

BWB17 Presentations

MONDAY, APRIL 10

Obtaining the Knowledge to Make Good Decisions: Surveying Biodiversity - Cartier I		
1:30 – 3:00 PM	Karen Cieminski, Minnesota Department of Natural Resources (Moderator and Speaker) - Survey123 for ArcGIS to Collect Observation Data - MN NHP Experiences;	The Minnesota DNR is beginning to test using Survey123 to collect observation data that will then be fed into our observation database. In this presentation, we will share our positive and negative experiences with the product, as well as briefly demonstrate a Minnesota-DNR designed web interface for editing the data collected by Survey123.
	Brent Kinal, New York Natural Heritage - Developing custom field data collection workflows compatible with a shared enterprise database using Esri Survey-123;	Designing a shared enterprise database to serve many organizations, each with different data storage and collection needs, has proven to be a difficult task in the development of iMapInvasives, an online GIS invasive species data management system. Esri's recent release of Survey-123 allows for customized field data collection workflows to accommodate individualized data collection needs, while maintaining a schema compatible with a shared database. We will share our experience using this newly released ESRI product.
	Samuel Brinker, Ontario Ministry of Natural Resources and Forestry - Five Years of Botanical Surveys in Ontario's Far North;	An ambitious 5-year endeavor to survey the vascular plant, bryophyte and lichen diversity in Ontario's Far North to support conservation planning. Representing 42% of Ontario's landmass, this region is north of the timber harvesting limit and is inaccessible by all-weather roads. It proportionally contains one of the most intact boreal forests remaining in Canada and some of the most southerly non-alpine arctic tundra in the world.
	Wesley Knapp, North Carolina Natural Heritage - A baseline for the Anthropocene; An overview of Plant Extinction in North America north of Mexico	It is hypothesized that extinction rates will increase as we move through the Anthropocene, yet we have not quantified the current extinction rates of most taxonomic groups. Approximately 81 plants have become globally historic or extinct from North America, north of Mexico, since European settlement. What lessons can we learn from our known current extinctions, how do we prevent future extinctions, and how do we prioritize current efforts?
3:30 – 5:00 PM	David Mazerolle, Atlantic Canada Conservation Data Centre - Filling knowledge gaps in Atlantic Canada through targeted fieldwork;	Through targeted species and habitat focused fieldwork over the last 15 years, the AC CDC's botany program has made great strides towards improving our understanding of Atlantic Canada's biodiversity and identifying areas of highest conservation value. This presentation will provide a brief overview of the centre's contribution to biodiversity information and highlight our most important finds in terms of species and communities. Some significant projects will be outlined, including collaborations with various conservation land trusts.

Carla Church, Manitoba Conservation Data Centre (moderator and speaker) - Tigers on the Prowl: Confusion and Conservation of a Rare Salamander;	Manitoba is home to 4 species of Salamander including the only known Canadian population of Eastern Tiger Salamander (<i>Ambystoma tigrinum</i>). The Manitoba Conservation Data Center has been working to understand the range of Eastern Tiger Salamander in the province by using a number of creative techniques to sample for larvae. The result is an extensive expansion of the known range in Manitoba and an improved understanding of habitat requirements for this enigmatic amphibian.
Charles Francis, Canadian Wildlife Service - Developing an Avian Monitoring Strategy in Canada	Birds are among the best monitored wildlife in Canada owing to a range of programs from Citizen Science efforts to professional surveys. I will discuss how these surveys can support decision making in conservation, and present a strategy being developed to optimize current investments in monitoring, ensure that data from supported surveys are available and useful, and identify ways to reduce risks associated with gaps in survey coverage.

Developing and Implementing Good Plans: Sustainable Industry - Cartier II

1:30 – 3:00PM	Reg Melanson, Canadian Business and Biodiversity Council, and Luc Robitaille, VP Responsible Care, Chemistry Industry Association of Canada (Co-Moderators) - Biodiversity Data Needs to Inform Government and Industry Decision-making;
	Tara Shea, Director, Towards Sustainable Mining, Mining Association of Canada;
	Kate Lindsay, Director, Environmental Regulations and Conservation Biology, Forest Products Association of Canada;
	Channa S. Perera, Director, Generation & Sustainability, Canadian Electricity Association;
	Drew Black, Director of Environment and Science Policy, Canadian Federation of Agriculture.

Developing and Implementing Good Plans: Future Directions in Conservation on Managed Lands - Cartier II

3:30 – 5:00 PM	<p>Future Directions in Conservation on Managed Forest Lands</p> <p>Session format and time: Series of 15-20 minute talks with Q/A, 90 minutes</p> <p>Session Moderators: Healy Hamilton (NatureServe) and Paul Trianosky (SFI)</p> <p>Speaker 1:</p> <p>Quantifying Conservation Value of SFI-Certified Forests, Part I</p> <p>Speaker: David Wiedenfeld, American Bird Conservancy</p> <p>Speaker 2:</p> <p>Quantifying Conservation Value of SFI-Certified Forests, Part II</p> <p>Speaker: Rickie White, NatureServe</p> <p>Speaker 3:</p> <p>Climate Change Adaptation: Using EDNA technology for better wildlife corridor in Eastern Canada.</p> <p>Speaker: Joël Bonin, Nature Conservancy of Canada</p> <p>Speaker 4:</p>	Quantifying Conservation Value of Managed Lands. Using EDNA technology to benefit conservation of ephemeral pools in Canada.
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Keeping the Villains at Bay: Using iMap Invasives for Early Detection in America's most heavily forested state

Speaker: Andy Cutko, Maine Department of Agriculture, Conservation, and Forestry.

