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**A SURVEY OF
BIODIVERSITY CONSERVATION GUIDELINES
FOR AGRICULTURAL AND OTHER
RURAL REGIONS OF CANADA**

**PREPARED FOR
THE BIODIVERSITY CONVENTION OFFICE
ENVIRONMENT CANADA, OTTAWA**



By

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Opinions expressed in this report are those of the author and do not necessarily reflect the views and policies of the Biodiversity Convention Office, Environment Canada.

Ted Mosquin, March, 1996.

NOTICE OF INTENT TO MAKE THESE GUIDELINES AVAILABLE ON THE INTERNET

Invitation to the Reader:

The material presented in Appendix 1 of this report will be revised and further edited over the course of 1996, with the objective of eventually making it available on the Internet. We would like to make this survey as complete as possible and are therefore inviting you, the reader, to make specific suggestions as to documents that have been overlooked and that, in your opinion, could be added. For inclusion the material should meet the general criteria as described in Section 1.0.

Any suggestions or hard copy documents should be sent by mail, fax or email as appropriate (with full citation, number of pages and description of contents) to:

Regular Mail: Biodiversity Convention Office, Environment Canada,
351 St Joseph Blvd., 5th Floor,
Place Vincent Massey, Hull, Quebec K1A 0H3

Tel: (819) 953-4374

Fax: (819) 953-3557

Additional contributions would be much appreciated and, possibly, help the users of this material to better value, conserve and/or restore natural biodiversity on their properties and in their communities.

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BIODIVERSITY CONSERVATION GUIDELINES REPORT

1.0 INTRODUCTION

1.1 Objectives of this Study

This study reports on the results of literature searches for published guidelines whose purpose is to inform farmers and other rural property owners on the many ways in which one could plan activities to better conserve and/or restore biodiversity on private properties and in local communities. The study also examined the ways in which existing guidelines are distributed to users and the approaches at distribution.

Good self-explanatory guidelines, among other things, can enable farmers and other rural property owners to conserve biodiversity on their own initiative, with no or minimum input of technical assistance through staff responsible for specific programs developed and maintained by government agencies and/or private organizations.

1.2 The Nature of Guidelines

Guidelines are always voluntary. If well written, convincing and seen to be important to the needs of the user, they can affect fundamental values and the non-regulated choices and actions people take based upon values implied, stated or explained in the guidelines. Good guidelines can lead people in an area of little knowledge and/or awareness to see the advantages and strategies that might be employed to plan for the future of an area. They thus can facilitate the growth of local initiatives and result in hands-on action to achieve a certain desirable goal or objective. The visible achievement of certain ends can be personally empowering and satisfying and foster a sense of responsibility and stewardship for wild species and the workings of natural systems. If enough people decide to use a set of guidelines and work together with others in the community this can lead to increased public support for the development and implementation of enlightened policy and legislation for achieving more biodiversity conservation and ecologically sustainable development. But as noted below, guidelines can also be negative and lead to the greater destruction of biodiversity.

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Appendix 1 of this report provides an annotated list of all the (mainly Canadian) guideline documents located during this search. To be included in the Appendix a publication (no matter how small or large) had to contain significant "how-to-do-it" information on biodiversity conservation. This means it had to contain a combination of specific directions or instructions on actions that, if taken, could enhance or restore biodiversity and/or reduce impact upon farm or rural biodiversity as a result.

Guidelines are of several types. Some are officially declared publications that are sometimes associated with government legislation and policy. A far greater number, however, are published by both government and the private sector and are designed to inform and instruct readers on specific things they can do and ways they can act such that would have some small or larger positive effect on local and more distant biodiversity. Guidelines of the "official" (i.e. linked to legislation) variety are generally too technical and difficult to understand at the farm level and were not the subject of searches during this survey.

It is obvious that an enormous creative effort has gone into researching and writing some of the guideline documents described herein. Thus, anyone wishing to prepare a set of practical guidelines for conserving or restoring troubled species or degraded ecosystems or for use in a specific area or region would do well to assemble and review the ideas in some of the documents listed in Appendix 1.

1.3 The Biodiversity Convention: A New and Powerful Context for Conservation Guidelines

The context within which guidelines applicable to Canadian agricultural and other rural areas is being examined is that of the *Convention on Biological Diversity* which came into being because biodiversity the world over is in very serious trouble. The Convention itself was deemed necessary and critical by over 100 nations because of the accelerating losses of thousands of species, the continuing degradation or elimination of natural ecosystems and associated valued resources. The Convention calls for greatly increased efforts on the part of nations to conserve their biodiversity, to sustainably use it and to share its benefits equitably world wide.

Canada helped to draft and negotiate this important Convention which was ratified by the Canadian Parliament 1992 and came into effect in 1993. A number of Articles of

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the Convention call for commitments and a variety of actions on the part of ratifying nations aimed at fostering the conservation and sustainable use of biodiversity in the country. When a nation ratifies the Convention, it makes a commitment to its citizens and to other nations of the world to take seriously the matter of the conservation and sustainable use of biodiversity.

It makes sense that the development and effective distribution of clearly written, credible and respected biodiversity conservation guidelines (for all sectors of society) would be an important mechanism to advance implementation of the Convention and meet a country's obligations to conserve biodiversity under the Articles of the Convention. A number of Articles refer to the mechanisms that a country should use to increase biodiversity conservation and restoration actions of its citizens. To actually achieve more conservation as called for under the Convention involves changes to policy, legislation, regulations and/or guidelines. The directly relevant Articles related to guidelines are identified below.

Specifically, Article 8 (*In situ* Conservation) states:

- 8(b) *"Each Contracting Party shall, as far as possible and as appropriate: develop.....guidelines.....where special measures need to be taken to conserve biological diversity."*
- 8 (d) *"Each Contracting Party shall promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings."*
- 8(f) *"Each Contracting Party shall, as far as possible and appropriate: rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, inter alia, through the development and implementation of plans or other management strategies."*

It is unambiguous that these paragraphs refer to ALL land and water areas: those within and outside protected areas, and on both public and private land.

Article 11 (Incentive Measures) of the Convention states:

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"Each Contracting Party shall, as far as possible and as appropriate, adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity."

As well, Article 13 (Public Education and Awareness) states:

"The Contracting Parties shall promote and encourage understanding of the importance of, and the measures required for, the conservation of biological diversity, as well as its propagation through media, and the inclusion of these topics in educational programs."

The above quotes from the Articles of the Convention describe the nature of Canada's commitment to these parts of the Convention.

In responding to the Convention through its new Canadian Biodiversity Strategy (Minister of Supply & Services 1995), Canada has outlined some ways in which it is putting mechanisms into place to permit and encourage participation by property owners in the implementation of the Strategy. The actual mechanisms which will better allow for participation of private property owners would necessarily involve the development and strengthening of any existing guidelines, the development of new or revised guidelines where gaps exist, and possibly the identification and withdrawal from circulation of some guidelines which do unacceptable levels of damage to biodiversity. Page 33 of the Strategy states that it is Canada's intent to:

- 1.44 *Develop and implement programs that promote and facilitate the co-existence of wild flora and fauna and other wild organisms and their habitats in agricultural landscapes;*
- 1.45 *Through research, training and technology transfer, facilitate the further adoption of environmentally sustainable practices, including those that:*
 - a) *reduce soil erosion, surface and ground water contamination and air pollution; and*
 - b) *lead to the identification of productive soil types in relation to specific crop requirements.*

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- 1.46 *Encourage agricultural producers to develop farm management plans that support the conservation of biodiversity and sustainable use of biological resources.*
- 1.47 *Facilitate the sharing of experiences and expertise among farmers to promote management practices that favour the conservation of biodiversity and the sustainable use of biological resources.*
- 1.48 *Maintain and develop policies or programs that conserve biodiversity by supporting the sustainable use of native grasslands, and*
- 1.49 *Identify and conserve areas that support native species and communities or could contribute to systems of protected areas, especially in intensively developed areas in accordance with the directions provided in the section on protected areas of the Strategy.*

And in Education and Awareness section of the Strategy (page 60), the following strategic directions are outlined:

- 3.3 *Create educational material that emphasizes measures that can be taken to prevent or reduce impacts on ecosystems and biological resources, and*
- 3.4 *Promote public awareness of biodiversity issues, conservation and sustainable use requirements and changes in the state of biodiversity and improvements in resource management practices through periodic reports, fact sheets, electronic information systems and other communication materials and methods”.*

A variety of wildlife and habitat enhancement guidelines for use in rural areas have already been written. In particular, work has been underway for many years by provincial and federal government agencies and in numerous non-governmental conservation groups (Appendix 1). In the last several decades, as the public came to be concerned about the environment and the known major impact of industrial farming practices on the losses of species and degradation of wetland and upland ecosystems, the writing of guidelines applicable specifically to on-the-farm operations has spread to the agricultural sector (Appendix 1, Part I).

