

Further Improvements to Rare Species Management in New Brunswick

Final Report to New Brunswick Environmental Trust Fund Project # 140270

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1.0 Executive Summary

Up to 2013, Department of Environment and Local Government (DELG) identified rare species potential relative to proposed developments using a dataset lacking 97.3% of the data in the Atlantic Canada Conservation Data Centre (AC CDC) rare species database. Environmental Trust Fund (ETF) funding in 2013 allowed AC CDC to transfer all rare species data to DELG, and to produce a digital map (GIS) product for DELG identifying sites known to be significant for rare species.

2014-2015 ETF funding, for the project “Further Improvements to Rare Species Management in New Brunswick”, has allowed AC CDC to complete a significant portion of the goals outlined in our application. To correspond with the proportion of funding received, approximately 41% our proposed activities have been carried out and remaining activities deferred to future funding years.

Table 1. Summary of goals and accomplished tasks during the 2014-2015 ETF funding year.

Goal	Summary of Results
1. Update the AC CDC rare species database	<ul style="list-style-type: none"> - significant database, record and workflow improvements - addition or improvement of approximately 45,000 New Brunswick records - addition of approximately 3,529 rare species records for New Brunswick - addition of more than 3,000 species to the NB taxonomic database, including more than 350 which are known to be provincially rare - review of 3,712 existing status ranks for various taxonomic groups, with rank revisions to a substantial number of these
2. Extend DELG’s access to AC CDC rare species data	<ul style="list-style-type: none"> - the newest release of the AC CDC database will be delivered to DELG by 31 March, 2015.
3. Work with DELG and DNR to begin providing AC CDC rare species data to planners in municipalities and regional service commissions	<ul style="list-style-type: none"> - strategic planning has been initiated via conversations with Mark Miller (DELG), Paul Jordan (DELG) and Wilson Bell (Executive Director, Greater Miramichi Regional Service Commission) - AC CDC will present to Planning Directors of regional service commissions and municipalities in spring 2015 - the AC CDC will continue to pursue this in future funding years
4. Initiate work to compile rare species data from Environmental Impact Assessment reports held by DELG	<ul style="list-style-type: none"> - strategic planning has been initiated with NB DNR and DELG - an assessment of rare species data in EA reports will be conducted beginning March 2015 - more extensive work on this has been postponed until DELG has finalized proposed changes to EA conditions in mid-2015

	- work will continue in future funding years
5. Work with DELG and DNR to develop a process for submission of rare species data associated with future environmental impact assessment reports.	<ul style="list-style-type: none"> - strategic planning has been initiated with Dave Maguire (DELG) - more extensive work on this has been postponed until DELG has finalized proposed changes to EA conditions in mid-2015 - work will continue in future funding years

The substantial improvements to the AC CDC database and data system completed under this project will significantly improve conservation efforts in New Brunswick. Data system, workflow and record improvements greatly increase the efficiency with which AC CDC can respond to data requests and the quality and reliability of the data provided to requestors. AC CDC carries out hundreds of data requests annually for environmental consultants, government biologists and land managers, natural resource companies, environmental NGOs and academics, all of whom will benefit from high-quality Species at Risk data delivered more expediently. Provision of the most up-to-date release of the AC CDC database to DELG increases the amount and currency of their rare species data holdings which can benefit conservation by informing recommendations they provide to reduce development-related impacts to rare species.

Finally, 2014-2015 ETF funding has allowed AC CDC to make strides in making rare species data available to local governments and in acquiring rare species data from environmental assessment projects and reports. Initiation of the process of making AC CDC data accessible to local governments will further improve conservation efforts by getting data and tools into the hands of local planners that intimately know local landscapes and the impacts of local development. In cooperation with NB DNR and DELG, AC CDC has begun evaluating the costs and benefits of retrieving and storing rare species data from environmental assessment reports. This is a crucial step in making the wealth of data collected by EA proponents available to further inform future conservation decisions in New Brunswick.

2.0 AC CDC Biodiversity Database Enhancements and Additions

Addition of Records to the Database

This ETF project supported extensive addition of data to the AC CDC database (Table 2), with the number of species occurrence records (a species documented in a specific geolocation) increasing by approximately 30,000 during fiscal year 2014-2015. Of those new records, more than 3500 were of provincially rare species, including more than 190 records of federally or provincially listed Species at Risk.

Table 2. New Brunswick records added to the AC CDC database in 2014-2015.

Source	Total Records	Records of Rare or Protected Taxa
AC CDC fieldwork	9,798	1,356
Maritimes Moss records from various herbarium databases	4,133	495
Rare vascular plant specimens in the Hilaire Chiasson Herbarium	106	78
eBird ^a	8,000	800

Breeding Bird Survey (BBS) ^a	8,000	800
Total	30,037	3,529

^a numbers approximate as final datasets will be completed in March 2015.

