**** Great Lakes, Great Times, Great Outdoors**

***www.michigan.gov/dnr***

**Lessons Learned From the Bald Eagle**

**Discovering Our Watershed Fieldtrip Saginaw Bay Visitor Center Bay City State Recreation Area Level: 4th, 5th or 6th Grade**

**FIELD TRIP PROGRAM DESCRIPTION:**

**Discovering Our Watershed Field Trip (3.5-4 hours):**

This program focuses on the importance healthy environment plays in every living creature’s existence, the factors which indicate good water quality and how man is part of the water pollution problem and solution. The program includes:

Arrival (15 minutes): Arrive at park and divide students into groups and go through station instructions.

Station 1 (1 hour): This station includes a tour of the visitor center museum, which includes a point source – non-point source pollution display, a run-off game, a review of the Lesson Learned From the Bald Eagle and the opportunity to play a computer touch screen virtual fishing scenario where ultimately the student must catch, measure, and ID a fish then use the Michigan Fish Consumption Advisory to determine whether they will eat it or not.

Station 2 (30 minutes): Utilizing live mounts and the museum students are introduced to common and endangered fish and wildlife that are found in the Saginaw Bay watershed, their traits and characteristics, predator prey relationships, habitat needs and man’s impact on their populations.

Station 3 (1.5-2 hours): Ecology Hike - Students will also explore the freshwater coastal ecosystem on a hike out to the Saginaw Bay traveling through wooded wetland, thicket, wet prairie, marsh, pond, dune and Great Lakes shoreline communities. As they hike they survey its living and non-living components, take and compare and contrast soil samples and macro-invertebrate samples, and take note of man’s use of the land and the Saginaw Bay and the possible impact it has on the ecosystem.

**PROGRAM GOALS:**

1. Each student will see the connection between environmental quality of the Bay and the health of the food web within the ecosystem, and have a better understanding how man is a part of the pollution problem and solution.

**PROGRAM OBJECTIVES:**

1. Each student will be able to list at least three pollutants which effect the watershed and how they are introduced into the Saginaw Bay’s ecosystem.
2. Each student will be able to describe sediment as a pollutant which decreases water quality (sedimentation).
3. Each student will be able to describe how nutrients can decrease water quality (nitrification).
4. Students will be able to describe how wetlands help keep our water clean.
5. Students will be able to describe the physical characteristics of three birds of prey and of three fish that help them survive in their environment.
6. Students will be able to describe a behavioral characteristic of the bald eagle, and three fish that help them survive in their environment
7. Students will be able to identify factors in the Great Lakes aquatic ecosystem that influence changes in fish and bird populations.
8. Students will be able to describe different members of a Great Lake’s food chain/food web and their place in it.
9. Students will be use the MDCH Fish Consumption Advisory Guide to determine if their fish is safe to eat using a virtual fishing game.

**PRE-VISIT SUGGESTIONS:**

1. Call the visitor center to make you pre-visit classroom program scheduled for part one of you Lessons Learned from the Bald Eagle.
2. Be sure that every student is dressed for the weather conditions. Layers work best. Our weather can be 10 to 15 degrees cooler near the Bay than at your school site. Tell them to wear shoes which can get muddy. If it is winter and we have snow, students will have the opportunity to use snow shoes so boots must be worn.
3. Review Vocabulary: watershed, wetland, conservation, macro invertebrate, environment, sediment, turbidity, photosynthesis, oxygen, carbon dioxide, nutrients, pollutant, herbicide, pesticide, bio-accumulation, toxic, persistent, precipitation, run-off, condensation, evaporation, predator, prey, abiotic, biotic, parasite, competition.

