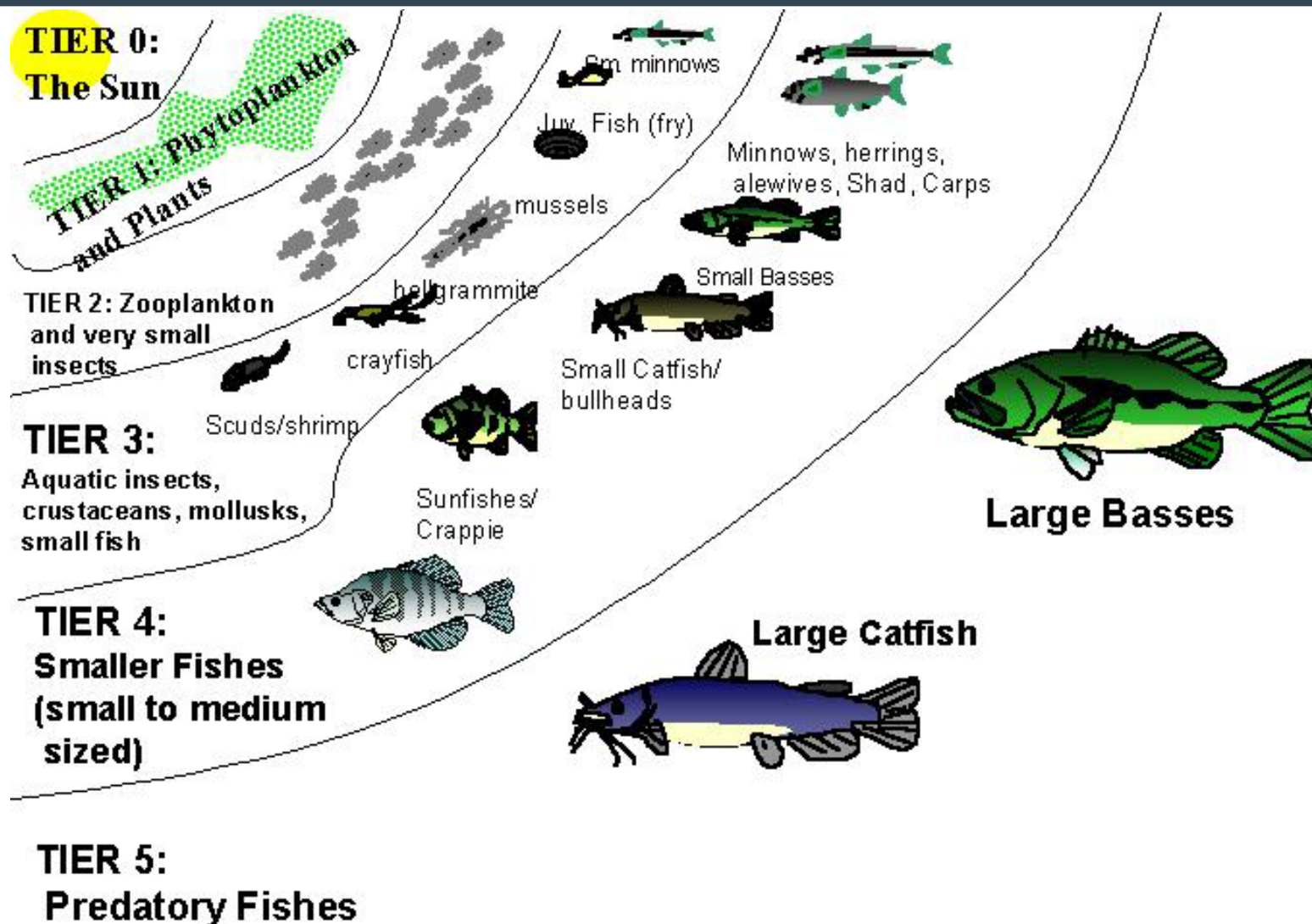
MARYLAND DEPARTMENT OF NATURAL RESOURCES

Sunfish and Students Teacher Workshop



MARYLAND DEPARTMENT OF NATURAL RESOURCES

Sunfish and Students Teacher Workshop



Reproduction and Bluegill nests



- Mature at 2-3 years old, and 3 inches long.
- Male makes nest using tail
- Colonies of 25-50 nests by multiple males. Males guard nests!

