



Poplars and Willows on the Saskatchewan Prairie

Jim Richardson, Technical Director, Poplar and Willow Council of Canada

Planted poplars in farm shelterbelts are a common sight on the Canadian prairies, and perhaps most frequently in Saskatchewan. Somewhat less well-known, but equally important, are the native willows that grow on the prairies. Both poplars and willows were presented and discussed in the 2016 annual meeting of the Poplar and Willow Council of Canada which was held in Regina and Indian Head, Saskatchewan over two days in July. The meeting was hosted by Agriculture and Agri-Food Canada (AAFC) and smoothly organized by PWCC Chair Raju Soolanayakanahally and Bill Schroeder, with the able assistance of Laura Poppy and Tricia Ward. Although the participants were few in number – 12 in all, from six Canadian Provinces – they were joined on the field-tour day by a number of additional friends and colleagues.

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For the first day, the group gathered in downtown Regina at the Alvin Hamilton federal government building (left) where eight technical presentations were made (seven oral and one poster). These all focused in one way or another on the overall theme for the meeting which was ‘Exploiting poplar and willow genetics for environmental applications’. On the eve of his retirement from AAFC, Bill Schroeder reflected on over 100 years of poplar planting in prairie shelterbelts, and 75 years of poplar breeding at

Indian Head in support of that planting, breeding work in which he has played a major part. Carl Douglas (right) of the University of British Columbia (UBC) presented a paper on understanding genetic variation across the ranges of *Populus trichocarpa* and *P. balsamifera* and using that knowledge to accelerate genetic improvement. Sadly, this was to be Carl’s last scientific presentation, as just a very few days after the meeting, he lost his life in a tragic mountain-climbing accident in the Rocky Mountains.



Bill Schroeder gives a presentation. Photo: Laura Poppy.

Two of the presenters were the 2016 recipients of the PWCC-UBC Student Travel Awards. Md Shayeb Shahariar, a graduate student at the University of Saskatchewan, and Yue (Bobby) Hu, a graduate student at the University of Alberta, each spoke on their work, Shayeb on the effects of short rotation willow on prairie wetland soil hydrology, salinity and macronutrients, and Bobby on assessing the potential for hybrid vigour from disparate population breeding of balsam poplar. Raju Soolanayakanahally spoke on a study of willow stomatal density and pore length trade-offs which used populations

of *Salix eriocephala* from across its natural range in Canada. Annie Desrochers presented the results of a study showing that root connections between balsam poplar trees can affect radial growth through a sharing of resources. Finally, Jim Richardson offered a glimpse of photos which will be included in an international online photo library illustrating all aspects of the Salicaceae.

All technical presentations are available in PDF format on the PWCC website (at www.poplar.ca/upload/documents/regina-16/presentations/presentation-list.pdf). The annual business meeting of the Council took place at the end of the first day in Regina. Reports were received, plans were discussed, and elections were held for the Board of Directors. Raju Soolanayakanahally remains as the PWCC Chair. Bill Schroeder was elected to serve as Vice-Chair West, replacing Cees van Oosten who has stepped down from that position. There were no other changes in Board membership, though the untimely death of Carl Douglas leaves one vacancy. Those present agreed with the proposal that the 2017 annual meeting of PWCC be held in conjunction with the conference of the North American Forest Ecology Workshop in Edmonton in mid-June. On the second day, participants travelled east of Regina to Indian Head and the Indian Head Research Farm of Agriculture and Agri-Food Canada for a full day of field visits. After a round of welcoming sea buckthorn smoothies on arrival, the group visited first a tree improvement seed orchard with a test of 12 different Russian and Estonian sources of

Siberian larch, a green ash seed orchard with 61 plus trees, and a Scots pine seed orchard containing the results of 80 years of testing and crossing Scots pine at the nearby Shelterbelt Centre.

The second stop was at a two-year-old project investigating the benefits and economics of alley cropping (or ‘intercropping’) of the berry shrubs sea buckthorn and buffaloberry with alleys of alfalfa and brome forage crops. Three different alley widths (5m, 15, and 26m) were being tested in this managed field boundary habitat agroforestry study. The third stop for the morning was at the AgCanSalix (willow) common garden. Collection of the willow germplasm began in 2005 and the material was moved to the present site in 2015. It includes 34 populations, mainly native willows, but also including 10 hybrid lines from Sweden and 12 clones. Key traits being sought are biomass production, nutrient accumulation and nutrient turnover, and adaptability to local growing conditions.