Measuring Progress and Communicating Success - Cartier III

1:30 – 3:00 PM	Presenters: Lori Scott & Erin Chen, NatureServe - Visualizing Corporate Conservation Efforts	All organizations, public and private, are accountable for measuring and communicating outcomes. The NatureServe Network provides organizations with the best available information and expertise to plan, implement and assess their conservation performance. NatureServe's suite of visualization tools delivers decision-quality information in formats that are easy to use and apply. This session will demonstrate the application of three NatureServe Network tools for visualizing corporate conservation efforts – the Pennsylvania Conservation Explorer, LandScope America, and the global Biodiversity Indicators Dashboard.
	Amelia Argue, Ontario Ministry of Natural Resources and Forestry - Reporting on the State of Ontario's Biodiversity	To effectively conserve biodiversity, we need to understand it. Ontario's Biodiversity Strategy includes a commitment to report on the state of biodiversity every five years. The Ontario Biodiversity Council produced the State of Ontario's Biodiversity 2015 report (SOBR), which uses 45 indicators to assess pressures, state of ecosystems and species, conservation response, and progress against 15 biodiversity targets. SOBR is publicly available using a web-based format. Results from reporting help set Ontario's biodiversity conservation agenda.

Measuring Progress and Communicating Success: Case Studies – Cartier III

3:30 – 5:00 PM	César Lucio, Pronatura Veracruz - Assessing the performance of nucleation based techniques for mangrove forest restoration in Alvarado Lagoon System, Veracruz;	Mangrove forests are one of the richest terrestrial ecosystems. Mexico is the 4th country in the world by mangrove forest area, but is losing it rapidly. Official projects have no meaningful successful measurement and mangrove forest lost has not stopped. We show the results of a nucleation-based technique for mangrove forest restoration. We took measures at two different levels (individual and geometric landscape) in sites that were intervened from 2012 to 2015.
	Laura Landa Libreros, Pronatura Veracruz - Native seed preserves as a tool for diversifying ecosystem restoration in México;	Mexican official efforts in reforestation are monumental but tree production is oriented towards a few coniferous species, ignoring the local tree diversity. We present strategic information about native seed collection, quality management and effective distribution in Veracruz state as an alternative for species diversification in reforestation and restoration projects. Our results show capacity building and networking are keys for implementing large-scale initiatives regarding native seed conservation and forest restoration.
	Bernardino Villa-Bonilla, Aníbal F. Ramírez Soto, Ixchel Sheseña Hernández and Laura Landa Libreros, Pronatura Veracruz - Biodiversity nurseries, a key tool for effective ecological	<p>The recovery of forests and their biodiversity have a critical problem: the lack of diversity of native species in nurseries. Without diversified and quality nursery plants, it is difficult to reach the goal of recovering biodiversity.</p> <p>Thanks to the experience of Pronatura, the spread of more than 100 species of forests and forests has been successfully developed. The results have been surprising as communities recognize and demand these key species for their usefulness. More than 3 million seeds of at least 50 species were collected</p>

restoration in the Gulf of México.	and donated, impacting more than 450 hectares of reforestation. With the implementation of 7 workshops, the technical and administrative capacities of 45 focal nurseries that were currently established as a Network of Biodiversity Nurseries of the Gulf of Mexico (REVIVE) were increased, 5 protocols were carried out to measure seed viability, Protocol for the raising of tree phenology from a dron, 5 seedlings (RODSEM) of key species introduced into forest production were established, nursery technicians were able to obtain quality plants, especially in The topic of pest prevention and combat, 4 specialized audiovisual videos on native plants were generated as a learning tool, and a web page was implemented as a fundamental tool in the search for specialized information on seeds, native plants and ecological restoration (http://viverosdebiodiversidad.org/), but in turn as a promotional tool.
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Working Groups - Capital/Carleton			
Conservation Assessment of Bees Workshop			
1:30 – 1:45 PM Jennifer Heron, BC Ministry of Environment – Introduction to session			
1:45 – 2:40 PM	Colin Jones, Natural Heritage Information Centre, Ontario Ministry of Natural Resources & Forestry	Ontario Pollinators: Monitoring Biodiversity and Assessing Habitat	While Ontario is a national hotspot for wild pollinator biodiversity little is known about their distribution, abundance or conservation status. Here we present two initiatives that address strategic outcomes of Ontario's Pollinator Health Action Plan. Firstly, the University of Guelph's program to monitor the current status and future trends in diversity and relative abundance of wild pollinators in Ontario. Secondly, a GIS-based analysis of the overall quantity and quality of pollinator habitat across southern Ontario.
2:40 – 3:00 PM	Syd Canning, Canadian Wildlife Service, Environment and Climate Change Canada	Monitoring Bumblebees in the Yukon: Finding New Gold in the Klondike	Some bumblebees have declined significantly in southern Canada and the US, but there are few data from northern Canada and Alaska. Trends can be inferred using relative abundance of species in museum collections through time; in the Yukon, we have begun general bee collections to provide baseline data. In the future, standardized transects along roads will provide more robust trend information. We have discovered a new bumblebee, <i>Bombus kluanensis</i> , and rediscovered the rare <i>B. bohemicus</i> .
3:30 - 3:50 PM	Cory Sheffield, Royal Saskatchewan Museum	Review of Bee Systematics, Ecology and Conservation in Canada	There are over 850 bee species in Canada, mostly within the ecozones in the southern half of the country. Efforts to document the patterns of diversity of Canada's bees have been facilitated by intensive surveys and DNA barcoding. These initiatives have allowed for the first comprehensive assessment of the conservation status of bees in Canada. Our current knowledge of our bees, including their diversity, distribution, gaps in knowledge, and conservation status will be provided.
3:50 – 5:00 PM	Jennifer Heron, British Columbia Ministry of Environment	Conservation status assessments of bees: challenges and discussions, workshop and	The conservation status of Canada's 800+ bee species was completed using Naturserve methodology as part of the 2015 general status of wildlife in Canada. During the process, we encountered numerous challenges and had extensive discussions about what factors should be considered when assessing this group. Factors such as nesting preferences, life cycle, floral and habitat specialization, threats and other factors. This workshop will begin

discussion session - need to devise agenda	with an overview of the challenges we encountered, and how we approached the assessment although we'd like to start a discussion and hear from others on this topic. We invite anyone would like to share their thoughts to bring them to the workshop, as we also aim to break out into discussion groups so everyone can hear others' thoughts, ideas and own experiences.
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TUESDAY, APRIL 11

