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Red-eyed vireo (*Vireo olivaceus*) in nest // Viréo aux yeux rouges dans nid. Photo: Cara Snell.

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Rob Warnock and Barbara Bleho

Welcome to the second issue of *Picoides* in 2022. We hope everyone had a good spring and is continuing to be safe during the pandemic.

In Nicola Koper's latest President's Message, she discusses in detail the upcoming SCO-SOC conference in September. It will be virtual and student and young researcher centred. There will be no registration fees to make the conference accessible for all. Donations to SCO-SOC in lieu of registration fees will be very welcomed. Please check out Nicola's message and the SCO-SOC website for more details. Her report is on page 2 and the preliminary notice about the conference is on page 22.

We wish to congratulate Dr. Rob Butler on receiving the well-deserved 2022 Huestis Speirs Award for his many achievements and contributions to Canadian ornithology.

Part six of the series on Brown-headed Cowbird brood parasitism on the Canadian prairies by Spencer Sealy is in this issue. Thank you, Spencer, for preparing this series! There is also another amusing bird-themed cartoon by Kayla Martin, an interesting article on hummingbird banding in the South Okanagan, BC and an article by the 2022 Early Career Research Award recipient, Lisha Berzins, and the table of contents from the latest issue of Avian Conservation and Ecology. There is also a new updated Bander's Code of Conduct by the North American Ornithological Council now available. Please check them all out!

The next *Picoides* deadline is October 15, 2022. We look forward to your next submission. Without submissions, there is no *Picoides*. We also welcome your feedback as it your publication and we wish everyone a safe, healthy, spring and summer.

FRANÇAIS—Message des éditeurs – Rob Warnock et Barbara Bleho

Bienvenue au deuxième numéro de *Picoides* en 2022. Nous espérons que vous avez tous a eu un beau printemps et que vous continuez à être en bonne santé pendant la pandémie.

Dans le dernier message de la présidente, Nicola Koper, aborde en détail la prochaine conférence SCO-SOC en septembre. La conférence sera virtuelle et centrée sur les étudiants et les chercheurs en début de carrière. Il n'y aura pas de frais d'inscription afin de rendre la conférence accessible à tous. Les dons à la SOC-SCO à la place des frais d'inscription sont les bienvenus. Pour plus de détails, veuillez consulter le message de Nicola et le site Internet du SCO-SOC. Son rapport se trouve à la page 2 et les premiers détails sur la conférence se trouvent à la page 22.

Nous souhaitons féliciter le Dr Rob Butler qui a reçu le prix 2022 Huestis Speirs bien mérité pour ses nombreuses réalisations et contributions à l'ornithologie canadienne.

La sixième partie de la série sur le parasitisme de couvée du Vacher à tête brune dans les Prairies canadiennes, par Spencer Sealy, est dans ce numéro. Merci à Spencer d'avoir préparé cette série ! Vous trouverez également une autre bande dessinée amusante sur le thème des oiseaux, réalisée par Kayla Martin, un article intéressant sur le baguage des colibris dans le sud de l'Okanagan, en Colombie-Britannique, un article de Lisha Berzins, lauréate de la bourse de recherche en début de carrière 2022, et la table des matières du dernier numéro de *Avian Conservation and Ecology*. Une nouvelle mise à jour du Code de conduite des bagueurs du North American Ornithological Council (en anglais) est également disponible. N'hésitez pas à les consulter !

La prochaine date limite pour les *Picoides* est le 15 octobre 2022. Nous attendons avec impatience votre prochaine soumission. Sans soumissions, il n'y a pas de *Picoides*. Nous vous invitons également à nous faire part de vos commentaires sur cette publication et nous souhaitons à tous un printemps et un été en santé et en sécurité.

Message de la présidente

Nicola Koper

Après ce qui a semblé être un hiver sans fin, je suis sûre que vous êtes tous aussi soulagés que moi que le printemps et maintenant l'été semble être enfin arrivé au Canada; J'ai beaucoup envié nos membres qui sont basés ou qui font des recherches dans les régions néotropicales. Je n'étais vraiment pas sûre que le printemps allait arriver cette année, mais nous y sommes.

Au cours des prochains mois, nous nous concentrerons sur notre conférence virtuelle, qui se tiendra principalement la fin de semaine du 17 et 18 septembre 2022 (nous prévoyons qu'il s'agira surtout de sessions présentées en direct plutôt que de sessions pré-enregistrées). Il y aura des ateliers leur étant associés, avant et après la conférence.

Je m'attends à ce que plusieurs de nos membres soient tristes de manquer une autre conférence en personne et qu'ils pourraient s'interroger sur le raisonnement derrière nos décisions, alors je voulais prendre l'opportunité de ce message pour expliquer davantage pourquoi nous avons fait ce choix et ce que nous espérons réaliser lors de notre conférence 2022.

Beaucoup d'entre nous qui aidons à planifier la conférence sont encore limités en termes de mobilité, d'utilisation de bureaux en personne et de réunions en personne, sans aucune indication de quand ces restrictions prendront fin. Nous avons également constaté que bon nombre de nos anciens partenaires de conférence étaient réticents à l'idée de financer une conférence en personne en raison de l'incertitude qui règne. Ainsi, lorsque nous avons discuté de nos options, il est rapidement devenu clair que ce ne serait pas une option de tenir une conférence en personne.

Cependant, nous voulions également nous assurer que nos étudiants et nos membres en début de carrière aient l'occasion de partager leur travail, de recevoir les réactions et les commentaires de la communauté ornithologique, de gagner des prix pour leurs présentations, de continuer à développer leurs réseaux et de bénéficier de l'expérience d'une conférence pour leur développement de carrière et de compétences. En même temps, nous voulions maximiser les avantages d'une conférence virtuelle, et l'un des plus grands avantages est la possibilité d'avoir une plus grande accessibilité.

Voici quelques-unes des principales caractéristiques de notre conférence virtuelle 2022:

- Inscription gratuite pour tous! Bien que cela ne soit pas obligatoire, certains d'entre vous peuvent choisir de faire un don aux programmes de la SOC-SCO, y compris à notre nouveau fonds d'équité, de diversité et d'inclusivité, puisqu'il n'y a pas de frais d'inscription (ou de frais associés au voyagement!). Nous allons mettre en place un processus qui simplifiera la façon de faire un don lors de l'inscription.
- Centré sur les étudiants et les professionnels en début de carrière. Seuls les étudiants et les post-doctorats présenteront, à l'exception du discours d'ouverture donné par notre lauréate du prix de recherche en début de carrière, Dr Lisha Berzins.
    - Par contre, TOUT LE MONDE est le bienvenu et encouragé à assister à la conférence. Soyons là pour encourager et célébrer les présentations de nos ornithologues de la relève.
- Un éventail de symposiums tirant le meilleur parti du format virtuel
    - Par exemple, il y aura un symposium sur l'écologie et la conservation des oiseaux en Amérique latine et dans les Caraïbes, car l'avantage de ce format virtuel est qu'il n'oblige pas nos experts et membres néotropicaux à se déplacer jusqu'au Grand Nord
    - Un autre symposium se concentrera sur les étudiants en début de programme, pour permettre aux étudiants qui ont récemment commencé leurs programmes d'études supérieures de présenter leurs propositions ou leurs données préliminaires
- Ateliers de développement de carrière et des compétences
- Opportunités de réseautage

- De nombreux prix de présentation, y compris pour les présentations en général ainsi que pour les étudiants de premier cycle et les étudiants en début de programme
- La conférence prendra place en septembre, pour mieux accommoder les membres ayant des responsabilités familiales et respecter le besoin de nos membres de se ressourcer mentalement et émotionnellement pendant l'été. (Nous reviendrons à une conférence d'été lorsqu'elle sera en personne, car les déplacements nécessaires pour assister à une conférence peuvent être plus facilement pris en charge par la plupart de nos membres en été).

Beaucoup d'autres plans pour la conférence sont en cours. À long terme, nous espérons que ce format offrira de nombreux services et avantages, et quelque chose d'un peu différent de la conférence habituelle. Bien que l'accent soit mis sur les étudiants et les membres en début de carrière, nous espérons que nos membres plus établis dans leur carrière seront également présents pour en apprendre davantage sur les dernières recherches ornithologiques, apporter leurs connaissances et leur expérience à la prochaine génération d'ornithologues et pour tirer le meilleur parti des ateliers de compétences que nous proposons - je suppose que la plupart d'entre nous trouverait utile d'avoir une mise à jour sur les dernières recherches utilisant des drones pour surveiller différents habitats ou sur les façons dont nous rendons nos cours d'ornithologie plus inclusifs.

Nous accueillons à bras ouverts toutes idées et aide. Si vous voulez nous rejoindre pour discuter de suggestions, d'idées, pour contribuer à un atelier en tant qu'hôte ou de faire du bénévolat, veuillez contacter le président de la conférence et le vice-président de SCO-SOC, Dr Matthew Reudink Mreudink@tru.ca. Pendant ce temps, nous travaillerons fort pour rendre cette conférence agréable et réussie. J'ai hâte de tous vous y voir, après avoir tous travaillé d'arrache-pied sur le terrain ce printemps et cet été.

ENGLISH— President's Message – Nicola Koper

After what seemed like an endless winter, I'm sure most of you are as relieved as I am that it seems like spring has finally arrived in Canada; I've been most jealous of our members who are based in or doing research in the Neotropics. I really wasn't sure spring was going to make it this year, but here we are.

Over the next few months, we will be focusing on our virtual conference, which will be held primarily on the weekend of September 17 and 18 2022 (we expect it to be primarily live rather than recorded sessions). There will be associated workshops before and after the conference.

I expect many of our members are sad to miss yet another in-person conference, and might wonder about the reasoning behind our decisions, so I wanted to use this message to explain more about why we made this choice and what we hope to achieve with our 2022 conference.

Many of us who are helping to plan the conference are still restricted in terms of mobility, our use of in-person offices, and in terms of in-person meetings, without any clear expectation of when these restrictions might end. We've also found that many of our past conference partners have been averse to funding an in-person conference in an era of such uncertainty. So, when discussing our options, it quickly became clear that it wouldn't be an option to hold an in-person conference.

However, we also wanted to make sure that our students and early career members had an opportunity to share their work, receive early feedback from the ornithology community, win awards for their presentations, continue to develop their networks, and be given career and skills-building opportunities through a conference. At the same time, we wanted to maximize the benefits of a virtual conference, and one of the greatest benefits is the opportunity for greater accessibility.

So, some of the key features of our virtual 2022 conference will be:

- Free registration to all! While not required, some of you may choose to donate to SCO-SOC's programs, including our new equity, diversity and inclusivity fund, in lieu of part of the cost of registration (or all that travel!). We'll be making it easy for folks to donate when they register.

