

## Dugong Distribution Contest

### OBJECTIVE

Students will demonstrate an understanding of the geographical distribution of sirenians.

### MATERIALS

- four pictures of a West Indian manatee (see Sirenian Sampler page 7)
- four pictures of a West African manatee
- four pictures of an Amazonian manatee
- four pictures of a dugong
- four pictures of a Steller's sea cow
- world map
- masking tape

### ACTION

1. Hang the world map on one wall of the classroom.
2. Attach tape to the back of each picture so that it will stick to the map. Review the names of each sirenian species, and which continent and ocean it lives in.
3. Divide the class into four groups. Give one student from each group a copy of the West Indian manatee and ask them to place it where they think the manatee is from (see Sirenian Sampler). After all the groups have finished, reveal the actual distribution. Award the group that was closest to the actual distribution two points. Award the group that was second closest one point. Do the same for each sirenian species, making sure to choose different students.
4. When finished, add up the points to determine the winning group.
5. Discuss the differences and similarities of each species as you put them on the map. Compare the needs of each animal and the adaptations it has for its specific environment (blubber for the Steller's sea

cow to keep warm). Compare the sirenians' environments. How are they different? How are they similar?



Manatees are herbivores. In Florida they eat over 60 species of plants.

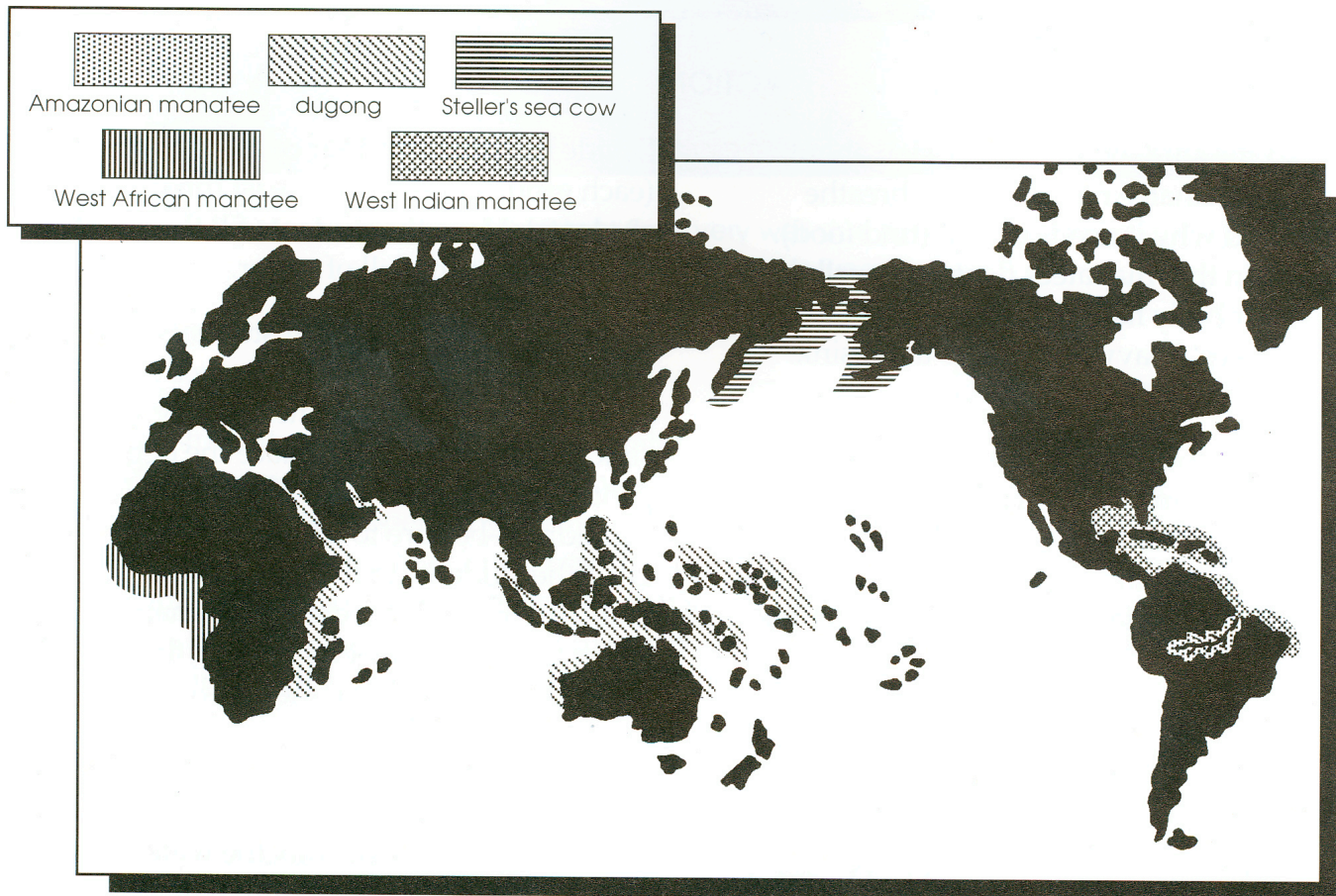


### DEEPER DEPTHS

Make continent and ocean flashcards for students to review the names and identifying shapes for the seven continents (North America, South America, Africa, Europe, Asia, Australia, Antarctica) and five major oceans (Atlantic, Pacific, Indian, Southern, and Arctic).

Discuss extinction and endangerment. Ask the students ways they might find out

what endangered species live in their area or state (go to library, write or call local or state conservation organizations). Develop a list of groups your students can write to for more information. Have the students share the information they receive or find in the library. Discuss with the class how they might help these endangered species.



Sirenian species are found throughout the world.

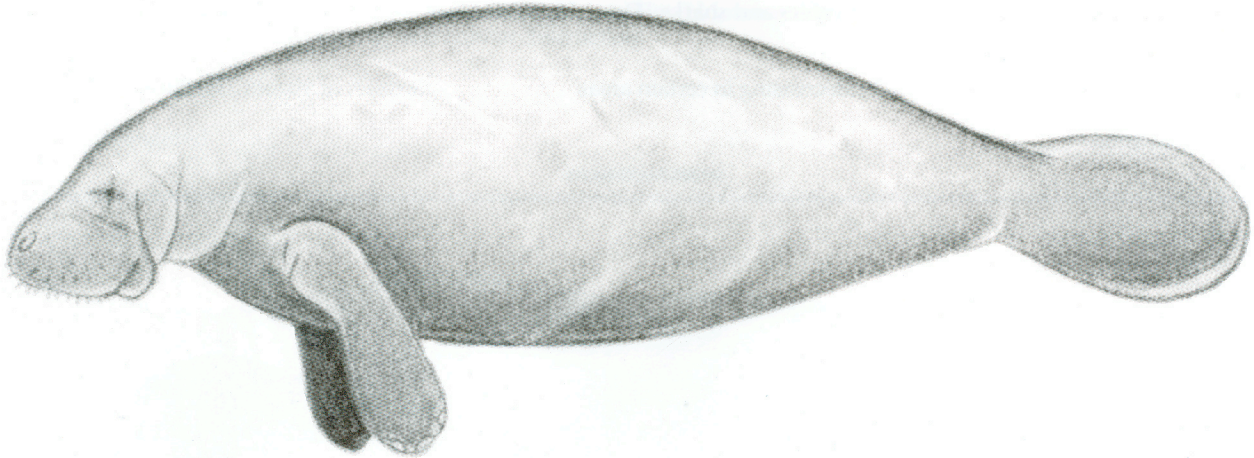


## Sirenian Sampler

There are four living species of sirenians: the West Indian manatee, the West African manatee, the Amazonian manatee, and the dugong. The Steller's sea cow was hunted to extinction in 1768, less than 30 years after its discovery.

