EAGLE FEATHERS VS. THOSE OF OTHER LARGE BIRDS

Shaft Characters. The shafts of eagle and other raptor feathers are plain in appearance. The upper surfaces of the shafts are dark and unmarked, and there is only a narrow, V-shaped groove in the underside of the shafts. In contrast, turkey and other gamebird feathers have fine parallel lines in the upper surface of the shaft, and broad, U-shaped grooves on the undersurface. These shaft characters are illustrated in Figures 11 and 12.

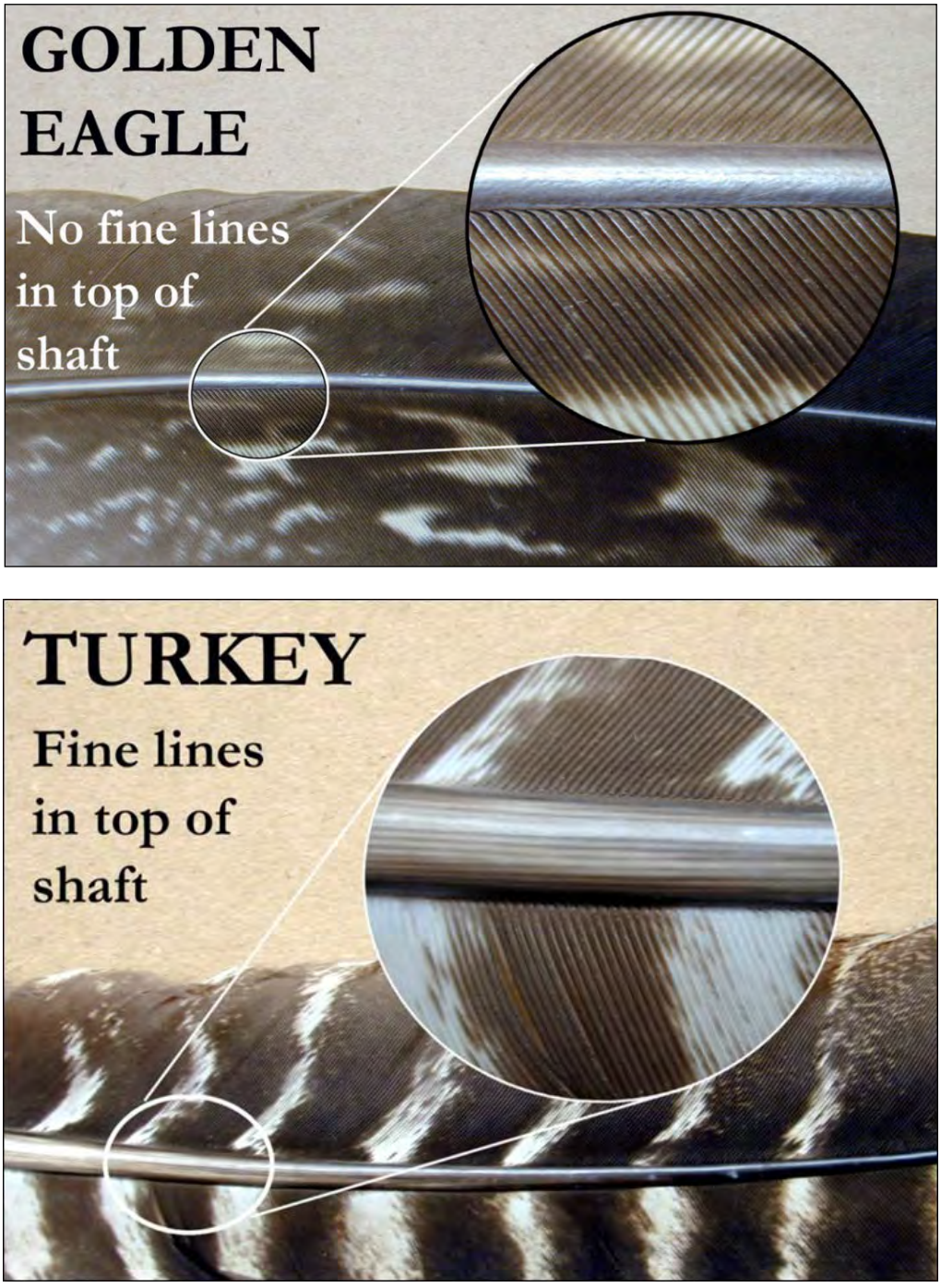


Figure 11. Fine lines in the upper surface of the shafts of turkey and other gamebird feathers distinguish them from eagle and other raptor feathers, which lack such lines.

Figure 12. A broad U-shaped groove in the under surface of the shafts of turkey and other gamebird feathers distinguishes them from eagle and other raptor feathers, which exhibit only fine lines or narrow, V-shaped grooves.

Size. The large size of eagle flight feathers rules out many other species. Eagle flight feathers are almost always ten inches (26 cm) or more long, and even the shortest secondaries are at least eight inches (20 cm) total length. Therefore, any flight feathers shorter than eight inches are NOT eagle flight feathers. This includes, for example, the tail feathers of swans, geese, and Great Blue Herons, all of which are less than eight inches long. The Feather Atlas provides dimensions for the feathers of almost all large North American birds , allowing a check whether the feathers of a particular species falls within the size range for Bald and Golden Eagles.

OTHER HAWKS AND EAGLES. Both Bald and Golden Eagles have close relatives outside of North America. Therefore, if suspected eagle feathers are seized at ports of entry, it is appropriate to submit these to the Forensics Lab for identification. As a practical matter, non-North American eagle feathers are extremely rare in casework, and most wildlife officers will never encounter them.

All North American hawks (Accipitridae), including the Osprey (Pandionidae), are much smaller than Bald and Golden Eagles. In addition, almost all of these hawks exhibit barring or other patterns on their flight feathers that are distinctly different from the patterns of either North American eagle species (see the Feather Atlas for examples).

The one North American hawk whose feathers may be used to simulate eagle is the Rough-legged Hawk. Some forms of this species have pale tail feathers with dark tips, resembling those of juvenile Golden Eagles. However, they are much smaller: 8-10 inches (22-25 cm) vs 12-15 inches (30-38 cm) for Golden Eagle.

Figure 13. Tail feathers of juvenile light morph Rough-legged Hawk. Although the pattern resembles juvenile Golden Eagle, these feathers are much smaller (compare to Figs. 9 and 10).

CONDORS. California Condors and the Andean Condor of South America are huge vultures (Cathartidae), far larger than either Bald or Golden Eagles. Both condors are endangered species, and their feathers are rare in casework, but are occasionally seen. Size alone should distinguish condor vs. eagle feathers. Condor primaries are 17-27 inches (43-70 cm) long, compared to12-21 inches (32-54 cm) for eagles; the outer primaries also have a strongly arched shape. Condor secondaries are14-18 inches (37-45 cm) long, compared to 10-14 inches (26-36 cm) for eagles. Their tail feathers are over 15 inches (40 cm) long, vs. less than 15 inches for eagles. In addition, condor feathers are unpatterned black or dark gray-brown, with the exception of the secondaries of adult Andean Condors, which exhibit panels of velvety silver-gray. Condor feathers never exhibit marbling, mottling, or patches of white at the base of the vanes.

