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Long-Eared Owl / Hibou moyen-duc. Photo by/par Jeff Costa.

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Editors' Message

Rob Warnock and Barbara Bleho

Welcome to the first issue of *Picoïdes* of 2017! We hope everyone had a great Christmas and a great start to the year. Finally, we have a truly full issue! We have the President's message, candidate biographies for the upcoming 2017 SCO-SOC election, two thesis abstracts in Canadian ornithology, a Taverner Award report, and several notices. Please check them all out. We have something somewhat new in this issue, a commentary article. This well-written commentary article by Spencer Sealy is about accurately determining the time of day of egg laying. We would love to have more commentary articles in *Picoïdes* to spark discussion among our members.

In the President's message, Ken Otter discusses the new SCO-SOC website (thanks to Jenn Foote and Joe Nocera), declining membership numbers, the President's membership drive challenge (Ken will look great in his new "official uniform" if we meet the membership goal of 100 new and renewed memberships by this summer) and our upcoming joint meeting with American Ornithology in August in East Lansing, Michigan.

We encourage everyone to make nominations for all SCO-SOC awards (Speirs, Jamie Smith and the new Early Career Research Award). Please vote in the upcoming society election. We applaud all candidates for standing for election.

This issue concludes with a review of the book, *Avian Cognition*. Check it out. The next *Picoïdes* submission deadline is May 15, 2017. Without submissions, there is no *Picoïdes*. Please keep the submissions coming. We prefer larger issues than smaller ones. Also, we welcome feedback from our readership as it is your publication. Have a safe and wonderful spring!

FRANÇAIS— *Message des éditeurs—Rob Warnock et Barbara Bleho*

Bienvenue dans le premier numéro de *Picoïdes* de 2017! Nous espérons que tout le monde a eu bon temps des Fêtes et un bon début d'année. Enfin, nous avons un véritable problème! Nous avons le message du président, les biographies des candidats pour l'élection SCO-SOC de 2017, deux résumés de thèse en ornithologie canadienne, un rapport sur le prix Taverner et plusieurs avis. Veuillez tous les consulter. Nous avons quelque chose de nouveau dans ce numéro, un article de commentaire. Cet article est rédigé par Spencer Sealy et porte sur comment déterminer avec précision l'heure de la ponte. Nous aimerions avoir plus d'articles de commentaires dans *Picoïdes* afin de susciter la discussion entre nos membres.

Dans le message du président, Ken Otter discute du nouveau site Web du SCO-SOC (merci à Jenn Foote et Joe Nocera), à la diminution du nombre d'adhérents, au défi du président sur le nombre d'adhésion (Ken sera super dans son «uniforme officiel» si nous atteignons l'objectif de 100 nouvelles adhésions ou renouvellement cet été). Notre prochaine réunion conjointe sera avec l'*American Ornithology* en août à East Lansing, Michigan.

Nous encourageons tout le monde à faire des nominations pour tous les prix SCO-SOC (Speirs, Jamie Smith et le nouveau prix de recherche en début de carrière). Veuillez voter lors de la prochaine élection de la société. Nous applaudissons tous les candidats à l'élection.

Ce numéro se termine par une revue du livre *Avian Cognition*. Jetez-y un œil. La prochaine date limite de soumission des *Picoïdes* est le 15 mai 2017. Sans vos soumissions, il n'y a pas de *Picoïdes*. Veuillez poursuivre vos soumissions. Nous préférons les numéros plus fournis que les plus petits. En outre, nous accueillons les commentaires de nos lecteurs, car c'est votre publication. En vous souhaitant un merveilleux printemps!



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 passionnant, mises à jour des membres, et plus encore!

President's Message

Ken Otter

The executive has been working hard behind the scenes over the last few months on strategies to address membership decline, and one of these was a major overhaul of our public image. Jenn Foote, our new webmaster, has given the society a facelift with a new website and new look – check it out at www.sco-soc.ca. Thanks to Jenn and to Joe Nocera (our outgoing webmaster) for getting this up and running!

Professional societies struggle with maintaining membership. Traditionally, society memberships were the means of subscribing to journals, but with the profusion of online access to journals (and Open-Source publications, like our own journal ACE-ECO) the rationale for renewing memberships seems tangential. However, this is a mechanism for supporting the work that the society does – providing awards for student research and travel to present at meetings, recognition awards for early career researchers and for life-time achievement, working behind the scenes on issues like permitting or even speaking on behalf of the community on public issues. In the fall issue, and through emails to the society, I encouraged supporting your society, and I am thrilled that people have responded to that challenge. Membership is up nearly 10% from this time last year, and if those still to renew do so prior to this summer's meetings, we will be at a 20% increase. We also had a record number of people taking out Life Memberships in this renewal period (thank you to all of you). We want to keep this drive strong, so now I offer a special incentive – join today and you can help humble your President.

As of February, we are launching the President's Challenge – see poster (Pg. 24-25) in this issue of *Picoides*, and help distribute them when they are sent out to members and departments across the country. If we can get 100 members to join (including those still to renew) prior to the AGM at this summer's meeting then I will wear the outfit in the poster to conduct that meeting. Now is the time to sign up and recruit if you want to see this! I am sure there will be photos, but if you want the full effect, you will also have to plan to come to this summer's meeting.

Speaking of this summer's meeting, make sure to join us at American Ornithology 2017, the joint meeting of the American Ornithology Society and Society of Canadian Ornithologists, this August in East Lansing, Michigan. Abstract submission deadlines will be 23 April 2017, and it looks to be a fantastic meeting. Meeting website: <http://www.americanornithology.org/content/aos-sco-2017-meeting>.

FRANÇAIS— *Message du président— Ken Otter*

L'exécutif a travaillé fort dans les coulisses au cours des derniers mois sur les stratégies visant à lutter contre la baisse des adhésions et l'une d'entre elles a été une refonte majeure de notre image publique. Jenn Foote, notre nouvelle webmestre, a procédé au développement de notre site web - consultez le site www.sco-soc.ca. Merci à Jenn et à Joe Nocera (notre webmaster sortant) pour avoir assuré ce changement !

Les sociétés professionnelles luttent pour maintenir leur niveau d'adhésion. Traditionnellement, les adhésions aux sociétés étaient la façon de s'abonner à des revues, mais avec la profusion de l'accès en ligne aux revues (et les publications Open-Source, comme notre propre revue ACE-ECO), les raisons pour renouveler les adhésions semble moins tangible. Cependant, il s'agit d'un bon moyen pour appuyer le travail de la société - fournir des bourses pour la recherche étudiante et les voyages pour réaliser des présentations lors des réunions, des prix de reconnaissance pour les chercheurs en début de carrière et pour les réalisations à vie, travailler en coulisses sur des questions comme les permis ou même pour parler au nom de la communauté sur des questions publiques. Dans le numéro d'automne, et par des courriels, j'ai encouragé le soutien de votre société et je suis ravi que les gens aient répondu à ce défi. L'adhésion est en hausse de près de 10% par rapport à l'année dernière et, si les personnes qui n'ont pas encore renouveler le font avant la réunion de cet été, nous présenterons une augmentation d'environ 20%. Nous avons également enregistré un nombre record de personnes qui ont souscrit à des adhésions à vie au cours de cette période de renouvellement (merci à vous tous). Nous voulons garder cette poussée forte, donc maintenant j'offre une incitation spéciale – adhérer aujourd'hui et vous pourrez aider à humilier votre président.

En février, nous lançons le Défi du président - voir l'affiche (pg. 24-25) dans ce *Picoides*, et aidez-nous à les distribuer lorsque nous les enverrons aux membres et aux départements à travers le pays. Si nous réussissons à obtenir l'adhésion de 100 membres (y compris ceux qui sont encore à renouveler) avant l'AGA de la réunion de cet été, je porterai la tenue de l'affiche pour mener cette réunion. C'est le moment de vous inscrire et de recruter si vous voulez voir ça! Je suis certain qu'il y aura des photos mais si vous voulez le plein effet, vous devrez également planifier de venir à la réunion de cet été.

Parlant de la réunion de cet été, assurez-vous de vous joindre à nous à l'American Ornithology 2017, la réunion conjointe de l'American Ornithology Society et de la Société des ornithologues du Canada, en août à East Lansing, Michigan. Les dates limites pour la soumission des résumés seront au 23 avril 2017 et ce sera sans doute une réunion fantastique. <http://www.americanornithology.org/content/aos-sco-2017-meeting>.



Yellow Warbler on nest. Photo by Kyle Elliot.

2016 Taverner Award Report

Winter Temperatures Limit Population Growth Rate of a Migratory Songbird

Brad Woodworth, University of Guelph

Understanding the factors that limit and regulate wildlife populations requires insight into interactions among demographic and environmental processes throughout the annual cycle. For migratory species, quantifying seasonal effects of density-dependent and density-independent factors on population dynamics is particularly challenging due to the difficulty of following individuals between their distinct and often distant breeding and non-breeding grounds.