All marine mammals are protected in United States waters under the Marine Mammal Protection Act of 1972. In addition, the West Indian manatee is protected under the Endangered Species Act of 1973. All species of sirenians are classified as *threatened*, *endangered*, or *extinct*.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) regulates international trade of certain species. Species for which CITES controls trade are placed in one of three appendices. Appendices classify species in terms of their population vulnerability. Species whose populations are threatened with extinction are placed in Appendix I. Species which are likely to become endangered if trade isn't regulated are placed in Appendix II. Appendix III species aren't threatened or endangered, but are listed to prevent or restrict their exploitation. Sirenian species are also protected by other countries and treaties.



### West Indian manatee

*Trichechus manatus*

size:	3.1 m (10 ft.) 545 kg (1,200 lb.) maximum size—4 m (13 ft.), 1,590 kg (3,500 lb.)
distribution:	southeastern North America (Virginia to Louisiana), the Caribbean, and the southern coast of Texas to the coast of Brazil. Shallow coastal waters, estuaries, and rivers. May live in marine, brackish, or freshwater environments.
diet:	submerged, emergent, floating, and shoreline vegetation. In Florida, diet consists of sea grasses, mangrove leaves, water hyacinth, and hydrilla. Consumes 4% to 9% of body weight (15-50 kg, 32-108 lb.) in vegetation daily.
predators:	natural predators may include sharks, alligators, or crocodiles. Human-related threats include boat-related accidents, flood gates, navigation locks, poaching, entanglement, and habitat destruction.
population:	estimated population in Florida is about 1,900; rest of range unknown
status:	endangered

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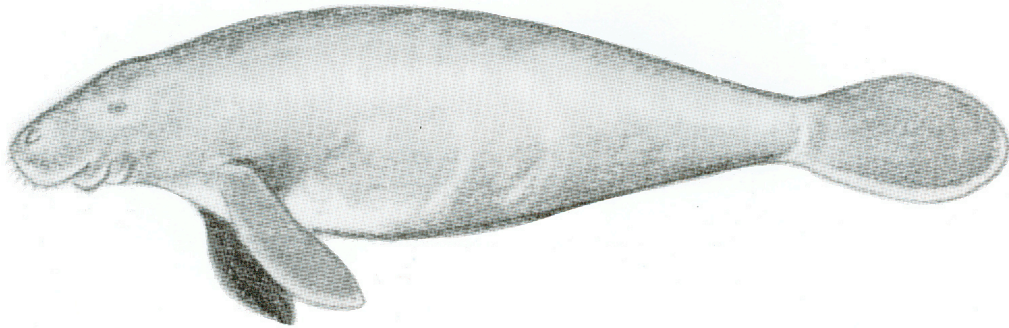


## West African manatee

*Trichechus senegalensis*

- size: 3.1 m (10 ft.)  
545 kg (1,200 lb.)  
maximum size—4 m (13 ft.), 1,590 kg (3,500 lb.)
- distribution: Senegal to Angola, Africa. Shallow coastal waters, estuaries, and rivers. May live in marine, brackish, or freshwater environments.
- diet: submerged, emergent, floating, and shoreline vegetation. Main diet consists of a variety of aquatic plants and mangrove leaves.
- predators: natural predators may include crocodiles and sharks. Drought, subsistence harvest, and hydroelectric dams have large impacts on population.
- population: unknown, however thought to be decreasing in certain areas
- status: threatened

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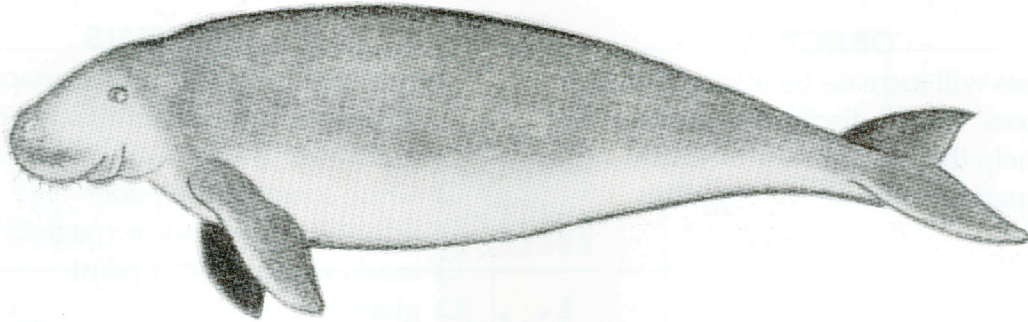
## Amazonian manatee

