

[Return to Activities Home Page](#)

HOW BIG ARE YOUR WINGS?

Appropriate grade level: 4-6

Subjects: Science, Art

Time required: 1-2 class periods

Hawai'i Performance Standards:

1. Identify similarities and differences of organisms.
2. Describe differences in physical and behavioral traits that contribute to the survival of a particular living thing.
3. Describe motion in reference to space and time.

Materials:

Background information, roll of butcher paper, paints of various colors (white, black, gray, red, blue, pink, brown, tan, yellow), scissors, tape, measuring tape (centimeters), pencils

Procedure:

1. Print a copy of [bird wing anatomy](#) from the website. Photocopy and pass out to students or make a poster size copy of the information to show the class.
2. Discuss different parts of a bird wing and compare it to our own arms. Differences include hollow/dense bone structure, feathers/skin, weight, the necessity for gathering food, metabolism, and heart rate.
3. Discussion ideas: Define adaptation. Questions to ask might include: Why don't we fly and seabirds do? Do we need to fly to get our food? Why did birds develop this adaptation and we didn't?
4. Art activity: Compare your own "wings" to the wings of the Laysan albatross and other seabirds.

Print a copy of the [silhouettes](#) of various seabirds from the website. Using measuring tape, tape, butcher paper, pencils, and imagination, have students draw the silhouette of a Laysan albatross, wandering albatross, and great frigatebird. Students can draw the albatross "eyeshadow" and other markings of the birds with paints or other materials using the pictures and [descriptions](#) in this activity. Cut out the birds and tape them to a wall. Let the students measure their own "wings" against the birds' wings. Ask the question: Even if we had wings would we be able to fly? Why or why not?

A more permanent option for this activity is to build a bench for use on a playground or in a classroom using the Laysan albatross dimensions. Have the students measure and draw the bird, and trace it on a plywood board. Cut out the bird with a saw and attach it to a wooden bench. The bench can be assembled and attached by adults or students. Have the students paint the albatross features and the rest of the bench to match. They can use this as a long-term check on their own growth and to relate to the growth of the albatross chicks hatching this year.

Suggested comparisons to make:

Largest seabird wingspan (wandering albatross, 419 centimeters)

Smallest seabird (least tern, 21.59-24.13 centimeters from beak to tip of tail)

Smallest bird (calliope hummingbird, 7.11-8.89 centimeters from beak to tip of tail)

Largest bird body (ostrich, 68 kilograms, can't fly)

Largest prehistoric flying animal, which was not a bird! (pterodactyl, 8m or 26 ft. wingspan)

Related activities:

[Adaptable Mandibles](#) illustrates feeding adaptations.

[Return to How Big Are Your Wings?](#)

Laysan Albatross

Coloring: Laysan Albatross is a white bird with a blackish back, tail, and upper surface of wings. Most of the lining or undersurface of the wings is white but there are black to brownish feathers around the edges in an irregular pattern.

Size: 31 to 32 inches long

Weight: 5 to 7 pounds

Wingspan: 6-7 feet

Life Expectancy: 42 years

Age at First Breeding: 8 or 9 years

Distribution in Hawaii: Nests in large numbers in the northwest chain. On the main islands nests at Kilauea Point NWR and Barking Sands Beach and recently successful breeding has occurred at Kaena Point, Oahu. Also seen in increasing numbers on Molokai, Lanai and Hawaii. When away from nesting colony, ranges widely over the north and central Pacific Ocean.

Nesting: They nest on the ground. Both male and female form the nest depression, and while sitting on it, they use their bills to scrape sand, leaves, and other debris to form the rim of the nest. The birds add to the nest rim throughout the incubation period. A single white egg is laid in November, the egg hatches in January, and the chicks fledge in July or August.



Laysan albatross with its chick
© R. Shallenberger

Black-footed Albatross



Black-footed albatross with its chick.
© R. Shallenberger

Great Frigatebird

Photo © R. Shallenberger

Coloring: This bird is primarily black, slender birds with long, pointed and angled wings and deeply forked tails, which may be opened or closed in flight. The bill is long and strongly hooked. Females have white feathers on the throat and upper breast, and have red eye-rings. Males have a highly inflatable, bare, red gular pouch. Immature birds have a white head, throat, and breast, typically heavily marked with a rusty color.

Size: Females are larger than males. The bird's length averages 43 inches.

