A Review of Wetland Policy and Practice: Towards a Strategy For the Development of a Wetland Policy for Manitoba

by

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A Thesis submitted to the Faculty of Graduate Studies of

The University of Manitoba

in partial fulfilment of the requirements of the degree of

Master of Environment

Department of Environment and Geography

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THE UNIVERSITY OF MANITOBA

FACULTY OF GRADUATE STUDIES

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ABSTRACT

Manitoba has one of the highest densities of wetlands in any province in Canada but does not have a wetland policy that protects these valuable ecosystems. Historically wetlands have been drained and converted to other uses with little concern for the ecological impacts this has on the landscape. Despite scientific research quantifying the essential role that wetlands play in maintaining healthy watersheds and the quality and quantity of water on the landscape, wetlands continue to be drained and degraded.

. The purpose of this study was to develop a framework for a wetland policy in Manitoba based on a case study of current wetland conservation practices in southwestern Manitoba and an assessment of wetland policies in other jurisdictions. Interviews and a workshop with experts in wetland conservation and management provided much of the data used to develop the policy framework.

A wetland policy is needed to provide a strong voice for wetlands, raising the awareness of their importance on the landscape and recognizing the value of the ecological goods and services they provide to society. A wetland policy must recognize there will always be conflicts related to protection of natural systems and economic development. It will have to state the importance and value of these ecosystems so that development objectives do not take priority over environmental concerns. The policy should function as a framework for decision making, enabling clear conclusions to be drawn about what actions are required and what end result is expected.

If a wetland policy is to be effectively implemented on the landscape it will have to address the concerns of the various stakeholders impacted by the policy. Stakeholders need to be identified and consulted and the policy must address the issues they identify as

important. The policy process should attempt to identify and develop common ground on which all stakeholders can agree and as much as possible create consensus on the high level goals and objectives of the policy.

ACKNOWLEDGEMENTS

The completion of this thesis would not have been possible without the support and assistance of many people. First and foremost I would like to thank my academic committee for keeping me focused and on track. Thanks to Mr. Greg Bruce for his time and expertise and to Ducks Unlimited Canada for providing the pictures presented in this thesis. Thanks also to Dr. Bill Norton for his review and comments. A special thanks to Dr. Rhonda McDougal who helped conceptualize this project and provided many opportunities in the area of wetland conservation. I would especially like to thank my advisor Professor Thomas Henley for his patience, understanding and invaluable counsel through all the ups and downs. This thesis would not have been completed without his support.

I would like to thank my funders, the Prairie Habitat Joint Venture and Manitoba Water Stewardship through the Water Stewardship Fund. This funding support has been greatly appreciated.

I would also like to express my gratitude to the administrative staff both at the Department of Environment and Geography and at the Natural Resources Institute for their assistance, kindness and understanding. I would particularly like to thank Mr. David Mosscrop his support and friendship.

I would like to acknowledge everyone who took time out of their busy schedules to contribute their opinions during the interview and workshop phases of this project and to the many others who helped along the way.

Most importantly I must thank my family and my children Andie and Luke, who have spent the better part of their lives waiting for this thesis to be finished and who

offered to buy Mommy 'important papers' for her birthday so there would be extras in case some got lost. I would like to dedicate this thesis to my father.

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CHAPTER 1

1.1 INTRODUCTION

Wetlands are extraordinary ecosystems associated with a diverse and complex array of direct and indirect uses. Manitoba has one of the highest densities of wetlands in any province in Canada, including fens and peatbogs found in southeast, central and northern Manitoba, saltwater coastal lowlands along Hudson Bay and the "prairie potholes" found in the southern areas of the province (Manitoba Water Stewardship, 2006). Wetlands in Manitoba vary greatly with regards to type, size, ownership and use of surrounding uplands, and the nature and severity of the threats they face. The majority of wetlands found in Manitoba are in the central and northern area, however, the potholes found in southwestern Manitoba are the most threatened. These wetlands are part of a working agricultural landscape and face pressures from agricultural production and a relatively high population density (MacGregor, 2003).