Obtaining the Knowledge to Make Good Decisions: Surveying Invasives - Cartier I		
10:30 – 12:00 PM	Jennifer Dean, New York Natural Heritage (Moderator and Speaker) - Spatial prioritization of invasive species management and survey efforts;	We developed a synthesis map layer for New York to help conservation partners decide where to focus their efforts when surveying and managing for invasive species. The model indicates areas predicted to have high value natural areas prone to new invasive species populations and dispersals by incorporating component models of ecological significance, priority protected areas, and anthropogenic stressors. Stakeholder workgroups helped shape the output and provided valuable use-case examples.
	Amy Jewitt, Western Pennsylvania Conservancy - iMapInvasives Promotes a Better Understanding of Invasive Species;	iMapInvasives provides an online platform for tracking invasive species locations and management efforts. As iMapInvasives has grown and developed, the network and dataset are being utilized in new and exciting ways. From directing on-the-ground management efforts to providing data for forthcoming invasive species field guides, iMapInvasives truly is leading the way when it comes to influencing the world of managing and understanding invasive species.
	Michael Oldham, Ontario Natural Heritage Information Centre - Monitoring Exotic Plant Species Along Northwest Territories Highways;	Exotic vascular plant species were surveyed along more than 2,000 km of highways in the Northwest Territories, Canada, in 2006 and again in 2016. 10 km long transect surveys were driven along all territorial highways in 2016 and results compared with the earlier survey. Walking transects were conducted at highway pull-offs to detect less conspicuous species. More than 50 exotic plant species were recorded including a dozen species not previously documented in the Northwest Territories.
	Bruce Bennett, Yukon Department of the Environment - Native Plant Range Expansion and Blurring Boundaries Between Native and Invasive;	Range expansion for vertebrates is well-documented and species are considered native. For plants the same expansion often leads to an exotic status. With climate change habitats and species ranges are changing should we rethink how we are treating these taxa?

Obtaining the Knowledge to Make Good Decisions: Threat Assessment - Cartier I

1:30 – 3:00 PM	Jenna Quinn, Rare Charitable Research Reserve - Long Term Monitoring Initiative to Inform Management Decisions	Monitoring a suite of indicator species on a nature reserve or protected area can provide a wealth of information regarding the health of the ecosystems present, the impacts of surrounding threats, and the direction of a proposed land management or stewardship regime. This presentation will discuss strategies for how to start up and sustain a long term monitoring program including presented case studies showcasing monitoring data being utilized to make best management decisions.
	Sybil Feinman, Canadian Wildlife Service - Drawing relationships between sectors and the specific activities which threaten biodiversity;	COSEWIC uses a "threats calculator" based on that of the IUCN–Conservation Measures Partnership. In addition to relying on this tool, a separate CWS database builds on these concepts, aligning threats to species at risk to the specific activities of the responsible sectors. This tool offers the potential to engage responsible sectors not only on a site-specific basis, but also on an industry wide scale, promoting improved global stewardship practices.
	Christopher Tracey, Pennsylvania Natural Heritage Program - Total Species Score for Large Scale Risk Assessment;	Rapidly screening the full flora and fauna of regions and continents is essential to adapt conservation priorities to otherwise undetected shifts in species status. Large data gaps leave qualitative localized rankings, such as S-ranks, as the only consistent means to assess status. While ranks estimated by each state or province can be suspect when aggregated across entire species ranges the Total Species Score provides a powerful means for prioritizing all species across North America.

Obtaining the Knowledge to Make Good Decisions: Status Assessments - Cartier I		
3:30 – 5:00 PM	Rémi Hébert, Canadian Wildlife Service - Wild Species 2015: The General Status of Species in Canada;	Session on how the national coordination works in Canada for species assessments (national and regional conservation status ranks), and examples of involvement at the provincial and territorial level.
	Suzanne Carrière (Government of the Northwest Territories, Northwest Territories Conservation Data Centre). A Look North: The NWT Species General Status Ranking Program;	We propose an eco-regional open-sourcing method to document northern species distribution that should meet all the requirements for providing explicit assumptions, mapping uncertainties, referencing, and scaling abundance to ultimately be able to better track how species distribution changes with climate. Using an open-source approach we present a first set of eco-regional maps for the 67 species of terrestrial mammals occurring in the NWT. Then we examined the assumption that real distributional changes in NWT's terrestrial mammals are detectable above the uncertainties and errors related to the underlying data.
	Bruce Bennett (Government of Yukon, Yukon Conservation Data Centre), Syd Cannings (Government of Canada, Environment and Climate Change Canada), and Randi Mulder (Government of Yukon, Yukon Conservation Data Centre). Assessing	The symposium will provide several perspectives on species assessment in Canada. Under the Accord for the Protection of Species at Risk, the wildlife ministers in Canada made the key commitment to “monitor, assess and report regularly on the status of all wild species”. This ambitious goal is the mandate of the National General Status Working Group (NGSWG), which includes representatives from all provincial and territorial governments in Canada, and from the federal government. The main products of the working group are the reports from the series Wild Species: The General Status of Species in Canada, which are released every five years. In the latest

5739 Yukon species: Beringia finds a place in the General Status Program;	report, Wild Species 2015, the conservation status of about 30,000 species was assessed in Canada. The Wild Species reports represent the most comprehensive look at the state of Canada's species and contain the general status assessments for a broad cross-section of species, from all provinces, territories and ocean regions. The symposium will showcase the perspective of various members of the working group on species assessment. A national perspective will be brought by the coordinator of the program (federal government). Then, a perspective from the territorial governments and from the provincial governments in Canada will be presented. A perspective will also be provided on the assessment of aquatic species and on how new groups of marine species are assessed in the oceans. Finally, NatureServe Canada will describe how they have been working to integrate the results of the Wild Species reports in the data management system of NatureServe, and how this work benefits the entire NatureServe network.
Guy Jolicoeur (Government of Québec, Québec Natural Heritage Information Centre). Québec CDC and NGSWG: Working Together Towards the Same Goal;	
Lea Gelling (Government of British Columbia, British Columbia Conservation Data Centre). BC embraces General Status;	
Jennifer Shaw (Government of Canada, Fisheries and Oceans Canada). Assessing Aquatic Species for the General Status Program;	
Amie Enns (NatureServe Canada). NatureServe Canada National Office Support for the General Status Program;	