BLACK AND TURKEY VULTURES. These common North American vultures have unpatterned dark wing feathers that may be confused with adult Bald Eagle wing feathers or un-marbled outer Golden Eagle primaries. However, vulture feathers are smaller than comparable eagle feathers, have paler undervanes, and their shafts are pale, strongly contrasting with the feather vanes. Black Vultures have white shafts on both the upper and undersides of their flight feathers; Turkey Vultures usually have pale shafts only on the undersides.

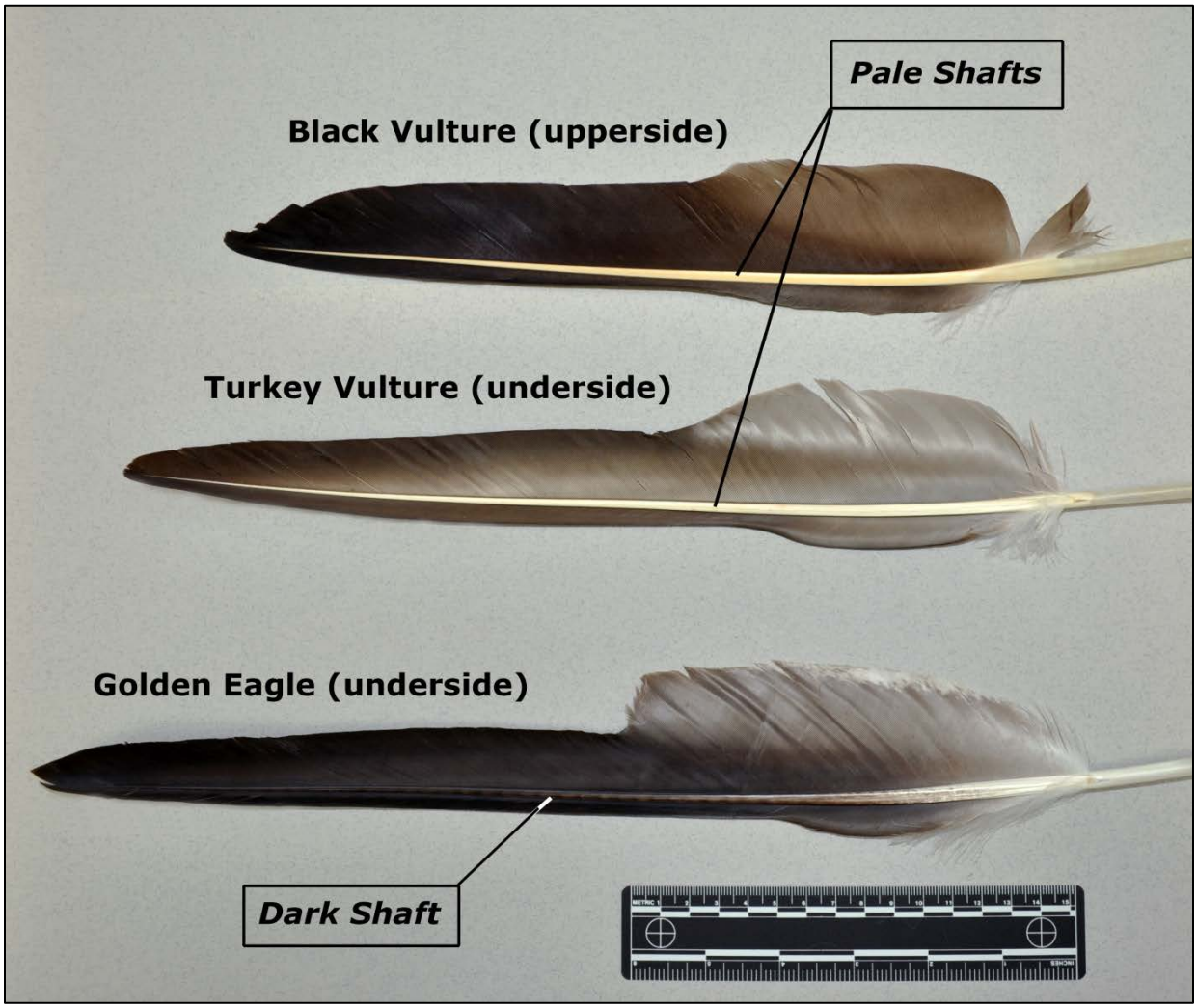
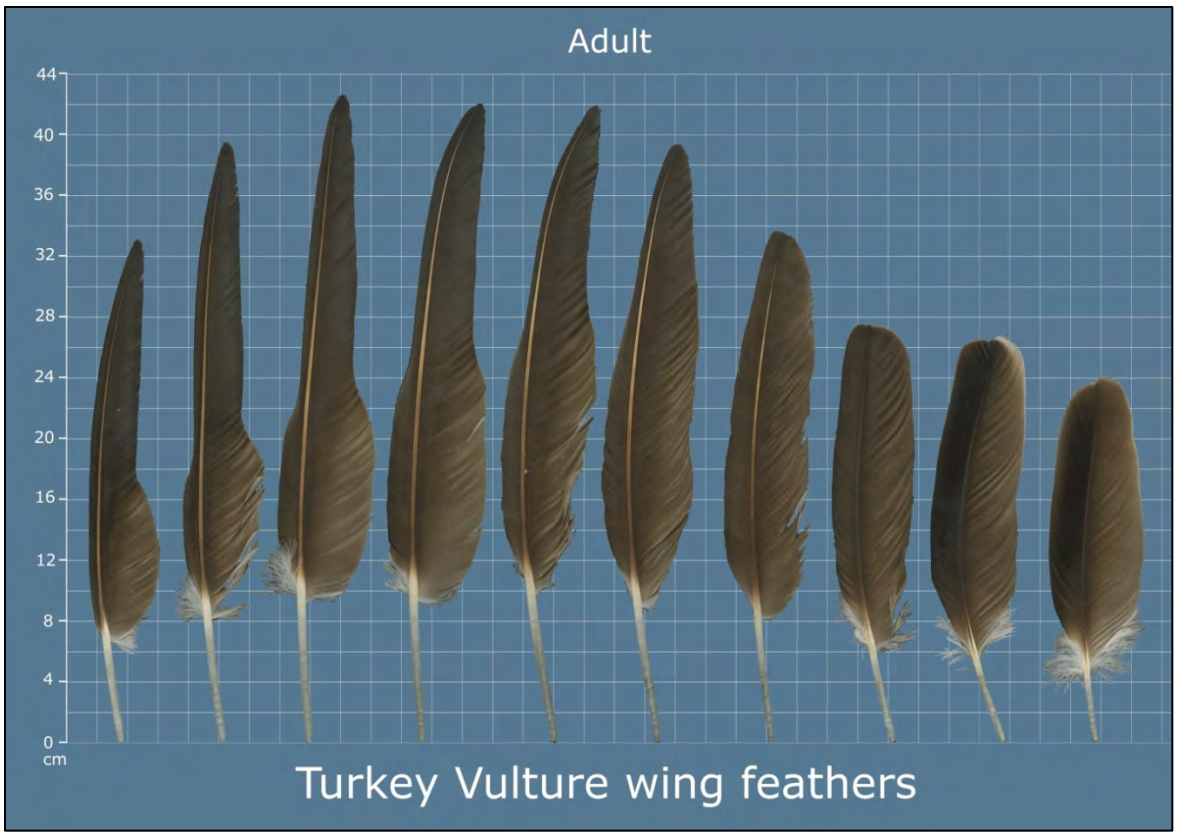


Figure 14. Primary flight feathers of Black and Turkey Vultures compared to Golden Eagle. Note the vultures' pale feather shafts, which contrast strongly with the color of the vanes. This is most obvious on the under-sides of the feathers.