Field tour group in field boundary habitats/alley cropping project, Indian Head Research Farm. Photo: Garth Inouye.



Shayeb Shahariar presents wetland/willow project, Reynard Farm, Indian Head. Photo: Garth Inouye.



Raju S. presenting AgCan balsam poplar common garden, Indian Head Research Farm. Photo: Jim Richardson.

Afternoon visits included the wetland willow study which Shayeb Shahariar had presented during the technical session the previous day in Regina. The effects of short rotation willow on soil hydrology and salinity in the riparian zone of Prairie wetlands were compared to those of annual crops and pasture. Differences in soil exchange capacity were found among the three land use systems over the two growing seasons of the study, with short rotation willow causing a greater decline in soil salinity on one of the two sites included in the study.

The final stop of the field tour was at the Agriculture Canada Balsam Poplar (AgCanBaP) collection of germplasm from 65 native wild populations of balsam poplar from throughout the full extent of its very wide natural range. The genomes of all trees in the collection have been sequenced and wood characteristics analysed. Efforts are now being made to correlate genotype and phenotype, and to compare this material with *P. trichocarpa*. North-south crosses have been done and the results planted out with plans to observe segregation in the F2 generation.

Participants in the field tour enjoyed a relaxed outdoor pizza lunch at The Grazing Goose farm, the pizzas being baked outdoors in a mobile oven. Pleasant summer weather and the rolling lawns of the farmhouse provided the perfect setting for informal mingling of

friends and colleagues, group photos and presentations. The latter included the first of a new series of PWCC awards – the ‘Poplar Gold Leaf’ – which were presented to Bill Schroeder of AAFC and to Pierre Périnet of the Quebec Ministère des Forêts, de la Faune et des Parcs for their lifetime contributions to poplar and willow breeding. (in his absence, Pierre’s award was accepted by Annie Desrochers and Lyne Blackburn.) The two Student Travel Awards, mentioned above, were also presented.



Field tour group and friends at The Grazing Goose farm, near Indian Head. Photo: Garth Inouye.



Bill Schroeder accepting Poplar Gold Leaf Award from Raju S. Photo: Jim Richardson

In addition to the photos included in this article, a complete photo gallery is available from the meeting. As noted above, all technical presentations are also available in PDF format.

Chair’s Report to the AGM held in 2016
Raju Soolanayakanahally PhD, Regina and Indian Head, Saskatchewan
July 19-20, 2016



Our 2015 Annual General Meeting (AGM) was held at the Lake Duparquet Research Station, Abitibi-Témiscamingue, Québec, a well organised event by Annie Desrochers. The meeting focused on (i) poplar and willow management in natural settings, (ii) site reclamation with poplar and willow, and (iii) field tours to 8-year old hybrid poplars, mature aspen stands and an active gold mine in North Western Québec.

Beginning 2015, PWCC introduced the Student Travel Award and this year's award recipients are Bobby Hu (University of Alberta) and Shayeb Shahariar (University of Saskatchewan).

The Genetics Working Group (GWG) is led by Pierre Perinet, Ministère des Forêts, de la Faune et des Parcs, Quebec City. During 2015-16, this group focused on updating the old Clone Directory by incorporating new poplar and willow germplasm. The work is now complete and a searchable database will be made available to members and non-members soon. I also appreciate numerous researchers who contributed significant time in compiling the clone directory.

The Pesticide Working Group (PWG) is led by a new chair, Richard Krygier, from the Canadian Wood Fibre Centre at Canadian Forest Service based out of Edmonton. Richard played a key role in retaining Prairie Pesticide Minor Use Consortium (PPMUC) bronze membership in order to finish-up the work on Lontrel and Sinbar registrations.

