

## **Phylum Echinodermata Webquest Exploration**

### **Incredible Echinoderms**

Link 1: <http://www.earthlife.net/inverts/echinodermata.html>

Scroll down to the "Record Holders" section of the webpage.

1. What is the largest species of starfish? What is its arm reach?
2. What is the heaviest species of starfish? What is its weight (in lbs)?
3. What is the largest species of sea cucumber? What is its length and diameter?
4. Where will you find the smallest species of starfish and sea urchins?
5. What is the deepest living echinoderm? At what depth is it found? Where is it located?
6. Select and research one of the record holder species. Write a short paragraph about this species which includes interesting and unique information.

### **Echinoderm Fossil Museum**

Link 2: [http://www.fossilmuseum.net/Tree\\_of\\_Life/Phylum-Echinodermata.htm](http://www.fossilmuseum.net/Tree_of_Life/Phylum-Echinodermata.htm)

7. Why does there exist such an extensive fossil record for echinoderms?
8. Why are the phylogenetic (evolutionary) relationships of echinoderms to other phyla so poorly understood?
9. Describe the evidence which supports the theory that starfish and brittle stars probably diverged from a common "somasteroid" ancestor.
10. Complete fossils of starfish are rare. Explain why.
11. List the extinction events of the crinoids.

## Virtual Echinoderm

Link 3: [http://bio.rutgers.edu/~gb102/lab\\_3/401bm-asteroidea.html](http://bio.rutgers.edu/~gb102/lab_3/401bm-asteroidea.html)

12. Describe the pathway of the water vascular system.
13. Click continue. What can you find among the spines of a sea urchin?
14. What is Aristotle's Lantern?
15. Which sea urchin picture (left, middle, or right) shows the hollowed skeletal "test?"
16. Click on sand dollar. The flattened body of the sand dollar is an adaptation for what lifestyle?
17. Click continue. In what ways are sea cucumbers different from other echinoderms?

## Test Your Knowledge

Link 4: <http://www.biologyjunction.com/echinoderm.htm>

This quiz will help you prepare for your own quiz over Phylum Echinodermata. Be warned, we have not yet gone over questions 17 – 20 😊 Enter in your name at the top and answer the questions in the quiz. Give the correct answers to the questions below.

18. \_\_\_\_\_ Chordates and echinoderms share a common ancestor.
19. Why is this statement false? The hard, spiny skin of an echinoderm is called an exoskeleton.
20. \_\_\_\_\_ A separated piece of a sea star can regenerate the rest of its body as long as the piece contains part of the central region of the animal
21. The first organisms to develop a hardened endoskeleton were the \_\_\_\_\_.
22. What is the answer to #12? Echinoderms....
23. The skeleton of an echinoderm is composed of individual plates called \_\_\_\_\_.

## **Starfish Outbreak**

Link 5: [http://www.biologynews.net/archives/2008/01/14/starfish\\_outbreak\\_threatens\\_corals.html](http://www.biologynews.net/archives/2008/01/14/starfish_outbreak_threatens_corals.html)

24. Read the article. This article is about which species of starfish?
25. What is thought to be causing the outbreak?
26. Why is this outbreak such a concern?

## **Sea Urchin Development**

Link 6: <http://www.microscopy-uk.org.uk/mag/indexmag.html?http://www.microscopy-uk.org.uk/mag/artjul00/urchin1.html>

27. Outline the early development of the sea urchin from fertilized out → “baby” sea urchin.

## **Everlasting Knives?**

Link 7: <http://www.telegraph.co.uk/earth/earthnews/8224831/Sea-urchin-could-lead-to-knives-that-never-need-sharpening.html>

28. Read and write a short summary of this article.

## **Sea Urchins and Humans**

Link 8: <http://news.nationalgeographic.com/news/2006/11/061109-sea-urchins.html>

29. Why are sea urchins such an important part of the kelp forest ecosystem?
30. Describe the genetic evidence which supports the claim that humans and sea urchins are closely related.