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Guidelines vary enormously with respect to their scope and geographical area of application. Some apply nationally, or as is more frequently the case, to a province or to a specific conservation problem or to a program delivered by a government agency or a non-government environmental group (NGO) such as Ducks Unlimited. Increasingly, guideline-writing initiatives are cooperative and involve government agencies, environmental NGOs, and farm organizations themselves. Where programs exist these are usually designed by government agencies or NGOs although farmer input is increasingly evident. A useful compilation of current agricultural programs across Canada (including programs for wetlands) that would have at least some positive effect on the conservation of biodiversity at the farm or ranch level are described by Greenfield (1995), although her list is by no means comprehensive. Her list does not include the many private initiatives at habitat restoration/protection taken without reference to any specific programs by individual farmers and other rural land owners. Some programs described by Greenfield (l.c.) have associated guidelines (when this is the case the guidelines are included in this report); other programs have no published guidelines but are executed by agencies providing technical expertise and, in some cases, also providing funding to the landowner for habitat enhancement, compensation for withdrawal of land from agricultural production, the re-establishment of natural habitat, assistance with pollution control structures or stream fencing on the property itself, and the like. This is clearly an emerging area.

2.0 SEARCHING THE LITERATURE

A number of obvious avenues were used to search for guidelines and related materials.

- 1) Direct contacts with agencies and organizations known to have produced and distributed guidelines in the recent past, including particularly agricultural departments, wildlife agencies, and private national and provincial conservation groups.
- 2) Limited searches of the Internet focussing on agriculture and environment including:
 - Federal and all Provincial Departments and Agencies (a few useful guideline publications were located - and noted in Appendix 1, Part I);

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- agricultural schools at universities and colleges, esp. Guelph, Manitoba, and Nova Scotia (no guidelines posted);
- non-governmental organizations in agriculture and environment; and
- some locations in other countries (a wide variety of relevant publications/programs, etc.).

Not all agencies and groups have Internet home pages. Information at some sites was printed out; it is available as informal background information to this report. However, the searches of international locations on the Internet was cursory at best (this was not a requirement of this project).

- 3) Visits to libraries of Agriculture and Agri-Food Canada, the eastern Ontario OMAFRA offices at Perth, Ontario and the Ontario Ministry of Natural Resources offices at Carleton Place.

Follow-up telephone calls were made to most provinces to request assistance and/or to confirm existence of guidelines and to learn something of distribution.

While every effort was made to locate all guidelines relevant to this report, the survey results as presented in Appendix 1 should not be seen as comprehensive. This is because, usually, there is no way of knowing that a particular guideline document exists until one learns about it from one source or another. However, it is believed that Appendix 1 contains very few serious gaps. As well, the author of this report feels that the Analysis and Discussion section which follows would not get significantly changed should some important new guideline document come to light.

3.0 ANALYSIS AND DISCUSSION

The content, scope, quality, specialization and intent of agricultural and rural land guidelines that are aimed at restoring, enhancing and conserving biodiversity are broad and uneven. As well, the motivations of people, government agencies and private sector groups producing these guidelines are likewise varied. A review of all the titles in Appendix 1 will reveal the varied and eclectic nature of materials available.

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3.1 Categories of Guidelines

As the survey of the guideline literature progressed, it became ever clearer that the material fell into a number of categories. Four are recognized for purposes of presentation and these are grouped in Appendix 1 as follows:

- I. guidelines produced mainly by agricultural agencies and industries;
- II. guidelines produced mainly by environmental agencies and private groups;
- III. guidelines produced by the growing organic farming/sustainable agriculture movement; and
- IV. miscellaneous guidelines - including those from foreign countries, written by individual authors.

There is considerable overlap between categories with respect to subject matter covered. While wildlife agencies and nature oriented NGOs have long produced educational materials and guidelines on the ways to conserve nature as such, this concern now clearly includes hunting and fishing groups and to a growing degree, the farming and ranching community at the grass roots level. Over the past several decades there has emerged an almost universal concern for the protection and restoration of wetlands, and in the past several years this concern has spread to the agricultural sector which now has produced some guidelines to help farmers lessen the impact of farming activities upon lakes and streams and restore economically marginal upland habitat. Also, the concern now includes the biodiversity of riparian areas (especially of streams flowing through agricultural and urban lands). The result is that increasingly, guidelines are produced co-operatively through partnerships and with joint funding. Hence, while some guidelines apply only to working farms, others apply more broadly and include any rural properties, including cottage country, abandoned farmland, hobby farms and the like.

3.2 Intergradation with Environmental Education Materials

Guidelines usually do not stand alone. They usually require explanation and/or rationales about values that would be gained. Hence, most guidelines carry considerable environmental education content. Indeed, educational material as such often contains a short "what you can do" section. There are literally thousands of pamphlets, magazine articles, tabloids, reports, books, etc. which contain some

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“guideline-like” material to assist the reader with follow-up actions. In other words there is no clearcut line separating much environmental educational material from the sorts of publications whose primary purpose was to instruct the reader on “how to do something.” As well, there is the obvious fact that, in themselves, guidelines are implicitly educational because of the implied values that would be recognized through their application.

Other kinds of biodiversity educational material come in the form of films and video. The National Film Board’s “Green Video Guide.” (NFB 1994) provides a good sampling. Some of these titles contain excellent guidelines aimed at informing and motivating the viewer on the whys and hows of biodiversity conservation actions. The survey of this kind of material is beyond the scope of this study. Private film producers such as Waterhen Films Ltd, Balgonie, Saskatchewan also produce quality educational and “guideline-like” films and videos that may be effective in fostering a deeper conservation ethic and encouraging actions on behalf of biodiversity conservation.

3.3 The Organic Farming/Sustainable Agriculture Movement

The organic farming movement is largely driven by the growing desire of people to grow and purchase food that is completely free of pesticide residues and other synthetic chemicals. As well, there is a philosophical commitment to the ethic that humans have a responsibility to care for the planet and that lands, waters and soils should be passed on to future generations in a healthy ecological condition. The movement is not officially supported by agricultural agencies and colleges. But nevertheless, it has spawned a wide series of publications, meetings, workshops, and the fostered the conversion of “model” farms away from a dependence upon artificial pesticides and synthetic fertilizers. Most farming prior to about 1945 was organic.

Over the past several decades, and particularly in recent years, the organic growers movement has become a persistent trend (see Appendix 2) particularly as the consumers of food change their buying preferences to favour organically raised products. The consequence has been that ever more farmers are converting to organic methods. There now exist many hundreds of educational and “guideline” publications on organic gardening and farming (Canadian Organic Growers’ Library List - 1995; Agri-Info 1995), a small number of which are described in Appendix 1.

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It is clear that the growing economic importance of the organic movement will help in achieving the goals of the Canadian Biodiversity Strategy since the consequences of organic gardening and farming are significant enhancement of soil biota, reductions in fertilizer runoff into streams, elimination of pesticides in food chains, increases in a host of insects and arachnid populations in the soil, along hedges, fence rows and forest edges.

One aspect of organic farming is termed "permaculture," short for permanent agriculture. Permaculture is defined by its proponents as *"the conscious design and maintenance of agriculturally productive systems which have the diversity, stability, and resilience of natural systems. It is the harmonious integration of landscape and people providing their food, energy, shelter, and other material and non-material needs in a sustainable way. Without permanent agriculture there is no possibility of a stable social order. The philosophy behind permaculture is one of working with, rather than against, nature: of protracted and thoughtful observation rather than protracted and thoughtless action; of looking at systems in all their functions, rather than asking only one yield of them; and of allowing systems to demonstrate their own evolution"* (Mollison 1988).

As with environmental education materials, it is not possible in the final analysis to clearly separate the organic farming guidelines from some current agro-industry guidelines or from ones aimed at enhancing wildlife habitat and restoring native biodiversity since some publications now cover all three areas.

3.4 Exclusion of Negative Guidelines

The agricultural guideline literature affecting biodiversity are not only positive. There also exist large numbers of publications produced by the agriculture and agri-food sector providing advice which would impact negatively on farm biodiversity. For example, some 180 titles are available free of charge from Agriculture and Agri-Food Canada, Ottawa (listed on the Internet). These publications are of interest and importance to industrial farms but few indeed have anything to do with biodiversity conservation. The subjects cover research, diseases, farm buildings, machinery, methods of growing crops, animal production, pesticides and the like. Information on organic farming is absent. The few titles that deal (or purport to deal) with habitat enhancement or species conservation on the farm are included in Appendix 1.

