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Mountain Chickadee // Mésange de Gambel (*Poecile gambeli*). Photo: Cara Snell.

TABLE OF CONTENTS

Editors' Message

Rob Warnock and Barbara Bleho

Welcome to the first issue of *Picoides* in 2022. We hope everyone had a great winter holiday, a good start to the year, and is continuing to be safe during the pandemic.

In Nicola Koper's latest President's Report, she discusses the new activities this year to support the career and skills development of our student members and early career researchers and that will also help build our community of ornithologists in Canada and beyond. These include a new mentorship program and webinar series for all SCO-SOC members and the formation of two social hour groups for underrepresented groups in SCO-SOC. These social hour groups will meet monthly and virtually outside the field season. Nicola also mentions that the 2022 SCO-SOC conference will be virtual, and the conference details will be released in the days ahead. Her report is on page 3.

In this issue, we are excited to have features of eight young ornithologists from underrepresented groups. Underrepresented groups include Black, Indigenous, people of colour, 2SLGBTQIA+, disabled people, and others. Check them out and their social media handles. We love promoting the important work of our members.

SCO-SOC will be fielding a team for the 2022 Great Canadian Birdathon in May and members are asked to vote on a name for this team. We encourage you to vote for a team name, participate in the Birdathon and raise funds for bird conservation. For more information, check out the notice on page 25.

SCO-SOC is seeking proposals for lectures or workshops as part of an online series focused on skills and career development and representation of broader perspectives in ornithology. We think this is a great idea and encourage SCO-SOC members to submit proposals and participate in these events in the coming months. Please see page 27 for more information.

Part five 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 a book review, an amusing bird-themed cartoon by Kayla Martin, three thesis abstracts, artwork by Alysha Riquer and Olivia Maillet, and the table of contents from the latest issue of Avian Conservation and Ecology. Please check them all out!

We welcome Beth MacDougall-Shackleton as Membership Secretary, and we thank Darroch Whitaker for all his help with *Picoides* during his time as Membership Secretary. In addition, we welcome all the new members of the SCO-SOC Council and thank all the outgoing members for their service.

We congratulate Bridget Stuchbury on receiving the well-deserved 2022 Jamie Smith Memorial Award for Mentoring and Lisha Berzins for receiving the 2022 Early Career Research Award. There is still time to submit nominations for the Doris Huestis Speirs Award. Please see page 28 for more information.

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

FRANÇAIS—Message des éditeurs – Rob Warnock et Barbara Bleho

Bienvenue au premier numéro de *Picoides* de 2022. Nous espérons que vous avez tous passé de bonnes vacances d'hiver, que votre début d'année a bien commencé et que vous restez en santé en ces temps de pandémie.

Dans le dernier Rapport du Président de Nicola Koper, elle discute des nouvelles activités de cette année pour soutenir le développement de carrière et des compétences de nos membres étudiants et chercheurs en début de carrière et qui aideront aussi à bâtir notre

communauté d'ornithologues au Canada et au-delà. Il s'agit notamment d'un nouveau programme de mentorat et d'une série de webinaires pour tous les membres de la SOC-SCO, ainsi que de l'établissement de deux groupes de 5 à 7 pour les communautés sous-représentées dans la SOC-SCO. Ces groupes de 5 à 7 se réuniront mensuellement et virtuellement en dehors de la saison de recherche sur le terrain. Nicola mentionne aussi que la conférence SCO-SOC de 2022 sera virtuelle et que les détails de la conférence seront publiés dans les jours à venir. Son rapport se trouve à la page 3.

Dans ce numéro, nous sommes heureux de vous présenter huit jeunes ornithologues issus de groupes sous-représentés. Les groupes sous-représentés comprennent les Noirs, les Autochtones, les personnes de couleur, les gens 2SLGBTQIA+, les personnes handicapées et autres. Jetez-leur un coup d'œil et allez consulter leurs médias sociaux. Nous adorons promouvoir l'important travail accompli par nos membres.

La SOC-SCO enverra une équipe au Grand Birdathon pancanadien 2022 en mai et les membres sont invités à voter pour le nom de l'équipe. Nous vous encourageons à voter pour un nom d'équipe, à participer au Birdathon et à recueillir des fonds pour la conservation des oiseaux. Veuillez consulter la page 25 pour plus d'informations.

La SOC-SCO recherche des propositions de conférences ou d'ateliers à donner dans le cadre d'une série en ligne axée sur le développement de carrière et des compétences et sur la représentation d'un grand nombre de perspectives en ornithologie. Nous pensons que c'est une excellente idée et nous encourageons les membres de la SOC-SCO à soumettre leurs propositions et à participer à ces événements dans les mois à venir. Pour plus d'informations, consultez l'avis en page 27.

La cinquième partie de la série sur le parasitisme de couvée du Vacher à tête brune dans les prairies canadiennes, réalisée par Spencer Sealy, est publiée dans ce numéro. Merci Spencer d'avoir préparé cette série! Vous trouverez également une revue de livre, un dessin humoristique de Kayla Martin sur le thème des oiseaux, trois résumés de thèse, une œuvre d'art d'Alysha Riquer et Olivia Maillet, et la table des matières du dernier numéro de Avian Conservation and Ecology. Consultez toutes ces sections!

Nous accueillons Beth MacDougall-Shackleton en tant que Secrétaire à l'Adhésion et nous remercions Darroch Whitaker pour toute l'aide qu'il a apportée à *Picoides* pendant son mandat de Secrétaire à l'Adhésion. Nous souhaitons aussi la bienvenue à tous les nouveaux membres du Conseil SCO-SOC et remercions tous les membres sortants pour leurs services.

Nous félicitons Bridget Stuchbury pour avoir reçu le très mérité prix commémoratif Jamie Smith de tutorat en ornithologie 2022 et Lisha Berzins pour avoir reçu le prix de recherche en début de carrière 2022. Il est encore temps de soumettre des candidatures pour le prix Doris Huestis Speirs. Veuillez consulter la page 28 pour plus d'informations.

La prochaine date limite pour *Picoides* est le 15 mai 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 les publications et nous vous souhaitons de passer un printemps et un été sécuritaires et en santé.

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.

Message de la présidente

Nicola Koper

Bien que nous continuions tous à faire face à d'énormes défis alors que l'on commence l'année 2022, je trouve toujours que les succès de la SOC-SCO apportent de la joie dans ma vie. Cette année, nous avons lancé plusieurs nouvelles activités pour supporter le développement de carrière et de compétences de nos membres étudiants et professionnels en début de carrière et nous aiderons aussi à bâtir notre communauté d'ornithologistes au Canada et au-delà. Bien que nous soyons tous déçus que notre assemblée annuelle se tienne encore en ligne cette année, je réalise que cette plateforme virtuelle à laquelle nous avons été obligés de nous adapter nous offre des tonnes d'opportunités de réseautage qui permettent des rencontres régulières plutôt qu'annuelles avec nos collègues et, à bien des égards, sont plus inclusives que les conférences annuelles en personne. Nous continuerons certainement de tenir des activités virtuelles et en personne lorsque nous pourrons nous revoir.

L'un des nouveaux programmes que nous avons lancés cette année est un programme structuré de mentor-mentoré. Les étudiants et les professionnels en début de carrière seront jumelés à des mentors qui travaillent dans les domaines d'intérêt des mentorés. Ces duos s'engageront à se rencontrer régulièrement durant une période de 8 mois au cours de laquelle ils travailleront à des activités allant de l'élaboration de CV au réseautage avec d'autres collègues professionnels. Nous venons de lancer un appel aux mentors et aux mentorés pour s'inscrire à ce programme; si vous voulez faire une différence dans la vie d'un de ces jeunes ou pour bâtir votre propre carrière, vous pouvez en savoir plus ici : Mentorat | sco-soc.

Nous lançons également une série de webinaires axés sur le développement de carrière et de compétences. Nous avons choisi de privilégier les conférenciers et sujets portant sur l'ornithologie appliquée, car le sondage auprès des membres de la SOC-SCO auquel beaucoup d'entre vous ont contribué a indiqué que c'est là qu'il y a le plus d'intérêt et de besoin. Restez à l'affût d'annonces pour trouver des conférenciers bénévoles et d'annonces de webinaires à partir de bientôt.

Nous avons aussi lancé deux groupes de cinq à sept pour rassembler les communautés sous-représentées au sein de l'ornithologie. L'un de ces groupes est conçu pour les ornithologistes LGBTQI2SA+ et aura lieu via Zoom le premier lundi de chaque mois (du moins, jusqu'au début de nos saisons de travail de terrain!). Nous accueillons toute personne s'identifiant comme étant- bispirituel, non binaire, en questionnement, pan, lesbienne, gay, bi+, trans, queer, intersex, ace, demi, gris et tous les autres- et qui aime aussi les oiseaux. Notre autre groupe social réunira les ornithologues PANDC (BIPOC) et se réunira sur Zoom le premier jeudi de chaque mois. Avec ces groupes sociaux, nous visons à la fois à connaître d'autres personnes pouvant avoir eu des expériences professionnelles similaires et à avoir la chance de discuter des défis uniques auxquels certaines communautés sous-représentées peuvent être confrontées en ornithologie et en sciences environnementales. Certaines de nos réunions auront des thèmes centraux tels que la sécurité lors du travail de terrain et les meilleures pratiques à suivre; lorsque cela arrive, nous en informerons les membres de la SOC-SCO sur les réseaux sociaux au cas où l'un de ces sujets vous intéresse particulièrement et que vous souhaitiez vous joindre à ces groupes seulement de façon occasionnelle.

Donc, malgré tout, nous avons déjà hâte à plusieurs évènements planifiés pour 2022. Je suis très reconnaissante envers la grande équipe de bénévoles qui organise ces activités et qui aide à faire de la SOC-SCO l'organisation inclusive qu'elle peut être. C'est un honneur et un plaisir de travailler avec une communauté aussi inspirante.

ENGLISH— President's Message – Nicola Koper

While we all continue to face tremendous challenges as we ease into 2022, I've been finding the successes of SCO-SOC to be a bright light in my life. Driven by the hard work of our EDI committee, we've initiated several new activities this year to support the career and skills development of our student members and early career researchers and that will also help build our community of ornithologists in Canada and beyond. While we're all disappointed that our annual meeting will again be held virtually this year, I'm coming to realize that the virtual platform we've been forced to adapt to provides us with tons of networking opportunities that allow for regular rather than annual visits with our colleagues, and in many ways are more inclusive than in-person annual conferences. We'll certainly continue with both

virtual and in-person activities when we're able to meet with each other again, and our virtual annual meeting will look a bit different this year, too (more to come later).

One of the new programs we've initiated this year is a structured mentor-mentee program. Students and early career professionals will be matched with mentors who work in the areas of the mentees interest. These pairs will commit to meet regularly during an 8-month period, during which they will work on activities ranging from resume development to networking with other professional colleagues. We've just put out the call for both mentors and mentees to sign up for this program; if you want to make a difference in a young person's life, or to build your own career, you can find out more here: Mentorship | sco-soc.

We're also introducing a webinar series focused on skills and career development. We've chosen to focus on speakers and topics in applied ornithology, because the survey to SCO-SOC members that many of you contributed to indicated that this is where there is the most interest and need. Look for calls for volunteer speakers and webinar announcements through emails and social media, starting early this year.

We've also started two social hour groups to bring together underrepresented communities within ornithology. One of our social groups is designed for 2SLGBTQIA+ ornithologists and will meet via Zoom on the first Monday of each month (at least until our field seasons start!). We welcome anyone across this spectrum – Two-spirit, non-binary, questioning, pan, lesbian, gay, bi+, trans, queer, intersex, ace, demi, gray-A, and everyone else – who is also into birds. Our other social group will bring together BIPOC ornithologists and will meet over Zoom on the first Thursday of each month. With these social groups, we're aiming both at simply getting to know other folks in similar positions and having a chance to discuss unique challenges that some underrepresented communities can face in professional ornithology and environmental sciences. Some of our meetings will have focal themes like field work safety and best practices; when this happens, we'll give SCO-SOC members a heads up on social media in case something piques your interest, and you'd just like to join one of these groups occasionally.

So, despite everything, we have lots to look forward to in 2022. I'm super grateful for the big team of volunteers who are putting together these activities and helping to build the SCO-SOC into the inclusive organization that it can be. It's an honour and a pleasure to work with such an inspiring community.

Follow SCO on Twitter! Follow us @SCO_SOC for news, exciting research, updates from members, and more!
Suivez SOC sur Twitter! Suivez-nous @SCO_SOC pour les nouvelles, la recherche passionnante, mises à jour des membres, et plus encore!

Like SCO on Facebook! https://www.facebook.com/sco.soc/
Aimez SOC sur Facebook!

Featured Young Ornithologists of 2021/ Jeunes Ornithologues de 2021 en vedette

Compiled by Taylor Brown and Leanne Grieves / Compilé par Taylor Brown et Leanne Grieves

In 2021, SCO-SOC ran a campaign to highlight some of the amazing research being conducted by talented and diverse young ornithologists in Canada who identify as Black, Indigenous, a Person of Colour, 2SLGBTQIA+, and/or disabled. These ornithologists were gracious enough to share their time, words, and photos with us so that we may share and applaud their work. Their research profiles can be found below, along with their social media handles so that you can learn more about the work they're doing.

En 2021, la SOC-SCO a mené une campagne pour mettre en lumière certaines des recherches phénoménales dirigées par de jeunes ornithologues talentueux et diversifiés du Canada qui s'identifient comme étant Noirs, Autochtones, Personnes de Couleur, 2SLGBTQIA+ et/ou handicapés. Ces ornithologues ont eu l'amabilité de partager leur temps, leurs paroles et leurs photos avec nous afin que nous

puissions partager et applaudir leur travail. Vous trouverez ci-dessous leurs profils de recherche, ainsi que leurs comptes de médias sociaux, afin que vous puissiez en savoir plus sur le travail qu'ils accomplissent.

Aranya Iyer

Aranya Iyer studies how birds use magnetic cues to navigate. Her project does not test if putting a magnet in your yard will attract that one rare bird you are chasing. She is also interested in SciComm (science communication) and how to make academia accessible. Check out @nerdmeetsbird on Instagram, and @aranya6776 on Twitter.

