Recent Literature

Compiled by C. John Ralph. (If you would like to help review articles of interest to banders, please contact cjr2 "at" humboldt.edu, and feel free to mention if you have a particular journal or geographic area of interest).

Contributors to this issue:
LFR = Luiza Figueira**, PVM** = Pedro V. Martins, **CMS** = Cyndi Smith, **CJR** = C. John Ralph

ANALYTICAL METHODS

Drivers of demographic decline across the annual cycle of a threatened migratory bird. Scott Wilson, James F. Saracco, Richard Krikun, D.T. Tyler Flockhart, Christine M. Godwin, and Kenneth R. Foster. 2018. *Nature Scientific Reports 8:7316.* https://doi.org/10.1038/s41598-018-25633-z. Environment Canada, Ottawa, scott.wilson@canada.ca

While many monitoring programs, such as the North American Breeding Bird Survey, are documenting range-wide declines in Neotropical migrant birds, scientists usually cannot attribute these declines to specific changes in demographic rates (i.e., productivity, recruitment, adult survival) on the breeding grounds and the influence of changes in habitat at locations throughout the annual cycle. This paper attempts to do just that for Canada Warbler (*Cardellina canadensis*), combining demographic data from 59 Monitoring Avian Productivity and Survivorship (MAPS) stations across the breeding range with human footprint analyses from the breeding range and the much smaller wintering range in the northwestern Andes of South America. Population declines were strongest in the east, moderate in the west, and fairly stable in the central portion of the range. However, the stations were heavily skewed to the western (23 stations) and eastern (32 stations) portions of the species range, with only 4 stations in the central portion, so the trends in the central portion should be interpreted cautiously. Positive trends in breeding productivity, but declining trends in recruitment and apparent adult survival, suggest that the factors causing population decline reside in the non-breeding range rather than the breeding range. This was supported by the trend in anthropogenic development, which was far greater on the non-breeding range in the Andes (14% increase) than on the breeding range (0.11% increase). This analysis benefitted from recent research on Canada Warbler on the wintering range in the Andes, which is still relatively uncommon. As a MAPS station operator, it is always gratifying to see our data being used to further conservation efforts. **CMS**

Reclamation and habitat-disturbance effects on landbird abundance and productivity indices in the oil sands region of northeastern Alberta, Canada. Kenneth R. Foster, Christine M. Godwin, Peter Pyle, and James F. Saracco. 2016. *Restoration Ecology* doi: 10111/rec.12478. Owl Moon Environmental, Inc., Fort McMurray, AB, kfoster@owlmoon.ca

The authors used demographic data (abundance and productivity) collected in 2011-2013 on 12 species captured at 35 MAPS stations to assess whether reclamation of land after oil sands extraction activities was effective. The stations were established in three habitats: undisturbed, disturbed and reclaimed (land capability equivalent to that present before disturbance). They measured vegetation structure as per the MAPS protocol to develop habitat variables. They found significant relationships between habitat structure and the capture rates of adult and young birds, and the probability of capturing a young bird (productivity). As might be expected, obligate forest-dwelling species, such as Canada Warbler (*Cardellina canadensis*), took more years to approach natural vital rates in reclaimed habitat than did those species, such as Tennessee Warbler (*Oreothlypis peregrina*), that prefer successional habitat. Clay-colored Sparrow (*Spizella pallida*), an open grassland specialist, showed reduced vital rates as vegetation structure became more established. This study nicely demonstrates how using mark-recapture methods may be a more effective monitoring technique than traditional presence-absence methods. For example, while Chipping Sparrow (*Spizella passerina*) abundance

appeared to be high, productivity was low, which may indicate a population sink – a finding that would not be possible relying on point counts. **CMS**

Equipment, techniques, and station reports

Bird Observatories: **An underutilized resource for migration study**. Erica H. Dunn. 2016. *The Wilson Journal of Ornithology* Environment Canada, Ottawa, ON. EricaHDunn@gmail.com