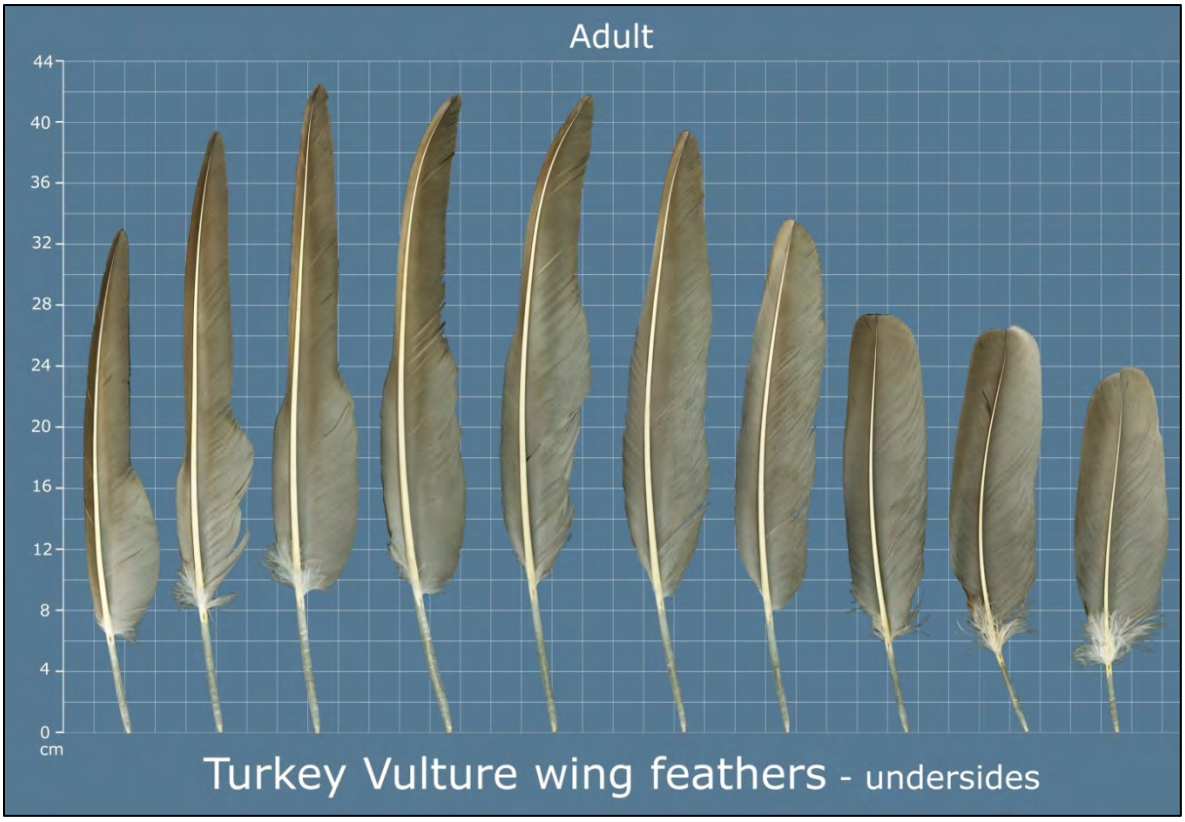
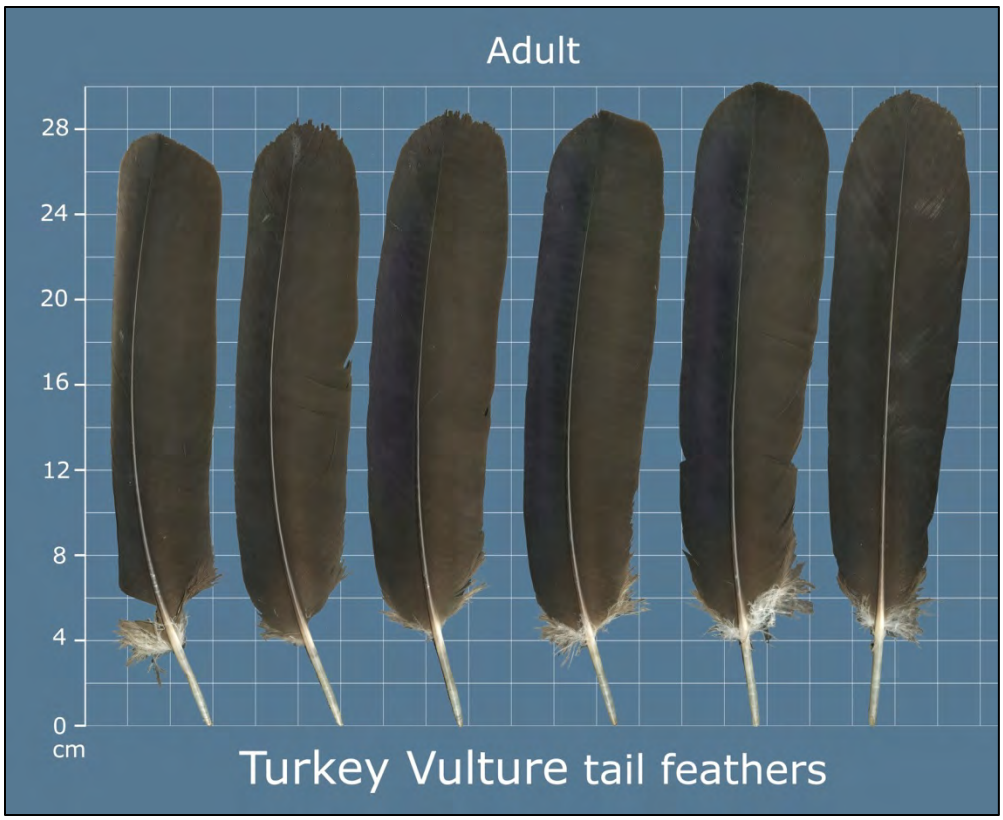


Figure15. Turkey Vulture wing feathers, showing upper & under surfaces. Note the lack of marbling or other patterns, the small size relative to eagle feathers, and the pale shafts (most obvious on the undersides). These scans show seven primaries and three secondaries.