Aranya Iyer étudie comment les oiseaux utilisent les signaux magnétiques pour s'orienter. Son projet ne vise pas à déterminer si le fait de placer un aimant dans votre jardin attirera l'oiseau rare que vous recherchez. Elle s'intéresse également à la SciComm (communication scientifique) et à la manière de rendre le monde universitaire accessible. Allez voir @nerdmeetsbird sur Instagram et @aranya6776 sur Twitter.

Aranya working at an outdoor bird banding station. Photo courtesy of Aranya Iyer. // Aranya travaillant à une station de baguage d'oiseaux en plein air. Photo gracieuseté d'Aranya Iyer.

Dahlia

My name is Dahlia and I'm an undergraduate in the Department of Geography, Geomatics and Environmental Studies at Carleton University where I take biology and environmental classes. I am an ornithologist in training: I enjoy birding walks and intersectional birding podcasts. I also identify as under the asexual spectrum. I love birds and hope to do avian and environmental research in the future!

Je m'appelle Dahlia et je suis étudiante de premier cycle au Département de Géographie, de Géomatique et d'Études Environnementales de l'Université Carleton où je suis des cours de biologie et de sciences environnementales. Je suis une ornithologue en formation: J'aime faire des promenades pour observer les oiseaux et écouter des podcasts sur l'ornithologie. Je m'identifie également au spectre asexuel. J'adore les oiseaux et j'espère faire de la recherche aviaire et environnementale dans le futur!

Dahlia is a keen birder and up-and-coming researcher. Photo courtesy of Dahlia. // Dahlia est passionnée d'oiseaux et une chercheuse en devenir. Photo gracieuseté de Dahlia.

Karen Ong

Hi! I'm Karen Ong (@kyko1120 on Twitter and Instagram) and I study the Canada Jays (*Perisoreus canadensis*) of Algonquin Provincial Park, which have declined by over 50% since the 1970s. They store food for overwintering and I'm studying how freeze-thaw cycles and jay saliva affect cache quality.

Bonjour, je m'appelle Karen Ong (@kyko1120 sur Twitter et Instagram) et j'étudie les geais du Canada (*Perisoreus canadensis*) au Parc Provincial Algonquin, qui connaissent un déclin de plus de 50% depuis les années 1970. Ils stockent de la nourriture pour passer l'hiver et j'étudie comment les cycles de gel-dégel et la salive des geais affectent la qualité des caches.

Karen holding TORL YOSR (Teal over Red Left, Yellow over Silver Right), the male Canada Jay of the Clarke Lake breeding pair in Algonquin Provincial Park. Photo courtesy of Karen Ong. // Karen tient TORL YOSR (bleu sarcelle sur rouge à gauche, jaune sur argent à droite), le Geai du Canada mâle du couple reproducteur de Clarke Lake dans le Parc Provincial Algonquin. Photo gracieuseté de Karen Ong.

Roxan Chicalo

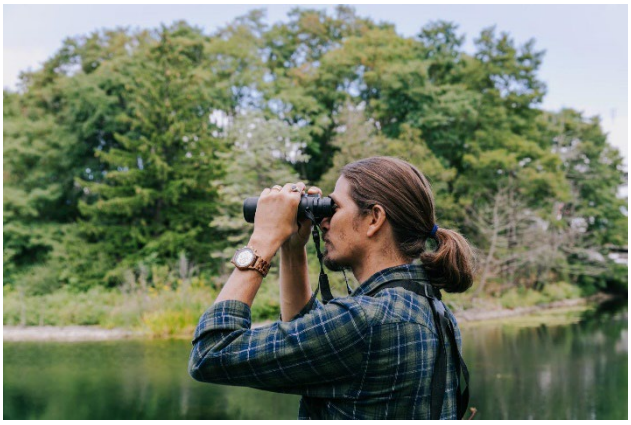
Roxan Chicalo (@Rchicalo on Twitter) is investigating if diet quality affects breeding performance in a late-winter nesting passerine, the Canada Jay (*Perisoreus canadensis*). This work brings her to Denali National Park, Alaska, to study these cold-adapted birds.

Roxan Chicalo (@Rchicalo sur Twitter) cherche à savoir si la qualité de leur diète influence la reproduction d'un passereau qui niche vers la fin de l'hiver, le geai du Canada (*Perisoreus canadensis*). Ce travail l'amène dans le Parc National de Denali, en Alaska, pour étudier ces oiseaux adaptés au froid.

Roxan is holding an adult Canada jay to extract blood for dietary analysis (with all necessary permits and training). Photo courtesy of Roxan Chicalo. // Roxan tient un geai du Canada adulte afin de prélever un échantillon de sang dans le cadre d'une analyse alimentaire (avec tous les permis et la formation nécessaires). Photo gracieuseté de Roxan Chicalo.

Andrés Jiménez

Meet Andrés Jiménez, a Costa Rican biologist creating connections between people and the planet. He works on urban bird conservation in Toronto and creates strategies to enrich people's experiences of nature, like a Birding by Ear online course for people with sight loss. Check out @andresjimo on Twitter, @happiestnature on Instagram, or his bird-related online courses on udemy.com.



Rencontrez Andrés Jiménez, un biologiste costaricien qui crée des liens entre les gens et la planète. Il travaille sur la conservation des oiseaux urbains de Toronto et crée des stratégies pour enrichir les expériences des gens avec la nature, tel que le cours en ligne Birding by Ear pour les personnes malvoyantes. Allez voir @andresjimo sur Twitter, @happiestnature sur Instagram, ou ses cours en ligne sur les oiseaux sur udemy.com.

Andrés connects people with nature and creates resources to make birding a more inclusive hobby. Photo courtesy of Andrés Jiménez. / Andrés connecte les gens avec la nature et crée des ressources pour faire de l'ornithologie un passe-temps plus inclusif. Photo gracieuseté d'Andrés Jiménez.

Alexandra Israel

Hi! I'm Alexandra Israel, and I graduated with a master's degree from York University studying nest concealment in Wood Thrushes (*Hylocichla mustelina*), and how this might relate to their reproductive success. This species is Threatened in Canada, so learning more about their life history strategies is critical for conservation. Check out @alexxisrael on Instagram.

Bonjour, je m'appelle Alexandra Israel et j'ai obtenu ma maîtrise de l'Université York où j'ai étudié la dissimulation des nids chez la Grive des bois (*Hylocichla mustelina*) et le lien entre cette dissimulation et leur succès reproducteur. Cette espèce étant menacée au Canada, il est essentiel d'en savoir plus sur leurs stratégies d'histoire de vie pour leur conservation. Allez voir @alexxisrael sur Instagram.

Alexandra holds a Wood Thrush that was captured, with research permits, for the purpose of taking a blood sample and other measurements. Photo courtesy of Alexandra Israel. // Alexandra tient une Grive des bois qui a été capturée avec permis de recherche dans le but de prélever un échantillon de sang et de prendre d'autres mesures. Photo gracieuseté d'Alexandra Israel.

Hazel Wheeler

Hazel Wheeler has a MSc from Trent University where they studied Chimney Swift foraging patterns, and has been with Wildlife Preservation Canada since 2013, working to recover Ontario's endangered Loggerhead Shrike. Part of their work with shrikes involves keeping track of the wild population in Ontario, so if you've seen a loggerhead shrike in the province (especially one with colour bands), they want to know about it! Check out @wildlife_preservation_canada and whichhazel_ on Instagram, @WPCWild911 on Twitter.

Hazel Wheeler est titulaire d'une maîtrise en sciences de l'Université Trent, où elle a étudié les stratégies de recherche de nourriture du Martinet ramoneur. Elle travaille pour Conservation de la Faune au Canada depuis 2013 où elle s'occupe du rétablissement de la Pie-grièche migratrice, une espèce en voie de disparition en Ontario. Une partie de leur travail avec les pies-grièches consiste à suivre leur population sauvage en Ontario, alors si vous avez vu une pie-grièche migratrice dans la province (surtout une avec des bagues de couleur), ils veulent le savoir! Allez voir @wildlife_preservation_canada et whichhazel_ sur Instagram, @WPCWild911 sur Twitter.

Hazel loves birds, and loves being a queer professional in Ontario's conservation scene. In this image, Hazel is using a spotting scope to view birds at a distance. Photo courtesy of Hazel Wheeler. // Hazel aime les oiseaux et adore être une professionnelle queer dans le domaine de la conservation en Ontario. Sur cette image, Hazel utilise une lunette d'approche pour observer les oiseaux à distance. Photo gracieuseté de Hazel Wheeler.

Tharindu Krishan

Hi! I'm Tharindu Krishan, an international student at the University of Alberta. I graduated with a bachelor's degree in Zoology at the University of Colombo, Sri Lanka, studying phylogenetic and ecological affinities of endemic mountain bush warblers. I'm currently a graduate student in Erin Bayne's Lab in the Department of Biological Sciences at the University of Alberta. Bioacoustic monitoring is a rapidly emerging tool in wildlife conservation. In my research, I use acoustic recordings with a focus on developing efficient and accurate sound localization techniques to understand the effects of energy sector linear features and edge effect on boreal bird communities. Check out @thari_kris on Instagram.

Bonjour, je suis Tharindu Krishan, un étudiant international à l'Université de l'Alberta. J'ai obtenu mon baccalauréat en zoologie à l'Université de Colombo au Sri Lanka où j'ai étudié les affinités phylogénétiques et écologiques des Parulines endémiques de montagnes. Je suis actuellement un étudiant de cycle supérieur dans le laboratoire d'Erin Bayne au Département des Sciences Biologiques de l'Université de l'Alberta. La surveillance bioacoustique est un outil en plein essor pour la conservation de la faune. Dans le cadre de mes recherches, j'utilise des enregistrements acoustiques en mettant l'accent sur le développement de techniques de localisation sonore efficaces et précises afin de comprendre les effets des caractéristiques linéaires du secteur de l'énergie et l'effet des lisières sur les communautés d'oiseaux boréales. Allez voir @thari_kris sur Instagram.

In summer 2021, Tharindu deployed a number of ARUs (Autonomous Recording Units) in various disturbed and intact forest and wetland habitats throughout northeastern Alberta to collect bird vocalization data. Photo courtesy of Tharindu Krishan. // Au cours de l'été 2021, Tharindu a déployé un certain nombre d'enregistreurs autonomes dans divers habitats forestiers et humides perturbés et intacts dans tout le nord-est de l'Alberta pour recueillir des données sur la vocalisation des oiseaux. Photo gracieuseté de Tharindu Krishan.

2022 SCO-SOC Award Recipients

Early Career Researcher Award / Prix de recherche en début de carrière – Lisha Berzins

Dr. Lisha Berzins was selected as the 2022 recipient of the SCO-SOC Early Career Research Award (ECRA). Dr. Berzins is an outstanding early-career researcher, who focuses on exciting and impactful questions regarding the drivers of avian population declines. Dr. Berzins is also committed to fostering future leaders in science. She is a passionate mentor and supporter of students and brings an infectious enthusiasm to everyone around her.

Dr. Berzins won this award for her leadership in aerial insectivore research in Canada, as demonstrated through her position as the co-chair of the Aerial Insectivore Research Network, an outstanding publication record, and securement of a prestigious Alexander Grahame Bell NSERC and two Mitacs Accelerate Fellowships to address drivers of population decline. Dr. Lisha is also recognized as a passionate mentor and a communicator of science through her involvement with the WildEcol seminar series.

Lisha Berzins at a nest box. Photo courtesy of Lisha Berzins. // Lisha Berzins à un nichoir. Photo gracieuseté de Lisha Berzins.

Congratulations Dr. Berzins!

Thanks so much to the ECRA committee (Danielle Ethier (Chair), Steve Van Wilgenburg, and Tony Gaston) for their ongoing hard work.

FRANÇAIS—Dre Lisha Berzins a été sélectionnée comme récipiendaire 2022 de la bourse de recherche de début de carrière SCO-SOC (ECRA). Dre Berzins est une chercheure exceptionnelle en début de carrière, se concentrant sur des questions passionnantes et percutantes concernant les raisons du déclin des populations aviaires. Dre Berzins s'est également engagée à encourager les futurs leaders en science. Elle est une mentore passionnée et un support pour les étudiants, en plus d'apporter un enthousiasme contagieux à tous ceux qui l'entourent.

Dre Berzins a remporté ce prix pour son leadership dans la recherche sur les insectivores aériens au Canada, comme en témoigne son poste de coprésidente du Réseau de Recherche sur les Insectivores Aériens, son dossier de publication exceptionnel et l'obtention d'un prestigieux Alexander Graham Bell CRSNG et deux Bourse Mitacs Accélération pour lutter contre les raisons du déclin des populations aviaires. Dre Lisha est également reconnue comme une mentore passionnée et une communicatrice scientifique grâce à sa participation à la série de séminaires WildEcol.

Félicitations Dre Berzins !

Merci beaucoup au comité ECRA (Danielle Ethier (présidente), Steve Van Wilgenburg et Tony Gaston) pour leur travail sans relâche.

Jamie Smith Memorial Award for Mentoring / Prix Memorial de Jamie Smith pour le mentorat – Bridget Stutchbury

We congratulate Prof. Bridget Stutchbury as the 2022 recipient of the Jamie Smith Memorial Mentoring Award. Many of her past students and mentees expressed how much she taught them, with several saying they now ask themselves "What would Bridget do?" whenever challenged. Dr. Stutchbury was chosen for this award for her diverse contributions towards mentoring the next generation of ornithologists. Of particular note was that she supported students that went on to many different careers, including research, education, science communication and consulting, and nourished each individual's career desires rather than superimposing her own career path as often happens in academia.

Bridget Stuchbury holding a Hooded Warbler. Photo by R. Mumme. // Bridget Stuchbury tenant une Paruline à capuchon. Photo par R. Mumme.

SCO-SOC thanks the selection committee (Kyle Elliott (Chair), Theresa Burg and Oliver Love) for their ongoing hard work.