**POST-VISIT SUGESTIONS:**

1. Make a chart or table comparing and contrasting the data collected by each group on their ecosystem survey hike. Graph the data collected.
2. Keep a class scrapbook on newspaper articles regarding the Dioxin issue and other incidents which affect the water quality of the Saginaw Bay.
3. Follow up this program by participating in a fishing trip like, Fishing for Fun.
4. Teachers attend Project WET or Project WILD workshop and get two books bulging with fun interdisciplinary, cross-referenced, hands-on lesson plans for water studies.
5. Conduct the Project Wild Lesson: “What’s in the Water?”; “Deadly Links” (this is a terrestrial version of the aquatic version of the game that we played with your class, then review the Eat Safe Wild Game with them)
6. Have the students design their own fish, name it and describe its food, water, shelter and space requirements (or Project Wild lesson: Fashion a Fish).
7. Visit a DNR Fish Hatchery.
8. Participate in the all new DNR classroom program “Salmon in the Classroom”
9. Participate as a class in the BAY SAIL program. Information on BAY SAIL is available from the Bay Area Visitors and Convention Bureau.
10. Obtain a list of land use precautions that the EPA has identified for people living or using land that has been contaminated by the dioxin in our area.
11. Have the students highlight on a county map or state map the floodplain areas contaminated with the dioxins.
12. Contact the Saginaw U.S. EPA office and see if a field agent is available to make a visit to your classroom or if they can make supplementary classroom materials available to your students. Mary Breeden, breeden.mary@epa.gov.
13. Contact Saginaw or Bay County Health Department and ask for information on other environmental health programs which are available for your students.

**COORDINATING WITH MICHIGAN SCIENCE Grand Level Content Expectations:**

Bold & Underlined=prominent program emphasis, Bold=reinforced through program, Italicized=program can be used to reinforce back in classroom

**Science. Inquiry Process:**

**S.IP.04.11**, **S.IP.04.12**, *S.IP.04.13*, **S.IP.04.14**, **S.IP.04.15**, *S.IP.04.16*,

**S.IP.05.11**, *S.IP.05.12*, **S.IP.05.13**, **S.IP.05.14**, *S.IP.05.15, S.IP.05.16,*

**S.IP.06.11**, **S.IP.06.12**, **S.IP.06.13**, **S.IP.06.14**, *S.IP.06.15, S.IP.06.16,*

**Science. Inquiry Analysis & Communication**:

**S.IA.04.11**, **S.IA.04.12**, *S.IA.04.13*, *S.IA.04.14*, *S.IA.04.15*,

**S.IA.05.11, S.IA.05.12, S.IA.05.13, S.IA.05.14**, *S.IA.05.15*,

*S.IP.06.11*, **S.IP.06.12**, **S.IA.06.13**,

**Science. Reflection & Social Implications:**

**S.RS.04.11**, **S.RS.04.14**, **S.RS.04.15**, *S.RS.04.16*, *S.RS.04.17*, **S.RS.04.18**, *S.RS.04.19*,

**S.RS.05.11**, **S.RS.05.12**, **S.RS.05.13**, **S.RS.05.15**, *S.RS.05.16*, **S.RS.05.17**, *S.RS.05.19*,

**S.RS.06.11**, **S.RS.06.12, S.RS.06.13, S.RS.06.14,** **S.RS.06.15**, *S.RS.06.16*, **S.RS.06.17**, *S.RS.06.18, S.RS.06.19*

**Physical Science. Changes in Matter:** **P.CM04.11**

**Life Science. Organization of Living Things:**

**L.OL.04.15**, **L.OL.04.16**,

*L.OL.05.41*, *L.OL.05.42*,

**L.OL.06.51, L.OL.06.52**

**Life Science. Heredity:** **L.HE.0511**

**Life Science. Evolution**:

**L.EV.04.21**, *L.EV.04.22*,

**L.EV.05.11,** **L.EV.05.12**, **L.EV.05.14**, **L.EV.05.21**

**Life Science. Ecosystems**:

**L.EC.04.11, L.EC.04.21**,

**L.EC.06.11**, **L.EC.06.21**, **L.EC.06.22**, **L.EC.06.23**, **L.EC.06.31**, **L.EC.06.32**, **L.EC.06.41, L.EC.06.42**

**Earth Science. Earth in Space & Time:**

*E.ST.04.12*, *E.ST.05.25*

**Earth Science. Solid Earth:**

**E.SE.06.11**, **E.SE.06.12**, **E.SE.06.13**

**COORDINATING WITH M.E.A.P. SOCIAL STUDIES CONTENT STANDARD BENCHMARKS:** *(underway GLCE’s correlation)*

**Geographic Perspective Civic Perspective Public Discourse & Decision Making**

 II.1—l.e.2 III.3—l.e.2 VI.1—l.e.1, l.e.3

 II.2—l.e.1, l.e.2, l.e.3, l.e.4 II.4—l.e.2

 II.4—l.e.5 & **II.5—l.e.1**