



Trunk Contents

Learning occurs not only with the mind, but also with the eyes, the hands – the whole child (or adult!). Items contained in the trunk are meant to be examined, handled, and shared with your students. Of course, some items, like the crane skull and leg, are fragile, so please handle them with extreme care. If an item is damaged in your care, you will be responsible for replacing that item. Check that every crane trunk item is in good shape when it arrives so you are not held responsible for someone else's damage. (see the Whooping Crane Education Trunk User Agreement form in the folder pocket for more information).

Whenever possible, we included real crane artifacts in the trunk for your students to examine. However, because whooping cranes are an endangered species, and certain artifacts are difficult to obtain, some items included are replicas. When replicas are used, it is noted in the inventory below.

We hope you enjoy *A Closer Look at Whooping Cranes*. ***Now dig in and explore!***

Crane Flight Feathers (3)

Flight feathers are stiff, strong, and light. They are shaped to provide lift. Flight feathers are a type of *contour feather*, made of a hollow quill with many *barbs*. The barbs are further divided into *barbules*. Barbules connect to each other like a zipper, forming the flat vane, or surface, of the feather. Birds preen their feathers with their beaks to keep the barbules connected and the surface of the feather smooth.

{ **Fun Fact:** The pigment that makes a whooping crane's wing feather tips black also makes those feathers stronger, which is important on their long-distance flights. }

Crane Leg (1-replica)

Cranes are the world's tallest flying birds. Much of their height is a result of their long legs. The crane leg illustrates several *adaptations* to wetland life. Long legs covered in scaly skin, not feathers, help keep cranes dry when feeding or roosting in water.

Although cranes can swim, they rarely do except as young chicks. Instead, a whooping crane's feet and legs have *adaptations* that allow for wading. The long, separated toes maneuver easily in wetland vegetation, and provide support on soft, muddy surfaces.



Fun Fact: When baby cranes hatch, their legs are short. Babies hatch early enough in the season that plants are not very tall yet, but a baby crane’s legs must grow very fast to keep up with plant growth so they can see over the grass and leaves.

One common misconception about cranes and other birds is that their knees bend backwards. In fact, their knees bend the same direction that ours do. The joint that appears to be bending “backwards” is actually the ankle. Walking cranes only touch their toes to the ground. The knee is normally hidden beneath the feathers of the body.

Crane Skull (1-replica)

The long, probing beak is a distinguishing characteristic of the whooping crane. Many crane species, including whooping cranes, feed in wetlands, probing in mud and even under water. Other crane species, sandhill cranes for example, also feed in uplands such as farm fields and grasslands. Cranes are *omnivores*, and their beaks work well for obtaining and eating both plant and animal foods. The crane skull replica included in the crane trunk was cast from a sandhill crane skull.

Fun Fact: The shape of a whooping crane’s skull provides a little bit of shade to its eyes from overhead sun and allows the crane to see in front, to the side, partly above, and partly below.

Whooping Crane Egg (1-replica)

Whooping cranes nest in wetlands in shallow water. They build their nest by piling up vegetation until the nest is raised above the surface of the water. A moat of water often develops around the nest, which helps to protect the eggs and chicks from potential predators. Cranes normally lay two eggs per *clutch*. The eggs are incubated by both parents for approximately 30 days. Usually only one chick is successfully fledged. Crane chicks are extremely aggressive towards each other, and the larger chick (usually a day or so older) outcompetes its sibling for food, resources, and attention.

Fun Fact: Chicks can hear their parents’ voices inside the egg. Parents sometimes anticipate hatching by listening to the peeping sounds made by the chicks for the last day or two before hatching. For this reason, scientists play recordings of ultralight motors before the whooping crane eggs hatch to prepare the chicks to follow the ultralights on their first migration.

The whooping crane egg replica is the size, shape, and color of a real whooping crane egg. Because of the weight of the resin used to cast the egg, it is significantly heavier than a real crane egg.

Hand Lens (1)

A hand lens is included for students to use while looking at the crane feathers, legs, and skull. With this simple tool, you can observe the hooking barbules on a flight feather or take a closer look at the scaly skin covering the crane leg. To use the hand lens, grasp it by the



handle. Bring the lens to your eye and the item you are observing up to the lens.

Food Box (1)

Plastic animals: In the wild, a crane's diet consists of a variety of animal and plant foods. Cranes are *omnivores* and eat crabs, reptiles, snakes, seeds, tubers (from the roots of plants), worms, and other invertebrates such as insects. They can even occasionally catch a small bird, mammal, or fish! The food box contains a representative sample of what a crane may eat such as a mouse, a minnow, a small frog, crayfish, leeches, and a blue crab. Whooping cranes in the Texas/Canada flock feed primarily on blue crabs during the winter. This high-protein food is vital for their healthy migration and nesting success the following spring.