John Doornbos at the Canadian Forest Service championed Canada's report 2016 to the International Poplar Commission of FAO. The final version of the report is available at <http://www.fao.org/forestry/ipc2016/91148/en/>; to serve as a comprehensive database to compile a global synthesis report on poplar and willow resources and markets, which will be presented at the forthcoming 25th Session of the International Poplar Commission in Berlin in September 2016. In addition to John, Jim Richardson and Cees van Oosten played a major role in compiling Canada's report. As stated in an e-mail from Walter Kollert, Secretary of the International Poplar Commission (IPC), FAO, Forestry Department, the Canadian report is by far the most detailed and comprehensive report that we have received from any member country. Kudos to John, Jim and Cees!!

As usual Jim Richardson did a fabulous job on website management, international dimensions, publications and technical enquires. All of this is meticulously put together in his 20th annual report to the Poplar and Willow Council membership from the Technical Director, a position created by the Executive Committee in April 1997.

The 2017 AGM will be jointly held in Edmonton with the 11th North American Forest Ecology Workshop (NAFEW). The dates are June 19 – 22, 2017. PWCC is considering having their own session based on the Call for Special Session Proposals.

On a personal note, I would like to recognise and thank Jim Richardson for his continued commitment to serve as Technical Director on the PWCC board. His dedication and advice on poplar and willow related matters; updates to website and International Poplar Commission reporting are commendable. At the same time, I would like to thank my Executive Assistant Deborah Brenton for her unrelenting patience and smooth running of

day-to-day activities of PWCC board. Thank you both for making my job as chair that much easier!!

In closing, I would like to take a moment to thank the Board of Directors and Working Party Chairs for their support and hours of volunteer work on council.

Technical Director's Report to the Annual Meeting

Jim Richardson, Regina, SK, July 19, 2016

This is the 20th annual report to the Poplar and Willow Council membership from the Technical Director, a position created by the Executive Committee in April 1997. The general objectives of the Technical Director position are to supply technical services and advice to the Council, to promote awareness and support for the Council and to increase membership. More specifically, the responsibilities of the technical director include maintaining and updating the Council's website; responding to technical enquiries using E-mail, phone, fax and mail; providing an international dimension to the Council through participation in the International Poplar Commission (IPC); contributing to the PWCC Newsletter and supporting technical aspects of the organization of the PWCC Annual meeting; and providing services to members and the Board of Directors of a technical rather than purely administrative nature. The specific responsibilities continue to change somewhat, reflecting the changing ways in which the Council operates and new directions and initiatives of the Council.

Website

Management and maintenance of the Poplar and Willow Council website (www.poplar.ca) is one of the most important on-going responsibilities of the technical director. The website is hosted by Sencia Canada Ltd. of Thunder Bay, ON. The content and appearance of the site has remained fairly stable this past year with the main changes being the addition of new news items at the rate of more than one a month. Only the six most current items are maintained on the 'What's New' page, with less current items being moved to an 'Older News Items' page. Other current website activities involve reviewing and updating the 'Events' pages regularly, as well as 'Links'. Information about individual and corporate members is updated once a year. Publications and news of Working Group activities are added as available. The website, in combination with newsflashes E-mailed to members, is the exclusive means of distributing PWCC news, with E-newsflashes sometimes being used to alert members to additions to the website.

The Council's interactive, searchable directory of poplar and willow clones is currently being revised and updated by the Genetics and Breeding Working Group. While this is taking place, the database is temporarily unavailable online. Updates have been completed, and the database is now being adapted for the website, so should soon be available again.

International Dimension

The 25th Session of the International Poplar Commission (IPC) will be held in Berlin September 12-16, 2016. Barb Thomas and I, who are both Canadian members of the IPC Executive Committee, hope to participate, as well as several other PWCC members. For this IPC Session, Canada's national report on poplar- and willow-related activities for the period 2012-2015, which is a major Canadian reference source, was prepared with the help of funding from the Canadian Forest Service which made possible the collection of information, writing, editing and

bibliography compilation. The report was submitted, on time, by the end of April. I was involved in the editing and some of the writing.

A new activity related to the book 'Poplars and Willows: trees for society and the environment', which was co-published in 2014 by CABI International and the Food and Agriculture Organization (FAO) of the UN, is being initiated by the editors of the book Jud Isebrands of Wisconsin and myself. We plan to develop an online photo library as a supplement to the book. This will provide access to the many photos which were submitted for the book by the worldwide poplar and willow community but could not be included in the publication (or were printed in black and white only), as well as to other relevant photo collections which are not readily available online. The project will be presented to IPC at the Session in Berlin.

