



Lesson 5: Scientific names—understanding where those funny words come from

Objectives: Students will use Greek and Latin word roots to interpret the scientific names of some whales. Students will create a hypothetical cetacean. They will use the Greek and Latin roots to create a scientific name (genus and species) for their cetacean.

What you will need:

- Copies of Greek and Latin word fragment sheet for each student (page 5-4; for parts 1 and 2)
- White board or overhead projector/Elmo and markers for part 1.
- Either printed copies of the whale images (pages 5-5 to 5-8) to hand out to students, or a single copy of the images to project using an Elmo for part 1.
- Art supplies as desired (pencils, paper, paints, newspaper, glue, clay...) for part 2.
- Copies of *Cetacean Information* sheet (page 5-9) for all students (for part 2).

Standards: Part 1: CCSS.ELA-Literacy.RF.4.3 ; Part 2: CCSS.ELA-Literacy.W.4.3; CCSS.ELA-Literacy.W.4.4; CCSS.ELA-Literacy.L.4.1; CCSS.ELA-Literacy.L.4.2; CCSS.ELA-Literacy.L.4.3; CCSS.ELA-Literacy.L.4.6

Sunshine State Standards: VA.4.S.1.1; VA.4.D.3.1; VA.4.F.1.1

Strategy:

Part 1: Learning about scientific names

1. Explain that every plant and animal has its own scientific name that is recognized by scientists around the world. The scientific name has two parts to it—the first part is called the “genus name” and the second part is the “species name”. Organisms with the same genus name are closely-related, while those with similar species names may share common features, such as shape or color. The species name is usually an adjective that describes something about the organism, the person who discovered the organism, or where the organism was first located. The scientific name is usually made up of words that come from either Latin or Ancient Greek.
2. Distribute copies of the Greek and Latin word fragment sheet.
3. Explain that the scientific name for the North Atlantic right whale is *Eubalaena glacialis*. Write this name on the board. Explain to the students that these words come from one Greek and two Latin words (also referred to as “roots”). Have the students look on the sheet for the words (eu, balaena and glacialis) and ask them what each one means.
 - a. Eu = true
 - b. Balaena = whale
 - c. Glacialis = frozen



So, a literal translation of this name would be “frozen true whale” (probably because it can be found in very cold waters.)

4. Explain that the scientific name for the short-finned pilot whale is *Globicephala macrorhynchus*. Write this name on the board. Show the students that these words come from three Greek and one Latin root. Have the students look on the sheet for the words (glob, cephal, macro and rhynch) and ask them what each one means.
 - a. Glob = globe, ball
 - b. Cephal = head
 - c. Macro = large
 - d. Rhynch = beak, snout

So, a literal translation of this name would be “large snout ball head.” Show students a picture of a short-finned pilot whale (page 5-5) and show them how the scientific name is a good descriptor for this whale (it has a ball-shaped head, and a large beak or snout).

5. Ask the students to use the list of Greek and Latin word fragments to help decipher the following scientific names. Show them images of the whales:
 - a. *Balaena mysticetus* (bowhead whale) [whale mustache whale]
 - b. *Balaenoptera musculus* (blue whale) [muscle/muscular winged whale]
 - c. *Tursiops truncatus* (bottlenose dolphin) [porpoise appearance provided with a trunk]
 - d. *Ziphius cavirostris* (Cuvier’s beaked whale) [hollow daughter of snout sword]

Part 2: Create an imaginary cetacean!

1. Distribute the Greek and Latin word fragments and meanings sheet.
2. Explain to students that they are going to create/draw an imaginary cetacean, and that they will be using the word fragments to create a scientific name that describes their whale or dolphin.
3. Encourage the students to create their scientific name first. Remind them that there are two parts to the scientific name, and that each part can contain a single word fragment, or two or more word fragments in combination. The first word (genus) should begin with a capital letter; the second word (species) should begin with a small letter. The scientific name should be printed in italics, or underlined.
4. Once the students have created a scientific name, they should draw or use other artistic media (sculpting, papier maché, painting etc.) to draw a picture/ create a model of their cetacean. They should write the scientific name of their whale (along with the translation of that name) on their picture, or create a label for their model.
5. Distribute “Cetacean information” sheets to students. Explain to students that they are marine biologists who have discovered the cetacean that they named in step 2. Encourage students to be creative when filling out the (imaginary) information on this sheet. Students



will use this information as the basis for a newspaper article describing the discovery of their cetacean, and providing information about its life history.

References:

- “*Name Game*” in Sea World *Whales* Teacher Guide for grades 4-8
- “*Fashion a Phytoplankton*” from NOAA’s Southeast Phytoplankton Monitoring Network; and Susan Seagraves’ “*Fashion a Fish*” activity.