Extensive scientific research has quantified the essential role that wetlands play in maintaining healthy watersheds and the quality and quantity of water on the landscape, yet wetlands continue to be drained and degraded. Manitoba does not currently have a policy that protects these valuable ecosystems. A provincial wetland policy should recognize the value of these ecosystems and highlight the necessity of maintaining their ecological integrity wherever they occur throughout the province and whatever threats they face. This study focused on the wetlands on privately owned land in southwestern Manitoba as they are under the most immediate threat. A policy framework addressing the issues facing wetlands in southwestern Manitoba will provide the vision and strategy needed to protect wetlands throughout the province.

Wetlands are drained and degraded when it is perceived the land would be more productive if it was drained and put to another use. When the value of the ecological functions that wetlands provide in maintaining the quality of water supply, sequestering carbon to mitigate the impacts of climate change, maintaining biodiversity, absorbing excess nutrients and pesticides are not recognized, wetlands are much more likely to be drained. A wetland policy that recognizes the value of these ecosystems and the importance of the ecological functions they provide will help protect wetlands wherever they occur in the province.

During most of the past century, wetlands on the Canadian Prairies were seen as wastelands that needed to be drained or filled in order to be made useful. It is estimated that since European settlement, Canada has lost approximately 20 million hectares of wetlands to agricultural development (Wiken et. al, 2003). Batt (1996) found that 71% of wetlands on the Canadian Prairies have been degraded, and in southwestern Manitoba, 57% have been lost entirely.

The intensification of commercial agriculture and land use changes associated with relatively high population densities have been identified as the primary threats to wetlands in southern Manitoba (Chambers et. al. 2002; Baydack et. al. 1996; Brinson and Malverez, 2002). The conservation of wetlands is of particular concern within the context of global climate change as the predicted droughts associated with climatic change will exacerbate the stresses already placed on these ecosystems (Wiken et. al. 2003). At the same time the maintenance of healthy wetland ecosystems provides increased resilience to climate change.

Historically, resource-related policy affecting agricultural production was driven by economic incentives that encouraged increasing the acreage under cultivation with little concern for the conservation of ecological resources (Baydack et. al. 1996). The goal of agricultural policy and practice was to maximize production to feed the world. As the value of ecological resources such as wetlands has become increasingly evident this perspective has changed and the need to conserve and regenerate these areas has become increasingly recognized (Gabor et. al. 2004). The conservation of wetlands, however, is a complex issue and involves a wide variety of players; from local, provincial and national government agencies, to international conservation organizations, to community groups, private landowners and concerned individuals.

The Government of Canada adopted the *Federal Policy on Wetland Conservation* in 1992, however there is no legislation at the national level directly addressing wetland conservation. A number of federal statutes have provisions specifically directed toward wetland conservation, however; the protection these provide to wetlands is incidental within a broader mandate such as the protection of endangered species and their habitat (Lynch-Stewart et. al. 1999). The majority of statutes that can influence wetlands in Canada must be enacted at the provincial level as each province maintains ownership of the natural resources that lie within its borders (Rubec and Lynch-Stewart, 1998).

The Manitoba Water Strategy (2003*), The Water Protection Act (*2005), and the *Water Rights Act* (19) are three primary pieces of legislation that address the management and development of water resources in Manitoba. Although explicit reference is made to the conservation of wetlands in both the *Water Strategy* and *Water Protection Act*, they currently provide only incidental protection. The *Manitoba Drainage Policies* developed

under the authority of the *Water Rights Act* do not allow drainage of permanent and semi-permanent wetlands and require a license for the drainage of seasonal wetlands. While these policies provide some protection to wetlands they are inadequate as they do not recognize the value of wetlands. It is not the purpose of the *Water Rights Act* to protect aquatic ecosystems but to control the allocation of water resources and license the construction of water control works. Historically these policies have been inadequately enforced and much unlicensed drainage of wetlands has occurred and continues to occur on the landscape (Manitoba Ombudsman 2008). Other policies which could provide some protection for wetlands again provide only incidental protection and have not been effectively implemented. As a result wetland loss continues, and "Manitoba is some ways away from no net loss" (Rubec and Lynch-Stewart, 1998).