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A similar situation prevails at the provincial level. For example, at OMAFRA field offices in Ontario one finds that the large bulk of pamphlets and guidelines are aimed at increasing the efficiency of modern agri-business farms. One exception, however, can be found in several (but not all) of the excellent publications in the "Best Management Practices Manuals" (reviewed in Appendix 1) which were designed to guide farmers to reduce impact of farming activities on the natural environment or to restore agriculturally degraded lands.

Looking at the guidelines (Appendix 1) as a whole, what seems to be emerging is a common set of environmental values with growing co-operation and a more common focus among some very different stakeholders. There is an emerging sense among rural property owners and farmers themselves of the importance of reducing the impact of industrial farming operations on the natural environment (ground water, streams, fish, upland wildlife, balances in nature, etc.). Translated into action this means some farmers are now formally involved in taking specific actions to enhance wildlife habitat, to reduce or eliminate a dependence on pesticides and fertilizers and to organize their farming activities with at least some thought at biodiversity conservation (some programs described by Greenfield 1995). So far, these farmers are in the tiny minority. The majority have become very much a part of the subsidized track toward totally industrialized agriculture, which has its own set of pervasive guidelines aimed at maximizing efficiency, production and profit. The low priority given to biodiversity conservation and restoration by the agricultural establishment in Canada is a major national problem which needs to be resolved if we are to see the agricultural sector of Canada take some responsibility for in moving this country toward sustainable development:

4.0 DISTRIBUTION AND DELIVERY SYSTEMS

The distribution of the many kinds of guideline documents included in Appendix 1 is largely dependent upon the supporting budgets and staff sizes of government agencies and private groups which create and publish the guidelines. Generally, distribution and delivery costs are assumed by the agency or conservation group producing the guidelines. This means that delivery is to a select audience, usually only to persons requesting the document, or as a blanket to all members of the group. What this means is that most farmers and other rural property owners never receive copies of the documents.

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The longest standing distribution system, and one which has produced a wide range of hands-on guidelines is that of the Canadian Wildlife Service which, for many decades has made a special effort to produce materials through their "Who's who" and other series (Appendix 1). Agriculture and Agri-Food Canada also has maintained its information distribution system operating for many decades. NGOs such as the Federation of Ontario Naturalists and Ducks Unlimited continue to develop guidelines and to make these available to their members.

Most guideline literature is free upon request but as one farmer indicated "if they don't send it directly to me, I don't get it." In the Perth area, two of the farmers interviewed indicated that they have never visited the information booths or reviewed the farming literature at the local OMAFRA office.

Farmers obtain most of their information through articles in farm journals and newspapers, at farm shows and through attending workshops organized by provincial agricultural field representatives, sometimes with the aid of professionals at regional agricultural colleges or universities. Farm shows and the farm press rely heavily for their continuing viability from advertising revenues provided by the farm machinery, pesticide and herbicide industries. Few parsnips are buttered by the biodiversity conservation "industry."

Examples of some widely read farm newspapers are:

- **The Western Producer** (104 pp.; many large ads for herbicides and machinery)
- **Ontario Farmer** (weekly, published in London Ontario). Devoted largely to increasing the efficiency of farm production. However, the newspaper carried dozens of articles on organic agriculture since 1988 (Acc. To the Canadian Organic Grower's Library List, 1995)
- **Farm & Country** ("Ontario's commercial farmer trade journal")
- **Manitoba Cooperator** ("News features and opinions on all matters of interest to Manitoba farmers")
- **The Grower** ("the seed and culture of Ontario's horticultural industry"). See article on organic farming (Appendix 2)
- **Country Life in British Columbia**
- **The Atlantic Co-Operator** ("the voice of the co-operative movement in Atlantic Canada")

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The distribution and delivery systems for guidelines appear to be mostly of an *ad hoc* nature. Delivery is scattered, opportunistic, or simply responding to requests received. Or, guidelines are available mainly to members of the group which produced them. Sometimes they are available at public meetings.

According to Barry Adams, Alberta Forestry, Lands and Wildlife (personal communication) and who has written a number of guideline documents for farmers and ranchers in Alberta (reviewed in Appendix 1) there is a "growing hunger" among farmers, ranchers and other rural property owners for good guidelines aimed at restoring native prairie, cleaning up natural streams, and otherwise enhancing wildlife habitat on their private properties and in their communities. This movement toward restoration, including the growing demand for organically raised food by consumers in many countries of the world has major implications for biodiversity recovery. The movement can be supported and nurtured through the availability of good, easy to understand "do it yourself" guidelines that can be understood at the farm and ranch level.

What seems to be an advance model for restoring the environment to a more healthful condition and bringing back native species and ecosystems has emerged in Australia and this may be worth detailed study for application to Canada and other countries. The Australian program called *LandCare Australia* is a true grass roots movement organized by farmers, ranchers and other rural property owners across the continent. Over 20% of Australia's 145,000 farmers are involved in planning and drafting detailed local plans aimed at substantially changing the approach to land use. The movement has grown quickly to over 2000 local groups. It is supported by thousands of volunteers from urban and rural areas who are involved in tree planting, erosion control and other restoration tasks. The LandCare movement is attempting to reverse the enormous destruction of species and natural ecological systems that has taken place in Australia. Local, state and national coordination is provided, but by far most of the work is by volunteers. The Internet is an important communication vehicle for sharing ideas and resolving problems. The process and the many elements of these locally and regionally generated plans (including addresses, local telephone, fax, and email addresses of the grass roots people involved) can be found in great detail on hundreds of home pages accessible through the Internet at location:

<<http://www.netc.net.au/LCare.html>>

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The mailing address is: National LandCare Program, PO Box 3141, Manuka, ACT 2603, Australia.

According to Pilarski (1996) and from which some of the above facts are taken, some of the principles of landcare include:

- extensive use of trees, shrubs and perennial plants;
- a land ethic;
- the goal of sustainable production and ecologically-based natural resource management;
- intelligent design of land use systems;
- a systems approach to environmentally sensitive production;
- integration of environmental and production goals;
- ecosystem knowledge, ecological literacy and land literacy; and
- community empowerment and focus.

And finally, this short study reports only on what was found and available in terms of guidelines for rural biodiversity conservation, and some excellent guidelines do exist. It makes no effort to identify needs. In the kind of increasingly ecologically degraded and toxic world in which we live, and considering the seriousness and permanency of losses of biodiversity, one can ask many questions. What sort of guidelines might be missing? Who can best write credible guidelines? What should be the optimum distribution and delivery system? What process should be used? Who would pay? This is the sort of issue that can be addressed through focus workshops of concerned property owners themselves (as is the case in the Australian LandCare movement noted above) with participation and guidance from knowledgeable naturalists and applied ecologists.

5.0 LITERATURE CITED

Agri-Info 1995. Catalogue on Sustainable Agriculture publications. Warwick, Quebec. 92 pp. (See page 36 of this report)

Canadian Organic Growers' Library List 1995. 20 pp. Almost 1000 titles. All these are available on loan from: COG Lending Library (see page 36 of this report).

BIODIVERSITY CONSERVATION GUIDELINES REPORT

Government of Quebec 1995. Convention on Biological Diversity: Quebec's Draft Implementation Objectives. Environnement et Faune, Québec. 168 pp.

Greenfield, Joyce 1995. Agricultural Biodiversity Initiatives. Consultant report submitted to: Environmental Bureau, Agriculture and Agri-Food Canada, Canadian Cattlemen's Association, and National Agricultural Environment Committee. 45 pp.

Mollison, Bill 1988. Permaculture, a Designer's Manual. Tagari Publications, Tyalgum, Australia. 576 pp. highly illustrated.

National Film Board 1994. The NFB Green Video Guide: A Collection of Videos that Celebrate the Earth and Promote Discussion. The guide is a resource for environmental education, representing a selection of some of the best environmental videos that the NFB has to offer.

Pilarski, Michael 1996. Restoration and Forestry in Australia. International Journal of Ecoforestry 12(1): 161-166.

APPENDIX 1

ANNOTATED BIBLIOGRAPHY OF GUIDELINES FOR THE CONSERVATION OF BIODIVERSITY IN AGRICULTURAL AND OTHER RURAL AREAS OF CANADA

Entries in this Appendix have been classified into four categories, namely:

- Part I. those produced mainly by agricultural agencies and industries;
- Part II. those produced mainly by natural resource and environment agencies and non-government conservation groups;
- PART III: guidelines for organic farming and sustainable agriculture;
- Part IV. miscellaneous guidelines, including those from countries other than Canada.

BIODIVERSITY CONSERVATION GUIDELINES REPORT**PART I : GUIDELINES PUBLISHED BY AGRICULTURAL AGENCIES AND THE AGRI-FOOD INDUSTRY****EIGHT BEST MANAGEMENT PRACTICES' MANUALS**

This series of 8 (soon to be 10) glossy 8 ½ x 11 inch booklets is funded by Agriculture and Agri-Food Canada, managed by the Ontario Federation of Agriculture and supported by the Ontario Ministry of Agriculture and Food. The manuals are addressed directly at working farmers although several of the booklets will be useful to non-farming rural property owners. The booklets vary greatly in terms of relevance to biodiversity conservation on the farm with some being very well written while others propose practices that would impact negatively on biodiversity. A disclaimer on each booklet reads: "This publication reflects the opinions of the contributing authors..... It may not reflect the programs and policies of the supporting agencies."