Weight: 2.6 pounds male, 3.2 pounds female

Life Expectancy: 34 years (oldest known bird)

Age at first Breeding: 7 years

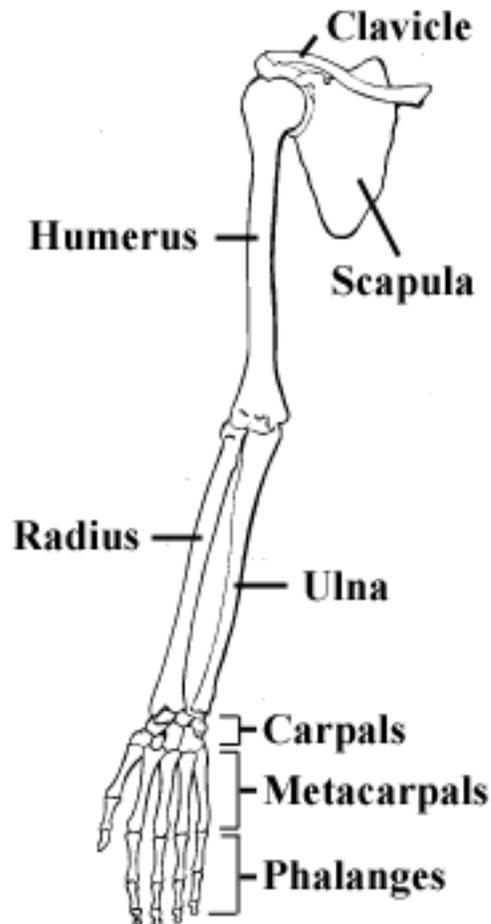


Distribution: The great frigatebird is found throughout most of the tropical Pacific. The adults tend to remain at their nesting island throughout the year, but immature birds roam widely over the Pacific.

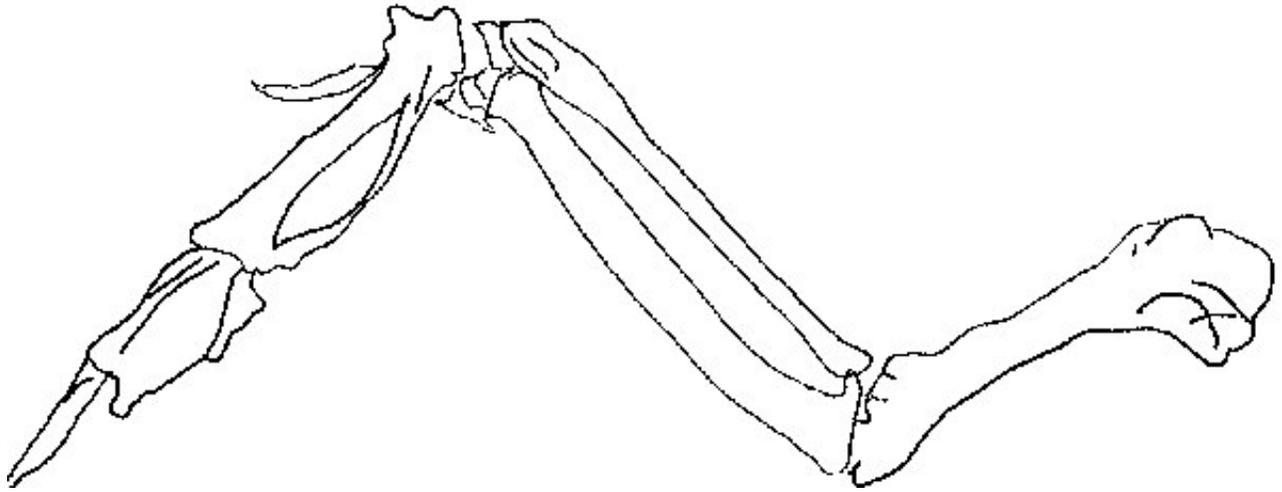
Courtship Behaviors and Nesting: Male frigatebirds inflate their bright red gular pouches during the courtship period and early stages of incubation. The males collect most of the nesting material, whereas the females build and guard the nest. Frigatebirds may rob twig-carrying boobies or they may steal material from other birds' nests. Both adults share incubation duties, and the egg is attended by one member of the

pair at all times.

Behavior: Their plumage is not waterproof, and frigatebirds are said to never land on water intentionally. They have 25% more flight feathers and 40% more wing area than any seabird of similar body weight. Frigatebirds are notorious for harassing boobies (and sometimes shearwaters and terns) to the point that the tormented birds disgorge their food in flight, which the frigatebirds catches in air. They also catch fish off the surface of the water.