- Student and early-career-centred throughout. Only students and post-docs will be presenting, other than the keynote talk given by our Early Career Researcher award winner, Dr. Lisha Berzins.
    - However, EVERYONE is welcome and encouraged to attend the conference. Let's all cheer on and celebrate the presentations of our up-and-coming ornithologists.
- A wide range of symposia making the most use of the virtual format
    - For example, one symposium will focus on bird ecology and conservation in Latin America and the Caribbean, as a benefit of this virtual format is that doesn't require our Neotropical experts and members to travel all the way up to the Great White North
    - Another symposium will focus on early-program students, to allow students who have recently started their graduate programs to present proposals or preliminary data
- Skills and career-building workshops
- Networking opportunities
- Many presentation awards, including for regular presentations, undergraduates, and early-program students
- A September date, to better accommodate members with family responsibilities and to respect the need for our members to recharge mentally and emotionally over the summer. (We'll be going back to a summer conference when it's in-person, as the travel required to attend a conference can more easily accommodated by most of our members in the summer).

Lots of other conference plans are ongoing. In the long run, we hope this format will provide lots of services and benefits, and something a bit different from the usual conference. While the focus is on students and early-career members, we hope that our members who are more established in their careers will also attend, to learn about the latest ornithological research, contribute their knowledge and experience to the next generation of ornithologists, and to make the most of the skills workshops we're offering – I'm guessing most of us could use a brush-up on the latest research on using drones to monitor habitat or how to make our ornithology courses more inclusive.

We welcome ideas and help in all of this. To reach out, with suggestions, thoughts, or to offer to host a workshop or volunteer, please contact the conference Chair and SCO-SOC's VP, Dr. Matthew Reudink Mreudink@tru.ca. In the meantime, we'll be working hard to make this another successful and enjoyable conference. I look forward to seeing you all there, after all our hard field work this upcoming spring and s ummer.

Follow SCO on Twitter! Follow us @SCO_SOC for news, exciting research, updates from members, and more!
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Student contributions wanted for *Picoides*!

SCO-SOC encourages students to submit material for *Picoides*. In particular, we would like each issue to feature abstracts of at least one or two recently published theses. They must be from students at a Canadian university, but need not necessarily focus on Canadian birds. Abstracts should be 250-400 words long, preferably accompanied by one or two relevant photos.

We also welcome articles describing aspects of student research in greater detail; these should focus on a subject relevant to Canadian ornithology, require references, and may be up to 1,000 words long, again preferably accompanied by one or two photos. See the SCO-SOC Information page for submission details.

2022 Early Career Researcher Award Research Synopsis – Lisha Berzins

I feel incredibly honoured to have received the 2022 Early Career Research Award from the Society of Canadian Ornithologists. Thank you for this recognition! As part of this award, I was asked to write about my research, and so below I will share what has become a central theme: understanding the drivers of variation in reproductive success of aerial insectivores to inform their conservation.

A female Tree Swallow near Prince George, British Columbia. Photo: Lisha Berzins.

From an early age, I had a keen interest in nature and bugs; I had a worm farm, went fishing, and collected 'specimens' to look at under my microscope, but my interest in birds was not sparked until I did a project on the Mallard Duck (*Anas platyrhynchos*). That changed everything. My poor parents endured facts about the Mallard Duck for months until my Dad introduced me to the Peterson Field Guide to Birds. From then on, I spent our family weekend fishing trips scanning the shorelines for birds, or their nests, if large enough to spot like osprey, but had to keep my excitement contained if I spotted one so that I did not scare the fish!

Fast forward to University, I finally got my feet wet in research as a field assistant for a study examining the effect of food availability on the reproductive success of Tree Swallows (*Tachycineta bicolor*) at Long Point, Ontario. I loved every second of working on that project, but the highlight for me, was learning about the ecology of Tree Swallows and the importance of insect prey from Dr. David Hussell. My master's thesis research, with Drs. Gary Burness and Grant Gilchrist, also brought an exciting opportunity to explore the costs of increased reproductive effort in Black Guillemots (*Cepphus grylle*) breeding at East Bay Island, Nunavut (Berzins et al. 2011).

Within an interest in understanding the mechanisms underlying variation in reproductive success of birds, I went to the University of Northern British Columbia to begin a PhD (NSERC CGS funded) with Dr. Russell Dawson. Here, I was keen to understand how variation in the iridescent blue-green dorsal plumage of female Tree Swallows, which reflects individual quality (Bitton et al. 2008) but is also sensitive to environmental conditions during feather growth (Lifshitz & St Clair 2019), influenced reproductive success. I manipulated the brightness of female plumage (dulled and brightened) and tested how variation in plumage colour affected male investment in offspring, nest site retention, and female extra-pair mating success (Berzins & Dawson 2016, 2018, 2020).

Tree Swallow nest box at a cropland site (canola field) near Saskatoon, Saskatchewan where wetlands have been retained. Photo: Lisha Berzins.

For me, the most interesting result was that female's whose plumage we dulled were more likely to retain their nest boxes and breed following the manipulation than control and brightened females (Berzins & Dawson 2018). Since nest usurpation among female Tree Swallows is high (Leffelaar & Robertson 1985) and second year (SY) females with drab plumage receive less aggression pre-breeding from older females (Coady & Dawson 2011), we speculated that dulled females likely avoided harassment and kept their nest boxes because they appeared similar to SYs. Females with brightened plumage, on the other hand, bred later in the season and produced lower quality nestlings (Berzins & Dawson 2019), which could impact their recruitment potential.

During my PhD, I also had the opportunity to be a part of a research network using gelocators to track the migratory movements of Tree Swallows from 12 populations across their breeding range (Knight et al. 2018). This research has led to a better understanding of the

movements and timing of Tree Swallows throughout their annual cycle (Knight et al. 2019, Gow et al. 2019a, b). It also provided an excellent foundation to begin investigating the mechanisms underlying the reproductive success of Tree Swallows from populations using different migratory flyways.

This marked the start of my postdoc at the University of Saskatchewan with Drs. Bob Clark and Christy Morrissey. I was fortunate to have the opportunity to work on two incredible long-term data sets and examine the drivers of lifetime reproductive success (LRS) in British Columbia and Saskatchewan. While the LRS of Tree Swallows in both populations was higher for females breeding earlier in the season and producing more fledglings in their lifetime, the most interesting discovery to me, was the strong positive direct effect of wetland abundance on the LRS of Tree Swallows in Saskatchewan (Berzins et al. 2020). We further investigated the effects of wetland abundance on nestling quality and recruitment potential, finding that nestlings were heavier, and more recruits were produced from years with abundant wetlands (Berzins et al. 2021). Interestingly, the effect of wetlands on nestling mass was stronger than aerial insect biomass, presumably because wetlands are the source of more nutritious aquatic insect prey (Twining et al. 2018).

Emerging aquatic insects from a wetland at the St. Denis National Wildlife Area in Saskatchewan, Canada. Photo: Robert Clark.

A second part of my postdoc, in collaboration with Ducks Unlimited Canada (Mitacs postdoctoral fellowship), involved testing the effect of wetland area on reproductive success and individual quality of Tree Swallows breeding in agricultural landscapes. Tree Swallows bred earlier and produced heavier nestlings, with greater model-predicted first year survival as the area of wetland within the vicinity of nest boxes (500 m) increased at cropland sites (i.e., from 0.2% to ~16% area, Berzins et al. 2022). Aquatic insect biomass was also higher at cropland sites with more wetland area. These results suggest that Tree Swallows can breed successfully, even in croplands, when wetlands are retained and protected. Importantly, wetlands likely promote the population stability of Tree Swallows in Saskatchewan.

Like many ornithologists, reports of declines in avian species have driven my desire to identify and investigate the threats they face to inform conservation actions. I've had the opportunity to do great research with incredible ornithologists, whose mentorship I am truly thankful for (especially, Drs. Russell Dawson, Bob Clark, Christy Morrissey, and Ryan Norris). With exciting new research results on the horizon, I am looking forward to sharing this work at the upcoming Society of Canadian Ornithologists conference in September 2022. Stay tuned! ☺

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2022 Doris Huestis Speirs Award Winner – Dr. Rob Butler

Congratulations to the 2022 Doris Huestis Speirs Award recipient – Dr. Rob Butler! This award is one of the most prestigious awards bestowed by the Society of Canadian Ornithologists/Société des ornithologistes du Canada (SCO-SOC) and it celebrates a person who has made significant and outstanding lifetime contributions to Canadian ornithology. We are extremely pleased to present it to Dr. Rob Butler.

Rob is an ornithologist who has worked as a government research scientist, commissioned wildlife artist, documentary filmmaker, book author, park naturalist, non-profit board member, and a science communicator. He co-founded two non-profit organizations, the Pacific Wildlife Foundation and the Young Naturalists Club of B.C., coordinated the B.C. Breeding Bird Atlas, chaired the Vancouver International Bird Festival, and has been instrumental in having the Fraser River Delta recognized as one of the world's most important migratory bird habitats. He is an excellent communicator and has published over 160 peer-reviewed journal papers, technical reports, conference proceedings, and scientific book chapters. He has also been very successful in communicating the inherent beauty of birds and nature with the general public through his prolific storytelling abilities as seen in his books, popular press articles, radio, television, and newspaper interviews, filmmaking, and art.

Rob served on the SCO-SOC Conservation Committee from 2000-2002. He is a past President of the Waterbird Society and a Fellow of the American Ornithological Society, the Royal Canadian Geographical Society and the Explorers Club. Dr. Butler has been named Outstanding Alumnus at Simon Fraser University (SFU) and Capilano University and holds Adjunct Professor status at SFU.

Some quotes from his supporters include this from James Casey: “To all birders that follow Dr. Butler, he is worthy of celebration for seeking to ensure nature remains part of the culture of those living along the jade coast”. Dr. Ken Otter remarked that Rob “was an instrumental player in establishing the importance of tidal flats in southwestern BC as integral foraging areas for wintering and migrating shorebirds”. Dr. Ron Ydenberg stated that Rob “consistently demonstrated vision, leadership and dedication, and has inspired British Columbians of all ages to have a place for nature in their hearts”. His nominator, Dr. Dorothy Hill, wrote “Dr. Rob Butler has done it all when it comes to contributions to Canadian ornithology. His accomplishments span from scientific publications and technical reports, science writing for lay audiences, public speaking and documentary films, conservation work with non-profits, and wildlife art.”

Thank you to the Doris Huestis Speirs committee which consists of Dr. Mark Brigham, Dr. Colin Garroway and Dr. Colleen Barber. On behalf of the SCO-SOC, we welcome Dr. Rob Butler to the flock of Doris Huestis Speirs Awardees. He is thoroughly deserving of this award.

Dorothy Hill and Colleen Barber

FRANÇAIS—Félicitations au lauréat du prix Doris Huestis Speirs 2022 - Dr Rob Butler

Ce prix, l'un des plus prestigieux décernés par la Société des Ornithologistes du Canada/Society of Canadian Ornithologists (SOC-SCO), récompense une personne qui a apporté une contribution importante et exceptionnelle à l'ornithologie canadienne au cours de sa vie. Nous sommes extrêmement heureux de le remettre à Dr Rob Butler.

