

Education and Public Outreach Committee Report – for the CASCA Board at CASCA 2010

Submitted by Dennis Crabtree (Chair).

This report covers the period from May 2009 to May 2010.

Current Committee Members

Chair:	Dennis Crabtree	(2005-10) Gemini Observatory/NRC-HIA
Vice-Chair:	Joanne Rosvick	(2005-11) Thompson Rivers University
Members:	Jan Cami	(2008-11) University of Western Ontario
	Martin Connors	(2007-10) Athabasca University
	Yvan Dutil	(2008-11) T3E
	Louise Edwards	(2008-11) Caltech/IPAC
	Nathalie Martimbeau	(2006-12) Montréal Planetarium
	Peter Newbury	(2009 – 2012) University of British Columbia
	Gordon Sarty	(2008-11) University of Saskatchewan
	Ian Short	(2009-2010) St. Marys University
ex-officio:	Robert Lamontagne	Université de Montréal
ex-officio:	Paul Hickson	University of British Columbia
Board Representative:	James Di Francesco	NRC-HIA

GSC Representative: Talayeh Hezareh University of Western Ontario

Education Co-ordinator: Heather Theijsmeijer

The EPO committee met at CASCA 2009. The membership listed above was partially decided on at this meeting and afterwards with input from the CASCA Board.

Report of Activities

Meetings/communication:

Committee business was conducted via email and there were four telecons (August 21, 2009, October 20, 2009, January 18, 2010, February 12, 2010).

EPO White Paper for LRP2010:

The committee worked very hard to produce a White Paper for the LRP2010 exercise. The White Paper lays out the priorities for astronomy EPO in Canada and includes some specific recommendations for the community to consider. The document emphasizes that our community must make use of new (social) media tools such as Facebook and Twitter in order to reach young Canadians.

A copy of the White Paper can be found at: <http://www.casca.ca/lrp2010/Docs/LRPReports/EPO.pdf>

Heather Theijsmeijer - CASCA Education Coordinator:

Heather's contract was renewed, and a raise negotiated. She has been busy maintaining the cascaeducation.ca website, doing other outreach tasks, and submitting regular articles for E-Cass (see her report below).

Liaison with IYA Executive Committee:

Jim Hesser, of the IYA Executive Committee participated in EPO committee activities as the liaison with the IYA EC. The question of how to transition from the IYA EC and continue the successful partnership with the amateur groups is an issue for both the EPO and IYA EC committees this year.

Committee members' EPO reports/ IYA 2009 activities:

Jan Cami:

In 2009/2010, Jan contributed to the organization of various IYA activities, including several public lectures and public stargazing at the Cronyn observatory (e.g. Galileo Nights). He ran a few of the public nights at the Cronyn observatory, offered observing opportunities to interested students,

trained several graduate and undergraduate students on operating the telescopes at the Cronyn observatory and the Natural Science telescope, and upgraded the computer and network infrastructure at the Cronyn observatory. He continued close collaboration with the local RASC chapter for these events. He worked on a (successful) application to buy a solar telescope and camera accessories for outreach purposes. He gave a public lecture on large, complex molecules for the amateur astronomers in Belgium. In the summer, he organized a press release about ground-breaking VLT observations of the supergiant Betelgeuse that was picked up by more than 60 news sites worldwide.

In terms of education, he continued his ongoing involvement in the Virtual Researcher On Call (VROC) program by talking to high-school students about astrochemistry. For a general astronomy course for non-science majors, he reworked 5 telescope observing projects, and developed 6 projects based on planetarium software programs or online astronomy website (e.g. Galaxy Zoo, Solar Storm Watch, ...). He took part in a Mastering Development Summit to further develop an online platform for astronomy & physics education through interactive tutorials, and also reviewed several such tutorials based on the PhET simulations. He took part in meetings and several workshops on educational aspects, e.g. about using clickers in the classroom and about visualization of astronomical images.

