

Homing Pigeons

Since the Roman Empire, troops have used homing pigeons to carry messages from the front lines to command posts. They remained popular for long-distance communication, even after the telegraph was invented in 1844.

In World Wars I and II, homing pigeons could operate faster than wires could be strung and farther than the troops' radio signals.

In one famous account, an infantry unit trapped behind enemy lines released three pigeons, but all were shot down. Despite her injuries, one took flight again and successfully delivered her message to save the soldiers.

Military surgeons were able to save her life, and she received a French medal of honor and a visit from U.S. General John Pershing.

Long ago, homing pigeons were bred from normal rock pigeons, which could find their home from as far as 1,000 miles away.

Eventually, handlers realized they could train them to fly between points by putting their feed at both spots. The birds could even adapt if one of those locations moved.

This remarkable power of navigation is partly based on magnetoreception, as we discussed in an earlier *EarthDate*.

But they may also be following anomalies in Earth's gravitational field, infrasonic sound waves, and scent trails in the atmosphere.

The only sense they use that we can experience ourselves is visual. Some studies suggest the birds read surface landmarks like rivers and highways to build their own aerial maps as they fly.

It's yet another remarkable adaptation of life.



Attaching a message to a U.S. Army Signal Corps homing pigeon during World War I, circa 1917–18.

Credit: National Archives at College Park (public domain), via Wikimedia Commons



BUREAU OF
ECONOMIC
GEOLOGY

Background: Homing Pigeons

Synopsis: Ancient Romans, Genghis Khan, and soldiers in both World Wars used homing pigeons for communication. The birds got critical information where it needed to go, fast. Pigeons can navigate because of their sixth sense—magnetoreception.

- *Magnetoreception* is a sense that allows organisms to orient themselves or to navigate by detecting the direction, intensity, and inclination of a magnetic field.
 - Homing pigeons share this ability with many other creatures, from microbes to insects to other vertebrates. Humans, however, don't have this directional sense.
 - Although ravens carry messages in the popular *Game of Thrones* television series, real-life ravens don't know how to do this. Their fictional delivery skills were modeled after real-life stories of homing pigeons.
- Homing pigeons were selectively bred from rock pigeons that consistently found their way home, enhancing the directional abilities of the species.
 - They have been known to fly as far as 1100 miles (1800 km) in races. For more typical distances of around 100–400 miles (160–640 km), they average speeds of 50 mph (80 kmh).
 - Historically, homing pigeons only carried messages one way, to their home roost. However, they also have been taught to find other places by placing their feed at those locations.
 - They are able to find their roosts even if the roosts are moved between flights.
- Homing pigeons were used to speed essential communication between the front line and command posts in wars ranging from the days of ancient Egypt, Greece, and Rome up through the twentieth-century Vietnam War.
 - Stories of the use of pigeons to communicate in wartime extend at least as far back as the Roman siege of Modena in 44 B.C.
 - Pigeons were commonly used in the twelfth century by Genghis Khan, remaining popular for long-distance communication until 1844, when Samuel Morse invented the telegraph.
 - However, during wartime, homing pigeons provided mobility that the telegraph did not, and more than 200,000 were used in World War I and World War II.
- In World War I, the U.S. Army Signal Corps depended on homing pigeons to create tactical advantages on the battlefield. Numerous stories of human lives saved are attributed to avian heroism. The most famous is the story of a bird called *Cher Ami*, a French name that means “dear friend.” (It was only after the pigeon's death that the taxidermist discovered she was female: Her name really should have been *Chère Amie*.)
 - On October 3, 1918, nearly 500 American soldiers of the 77th Infantry Division found themselves trapped behind enemy lines without radios, food, or ammunition. By the second day, the Germans had captured or killed all but 194 men. The Americans were also receiving friendly fire from Allied troops who thought they were in a different location.
 - Their commander, Major Whittlesey, began sending pigeons, which they carried into battle in wicker backpacks. The first two pigeons were shot down. Major Whittlesey penned a third note on onion paper: “We are along the road parallel to 276.4. Our own artillery is dropping a barrage directly on us. For heavens sake, stop it.” He attached it to Cher Ami's leg.
 - As she took flight, Cher Ami was also shot down, but she managed to take to the sky again. Despite being blinded in one eye and shot through the breast, and having a leg hanging by a tendon, she flew to her loft at division headquarters 25 miles (40 km) from the front in just 25 minutes. Her message located the division just in time, enabling the Allies to rescue the 194 soldiers.

References: Homing Pigeons

Magnetoreception | Wikipedia
How Birds Can Detect Earth's Magnetic Field | ScienceDaily.com
Homing Pigeon | Wikipedia
Cher Ami | Wikipedia

Those *Game of Thrones* Ravens Are Based on Real Birds Who Also Had Important Jobs | Time.com

Contributors: Juli Hennings, Harry Lynch



EarthDate.org
Fact Sheet:
Episode **ED 120**

Background: Homing Pigeons

- Army medics worked to keep her alive. They couldn't save her leg, so they whittled a tiny wooden leg for her. When she departed Europe for the United States, General John J. Pershing came to the docks to see the one-legged avian heroine off.
 - She was made a hero of the division, and the French Army awarded her their *Croix de guerre* ("war cross") for her astonishing flight.
 - Cher Ami died 9 months later at the age of 9 years at Fort Monmouth, New Jersey. Her beautiful purple and blue speckled plumage is currently on display at the Smithsonian "Price of Freedom" exhibit in Washington, DC.
- How do homing pigeons navigate?
 - Originally, researchers believed that iron concentrations found in pigeons' beaks were receptors, but these were ruled out when the iron turned out to be concentrated in blood cells.
 - More recently, scientists were able to track specific neurons in the homing pigeon's brain that sense the specific inclination of magnetic fields. One neuron responds if the field is at 45 degrees, while other neurons respond when the field is at other inclinations. Scientists found the same result for variations in polarity and intensity.
 - Interestingly, the receptors located during the inclination experiments seemed to be associated with the inner ear. Subsequently, other researchers found an iron-rich organelle in the cochlear and vestibular hair cells of the inner-ear structure of pigeons and other birds that is likely related to magnetoreception.
 - Additional studies suggest that pigeons use atmospheric odors for olfactory navigation, or use gravitational anomalies or low-frequency infrasound waves to create mental maps.
 - Some experiments show that different pigeons use different cues—including human-built landmarks like highways—to create visual maps.



Heroic war pigeon Cher Ami on display at the Smithsonian Museum.

Credit: United States Signal Corps derivative work by Trizek (public domain)

References: Homing Pigeons

Magnetoreception | Wikipedia
How Birds Can Detect Earth's Magnetic Field | ScienceDaily.com
Homing Pigeon | Wikipedia
Cher Ami | Wikipedia

Those *Game of Thrones* Ravens Are Based on Real Birds Who Also Had Important Jobs | Time.com

Contributors: Juli Hennings, Harry Lynch