Publications

The technical director makes regular contributions to the Council's information about meetings and other events. A complete report, including photos, on the 2015 annual meeting of the Council and field tour held in the Abitibi-Témiscamingue region of Québec in September was prepared and published on the website. A total of 86 annotated photos, primarily from the field tour following the event, was also uploaded to the website photo gallery. As noted above, I was also involved in the preparation of the Canadian national report to the 25th Session of IPC.

Meetings

Information on the 2016 annual meeting, being held in Regina with a field tour to Indian Head, Saskatchewan has been made available through web-pages on the PWCC website. Online registration and payment (via PayPal) for the event was also enabled on the website. I will participate in the meeting and will subsequently prepare for the website a report and photo package on the technical presentations, business meeting and field visits. Thanks to the generosity of the IPS VI organizers, part of the surplus from that 2014 event has been given to the PWCC to create an annual PWCC/UBC student travel award. I participated in a small Board committee to select the 2016 recipients of the award. The recipients will participate in the annual meeting with oral technical presentations.

I have participated regularly in telephone meetings of the Council's Board and Executive Committee, on occasion acting as secretary, as well as for annual business meetings in recent years.

Technical Enquiries

The technical director responds to technical enquiries, most of which are received as a result of contact through the website to the Secretariat and are dealt with by E-mail. The vast majority of such enquiries come from non-members, including from outside Canada. However, the number of individual enquiries continues to decline.

Acknowledgements

I would like to thank Raju Soolanayakanahally and Executive Committee members Cees van Oosten, Annie DesRochers, Barb Thomas and John Doornbos for their continued support and confidence throughout the year. It is a pleasure to work with such a knowledgeable and helpful team. I also appreciate very much the efficiency and hard work of Deb Brenton, the Council's Executive Assistant.

Treasurer's Report to the Annual Meeting

John Doornbos, Regina, Saskatchewan, July 19, 2016

This is my second report to the PWCC membership as Treasurer. The budgets for 2016 (revised) and 2017 (proposed) as well as the PWCC Financial Statements (compiled by Hergott and Company) are included in the Annual Meeting package and form the basis of this report. Also provided is a Supplement to the Financial Statements, compiled by Deb and myself, which provides more detail on some items in the Financial Statements.

PWCC has had a substantial surplus of funds (accumulated a number of years ago) which have provided PWCC with the flexibility to utilize these funds to cover revenue shortfalls. Most of the funds are held in two GICs which are each invested for 2 years and come due in alternate years. The current GICs mature in August 2016 and 2017 with the intent to redeem funds as needed to cover our ongoing expenses. The balance in our chequing account is currently high enough to cover our typical expenses for one to two years.

The financial transactions of PWCC are quite simple and straightforward. Most revenue comes from memberships and interest income. Most of our regular expenses are for services provided by our Technical Director and our Executive Assistant and as well as for associated travel. In some years, we take on special projects; none occurred in 2015. Revenues and Expenses for the past few years are summarized below:

Year	Revenue	Expenses	Surplus (Deficit)
2012 (actual)	41,421	62,512	(21,091)
2013 (actual)	9,098	35,244	(26,146)
2014 (actual)	10,584	21,517	(10,933)
2015 (actual)	21,407	26,555	(5,148)
2016 (revised)	15,697	34,568	(18,870)
2017 (proposed)	8,912	29,547	(20,635)

Given that PWCC financial transactions are simple and straightforward, our financial record keeping is also modest and straightforward. Our transactions are tracked using a spreadsheet, utilizing a double entry booking keeping system. Our two bank accounts (General and Project) are reconciled each month and are summarized and reviewed quarterly. Note the PWCC Project Account is used to manage funds on behalf of other groups. Currently there are two active projects: Alberta Forest Genetics Resources Council and the PWCC-UBC Student Award. In a typical year, for the two accounts, we issue about 20 - 30 cheques and make about 30 – 40 deposits.