1) Best Management Practices: A First Look - Practical Solutions for Soil and Water Problems

(no date). A first look at soil and water conservation concerns and practical problems.

2) Best Management Practices: Livestock and Poultry Waste Management

1994. 50 pp. Concerned with methods of handling of manure and milk house waste water disposal. The effect of guidelines would be to reduce impacts on water table and stream pollution from farms.

3) Best Management Practices: Field Crop production

1992 or later. 134 pp. This guide provides detailed descriptions of soil, nutrient and pest management alternatives and reflects a strong concern for the consequences of a farmer's actions on the environment. It describes conservation structures for cropland and for streams and ditches to minimize harm to the environment. These include tile drainage and water table management, terraces, soil and sediment control basins, diversions, grass waterways, stabilization of stream banks, drain outlet stabilization, livestock fencing and stream crossings, machinery crossings, and fragile and marginal land "retirement."

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4) *Best Management Practices: Horticultural Crops*

(no date). 77 pp. This booklet relies heavily on efficient machinery, pesticides and fertilizers with little attention to impact on biodiversity. It notes that: "...nothing less than this comprehensive approach will allow farmers to enhance the environment while meeting business objectives." The conservation content of this booklet is nil.

5) *Best Management Practices: Farm Forestry and Habitat Management*

1993. 41 pp. This booklet describes a number of practices for farm forestry and habitat management which would have a positive effect on biodiversity. In particular, the practices described would reduce: local impact of erosion, clouding of streams by sediment and contamination by fertilizers and pesticides. The practices described would increase the quality of habitat for fish, wildlife and a variety of living things.

6) *Best Management Practices: Nutrient Management*

(1994). 70 pp. This booklet promotes the widespread use of artificial fertilizers to optimize crop production. It contains no guidelines whatsoever aimed at reducing nutrient use, impact on streams, etc. or how a farmer might get off dependency on artificial nutrients. It is misleading to call this a "best management" publication.

7) *Best Management Practices: Water Management*

1994. 94 pp. Generally an excellent guidebook on this topic for farmers, and with a strong educational value. At the outset it describes the ideal toward which each farmer should strive: "Likewise, it's expected that water leaving your farm, either through evaporation, infiltration to ground water, or surface runoff, will still be abundant and clear for the next user." Another merit of this booklet's guidelines is that it begins by describing the larger global and regional water cycle and how farm activity, home and barn are linked to and depend on this and also could affect it. Any farmer following this guide and the principles it sets forth would provide a small contribution to biodiversity conservation. It ends with a presentation of the importance of wetlands, woodlands, water courses and ponds. In preparing the guidelines for water management, the authors try to live up to their enlightened statement in the introduction.

8) *Best Management Practices: Soil Management*

1994. 70 pp. This booklet logically begins with 28 illustrated full pages describing the basics of soil formation and structure while avoiding the use of technical terms. Sections follow on a variety of agricultural practices causing soil problems with

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structure, compaction, erosion in droughty, organic and wetland soils. Guidelines for management are then presented dealing with buffer strips, cover crops, crop rotation, drainage, erosion control structures, green manure, irrigation, manure management and the use of other organic materials. Reduced tillage and non tillage systems and windbreaks are described. The rest of the booklet is an experienced description of the many ways of either restoring or maintaining soils in a high quality condition.

The Ontario Environmental Farm Plan Guidebook

The Environmental Farm Plan (EFP) is way of evaluating the environmental performance of a farmer's operations. Through the EFP process, farmers highlight environmental strengths of their farm, identify areas of environmental concern, and set goals to improve environmental conditions according to their own timetable. The EFP was started and drafted by a number of Ontario farmers organizations including the Ontario Federation of Agriculture, Christian Farmers Federation of Ontario, AGCare and the Ontario Farm Animal Council, helped along with a grant of \$3.9 million from Agriculture and Agri-food Canada. These documents are designed for the use of individual farmers.

The procedure involves free workshops delivered locally through the program representative of the Ontario Soil and Crop Improvement Association. Technical direction is provided by OMAFRA. Home study packages (including videos) are available as an alternative to workshops. The "self-assessment" topics include soil & site, water wells, livestock yards, silage storage, noise and odour, water efficiency, energy efficiency, soil management pest control, field crop production, woodland and wildlife, horticultural production, pesticide storage and handling, disposal of farm wastes, fertilizer storage and handling, storage of agricultural wastes, storage of petroleum products, treatment of household wastewater, milking centre washwater, nutrient management in growing crops, manure use and management, stream ditch & floodplain management, and wetlands and wildlife ponds. Obviously, several of these topics could result in some biodiversity conservation or restoration depending on farm location.

The plan documents are available to farmer families who voluntarily fill them out. The exercise raises awareness of the environment on the farm. The EFP was started as a pilot project in 1993 and over 5000 farmers in over 50 counties across Ontario have now participated in the exercise.

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Up to \$1500 per farm business is available to assist farmers making positive environmental changes identified in their EFP. A farmer needs to produce at least \$7000 in agricultural products in the previous year in order to qualify.

Several eastern Ontario farmers interviewed chose not to participate in the EFP. One noted: "If something is reported in the EFP, you could be toast - my operation could be shut down." Information @ 1-800-265-9751.

Agricultural Practices and Environmental Conservation

1984. Agriculture Canada Publ. No. 1772/E 27 pp. A summary of guidelines for farmers dealing with water, air and soil pollution and soil degradation resulting from farming practices. While still available, the material in this publication has been incorporated into the "Best Management Practices" manuals described above and by other guidelines.

Pesticide Safety

Agriculture Canada Publ. (nd) No. 1825E. The title of this booklet implies that humans and the environment would be safe if these guidelines were followed. Upon reading the text however, there is no mention of effects on biodiversity or the natural environment. Hence, if the procedures are followed, humans and their farm animals would be better protected from poisoning, but agricultural and rural biodiversity would still suffer some impacts. It needs to be acknowledged, however, that if the guidelines on safety are carefully followed the impact on wild species and natural ecosystems can be minimized.

Guide to Range Condition and Stocking Rates for Alberta Grasslands

1988. By R.A. Wroe, S. Smoliak, B.W. Adams, W.D. Willms and M.L. Anderson. 33 pp. Small booklet. Alberta Forestry, Lands and Wildlife. Edmonton. A technical booklet with tables, criteria, maps and an inventory evaluation form.

Grazing Management in Native Grasslands: Handbook No. 1, Foothills Fescue Prairie

1992. Agriculture Canada Publ. No. 1883/E. 33 pp. The title of this guidebook is a misnomer. The booklet is intended for use by ranchers in the foothills who want to manage areas of former fescue prairie or cultivated fields by establishing good forage species. The guide recommends numerous species most of which are non-native (alfalfa, alsike clover, birds-foot trefoil, Cicer milk-vetch, sainfoin, altai wild rye,

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Kentucky blue grass, smooth brome, meadow brome, orchard grass, crested wheat grass, rough fescue, intermediate wheat grass, tall wheat grass and some others). It also considers range, condition, stocking rates, grazing intervals, grazing systems and the problems of restoring overgrazed rangeland. Several paragraphs provide a few comments on re-establishing native prairie. If the grazing management guidelines in this publication are followed, the affected grasslands would soon become almost totally non-native in species composition. Native biodiversity will not benefit from this guidebook; rather numerous plant and animal species would be lost from the managed areas.

B.C. Livestock Watering Manual

(may be relevant to stream biodiversity)

Environmental Guidelines for Beef Producers in British Columbia

(not examined)

Best Agricultural Waste Management Plans

British Columbia Ministry of Agriculture, Fisheries and Food

Best Soil Management Plans

British Columbia Ministry of Agriculture, Fisheries and Food

Caring for the Green Zone: Riparian Areas and Grazing Management

1995. By Barry Adams and Lorne Fitch. 8 ½ x 11. 36 pp. + covers. Illustrated with photographs and drawings. This educational and hands-on "how-to" guidebook is written for ranchers and livestock operators and is aimed at influencing the management of the many riparian areas on private ranches of Alberta, but would be applicable to other western provinces. The publication is part of the Alberta Riparian Habitat Management Project, also known as the "Cows and Fish Project." The project is a co-operative effort between The Alberta Cattle Commission, Trout Unlimited Canada, Canadian Cattleman's Association, Alberta Agriculture, Food & Rural Development, Alberta Environmental Protection and Department of Fisheries and Oceans.