For my PhD, I am combining long-term demographic data with multi-year individual-tracking data for a migratory songbird (Savannah Sparrow, *Passerculus sandwichensis*) to understand the relative effects of breeding and winter weather and density on population growth rate. To achieve this goal, I first estimated annual vital rates (age- and sex-specific survival, fecundity, and sex-specific immigration) and population growth rate from 26 years of mark-recapture, population count, and reproductive success data from the

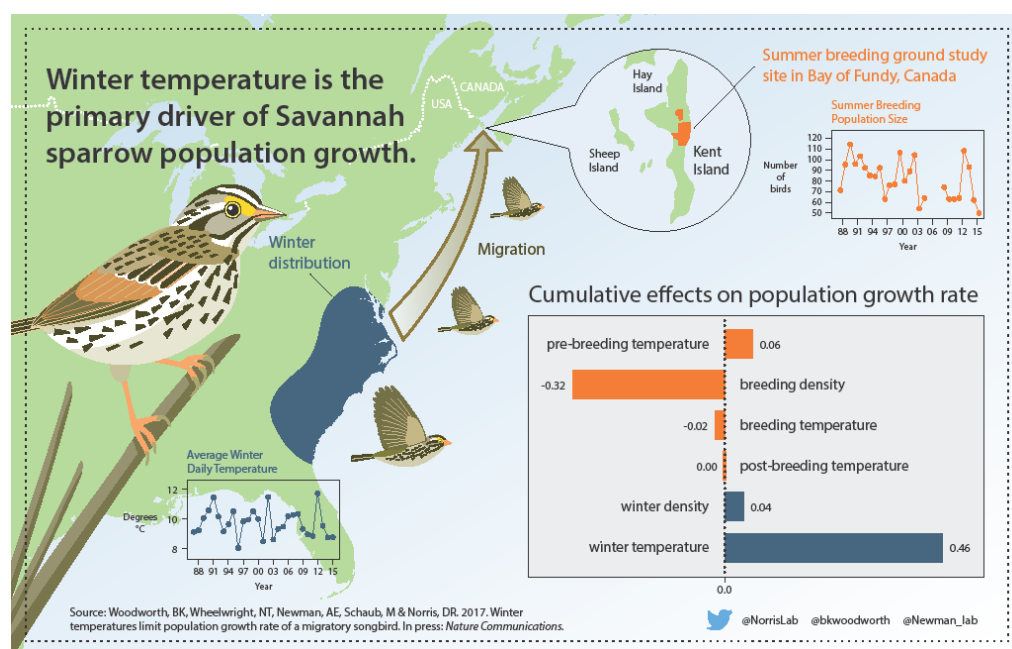


Figure 1. Effects of breeding (orange) and winter (blue) weather and density on population growth rate of Savannah sparrows breeding on Kent Island, NB, Canada. Graphic by KAP Design. *Effets des conditions de reproduction (orange) et hivernales (bleu) et de la densité sur le taux de croissance démographique des bruants des prés se reproduisant sur l'île Kent, au N.-B., au Canada. Graphique par KAP Design.*

breeding grounds using a Bayesian integrated population model. I then adopted a novel path analysis approach to estimate (i) direct effects of the different vital rates on population growth rate and (ii) indirect effects of density and weather at the breeding and population-specific wintering grounds on population growth rate through the vital rates. Year-round individual tracking data revealed that the wintering grounds of the study population was centered in North Carolina (34°N); at the far eastern extent of the species-wide range (Fig. 1, Woodworth et al. 2016).

By integrating long-term demographic data with individual tracking data, I found clear support for opposing forces of winter temperature and breeding density driving population dynamics (Fig. 1, Woodworth et al. 2017). Above-average temperatures at the wintering grounds lead to higher population growth rate, primarily through strong positive effects on survival. However, population growth rate was regulated over the long term by strong negative effects of breeding density on fecundity, juvenile survival, and adult male survival. My ongoing work also suggests that the main mechanism by which density regulates fecundity is at a local scale through effects on nest predation and a female's ability to successfully raise more than one brood in a season. At high densities, females are both more likely to have their nest(s) predated and less likely to successfully fledge a second clutch, resulting in lower individual reproductive success and, ultimately, population-level fecundity.

Results of my PhD research thus far provide important information about how year-round factors limit and regulate populations, and the demographic mechanisms through which they act. Such information is vital for predicting species responses to future environmental change and for implementing effective and efficient conservation programs.

FRANÇAIS— *Rapport du prix Taverner 2016: Les températures hivernales limitent le taux de croissance démographique d'un passereau migrateur par Brad Woodworth, Université du Guelph*

Comprendre les facteurs qui limitent et régulent les populations fauniques exige une connaissance des interactions entre les processus démographiques et environnementaux tout au long du cycle annuel. Pour les espèces migratrices, la quantification des effets saisonniers des facteurs dépendants et indépendants de la densité sur la dynamique de la population est particulièrement ardue en raison de la difficulté de suivre les individus entre leurs lieux de reproduction distincts et souvent éloignés.

Pour ma thèse, je combine des données démographiques à long terme avec des données de suivi individuel pluriannuelles pour un passereau migrateur (Bruant des prés, *Passerculus sandwichensis*) afin de comprendre les effets relatifs de la reproduction et de la température hivernale et de la densité sur le taux de croissance démographique. Pour atteindre cet objectif, j'ai d'abord estimé les taux vitaux annuels (la survie par âge et par sexe, la fécondité et l'immigration selon le sexe) et le taux de croissance démographique à partir de 26 années de marquage-recapture en utilisant un modèle bayésien de population intégrée. J'ai ainsi développé une approche statistique pour estimer (i) les effets directs des différents taux vitaux sur le taux de croissance de la population et (ii) les effets indirects de la densité et des conditions météorologiques durant la reproduction et sur les aires d'hivernage sur les taux d'accroissement de la population en fonction des taux vitaux. Des données de suivi individuelles tout au long de l'année ont révélé que l'aire d'hivernage de la population étudiée était centrée en Caroline du Nord (34° N); à l'extrémité est de la répartition de l'espèce (Figure 1, Woodworth et al., 2016).

En intégrant des données démographiques à long terme avec des données de suivi individuel, j'ai trouvé une évidence à ce que les forces opposées de la température hivernale et de la densité de reproduction conduisent la dynamique des populations (Figure 1, Woodworth et al., 2017). Des températures au-dessus de la moyenne dans l'aire d'hivernage conduisent à un taux de croissance démographique plus élevé, principalement par des effets positifs forts sur la survie. Cependant, le taux de croissance de la population était régulé à long terme par de forts effets négatifs de la densité de reproduction sur la fécondité, la survie des juvéniles et la survie des mâles adultes. Mon travail en cours suggère également que le principal mécanisme par lequel la densité régule la fécondité est à l'échelle locale à travers les effets sur la prédation des nids et la capacité d'une femelle de produire avec succès plus d'une nichée dans une saison. À des densités élevées, les femelles sont à la fois plus susceptibles d'avoir leur(s) nid(s) prédaté(s) moins susceptible de réussir une deuxième nichée, ce qui a pour effet de diminuer le succès de reproduction individuel et, ultimement, la fécondité de la population.

Jusqu'à présent, les résultats de ma recherche doctorale fournissent des informations importantes sur la façon dont les facteurs annuels limitent et régulent les populations et les mécanismes démographiques par lesquels ils agissent. Ces informations sont essentielles pour prévoir les réponses des espèces aux changements environnementaux futurs et pour mettre en œuvre des programmes de conservation efficaces.

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Feature Commentary

Accurate Determination of Time of Day of Egg Laying is Crucial for Studies of Mating Systems and Breeding Biology of Birds

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Knowledge of the time (hour) of day that birds lay their eggs (hereafter, laying time) is critical to the interpretation of results from a wide range of studies, from timing of within- and extra-pair copulations to the most basic aspects of breeding biology, such as dates of clutch initiation and laying of successive eggs. Information on laying times and laying bouts (time spent in the nest while egg laying; Sealy et al. 1995) of birds is not extensive enough for generalizations, but, as shown in a data-set of laying times of 22 species at Delta Marsh, Manitoba (Table 1), some species lay eggs within a few minutes of sunrise and exhibit little variation in laying times. Conversely, other species lay in the hours leading up to noon or in the early afternoon, and exhibit greater variation and uncertainty around laying times (Sealy et al. 1995; McMaster et al. 1999, 2004). In this commentary, I consider results of studies whose accurate interpretation rely on knowledge of laying times, focusing initially on clutch-initiation dates in species that lay eggs at different times of the day. Following this, I examine results of studies of mating behaviour and breeding biology, including conservation implications, which hinge on accurate determination of laying times. The reader is referred to McMaster et al. (2004) for information on possible relationships between laying time, laying bout, body mass, and egg size in this community of passerine birds.

In studies of breeding biology, researchers generally inspect nests each day, often before mid-morning, then record the dates on which the first and successive eggs of clutches are laid. However, not all species lay eggs at the same time of the day (Skutch 1952; Schifferli 1979; Scott 1991; McMaster et al. 2004). Inspection of nests before mid-morning would provide accurate laying dates of eggs laid on that date for species that lay within an hour or so of sunrise. For species that lay several hours after sunrise, however, eggs of the day would be laid after that morning's inspection, and would be incorrectly recorded as laid on the day when the egg was first observed, that is, the day after laying. Laying dates for many species recorded in the literature, therefore, will be out by one day.

Recording Laying Times

Variation in laying times was determined by direct observations at nests of 22 species of passerine birds in 10 families, including the brood-parasitic Brown-headed Cowbird (scientific names in Table 1). Laying times are presented as mean times of arrival at nests to lay, i.e., start of the laying bout. The Brown-headed Cowbird was the only species that laid eggs before sunrise, ~ 31 minutes before, and females spent the least amount of time on nests (< 1 minute) while laying. Yellow Warblers were the second species to arrive at their nests, ~ 13 minutes after sunrise, whereas Eastern Wood-Pewees did not arrive at their nests to lay until early afternoon, ~ 425 minutes (7 hours) after sunrise.

