

Focus

Wild Arizona

Key Words:

Carrion: the flesh of a dead animal, the primary food source of vultures

Engineer: a person who uses scientific principles to design objects

One hundred years ago, Wilbur and Orville Wright (often referred to as the Wright brothers) received their first contract to sell airplanes. This came after 10 years of hard work and scientific research to become the first people to invent and successfully fly an airplane. This significant achievement changed the way people travel. As important as the efforts of the Wright

brothers were, however, some of the story often is overlooked: the role that nature, specifically birds, played in this invention.

During a newspaper interview in 1906, Orville Wright said, “Before we attempted the construction of our first flying machine we knew that we must apply the principle used by birds in flight before it could be any sort of success.”

The Wright brothers filled pages of their scientific journals with observations and data taken directly from birds. They spent hours observing vultures soaring on wind currents. They measured wings. They became familiar with everything a bird does to fly.

Just for fun

Using field guides or the Internet, study different birds. Go outside and spend some time observing them. Pay particular attention to the shape of the wings. Do you notice that some wings are long and some are short? Some are narrow and some are wide? Some are pointed while others are round? Why?

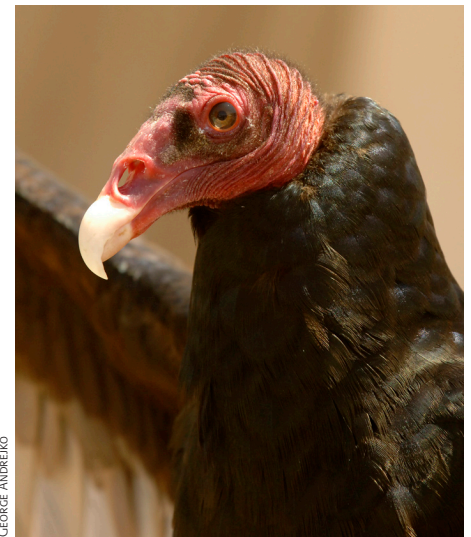
Even though most birds can fly, their reasons for flying often are different. Some birds need to be fast to catch prey while others need to migrate long distances. Different wing shapes help birds with their specific needs. Take a look at some birds found in Arizona and how their wings help them survive.



The Cooper's hawk is found in forested areas and often hunts birds. It has short wings for maneuvering through the trees.



The peregrine falcon is the world's fastest animal. The short, triangular wings help it reach speeds of around 200 mph.



The turkey vulture soars high above the land in search of carrion. The long wings allow it to soar for hours at a time.



By Eric Proctor

A



U.S. AIR FORCE PHOTO

B



U.S. AIR FORCE PHOTO

C



U.S. AIR FORCE PHOTO

Following the lead of the Wright brothers, airplane **engineers** look at different wing shapes to develop better airplanes. Let's see if you can determine the purpose of the airplane just by comparing its wings to those of birds.

The pictures above show three different airplanes. First, do you notice any similarities between their wing shapes and those of the birds at left? Read the descriptions below. Can you match each description to a picture? Answers are at the end of the article.

Airplane Descriptions:

1. The SR-71 was one of the fastest airplanes ever created. It broke records by flying from California to Virginia in about 68 minutes and from New York to London in less than two hours.
2. The B-29 was a large airplane. Used as a bomber in World War II, it could remain in the air for hours and fly about 5,000 miles.

3. The P-51 Mustang was used in World War II also. It was designed to be fast and maneuverable in order to protect bombers from other airplanes.

Do the science:

Now that you know how important observations are for engineers, let's try to replicate the work of the Wright brothers on a smaller scale. First, create a paper airplane, using any design you wish. For ideas, visit these Web sites:

- www.bestpaperairplanes.com
- 10paperairplanes.com
- www.funpaperairplanes.com

Use a thicker piece of paper to provide more support for your airplane. Once you have created your airplane, test it out. How well does it fly? Does it fly straight or crash into the ground?

What do you want your airplane to be able to do? Based on what you learned in this article, what changes could you make to your airplane in order to:

- Make it stay in the air longer?
- Fly faster?
- Loop through the air?

Try out your ideas. How successful were you? 🦋

Answers to airplane matching:
A. 2 B. 3 C. 1

■ This feature is part of the Arizona Game and Fish Department's Focus Wild Arizona program, a free educational program for teachers, parents, students or anyone interested in learning about wildlife and habitat. Visit our Web site, www.azgfd.gov/focuswild, to find exciting lessons and resources.