FRANÇAIS—Nous félicitons la professeure Bridget Stutchbury, récipiendaire 2022 du Prix Memorial de Jamie Smith pour le mentorat. Beaucoup de ses anciens étudiants et mentorés ont exprimé à quel point ils ont appris avec elle, plusieurs mentionnant qu'ils se demandent maintenant "Que ferait Bridget ?" chaque fois qu'ils font face à un défi. Dre Stutchbury a été choisie pour ce prix pour ses diverses contributions au mentorat de la prochaine génération d'ornithologistes. Il est à noter qu'elle a soutenu des étudiants qui se sont lancés dans de nombreuses carrières différentes, y compris dans la recherche, l'éducation, la communication scientifique et en consultation, en plus d'avoir nourri les désirs de carrière de chacun plutôt que de superposer son propre cheminement de carrière, comme cela se produit souvent dans le milieu universitaire.

SOC-SCO remercie le comité de sélection (Kyle Elliott (président), Theresa Burg et Oliver Love) pour leur travail sans relâche.

Recent Canadian Ornithology Theses

Snell, Cara L. 2021. Avian communication networks: how audible are mountain chickadee males during dawn signalling? M.Sc Thesis. University of Northern British Columbia, Prince George, BC.

Urban noise can disrupt avian communication networks, resulting in reduced communication among individuals. Mountain Chickadees alter their vocalizations in areas of high ambient noise; however, it is unknown how audible their signals are within the nest cavity, where the female remains during dawn signalling. I investigated how urban noise influences the relative audibility of songs to female Mountain Chickadees (*Poecile gambeli*), who assess male signalling at dawn while roosting within the nest cavity. Over two breeding seasons, I monitored Mountain Chickadees breeding on an urban/rural interface in Kamloops, BC, Canada. I broadcast typical Mountain Chickadee songs, with or without added noise, towards recently unoccupied nests while simultaneously re-recording these songs with microphones outside and inside the nest box to determine the relative audibility in relation to both distance and presence/absence of noise. I then tracked individual males' behaviour and movement during dawn signalling, while passively recording their songs with microphones — outside and inside the nest box — to determine the relative audibility of signals from the perspective of the roosting female. The relative audibility of songs decreased with increasing distance from the nest, which was compounded by increased urban noise. During dawn signalling, urban males respond to these effects by remaining closer to the nest, resulting in their songs being more audible within the nest than their rural counterparts. Overall, ambient noise and distance had an interactive effect on relative audibility of songs, suggesting complex dynamics of communication networks that may result in a trade-off, where males are forced to prioritize directing their signals to either their social mates or neighbours.

Cara Snell holding a Mountain Chickadee. Photo courtesy of Cara Snell.

Esparza Magaña, Ilse Gabriela. 2021. Multiple stressors: evaluating the effect of pollution, climate change and oceanographic processes in Tropical and Arctic seabirds. MSc Thesis, McGill University, Montréal, QC.

Wildlife and ecosystems are currently exposed to multiple stressors that affect ecological patterns at both individual and ecosystem levels. Multiple natural and anthropogenic stressors often occur simultaneously and interact in complex ways which are not yet fully understood. For the past three decades, researchers have been trying to understand and predict the effect of the interactions between stressors. However, with new stressors constantly emerging and the effects of other stressors intensifying, understanding the effects of co-occurring stressors is still a priority for risk assessment, and the identification of conservation and mitigation measures. Here, we used two seabird species as indicators to help assess the effects of co-occurring natural and anthropogenic stressors threatening marine ecosystems on two different systems, the Tropics and the Arctic.

Ilse Gabriela Esparza Magaña. Photo courtesy of Ilse Gabriela Esparza Magaña.

In the first chapter of this thesis, I studied the Brown Booby (*Sula leucogaster*), a widely distributed seabird in the Tropics to assess the effects of co-occurring natural stressors, specifically upwelling and highly correlated oceanographic conditions (sea-surface temperature, precipitation, chlorophyll-a concentration, wind speed and wind direction) on reproductive success. I used productivity data from 61 nests from the Brown Booby colony at Bona Island in the Gulf of Panama, as well as remote-sensing environmental features. Chick survival probability was positively associated with chlorophyll-a concentration and negatively associated with $(\text{chlorophyll-a})^2$ and laying date. This study provides evidence that upwelling has a strong effect over tropical seabirds reproduction and that seabirds in the Tropics follow seasonal pulses similar to those observed in species in polar and temperate regions. Nonetheless, my findings need to be complemented with

more years of monitoring or information on other tropical species to properly assess how upwelling and oceanographic conditions are impacting tropical seabirds' reproductive success.

In the second chapter, I studied the Thick-billed Murre (*Uria lomvia*), a pagophilic (ice-associated) deep-diving seabird, to investigate the effects of chemical contamination on behavioural plasticity in response to changes in ice availability in the Canadian Arctic. I used data on contaminants (Hg, PCB congeners, OC pesticides, BFRs and PBDEs) and hormone concentrations (thyroid and stress hormones) in blood, as well as foraging behaviours (time spent diving, swimming and flying, diving depth and number of dives) collected over three breeding seasons (2016-2018) at Coats Island in Hudson Bay. Circulating concentrations of PCB congeners, OC pesticides, BFRs and PBDEs were extremely low; therefore, I only investigated the potential relationships between circulating mercury, thyroid and corticosterone levels and foraging behaviours. Methylmercury concentrations were correlated with blood plasma total T3 levels in Thick-billed Murres, indicating potential thyroid function disruption. Thyroid function was disrupted in 2016 and 2017, both years with early-ice melting, but not 2018, a year with late-melting conditions. Moreover, total T3 was correlated negatively with total time spent underwater during the same years, which is unsurprising as total T3 increases metabolism and thus shortens dive duration. In summary, in warm years, methylmercury may disrupt total T3 levels and thus interfere with how the murres can adjust to changing ice levels by altering their diving behaviour. Thus, our study demonstrates how the indirect effects of contaminants on behaviour may affect the way species cope with climate change.

McCabe, Rebecca A. 2021. The effect of winter movement patterns of Snowy Owls on their survival and management in human-dominated landscapes. Ph.D. Thesis, McGill University, Montréal, QC.

Movement is a primary way that animals respond to environmental variability. At a proximate level, animals are triggered to move as a result of changes in their internal state (i.e., related to their physiology and hormones) as well as external factors (i.e., competition and food). At an ultimate level, movement patterns have presumably been selected to increase the overall fitness of an animal, and thus influence population, community and ecosystem dynamics. For my PhD research, I used biologging to quantify the overwintering movements of Snowy Owls (*Bubo scandiacus*) and assessed how these patterns relate to land cover composition within wintering areas and influence age-, sex-, regional- and time-specific seasonal survival. I also studied how the movements of Snowy Owls after being translocated from airports affect the success of that management practice. I analyzed fine-scale movement data collected over a timespan of 20+ winters from owls in North America fitted with transmitters. Statistical modelling showed that movements of wintering snowy owls varied from range-residency to nomadism, and that the use of landscape was driven by extrinsic factors like landscape cover rather than intrinsic factors like age and body condition. Thus, nomadism is probably a response to food resources which vary temporally and according to landscape configuration on a large spatial scale. By combining telemetry and necropsy data, I showed that immature Snowy Owls that irrupt into eastern North America were limited by density-dependent factors, and mortality of owls was associated with human activity. Finally, I demonstrated how the inclusion of multiple factors are necessary to reduce wildlife collisions and limit the return rates of relocated owls from airport facilities. Of the 42 owls relocated from airports, 33% returned and the probability of returning was negatively related to the distance of the release site from the airport, the proportion of croplands and wetlands at the release site, and the sex and age of the individual. By integrating a knowledge of movement patterns with various aspects of the winter ecology and life history of Snowy Owls, I contribute new insights on how movements of an irruptive species in the nonbreeding season may influence population-level processes, and how knowledge of movements can inform conservation strategies on a global scale.

Rebecca McCabe getting ready to release an adult male snowy owl. Photo by Karen Wiebe.

To learn more, check out the published papers from this research:
(1) https://doi.org/10.1093/ornithology/ukaa082, (2) https://doi.org/10.1007/s00442-021-05057-9

Feature Article

Building Upon Old Cowbird Breeding Records from the Canadian Prairies [1]

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Introduction

In the previous instalments in this series, eggs collected in the late 1800s and the early decades of the 1900s provided information on historic breeding records of the Brown-headed Cowbird (*Molothrus ater*, hereafter cowbird(s)) on the Canadian Prairies, at a time closer to original habitat conditions. Records were uncovered from bird lists published in regional accounts and confirmed in as many instances as possible by examining photographs of egg-sets and scans of data slips provided by curators of museum collections. I uncovered additional records of parasitism during online searches of museum collections, which further confirm the value of these irreplaceable resources. The status and suitability as hosts of some species, however, remained elusive, and awaited studies that were conducted in the ensuing decades.

Oologists and naturalists were there to collect eggs and other specimens, however, not to quantify nest success or, without bias, determine frequency of natural parasitism on potential host species. Their observations of cowbirds and host records were made opportunistically. Despite possible biases among early oologists who may have preferred sets of eggs "uncontaminated" by cowbird eggs (see Friedmann et al. 1977, p. 2-3, 6), a picture emerged of host use, including records of parasitism that involve more than one cowbird egg laid in the same nest, by the same or different females, i.e., multiparasitism, which yielded comparative information. To those records would be added new information based on studies at one or more sites within one or several seasons; results of some of these studies are discussed in this instalment, as others were in previous ones. Some of this information augments Lowther's (1977) analyses of the early observations of the Brown-headed Cowbird that were made outside the species' original (and present) core area, the Great Central Plains.

Injecting bias into the determination of the identities of cowbird hosts and records of the numbers of nests parasitized of each species were species that ejected cowbird eggs or deserted parasitized nests, defenses of which most oologists and early ornithologists were unaware (but see Macoun 1904), and were noted in previous instalments. Egg-sets with cowbird eggs suggest acceptance of parasitism, but in others cowbird eggs may already have been ejected by the host or the nests were deserted before they were found. Regardless, assignment of the type of response, acceptance or rejection, awaited results of experiments that simulate natural parasitism. Early observations of cowbirds and their hosts, and the speculation that followed, provided building blocks for studies that increased our understanding of this parasitic system. In this instalment, I review some of the old cowbird breeding records from the grasslands of the Canadian Prairies and address questions in light of what we know now. Focusing initially on Baird's Sparrow (scientific names of birds in Appendix 1), a species that is endemic to the Great Plains, I highlight the emergence of early records of parasitism on this species and notes on habitat used during the breeding season, which was generally described by naturalists in lieu of nests that initially eluded them.

As the identities of the grassland hosts emerged, the similarity in appearance of eggs of the Brown-headed Cowbird and most host species, including Baird's Sparrow, was apparent, and suggested the possibility of generalized cowbird egg mimicry. The unspotted, blue (non-mimetic) eggs of another species in this community, the Lark Bunting, called for experiments that recorded acceptance or rejection of cowbird eggs, the results of which have contributed to ongoing research on cues used by hosts to recognize foreign eggs. Still building upon early observations were specimens of the Warbling Vireo collected by the early naturalists in the riparian woodlands in and beyond the Cypress Hill that provided evidence that eventually pointed to the existence of two species, one in the west, the other in the east. Experiments that simulated cowbird parasitism on their nests, which are highlighted below, revealed acceptance of cowbird eggs in the western population, but rejection in the eastern species.

[1] Fifth in a series on historic observations of cowbird parasitism on the Canadian Prairies.

Baird's Sparrow, an elusive host

The first nest of Baird's Sparrow was discovered in 1873 (Allen 1874) in what is now western South Dakota, but knowledge of the species' natural history and its status as a cowbird host emerged sporadically over several decades. Before most of the Great Plains were converted to cropland, the species was reported as "the most abundant and characteristic species … in some places outnumbering all the other birds together" (Coues 1873). The first parasitized nest, discovered in North Dakota in 1883, was followed by two additional parasitized egg-sets collected by L.B. Bishop, also in North Dakota (Table 1, Figure 1). On the Canadian Prairies, Raine (1894) reported a multiparasitized nest near Rush Lake, Saskatchewan, which contained two host eggs plus three cowbird eggs. He mentioned this record only in passing, but earlier he (1892, p. 33) provided more details about two unparasitized Baird's Sparrow nests discovered in 1891:

> I startled a small bird from the dry ground on the margin of the slough, and found a nest of five eggs. The eggs were unknown to me; they resembled eggs of the grass finch but were smaller. I afterwards found out they were eggs of that rare bird, Baird's Sparrow (ammodramus Bairdii) [*Centronyx bairdii*]. I left the eggs in the nest and placing a piece of wood nearby as a mark; I went away in hopes the bird would return so that I could shoot her to enable me to identify the eggs. Although I stayed away twenty minutes before returning, I did not see any signs of the bird, so I took the nest and the eggs. The nest is made of dried grass and was built on the ground after the manner of the [S]ong and Savannah [S]parrows ... This set was taken on 8th June, and they were quite fresh. On the 14th of June I found another nest of Baird's Sparrow on the prairie south of Rush Lake; it contained three eggs and incubation was far advanced,—the nest was made of grasses and on the ground. These eggs were greyish white, finely spotted with dark brown, and they have a few hair lines of brown after the fashion of McCown's [Thick-billed] [L]ongspur, but the eggs are larger than those of McCown's [L]ongspur.

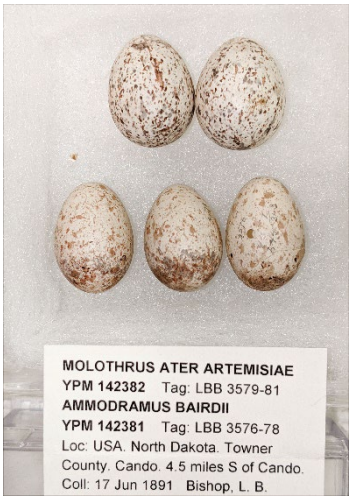

Figure 1. Parasitized set of Baird's Sparrow eggs (YPM ORN 142382), with three eggs of the host (bottom row) and two cowbird eggs, collected by L.B. Bishop in Towner County, North Dakota, June 17, 1891. Photo credit: Krystof Zyskowski, courtesy of the Peabody Museum of Natural History, Yale University.