Developing and Implementing Good Plans: Using NatureServe Data and Products to Plan for Conservation of Species and Habitats in Managed Forest Ecosystems - Cartier II		
10:30 – 12:00 PM	Using NatureServe Data and Products to Plan for Conservation of Species and Habitats in Managed Forest Ecosystems. Session format and time: Series of 15-20 minute talks with Q/A at end, 90 minutes total Session Moderators: Andrew DeVries (SFI) and Rickie White (NatureServe) Speaker 1:	Examples from Port Hawkesbury. US Forest Service and NatureServe: Partnering to Protect Critical Resources in Managed Forests. How provincial governments are utilizing NatureServe data and tools.

Using NatureServe Data to Plan and Manage for Critical Species and Habitat:
Examples from Port Hawkesbury
Speaker: Andrew Fedora, Port Hawkesbury Paper

Speaker 2:
How a provincial government is utilizing NatureServe data and tools.
Speaker: Jim Mackenzie, Coordinator, Ontario Natural Heritage Information
Centre

Speaker 3:
Nanabush and the Reconciliation of Indigenous values in Canadian forestry
Rosanne Van Schie MFC, Wolf Lake First Nation

Developing and Implementing Good Plans: Energy - Cartier II

1:30 – 3:00 PM	Erin Chen, NatureServe (Moderator) Gregory Miller, Ph.D. - NatureServe -Energy and Biodiversity in an Era of Global Change;	Dr. Gregory Miller will outline how energy companies and conservation practitioners can work together to better incorporate biodiversity info into the business/project life cycle of oil and gas development. The session will explore the challenges both to businesses and to conservation organizations, as well as the role of governments. Key topics include mitigating impacts, measuring impacts, and the importance of stakeholder engagement.
	Jacqueline Dennett, U. of Alberta - Enduring disturbance: rare vascular plants in Alberta's oil sands: Ann Smreciu, Wild Rose Consulting - A Cooperative Effort to Maintain Biodiversity in Alberta's Oil Sands	Plant populations encountered during pre-disturbance assessment surveys in Alberta's oil sands are included in provincial ranking of rarity. Use of these element occurrences raises concerns about persistence given record origin, particularly when associated with footprints from recent developments. We found a persistence rate of 75% for image and field-based surveys of historic rare plant records. Findings from field visits will be discussed along with suggested methods for revisitation monitoring.

Developing and Implementing Good Plans: Minerals, Agriculture and Net Benefits - Cartier II

3:30 – 5:00 PM	Shara Howie, NatureServe (Moderator), Ashlea Frank, Compliance Services International - Net Conservation Benefit Approaches Designed for Endangered Species and Pesticides;	The registration and registration review of pesticides by the U.S. EPA under the Federal Insecticide, Fungicide, and Rodenticide Act presents many challenges to regulating agencies, pesticide registrants, and end-users when it comes to evaluating, ensuring and/or communicating the adequate protection of species listed under the Endangered Species Act. Adequate protection is attainable through sound science, decisions that take into account various interactions within the environment, and knowledge about local conditions. This presentation will explore additional net conservation benefit approaches that can support ESA-listed species recovery while also
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	<p>providing pesticide users with the tools they need. The organization of a successful program will require input from regional and local experts, land use managers, and growers or pesticide users who can then explore a comprehensive program that promotes a healthy environment. Illustrations on how such programs can contribute to existing tools and data developed by the FIFRA Endangered Species Task Force will also be discussed.</p>
<p>Chris Friesen, Manitoba Conservation Data Centre - Pits and Plants: Gravel Extraction and Rare Species;</p>	<p>The Birds Hill area of Manitoba is a significant source of gravel for the aggregate industry. It's also home to two plant species listed under Manitoba's Endangered Species and Ecosystems Act. The Manitoba Conservation Data Centre is engaging with the gravel pit operators and land owners to develop site plans for specific projects. By working with stakeholders, the CDC hopes to build positive relationships that will allow a long-term land-use plan to be developed.</p>
<p>Meg Southee, Wildlife Conservation Society Canada - How is mineral exploration affecting caribou ranges in Ontario?</p>	<p>Boreal woodland caribou, a species-at-risk in Canada, are under threat from habitat loss and fragmentation from cumulative impacts, including mineral exploration. We have developed a system to track mineral exploration permits and associated activities occurring on caribou ranges in Ontario. This presentation will outline how Python scripts were used to harness data from isolated government websites to create a publicly available Story Map and custom web tools to empower the public on this issue.</p>

Measuring Progress and Communicating Success - Cartier III		
10:30 – 12:00 PM	<p>Distribution Modeling Success Stories</p> <p>Species Distribution Modeling – A Tool for Improving Conservation</p> <ul style="list-style-type: none"> - Dan Campbell, Syngenta – The Need for Better Distribution Data for T&E Species - Stinger Guala, USGS – A National Vision for Improved Biodiversity Data and the Role of SDM - Network Distribution Modeling Use Cases – Presented as a series of short talks highlighting how NatureServe network programs are using species distribution modeling to address conservation needs. Includes presentations from New York, Pennsylvania, Virginia, Saskatchewan, Colorado, Montana, Oregon, and NatureServe. 	<p>This forum will explore the successes of NatureServe Network Modeling Centers in generating improved distribution data through species distribution modeling (SDM), and applying that data in varied management contexts. Formatted as a series of short (10 minute) presentations, the purpose of this session is to expose others inside and outside the NatureServe Network to the body of SDM currently underway. We will highlight the work of programs to (1) model varied conservation elements (terrestrial and aquatic, habitat specialists and generalists, species and communities) and (2) provide data to support diverse conservation applications (e.g. directing inventory, supporting planning, informing listing decisions). Of interest to both modelers and managers, this forum is intended to inspire with what is possible when advances in computing power, GIS capacity, and environmental data are combined with NatureServe's rich natural history data.</p>