Martin Connors:

Activities have mainly been focused on distance education (DE) course development. Public outreach activities have been more associated with space physics but are mentioned to seek links to astronomy. Athabasca University's courses are 'open' and current astronomy courses have no prerequisite. Increasingly, we are using Open Courseware and this would make our courses available to others for use under the Creative Commons License in many cases.

Brian Martin has been the prime mover behind our new Astronomy for Canadians (Canadian Skies) course. This web course based on Moodle will open in fall 2010. The main idea is to rectify the fact that current astronomy education materials are mainly from US sources and do not properly treat Canadian topics, ranging from our night sky and seasonal phenomena to the important role of Canadians in astronomical history.

This course will use Stellarium, and this program has also been adapted for our existing DE astronomy courses. Ironically, there have been a lot of problems with our use of Stellarium recently due to operating system changes imposed by Microsoft, which are hard to deal with in a DE setting. Connors and Martin hope to move forward with a project for a Canadian astronomy textbook based on the materials developed for the web course.

A planetary science course based at intermediate level is under development. In other related fields, the web site <http://auroranet.org/educational.php> has been set up and it is hoped to place instruments in schools to contribute data to this site. CSA funding aided in this project and it is anticipated to play a role in the upcoming e-POP Canadian science satellite project.

Dennis Crabtree:

Dennis is President of IAU Commission 55 – Communicating Astronomy with the Public (2009-2012). He is also Chair of Commission 55's Working Group on the Washington Charter. Dennis served on the IAU's Executive Committee for IYA2009 providing input and advice on various global activities and issues. He also served on the SOC for the very successful Communicating Astronomy with the Public Conference (CAP2010) held in Capetown in March 2010.

Dennis organized the EPO telecons, which was a challenge while he was located in Chile. He led the development of the CASCA EPO white paper for LRP2010 ("Engaging Canadians from Main Street to Parliament Hill") and was encouraged by the engagement of the other EPO committee members in the process. Dennis made two proposals to the CASCA Board:

- 1) That CASCA become a Charter member of the new Science Media Centre of Canada (SMCC).
- 2) Establish a WESTAR Communications Award to recognize Canadians who had played a significant role in astronomy communication or formal/informal astronomy education in Canada.

Yvan Dutil

Yvan participated in the conference of his local astronomy club and gave several interviews to local journalists.

Louise Edwards

Although not physically in Canada due to a postdoc in Pasadena, Louise Edwards has kept up with several EPO activities this year. She participated in the Spitzer Space Telescope 'Astronomer on the Street' where infrared cameras were set up for passersby in Old Town Pasadena. She created and presented an interactive lecture on Planets to grade 5 students and Thomas Jefferson Elementary School. Also, she acted as instructor and mentor to graduate students at the International Astronomical Union's ISYA 2009 (International School for Young Astronomers) in Trinidad and Tobago.

Robert Lamontagne (CASCA Press Officer):

During the last year Robert distributed press releases and maintained the press release pages on CASCA's website. Robert adds new releases when one is received from a specific individual or if one is received from another source (e.g. Steve Maran AAS).

Robert maintains a list of reporters and media contact (both French and English). Currently, there are over 50 on this list. The list includes reporters from the CBC and the SRC, the Globe and Mail, the National Post, the Toronto Star, la Presse, le Devoir, Sky and Telescope, Astronomy, Spacecast Network, Discovery Channel, a few more local media on the west coast and in Manitoba, and a few freelancers. Unfortunately, media contacts on the east coast are lacking.

The activities of the press officer are mostly concentrated around the annual CASCA meetings. Robert writes press releases (both in French and English) for the various awards (Beals, Petrie, Plaskett, etc.) when needed.

Unfortunately, new duties for the Mont-Mégantic observatory are such that Robert is no longer able to devote adequate time to the task of press officer. See Issues section.

Nathalie Martimbeau:

Nathalie participated in an afterschool program at the Massachusetts Institute of Technology's Kavli Institute for Astrophysics. She acted as a 'consultant' working with high school students who were developing planetarium shows for the public for science festivals in Cambridge, MA held spring 2009. She has also participated in the Center for Astrophysics' Science Education Panel, which meets weekly to discuss far-ranging issues both in classroom education and informal science education.

