

Raptor Taxonomy and Characteristics (Diurnal Raptors)

All birds are codified in the family *Animalia*, the phylum *Chordata*, the subphylum *Vertebrata* and the class *Aves*.

Diurnal raptors are classified in the order *Falconiformes*. Within this order, the family *Accipitridae* includes hawks, eagles, accipiters and kites. Ospreys are isolated in the family *Pandionidae*. Falcons reside in the family *Falconidae*. Until recently, New World Vultures were accommodated within *Falconiformes* in the family *Cathartidae*. This family has been moved intact to the order *Ciconiiformes* where it accompanies storks, ibises, herons, bitterns and spoonbills.

When considering the nomenclature of diurnal raptors it is interesting to note that suggested evolutionary relationships of the *Falconiformes* show an early divergence of Fish Eagles (Bald Eagle) and Booted Eagles (Golden Eagle), placing them on opposite sides of the phyletic table and therefore only distantly related.

Also of interest is the segregation of Osprey as a single genus and species in the family *Pandionidae*. Distinct and exclusive morphological deviation in the form of primitive feather arrangement (pterylosis) similar to Old World vultures indicative of early evolution; slit-like, closeable nostrils; zygodactyl talons and the singular act of securing its prey by plunge diving (adaptations related to foraging) are characteristics that are most often cited to warrant such treatment.

What makes a “bird of prey” a “raptor”?

rap-tor (răp' ter, -tôr), n. one who seizes by force, robber; a raptorial bird. (from the root *rape* + *tor*)

Two-thirds of all bird species prey on other animal organisms for food. Pelicans and cormorants prey on fish; herons and egrets on fish, arthropods and amphibians; song birds on insects, and shrikes on a wide range of organisms including other birds, but none of these are thought of as “birds of prey” or “raptors”. It is the physiological adaptation related to food and foraging, not the predatory behavior or the food itself, that sets raptors apart.

As a group, raptorial birds share common physical characteristics that give them the ability to obtain food by the most difficult method possible. In order to survive and successfully reproduce, raptors must catch, kill and consume other animals of varied size, elusiveness and capabilities of self-defense while avoiding undue competition with other individuals of their own species or other species. These adaptive characteristics include:

Very large, forward facing eyes that provide a high degree of visual acuity and stereoscopic vision and a bony supraorbital ridge above the eye which is thought to

shade the iris from overhead sun glare and provide physical protection as well. It is the supraorbital ridge that gives raptors their fierce-looking appearance.

Long, razor-sharp talons and their powerful associated musculature allow raptors to effectively seize and dispatch prey as the rear talon penetrates in a ratchet-like fashion, piercing vital organs. The talons of a Golden Eagle are capable of exerting pressure at 1500psi.

A raptor's formidable, sharply curved beak may look like a fearsome weapon but, in actuality, it is used almost exclusively for tearing apart prey when eating. It is capable of what some may consider repugnant butchery in one instant and the tender proffering of the tiniest morsel to a newly hatched chick the next. In most cases, raptors hold their heads well away from struggling prey to prevent eye injury. Deviation from this practice occurs in falcons which have evolved a tomial or mandibular tooth or notch on the sharp, outer edge of the bill used to sever the neck vertebrae of prey, often in flight.

Raptor identification can be a challenge, but their comparatively large size, slow, soaring flight and diurnal migration habits make them one of the easiest of all bird groups to observe in the field.

The Most Common Diurnal Raptors in Boulder County

Summer (breeding season):

Osprey, *Pandion haliaetus carolinensis*

Bald Eagle, *Haliaeetus leucocephalus leucocephalus*

Golden Eagle, *Aquila chrysaetos canadensis*

Northern Harrier, *Circus cyaneus hudsonius*, a Boulder County species of special concern

Red-tailed Hawk, *Buteo jamaicensis calurus* *

Swainson's Hawk, *Buteo swainsoni*

Sharp-shinned Hawk, *Accipiter striatus velox*

Cooper's Hawk, *Accipiter cooperii*

Northern Goshawk, *Accipiter gentilis atricapillus*

American Kestrel, *Falco sparverius sparverius*

Prairie Falcon, *Falco mexicanus*

Peregrine Falcon, *Falco peregrinus anatum*

*Boulder County lies west of and contiguous to the range of Eastern Red-tailed Hawk, *Buteo jamaicensis borealis*, and well within the intergrade zone with Western Red-tailed Hawk, *Buteo jamaicensis calurus*. However, most Red-tails encountered will be the "Western Race". Most intergrades (offspring resulting in breeding between two recognized subspecies) are not detectable in the field.

Winter:

Bald Eagle, *Haliaeetus leucocephalus leucocephalus*

Golden Eagle, *Aquila chrysaetos canadensis*

Northern Harrier, *Circus cyaneus hudsonius*

Red-tailed Hawk, *Buteo jamaicensis calurus*

Red-tailed Hawk (Harlan's Hawk), *Buteo jamaicensis harlani*

Ferruginous Hawk, *Buteo regalis*

Rough-legged Hawk, *Buteo lagopus sanctijohannis*

Sharp-shinned Hawk, *Accipiter striatus velox*

Cooper's Hawk, *Accipiter cooperii*

Northern Goshawk, *Accipiter gentilis atricapillus*

American Kestrel, *Falco sparverius sparverius*

Prairie Falcon, *Falco mexicanus*

Merlin, *Falco columbarius richardsonii* and *Falco columbarius columbarius*

Broad-winged Hawk, *Buteo platypterus*, a complete transequatorial migrant, is occasionally observed in Boulder County in spring only (March/April) due to its elliptical clockwise inbound migration pattern.

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