

# Raptor Force

*Glue the video worksheet (FAF Left) on page 46 of your notebook.*

*Fill in the note worksheet as you watch the video.*

*We will go over the answers so you can make corrections or additions, but you may try to fill in as many as you can.*

1

1. Birds of prey are also called **raptors**.
2. List five groups of raptors.

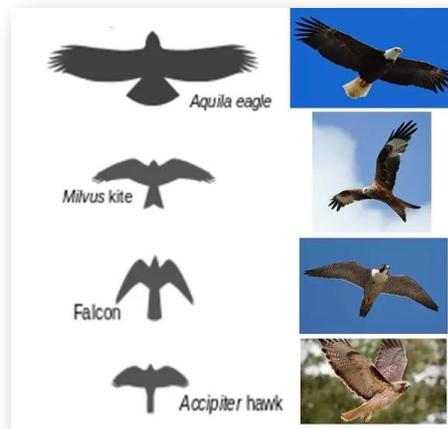
**Hawks**  
**Vultures**  
**Owls**  
**Eagles**  
**Falcons**



3. Peregrine falcons are the **fastest** of all raptors. They like to raise their young on **cliffs** where they are safer from predators, but they have to defend their **nests** from other birds of prey.



4. One of the most powerful jets in the world is the **F22**, which is nicknamed the "raptor". It can make fast turns due to the many moveable **surfaces** that are used the same way birds use their **wings** and tail.

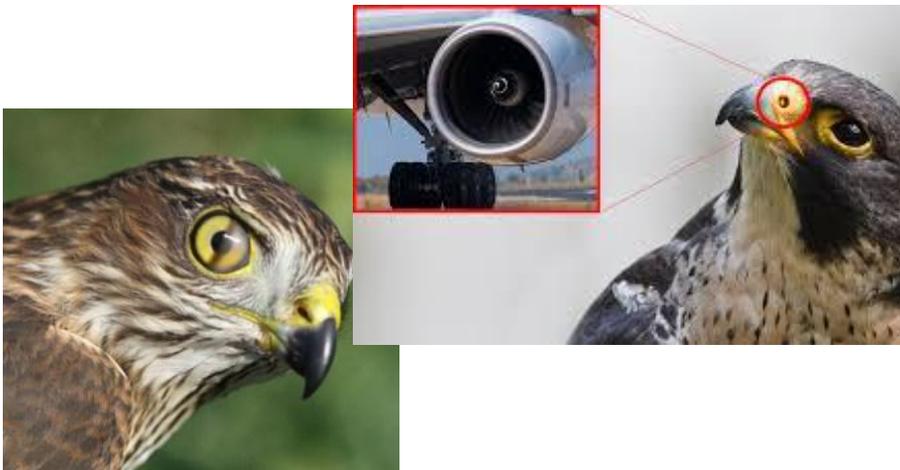


5. The highest g-forces, or g's, a pilot has ever attained in a Raptor is **9.5**, which feels like heavy weight on your body. Falcons experience maximum g-forces in the attack pattern called the **stoop**. The forces can reach up to **25** g's.



*Where have you experienced g-forces?*

6. Almost every part of a peregrine falcon's **body** is tuned for high air speed. They have an extra **eyelid** (nictitating membrane) to protect the eyeball, have special **tears**, and an unusual **breathing** system that works at high speeds.



7. Falconers can now see what the stoop looks like from the bird's view through the use of a special **camera**. The first camera test was done with a **red-tailed** hawk and gave the scientists ideas for improving it, such as being able to see the **rudder**-like tail.



© 2010 Photo by San Diego Shooter / Nathan Rupert  
<http://www.flickr.com/people/nathaninsandiego/>