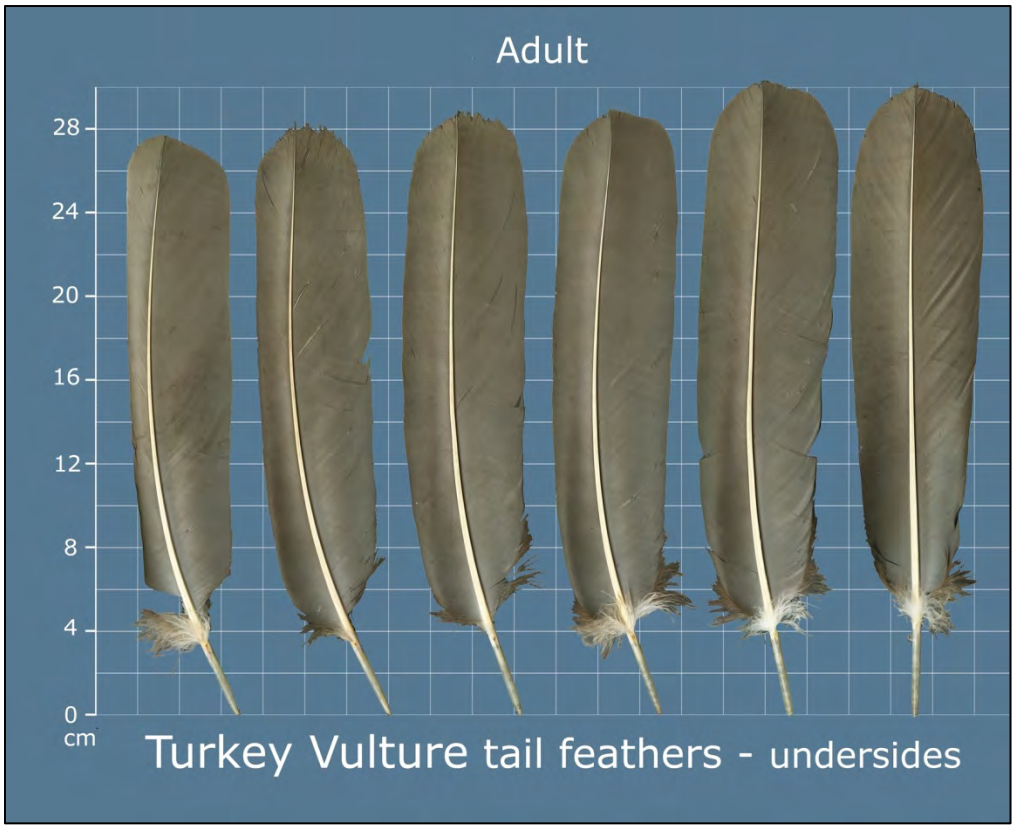


Figure 16. Turkey Vulture tail feathers. Note the lack of patterning (eagle tail feathers always exhibit some patterning or are pure white in the case of adult Bald) and the pale shafts on the undersides.

TURKEY. Wild Turkey feathers are unlikely to be confused with eagle: the wing feathers are strongly barred brown and white (Fig. 17), and the tail feathers are reddish-brown, barred, and have a squared tip with a broad black subterminal band (Fig. 18).

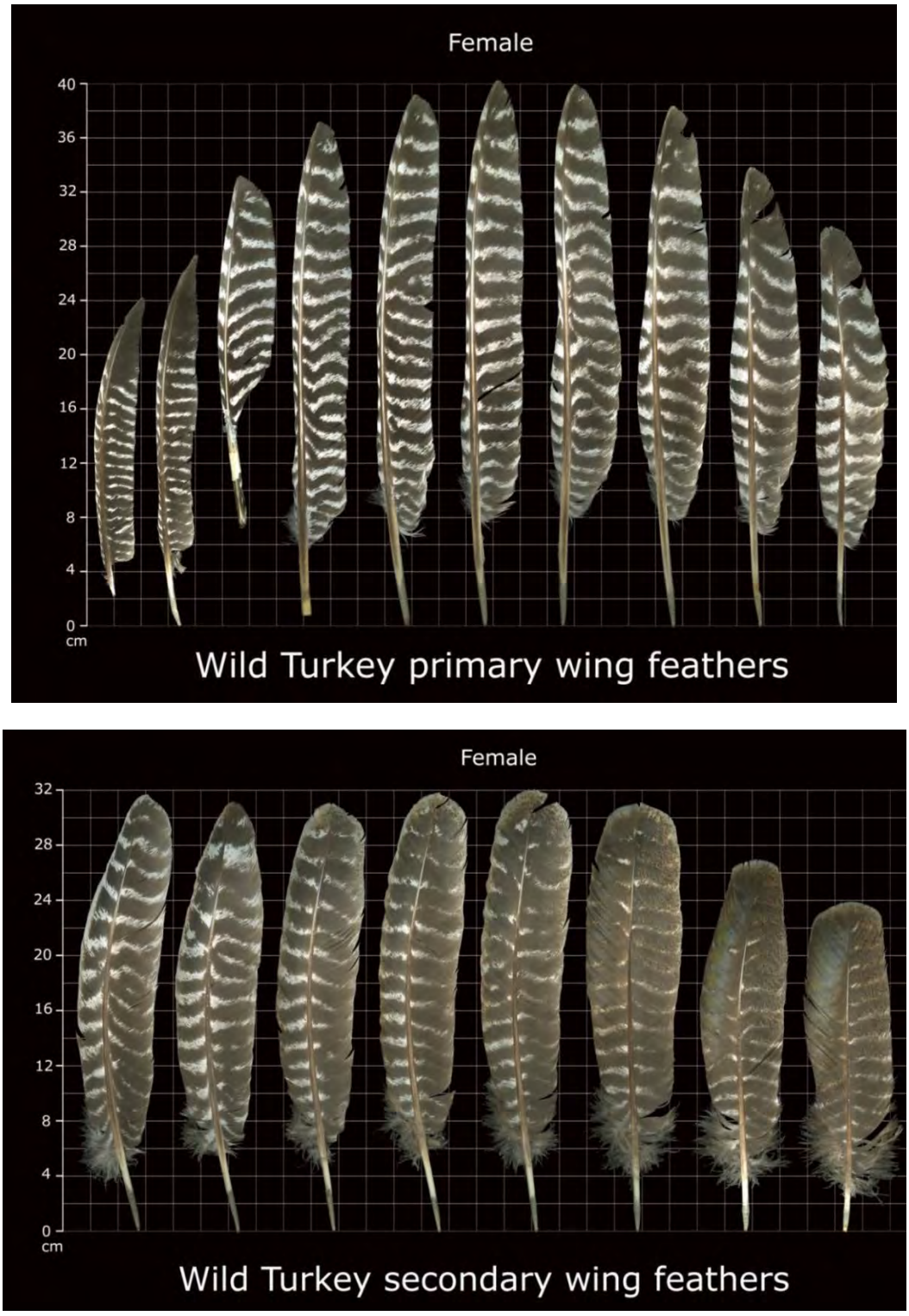


Figure 17. Primaries and secondaries of Wild Turkey. Note the strong brown-and-white barring, a pattern never seen on eagle feathers. When viewed edge-on, turkey primaries also have a strong arch, or camber, not seen on eagle feathers.

