

Is It Time to Halt Bird Banding?

By Marlene A. Condon



Courtesy of Marlene A. Condon

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About 10 years ago, I read a letter to the editor in *Birder's World* magazine, which suggested that bird bands could be deadly to migrating species (Ruiz 2000). The letter writer, Henry Ruiz, felt that a Blackburnian warbler (*Dendroica fusca*) that he had seen land exhausted on a beach near the Gulf of Mexico would not have survived the journey if it had any excess weight to carry. Yet the magazine published a response from two well-known hummingbird banders who considered "the weight of the band [as] truly a non-factor in the lives of these birds."

Clearly, banded birds have provided scientists with a wealth of information. However, it's worth noting that the number of recovered bands can be extremely low. According to biologist Paul Kerlinger, approximately 6 percent of the 1.1 million birds banded annually in the U.S. are recovered each year (Kerlinger 2005), with rates varying by species. In songbirds, the recovery rate is less than 1 percent, while in game birds the rate can go up to 12 percent (Bird Banding, Colorado Division of Wildlife).

Is a 1 to 12 percent return worth the potential risk? Concerns about banding are not uncommon, and some studies reveal consequences that are worth considering.

Wear and Tear. A study published in *The North American Bird Bander* in 1976 found that conventional metal leg bands on black vultures (*Coragyps atratus*) and turkey vultures (*Cathartes aura*) caused skin lesions and foot deformities because of excrement build-up beneath the band (Henckle 1976). As a result, U.S. and Canadian banding offices prohibited the use of leg bands on vultures, and researchers began using commercially available cattle ear tags to mark birds in field studies. Those tags also proved problematic. In 1998, a study published in the *Journal of Field Ornithology* found that cattle tags on vultures became illegible, which impacted long-term studies (Buckley 1998). Band damage is a particular concern for those studying long-lived birds such as sea birds, whose bands can deteriorate from sand or saltwater corrosion (Hatch and Nisbet 1983).

Exhaustion. Fifty percent of the bird species that nest in the eastern and midwestern U.S. then winter

in the Caribbean or Latin America cross the Gulf of Mexico, flying nonstop across 600 miles of water. To prepare for the journey, birds such as the ruby-throated hummingbird (*Archilochus colubris*) or the rose-breasted grosbeak (*Pheucticus ludovicianus*) must put on fat to provide the necessary energy. Kerlinger notes that most of these birds burn 0.6 percent of their body weight per hour, and that if they do not find land within about two and a half days of nonstop flight, they will likely die (Kerlinger 1999). Thus, if tailwinds shift, lengthening the trip, even the 0.005-gram weight of a hummingbird band could speed depletion of the hummer's fat supply. Even without added band weight, this migration can prove deadly. "Biologists routinely discover thousands of dead birds that have washed ashore," writes Kerlinger.

Banding Stress. Research shows that most birds tend to lose weight during the banding process (Refsnider 2003). House sparrows, for example, may lose an average of 4.2 percent of their body mass, and possibly as much as 7.4 percent (Refsnider 2003). Although banding a bird typically takes a few minutes, researchers sometimes net large numbers of birds at one time. To minimize avian stress, most researchers try to release birds within an hour.

Penguin Deaths. Early in 2011, scientists published a study in *Nature* that highlighted the long-term impact of banding king penguins (*Aptenodytes patagonicus*). The researchers found that bands attached to the birds' flippers seemed to lower their survival rate by 44 percent and reduce their chances of reproducing (Le Maho 2011). A similar study published in 2004 revealed that the metal ID bands fitted on to penguins' flippers hinder the penguins in water, adversely affecting their fishing and swimming abilities (Gauthier-Clerk 2004). Although the impacts of flipper tags on penguins is not necessarily relevant to North American migratory birds, it does highlight some additional risks of banding.

At a time when nearly a third of the 800 bird species in the United States are threatened or in serious decline (The State of the Birds 2009), scientists should ask themselves: Is banding worth the stress it places on birds? ■

Why Bird Banding Should Continue

By Bruce G. Peterjohn

Last spring, Cindy Marguilis, a volunteer with the conservation group International Bird Rescue (IBR), was watching egrets at a rookery in California and noticed a bird with a metal leg band. Her photographs of the bird revealed the band number, and from that Marguilis discovered that IBR had treated the bird for injuries then released it about a year earlier. Researchers were heartened to learn that the bird was healthy and well-adjusted—information that would have been almost impossible to gather without a bird band.

The concept of marking individual birds with numbered bands has barely changed since its inception in the late 19th century, but its application as a scientific tool has evolved considerably. Initially used mainly to track bird movements, banding has a much broader use today.

Population Ecology. Banding data help develop quantitative population ecology and analytical tools to estimate demographic trends of migratory bird populations (Nichols and Tautin 2008). Researchers also use these data to determine factors such as harvest rates and survivorship that help manage harvested bird populations (Anderson 1975, Nichols and Johnson 1996). For example, every year the U.S. Fish and Wildlife Service and the Canadian Wildlife Service survey breeding waterfowl from the north-central U.S. throughout Canada and Alaska, estimate the number and species of breeding waterfowl for that year, and use that information to establish annual duck-hunting regulations (USFWS Migratory Bird Program).

Survival Rates and Trends. Bands recovered from mist-netted passerines and songbirds help scientists estimate the productivity, survival rates, and other factors influencing the birds (DeSante *et al.* 1995). For example, banding results show that significant regional declines in wood thrush (*Hylocichla mustelina*) populations coincide with regions having low apparent survivorship (Saracco *et al.* 2010). Such information helps monitor the status and trends of migratory bird populations, especially species breeding in the boreal forest and other regions of the continent that are not routinely surveyed or need special attention (Dunn *et al.* 1997).

Scientific Studies and Research. The growth of avian ethology as a scientific discipline has influenced the evolution of bird-banding practices (McDon-

ald *et al.* 2008). Following the local movements of marked birds is important for ecotoxicological studies, especially where birds are regularly exposed to environmental contaminants (Weseloh and Hebert 2008). Scientists study marked birds to determine rates of disease infection within bird populations and to identify a bird's potential role as a vector for diseases, such as West Nile virus and Newcastle disease (McLean and Guptill 2008).

Despite the obvious benefits of bird banding, the practice has its critics. Recent studies show that most annual mortality in bird populations occurs during migration (Sillett and Holmes 2002). Some critics fear that migratory birds may be imperiled by carrying a band, which typically weighs less than 1 percent of the total body weight. Yet that claim has never been substantiated. No studies have demonstrated that banded birds are more susceptible than unbanded birds to migration mortality factors such as increased predation, unfavorable weather conditions, and reduced feeding opportunities.

In addition, it has never been verified that neotropical migrants crossing the Gulf of Mexico can barely store enough fat to complete this crossing. In fact, during most weather conditions, trans-Gulf migrants fly a considerable distance inland after crossing the Gulf before they land (Lowery 1945), indicating that fat reserves are not depleted by carrying the weight of a small aluminum band. Banding data show that migratory birds return for a number of years to their breeding location, demonstrating that banded birds can complete their annual migrations while wearing a bird band.

Reports of birds injured by bands are rare, but when they occur, scientists seek to minimize the risk. As a result, many different sizes and types of bands have evolved over the past century, and this will continue as new problems are identified. If solutions aren't available, then the birds are no longer marked with metal bands, as is the case with New World vultures.

While the risk to banded birds cannot be completely eliminated, the knowledge derived from banding far outweighs the risks. Bird banding is an integral management and conservation tool, and within the context of defined scientific studies, it is essential for maintaining avian populations in the future. ■



Credit: Kinard Boone

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