

Land Use History, Landscape Change and the Role of Parks and Protected Areas

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Abstract

Our purpose is to demonstrate the importance of land use history and landscape change studies to park and protected area planning, management and decision-making. We begin with some highlights on recent advances in biologically based ecosystem approaches and then proceed to discuss the supportive role that can be played by land use history and landscape change studies. In this context we go on to discuss the as yet random attempts to get full-scale landscape planning underway in Ontario, through for example, recent revisions to the provincial Planning Act. We draw on United Kingdom and US experience to provide examples of the nature and value of landscape planning. We close with some suggestions for research in relation to parks and protected areas in Ontario.

Biologically Based Ecosystem Planning

Since the 1980s a virtual revolution has occurred in the biological aspects of parks and protected areas planning in Ontario—and elsewhere. Under the banner of ecological or ecosystem planning and management, an array of new theory and methods has been applied to the creation, planning and implementation of parks and protected areas programs (Woodley 1992, 1993, 1997; Woodley and Forbes 1995; Grumbine 1994; Halverson and Davis 1996; Noss 1990; Noss 1995).

Basic principles of ecosystem planning were being put forward decades ago (Shelford 1932). However, ecosystem thinking did not penetrate very far into park and protected area policy and practice until the 1980s. At about that time some ground breaking research and scholarship led to the emergence of what are now considered to be fundamental building blocks in park and protected area planning, management and decision-making. These basic ideas and approaches include:

1. Biogeographic theory, with its conclusion that the number and diversity of species in an area is basically related to its size and that these numbers tend to decline without replenishment from outside the area (Ehrlich and Ehrlich 1981);
2. The biodiversity concept, with its central notion that the range of species, communities, and related biological elements and processes in an area are a fundamental influence on ecological resilience and health (Wilson 1988 1992; Szaro and Sexton 1996);
3. Landscape ecology, with its basic idea of connectivity, notably through a network of nodes and corridors, in order to maintain biodiversity and ecosystem health (Foreman and Godron 1986; Farina 1997);
4. Bioregions, which form a context for parks and protected areas thinking and have led in some areas to co-operative government and private sector plan-

ning at the local, regional, national and international levels or scales. Surrounding lands and waters are often described—in the language of landscape ecology—as the larger ‘matrix’ in which parks and protected areas are imbedded (Berry 1988);

5. Ecosystem conservation, with its emphasis on understanding fundamental ecological relationships and integrity of species and habitats as a foundation for planning, management and decision-making (Noss 1990, 1995; Grumbine 1994; Woodley 1997; Stephenson and Zorn 1998);
6. Restoration ecology, with its central idea that disturbed ecosystems can be returned to something approaching their original state or a more desirable mix of species and habitats (Jordan et al. 1987; Bradshaw 1987; Holl 1996);
7. Monitoring of ecological or environmental changes to determine what is happening to species, habitats, water quality and other elements and processes essential to biodiversity and ecological integrity of parks and protected areas and the environmental health and sustainable development of surrounding lands and waters (Skibicki et al. 1994); and
8. The human dimensions of ecosystem planning, which involve recognizing and dealing with as many concerned managers, owners and other stakeholders as possible within and around parks and protected areas. In this respect human dimensions include public and private co-operative stewardship efforts, communication strategies, conservation trusts, land owner contact programs, easements, tax relief and other government economic incentives, technical assistance and other planning, management and decision-making measures (Brown and Mitchell 1998).

Applications

The foregoing concepts and approaches are not complete but represent a major part of the new tool kit that many ecologists, planners, park managers, non-government organizations, private groups and citizens are attempting to apply in numerous places in North America. Examples include: the establishment of ‘ecological integrity’ as the prime goal of the 1989 revised National Parks Act; United States Greater Park Ecosystem Planning; and the Wildlands Project in the US which aims to restore vast areas through nodes and corridors analysis and planning, gap identification and restoration or ‘re-wilding’ programs.

Some illustrations of the new ecosystem approaches are also apparent in southern Ontario. Planning, management and decision-making for the Niagara Escarpment reflects some of this thinking and practice. The Niagara Escarpment Commission has established a new monitoring system, which partly arises as a result of designation as a biosphere reserve (see Milne et al., this volume). However, as yet the Escarpment is not well connected in terms of nodes and corridors and landscape ecology. Nor are the boundaries of the Niagara Escarpment planning area defined well in bioregional terms.