Rob est un ornithologiste qui a travaillé en tant que chercheur scientifique pour le gouvernement, artiste animalier, réalisateur de documentaires, auteur de livres, naturaliste de parc, membre du conseil d'administration d'une association à but non lucratif et communicateur scientifique. Il a cofondé deux organismes à but non lucratif, la Fondation Pacific Wildlife et le club des Jeunes Naturalistes de la Colombie-Britannique, il a coordonné l'Atlas des oiseaux nicheurs pour la Colombie-Britannique, il a présidé le Festival international d'oiseaux de Vancouver, et il a contribué à faire reconnaître le delta du fleuve Fraser comme l'un des habitats d'oiseaux migrateurs les plus importants au monde. Il est un excellent communicateur et a publié plus de 160 articles évalués par les pairs, ainsi que des rapports techniques, des actes de conférence et des chapitres de livres scientifiques. Il a également réussi à communiquer au grand public la beauté inhérente des oiseaux et de la nature grâce à ses talents de conteur prolifique, comme en témoignent ses livres, ses articles dans la presse populaire, ses interviews à la radio, à la télévision et dans les journaux, ses films et son art.

Rob a fait partie du comité de conservation de la SOC-SCO de 2000 à 2002. Il a été président de la Société des oiseaux aquatiques et est membre de la Société américaine d'ornithologie, de la Société géographique royale du Canada et du Club des Explorateurs. Dr Butler a été nommé ancien élève exceptionnel de l'Université Simon Fraser (SFU) et de l'Université Capilano et a le statut de professeur auxiliaire à SFU.

Parmi les citations de ses partisans, citons celle de James Casey: "Pour tous les ornithologistes qui suivent le Dr Butler, il mérite d'être célébré pour avoir cherché à faire en sorte que la nature fasse toujours partie de la culture de ceux qui vivent le long de la Côte de Jade". Le Dr Ken Otter a fait remarquer que Rob "a joué un rôle déterminant dans l'établissement de l'importance des battures du sud-ouest de la Colombie-Britannique en tant que zones d'alimentation intégrales pour les oiseaux de rivage hivernants et migrateurs". Le Dr Ron Ydenberg a déclaré que Rob "a constamment fait preuve de vision, de leadership et de dévouement, et a inspiré les Britanno-Colombiens de tous âges à avoir une place pour la nature dans leur cœur ". La personne qui a proposé sa candidature, Dr Dorothy Hill, a écrit : "Rob Butler a tout fait en matière de contributions à l'ornithologie canadienne. Ses réalisations vont des publications scientifiques et des rapports techniques à la rédaction d'articles scientifiques destinés au public, en passant par les conférences et les films documentaires, le travail de conservation avec des organismes sans but lucratif et l'art animalier.

Merci au comité Doris Huestis Speirs, composé de Dr Mark Brigham, Dr Colin Garroway et Dr Colleen Barber. Au nom de la SOC-SCO, nous souhaitons la bienvenue au Dr Rob Butler dans le groupe des lauréats du prix Doris Huestis Speirs. Il mérite amplement ce prix.

Dorothy Hill et Colleen Barber

Feature Articles

The Presence of Anna's Hummingbird in the Oliver Area – Some Observations

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Introduction

Hummingbirds were added to the author´s Canadian banding permit (10852) in 2012, with over 3,900 birds banded in the South Okanagan. Over 900 banded birds have been recaptured. Four BC recognized hummingbird species have been banded by the author: Anna's (*Calypte anna*), Black-chinned (*Archilochus alexandri*), Rufous (*Selasphorus rufus*) and the predominant Calliope (*S. calliope*). The author's first Anna's Hummingbird was banded in 2013.

Methods

Initially (2012-2016), hummingbirds were captured at a single site using a Hall's trap but incidental captures were also made in nets whilst banding 'forest birds' at that site (Site 1). Since 2017 there has been a gradual increase in the number of sites from 4 (2017) to 8 (2020) that were used regularly each year. Other sites than 1-5 (that were used), were discontinued if the numbers captured were too low to provide meaningful observations and, at two sites, feeding hummingbirds was discontinued. Sites were usually visited once a week and the capturing period was either 1 hour or 2 hours using a Hall's trap. At all sites, all feeders except the one in the trap were taken down for the duration of the capturing period. Occasionally, extra visits were made to sample the population more accurately due to low numbers of hummingbirds – usually August (which is when Anna's became more numerous).

Site 1 has not been available since 2019 but site 5 which is across the road from site 1 was started in 2020. Site 2 was started in 2017. These three sites are at elevation (ca 800 m) Site 2 is approximately 2 km from Sites 1 and 5. Banding sites consist of mostly forest and riparian habitats. Site 2 has a small creek with a variable flow. Site 3 was also started in 2017 and is next to Site 4 (which was started in 2020) apart from a highway dividing the properties. These two properties are in the valley bottom but about 100 m above the altitude for Oliver town (300 m). Site 3 has a mix of coniferous and riparian species; Site 4 is a vineyard bordered in the southerly direction by a ravine with a creek, above which there is forest.

Juvenile female Anna's Hummingbird moulting into formative plumage (25.8.2021). Photo by MB Lancaster.

Buff tipped feathers on the rump is indicative of juvenile plumage. The gorget has already moulted a lot of juvenile feathers. Primaries 1-6 have been replaced, primary 7 is growing, primaries 8-10 are juvenile (P10 is the outermost feather). P1 is obscured by a secondary. Only 3 secondaries are clearly visible. Possibly S1-3, (S1 outermost and could be growing). S4 appears to be underneath S3 (6 secondaries is the normal number, but 5 and 6 may be called tertials). Note that what appears to be S2 and S3 have rounded tips. These are diagnostic for juvenile females, adults have the corners 'snipped off '(Wells, 2015). Several pin feathers appear above the secondaries and are probably secondary coverts. The white spot behind the eye is moulting.

Results

At only 5 sites were Anna's captured (Sites 1-5). A total of 30 Anna's Hummingbirds were banded and only two recaptured. No adult Anna's males were captured. The only adult male seen in the whole period was at a site about two km westerly from Site 4 in 2021. A Calliope banded at Site 4 in 2021 was also seen at this site (it was a colour marked bird). There is movement of individuals of hummingbird species including Anna's, between banding and recapture sites. Four percent of hummingbird recaptures of all four species were captured at sites where they were not banded, with the distance ranging from less than 1 km to 19 km distant.

By far the majority of Anna's banded were current year birds – 25 vs 5 adults (Table 1). Only one of the 11 individuals banded with a fat score was an adult, but the recaptured adult did have a fat score (see discussion). Only three of the 30 birds banded had no sign of moult. The adult recaptured bird was moulting, the hatch year bird was not (see discussion). Neither was the adult banded at Site 1 on 02/08/2013 (see discussion).

During 2021, four times the previous maximum annual number (4) of Anna's was caught. Extra visits to the 'hot spot' (Sites 3 and 4) did increase the number to 17 individuals, but by August 2, 8 had already been caught. Just a single bird was caught during July in each of four years prior to 2021.

Table 1. Anna's Hummingbirds captured in the Oliver area.

Location	Banding Date	Age	Sex	Fat	Flight Moult	Body Moult	Weight
Site 1	02/08/2013	1	F	0	N	N	4.3
Site 1	24/06/2014	1	F	0	Y	Y	4.3
Site 1	29/08/2015	2	M	0	Y	Y	4.0
Site 1	07/08/2016	2	F	1	N	Y	4.2
Site 1	22/08/2018	2	M	0	Y	Y	3.1
Site 1	17/08/2019	2	M	0	N	Y	4.9
Site 2	05/08/2019	2	M	1	Y	Y	4.7
Site 2	24/07/2020	2	F	3	Y	Y	5.0
Site 3	18/07/2018	2	M	0	N	N	4.7
Site 3	15/08/2018	2	M	0	N	Y	3.7
Site 3	15/08/2018	2	M	0	Y	Y	4.2
Site 3	31/07/2019	2	M	1	Y	Y	4.6
Site 3	01/08/2019	2	M	1	Y	Y	4.3
Site 3	12/07/2021	2	F	0	Y	Y	4.6
Site 3	26/07/2021	2	F	1	Y	Y	4.7
Site 3	26/07/2021	1	F	1	Y	Y	4.5
Site 3	02/08/2021	2	F	0	Y	Y	4.1
Site 3	27/08/2021	2	M	0	Y	Y	4.2
Site 4	20/07/2020	2	M	0	N	N	4.3
Site 4	12/07/2021	2	F	0	Y	Y	3.9
Site 4	19/07/2021	2	F	0	Y	Y	3.9
Site 4	26/07/2021	2	F	0	Y	Y	4.0
Site 4	02/08/2021	2	F	0	N	Y	5.0
Site 4	08/08/2021	2	M	2	Y	Y	3.9
Site 4	09/08/2021	2	M	2	N	Y	3.0
Site 4	09/08/2021	2	F	0	Y	Y	4.2
Site 4	09/08/2021	1	F	0	Y	Y	4.4
Site 4	13/08/2021	2	M	3	N	Y	4.4
Site 4	27/08/2021	1	F	0	Y	Y	4.0
Site 5	14/08/2020	2	F	1	Y	Y	4.2
	Recapture date						
Site 1	06/05/2016	8	F	1	N	N	4.3
Site 4	24/09/2021	2	F	2	N	N	4.1

Age: 1 = after hatch year; 2 = hatch year; 8 = after third year.
Weight is in grams.
Flight moult: primaries, secondaries and tertials.
Body moult: body and wing coverts.

Discussion

Clearly there is a difference in the incidence of occurrence between Anna's at altitude and at the valley bottom. The reason for the difference in incidence of occurrence of Anna's at altitudinal sites and at the valley bottom sites is unknown. The reason for the 'hot spot' in the valley bottom is also unknown but, in both cases, it is likely to be habitat preference. It is known that hummingbirds migrate at higher elevations, and it might be that that the birds at that altitude are migrating, whereas those in the valley are post-breeding/post-natal dispersal birds prior to migration (which might or might not take place at that altitude).

There is a belief in BC, that Anna's Hummingbirds do not migrate. Evidence presented here, suggests otherwise. Migration does not have to be long distance and short distance migration takes place with many species of birds which are then replaced by the same species from further north in the case of south bound migration. There is also post-natal dispersal. In some species, this is often altitudinal change to the valley floor where moult takes place before migration.

