

PANEL ON APPROACHES TO COLLABORATIVE RESEARCH

Collaborative Research Involving the Ontario Natural Heritage Information Centre

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The mandate of the Ontario Natural Heritage Information Centre (NHIC) is "to generate and maintain a permanent and dynamic atlas and database on the distribution, character and conservation status of natural areas, critical flora and fauna, natural communities and special features in Ontario". The NHIC was created in late 1993 by four founding partners: The Nature Conservancy (U.S.) (TNC), the Nature Conservancy of Canada (NCC), the Natural Heritage League and the Ontario Ministry of Natural Resources (OMNR). In doing so NHIC became one of more than 80 such heritage programs in five Canadian provinces, fifty U.S. states and a number of Latin American, Caribbean and Pacific Rim nations. These programs use a common methodology and data base system known as the Biological and Conservation Data System (BCD), developed by TNC to track species, communities and natural areas.

The approach developed by TNC, and adopted by the NHIC, contributes to biodiversity protection by tracking species and identifying significant natural areas on the basis of rarity and degree of threat, and by providing management and stewardship advice about species, communities and areas to agencies and organizations that engage in conservation and land-use planning. One of the first tasks facing NHIC biologists has been to assess the status of the province's biota and vegetation communities or elements, and to establish lists of the elements that are most imperilled and in greatest need of immediate protection. To date, lists showing the status of Ontario's vascular plants, mosses, liverworts, mammals, birds, reptiles, amphibians, fish and butterflies have been produced by the NHIC.

A species' or taxon's status in the province is known as its "S-rank" (subnational rank). The S-rank is measured on a scale of 1 to 5, with a rank of S5 indicating that an element (species or community) is very common in the province (more than 100 occurrences), while an S1 indicates that an element is extremely rare (5 or fewer occurrences) and probably on the verge of extirpation unless conservation action is taken immediately. In order to formulate credible provincial status lists, NHIC biologists are also actively engaged in the verification of species records, in the development of an ecological land classification system, and in the evaluation of the "quality" of element occurrences.

For example, an extant population of 100 individuals of a species at a provincial nature reserve is a much higher quality occurrence than a 1970s sighting of an individual of the same species in an area that has since been developed into an industrial park. The latter record would most likely not even be considered in the evaluation of the species' current status in the province. Locations of highly ranked (S1 to S3) elements are mapped by the NHIC's GIS specialist, and the NHIC's data manager maintains the BCD and Natural Areas databases. NHIC biologists also produce "characterization abstracts" that outline the basic biology and conservation needs of rare species and communities.

The NHIC's S-ranks are periodically downloaded to The Nature Conservancy's main office in Arlington, Virginia, where elements are given G-ranks (global ranks), based on their abundance or rarity throughout the world. The TNC's use of S-ranks to assign global ranks underscores the importance of having a standardized ranking methodology for all sub-national and international data centres. The global ranking contributes to range-wide conservation planning for globally rare species and communities. This involves collaboration among heritage programs in the TNC network, as well as other conservation agencies. The International Alvar Conservation Initiative is an example of one such project concerned with inventory and conservation planning for a globally rare community type and involving agencies and researchers from at least three U.S. states and one Canadian province.

With the formulation of status lists and the mapping of element occurrences, it becomes possible to pinpoint Ontario's areas of highest conservation priority. Through a kind of "gap analysis," the NHIC's stewardship ecologist can take the dot maps showing significant element occurrences (beginning with G1's and G2's and working down the hierarchy to S2's and S3's) and overlay them with maps showing park, nature reserve, Areas of Natural and Scientific Interest (ANSI) and land ownership boundaries, to determine which species are already well protected within managed areas, and which sites are in the greatest need of land acquisition, conservation easements, or other stewardship or management procedures.

Such information is disseminated to agencies such as The Nature Conservancy of Canada, Parks Ontario, Ontario Ministry of Natural Resources (OMNR) District Offices, the Federation of Ontario Naturalists, municipalities, and other local and federal organizations in the business of natural heritage protection and/or land-use planning. With its focus on rare elements, the TNC/NHIC method differs somewhat from the methodology used by the OMNR to identify ANSIs and candidate nature reserves in its site district reports; ANSI identification is weighted more heavily on representation of characteristic physiographic and vegetation patterns in a given site district.

The stewardship ecologist position has only existed at the NHIC since autumn 1995. To date, a manual filing system and resource library has been set up to document roughly 2,500 of the province's most significant natural areas including, parks, conservation areas, provincially significant wetlands, ANSIs, environmentally sensitive areas (ESAs), and non-governmental organization (NGO) reserves. I have also assisted the data manager in improving the NHIC's Natural Areas Database (NAD) and in populating this database for selected sites. The NAD is used by the NHIC to track and maintain information on the areas of conservation interest in the province, and may be made available to other agencies and organizations for input of information on natural areas of interest to them.

Since its inception, the NHIC has been involved in a wide range of collaborative projects with other agencies and institutions. Most have relevance to parks, protected areas and conservation planning. The NHIC is generally very interested in any research projects that contribute to improving our knowledge of the population size, distribution, quality of occurrences, life history, threats, conservation and management needs, habitat restoration, and population recovery plans of rare species and communities in the province.

One such project that is still in its early, conceptual phase is the Great Lakes Wetlands Biomonitoring Project. This project is part of a collaborative effort among Environment Canada, The Nature Conservancy of Canada and the NHIC, and will involve a number of additional agencies and individuals, including members of the academic community.

One of the first steps in this project has been to accumulate background source data, and to identify a number of benchmark sites for biomonitoring. The preliminary list includes many sites that are already contained within provincial and national parks and other protected areas. This early list consists of many of the highest quality wetlands on the Ontario side of the Great Lakes.

To be more comprehensive, and to allow for comparisons of trends, it has been suggested that a number of more degraded wetlands also be included in the study.

To date, the NHIC's role in the Great Lakes Wetlands Biomonitoring Project has been to compile data on and map the vegetation communities, rare species, park zone boundaries, wetlands and other significant features of a few selected sites. Much planning for this potentially long-term project remains to be done. Biomonitoring methodology, selection of indicator species, selection of study sites, scope and duration of the project, and the roles and responsibilities of interested agencies, institutions and individuals have not yet been determined.

I think the present forum provides an excellent opportunity to invite discussion regarding the direction a biomonitoring project of this kind should take, and also possibly to recruit interest and participation of additional collaborators in the project.