Larger units of land have also been managed by Conservation Authorities in southern Ontario since 1948. These authorities are established on the basis of watersheds and represent a sound ecological basis for defining landscape management units.

The Long Point area is a biosphere reserve where planning has involved attempts to identify and restore natural corridors between the highly protected National Wildlife Areas on the peninsula, and the forests, wetlands and other ecologically significant areas on the nearby mainland. The Carolinian Canada program is another attempt to think and practice in ecosystem terms. But this program faces great challenges in a highly productive agricultural area, where the few remaining natural areas tend to be highly fragmented and under private ownership. Here, communication is the focus of the latest strategy.

In Ontario, the Parks Canada Agency and national parks are perhaps the most vigorous in carrying forward the new ecological approaches. Ecosystem Plans are to be prepared for each National Park in the province. The basic goal is to place planning, management, and decision-making within and around the parks on a sound ecosystems basis (Zorn et al. 1997). The aim is to work with surrounding agencies, groups, and individuals in ensuring development around the park is done in such a way as to buffer effects on the ecological integrity of the park. Such ecosystem planning also provides for the environmental health and sustainable development of the surrounding lands and waters of which the national park is an essential part. One example is the St. Lawrence Islands National Park Ecosystem Conservation Plan which involves planning at various scales around the park, extending to its role as part of the Algonquin to Adirondacks bioregion (Stephenson and Zorn 1998). Another example is the Georgian Bay Islands National Park's Ecosystem Conservation Plan (ECP) which sets the park in the context of the surrounding lands and waters and recommends an advisory committee and a public forum as basic means of working with other agencies and groups in the region (Nelson and Skibicki 1997).

Progress is also being made in applying ecosystem planning at the provincial and local level. In the recent *Lands for Life* planning program for northern Ontario many areas of high value for biodiversity and other natural reasons were identified and described in terms of nodes and corridor systems (Wildlands League 1999). At the local level the Regional Municipality of Waterloo has identified and planned for a growing system of more than 70 Environmentally Sensitive Areas (ESAs). These forested, wetland and other areas are 'islands' separated from one another by agricultural and other land uses. In accordance with landscape ecology and related theory, they are part of a nodes and corridors system in the new regional Official Plan. Halton Region has taken similar steps.

The key points to consider in this general survey are three-fold. First, applications of the new ecosystem approaches are being made in a number of relevant jurisdictions. Second, progress at all levels of government and in all locations is uneven and often tends to be slow in developing. Third, relatively little is known about the reasons for this slow and inconsistent adoption of ecosystem-based planning in part because little monitoring and research has been conducted on its application to parks and protected areas in Ontario. Many would agree that a major factor is inadequate understanding of ways of life and economic, social and cultural patterns and needs as these relate to landscape planning. In this context two major research thrusts are needed. One is inquiry about land use and economic patterns and changes and how they impact on protected areas and surrounding lands and waters. The second is to gain better understanding of landscape as a basic

organizing concept in ecosystem planning in Ontario. These two research thrusts are dealt with in the following two parts of this paper.

Land Use Patterns and Changes

Study is needed to increase knowledge of the nature, extent and role of land use patterns and changes, both within and around parks and protected areas. To our knowledge very few studies have been undertaken to map current patterns and historic changes in campsites, visitor centres, roads, trails, parking lots and other recreational uses and technology within parks and protected areas in Ontario. This also is the case in other parts of Canada and North America. One exception is research and mapping done in Banff National Park. This indicates that recreational land use changes have been substantial and have increased considerably in the last few decades (Nelson, Serafin, Skibicki and Lawrence 1997). The patterns of land use change in turn, suggest where and to what extent associated effects on wildlife or other aspects of the ecosystem are likely to occur. Additional land use studies were recently carried out as part of the federal government's review of recreational and tourism development and its effects in Banff National Park. Along with related ecological research, this work showed major growth in human activities and their effects on grizzly, wolf, elk and other wildlife.