Certainly, Anna's exhibit post-natal dispersal (males clearly do this); presumably seeking out potential breeding areas. The lack of adult males during the breeding season, and only one adult female caught (Site 1, 24/06/2014) would seem to indicate that breeding does not take place in the Oliver area. However, the female was moulting which is suggestive of a post breeding moult. When recaptured (Site 1, 06/05/2016), there was no moult, but it had a fat score – this is suggestive of arrival after northbound movement. The other recaptured bird (Site 3, 24/09/2021) – a hatch year, had no moult but had a fat score and had gained a little weight since it was banded. When banded (Site 4, 26/07/2021), it was in heavy moult with no fat score. A quite typical sequence of events suggesting pre-migration behaviour. The adult banded on 02/08/2013 at Site 1 almost certainly had finished the moult.

Fourteen hatch year birds were banded at the 'hot spot'. If every youngster hatched had reached the stage where the formative moult took place (unlikely) then 7 adult females should have been captured (three were). In reality, more than 7 adult females would be necessary to suggest breeding in the Oliver area (plus 2 or 3 males). But of course, females do not necessarily follow the same post-breeding behaviour as adult males or indeed, post-natal behaviour of hatch year birds.

The structure of the population (post-breeding/post-natal dispersal) from which birds were caught is typical of the other species of hummingbirds at this time of the year. Early 'disappearance' of males, presence of females with hatch year birds, then predominance of the latter, and importantly, fat deposition. Why deposit fat if not migrating? The writer has not captured any species of bird, either side of the Atlantic which had a fat score outside of the migratory periods for those species. Anna's is the only species of hummingbird in BC that undertakes a complete moult on the 'breeding grounds'. It seems reasonable to assume that whilst moulting, fat is accrued prior to further movement. Howell (2002) with reference to Anna's Hummingbird, states “Molts on breeding grounds or during post-breeding dispersal and migration, with some completing on non-breeding grounds.” Birds of the World (online) describes a complex series of movements and migration. Different populations behave differently and those described are in southern USA states. West (2015) states “While some birds may be resident in southern areas, most migrate from the northern coastal regions to southern Arizona and northern Mexico to winter. In southeastern Arizona, there is a movement pattern in fall from west to east, with birds wintering from California to southern Texas, as far east as Houston.” British Columbia is not mentioned regarding migration in any of these three references. However, it seems entirely possible that (some?) Anna's individuals in Southern BC might migrate and be replaced by birds from further North in BC.

There seems to have been an increase in the number of birds using the 'hot spot' in 2021. It will be interesting to see what happens in subsequent years. Particularly if the higher incidence of birds caught in July continues. With the number caught at Sites 3 and 4 during 2021 it is possible that returning birds could be captured in spring 2022.

Anna's Hummingbird is unlikely to survive an Okanagan winter without 'help' from humans putting up feeders and even hanging up light bulbs to provide warmth. This is a recipe for disaster; all hummingbirds need 40% of their food intake as insects. Sucrose does not contain protein. The practice should be actively discouraged, and hummingbird feeders removed on the first of September (the end of September

at the very latest) thus not giving Anna's the option of attempting to remain in the Okanagan for the winter. If birds happen to survive unaided, then that will undoubtedly lead to a natural increase in the overwintering population.[1]

Conclusions

Anna's Hummingbird continues to expand northward. Undoubtedly, this is due in part to the increase of Anna's in Washington State. Studies on 'resident' populations in the Vancouver area and on Vancouver Island would no doubt help to elucidate movement and migratory behaviour of Anna's Hummingbird in BC.

Acknowledgements

Grateful thanks are due to all owners who granted permission to band hummingbirds on their properties. Thanks are also due to S Gellman, whose comments provoked meaningful improvements to the text.

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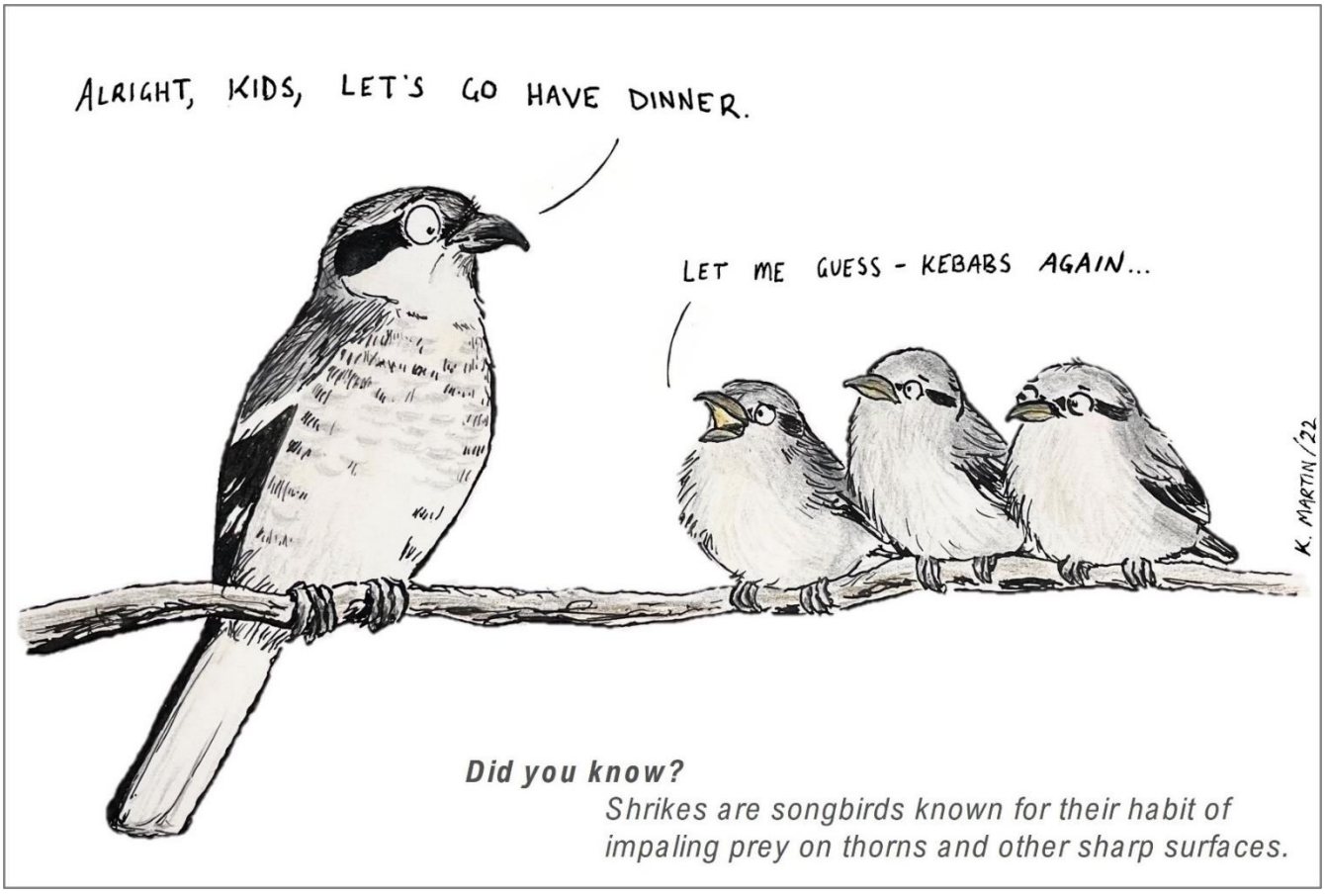

[1] Since writing the last paragraph of the discussion, southern BC has experienced an exceptionally cold December (2021) – temperatures down to -30C. Many reports of dead and dying Anna's Hummingbirds appeared in various media outlets. The opinions expressed in that last paragraph have been fully vindicated.

Cowbirds, Migration and Hormones: Research in the Academy [2]

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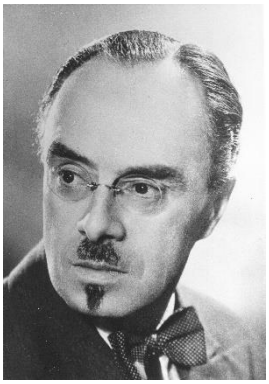
Introduction

The parasitic lifestyle of the Brown-headed Cowbird (*Molothrus ater*) and other brood parasites has intrigued naturalists and ornithologists interested in the behavioural and evolutionary interactions between the parasites and their hosts for more than 200 years. Freed from domestic duties after their eggs are laid, the costly demands of incubation and chick-rearing are foisted upon other species, or hosts. Two early researchers intrigued by this breeding strategy were professors of zoology and physiology at the University of Alberta in Edmonton. William Rowan was Canada's first academically trained ornithologist, who garnered fame for his experiments on the influence of light, particularly on the timing of migration and reproduction in birds. Ornithologist and endocrinologist Emil Otto Höhn's primary interest focused on the endocrine basis of reproduction, particularly of species whose modes of reproduction differed from the typical pattern found in most birds. Brown-headed Cowbirds fitted the bill because they do not build nests, do not develop brood patches or incubate their eggs, apparently have little or no contact with their young, and migrate independently.



Professor William Rowan (courtesy of the University of Alberta Archives).

William Rowan and Migration

Rowan emigrated from England to take a position as a lecturer in the Zoology Department at the University of Manitoba. He and his wife Reta docked at Montreal on October 25, 1919, and arrived In Winnipeg on October 27, where they remained for less than one year, as Rowan eventually accepted a position as a professor in the soon-to-be named zoology department at the University of Alberta and assumed the chairmanship in 1921 (Ainley 1993). Rowan spent the field season of 1920 observing and collecting birds on the outskirts of Winnipeg before initiating field work at the University of Manitoba's new field station at Waugh (Indian Bay), Shoal Lake (49°370″ N, 95°1060″ W), a large, nonacidified Precambrian Shield Lake on the Manitoba-Ontario boundary. There he experienced the forests and muskeg around the station and continued his observations and collections of birds, from which emerged a few observations of cowbirds and new host records (Rowan 1922a, b), which will be highlighted in the last instalment in this series.

Figure 1. 5¢ Whooping Crane stamp issued by Canada Post on April 4, 1955.

It was in Alberta that Rowan conducted the work for which he became best known among scientific circles, his pioneering experiments on the influence of day length on the initiation of migration and timing of reproduction in birds. Although a field biologist at heart, Rowan also was a laboratory zoologist, and he showed that the two approaches could be married successfully at a time when field studies were struggling to be accepted (Ainley 1993). Rowan had many interests and exhibited many talents — avian physiology and reproduction, migration of birds and fishes, avian taxonomy, variation in birds' eggs, biological cycles, nature art and popularization of science — and he became an early champion for conservation of wildlife species and their habitats. Rowan brought his artistic talent to bear in the design of a stamp issued by Canada Post in 1955 (Figure 1) that featured a pair of Whooping Cranes (*Grus americana*) based on a photograph taken in Saskatchewan in the fall of 1953, when the species faced extinction (Sealy 2020).

[2] Sixth in a series on historic observations of cowbird parasitism on the Canadian Prairies.

Figure 2. William Rowan with American Crow, a species on which he conducted an experiment on the influence of light on timing of migration in birds. Courtesy of the University of Alberta Archives (UAA-1969-016-2497).