Database and workflow improvements

Numerous database and workflow improvements were made to the AC CDC Data System this year. Although this slowed the rate of database additions it allowed for great improvements in the quality, functionality and long-term stability of our data system (Table 3). Major database record improvements included the refinement of more than 14,000 records and rank updates for more than 1000 taxa. Several vital improvements were made to data system workflows including 1) development of a Python script to automate addition of spatial attributes to records entering the database, 2) modification of data import workflows to increase efficiency of data loading, and, 3) development of a Python script to automate calculation and mapping of rare species element occurrence polygons used for core AC CDC activities. In combination, these workflow improvements have resulted in greatly increased efficiency of AC CDC core activities, which has saved numerous hours in this fiscal year and will continue to do so into the future.

Table 3. AC CDC database improvements in 2014-2015.

Activity	Results
Record location corrections	14,596 New Brunswick record coordinates were improved
SRANK (subnational rarity rank) updates	1000 New Brunswick invertebrate taxa SRANKs were updated
Update of New Brunswick provincial ranks in the database	Recent changes to New Brunswick Species at Risk Act listed species were integrated into the database. More than 3,000 species were added to the NB taxonomic database, including more than 350 which are known to be provincially rare 3,712 existing status ranks for various taxonomic groups were reviewed, with rank revisions to a substantial number of these
GIS server machine upgrades	The GIS sever now runs on a current operating system which improves data security and stability
Development of Python scripts to: 1. add spatial attributes to database records 2. calculate and map rare species element occurrence polygons	1. Replacement of scripts designed for now-deprecated software 2. A ten-fold increase in efficiency of element occurrence polygon calculations

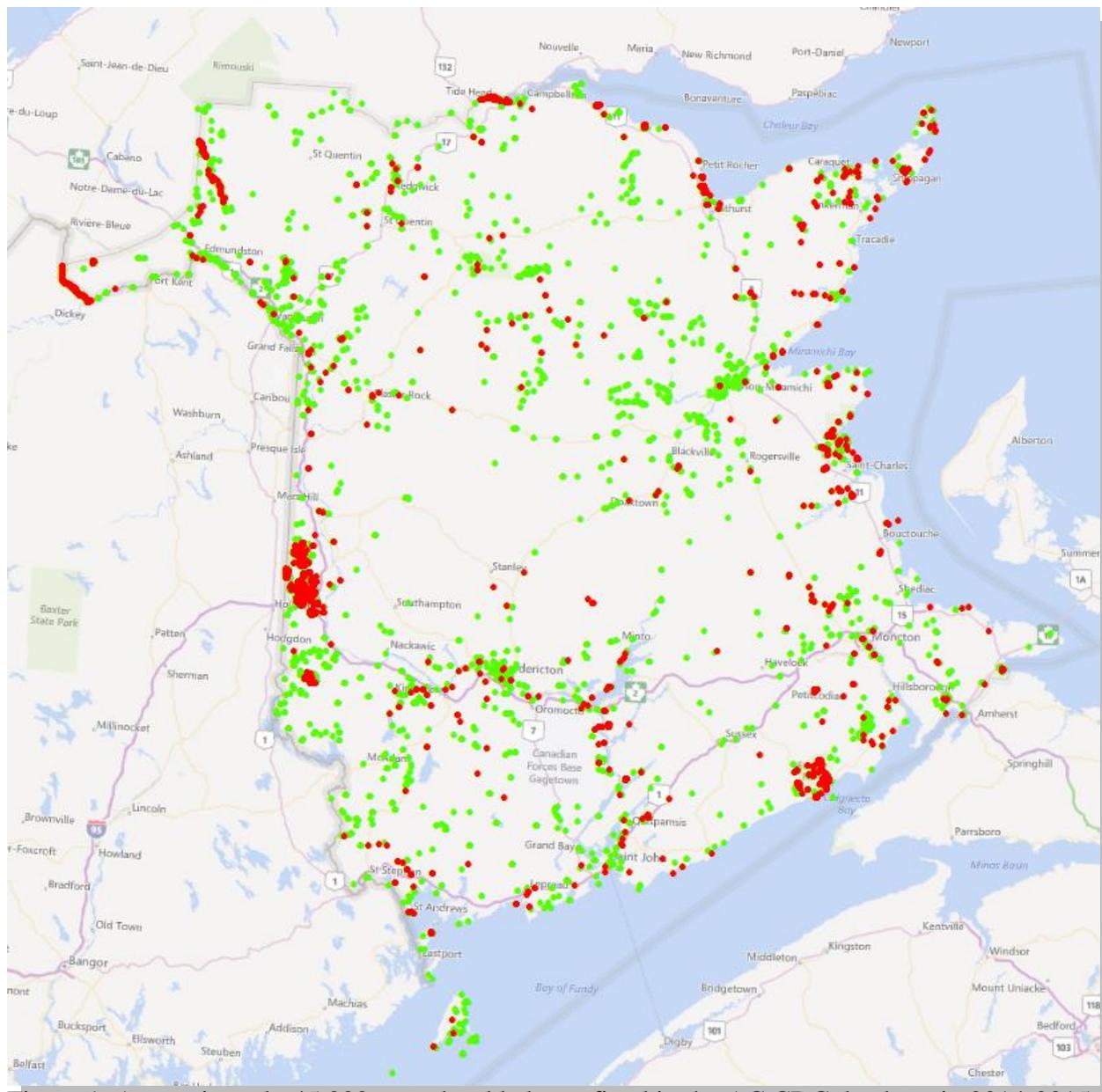


Figure 1. Approximately 45,000 records added or refined in the AC CDC database in 2014-2015. Red dots indicate rare species, green dots indicate non-rare species.

