



2020 LEBANON COUNTY ENVIROTHON

ELEMENTARY & MIDDLE SCHOOL AQUATIC RESOURCES



TESTING RESOURCES

IDENTIFICATION STUDY LIST:

FISH	REPTILES & AMPHIBIANS	INVERTEBRATES
American Eel	Eastern Hellbender	Caddisfly Larva
American Shad	Northern Dusky Salamander	Mayfly Nymph
Common Carp	Common Snapping Turtle	Water Penny
Blacknose Dase	Midland Painted Turtle	Cranefly Larva
Brown Bullhead	Longtail Salamander	Stonefly Nymph
Brook Trout	Northern Red Salamander	
Brown Trout	Map Turtle	
Striped Bass	Stinkpot Turtle	
Smallmouth Bass		
Rock Bass	Focus on Species Overview and Habitat:	

- 1) PA Fish & Boat Commission-PA FISH BOOK (Displayed as a “**GALLERY OF PA FISHES**” on PAFBC Website)
<https://www.fishandboat.com/Fish/PennsylvaniaFishes/GalleryPennsylvaniaFishes/Pages/GalleryPennsylvaniaFishes.aspx>
 Students should be familiar with the species overview, identification, and habitat of species on the **IDENTIFICATION STUDY LIST ONLY**.

Individual chapter links below:

American Eel (chapter 9)

<https://www.fishandboat.com/Fish/PennsylvaniaFishes/GalleryPennsylvaniaFishes/Pages/FreshwaterEels.aspx>

American Shad (chapter 10)

<https://www.fishandboat.com/Fish/PennsylvaniaFishes/GalleryPennsylvaniaFishes/Pages/Herrings.aspx>

Common Carp (chapter 11)

<https://www.fishandboat.com/Fish/PennsylvaniaFishes/GalleryPennsylvaniaFishes/Pages/CarpsandMinnows.aspx>

Blacknose Dace (chapter 11)

<https://www.fishandboat.com/Fish/PennsylvaniaFishes/GalleryPennsylvaniaFishes/Pages/CarpsandMinnows.aspx>

Brown Bullhead (chapter 13)

<https://www.fishandboat.com/Fish/PennsylvaniaFishes/GalleryPennsylvaniaFishes/Pages/NAmericanCatfishes.aspx>

Brook Trout (chapter 15)

<https://www.fishandboat.com/Fish/PennsylvaniaFishes/GalleryPennsylvaniaFishes/Pages/TroutsandSalmons.aspx>

Brown Trout (chapter 15)

<https://www.fishandboat.com/Fish/PennsylvaniaFishes/GalleryPennsylvaniaFishes/Pages/TroutsandSalmons.aspx>

Striped Bass (chapter 21)

<https://www.fishandboat.com/Fish/PennsylvaniaFishes/GalleryPennsylvaniaFishes/Pages/TemperateBasses.aspx>

Smallmouth Bass (chapter 22)

<https://www.fishandboat.com/Fish/PennsylvaniaFishes/GalleryPennsylvaniaFishes/Pages/Sunfishes.aspx>

Rock Bass (chapter 22)

<https://www.fishandboat.com/Fish/PennsylvaniaFishes/GalleryPennsylvaniaFishes/Pages/Sunfishes.aspx>

- 2) Macroinvertebrate Resources (links to full sites):
- Creek Connections, Allegheny College (<https://sites.allegheny.edu/creekconnections/>)
 - <http://www.macroinvertebrates.org/>

Caddisfly Larva

<http://sitesmedia.s3.amazonaws.com/creekconnections/files/2013/12/caddisfly.pdf>

<http://sitesmedia.s3.amazonaws.com/creekconnections/files/2013/12/casebuildingcaddisfly.pdf>

[https://seetolearn.weebly.com/uploads/4/6/7/4/46744079/trichoptera.hydropsychidae.hydropsycha.lateral\[clean\]_10.png](https://seetolearn.weebly.com/uploads/4/6/7/4/46744079/trichoptera.hydropsychidae.hydropsycha.lateral[clean]_10.png)

<https://www.youtube.com/watch?v=Z3BHzDHoYo>

Mayfly Nymph

<http://sitesmedia.s3.amazonaws.com/creekconnections/files/2013/12/mayfly.pdf>

https://seetolearn.weebly.com/uploads/4/6/7/4/46744079/ephemeroptera_order_sheet.pdf

[https://seetolearn.weebly.com/uploads/4/6/7/4/46744079/ephemeroptera.ephemerellidae.ephemerella.dorsal\[clean\]_10.png](https://seetolearn.weebly.com/uploads/4/6/7/4/46744079/ephemeroptera.ephemerellidae.ephemerella.dorsal[clean]_10.png)

Water Penny

<http://sitesmedia.s3.amazonaws.com/creekconnections/files/2013/12/waterpenny.pdf>

[https://seetolearn.weebly.com/uploads/4/6/7/4/46744079/coleoptera.psephenidae.psephenus.adult.ventral\[clean\]_10.png](https://seetolearn.weebly.com/uploads/4/6/7/4/46744079/coleoptera.psephenidae.psephenus.adult.ventral[clean]_10.png)

Cranefly Larva

<http://sitesmedia.s3.amazonaws.com/creekconnections/files/2013/12/cranefly.pdf>

<http://macroinvertebrates.org/taxa-characters/diptera-larva/tipulidae/tipula/lateral>

Stonefly Nymph

<http://sitesmedia.s3.amazonaws.com/creekconnections/files/2013/12/stonefly.pdf>

https://seetolearn.weebly.com/uploads/4/6/7/4/46744079/plecoptera_order_sheet.pdf

[https://seetolearn.weebly.com/uploads/4/6/7/4/46744079/plecoptera.perlidae.acroneuria.dorsal\[clean\]_05reduced.png](https://seetolearn.weebly.com/uploads/4/6/7/4/46744079/plecoptera.perlidae.acroneuria.dorsal[clean]_05reduced.png)

<https://www.fishandboat.com/Transact/AnglerBoater/AnglerBoater2006/MarchApril/Documents/play5match.pdf>

- 3) Fish & Boat Commission- **AMPHIBIANS & REPTILES BOOK** (ISBN 1-930369-00X)

Hard copy, new schools should contact the Envirothon Coordinator to obtain a copy (if available).