Laying-time observations were made in and near the dune-ridge forest, Delta Marsh, Manitoba (50°11'N, 98°19'W), from mid-May to July, 1989 through 1995. Details of the study area and bird community are provided by MacKenzie et al. (1982) and Pohajdak (1988) and the protocol for nest watches was modified from Muma (1986) and extended in Sealy et al. (2000) and McMaster et al. (2004). Using spotting scopes at most nests, laying times were recorded from blinds placed far enough away to avoid interfering with the laying female's behaviour. The evening before the female was expected to lay her second, or next, egg, the blind was set up according to a sight-line marked with a small piece of flasher tape placed near the nest so that it could be located with a flashlight in the darkness the following morning. Around 03:30 the next morning (all times CST, unless noted otherwise), the nest was inspected to confirm that no additional eggs had been laid. At nests on which the female had roosted overnight, the observer waited until she left the nest before checking it to record whether the next egg had been laid, although none had (Neudorf and Sealy 1994). Females returned to most nests and sat in them multiple times before eventually settling down to lay, i.e., initiating the laying bout (e.g., Sealy et al. 2000). Each nest was inspected after each departure, regardless of the length of time the female spent on the nest, to determine whether the next egg

had been laid. Despite disturbance caused by the nest inspections, no nests were deserted, as confirmed subsequently during routine monitoring of the nests.

Table 1. Egg-laying times of 22 species of passerines at Delta Marsh, Manitoba, 1989-95. Data are from Appendix 1 of McMaster et al. (2004:122), which also includes data on body mass and egg volume of each species. Order and nomenclature of species follow the American Ornithologists' Union (1998) and supplements.

Family	Common and scientific names	No. of nests	Time laying began (x ± SE min) before or after sunrise, SR	Laying bout (x ± SE min)
Tyrannidae	Eastern Wood-Pewee (<i>Contopus virens</i>)	2	SR + 425.5	37.5
	Least Flycatcher (<i>Empidonax minimus</i>)	24	SR + 84.2 ± 12.2	20.7 ± 1.8
	Alder Flycatcher (<i>E. alnorum</i>)	3	SR + 205.3	29.3
	Eastern kingbird (<i>Tyrannus tyrannus</i>)	15	SR + 211.5 ± 13.7	46.4 ± 5.5
Vireonidae	Warbling Vireo (<i>Vireo gilvus</i>)	8	SR + 27.8 ± 6.6	31.8
Hirundinidae	Barn Swallow (<i>Hirundo rustica</i>)	8	SR + 35.9 ± 12.5	46.1 ± 4.8
Troglodytidae	House Wren (<i>Troglodytes aedon</i>)	7	SR + 21.9 ± 4.8	24.1 ± 3.0
Turdidae	American Robin (<i>Turdus migratorius</i>)	20	SR + 290.0 ± 11.4	103.7 ± 8.4
	Veery (<i>Catharus fuscescens</i>)	1	SR + 247.0	57.0
Mimidae	Gray Catbird (<i>Dumatella carolinensis</i>)	18	SR + 128.7 ± 11.4	49.9 ± 3.6
	Brown Thrasher (<i>Toxostoma rufum</i>)	2	SR + 109.0	33.0
Bombycillidae	Cedar Waxwing (<i>Bombycilla cedrorum</i>)	6	SR + 182.0 ± 12.7	65.7 ± 13.9
Parulidae	Yellow Warbler (<i>Setophaga petechial</i>)	32	SR + 13.3 ± 2.8	26.7 ± 2.3
Emberizidae	Clay-colored Sparrow (<i>Spizella pallida</i>)	7	SR + 15.9 ± 14.2	34.7 ± 7.6
	Song Sparrow (<i>Melospiza melodia</i>)	3	SR + 11.2	47.7
Icteridae	Red-winged Blackbird (<i>Agelaius phoeniceus</i>)	20	SR + 13.0 ± 4.2	28.2 ± 2.2
	Yellow-headed blackbird (<i>Zanthocephalus zanthocephalus</i>)	21	SR + 22.2 ± 6.2	53.4 ± 6.2
	Brewer's blackbird (<i>Euphagus cyanocephalus</i>)	8	SR + 37.3 ± 10.2	31.0 ± 3.8
	Common Grackle (<i>Quiscalus quiscula</i>)	17	SR + 99.4 ± 6.9	40.1 ± 3.1
	Brown-headed Cowbird (<i>Molothrus ater</i>) ¹	13	SR - 31.2 ± 2.0	0.8 ± 0.1
	Orchard Oriole (<i>Icterus spurius</i>)	4	SR + 57.8	18.8
	Baltimore Oriole (<i>I. galbula</i>)	13	SR + 78.9 ± 5.7	30.3 ± 2.2

¹ Brown-headed Cowbirds were recorded parasitizing nests of five host species – Yellow Warbler, Clay-colored Sparrow, Red-winged Blackbird, Brewer's Blackbird, and Baltimore Oriole.

Using Scott's (1991) method, we calculated the time of arrival at the nest to lay in relation to sunrise (SR). To determine the exact time of sunrise at Delta Marsh, Manitoba, for the days on which nests were watched, we used the 1991 Observer's Handbook of the Royal Astronomical Society of Canada. As sunrise times exhibit little year-to-year variation, the 1991 issue was used for all seven years of our study. Sunrise ranged from 04:38 to 04:20 CST over the dates nests were observed. Laying times were recorded as the mean number of minutes (± SE for sample of > 5 nests) females arrived at nests before sunrise (SR - min) or after sunrise (SR + min). Not surprisingly, laying times have been determined by direct observations for only a handful of species undoubtedly due to the considerable time required to watch and inspect nests to record when females arrive to lay eggs and then leave after laying (Scott 1991; Sealy et al. 1995, 2000; McMaster et al. 2004).

Several workers have recorded laying times by inspecting nests at intervals after sunrise, then bracketing the time between inspections in which laying occurred, taking the mid-point of these intervals as the laying time (e.g., Skutch 1952; Weatherhead 1993; Scott 1991, 1993; Sealy 2011). The shorter the interval between nest inspections, the more accurate the laying time, but this method also is time-consuming if the researcher waits until the female leaves the nest, so as not to flush her while she is laying. Results from this method, however, accurately determine dates of clutch initiation and those of successive eggs. The least time-consuming method of recording

laying times, and with the least disturbance, however, involves video surveillance and use of microphones, which also record collateral information on the behaviour of adults at the nest, including possible conspecific parasitism.

Use of camcorders decreases the researcher's time required to record laying times even further, but cameras must be positioned above the nests, open-cup nests or those inside nest-boxes, so that all eggs are video-recorded when the female leaves the nest. We identified this requirement when we discovered that females visited nests multiple times after sunrise before finally laying eggs (Sealy et al. 2000; McMaster et al. 2004). During these pre-laying visits, females generally settled in the nests, then left them without laying. After each departure, nests had to be checked to determine whether the egg of the day had been laid. Visits eventually turn into laying bouts, however, and the camcorders would record the new egg after the female departed.

Cameras positioned to show females on their nests but not the contents may record pre-laying visits and eventually laying bouts but the time of laying of the next egg will not be revealed (i.e., Sharp and Kus 2004). Laying bouts would be recorded in this way only in species whose females visit nests only once after sunrise to lay, but of the species studied at Delta Marsh, only Brown-headed Cowbirds laid on their first and only visit to the nest on the morning of egg-laying, before sunrise and their host's. Microphones inserted into nest cavities or nest-boxes would pick up the presence of a laying bird, but would not record when the next egg was laid, unless there were no pre-laying visits.

Clutch-initiation dates

If nests of the 21 species listed in Table 1 were inspected during the egg-laying stage at Delta Marsh two hours (06:30 hr), three hours (07:30 hr), or four hours (08:30 hr) after sunrise, first-laid eggs likely would not be detected, respectively, in (1) 7/21 (33%) species: Eastern Wood-Pewee, Alder Flycatcher, Eastern Kingbird, Cedar Waxwing, American Robin, Veery, and Gray Catbird; (2) 6/21 (29%) species: all of the above species except Gray Catbird; and (3) 3/21 (14%) species: Eastern Wood-Pewee, American Robin, and Veery. Nests of the last three species, particularly the exceptionally late-laying Eastern Wood-Pewee, would have to be inspected through early afternoon to record all first-laid eggs.

By contrast, all eggs of the day would be recorded for 11 species if nests were inspected as early as 06:00 hr (1.5 hours post-sunrise), which includes the range of arrival times indicated by the standard errors in Table 1: Warbling Vireo, House Wren, Barn Swallow, Clay-colored Sparrow, Song Sparrow, Yellow Warbler, Red-winged Blackbird, Yellow-headed Blackbird, Brewer's Blackbird, Orchard Oriole, and Baltimore Oriole. First-laid eggs of Least Flycatcher, Brown Thrasher, and Common Grackle would be detected if nest inspections began no earlier than 07:00 hr after sunrise.

Comparisons Among Species of Thrush

Laying times of American Robin, Eastern Bluebird (*Sialia sialis*) and Western Bluebird (*S. mexicana*) provide further examples of the influence of clutch initiation (Table 2). These include data recorded by direct observation at 20 American Robin nests at Delta Marsh (Table 1). (Scott [1993] provides references on laying times of robins at several other sites.) Equating the time of arrival at nests to lay, i.e., the beginning of the laying bout, as the laying time, laying time averaged 290 (SE \pm 11.4 min), or 4.8 hours after sunrise (McMaster et al. 2004). No nests contained eggs before 08:00, and only 10% of recently laid eggs would be detected in nests inspected between 08:00 and 09:00, 40% in nests inspected between 09:00 and 10:00, 75% between 10:00 and 11:00, 95% between 11:00 and 12:00, and 100% between 12:00 and 13:00. Accurate clutch-initiation dates for all nests in this population of the American Robin would require inspections to occur after 13:00 (Table 2). If nests were inspected around 09:00 hours, > 90% of first-laid eggs would not be recorded until the next day, when they likely would be recorded as laid that day.