Code of Practice for the Safe and Economic Handling of Animal Manures

Alberta Agriculture, Food and Rural Development

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Guide to Crop Protection in Alberta: Non-Chemical Control

1989. Media Print Branch, Alberta Agriculture, 7000-113 Street, Edmonton, Alberta T6H 5T6.

Fire and Grazing to Manage Willow Shrubland on Foothill Range

1992. By Barry W. Adams, Oriano Castelli, Gordon Cartwright and Jim Clark. Range Notes, Issue No. 15. 10 pp. Illustrated. A guide to burning to maintain fescue prairie in the foothills. Other numbers in *Range Notes* may also provide useful guidelines.

Contact: Barry Adams (403)381-5486

Farm Practices Guidelines for Beef Producers in Manitoba

Manitoba Department of Agriculture. (not examined)

Contact: Cam Thang or Shelly Bartell (204) 945-3893.

Farm Practices Guidelines for Dairy Producers in Manitoba

Manitoba Department of Agriculture. (not examined)

Contact: Cam Thang or Shelly Bartell (204) 945-3893.

Farm Practices Guidelines for Hog Producers in Manitoba

Manitoba Department of Agriculture. (not examined)

Contact: Cam Thang or Shelly Bartell (204) 945-3893

Farm Practices Guidelines for Poultry Producers in Manitoba

Manitoba Department of Agriculture. (not examined)

Contact Cam Thang or Shelly Bartell ((204) 945-3893.

National Environment Strategy for Agriculture and Agri-Food

1995. Agriculture and Agri-Food Canada. 47 pp. Prepared for the Federal and Provincial Ministers of Agriculture. This should have been an important conceptual document for biodiversity conservation. However, it contains no substantive material on this subject. It defines 20 environmental goals for industrial agriculture and the agri-food industry. The goals are weak and vague. The one defined for biodiversity conservation is "pursue opportunities for the agriculture and agri-food sector to contribute to enhanced biodiversity, while continuing to generate wealth from the agricultural land base." Another, for the handling of farm manures (which are a major source of fertilization of riparian areas) is "find sustainable cost-effective and

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innovative ways of using manure as a resource." The other 18 goals equally appear to be speaking for a protectionist interest. This is a strategy document with assumes that Canada's agricultural sector is merely a self-serving interest rather than one that is responsible to all Canadians interest in reducing the impacts of industrial agriculture on agriculturally impacted environmental systems. The document contains no goals to reduce reliance on agricultural pesticides or fertilizers. In a section called "Framework for Action," the Strategy states flatly: "The agriculture and agri-food sector will not adopt new environmentally friendly practices if they damage the economic or social viability of the sector." Which sounds more like a statement of national policy on the sector's intended lack of commitment to biodiversity conservation. It is questionable whether this "strategy" document will help reduce the extremely serious impacts that present day industrial agricultural policies and activities have on the destruction of Canada's environment. As well, the document reveals something about Agriculture and Agri-Food's attitude toward Canada's international commitments. This document is not consistent with many of the forward looking and innovative agricultural and ranching guideline documents listed throughout this Appendix.

Planning for Farm Shelterbelts

(no date). PFRA, Agriculture and Agri-Food Canada 6 pp. For shelterbelts around farmsteads.

Planning Field Shelterbelts

1996. PFRA, Agriculture and Agri-Food Canada. 6 pp. For shelterbelts in open fields.

Shelterbelt Species

(no date). PFRA, Agriculture Canada. 12 pp. + covers. Describes the characteristics of 12 species of trees and shrubs suitable for prairie farm shelterbelts.

Planting Trees for Wildlife

(no date). PFRA, Agriculture and Agri-Food Canada. 9 pp. Describes the benefits of plantings for water and snow conservation, erosion control, crop protection and wildlife conservation. Eleven species of fruit-producing shrubs and trees described with photos.

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PART II: GUIDELINES PRODUCED BY NATURAL RESOURCE AND ENVIRONMENT AGENCIES & NON-GOVERNMENTAL ENVIRONMENTAL GROUPS***Conservation on the Canadian Prairies: A Landowner's Guide***

Environment Canada, Canadian Wildlife Service & World Wildlife Fund, 1989. 92 pp. incl. charts, colour photos and appendices. This guide is one of many projects being supported under the Prairie Conservation Action Plan. It has been prepared to encourage and provide ideas on how to retain native grass holdings in a productive condition both for the benefit of the landowner and that of the wildlife which depends on that habitat. The guide promotes grassland conservation on private land in several ways. Chapter 2 provides direction for identifying grassland types. Chapter 3 outlines an ecological approach to management. Chapter 4 shows how to assess grassland health so that appropriate management directions are chosen. Chapter 5 considers a variety of management/restoration techniques such as proper livestock grazing practices, use of prescribed burning, artificial nesting dens, and the like. Sources of additional information, extension services, and incentive programs are presented in Appendices.

Prairie Raptors: A Landowner's Guide

By Holroyd, Geoffrey L., Ivan Shukster, Diane Keith, and Laurie Hunt, 1995. (Environment Canada, Canadian Wildlife Service, Prairie and Northern Region), Edmonton. 48 pp. This attractive booklet is a practical, down-to-Earth guide written and researched by wildlife specialists with extensive knowledge of the prairie region and the concerns of prairie landowners. It includes a full-colour identification guide to 25 hawks, eagles, falcons, owls and other birds of prey common to the prairie region. It describes the simple steps that landowners can take to help protect and conserve the habitats of prairie raptors - and the birds themselves. Includes instructions on building nesting boxes and platforms and provides additional references for those who wish to become more involved.

Agro-Ecological Farm Planning Do-it-yourself Handbook

This is a guideline handbook created by the Maitland River Conservation Authority in consort with some farmers in the area. It invites farmers to define goals and objectives of their farm, describe the wildlife observed, consider their farm's location

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among others, and prepare a map and a land use plan. Unlike the Ontario Farm Plan, no rating is produced. Nine individual farms have completed the plans for their properties following these self-help guidelines. The Maitland system is not a program run by an agency, rather the Authority assists the farmer if requested. The intent was to guide families through a self-directed environmental review of their farm and to assist them in developing an enhancement plan. Facilitators used each family's knowledge of their landscape and management practices in a feedback routine to enhance awareness of landscape components and their environmental significance. In effect the families served in the capacity of an 'expert system' in preparing a plan for wildlife habitat enhancement on their own property. This approach to farm biodiversity conservation includes suggestions for reading background educational materials an example of which is that of Riley & Mohr, OMNR listed in Part 2 of this Appendix. Contact: Rick Steele (519) 335-3557.

Protecting Your Shoreline for Better Farming and Ranching

Fisheries and Oceans Canada, Central and Arctic Region, Winnipeg, Manitoba.

The Nature of Canada: A Primer on Spaces and Species

Environment Canada 1993. Published by Supply & Services Canada. 210 pp. Part of the Environment Citizenship Series. (Also issued in French). This unique and extremely well thought out "manual" is intended for environmental educators working in formal and informal settings but would be readily comprehensible to ordinary farmers and other rural property owners. Material is presented in the form of 117 specific straight forward questions and answers which explain how and why wild species and natural ecosystems are important. The text is entirely non-technical, with explanations of the deeper reasons for biodiversity conservation. The last chapter then presents 7 steps or guidelines on what you can do individually to make a difference in your home, yard, rural property, cottage, community, while shopping, and during leisure and travelling.

Nest Boxes

Environment Canada. Canadian Wildlife Service. Six page brochure in the "Hinterland Who's who" Series. Details of nest box construction and placement of boxes for some 20 species.

Bird Feeding

Environment Canada. Canadian Wildlife Service. Four page brochure in the

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"Hinterland Who's who" Series. Describes feeders, what to feed to some 30 Canadian winter birds and some associated problems.

What You Can Do for Wildlife

Environment Canada. Canadian Wildlife Service. Six page brochure in the "Hinterland Who's who" Series. Describes the various ways in which a person can become active in enhancing wildlife habitat, including a number of things to do and not to do, organizations to consult or join, and the like.

Wildlife Habitat: A Handbook for Canada's Prairies and Parklands

Environment Canada. Canadian Wildlife Service. 1981. 51 pp. This is essentially a manual describing what can be done by farmers and other rural property owners to preserve an improve habitat of abandoned farmsteads, weedy roadside ditches, undrainable sloughs and unplowable corners, prairie woodlands and tree lined stream banks. Other chapters deal with how to restore overgrazed rangeland and eroded lands and with how to deal with problems caused by wildlife..