Rowan wondered whether the movement of migratory birds in spring was stimulated internally by the gradual increase in the amount of light each day, whereas the southward movement in fall for many species occurred under conditions of ever-decreasing daylight. Rowan (1929) involved several passerine species in his experiments, but he focused primarily on the Dark-eyed Junco (*Junco hyemalis*) and later the American Crow (*Corvus brachryhnchos*), both abundant spring and fall migrants in the Edmonton area, and readily held in captivity (Figure 2), unlike a long-distance migrant that Rowan may have initially planned to include in his experiments. Rowan hypothesized that if seasonal trends in photoperiod influenced migratory behaviour, subjecting birds artificially to decreasing photoperiod in spring and increases in fall would upset their normal migratory habits. He predicted that the birds would fly in the opposite, that is, the "wrong" direction — south in spring, north in fall. The results were inconclusive. Immediately upon release birds were observed flying south in spring and north in fall, but none of the banded and, hence, identifiable individuals, was encountered by members of the public late enough following release to support the predicted misdirection of movements. The experiment with the crows, however, was widely publicized and Rowan became known as the man who made "crows fly backwards."

Rowan presented the results of those experiments in a thesis for the D.Sc. degree, published them in prestigious journals of the day (e.g., Rowan 1926, 1929, 1930) and highlighted his work for the appreciation of a broader readership in *The Riddle of Migration* in 1931 (Figure 3). It is significant in the present context that Rowan already was thinking about the migration of cowbirds and proposed to study them at about the same time the experiments on photoperiod were initiated (see below). Although nothing came of the cowbird experiment, Rowan's ideas provided a window into his thinking at the time and revealed his ability to enlist help from experienced naturalists in different parts of the region to assist in the collection of field data and specimens. One of those naturalists mentioned in the context of the planned cowbird migration study was Thomas E. Randall, a superior nest-finder (Houston et al. 1984).

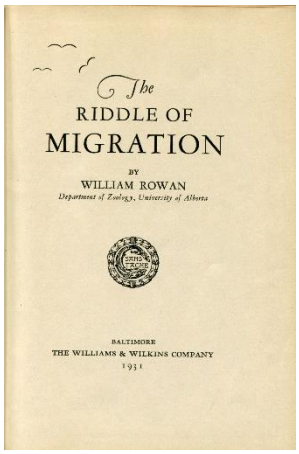


Figure 3. Title page of *The Riddle of Migration* (1931) in which William Rowan described the successes and failures of his pioneering experiments on the influence of photoperiod on timing of migration in birds, in light of current theories of bird migration.

Rowan was aware that cowbirds were reared by other species, and apparently migrated independently of the adults and the foster-parents. He brought with him to Canada a familiarity with the parasitic habits of the Common Cuckoo (*Cuculus canorus*) in his native England. A few days after his arrival in Edmonton, Rowan (1920) wrote to Edgar Chance, who had begun to publish his famous observations of Common Cuckoos parasitizing the nests of one of Britain's most important cuckoo hosts, the Meadow Pipit (*Anthus pratensis*). Chance had provided conclusive evidence, backed by photographs, that cuckoos laid their eggs directly into hosts' nests, rather than laying them on the ground and carrying them in their bills to the nests. Among the myriad projects Rowan would undertake was to build up an ornithological library in his department. He wrote to Chance on September 17, 1920:

> I have followed with the utmost interest your notes on the Cuckoo as they have appeared from time to time in British Birds. I see from the current number which had just reached me that you intend to publish still further and even more interesting notes. [In addition to several papers, Chance published two books on the Cuckoo, *The Cuckoo's Secret*, 1922, and *The Truth About the Cuckoo*, 1942.] Although I keep British Birds, I should very much value a set of reprints of your unique papers for the library of my department, in the hopes that they might stimulate some of my students to try similar work on our Cowbird, which as you know has similar parasitic habits of the cuckoo. I can offer you in exchange reprints of my list of the birds of the Eastby district (Yorks) from the Naturalist, and a list of the birds of Blakeney Point, which are my only British publications of which I any copies left.

There is no evidence that students were stimulated to study cowbirds after reading Chance's papers or talking with Rowan. Another colleague with whom Rowan corresponded was E.C. Stuart Baker, at the time Hon. Secretary of the British Ornithologist's Union. Stuart Baker's contributions to the study of cuckoos and their hosts also caught Rowan's attention. He requested a copy of Stuart Baker's (1923) seminal paper, "Cuckoo eggs and evolution", in which he outlined ideas on the resemblance between the eggs of cuckoos and their foster-parents, sufficiently enough to enable them to escape destruction. But Stuart

Baker had run out of copies of the paper, writing to Rowan on December 2, 1926, that he no longer had copies, as "They all went with a rush, and I have had to defer dozens of people who wanted copies…" (Stuart Baker 1926). (Xeroxed copies were not an option at that time.) Stuart Baker's study of eggs and natural history of brood parasitism culminated in a thought-provoking book, *Cuckoo Problems* (1942). Despite Stuart Baker's descriptions of the eggs of several species of cuckoo and the hosts' eggs they matched, Rowan did not express interest in the responses of different hosts to being parasitized, whether accepting or rejecting the foreign eggs, or the emerging ideas pointing to the evolution of egg mimicry in many cuckoo hosts. It was not that Rowan was not interested in birds' eggs and their often-different shapes and variable colour patterns, because he had studied egg variation in terns before leaving England (e.g., Rowan et al. 1919), but his interests had changed.

Rowan probably also wondered whether light and hormones affected the timing of the cowbirds' migration, as results emerged from the experiments on juncos and crows. For the cowbird work, he needed to incubate cowbird eggs to produce the experimental subjects, but there was not enough time to search for parasitized nests. Help arrived from one of Rowan's associates, Thomas E. Randall, a tireless nest finder and observer who farmed for many years in the Castor area of south-central Alberta (Houston et al. 1984). Rowan was overwhelming in his praise for Randall's abilities as a nest finder. In a letter to Harry S. Swarth of the Museum of Vertebrate Zoology (MVZ), Rowan (1925) described Randall as a "most trusty henchman." Randall's nest-finding prowess produced the cowbird eggs needed for Rowan's experiment.

An experiment proposed, but not conducted

With the knowledge that adult cowbirds migrate ahead of the young in summer, Rowan wondered how cowbirds found their way. He wrote (1931, pp. 76-77):

> It has been assumed times without number that young birds find their road south by accompanying their parents or even members of other species; that they are, in fact, guided south. In some cases, the young do stay with their parents and probably complete their entire migration in company, but such cases are no more frequent than those that undoubtedly do not. The assumption that some other species provides the guidance is the merest assumption. The young cowbirds of Alberta, hatched and fed by foster-parents of some thirty different species, do not spend the winter scattered all over the south as would be the case if they accompanied the birds that reared them. They go neither with their true parents, which depart long before they are ready to travel, nor with their foster-parents. They find their own road when the time comes. It is their very first taste of migration, but they nevertheless take the correct road.

Rowan was aware, however, that adults of many other species, particularly shorebirds, initiate their fall migrations ahead of their young. He cited several examples (1931, p. 77), which revealed the incomplete knowledge of the species at the time:

> The numerous waders that breed on the barren lands to the north of us, practically all leave their young as soon as they can feed themselves and depart south. Later, but independently, the young follow. When they reach us in September far behind their parents, they are hopelessly mixed up and seven or eight species are frequently seen together in a flock. But winter finds them in the Argentine or Florida, Peru or California. Our Franklin gulls, which breed locally in colonies of many thousands, pay no attention to their young after they can feed themselves. They are left to find their own way to Texas and Peru. The extreme case is undoubtedly the American golden plover. The adults take the Atlantic route south while the young travel by themselves, 2000 miles to the west, through the interior of Canada. Yet they re-join their parents later in the Argentine. It is their first migration. Intent must be ruled out. They cannot be conscious of the fact that they are travelling south or making for the Argentine.

Years later, after completing the research on photoperiod and migration, but with this topic still on his mind, Rowan (1945, p. 210) took exception to a conclusion drawn by Platt and Dare (1945) to the coupling of the words "homing" and "migration", "as though they were different manifestations of a single phenomenon." Referring to recent experiments on homing of pigeons, those authors stated that their results suggested that training and familiarity with landmarks are necessary for successful return of the birds to their lofts. Rowan argued that "One cannot, in fact, argue legitimately from the homing habits of pigeons to the migratory ways of other species." To make his point, he wrote, "in the first annual migration of the young of numerous species of birds which undertake their initial fall journey without knowledge or landmarks or the chaperonage of adults. The young of our cowbirds, for instance, or European cuckoos, reach their predestined wintering grounds without either parents or foster-parental guidance…

Figure 4. Brown-headed Cowbird eggs as they appear in their original storage vials (left) and removed from one vial to reveal eggs collected by Thomas E. Randall in June 1936; host(s) are unknown ("Rowan drawer", biology museum, University of Alberta). Photo credit: Cynthia Paszkowski.

We can only speculate on the path Rowan may have taken in a study of the cowbird's migration, but he probably would have manipulated the light regimes of adult versus juvenile cowbirds in the fall, as he did with juncos and crows. He reasoned that young cowbirds — reared by species other than their own – migrated independently of the adults, and their hosts, although he acknowledged this independence is prevalent among many other migratory species. He also was aware that adult cowbirds migrate in mid-summer, ahead of the juveniles, but several weeks earlier than juncos and crows. Capturing enough adults and young cowbirds would have been challenging, but cowbird eggs collected from host nests could be incubated artificially, and neither the adults nor young produced would have migrated. In a letter written on August 29, 1925, to Swarth of the MVZ, Rowan (1925) revealed his plan, albeit only vaguely, that apparently involved incubating cowbird eggs, presumably to provide subjects for his experiment, but this was not stated: "Randall and I are working together on the cowbird", but no further details were provided and apparently the project did not get off the ground. Nevertheless, in the same letter to Swarth, Rowan noted that Randall collected "… 41 cowbird eggs with foster sets and examined no less than 340 nests of small birds." Nothing suggests the eggs were incubated, but I wondered whether all or at least some of them were preserved, possibly individually or as parasitized egg-sets, in the "Rowan drawer" in Department of Zoology's museum. Randall recorded several cowbird hosts over the years, but eggs in the vials in the museum (Figure 4) were taken in the mid-1930s, at least 10 years after those to which Rowan (1925) had referred in his letter to Swarth. The eggs and egg-sets collected by Rowan across the Prairies, and additional host records credited to Randall, will be sorted out in the final instalment of this series, along with those of another long-time associate of Rowan's, Archibald D. Henderson, and other resident oologists and nest-finders across the Prairies.

William Rowan's artistic talent is shown by this pencil sketch of an Eared Grebe on a nest. Courtesy of the University Alberta Archives (1992-12-15 GBMcL, 6-13).

