

Official Magazine of the Canadian Water Resources Association

# WaterNEWS

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**Mid-term directors meeting, what happened.**

**Réunion à mi-parcours du Conseil d'administration...  
un aperçu!**



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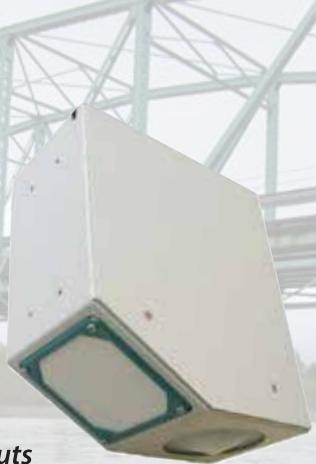
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# From the helm

By Dave Murray On Twitter at [@CWRA\\_Pres](#)



## New Regulations for BC Water Sustainability Act

### Top 5 from @CWRA\_Pres

- 1 BC Water Sustainability Act- Finally!
- 2 SYP Corner
- 3 CWRA Factoid
- 4 Get Ready for Montreal!
- 5 Expanding CWRA's Impact

"I often wonder what the problem is with national leadership on water issues?"

I often wonder what the problem is with national leadership on water issues? The Canadian Constitution gives most rights to manage water to the provinces and territories. Now I am hopeful that the trend of declining Federal interest in water issues has ended along with declining funding and jurisdictional fragmentation. The Canadian constitution divides power to legislate water among federal, provincial, territorial, First Nations governments and no one government can develop a national water management strategy. So amidst this confusion comes the new BC Water Sustainability Act. Initially passed in May 2014, by the time of publication this new modernized regulations and policies will be in force. Several CWRA members worked on this new updated water act and have contributed to water management in BC. Some of the new measures in the act are:

- Water licencing of groundwater (last jurisdiction in North America)
- Dam safety regulations update
- Greater water rights to First Nations
- Protection of stream health
- Improved water conservation and watershed based approaches

### SYP Corner

The new and improved SYP handbook is on its way. Meg Olson and Greg Schellenberg have a new and improved guide in place. We were pleased to have four SYP representatives at our mid-term meeting in Calgary and it provided valuable input where CWRA should go in the future. CWRA goals for SYPs are to:

- Foster the development of SYP groups across the country and expand our SYP membership
- Support SYP activities to generate activity and promote effective water management
- Provide career mentoring to SYPs through mentoring programs

If you have an idea on a new group or need help please contact [executivedirector@cwra.org](mailto:executivedirector@cwra.org)

### CWRA FACTOID: WET FUNDING

Project WET has been sponsored by CWRA in Canada for 20 years. **Happy 20th Project WET!** The WET stands for **Water Education for Teachers** and our facilitators train teachers to train kids about water. The Saskatchewan Water Security Agency recently sponsored Project WET for expanded activities in Saskatchewan. Activities began in Saskatchewan, Manitoba and British Columbia and then to formally introduce the programs provincially. Then we expanded to educators in the Yukon Territory, Nova Scotia, New Brunswick, Newfoundland and Labrador. Workshops have also been in Alberta, Quebec, Ontario and Nunavut.

"We have a new SYP Guide in Place!"

Continued on page 6

# À la barre

Par Dave Murray sur Twitter à  @CWRA\_Pres



## Nouveaux règlements pour la Water Sustainability Act de la Colombie-Britannique

### 5 thèmes majeurs @CWRA\_Pres

- 1 La Water Sustainability Act -Enfin!
- 2 Le coin des ÉJP
- 3 Factoïde de l'ACRH
- 4 Préparez-vous pour Montréal !
- 5 Étendre la portée de l'ACRH

« Je me suis souvent demandé pourquoi il est si difficile d'en arriver à un leadership national entourant les enjeux liés à l'eau? »

### Sections ÉJP

- Calgary ÉJP
- Edmonton ÉJP
- Toronto ÉJP
- Vancouver ÉJP
- Winnipeg ÉJP

« Nous avons un nouveau guide des ÉJP! »

**J**e me suis souvent demandé pourquoi il semble si compliqué d'en arriver à un leadership national entourant les enjeux liés à l'eau? La Constitution canadienne confère la plupart des droits de gestion de l'eau aux provinces et aux territoires. J'ai bon espoir que la tendance du gouvernement fédéral à se désintéresser du dossier de l'eau, à octroyer de moins en moins de financement et à favoriser la fragmentation des compétences, est maintenant chose du passé. La Constitution canadienne divise le pouvoir de légiférer sur l'eau entre les gouvernements fédéral, provinciaux, territoriaux et des Premières Nations et aucun gouvernement ne peut élaborer une stratégie nationale de gestion de l'eau. Au beau milieu de toute cette confusion nous arrive la nouvelle loi de la Colombie-Britannique intitulée « Water Sustainability Act ». Sanctionnés en mai 2014, ces nouveaux règlements et politiques modernisés seront en vigueur au moment où le présent article sera publié. Plusieurs membres de l'ACRH ont travaillé à la mise à jour de cette nouvelle loi et ont contribué à la gestion de l'eau en Colombie-Britannique. Voici certaines des mesures prévues par la loi :

- Permis d'utilisation des eaux souterraines (dernière compétence territoriale en Amérique du Nord)
- Mise à jour des règlements en matière de sécurité des barrages
- Plus vastes droits d'usage de l'eau pour les Premières Nations
- Protection de la santé des cours d'eau
- Amélioration de la conservation de l'eau et des approches par bassin versant

### Le coin des ÉJP

Le nouveau guide amélioré des ÉJP est en route. Meg Olson et Greg Schellenberg ont un nouveau guide amélioré. Nous étions ravis d'accueillir nos représentants ÉJP à notre réunion de mi parcours à Calgary. Leur apport a été précieux quant à l'orientation que l'ACRH devrait envisager pour l'avenir.

L'ACRH poursuit les objectifs suivants pour les ÉJP :

- Encourager le développement des groupes d'ÉJP dans l'ensemble du pays et accroître le nombre de membres parmi les ÉJP.
- Soutenir les événements des ÉJP visant à générer de l'activité et à promouvoir la gestion efficace de l'eau.
- Offrir un mentorat professionnel aux ÉJP par le biais de programmes de mentorat.

**Si vous avez des idées à propos d'un nouveau groupe ou si vous avez besoin d'aide, veuillez communiquer avec [executivedirector@cwra.org](mailto:executivedirector@cwra.org)**

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*Continued from page 4*

## *Project WET has been sponsored by CWRA for 20 years!*

### **ENHANCING CWRA'S IMPACT**

So how can we make a bigger impact on water management? Being a volunteer organization we need to find a way to help our branches and volunteers. At our mid-term directors meeting we voted to expand staff resources which will in turn enable CWRA to grow membership and our impact and outreach. Internally want to better serve our members. We are looking at the services provided by both our executive directors offices and membership offices and will be presenting a new services framework at our board meeting in Montreal. We will be looking at where additional staff resources can assist branches and our board with conferences and webinars, connect with other water organizations and our discussions with the Federal Government. **WN**

*Suite de la page 5*

### **FACTOÏDE DE L'ACRH : FINANCEMENT WET**

L'ACRH parraine le Projet WET au Canada depuis 20 ans. **Joyeux 20e anniversaire Projet WET!** L'abréviation WET en anglais correspond à **Water Education for Teachers**. Nos facilitateurs forment les enseignants afin qu'ils forment à leur tour les enfants dans le domaine de l'eau. La Saskatchewan Water Security Agency a récemment parrainé le Projet WET afin d'étendre les activités du Projet en Saskatchewan. Des activités ont été entamées en Saskatchewan, au Manitoba et en Colombie Britannique puis le programme a été présenté de manière officielle aux échelles provinciales. Le programme a ensuite été étendu au personnel enseignant du Yukon, de la Nouvelle Écosse, du Nouveau-Brunswick et de Terre Neuve-et-Labrador. Des ateliers ont également été tenus en Alberta, au Québec, en Ontario et au Nunavut.

*L'ACRH parraine le Projet WET depuis 20 ans!*

### **ÉTENDRE LA PORTÉE DE L'ACRH**

Comment pourrait-on exercer une plus grande influence sur la gestion de l'eau? En tant qu'organisme bénévole, nous devons trouver le moyen d'aider nos sections et nos bénévoles. À la réunion à mi-parcours de notre conseil d'administration, nous avons voté en faveur de l'expansion de nos effectifs, ce qui en retour permettra à l'ACRH de recruter davantage de membres et améliorera du même coup notre impact et notre portée. À l'interne, nous souhaitons mieux servir nos membres. Nous nous penchons actuellement sur les services offerts à la fois par nos bureaux de direction et de services aux membres. À la réunion du Conseil qui se tiendra à Montréal, nous présenterons une nouvelle structure de services. Nous tenterons aussi de déterminer là où des ressources en personnel pourraient assister les sections et le conseil d'administration dans la préparation des congrès et des webinaires, dans nos échanges avec d'autres organismes œuvrant dans le domaine de l'eau et dans nos discussions avec le gouvernement fédéral. **WN**



### **GET READY FOR MONTREAL!**

Our National Conference and Board Meeting is coming up in Montreal, Quebec May 25-27. If you have never attended a conference in Montreal it's not to be missed. In addition to the top notch conference there is so much to enjoy in Montreal from historic buildings in Old Montreal, walking tours, Canal-de-Lachine, museums, churches and restaurants, oh my! The conference theme is Vulnerability and improving resilience in water management. There will be:

- Pre-conference workshops
- SYP events
- CSHS and CANCID sessions
- Field trips and more!

*Photo courtesy stockvault.net*

### **PRÉPAREZ-VOUS POUR MONTRÉAL!**

Notre congrès national et la réunion de notre conseil d'administration auront bientôt lieu à Montréal, au Québec, du 25 au 27 mai. Si vous n'avez jamais pris part à un congrès à Montréal, c'est à ne pas rater. En plus de notre congrès de premier plan, il y a tant à faire et à découvrir à Montréal... les bâtiments historiques du Vieux Montréal, les visites guidées, le canal de Lachine, les musées et les restaurants, et j'en passe! Cette année, le thème du congrès est la vulnérabilité et l'amélioration de la résilience en matière de gestion de l'eau. Il y aura :

- des ateliers pré-conférence
- des événements ÉJP
- des séances SCSH et CNCID
- des visites d'études et bien plus encore!

# Mid-term directors meeting, what happened.



Photo courtesy freepik.com

## Réunion à mi-parcours du conseil d'administration...un aperçu!

**M**idterm CWRA directors' meetings commenced with a workshop, held Friday, January 29. Water management in the Bow River Basin, which covered many topics of interest to our members. For those who attended the workshop and CWRA members, the presentations are now loaded online for review.

The board meeting commenced at 8:15 AM Saturday January 31st following a directors' "get acquainted breakfast". We were joined online by several directors who were unable to get travel support.

*Continued on page 8*

**L**a réunion du conseil d'administration de l'ACRH à mi-parcours a commencé par un atelier, tenu le vendredi 29 janvier – Gestion de l'eau dans le bassin de la rivière Bow - traitant de nombreux thèmes d'intérêt pour nos membres. Pour ceux et celles qui ont pris part à l'atelier et aussi pour les membres de l'ACRH, les présentations sont maintenant accessibles en ligne pour visualisation.

La réunion du conseil d'administration a commencé à 8 h 15 le samedi 31 janvier, après un déjeuner au cours duquel les membres du conseil

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*Continued from page 7*

President Dave welcomed all the directors and noted CWRA directors need to have significant discussion today regarding the future of the Executive Director's position and CWRA membership fees.

The preliminary budget was proposed in the morning but was not finalized pending the decisions that would come during the day. For example, an early motion allocated \$18,000 for Project WET Canada. It was also noted that project WET has successfully raised sponsorship money from Nestlé Canada for the Canadian guide supplement in addition to this allocation to continue the coordination efforts across Canada.

Professional development webinars will be a possible source of income for the next year and it was suggested that a line item of \$5000 revenue be added to the budget. There was further discussion about the increase for the Executive Director's office to accommodate the Assistant Executive Director and other possible structural changes. This was followed by an assignment to the executive to prepare a proposal for a new service delivery model and development of a transition plan to be provided to the directors to consider at the May meeting.

A proposal was submitted to increase the members' rates noting that they had not increased for 10 years. It was noted that as an environmental organization we are actually penalizing people for avoiding paper with the \$10 surcharge for electronic access to the journal, even though we are actually having to pay extra for that electronic access. The proposal is accepted and the new rates (which now include journal electronic access at no charge) are:

	<b>2016 rate</b>	<b>CANCID</b>	<b>CSHS</b>	<b>Journal E access</b>
Regular members	\$120	\$50	\$10	now included at no charge
Retired members	\$60	\$25	\$5	now included at no charge
Young professionals	\$60	\$25	\$5	now included at no charge
Students	\$25	\$20	\$5	now included at no charge

With no change in membership numbers these changes would increase income by about \$24,000.

This will assist in offsetting the additional services in the Executive Director's office and Assistant Executive Director's expenses.

Canadian National Committee on Irrigation and Drainage (CANCID) and ICID 2018 Saskatoon were noted as an international conference coming to Canada in the fall of 2018. This is an opportunity to showcase Canada and its expertise to the world. It will provide an opportunity for material and equipment suppliers and consultants to show and demonstrate their successes to a worldwide audience.

*Continued on page 9*

*Suite de la page 7*

ont pu faire connaissance. Plusieurs membres du conseil se sont joints à nous en ligne, puisqu'ils étaient dans l'impossibilité d'obtenir un soutien pour leur déplacement.

Le président, M. Dave Murray, a souhaité la bienvenue à tous les membres du conseil et a fait remarquer qu'il fallait se livrer à d'importantes discussions quant à l'avenir du poste de directeur exécutif et quant au droit d'adhésion de l'ACRH.