Last August 2009, Nathalie joined the education team at the Montreal Planetarium where she elaborates, presents and leads diverse programmes to the public and school groups : short 20 minutes public workshops, planetarium shows, day and evening observing, and exhibits.

Peter Newbury:

As part of the introductory astronomy course offered to non-Science students at UBC, I developed an activity where students create a "human orrery". We ran this activity in January 2009 for the 250 students in the class (in groups of 30-40) and also as a public outreach event for IYA2009, attracting about 150 passers-by. We ran the activity again for about 200 students in February 2010. In June 2009, I presented a poster about the activity at AAS 214. An article detailing how to run the activity will appear in Fall 2010 in The Physics Teacher.

For our astronomy lab, together with the Department's physics outreach group, I organized the purchase of 150 Galileoscopes. With a vision of outreach within my Department, I invited my colleagues to purchase Galileoscopes of their own and was overwhelmed when 60 individuals purchased an additional 110 telescopes. I've been giving short telescope basics workshops and will to continue to develop resources for my colleagues to share with their friends and families.

I have been expanding my role as an astronomy and science "popularizer" with the Vancouver-area media, particularly the CBC. I'm doing this mostly through Twitter where I tweet as @polarisdotca.

Joanne Rosvick:

IYA 2009 activities included assisting with an astronomy open house at Thompson Rivers University in May 2009, organising an astronomy-themed Music in the Park concert in Kamloops in July 2009, assisting TRU's Visual Arts department in organising a student- and faculty-driven art show which took place in September/October 2009 at TRU, and conducting an astronomy night (presentation and observing at TRU's observatory) for the BC Living Arts Society in September 2009.

In addition to the presentation mentioned above, Joanne gave a presentation to and conducted an interactive exercise entitled "Secrets of Attraction: Gravity and Galaxies" with two groups of Grade 11 students when TRU had their open house event "A Day in the Arts and Science" in April 2009. She gave a talk to the BC Association of Physics Teachers in May 2009 about an interactive eclipse demonstration I'd developed some years before, and spoke to the Kamloops Astronomical Society in November 2009 about possible physical connections between open clusters and planetary nebulae. Joanne also conducted several observatory tours for school groups, Cub groups, and Brownies/Girl Guides. Finally, she hosted a Grade 11 class at TRU in December 2009: we had an observatory tour and then the class took part in an image processing exercise in one of our physics laboratories.

For her own professional development, in August 2009 Joanne participated in the Faculty Development Summer Institute at the University of Prince Edward Island in Charlottetown, PEI. This week-long teaching workshop focused on active and interactive techniques that can be used in the classroom. Joanne was able to incorporate several of the techniques in my first-year astronomy and physics courses the following semesters.

Gordon Sarty:

Gordon's main activity with the CASCA EPO Committee consisted of putting together a prototype web page to promote collaborations between amateur and professional astronomers, to be implemented on the Canadian Astronomy Education web site. The web page was constructed in consultation with members of the Royal Astronomical Society of Canada (RASC), Fédération des Astronomes Amateurs du Québec (FAAQ), The American Association of Variable Star Observers (AAVSO), International Occultation Timing Association (IOTA), International Meteor Organization (IMO), Association of Lunar and Planetary Observers (ALPO). He also contributed to the writing of the EPO white paper for the Long Range Planning Committee in early 2010.

Outside of the CASCA committee, Gordon's contributions to EPO were primarily in the form of public lectures. The following lectures were given at the regular monthly meetings of the Saskatoon Centre of the RASC: "Space Telescope Fever: A cure for Aperture Fever", "Meteorite Hunting at Buzzard Coulee". I also gave the following talk at the 2009 Saskatchewan Summer Star Party/RASC AGM: "Observing HMXB's with Professional and Space Telescopes". In addition, Gordon organized and chaired the Astronomy Papers session for that same star party/AGM. He also brought his H-alpha solar telescope to public observing sessions held on the 2009 and 2010 Astronomy Days.