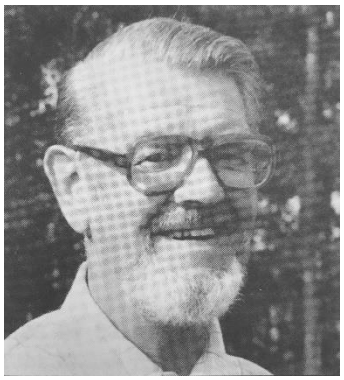
This was not the only project that Rowan did not complete. His interest in doctoral research had been reawakened in discussions with a colleague who was initiating a study of embryology, a subject Rowan had continued to view as a promising area of research for his D.Sc. thesis (Ainley 1993). Rowan thought the Eared Grebe (*Podiceps nigricollis*) embryos he had been collecting for several years would be a worthy subject for a thesis, but this project did not pan out. Instead, Rowan was awarded the doctorate by University College London in 1929 for his work on migration (see Rowan 1929), and his reputation as an original thinker and a pioneer of experimental ornithology was firmly established. Robert Lister (1979, p. 48) described in his popular book, *The Birds and Birders of Beaverhills Lake*, one of the first tasks that Rowan assigned to him after he joined the Zoology Department as a technical assistant in 1923, was to section and mount "dozens if not hundreds of Eared Grebes' embryos." Lister never knew why the embryos were collected, just that Rowan did nothing with them. But a few possibilities came to mind (p. 49), the most likely being that "… Rowan had contemplated working out the embryology of the grebe, but as with several other of his projects, he never got around to doing it."

Nesting in dense colonies allowed William Rowan to collect a large number of Eared Grebe embryos. Colony near Kindersley, Saskatchewan. Photo credit: S.G. Sealy.

Several years later, the stains now faded, the slides of the embryos were discarded. Rowan's interest in embryos, however, did not end there. He conceived the idea that if the Common Loon (*Gavia immer*) descended from the prehistoric, toothed diving bird, *Hesperornis*, it might show evidence of vestigial tooth buds in its embryos. Loons' eggs were collected, and Lister sectioned and mounted the bills of embryos in different stages of development, but the sections showed nothing, and Rowan also abandoned that project. Several years after Rowan's death, Robert W. Storer of the University of Michigan, who was filming the courtship behaviour of Eared Grebes near Edmonton, encouraged Lister to report the negative results. Lister (1967) complied, "… not only as an historical record but also to show the wider interests of the man who did so much pioneer work in the field of photoperiodism." *Hesperornis* superficially resembled modern loons, but the genus currently is allied with shorebirds (Clarke et al. 2005).

A typical clutch of two eggs of the Common Loon, Moose Mountain Provincial Park, Saskatchewan. Photo credit: S.G. Sealy.

Having gained some familiarity with the breadth of Rowan's interests and projects that were executed and planned, it is reasonable to assume that he wondered why adult cowbirds depart from their breeding grounds rather abruptly before some hosts have finished nesting (see Rothstein et al. 1980), and whether the early departure is related to the parasite's "freedom" from parental responsibilities. He would have confirmed this had he trapped cowbirds over the course of the breeding season, but he apparently did not, and there are no returns from banded cowbirds, as there were for crows. Rowan would have been aware that adult Common Cuckoos migrate in mid-summer, early enough to facilitate their return to their southern wintering grounds ahead of other competing species; recent studies have shown, however, that cuckoos are adjusting their migration schedules to match earlier nesting by some hosts in response to climate change (e.g., Saino et al. 2009). Rowan and Otto Höhn shared a consuming interest in the relationship between the hormones and behaviour of birds (Boag 2000), and the possible influence of hormones on reproduction in cowbirds. They became friends and, together with Robert Lister, they founded the Edmonton Bird Club in 1949 (Lima 1997, also see Höhn 1981). Within 10 years, Höhn was publishing results that emerged from his experiments on hormones and cowbirds.



Professor Otto Höhn. Courtesy of Lone Pine Media Productions.

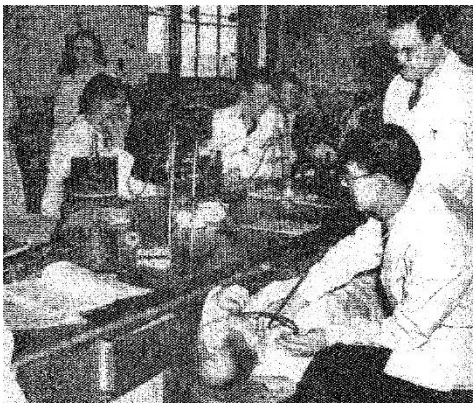
Otto Höhn and Hormones

A more frequently asked question was how avian brood parasitism evolved (Freidmann 1964, Schulze-Hagen 2009). This was the first among 16 major unanswered questions in the study of avian brood parasitism, which was posed in *Parasitic Birds and their Hosts: Studies in Coevolution* (Rothstein et al. 1998), a compendium of then up-to-date summaries of research in the field of avian brood parasitism. The answer is not straightforward. Obligate brood parasitism evolved independently in several taxa of birds, and the various hypotheses posited in explanation of its evolution are not necessarily valid for all taxa nor are they mutually exclusive. Because brood parasites do not develop brood patches and relegate incubation and chick-rearing to other species, endocrinologists such as Höhn began to consider whether the basis of this breeding strategy lies in the endocrine system, and that study of this system in birds that do not develop brood patches, such as in the Brown-headed Cowbird, may clarify understanding of the pattern of reproduction typical of most birds.

Reproduction in the brood-parasitic Brown-headed Cowbird (female on left) piqued the interest of endocrinologist Otto Höhn because this species and other obligate brood parasites lay eggs in other species' nests but do incubate them and, thus, brood patches are not developed during the breeding season. Photo credit: Glen A. Fox.

After emigrating to Canada in 1947, Höhn joined the Physiology Department at the University of Alberta and became a friend and colleague of Rowan's. In fact, Rowan was influential in Höhn being hired by the University, and his hopes were "to benefit from the presence and professional advice of Rowan" (Ainley 1993, p. 291). Although they conducted their research independently, their interests in field ornithology overlapped and their association remained until Rowan's death in 1957. In tributes to Rowan and his many contributions, Höhn (1958a, b) was particularly impressed by Rowan's study of

the effect of light on migration of birds. Lamenting his death, Höhn (1958b, p. 279) stated, "For us, in Edmonton, it is difficult to believe that there will be no further unexpected phone calls from him. These might be to inquire whether we had some book of his that he temporarily misplaced, or to invite us on a country drive to count rabbits in certain patches of brush, or to check on some reported sighting of whooping cranes. He is deeply missed by a wide circle of scientists all over the world." One may speculate about the combined impact Rowan and Höhn would have made had they been able to conduct their migration and hormonal studies together, instead of more than 20 years apart.



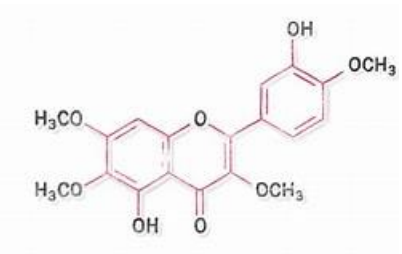
Demonstrating to lab students in 1949. A youthful Dr. Otto Höhn can be seen in the right foreground (reproduced from Sanders and Young [2013]), Department of Physiology, University of Alberta.

Laying eggs, but not incubating them

Höhn became recognized as an international expert on avian endocrinology in the 1950s and 1960s (Lima 1998). He wondered whether the hormonal basis of the typical breeding pattern in birds applied to the Brown-headed Cowbird, and other brood parasites, species that do not incubate or raise their own young. He believed that a study of cowbirds and hormones may shed light on breeding in species with typical breeding patterns. Stimulated by Bailey's (1952) finding that incubation (brood) patch development in passerines requires the action of estrogen and prolactin, and that prolactin also induces broodiness in pigeons and poultry, Höhn (1959) wondered whether a failure to produce prolactin may be a basic factor in the development of brood parasitism.

Otto Höhn "catching some rays" while contemplating the wilderness at his field camp (UAA 1969-016-798-047).

Höhn wondered whether the hormonal basis of the typical breeding pattern in birds applied to the Brown-headed Cowbird, and other brood parasites, species that do not incubate or raise their own young. He believed that a study of cowbirds and hormones also would shed light on breeding in species with typical breeding patterns. Noting that Bailey (1952) had shown that incubation (brood) patch development in passerines require the action of estrogen and prolactin, and that prolactin also induces broodiness in pigeons and poultry, Höhn (1959) thought about whether a failure to produce prolactin may be a basic factor in the development of brood parasitism. Although unexpected, the results revealed that prolactin is present in the pituitaries of ovulating cowbirds, and the prolactin content of the pituitaries of cowbirds was similar to that of the closely related Red-winged Blackbird (*Agelaius phoeniceus*), which exhibits a typical avian breeding pattern (Höhn 1959). Failure to respond to prolactin rather than a lack of its production was suggested in the failure of female cowbirds to form brood patches. Ortega (1998, p. 48) followed Höhn's (1962) suggestion "… that obligate brood parasitism could have evolved from a mutation of skin insensitivity to hormones, resulting in the loss of brood patch and incubation behaviour."



Prolactin.

Apparently unbeknownst to Höhn, Robert Selander was conducting a similar experiment in a lab in Texas. The results confirmed Höhn's finding that cowbirds of either sex treated with estrogen and prolactin did not develop brood patches (Selander 1960). How it was that Höhn became aware of Selander's work is not known, although his acknowledgement of Selander's finding (Höhn 1959) suggests it was during the review process. In turn, Selander (1960, p. 65) referred to Höhn's work, stating that it "… nicely supports the conclusion suggested by the present study, namely, that the absence of a brood patch in parasitic cowbirds is attributable not to a deficiency of prolactin or estrogen but, rather, to a failure of tissues in the brood patch region to respond to these hormones." The cowbird may have lost responsiveness to prolactin in target tissues, but the question of circulating levels of prolactin remained, until (Dufty et al. 1987) demonstrated that circulating levels of plasma prolactin show a seasonal rise in male and female Brown-headed Cowbirds. This led them to conclude (p. 672) that "… the 'parental' hormone exhibits seasonal variation despite the fact that this species displays absolutely no parental care" (also see Robinson and Warner 1964). Factors that produce this increase in prolactin, however, were not identified. Perhaps prolactin is co-opted to other functions in cowbirds, such as molt, which is temporally separate from breeding in Brown-headed

Brown-headed Cowbirds parasitizing nests of Bell's Vireo (*Vireo bellii*) and Song Sparrow (right) in the minutes around sunrise. Females may return to lay another egg or two in the nest or more likely parasitize other nests, but once the eggs are laid, incubation and chick-rearing are left to the hosts. Photo credits: Kevin Ellison and Liana Zanette, respectively.