Crane Chow: In captivity, cranes eat a modified diet that is produced specifically for them. Cranes are fed "crane chow," which is a specially formulated pellet food made of soy, corn, other grains, and a combination of vitamins and minerals.

{ **Fun Fact:** Whooping cranes are opportunistic foragers, and when there are enough crabs, cranes may eat 80 every day! }

Isolation Rearing Costume and Puppet (1)

The whooping crane isolation rearing costume is worn by biologists when raising whooping crane chicks in captivity. Crane chicks are *precocial*; they are active and able to feed themselves shortly after hatching. They *imprint* on the first large moving object that they see after they hatch. In the wild, whooping crane chicks will imprint on their parents. In captivity, however, whooping crane eggs are often removed from the nest before they hatch and are incubated artificially. These chicks are reared by humans instead of adult whooping cranes.

The International Crane Foundation, Patuxent Wildlife Research Center, Calgary Zoo, and other captive breeding centers in North America are cooperating in raising whooping cranes to be introduced into the wild. In order to be released into wild populations, the whooping cranes must imprint on other cranes and not humans. Crane chicks raised for release are fed, taught to forage, and cared for using the hand puppet and costume so that they do not imprint on people.

The hand puppet and costume hide the human form and introduce the whooping crane chicks to the shape and color patterns of an adult whooping crane. Look at the crane puppet carefully, and notice that the red patch and black mask on the puppet closely match the coloration of an adult whooping crane. The puppet and costume are also the same bright white of the adult whooping crane, and the puppet's form is similar to the silhouette of an adult crane.



Flight Diverter (1)

An important threat to cranes and other birds are power lines, towers, turbines, and other structures. Many cranes fly into utility lines that they cannot see when flying in low light conditions or when landing at wetlands adjacent to power lines. If startled, a crane foraging or sleeping on the ground may also take off quickly and inadvertently collide with unseen lines. An especially risky time for collisions with utility lines is during migration. Cranes may migrate hundreds or thousands of miles, and encounter countless lines throughout their long journey.

To reduce the threat of collisions with utility lines, researchers have developed several ways to mark the lines so that they are more visible to cranes and other birds. An example of one of these devices, called a flight diverter, is included in the trunk. The markers are designed to attach on existing lines, providing a visual alert to flying cranes that the line is present.

Leg Band and Radio Transmitter (1 of each)

Included in the trunk are leg bands used to identify cranes in captivity and in the wild. The bands are placed around the crane's leg above the ankle. Researchers who study cranes in the wild use the colored plastic bands with engraved numbers. These bands are put on birds before they are released, and also fitted on cranes captured from and returned to the wild. Each banded crane is assigned a unique band combination, allowing for visual identification in the field. For example, one crane may have a green and red band on its left leg, while another crane will be fitted with only a green band on its right leg.

The trunk also contains a band with a radio transmitter. Using a radio receiver, researchers can locate the signal from the transmitter on a wild bird's leg and determine the approximate location of the crane.

Fun Fact: When the cranes first receive a radio transmitter, they will often try to preen the antenna as if it is a feather that will not smooth out, but it does not affect flight or their general lifestyle. After a short time, they get used to the transmitter.



Additional Trunk Resources

The following resources are included in the trunk to enrich your students' learning:

DVDs (for reference use only)

- Whooping Crane Eastern Partnership DVD - This documentary focuses on the history and most recent effort to restore migratory whooping cranes to eastern North America.
- Breeding and Reintroduction Program DVD - This includes a series of videos explaining the whooping crane breeding and reintroduction program at the International Crane Foundation.

Books and Publications (for reference use only)

- *Cranes: Symbols of Survival* - This publication outlines the 10 year strategic plan for the International Crane Foundation. The plan builds on lessons and experience from forty years of crane conservation and describes ICF's vision for the next decade.
- *Reflections: The Story of Cranes* - This reference book provides an introduction to cranes, the value of wetlands, and the International Crane Foundation's programs. The book includes color photographs, range maps, and conservation challenges for each of the crane species.

Brochures and Handouts

A variety of brochures and other handouts are provided for your use. Feel free to keep these or photocopy as needed. If you are sending the trunk on to other users, please leave an ample brochure supply in the trunk for their use. Contact us for additional copies.