An interesting overview from a leader in the bird observatory movement, she noted that "classic" observatories share a focus on capture and study of birds in the hand, particularly migrants. While many professionals were first inspired by working at a bird observatory, and researchers have long been using observatory data and facilities in collaborative studies, including: timing, routes and destinations of migration; body condition and local movement during stopover; and tracking long-term population change. Nonetheless, she observes that observatories are an underutilized resource for data by researchers, and highlights the benefits they offer and opportunities for further cooperation. **CJR**

An improved mechanical owl for efficient capture of nesting raptors. Meghan K. Jensen, Shanti D. Hamburg, Christopher T. Rota, David F. Brinker, Dustin L. Coles, Mark A. Manske, Vincent A. Slabe, Matthew J. Stuber, Amy B. Welsh, and Todd E. Katzner. 2019. *Journal of Raptor Research.* West Virginia University, Morgantown, WV. mkjensen@mix.wvu.edu

Lures are in widespread use for capturing of focal bird species or groups. In the case of raptors, live lures, such as *Bubo* owls, are commonly used, that poses ethical and logistical challenges. To overcome these challenges, taxidermy lures have been tested, with the ones that were fitted with mechanical components for simulating movements being more successful. In this paper, the authors presented improvements in the engineering of mechanical owl lures and tested their effectiveness against live lures. The costs for the first year of the research and for the subsequent years' maintenance was lower for mechanical lures (US $775 and US $75, respectively) when compared with live lures (US $2,230 and US $1,325, respectively). The mechanical lure was placed near raptor nests, focusing on capturing the individuals using the nest and following the same protocol used when luring with live animals. The capture attempts in northeastern US using the improved mechanical lure were more successful than the attempts that used live lures (based on other research around the US), with exception of one species, Merlin (*Falco columbarius*), for which the effectiveness of both methods was high. It also took the researchers less time to capture the focal individuals than with the compared literature. **PVM**

Mixed effects of geolocators on reproduction and survival of Cerulean Warblers, a canopy-dwelling, long-distance migrant. Douglas W. Raybuck, Jeffrey L. Larkin, Scott H. Stoleson, and Than J. Boves. 2017. *Condor 119:289-297.* Arkansas State University, Jonesboro, AR, dwraybuck@gmail.com.

This article explores the effects of carrying geolocators on return rates (apparent annual survival) over two years on 49 adult male Cerulean Warblers (*Setophaga cerulea*) in Pennsylvania, Missouri, and Arkansas, US. They monitored the effects of geolocators across the full annual cycle by comparing apparent within-breeding-season survival (within-season), nestling provisioning rates, nest survival, and return rates tagged adult males and color-banded controls. They found no negative effects during the breeding season, but their return rate of tagged birds was lower than that of controls (16% ± 5% vs. 35% ± 7%). They found no strong evidence that the differential return rate between the two groups was influenced by breeding region, body mass, bird age, year of geolocator deployment, or method of attachment. Although finding no effect of geolocators during the breeding season is encouraging, the lower return rate of geolocator-tagged birds warrants further investigation in the field. **CJR**

Identification, molts, plumage, weights, and measurements

Eccentric preformative molt in the Spotted Towhee. Stephen M. Fettig and Charles D. Hathcock. 2015. *Western Birds 46:343–346*. Los Alamos National Laboratory, Los Alamos, NM, US. hathcock@lanl.gov

Correct aging of birds is accomplished primarily through the examination of wing-feather molt. Thus, understanding the sequence of molts is critical. In this paper the authors describe an incomplete eccentric preformative molt observed in a hatch year male Spotted Towhee (*Pipilo maculatus*) within the Pajarito Wetlands Complex of the Los Alamos National Laboratory in New Mexico. An eccentric molt starts among the middle primaries rather than at the first primary. The authors hypothesize that this eccentric primary molt may have adaptive value for young birds exposed to abrasive vegetation, such as the dry ground habitat of the towhee. **CMS**