Red-Tailed Hawk



Cooper's Hawk



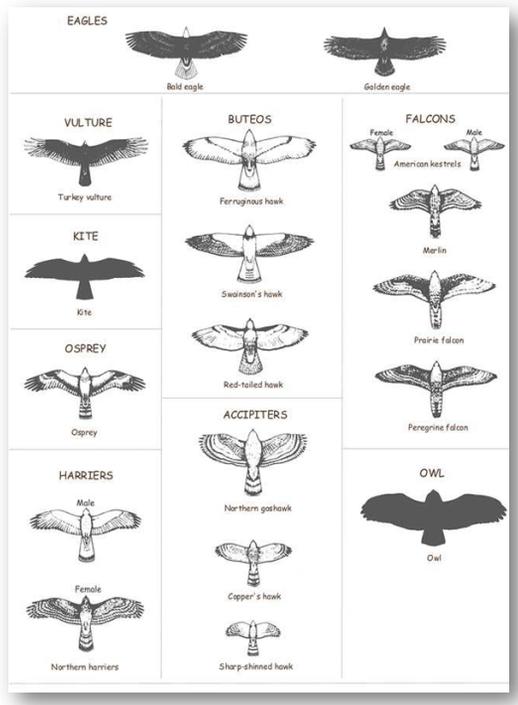
© The Peregrine Fund

8. The **Harpy** eagle is one of the largest eagles and can weigh up to **18** pounds. It kills the prey with **talons** that are powerful enough to crush a monkey's **skull** or human bone. It is able to maneuver by adjusting its wing **shape**.

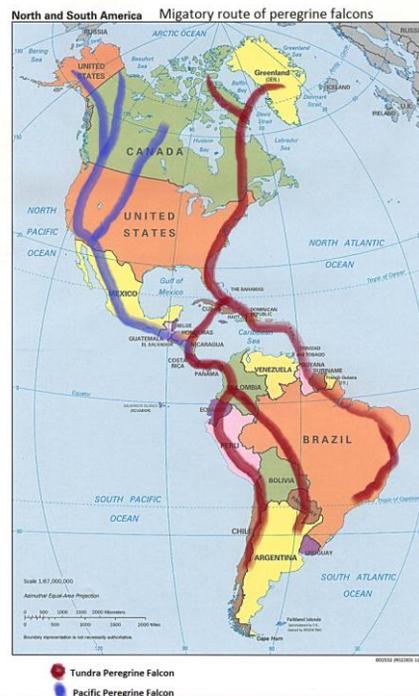


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9. Some wing shapes are good for high, slow **crusing**, while others are better for **plunging** down for the kill. A new design for aircraft is trying to create wings that are able to **morph** or change.



10. A key characteristic of any flyer is its **range**, or the distance it can travel between refueling. Most raptors **migrate** twice a year and need to be able to travel long distances in a short time. The bands or **tags** on a raptor are able to help scientists determine how far they travel nonstop, such as **1000** miles for a peregrine falcon or **400** miles for an osprey.



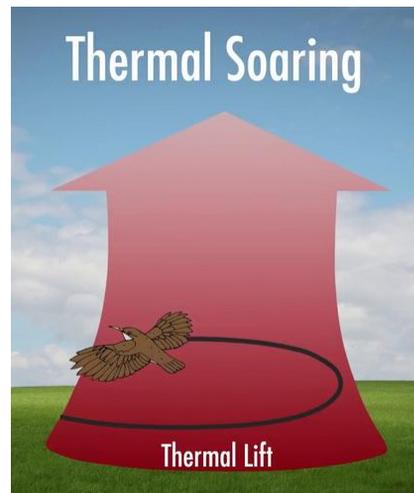
11. Raptors range from 1 ¼ ounces to **33** pounds wingspans from **12** inches to **11** feet. Many young raptors have longer **feathers** than their parents, up to an extra ½ foot of wingspan for bald eagles.



What are three differences between adults and immatures?

12. Bald eagles are able to soar using an elevator of rising warm air, called **thermal** soaring. Golden eagles also use thermal soaring and have a high **endurance** to fly for long periods.

Thermals = Rising currents of warm air



13. Turkey vultures use a technique called **dynamic** soaring, where the raptor starts in still air, soars into faster moving air, and uses turns to increase its air **speed**.



14. The Great Gray owl likes to hunt **voles** and is able to detect them using its ears. One part of its face, called the **rough**, is used to amplify and focus sound. Its ears are at different **heights** with one pointing up and the other down. It is also one of the quietest, or **stealth**, flyers due to special comb-like edges on their feathers and a layer of **down** feathers.