Prairie Grasslands Guidebook: A Management Manual

1995. 21 pp. + Table of Contents and Covers. Illustrated. This "primer" publication supports a project of the Critical Wildlife Habitat Program, a co-operative effort by Wildlife Habitat Canada, World Wildlife Fund, Manitoba Naturalists Society, Manitoba Habitat Heritage Corporation, Nature Conservancy of Canada, Canadian Wildlife Service and Manitoba Natural Resources. This is a state of the art summary booklet presenting almost everything a farmer or rural property owner or range manager would want or need to know to restore and maintain the productivity of native grasslands. The booklet "contains some basic ideas on how to manage prairies in a way that will not jeopardize their use by future stewards of the land." It covers values, management techniques of burning and grazing

The Natural Heritage of Southern Ontario's Settled Landscapes: A Review for Land-Use and Landscape Planning

By John L. Riley and Pat Mohr, Ontario Ministry of Natural Resources, Southern Region, Aurora. 1994. 78 pp. This excellent publication is definitely written for the educated farmer with an inquiring mind. It is essentially a lesson in the science and concepts of Conservation Biology applied to the management of settled landscapes of southern Ontario. The guidelines described in this booklet were the basis for the *Agro-Ecological Farm Planning Do-it-yourself Handbook* described above.

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Community Wildlife Involvement Program Field Manual

nd. Ontario Ministry of Natural Resources. Numerous authors. This thick manual, available only at select MNR offices, provides extensive "hands-on" descriptions of the many ways a landowner may improve or restore habitat for different species of wildlife. Chapters describe how to prepare a habitat plan, species management techniques for some 20 individual species or groups, trees and shrubs for wildlife, habitat improvement techniques and nesting and feeding structures. The volume is some three inches thick. Extensive references are provided for each chapter.

Ontario Ministry of Natural Resources Extension Notes Series

1994 and 1995. Landowner's Resource Centre, OMNR, in cooperation with various groups. A total of 22 pamphlets (8 ½ x 11) each with either four or six pages have been produced. Most are educational or describe how to increase the efficiency of production of trees, control beaver and the like. The following seven are relevant to this report:

- ***Building Nesting Platforms for Ospreys***
- ***Preserving and Restoring Natural Shorelines***
- ***Restoring Shorelines with Willows***
- ***Designing and Caring for Windbreaks***
- ***Protecting Trees from Vole Damage***
- ***Planning a School Tree Plant***
- ***Cavity Trees and Refuges for Wildlife***

Ontario Ministry of Natural Resources: Land Use Guidelines

(1981 to 1985). In the early '80s each of the Districts of the Ministry of Natural Resources produced a set of guidelines outlining the goals and objectives of the OMNR and defining land use policies, program strategies and practices within each District. The intent was to revise the guidelines every 10 years, something that has not happened. Public consultation was an important element in the development of these documents which carried chapters on a wide range of biodiversity-related topics. While no longer operational, some of these documents (e.g. the Pembroke District Guidelines) became known for their forward thinking conservation insights and policies on protected areas, wildlife, soils, forestry, water and fire management, fisheries, mining and other resource area and are worth consulting. However, implementation has proved difficult in many respects and with the changing times.

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Fringe Benefits: A Landowner's Guide to the Value and Stewardship of Riparian Habitat

1996. By A. Eriksson and V. Stevens. Canadian Wildlife Service, Environment Canada, Sidney, B.C. 28 pp. The development of this booklet was funded by the Fraser River Action Plan of Environment Canada and the Forest Biodiversity Research Program of Forest Renewal B.C. (a joint initiative of the BC Ministry of Environment, Lands and Parks and the BC Ministry of Forests). The goals of the booklet are to inform the public, especially private landowners, of: what riparian areas are, and the ecological processes that occur; the value of riparian habitats to plants, invertebrates, amphibians and reptiles, fish, birds and mammals; how riparian systems contribute to maintaining biodiversity (and other human 'values' eg. physical, educational, aesthetic and spiritual); the threats to riparian systems; the ways to protect, maintain and/or restore riparian areas. There is a short, tear-out questionnaire for people to fill out (to assess the text and design, to suggest improvements and identify ways that they are (or plan to) changing their land-use practices to conserve riparian areas. The booklet will be available from Ken Morgan, Canadian Wildlife Service, DFO, P.O. Box 6000, Sidney, B.C. V8L 4B2.

Ecology and Management of Woodpeckers and Wildlife Trees in British Columbia

By C. Steeger, M. Machmer and E. Walters. Canadian Wildlife Service, Sidney, B.C. 24 pp. This publication summarizes the current state of knowledge of the ecological associations between woodpeckers and their habitat in BC. It includes information on the general ecology of woodpeckers, their roles within forest ecosystems, and their potential utility as biological control agents of forest insects. The relationship between woodpeckers and their habitat is explored with special reference to three field studies in the Fraser River and Columbia River Basins. Wildlife tree management options for private landowners and land managers are also provided. Available from Ken Morgan (address above).

Canadian Biodiversity Strategy

1995. Supply & Services Canada. 80 pp. This is an important national document, the only one of its kind and is the latest of Canada's step-wide responses to the Convention on Biological Diversity. It outlines the importance of Canada's biodiversity, problems, where responsibilities lie for conservation. The process which produced it involved stakeholders from the spectrum of Canadian agencies and

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NGOs. It defines five general goals:

- conserve biodiversity and use biological resources in a sustainable manner;
- improve our understanding of ecosystems and increase our resource management capability;
- promote an understanding of the need to conserve biodiversity and use biological resources in a sustainable manner;
- maintain or develop incentives and legislation that support the conservation of biodiversity and the sustainable use of biological resources; and
- work with other countries to conserve biodiversity, use biological resources in a sustainable manner and share equitably the benefits that arise from the utilization of genetic resources.

Within each goal, a few to a dozen or more strategic directions are defined. The document should be seen as providing distilled general guidelines (called strategic directions) to the formulation of specific actions and action plans (such as farm plans) where each strategic direction can be individually considered as it may apply to the conservation of biodiversity to one's property or community. As well, provinces and other jurisdictions can develop action plans within their areas of jurisdiction. This has already been done in Quebec (Government of Quebec 1995).

Restoring Canada's Native Prairies; A Practical Manual

By John P. Morgan, Douglas R. Collicutt and Jacqueline D. Thompson. Manitoba Naturalists Society. 8 ½ x 11. 84 pp. With numerous colour photos, maps and appendices. This book is the only one of its kind in Canada. It's contents apply to 5 Canadian provinces (Ontario to B.C.) and Yukon. The Chapters cover: reasons for restoration, planning, species selection, acquiring seeds, seed processing, propagation, site preparation, seeding, alternative techniques and special restoration sites. The appendices list suppliers of native prairie seed, public information sources, locations of selected original and restored sites in Canada, restoration equipment sources. It ends with an annotated bibliography of prairie literature, a restoration checklist and a photographic guide to native seedlings. This book provides ready reference to anyone thinking of restoring native prairie, from homeowners, teachers, farmers and ranchers to landscape designers and architects, park, municipal and urban planners, maintenance personnel, biologists, road engineers. It represents over 5 years of research and experimentation by many people across Canada.

Citizen's Guide to Forest Management in Ontario

(Draft; 46 pp), 1996. By Leo Levy, Federation of Ontario Naturalists (final version to

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be published in April, 1996). This booklet instructs people on how to get involved in the new forest management planning process in Ontario. Public participation which traditionally implied a review of timber management plans can now be more proactive through the Local Citizens Committees that have an advisory role to the planning team. This is the FON's attempt to provide individuals with needed information on the planning process and to make forestry bafflegab understandable.

Citizen's Guide to Protecting Wetlands and Woodlands

By Neida Gonzalez, Federation of Ontario Naturalists, 1996. 88 pp. This guide has been evolving for some time under circumstances where new legislation and programs were being developed. The booklet notes: "more means to protect wetlands and woodlands are available today than ever before, but it remains up to concerned citizens to make sure these measures are implemented. The intent of the guide is to describe the many approaches that can be taken by individuals and groups wanting to save a natural area.

Creative Conservation: A Handbook for Ontario Land Trusts

Hilts, Stewart and Ron Reed, 1993 Federation of Ontario Naturalists 171 pp. This book describes how Land Trusts offer new opportunities to those working to save natural areas and agricultural lands. The conservation approach offered to private property owners by Trusts is one of the fastest growing in the province. The book provides down-to-Earth advice on setting up and managing a Land Trust organization in Ontario. Topics covered include:

- Assessing the Situation - Is a Land Trust the Right Answer?
- The legalities involved in setting up a Land Trust.
- Building Community Support and Raising Funds.
- Setting Priorities.
- Acquiring and Managing Land.
- Private Land Stewardship.

The book comes complete with recent examples, resource information and a bibliography. It answers many questions people may have and alerts people to pitfalls to be avoided, and above all, invites landowners to take action.