In the Eastern Bluebird, 52% of recently laid eggs were detected at nests inspected between 07:01 and 8:00 Eastern Standard Time (EST), whereas 100% of new eggs would have been recorded if nests were inspected after 12:00 (Table 2). Western Bluebirds were the earliest egg-layers (Wang and Weathers 2009) among the three thrush species, and nest inspections after 09:00 Pacific Standard Time (PST) probably would detect all eggs laid that day (Table 2).

Table 2. Percentage of recently laid eggs detected in nests of three thrush species in relation to time of day of inspection.

Time of inspection	Eastern Bluebird ¹	Western Bluebird ²	American Robin ³
05:01-06:00	0% (0/16)	17% (1/6)	0%
06:01-07:00	19% (4/21)	50% (3/6)	0%
07:01-08:00	52% (13/25)	67% (4/6)	0%
08:01-09:00	86% (18/21)	83% (5/6)	10% (2/20)
09:01-10:00	92% (22/24)	100% (6/6)	40% (8/20)
10:01-11:00	92% (11/12)	100% (6/6)	75% (15/20)
11:01-12:00	n/a	100% (6/6)	95% (19/20)
After 12:00	100% (26/26)	100% (6/6)	100% (20/20)

¹ Data collected in Ontario by Meek and Robertson (1995).

² Data collected in California by Wang and Weathers (2009).

³ Data collected in Manitoba by McMaster et al. (2004).

After all is said and done, does it really matter whether clutch-initiation dates are out by one day? If accuracy of the recorded data is the goal, then the answer is yes, but not all studies require such precision and this investment of time. In some studies clutches may be inspected every 1-3 days and calculated clutch-initiation dates may be lumped over weekly or bi-weekly periods (e.g., Murphy 1983); thus, the hour of nest inspections may be less important (also see Drent et al. 1964). Comparisons of timing of breeding within populations or among individual pairs, and assessments of brood reduction and hatching asynchrony (Hussell 1985; Hébert 1993), however, require precisely recorded laying and hatching dates. Likewise, estimates of nest failure may be biased towards the high end due to an underestimate of exposure to predation and possible underestimation of the time required for hatching, particularly when small samples are involved.

Knowledge of laying time is critical when considering interactions between brood parasites and some host species at nests (Scott 1991; Guigueno and Sealy 2010). Visits to nests by some brood parasites may interfere with host laying, and apparently influence whether the parasite's egg is rejected. This complex interaction became clear in studies of the responses of Yellow Warblers to the timing of parasitism by the Brown-headed Cowbird.

Cowbirds Parasitizing Yellow Warblers

Knowing that Brown-headed Cowbirds parasitize nests during a 20-minute window at Delta Marsh just before sunrise (Table 1), which is about one hour before Yellow Warblers lay eggs, revealed that the likelihood of host rejection (burial) of the parasite's egg was related to the day of the warbler's egg-laying cycle on which the cowbird laid. Most Yellow Warblers rejected cowbird eggs that appeared before the warbler had laid its first or second egg, that is, the cowbird had laid about one hour before the host. Parasitism on days after Yellow Warblers had laid their second and subsequent eggs were generally accepted (Sealy 1995; Guigueno and Sealy 2010). However, this interaction is actually more complicated than that.

Conspecific Parasitism in Cuckoos (Coccyzus spp.)

Knowledge of laying times in species that occasionally or regularly lay eggs in other nests of their own species is crucial if identification of conspecific parasitism can only be detected when more than one egg is laid on the same day, obviously by more than one female (Whittow 2000), or between successive eggs of species whose laying intervals are longer than 24 hours (Sealy 2003). Inspecting nests at intervals greater than 24 hours poses a particular problem and requires accurate information on the intervals between laying of successive eggs. This became evident when documenting conspecific parasitism by Black-billed Cuckoos (*Coccyzus erythrophthalmus*) in Manitoba (Sealy 2003) and Yellow-billed Cuckoos (*C. americana*) in Indiana (Nolan and Thompson 1975). These species lay mid-morning or later and occasionally lay in other nests of their own species or in each other's nests (Nolan and Thompson 1975; Potter 1980; Sealy 2003). Daily or irregular nest inspections did not reveal laying dates accurately. This is illustrated by an example from Delta Marsh (Sealy 2003). Inspecting a Black-billed Cuckoo's nest at 08:30 (~4 hours after sunrise) on Day 1 and then again at 10:00 (~5.5 hours after sunrise) on Day 3, three eggs could have been added to the nest within the ~ 48-hour interval. Inspections every other day would not reliably detect parasitic eggs added either the day after the last host egg or on the same day as the last host egg (if another day elapsed before the nest was inspected again). These difficulties were circumvented in the past using techniques of starch gel electrophoresis

(Fleischer 1985, Fleischer et al. 1985) or molecular genetics (e.g., Westneat and Webster 1994). Those techniques have been replaced by microsatellite DNA markers (e.g., Alderson et al. 1999), which identify individual parasitic eggs and the females that laid them, but not the chronology of laying of parasitic and host eggs.

The examples examined above reveal the importance of accurately determining clutch-initiation dates in basic studies of breeding biology, and for detection of the chronology of parasitic laying and responses to parasitic eggs by certain host species. These are not the only topics of research on birds that require knowledge of the hour of egg laying, however, as will be seen in studies examined below of the dawn chorus and the acquisition of extra-pair copulations.

Dawn Chorus and Within- and Extra-Pair Copulations

Post-dawn copulatory behaviour and the fertile period of birds (Cheng et al. 1982) must be considered in relation to the time of day of laying, especially when interpreting extra-pair behaviour, as this is most likely to be successful only if females have just laid. Studies that tracked female Great Tits (*Parus major*) and Hooded Warblers (*Setophaga citrina*) in the post-dawn revealed incursions into neighbouring territories, on the assumption these forays were to inspect/seek males for extra-pair copulations (EPCs) (Neudorf et al. 1997; Otter et al. 1999). Extra-pair young, however, likely would not result if females had not already laid that morning, as the passage of the egg would largely eradicate most sperm from a copulation that immediately preceded it (Birkhead and Møller 1992). If the egg had just been laid (as in Great Tits; Otter et al. 1999), then the period of copulation noted immediately following the dawn chorus in some species (Mace 1987; Otter and Ratcliffe 1993; Gammon 2004) would provide the best window for males to fertilize the next day's egg. In many species within-pair copulations have occurred prior to egg laying and successive eggs are fertilized by sperm stored in the sperm storage tubules (Birkhead and Møller 1992).

Female American Robins, which lay several hours after sunrise (Tables 1, 2), are known to forage before and after egg laying (Weatherhead et al. 1991), but if females were only tracked in the through the morning, there might be little evidence for extra-pair activity, and it would be correctly concluded that EPCs were not being sought. EPCs have not been recorded in this species, however, but this may reflect an assumption that this behaviour occurs in the post-dawn, in actuality before robins have laid, but it may be recorded if tracking continues into the



Complete clutch of American Robin eggs, dune-ridge forest, Delta Marsh, Manitoba. Typical of this species, each egg is laid after mid-morning through early afternoon. Photo credit: S.G. Sealy.

early afternoon. On the other hand, Gowaty and Plissener (1987) supported the hypothesis that male robins behave in a manner so as to protect their paternity Birkhead et al. (1996), who re-analyzed Cheng et al.'s (1983) data on forced copulation in captive Mallards, cautioned that all cases of a suspected link between copulation and laying should be closely examined. McMaster et al. (2004:119) noted that "[i]f there is a precise time of day for copulation, in relation to laying, research is needed to identify cues that males use to determine when their females have just laid." Females sitting on their nests during the egg-laying period do not provide this cue, because they sit multiple times before actually laying (Sealy et al. 2000). On the other hand, laying times may be more predicable in females that lay closer to sunrise rather than at other times of the day (Mace 1986; McMaster et al. 1999).

Final thoughts

I have shown that accurate determination of laying times is of practical importance in studies of the reproduction of birds. Additional field work is required, however, to produce a catalogue of laying times of additional species, with adequate sample sizes, so that workers can judge the best time to inspect nests of their species under study after the eggs have been laid. If the focus is on aspects of reproductive behaviour, for example, a pair's behaviour during the egg-laying period, data should be recorded with knowledge of the female's laying time so results are interpreted against the female's fertilizable period. Increasing information will also beg answers to

broader questions pertaining to variation in laying times and laying bouts, building upon early work (e.g., Skutch 1952; Schifferli 1979; Scott 1991; Sealy et al. 1995; McMaster et al. 2004). Why do laying times vary among species and individuals, and in different taxonomic groups? Is this variation an adaptation to foraging, or to risks of predation or brood parasitism? Do the relative sizes of birds and their eggs, and the cost of carrying fully developed eggs around, influence laying times? Does body mass predict laying time? Why do larger species spend more time on the nest while laying, whereas laying bouts of smaller species tend to be shorter? Why do parasitic cowbirds consistently lay during a narrow window around sunrise, whereas parasitic cuckoos lay over a much longer period through the afternoon (Davies and Brooke 1988)? Answers to these and other questions will further our understanding of one of the most important aspects of the reproductive biology of birds, that is, behaviour surrounding egg laying.