Greek and Latin word fragments and meanings

a- — no, lacking, none (<i>Latin</i>)	mono- — single (<i>Greek</i>)
-aceous — of, or pertaining to (<i>Latin</i>)	musculus — muscle (<i>Latin</i>)
-al — having the character of (<i>Latin</i>)	myst — mustache (<i>Greek</i>)
albus — white (<i>Latin</i>)	nas — nose (<i>Latin</i>)
anglic — English (<i>Latin</i>)	nov — new (<i>Latin</i>)
-atus — provided with (<i>Latin</i>)	obscurus — dark (<i>Latin</i>)
australis — southern (<i>Latin</i>)	ocul — eye (<i>Latin</i>)
balaena — whale (<i>Latin</i>)	odon — tooth (<i>Greek</i>)
barb — beard (<i>Latin</i>)	-oides — like (<i>Greek</i>)
borealis — northern (<i>Latin</i>)	oo- — egg (<i>Latin</i>)
brevis — short (<i>Latin</i>)	-ops; -opsis — appearance (<i>Greek</i>)
caeruleus — blue (<i>Latin</i>)	orca — great killer (<i>Latin</i>)
cavus — hollow (<i>Latin</i>)	orcinus — belonging to the underworld (<i>Latin</i>)
cephal — head (<i>Greek</i>)	oscu- — mouth (<i>Latin</i>)
cer — horn (<i>Greek</i>)	pachy- — thick (<i>Greek</i>)
cet — whale, sea monster (<i>Greek</i>)	phocaen — porpoise (<i>Greek</i>)
crass — thick, heavy (<i>Latin</i>)	-phore — bearer (<i>Latin</i>)
delphin — dolphin (<i>Greek</i>)	physeter — blower (<i>Greek</i>)
dent — tooth (<i>Latin</i>)	platy- — flat or broad (<i>Greek</i>)
derm — skin (<i>Latin</i>)	pseud — false (<i>Greek</i>)
-ella — suffix added to noun stem to indicate “small” (<i>Latin</i>)	pter — having wings or fins (<i>Latin</i>)
eu — true (<i>Greek</i>)	robustus — strong, robust (<i>Latin</i>)
fero — to bear (<i>Latin</i>)	rostra; rostralis — beak, snout (<i>Latin</i>)
glacialis — frozen (<i>Latin</i>)	rhynch-; rhynchos — beak, snout (<i>Greek</i>)
glob — globe, ball (<i>Latin</i>)	sten — narrow, straight (<i>Greek</i>)
grav — heavy (<i>Latin</i>)	tachy- — quick; swift (<i>Latin</i>)
halo — sea, salt (<i>Latin</i>)	-tes — having to do with (<i>Greek</i>)
-inus — like (<i>Greek</i>)	trunc — trunk, stem (<i>Latin</i>)
-ic — added to nouns to form adjectives (<i>Latin</i>)	tursi — porpoise (<i>Latin</i>)
leuc-; leucos — white (<i>Greek</i>)	vulgaris — common (<i>Latin</i>)
lineatus — lined or striped (<i>Latin</i>)	ziph (from xiph) — sword (<i>Greek</i>)
lip — fat (<i>Latin</i>)	
long — long (<i>Latin</i>)	
macro — large (<i>Latin</i>)	
maculatus — spotted (<i>Latin</i>)	
mauro- — dark or black (<i>Greek</i>)	
meg — great (<i>Greek</i>)	
mela — black; dark (<i>Latin</i>)	