Measuring Progress and Communicating Success: Mitigation - Cartier III

1:30 – 3:00 PM	Nicole Firlotte, Manitoba Sustainable Development (Moderator and Speaker) - Chimney Swift Habitat Loss A Mitigation Case Study;	The Chimney Swift (<i>Chaetura pelagica</i>) presents an unusual case of a Species at Risk (Schedule 1, Threatened under Canada's Species at Risk Act; Threatened under Manitoba's Endangered Species and Ecosystems Act) that is currently largely human commensal, presenting novel community engagement and stewardship opportunities. This species adapted to the loss of large tree cavities by utilizing chimneys; however, recent changes to building design and furnace systems have meant that many chimneys are no longer available to swifts as a nesting or roosting substrate. This loss of habitat is implicated in the species' decline. Although free-standing towers have worked well as a substitute for chimneys in the southern U.S.A, they have, to date, failed to attract swifts in the northern periphery of the species' range, necessitating more research and monitoring in the Canadian context. We present a case study of the mitigation procedure for the loss of an industrial chimney stack in Winnipeg, Manitoba. After an unsuccessful attempt to retain the chimney, a mitigation plan was developed that included the design and construction of temporary structures on site, plans for permanent replacement faux chimneys, and community outreach and engagement including volunteer monitoring.
	Robert Popp, Vermont Natural Heritage - Assisted Migration: Context, Risks, and Opportunities	The possibility of "assisted migration" to aid species in adjusting to climate change is highly controversial. This workshop will outline the ongoing debate surrounding assisted migration, and provide a tangible example of how this approach might be relevant to plant species of conservation concern in eastern North America. Participants will engage on a range of ecological, ethical, and legal issues concerning whether this approach could or should become a viable conservation option in the future.

Measuring Progress and Communicating Success: Restoration - Cartier III

3:30 – 5:00 PM	Climate Smart Restoration - Erin Chen, NatureServe (Moderator), Lori Scott, Nicholas Moy, NatureServe – Climate Smart Tool;	Our planet is changing, and we need to plant a variety of species in a climate-smart way if we want restoration efforts to succeed and native ecosystems to thrive. With funding from the Alcoa Foundation, NatureServe is building a mobile-friendly online tool (which will work on any smartphone or browser) that guides land management and restoration decisions in an ecologically informed way about what species to plant in a given location in light of climate change. The target audience for this tool is broad: from people planting trees to revegetate an area, to those who are attempting to restore a more functional ecosystem. Even if the goal is to simply plant trees, this tool will provide the information one needs to select the most ecologically and climatically appropriate trees in that area. This first iteration of the tool focuses on the ecosystem types in the Ridge and Valley portion of the Appalachians centered in Tennessee, but will reach beyond this region to Pennsylvania and south to northern Alabama. We anticipate that this Alcoa-funded tool has the potential to aid in the climate-smart restoration of over 2,000 acres with over 40,000 trees, and will catalyze a quick uptake with expansion to other ecoregions.
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	<p>NatureServe will showcase a beta version of a new climate-smart tool for restoration and gather feedback. The session will focus on:</p> <ul style="list-style-type: none"> • Defining the need for climate-smart restoration among various stakeholders • Showcasing features of the new climate-smart tool and gathering focus-group feedback • Exploring opportunities for tool expansion and collaboration
<p>Sarah Marshall, Colorado Natural Heritage Program, Colorado's Watershed Restoration Toolbox</p>	<p>Colorado is one of the fastest-growing states in the U.S., placing increasing demands on limited groundwater and surface water resources and stressing aquatic ecosystems. As resource managers, planners, and restoration practitioners attempt to mitigate for impacts to aquatic ecosystems, there is a growing need for conservation planning tools that help bridge the gap between ecological data collection and applied restoration and water resource management. The Colorado Natural Heritage Program (CNHP) is working to meet this need by developing a suite of online tools to help support conservation efforts in Colorado. One of these tools, the Watershed Restoration Toolbox, is an interactive online mapping interface intended to help users visualize wetland and stream distribution, landscape-scale ecological functions, hydrologic modification, stressors, and prioritization for conservation and restoration at the HUC8 subbasin scale. In addition to mapping, the toolbox will provide a gateway to planning resources ranging from funding opportunities to the most current technical guidance for aquatic restoration. This project is intended to help catalyze and improve aquatic restoration activities by providing integral data to streamline restoration planning, increasing the likelihood of successful project implementation, and encouraging planners and restoration practitioners to view conservation and restoration through the lens of cumulative ecological impacts at the sub basin scale.</p>

Working Groups - Capital/Carleton		
10:30 – 12:00 PM	<p>Building Reference Networks of Benchmark Ecosystems – Don Faber-Langendoen (Senior Ecologist, Northeastern North America, NatureServe). a) Opening remarks b) The goals of reference networks for ecosystems. (10 min)</p> <p>Joe Rocchio (Senior Vegetation Ecologist, Washington DNR, Natural Heritage Program) <i>Identifying Washington's Benchmark Wetlands. An Approach Based on Ecological Integrity, USNVC, and Natural Area Preserves.</i> (10 min)</p> <p>Andy Cutko (Ecologist, Maine Natural Areas Program, Maine Department of Agriculture, Conservation and</p>	<p>NatureServe and the Network are now widely applying Ecological Integrity Assessment (EIA) methods, including as part of our core Element Occurrence Rank (EORANK) methods, to support conservation, restoration, management and monitoring of ecosystems. Reference networks, in which the integrity of ecosystems are documented across a range of sites, are a key application of the method. These networks serve as baselines for documenting responses to natural and human disturbances, including climate change. In this workshop we ask how we can continue to expand the development of reference networks to support ecosystem condition assessments, and how this intersects with our goals of using EORANKS to build conservation networks that seek to protect all ecosystems. The workshop will include talks by practitioners from across the network, followed by open discussion.</p> <p>90- minute Session.</p>

