

CYCAD/*GINKGO* FIELD AND INTERNET PROJECT

Lab Section: _____ Name: _____

This project leads you on two real and two virtual field trips to see and learn about cycads and *Ginkgo*. Staple these pages together, clearly write your lab section and name above, and complete the instructions below. The completed worksheet is due at the beginning of Lab 8. This assignment contributes to your overall lab grade. You can take the real field trips with a friend, but complete the internet assignments on your own.

Part I

Although we discuss only two cycad genera in lecture (*Cycas* and *Zamia*), nine additional genera are known, and they are: *Bowenia*, *Ceratozamia*, *Chigua*, *Dioon*, *Encephalartos*, *Lepidozamia*, *Macrozamia*, *Microcycas*, and *Stangeria*. Enter the greenhouses through Jordan 139 (southeast corner of the first floor, beyond the stairs) and walk to the conservatory (Room P; the far southeast corner; the greenhouse with the highest roof), closing doors after yourself to maintain the different temperatures in each house. As you enter the conservatory, you will be facing east. In front of you and slightly to the right you will see a *Cycas revoluta* sporophyte planted in the ground. Look at this plant and indicate on **Line 1** below whether a strobilis is present.

1) _____

In the northeast corner of the conservatory (to the back left as you enter) is a cycad sporophyte with strobili. Near the base of this plant is a white sign indicating its scientific name. Write the scientific name (genus and species) of this cycad on the **Line 2** below.

2) _____

Look around the conservatory for other labeled cycads. On **Line 3** indicate what other cycad genera are in this living collection.

3) _____

Take a few moments to appreciate the other plants in the conservatory, particularly the tree fern (*Sphaeropteris*) growing in the center area.

Part II

Go to the B300 website >Botany Links >[The Cycad Pages](#). A wealth of information about cycads, including photos, is available at this site. Open **The World List of Cycads** toward the top of this web page (click on the blue words) and then open the page for the **genus** named on **Line 2** above. Scroll down this page and see that there are many species in this genus (names in blue, with the genus name abbreviated). Read the explanation of the colored letters associated with these species names.

Click on the name of the species from **Line 2** above to open the web page for this species. Look at the green map of the region of the world in which this species naturally occurs. There is only one blue dot on this map, but the text in the line headed '**Distribution and habitat**' provides more complete information about its geographic distribution. On **Line 4** indicate the native country of this species.

4) Country: _____

On **Line 5** indicate the three states of that country in which this species is found (according to the information presented in '**Distribution and habitat**').

5) States: _____

Part III

In Lab 7, you worked with demonstration materials from several cycad species, among them *Cycas revoluta* (which you just saw in the greenhouse) and *Cycas circinalis*. Of course there's more to *C. circinalis* than the fragments we were able to present in lab. Return to **The World List of Cycads** webpage. In the list of genera click on the blue generic name *Cycas* to open its webpage. Scroll down this page to see, among other things, a list of the many species in this genus. Click on *C. circinalis* to open its webpage. Scroll down to the green map of the region of the world in which this species is native. The blue dots on this map indicate where natural populations of this species occur. Scroll down further to the paragraph headed '**Distribution and habitat**'. On **Line 6** indicate the native country of *C. circinalis*.

6) Country: _____

On **Line 7** indicate the four states of that country in which *C. circinalis* is found (according to the information presented in '**Distribution and habitat**').

7) States: _____

On **Line 8** indicate the habitat of *C. circinalis*.

8) Habitat: _____

Part IV

Return to the web page in which all of the species of the genus *Cycas* are listed. Species in this list for which a complete web page is available are indicated by a green dot. The page for one of the species with a green dot states that that species is 'similar in pollen and seed cones to the true *C. circinalis*' that we have been researching. That statement is made in a paragraph under the heading '**Distinguishing features**' on the page for this similar-looking species. To find this 'similar' species you will have to open and examine the web pages of the species with green dots. The objective is for you to cruise these web pages to see the diversity of cycads, helping you to appreciate the variation present in this group, despite the limited number of examples

presented in class. Read the web pages with green dots to find which of these species is said to be ‘similar ... to the true *C. circinalis*’ and write on **Line 9** the scientific name (genus and species) of this species.

9) _____

The megasporophylls or microsporophylls (but not both) of this species (**Line 9**) are tightly grouped into a cone-like strobilus. Judging by the photos of the reproductive parts of the sporophyte in the web page for this species, indicate on **Line 10** whether the megasporophylls or the microsporophylls are tightly grouped into a cone-like strobilus.

10) _____

On **Line 11** indicate what happens when you click on these images of the reproductive parts.

11) _____

Note the blue dot that indicates the geographic distribution of this species on its map. On **Line 12** indicate the native country of this species.

12) Country: _____

On **Line 13** indicate the province of that country in which this species is found.

13) Province: _____

(In the web page for this species, this geographic information is clearly stated in the line that gives the **etymology** [= the derivation or meaning] of the specific epithet).

On **Line 14** indicate the habitat of this species.

14) Habitat: _____

Part V

Before starting this part of the exercise, review your lecture notes regarding the shape of *Ginkgo* leaves and the difference between a bilobed leaf from a long shoot and the fan-shaped leaf from a short shoot. Then, walk to the northwest corner of Kirkwood Hall on campus. With your back to Kirkwood Hall, face the bell tower on top of the Student Building, standing so that the stone pavilion and the bell tower are in a straight line (if you are accurately positioned, the statue of Chancellor Wells seated on a bench will be off to your right). There is a very large tree in front of you (slightly to the left of the line to the bell tower). This is a ginkgo tree, a sporophyte of *Ginkgo biloba*. You examined some structures from *Ginkgo biloba* in Lab 7. Walk to this ginkgo tree. Because sporophytes of ginkgo are deciduous, the tree is leafless during winter, but by looking up at the branches, you will easily distinguish the short shoots from the long shoots.