These egg-sets were not located in any collection, but an unparasitized set of Baird's Sparrow eggs is catalogued in the Western Foundation of Vertebrate Zoology (WFVZ E126.460.4), which was collected for Raine and his son Stanley, at Lethbridge, Alberta on May 23, 1906 (Figure 2). (Noted in the second instalment of this series, some egg-sets were collected on the Canadian Prairies for Raine, during years, such as 1906, when he did not visit western Canada.) The first authenticated nest in Saskatchewan, which was not parasitized, was found by G.M. Sutton at the head of Last Mountain Lake on June 23, 1932 (Todd 1947); the eggs are catalogued in the Carnegie Museum of Natural History (CM 2869 E; Figure 3). Between the time of Raine's report of a parasitized nest of Baird's Sparrow and Friedmann and Kiff's (1985) last compilation of cowbird hosts, fewer than 10 additional records of parasitism were published (Table 1). The Saskatchewan record was provided by J.A. Slimmon, oologist and skilled nest finder from Saskatoon, who collected a parasitized clutch near Goose Lake, on May 29, 1971 (Friedmann and Kiff 1985); this set was not located, but he took an unparasitized clutch near Asquith on May 29, 1969 (WFVZ E84444, Figure 2).

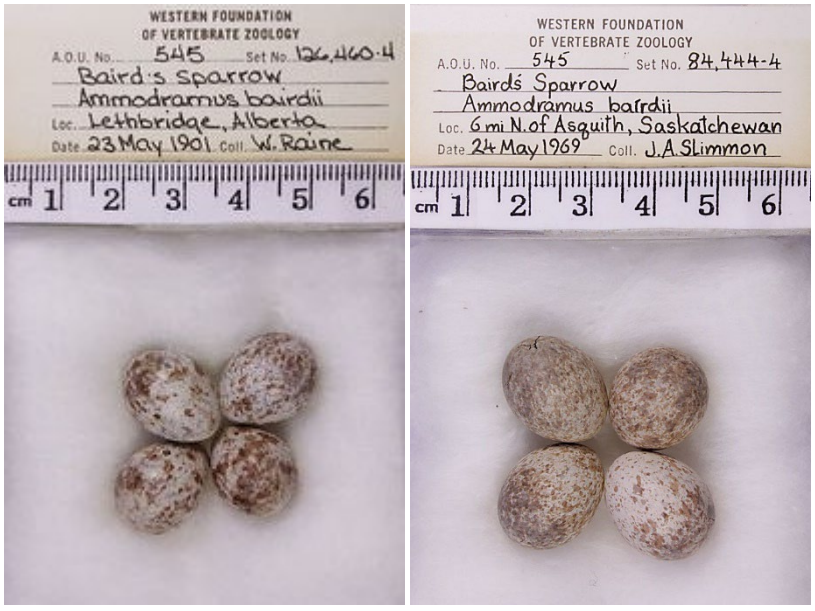

Figure 2. Unparasitized sets of Baird's Sparrow eggs. Left: WFVZ 126.460.4, collected for Walter Raine and his son Stanley, in their absence, near Lethbridge, Alberta, May 23, 1906. The year of collection was incorrectly transcribed from the original data-slip as 1901. Right: WFVZ E8444 collected by J.A. Slimmon near Asquith, Saskatchewan, on May 29, 1969. Courtesy of the Western Foundation of Vertebrate Zoology.

Table 1. Chronology of records of cowbird parasitism on Baird's Sparrow in the northern Prairie Region.

Location of record/study	Provenance and notes
North Dakota: northern Sargent County	June 18, 1883; 4 h + 2 c[1]; an early case of multiparasitism reported by T.S. Roberts to Cartwright et al. (1937); included in Friedmann (1929, p. 219)
Saskatchewan: Rush Lake	May 24, 1893; 2 h + 3 c; species noted as "rare" by Raine (1894); included in Friedmann 1929, p. 219). Egg-set not traced; eggs identified by Raine on basis of size and appearance. Friedmann (1963, p. 155) assumed "… [the site] was either Montana or some adjacent area of Canada", although Raine had stated the eggs were collected at Rush Lake, Saskatchewan; date later determined to be May 24, 1893 (letter from C.S. Houston to Friedmann, October 11, 1965)
North Dakota: Towner County	YPM[2] ORN 142382 (host), 142381 (cowbird): June 17, 1891; 3 h + 2 c; collected by L.B. Bishop "… near Devil's Lake" (Figure 1) (Friedmann 1963, p. 155); photograph examined[3]
North Dakota: Towner County, near Devil's Lake	YPM ORN 142439 (cowbird): June 26, 1895; 2 c; collected by L.B. Bishop "near Devil's Lake". Bishop noted that the "nest contained 1 rotten Baird's Sparrow egg and 3 young Baird's Sparrows" (see also Friedmann 1963, p. 155); photograph examined[3]
North Dakota	No date: no details, Alfred Eastgate reported to Friedmann (1929, p. 155) "many years ago" of finding one parasitized nest
Manitoba: Winnipeg	July 7, 1931; 3 h on July 7, one cowbird egg laid July 8 but removed by R.D. Harris; sparrow eggs hatched on July 12 (Cartwright et al. 1937, p. 183). The authors stated that "as we had no assurance that we would find any more [nests] we planned extensive observations on the nest. Had we known that we would … find seven more nests during the season we would have allowed the cowbird's to remain and would have learned the reactions of Baird's sparrow to this social parasite." One of eight nests (12.5%) parasitized
Manitoba: near Brandon	1960-65[4]; 0 of 8 nests parasitized (Lane 1968)
Saskatchewan: Goose Lake	May 29, 1971; 2 h + 3 c; J.A. Slimmon (see Friedmann and Kiff 1985, p. 261); egg-set not traced; unparasitized set (WFVZ E84444) with four eggs taken by Slimmon near Asquith, May 24, 1969 (Figure 2)
Manitoba: sites in southwest corner	1987-88[4]; 2 of 13 nests (15.3%) parasitized (De Smet and Conrad 1991)
Manitoba: four "typical" grassland sites in the southwest	1991-92; 27 (18 with >1 cowbird egg) of 74 nests (36.5%) parasitized (Davis and Sealy 1998, 2000)
Saskatchewan: native pastures[5]	1996-00; 38 (60% with >1 cowbird egg) of 182 nests (20.9%) parasitized (Davis 2003)
Saskatchewan: centred around abandoned hamlet of Dummer	2001-02; 11 of 70 nests (15.7%) parasitized (Klippenstine and Sealy 2008)
Saskatchewan; two sites in southwest corner	2010-11; 0 of 23 nests parasitized (Gaudet 2013)
Alberta: Antelope Creek Habitat Development Area, in the southeast	2010-11; 6 of 35 nests (17.1%) parasitized (Ludlow et al. 2014)
Alberta: Brooks	2015-17; 0 of 7 nests parasitized (P.G. Des Brisay, pers. comm.; also see Des Brisay 2108)

[1] h = host egg(s) + c = cowbird egg(s).

[2] Yale Peabody Museum of Natural History (YPM).

[3] Photographs were provided for confirmation by curators of respective egg collections.

[4] Duration of fieldwork.

[5] Study conducted on 47 native pastures in the eastern portion of the mixed- and moist mixed-grassland ecoregions of southern Saskatchewan.

The early records and Lane's (1968, p. 762) failure to record parasitism on Baird's Sparrow during several years of study of the species in Manitoba prompted Lane to note: "… nesting as it does in wide, open grasslands, it shares with several neighboring species almost complete immunity from the visits of that parasite, the brown-headed cowbird." It was not that early naturalists did not encounter Baird's Sparrows, they did not find their nests, and their comments usually turned to general descriptions of the habitats in which they found the birds.

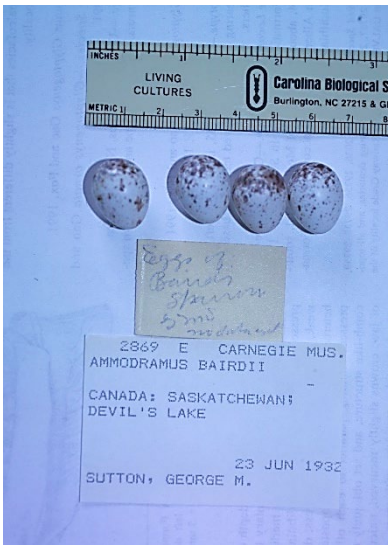

Figure 3. Unparasitized set of Baird's Sparrow eggs (CN 2869 E) collecteb by George M. Sutton near Last Mountain Lake, Saskatchewan, on June 23, 1932. Courtesy of the Carnegie Museum of Natural History, Pittsburgh.

Bent (1908, p. 31) wrote of Baird's Sparrow observed at Crane Lake, in southwestern Saskatchewan:

> Uncommon, but quite a number of pairs were located in the grassy hollows on the prairies. These pairs were widely scattered but we could generally locate them by their peculiar songs in nearly all suitable localities. Their song is somewhat intermediate between those of the Savanna[h] and the Grasshopper Sparrows. The birds were very shy and we experienced difficulty in collecting them. No nests were found.

Also in Saskatchewan, Harrold (1933, p. 25) described the species as a common summer resident near Old Wives Lake: "A pair could be found at the edge of every slough."

Todd (1947, pp. 418-419) observed Baird's Sparrow near Last Mountain Lake:

> This is another characteristic bird of this region; however, it tends to be local in its distribution. It was common in the grass lands at the head of Last Mountain Lake, where the conditions were especially favorable—same place as Sprague's Pipit favored. Dr. Sutton found a nest here … [which] held four eggs [see Figure 3], which closely resembled those of the Grasshopper Sparrow. Like the last-named species, Baird's Sparrow is a ground bird, but it often ascends a weed-top or the pole of a fence to sing.

In the Cypress Hills, Godfrey (1950, p. 85) wrote:

> In 1948, this species was rather uncommon. At Crane Lake on June 15, 9 were noted near water's edge in manna grass (*Glyceria*) and in *Juncus-Scirpus* associations. It was observed also in grassy depressions on the plains, and in similar places well up in the Cypress Hills and in the broad treeless area between the west and east blocks of the Cypress Hills (The Gap).

Near Castor, Alberta, Randall (1926) was among the earliest to discover nests of Baird's Sparrow, the first of which contained five eggs on June 16, 1924. He described what were unusual sites of this and other nests as, "… always placed near the edge of a clump of briers or buck-brush, such clumps being common on the prairie, and in most cases a stem or two of the brush will partly hide the nest.

In southeastern Alberta, Rand (1948. p. 87) related Percy Taverner's observations in which he noted "[Baird's Sparrows] were singing in the fox grass on the dry alkaline plain, but he was unable to secure specimens owing to their wildness, and to the numerous Savannah sparrows that occupied the same territory and attracted the attention."

The picture began to come together as results emerged from studies of breeding biology and quantification of habitat use across the Canadian Prairies. A re-assessment of the status of Baird's Sparrow in Saskatchewan revealed this species occupies a greater variety of habitats than previously believed, including "grasslands invaded by with Brome Grass [*Bromus* spp.] and Crested Wheatgrass [*Agropyron cristatum*] as well as alfalfa hayfields" (Davis et al. 1996, p. 189; data in Davis et al. 1999) – more broadly characterized as a preference for taller vegetation (Madden et al. 2000), including introduced vegetation (Sutter et al. 1995). During dry years, the species was noted as restricted to dry shallow ponds, depressions and drainages (Cartwright et al. 1937), which pointed to the importance of studies of the impact of nest predation and cowbird parasitism that extend long enough to include series of wet and dry years in different habitats. Recent information has suggested Baird's Sparrow is a good quality host because it is frequently parasitized and rears more cowbirds than other grassland bird species, at least in fragmented habitats (Davis and Sealy 2000, Davis 2003). Not every observer, however, reported frequent parasitism on this species.

Low parasitism frequencies recorded on Baird's Sparrow in the past pointed not only to a possible artefact of the small number of nests observed, but that the nature of the habitat apparently plays a role (Table 1). More Baird's Sparrow nests were parasitized in fragmented patches of grassland (Davis and Sealy 1998), whereas no parasitism was recorded in extensive tracts of unbroken rangeland (Maher 1973, Gaudet 2013). In fact, two of 148 nests of seven species of mixed-grassland passerines were parasitized (Gaudet 2013), whereas in a five-

year study in the Matador prairie in Saskatchewan in the early 1970s, none of >500 nests of eight prairie passerines, including Baird's Sparrow, was parasitized, despite the presence of cowbirds on the Matador study area (Maher 1973). Based on data obtained from other areas held in the Prairie Nest Records Scheme, Maher (1973, p. 30) noted "The data indicate that, for the horned lark, western meadowlark and chestnut-collared longspur, cowbird parasitism is potentially a serious source of mortality in nearby areas. Its absence at Matador is significant." Roy (1996, p. 279) took this comparison farther, stating:

> I have found more parasitized nests in farm groves and hedges and in clumps of native shrubbery than in tracts of native grassland. In June 1947, for instance, all seven blackbird nests (four Brewer's and three Redwings) at the Roy farm where parasitized while four nests (two Vesper Sparrows, a meadowlark and a Horned Lark) found in a nearby 12-ha pasture were not. Clay-colored Sparrows, Yellow Warblers and Least Flycatchers nesting in willows, saskatoons, choke cherries and patches of snowberry are frequently parasitized. Yet during the IBP [International Biological Programme] studies in the Matador grasslands, 1967-71 [Maher 1973], when 510 nests of eight prairie passerines were examined …., **not a single cowbird egg was found** (emphasis Roy's). The difference appears to be the visibility of the nest. Birds nesting in extensive tracts of natural prairies seem better able to hide their nests from the prying eyes of female cowbirds.

Roy raised an important point — often considered and even assumed — but rather than cowbirds parasitizing nests that are easy to see, a myriad of other factors is likely at play when selecting nests to parasitize. Among them may be the number and placement of suitable perches, distance to habitat edges, host and parasite densities, effective nest defense, host quality and how the landscape is managed. Fragmentation of the prairie may have facilitated use of grassland hosts that historically were less accessible to them across the vast prairie landscape (Davis and Sealy 2000). Geographic variation in parasitism frequency has been suggested for other grassland songbirds, which reflect such factors as differences in the size of suitable habitat patches and availability of other species in the community (Igl and Johnson 2007).