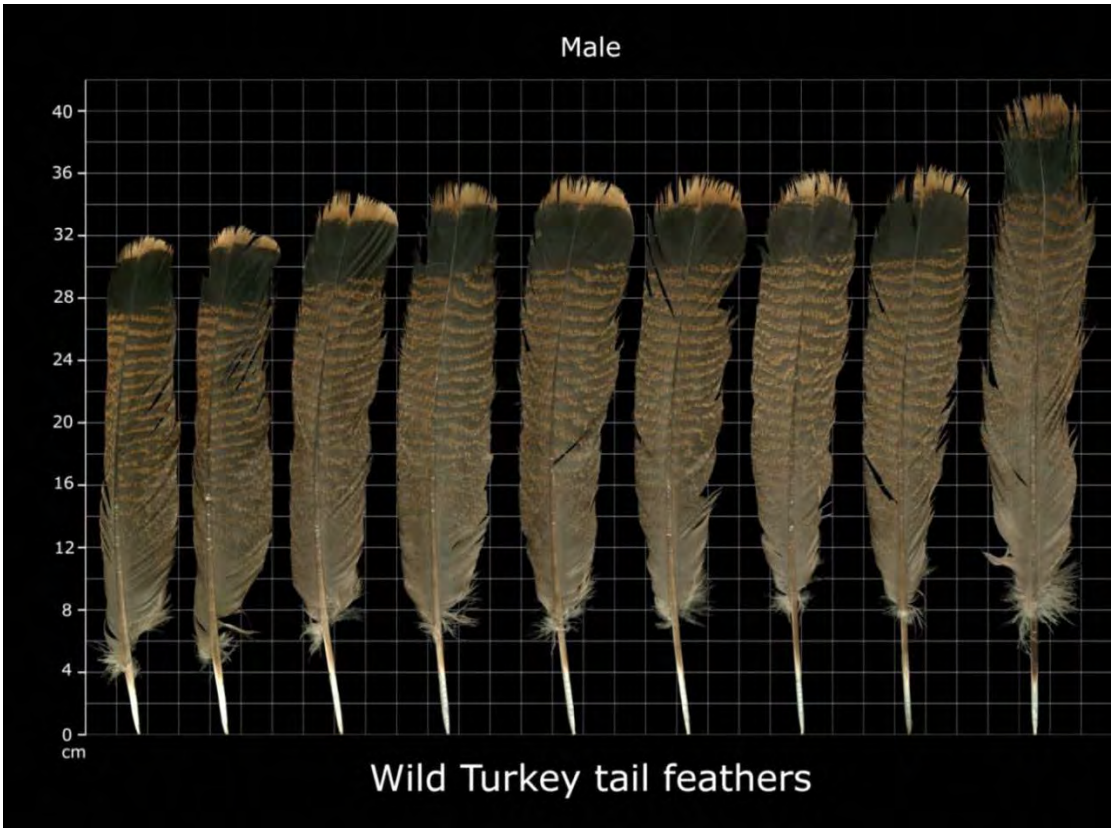


Figure 18. Tail feathers of Wild Turkey - note squared tips, black subterminal bands, and narrow barring.

However, some domestic turkey varieties have patterns that may resemble marbling (Fig. 19), and the tips can be trimmed to remove the dark subterminal band.

Figure 19. Secondaries (on the left) and tail feathers (on the right) of various domestic turkey breeds. The fine speckling and marbling-like patterns could lead to confusion with Bald and Golden Eagles, respectively, especially if the feathers are trimmed to resemble eagle feathers in shape.

Finally, the feathers of domestic white turkeys can be dyed to resemble eagle. These are by far the most common types of simulated eagle feathers. The dark dyed portion of such feathers is usually unnaturally uniform, lacking the subtle variation in shading of unmodified feathers. Close examination will also reveal fine lines in the upper surface of the feather shafts, and broad grooves in the underside of the shafts, as illustrated in Figs. 11 and 12.

Figure 20. Wing feathers of white domestic turkey, with tips dyed to simulate subadult Golden Eagle feathers. Note the unnatural appearance of the dyed margin (compare with Golden Eagle feathers in Figs. 9 and 10). These turkey wing feathers also exhibit a distinct arch, or camber, when viewed from the side. This shape provides extra stiffness, necessary for heavy-bodied birds like turkeys, but is not seen on eagle feathers. Close examination of these turkey feather shafts would also reveal fine lines in the upper surface (see Fig. 11) and broad U-shaped grooves in the under-surface (see Fig. 12).

GEESE AND SWANS. The unpatterned dark brown wing feathers of large races of Canada Goose may be confused with adult Bald Eagle wing feathers or un-marbled outer Golden Eagle primaries. The relatively rounded inner primaries of swans can be confused with adult Bald Eagle tail feathers. However, all waterfowl primaries can be easily distinguished from eagle feathers by the shiny "tegmen" layer on the under-vanes (see Fig. 21 below). Tegmen is characteristic of waterfowl primaries, but does not occur on eagle feathers. Goose secondaries and tail feathers lack tegmen, but can be distinguished from eagle feathers by their smaller size.

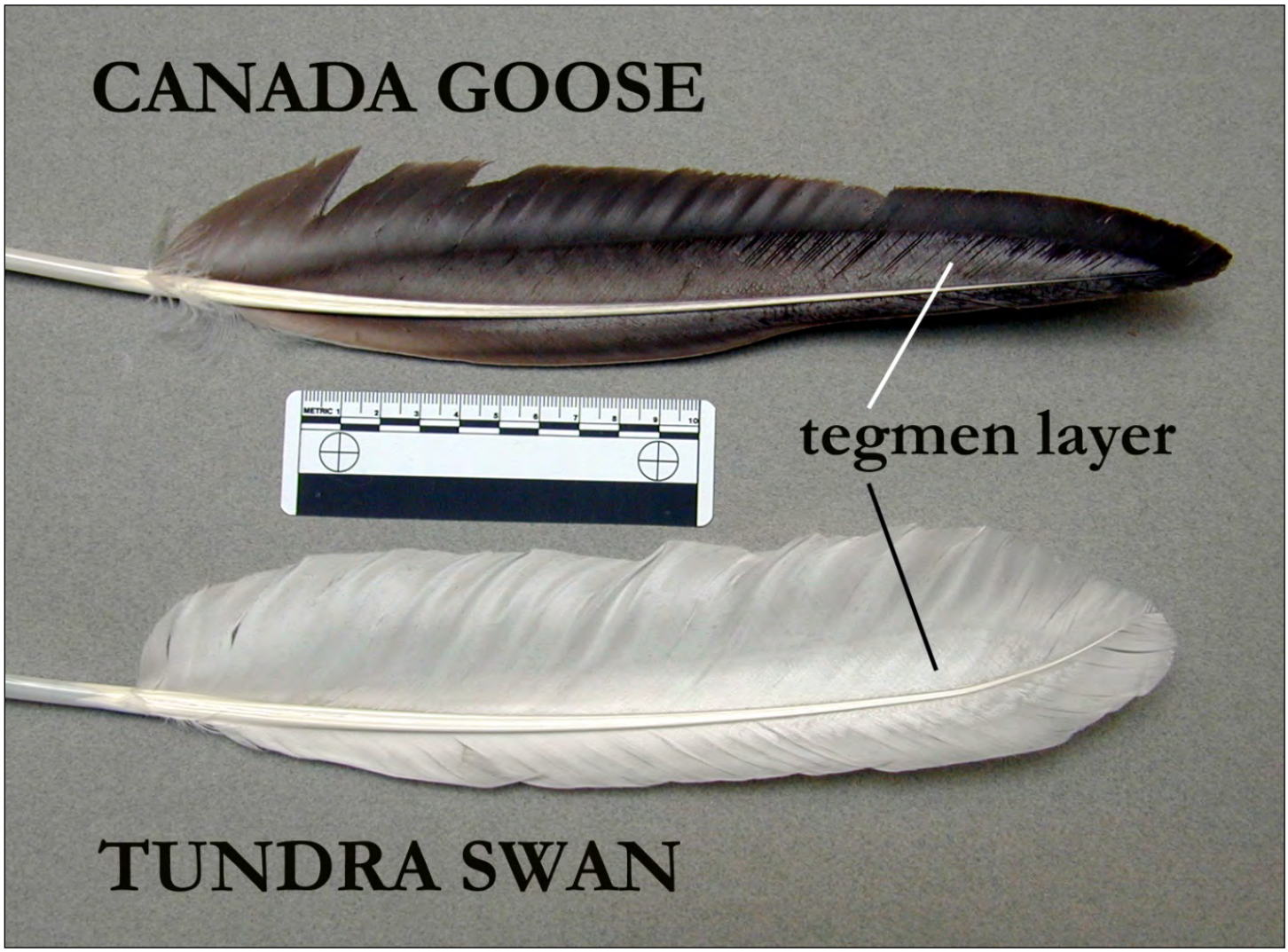


Figure 21. Shiny tegmen layer on the undersurface of waterfowl primaries. This is never seen in eagles.