Backyard Habitats

Federation of Ontario Naturalists. Four-page tabloid. Describes ways to landscape your yard to provide more food and shelter for a variety of animals. Lists and describes characteristics of highly desirable species of trees, shrubs, vines and

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herbaceous plants, and includes use of structures such as brush piles, nesting boxes, small ponds, water dishes, bird baths and feeders. Provides a list of additional sources of information.

Schoolyard Naturalization

This small brochure discusses ways to adapt ideas presented in "Backyard Habitats" described above, to the schoolyard and also covers funding, planting, maintenance.

Natural Invaders

Federation of Ontario Naturalists. 16 page booklet. Describes some of the most destructive invasive plants of Ontario and offers some advice on the methods of control which include: chemical herbicides, physical removal, biological agents, prescribed burning and ecological or integrated pest management.

Bring Back the Birds: A Community Action Guide to Migratory Songbird Conservation (Eastern Canada Edition)

1994. By Ken Towle, Conservation International Canada.

ISBN: 0-9698452-0-0. 46 pp. + Appendix and Questions and Activities for Students. This guide describes what is happening to songbird populations and what individual persons can do to help with conservation efforts. Part 3 is a practical guide to the planting of trees and shrubs to help the birds. The appendix and describes the trees and shrubs to plant for migratory songbirds in trouble.

Guidelines for the Integration of Wildlife and Habitat Evaluations with Ecological Land Survey

Wildlife Habitat Canada, 1991. Wildlife Working Group of the Canada Committee on Ecological Land Classification. Free from WHC (Not examined).

Natural Forest Landscape Management in Canada. Setting Global Standards for Implementing Sustainable Development

Wildlife Habitat Canada, 1993. Free from WHC (not examined).

The Stewardship Revolution: Making Room for Wildlife

Wildlife Habitat Canada 1993. Free from WHC (not examined).

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Wetlands and Woodlands

1995. By Lisa Twolan-Strutt. The North American Wetlands Conservation Council (Canada). 24 pp. The objective of this publication, written for people who own wetlands and/or adjacent uplands, is to make these property owners more aware of the importance of the wise use and conservation of these ecosystems. Natural resource and other values of wetlands and woodlands are outlined. Fourteen management actions (guidelines) are described, which if implemented, would result in the reduction of the negative effects of nearby agricultural and forestry practices on wetlands and hence in the increased conservation of biodiversity.

You Can't Give it Away: Tax Aspects of Ecologically Sensitive lands

(No date) North American Wetlands Conservation Council (Canada), Ottawa. This brochure outlines how the *Income Tax Act* treats all donations (for conservation purposes) of natural property in Canada. It is an easy-to-read review of how each provincial and territorial tax assessment legislation and/or regulations negatively affect the conservation of ecologically sensitive lands. Eight recommendations (essentially guidelines) for action are provided to the reader

Prairie Conservation Action Plan, 1989-1994

1988. Published by WWF Canada, Toronto, 38 pp. This action plan applies to the prairies of Alberta, Saskatchewan and Manitoba. The purpose of the Plan is to influence policy and attitudes so as to conserve the biological diversity found in the Canadian prairies. Ten specific goals are outlined in the Plan. Among these is the call for the preparation and implementation of habitat management and restoration plans, particularly for threatened and vulnerable species.

A Conservation Strategy for Sustainable Development in Saskatchewan

1992. Government of Saskatchewan. 76 pp. This is another "what should be done" publication rather than a "how to do it" one. The report notes that the many recommendations are "presented to encourage new action." Like so many other strategy documents, this one could influence readers' attitudes and this can sometimes lead to new actions on the ground.

Yukon Conservation Strategy; Our Common Future

1990/91. Department of Natural Resources. Produced by Tuak Environmental Services, Whitehorse. 80 pp.

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South Okanagan Conservation Strategy

1990. Integrated Management Branch, B.C. Ministry of Environment, Victoria. (Not examined).

Stewardship and Sustainability: A Renewed Conservation Strategy for Prince Edward Island

April 1994. PEI Department of Natural Resources. 52 pp.

The Forest Farmer's Handbook: A Guide to Natural Selection Forest Management

By Orville Camp. Available from Ecoforestry Institute, P.O. Box 5783, Stn. B, Victoria, B.C. V8R 6S8.

Naturescape British Columbia; Caring for Wildlife Habitat at Home

Several six-sided brochures describe a program supported by Wildlife Habitat Canada, Environment Canada, Canadian Wildlife Service, BC Ministry of the Environment, Lands and Parks, and the Habitat Conservation Fund. The program promotes caring for wildlife habitat by private landowners in cities, towns and rural areas. For a small fee, landowners receive a Naturescape Kit that provides information to help applicants create and maintain wildlife habitat appropriate for particular sites, a booklet with specific information about native plants and animals in BC's Georgia Basin region, and a regional resource booklet that lists publications, naturalists' organizations, wildlife rehabilitation centres, and the like. Applicants also receive a membership card, a sign for their yard, and a newsletter. Information available at 1-800-387-9853.

Stewardship '94: Proceeding of a symposium on the Voluntary Conservation of Nature on Private Land, and Revisiting the Land Ethic

This symposium (full proceedings published) is a cooperative project developed, managed and funded by 11 provincial and national government and non-government environmental agencies and organizations. Its speakers worked with two themes: revisiting the land ethic, and the voluntary conservation of nature on private lands. This publication is similar to the "Conservation Strategy" documents summarized in this report in that it examines "what should be done" rather than instructing the landowner or government on how to do it. The brochure on Stewardship '94 provides addresses and a brief overview of the stewardship series. Information: 1-604-387-9369.

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Streamkeepers Handbook: A Practical Guide to Stream and Wetland Care

1995. Provides guidance for people who wish to protect and restore local waterways in BC. Projects are organized in modules, providing easy updating of information. \$30. Tel: (604) 666-3545.

Riparian Management in British Columbia: an Important Step in Conserving Biodiversity

1995. By Victoria Stevens, Frances Backhouse, and Ann Eriksson, Province of British Columbia, Ministry of Forests Research Program and the Ministry of the Environment, Lands and Parks, Habitat Protection Branch. A 30 page publication that describes the different values of riparian areas, impacts of human activities on them, and management strategies for their conservation.

Managing Small Wetlands for Waterfowl

Ducks Unlimited Canada (Maritime staff). 16 pp. [Now being revised to apply to Canada as a whole]. This publication provides a few instructions on how to improve small freshwater marshes and ponds for the optimum production of waterfowl. It discusses artificial water control structures, contouring, water depths, nutrients and a number of approaches to ditching. The methods described can also be used in upland areas to create wetlands in suitable sites where none had been before.

PART III: GUIDELINES FOR ORGANIC FARMING AND SUSTAINABLE AGRICULTURE

Getting Started in Organic Farming

Environment Canada, Winnipeg, & Manitoba Agriculture, Winnipeg 1992. 48 pp. This booklet presents the "on the ground" experiences of 10 farmers in southern Manitoba and adjacent North Dakota in making a transition to organic farming. An "organic product" is defined in the booklet as "... *that which is raised, grown, stored and/or processed without the use of synthetically-produced chemicals or fertilizers, herbicides, insecticides, fungicides, or any other pesticides, growth hormones or growth regulators.*" The methods of organic farm management are then described where topics such as crop rotations, soil fertility, soil management, pest management, crop insurance, certification and marketing are considered.

Organic Field Crop Handbook

Macey, Anne (ed.) 1992. Canadian Organic Growers (Box 6406, Station J, Ottawa, Ontario K2A 3Y6). 198 pp.

This book is a basic introduction to organic farming. It provides practical "how to" information and is useful to conventional farmers wishing to convert to organic techniques, for farmers in the transition to organic practices and for organic farmers who want to expand their crop rotations. It does not provide information on fruit and vegetable production or on animal farming. It is divided into three sections. Section 1 explains the principles of organic crop production and deals with farm ecosystems, the soil, composting and nutrient management, and weed control. Section 2 deals with crop rotations on the organic farm and includes worksheets and instructions on how to design a rotation suited to the individual farm. Section 3 describes 11 different crops from the organic perspective in terms of placement in the rotation, planting and tillage requirements, and nutrient considerations. Photographs, figures and line drawings supplement the text throughout. Appendix materials include a complete list of Canadian organic organizations and a bibliography. The handbook is spiral bound with a durable cover designed for years of hard use. Wide margins provide space for notes.

Cereal-Legume Cropping Systems: Nine Farm Case Studies in the Dryland Northern Plains, Canadian Prairies and Intermountain Northwest

1991. By Nancy Matheson, et. al. Alternative Energy Resources Organization:

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Helena, Montana, USA

Earthcare: Ecological Agriculture in Saskatchewan

1980. By Paul Hanley, Earthcare Group, Regina.

Effects of Transition to Ecological-Organic Agriculture in Manitoba

1985. By Paul Robinson, Unpublished Masters Thesis, University of Manitoba, Winnipeg.

Organic Farming in Canada

1984. By Stuart Hill. Ecological Agricultural Projects, MacDonald College, McGill University.

NOTE: Stuart Hill has published perhaps several dozen papers on the subject of sustainable agriculture. Titles are available from MacDonald College.