In the context of land use change studies, it is interesting to note that where monitoring has been introduced into parks and protected areas, the tendency has been to focus on changes in species, communities, habitats, water quality, soil erosion and other natural features and processes and not on the land use changes that often are the basic cause of ecosystem changes.

Some studies of land use and land cover have been completed in various parts of Ontario in recent years, including a number by the University of Waterloo's Heritage Resources Centre (Nelson, Skibicki and Lawrence 1997). Examples are: Frenchman's Bay; the Saugeen Conservation Authority, Lake Huron; the Georgian Bay Islands National Park region; and Fairy Lake-Peninsula Lake near Huntsville, Ontario (Cornelisse and Evans 1999). The Fairy Lake-Peninsula Lake study is of special interest here because it involved the completion of land use change studies which were correlated with research on water quality, lake shore erosion and deposition, fish and other aspects of the ecosystem. In other words an explicit attempt was made to link changes in land use with ecosystem changes. An overall report on this work has recently been published by the Ontario Ministry of Natural Resources (Cornelisse and Evans 1999).

Studies of land use and natural systems can inform one another and where possible, should be conducted together. The results of such studies in and around parks and protected areas will give parks and protected areas personnel a better understanding of land use changes and their ecological effects in and around the protected area as well as a better understanding of the socio-economic interests and needs of people. This information can provide a better basis for the trade-offs and co-operative endeavours that need to be faced in ecosystem conservation.

A special area of concern is the human dimensions of ecosystem planning in parks and protected areas in Ontario. We need more research on this important matter. We do not know enough about what local people understand about parks and

protected areas and their relation to nature conservation and particularly about their understanding of the interactions between recreation and nature conservation. In this respect the Ontario Regional Office of Parks Canada has been placing increasing emphasis on the preparation of Communication Strategies as part of the Ecosystem Conservation Plans now required for national parks. The Communication Strategy is seen as a fundamental means of building more effective understanding and co-operation among national parks staff and local people as well as visitors. Communication Strategies have been prepared for Georgian Bay Islands National Park (Dakin 1996), Bruce Peninsula National Park and Fathom Five National Marine Park (Black and Nelson 1997). While the form and content of the Strategies are evolving, emphasis has been placed on identifying the key actors or interests, their values and objectives, their expectations, and the ways in which they would prefer to be involved in park planning. Communication and mutual learning through language and media that are understandable to an array of relevant scientific, scholarly and technical groups as well as the public are increasingly recognized as critical needs in proceeding with more effective ecosystem planning, management and decision-making for parks and protected areas and nature conservation in Ontario.

Landscape Patterns and Changes

This brings us to the concept of landscape, a major element in parks and protected area planning. Landscape refers to what we see or sense at the surface of the earth (Phillips 1997). As such it has a long history in fields as diverse as geography, art history, landscape architecture, environmental planning, psychology, and geology (Appleton 1975; Bunce 1994; Dansereau 1957; Jackson 1984; Lowenthal 1985; Sauer 1925; Schama 1995). As noted previously the concept of landscape has been a prominent part of recent advances in ecology and ecosystem science.

Landscape is an idea that also is reasonably well understood by the public particularly in the sense of scenery. Landscape is therefore a term that can link the ideas of numerous scientists and other specialists with the general understandings of people at large. It is potentially a very useful bridging concept around which different interests can be built, integrated and reconciled.

The term, landscape, has been used more widely in the United Kingdom and the US than in Canada and Ontario. The case for the value and utility of the concept of landscape has probably been made most strongly in England although it is also widely used in Europe (Cosgrove 1984; Hoskins 1988; Williams 1973). In England, the idea of landscape is applied in local municipal planning as well as in national parks and central government planning. In this way the concept is used to link local and central government planning efforts. Since at least 1949—and the formation by the UK government of the Countryside Commission—senior and local governments have worked together to protect landscapes of high natural, historic and scenic value through for example, official recognition and planning of National Parks, Areas of Outstanding National Beauty, and Marine Heritage Coasts (Countryside Agency n.d.; Lucas 1992). In these situations, the senior government has offered legislation, policies and guidelines as well as technical and financial assistance; and local governments have worked largely through permit and other procedures of official plans.