- May – Aug. - Females will lay 10,000 -50,000 eggs on average!

How Many Bluegill?

Lesson Plan and Activities

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Sunfish and Students Teacher Workshop



<https://www.youtube.com/watch?v=NvYFEkR5VgY>

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Sunfish and Students Teacher Workshop



Brook Trout Tagging

<https://youtu.be/ViFdEccMNO0>

<https://youtu.be/d107raqNFRs>

Setting up the aquarium

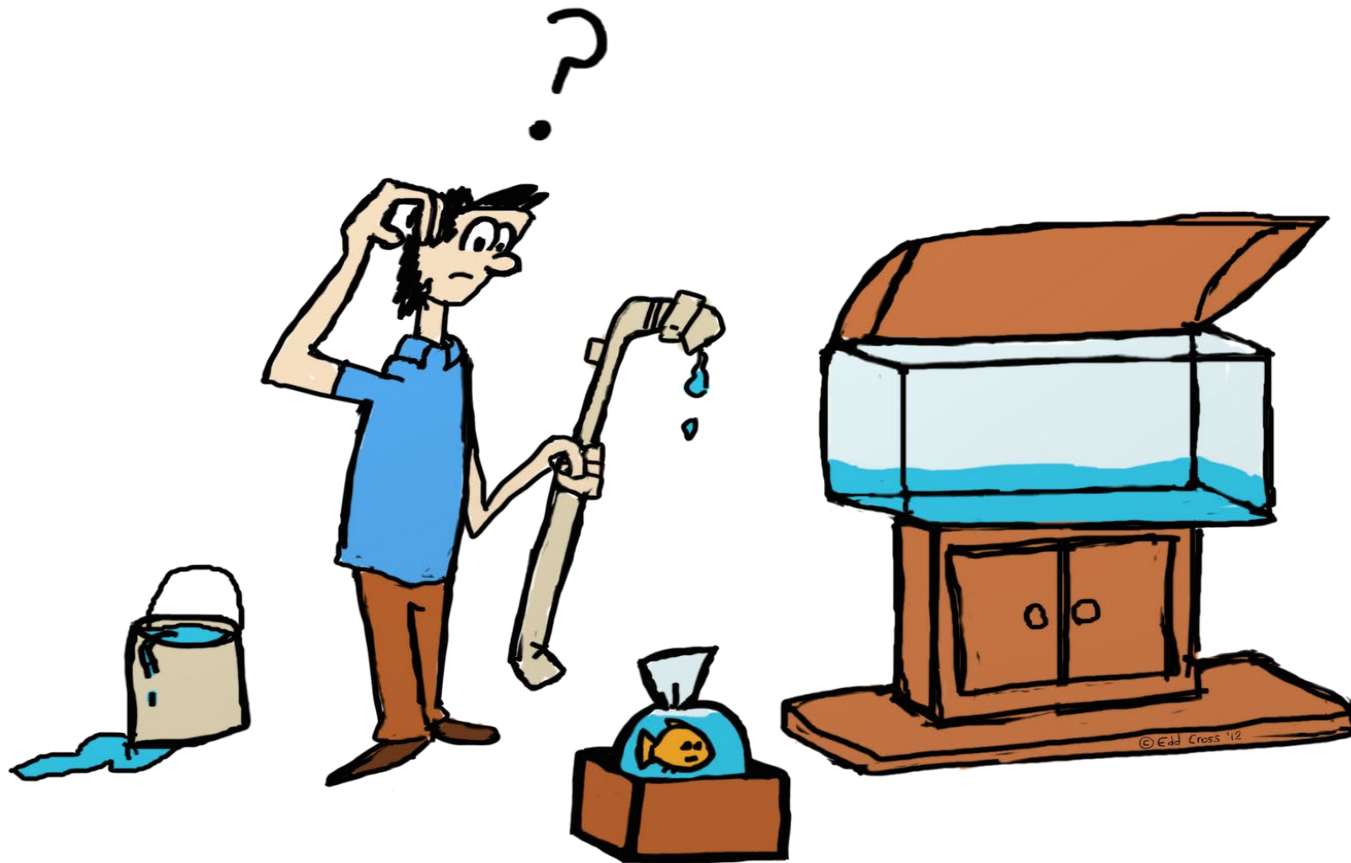


Info packet available online also



- Inventory of items provided
- Equipment Set-up Instructions
- Maintaining
- Troubleshooting
- Feeding
- Routine Care and Maintenance /
Schedule