North American banding results

Golden-cheeked Warbler: new maximum longevity record. Melanie R. Colón, Ronnisha S. Holden, Michael L. Morrison, Tiffany M. McFarland, and Heather A. Mathewson. 2015. *Western Birds 42:261–262*. Texas A&M University, College Station, TX, US. melaniec@tamu.edu

The juniper-oak woodlands of the Kerr Wildlife Management Area (WMA) in central Texas are one of the few breeding areas for the endangered Golden-Cheeked Warbler (*Setophaga chrysoparia*) in the USA. On 19 Apr 2006, a male that was at least two years old (based on plumage) was captured and banded. In 2013 this male was recaptured, and three auxiliary color bands were added so that he could be identified by sight. He was observed numerous times in 2014 and was last observed at Kerr WMA on 9 May 2015. At that time he was inferred to be at least 11 years old, which is three years older than the previous record, and fairly old for a *Setophaga* warbler. The authors do not mention whether this male was observed anywhere between 2006 and 2013, which would be important information towards understanding sightability, breeding site fidelity and emigration. **CMS**

A summary of landbird banding near Tlell, Haida Gwaii, British Columbia, autumn 1997. Spencer G. Sealy. 2017. *British Columbia Birds 27:30–34.* spencer.sealy@umanitoba.ca

The author captured 443 individuals of 19 species during 53 days of banding between 30 Aug and 15 Dec 1997. Dark-eyed Juncos accounted for 81% of the captures (355 birds). Golden-crowned Kinglet and Hermit Thrush were the only other species with more than 10 individuals captured during that period (24 and 15, respectively). A continual turnover of Dark-eyed Juncos at the site suggested that they move widely on the Islands throughout the fall. The results provide only a snapshot of fall migration timing and post-fledging dispersal at one location on the east side of Graham Island, and only further monitoring at a number of sites would confirm how representative these results are. **CMS**

Postfledging survival and local recruitment of a riparian songbird in habitat influenced by reservoir operations. Matthew Hepp, Lena Ware, Harry van Oort, Suzanne M. Beauchesne, John M. Cooper, and David J. Green. 2018. *Avian Conservation and Ecology 13:12.* https://doi.org/10.5751/ACE-01190-130112. djgreen@sfu.ca

Studies evaluating the significance of anthropogenic activities, such as oil and gas development or forestry, typically focus on nesting success or number of young fledged (productivity) and suggest mitigation measures based on those periods of the annual cycle. This study suggests that the post-fledging period, when the young are still on the breeding grounds, should receive more attention. They monitored Yellow Warblers (*Setophaga petechia*) at three sites near Revelstoke, British Columbia that were in riparian habitat within or adjacent to the Upper Arrow Lakes Reservoir, levels of which are controlled for hydroelectric and flood control purposes. While there is annual variation, water levels typically rise in late May and June, and peak in July; birds may initiate breeding on territories above the water line but these may be partially or completed inundated

as the season progresses. They color-banded adults, monitored all nests they could find, then color-banded nestlings, and radio-tagged a subset of the heaviest nestlings. Of 39 nestlings tagged, 13 died in the nest due to predation. They were able to track the remaining fledglings (15 from inundated territories and 11 from dry territories) for up to 21 days. Birds that hatched from nests in inundated territories had a higher risk of mortality than those hatched in dry territories, with most deaths attributed to drowning. While the authors do not discuss possible negative effects of the radio tags, their telemetry results were supported by data on fledglings that were banded, but not radio-tagged; these were also less likely to recruit in inundated than in dry habitat, and had overall low recruitment. This study highlights the need to consider the vulnerable post-fledging period in impact studies. **CMS**

Effects of restoration and fire on habitats and populations of western hummingbirds: a literature review. John D. Alexander, Elizabeth J. Williams, Caitlyn R. Gillespie, Sarahy Contreras-Martínez, and Deborah M. Finch. 2020. *General Technical Report RMRS-GTR-408. U.S.D.A., Forest Service, Rocky Mountain Research Station. 6*4pp. Klamath Bird Observatory, Ashland, OR, US. jda@klamathbird.org.