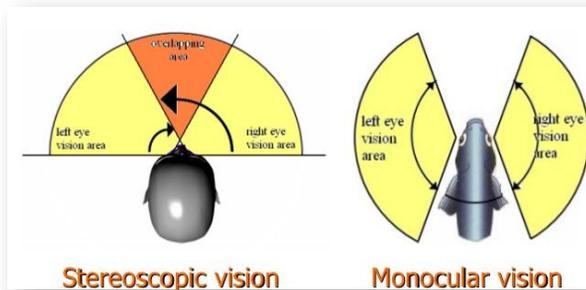
15. **Kestrels** enhance their eyesight by hovering when looking for its prey and are able to see **ultraviolet** light, which helps it see the urine from a vole.



16. Peregrine falcons have a line of sight that angles off 45° and flies in a **curved**, or corkscrew, pattern towards its target. It also has **stereoscopic** vision to help it tell distances.

17. Raptors can see details **three** times finer than we can, since they have a dimple in the **retina** that acts as a **telephoto** lens. They also have pupils with stronger, faster eye **muscles** that help them respond quickly to changing amounts of light.

[SciShow](#)  
[How Birds See](#)  
[the World](#)



A little gray bird with an echoing voice, the Tufted Titmouse is common in eastern deciduous forests and a frequent visitor to feeders. The large black eyes, small, round bill, and bushy crest gives these birds a quiet but eager expression that matches the way they fit through canopies, hang from twig-ends, and drop in to bird feeders. When a titmouse finds a large seed, you'll see it carry the prize to a perch and crack it with sharp whacks of its stout bill.

**Tufted Titmouse**

18. The sport of raising and hunting raptors is called **falconry**.



[Falconry Basics](#)



19. Raptors use all their talents and **brains** to be powerful hunters. Red-tailed and other hawks wait for **bats** to emerge from a cave each evening. Harris hawks work together to hunt prey, which lends to its "**wolves** of the sky" nickname. Peregrine falcons appear to "**punch**" their prey, but they really grasp it to unbalance it.

[Harris Hawks](#)



20. After the first camera tests with the peregrine falcon, the scientists had to adjust its **location** by moving it closer to its center of **balance**. They used a kite to lure the falcon to higher **altitudes** and were able to film it during a **dive** for prey.



### Fastest Falcon

<https://www.youtube.com/watch?v=mry7evAJHz0>

## Bird Nest Basics – pg. 47 FAF Right

Each person needs to complete the front AND back before class on Thursday!

Sites are listed on the BALD EAGLE page of the SS Kid Zone!

**Biology**

- [Cells & Classification](#)
- [Microscopes](#)
- [Genetics & DNA](#)
- [Plants & Animals](#)
- [Insects](#)
- [Bald Eagles](#)
- [Health & Human Body](#)
- [Ecology & Environment](#)
- [Pond Water](#)

**Eagle Information**

- [American Bald Eagles](#)
- [Journey North - Eagles](#)
- [PBS American Eagle](#)
- [Enchanted Learning - Bald Eagles](#)
- [Critter Corner - Bald Eagle](#)
- [Nat Geo Bald Eagles & Raptors](#)
- [PBS Raptor Force](#)

**Bird Nests**

- [ABCs of Bird Nests](#)
- [Bird Nest Basics](#)
- [Nest Watch](#)
- [BBC Amazing Nests](#)

**Bird Nest Basics** Name \_\_\_\_\_

Site #1: **ABCs of Bird Nests** - Read the information and then choose THREE types of nests that you think would be the strongest. Give a description of each one that includes examples of birds that build each type of nest along with at least 2 reasons for picking it as one of your top three!

Type of Nest	Description - What does it look like? What shape is it? What types of birds use it?	Why did you pick this as one of the strongest? Give 2 reasons!

**Extra time? Work on other school work, read a book, or check out the animal cam links on the Eagle page.**

**Bald Eagle Links**

- Eagle Cams**
  - [Bald Eagle Cam](#)
  - [US Stream Eagle Cam](#)
- Animal Cams**
  - [National Zoo](#)
  - [San Diego Zoo](#)
  - [Minnesota Zoo](#)
  - [Monterey Bay Aquarium](#)

Also visit ...  
[Bird Links on the Plants & Animals page](#)