Ian Short:

Ian participated in the Summer Teachers' Astronomy Resource Seminar (STARS, www.ap.smu.ca/STARS) at Saint Mary's University in July 2009, which was attended by 12 high school teachers from around Nova Scotia. He gave a presentation to the teachers on extra-solar planets with an emphasis on principles of the detection techniques, such as centre of mass and Doppler wobble that could be incorporated in a High School physics course. He also hosted a subgroup of four teachers in his office and demonstrated Java applets

(www.astro.ubc.ca/~scharein/applets/) that could be used to illustrate these principles in the classroom.

Ian gave a public lecture at Saint Mary's University on the 2009 Nobel Prize in physics in March 2009. The talk emphasized the astronomical utility of the CCD. In October 2009 he gave television and radio interviews on the significance of the CCD when the Nobel Prize was announced, which were aired on The National and CBC Radio One. He also prepared a presentation for a Teachers' Professional Development workshop on the math, physics, and lab skills needed by first year University students that was to be held in October, but, that workshop has been postponed.

Heather Theijsmeijer – CASCA Education Coordinator:

In terms of outreach over the past year, the CASCA Education Coordinator was involved with a number of public talks promoting both CASCA teacher resources (namely, the CASCAed website), as well as other astronomy resources for IYA2009. The workshops for teachers included the CASCA Assembly Teachers' Workshop (*CASCA Education: Bringing the Stars to the Students (and Teachers!)*), Ontario Teachers' Federation (OTF) Summer Institute (co-facilitator), and two talks at the Science Teachers' Association of Ontario (STAO) Conference (*Mastering the ESS curriculum*, and *Grade 9 Astronomy workshop*). IYA2009-related talks included the Manitoulin Star Party (*IYA2009: Canada Looks to the Skies!*), First Nations science camp, Camp P'Skapkiidaa (workshop on rockets and astronomy, including a stargazing session) and Stargazing Manitoulin (represented CASCA at the dedication ceremony for the first commercial dark sky sanctuary in Canada). Local events for Galilean Nights were also planned, but were cancelled due to poor weather.

Apart from public talks, the English CASCAed website was updated and received a thorough dead-link check. Google Analytics was also added to the site and is monitored continuously. In addition to the major updates, several minor updates and maintenance were performed throughout the year. The CASCAed Twitter account was created (@canastro) and has gained 159 followers since August 2009. The account is updated several times a week. Collaboration with the Doran Planetarium and PlayLearnThink enabled the Canadian Junior Astronomer Program to be integrated into the Doran Planetarium's outreach activities, which can then be modeled by other planetaria in Canada in the near future (<http://www.playlearnthink.com/iya2009.html>). Finally, collaboration with a STAO ScienceWorks committee allowed me to contribute to the new grade 9 astronomy resource for teachers, which was presented at the OTF Summer Institute in 2009, and will be again in 2010 (see below).

One CASCA-Westar Lectureship was arranged for Campbell River, BC, for March 2010, but did not occur. It is a priority for the next year to get the word out and use the CWL to continue the momentum gained by the Galileo Lecture Series for IYA2009. There were also small contributions to the CASCA E/PO committee activities, such as teleconferences. "In-reach" activities included regular articles for E-Cass, and a public talk at the CASCA 2009 Assembly (*Translating High School to University: What to expect from your first year students*)

Two workshops have been planned for the upcoming year, again at the STAO conference (most likely both a talk for CASCA and a talk for the STAO grade 9 astronomy resource), as well as the OTF Summer Institute in Sudbury. It is hoped that a CASCA-Westar Lectureship can be combined with the OTF Institute, as well. The French half of the CASCAed website will be getting its complete overhaul this summer (dead-link checks, updates and expanded pages). The Canadian Astronomy Facebook page will be maintained and updated, as well as expanded, to promote the Twitter feed, Canadian astronomical events and CASCAed resources.