Baird's Sparrow at the nest

The history of Baird's Sparrow for the 30 years following its discovery is traced in a monograph published in 1937 by three Winnipeg field naturalists, Bertram W. Cartwright, Terence M. Shortt and Robert D. Harris. Among the information summarized were observations made by Harris from a blind set up near a Baird's Sparrow nest at Deer Lodge, a former area of unspoiled woodland and prairie north of the Assiniboine River in Winnipeg, from which new questions emerged. The nest contained three eggs when discovered on July 7, 1931, but a cowbird egg was laid the following morning, which Harris removed. The clutch of three sparrow eggs hatched on July 12. On July 14, the blind was erected within three feet of the nest and the following observations were made (Cartwright et al. 1937, p. 183):

> There was a rustle in the grass near the blind and a female cowbird appeared. It inspected the blind but came to within only two feet of the nest. Then it walked to the long grass by the side of the ditch. Just then, the female Baird's sparrow appeared, flew to the nest and fed the young with a grasshopper and another unidentified insect. When I looked for the cowbird it was not visible—it had hidden in the grass. The Baird's sparrow now flew to the top of the blind. From its elevated position it saw the cowbird and flew at it. The cowbird flew away pursued by the sparrow. The Baird's sparrow then returned to the nest and settled on it to brood.
>
> It is not improbable that this was the same female cowbird that had deposited the egg in the nest on July 8 and possibly had returned to lay a second egg.
>
> Our experience, therefore, borne out by other available breeding records, is that Baird's sparrow is not a frequent victim of the cowbird. Its habit, in our district at least, of nesting late in the season may be a factor in its partial immunity, but cowbirds do not seem to be as numerous in the open prairie as they are in the wooded sections.

This was not only a late laying date for the cowbird in Manitoba but the egg was laid late during the sparrow's incubation period, with no chance that it would hatch. The latest recorded dates of laying by cowbirds in Manitoba, observed over >35 years of study in a host community at Delta Marsh, was July 12-15 (Sealy 2020), and July 17 on the grasslands of Saskatchewan (Davis 2003). Most cowbird eggs are laid, however, during or within a day or two of the initiation of the host's clutch (Sealy et al. 2002). Speculation that the latter female cowbird that Harris had already observed parasitized the nest was reasonable, particularly at that late date. Two or more cowbirds, however, are known to parasitize the same nest (McLaren et al. 2003), and Harris believed correctly that the nest may be parasitized again, because he was aware of Raine's (1894) record of multiparasitism on this species.

Harris noted that the female Baird's Sparrow returned to the nest to brood the young after chasing the cowbird away. Did the sparrow recognize the cowbird as a brood parasite, as a predator or as a generalized threat to the nest? Different forms of fine-tuned discrimination between these threats at the nest have been identified at nests of several host species in other habitats, following quantified responses to successive presentations of a stuffed female cowbird, predator and, as a control, a nonthreatening species (e.g., Sealy et al. 1998). Some responses involved referential alarm calls, one type uttered toward the cowbird, another type toward the predator. As noted in the last instalment, Yellow Warblers utter a distinctive alarm call toward the cowbird, which, in tandem with other aggressive responses, wane as incubation progresses and the threat of parasitism declines; on the other hand, aggression may escalate in response to a predator as the nesting cycle progresses and the value of the nesting attempt increases (Gill and Sealy 1996). Models of a female cowbird, a known predator and a nonthreatening species presented at nests of grassland hosts may reveal similar repertoires of response to perceived threats of cowbird parasitism and predation.

Grassland hosts: Generalized mimicry?

Similarity among cowbird eggs and several grassland species, including Baird's Sparrow (Figure 4), was hypothesized to represent a form of generalized cowbird egg mimicry (Klippenstine and Sealy 2008). Underlying this hypothesis is the idea that the colour and maculation of cowbird eggs have been adapted to match the appearance of eggs laid by several hosts. Hosts were predicted to accept cowbird eggs but reject non-mimetic eggs (see Klippenstine and Sealy 2010). That Baird's Sparrows rear cowbirds suggests acceptance of parasitism, but there may be more to the story. Cowbird eggs may be ejected before the investigator can record this response, thus biasing the results in favour of acceptance. Acceptance is confirmed if real or model cowbird eggs that are introduced into the potential host's nest remain in the active nest beyond the host's laying period and during incubation.

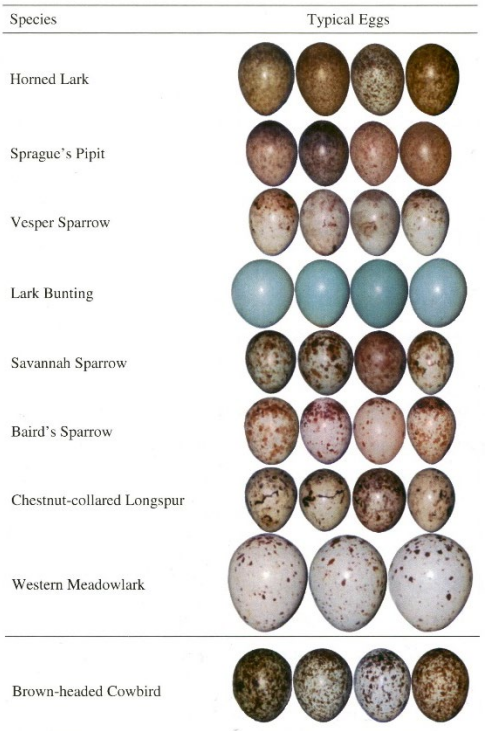

Figure 4. Eggs of the Brown-headed Cowbird (bottom row) and eight grassland passerines of south-central Saskatchewan (after Klippenstine and Sealy 2008).

Following this protocol, Dwight Klippenstine tested this hypothesis at sites near the abandoned hamlet of Dummer, in south-central Saskatchewan. He introduced either a real or a model cowbird egg into nests of six species of grassland songbirds and, into other nests of the same species, as a control, either a real or a model cowbird egg painted solid blue, i.e., a non-mimetic "egg" (Figure 5). Acceptance of real or model cowbird eggs confirmed the status of Baird's Sparrow, and of the other species, as acceptors, whereas rejection of blue eggs supported the egg mimicry hypothesis. Baird's Sparrows accepted all 26 real and model cowbird eggs, but ejected or attempted to eject 19% of 21 blue eggs. Rejection was assumed to be by grasp-ejection because both model and real cowbird eggs were ejected (Klippenstine and Sealy 2008), although at the time the possibility that birds kicked the eggs out of the nests was not considered. This response should be confirmed with the use of videography.

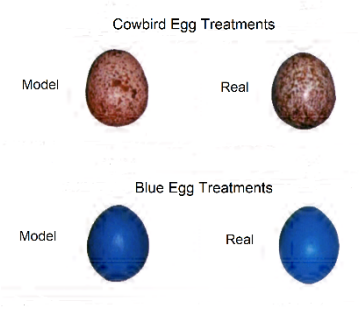

Figure 5. Four egg treatments used to experimentally parasitize nests of grassland passerines in south-central Saskatchewan (after Klippenstine and Sealy 2008).

With the exception of the Western Meadowlark, all species accepted all or nearly all the cowbird eggs, but ejected or attempted to eject between 9% and 20% of blue eggs, with 54% of rejected eggs not removed from the nests, i.e., failed ejection attempts identified (Figure 6). The results suggest that all six species tested evolved egg recognition and egg ejection in response to cowbird parasitism. Too few nests of Horned Lark and Lark Bunting were available for testing (Klippenstine and Sealy 2008).

The Western Meadowlark, the largest species among those tested, ejected 67% (n = 12) of cowbird eggs and 92% (n = 12) of non-mimetic eggs (Figure 6). The higher frequency of rejection may be related to the meadowlark's large bill compared to the smaller bills of the sparrows and the pipit. This species differed from most ejectors in that its response was intermediate, a mixture of acceptance and rejection instead of the usual all-or-none response to the presence of a cowbird egg shown by most rejector species, i.e., either acceptance or rejection (Rothstein 1975). In previous instalments, I noted that ejection may result in underestimation of the frequency of parasitism. Having said this, however, parasitism frequencies of up to 44% and 25% on the Western Meadowlark have been recorded in Manitoba

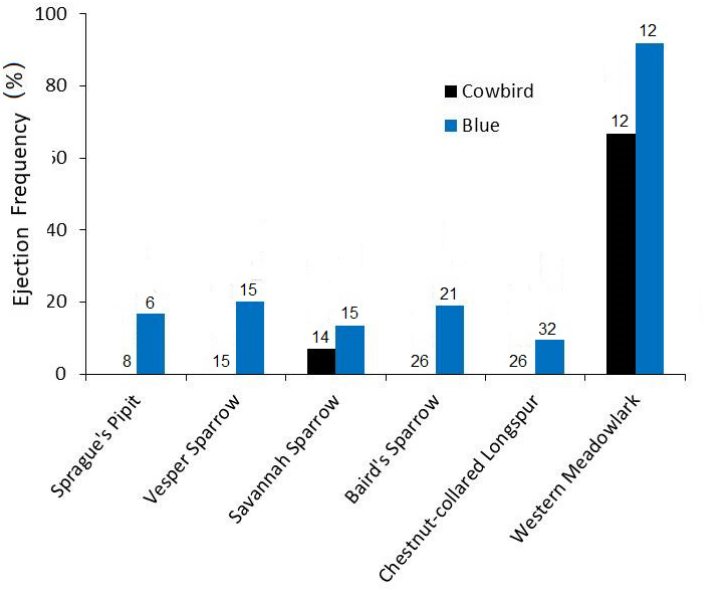

Figure 6. Frequency of rejection (includes both successful and failed ejection attempts) of model and real cowbird and blue eggs experimentally added to grassland passerine nests (data modified from Klippenstine and Sealy 2008).

and Saskatchewan, respectively (Davis and Sealy 2000, Davis 2003), and multiparasitism is recorded occasionally (Davis and Sealy 2000), as is shown in an extreme example on this species in southwestern Manitoba (Figure 7), from which only five cowbirds fledged.

A similar result was obtained during an experimental study of host responses in Illinois. Western and Eastern meadowlarks rejected 78% and 36% of model and real cowbird eggs, respectively, whereas non-mimetic eggs were rejected at a slightly higher frequency by Western Meadowlarks (Peer et al. 2000). The intermediate levels of rejection by these species may indicate that rejection is increasing in their populations. Except for the Dickcissel, whose rejection frequency was 11%, none of the other four host species rejected cowbird eggs.

Before host discrimination can drive the evolution of a mimetic egg in the Brown-headed Cowbird, host specialization on a single host species or a small group of species with similar egg types would be required. That the frequency at which cowbird eggs were misclassified as eggs of each grassland passerine ranged from 8% to 48%, suggests that a single cowbird egg is capable of mimicking the eggs of more than one species (Klippenstine and Sealy 2010). This contrasts with the elaborate mimicry evolved by the Common Cuckoo, in which individual females, or "gentes", specialize on a single host species (Gibbs et al. 2000).

Figure 7. Multiparasitism on the Western Meadowlark, with two host eggs (bottom) and eight cowbird eggs, southwestern Manitoba. Five cowbirds fledged from this nest. Photo credit: Stephen K. Davis.

On the blue eggs of the Lark Bunting and other hosts

Another species whose status as a cowbird host on the Canadian Prairies emerged slowly was the Lark Bunting. Early naturalists observed this species infrequently, despite the males' conspicuous flight songs and other behaviour (see Nero 1982). This was probably because the species was not always present in the region during their visits, given its irruptive nature, especially at the northern edge of its range. This was illustrated by back-to-back visits to the Crane Lake region of southwestern Saskatchewan by Bent (1908) who did not record the Lark Bunting in 1905, but recorded it as "very common" the following year. Raine eventually observed the species, and was quoted by Macoun (1904, p. 534), stating "I never saw this bird in Manitoba but it is not at all scarce in western Assiniboia and Alberta. I found its nest at Rush Lake and Crane Lake …" Raine possibly collected Lark Bunting clutches, but only one unparasitized set turned up during my online search, this one collected by an associate for him in central Alberta in 1906 and now registered in the Yale Peabody Museum of Natural History (YPM ORN 131380).

Figure 8. Parasitized clutch of the Lark Bunting, near Val Marie, Saskatchewan, June 28, 1997. Photo credit: S.G. Sealy.

One may imagine that the Lark Bunting's immaculate blue or bluish white eggs, which to our eyes are in striking contrast with the colour and pattern of eggs of other grassland hosts, and of cowbird eggs (Figures 4 and 8), were particularly sought by oologists. Nevertheless, Friedmann (1963, p. 153) commented on how few records of parasitism on the Lark Bunting had come to his attention, despite searching among egg-sets catalogued in museums, since he first summarized the records in his monograph on the parasitic cowbirds, published in 1929. He wrote:

> It is strange that, in the succeeding years, only one additional record has come to my attention: a parasitized set of eggs taken in McHenry County, North Dakota, on June 9, 1933 ... When we consider that the most recent of the earlier cases was prior to 1878, it is all the more surprising that supplementary information has not been forthcoming. This phenomenon cannot be blamed completely on the dropping off of interest in egg collecting, but, at the same time, there is no reason for thinking that the lark bunting has become immune to cowbird parasitism.

Friedmann did not explain what he meant by becoming "immune to cowbird parasitism"; but frequent parasitism on the Lark Bunting, including multiparasitism, was eventually recorded in the early years when the species was present (e.g., Cohen and Rever 1966, Smith and Smith 1966), and especially later during studies of host communities in Manitoba and Saskatchewan (Sealy 1999, Davis and Sealy 2000). Parasitism on the Lark Bunting confirms the cowbird's opportunistic use of a host that may be present in an area in one year but not the next (also see Sealy 1979).

Hill (1976, p. 564) commented on the contrast in appearance of Lark Bunting and cowbird eggs, and wondered whether this facilitated recognition and rejection of the parasite's egg. He wrote of this species in west-central Kansas:

> Because of a relatively low frequency of parasitism and the high proportion of nests destroyed by farming practices, the Lark Bunting appears to be a species of little value to the cowbird as a host. One possible adaptation of the bunting to cowbird parasitism may be the removal of cowbird eggs from the nest. The color contrast of the blue bunting egg and the brown speckled egg of the cowbird is greater than that of all other grassland species except the Dickcissel. Thus, if any grassland species is capable of distinguishing between eggs of their own and those of the cowbird it would be the Lark Bunting.