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Recent Canadian Ornithology Theses

Kayla Lane Balderson. 2016. *Habitat selection and nesting ecology of translocated Greater Sage-grouse*. M.Sc. Thesis. University of Regina, Regina, SK.

Sagebrush ecosystems are one of the most imperiled ecosystems in North America. The cumulative effects of habitat loss, fragmentation and degradation of the sagebrush ecosystem threaten the persistence of the Greater Sage-grouse. Sage-grouse depend on healthy, intact areas of sagebrush habitat throughout the year. In Alberta, the sage-grouse population is estimated to be only 5% of what it was in 1968. During the spring of 2011 and 2012, 41 sage-grouse were fitted with GPS transmitters and translocated from stable populations in Montana to active lek sites in southeast Alberta. I conducted research to improve our understanding of translocation as a management tool, and how translocated sage-grouse are affected by anthropogenic features. I examined nesting ecology including the differences in post-release movements between nesting and non-nesting hens and the extent to which nest success is affected by anthropogenic features. I also identified habitat that translocated sage-grouse select in relation to anthropogenic and natural features.

My research documented some of the largest post-release movement distances, rates and areas ever recorded for sage-grouse after being translocated. Average weekly linear distance travelled was 56 km and average area traversed was 1944 km². Non-nesting hens had significantly higher movement rates than nesting hens. Movement rates of nesting hens decreased during the nest initiation period, whereas movement rates of non-nesting hens did not decrease until six weeks later. Apparent annual hen survival ranged between 31-72% across the study period. Nest initiation (53%) and nest success (29%) were low compared to other sage-grouse populations across their range. Nest success decreased with increasing distance from trees, power lines and settlements, suggesting that translocated hens are naïve to the release area and do not recognize the risks that are typically associated with certain anthropogenic features.

Translocated sage-grouse were more likely to be observed with increasing distance from all of the anthropogenic features included in the movement models: as far as 3 km from trees and gas wells, 10 km from buildings and 15 km from settlements, at least 23 km from power lines and 2.5 km from roads. Interaction models suggest that sage-grouse are avoiding anthropogenic features because of the disturbance of the features themselves, and not because the features occur in poor sagebrush habitat.

My results indicate that power lines, buildings, trees and oil wells (up to 5 km) had the largest effects on the occurrence of sage-grouse, suggesting that these features should be prioritized for removal. However, it is likely that cumulative effects of some or all anthropogenic features cause sage-grouse to select habitat farther away from these features. The predicted intensity map I generated could be used to help strategically guide habitat enhancement efforts in the study area. Habitat enhancements would best be focused in areas where predicted intensity was high and suitable habitat was present yet no sage-grouse were observed, with the goal of increasing the likelihood of sage-grouse use within those areas. Future assessments of proposed developments should consider the construction of all new anthropogenic features as a potential detriment to habitat quality.

Alain Parada. 2016. *Stopover movement patterns by Blackpoll and Canada warblers across southeastern Canada during fall migration: an automated radio-telemetry study*. M.Sc. Thesis. Trent University, Peterborough, ON.

Stopover ecology is a topic that surges in relevancy because choices made by migrants during stationary periods (stopover sites) may not only have important consequences on individuals' fitness but also can affect population dynamics. Stopover duration and departure decisions of nocturnally-migrating songbirds result from a complex interplay of intrinsic and external factors. Most studies relating departure decisions and weather variables have employed indirect methods with limited information of the spatiotemporal scales of departure movements. Moreover, stopover timing and length estimates from banding data are negatively biased due to the difficulty in distinguishing true migratory flights as opposed to flights involving relocations within a localized stopover landscape, but away from the sampling area.



Female radio-tagged Blackpoll Canada Warbler at Thunder Cape Bird Observatory in September 2014. Photo by Gildas Lemonnier.

Addressing aspects of the stopover ecology of Neotropical migrants as a critical component of conservation planning becomes especially relevant when referred to those species undergoing widespread breeding population declines with understudied migration ecology. Using Blackpoll and Canada Warblers as focal species that possess different migratory behaviour (e.g., trajectory's relative position to major ecological barriers) may also provide a useful experimental framework for understanding and testing how differences in critical migratory traits (departure decisions) across avian taxa affect migration performance.

I deployed 56 digitally coded radio-transmitters on Blackpoll Warblers at Thunder Cape (TCBO) and Long Point (LPBO) bird observatories and 32 on Canada Warblers at LPBO during September-October 2014-2015. Daily locations of radio-tagged individuals were tracked through the Motus Wildlife Tracking System network across southeastern Canada. I developed models to determine the effects of age class, fat score, migration timing (Julian date) and stopover movement type (landscape-scale relocation and migratory flight) on the minimum stopover length (MSL) of Blackpoll Warblers and to examine whether there are species- and movement type-related differences of weather conditions (tailwind assistance, atmospheric pressure and cloudiness) in the departure decisions around the greater Long Point Area.

No explanatory variable significantly influenced the MSL of Blackpoll Warblers. Timeframe spanning the whole tag-deployment period was likely not long enough to impart significant differences in time-constraints between "early" and "late" arrivals. Fat score at capture time was not an accurate proxy of fuel reserves at departure time despite relatively short stopover periods. Expected age-related differences in fuel deposition rate may be obscured under conditions of good food supply, when inexperienced birds are capable of securing sufficient food resources. Both species tended to depart LPBO under increased tailwind assistance with Blackpoll Warblers resuming migration and no difference in the effect of wind conditions between the two species. I found some evidence that Blackpoll Warblers chose more favorable tailwinds when departing LPBO through a migratory flight compared to wind conditions when embarked on relocation flights across the stopover landscape and when continued stopover. Finally, this study provides further evidence supporting the relevance of local wind conditions as a key factor affecting the departure likelihood, especially when migrating birds face an ecological barrier.

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 page 15 for submission details.

Canadian Ornithological News

The December issue of *Ontario Birds* and the availability of back issues

The December issue of *Ontario Birds*, the journal of the Ontario Field Ornithologists (OFO), has recently reached its members. This issue comprises seven articles, three of which highlight the Piping Plover in Ontario. The seven articles of the December issue are as follows:

- Piping Plovers in Ontario: A decade of recovery on the Great Lakes by John Brett
- The return of breeding Piping Plovers to the Ontario shores of Lake Ontario by Glenn Coady
- Consumption of amphibian prey by Piping Plover by Glenn Coady
- The role of the European Starling in the decline of Red-headed Woodpeckers in Ontario by Mathew Mair and Sara E. Jamieson
- Migration of the Red-throated Loon on Lake Ontario by Geoff Carpentier
- Distinguished Ornithologist: Jean Iron by Kenneth Abraham
- In Memoriam: Alan Wormington by Bill Lamond



The August issue of *Ontario Birds*, which was its 100th issue, contained 160 pages comprising 16 articles and focused on changes to populations of selected bird species and changes to birding and ornithology in Ontario since 1982, the founding year of OFO.

Back issues of the journal are available on OFO's website: www.ofo.ca. *Ontario Birds* articles from 1983 to 2009 are also now available on Searchable Ornithological Resource Archive (SORA) at <http://sora.unm.edu>. For more information about *Ontario Birds* and the type of papers it publishes, please see *Picoides* 29(1):18, or write to one of its three co-editors: Chip Weseloh (Chip.Weseloh@canada.ca), Chris Risley (Chris.Risley@ontario.ca) or Ken Abraham (kenabra@sympatico.ca).

Information Exchange

Broken Wing Display Survey

Our mission is to create a phylogenetic tree based on the presence of the broken wing display in birds of the world, along with determining the selective factors a species may experience that cause it to evolve the broken wing display. In order to properly research these questions, we need a huge amount of data from a broad range of observers. The broken wing display is defined as a parent feigning an injury to the wing in order to lure an intruder and potential predator away from a nest, nestlings, or young. The severity of the reaction varies, but the theme of dragging wings and moving steadily away from the nest is consistent in literature. We would like this survey to be filled out by anyone who has witnessed the broken wing display.

The survey is located at <https://goo.gl/forms/ldCb1wJvJ4hDyzJl2>

We appreciate your participation,

Cal Poly SLO Broken Wing Team

E-mail: brokenwingteam.calpoly@gmail.com

Announcements

The Doris Huestis Speirs Award

Background: 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.

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).

Process: 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:

Ken Otter
Ecosystem Science and Management Program
University of Northern British Columbia
3333 University Way, Prince George, BC V2N 4Z9
Tel: 250-960-5019
Email: ken.otter@unbc.ca

Deadline for receipt of nominations is 15 April 2017

The Speirs award selection committee (2016-2017) is composed of Ken Otter (Chair), Mark Brigham (Univ. Regina), and Nicky Koper (Univ. Manitoba)

Le prix Doris Huestis Speirs

Contexte: 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 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).

Processus: 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:

Ken Otter

Ecosystem Science and Management Program

University of Northern British Columbia

3333 University Way, Prince George, BC V2N 4Z9

Tel: 250-960-5019

Courrier: ken.otter@unbc.ca

La date limite de réception des candidatures est le 15 avril 2017

Le comité de sélection du prix Speirs (2016-2017) est composé de Ken Otter (président), Mark Brigham (Univ. Regina) et Nicky Koper (Univ. Manitoba)

Vancouver Bird Week 2017 – May 6-13

Celebrate Vancouver Bird Week from May 6-13. Whether you're a bird nerd or bird curious, there are free walks, activities, and lectures all week long and for all ages to learn more about our fine-feathered friends. Our theme this year is 'Birds on the Shore'. We will also be naming Vancouver's official city bird in anticipation of the International Ornithological Congress coming to Vancouver in August 2018.

