

Once an eagle spots a fish swimming or floating near the surface of the water, it approaches its prey in a shallow glide and snatches the fish out of the water with a quick swipe of its talons. Eagles can open and close their talons at will. If an eagle is dragged into the water by a fish too large for the eagle to lift, it is because the eagle refuses to release it. In some cases this is due to hunger. An eagle might drown during the encounter with the fish or if it's unable to swim far enough to reach shore. The eagle can not fly again until it's out of the water, so it uses its large wings to swim. The eagle is a strong swimmer, but if the water is very cold, it may be overcome by hypothermia.

The hunting area or home range patrolled by a bald eagle varies from 1,700 to 10,000 acres. Home ranges are smaller where food is present in great quantity.



For a scavenger like the bald eagle, a seal or deer carcass would be an unexpected large food supply. Rich in protein, the bodies will feed a group of eagles for days. Though many calories will be obtained, they will be lost in fighting over the food.

Because of the energy expended during hunting, an eagle has to spend a lot of time resting quietly. It's estimated that only one out of eighteen attacks are successful.

Though not as fast as falcons, bald eagles are fast fliers. When diving, where lift is less important than reaching drag, the eagle pulls in its wings to minimize their surface area.

Bald eagles have been seen hunting in pairs.

An eagle protects its food by partially opening its wings or tenting.

An eagle can consume one pound of fish in about four minutes. The eagle holds its prey with one talon, holds onto its perch with the other, then tears off each bite with its beak.

The bald eagle steals food from other bald eagles as well as other species. Chasing another raptor is usually enough to persuade it to drop its kill, but occasionally bald eagles will attack. Bald eagles do not have to eat every day. But if the bird goes too long without food, it may not be able to hunt effectively in order to survive.

Eagles have an out pouching of the esophagus, called a crop, where they can store food when the stomach is full. The crop also separates indigestible substances, such as feathers, fur, and scales from the meat. The indigestible substance is mixed with mucus and formed into a mass. After the meal, the eagle eventually regurgitates the mass as a casting.

- **June 28, 2007 - The Interior Department took the American bald eagle off the endangered species list.** The removal of the bald eagle from the Federal List of Endangered and Threatened Wildlife and Plants will become effective 30 days after publication in the Federal Register.

NAME: _____

LIFE BIOLOGY

The Bald Eagle



- 1. **What happened to the Bald Eagle on June 28th, 2007?**
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- 2. The bald eagle (*Haliaeetus leucocephalus*) is a member of the _____ **and** _____ **eagle group**.
- 3. **Color** - Both male and female adult bald eagles have a _____ back and breast; a _____ head, neck, and tail; and _____ feet and bill.
- 4. _____ **bald eagles** are a mixture of brown and white. They reach full maturity in _____ to _____ years.
- 5. **Size** - The _____ bald eagle is 35 to 37 inches, slightly larger than the _____.
- 6. **Wingspan** ranges from _____ to _____ inches.
- 7. Bald eagles can fly to an altitude of _____ feet. During level flight, they can achieve **speeds** of about _____ to _____ mph.
- 8. Bald eagles **weigh** from _____ to _____ pounds.
- 9. Eagle **bones** are light, because they are _____.
- 10. The **beak, talons, and feathers** are made of _____.
- 11. Bald eagles have 7,000 _____.
- 12. **Longevity** - Wild bald eagles may live as long as _____ years.
- 13. Bald eagles sit at the _____ of the **food chain**

- **14. Lifting power** is about _____ pounds.
- **15. The main diet of the Bald Eagle is _____**
- 16. The bald eagle is a _____ **swimmer**, but if the water is very cold, it may be overcome by _____.
- 17. All eagles are renowned for their **excellent** _____.
- **18. Nests** are built in large trees near _____ or _____
- 19. An eagle reaches **sexual maturity** at around _____ or _____ years of age.
- **20. Fidelity** - Once paired, bald eagles remain together until one _____.
- 21. Bald eagles lay from _____ to _____ **eggs**.
- 22. The _____ **days of incubation** duties are shared by both male and female.
- **23. Nesting cycle** - about _____ weeks
- 24. Today, there are an estimated _____ **breeding pairs** of bald eagles.
- **25. Eagles** _____ in patches, taking almost half a year to replace feathers, starting with the _____ and working downward.
- 26. The bald eagle became the _____ in 1782 when the great seal of the United States was adopted.
- **27. List 5 Causes of death** - _____

- 28. Circle the Eagle that is larger the Golden or the Bald eagle.
- 29. **Longevity** (bald eagle's life expectancy) - **Bald eagles in the wild may live longer than _____ years**, but the average lifespan is probably about f _____ to _____ years. A captive eagle at West Stephentown, NY lived to be at least _____ years old.
- 30. **Body Temperature** - _____ degrees Fahrenheit (38.8 degrees Celsius)
- 31. **Eagles do not _____ t**, so they need to use other cooling methods such as perching in the shade, panting, and holding their wings away from their body.
- 32. **Tolerance to cold temperatures** - A bald eagle's skin is protected by feathers lined with _____. The feet are cold resistance because they are mostly tendon. The outside of the bill is mostly nonliving material, with little blood supply.
- 33. Bald eagles are active during _____ hours (**diurnal**)
- **34.** The feathers weigh _____ that much. Eagle bones are light, because they are hollow
- 35. Long-distance migration flights are accomplished by climbing high in a _____, then gliding downward to catch the next thermal, where the process is repeated.