3.0 DELG Access to AC CDC Rare Species Data

By March 31, 2015, under a one-year data use agreement for fiscal year 2015-16, AC CDC will provide to DELG the most up-to-date release of the AC CDC database of rare species occurrences. DELG will be able to use the updated database in development of a long-term wetlands policy, and for use in Environmental Impact Assessments (EIAs), Wetland and Watercourse Alteration (WAWA) permitting and municipal and regional land use planning.

4.0 Provision of AC CDC data to planners in municipalities and regional service commissions

Although this activity was predominantly beyond the scope of the current funding, strategic meetings were held with a number of individuals to initiate this process. Mark Miller and Paul Jordan of DELG provided valuable advice on contacts and approaches to the provision of AC CDC data to municipal and regional service commission planners. Wilson Bell, Executive Director/Planning Director, Greater Miramichi Regional Service Commission, was approached and provided the opportunity to present on our data, products and services to the Planning Directors of the regional service commission and municipalities in spring 2015. Meetings with James Bornemann, Geomatics Analyst with the Southeast Regional Service Commission will also occur in March 2015.

5.0 Compile Rare Species Data from Environmental Impact Assessment Reports, and develop a process for Submission of Rare Species Data with Environmental Impact Assessment Reports

Although this activity was predominantly beyond the scope of the current funding strategic meetings have been initiated with NB DNR and DELG (Dave Maguire, Manager EA Unit) regarding the process of extracting rare species data from EA reports and introducing conditions into EA reports requiring submission of rare species data to the AC CDC database. Dave Maguire indicated that most of these proposed activities should occur after new conditions for EA reports have been drafted and proposed by DELG in mid-2015. In March 2015, as a preliminary step in this process, an assessment of the quality and quantity of rare species data in current EA reports will be carried out. This will help to assess the potential value of pursuing these courses of action to the AC CDC database, and the conservation of rare species in New Brunswick.

6.0 Other Activities

Evaluation of DELG Rare Biodiversity Geospatial Products

Rare Biodiversity tools deployed to DELG in 2014-15 were evaluated by Mark Miller, DELG. Evaluations indicated that the received AC CDC data had been helpful but extensive use of the tools had been stalled by the shift in fiscal priorities away from the *Balanced Approach for Wetland Management* and *Long Term Wetland Strategy* projects. In future phases of this work, AC CDC will continue to update and promote the use of these tools, and derived products, especially to regional service commission and municipal planners.

7.0 Conclusions

2014-2015 ETF funding has allowed a significant number of record additions and improvements to the AC CDC data system as well as crucial improvements to data system workflows. In combination these have greatly increased the quantity and quality of data in the AC CDC database and increased the efficiency at which the AC CDC can carry out core activities and respond to data requests. In turn, these improvements and gained efficiencies will have great, positive impact on the ability of numerous other organizations to manage and protect rare species in New Brunswick.

The knowledge of rare species locations provided by AC CDC data is especially crucial for species protected under the NB Endangered Species Act, preventing DELG from inadvertently permitting developments that contravene the act. Other potential DELG uses of the updated AC CDC rare species data include incorporation into the *Balanced Approach for Wetland Management* project within the *Long Term Wetland Strategy* currently under development, and the determination of areas where wetland restoration efforts could be directed. As a partner organization, DNR automatically receives updated versions of our database, thus the project's new rare species records will contribute significantly to their biodiversity conservation efforts as well.

This year's improvements will help the AC CDC respond more efficiently to the hundreds of data requests received annually and provide high-quality, up-to-date data to data requestors. The new records will also help inform species' status assessments at the provincial and federal levels through the foreseeable future.

This year's funding has also allowed the AC CDC to begin laying the foundation for two important processes: allowing access of AC CDC rare species data to local governments, and accessing rare species data collected by proponents for EA reports. Together these processes will further awareness of rare species conservation in New Brunswick and have great potential to minimize development-related impacts to rare species for years to come.

As with all non-member organizations receiving data from AC CDC, the access to AC CDC data that DELG has received through this project lasts for one fiscal year (in this case, the 2015-2016 fiscal year). After that time, ongoing additions and improvements to the AC CDC database will have made the current data out of date and an update to DELG will be required. AC CDC hopes that DELG will continue to utilize the many advantages that having access to AC CDC data provides, either through membership with AC CDC or through additional support through the Environmental Trust Fund.