Visit www.vancouverbirdweek.ca for more information.

French translators needed for *Picoides*

SCO-SOC is seeking volunteers to translate newsletter content from English to French and French to English for future issues as part of an effort to make *Picoides* a truly bilingual newsletter. Interested volunteers are asked to please contact Ken Otter (Ken.Otter@unbc.ca) or Colleen Barber (Colleen.Barber@smu.ca) for more details.

vancouver
BIRD WEEK

*Birds at
the Shore*

May 6-13, 2017

bird tours / lectures /
birding basics / bird art /
events around the city

www.vancouverbirdweek.ca



SCO-SOC Council Election

Please vote for candidates for positions on the SCO-SOC Council as well as Recording Secretary online by following the link emailed out to you. Voting ends on Wed **April 19, 2017**. The names of candidates are located at the end of this issue// Veuillez voter pour les candidats à des postes au sein du Conseil SCO-SOC ainsi que le Secrétaire d'enregistrement en ligne en suivant le lien envoyé par courrier électronique. Le vote prend fin le mercredi **19 avril 2017**. Les noms des candidats se trouvent à la fin de ce numéro.

Biographies of candidates / Biographies des candidat(e)s

Theresa Burg

Candidate for Member of Council / Candidate pour Membre du Conseil



Theresa Burg looking happy doing research in a place we'd all like to be. *Theresa Burg a l'air heureux de faire des recherches dans un endroit que nous aimerions tous être.* Photo Credit: Karen McCoy

My research interests are mainly phylogeography, population genetics and evolution of high latitude birds. After completing my M.Sc. (UBC) on population structure in harbour seals in the Eastern Pacific, I did my Ph.D. at the University of Cambridge where I started working on birds. My Ph.D. thesis examined population genetics, mating systems and speciation in Southern Ocean albatrosses. After completing my Ph.D., I got an NSERC postdoctoral fellowship to study the role of glacial refugia in population structure of chickadees and jays at Queen's University and did another postdoc in France (CNRS) on population genetics of razorbills. In 2006 I started my present position as a faculty member at the University of Lethbridge. My research still includes work on seabirds, but is mainly focused on resident species of North American birds.

To date most of my involvement with SCO-SOC has been as a regular member and judging student presentations. I am currently on the editorial board/associate editor for several journals including Journal of Avian Biology, Emu and Axios.

I believe that SCO-SOC serves as an important venue for promoting our research, encouraging and supporting graduate students and their research as well as an opportunity for the research community to come together and discuss our research.

Mes intérêts de recherche sont principalement la phylogéographie, la génétique des populations et l'évolution des oiseaux de haute latitude. Après avoir fini mon M.Sc. (UBC) sur la structure de la population des phoques communs dans le Pacifique oriental, j'ai fait mon doctorat à l'université de Cambridge où j'ai commencé à travailler sur les oiseaux. Ma thèse de doctorat a examiné la génétique des populations, les systèmes d'accouplement et la spéciation des albatros de l'océan Austral. Après avoir complété ma thèse, j'ai obtenu une bourse de recherche postdoctorale du CRSNG pour étudier le rôle des refuges glaciaires dans la structure de population des mésanges et des geais de l'Université Queen's et j'ai fait un autre post-doctorat en France (CNRS) sur la génétique des populations de Petits Pingouins. En 2006, j'ai commencé ma carrière de professeur à l'Université de Lethbridge. Mes recherches incluent encore les oiseaux de mer, mais portent principalement sur les espèces résidentes d'oiseaux nord-américains.

À ce jour, la majeure partie de ma participation à SCO-SOC a été en tant que membre régulier et juge des présentations des étudiants. Je suis actuellement rédacteur en chef / éditeur associé pour plusieurs revues comprenant Journal of Avian Biology, Emu et Axios.

Je crois que le SCO-SOC est un lieu important pour promouvoir notre recherche, encourager et soutenir les étudiants diplômés et leurs recherches ainsi que l'occasion pour la communauté de recherche de se réunir et de discuter de nos recherches.

DOROTHY HILL

Candidate for Member of Council / Candidate pour Membre du Conseil



Dorothy Hill – a happy summer day for this ornithologist.

Dorothy Hill - une journée d'été heureuse pour cet ornithologue.

Photo Credit: Claudia Lipski

Serendipity played a role in my pathway into ornithology. I was named after my mother's best friend, Dorothy Hazlett, an avid bird watcher who saw it as her duty to take me on Christmas bird counts when I was a child. It was because of those early experiences that I was later successful in landing an undergraduate summer position with Canadian Wildlife Service in Delta, B.C., which sent me in the direction of ornithology. Under the mentorship of Jamie Smith (UBC), avian behavioural ecology became my passion. I received my B.Sc. in Zoology from UBC, M.Sc. in Zoology from University of Manitoba (Spencer Sealy), and Ph.D. in Ecology from University of Calgary (Robert Barclay). Since 2009 I have been a faculty member at Mount Royal University in Calgary and teach courses in ecology, conservation biology, and the biology of sex.

My research interests shifted from the evolution of parental care to conservation biology as I saw once-numerous species after species decline and get listed. I have particular interests in the biology and conservation of grassland birds, transboundary conservation initiatives, and the role of citizens in conservation efforts.

As a member of council, I would like to focus on SCO-SOC membership recruitment and retention efforts. Recruiting, mentoring, and supporting student members are essential in ensuring the continued success of SCO-SOC; however, membership retention is also important. Many academic societies lose members as they transition from student through the long post-doctoral purgatory en

route to permanent professional positions. Finding ways to support and mentor ornithologists through that transition can aid in membership recruitment.

La chance a joué un rôle dans mon parcours vers l'ornithologie. On m'a donné le prénom de la meilleure amie de ma mère, Dorothy Hazlett, une avide observatrice d'oiseaux qui a cru son devoir de m'amener aux recensements d'oiseaux de Noël quand j'étais enfant. C'est grâce à ces premières expériences que j'ai plus tard réussi à décrocher un poste d'été de premier cycle au Service canadien de la faune à Delta, en Colombie-Britannique, ce qui m'a ensuite dirigée vers l'ornithologie. Sous l'égide de Jamie Smith (UBC), l'écologie comportementale aviaire est devenue ma passion. J'ai reçu mon B.Sc. en Zoologie de UBC, mon M.Sc. en Zoologie de l'Université du Manitoba (Spencer Sealy) et mon Ph.D. en écologie de l'Université de Calgary (Robert Barclay). Depuis 2009, je suis professeur à l'Université Mount Royal de Calgary et j'enseigne des cours d'écologie, de biologie de la conservation et de biologie du sexe.

Mes intérêts de recherche sont passés de l'évolution des soins parentaux à la biologie de la conservation après avoir vu des espèces prolifiques décliner drastiquement et être listées. Je m'intéresse surtout à la biologie et à la conservation des oiseaux des prairies, aux initiatives de conservation transfrontalière et au rôle des citoyens dans les efforts de conservation.

En tant que membre du conseil, je voudrais me concentrer sur les efforts de recrutement et de rétention des membres du SCO-SOC. Le recrutement, le mentorat et le soutien aux étudiants sont essentiels pour assurer le succès continu du SCO-SOC; cependant, la rétention des membres est également importante. De nombreuses sociétés universitaires perdent leurs membres au fur et à mesure que ceux-ci progressent dans leur parcours d'étudiant à professionnel. Trouver des façons de soutenir et d'encadrer les ornithologistes au cours de cette transition peut aider à recruter des membres.

ANDY HORN

Candidate for Member of Council / Candidat pour Membre du Conseil

I'm a Research Adjunct in the Department of Biology at Dalhousie University, where I teach courses in animal behaviour and study animal communication, mainly parent-offspring communication in tree swallows. I also take on a wide variety of bird-related contracts, from status reports for COSEWIC to wind-farm surveys for local industries. A keen birder since I was a kid, I try to pitch in to the local birding community and BSC whenever I can, playing various roles for the Maritime Breeding Bird Atlas and serving as a trustee for the Baillie Fund, for example.



Andy Horn looking for Tree Swallows in all the right places. *Andy Horn à la recherche d'hirondelles bicolores dans les bons endroits.*
Photo Credit: Ricki Hurst

I confess I have not been very engaged with SCO-SOC so far, apart from attending its conferences and revising grant applications when asked, but since there's such great people involved and it's now such an exciting time in ornithology, I can't pass up the opportunity to offer to serve on the council. Perhaps because I encounter such a variety of perspectives on ornithology — academic, conservational, industrial, recreational — I'm particularly excited about developing SCO-SOC's capacity to foster cross-communication and cross-application of science. At the same time, I also recognize that, as a councillor, I should be ready to take on whatever roles best serve the group as a whole.

Je suis un adjoint de recherche au département de biologie à l'Université Dalhousie, où j'enseigne des cours de comportement animal et étudie la communication animale, principalement la communication parent-progéniture chez l'hirondelle bicolore. Je participe également à une vaste variété de contrats liés aux oiseaux, tels que des rapports de situation du COSEPAC ou des relevés d'oiseaux dans des parcs éoliens pour des industries locales. Passionné d'oiseaux depuis mon enfance, j'essaie de me joindre à la communauté d'observation d'oiseaux locale et d'ÉOC aussi souvent que possible, en remplissant divers rôles pour l'Atlas des Oiseaux Nicheurs des Maritimes

et en tant que fiduciaire du Fonds Baillie, par exemple.