Cowbirds (Payne 1973). Dufty et al. (1987) suggested that secretion of prolactin in female cowbirds may be stimulated when females watch potential hosts building nests, but this did not seem to account for males, which they noted do not engage in this activity, or visit nests, yet their circulating prolactin levels compare with those of females. Although the function of prolactin in cowbirds remains unknown, Dufty et al. (1987) suggested that "increased target insensitivity to prolactin may have been a factor in the evolution of brood parasitism, with its extended period of gonadal activity and lack of parental care."

The over-riding question on Höhn's mind continued to be the evolution of brood parasitism. In a follow-up paper, Höhn (1962) took a forward step by proposing a possible endocrine basis for brood parasitism. He considered four categories: (1) failure to build a nest; (2) failure to develop a brood patch; (3) failure to incubate; and (4) failure to feed or tend young. He concluded that cowbirds have no urge to incubate because the relevant part of the central nervous system (like their skin) is insensitive to prolactin. But because they can lay eggs, he suggested that parasitic cowbirds lay more eggs than nonparasitic species, because a lack of incubation duties would provide extra time for feeding, which would result in production of more eggs. Höhn was apparently the first to compile data on the number of eggs laid per season by brood parasitic species and non-parasitic, related species (Table 1 *in* Höhn 1962, p. 420). Parasitic species of cuckoo and cowbird laid more eggs per season (9-22 and 4-100, respectively) compared with outgroups that consisted of five species of nonparasitic cuckoo, a nonparasitic blackbird and four species of tanager (4-6 eggs/clutch). He distinguished these large numbers of eggs from those that indeterminate layers can be induced to lay by removing the eggs as they are laid.

Höhn wrote (1962, p. 419):

> It is obvious that natural selection would weed out the offspring of female parasitic birds which simply laid their eggs anywhere, since only those which laid their eggs in nests of other birds could have descendants. It is also probable that at a time when the population contained "normal" and mutated parasitic cowbirds the latter would be at an advantage. Normal cowbirds would be subject to the usual factors which limit clutch size, while the number of eggs laid by parasitic females would seem to be limited only by the number of fosterers' nests they could find in their territories during their own period of full ovarian activity.

Egg production and incubation in birds are under the control of the endocrine system, mediated by hormones (Vleck 2002); therefore, it was reasonable that Höhn inquired about ways this system may have been altered in the brood parasites, among them the number of eggs produced annually. Intuitively, species that do not rear their own young may be expected to produce more eggs per season than related species that rear young, without regard to any particular host. Early studies revealed high numbers of eggs were produced annually (see Table 17.2 *in* Sealy et al. 2002, p. 258), with host-specific parasites (cuckoos) laying fewer eggs than generalist parasites (cowbirds) based on examination of post-ovulatory follicles of shot birds and eggs laid by individual captive females. Molecular genetic techniques used to track eggs laid in different nests by individual female cowbirds, however, produced results that suggest the number of eggs produced is much lower, and that there is some degree of host selectivity.

Still interested in prolactin and brood parasites, Höhn (1972, p. 108) planned to assay pituitaries of other species of brood parasites, writing:

> By now brood patches have been induced experimentally in a variety of birds by the administration of hormones, namely an oestrogen (in phalaropes it is instead an androgen) and prolactin, or, in some species, progesterone. Since brood parasites do not form brood patches, this raises the possibility that some anomaly of hormone production might underlie brood parasitism. In birds other than pigeons, where it stimulates the crop sac, prolactin has little known function beyond its involvement in brood

patch development, while the other hormones named are widely involved in reproduction. The suggested anomaly therefore most probably involves prolactin.

Nothing more was published about hormones and cowbirds and, more than 20 years later, Höhn (1983, p. 103) commented in a popular account of the natural history of northern animals (Figure 5) that the Brown-headed Cowbird's "brood parasitic habit evolved independently several different times, but we still do not know why. Nor do we know how the physiology of the female parasite is modified to block its nest building and incubating urges." It was his later work on hormones and phalaropes, species in which normally only the inconspicuously plumaged males develop brood patches and incubate (Höhn 1971), that he highlighted more extensively in the book. Again, prolactin is implicated (together with androgens) (Höhn and Cheng 1965). The colourful plumage normally shown by females of the three species of phalarope is the result of higher androgen secretion in the female (Höhn and Chang 1967, Höhn 1970), which is the reverse of the situation in nearly all other species of birds.

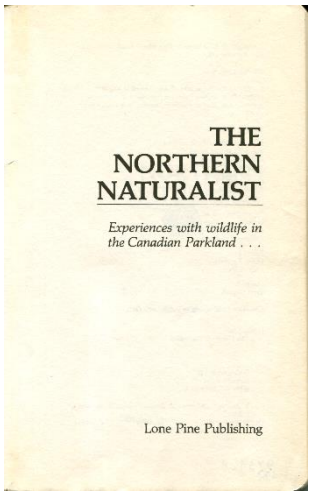


Figure 5. Otto Höhn prepared a popular guide to wildlife in the Canadian aspen parkland in *The Northern Naturalist* (1983). It is a personal account of observations of the flora and fauna around his home in the Cooking Lake region of Alberta, augmented by experiences with some of the same species encountered during travels in the Arctic. Only brief mention is made of Höhn's hormonal studies in the lab, for which he is best known.

Acknowledging that the pituitaries of the Brown-headed Cowbird contain about as much prolactin as a related nonparasitic icterids during the breeding season, Höhn (1959) wondered what experiments might reveal in other parasitic species, such as the Common Cuckoo, and in other brood parasites. He referred to an assay in progress, apparently in his lab, involving the Common Koel (*Eudynamys scolopacea*) of India and southeast Asia (Payne 2005), which demonstrated an absence of prolactin in the pituitaries of breeding females (Höhn 1972). He appealed to readers "who live in areas where any of these birds occur to consider… collecting suitable test material for me" (Höhn 1972). It is not known whether additional material was received, and nothing was published on this subject, even after he collected his own samples from the obligate parasitic Black-headed Duck (*Heteronetta atricapilla*) during a trip to Argentina in 1973 (Höhn 1975).

Recent research has extended the early studies of hormones and cowbirds, focusing more on the effects of hormones on the responses by hosts to being parasitized, such as testosterone concentrations on begging behaviour of nestling cowbirds and hosts (Hauber and Pilz 2002), and stimulation by corticosterone, a hormone linked to stress response, vigilance and the suppression of parental behaviour, on stress responses by host parents that reject foreign eggs (e.g., Abolins-Abols and Hauber 2020, Antonson et al. 2020, Turcotte-van de Rydt et al. 2022). Results have linked experimentally an endocrine mechanism with a widespread and effective avian host defence, ejection of the foreign egg. By treating American Robins (*Turdus migratorius*), which eject cowbird eggs (Rothstein 1982, Rasmussen at al. 2009), with mitotane, a suppressor of glucocorticoid synthesis, Abolins-Abols and Hauber (2020) recorded an increase in the probability of acceptance of non-mimetic model eggs by robins, compared to a sham treatment. This effect was not explained by the loss of motor activity, which suggests that mitotane instead affected sensory-cognitive aspects of egg rejection. Exciting findings! Knowledge of the interactions between cowbirds and their hosts has increased greatly since Otto Höhn conducted experiments on a bird that relies on other species to incubate its eggs and rear its young.

Male (left) and the more brightly plumaged female Wilson's Phalarope (*Phalaropus tricolor*). Photo credit: Glen A. Fox.

Acknowledgements

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Boer provided a scan of the portrait of Otto Höhn that was published in The Northern Forest (1983) by Lone Pine Media Productions. Carla Cicero provided copies of Rowan's extensive correspondence with Joseph Grinnell that is archived in the Museum of Vertebrate Zoology, University of California at Berkeley. I thank Glen A. Fox for permission to use his photographs of cowbirds and phalaropes. Mark E. Hauber provided copies of recent papers on hormones and host responses to parasitism. The reviewer, Kyle H. Elliott, provided insightful comments on the manuscript.

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Ornithological News and Announcements

2022 SCO-SOC Conference - Virtual - September 17-18 // La conférence SCO-SOC 2022 - Virtuel - 17-18 septembre

The 2022 SCO-SOC Conference will be held virtually the weekend of September 17-18. This year's conference will be slightly different, with two days of student and early-career researcher led talks, all held in one continuous session. More details will be forthcoming, as we're still early in the planning process, but you can count on plenary talks, special sessions, student awards, and social events. In addition to the two-day virtual conference, we will be hosting a series of skills-based and career development workshops.

Abstract submissions (due July 31) and conference registration is now live for the 2022 SCO-SOC Virtual Conference! As a reminder, this year's conference will consist of student and early professional talks. To maximize accessibility, this year the registration cost for the conference will be $0 (Not a typo!) However, when you register, you'll have a chance to donate to our equity, diversity and inclusion fund, or other SCO-SOC programs, in lieu of paying a registration fee for attending the conference, if you choose to do so. In addition, we will be providing workshops throughout the week leading up to the conference and a selection of social events. We look forward to seeing you there. To find out more, or to volunteer to help out, contact mreudink@tru.ca or visit https://scosoc2022.wordpress.com.

La conférence SCO-SOC 2022 se tiendra virtuellement la fin de semaine du 17 au 18 septembre. La conférence de cette année sera un peu différente, avec deux jours de conférences dirigées par des étudiants et des chercheurs en début de carrière, le tout organisé en une seule session continue. Plus de détails sont à venir puisque nous en sommes encore au début du processus de planification, mais vous pouvez compter sur des conférences plénières, des sessions spéciales, des prix aux étudiants et des événements sociaux. En plus de la conférence virtuelle de deux jours, nous organisons une série d'ateliers axés sur les compétences et le développement de carrière.

Les soumissions de résumés scientifiques (dues le 31 juillet) et l'inscription à la conférence sont maintenant en ligne pour la conférence virtuelle SCO-SOC 2022! Pour rappel, la conférence de cette année consistera en des congrès d'étudiants et de jeunes professionnels. Pour maximiser l'accessibilité, cette année, le coût d'inscription à la conférence sera de 0$ (ce n'est pas une faute de frappe!) Cependant, lorsque vous vous inscrivez, vous aurez la possibilité de faire un don à notre fonds d'équité, de diversité et d'inclusion, ou à d'autres programmes de la SOC-SCO, au lieu de payer des frais d'inscription pour assister à la conférence, si vous choisissez de le faire. De plus, nous offrirons des ateliers et une sélection d'événements sociaux tout au long de la semaine précédant la conférence. Nous avons hâte de vous y voir! Pour en savoir plus ou pour vous porter bénévole pour aider, contactez mreudink@tru.ca ou visitez https://scosoc2022.wordpress.com.