Le budget préliminaire a été proposé pendant la matinée. Il n'a cependant pas été arrêté définitivement avant que toutes les décisions ne soient prises plus tard au cours de la journée. Par exemple, une requête avait été formulée plus tôt afin que la somme de 18 000 \$ soit affectée au Projet WET Canada. Il a également été noté que les responsables du Projet WET ont réussi à recueillir des fonds auprès de Nestlé Canada, qui s'est engagé à parrainer le supplément du guide canadien ainsi que la poursuite des efforts de coordination du projet à la grandeur du Canada.

Les webinaires de perfectionnement professionnel constitueront une éventuelle source de revenus pour l'année à venir et il a été recommandé qu'un poste de revenus de 5 000 \$ soit ajouté au budget. D'autres discussions ont eu lieu au sujet de la hausse pour le bureau du directeur exécutif afin de répondre aux besoins du directeur exécutif adjoint et au sujet d'autres changements structuraux éventuels. Le tout a été suivi d'une mission confiée à la direction pour la préparation d'une proposition visant un nouveau modèle de prestation de services et l'élaboration d'un plan de transition devant être soumis aux membres du conseil pour étude à la réunion de mai.

Une proposition a été soumise en vue de l'augmentation de la cotisation des membres. Il a été souligné que cette cotisation n'avait pas augmenté depuis dix ans. Il a été noté que, bien que nous soyons un organisme à vocation environnementale, nous pénalisons en fait les gens qui évitent le papier en leur facturant un supplément de 10 \$ pour l'accès électronique à la revue, même s'il est vrai que cet accès électronique suppose des frais supplémentaires de notre part. La proposition a été acceptée et les nouveaux frais (qui comprennent maintenant l'accès électronique sans frais à la revue) sont les suivants :

	<b>Cotisation de 2016</b>	<b>CNCID</b>	<b>SCSH</b>	<b>Accès virtuel à la revue</b>
Membres ordinaires	120 \$	50 \$	10 \$	maintenant inclus sans frais
Membres retraités	60 \$	25 \$	5 \$	maintenant inclus sans frais
Jeunes professionnels	60 \$	25 \$	5 \$	maintenant inclus sans frais
Étudiants	25 \$	20 \$	5 \$	maintenant inclus sans frais

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Canadian Society for Hydrologic Sciences (CSHS) has been running a hydrology metering short course in Kananaskis Alberta for several years and are receiving requests for an advanced course to include hydrology modelling. CSHS is working on that initiative, establishing a metering course in Eastern Canada and hosting various hydrology models that are becoming less used and in danger of being abandoned, on University of Waterloo servers. CSHS have also been invited to participate with the International Union of Geodesy and Geophysics conference in Montréal in 2019.

The executive, directors and committees are now connected on a Google drive option that is available for charities such as CWRA. A demonstration on how to access and use this drive was provided for the directors in attendance.

The directors participated in a “blue sky” session exploring a variety of options to improve and or expand member service delivery. This list of preferred items included many of the services that are currently being provided as well as some additional desired activities/services. For example, it was felt that a centralized conference planning service would be an advantage to the various branches tasked with national conferences as well as for their own local conferences. Fundraising and non-dues revenue such as webinars was another major item. It was noted also that our communications tools availability and use have increased with the addition of the Assistant to the Executive Director.

Doctor Diana Allen was recognized for her services as Journal co-editor for the last 6 years on a motion unanimously approved by the board. Her replacement will be Doctor Chris Spence whose expertise is in northern hydrology and process hydrology. We look forward to the team of Doctor Jim Buttle and Doctor Chris Spence as our journal coeditors and their work with the team of the editorial committee. **WN**

*Suite de la page 8*

Si le nombre de membres demeure le même, ces changements donneront lieu à une hausse des revenus d'environ 24 000 \$.

Cela permettra de compenser les services supplémentaires offerts dans le cadre du mandat du directeur exécutif ainsi que les dépenses du directeur exécutif adjoint.

Il a été noté que le Comité national canadien de l'irrigation et du drainage (CNCID) accueillera la réunion du Conseil exécutif international de la CIID à l'automne de 2018 à Saskatoon. Cette conférence internationale sera une belle occasion de rehausser l'image du Canada et de démontrer son expertise au monde entier. Elle représentera également une formidable occasion pour les fournisseurs de matériel et d'équipement et les consultants de mettre en valeur leurs réussites auprès d'un public international.

La Société canadienne des sciences hydrologiques (SCSH) a offert un cours abrégé de comptage hydrologique à Kananakis, en Alberta pendant plusieurs années et elle reçoit des demandes en vue de la création d'un cours avancé qui engloberait la modélisation hydrologique. La SCSH travaille à cette initiative, en mettant sur pied un cours de comptage dans l'Est du Canada et en hébergeant sur des serveurs de l'Université de Waterloo divers modèles hydrologiques qui sont de moins en moins utilisés et qui risquent d'être abandonnés. La SCSH a également été invitée à participer à la conférence de l'Union géodésique et géophysique internationale qui se tiendra à Montréal en 2019.

La direction, les membres du conseil d'administration et les comités sont maintenant reliés entre eux grâce à une option de Google Drive qui est accessible aux organismes de bienfaisance tels que l'ACRH. Une démonstration portant sur l'accès à cette fonctionnalité et sur son utilisation a été faite à l'intention des membres du conseil présents.

Les membres du conseil ont pris part à une séance de discussion « sans frontières » qui visait à explorer diverses options qui nous permettraient d'améliorer et d'étendre la prestation des services aux membres. Cette liste d'éléments préférés comprenait bon nombre des services qui sont actuellement offerts ainsi que certains autres services ou activités souhaités. Par exemple, les membres du conseil étaient d'avis qu'un service centralisé de planification des conférences serait avantageux pour les diverses sections appelées à organiser le congrès national ainsi que pour les sections qui doivent organiser leur propre conférence. Les collectes de fonds et les revenus non tirés des droits d'adhésion, par exemple les webinaires, constituaient un autre point majeur ayant été abordé. Il a aussi été noté que la disponibilité et l'utilisation des outils de communication ont augmenté avec l'ajout d'un adjoint au directeur exécutif.

Mme Diana Allen a été reconnue pour ses services à titre de corédactrice en chef de la Revue au cours des six dernières années, par suite d'une proposition approuvée à l'unanimité par le conseil d'administration. Elle sera remplacée par M. Chris Spence, spécialisé en hydrologie nordique et en processus hydrologiques. Nous sommes ravis de la nouvelle équipe formée par MM. Jim Buttle et Chris Spence, à titre de corédacteurs de la revue, et nous sommes enthousiastes à l'idée de leur collaboration avec l'équipe du comité de rédaction. **WN**

# RIVTEMP: A WATER TEMPERATURE NETWORK FOR ATLANTIC SALMON RIVERS IN EASTERN CANADA

## RIVTEMP : RÉSEAU DE SUIVI DE LA TEMPÉRATURE DE L'EAU DES RIVIÈRES À SAUMON ATLANTIQUE (*SALMO SALAR*) DE L'EST DU CANADA

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<sup>5</sup> Conseil de gestion du bassin versant de la rivière Restigouche, Matapedia (Qc), GOJ 1VO, Canada.

### 1 CONTEXT AND INTEREST OF RIVER TEMPERATURE

Wild Atlantic salmon is greatly prized for recreational fishery. This activity attracts numerous tourists and generates important income and jobs for many communities in Eastern Canada. The economic value of this species is estimated at 255 million dollars in this region (Gardner Pinfold, 2011). Threats to wild Atlantic salmon populations are diverse. For instance, fluvial habitat variables can limit the survival of this species. River temperature is a key hydro-climatic variable that impacts on the health and survival of Atlantic salmon at different life stages. Water temperature affects other water quality variables (e.g. oxygen), development of parasites or pathologies and ultimately, growth, reproduction and survival (McCullough, 1999; Ducharne, 2008; Jonsson and Jonsson, 2009; Elliott and Elliott, 2010).

The spatio-temporal fluctuations of temperature, in relation to watersheds and climate variables, are important concerns for managers who want to preserve and protect this resource as

### 1 CONTEXTE ET INTÉRÊT DE LA TEMPÉRATURE DES RIVIÈRES

Le saumon atlantique sauvage est grandement prisé pour la pêche récréative. Cette activité attire de nombreux touristes et génère d'importants revenus et des tas d'emplois pour de nombreuses collectivités de l'Est du Canada. La valeur économique de cette espèce est estimée à 255 millions de dollars dans cette région (Gardner Pinfold, 2011). Les menaces qui pèsent sur les populations de saumon de l'Atlantique sont variées. Par exemple, les variables de l'habitat fluvial peuvent limiter la survie de cette espèce. La température des rivières est une variable hydro-climatique majeure qui influe sur la santé et sur la survie du saumon atlantique à différents stades de la vie. La température de l'eau influe sur d'autres variables de qualité de l'eau (p. ex. l'oxygène), le développement des parasites ou des pathologies et ultimement la croissance, la reproduction et la survie (McCullough, 1999; Ducharne, 2008; Jonsson et Jonsson, 2009; Elliott et Elliott, 2010).

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well as maintain a sustainable fishery in the future. Managers seek to make informed decisions and to propose actions at the watershed scale. However, they are confronted with the paucity of temperature data. Indeed, despite the importance of water temperature and the fact that it can be measured easily, and at relatively low cost, few rivers are monitored in Eastern Canada. Furthermore, these measurements are not fully structured within a network. This lack of basic information can limit our ability to manage this important resource during high temperature events.

The RivTemp network seeks to address this gap by bringing together key partners concerned with water temperature issues in Atlantic salmon rivers; to share data and increase the knowledge about river temperature; to develop management tools and communicate relevant statistics; and to optimize a viable number of temperature monitoring stations within specific areas. The network is a partnership between universities, federal and provincial governments, watershed groups and organization dedicated to the conservation of Atlantic salmon (Table 1). The main outputs of the network are a centralized database grouping water temperature data from all monitoring stations; report cards providing thermal data and comprehensible analysis results that are relevant for Atlantic salmon and approaches to optimized network of new monitoring stations.

## 2 OUTPUT AND OUTCOMES OF RIVTEMP

### RIVTEMP DATABASE

A database was built with temperature data collected from historical and current monitoring stations operated by various agencies (governmental and non-governmental). The RivTemp database currently includes daily time series of water temperature for 478 monitoring stations distributed in 186 rivers: 114 rivers in Québec (346 stations), 55 in New-Brunswick (113); 12 in Newfoundland/Labrador (14); 3 in Prince-Edward Island (3) and 2 in Nova-Scotia (2) (Figure 1).

The length of the time series is variable. Although most stations (80 %) have data for 5 years or less, 50 stations (10 %) have more than 10 years of data; among this last group, two stations span for more than 20 years (Figure 1). The oldest water temperature time series begins in 1985. This station is located on the Trinité River, on the Nord Shore of the St. Lawrence Estuary. Stations with more than 10 years of data are distributed between latitude 45°N and 52°N.

A large group of stakeholders will benefit from this accessible tool. For instance, characterisation of historical river temperature data and maintenance of monitoring sites along a broad latitudinal gradient will allow assessment of the impact of climate change on water temperature and ultimately on fish habitat.

### EXPANSION OF THE MONITORING STATIONS NETWORK

The network of monitoring stations is currently in expansion.

*Continued on page 12*

Les fluctuations spatio-temporelles de la température, en rapport avec les bassins versants et les variables climatiques, sont d'importants enjeux pour les gestionnaires qui souhaitent préserver et protéger cette ressource tout en assurant une pêche durable pour l'avenir. Les gestionnaires cherchent à prendre des décisions éclairées et à proposer des mesures à l'échelle du bassin. Cependant, ils sont confrontés à la rareté des données sur la température. En réalité, malgré l'importance de la température de l'eau et le fait qu'elle peut être mesurée facilement, et à un coût relativement faible, peu de rivières sont contrôlées dans l'Est du Canada. Qui plus est, ces mesures ne sont pas entièrement structurées à l'intérieur d'un réseau. Ce manque de données de bases peut limiter notre capacité de gérer cette importante ressource lors des épisodes de température élevée.

Le réseau RivTemp cherche à combler cette lacune en rassemblant des partenaires clés qui s'intéressent aux problèmes de température de l'eau dans les rivières à saumon atlantique; à partager des données et à accroître les connaissances liées à la température de l'eau des rivières; à créer des outils de gestion et à communiquer des statistiques pertinentes et, enfin, à optimiser un nombre viable de stations de surveillance de la température à certains endroits bien précis. Le réseau consiste en un partenariat entre les universités, les gouvernements provinciaux et fédéral, les groupes de bassins et les organismes voués à la conservation du saumon atlantique (tableau 1). Les principaux apports du réseau sont les suivants : une base de données centralisée regroupant les données sur la température de l'eau provenant de l'ensemble des stations de surveillance; des fiches de rendement comportant des données thermiques et faisant état des résultats d'analyse complets jugés pertinents pour le saumon atlantique et des approches de réseau optimisé de nouvelles stations de surveillance.

## 2 APPORT ET RÉSULTATS DU RÉSEAU RIVTEMP

### BASE DE DONNÉES RIVTEMP

Une base de données a été créée à l'aide des données sur la température recueillies par le biais de stations de surveillance passées et actuelles, exploitées par divers organismes (gouvernementaux et non gouvernementaux). La base de données RivTemp comprend actuellement des séries temporelles quotidiennes de température de l'eau pour 478 stations de surveillance réparties entre 186 rivières : 114 rivières au Québec (346 stations), 55 au Nouveau-Brunswick (113); 12 à Terre-Neuve-et-Labrador (14); trois à l'Île-du-Prince-Édouard (3) et deux en Nouvelle-Écosse (2) (figure 1).