	<p>Forestry. <i>Reference Wetlands in Maine: EIA, Ecological Reserves, and Key Questions</i> (20 min)</p> <p>Eric Sorenson (Community Ecologist, Natural Heritage Inventory, Vermont Fish and Wildlife Department). <i>Using natural community element occurrences as conservation targets in Vermont's Landscape Conservation Design</i> (20 min)</p> <p>Panel Discussion with Participants (30 min)</p>	
1:30 – 3:00 PM	<p>NatureServe Species Distribution Modeling Workshop - Regan Lyons Smyth and Healy Hamilton, NatureServe</p>	<p>Recognizing the value of species distribution modeling (SDM) relevant to management of threatened and endangered species, and that those management concerns do not stop at state boundaries, in this second SDM session we will roll up our sleeves to make headway on a coordinated national SDM initiative. Continuing the dialog begun at BWB 2016, in this work session we will address issues relevant to this national initiative, including (1) development of a national predictor data library for use in modeling, (2) a framework for coordinated production of consistent SDM products, (3) consideration for the formatting and dissemination of model outputs.</p>
3:30 – 5:00 PM	Continued	

WEDNESDAY, APRIL 12

Obtaining the Knowledge to Make Good Decisions: Classification and Mapping - Cartier I		
10:30 – 12:00 PM	<p>Patrick Henry, NatureServe Canada (Moderator), Ken Baldwin, Canadian Forest Service, CNVC Technical Committee Chair, Don Faber-Langendoen, NatureServe, CNVC Technical Committee member - Status and Needs of the Canada National Vegetation Classification;</p>	<p>For industries to operate sustainably, they and governments require access to comprehensive, current and accurate environmental data, including information regarding the location and status of Canada's rare and threatened species. This panel will bring together members of the Canadian Biodiversity and Business Council (CBBC) and guests from the NatureServe Network and Canadian governments to discuss data needs, data gaps, data access and sharing, and proposed solutions to ensure that industrial development decisions in Canada are informed by the best available biodiversity information.</p>
	<p>Ephraim Zimmerman, Pennsylvania Natural Heritage Program - Revising Pennsylvania's Natural Plant Community Classification;</p>	<p>Wetland vegetation associations for Pennsylvania were updated in 2012 with quantitative field data and "crosswalked" to the NVC. Data from several recent vegetation classification projects conducted by PNHP since 1999 suggest the terrestrial portion of the classification is needed as well. In this presentation, we will discuss the process to update the upland portion of the Pennsylvania</p>

	classification including field inventory protocols, data management and analysis, and links to the NVC.
Kevin Hop, U.S. Geological Survey - Lessons learned: synchronizing map layers to a single USNVC version;	This presentation provides lessons learned from synchronizing nine vegetation map layers to a single USNVC version. From 1996 to 2015, the NPS Vegetation Mapping Inventory Program produced map layers of national park units in the Great Lakes Network. Most park units received a different iteration of the USNVC depending on when a map layer was produced. Synchronizing all nine map layers with a unified classification equips data users to perform consistent application across all layers.
Jimmy Kagan, Institute for Natural Resources, Portland - Creating range maps for all vertebrates, trees, shrubs and at-risk species in North America	

Citizen Science - Cartier I		
1:30 – 3:00 PM	Lindsey Wise, Portland State University and Bryce Maxell, Montana Natural Heritage - Practical Uses of iNaturalist, eBird, and Other Online Observations;	Websites such as eBird and iNaturalist continue to grow in popularity, resulting in millions of observations of species around the world. Many of these observations are relevant to biodiversity conservation and can inform our work with rare and invasive species. This talk will give examples of how these sites have been used successfully by network members in species tracking, modelling, and planning and provide guidance on how to get started tapping into these valuable resources.
	Peter Soroye, U. of Ottawa - How good is citizen science at contributing novel species information?	Answering global change and conservation biology questions is increasingly limited by a lack of comprehensive datasets of spatio-temporal species observations, data which citizen science seems well positioned to provide. However, no work has explored citizen science's ability to provide new species information as opposed to simple confirmatory observations. In a geo-spatial analysis comparing citizen science observations to professionally collected observations, we find that citizen science provides significant new information on species distributions, habitats, and phenology.
	James Pagé, Canadian Wildlife Federation, Bioblitz Canada: documenting biodiversity from sea to sea to sea;	BioBlitz Canada launches in 2017 with a cross Canada citizen science and traditional science initiative to document species occurrences and help increase the knowledge base for conservation decisions. The initiative will carry out targeted surveys at a minimum of 35 sites covering every province and territory and engage over 10,000 citizens and scientists to collect species observations using iNaturalist.ca to be shared with the public, government and the conservation community, including the NatureServe Network.
All - Presenter Panel Discussion		