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- **36. Several eagles soaring in a thermal together is described as a "_____ of eagles."**
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Eagles sit at the top of the food chain, making them more vulnerable to toxic chemicals in the environment, since each link in the food chain tends to concentrate chemicals from the lower link.

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Fidelity - Once paired, bald eagles remain together until one dies. The survivor will not hesitate to accept a new mate.

Voice - Shrill, high pitched, and twittering are common descriptions used for bald eagle vocalizations. Eagles do not have vocal cords.

Sound is produced in the syrinx, a bony chamber located where the trachea divides to go to the lungs. Bald eagle calls may be a way of reinforcing the bond between the male and female, and to warn other eagles and predators that an area is defended.

[Bald eagle audio.](#)

Skeleton - It weighs about half a pound (250 to 300 grams), and is only 5 or 6 percent of its total weight.. The beak, talons, and feathers are made of keratin.

[Detailed diagram of a bird skeleton](#)

The wings and soaring - An eagle's wings are long and broad, making them effective for soaring. To help reduce turbulence as air passes over the end of the wing, the tips of the feathers at the end of the wings are tapered so that when the eagle fully extends its wings, the tips are

widely separated.

To help them soar, eagles use thermals, which are rising currents of warm air and updrafts generated by terrain, such as valley edges or mountain slopes. Soaring is accomplished with very little wing-flapping, enabling them to conserve energy.

Bald eagles can fly to an altitude of 10,000 feet. During level flight, a bald eagle can achieve speeds of about 30 to 35 mph.



The tail - is very important for flight and maneuvering. While the bald eagle is soaring or gliding in flight, the tail feathers are spread in order to attain the largest surface area and increase the effect of thermals and up-drafts. The tail also helps to brake the eagle when landing and assists in stabilization during a controlled dive or swoop toward prey. The strength of the feathers and the follicles holding the feathers is quite impressive while watching the tail move back and forth and up and down during maneuvers.

Bald eagles have 7,000 feathers. **Eagle feathers** are lightweight yet extremely strong, hollow yet highly flexible. They protect the bird from the cold as well as the heat of the sun, by trapping layers of air. To maintain its body temperature an eagle simply changes the position of its feathers. While an eagle suns itself on a cold morning, it ruffles and rotates its feathers so that the air pockets are either opened to the air or drawn together to reduce the insulating effect. Feathers also provide waterproofing and protection, and are crucial for flight.

Feather structure makes pliability possible. Overlapping feathers can form a dense covering, which the birds can open or close at will. The bald eagle has several layers of feathers, each serving a different function. Under the outer layer of feathers is an inner layer of down or smaller feathers. The inter locking of feathers is an astonishing design of nature.

The feathers enable eagles to live in extremely cold environments. Eagles do not have to migrate to warmer areas each year to fulfill temperature requirements, they migrate to available food supplies.

A lone eagle feather is believed to convey great power. North American Indians incorporated the eagle's primaries and tail feathers into their ceremonies and legends. **Use of**



feathers permit.

Respiratory system - Eagles have an external nares opening on both sides of the beak. A

bald eagle never reaches speeds that would interfere with normal breathing. An eagle's lungs and air sac system are adequate for its size. Air moves in through the lungs and on into the air sacs before moving back through the lungs and out again. Air passes through the lungs twice with each breathing cycle - twice that of mammals.

[More about the respiratory system of birds](#)

Beak - The hook at the tip is used for tearing. Behind the hook, the upper mandible, the edge sharp enough to slice tough skin, overlaps the lower, creating a scissors effect. A bald eagle's beak is a strong weapon, but is also delicate enough to groom a mate's feathers or feed a small portion of food to a newly hatched chick.



The beak of a female eagle is deeper (distance from top to chin) than the beak of a male.



The beak and talons grow continuously, because they are made of keratin, the same substance as our hair and fingernails. The beak of a captive eagle is not worn down naturally, so must be trimmed annually.

Talons - Talons are important tools for hunting and defense. Eagles kill their prey by penetrating its flesh with their talons.

Eagles can open and close their talons at will. If an eagle is dragged into the water by a fish too large for the eagle to lift, it is because the eagle refuses to release it. In some cases this is due to hunger. An eagle might drown during the encounter with the fish or if it's unable to swim far enough to reach shore.

Above all other birds it is the soaring eagle, with its size and weight, that gives the most abiding impression of power and purpose in the air. It advances solidly like a great ship cleaving the swells and thrusting aside the smaller waves. It sails directly where lesser birds are rocked and tilted by the air currents.

---Edwin Way Teale, "Bird of Freedom,"