The entire book has been scanned and is on the LCCD website as 7 PDFs in the General Resources section:

<https://www.lccd.org/envirothonobjectives/>

The 2020 **IDENTIFICATION STUDY LIST ONLY** has been scanned separately and is available as:

"2020 AQUATICS -AMPHIBIAN & REPTILE RESOURCE PDF", posted under the Aquatic Objectives.

- 4) Focus on Habitat: Wild Brook Trout 7. A River Flows Through It

<https://www.fishandboat.com/LearningCenter/EducationResourceCatalog/AquaticHabitat/Documents/riverruns.pdf>

- 5) Smart Angler's Notebook:

- Crazy Crayfish

<https://www.fishandboat.com/LearningCenter/EducationResourceCatalog/Critters/Documents/crazycrayfish.pdf>

- The Basics of Water Pollution in PA

<https://www.fishandboat.com/LearningCenter/EducationResourceCatalog/Pollution/Documents/waterpollutionpa.pdf>

- Diadromy **MIDDLE SCHOOL ONLY**

<https://www.fishandboat.com/LearningCenter/EducationResourceCatalog/Fish/Documents/diadromy.pdf>

Select pages from the following PLAY issues:6) *Fall 2002 All About Fish*

- Living in Water: Fish Anatomy
<https://www.fishandboat.com/Transact/PennsylvaniaLeagueofAnglingYouthPLAY/PLAY2002/Documents/living.pdf>
- PA Fish Family Tree **MIDDLE SCHOOL ONLY**
<https://www.fishandboat.com/Transact/PennsylvaniaLeagueofAnglingYouthPLAY/PLAY2002/Documents/fishtree.pdf>
- How Fish Swim
<https://www.fishandboat.com/Transact/PennsylvaniaLeagueofAnglingYouthPLAY/PLAY2002/Documents/fishswim.pdf>

7) *Summer 2004 Watersheds and Stream Order*

- Stream order
<https://www.fishandboat.com/LearningCenter/EducationResourceCatalog/Documents/herpsweethome.pdf>
The second page of the Herp Sweet Home resource has a stream order map and a detailed description of how stream order works.
- Rivers
<https://www.fishandboat.com/Transact/PennsylvaniaLeagueofAnglingYouthPLAY/PLAY2004/Documents/play4rivers.pdf>

8) *Fall 1999 Trees and Aquatic Insects*

- **Why Fish Need Trees:** Resource posted under Aquatic Objectives
- **Aquatic Leaf Eaters:** Resource posted under Aquatic Objectives

9) *Summer 2005 PA's Most Migratory Fish*

- PA's Most Migratory Fish
<https://www.fishandboat.com/Transact/PennsylvaniaLeagueofAnglingYouthPLAY/PLAY2005/Documents/play1mighty.pdf>
- The Life Cycle of American Shad
<https://www.fishandboat.com/Transact/PennsylvaniaLeagueofAnglingYouthPLAY/PLAY2005/Documents/play2cycle.pdf>
- Where Have All the Fish Gone
<https://www.fishandboat.com/Transact/PennsylvaniaLeagueofAnglingYouthPLAY/PLAY2005/Documents/play3gone.pdf>
- A Successful Shad Story **MIDDLE SCHOOL ONLY**
<https://www.fishandboat.com/Transact/PennsylvaniaLeagueofAnglingYouthPLAY/PLAY2005/Documents/play4story.pdf>
- Many More Migratory Fish
<https://www.fishandboat.com/Transact/PennsylvaniaLeagueofAnglingYouthPLAY/PLAY2005/Documents/play5more.pdf>

Focus:

- Understand the characteristics of streams and rivers including stream order.
- Know the major pollutants in Pennsylvania's waters, understanding the importance of healthy streams.
- Have a basic knowledge of stream and river food chains.
- Know general information and habitat preferences of the fish, macroinvertebrates, salamanders, and turtles listed above.
- Have a general knowledge of the migratory fish in Pennsylvania's rivers with emphasis on the American Shad.
- Be able to identify all the above species by live sample, photo, or drawing.

Sample Question(s):

- 1) If you were fishing for brook trout, which of the following streams would you choose?
- a) Slow moving deep stream
 - b) Cold fast-moving headwater stream**
 - c) Wide warm river

Non-Testing, Enrichment material:***PLAY Issues***

Winter 2007 - Smallmouth Bass

<https://www.fishandboat.com/Transact/PennsylvaniaLeagueofAnglingYouthPLAY/PLAY2007/Pages/default.aspx>

Spring 2015 - All About Trout

<https://www.fishandboat.com/Transact/PennsylvaniaLeagueofAnglingYouthPLAY/PLAY2015/Pages/default.aspx>

All resources highlighted in yellow are available as separate attachments listed under the station's objectives sheet.