The authors present a welcome comprehensive review of life history traits and the role of fire in the range of six species in four key habitat types in western North America. They examined: Rufous (*Selasphorus rufus*), Calliope (*Selasphorus calliope*), Broad-tailed (*Selasphorus platycercus*), Costa's (*Calypte costae*), Black-chinned (*Archilochus alexandri*), Anna's (*Calypte anna*), and Allen's (*Selasphorus sasin*) hummingbirds. A key recommendation was to "expand hummingbird banding locations to replicate sites and sample a broader range of ecotypes. The expansion of hummingbird banding efforts is valuable for understanding humming-bird demographics, population trends, migration routes, and timing." They also recommend that training and support should be provided for existing and new hummingbird banding efforts, and existing bird banding stations should be provided with the training and resources necessary to accurately identify, age, and band hummingbirds. To help address these suggestions, the banding community should consider additional review of monitoring approaches to show how alternative capturing techniques and protocols (e.g., monitoring methods that use feeder lures and Hall traps or constant effort mist netting) can best complement each other to meet objectives for filling information needs such as monitoring long-term changes in hummingbird population demographics, measuring responses to restoration, and researching migratory connectivity. **CJR**.

Effects of urbanization on bird migration. Anne-Sophie Bonnet-Lebrun, Andrea Manica, and Ana S.L. Rodrigues. 2020. *Biological Conservation 108423:1-8.* Department of Zoology, University of Cambridge, UK. anne-sophie.bonnet-lebrun@normale.fr

This important paper uses U.S. and Canada Bird Banding Lab and Office records for 12 species to examine the variability in the amount of migration, and just why the species migrate. Roughly 20% of species are migratory overall, but not all individuals within these species necessarily migrate. The authors looked at this within-species variability as a natural experiment to investigate the mechanisms driving bird migration. Previous studies have suggested that migrating enables an escape from harsh winters and increased access to resources, particularly important during the breeding season. Urbanization, by altering local temperatures and resource availability (e.g. through garbage or garden feeders) can buffer the effects of winter harshness and modify breeding-season resource availability, potentially affect individual migratory strategies. They used banding data from partially migratory North American species to investigate the effects of natural environmental conditions (winter temperature, breeding season resource surplus) and urbanization on the propensity of individuals to migrate. They found strong support for the hypothesis that individuals migrate to avoid harsh winters. In eleven species, they found significantly higher probabilities of residency in areas with milder winters. They also found in five species that resource surplus

in the breeding season significantly reduces the propensity to migrate. Finally, urbanization increased the likelihood that individuals remain year-round in their ranges, avoiding migration away from their breeding range (in four species) or their wintering areas (in eight species), after controlling for climate and resources. They concluded that migration strategies will respond to global change – in climate and land use – and indeed are already doing so. **CJR**

Birds of a feather don't always flock together: variation in molt origins and movement patterns of winter finches in Ontario. Kevin C. Hannah, Kevin J. Kardynal, and Keith A. Hobson. 2020. *Journal of Ornithology*. *https://doi.org/10.1007/s10336-020-01760-1*. Canadian Wildlife Service, Ottawa, ON. kevin.hannah@ec.gc.ca

For irruptive or facultative migrants among the winter finches in the subfamily Carduelinae, seasonal movements are extensive but have been poorly described in North America. The authors used baited traps and mist nets and took a primary feather for stable hydrogen isotope measurements (δ^2H_f) from three regions in Ontario, Canada, during the winters of 2014–2015 and 2015–2016 to infer potential breeding origins of four species. They also used color bands to better understand migratory movements within and across winters. Values of δ^2H_f differed by age, sex, and capture location both within and among species. Predicted breeding origins of wintering Evening Grosbeaks (*Coccothraustes vespertinus*) and Pine Grosbeaks (*Pinicola enucleator*) were largely from northwestern North America. Common Redpolls (*Acanthis flammea*) and Hoary Redpolls (*A. hornemanni*) largely originated from the High Arctic or western Canada. Grosbeaks were most often recaptured or re-sighted at the same capture location between winters. Recaptures and observations of color-banded redpolls only occurred within a winter, and mostly at the same capture location. Their results are a unique application of banding to document the first linkages between potential breeding and wintering sites. These results demonstrate the usefulness to conservation and science of using feather samples in capture operations and should be emulated. **CJR**