The PWCC Annual Meeting is typically held in the late summer or early fall. As a result, the budget for the current year (2016) is usually approved the year before and a revised current year budget is approved at the Annual Meeting. A budget for the following year is also approved. Budget Expenses are organized to show expenses required for our day-to-day operations and discretionary expenses which can be postponed if the need arises. Some basic financial policies have been developed for PWCC. These include signing authorities, movement of funds between accounts and instructions for the transfers of funds and issuing of payments are done in writing, in most cases using email.

Reimbursements for GST are sought when we have qualifying revenues and expenditures. These should be reviewed and updated periodically by the Board. Overall, the Poplar and Willow Council of Canada lives within its means but operates at a loss each year. A decision was made a number of years ago that the PWCC had sufficient reserves that it could operate at a loss for some time into the future. The belief is that interest in poplars and willows will be reinvigorated at some point in the not too distant future causing membership and other revenue to grow. This decision has been renewed by the Board and members each year by approving the budgets.

I want to thank Deb for her ongoing hard work, support and for keeping me on track.

Genetics and Breeding Working Group Report

Pierre Périnet, Regina and Indian Head, Saskatchewan
July 19-20, 2016

Germplasm conservation activities

Ten new parental trees of *Populus deltoides*, selected from progeny tests in Québec, were used for intraspecific breeding and successfully propagated by cuttings during winter 2016. These trees will be planted in the field in 2017 to complete our *P. deltoides* populations.

With the termination of the Prairie Shelterbelt Program and closure of the Agroforestry Development Centre (ADC) in 2013 there was a need to transfer poplar and willow genetics from ADC to the Agriculture and Agriculture Canada Indian Head Research Farm at Indian Head. This transfer preserves some of the poplar and willow germplasm developed over the years at ADC. In total 1,924 *Populus* and 550 *Salix* genotypes were preserved and are now located at the Indian Head Research Farm.

Poplar and willow directory update

In March 2015, the Genetics and Breeding Working Group invited Canadian breeders, scientists, and poplar and willow specialists to participate in reporting and describing their new populations of selected trees, families, or clones of willow and poplar from Canadian provenances and breeding programs to update the PWCC directory. Updated files from several contributors are now ready for publication as a searchable database on the new PWCC website. The updated directory should be available to members in the coming months.

Poplar Factsheet Series

French and English versions of ten Prairie poplar clones from Indian Head are now available on the PWCC website.

Executive Assistant's Report to the Annual Meeting

Deborah Brenton, Regina, Saskatchewan, July 19, 2016

I am very pleased to file my eighth report to the Board of Directors of the Poplar and Willow Council of Canada. The Executive Assistant's responsibilities include managing the daily operations of the office; membership and associated services; coordinating permanent files and membership databases; preparing agendas and recording minutes for meetings; maintaining a library of technical information; responding to and providing referrals to information requests; soliciting articles, editing and formatting the newsletter, as well as maintaining accurate financial records of all bank accounts, accounts payable and receivables. The Executive Assistant is also responsible for conference services including registration, events planning and organization.

Membership

This year the Poplar and Willow Council lost one corporate member – Coast to Coast Reforestation Inc. Currently, the corporate membership now stands at 8 with 35 affiliates, and individual membership totals 28, with 3 associate members. Please feel free to visit the website at www.poplar.ca/members for contact information for current and new members.

Highlights of 2016

Since the last annual meeting, one newsletter has been posted to the website which detailed the 2015 annual meeting of the Council and the field tour which was held in the Abitibi-Temiscamingue region of Quebec. As well, a number of E- Newsflash messages have been sent as an alert to members to check the website for current information relevant to the Council.

This year, the PWCC prepared a national report on poplar and willow for the period of 2012-2015. The Canadian Forest Service helped with the funding of the report which was submitted to the International Poplar Commission by April 30, 2016.

Conclusion

I would like to especially thank Raju Soolanayakanahally and the other members of the Board of the PWCC for their continued support and guidance.

Save the Date:

June 19-22, 2017 – The Poplar and Willow Council of Canada's AGM in conjunction with the North American Forest Ecology Workshop– Edmonton, Alberta

Advice from a Tree

Leaves have a lot of responsibility: they produce food for all parts of the tree.