J'avoue ne pas avoir été très engagé avec SCO-SOC à ce jour, sauf pour participer à ses conférences et réviser des demandes de subvention lorsque demandé, mais comme il y a tellement de gens intéressants impliqués et on se trouve dans une période passionnante en ornithologie, je ne peux laisser passer l'opportunité d'offrir mes services au conseil. Peut-être parce que je rencontre une telle variété de perspectives sur l'ornithologie - universitaire, conservatoire, industriel, récréatif - je suis particulièrement excité de développer la capacité de SCO-SOC à promouvoir la communication et l'application croisée de la science. Je reconnais également qu'en tant que conseiller, je devrais être prêt à assumer les rôles qui conviennent le mieux au groupe dans son ensemble.

DAVID LOGUE

Candidate for Member of Council / Candidat pour Membre du Conseil



David Logue living the life. *David Logue vivant la vie.* Photo Credit: David Logue

I have been an assistant professor of Psychology at the University of Lethbridge for the past two years. Before that, I spent five years as an assistant / associate professor of Biology at the University of Puerto Rico. A behavioural ecologist by training, I study vocal communication in birds. Most of my research involves vocal interactions, like duets and countersinging, in year-round territorial Neotropical residents.

Professional societies like the SCO-SOC contribute to community building, political influence, and the advancement of science and scientific careers. I accepted the nomination for a councillor position because I would like to lend a hand in helping to advance these goals in our scientific community.

Je suis professeur adjoint de Psychologie à l'Université de Lethbridge depuis les deux dernières années. Avant cela, j'ai passé cinq ans à titre d'assistant / professeur agrégé de

Biologie à l'Université de Porto Rico. Écologiste comportemental de formation, j'étudie la communication vocale chez les oiseaux. La grande partie de mes recherches implique des interactions vocales comme le chant en duo et le contre-chant chez des oiseaux néotropicaux territoriaux résidents à l'année.

Des sociétés professionnelles comme le SCO-SOC contribuent au renforcement de la communauté, à l'influence politique et à l'avancement de la science et des carrières scientifiques. J'ai accepté la nomination pour un poste de conseiller parce que j'aimerais aider à faire avancer ces objectifs dans notre communauté scientifique.

BETH MACDOUGALL-SHACKLETON

Candidate for Member of Council / Candidate pour Membre du Conseil



Beth MacDougall-Shackleton recording bird vocalizations – another happy ornithologist doing what she loves. *Beth MacDougall-Shackleton enregistre des vocalisations d'oiseaux – un autre ornithologue heureux fait ce qu'elle aime.* Photo Credit: Scott MacDougall-Shackleton

With human activities increasingly fragmenting wildlife habitats, understanding the factors that maintain genetic diversity in natural populations is critical. My students and I integrate approaches from behavioural and evolutionary ecology, ecophysiology, and ecological immunology to develop hypotheses about the roles of behaviour and infectious disease in maintaining genetic variation in free-living birds.

I have worked with wild birds since 1991, first as an undergraduate thesis student and MSc student at Queen's, then during my PhD at Princeton and a postdoctoral fellowship at McMaster. Since 2004, I have been a faculty member in Biology at the University of Western Ontario, where I combine fieldwork with genetic, acoustic and immune analyses. Taxonomically, much of my research focuses on a long-term study population of Song Sparrows, but other projects have involved Great-crested Flycatchers, Eastern Bluebirds, Red Crossbills, Green Hermits, White-crowned Sparrows, Old World leaf-warblers, and White-throated Sparrows.

As a graduate student, I benefited greatly from student research grants and conference travel awards from several ornithological societies. I am keen to give back to the ornithological community and especially to foster the development of the next generation

of professional and amateur ornithologists. I have served on the Cooper Society's Katma Award committee each of the last two years, and am an associate editor for *The Auk: Ornithological Advances*. If elected to Council for the SCO-SOC, I will work to maintain the Society's vibrant, student-friendly nature, and also to foster an appreciation for Canada's unique avifauna through youth outreach.

Les activités humaines fragmentant de plus en plus les habitats fauniques, il est essentiel de comprendre les facteurs qui maintiennent la diversité génétique des populations naturelles. Mes étudiants et moi intégrons des approches provenant de l'écologie comportementale et évolutive, de l'écophysologie et de l'immunologie écologique pour développer des hypothèses sur les rôles du comportement et des maladies infectieuses dans le maintien de la variation génétique chez les oiseaux sauvages.

J'ai travaillé avec les oiseaux sauvages depuis 1991, d'abord comme étudiante de premier cycle et de MSc à Queen's, puis pendant mon doctorat à Princeton et ma bourse postdoctorale à McMaster. Depuis 2004, je suis membre de la faculté de Biologie à l'Université de Western Ontario où je combine le travail de terrain et les analyses génétiques, acoustiques et immunitaires. D'un point de vue taxonomique, une grande partie de mes recherches portent sur une population d'étude à long terme de Bruants chanteurs, mais d'autres projets ont porté sur le Tyran huppé, le Merlebleu de l'Est, les Bec-croisé des sapins, l'Ermite vert, le Bruant à couronne blanche, le paruline et le Bruant à gorge blanche.

En tant qu'étudiant diplômé, j'ai profité grandement des bourses de recherche des étudiants et des prix de voyages de conférence de plusieurs sociétés ornithologiques. Je tiens à redonner à la communauté ornithologique et surtout à favoriser le développement de la prochaine génération d'ornithologues professionnels et amateurs. J'ai siégé au comité Katma Award de la société Cooper pendant les deux dernières années et je suis rédacteur en chef associé pour *The Auk: Ornithological Advances*. Si je suis élue au Conseil de SCO-SOC, je travaillerai à maintenir le caractère dynamique et accueillant de la Société et à favoriser une appréciation pour l'avifaune unique du Canada grâce à la sensibilisation des jeunes.

Society of Canadian Ornithologists' Early Career Research Award

CALL FOR NOMINATIONS - 2017

The Early Career Researcher Award honours fledgling ornithologists - in academia, industry, non-government or government agencies – that show strong potential for future leadership in Canadian ornithology. The award will be presented to the recipient at the Society's annual meeting where they will be invited to give a 30 minute keynote address, and travel to the meeting will be subsidized. The recipient will also be asked to provide a synopsis of their work to appear as a multi-page colour feature in the Society's *Picoides* newsletter.

Nomination: Candidates can be nominated by themselves, former/current supervisors, colleagues and/or peers. A nomination letter should include a short statement (max 1000 words) describing the nominee's accomplishments to date. To be eligible, the candidate must have received their PhD from or currently working at a Canadian institution. The researcher should have obtained her or his PhD no more than five years prior to the SCO meeting where the award is to be given. Periods where the researcher has not been active due to parental or personal leave would be excluded from the five years.

Deadline for submission of nominations is 1 May 2017.

Nominations should be sent, by email, to:

Kyle Elliott, Chair

Early Career Research Award Committee

email: kyle.elliott@mcgill.ca



Society of Canadian Ornithologists
Soci t  des ornithologistes du Canada

Prix de recherche en début de carrière de la Société des ornithologistes du Canada

APPEL AUX NOMINATIONS – 2017

Le prix de recherche en début de carrière honore les jeunes ornithologistes – en université, en industrie et en agences non-gouvernementales et gouvernementales – qui démontrent un fort potentiel pour le futur leadership en ornithologie canadienne. Le prix sera présenté au récipiendaire à la réunion annuelle de la société où il sera invité à donner un discours d'ouverture de 30 minutes, et le voyage à la réunion sera subventionné. Le récipiendaire devra également fournir un résumé de son travail qui sera publié comme un article à plusieurs pages dans le bulletin de la société, *Picoides*.

Nomination:

Les candidats peuvent se nommer ou peuvent être nommés par leurs anciens superviseurs, par leur superviseurs actuels, par leurs collègues, ou par leurs pairs. Une lettre de nomination devrait inclure une courte déclaration (max 1000 mots) décrivant les accomplissements du nominé à ce jour. Pour être éligible, le candidat doit avoir reçu son doctorat d'une institution canadienne ou doit présentement travailler à une institution canadienne. Le candidat doit avoir obtenu son doctorat au plus tard 5 ans avant la réunion de la SOC où le prix sera remis. Les périodes durant lesquelles le candidat n'était pas actif à cause d'un congé parental ou personnel seront exclues de cette période.

Date limite pour les nominations est le 1er mai 2017.

Les nominations devraient être envoyées, par courriel, à:

Kyle Elliott, Chaire

Comité de prix de recherche en début de carrière

courriel: kyle.elliott@mcgill.ca



Society of Canadian Ornithologists
Société des ornithologistes du Canada



The SCO-SOC WANTS YOU

Join the **Society of Canadian Ornithologists/Société des ornithologistes du Canada**; support bird ecology, conservation and research in Canada.

(\$10/yr – Student, \$25/yr - Regular Member)

WWW.SCO-SOC.ca

Benefits of membership include: eligibility for student awards; reduced fees for conferences; highlighting your work in our newsletter; gaining a professional affiliation and networking with other researchers, all at a low membership fee

Challenge – if the society gains 100 new members before our 2017 meeting in Aug, The President will conduct the AGM in this outfit



La SCO-SOC VOUS VEUT!

Joignez la **Société des ornithologistes du Canada/Society of Canadian Ornithologists**; soutenez la recherche sur les oiseaux du Canada et leur conservation.