Maintenance Tasks and Records



Maintenance Tasks and Records

Bluegill Care and Maintenance Record

Date	Total Ammonia <2.5ppm Optimum: 0	Unionized Ammonia (calculated, not tested) <0.12ppm Optimum: 0	Nitrite Optimum: 0	Nitrate Optimum: <40ppm	pH Range: 6.5-8.5	Temp Range: 65-80 F	Other:	Observations (Water changes, chemicals added, etc.)

Water Quality Testing

How Often:

- Daily for the first two weeks or until the results are within safe ranges.
- Weekly, at the minimum after results are within safe ranges.

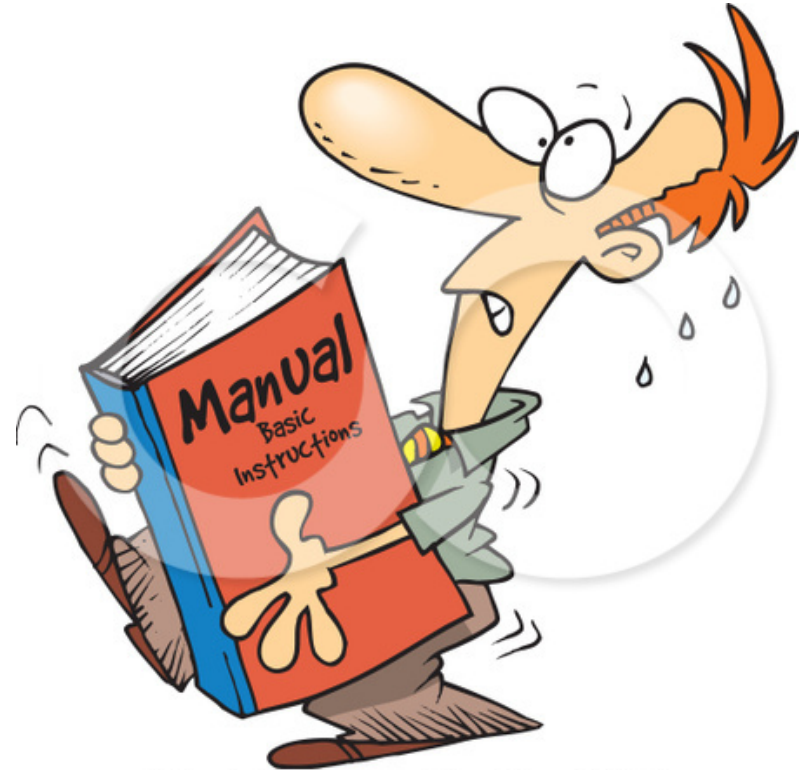


Water Quality Testing

- In the wild, toxic levels are relatively rare.
- The aquarium is conducive to build ups that can sicken or kill your aquarium fish, because:
 - Overcrowding
 - Overfeeding
 - The closed environment



- Teachers' Manual
- Lesson plans
- Website



© Ron Leishman * www.ClipartOf.com/443053

Lake Waterford Fish Kill

Lesson Plan and Activities

Lake Waterford Fish Kill

The Answer Article



Low Dissolved Oxygen Levels in the Magothy River Leads to Fish Kill at Lake Waterford

On March 23rd, 2010, a fish kill of approximately 500 fish, including gizzard shad, sunfish, and stocked rainbow trout, was reported by the Maryland Department of the Environment (MDE) in Lake Waterford. Lake Waterford, which is located in Pasadena, Maryland (39.11373°, -76.561124°), is formed by a dam near the headwaters of the Magothy River (Figure 1). MDE investigated the fish kill and found that oxygen levels within the lake were below 1 milligram per liter (mg/l). These levels are considered severely low and most aquatic organisms cannot survive in such conditions for more than a few hours.