La durée des séries temporelles est variable. Bien que la plupart des stations (80 %) possèdent des données pour 5 ans ou moins, 50 stations (10 %) possèdent plus de 10 ans de données; parmi ce dernier groupe, deux stations ont des données qui s'échelonnent sur plus de 20 ans (figure 1). La plus ancienne série temporelle sur la température de l'eau commence en 1985. La station est située sur la rivière de la Trinité, sur la rive nord de l'estuaire du Saint-Laurent. Les stations qui possèdent plus de 10 ans de données sont distribuées entre la latitude 45° N et 52° N.

Un vaste groupe d'intervenants bénéficieront de cet outil accessible. Par exemple, la caractérisation des données historiques sur la température de l'eau des rivières et l'entretien des sites de surveillance le long d'un

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In total, 86 new sites were monitored during the course of the last two years, as more and more watershed organisations become members of the network. In collaboration with First Nations communities and DFO, we are working on an important network expansion in order to include Labrador and Ungava rivers as well as rivers within St. Lawrence North Shore (Qc). We are expecting that this expansion will continue as new local partners join the network.

Since 2014, the Restigouche and Miramichi drainage basins were targeted for a pilot study on network optimization, with the deployment of 30 additional thermographs in each system. Data from these two pilot watersheds will be exploited to test network rationalization/optimization approaches. These approaches aim to examine spatial variability in water temperature data in order to find out the optimal number and position of monitoring stations required to estimate effectively key metrics such as daily mean or maximum temperature across the watershed. Preliminary results obtained with the entropy-based approach, applied with temperatures measured on two small watersheds ( $< 2000 \text{ km}^2$ ), have shown that a relatively sparse network (6 stations or less) could be sufficient to estimate daily mean or maximum temperature.

### REPORT CARD

The content of the report card aims to provide summarized data that are relevant to managers and stakeholders. Several of their issues concerns summer temperature and warm water events (thermal stress events). From the data analysis, the card will provide information about the frequency and duration of warm water events registered at specific monitoring sites, present the temporal trend of summer water temperature and compare with nearby sites and rivers.

Thermal stress events: Frequency, duration and trend of warm water events

Thermal stress for stenotherm organisms begins when water temperature exceeds an optimal threshold. It is acknowledged that when temperatures exceed  $20^\circ\text{C}$ , Atlantic salmon likely have reduced aerobic capacity. The thermal stress is maintained if this threshold is exceeded for a certain period (without a recovery period). The complete collapse of the aerobic scope due to temperature alone would occur at a critical temperature of  $\geq 25^\circ\text{C}$  for Atlantic salmon (Breau, 2013). Representation of these thresholds in a report card can give valuable habitat information for the managers in their planning of recreational fisheries (Figure 2). Where many years of data are available, an evaluation of the thermal deterioration of the habitat can also be given.

### 3 CHALLENGES AND PERSPECTIVE

The RivTemp network provides a unique opportunity to establish monitoring and analysis tools for rivers with Atlantic salmon populations and to communicate information to the general public. Anthropogenic stresses related to land use and climate

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large gradient latitudinal permettront l'évaluation de l'incidence du changement climatique sur la température de l'eau et à la limite sur l'habitat du poisson.

### EXPANSION DU RÉSEAU DE STATIONS DE SURVEILLANCE

Le réseau de stations de surveillance est en voie d'expansion. En tout, 86 nouveaux sites ont été contrôlés au cours des deux dernières années, de plus en plus d'organismes de bassins devenant membres du réseau. En collaboration avec les collectivités des Premières Nations et avec le ministère des Pêches et des Océans, nous travaillons à une importante expansion du réseau afin d'inclure les rivières du Labrador et de l'Ungava ainsi que les rivières de la Côte-Nord du Saint-Laurent (Québec). Nous nous attendons à ce que cette expansion se poursuive étant donné que de nouveaux partenaires locaux adhèrent au réseau.

Depuis 2014, les bassins hydrographiques de la Restigouche et de la Miramichi sont ciblés pour une étude pilote sur l'optimisation du réseau, avec le déploiement de 30 thermographes supplémentaires dans chaque système. Des données provenant de ces deux bassins pilotes seront exploitées pour tester les méthodes de rationalisation ou d'optimisation du réseau. Ces méthodes visent à examiner la variabilité spatiale des données sur la température de l'eau afin de trouver le nombre optimal de stations de surveillance, et leur position idéale, dans le but d'estimer efficacement les paramètres clés tels que la température moyenne ou maximale quotidienne à la grandeur du bassin hydrographique. Des résultats préliminaires obtenus grâce à l'approche fondée sur l'entropie, appliqués de concert avec les températures mesurées pour deux petits bassins ( $< 2000 \text{ km}^2$ ), ont démontré qu'un réseau relativement limité (6 stations ou moins) pouvait suffire à estimer la température moyenne ou maximale quotidienne.

### FICHE DE RENDEMENT

Le contenu de la fiche de rendement vise à fournir des données sommaires pertinentes pour les gestionnaires et les intervenants. Plusieurs des enjeux auxquels ils sont confrontés concernent la température d'été et les épisodes d'eau chaude (épisodes de stress thermique). À partir de l'analyse des données, la fiche fournira des renseignements sur la fréquence et sur la durée des épisodes d'eau chaude enregistrés à des sites de surveillance en particulier, présentera la tendance temporelle de la température de l'eau en été et comparera ces données avec celles de sites et de rivières à proximité.

Épisodes de stress thermique : fréquence, durée et tendance des épisodes d'eau chaude

Le stress thermique pour les organismes sténothermes commence lorsque la température de l'eau dépasse un seuil optimal. Il est reconnu que lorsque les températures dépassent  $20^\circ\text{C}$ , le saumon atlantique est susceptible de voir sa capacité aérobie réduite. Le stress thermique est maintenu si ce seuil est dépassé pendant une certaine période (sans période de récupération). L'effondrement complet de la puissance aérobie en raison de la température seulement se produirait à une température critique de  $\geq 25^\circ\text{C}$  pour le saumon atlantique (Breau, 2013). La représentation de ces seuils dans une fiche de rendement peut fournir de précieux renseignements sur l'habitat aux gestionnaires pour la planification.

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<b>PARTNERS</b>	
Funding agency	<ul style="list-style-type: none"> <li>- Atlantic Salmon Conservation Foundation (ASCF)</li> <li>- Atlantic Salmon Federation (ASF)</li> </ul>
Watershed organisations	<ul style="list-style-type: none"> <li>- Conseil de bassin versant de la rivière Restigouche</li> <li>- Organisme de bassin versant Matapedia-Restigouche</li> <li>- Gespe'gewaq Mi'gmaq Resources Council</li> <li>- Miramichi River Environmental Assessment Committee (MREAC)</li> <li>- Corporation du bassin de la Jacques-Cartier</li> <li>- Société Cascapédia</li> <li>- Zec rivière Mitis/Mitigouguèche</li> <li>- Organisme des bassins versants de la Haute-Côte-Nord</li> </ul>
Provincial government	<ul style="list-style-type: none"> <li>- Ministère des forêts, de la faune et des parcs (MFFP)</li> <li>- Centre d'Expertise Hydrique du Québec (CEHQ)</li> </ul>
Federal government	<ul style="list-style-type: none"> <li>- Fisheries and Oceans Canada (DFO)</li> <li>- Environment Canada (EC, Atlantique)</li> <li>- National Defense</li> </ul>
Universities	<ul style="list-style-type: none"> <li>- Institut national de recherche scientifique (INRS-ETE)</li> <li>- Centre interuniversitaire de recherche sur le saumon atlantique (CIRSA)</li> <li>- University of New-Brunswick, Canadian River Institute (CRI)</li> </ul>

Table 1 List of current partners in RivTemp network.

<b>PARTENAIRES</b>	
Organisme de financement	<ul style="list-style-type: none"> <li>- Fondation pour la conservation du saumon atlantique (FCSA)</li> <li>- Fédération du saumon atlantique (FSA)</li> </ul>
Organismes de bassin	<ul style="list-style-type: none"> <li>- Conseil de bassin versant de la rivière Restigouche</li> <li>- Organisme de bassin versant Matapedia-Restigouche</li> <li>- Conseil des ressources Gespe'gewaq Mi'gmaq</li> <li>- Comité d'évaluation environnementale de la rivière Miramichi (CEERM)</li> <li>- Corporation du bassin de la Jacques-Cartier</li> <li>- Société Cascapédia</li> <li>- Zec rivière Mitis/Mitigouguèche</li> <li>- Organisme des bassins versants de la Haute-Côte-Nord</li> </ul>
Gouvernement provincial	<ul style="list-style-type: none"> <li>- Ministère des forêts, de la faune et des parcs (MFFP)</li> <li>- Centre d'expertise hydrique du Québec (CEHQ)</li> </ul>
Gouvernement fédéral	<ul style="list-style-type: none"> <li>- Pêches et océans Canada (MPO)</li> <li>- Environnement Canada (EC, Atlantique)</li> <li>- Défense nationale</li> </ul>
Universités	<ul style="list-style-type: none"> <li>- Institut national de recherche scientifique (INRS-ETE)</li> <li>- Centre interuniversitaire de recherche sur le saumon atlantique (CIRSA)</li> <li>- Université du Nouveau-Brunswick, Canadian River Institute (CRI)</li> </ul>

Tableau 1 - Liste des partenaires actuels du réseau RivTemp.

*Continued from page 12*

change will likely increase over the next decades on these drainage basins. Water temperature monitoring is of the utmost importance for effective management of fish stocks, habitat protection and enhancement work. When establishing a new monitoring network, site selection must be based on sound science and information redundancy must be minimized. It is hoped that the RivTemp network will federate efforts of many stakeholders and will continue to provide key thermal information, leading to more informed decisions related to Atlantic salmon population and habitat management.

Agencies and groups willing to collaborate with RivTemp can contact the authors.

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fication des activités de pêche récréative (figure 2). Lorsque des données s'étalent sur de nombreuses années sont disponibles, une évaluation de la détérioration thermique de l'habitat peut également être fournie.

#### 3 DÉFIS ET PERSPECTIVE

Le réseau RivTemp offre une occasion unique d'adopter des outils de surveillance et d'analyse pour les rivières qui abritent des populations de saumon atlantique et de communiquer de l'information au grand public. Les facteurs de stress anthropiques liés à l'utilisation des terres et au changement climatique augmenteront probablement au cours des prochaines décennies dans ces bassins hydrographiques. La surveillance de la température de l'eau est de la plus haute importance pour la gestion efficace des stocks de poissons, pour la protection de l'habitat et pour le travail de mise en valeur. Au moment d'établir un nouveau réseau de surveillance, le choix de l'emplacement doit reposer sur des principes scientifiques éprouvés et la redondance des données doit être réduite au minimum. Nous avons bon espoir que le réseau RivTemp permettra de regrouper les efforts des nombreux intervenants et continuera de fournir des données thermiques clés, favorisant ainsi des décisions plus éclairées en ce qui a trait aux populations de saumon atlantique et à la gestion de l'habitat.

Tout organisme ou groupe désireux de collaborer avec le réseau RivTemp peut communiquer avec les auteurs.

#### 4 BIBLIOGRAPHIE

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Figure 1 Map of historical and present water temperature monitoring sites currently available in the RivTemp database (<http://arcg.is/1PIDvQJ> ).

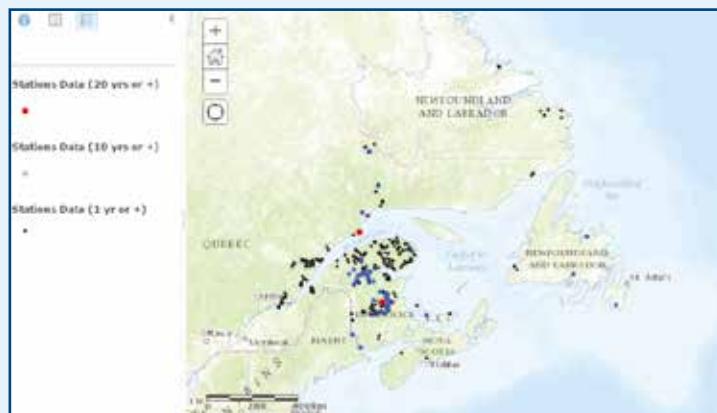


Figure 1 - Cartographie des sites de surveillance de la température de l'eau, actuels et passés, qui sont accessibles aujourd'hui dans la base de données RivTemp (<http://arcg.is/1PIDvQJ> ).

Continued from page 14

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Historical Data (Period: 1985-2014) | Données historiques (période : de 1985 à 2014)

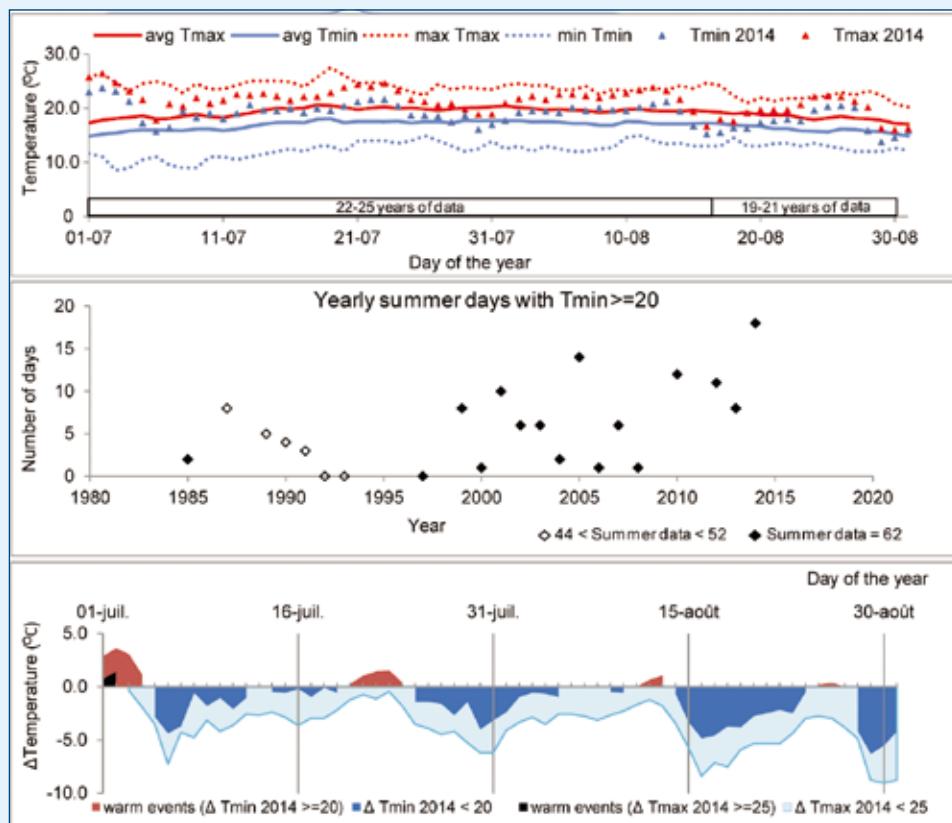


Figure 2 Example of a report card for station Trinité, located on Trinité River (Qc). a) Summer temperature data for 2014 in relation to historical temperature metrics (period 1985-2014). The numbers of years with valid data varied from 19 to 25; b) Trend in the yearly frequency of summer warm events; c) Amplitude and duration of warm water events in 2014. Thresholds for warm events are defined by Tmin  $\geq 20^{\circ}\text{C}$  and Tmax  $\geq 25^{\circ}\text{C}$ . The most stressful events occur when Tmax  $\geq 25^{\circ}\text{C}$  is observed simultaneously with Tmin  $\geq 20^{\circ}\text{C}$ .

