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Powerful feet and talons help birds of prey make their living

I hadn't seen our neighborhood sharp-shinned hawk for about two weeks until a few days ago when I caught a glimpse of him literally diving feet first into a dense shrub at the front of the house. He came up empty handed and took off, but the incident made me think again about just how agile and powerful these birds really are.

A raptor is a bird of prey characterized by a hooked beak, razor-sharp talons on strong feet and excellent eyesight. Raptors generally kill prey with their feet, the key appendage to their survival. By definition, the word raptor comes from the Latin word "rapere" which means to plunder, snatch or seize. These birds fascinated people for centuries and we continue to marvel at their hunting prowess today.

Symbols of might and strength, there are about 446 raptor species worldwide. Raptors include eagles, hawks, (and condors, falcons, kites, harriers, osprey), vultures and owls. Some, like hawks, hunt during the day while others prefer to hunt under the cloak of darkness, like most of the owls.

Getting a grip on just how powerful these birds are was a challenge. How does one measure the strength of raptor talons? I wanted to find an answer and better understand psi or pounds per square inch of pressure and the gripping strength of various birds of prey. What I found, however, was that the psi values were all over the charts, and rather hard to come by.

We know that different raptor species have different gripping strengths depending on the type and strength of the prey they pursue, and that the design of raptor feet tells something about how the various species make their living.

Hawks with long toes catch birds. Short-toed hawks are generally mousers. Other items are on their menu, too, including rabbits, squirrels, lizards, toads and insects to name a few.

Hawks with large feet and sharp talons are able to capture and consume just about anything. The osprey makes its living by fishing and its long, sharply curved talons function like fish hooks.

A bird's preference for bird or mammal prey may also play a key role in shaping differences in beak and foot strength.

The power of a raptor's grip comes from its leg muscles, tendons and bones. Researchers believe a bald eagle's grasp is at least 10 times stronger than that of an adult human hand and can exert upwards of 400 psi. The average person, by comparison, purportedly has a grip strength of about 20 psi.

In contrast, a female golden eagle weighing about nine pounds with a seven foot wingspan can grip with an estimated strength of 450 pounds per square inch. (That figure varied up to 750 psi).

The great horned owl's talons were reported to exert anywhere from 300 to 3,000 psi pressure, and that's quite a difference. In either case, the GHO is a mighty nighttime hunter that can catch and kill a remarkable assortment of prey with its large, strong feet including skunks, porcupines, rabbits, rodents, squirrels, opossums, bats snakes, fish and birds (including other birds of prey such as a red tailed hawk or a barn owl). Author Arthur Cleveland Bent wrote in "The Life History of American Birds Of Prey," "Almost any living creature that walks, crawls, flies, or swims, except the large mammals, is the great horned owl's legitimate prey." **According to an article on owlpages.com, a GHO can exert a stronger grip with its talons than an Olympic gymnast on the rings, and this strength is how the owl squeezes its prey to death.** An extra cutting edge on the middle front talon

helps the owl tear its prey.

GHOs, kites and many other species may become fiercely territorial during the spring and summer when they have young either in the nest or on the ground, and one is wise to heed their warnings by staying away temporarily until the youngsters are off on their own.

Small hawks and owls and even raptor chicks can pack a wallop and deliver a painful and deep flesh wound with their strong, sharp talons. If you find an injured bird of prey, it's important to remember a few things.

Always protect your hands with heavy gloves. Throw a small blanket over the bird, grip both legs if possible and place it in an appropriate sized box lined with newspaper or paper toweling. Even if a raptor is in shock or unconscious, remember it can suddenly spring to life and cause severe injury to an unprotected hand or arm.

Although some raptors will try to bite, most use their feet as defense weapons, and this is called "footing." Be careful not to further injure the bird if it sustained a fractured wing or leg. Carefully lay it in the box, and place on its side if it can't stand.

Don't offer food or drink, keep it warm, dark and quiet, keep children and pets away and bring it to the Wildlife Center as quickly as possible.

Many raptors - particularly barn owls - frequently get hit by vehicles while pursuing prey. If you need advice in a particular situation, call a volunteer at the center at (806) 799-2142.

Please do not bring any healthy, uninjured birds - raptors or otherwise - to the center. Youngsters leave the nest before they can fly well (or at all) and the parents always do the best job of raising them.

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http://www.lubbockonline.com/stories/032606/gue_032606062.shtml