An Introduction to Imping, the Ancient Art of Feather-Mending

The practice has been described by kings, mentioned in Shakespeare, and is regularly performed at rehabilitation clinics everywhere.

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When the Audubon Center for Birds of Prey posted a recent Facebook update on Bailey—the internet-famous Osprey recovering at the Florida facility after a Bald Eagle attacked her—they used a term familiar to few people beyond falconers and raptor rehabbers. Bailey was having a hard time flying in a rehab barn, the post explained, possibly because of wing and tail feathers broken during and after the eagle attack. “Since there is a possibility that these broken feathers are the reason she is unable to sustain height while flying,” the update continued, “we imped Bailey's wing and tail feathers today.”

You did what now?

Imping, it turns out, is a centuries-old technique to replace a broken feather with a close match from a previous molt or from another bird, usually—but not always—of the same species. Basically, the process involves joining the broken feather to its replacement by inserting into the shaft of both feathers a thin piece of bamboo, metal wire, or other material, known as an imping needle, fixed with a bit of adhesive.

A number of the raptor center’s Facebook followers were curious about the process, so they posted a video of rehabilitation supervisor Dianna Flynt imping Bailey’s feathers. You can watch it here.

While sometimes used on corvids, seabirds, and other species at rehabilitation centers, imping is most closely associated with raptors. Falconers have been imping for hundreds, if not thousands of years. Jason Jones, a longtime falconer and former raptor rehab professional in Wyoming, has done some research into historical imping, and the earliest written reference he's found is from a book written in the 1240s by the Holy Roman Emperor Frederick II of Hohenstaufen. Translated from Latin as *The Art of Falconry*, the book uses the term *imponere* (from the Latin "to place upon" or "to fix") to refer to the process. A little over three centuries later, The Bard himself found an apt metaphor in imping. In *Richard II*, Shakespeare has the Earl of Northumberland beseech his fellow noblemen to "Imp out our drooping country's broken wing" by rebelling against the king.

Since then, the methods have changed little, though the tools of the trade have evolved. Imping of old typically involved dipping an iron needle in brine to create rust as a bonding agent. Today, feathers are often joined with graphite or fiberglass imping needles dabbed with fast-drying epoxy.

Imping isn't painful for birds—like human hair or fingernails, feathers are dead structures made of the protein keratin—but that doesn't mean they like it. "When a bird breaks a feather, the first thing that goes through my mind is: Do we really need to have an argument with this bird about replacing its feather?" Jones says. A bird will shed damaged feathers when it molts, so if it's near the end of falconry season, Jones often lets nature take its course (and then gathers up the molted feathers for future imp jobs).

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"Falconers all pride ourselves on trying to keep the birds in great feather condition," he says. "But feathers do unfortunately get broken when they're hunting. There's nothing you can do about that."

Imping may be a relatively simple fix, but it's not easy to perform. Each feather plays a part in helping birds glide, dive, catch prey, or avoid predators, so a proper imp job requires carefully trimming, measuring, and aligning the replacement feather so it matches the original length and orientation as closely as possible.

“I’m a lot better now than I was 20 years ago,” Jones says. When he was in his late teens, one of his first Peregrine Falcons clipped a fence in flight, breaking a pair of primary feathers. He and a friend placed a hood over the bird's head—a common practice to keep injured birds calm—and imped for the first time. “It looked great to us,” he says. The next morning, feeling proud, they took the bird out for a flight. “Both of those feathers we’d imped came spiraling down," he says.

In the wild, of course, birds don’t have helpers to mend their broken feathers. “Yes, they probably will be okay,” says Flynt, Bailey’s imper-in-chief. “It all depends on the species and the individual.” Many raptors in Florida don’t migrate, and can probably make do with a few broken feathers until their next molt, she says. “But a migrant like Bailey has to be perfect.”