*Trichechus inunguis*

- size: 2.4 m (8 ft.)  
363 kg (800 lb.)  
maximum size—2.8 m (9.2 ft.), 500 kg (1,100 lb.)
- distribution: Amazon River drainage basin. Floodplain lakes, rivers, and channels. Restricted to freshwater environments.
- diet: surface feeder, browses on floating grasses and bank vegetation. Apparently fasts during the dry season (November and December) due to lack of vegetation.
- predators: predators include jaguars, caimans, sharks, and humans. Drought may cause starvation and dehydration.
- population: unknown, however populations in Ecuador, Peru, and Colombia have almost been eliminated.
- status: endangered

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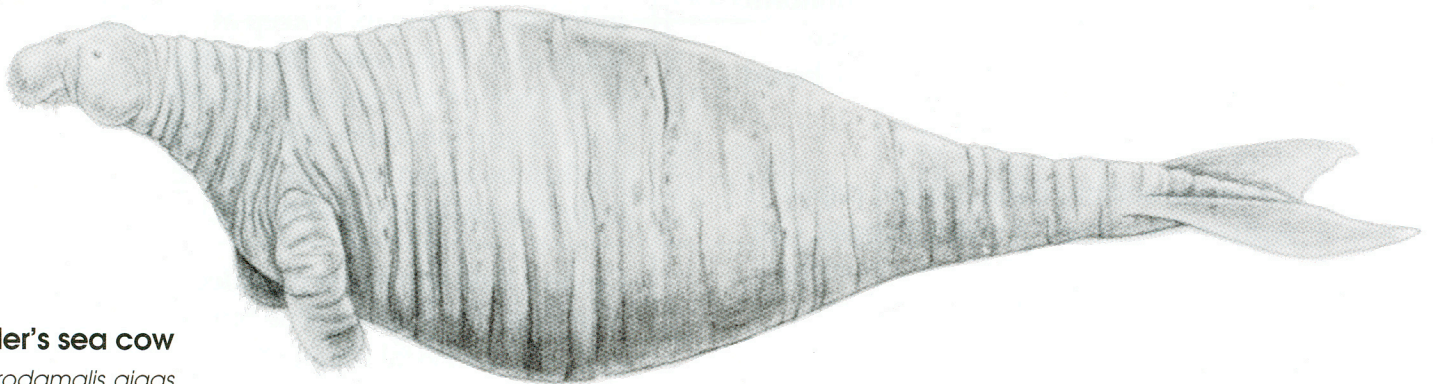


## dugong

*Dugong dugon*

- size: 2.7 m (9 ft.)  
272 kg (600 lb.)  
maximum size—3.3 meters (10.8 ft.), 420 kg (925 lb.)
- distribution: southwestern Pacific Ocean, Indian Ocean, Red Sea, east coast of Africa to Mozambique. Coastal shallows. Found in brackish and marine environments but rarely in fresh water.
- diet: inshore, bottom feeder. Dugongs generally feed at night. Main diet consists of a wide variety of tropical and subtropical seagrasses.
- predators: few predators, but may fall prey to sharks and crocodiles. Human-related threats include entanglement in fishing nets, poaching, subsistence fishing, and habitat destruction.
- population: 50,000-100,000, mostly in Australia
- status: endangered

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## Steller's sea cow

*Hydrodamalis gigas*

- size: 7.9 m (26 ft.)  
estimated between 3,630 to 21,880 kg (8,000-48,000 lb.)
- distribution: Bering and Commander Islands off the coast of Alaska and the Soviet Republic. Shallow bays and inlets.
- diet: aquatic vegetation, mainly kelp
- predators: natural predators unknown. Steller's sea cows were exclusively hunted for their meat and oil off the coast of the Commander Islands.
- population: 0
- status: extinct

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