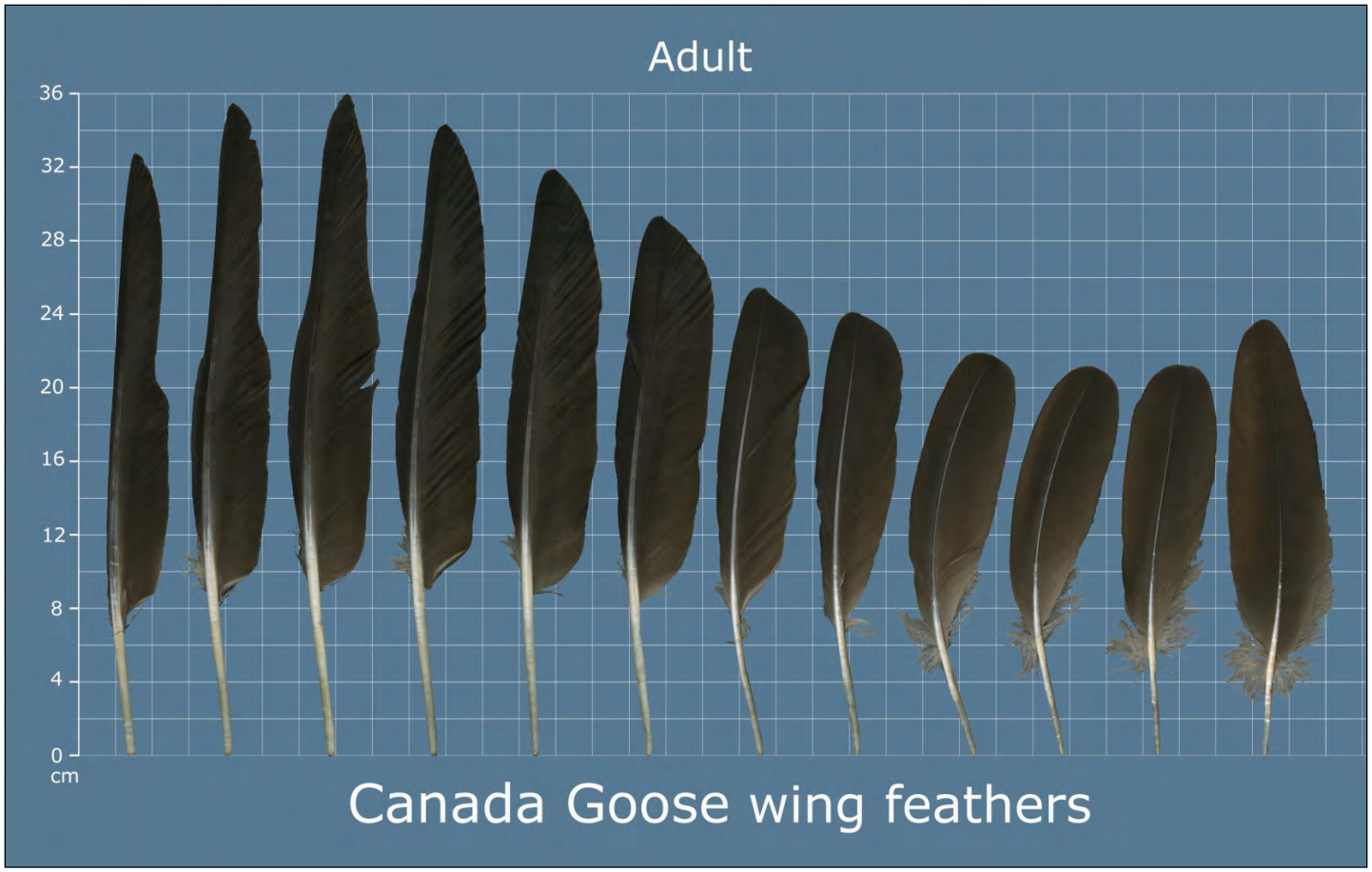
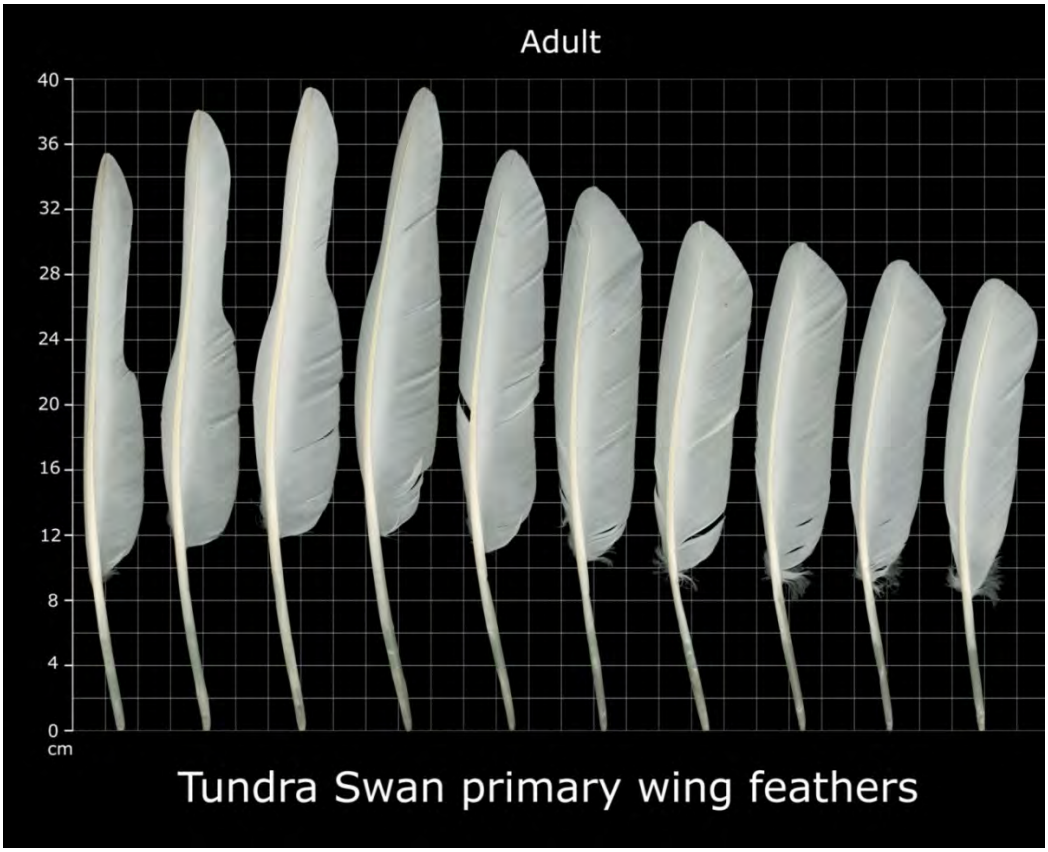


Figure 22. Canada Goose wing and tail feathers (of the mid-sized "Dusky" subspecies). Eight primaries and four secondaries are shown in the upper scan. Primaries possess tegmen on their undersides (not visible in this upper-surface scan), which rules out eagle. Secondaries and tail feathers are too small for eagle feathers (compare size with the unpatterned Bald Eagle secondaries in Fig. 4).



