

# PA SEA GRANT LESSON PLAN

**Lesson** "Fossil Formations – Ancient Oceans" Lesson 1

**Grade level:** 4 -8

**Duration:** 40-60 minutes

**Materials:** Power Point Presentation, Quick Quiz, Group Activity – Fossil Kits

**Objectives:** Students will be able to define what constitutes a "fossil".  
Students will be able to determine the 6 variations of fossil evidence.  
Students will be able to examine and identify various fossil specimens to determine the process by which the fossil was formed.

**Procedure:**

*Anticipatory Set:* "What are the three types of fossil fuels? How were they formed?"

**Answer: Solid – Coal, Liquid-Oil, Gas – Natural gas; 1-200 mya bio process**

**Introduction:** Power Point Presentation (10 minutes)

Slide 1- Cover Page

Slide 2 – Fossil definition, generally 10,000 years old

Slide 3/4 – list of (6) processes of biological evidence

**(Slide 3&4) Fossilization/Preservation Processes – Talking Points (15 minutes)**

- ▶ Permineralization/Petrification example: most common - bones/wood
- ▶ Carbonization example: impression of plant leaves/dino footprints
- ▶ Amber – Jurassic Park; insect in tree sap
- ▶ Asphalt – La Brea Tar pits; saber tooth tigers
- ▶ Dessication – Mumification, arid regions
- ▶ Refridgeration – Frozen Mammoths, wooly rhinos

**(Slide 5) Fossil Formation Process; Permineralization**

**(Slide 6) Impression Mold or Trace Fossil**

- ▶ Exterior mold – imprint or empty space
- ▶ Example of Carbonization fossil

**(Slide 7) Dinosaur Eggs**

- ▶ Cast Fossil example
- ▶ Example of Permineralization

**(Slide 8) How Layers are Formed**

- ▶ Ancient Oceans, tectonic plate movement

**(Slide 9) Sedimentary Process – Collection sites for scientists**

**(Slide 10) Bone Slices Under the Microscope**

- ▶ Dinosaur means "Terrifying Lizard"
- ▶ Are dinos more closely related to lizards or mammals?

**(Slide 11) Why Did Dinosaurs go Extinct?**

▶ **Q&A Discussion**

**(Slide 12) Meteorite Impact?**

**(Slide 13) Extinction Theory**

▶ Evidence in Gulf of Mexico cenotes

**(Slide 14) Paleontology Defined**

▶ Study of ancient life through fossil evidence

**(Slide 15) Importance of Fossils**

**(Slide 16) Source Page**

**(Slide 17) The End**

**Assessment: 10 minutes; 10 question Quiz**

**(10 minutes)**

**Discovery Activity:**

**(10-15 min)**

**Group students and place fossil kit on lab desk. Give them a few minutes to examine and determine...What is it? Is it an impression cast or mold fossil? Provide data sheet/complete worksheet as time permits, share answers in group discussion. Allow students 10-15 minutes to examine fossil display and ask questions.**

**Re-group for summary.**

**Materials:**

- (1) Power Point Presentation -17 slides**
- (2) Fossil Quiz – 10 questions**
- (3) Fossil Kit – 12 fossil samples per box**
- (4) Fossil Fact Sheets – Corresponding with Kits**
- (5) Fossil worksheet – extension/identification activity**
- (6) Fossil Talking points – Slides 3&4**

**Sources:**

- Allegheny College, Ron Cole, Geology Department Power point images
- [www.fossils-facts-and-finds.com](http://www.fossils-facts-and-finds.com)
- TREC Natural History Collection – Fossils
- Private Collection; Marine fossils – D. Boughton
- [www.gsa.state.al.us](http://www.gsa.state.al.us)

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2/2009