Figure 2 - Exemple de fiche de rendement pour la station Trinité, située sur la rivière de la Trinité (Québec). a) Données sur les températures d'été pour 2014 par rapport aux mesures de température historiques (période de 1985 à 2014). Le nombre d'années s'accompagnant de données valides variait entre 19 et 25; b) Tendances entourant la fréquence annuelle des épisodes chauds d'été; c) Amplitude et durée des épisodes d'eau chaude en 2014. Les seuils relatifs aux épisodes chauds sont définis en fonction d'une Tmin  $\geq 20^{\circ}\text{C}$  et d'une Tmax  $\geq 25^{\circ}\text{C}$ . Les épisodes les plus stressants se produisent lorsqu'une Tmax  $\geq 25^{\circ}\text{C}$  est observée simultanément avec une Tmin  $\geq 20^{\circ}\text{C}$ .

# A new experimental nordic watershed in Lake St-Jean

## Un nouveau bassin hydrographique nordique expérimental au lac Saint-Jean

Marie-Amélie Boucher and André St-Hilaire

**H**ydrology is very much an empirical science, which requires various sources of data for all its facets, including building and calibrating models and to verify the inevitable underlying assumptions associated with modelling. For the specific purpose of watershed modelling, the level of complexity in a model is a determinant of the number of variables that need to be monitored in situ in order to be able to validate simulations. This article describes a recent initiative aimed at improving the monitoring of hydro-meteorological variables on the Lake St-Jean watershed for hydrological modeling purposes. It is also intended as a call for collaboration and data sharing. Moran et al. (2008) stress the importance of implementing such experimental watersheds, that they called "outdoor laboratories", in order to support research in the field of hydroecology. A similar statement could certainly be made regarding hydrology in general.

### **HYDRO-METEOROLOGICAL MONITORING ON THE LAKE ST-JEAN WATERSHED**

The Lake St-Jean watershed is a large (73 800 km<sup>2</sup>) nordic watershed located in the province of Quebec. Although Rio Tinto (RT) manages 6 hydropower plants on this watershed, they are all located on the Pérignonka River so most of the rivers are unregulated. However, they are gauged in order to monitor the inflows to lake St-Jean that is used as a reservoir. The density of population is also very low on this watershed and concentrated around the lake. Consequently, the watershed is fairly close to its original natural state. Hydro-meteorological monitoring of the Lake St-Jean watershed began in the early 1950s and underwent successive periods of improvement. For instance, 6 meteorological stations were installed in the early 1980s, and another extensive field campaign in the early 1990s added three meteorological stations and five streamflow and water level gauging stations. Those campaigns were mostly the initiative of RT. Figure 1 shows the location of all hydro-meteorological stations on the watershed.

More recently, a research program aimed at improving the distributed hydrologic model CEQUEAU (Morin and Paquet, 2007; St-Hilaire et al. 2015) provided the momentum for further improvement of hydro-meteorological monitoring on the watershed. CEQUEAU is the model used for operational hydrological forecasting by RT. This research

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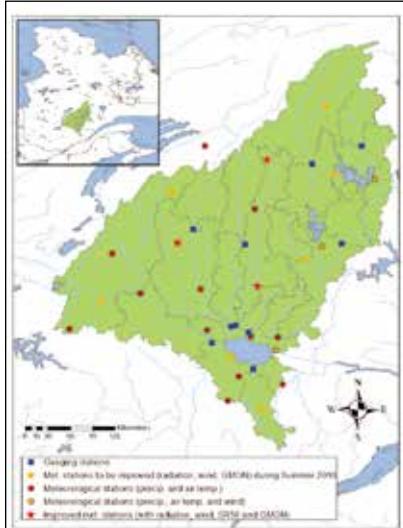
Marie-Amélie Boucher et André St-Hilaire

**L**'hydrologie est en grande partie une science empirique qui repose sur diverses sources de données pour toutes ses facettes, y compris la création et l'étalonnage de modèles, et qui exige la vérification des hypothèses sous-jacentes inévitables associées à la modélisation. Pour les fins bien précises de la modélisation du bassin hydrographique, le niveau de complexité dans un modèle est un facteur déterminant du nombre de variables qui doivent être surveillées in situ afin qu'il soit possible de valider les simulations. Le présent article décrit une initiative récente visant à améliorer la surveillance des variables hydrométéorologiques du bassin hydrographique du lac Saint-Jean pour des fins de modélisation hydrologique. Il s'agit aussi d'un appel à la collaboration et au partage de données. Moran et al. (2008) soulignent l'importance de la mise en œuvre de ce genre de bassins versants expérimentaux, qu'ils qualifient de « laboratoires extérieurs », pour soutenir la recherche dans le domaine de l'hydroécologie. Un énoncé semblable pourrait certainement être formulé à propos de l'hydrologie en général.

### **SURVEILLANCE HYDROMÉTÉOROLOGIQUE DANS LE BASSIN HYDROGRAPHIQUE DU LAC SAINT-JEAN**

Le bassin versant du lac Saint-Jean est un vaste bassin nordique (73 800 km<sup>2</sup>) situé au Québec. Bien que Rio Tinto (RT) gère six (6) centrales hydroélectriques dans ce bassin, elles sont toutes situées sur la rivière Pérignonka et la plupart des apports ne sont pas régularisés. Cependant, ils sont jaugés afin de surveiller les entrées d'eau au lac Saint-Jean qui sert de réservoir. La densité de la population est également très faible dans ce bassin hydrographique et la population est concentrée autour du lac. Par conséquent, le bassin hydrographique est assez proche de son état naturel original. La surveillance hydrométéorologique du bassin du lac Saint-Jean a commencé au début des années 1950 et a connu des périodes d'amélioration successives. Par exemple, six (6) stations météorologiques ont été installées au début des années 1980 et une autre vaste campagne de terrain au début des années 1990 a donné lieu à l'ajout de trois stations météorologiques et de cinq stations de jaugeage du débit d'eau et du niveau d'eau. Ces campagnes étaient en grande partie l'initiative de RT. La figure 1 indique l'emplacement de toutes les stations hydrométéorologiques du bassin hydrographique.

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*Figure 1: Map of the Lake St-Jean watershed illustrating the location of hydrometeorological stations.*

*Figure 1 : Cartographie du bassin du lac Saint-Jean indiquant l'emplacement de toutes les stations hydrométéorologiques.*



*Figure 2: The GMON snow water equivalent sensor installed at station Mistassibi 2 (Photo by Qing Xiao Zhou)*

*Figure 2 : Le capteur GMON mesurant l'équivalent en eau de la neige au sol, installé à la station Mistassibi 2 (photo prise par Qing Xiao Zhou)*

*Continued from page 16*

program, which began in 2013 involves the implementation, validation and comparison of various snowmelt and evapotranspiration modules in the CEQUEAU model, many of which require input data that are not commonly available at most monitoring stations, such as solar radiation, wind speed and direction, soil moisture and real time snow water equivalent. On Figure 1, streamflow and water level gauging stations are identified by blue squares. Meteorological stations are all displayed in red and orange. Those identified by a red circle measure precipitation and temperature, while those identified in orange also measure wind speed. The four stations identified by a red star were equipped with additional sensors during an extensive field campaign in fall 2014. They now measure wind speed, short and long range radiation and snow water equivalent in addition to total precipitation and temperature. Finally, stations identified by orange stars correspond to existing stations (precipitation and temperature) that will also be equipped with additional sensors (wind speed, short and long range radiation and snow water equivalent) during the course of 2016.

*Continued on page 18*

*Suite de la page 16*

Plus récemment, un programme de recherche visant à améliorer le modèle hydrologique distribué CEQUEAU (Morin et Paquet, 2007; St-Hilaire et al. 2015) a imprimé un élan à l'amélioration de la surveillance hydrométéorologique du bassin hydrographique. Le modèle CEQUEAU est le modèle utilisé par RT pour les prévisions hydrologiques des opérations. Ce programme de recherche, lancé en 2013, implique la mise en œuvre, la validation et la comparaison de divers modules de fonte des neiges et d'évapotranspiration du modèle CEQUEAU, dont un grand nombre exigent des données d'entrée qui ne sont pas couramment accessibles à la plupart des stations de surveillance, notamment le rayonnement solaire, la vitesse et la direction du vent, l'humidité du sol et l'équivalent en eau de neige en temps réel. À la figure 1, les stations de jaugeage du débit d'eau et du niveau d'eau sont indiquées à l'aide de carrés bleus. Les stations météorologiques sont toutes affichées en rouge et en orange. Les cercles rouges correspondent aux stations qui mesurent les précipitations et les températures. Les cercles de couleur orange correspondent aux stations qui mesurent en outre la vitesse du vent. Les quatre stations indiquées à l'aide d'une étoile rouge ont été munies de capteurs supplémentaires au cours d'une vaste campagne de terrain menée à l'automne de 2014. Elles mesurent dorénavant la vitesse du vent, la radiation de faible portée et de longue portée et l'équivalent en eau de neige en plus des précipitations totales et de la température. Enfin, les stations indiquées à l'aide d'étoiles oranges correspondent aux stations existantes (précipitations et température) qui seront également munies de capteurs additionnels (vitesse du vent, radiation de faible portée et de longue portée et équivalent en eau de neige) au cours de l'année 2016.

## **ACCENT PARTICULIER MIS SUR LA SURVEILLANCE DE LA NEIGE**

Étant donné que la modélisation de la neige et la prévision des crues printanières constituent l'un des principaux champs d'intérêt du programme de recherche mentionné précédemment, un effort de surveillance accru a été mis en œuvre pour contrôler l'équivalent en eau de neige, une variable pour laquelle prévaut une grande incertitude de mesure. La surveillance en temps réel de l'équivalent en eau de neige est rendue possible grâce à l'installation récente de capteurs GMON\* (Choquette et al. 2008, voir la figure 2), mais les mêmes stations sont également équipées de capteurs acoustiques plus conventionnels qui mesurent l'épaisseur de la neige. Des données manuelles de relevés nivométriques sont disponibles pour 18 emplacements du bassin depuis 1955. Les relevés nivométriques sont effectués au moins trois fois par année, c'est-à-dire à la fin de janvier, de février et de mars, parfois plus souvent selon les conditions réelles variables. Il convient également de noter qu'étant donné que les capteurs GMON mesurent l'atténuation du rayonnement gamma naturel du sol par l'eau, ils peuvent également servir à surveiller l'humidité du sol à des endroits bien précis.

\* Abréviation de « gamma monitoring »

## **OBTENTION DE DONNÉES**

Les données tirées du laboratoire extérieur, décrit précédemment, sont accessibles à des fins de partage (par exemple, voir Troin et al.

*Suite à la page 18*

## A PARTICULAR EMPHASIS ON SNOW MONITORING

As snow modelling and forecasting of the spring freshet is one of the main focus of the aforementioned research program, an increased monitoring effort was implemented to monitor snow water equivalent, a variable for which great measurement uncertainty prevails. Real time snow water equivalent monitoring is attained by the recent installation of GMON sensors (Choquette et al. 2008, see Figure 2), but the same stations are also equipped with more conventional acoustic sensors that measure snow depth. Manual snow survey data are available for 18 locations on the watershed since 1955. Snow surveys are performed at least three times per year, namely the end of January, February and March, sometimes more often depending on variable actual conditions. It is also worth mentioning that since GMONs measure the attenuation of natural gamma radiation from the soil by water, they can also be used to monitor soil moisture at specific locations.

