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Survival After Banding: Some Further Thoughts

As noted by R. Poole and C. Brown (2007) banders who ply their craft in view of the general public, or who give talks about banding, are liable to run into the question "Does that harm the bird?" We generally have a litany of stock answers. Some involve telling them about the lengthy lifespan of banded birds. Others recount the speed and willingness of banded birds to re-enter traps and in the process get handled, weighed and measured all over again. These 'trap-happy' birds seemingly act as if this was simply the minor price of getting a free meal of the bait in the trap.

In my case I talk about Black Skimmers (*Rynchops niger*) and Royal Terns (*Thalasseus maxima*) I have banded living to 17-18 years. I also tell about Island Scrub-Jays (*Aphelocoma insularis*) re-entering a trap to cart away and cache yet another peanut less than five minutes after being captured and banded. Such accounts, that I suspect we all use, are meant to imply that the capture and

banding of birds in our studies is not detrimental to their health and survival.

Is this entirely true? First of all, there is some, largely unavoidable, mortality involved with the capture process, especially when mist-nets are used. This includes predator attacks on birds in the nets. However, this mortality rate is in most cases so minimal that it is usually omitted from banding operation reports and population studies. Nevertheless, we should not ignore entirely the fact that there is some mortality associated with our banding operations.

What about non-lethal impacts? In their recent analysis, Poole and Brown (2007) clearly showed that body weights of 28 individuals from seven passerine species were similar on the last capture date to the weight on the initial capture date. Last captures were from 41 days to over five years after the initial capture with sometimes multiple recaptures within these intervals. But what about impacts on a much shorter time scale? Most of us have watched a newly banded bird fly to a nearby perch and spend some time pecking at this new thing stuck on its leg. How long does it take before it goes back to its normal activity pattern? Body weights of Swainson's Thrushes (*Catharus ustulatus*) netted in spring migration in southern California (Collins and Bradley 1971) and in fall migration in Wisconsin (Mueller and Berger 1966) showed a similar pattern. Recaptured individuals "showed little change in weight on the day of banding, a decrease on the day after banding, and an increase on the second day after banding which brought the birds back to approximately the weight at the time of banding" (Mueller and Berger 1966). This decrease in weight would suggest that there was an impact, albeit brief, on some of the captured thrushes. Possibly they were sitting quietly getting over the capture experience and the presence of a band on their leg and not foraging at a level which would maintain their normal weight (i.e., the weight at initial capture). Were they possibly less vigilant at this time and if so were they briefly more susceptible to predation as well? If they were territory holders and not migrants, they could well suffer a loss of paternity or an attempted territory take-over by ever-vigilant floater individuals during the time when they were being banded or in the post-banding recovery period. This was well documented for Red-shouldered Hawks (*Buteo lineatus*) by McCrary et al. (1992). We will probably never know all the answers to these questions. However, even brief observations suggest there are real possibilities.

Using the longevity of banded birds as a reliable indication of there being no impact on the bird due to banding (as I have often done) is not an experimentally testable hypothesis. It is only by banding that we can determine the age of long-lived birds. The age and survival rate of the logical control group (i.e. non-banded individuals) cannot be determined, at least not with techniques available today. Although probably correct, the initial proposition just cannot be verified quantitatively.

I have been a master bander for 45 years and have used banding in many field studies including a recent survival analysis (Collins and Doherty 2006). Thus, I am in no way speaking against bird banding, something I consider to be an invaluable research technique. I only mean to point out here that there are some, usually minor, impacts on the birds we study associated with this activity. We should not just accept or write off these impacts as 'the price of doing business' and blindly move on. Since there are impacts, banding should be used for research-oriented studies and not random or recreational purposes. Banders should also be alert to opportunities to quantify any impacts of our banding on the subjects of our behavioral studies, population models and survival analyses. In so doing, we will improve both the data we collect and how we use it.

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Recent Literature

BANDING EQUIPMENT AND TECHNIQUES

A method for trapping breeding adult American Oystercatchers. C. P. McGowan and T. R. Simons. 2005. *J. Field Ornithol.* 76:46-49. USGS Coop. Fish & Wildl. Res. Unit, North Carolina State Univ., Box 7617, Raleigh, NC 27695 (The authors used a remote-controlled mechanical decoy to lure birds to a leg-hold noose-mat.) RCT

A technique to produce aluminum color bands for avian research. T. J. Koronkiewicz, E. H. Paxton and M. K. Sogge. 2005. *J. Field Ornithol.* 76:94-97. USGS Colorado Plateau Field Stn., Box 5614, North. Arizona Univ., Flagstaff, AZ 86011 (Color-anodized aluminum bands are used with automobile pin-striping tape and sealed with flexible epoxy. These bands are additional to standard BBL bands.) RCT

Rapid sustainability modeling for raptors by radiotagging and DNA-fingerprinting. R. Kenward, T. Katzner, M. Wink, V. Marcstro, S. Walls, M. Karlbom, R. Pfeffer, E. Bragin, K. Hodder and A. Levin. 2007. *J. Wildl. Manage.* 71:238-245. (Demographic models for exploited populations of three raptor species were developed using three types of data. For two species, Northern Goshawks [*Accipiter gentilis]* in Sweden and Common Buzzards [*Buteo buteo*] in Great Britain, banding and telemetry data were available; for the third species, Saker Falcon [*Falco cherrug*] in Khazakstan, DNA data were also available. Collection of a sufficient amount of data to estimate population parameters reliably when only banding and telemetry data were available required up to 18 years. However, with the addition of DNA data and the rapid improvement in telemetry technology, sufficient data can be collected in as little time as four years.) SG

Use of implanted radiotransmitters to estimate survival of Greater Sage-Grouse chicks. M. A. Gregg, M. R. Dunbar and J. A. Crawford. 2007. *J. Wildl. Manage.* 71:646-651. USFWS, Sheldon-Hart Mountain Natl. Wildl. Refuge Complex, Box 111, Lakeview, OR (Low chick survival is one likely cause of declines of Greater Sage-Grouse [*Centrocercus urophasianus*] populations in the Pacific Northwest. The authors implanted subcutaneous radio transmitters to track survival of 286 chicks. Chicks were captured at 24-36 hours post hatch; transmitters were implanted at the capture site. Unlike other studies in which chicks were captured and moved to alternate locations (vehicle, lab, etc.), surgery was conducted at the capture site. Thus, goals of the study were to develop field surgery techniques, evaluate post-surgery chick survival and determine cause of death. Two chicks apparently died as a result of surgery. At the end of the tracking period, 26 chicks were alive and 212 dead. About 80% of mortalities were attributed to predation. The overall 28-day survival rate was 0.22. Data from 48 chicks were deleted due to transmitter loss or failure. Necropsies of 22 dead chicks revealed no inflammation or infection associated with the implantation or infection associated with the implantation surgery. The estimated survival rate was about half that of another study in which chicks were fitted with external transmitters.) SG

IDENTIFICATION, MOLTS, PLUMAGES, WEIGHTS AND MEASUREMENTS

Featured photo: identification of adult Pacific and American golden-plovers in their south-bound migration. A. Jaramillo. 2004. *West. Birds* 35:120-123. San Francisco Bay Bird Observ., Box 247, Akviso, CA 95002 (Details with two color photos.) RCT