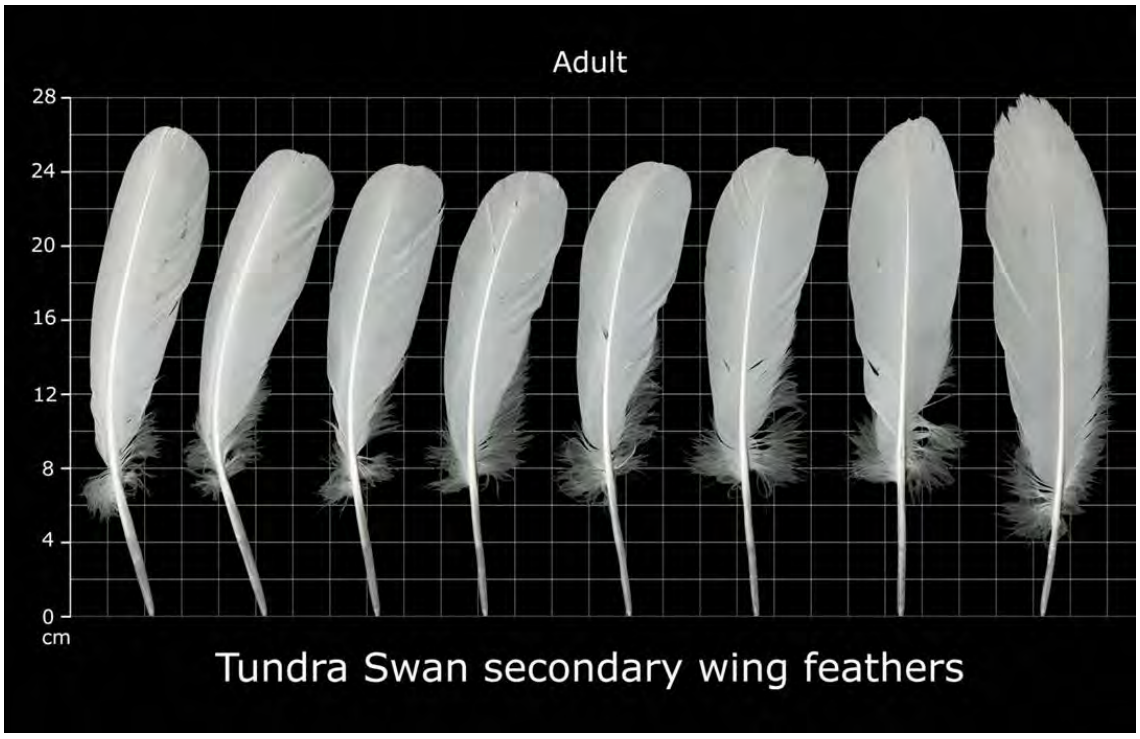
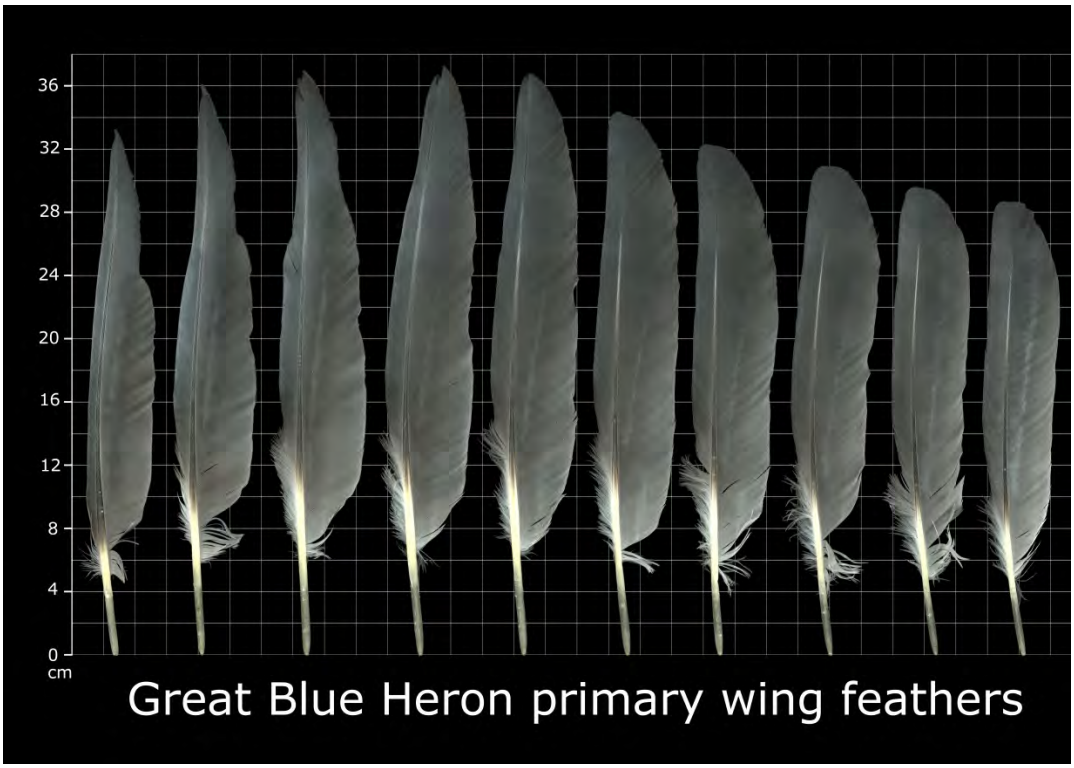


Figure 23. Tundra Swan primaries and secondaries. The inner primaries somewhat resemble tail feathers in shape, but they possess tegmen on the under-surface of the vanes (not visible in this upper-surface scan), ruling out adult Bald Eagle tail feathers. Note also the very long quills of swan wing feathers compared to Bald Eagle tail feathers (see Fig. 7). Swan tail feathers are far too small for eagle (< 20 cm).

GREAT BLUE HERON. The wing feathers of this species can be confused with adult Bald Eagle, as they are also unpatterned blue-gray. However, Great Blue Heron flight feathers differ in the following ways: they are slate blue (paler and less brown than Bald Eagle feathers); are significantly smaller than comparable eagle feathers; and the primaries have at most only short narrowed tips (very different from the elongated "fingers" on eagle outer primaries). Great Blue Heron tail feathers should not be confused with eagle, as they are only about half the length of eagle feathers and lack any marbled or spattered patterning or patches of white.