Hill (1976) found cowbird eggs outside of five bunting nests, which he suggested may help to explain the relatively low frequency of parasitism in comparison with other grassland passerines. This finding called for an experiment, which I performed at a site near Val Marie, Saskatchewan, in 1997 (Sealy 1999). Twelve of 22 nests (54.6%) were naturally parasitized, with one-to-three cowbird eggs per nest. Except for two cowbird eggs embedded in the bottom of one nest—apparently laid before the nest was complete and before the bunting had initiated laying — all cowbird eggs were accepted, and six cowbirds fledged from five nests. Buntings accepted real cowbird eggs at four nests parasitized experimentally, whereas at the fifth nest the cowbird egg disappeared within 24 hours of its introduction. That nest was naturally parasitized three days later and the cowbird egg was accepted (Sealy 1999).

Figure 9. Common Cuckoo eggs and host eggs. The cuckoo egg is shown on the left of each host clutch. From the top: Redstart, followed by the five principal hosts in Britain: Meadow Pipit, Reed Warbler, Dunnock, Pied Wagtail and European Robin. Photo credit: Robert Y. McGowan, courtesy of the National Museums of Scotland, Edinburgh.

Especially intriguing is the relationship between hosts that lay plain blue eggs and the parasitic Common Cuckoo in Europe. The cuckoo is well known for laying eggs that mimic those of its hosts (Figure 9), thus duping them into accepting their eggs. But note the non-mimetic cuckoo egg and the plain blue eggs laid by the Dunnock, or Hedge Accentor (Figures 9 and 10). The Dunnock accepts the cuckoo egg, which ornithologist Nick Davies of Cambridge University dubbed "a glaring exception to egg mimicry among the main hosts of the Common Cuckoo" (Davies 2002), as the cuckoo's egg is the wrong colour and it has spots. Following controlled experiments in which differently coloured and patterned model eggs were placed into Dunnock nests, in some cases accompanied by a stuffed cuckoo placed near the nest, all with the same result – acceptance – Davies and Brooke (1989) concluded that the Dunnock is alone among major European cuckoo hosts in showing no egg discrimination.

Figure 10. Parasitized set of Dunnock eggs, with four blue eggs of the host and one non-mimetic cuckoo egg. This egg-set was originally part of the stock held by natural history dealer, C.H. Gowland, in England. Courtesy of the Natural History Museum of Ireland, Dublin.

Among the latter group of hosts to which Davies referred is another species that lays plain blue eggs, the cavity-nesting Redstart, but in this case its eggs are almost perfectly matched by the cuckoo's egg (Figure 9) (see Grim and Rutila 2017). An obvious question is: Why does the cuckoo mimic most other hosts' eggs but not the Dunnock's? One explanation invoked the costs associated with parasitism. Davies (2002, p. 122) wrote:

> Perhaps rejection is peculiarly costly for the Dunnock, so that at the current level of parasitism in Britain, just 2% of nests parasitized, it is better for them to accept foreign eggs.
>
> At first sight this seems unlikely. There is nothing obviously odd about Dunnocks which would preclude rejection. They have just as large bills as other rejector hosts and so should be able to eject a cuckoo egg. They do not nest in unusually dark places where detection of a foreign egg would be difficult; Robins' nests are equally dark and they reject. Finally, other hosts with blue eggs (Redstarts) have evolved rejection. Furthermore, Dunnocks suffer similar rates of parasitism in Britain to Meadow Pipits (3%) and a much higher rate than Pied Wagtails (0.5%), both strong rejectors.

Davies (2002, p. 122) wondered whether pipits and wagtails may have evolved under higher parasitism levels in the past that drove down their population sizes, thus lowering their parasitism frequencies. He speculated further that the Dunnock's parasitism rate may always have been low, possibly below the threshold at which rejection would pay, because of its costs. Acceptance by Dunnocks may be a stable situation and, as Davies noted, "If we came back in a few thousand generations, [Dunnocks] would still accept non-mimetic Cuckoo eggs."

In accordance with acceptance of cowbird parasitism by the Lark Bunting, with its blue eggs, results of an analysis of correlates of egg rejection by cowbird hosts revealed that egg appearance was not correlated with acceptance of cowbird eggs or constrained by taxonomy (Peer and Sealy 2004; see Figure 11). Does the Lark Bunting show no egg discrimination? Results of my experiment suggested that this is the case, but introduction of models of different colours and patterns, and size, are required to confirm a lack of discrimination, as results of Davies's tests conducted at Dunnock nests revealed. Recognition costs and damage wrought on some grassland host eggs during ejection suggest that an evolutionary equilibrium exists resulting in acceptance of cowbird eggs by grassland hosts whose eggs are similar in appearance to cowbird eggs (Klippemstine and Sealy 2008).

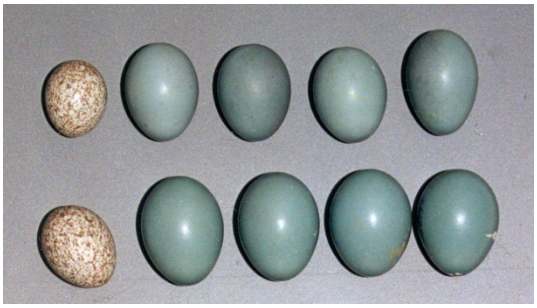

Figure 11. Brown-headed Cowbird eggs to the left of clutches of Wood Thrush (top) and American Robin (bottom). Wood Thrushes accept cowbird eggs, American Robins eject them. Photo credit: Peter E. Lowther, courtesy of the Field Museum of Natural History, Chicago.

Warbling Vireo: Two species with different responses to a cowbird's egg

Oologists and early naturalists on the Canadian Prairies seldom reported observations of the Warbling Vireo. Its status as a cowbird host was not confirmed until a little more than 20 years ago (Sealy 1996), and a proposal of its status as two distinct cryptic species was published only last year (Lovell et al. 2021), although two sibling species – a western form, *Vireo swainsoni* (hereafter, *swainsoni*), and the nominate form in the east, *V. gilvus* (hereafter, *gilvus*) — were considered much earlier (J.C. Barlow *in* Lovell et al. 2021). Mitchell (1924) reported the first specimen, taken by P.A. Taverner near Cypress Lake on May 31, 1921, as the western subspecies *swainsoni* but Godfrey (1950, p. 67) listed that specimen under the nominate race *gilvus*, without explanation. Rand (1948, p. 70) did not record either race of Warbling Vireo in the Cypress Hills, "where the red-eyed vireo was common." Macoun and Macoun (1909, p. 604) recorded Warbling Vireo under the eastern race at Medicine Hat, Alberta, and also at Indian Head, Saskatchewan, based on observations and specimens collected by William Spreadborough in 1892, but they suggested that "[s]ome of the western references probably should go under the next variety [*V. g. swainsoni*]."

The only early reference to a parasitized vireo's nest on the Canadian Prairies was Congdon's (1903, p. 610) observation of a probable nest of the Red-eyed Vireo (*V. olivaceus*) discovered while recording birds in the Prince Albert region, Saskatchewan, in 1902. He wrote: "Eggs of this tramp were found in nests of the Vireo and some of the Sparrows. Two eggs, found in a nest with three pretty eggs of the Vireo, looked very much out of place." (Congdon did not list Warbling Vireo among the 85 species observed.) Although there were no historical records of parasitism on the Warbling Vireo, a few more recent ones have been published (Salt 1973, Wapple 2019). Observations that led to the discovery that individuals in one population of the eastern subspecies of Warbling Vireo eject cowbird eggs began indirectly. Over the decades ornithologists rarely recorded cowbird parasitism on this species, whereas the Red-eyed Vireo was frequently reported as a host (Friedmann et al. 1977). In retrospect, based on new information summarized below, such infrequently recorded parasitism on the Warbling Vireo may have reflected ejection of cowbird eggs before the observers could record them.

Observations and results of an experiment confirmed the Warbling Vireo's status as an ejector, at least in one eastern population (Sealy 1996). While inspecting Warbling Vireo nests in the forested dune ridge that separates Lake Manitoba and Delta Marsh, in 1986, I recorded a cowbird egg in a Warbling Vireo's nest, the first parasitized nest I observed out of more than 20 nests of this species inspected to that date. The egg was on the ground the next day, punctured but still mostly intact. This observation remained embedded in my field

notebook, but it was not forgotten. I eventually wondered whether the egg had been removed by a cowbird, possibly in association with a parasitism event, as I had by that time initiated a study of host-egg removal by laying cowbirds, but only vireo eggs remained in the nest.

Consulting the literature, I learned that cowbirds frequently remove a host egg in association with parasitism, but that cowbirds rarely remove other cowbird eggs (Nolan 1978). Given the vireo's small size (15 g), I did not consider the possibility that it had ejected the cowbird egg, although I should have as several hosts that eject Common Cuckoo eggs are as small. Delving into the literature further revealed that parasitism was recorded infrequently in populations of *gilvus* (3.6% to 10.9% in six studies), whereas relatively high parasitism rates were recorded for the Red-eyed Vireo. Further investigation, however, revealed that parasitism was recorded considerably more frequently on the western subspecies, *swainsoni* (75.0% to 80.0% in four studies; Sealy 1996). The eggs of the two taxa are similar in appearance (Figure 12), which called for another experiment.

Figure 12. Top to bottom rows: Brown-headed Cowbird eggs to the left of clutches of Eastern Warbling Vireo (*Vireo gilvus*), Western Warbling Vireo (*V. swainsoni*) and Red-eyed Vireo (*V. olivaceus*). Photo credit: Mimi Damryk, courtesy of the Western Foundation of Vertebrate Zoology.

Using real cowbird eggs, co-workers and I experimentally parasitized 41 nests of the Warbling Vireo, three nests in each of British Columbia and Colorado, five in Montana, and 30 in Manitoba. Cowbird eggs were accepted in all nests tested in British Columbia and Colorado, but a mixture of acceptance and rejection was recorded in Montana. In Manitoba, all cowbird eggs were rejected (29 by ejection, one by nest desertion) (Sealy 1996, Sealy et al. 2000). The results suggested that *swainsoni* accepts cowbird eggs, whereas *gilvus* rejects them, which was consistent with the high frequencies of parasitism reported for *swainsoni* and infrequently recorded parasitism on *gilvus*. Further confirmation of acceptance in the *swainsoni* emerged from a study in Colorado in which 75% of 36 nests were parasitized, with parasitism a major source of nest failure (Ortega and Ortega 2003). The responses to cowbird parasitism is another difference in the ecology of the western and eastern populations (or species) of the Warbling Vireo. Responding to our plea for tests of nests of *gilvus* in additional eastern populations (Sealy et al. 2000), Van Roo (2021) recorded ejection of three cowbird egg models from as many nests tested in Massachusetts.

Eastern and western forms of the Warbling Vireo have essentially allopatric breeding ranges across north-central North America, but they come into contact in Central Alberta (mapped in Salt 1973). The taxa retain large genetic differences with little hybridization (Lovell et al. 2021), and males of both taxa may occupy adjacent territories in areas where they coexist (J.C. Barlow 1988 *in* Lovell et al. 2021). Despite the extremely close similarity in the appearance of their eggs (Figure 12), results of experiments on the two forms of Warbling Vireo and a Manitoba population of the Red-eyed Vireo (hereafter, *olivaceus*) confirmed ejection by *gilvus* and acceptance by the other taxa (Sealy 1996, Sealy et al. 2000; Sealy and T.J. Underwood, unpublished). The question becomes: Is *gilvus* capable of egg recognition, but not *swainsoni*? Results of an experiment conducted by Todd Underwood in Manitoba showed that Warbling Vireos ejected an array of foreign eggs on the basis of differences in spot pattern, but not size, and that ejector species whose eggs are more similar in appearance to cowbird eggs should be less tolerant of them (Underwood and Sealy 2006), but the story does not end there. Underwood and Sealy (2010) found that *gilvus* can grasp-eject cowbird eggs and that the bill of *swainsoni* is significantly smaller (as measured by a grasp index) than that of *gilvus*. Rasmussen et al. (2010) also concluded that hosts the size of *swainsoni* may be too small to grasp and eject cowbird eggs; thus, *swainsoni* may be constrained from rejecting cowbird eggs efficiently by a smaller bill size. Similar tests on *swainsoni* and *olivaceus* are needed to extend the one conducted on *olivaceus* in Manitoba that resulted in acceptance of all 16 real cowbird eggs placed into as many nests, in a population in which 14 of 29 nests (47%) were parasitized (Sealy and Underwood, unpublished).

The extent of historical contact with cowbirds may have bearing on the answer. S*wainsoni* probably has a shorter history of parasitism as the cowbird recently expanded its range in the west (Rothstein 1994), whereas the breeding ranges of *gilvus* and *olivaceus* have been in contact with cowbirds longer, however, recall that *gilvus* rejects cowbird eggs, whereas *olivaceus* accepts them. More nests need to be tested across the entire ranges of *gilvus* and *swainsoni*, as Sealy et al. (2002) noted, as well as in other populations of Red-eyed Vireos. Indeed, ejection by *gilvus* has been confirmed experimentally in Massachusetts (Van Roo 2022). The outlier population of *swainsoni* in the Cypress Hills of southeastern Alberta and southwestern Saskatchewan presents an opportunity to confirm acceptance in *swainsoni* within the context of the history of colonization of the Hills by this and other western species of birds. This will be challenging, on two fronts. In

addition to apparently low nesting densities in the Hills, Warbling Vireos generally nest high in the forest canopy (Figure 13), but once the cowbird egg has been introduced, nests can be inspected, with patience, and a mirror affixed to a telescoping pole.