(10 \$/ année – Étudiant; 25 \$/ année – Membre régulier)

WWW.SCO-SOC.ca

Les avantages de l'adhésion comprennent: l'admissibilité aux bourses d'études; des frais réduits pour les conférences; la mise en valeur votre travail dans notre bulletin; l'obtention d'une affiliation professionnelle et le réseautage avec d'autres chercheurs, le tout à très peu de frais!

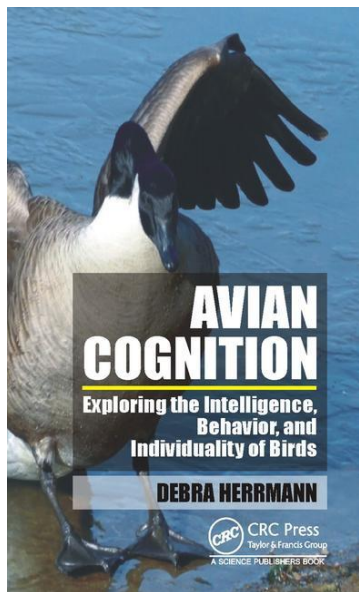
Défi - Si la Société recrute 100 nouveaux membres avant sa réunion d'août 2017, le président dirigera l'AGA dans cette tenue!

Book Review

Avian Cognition: Exploring the Intelligence, Behavior, and Individuality of Birds

By Debra S. Herrmann

Published in 2016 by CRC Press, Boca Raton, FL. 535 Pages.



The author of *Avian Cognition* personally observes over 300 individuals of 14 species over 30 years to explore intelligence, behaviour, and individuality of birds. The species observed include a mix of North American wild birds (four species of heron, Canada Goose, Mallard, Ruby-throated Hummingbird and Northern Cardinal) and captive-held exotic birds (Budgerigar, Zebra Finch, Meyer's Parrot, Red-bellied Parrot, Mitred Conure and Indian Ringneck Parakeets).

The first-time reader should read the preface where the author succinctly discusses the purpose and organization of the book. The first chapter provides a key, brief and effective overview of concepts and theories of animal and human cognition including learning, thought, emotion, consciousness, behaviour, language, culture, technology, adaptation, instinct and intuition.

Chapters 2 to 11 explore avian cognition in one to four species and do have a logical and similar organizational structure including background, historical notes, physical characteristics (appearance, diet, range, habitat, and vocalizations), family life, daily and seasonal activities and common behaviour. The next section of these chapters is the most interesting, the individual or unique behaviour (for example, Canada Geese jumping off tall buildings and constructing pond entrances/exits and Cardinals using a playground metal slide). Chapters 2 to 11 conclude with a

discussion of the observed behaviour and short section on what humans have "appropriated" from birds, such as the red colour of male Cardinals as a warning and the colour of stop signs. In Chapters 7 to 11, the discussion section examines the similarities and differences between captive-held and wild individuals of the same species.

I enjoyed the storytelling approach in the book and appreciated the minimal use of technical jargon. The story telling and use of simpler language make the information accessible to more readers. I found the stories about the wild bird intelligence a bit more compelling because of the much less interactions with humans. Particularly interesting were stories of apparent empathy and fairness in sharing food and Canada geese adopting orphaned goslings. The individuality, curiosity and adaptability of wild birds are simply amazing. Reference numbers were used to link cited information in the text to the citation in the bibliography (Annex B). The colour figures and photos are clear, sharp, and of high quality.

The book also includes two digital audio disks with four tracks each of varying lengths containing recorded conversations between individuals of these bird species: Canada Goose, Mallard, Zebra Finch, Indian Ringneck, Meyer's Parrot, Mitred Conure and Budgerigar. The sound quality of both digital audio disks is excellent with clear and sharp vocalizations. You will need to open chapter 12 on vocalizations of the book as you listen to these avian conversations.

The book concludes with five annexes and a very detailed subject index. These annexes include a handy seven-page glossary, a 210-entry bibliography, an overview of observation locations and populations studied in the book, a tribute to a long-time pet bird by the author, and external factors to consider in medical exams for birds.

I learned many new things about bird behaviour and cognition. The book overall is excellent. However, the US\$145.95 price for the hard copy book is very steep. This must be largely due to over 200 colour figures, the two digital audio disks and the hard cover binding. The eBook version is cheaper, but still relatively expensive at US\$104.97.

Reviewed by Rob Warnock, e-mail: warnockr@accesscomm.ca

SCO – SOC Information

Name	Title	Phone	E-mail
Officers for 2016/2017:			
Dr. Ken Otter	President	250-960-5019	ken.otter@unbc.ca
Dr. Colleen Barber	Vice-President/President-elect	902-496-8126	colleen.barber@smu.ca
Dr. Greg Robertson	Past President	709-772-2778	greg.robertson@canada.ca
Dr. Matt Reudink	Treasurer (<i>Outgoing</i>)	250-828-5428	mreudink@tru.ca
Dr. Junior Tremblay	Treasurer (<i>Incoming</i>)	418-649-6260	junior.tremblay@canada.ca
Mr. Lance Laviolette	Membership Secretary (<i>Outgoing</i>)	613-874-2449	lance.laviolette@gmail.com
Dr. Darroch Whitaker	Membership Secretary (<i>Incoming</i>)	709-458-3464	darroch.whitaker@pc.gc.ca
Dr. Greg Mitchell	Recording Secretary	613-998-7311	greg.mitchell@canada.ca
Mr. Rob Warnock	Co-editor, <i>Picoides</i>	306-586-2492	warnockr@myaccess.ca
Ms. Barbara Bleho	Co-editor, <i>Picoides</i>	416-705-0092	bleho.barbara@gmail.com
Voting Members of Council: (*second term)			
Dr. Kyle Elliott	Member of Council *	514-398-7907	kyle.elliott@mcgill.ca
Dr. Barbara Frei	Member of Council*	514-667-4261	barbara.frei@mail.mcgill.ca
Dr. Jennifer Foote	Member of Council	705-949-2301 ext 4368	jennifer.foote@algomau.ca
Dr. David Green	Member of Council*	778-782-3981	davidg@sfu.ca
Dr. Laura McKinnon	Member of Council*	705-930-4125	laura.mckinnon@utoronto.ca
Dr. Dan Mennill	Member of Council*	519-253-3000 ext 4726	dmennill@uwindsor.ca
Dr. Laura McFarlane Tranquilla	Member of Council*	709-770-6923	ltranquilla@bsc-eoc.org
Dr. Marc-André Villard	Member of Council	418-723-1986 poste 1540	Marc-Andre_Villard@uqar.ca

(Non-voting) Past Presidents:

Ross Lein	1983-1986	Henri Ouellet	1994-1996	Charles Francis	2004-2006
Spencer Sealy	1986-1988	David Nettleship	1996-1998	Susan Hannon	2006-2008
Erica Dunn	1988-1990	Tony Diamond	1998-2000	David Bird	2008-2010
Jon Barlow	1990-1992	Kathy Martin	2000-2002	Erica Nol	2010-2012
Bruce Falls	1992-1994	Jean-Pierre Savard	2002-2004	Joe Nocera	2013-2014

Membership Information

www.sco-soc.ca/membership.html

SCO-SOC membership forms can be found at the link above.
Current membership rates are as follows:

Student	\$10.00/year
Regular	\$25.00/year (\$35.00/year international)
Sustaining	\$50.00/year
Life	\$500.00

SCO-SOC Website

www.sco-soc.ca/index.html

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

To suggest any additions or edits for the website, contact Jennifer Foote at jennifer.foote@algomau.ca.

Submissions to *Picoides*:

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

Disclaimer:

Picoides is not a peer-reviewed journal; the publication of an article in *Picoides* does not imply endorsement by SCO-SOC.



**Society of Canadian Ornithologists
Soci t  des ornithologistes du Canada**

ELECTION 2017-2019/ LECTION 2017-2019

BALLOT/MISES EN CANDIDATURE

Only one candidate agreed to allow his/her name to stand for all available positions. Our By-laws require an affirmation vote by the membership to confirm these persons to their positions. The society wishes to thank all those who are willing to serve in these capacities.

Un(e) seul(e) candidat(e) a accept  d'avoir son nom consid r (e) pour chaque position disponible. Nos r glements exigent un vote d'affirmation par les membres pour confirmer les positions respectives. La soci t  tient   remercier les membres pr t   contribuer au fonctionnement de l'ex cutif.

Incumbent candidate for Recording Secretary (For Term 2, By-laws require re-election) (Vote for 1)

Le Secr taire de l'Enregistrement actuel (Par r glement, r election requise pour le 2  mandat) (Voter pour 1 personne):

Greg Mitchell _____ Yes/Oui _____ No/Non

Candidates for council (Vote for 3):

Conseillers (Voter pour 3 personnes):

Theresa Burg _____ Yes/Oui _____ No/Non

Dorothy Hill _____ Yes/Oui _____ No/Non

Andy Horn _____ Yes/Oui _____ No/Non

David Logue _____ Yes/Oui _____ No/Non

Beth MacDougall-Shackleton _____ Yes/Oui _____ No/Non

We will be conducting the vote using an online voting tool, BallotBin. You will receive a link to vote by email. Please complete the vote by Wednesday 19 April 2017 / Nous proc derons au vote en utilisant un outil de vote en ligne, BallotBin. Veuillez compl ter le bulletin de vote avant le mercredi 19 avril 2017

For questions, please contact/ Pour des questions, s'il vous plait contactez:

Colleen Barber, colleen.barber@smu.ca

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