In England landscapes that have been recognized as possessing high heritage and scenic quality and which have been designated, planned, managed and decided upon in these terms include: the Lake District; the Peak District; the Yorkshire Dales; the New Forest; the Broads; and much of the coast of Wales. The system is certainly not perfect and is marked by ongoing and alternating bouts of controversy, conflict and co-operation. However the system seems to be succeeding in protecting the heritage values of many working landscapes, to a substantial degree.

This success has been achieved not only because of the coming together of specialists, planners and public and private managers around the guiding concept of landscape but also because of the general understanding and support of the public. In the Isle of Wight for example, a recent visit revealed local people talking about landscape unabashedly in terms of scenic walks along its rocky shorelines, Victorian seaside resort towns, archaeological ruins of Roman villas, Queen Victoria's summer palace, and mediaeval forts. People also talked of landscape in terms of fertile agricultural soils, the sustainable employment of young people, the economic well being of communities and the conservation of the varied bird life of the rich wetlands and estuaries of the island. In this respect the idea of landscape is not only a common vernacular concept but it has long been taught in the schools, colleges and universities where the curriculum is built on the rich research of landscape scholars such as Hoskins, Prince and Lowenthal and the poetry and writing of William Wordsworth, John Keats and Jane Austin. In these ways awareness of the nature and quality of landscape is built into the way people think about their home area and the way they plan for its future.

In the US, landscape also is an increasingly valued idea and quality. Many of the well known national parks and monuments of the country were established because of the geologic, biological, scenic, historic and other characteristics of various places. In the US—as in England—this recognition and conservation has been built on the understanding provided by scientists, scholars, poets and writers such as John Wesley Powell, John Muir, Walt Whitman, Wallace Stegner and Edward Abbey. Examples of landscape recognition and protection include Yosemite, Yellowstone, Mammoth Cave and Shenandoah. In this respect national parks and other protected areas have become the institutional frame for the conservation of particularly outstanding parts of surrounding landscapes or regions. The same opportunity exists in Canada with its national park system but, as noted earlier, linked landscape planning has rarely occurred.

In recent years the US has moved forward in some interesting ways. One has been the introduction of a National Heritage Areas Program by the National Park Service in co-operation with state and local governments. The National Park Service offers financial and technical assistance in planning for high quality landscapes of concern to the states and local people. Co-operative research, planning, management and decision-making are carried out to provide for conservation of important natural and cultural areas and compatible land use activities. Fifteen National Heritage Areas have been established through this kind of co-operation among national and state governments and local communities.

In Ontario, we have not thought about nor used the concept of landscape to the

same degree as in the United Kingdom and United States. Some outstanding areas have received recognition and attention from scholars and writers, for example Ontario's Shield country, through the work of the Group of Seven. As to protection, a major attempt has been made to conserve a highly significant Ontario landscape, this being the Niagara Escarpment. Len Gertler drew strong attention to its qualities in 1968 with *The Niagara Escarpment Study: Conservation and Recreation Report* (Gertler 1968). The struggles over the Escarpment landscape have continued ever since with recent studies including *The Natural Heritage of Southern Ontario's Settled Landscape: A Review of Conservation and Restoration Ecology for Land-Use and Landscape Planning*, produced by the Ministry of Natural Resources (Riley and Mohr 1994).

In a similar vein, a number of landscape-based studies took place in the 1970s. The study prepared for the Oak Ridges Moraine called for the preservation of the "the essential landscape character of the region" (Ecologistics Ltd. 1993). A recent publication by the Ontario Management Board on the conservation of cultural heritage resources of the provinces' properties included a section on landscapes (Commonwealth Resources Management Ltd. 1993). As well, the *Greenlands Strategy for the Greater Toronto Area* included provision for the conservation of "Cultural Heritage Features and Landscapes" (Ontario Provincial-Municipal Countryside Working Group 1993). The Royal Commission on the Future of the Toronto Waterfront also included a landscape perspective in its studies of watershed and land-use planning (Royal Commission on the Future of the Toronto Waterfront 1991). A landscape perspective was also reflected in the Heritage Districts that can be created through the authority of Part V of the *Ontario Heritage Act*.

