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Use the online Interactive Activity 15.A to complete this lab sheet.

Part I - **Adaptive Radiation** - Read through the lab introduction and click on the interactive animations. Once complete, answer the questions below:

Fill in the blanks:

1- Adaptive radiation is the evolution of new and varying species from a common ancestor that results in the species adapting to different enviornments. The new species may evolve through genetic drift and adaptation. The Hawaiian Islands are one of the world's great showcases of evolution. Each island in the chain is quite different. Among the islands, there is a wide range of altitude, temperature, and rainfall that creates multiple environments. In this activity, you'll study how scientists hypothesize that a single species of plant from California, called tarweed, gave rise through adaptive radiation to the species of plants in the Hawaiian silversword alliance. The silversword alliance is a group of 28 closely related plant species classified in 3 genera: *Argyroxiphium*, *Dubautia*, and *Wilkesia*. All the plants in the alliance have very similar DNA.

Answer in complete sentences when appropriate:

2- Evidence indicates that the 28 species in the Hawaiian silversword alliance originated from a single species. What was that species and where was it from?

These species originate from the Tar weed which came from California.

3- How did this single founding species get to the Hawaiian Islands? It came from birds.

4- Look at all the plants found in the Hawaiian Islands. Describe some of the differences in the plants.

Each of these plants have adapted to different elevations and rainfall. They also look very different and have different leaf structures.

5 - List the 5 represented species of related plants listed in the interactive lab-

Dubautia Scabra

Argyroxiphium Sandwicense

Dubautia Reticulata

Dubautia Waialealae

Dubautia Knudsenii

6. List the elevations of the following Hawaiian peaks.

Mauna Kea 4,206 Meters

Puu Ulaula 3,055 Meters

Mauna Loa 4,169 Meters

Waialeale 1,569 Meters

7] Which of the 5 plants grow as a small Tree?

The Dubautia Reticulata

Dubautia Knudsenii

8] Why is Argyroxiphium Sandwicense commonly called Silversword?

Agyroxiphium Sanwicense is commonly known as Silversword because of the long silver-colored leaves.

9] Which of the 5 plants grow on both Maui and Hawaii?

Dubautia Scabra

Argyroxiphium

Use the online lab activity **15.A2 – Part 2** to complete this lab sheet.

Part II - **Explore Speciation** - Read through the lab introduction and click on the interactive animations. Once complete, answer the questions below:

1- What is the name of the Elephant species that is the original first elephants?

P gomphotheroides

2 - What are the names of the Elephant species that originated from the first species?

Loxodonta | Elephas | Mammuthus

3 - Using the chart, which species seems to have the longest lifespan through geologic time?

The Loxodonta

4 - About how long ago did the earth have the most elephant species present?

How many where there?

about 500,000 years ago there seemed to be the most elephant species present, with about 10 species.

5- Which elephant species replaced E. recki? E. iolensis

6 How long ago did M. africanavus go extinct? about 3 million years ago

7- How long ago did L. atlantica go extinct? about 500,000 years ago

8- What two species came from E. hysudricus? E hysdrindicus | E maximus

9 - Has the number of species remained constant in the elephant family over the past 5 million years? **Explain**.

the number of species has not remained constant. This is shown by the varying amounts of species alive at a certain time. Some species will be created through many means and some will die off.

10 - What do we know about the elephants of today? (Use the slider bar)

Only two elephant species now exists, although one of these species may actually be two meaning there might be 3.