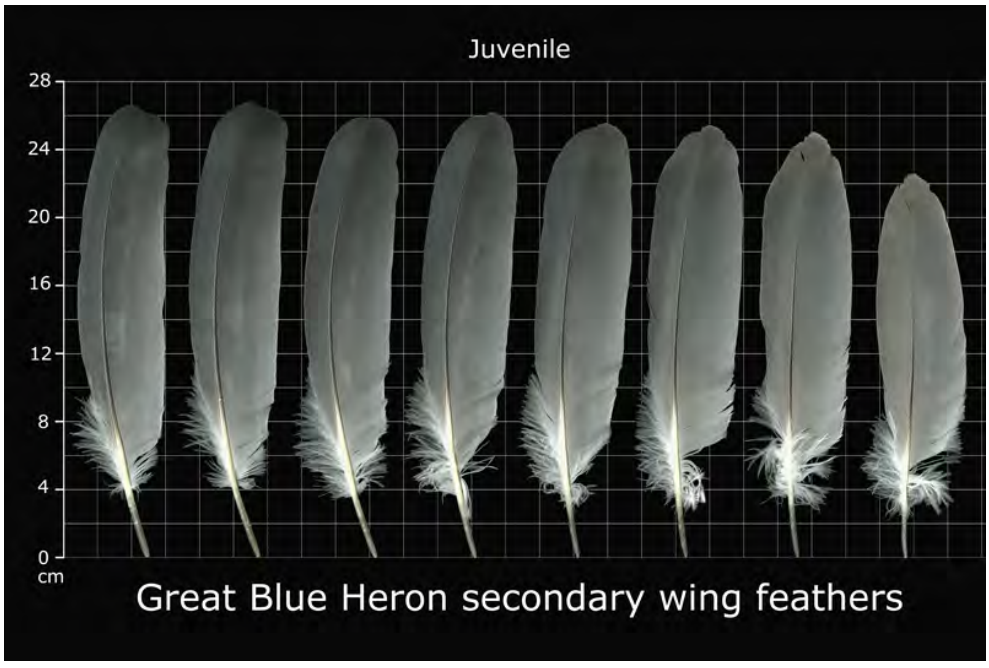


Figure 24. Great Blue Heron wing feathers. Note the uniform blue-gray color, lack of patterning, and small size compared to eagle feathers.

COMMON RAVEN: All raven feathers are black, often with a glossy blue sheen. Bald and Golden Eagle feathers may be dark gray or brown, but are never truly black. Raven feathers are also significantly smaller and more slender than comparable eagle feathers.

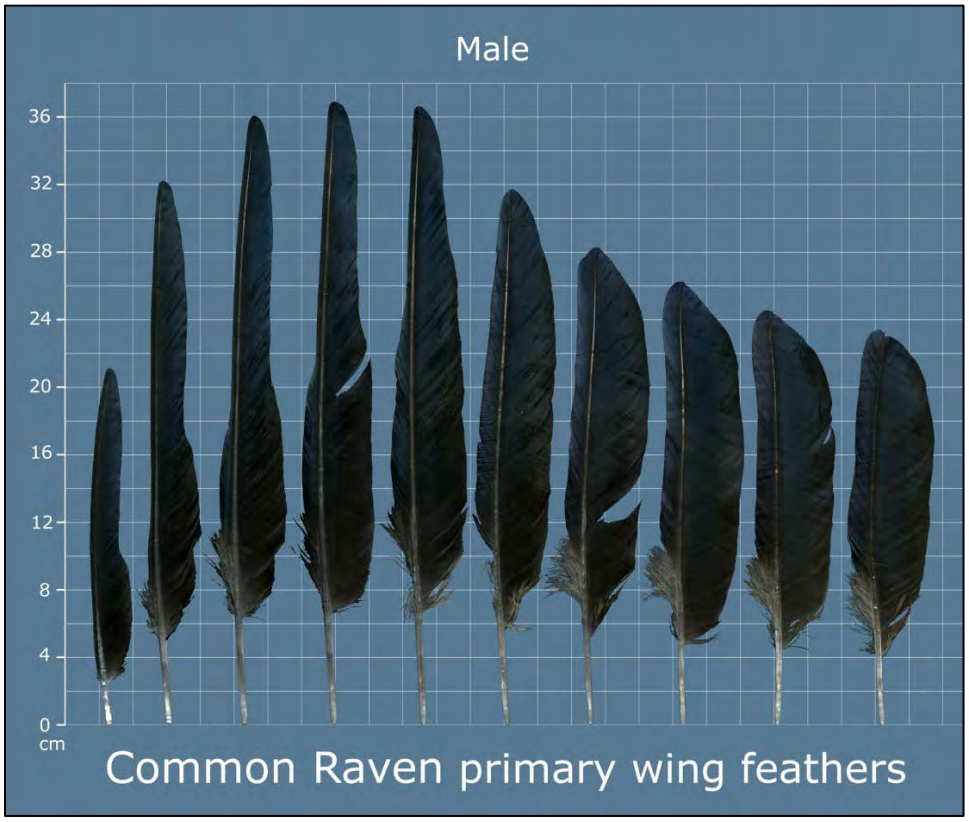


Figure 25. Common Raven primaries and tail feathers. Note the solid black color and small size compared to eagle feathers. Raven secondaries are 7-9 inches (18-22 cm), too small for eagle.

TABLE 1. SUMMARY OF EAGLE FEATHER IDENTIFICATION TIPS

TO IDENTIFY SPECIES OF EAGLE:

Feather CANNOT be from Bald Eagle if:

- "Marbling" pattern of paler bars and swirls is present in dark brown feather.
  ⇒ It is adult Golden Eagle (Fig. 3, 4, 7, 8)
- There is a large pure-white area at the base of the feather and a dark tip.
  ⇒ It is subadult Golden Eagle (Fig. 5, 6, 9, 10)

Feather CANNOT be from Golden Eagle if:

- It is pure white.
  ⇒ It is an adult Bald Eagle tail feather (Fig. 7)
- It has white areas mottled with brown and surrounded by dark areas.
  ⇒ It is subadult Bald Eagle (Fig. 5, 6, 9, 10)

TO RULE OUT EAGLE:

Feather CANNOT be from eagle if:

- A waxy "tegmen" layer is present on the underside of the feather along the shaft.
  ⇒ It is waterfowl (Fig. 21)
- There are fine lines running along the shaft on the top of the feather.
  ⇒ It is gamebird (most likely) or waterfowl (Fig. 11)
- There is a broad, U-shaped groove in the shaft on the underside of the feather.
  ⇒ It is gamebird (most likely) or waterfowl (Fig. 12)
- There is a strong contrast between a white feather shaft and surrounding darker vanes.
  ⇒ It is vulture (most likely) (Fig. 14, 15, 16)

STILL UNCERTAIN? CHECK FEATHER SIZES ON THE FEATHER ATLAS

- Eagle flight feathers are larger than the corresponding feathers of all other North American birds of prey, as well as ravens, herons, and most other North American birds (see p. 14)
- Eagle flight feathers are smaller than the corresponding feathers of California and Andean Condors (see p. 15).