Sustainable Agricultural Systems

(n.d.). By Clive A. Edwards et al. (Editors). Soil and Water Conservation Society, Ankeny, Ohio, USA.

Switching to a Sustainable System

1988. By Frederick Kirschenmann. The Northern Plains Sustainable Agricultural Society, Windsor, North Dakota, USA.

Canadian Organic Growers Library List

This list provides almost 1000 titles of articles, books, government publications, catalogues, organizations, standards, periodicals, reports, research reports, booklets, tapes and transcripts. The majority of titles appear to be "how-to" guidelines. All titles are available on loan, a few through purchase. COG Lending Library, Brian Woods, R.R. # 9, Picton, Ontario K0K 2T0. Membership in COG is \$25. from Box 6408, Stn J., Ottawa, Ont. K2A 3Y6

Agri-Info: The Mail Order Bookstore for Agriculture and Horticulture

This is a 92 page catalogue listing many hundreds of titles available for purchase. The titles are selected for specialization in organic and sustainable agriculture. Extensive listings of publications, each described in the language published. The catalogue is free from: Agri-Info, 55 rang 4 ouest, Warwick, Québec J0A 1M0. Tel: (819) 358-6038; Fax: (819) 358-6038.

PART IV: MISCELLANEOUS GUIDELINES, INCLUDING THOSE FROM COUNTRIES OTHER THAN CANADA

(The world literature on this would be very extensive)

The Wildlands Project: Plotting a North American Wilderness Recovery System
Wild Earth, 1992. Special Issue of Wild Earth. Published by the Cenozoic Society (Vermont) 88 pp. This is an audacious first-of-its-kind proposal outlining a vision and scientific rationale for a continent-wide plan to restore the ecological richness and native biodiversity of North America through the establishment of core protected areas geographically connected through special management and zoning of the connections and associated buffer areas. The idea is to restore evolutionary processes by reversing the continuing losses of natural ecosystems and their wild species. It is unique "biodiversity restoration guidelines" document. The 20 authors see this as an educational book. It has been very widely distributed in North America.

Agroecology: the Scientific Basis of Alternative Agriculture

1987. By M. Altieri. Westview Press, Boulder, Colorado (not examined).

Agroecology and Small Farm Development

1989. By M. Altieri and S.B. Hecht (eds.) 1989. CRC Press, Boca Raton, Florida (not examined).

Lowland Landscape Design Guidelines

1992. By Simon Bell (Senior Landscape Architect), The Forestry Commission, Surrey, U.K. 56 pp. Numerous coloured illustrations and line drawings. The "Foreword" to this useful publication states: "*The lowland landscapes of Britain are the result of a varied landform, cultivation patterns, settlements and communication networks, often showing a high degree of diversity over relatively short distances. The creation of new woodlands and the cutting of existing ones can cause major changes in the landscape, quickly altering familiar and well-loved scenery. These changes can be harmonious, and mistakes avoided, if they are carried out with care and long-term effects are accurately foreseen. Government policy encourages the planting of more woodlands on farmland, and many landscapes can easily accommodate well designed new woods. This booklet is broad in scope and intended*

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to give landowners, land managers and their advisers an understanding of the existing landscape, and guidance on how proposals for planting and other forest work can be designed in sympathy with the best features of the landscape. The guide is based on many years of experience in woodland design, it complements other Forestry Commission publications on woodland planning, practices and environmental aspects of woodlands and forests."

Community Woodland Design Guidelines

1991. By Simon Bell, Forestry Commission, Surrey, UK. 49 pp. Illustrated. This well-written publication outlines how to re-establish forest landscape linkages. Topics covered logically include: the woodland design process, values assessment and planning, design concepts, visual design principles, layout, woodland structure, design of open space, restoration of mineral workings, gravel pits and other "derelict" land, and design for informal recreation.

A Manual of Sustainable Agriculture in the Humid Tropics, with a Focus on Belize

1993. By Patrick H. Herzog. Division of Natural and Social Sciences, Lethbridge Community College, Lethbridge, Alberta, 115 pp. In August 1990, Lethbridge Community College (Alberta) and the Belize College of Agriculture sponsored a workshop on "Appropriate Technology for Agricultural Production and Environmental Protection." Several important topics were discussed during the 3-day session including pest control, proper use of pesticides, legume crop systems and biogas technology. Participants were enthusiastic and positive, and many people expressed the need to promote and expand the information delivered by the various speakers. This is a practical guide for teaching students and training field personnel about many of the needs and techniques identified in the workshop. Although preliminary in nature, this edition can be used as a foundation by Belize College of Agriculture for several purposes:

- 1) to design curricula for instruction of BCA students;
- 2) to offer short course or workshops to off-campus users primarily extension agents with the Belize Ministry of Agriculture.

A Homeowners Guide to Northeastern Bats and Bat Problems

1995. 22 pp. College of Agricultural Sciences, Penn State University, 112 Agricultural Administration Building, Penn State Univ. University Park, Pennsylvania 16802. A great discussion of bat natural history and detailed plans on how to build a

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state-of-the-art "Maternity Colony Bat House." This plan for a bat house is an improvement upon a widely known plan of *Bat Conservation International*.

Man-made Structures as Winter Hibernacula and Summer Dens for Snakes

Snakes living in a cold climate like Canada's need a suitable place to hibernate out of reach of frost and flooding. Where development has destroyed their wintering sites or where 'replacement habitat' can be created, it may be possible to build an artificial hibernaculum to restore snake species that would otherwise have been present in the area. A number of successful artificial hibernacula are described by scientists working in the Pine Barrens of New Jersey. Their common sense approach to building these artificial underground hibernacula would appear to have wide application for many species of snakes living in Canada. Send US\$10 (to cover postage and handling) to Robert T. Zappalorti, Herpetological Associates, Inc. Environmental Consultants, 2525 Dover Road - Bamber Lake, Forked River, New Jersey 08731.

APPENDIX 2

NEWSPAPER REPORT

ON

TREND TOWARD ORGANIC FARMING

Organic farming remains growing trend

By MARGARET BOYD
Special to Farm & Country

The organic farming movement is growing rapidly, but must not lose sight of a common definition, says Tom Harding, president of the Organic Crop Improvement Association.

"Natural, organic products are not just a niche in the marketplace; they have become a trend," Harding told the annual Organic Agriculture Conference at the University of Guelph last month. Singling out the 'baby boomers' as the major influence in the market, Harding said that organic farming is now a global force. At the end of the 20th century, a huge opportunity exists for farmers and value-added partnerships to produce and export organic products. In 1994, the industry grew by 24 per cent, and in the U.S., the annual US\$50-million value for organic products is ex-

pected to double by the year 2000. North America currently commands about 10 per cent of the global marketplace, and Europe 50 per cent. Germany is the largest consumer of organic produce, although the Pacific Rim is growing rapidly. A lot of organic raw material from North America currently goes to Europe and Asia.

Trade policy and certification are other issues facing organic growers, Harding said. An International Organic Certifiers Council was recently created to ensure that the quality of organic products in the marketplace, he said.

Organic marketing guidelines are now a necessity, said Harding, noting that organic regulations were passed in Europe in 1992 and there are currently efforts to unite Japan under guidelines. In 1990, the Organic Foods Production Act

was passed in the U.S., providing a 'natural organic' label for products and the clout to fight for harmonized trade. In Canada late last year, the Canadian Organic Advisory Board (COAB) entered the regulatory process to create a binding law.

A strong certification process would involve annual inspection reviews, tracking mechanisms for all stages of production to ensure product authenticity, labelling regulations, and overseeing by a public-private partnership. Regional marketing must also be pursued in all areas, including aquatics and even wood, Harding said.

"We need to work together. I hope we won't divide ourselves on any competitive issue."

Harding issued a caution against ignoring global realities at the peril of the goals and objectives of organic farming.

"I don't believe we can think we occupy this part of the

*Uniform
worldwide
organic
regulations
are sought
to ensure
quality*



world and nothing else matters," he said. "What is happening in China and Ethiopia are indicators of what we are heading for. The world is interconnected...there is a clear picture of mankind's interdependence with the environment, and we can't treat issues separately."

The industry needs more partnerships with the public, more leadership from business and industry, and more research and education, he said.

Harding also cautioned against building a parallel sys-

tem to conventional farming, citing the many failures of the so-called 'Green Revolution', which he criticized for depending on government subsidies, high chemical input, short-term higher yields on limited land and mismanagement of resources.

"It provides cheap farmgate food, but at what cost? Harding asked. "Remove the subsidies and the system is bankrupt."