

# Lab: Albatross In the Ecocline

## Animals From Two Biomes



**Theme:** The *ecocline*, the area between two biomes, is inhabited by animals with special adaptations to move between environments.

**Goal:** Understand the unique adaptations of the Albatross and how they allow these unique birds to move between biomes, inhabiting the ecocline. Also, what dangers does this impose on the animal?



© WWF

**Directions:**

1. Take your own arm span and record it
2. Measure your height and record it
3. Calculate the ratio: To do this, divide the wingspan by the body length/height. The first one, Black-footed albatross, is done for you:

$$\frac{200 \text{ cm}}{70 \text{ cm}} = 2.85$$

4. Compare it to that of a wandering albatross.
5. Calculate how tall you would have to be to match the ratio of the wandering albatross
6. Create a model for TMS to learn about the expansive albatross wing span!
7. Create a script to teach TMS at the next morning meeting.
8. Answer the Focus Questions

**Data:**

You			Wandering Albatross			How large would your wings need to be to match the albatross ratio?
Your Height	Your Arm span	Ratio	Wing Span	Height	Ratio	
			3.5 M _____CM 11Ft	120CM 3.5-4.5Ft	2.92	

**Focus Questions:**

1. How do human wingspans compare to albatross wingspans?

---



---



---

## Meeting Needs at Sea

All living things must somehow get energy and nutrients. Albatross find their food at sea. These birds have a strong sense of smell, made possible by tubular nostrils and a large lobe in the brain for smelling (olfactory lobe). This is an unusual ability for birds. In fact, albatross belong to a family of birds known as tubenoses. Albatross eat fish eggs, squid, fish, and other items near the surface of the water. They also have webbed-feet, perfect for life on the sea surface. Albatross drink seawater. Unlike humans, they can survive just fine with this liquid, thanks to a special gland that removes excess salt in form of saline that drips out their tubenoses and off their bills.

Observing a flying albatross is quite a sight! They gracefully glide on sea surface wind, and can actually lock their “elbows and shoulders” to keep their wings stiff, ideal for catching the wind. The muscles and bones in their wings work together for flapping, but they also have special tendons and other tissues that keeps the wings outstretched. These features also allow them to soar without expending much muscle energy. Their heart rates while flying are close to their resting heart rates. Think about what your heart rate is like when running, as compared to lying on the couch watching television. In fact, the most difficult part of their long journeys is often getting started. These birds take a running start, with outstretched wings to catch the wind. Albatross species take advantage of sea surface winds, using a technique in which the wind lifts them and then they rapidly glide downward. This flying technique is known as **dynamic soaring**, and allows albatross to fly huge distances. In calm weather, albatross often rest on the sea surface until the wind increases enough to fly efficiently. Upon finding their life long mate on their nesting island around October, albatross mates perform a dance for one another, breed, and then laying 1 egg together. Both parents take turns incubating the egg for about 2–3 months, and then the chick finally hatches in January or February.

2. **Biome:** *(Be specific about which biome this animal lives in)*

---

---

---

3. Why do you think albatross wingspans matter?

---

---

---

## Albatross and Adaptations

An **adaptation** is a genetically programmed feature that improves an individual’s chances for survival and/or reproduction. Within a population, organisms with fewer adaptations to the environment do not survive. Those that are lucky enough to have these adaptations survive and pass these “lucky genes” on to offspring. Adaptations are not something an animal chooses. They are part of one’s DNA. Adaptations can be structural (i.e., physical features), or behaviors.

4. Describe three features and/or behaviors of albatross that allow them to better survive and/or reproduce, passing on their genes to future generations.

---

---

---

### Resources:

- WWF: [http://wwf.panda.org/what\\_we\\_do/endangered\\_species/albatross/](http://wwf.panda.org/what_we_do/endangered_species/albatross/)
- Winged Ambassador Program: <http://www.downloadwingedambassadors.org/>
- National Geographic: <http://animals.nationalgeographic.com/animals/birds/albatross/>