New Banders' Code of Ethics // Nouveau Code d'éthique du bagueur

If you capture and band birds in Canada or the US, you should be familiar with the North American Banding Council (NABC), their mission, activities, and resources. At the heart of the NABC is the Banders' Code of Ethics. Bird banders have been following the code since 1996, which has resulted in high standards for bird banding in North America and beyond. NABC recently revised the Code to be inclusive of all species groups, and it now encourages banders to ensure the respect, safety, and welfare not just of birds, but also of people, bird populations, and the environment. The new Code is succinct and easy to remember. Please review the new code of ethics in English, French, Spanish or Portuguese at https://nabanding.net/banders-code-of-ethics/. If you have any questions about the new Code, NABC, or bird banding, please contact your representative on council, the BBO, or NABC.

Si vous capturez et baguez des oiseaux au Canada ou aux États-Unis, vous devez connaître le North American Banding Council (NABC; en anglais), sa mission, ses activités et les ressources qu'il publie. Le Code d'éthique du bagueur est un document fondamental du NABC. Les bagueurs d'oiseaux le suivent depuis 1996, ce qui a abouti à des normes élevées relatives au baguage des oiseaux en Amérique du Nord, et même au-delà. Le NABC a récemment révisé le Code pour y inclure tous les groupes d'espèces. Il exhorte à présent les bagueurs à veiller au respect, à la sécurité, et au bien-être non seulement des oiseaux, mais aussi des personnes, des populations aviaires, et de l'environnement. Le nouveau code d'éthique est bref et facile à retenir. Veuillez lire le nouveau code en anglais, français, espagnol ou portugais sur https://nabanding.net/banders-code-of-ethics/. Si vous avez des questions au sujet du nouveau code, du NABC ou du baguage d'oiseaux, communiquez avec votre représentant au conseil, le BBO, ou le NABC.

Avian Conservation and Ecology Articles

Volume 17, Issue 1 (continued)

Canada Goose populations harvested in Eastern James Bay by Eeyou Istchee Cree hunters
Populations de Bernaches du Canada récoltées par les chasseurs Cris d'Eeyou Istchee dans l'est de la Baie James
Jean-François Giroux, Jean Rodrigue, Rodney W Brook, and Martin Patenaude-Monette
Avian Conservation and Ecology 17(1): 5

The invasive parasitic fly Philornis downsi is threatening Little Vermilion Flycatchers on the Galápagos Islands
La mouche vampire aviaire Philornis downsi menace la moucherolle des Galápagos
Denis Mosquera, Birgit Fessl, David Anchundia, Eileen Heyer, Celina Leuba, Erwin Nemeth, Maria Lorena Rojas, Christian Sevilla, and Sabine Tebbich
Avian Conservation and Ecology 17(1): 6

The nuthatch and the hare: Slow explorers dominate in a re-established population of the Brown-headed Nuthatch (Sitta pusilla) two decades later
Le lièvre et la sitelle : les explorateurs lents dominent dans une population réintroduite de sitelles à tête brune (Sitta pusilla) deux décennies plus tard
Mary Mack Gray, Kathryn E. Sieving, and James A. Cox
Avian Conservation and Ecology 17(1): 7

Abundance and habitat use estimates show Lesser Yellowlegs (Tringa flavipes) breed in high numbers in interior Alaska
Les estimations de population et d'utilisation de l'habitat indiquent que les Petits Chevaliers (Tringa flavipes) se reproduisent en grand nombre dans l'intérieur des terres de l'Alaska
Ellen C. Martin, Paul F. Doherty, Jr., Kim A Jochum, and Calvin F. Bagley
Avian Conservation and Ecology 17(1): 8

Female migration phenology and climate conditions explain juvenile Red Knot (Calidris canutus rufa) counts during fall migration
La phénologie de migration des femelles et les conditions climatiques expliquent le nombre de bécasseaux maubèche (Calidris canutus rufa) pendant la migration d'automne
Laura McKinnon, Lucie Schmaltz, Yves Aubry, Yann Rochepault, Christophe Buidin, and Cedric Juillet
Avian Conservation and Ecology 17(1): 9

Soil management of olive groves has contrasting effects on nest densities and reproductive success of tree-nesting passerines
La gestion des sols d'oliveraies a des effets différents sur la densité de nids et le succès de reproduction de passereaux nichant dans les arbres
Juan Carlos Castro-Caro, Isabel C. Barrio, and Francisco Sánchez Tortosa
Avian Conservation and Ecology 17(1): 10

Forest specialist species in the urban landscape: Do different levels of urbanization affect the movements of Forest Red-tailed Black Cockatoos (Calyptorhynchus banksii naso)?
Espèces spécialistes de la forêt en paysage urbain : les divers degrés d'urbanisation affectent-ils les déplacements du Cacatoès banksien (Calyptorhynchus banksii naso)?
Sam J. E. Rycken, Kristin S. Warren, Lian Yeap, Rebecca Donaldson, Peter Mawson, Rick Dawson, and Jill M. Shephard
Avian Conservation and Ecology 17(1): 11

Spatially explicit population trend estimates of owls in the Maritime provinces of Canada and the influence of call playback
Estimations spatialement explicites de la tendance des populations de Strigidés dans les provinces maritimes du Canada et influence de l'utilisation d'enregistrements sonores
Danielle M Ethier, Rémi Torrenta, and Amy-Lee Kouwenberg
Avian Conservation and Ecology 17(1): 12

Post-fledging survival, movements, and habitat associations of Gray Vireos in New Mexico
Survie après l'envol, déplacements et associations avec l'habitat de Viréos gris au Nouveau-Mexique
Silas E Fischer, Kathy Granillo, and Henry M Streby
Avian Conservation and Ecology 17(1): 13

Understanding widespread declines for Common Terns across inland North America: productivity estimates, causes of reproductive failure, and movement of Common Terns breeding in the large lakes of Manitoba
Comprendre la diminution généralisée de Sternes pierregarins dans les régions intérieures de l'Amérique du Nord : productivité, causes de l'échec de la reproduction et déplacements des Sternes pierregarins nichant sur les grands lacs du Manitoba
Jennifer M Arnold, Stephen A Oswald, Scott Wilson, and Patricia Szczys
Avian Conservation and Ecology 17(1): 14

Migratory stopover sites used by Reddish Egrets: prioritization for conservation
Haltes migratoires utilisées par les Aigrettes roussâtres : priorisation pour la conservation
Lianne M. Koczur and Bart M. Ballard
Avian Conservation and Ecology 17(1): 15

A lidar-based openness index to aid conservation planning for grassland wildlife
Indice d'ouverture fondé sur le LiDAR et destiné à faciliter la planification de la conservation de la faune de prairies
Michael C Allen, Thomas Almendinger, Charles T Barreca, and Julie L Lockwood
Avian Conservation and Ecology 17(1): 16

Mortality of grassland birds increases with transmission lines
La mortalité d'oiseaux de prairies augmente avec les lignes de transport d'électricité
Caroline J. Martin, Edward W. Bork, and Scott E. Nielsen
Avian Conservation and Ecology 17(1): 17

Nest-site selection and breeding biology of the locally endangered Micronesian Starling (Aplonis opaca) informs its recovery on Guam
La sélection des sites de nidification et la biologie de reproduction du Stourne de Micronésie (Aplonis opaca), espèce en voie de disparition localement, permettent d'envisager son rétablissement sur Guam
Julie A. Savidge, Martin Kastner, Henry S. Pollock, and Thomas F. Seibert
Avian Conservation and Ecology 17(1): 18

Pre-breeding foraging ecology of three tern species nesting in the Gulf of Maine
Écologie de l'alimentation avant la reproduction de trois espèces de sternes nichant dans le golfe du Maine
Rachel M. Bratton, Henry D. Legett, Paula Shannon, Keenan C. Yakola, Alexander R. Gerson, and Michelle D. Staudinger
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Understory structure and heterospecifics influence the occupancy of a ground-nesting species of conservation concern, the Canada Warbler
Influence de la structure du sous-étage et des hétérospécifiques sur la présence d'une espèce nichant au sol et dont la conservation est préoccupante, la Paruline du Canada
Gordon W Dimmig, Christopher Rota, Petra Wood, and Christopher M Lituma
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In the still of the night: revisiting Eastern Whip-poor-will surveys with passive acoustic monitoring
Dans le calme de la nuit : réévaluer les inventaires d'Engoulevent bois-pourri au moyen de suivis acoustiques passifs
Elly C. Knight, Kevin C. Hannah, and Jonathan DeMoor
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Migratory songbirds and urban window collision mortality: vulnerability depends on species, diel timing of migration, and age class
Passereaux migrateurs et mortalité par collision avec les fenêtres en milieu urbain : la vulnérabilité dépend de l'espèce, du moment de la migration et de la classe d'âge
Olivia M Colling, Christopher G Guglielmo, Simon J Bonner, and Yolanda E Morbey
Avian Conservation and Ecology 17(1): 22

Food subsidies shape age structure in a top avian scavenger
Les apports alimentaires déterminent la structure d'âge chez un charognard aviaire au sommet de la chaîne alimentaire
Lola Fernández-Gómez, Ainara Cortés-Avizanda, Patricia Tiago, Fiach Byrne, and José Antonio Donázar
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Natural history and community science records confirm rapid geographic shifts in the distribution of Bachman's Sparrow (Peucaea aestivalis) since 1850
Les mentions provenant de l'histoire naturelle et de sciences communautaires confirment des changements géographiques rapides dans la répartition du Bruant des pinèdes (Peucaea aestivalis) depuis 1850
Amie E. Settlecowski, Kathryn E. C. Davis, James A. Cox, Stefan Woltmann, and Sabrina S. Taylor
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(Non-voting) Past Presidents:

Ross Lein	1983-1986	David Nettleship	1996-1998	David Bird	2008-2010
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Jon Barlow	1990-1992	Jean-Pierre Savard	2002-2004	Greg Robertson	2014-2016
Bruce Falls	1992-1994	Charles Francis	2004-2006	Ken Otter	2016-2018
Henri Ouellet	1994-1996	Susan Hannon	2006-2008	Colleen Barber	2018-2020

Membership Information

www.sco-soc.ca/membership.html

SCO-SOC membership forms can be found at the link above. Current membership rates are provided below. SCO-SOC provides free membership to members of equity-denied communities. See our website for more information.

Student	$15.00/year
Early Career (<5 y post-grad)	$25.00/year
Retired	$25.00/year
Regular	$35.00/year ($45.00/year international)
Sustained	$75.00/year
Life	$500.00

SCO-SOC Website

www.sco-soc.ca/index.html

The SCO-SOC website includes sections on membership, meetings, news, publications, awards, information for students, an overview of SCO-SOC, and links of interest to members and other visitors.

Please direct any suggested additions or edits to the website to the Society's webmaster, Jennifer Foote, at jennifer.foote@algomau.ca.

Submissions to *Picoides*:

Articles and photos relevant to Canadian ornithology are welcomed by the editors. If submitting photos, please save them in tiff or jpeg format with descriptive file names, and supply captions including common names of species, location, date, photographer, and any other notes of interest. Deadlines for submission are February 15, May 15, and October 15; issues are typically published 4-6 weeks later. Please send all submissions to Rob Warnock at warnockr@myaccess.ca.

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