Issues, Recommendations, Requests

Funding for Education and Public Outreach: The majority of CASCA's EPO activities are carried out by volunteers. The EPO LRP 2010 White Paper recommended that CASCA establish an EPO office with at least one full-time person. This person, along with contracted and volunteer effort, would develop and maintain the AstronomyCanada.ca website, develop and maintain public engagement through social media, manage the CASCA WESTAR lecture series and work on other national EPO projects.

AstronomyCanada.ca: The rationale for establishing this website is stronger now than when the website was first proposed. Astronomy in Canada is publically funded and all Canadians should have access to inspiring and informative textual and visual material about Canadian astronomy. As stated in the LRP2010 White Paper, AstronomyCanada.ca will serve as a central resource for communicating the achievements, activities and aspirations of Canadian astronomy to the public, Canadian media and decision makers. The critical issue is how to develop and maintain the website and identify the needed funding.

WESTAR Lecture Series: The WESTAR lecture series has had limited success. We recommend that the lecture series be revamped along the lines of the successful IYA Galileo lectures and that the lecture series is promoted more actively.

The IYA 2009 Legacy: During IYA many individuals and organisations worked very hard to establish connections between amateur and professional astronomers. This effort was led by the IYA Executive Committee (EC) in which CASCA was an equal and effective partner and represented the official link to the IAU through its Board, which acts as the Canadian National Committee. The partnerships between the amateur and professional astronomy communities were essential to the success of IYA2009 in Canada (these pro-am collaborations have been identified in many countries as one of the primary reasons for the success of IYA2009).

In addition, CASCA, the RASC and FAAQ made a successful proposal to NSERC's PromoScience program (CASCA is administering for the partnership with John Percy as PI) to support IYA and to "solidify partnerships and processes that secure the legacy" of IYA. One of the goals of this grant is to excite young people about science – especially young people from underserved communities. This grant is being used to support Julie-Bolduc Duval part-time as the IYA EPO Coordinator.

It is essential to maintain the partnerships with the amateur community to ensure that Beyond IYA legacies are achieved, and that the PromoScience award is successful. The effort by the IYA EC in building and maintaining these partnerships needs to be transitioned to a post-IYA environment. Regular communication and coordination between CASCA, the RASC and the FAAQ on EPO are essential to keep the collaboration effective.

We suggest that a small Joint EPO Coordination Committee (JECC) be established with equal representation from the three (CASCA, RASC, FAAQ) organizations. The Chairs (or designates) of each organization's EPO committee would form the core of the committee. There would be monthly or bi-monthly telecons to discuss broad EPO activities of interest to all organizations. Hopefully, this continued collaboration would lead to a small number of joint activities such as an annual Galilean Night. Note that we have not yet proposed this specifically to our FAAQ and RASC IYA partners, and welcome CASCA Board comments or suggestions before we proceed.

The EPO committee sees this collaboration as strategically important for CASCA and for Canadian astronomy generally. CASCA's EPO committee and other volunteers have much to contribute but these efforts are insufficient for an effective national outreach program. As evidenced by the success of IYA, an effective pro-am collaboration that can harness the strengths of both amateur and professional astronomers is an approach that works. Given the strategic importance of this collaboration, we suggest that each organization be invited to designate one member of their organization's Executive Committee to be added to the core of the committee identified above. For CASCA we recommend that the Board assign the 2nd Vice-President to be CASCA's Executive representative on the JECC. Should the Board wish, the 2nd VP could also serve as the Board liaison with the EPO Committee. The CASCA Board might recall that the RASC elected Jim Hesser as their Honorary President last August and Jim has expressed his willingness to help support efforts to maintain effective working relations between our organizations as the transition to Beyond IYA activities matures.

CASCA Press Officer: As noted in Robert Lamontagne's report he feels he no longer has the time to serve as CASCA's press officer. The EPO committee feels this is an important role and that CASCA should find a replacement for Robert. We recommend that Robert's contributions as CASCA press officer be recognized by CASCA at the upcoming meeting.