## OBTAINING DATA

Data from the outdoor lab described in the above are available for sharing (see for instance Troin et al. 2016). Since many instruments in this lab are still newly installed, the record for some variables is short for the moment. Anyone interested in conducting research on the Lake St-Jean watershed can contact us for more information using the following email addresses:

Bruno Larouche : bruno.larouche@riotinto.com

André St-Hilaire : Andre.St-Hilaire@ete.inrs.ca

Marie-Amélie Boucher : marie-amelie\_boucher@uqac.ca 

## REFERENCES

- Choquette Y, Lavigne P, Nadeau M., Ducharme P., Martin J.P., Houdayer A. and Rogoza J. (2008) GMON, a new sensor for snow water equivalent via gamma monitoring. International Snow Science Workshop, Whistler, Canada, 802–807.
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- Troin M., Poulin A., Baraer M. and Brissette F. (2016) Comparing snow models under current and future climates over three Nordic catchments: uncertainties and implications for hydrological impact studies. Submitted to the *Journal of Hydrology* (ref. HYDROL20503)

2016). Étant donné que de nombreux instruments de ce laboratoire viennent tout juste d'être installés, le registre de certaines variables est limité pour le moment. Quiconque serait intéressé à mener des recherches sur le bassin du lac Saint-Jean peut communiquer avec nous afin d'obtenir de plus amples renseignements, à l'une ou l'autre des adresses de courriel suivantes :

Bruno Larouche : bruno.larouche@riotinto.com

André St-Hilaire : Andre.St-Hilaire@ete.inrs.ca

Marie-Amélie Boucher : marie-amelie\_boucher@uqac.ca 

## REFERENCES

- Choquette Y, Lavigne P, Nadeau M., Ducharme P., Martin J.P., Houdayer A. and Rogoza J. (2008) GMON, a new sensor for snow water equivalent via gamma monitoring. International Snow Science Workshop, Whistler, Canada, 802–807.
- Moran M.S., Peter D.P.C., Nichols M.H. and Adams M.B. (2008) Long-term data collection at USDA experimental site for studies of ecohydrology, *Ecohydrology*, 1, 377–393.
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**CANCID CNCID**

Canadian  
National  
Committee  
on Irrigation  
and Drainage  
Canadian Water  
Resources Association

Comité  
National  
Canadien de  
l'Irrigation  
et du Drainage  
Association Canadienne  
des Ressources Hydrauliques

## CANCID Report and the 69<sup>th</sup> IEC of ICID and Conference, 2018 in Saskatoon

## CWRA Midterm BoD Meeting in Calgary AB Saturday - January 30, 2016

1. In its role as CWRA core affiliate, CANCID continued its international involvement in the International Commission on Irrigation and Drainage (ICID) as stipulated in CWRA By-Laws. CANCID has been well represented on ICID executives by Laurie Tollefson, CANCID Treasurer/Secretary who also served as ICID Vice President.
2. CANCID Treasurer/Secretary actively participated in the ICID 2015 Conference and 66th International Executive Council (IEC) of ICID in Montpellier, France, October 11 – 16, 2015. These ICID events attracted about 800 participants from 65 countries. He is currently the chairman of the ICID Permanent Finance Committee and a member of the Management Board. In addition, CANCID Treasurer/Secretary served as chairman of the Task Force on Water for Bioenergy and Food. Moreover, he presented an invited presentation on the Role of ICID in Ag-Water Management at the 2015 CWRA Conference in Winnipeg.
3. CANCID President and representatives from QC, SK, ON, AB, and Atlantic Canada have been/are being/will be actively involved in several ag-water events, projects and issues. They also presented four papers and were involved in the 2015 student papers reviews, evaluations, and awards at the 2015 CWRA Conference in Winnipeg.
4. New CANCID representative in BC has been identified and recruited to serve with and promote CANCID.
5. Similar to previous years, CANCID President and representatives solicited abstracts and organized four successful sessions under the theme “Agriculture and Water Issues” in the 2015 CWRA Conference in Winnipeg. This continues CANCID’s strong presence, commitment, and contribution in CWRA national conferences/congresses.

6. The 2015 CANCID Lifetime Achievement Award was presented to Roger Hohm of Alberta Agriculture at the 2015 CWRA National Conference banquet in Winnipeg.
7. Organized the 2015 CANCID AGM at the 2015 CWRA Conference in Winnipeg and a supplementary motion regarding CANCID finances was presented and passed.
8. Similar the 2015 CWRA Conference in Winnipeg, CANCID is involved the Scientific Committee and helping in prompting and soliciting abstracts for its sessions under the theme "Water Management in Agricultural Settings" in as well as the 2016 CWRA Conference, Montreal in general.
9. Motions regarding finances and the 69th International Executive Council (IEC) of ICID meeting and regional conference in Saskatoon in 2018 were presented to June 2015 CWRA BoD meeting in Winnipeg and were passed.
10. The 69th IEC of ICID initial proposal has been completed PART I "GENERAL" of "PROFORMA TO FACILITATE APPROVALS FOR HOSTING ICID EVENTS". It was presented during the ICID 2015 Conference and the 66th International Executive Council (IEC) of ICID in Montpellier, France. The remainder of "PROFORMA has/will be completed for the 2016 ICID events in Thailand.
11. With the help of Tourism Saskatoon, the proposal presentation for the 69th IEC of ICID and regional conference, 2018 was prepared and reviewed including irrigation and other features in Saskatoon/SK and rest of Canada. Dave Murray, CWRA President and Dr. Warren Helgason, CANCID SK rep presented the proposal at the ICID 2015 Conference and 66th IEC of ICID, October 11 – 16, 2015 in Montpelier, France.
12. The proposal was successfully accepted and CANCID/CWRA will be the 2018 host for the 69th IEC of ICID and regional conference. About 100 countries are likely to attend the 2018 ICID events in Saskatoon. This will internationally show case and promote the Canadian agricultural water management in general and irrigation and drainage technologies, practices and research in particular. These events will also enhance CANCID's continuous efforts to fulfill its CWRA core mandate as the link between agriculture and water across Canada and with ICID. In addition, these events will possibly contribute to CANCID and CWRA finances.
13. The 69th IEC of ICID and regional conference committees are finalized to work on logistics including website, venue/facilities, registrations, technical tours, finances, supporters, etc. ICID Handbook Procedures will also be referred to in logistics. In addition to teleconferences to discuss the proposal presentation for ICID events in France, a discussion teleconference was held on October 26, 2015.
14. Tourism Saskatoon, SK is in full support of hosting the 2018 ICID events in Saskatoon. This support includes a financial commitment to contribute \$10,000 and travel support to the 2016 and 2017 ICID events in Thailand and Mexico. A preliminary budget was prepared for the 2018 ICID events and is being updated.
15. CANCID is currently pursuing other supporters for the 2018 ICID events and received preliminary indications for support from organizations including the Global Institute for Water Security at the University of Saskatchewan and the provincial government.
16. With the change in federal Government, CANCID plans to contact Agriculture and Agri-Food Canada regarding their previous financial support and will highlight its activities and the 2018 ICID events in Saskatoon.
17. With the transfer of finances to CWRA, CANCID transferred a balance ~ \$8,700 to CWRA account.
18. CANCID President will continue his efforts to promote and increase CANCID membership (currently 90 members in good standing \$3,600) who also paid their CWRA membership dues.
19. It should be pointed out that delegates presented, registered, and attended CANCID sessions in the 2015 CWRA Conference in Winnipeg and previous conferences also contributed to CWRA finances.
20. While the regional CANCID workshop in AB is currently on hold due to the change of provincial Government, CANCID is exploring other opportunities. In this regard, CANCID is currently engaged in discussions and plans regarding potential i) pre-conference workshops at CWRA annual conferences; ii) regional workshops in other provinces; and iii) webinars for CANCID members.

**Respectfully submitted by**

Dr. Abdel-Zaher Kamal Abdel-Razek, P.Eng., CANCID President  
January 15, 2016 

# CSHS Report January 2016

## 1. EXECUTIVE

Wayne Jenkinson	wayne.jenkinson@nrc-cnrc.gc.ca	President
Erika Klyszejko	erika.klyszejko@canada.ca	Vice-President
Kevin Shook	kevin.shook@usask.ca	Secretary
Barret Kurylyk	bkurylyk@gmail.com	Director of Communications
James Craig	jrcraig@uwaterloo.ca	Member at large
Alan Barton	Alan.barton@nrc-cnrc.gc.ca	Member at large
Frank Seglenieks	frank.seglenieks@ec.gc.ca	Member at large
James Bomhof	James.bomhof@canada.ca	Member at large

## 2. CSHS PRIORITY GOALS

### Priority Goal 1: Improved communications within CWRA among water resources professionals.

This goal is designed to increase the outreach to CWRA boards, CSHS membership and other water resources professionals. This can be done with email blasts, social media, and improved cooperation with CWRA administrative staff and CWRA Branch membership.

### Priority Goal 2: Enhanced understanding of water and integrated water management.

This goal is designed to promote awareness of emerging technologies and to provide training to CSHS membership. This can be done with webinar activities, workshops, papers, and conference presentations and activities.

### Priority Goal 3: Increased profile for the organization.

This is designed to increase the awareness of the CSHS and by association, the CWRA, by increasing our public profile and maintaining and increasing CSHS membership. This can be done through activities at conferences, training, webinars, papers, and other value-added services provided by CSHS.

### Priority Goal 4: Increased role in international water management activities.

This goal is designed to promote CSHS cooperation with other hydrology-related organizations around the world. This is done through partnerships with and participation in other organizations, including the International Association of Hydrological Sciences (IAHS).

### Priority Goal 5: Effective management and development of the society.

This goal is designed to ensure that CSHS is

effectively and efficiently managed to deliver on its priority goals. This is done through regular meetings, open discussions with membership and adaptively managing activities and procedures.

### Priority Goal 6: Increased role in supporting Canadian hydrological innovation.

This goal is to leverage the CSHS position and network to provide support to Canadian-developed hydrological tools and numerical, including stewardship, development and training and best practices.

## 3. CSHS 2015 ACTIVITIES

### Activity 1: Kananaskis Short-Course

#### Supporting Priority Goals: 2 & 3

Since 2010, the short course has generated over \$60,000, with approximately \$11,500 in student bursaries awarded between 2010 and 2015. In 2015, several actions were taken by CSHS and the University of Saskatchewan to further ensure financial sustainability of the course:

- The CSHS began early promotion of short course at the CWRA annual conferences, including distribution of fliers during CSHS-sponsored sessions;
- The course is now held in mid-January to account for the needs of professionals (the course was originally held in March) which has increased professional participation;
- The CSHS has maintained the course fees established for the 2015 course (\$1000 for students, \$2500 for professionals).
- The CSHS support person for the course will now have their travel expenses to the

course covered by the revenue from the course (previously EC had covered these travel costs).

The above actions resulted in the most successful year to date for the Short Course in January 2015. The course attracted a total of 36 participants (21 professionals and 15 students) and the CWRA gained a total of 25 new members through course enrolment. The sharp increase in professional attendance resulted in a significant increase in net income. The 2015 short course generated approximately \$25,000.

The 2016 course will be underway the second week of January and most recent registration data indicates that there will be 35 participants, including 14 professionals and 21 students. It is anticipated that the 2016 course will provide close to \$14,000 revenue.

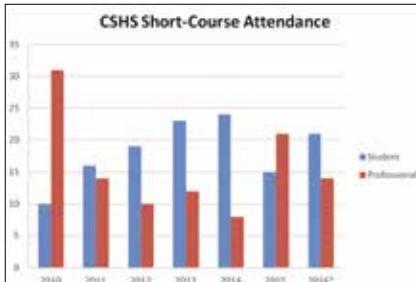
Figure 1 illustrates the changes in attendance, and Figure 2 shows the changes in net income not including the student travel bursaries. 2016 figures represent current best forecasts.

CSHS also conducted a participants' survey that was distributed to 2015 attendees. This survey indicated that there is significant interest among participants for a follow-up course that focuses on the application of the principles presented. The CSHS is currently investigating the feasibility of running a similar course through the University of Waterloo that focuses on modelling techniques.

### Activity 2: CSHS Terms of Reference Update

#### Supporting Priority Goals: 5

Following on the review and update of the CWRA bylaws, the CSHS executive reviewed the society's terms of reference. The proposed



**Figure 1 - CSHS Hydrology Short-Course Attendance.**

updates were submitted to the CWRA executive in the Spring of 2015 and were ratified at the CSHS AGM at the CWRA Conference in Winnipeg, MB in June 2015. The original and updated ToRs for CSHS are available on the CWRA Google shared drive. Major changes included, aligning with the newly developed CWRA Bylaws, the refinement and balancing of executive responsibilities and term limits, and the addition of a Director of Communication position.

### **Activity 3: Hydrological Model Stewardship Initiative**

#### **Supporting Priority Goals: 3 & 6**

The CSHS has launched a new initiative to support numerical model stewardship for Canadian-developed numerical models that are at risk. The CSHS executive is unanimous in support of this initiative and it was presented to CWRA executive at the Mid-Term meeting in Vancouver, BC. CSHS has launched an internal task team to review the possible structure of the initiative and submitted a proposal for review by the CWRA Executive at the Board of Directors meeting in Winnipeg, MB in June 2015. This request was approved by the executive and the task team is procuring the necessary hardware. An anticipated beta launch date for the platform is February 2016.

### **Activity 4: New Principles of Hydrological Modelling Short Course**

#### **Supporting Priority Goals: 2 & 3**

In view of the success of the Kananaskis Short-Course and the request from attendees of that course to provide a similar course related to numerical modelling in hydrology, the CSHS Executive is currently investigating the feasibility of running a course through the University of Waterloo that focuses on modelling techniques entitled "Principles of Hydrological Modelling". Initial plans to have a course ready in spring of 2016 are postponed. Currently the CSHS executive is planning to partner with Prof. John

Pomeroy on the development of this course using funds from the recently won NSERC CREATE grant (co-held with Cherie Westbrook).

### **Activity 5: Webinar Activities**

#### **Supporting Priority Goals: 2, 3 & 6**

In 2015, CSHS continued to offer webinars to members on various hydrology-related topics, although with the Assistant to the Executive Director on leave for much of 2015, with whom most of the webinar expertise rested, the webinar offerings by CSHS took a similar hiatus.

### **Activity 6: CWRA 68th Annual Conference Support – Winnipeg MB**

#### **Supporting Priority Goals: 2, 3 & 6**

CSHS organized sessions on hydrological modelling and analysis at the 68th annual CWRA conference in Winnipeg, MB. CSHS was involved in judging student posters and presenting the Bill Stolte Award to the award winner, Emmanuel Ojo.

### **Activity 7: Communication and Board Coordination**

#### **Supporting Priority Goals: 1 & 5**

The CSHS, through the introduction of the executive position of Director of Communication, has increased communications activities, including more timely updates of the CSHS section of the website, and outreach via the CSHS Twitter account. The CSHS executive is also working with Branch executives (Ontario) to strengthen relationships and communication.