I have referred to cowbird hosts as acceptors and rejectors (nest deserters but primarily ejectors), which either tolerate a cowbird's egg, or not. Acceptors assume the costs of rearing their own and the parasite's young, whereas ejectors eliminate the parasite's young, although one or more of their own eggs may be lost at the time of parasitism (Lorenzana and Sealy 2001). Recent experiments have demonstrated that although the end result of ejection is riddance of the cowbird egg, the process to get there differs among some hosts. Consider ejection of cowbird eggs by the *gilvus* and the American Robin, in which eggs of the former species are more similar in appearance to cowbird eggs, compared with the latter species whose eggs are in stark contrast (Figures 11 and 12). Warbling Vireos are less tolerant of foreign eggs than American Robins (Underwood and Sealy 2006), a finding that supports Rothstein's (1982) prediction that ejector species whose own eggs are more similar to cowbird eggs in appearance should be more intolerant of foreign eggs. Warbling Vireos recognized the foreign egg based on a single parameter, spot-pattern, measured against their own eggs, and ejected them within hours (Underwood and Sealy 2006). Robins most reliably differentiated cowbird eggs on the basis of two parameters, white ground colour and size of the cowbird egg, and generally took longer to eject them. Underwood and Sealy (2006) concluded, "Experiments on the parameters of egg discrimination required by other ejectors of cowbird eggs will reveal the full extent of divergent selection pressure placed on the appearance of cowbird eggs."

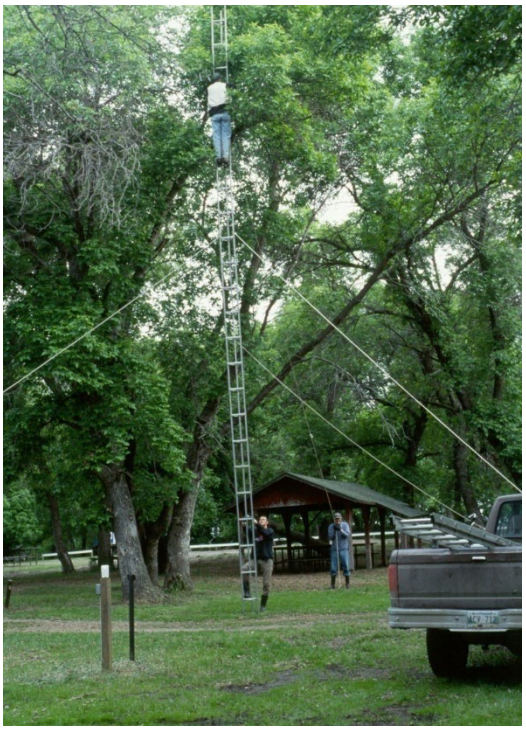

Figure 13. Accessing a Warbling Vireo nest with the help of a portable tower, dune-ridge forest, Delta, Manitoba. Photo credit: Robyn Underwood.

Amid considerable research that is underway on the subject of egg recognition worldwide, recent discoveries have revealed that recognition and rejection differ among species and that acceptance by cowbird hosts may often be the better strategy (Peer et al. 2018). In this and a previous instalment, I noted differences or similarities in egg colouration that may or may not be apparent to humans, whereas birds can see in the near-ultraviolet range (Cuthill et al. 2000), with differences in UV reflectance possibly providing potential cues for use in egg discrimination (Underwood and Sealy 2008). UV reflectance has been shown to affect rejection in cowbird hosts (Abernathy and Peer 2015) and that birds apparently exhibit colour biases that dictate how they respond to parasitic eggs (Canniff et al. 2018). Knowledge of the give and take between cowbirds and their hosts has come a long way since Alexander Wilson sought the answer to the question of who laid that foreign egg, more than 200 years ago.

Acknowledgements

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Appendix 1. Scientific names of bird species mentioned in the text.

Common Cuckoo (*Cuculus canorus*)
Least Flycatcher (*Empidonax minimus*)
Eastern Warbling Vireo (*Vireo gilvus gilvus*)
Western Warbling Vireo (*V. g. swainsoni*)
Red-eyed Vireo (*V. olivaceus*)
Horned Lark (*Eremophila alpestris*)
Gray Catbird (*Dumetella carolinensis*)
Wood Thrush (*Hylocichla mustelina*)
American Robin (*Turdus migratorius*)
Dunnock (*Prunella modularis*)
Meadow Pipit (*Anthus pratensis*)
Sprague's Pipit (*A. spragueii*)
Chestnut-collared Longspur (*Calcaruis ornatus*)
Grasshopper Sparrow (*Ammodrammus savannarum*)
Lark Bunting (*Calamospiza melanocorys*)
Chipping Sparrow (*Spizella passerina*)
Clay-colored Sparrow (*S. pallida*)
Vesper Sparrow ((*Pooecetes gramineus*)
Baird's Sparrow (*Centronyx bairdii*)
Savannah Sparrow (*Passerculus sandwichensis*)
Song Sparrow (*Melospiza melodia*)
Eastern Meadowlark (*Sturnella magna*)
Western Meadowlark (*S. neglecta*)
Redstart (*Phoenicurus phoenicurus*)
Brown-headed Cowbird (*Molothrus ater*)
Yellow Warbler (*Setophaga petechia*)
Northern Cardinal (*Cardinalis cardinalis*)
Dickcissel (*Spiza americana*)

Ornithological News and Announcements

Participate in the Great Canadian Birdathon this May / SCO-SOC participera au Grand Birdathon pancanadien en mai

The Great Canadian Birdathon is an annual fundraising event coordinated by Birds Canada. This year the SCO-SOC will be creating a pan-Canadian team and participating!

You can participate as part of the SCO-SOC team and raise valuable funds for bird conservation and the SCO-SOC's equality, diversity and inclusion initiative by participating in a big day of birding in May and collecting donations from friends and family. As with any team, the first order of business is deciding on a team name. And as the funding is to be put towards the SCO-SOC's equality, diversity and inclusion initiative, what better way to go about selecting a team name than by including the SCO-SOC membership!

The five shortlisted team names are listed and explained below:

1. SCO Scoter Scouters: Capitalizing on the Society of Canadian Ornithologists' acronym and some alliteration to provide an indication of what we will be doing on our big day in May: searching near and far for birds!
2. The White-throated Sparrows/Les bruants à gorge blanche: One of the most patriotic of birds, the White-throated Sparrow, sings about Canada all summer long. If this weren't enough reason to use their name, the differing colour morphs tied into its unique reproductive behavior make it a perfect flagship for a team focused on equality, diversity and inclusion!
3. Kicikîsokosîs: Chickadees are a well-loved and widely spread species in Canada. The Nêhiyawêwin (Cree) language has a beautiful name for the Chickadee, kicikîsokosîs, that emulates the chickadee-dee-dee call (with a diminutive suffix) that you might hear while out on a walk at the end of winter, just as the days are getting longer and the snow is starting to melt. The Cree are the most populous and one of the most widely distributed Indigenous peoples in Canada, living in areas from Alberta to Québec. As

such, it seems fitting to include a team name in Nêhiyawêwin. (Note: there are regional variants of bird names and for the language; for example, Nêhiyawêwin is used for Plains Cree or Y-dialect.)

4. Gwiingwiishi: The Canada Jay is another widely distributed and iconic Canadian bird. Living in Canada year-round, rearing chicks in winter, and their affability makes them a great Canadian emblem. The Anishinaabeg have many beautiful stories about the mischievous and wise Canada Jay. In Anishinaabemowin (Ojibwe language), Canada Jay is known as gwiingwiishi, which may also be onomatopoeia, and may conjure images of Canada Jays inquisitively floating down towards you as you eat a peanut butter sandwich on a roadside flanked with coniferous trees. (Note: again, there are regional differences and in some southern locations such as Manitoullin Island, the word gwiingwiishi may also be used to refer to the Blue Jay (otherwise known as diindiisi, jiindiisi or similar variants).)
5. SCOter SOCiété: Another ode to our acronym, as well as adding the representation of Canada's two official languages! And hopefully, many of us will be fortunate enough to see one or more Scoter species on our big day!

You can vote for a team name at the following poll: https://doodle.com/poll/3v9uxhkqvhe2rtau?utm_source=poll&utm_medium=link. If you have any additional questions, please contact Amélie Roberto-Charron (arobertocharron@gmail.com).

Le Grand Birdathon pancanadien est un événement annuel de collecte de fonds coordonné par Oiseaux Canada. Cette année, la SOC-SCO créera une équipe pancanadienne et participera!

Vous pouvez participer en tant que membre de l'équipe SCO-SOC et lever des fonds pour la conservation des oiseaux et pour promouvoir l'initiative d'égalité, de diversité et d'inclusion de la SOC-SCO en participant à une grande journée d'observation des oiseaux en mai et en ramassant des dons auprès de vos amis et de votre famille.

Comme pour toute équipe, la première chose à faire est de choisir un nom d'équipe. Et comme le financement sera affecté à l'initiative d'égalité, de diversité et d'inclusion de la SOC-SCO, quelle meilleure façon de choisir un nom d'équipe qu'en incluant les membres de la SOC-SCO!

Les cinq noms d'équipes présélectionnés sont énumérés et expliqués ci-dessous :

1. SCO Scoter Scouters: Ce nom capitalise sur l'acronyme de la Société des Ornithologistes du Canada et sur quelques allitérations pour donner une indication de ce que nous ferons lors de notre grand jour de mai: chercher de près et de loin pour trouver des oiseaux!
2. The White-throated Sparrows/Les Bruants à gorge blanche: L'un de nos oiseaux les plus patriotiques, le Bruant à gorge blanche chante au Canada pendant tout l'été. Si ce n'était pas une raison suffisante pour utiliser son nom, ses formes de différentes couleurs liées à son comportement reproducteur unique en font un symbole parfait pour une équipe axée sur l'égalité, la diversité et l'inclusion!
3. Kicikîsokosîs: Les Mésanges sont des espèces très appréciées et largement répandues au Canada. La langue Nêhiyawêwin (Cri) a un très beau nom pour la Mésange, kicikîsokosîs, qui émule l'appel chickadee-dee-dee (avec un suffixe en moins) que vous pourriez entendre lors d'une promenade à la fin de l'hiver lorsque les jours s'allongent et que la neige commence à fondre. Les Cris forment le peuple autochtone le plus populeux et le plus largement réparti au Canada, habitant des régions allant de l'Alberta au Québec. Il semble donc aller de soi d'inclure un nom d'équipe en Nêhiyawêwin. (Remarque: il existe des variantes régionales et de langue des noms d'oiseaux; par exemple, Nêhiyawêwin est utilisé pour le dialecte cri des plaines ou dialecte en Y.)
4. Gwiingwiishi: Le Geai du Canada est un autre oiseau largement répandu et emblématique au Canada. Vivant au Canada durant toute l'année, élevant leurs poussins en hiver, ainsi que leur affabilité en font un excellent emblème canadien. Les Anishinaabeg ont beaucoup de belles histoires sur l'espiègle et astucieux Geai du Canada. En anishinaabemowin (langue ojibwée), le Geai du Canada est connu sous le nom de gwiingwiishi, qui serait aussi une onomatopée, et peut évoquer des images de Geais du Canada flottant curieusement vers vous lorsque vous mangez un sandwich au beurre d'arachide sur le bord d'une route bordée de conifères. (Remarque: encore une fois, il existe des différences régionales et dans certains endroits plus au sud, comme à l'île

Manitoullin, le mot gwiingwiishi peut également être utilisé pour désigner le Geai bleu (autrement connu sous le nom de diindiisi, jiindiisi ou de variantes similaires))

5. SCOter SOCiété: Une autre ode à notre acronyme, en plus d'y ajouter la représentation des deux langues officielles du Canada! Et j'espère que beaucoup d'entre nous auront la chance de voir une ou plusieurs espèces de macreuses lors de notre grand jour!

Vous pouvez voter pour un nom d'équipe au sondage suivant: https://doodle.com/poll/3v9uxhkqvhe2rtau?utm_source=poll&utm_medium=link. Si vous avez des questions, veuillez contacter Amélie Roberto-Charron (arobertocharron@gmail.com).

SCO-SOC Launches a New Mentorship Program

The SCO-SOC has launched a new program aimed at pairing students and early career scientists with established ornithologists. The program kicked off in March and runs until October 2022 and is structured to help mentees navigate the world of ornithology and progress in their careers.

We are thrilled with the response to the inaugural launch of this program. We managed to pair 12 students and early career ornithologists with professionals from government, industry, non-profit organizations, and academia.

The program began with a large group meeting to introduce all the mentors and mentees and provide everyone with a sense of how the program will run over the coming months. We're currently working on organizing workshops for both mentors and mentees that will take place throughout the course of the 8-month program.

Judging by the responses we've received, both the mentors and mentees are excited to get started and begin work with their partners. Here's to hoping that the program is a great success and the start of a new yearly tradition for the SCO-SOC!

Call for Proposals for Online Lectures or Workshops / Appel à propositions pour des conférences ou des ateliers en ligne

The SCO-SOC is seeking proposals for lectures or workshops as part of an online series focused on skills and career development and representation of broader perspectives in ornithology! Speakers will be selected to ensure varied career trajectories are represented as well as to ensure diversity and inclusivity. If you are interested, please contact Amélie Roberto-Charron (arobertocharron@gmail.com), Steve VanWilgenburg (Steven.VanWilgenburg@ec.gc.ca) and Samuel Haché (Samuel.Hache@ec.gc.ca) and provide your name, proposed topic, duration of session, and preferred time of year.

La SOC-SCO recherche des propositions de séminaires ou d'ateliers pour faire partie d'une série virtuelle axée sur le développement de compétences et de carrière, ainsi que pour exposer le plus grand nombre de perspectives en ornithologie ! Les conférenciers seront sélectionnés de façon à s'assurer qu'une variété de trajectoires de carrière seront représentées, ainsi que pour assurer la diversité et l'inclusivité. Si vous êtes intéressé, s'il vous plaît contacter Amélie Roberto-Charron (arobertocharron@gmail.com), Steve VanWilgenburg (Steven.VanWilgenburg@ec.gc.ca) et Samuel Haché (Samuel.Hache@ec.gc.ca) et fournir votre nom, le sujet proposé, la durée de la session et la période de l'année préférée.

Seeking Remote Work Opportunities

I am looking for remote work opportunities. I have extensive experience with data preparation and analysis, and with publication preparation, review, and layout. I have a MSc in biology and certificates in project management and public policy. My CV is available upon request.

