

Biosurfing

You need to read this assignment online to follow the [blue links](#).

Read about [Biodiversity Hotspots](#) and find the hotspot nearest to you.

1. In your own words, define a biodiversity hotspot.
2. How many biodiversity hotspots have been identified?
3. Which hotspot is geographically nearest to you?
4. How many endemic insects are in this hotspot?

Use the Species Database to see the threatened species. PubMed and Google Scholar are indexes to articles published in medical and scientific journals.

5. Check out [PubMed](#) and [Google Scholar](#) by looking for an article on one of the threatened mammals or amphibians in this hotspot. Give the article's citation in APA [format](#). Note that PubMed and Google Scholar are *not* the citation and not *in* the citation.

Go to [The Tree of Life \(TOL\)](#). Click on [phylogeny](#) in the text below the tree.

6. Paraphrase into your own words, what is meant by “the phylogeny of organisms”?
7. Click on the root of the tree. What domain are animals in?
8. Follow that domain. Which of the following is most closely related to fungi? Animals, plants, bacteria

Tipulids are common around your home and college. They eat nectar or do not eat at all. Type tipulidae in the TOL search box then follow the links.

9. How many wings does it have?
10. This places it in the order _____. The hind wings of this order are modified into little gyroscopes. Describe them.
11. Its larvae can be found in streams and lawns. Follow the links on the tipulid page to view the larva. Describe the larva in your own words.
12. Read about Invasive Species. San Francisco Bay has the most non-native species in the world. One example is *Caprella mutica* (skeleton shrimp).
 - a. How do invasive species get into the bay?

To answer (b), read the article: Byrnes, J.E., P. L. Reynolds, and J. J. Stachowicz. (2007). “Invasions and Extinctions Reshape Coastal Marine Food Webs.” *PLoS ONE* 2(3): e295. doi:10.1371/journal.pone.0000295

 - b. What effect could this shrimp have on the birds in question 13.

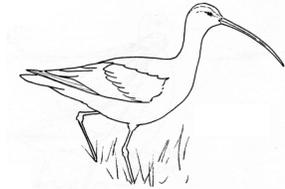
The San Francisco Bay Estuary is the nation’s second largest and perhaps the most biologically significant estuary on the Pacific Coast. Millions of shorebirds and waterfowl stop by during their annual migrations between Alaska and South America. Many over winter here. San Francisco Bay is the only site along the Pacific Flyway where close to a million shorebirds have been counted in a single day. [Audubon California](#) is a helpful reference.

13. How many shorebirds pass through San Francisco Bay each day during winter migration?

How is it possible for such a large number of similar bird species such as curlews, avocets, and stilts to exist in an apparently homogeneous habitat? They all eat aquatic snails, insects, worms, and some small fry of fishes.



American Avocet



Long-billed curlew



Black-necked stilt

14. Mark the *Pacific Flyway* route of the Long-billed Curlew and American Avocet on the map.



15. The birds shown below are found in San Francisco Bay. Type Birds into the [Tree of Life](#) search box and follow the links to identify their family.

- a. To what family do they belong?
- b. What do they eat?