## **4. PROPOSED CSHS ACTIVITIES FOR 2016**

- Webinars

CSHS is targeting to host at least 4 webinars in calendar year 2016. Topics for future webinars are to include: Hydroinformatics, Numerical Model Optimization, Alpine Hydrology, Groundwater Modelling and the CHyMS project. CSHS will continue to work with the CWRA intern (Jody Rutledge) to link CSHS webinar access to membership and/or payment methods.

With the webinar technology now tested CSHS will work with our new Director of Communications to more actively promote the webinars to members and to develop experience in house..

- Kananaskis Short-Course

The short course on Principles of Hydrology is being hosted for a seventh consecutive year in January 10 to 21, 2016 at the University of Calgary Biogeoscience Centre, Kananaskis, AB. The course is providing state-of-the-art training in hydrology to graduate level students, and professionals. See [http://www.usask.ca/hydrology/CSHS\\_PoH\\_Short-Course\\_2016.php](http://www.usask.ca/hydrology/CSHS_PoH_Short-Course_2016.php). CSHS will review the course finances and feedback and provide a full final report during the Summer Board of Directors meeting in Montreal. The Kananaskis Short-Course will be held again in 2017.

- CWRA 69th Annual Conference, Montreal, QC

CSHS has nominated a liaison in Erika Klyszko to coordinate with the CWRA 69th Conference in Montreal, QC planning committee to improve communication and cooperation. CSHS has committed to hosting a session on innovations in numerical modelling at the 69th annual CWRA conference in Montreal, QC. Barret Kurylyk will be hosting a workshop on using water temperature as a hydrologic tracer at that conference. CSHS will be financing the Bill Stolte award (\$250).

- Model Stewardship Initiative

The CSHS is currently reviewing a new initiative to support numerical model stewardship for Canadian-developed numerical models that are at risk. The CSHS executive is unanimous in support of this initiative and it was presented to CWRA executive in the December 2014 briefing. CSHS has launched an internal task team to review the possible structure of the initiative, and some budget items were included in the CSHS budget as contingency.

- IAHS

The CSHS will develop its involvement with IAHS in support of the new research decade: Panta Rhei (everything flows).

- Communications

CSHS will work with the website committee to improve CSHS content on the website, and to advertise CSHS webinars and activities more actively. Barret Kurylyk will act as CSHS liaison to the website and communications committees. 



## 1. 2016 EXECUTIVE WILL BE ELECTED SPRING 2016 AND ALL CONTACTS WILL BE UPDATED AT THAT TIME.

### 2015 EXECUTIVE WAS:

President	Tamsin Lyle	tamsin@ebbwater.ca
Vice-President	Michael Florendo	Michael.Florendo@tetrtech.com
Vice-President	Matthew Graham	matthew.graham@amecfw.com
Past-President	Stephanie Smith	Stephanie.Smith@bchydro.com
Finance Chair	Lawrence Francois	LFrancois@kwl.ca
Treasurer	Vacant	
Secretary	Tara Sherman	sherman@ae.ca
Communications	Angela Mawdsley	mawdsleya@dnv.org

### 2. PAST ACTIVITIES

#### Priority Goal 1: Improved communications among water resources professionals.

- Irregular communication through 'Runoff' newsletter
- Regular contributions to national weekly email blast.
- Active use of twitter account (@cwrabc). Steady increase in followers. Had a 'social media co-ordinator' for the branch conference.
- Regular updates of branch website ([www.cwrabc.ca](http://www.cwrabc.ca))

#### Priority Goal 2: Enhanced understanding of water and integrated water management.

Conferences/ Seminars / Workshops – May 2015-Dec 2015

- May 2015 – AGM and Hydrological Modelling Workshop (approx. 20 participants)
- October 2015 – Full day workshop on Columbia Basin Treaty in conjunction with Okanagan Basin Water Board
- November 2015 – 2-day conference (130 participants)

- SYP Activities:
  - » Shoreline clean-up

#### Priority Goal 3: Increased profile for the organization.

##### Connections to other water related organizations:

- Participation of BC Branch Flood Hazard Management Committee chairs on the Fraser Basin Council Joint Program Committee for Integrated Flood Hazard Management
- CWRA BC member and alternates sit on Okanagan Basin Water Board
- Member of POLIS-led "BC Water Leaders Forum". Attended 1 meeting since May 2015.

#### Priority Goal 4: Increased role in international water management activities.

- No activity

## **Priority Goal 5: Effective management and development of the association.**

- Monthly board of directors meetings by conference call
- Active search for replacements to ensure long-term sustainability of board – we have replacements for Finance and Communications lined up, and have also recruited many SYPs to help with specific tasks (management of website for example)
- Finances are stable
- Increasing communication with members, in part thanks to National Communications

### 3) Proposed Activities

#### **Priority Goal 1: Improved communications among water resources professionals.**

- Issue quarterly newsletters with links to BC Branch and other water related events in and around BC – see above note about new communications chair and website helper.
- Continue to use twitter account and gain more followers – aiming for at least 1 tweet a week.
- Maintain and update BC Branch website

#### **Priority Goal 2: Enhanced understanding of water and integrated water management.**

##### Proposed Workshops / Seminars

- Mid-Feb – UBC Watershed Model Workshop
- Late Jan – Water sustainability act workshop with POLIS
- Mar/Apr – ‘Floodplains by Design’ Workshop with US Nature Conservancy
- Mar/Apr – Marine Spills and Dispersion Modelling
- Apr/May – Wetland Plant Species Adaptation
- Nov 2016 – Asset Management for Water

##### **SYP Events**

- SYP will be hosting a World Water Day event, as yet undefined.

## **Priority Goal 3: Increased profile for the organization.**

- Continued involvement with Okanagan Basin Water Board (OBWB), Fraser Basin Council Floodplain Committee and POLIS water leaders.
- Attempt to work with Province through call for comments on new Climate Plan.

## **Priority Goal 4: Increased role in international water management activities.**

## **Priority Goal 5: Effective management and development of the association.**

- Complete by-law review for branch, including a review of how liaison positions are assigned
- Review and update of existing board roles, including a description of board members' roles and responsibilities. **WN**



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# Alberta Branch Update

## 1. BRANCH EXECUTIVE

President	Rick Carnduff	rick.carnduff@stantec.com	403-716-8213
Vice President	Pablo Pina	Pablo.pina@o2design.com	403-228-1336 Ext. 237
Treasurer	Robyn Andrishak	robyn.andrishak@amec.com	780-377-3682
Secretary	Rod Burr	rod.burr@gov.ab.ca	780-624-6567
Past President	Andrew Chan	achan@dillon.ca	403-215-8880
WET Representative	Maggie Romuld	maggie.romuld@gmail.com	403-793-3014

## 2. PAST ACTIVITIES

### 2015 Branch Conference (Priority Goals 1, 2, 3, 4 and 5)

On April 19-22, 2015 the Alberta Branch held its annual conference in Red Deer, Alberta. The conference theme was **Adapting to a Changing Environment** with 27 excellent presentations.

Total Attendees: 85 (±)

Corporate Sponsorship: \$6,750 (10 sponsors)

Contribution to CWRA National: \$12,000

Net Proceeds: \$2,000 (to be confirmed)

### 2015 Livable Cities Forum (Priority Goals 1, 2, 3, 4 and 5)

CWRA partnered with the City of Calgary and ICLEI to host a Livable Cities Forum in Calgary which was held on September 28-30, 2015. The theme was *Building Flood Resilient Communities* which included invited speakers from Canada and the United States who made presentations on a variety of topics. A workshop on *Tools for building flood resilience in local communities* was held in advance of the forum on Sunday, September 27. While this was a CWRA National initiative, several Directors from the Alberta branch joined National President Dave Murray in planning the event, organizing speakers and moderating various sessions.

### Student and Young Professionals (SYP) (Priority Goals 1, 2 and 3)

The Edmonton SYP regularly hosts monthly Blue Drinks events in partnership with AWWA Young Professionals, with a regular attendance of approximately 15-20 people.

### Lunch-N-Learn Sessions (Priority Goals 1, 2 and 3)

Lunch-n-learn sessions are being planned. The option of adding technical webinars is also being considered. The Coordinator is Andrew Szojka

### Alberta Branch Events Website (Priority Goals 1 and 5)

The Alberta Branch has established a permanent website address and email domains to communicate events and conferences to its members rather than to establish temporary domains specific for any event. This improves stability for individuals seeking a place to find information on branch events. For the Branch's 2015 annual conference a link was provided for individuals to download the "guidebook" app for mobile devices and download the conference program onto their mobile device.

Website link: <http://www.cwra-ab-events.org/>

### Water Education for Teachers (WET) (Priority Goals 1 and 3)

Several workshops were held in 2015:

- WET 2.0 Facilitator Leadership workshop at the Bow Valley Habitat Station in Calgary on April 22, 2015. Eight (8) staff from Alberta Environment and Sustainable Resources Development and Park staff attended.
- WET 2.0 workshop with 5 Alberta Environment and Sustainable Resources staff.
- WET 1.0 workshop in Medicine Hat on April 30, 2015. There were 14 participants, a few who indicated an interest in facilitator training.
- WET 2.0 workshop with educators at the National EECOM Earth Matters Conference in Canmore in October.

### 3. PROPOSED ACTIVITIES

#### 2016 Mid-Term Directors' Meeting and Forum

(Priority Goals 1, 2, 3, 4 and 5)

The Alberta Branch is hosting this year's Mid-Term Directors' meeting on January 30, 2016. The planning committee has made arrangements for the meeting to be held in Calgary at Hotel Arts. Hotel arrangements, food and beverages and AV/IT services have been organized. The branch has also arranged for a one-day forum to coincide with the meeting, which is being held on Friday, January 29, 2015 in TransAlta's Auditorium. The forum comprises a series of presentations from invited speakers on *The Bow Basin – Top to Bottom Challenges*.

Contact: Rick Carnduff | [rick.carnduff@stantec.com](mailto:rick.carnduff@stantec.com)

Website: <http://www.cwra-ab-events.org/2016-forum>

#### 2016 Branch Conference

(Priority Goals 1, 2, 3, 4 and 5)

Plans are underway for the branch's 2016 conference which will be held in Edmonton on April 3-5, 2016. The venue will be the Courtyard Edmonton West Hotel. The conference theme is *Groundwater and Surface Water Management: Interactions, Challenges and Opportunities*. A one-day pre-conference workshop has been organized to occur on Sunday, April 3, 2015. The workshop will be on PCSWMM/EPS SWMM5 stormwater modelling with groundwater routines. SYP is also planning an event to occur as part of the conference activities.

Contact: Rick Carnduff | [rick.carnduff@stantec.com](mailto:rick.carnduff@stantec.com)

Website: <http://www.cwra-ab-events.org/2016conference>



#### GET READY FOR MONTREAL!

Our National Conference and Board Meeting is coming up in Montreal, Quebec May 25-27. If you have never attended a conference in Montreal it's not to be missed. In addition to the top notch conference there is so much to enjoy in Montreal from historic buildings in Old Montreal, walking tours, Canal-de-Lachine, museums, churches and restaurants, oh my! The conference theme is Vulnerability and improving resilience in water management. There will be:

- Pre-conference workshops
- SYP events
- CSHS and CANCID sessions
- Field trips and more!

#### Student and Young Professionals (SYP) (Priority Goals 1, 2 and 3)

The Edmonton SYP group continues to plan regular activities. This group is co-chaired by Cody Kupferschmidt ([ckupers@ualberta.ca](mailto:ckupers@ualberta.ca)) and Jeff Seaman ([seaman1@ualberta.ca](mailto:seaman1@ualberta.ca)). Plans are underway to organize a Calgary SYP group. The Board is pursuing possible contacts for Lethbridge and Okotoks.

#### Lunch-N-Learn Sessions

(Priority Goals 1, 2, 3, 4 and 5)

Future lunch-n-learn sessions are planned, with the possibility of adding longer webinar sessions.

Contact Person: Andrew Szojka | [ASzojka@kwl.ca](mailto:ASzojka@kwl.ca)

#### 2017 National Conference

(Priority Goals 1, 2, 3, 4 and 5)

Plans are underway for the national 2017 conference in Lethbridge Alberta. The event will be held at the Coast Hotel on June 4-7, 2017. The conference theme Water: A Continental Asses and contacts have been made with our counterparts in the U.S. to determine their interest in being involved in some way.

Contacts: Rick Ross | [fjross@telusplanet.net](mailto:fjross@telusplanet.net)

Rick Carnduff | [rick.carnduff@stantec.com](mailto:rick.carnduff@stantec.com)

Web Site: <http://www.cwra-ab-events.org/2017conference> 

#### PRÉPAREZ-VOUS POUR MONTRÉAL!

Notre congrès national et la réunion de notre conseil d'administration auront bientôt lieu à Montréal, au Québec, du 25 au 27 mai. Si vous n'avez jamais pris part à un congrès à Montréal, c'est à ne pas rater. En plus de notre congrès de premier plan, il y a tant à faire et à découvrir à Montréal... les bâtiments historiques du Vieux Montréal, les visites guidées, le canal de Lachine, les musées et les restaurants, et j'en passe! Cette année, le thème du congrès est la vulnérabilité et l'amélioration de la résilience en matière de gestion de l'eau. Il y aura :

- des ateliers pré-conférence
- des événements ÉJP
- des séances SCSH et CNCID
- des visites d'études et bien plus encore!