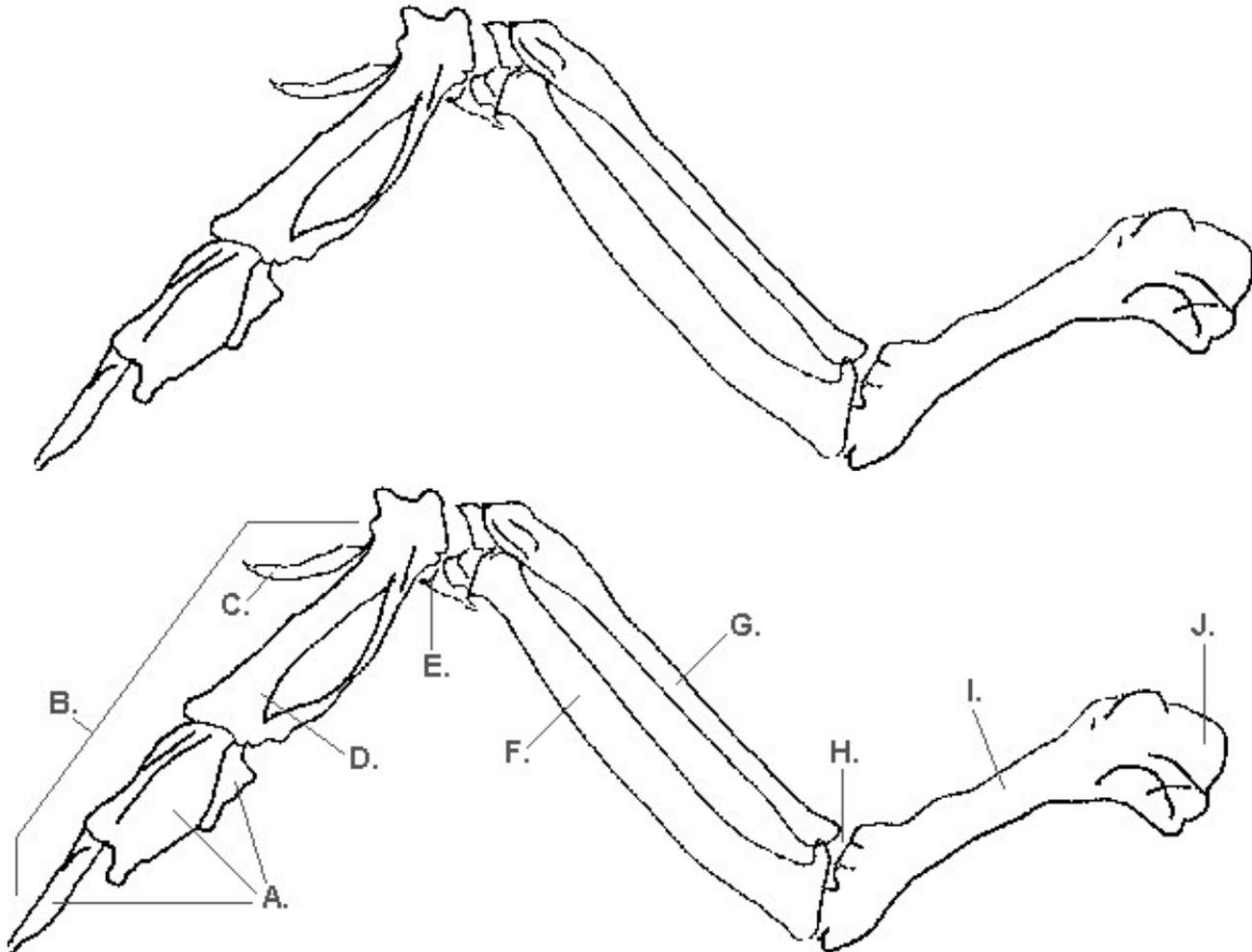
[Return to Bird Wing Anatomy](#)



[Return to How Big Are Your Wings?](#)

Bird Wing Anatomy

These two images provide labelled or unlabelled pictures to your class. At the bottom of the page is a key to the labelled image:



Want a page to print with only one of the images and no words or other clutter? Click for the [unlabelled image](#) and for the [labelled image](#).

- A. Phalanges
- B. Manus (or hand)
- C. Alula
- D. Metacarpals
- E. Carpal joint (or wrist)
- F. Ulna
- G. Radius
- H. "Elbow"
- I. Humerus
- J. "Shoulder" joint

[Return to How Big Are Your Wings?](#)

Seabird Silhouettes (albatross, frigatebird, pelican, and pterodactyl)



Laysan albatross



Great Frigatebird



Pterodactyl



Brown Pelican