3:30 – 5:00 PM	Janel Johnson, Nevada Natural Heritage Program - Year of the Monkey: a rare "super bloom" for Carson Valley Monkeyflower;	The Carson Valley Monkeyflower (<i>Erythranthe carsonensis</i>), is endemic to a small area of northern Nevada and California. Surveys before 2016 had only found small, fragmented populations at the fringes of urban development around Carson City. The weather in 2016 was particularly favorable for this annual species and a public outreach campaign through social media and the local news helped us locate several large new populations in better protected areas.
	John Klymko, Atlantic Canada Conservation Data Centre - Maritimes Butterfly Atlas;	The Maritimes Butterfly Atlas is a citizen science project that documented the distributions of butterfly species occurring in the Maritimes. Over the course of six years 34,000 photographic and specimen-based records were submitted by 450 volunteers. The project greatly increased what is known about the current conservation statuses of the region's butterfly species and created a snapshot of current distribution that will serve as a baseline for monitoring future distribution changes.
	Colin Jones & Jim Mackenzie, Ontario Natural Heritage Information Centre - Master Naturalists--Champions of NatureServe?	Master Naturalist programs provide training and accreditation to individuals so that they can provide education, outreach and service dedicated to the understanding and management of natural resources. Some programs may not, however, include a module on the importance of contributing observations to citizen science platforms. Ontario has recently created a module for our Master Naturalist Program highlighting how contributing records can benefit NatureServe conservation status assessments and land-use planning.
	Chris Ludwig, Virginia Division of Natural Heritage - Virginia Master Naturalist Project RareQuest: An experiment to use citizen scientists for hard-core Heritage inventory field work;	During the field season of 2016, the Virginia Natural Heritage Program used volunteers from the Virginia Master Naturalist Program to conduct field work to update Element Occurrences (EOs) for rare plants, butterflies, and birds. 109 volunteers signed up and were assigned to one of 37 teams distributed throughout the Commonwealth. Approximately 81 volunteers (75%) followed through on participation at some level. These volunteers contributed more than 770 hours towards the project and found and documented 27 of the 134 element occurrences assigned to them. This presentation will offer the benefits and drawbacks of such an effort and share many lessons that were learned during the year.
All - Presenter Panel Discussion		

Developing and Implementing Good Plans: Planning for Biodiversity - Cartier II		
	Andrew Couturier, Bird Studies Canada - Incorporating biodiversity data into assessments for IBAs and KBAs;	In partnership with NatureServe Canada, we have developed an algorithm to harvest and visualize biodiversity records falling within Important Bird and Biodiversity Areas. The value of these data is immense, as we broaden the scope of IBAs beyond birds to other taxonomic groups, and move towards Key Biodiversity Areas. The presentation will showcase early results from this initiative and outline plans for broader implementation.

<p>Ryan Fisher, Environment Saskatchewan -Using NatureServe Vista to inform landscape-scale planning in southwestern Saskatchewan;</p>	<p>Management of landscapes in southwestern Saskatchewan, Canada involves multiple competing landuses, including industry, farming and ranching, and conservation of species-at-risk and habitats. Saskatchewan Ministry of the Environment is undertaking a pilot project using NatureServe Vista to aid in landscape-scale visualization of these competing land uses and for future planning scenarios in the southwestern corner of the province. This area was chosen because of: the availability of all relevant land use threat layers that impact species in this area, the availability of point locations and modelled habitat for multiple species, and primarily because of an existing on-the-ground partnership between stakeholders and government to conserve species-at-risk. We are beginning with 4 conservation elements; the modelled habitat of 3 species (Greater Sage-grouse, Sprague’s Pipit, and Swift Fox) and one element representing native grassland landcover. Threats for these species and in this area, are mainly related to industrial development and we are also using the landscape condition modeller to assess how distance intensity thresholds influence viability of the conservation elements. Next steps include examining how policies on different land tenure types influence protection of the conservation elements, including more modelled habitat of species in the area, and examining future development scenarios related to industrial development.</p>
<p>Christopher Tracey, Pennsylvania Natural Heritage Program (Moderator and Speaker) - Prioritizing Habitats for Conservation Action in the Northeastern US;</p>	<p>Determining the relative importance of habitats to at risk species and biodiversity in general is critical for spatially explicit conservation prioritization. We developed a method that statistically measures the association of individual species with habitat types and developed a weighting system to aggregate the importance of habitats across multiple species. We will share a test case of this method used in the Regional Conservation Opportunity Areas project led by the North Atlantic LCC.</p>

Developing and Implementing Good Plans: Planning for Biodiversity - Cartier II	
<p>1:30 – 3:00 PM Julie Lundgren, New York Natural Heritage (Moderator)</p>	
<p>Michael Bradstreet, Nature Conservancy of Canada – NCC’s Conservation Assessment for Southern Canada;</p>	<p>Conservation Assessment for Southern Canada Using nationally-available digital layers from 79 ecoregions across southern Canada, the Nature Conservancy of Canada has scored and mapped 8 biodiversity, 6 threat and 2 conservation response criteria. Biodiversity criteria represent Canadian species at risk, globally rare and unique species occurring in Canada, and measures of ecosystem function, including species richness, intactness and habitat diversity. Threat criteria include human footprint, watershed stress, habitat risk, lack of connectivity and observed climate change. Conservation response looks at the amount of land formally protected for conservation and how representative such areas are of the range of landforms in an</p>

	<p>ecoregion. Biodiversity and threat criteria scores were summed, rescaled into five categories using natural breaks and then plotted in a 2X2 matrix. Ten ecoregions had relatively high total biodiversity and threat scores and were deemed in most urgent need of additional protection. 21 ecoregions also had relatively high total biodiversity scores but somewhat lower total threat scores. 12 additional ecoregions with lower total biodiversity scores nevertheless scored in the highest category for one or more biodiversity criteria. Combined, these 43/79 ecoregions comprised 74% of the study area.</p> <p>Canada has committed to achieving Aichi Target 11 by 2020. To date, most activity has been focused on achieving at least 17% protection for terrestrial and freshwater areas. Data from these analyses show that in most of the ecoregions of southern Canada levels of terrestrial and freshwater protection are well below this target. In addition, the analyses provide some additional perspectives on other aspects of Target 11 including ecological representation and well connected systems.</p>
Robert Zaino, Vermont Department of Fish and Wildlife - Heritage Data in State Lands Management Planning;	For nearly two decades, Natural Heritage data have been foundational to the management of state parks, state forests, and wildlife management areas in Vermont. We conduct detailed natural community inventories as part of a multi-disciplinary land management planning process, and project-specific Heritage inventories. This model is very successful, and fosters a positive, collaborative approach to conserving natural communities and rare species on Vermont's state-owned lands. I'll discuss some specific examples, and consider lessons learned.
Julie Lundgren, New York Natural Heritage - Meeting in the Middle - Satisfying Recreation and Conservation Priorities in NY State Parks	NY State Parks comprises less than 1% of the land area of NY State, but supports a disproportional percent of the state's known occurrences of rare species and significant natural communities. The parks' natural areas are also in high demand for recreational use. To address this challenge, NYNHP has worked in partnership with Parks to identify priorities and solutions for different parcels and parks rather than a one size fits all approach.