# Saskatchewan Branch Update

## 1. SASKATCHEWAN BRANCH EXECUTIVE (ELECTED AT THE MARCH 25, 2015 AGM)

NAME	PHONE (306)	E-MAIL	EXECUTIVE POSITION
Bob Halliday Halliday	665-0805	rhalliday@sasktel.net	President & National Director
Jaime Hogan	667-1503	jhoghan@golder.com	Vice-President
Gord Bell	694-7748	gord.bell@wsask.ca	Past President
Brad Uhrich	569-0424	b_uhrich@ducks.ca	Secretary
Curtis Hallborg	694-3942	curtis.hallborg@wsask.ca	Treasurer
Ed Dean	787-7812	ed.dean@gov.sk.ca	Project WET Liaison
Brian Abrahamson	546-2955	brian.abrahamson@accesscomm.ca	CANCID Liaison
Bruce Davison	975-5788	bruce.davison@ec.gc.ca	CSHS Liaison
Virginia Wittrock	933-8122	wittrock@src.sk.ca	Communications Liaison
Russell Boals	351-8329	boals.russ@gmail.com	National Director
Dirk de Boer	966-5671	dirk.deboer@usask.ca	National Director

## 2. PAST ACTIVITIES

**Priority Goal 1: Improved communications among water resources professionals;**

**Priority Goal 2: Enhanced understanding of water and integrated water management:**

**Priority Goal 3: Increased profile for the organization**

### Saskatchewan Flood Workshop

Between 2010 and 2014, Saskatchewan experienced its worst flooding in the province's history. This began with the Maple Creek flood in June of 2010, which led to the closure of the Trans-Canada Highway, resulting in a 150 km detour. Wet conditions in the fall of 2010 and an above normal winter snowpack led to widespread flooding during the 2011 freshet. In the southeastern portion of the province a series of rain events in May and the first half of June of 2011, which left the Souris River Basin saturated, was followed by an extreme rainfall event in mid-June. Return periods in the basin were in the order of 1:500. High flows were also observed on the Saskatchewan River System in 2011. The province was spared from significant flooding in 2012, with the exception of

flooding around terminal lakes and wetlands that remained high. Some flooding occurred in 2013 from snowmelt runoff, but it was less significant than in 2011. The flood flows that struck Calgary in 2013 also required management downstream in Saskatchewan. Snowmelt runoff in 2014 was not problematic however, a significant rainfall event during the Canada Day weekend led to widespread flooding across east central Saskatchewan and substantial property and agricultural losses. With these events behind us, the Saskatchewan Branch of the Canadian Water Resources Association saw an opportunity to discuss some of the experiences from these events and share knowledge.

The two-day workshop in November 2015 featured presentations by scientists and engineers, researchers and practitioners, flood managers and those affected by floods. Both knowledge and experience were shared.

The Saskatchewan Branch is extremely proud of the success of this event as it provided a tremendous amount of information exchange and networking opportunities for the 125 delegates who

participated. Over three quarters of these participants were not current CWRA members, so we are hopeful that this event will help to bolster membership in the province. This event could not have been a success without the individuals who volunteered their time. Remarkable corporate sponsorship from the consulting engineering community in the province was also greatly appreciated.

**Project WET**

Project WET workshops continued in the latter portion of 2015 and are scheduled through to June 2016. A cross-reference guide between Project WET activities and the Saskatchewan environmental science curriculum is in its final stages of preparation.

**3. PROPOSED ACTIVITIES**

**Priority Goal 1: Improved communications among water resources professionals;**

**Priority Goal 2: Enhanced understanding of water and integrated water management;**

**Priority Goal 3: Increased Profile for the Organization**

**CANCID**

Initial steps have been taken to host the 2018 International Commission on Irrigation and Drainage's (ICID) 69th meeting of its International Executive Council and a related conference in Saskatoon. Some 450 delegates are expected. **WN**

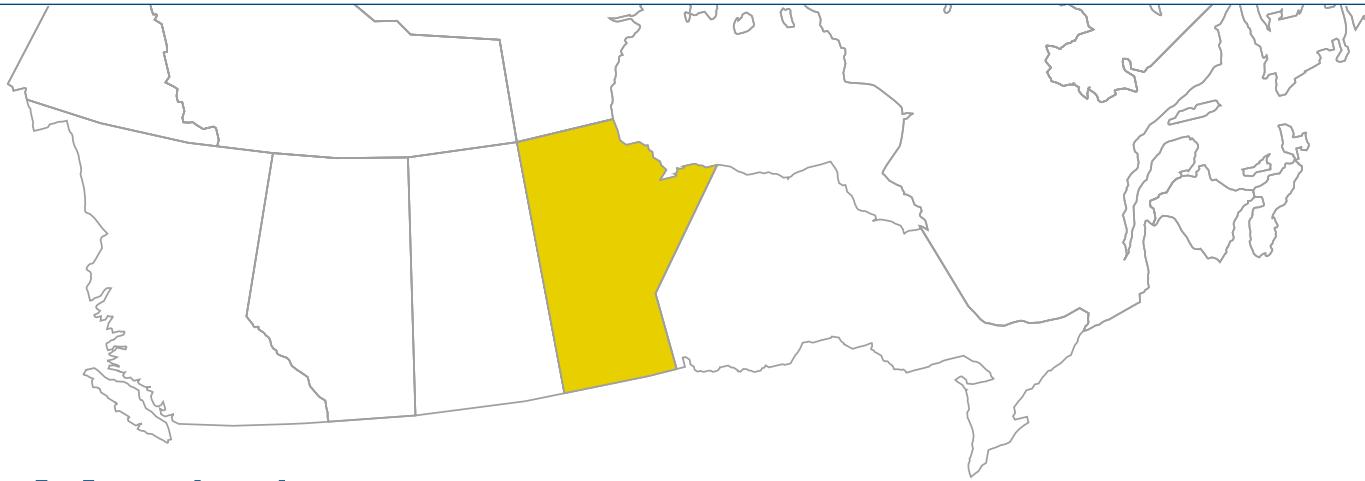
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# Manitoba Branch Update

## 1. EXECUTIVE

THE 2015 – 2016 CWRA MANITOBA BRANCH EXECUTIVE CONSISTS OF THE FOLLOWING MEMBERS:

Eric-Lorne Blais, President	Ph: 204-898-3140	ericlorne.blais@amecfw.com
Stephen Carlyle, Vice-President	Ph: 204-784-4355	scarlyle@mhhc.mb.ca
Melissa Haresign, Secretary	Ph: 204-896-1209	maheresign@ggsgroup.com
Dave Fuchs, Treasurer	Ph: 204- 786-8751	DFuchs@hatch.ca
Nikou Snell, Past President	Ph: 204-786-8751	nsnell@hatch.ca
	Fax: 204-786-2242	
	Fax:204-786-2242	

National Directors for 2015/2016 are Eric Blais, Stephen Carlyle, Trish Stadnyk and Tesfaye Kebede Gurmessa.

## 2. PAST ACTIVITIES

Activities are planned keeping CWRA goals in mind. These are:

**Priority Goal 1: Improved communications among water resources professionals; and**

**Priority Goal 2: Enhanced understanding of water and integrated water management**

**Priority Goal 3: Increased profile for the organization**

**Priority Goal 4: Increased role in international water management activities**

### 2015 National conference

Manitoba Branch hosted CWRA's 68th annual meeting and national conference. This event was held at Radisson Hotel in Downtown Winnipeg on June 1st to June 4th 2015. The conference Theme was:

*"More Extremes? Preparing for future challenges to Canada's Water Resources".*

The conference keynote speaker was Bob McDonald the host of Quirks and Quarks.

Projected profit from the conference was \$82,432.43. It should be noted that profit was calculated after transferring \$8,450 to National for 2015 Conference Membership fees.

The conference report will be a separate submission.

### Luncheon Series

The CWRA Manitoba Branch coordinates a luncheon program that provides an opportunity for water professionals to present updates and information on water related topics in Manitoba, Canada and abroad. The contacts for the luncheon program are Melissa Haresign (c/o KGS Group, ph: 896-1209, email: maheresign@ggsgroup.com) and Aaron Smith (c/o University of Manitoba, ph: 204-880-3060, email: umsmi454@cc.umanitoba.ca).

As part of the luncheon series, three presentations were organized between February and December 2015

- February 11, Candace Parks, Manitoba Conservation and Water Stewardship, presented: "Zebra Mussels in Lake Winnipeg- The Who, What, and Why of this Costly Invader"
- March 11, Don Murray, Hatch Ltd., presented: "Forest Kerr Hydroelectric Project - The Importance of Physical Modelling in the Design of the Headwater Structure"
- April 14, Chani Welch, Post-Doctoral Fellow, University of Manitoba presented: "Regional Controls on Groundwater Discharge Chemistry in a Large Tropical Catchment: Quantification using environmental tracers, mass balance models, uncertainty analysis, and high resolution time series data"

- May 27, Mark Lee, Water Science and Management Branch, Conservation and Water Stewardship, presented: "The Manitoba Drought Water Management Strategy"
- September 29, Dave Brown, KGS Group, presented: "Point du Bois Generating Station Spillway Replacement"
- October 21, Nicole Armstrong, Manitoba Conservation and Water Stewardship, presented: "Prairie Provinces Water Board: Water Quality Objectives"
- December 3, Dr. Annemieke Farenhorst, Director of H2O Create, presented: "Safe Drinking Water Rights: A Closer Look at First Nations Communities in Manitoba"

The luncheon program will continue on a monthly basis with speakers presenting on a variety of water related topics. Scheduled presentation topics include a Wetland Inventory Project: Building a Baseline for Wetland Resource Planning in Manitoba.

### **Committee Representation**

Various CWRA national committees have representation from the Manitoba Branch Board members, including:

Communications Committee - Ute Holweger Phone: (204) 259 - 4018  
Publications Committee Tesfaye Kebede Gurmessa Phone: (204) 474-2055  
Scholarship Committee Nick Kehler Phone: (204) 928-8313  
Website Committee Tricia Stadnyk Phone: (204) 474-8704  
Finance Committee David Fuchs Phone: (204) 786-8751

### **Students and Young Professionals**

The Winnipeg SYP branch hosted two Speaker Series events in November. Dylan Lyng from Manitoba Conservation and Water Stewardship presented, "Information on the MB Clean Beaches Program, Water Quality Objectives, and the Implications to Human Health" at the University of Winnipeg on November 2nd. Approximately 30 students and young professionals attended Dylan's presentation. Dr. Scott Higgins from IISD-Experimental Lakes Area Inc. also presented on "The Implications of Climate Change to Boreal Lake Ecosystems" to 50 students and young professionals at the University of Manitoba on November 23rd. Both presentations were very successful, and their timeliness and focus on water issues in Manitoba attracted a number of first-time students to a CWRA-SYP event. The Winnipeg SYP branch plans to host another Speaker Series event at each university in the winter of 2016.

The Winnipeg SYP branch also participated in recruitment activities at the University of Winnipeg and University of Manitoba, and organized a Meet & Greet event in September for interested students to meet existing members. Several new SYP members were added as a result of these activities.

The annual CWRA-SYP Networking Event will be hosted at the APEGM office in mid-February. The Networking Event is an excellent opportunity for students to learn about current projects in the field of water resources here in Manitoba and across the country, and for professionals to meet enthusiastic students with an interest in water resources. The event will be sponsored by Amec Foster Wheeler, a global engineering consulting firm with a number of offices and water resources engineering projects in Canada.

The Winnipeg SYP branch will also be coordinating with the CWRA Manitoba branch to organize a job showcase event for World Water Day 2016. The event will provide an opportunity for students to hear from a variety of water resources professionals on how they entered their field and the work that they do.

Visit the Winnipeg SYP's Facebook page at [www.facebook.com/CWRASYPManitobaChapter](http://www.facebook.com/CWRASYPManitobaChapter) or Twitter page at <https://twitter.com/cwraWPG> to stay up to date with all of our events and water news. For more information on the Winnipeg CWRA SYP, please contact Kevin Sagan, SYP Team Leader ([umsagank@myumanitoba.ca](mailto:umsagank@myumanitoba.ca)).

**Prepared by:** Eric-Lorne Blais, President, Manitoba Branch 

# Ontario Branch Update

## 1. EXECUTIVE AND NATIONAL BOARD

EXECUTIVE POSITION:		E-MAIL:	TELEPHONE:
President*	Nancy Davy*	ndavy@grandriver.ca	519-621-2763 x2235
Vice-President*	Steve Brown*	steve.brown@stantec.com	519-585-7446
Secretary	Kristina Parker	KParker@oakville.ca	905-845-6601 x3889
Treasurer	Gail Faveri	Gail.Faveri@ec.gc.ca	905-336-6007
Director-at-Large	Dean Young	dyoung@trca.on.ca	289-268-3904
National Director & Past-President	Stephen Braun	stephen.braun@vanguardwater.ca	647-271-5272
National Director	Hugh Whiteley	hwhiteley@uoguelph.ca	
National Webmaster	Bob Metcalfe**	rpm48@rogers.com	905-668-6195

\* indicates National Director \*\*also National Webmaster

## 2. PAST ACTIVITIES (JUNE TO DECEMBER)

### Priority Goal 1: Improved Communications among Water Resources Professionals

- A branch communication committee has been working towards regular e-blasts to Ontario members. The branch Twitter account is @CWRAONT – and has been used to promote and tweet about events. Information for the weekly national e-blasts has been provided.
- CSHS and CANCID representatives have been invited to participate in Branch Board meetings. An ON Branch Director will provide information to CSHS and a CANCID representative will join the branch Board meetings to provide updates on each organizations activities and facilitate joint activities as appropriate.
- Enhancement of the Google Calendar on the Branch section of the website and email blasts to Ontario members only on HEC RAS training, Environmental Flows Technical Workshop, SYP Toronto and Ottawa activities have generated points of contact with the membership.
- An update of the ON Branch section of the website was completed.
- The Toronto SYP has been hosting monthly events with guest speakers from the water industry and academia, including professors, start-up founders and public servants. The group has also organised other events such as the annual picnic on the Toronto Island, a tour of the storm water management facilities at Pearson Airport. Ottawa SYP/Bluedrinks have hosted several events featuring water resource professional careers and research related to social aspects of environmental management, governance, and policy.