Eyes on the Bay

<http://eyesonthebay.dnr.maryland.gov/>

Online Maryland DNR
Water Quality Data Resource

Aquatic Resources Education programs

- Aquatic Resources Education Grants
- Hooked on Fishing youth fishing programs
- Loaner fishing equipment
- Storm Drain Stencils
- Professional Development – Many offerings!
- Website Resources
- Green Leaders – Assist with Green School Apps

Questions?

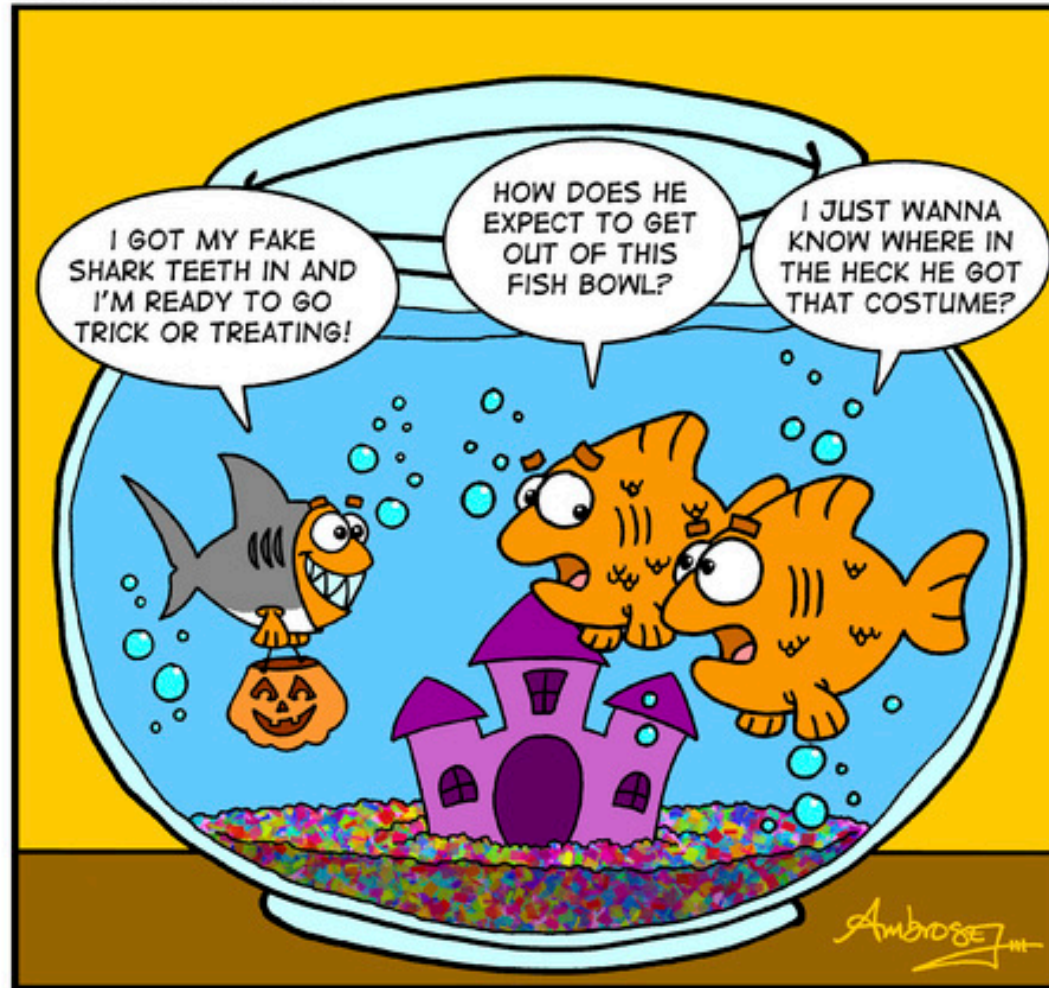
Chelsea Miller
Chelsea.Miller
@maryland.gov
410-260-8705



MARYLAND DEPARTMENT OF NATURAL RESOURCES

Sunfish and Students Teacher Workshop

IN YOUR FACE!



facebook.com/Gopherit