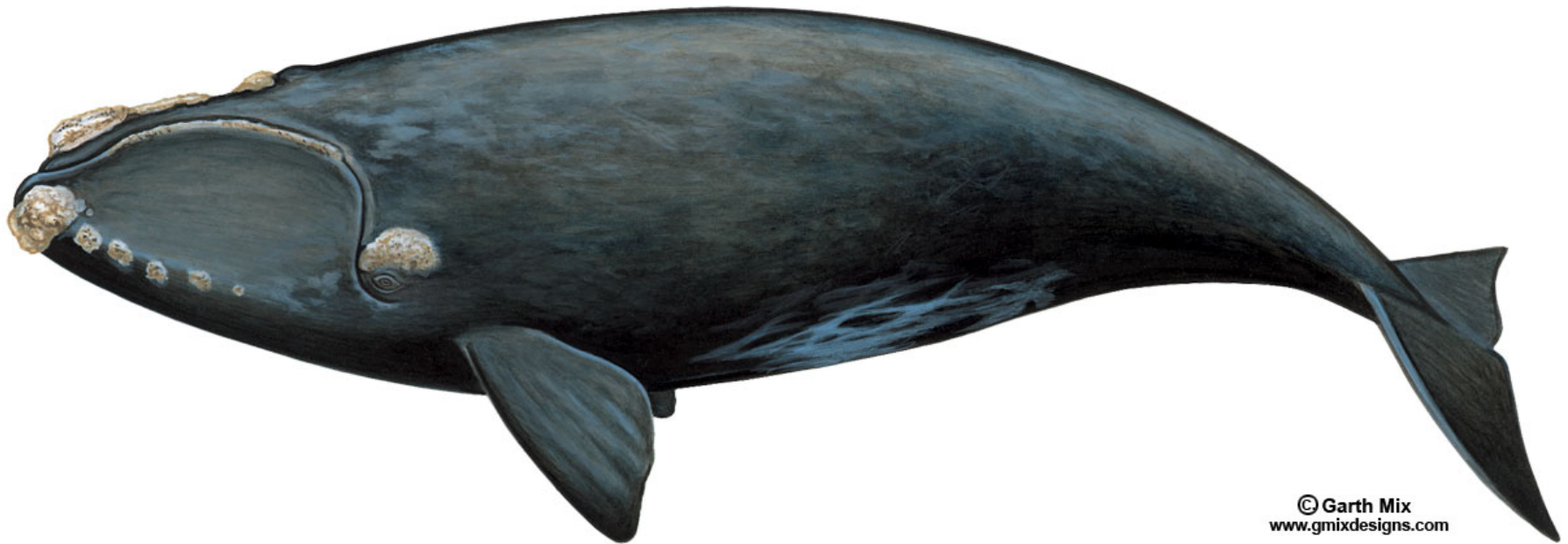


Short-finned pilot whale
Globicephala macrorhynchus





North Atlantic right whale
Eubalaena glacialis



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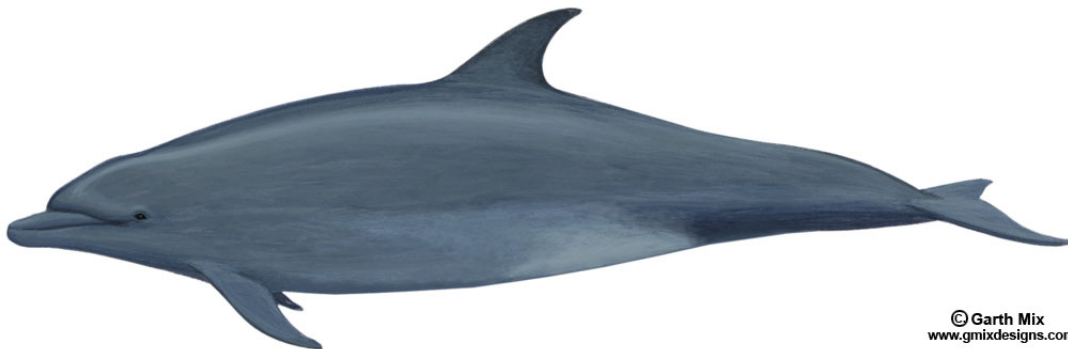


Cuvier's beaked whale
Ziphius cavirostris



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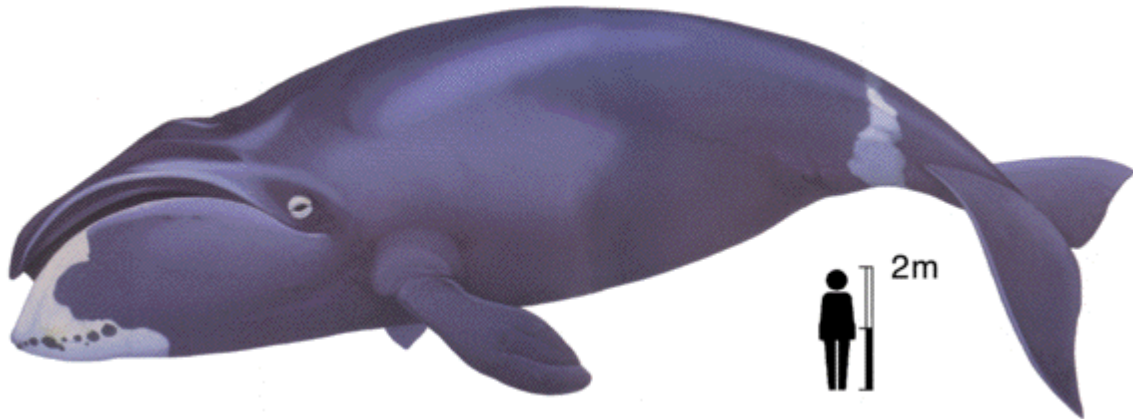
Bottlenose dolphin
Tursiops truncatus



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Bowhead whale
Balaena mysticetus



http://www.nmfs.noaa.gov/pr/pdfs/education/kids_times_whale_bowhead.pdf

Blue whale
Balaenoptera musculus



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Student name: _____

Cetacean Information

What is the scientific name of your cetacean (2 words)?

What is the English translation of this scientific name?

Where does your cetacean live? (in what ocean or oceans, near shore, in very deep water, etc.)

How big is your cetacean?

Does your cetacean migrate, or live its entire life in one region?

Does your cetacean have any special color patterns? What are they?

Is there anything special about your cetacean's size, body shape, fins, etc? If so, what?

What does your cetacean eat?

Does anything eat your cetacean?

Use the information above as the basis for a newspaper article. You will write the newspaper article as though you are a marine biologist who has just discovered the cetacean you have described. In the article, you should be creative in describing the animal, its habitat and its life history. If you would like, you can describe the voyage during which you discovered the animal. Your article should contain at least three paragraphs (introductory, body and concluding).