Migration patterns of San Francisco Bay Area Hermit Thrushes differ across a fine spatial scale. Allison R. Nelson, Renée L. Cormier, Diana L. Humple, Josh C. Scullen, Ravinder Sehgal, and Nathaniel E. Seavy 2016. *Animal Migration 3: 1-13*. San Francisco State University, San Francisco, CA . nelson.allison@gmail.

An interesting paper that shows the fine-scale migration patterns of Hermit Thrush (*Catharus guttatus*). The authors used light-level geolocators on birds from their wintering grounds to their northern breeding grounds. Six birds from the north of San Francisco Bay (Marin County) migrated to the British Columbia coast and northwestern Washington. Four birds from the south of San Francisco Bay (Alameda County) migrated to southeastern Alaska and the British Columbia coast. Hermit Thrushes from the north and south of San Francisco Bay likely originate from different breeding populations and may, therefore, face different conservation challenges. **CJR**

Non-North American Banding Results

Bird assemblages on Amazonian river islands: Patterns of species diversity and composition. Sérgio H. Borges, Fabricio Baccaro, Marcelo Moreira, and Erik L. Chourei. 2019. *Biotropica 51:903-912.* Universidade Federal do Amazonas, Manaus, Brazil. shborges9@gmail.com

Using banding as well as other methods, the authors compared bird assemblages from Amazonian fluvial islands with other Amazonian ecosystems, aiming to understand differences in species composition, richness and abundance, and also the influence of nearby mainland and island characteristics to these parameters in the Rio Negro region, in the Brazilian Amazon. Islands had overall less species than mainland, with larger islands having higher species richness. The degree of isolation also influenced the species richness, with more isolated islands having a lower richness.

The species composition differed between islands and the mainland, with some species more abundant in islands than in the mainland. Three of the five most captured species on islands are specialized to these environments and hardly found on the mainland. The authors also suggested that three other species, found in the mainland, are good candidates to be island specialists since they are widespread and more abundant in these environments. The methods used here have been relatively little applied to temperate regions, and would likely prove interesting. **PVM**

Effects of a regenerating matrix on the survival of birds in tropical forest fragments. Jared D. Wolfe, Philip C. Stouffer, Richard O. Bierregaard Jr., David A. Luther, and Thomas E. Lovejoy. 2020. *Avian Research 11:8*. Michigan Technological University, Houghton, MI. jdwolfe@mtu.edu

This study uses long-term bird banding data from a large scale ecological experiment in the Brazilian Amazon, the "Biological Dynamics of Forest Fragmentation Project" to test the hypothesis that age and quality of forest matrix around "islands" of habitat influence the survival of sensitive bird species living in these forest fragments. T hey used six landbird species with high capture numbers, distinct ecology, and diet guild to represent one group of sensitive species (birds expected to suffer population decline under forest fragmentation process) and one group of species more resilient to fragmentation. As predicted, the three sensitive species suffered a decrease in survival just after fragmentation and had increased survival with the development of the matrix's secondary forest around the islands. More resilient species had little to no variation in survival related to fragmentation and matrix's forest regeneration, except that one of the resilient species, the Black-headed Antbird *(Percnostola rufifrons)*, a gap specialist, that had an increased survival just after fragmentation. This elegant paper contributes to our understanding and necessary discussion of the consequences of fragmentation on tropical forest as well as our understanding of population dynamics associated with regenerating and young forests. **LFR**

Hermit Thrush
Comstock studios George West