Developing and Implementing Good Plans: Planning for Biodiversity - Cartier II		
3:30 – 5:00 PM	Cary Hamel, Nature Conservancy of Canada (Moderator) and Nicole Firlotte, Manitoba Sustainable Development - A Multiple Species management framework in tall-grass prairie;	The application of active land management tools can be challenging in landscapes that support multiple Species-at-Risk and within a regulatory and recovery framework that prohibits individual harm and focuses on individual species. Management prescriptions directed at the recovery of one particular species may conflict with the recovery objectives of other species. Locally-appropriate data on sensitive time periods and management activities are often lacking. Several conservation management techniques are used in Manitoba's prairies and aspen parklands to promote the maintenance of a diversity of habitats and successional stages, as well as the rare and endangered species these habitats support to achieve long-term maintenance of biodiversity. Here we present a practical conservation land management decision support tool that is in development for Nature Conservancy of Canada lands at the Manitoba Tall Grass Prairie Preserve. We also present multiple Species-at-Risk Management, Recovery and Research Action Plans that are based on the best available science and data, that recognize the recovery needs of all Species-at-Risk and their habitats, that recognize disturbance as a key ecological factor of Species-at-Risk habitat ecology, and

	that formalize the identification of key knowledge gaps and ongoing monitoring of the effectiveness of management actions and of species and their habitats.
Katie Akey, Toronto Zoo - Conservation as Tradition: Protecting Biodiversity in First Nations Communities through Cultural Preservation;	The Toronto Zoo's Turtle Island Conservation programme will present on the opportunities and challenges in working with First Nations communities in the protection of biodiversity, issues around management and use of Traditional Ecological Knowledge, as well as designing and implementing conservation actions in partnership with First Nations communities. The overall impacts of this work on biodiversity as well as the social and human outcomes on First Nations peoples and communities will be discussed.
Mario Thomas, Biodiversity Institute of Ontario - DNA Barcoding to help achieve UN targets of the Biodiversity Strategic Plan	<p>The UN Convention on Biological Diversity (CBD) stresses the need to conserve biological diversity and share benefits from use of genetic resources. The agreement was adopted at the UN's Earth Summit in 1992, and is now one of the most widely ratified international treaties on environmental issues.</p> <p>Supporting DNA barcoding was among the recommendations made last December during the UN's Biodiversity Conference in Cancun, Mexico. Representatives from 196 countries attended the 13th conference of the Parties to the CBD. During the recent UN Biodiversity Cancun conference, DNA barcoding was identified by CBD as key to implementing a strategic plan for biodiversity. DNA barcoding is now part of the United Nations strategic plan for enhancing and protecting biodiversity.</p> <p>The decision ratified Dec. 17 calls for international support for development of DNA sequence-based technology (DNA barcoding), the Global Taxonomy Initiative and associated DNA barcode reference libraries for priority taxonomic groups of organisms, to promote the application of these techniques for the conservation and sustainable use of biodiversity, and to support related capacity-building activities</p> <p>This presentation will expand on how DNA methods and in-particular environmental DNA (eDNA) detection at the point-of-need can help conservation groups protect known threatened species as per Aichi target 12 of the UN Biodiversity Strategic Plan (2011-20).</p>

Strengthening the Network: Clients - Cartier III		
10:30 – 12:00 PM	Eric Lofroth, British Columbia Conservation Data Centre and Bryce Maxell (moderators) - Client Identification and Service	Many different programs have different suites of clients. Some of them know their clientele well, others not so much. Others probably don't know the potential for clientele. How do you identify who your clients are and more importantly how do you try and both understand and effectively meet their needs. This came out of some discussions with Bryce Maxell and the realization that we have two very different approaches for identifying clients and client needs (with some overlap). I suspect that there is a real diversity in the network here that we could all learn from.
1:30 – 3:00 PM	Eric Lofroth, British Columbia Conservation Data Centre (moderator) - Regional Network Collaboration Models	There are a number of existing collaborations in place but I was made aware of more last week at the Cascadia Meeting and the discussions there certainly opened my eyes to a lot of other options. This could be a presentation/discussion session or a round table session where we brainstorm ideas based on a pre-populated list of existing models. It could potentially involve industry as a facilitator and benefactor of some of that work (e.g., discussions I had recently with Nicole about having Trans Canada involved in helping with a prairie regional collaboration that could provide a more comprehensive data coverage for them.

Strengthening the Network: MJD - Cartier III

3:30 – 5:00 PM	Shara Howie, NatureServe; Bob Gottfried, Texas Parks and Wildlife; Brian Klatt, Michigan Natural Features Inventory; Everett Marshall, Vermont Natural Heritage - Multijurisdictional Data: A New Frontier	We are uniquely positioned to provide comprehensive data on species and ecosystems for the U.S. and Canada. It is vital that governments and other decision-makers have timely access to these data to support regional and national efforts. NatureServe must improve the participation and responsiveness to requests for multi-jurisdictional data, and develop data-use agreements with all major federal agencies that can benefit from access to our data. With comprehensive agreements in place, NatureServe could move from a pay-per project model, encouraging broader use of these data. During this session we will present new MJD program goals, demonstrate local data-sharing arrangement successes, discuss a vision for expanding uses of NatureServe Network data, and how all of these things together can benefit network programs and support better conservation outcomes.
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Working Groups - Capital/Carleton

10:30 – 12:00 PM	Karen Cieminski, Minnesota Department of Natural Resources (Moderator and Speaker) - Backlog Working Group Update and Discussion	We will present an update on the progress of the Data Backlog Reduction Effort so far, and seek feedback on tentative decisions, draft proposals, and operations.
1:30 – 3:00 PM	Canada National Vegetation Classification Working Group	
3:30 – 5:00 PM	Canada National Vegetation Classification Working Group	