An interesting contribution by the federal government in Ontario has been the study of the Rideau Corridor cultural landscape (Canadian Parks Service 1993). This project was instrumental in spreading the work of landscape conservation within the Province. Heritage Canada has also been influential through the landscape projects which were part of its *Mainstreet* and later its *Heritage Regions* programs. Unfortunately, these programs are no longer a part of Heritage Canada's activities in Ontario and Canada.

The foregoing list of relevant projects in Ontario is incomplete but does show that the application of the landscape idea in Ontario is a mixed and uneven one. And in spite of the continuing struggle with the precise meaning of landscape and the best planning approach for its protection, the term and its potential remain with us. Many landscape protection possibilities exist in Ontario for example: Heritage Rivers and riparian landscapes; watersheds such as the Grand with its mix of cultural and natural landscapes; the Bruce Peninsula and its rugged limestone landscape; and, provincial parks and environs including Long Point, the Pinery and Rondeau. Two landscapes currently of considerable interest to the University of Waterloo Heritage Resources Centre are *The Great Arc* and *The Island Arc*. *The Great Arc* involves a vision of the landscape or landscapes of the Niagara Escarpment Region as they stretch from New York through Ontario and Michigan into Wisconsin. *The Island Arc* involves a vision of the western Lake Erie region which includes the islands and waters stretching from the Point Pelee area in Ontario across to the Ohio shores in the US (Iisaka 1999).

Some significant questions remain about the conservation of such landscapes however. How do we encourage greater awareness and use of the concept by all those concerned with ecosystem protection, cultural heritage conservation, sustainable development and quality of life in Ontario? How do we make decisions about which landscapes are significant? What scale of landscape should be protected? Who should be involved in the decision-making for protection? How can protection or conservation be combined with development to a degree that is acceptable or practicable for the concerned parties?

Clearly much more could be done to use the concept of landscape as a platform for natural and cultural heritage conservation and community development on a regional basis in Ontario. An underlying need is to build awareness, appreciation and concern for landscape, and its linkage with changes in land-use and ecosystems. The key is to engrain this more fully into professional planning and into the minds, feelings and values of the people of the province. Scientific and scholarly understanding as well as emotional or spiritual commitment are both very important to success. In this respect we need:

- More studies of the way in which people perceive and value the land in Ontario. These studies would serve as a basis for awareness building and educational programs in schools and in interpretation programs generally;
- More historical studies of the interrelated natural, cultural and land use histories of interesting landscapes in Ontario, for example the Grand River, the Ganaraska Watershed or the Island Arc;
- More inventories and assessments of the combined natural, cultural and scenic qualities of working landscapes in Ontario, for example Georgian Bay, Muskoka, or Mennonite Country;
- More research and assessment of planning approaches and procedures in England, the US and other areas which could be useful to compare with Ontario, a leading example being the National Heritage Areas Program in the US;
- Research on land use history, landscape change and their implications for planning in and around parks and protected areas in Ontario, for example in the Bruce, Long Point and the Pinery. People are frequently unaware of the degree and extent of change even in protected areas and so of the effects of recreation, tourism and related planning decisions;
- More studies of history, progress and problems with the designation and planning of Heritage Districts in Ontario, most having been set-up in urban rather than rural areas;
- Assessment of experience with national monuments and other attempts to conserve unique or special as well as representative natural and cultural landscapes in the US and other countries with the intent of applying such approaches in Ontario. The *Federal Landmark Program* is an example of a neglected Canadian approach of this kind which might be used quite effectively as a lynch pin in conservation and sustainable development efforts in heavily settled areas such as southern Ontario. In these respects we could probably learn a lot from detailed studies of the approaches and work of the UK Countryside Commission or of the US National Park Service;
- Research on ways of working more effectively with First Nations and other cultural groups with a strong interest in conserving the ways of life and landscapes of which they are part.

We wish to conclude this brief paper by stressing the importance of co-operative approaches to the challenges. Recent experience in British Columbia, Ontario and other areas indicates that linking local or grassroots efforts with support from senior governments is an important factor in achieving success (Cardinal and Day 1998; Nelson and Black 1998).

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