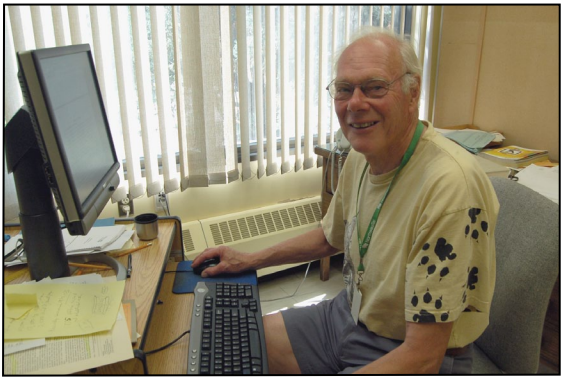
An icon in Canadian entomology was lost in August of this year with the passing of Dr Peter Harris at the age of 83. Highly respected at home and internationally as a pioneering leader in *classical weed biological control*, Peter will be remembered for laying the foundations for, and then greatly contributing to, Canada's reputable programme in this field of applied study. For future generations, he also has left an enduring legacy with the successful mitigation of some of western North America's most invasive rangeland weeds.



Peter Harris
(1930 – 2014)

Born and raised in England, Peter first came to Canada in 1950 to obtain his BSc (1955) in the Faculty of Forestry at UBC. It was during his undergraduate degree, which also included a summer job with the Federal Division of Entomology (FDE), Belleville, Ontario, Substation on the UBC campus, that Peter's interest in entomology was ignited through the study of forest pests (e.g., bark beetles; see Peter's 2007 Heritage Lecture, ESC *Bulletin*, **39**(4): 154-160). While at UBC, Peter also met his wife, Irene (m 1957), and rose to some prominence as an award-winning track and field athlete. These early years of athletics did not fade with time for Peter or Irene (or their three children), as they made physical activity a central part of their lives. After completing his BSc, Peter returned to England to obtain a PhD in entomology at the University of London (1958), studying the European pine shoot moth, although he maintained Canadian ties by collaborating on the same forest pest with FDE entomologists in Belleville and Sault Ste Marie, Ontario. This sustained Canadian connection likely contributed to his hire in 1959 into a biological control research position with Agriculture Canada, which was the beginning of a highly productive career that would span 36 years. He first worked at the 'Research Institute' in Belleville, until its closure in 1972, then at the Research Station in Regina, until it closed in 1992, and lastly at the Agriculture and Agri-Food Canada - Lethbridge Research Centre (AAFC-LRC) until he officially retired in 1995. However, being one to never sit physically or mentally idle, Peter continued to jog and work as an emeritus scientist at LRC until early 2014.

Peter was innovative, a 'big picture' thinker, tenacious and politically astute, which helped greatly in the formative years of the Canadian biological control programme. He persistently sought out, engaged and recruited those who could help him achieve his unwavering goal of providing agricultural producers and land managers with a reliable, economical and environmentally safe weed control option. Through his enthusiasm, drive and practical knowledge, he was often able to deliver. Very early in his career, Peter cultivated close collaborative ties with entomologist colleagues at CABI (formerly the Commonwealth Institute for Biological Control and International Institute for Biological Control) in Switzerland, which has been the contracted source of European weed biocontrol agents for Canada now for over 60 years. Working in close partnership with CABI legends, Dr Helmut Zwölfer and subsequently Dr Dieter Schroeder, Peter set Canada's priorities for the overseas surveys, selection and host specificity testing of mostly insect agents for a number of damaging rangeland weeds. During his

career with AAFC, Peter released and field assessed 36 insect and 1 nematode species, of which 70% established in Canada (a high percentage for weed biological control globally) and about a third of these have had measureable impact on their target weed hosts. He had excellent instincts in predicting which agents would be successful based on a broad knowledge of entomology and botany and keen observational skills. He typically was engrossed in developing mechanistic hypotheses on why an agent either succeeded or failed, and could easily bridge disciplines to arrive at novel approaches and conclusions to explain observed field patterns (e.g., his application of soil microbiology with a colleague to investigate the role of plant mycorrhizae in weed biological control). Some of Peter's acclaimed successes include the biological control of diffuse and spotted knapweeds in British Columbia using a suit of 11 established insects working in concert, and of leafy spurge in our Prairie Provinces using a complex of root-feeding flea beetles (*Aphthona* spp). He also is recognized for using biological control to produce major reductions of the pasture weed, nodding thistle, such that herbicide use against the weed was no longer needed in most areas, thus accruing savings for affected livestock producers. Many of the successful agents introduced into Canada by Peter were subsequently approved for use by the USA against the same weeds.

Among Peter's many contributions to the science of classical weed biological control were those that advanced the field globally through their immediate and sustained application by researchers. Together with colleagues, he played a major role in the development of currently used host specificity testing protocols. Peter was ahead of his time in advocating for consideration of both crops and native plant species of concern when delineating the host range of candidate biocontrol agents during pre-release testing. He also encouraged a process of independent scientific review of petitions for agent release, thereby reducing conflicts of interest for the researchers that produce and submit the petitions to regulators for decision. Other contributions of note were his development of an easy-to-use, standardized scoring method for assessment and comparisons of agent impact in the field, and the first to implement an economic analysis of the costs and benefits of weed biological control that could help in selling it to potential project funders.

Peter also was tireless in encouraging general acceptance and adoption of weed biological control in Canada through its promotion to both industry and governments, and the staging of public extension activities. He readily shared and spread his biological control successes by directly engaging the provinces and other stakeholders in educational hands-on events (e.g., farmer field days for the redistribution of leafy spurge beetles), thus engendering an understanding and sense of ownership of the projects and a personal connection with the insect agents. As a result, many a field person grew fond of the insects they managed and became loyal converts to biological control after witnessing what it could do for weed control. When project funding declined, Peter created the concept of 'weed biological control consortia', which brought Canadian and American stakeholders together to jointly fund the overseas exploration and testing of new agents for weeds of common interest.

Among his many accomplishments and awards for his career contributions, a few stand out as particularly noteworthy. These include: published papers in both Science and Nature in 1969 reporting on how mosquitoes sometimes benefit from feeding on insect haemolymph; made a Fellow of the ESC (1984); awarded the Commemorative Medal for the 125th Anniversary of Canadian Confederation (1994); given an award of recognition by the Canadian Forum for Biological Control (1996); awarded the ESC's Gold Medal (1997); inducted as a member of the Order of Canada (1997); formally recognized by his biological control peers at the International Symposium on the Biological Control of Weeds (1999); and made an Honorary Member of the ESAB (2008).

Peter inspired a whole generation of weed biological control researchers and practitioners

with his boundless energy and dedication to learning more about the art and science of his field of study. After notifying the international weed biological control community of his recent death, there was an overwhelming response of personally shared stories of how Peter helped in individual careers and lives. For those who knew him, he was an impressive, likeable man that will be greatly missed by his friends, colleagues and family.

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