### Priority Goal 2: Enhanced Understanding of Water and Integrated Water Management

- HEC-RAS Training - The popular HEC-RAS training general (2 days) and advanced (1 day) workshops were held November 2-4 in Toronto. The advanced training focused on unsteady state modelling

topics and applications. The courses were instructed by Chris E. Maeder who is an expert in HEC-RAS, with over 25 years of application experience in HEC-RAS and HEC-2 modelling projects, including FEMA flood studies, bridge and culvert design, bridge scour and armouring studies, dam safety and failure analysis, as well as reservoir and spillway analysis and design.

- Environmental Flows Training - Over 60 water resource professionals attended the ON Branch 'Environmental Flows Technical workshop' on November 16, 2015 in Alliston, Ontario. The morning sessions included presentations and discussion on the developments in environmental flows science, policy, and management in Ontario. The afternoon sessions focused on practitioner experience in implementation of environmental flows in water management in Ontario, Alberta and British Columbia. The speakers engaged in a lively question and answer session following the morning and afternoon segments of the workshop.

Presentations included:

- Aquatic Ecosystem Assessment for Rivers and Streamflow Analysis and Assessment
- Development of a Guide for Environmental Flow Regime Design in Ontario
- Development of a Guide for Environmental Flow Regime Design in Ontario – Decision Making Framework
- Toolkit for Ecological Flows and Water Power
- Establishment of River-Specific Instream Flow Needs for the Wapiti River, Alberta
- Utilizing a modelling approach to develop E-Flow targets for the Lovers Creek Subwatershed
- Incorporating E-Flows into Water Management Decisions: Whitemans Creek and the Grand River
- Environmental Flow Setting– Successful Examples from British Columbia

- Presentations from the environmental flows workshop will be posted on the members section of the CWRA website. Please go to [www.cwra.org](http://www.cwra.org) and Log In as a member. The presentations are under Welcome CWRA member / Members Area/ Member Library. <http://cwra.org/en/welcome-cwra-member/cwra-members-area/member-resources-library>
- Presentations from the ON Branch 'Ontario Floodplain Mapping Symposium' on April 23, 2015 were also posted on the members section of the CWRA website.

#### **Priority Goal 3: Increased Profile for the Organization**

- At the environmental flow technical workshop, the profile of CWRA was increased by highlighting initiatives of ON Branch. Many of the attendees were not CWRA members and the registration package included membership brochures. In addition, a PowerPoint presentation highlighted the National Conference in May. Postcard advertisements of the conference were provided to attendees.
- CWRA was invited to attend workshops hosted by Public Safety Canada and Natural Resources Canada regarding the National Disaster Mitigation Program (NDMP). ON Branch Board members attended the workshop in Ottawa on Nov. 17. The NDMP was launched earlier in 2015 and is focused on investing in reducing flood risks. Flood mapping has been identified as a key component to assessing flood risks and hazards to help guide mitigation measures. An overview of residential flood insurance was presented in the workshop as well as presentations focusing on advancing the work of the NDMP's Flood Mapping Committee, the Technical Working Group along with information on the main program areas: flood mapping, risk assessment, climate change, hydraulics and hydrology.
- The SYP held several activities throughout the summer including a summer picnic on Toronto Islands with EWB Toronto and SYP meetings through the fall. In December a joint networking opportunity was held for SYP in the water, wastewater and water resources sectors. The young professional committees of each organization (WEAO, OWWA and CWRA) worked together to plan the event. This event was attended by a mix of seasoned, intermediate and young professionals. A raffle was held for prizes and the funding supported the Water, Sanitation and Hygiene (WASH) focused charity - Water for People.

#### **Priority Goal 4: Increased Role in International Water Management Activities**

- Continued participation on national CWRA-Engineers Without Borders Partnership. The speakers at the environmental flow workshop were recognized with a \$25 donation to EWB in their name.

#### **Priority Goal 5: Effective Management and Development of the Association**

- The ON Branch mentoring program concluded its inaugural session supporting 5 mentors and 8 mentees in Toronto and the Kitchener-Waterloo area. Mentor and mentee pairs were assigned based on participant interests. An evaluation of the program was completed with very positive feedback. Participants indicated the program provided an opportunity to discuss various roles in water management; it helped them meet their career goals and increased their engagement with the CWRA.
- ON Branch SYP participate on the National SYP committee and are

providing input to update the SYP manual.

- Branch By-law review was initiated.

### **3. PROPOSED ACTIVITIES**

#### **Priority Goal 1: Improved Communications among Water Resources Professionals**

- The communication committee will focus on eblasts, website and google calendar updates for members on upcoming events.
- Technical workshops, SYP and World Water Day events, and other announcements/e-blasts will enhance the profile of CWRA in Ontario.

#### **Priority Goal 2: Enhanced Understanding of Water and Integrated Water Management**

- Ontario Branch has been asked to provide support to the Ontario Ministry of Natural Resources and Forestry and the Ontario Flood Mapping Technical Working Group for a workshop focused on technology transfer. The workshop will focus on flood base mapping, hydrology and hydraulics. A number of technical projects will be highlighted to provide attendees with an update on tools and technology essential to flood mapping projects. The province and stakeholders will find this information beneficial for planning future projects under the National Disaster Mitigation Program (NDMP). The workshop will be on March 2 and 3 in Peterborough, Ontario.
- ON Branch is partnering with Project Wet to facilitate two events in Ontario. It's anticipated that a Project Wet training workshop for post-secondary students will be held in conjunction with the world water day event in Toronto in March and a second training session will be held near Guelph in late Spring/Summer 2016.
- Ontario Branch is Co-Chairing a Natural Channel Systems Conference in Niagara Falls, Ontario in September 2016 with several water management organizations.

#### **Priority Goal 3: Increased Profile for the Organization**

- An ON Branch representative will speak about CWRA at the Ontario Flood Mapping Tech Transfer workshop in March and membership brochures will be provided to attendees. It's anticipated that up to 160 water resource professionals will attend this workshop.

#### **Priority Goal 4: Increased Role in International Water Management Activities**

- Planning is underway for a World Water Day event in Toronto in March 2016 - Stay tuned for more information!

#### **Priority Goal 5: Effective Management and Development of the Association**

- The ON Branch Mentorship Program began its second session with a diverse group of 7 mentors and 11 mentees at an auspicious meeting during an historic Blue Jays victory. Group networking events, one-on-one mentoring pairs, and peer mentoring meetings will continue through May 2016.
- The Branch in co-operation with CSHS is excited to continue to support BlueDrinks Ottawa events, run by SYP, to facilitate water networking in the capital.
- Branch By-Law update – Amendments to the ON Branch By-laws will be approved at the Branch AGM in Spring 2016 and brought to the national board meeting in May 2016. **WN**

# New Brunswick Branch Update

## 1. BRANCH EXECUTIVE (2015-2016)

		<b>Phone</b>	<b>Fax</b>	<b>Email</b>
President:	Gordon Fairchild	(506) 475-4040	475-4030	gordon.fairchild@gnb.ca
Vice-Pres.:	Anne-Marie Laroche	(506) 858-4337	858-4082	anne-marie.laroche@umoncton.ca
Treasurer:	Stephanie Merrill	(506) 458-8747	458-1047	water@conservationcouncil.ca
Secretary:	vacant			
Past Pres.:	--			
Nat. Dir.:	Anne-Marie Laroche Gordon Fairchild	(506) 858-4337 (506) 475-4040	858-4082 475-4030	anne-marie.laroche@umoncton.ca gordon.fairchild@gnb.ca
Branch Directors :	two vacant			

## BRANCH ACTIVITIES:

### Priority Goal 1: Improved communications among water resources professionals.

Branch members continue to participate with several other related organizations, ENGOs and NGOs.

### Priority Goal 2: Enhanced understanding of water and integrated water management.

Branch members continue to be involved with a number of University, government and private sector-led projects around the province of New Brunswick

### Priority Goal 3: Increased profile for the organization.

New Brunswick Branch members continue to be actively involved across the province with various water related issues, research, committees and programs in New Brunswick.

### Priority Goal 4: Increased role in international water management activities.

Details on international involvement would have to be obtained directly from individual branch members.

### Priority Goal 5: Effective management and development of the association.

NB Branch members have participated actively on the CWRA Communications, Publications and Finance committees in past years, but less so in 2015 and in recent years due to time, scheduling and other related constraints. Branch members promote the CWRA to other professionals in related fields. The branch holds meetings or regional workshops, as time and interest permits.

## 3. NB BRANCH PROPOSED ACTIVITIES

### Priority Goal 1: Improved communications among water resources professionals

The Branch is intending to plan branch activities again in the near future. A potential workshop on agricultural land stream bank erosion control with the Agricultural Alliance of New Brunswick is under discussion.

### Priority Goal 5: Effective management and development of the association.

The New Brunswick Branch would like to take the opportunity in this issue of Water News to make a call for volunteers in New Brunswick to fill several New Brunswick branch CWRA executive positions: Branch President, Secretary, 2 branch Directors; and potentially 2 CWRA National Directors to represent New Brunswick who would be nominated by the New Brunswick branch and appointed by the CWRA National Board at the next National AGM.

Note that it would now be potentially possible to attend the New Brunswick Branch CWRA or the National CWRA AGMs through the CWRA webinar services instead of attending in person, so participation would not necessarily involve travel or travel expenses. Volunteers may forward their names to either the current New Brunswick Branch President, Gordon Fairchild at (Gordon.fairchild@ccnb.ca) and/or to Rick Ross, CWRA National Executive Director at (executivedirector@cwra.org). Names volunteered would be subject to the normal New Brunswick branch CWRA bylaws with respect to election of executive. However, acclamation is the most likely outcome unless there were multiple volunteers for a given post.

Your support to continue the on-going participation of New Brunswick water resource professionals in the CWRA would be greatly appreciated.

Gordon Fairchild

NB Branch President **WN**

# CWRA EXECUTIVE / DIRECTION DE L'ACRH



## **President/Président**

Dave Murray, Victoria, BC

## **President Elect/Président désigné**

Sean Douglas, Edmonton, AB

## **Past President/Président sortant**

Ute Holweger, Winnipeg, MB

## **Treasurer/Trésorier**

Ed Dean, Regina, SK

## **Secretary/Secrétaire**

John van der Eerden, Vancouver, BC

## **President CANCID/Président du CNCID**

Dr. Abdel-Zaher Kamal Abdel-Razek, St. John's, NL

## **Chair CSHS/Président de la SCSH**

Wayne Jenkinson, Ottawa, ON

## **Executive Director/Directeur exécutif**

Rick Ross, Lethbridge, AB

## **Branch Presidents/Présidents de division**

B.C.: Tamsin Lyle

Alberta: Rick Carnuff

Saskatchewan: Bob Halliday

Manitoba: Eric Blais

Ontario: Nancy Davy

NWT: Bob Reid

Nunavut: Sophia Granchinho

Quebec: Gilles Rivard

Newfoundland & Labrador: A.K. Abdel-Razek

Nova Scotia: Kevin Garroway

New Brunswick: Gordon Fairchild

PEI: Scott Anderson

## **Journal Editors/Rédacteurs de la revue**

Chris Spence, Regina, SK

Jim Buttle, Peterborough, ON

## **Water News Editor/Rédacteur du bulletin**

### **À propos de l'eau**

Rick Ross, Lethbridge, AB



# coming events



**3-5 April, 2016** CWRA AB. AGM Conference  
Edmonton Alberta, Courtyard Edmonton West Hotel

**6-8 April 2016** Banff, AB WaterTech2016

**26-28 April 2016** 4th African Regional Conference  
on Irrigation and Drainage (ARCID) on 'Agricultural Land  
and Water Management for Sustainability under Climate  
Variability', Cairo, Egypt, <http://www.encid.org.eg>

**11-12 May 2016** ACZISC Meeting #77, Charlottetown,  
PEI

**18-19 May, 2016** Toronto, ON Canadian Water  
Network: Blue Cities

**18-20, May 2016** HydroVision Brasil Sao Paulo, Brazil

**24-27 May 2016** 69th CWRA National La conférence  
nationale annuelle de l'ACRH, qui se tiendra au  
printemps 2016 dans la ville de Montréal (Québec)

**1-4 June, 2016** Annual Conference of the Canadian  
Society for Civil Engineering, Theme: Resilient  
Infrastructure. London, ON

**12 - 16 June, 2016** AWWA ACE'16 Chicago, IL USA

**23 June 2016** Toronto, ON 7th Annual Canadian Water  
Summit - The Business of Water

**August 2016** Water Finance Conference in Denver,  
Colorado.

**21-22 September 2016** ACZISC Meeting #78, St.  
John's, NL

**24-28 September, 2016** WEFTEC.16 New Orleans,  
LA USA

**5-7 October 2016** WaterSmart Innovations Las Vegas,  
NV USA

**6 -12 November 2016** 2nd World Irrigation Forum and  
67th IEC, Chiang Mai, Thailand  
<http://www.worldirrigationforum.net>

**4-7 June, 2017** 70th CWRA AGM and National  
Conference. Water a Continental Asset- Lethbridge  
Alberta

**11-15 June, 2017** AWWA ACE17 Philadelphia, PA

**8-14 October 2017** 68th IEC and 23rd ICID Congress  
on Irrigation and Drainage, on the theme: Modernizing  
Irrigation and Drainage for a new Green Revolution,  
Mexico City, Mexico E-mail: [cnm@mxcid.org](mailto:cnm@mxcid.org), [brobles@tlaloc.imta.mx](mailto:brobles@tlaloc.imta.mx), [luis.rendon@cna.gob.mx](mailto:luis.rendon@cna.gob.mx), [luis.rendon@conagua.gob.mx](mailto:luis.rendon@conagua.gob.mx)

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Contact-free discharge measurement for channels & rivers with Radar technology

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- Optional: analog outputs from 4 to 20 mA



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Mobile discharge measurement with salt or fluorescent tracer

- Mobile discharge measurement
- Bluetooth-transmission of measurement values
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- For high velocities and turbulent streams



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