Rob Warnock
warnockr@myaccess.ca

Doris Huestis Speirs Award
Prix Doris Huestis Speirs

CALL FOR NOMINATIONS / APPEL DE NOMINATIONS - 2022

The Doris Huestis Speirs Award is the most prestigious award given by the SCO-SOC. The award is presented annually to an individual who has made outstanding lifetime contributions in Canadian ornithology. Past awardees include professionals who work at museums, government agencies, private companies and universities, as well as amateur ornithologists and people who have contributed to ornithological infrastructure of Canada. // *Le prix Doris Huestis Speirs est le plus prestigieux prix décerné par la SCO-SOC. Le prix est remis annuellement à une personne qui a apporté une contribution significative à long terme en ornithologie au Canada. Les précédents récipiendaires sont des professionnels qui travaillent dans les musées, les organismes gouvernementaux, les entreprises privées, les universités, ainsi que des ornithologues amateurs et des personnes qui ont contribué à la cause ornithologique au Canada.*

Doris Huestis Speirs was born on 27 October 1894 in Toronto, Ontario, and passed away in Ajax, Ontario, on 24 October 1989. Doris was highly prominent in art, literary, and ornithological circles. She founded the Margaret Morse Nice Ornithological Club, which was the only such group specifically for women, and she was also a founding member of the Pickering Naturalists' Club. In her lifetime, Doris made several prominent contributions to the ornithological literature on Evening Grosbeaks and Lincoln's Sparrows (the latter with her husband, J. Murray Speirs). *// Doris Huestis Speirs est né le 27 octobre 1894 à Toronto, en Ontario, et est décédé à Ajax, Ontario, le 24 octobre 1989. Doris a été très importante dans les milieux artistiques, littéraires et ornithologiques. Elle a fondé le club ornithologique de Margaret Morse Nice, qui était le seul groupe ornithologique pour les femmes et elle a également été membre fondateur du Club des naturalistes de Pickering. De son vivant, Doris a fait plusieurs contributions importantes à la littérature ornithologique du Gros bec errant et le Bruant de Lincoln (ce dernier avec son mari, J. Murray Speirs).*

Process//Processus: Nominations should clearly articulate the nominee's cumulative, significant contributions to ornithology in Canada. Nomination packages containing attestations from more than one individual about the scope and impact of the nominee's contributions are particularly welcomed. To nominate a candidate for the Speirs award, preferably with supporting detailed information, contact the Chair of the award committee: // *Les candidatures doivent exprimer clairement le cumul et l'importance des contributions du candidat à l'ornithologie au Canada. Les dossiers de candidature comprenant le soutien de plus d'une personne au sujet de la portée et l'impact des contributions du candidat sont particulièrement les bienvenues. Afin de désigner un candidat au prix Speirs, de préférence avec à l'appui des informations détaillées, contactez le président du comité d'attribution:*

Colleen Barber
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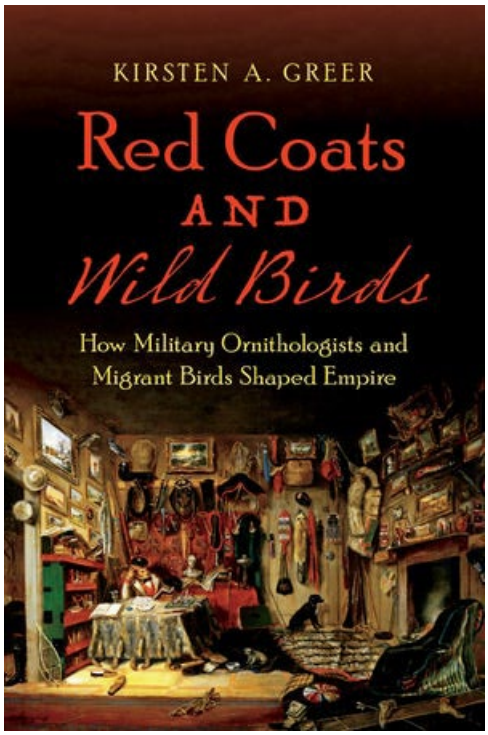
Society of Canadian Ornithologists
Société des ornithologistes du Canada

Deadline for receipt of nominations is 9 April 2022. // La date limite de réception des candidatures est le 9 avril 2022.

Book Review

Red Coats and Wild Birds - How Military Ornithologists and Migrant Birds Shaped Empire

(University of North Carolina Press, 2020), authored by Kirsten A. Greer, an associate professor and Canada Research Chair in Global Environmental Histories and Geographies at Nipissing University.



I'm a brand-new member of the SCO/SOC, so if my title of choice has already been gifted a book review in *Picoides*, or if I haven't entirely adhered to your editorial expectations, I apologize in advance. I'm just an avid writer of creative nonfiction, who, upon receiving my Society-wide invitation to contribute to our news bulletin, pounced on this opportunity like a Blue Jay on a June bug.

While an offshoot of the word 'ornithology' appears in its subtitle, *Red Coats and Wild Birds* is not a science book. I see the publishing industry has categorized Greer's story as 'Environmental History', and I'm hoping her author's bio above will give the reader a good idea of the approach that she took with this tiny book. It's barely 100-pages of academic narrative, yet I got enormous enjoyment from every word, not as a result of any kind of great flow the author achieved, but because I found her information enlightening.

It all starts with the front cover, where an oil painting by Cornelius Krieghoff illustrates what the inside of an officer's room in Montreal looked like in 1846. The walls are adorned with First Nations' artifacts, firearms, skis, snowshoes, paintings, and various dead animals, including five species of birds. Call me naive, and shaped by American publications, but I had no idea that there were British military personnel practicing ornithology in the nineteenth century.

I see now that protecting Britain's trade routes was not every soldier's primary desire. There were officers who carried out natural resource research as well. Greer examines the lives of these men and how they impacted ornithology. She does a fine job of recognizing the individuals, not "merely on the final results of the scientist," she says, but more so on "the lives [they] lived." That's what I like best about this book - the information Greer shares on four officers and their efforts:

One man for playing such a significant role in the emergence of the military-scientific hero; Another for his studies in Malta and later New Brunswick; A third for elucidating ways in which field ornithology helped maintain territory; And a fourth for demonstrating how ornithological ideas, conceived overseas, could find their way back to Britain.

Having said all that, I think it is important to remind readers that Greer's writing describes a time when the Brits frequently stole political control from vulnerable populations, so they could fill their lands with settlers and exploit them economically. If I didn't acknowledge that fact, I'd see myself as unconscionable.

In summary, I felt a lot of satisfaction, and I learned a great deal, from reading about the lives of these mostly self-made, military ornithologists. So, after owning the arrogant, devastating colonialism that my ancestry spread around the world, I feel compelled to say that I love this little book, and that I paid full price for its purchase.

***

David Ward is a writer and teacher who resides in Fenelon Falls, Ontario. Author of the award-winning *The Lost 10 Point Night*, and the critically acclaimed *Bay of Hope*, David is a former recipient of the Charles E. Pascal Award for Excellence in Teaching.

Bird Artwork

Top (L-R): Peregrine Falcon (*Falco peregrinus*) by Alysha Riquier; Boreal Owl (*Aegolius funereus*) by Alysha Riquier. Bottom (L-R): Stilt Sandpiper (*Calidris himantopus*) by Olivia Maillet; Snow Bunting (*Plectrophenax nivalis*) by Alysha Riquier.

Avian Conservation and Ecology Articles

Volume 16, Issue 2 (continued)

Response of Ferruginous Hawks to temporary habitat alterations for energy development in southwestern Alberta
Réactions des buses rouilleuses aux altérations temporaires de l'habitat en raison du développement énergétique au sud-ouest de l'Alberta
Nicholas W. Parayko, Janet W. Ng, Jessa Marley, Ronena S Wolach, Troy I. Wellicome, and Erin M. Bayne
Avian Conservation and Ecology 16(2): 17

Threatened neotropical birds are big, ecologically specialized, and found in less humanized refuge areas
Les oiseaux néotropicaux menacés sont de grande taille, écologiquement spécialisés, et présents dans des zones protégées moins peuplées
Ricardo A Soto-Saravia, Carla M Garrido-Cayul, Jorge Avaria-Llautureo, Alfonso Benítez-Mora, Cristián E Hernández, and Manuela González-Suárez
Avian Conservation and Ecology 16(2): 18

Rat snakes, cowbirds, and vines lower passerine nest survival in remnant bottomland hardwood forests in east-central Arkansas, USA
Les serpents ratiers, les vachers à tête brune et les lianes réduisent la survie des nids de passereaux dans les dernières forêts feuillues des basses terres de l'est et du centre de l'Arkansas
Amy L Wynia, Virginie Rolland, and James C Bednarz
Avian Conservation and Ecology 16(2): 19

An artificial lakes system intended for human recreation supports a vital breeding population of Red-wattled Lapwing in the Arabian Desert
Un réseau de lacs artificiels destiné à la recréation d'un habitat par l'homme soutient une population vitale de reproduction de vanneaux indiens dans le désert d'Arabie
Esmat E. M. Elhassan, Martin Sládeček, Saoud Badaam, Kateřina Brynychová, Petr Chajma, Veronika Firlová, Veronika Janatová, Vojtěch Kubelka, Lucie Pešková, Eva Vozabulová, Aisha Almuhery, and Miroslav Šálek
Avian Conservation and Ecology 16(2): 20

Evidence of long-term declines in Island Scrub-Jay vital rates
Indication d'une baisse de longue date des taux vitaux du Geai de Santa Cruz
Brittany A. Mosher, Paul F. Doherty, Jr., Jonathan L. Atwood, Kennon A. Corey, and Charles T. Collins
Avian Conservation and Ecology 16(2): 21

Fire regimes shape biodiversity: responses of avian guilds to burned forests in Andean temperate ecosystems of southern Chile
Le régime des incendies façonne la biodiversité : réactions des guildes aviaires aux forêts brûlées dans les écosystèmes andins tempérés du sud du Chili
Fernando J. Novoa, Tomás A. Altamirano, Cristián Bonacic, Kathy Martin, and José Tomás Ibarra
Avian Conservation and Ecology 16(2): 22

Population trends and habitat selection of threatened marsh passerines in a protected Mediterranean wetland
Les tendances de la population et la sélection des habitats des passereaux des marais menacés dans un milieu humide méditerranéen protégé
Iván Alambiaga, Manuel Carrasco, Carlos Ruiz, Francesc Mesquita-Joanes, and Juan S Monrós
Avian Conservation and Ecology 16(2): 23

Waterfowl use of mine tailing ponds in comparison with beaver ponds in boreal eastern Canada
Utilisation par la sauvagine de bassins de résidus miniers comparativement à celle d'étangs de castors dans la région boréale de l'Est du Canada
Emilie Desjardins, Louis Imbeau, Marcel Darveau, Marc J. Mazerolle, and Nicole J. Fenton
Avian Conservation and Ecology 16(2): 24

Lek attendance and disturbance at viewing blinds in a small, declining Sharp-tailed Grouse (*Tympanuchus phasianellus*) population

Fréquentation des leks et dérangement aux postes d'observation chez une petite population de Tétras à queue fine (*Tympanuchus phasianellus*) en baisse
Charlotte L. Roy and Pamela L. Coy
Avian Conservation and Ecology 16(2): 25

No common pesticides detected in snow buntings utilizing a farmland landscape in eastern Québec
Aucun pesticide commun détecté chez les Plectrophanes des neiges qui fréquentent des milieux agricoles de l'Est du Québec
Emily Cornelius Ruhs, Oliver P Love, Louis Drainville, and François Vézina
Avian Conservation and Ecology 16(2): 26

Minor interspecies differences in breeding phenology and productivity between two co-occurring aerial insectivores
Différences interspécifiques mineures dans la phénologie de nidification et la productivité de deux insectivores aériens cooccurrents
Chloe K Boynton, Olga C Lansdorp, Nancy A Mahony, and Tony D Williams
Avian Conservation and Ecology 16(2): 27

Combining monitoring data from multiple sites to assess population status and trends of White-tailed Tropicbirds (*Phaethon lepturus*) in the Seychelles
Regroupement de données de suivis provenant de plusieurs sites pour évaluer l'état et la tendance des populations de Phaétons à bec jaune (*Phaethon lepturus*) aux Seychelles
April J Burt, Fernando Cagua, Cheryl Sanchez, Licia Calabrese, Janske van de Crommenacker, James McClelland, Nirmal Shah, Heather Richards, and Nancy Bunbury
Avian Conservation and Ecology 16(2): 28

Effects of future climate change on the geographical distribution of a bird endemic to South American floodplains
Effets des futurs changements climatiques sur la répartition géographique d'un oiseau endémique des plaines inondables d'Amérique du Sud
Mayara F. Zucchetto, Natalia S. Da Silveira, Victor M. Prasniewski, Tatiane Arnhold, Thadeu Sobral-Souza, and João B. de Pinho
Avian Conservation and Ecology 16(2): 29

Volume 17, Issue 1 (in progress)

The role of temperature and microclimate in the survival of wintering grassland birds
Le rôle de la température et du microclimat dans la survie des oiseaux de prairie hivernant
Denis J Pérez-Ordoñez, Mieke Titulaer, Maureen D Correll, Erin H Strasser, Fabiola Baeza-Tarin, Russell L Martin, and Louis A Harveson
Avian Conservation and Ecology 17(1): 1

Avian response to plant community composition and structure in regenerating timber harvests protected by ungulate exclusion fencing
Réponse des oiseaux à la composition et à la structure de la communauté végétale dans des parterres de coupe en régénération protégés par des clôtures d'exclusion des ongulés
Halie A Parker, Clark S Rushing, Jeffery T Larkin, Joseph E Duchamp, Ronald W Rohrbaugh, Darin J McNeil, and Jeffery L Larkin
Avian Conservation and Ecology 17(1): 2

Kirtland's Warbler breeding productivity and habitat use in red pine-dominated habitat in Wisconsin, USA
Productivité de nidification de la Paruline de Kirtland et utilisation de l'habitat dans un milieu dominé par le pin rouge dans le Wisconsin, É.-U.
Ashley M. Olah, Christine A. Ribic, Kim Grveles, Sarah Warner, Davin Lopez, and Anna M. Pidgeon
Avian Conservation and Ecology 17(1): 3

Insights on post-breeding movements from a northeastern population of Canada Warblers (*Cardellina canadensis*)
Aperçu des déplacements post-nuptiaux de Parulines du Canada (*Cardellina canadensis*) issues d'une population du nord-est du pays
Camille Bégin-Marchand, François Gagnon, Bruno Drolet, Jacques Ibarzabal, and Junior A. Tremblay
Avian Conservation and Ecology 17(1): 4

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