A provincial wetlands policy recognizing the inherent value of these ecosystems and the need to conserve and protect them in their own right is needed as a first step in stopping the continued loss of Manitoba's wetlands

1.2 RESEARCH QUESTION

The importance of the ecological functions performed by wetlands has been quantified through scientific research and the need to preserve and protect wetlands has been acknowledged at all levels of government. A number of institutions and organizations are working at the local to international levels to protect wetlands. Federal and provincial legislation exists that has the capacity to provide some protection to wetlands. Despite these efforts, wetlands continue to be drained, filled and polluted. How can an effective and comprehensive wetland policy be developed that will build

upon existing conservation efforts and fill in gaps that allow the continued degradation of wetlands in Manitoba?

1.3 PURPOSE OF THE STUDY

The purpose of this study was to develop a framework for a provincial wetland policy. To do this the current wetland conservation practices and provincial and federal policies that impact wetlands in the study area were assessed to identify strengths, weaknesses and gaps in current wetland conservation efforts. Wetland policies in other jurisdictions were also evaluated for their applicability to the Manitoba context.

The area for this study was the prairie ecozone found in southwestern Manitoba. Many different types of wetlands are found throughout Manitoba and they face different threats based on geographic location. The wetlands found in southwestern Manitoba are under the most immediate threat. The situation in this area demonstrates what could happen to wetlands in other areas of the province if pressures to convert them to other uses develop in the future. A framework for a provincial wetland policy based on a case study of the wetlands that are most threatened can be easily expanded to other areas of the province where wetlands are under less immediate threat.

The objectives of this study were:

1) to identify the major players involved in wetland conservation in Manitoba, including their goals and the strategies and methods used to achieve those goals,
2) to determine the key components of an effective wetland policy,
3) to assess the potential applicability of policies and regulations in other jurisdictions for use in Manitoba; and

4) to develop a framework that will underpin the development of a wetland policy for Manitoba.

1.4 STATEMENT OF METHOD

This study used a qualitative grounded theory approach to interpretive policy analysis. This approach involves several phases of data collection using a different method of data collection in each phase. The date collected in each phase provides information and context for the following phase. Interpretive policy analysis seeks to understand the values, beliefs and feelings of the various audiences who are directly affected by a particular policy. The data was collected in three phases:

1) A review and analysis of existing literature. Supplemented with information from interviews, the literature review identified the major players involved in wetland conservation and introduced their goals and strategies, reviewed policies and legislation used in other jurisdictions, and identified key components of wetland policy.
2) Semi-structured interviews with key informants from lead organizations involved in wetland conservation. The interviews identified gaps in existing policies and assessed the transferability of policies currently being used in other jurisdictions.
3) Focus group/workshop with selected participants from lead organizations. The workshop supplemented data collected in the interviews and identified priority areas to be addressed in a wetland policy.

Upon completion of the data collection, data from all research phases was integrated and analyzed using a grounded theory analysis to identify trends, contradictions and themes.

1.5 ORGANIZATION OF THESIS

The thesis is organized into six chapters. The first chapter introduces the topic, states the research question and objectives of the research, and outlines the methods used to acquire the necessary data. Chapter Two provides a review of related literature providing background information regarding wetland ecology, the value of wetlands, and the current state of wetland conservation and policy in Manitoba. Chapter Three describes the methods used to conduct the research, including data collection and analysis. The results of the data collection and analysis are presented in the fourth chapter. Chapter Five draws upon the data collected in all three phases to develop a framework from which a wetland policy for Manitoba could be drafted. The final chapter, presents the summary and conclusions of the research and provides recommendations and suggestions for future research in this area.

CHAPTER 2: WETLANDS IN MANITOBA

2.1 INTRODUCTION

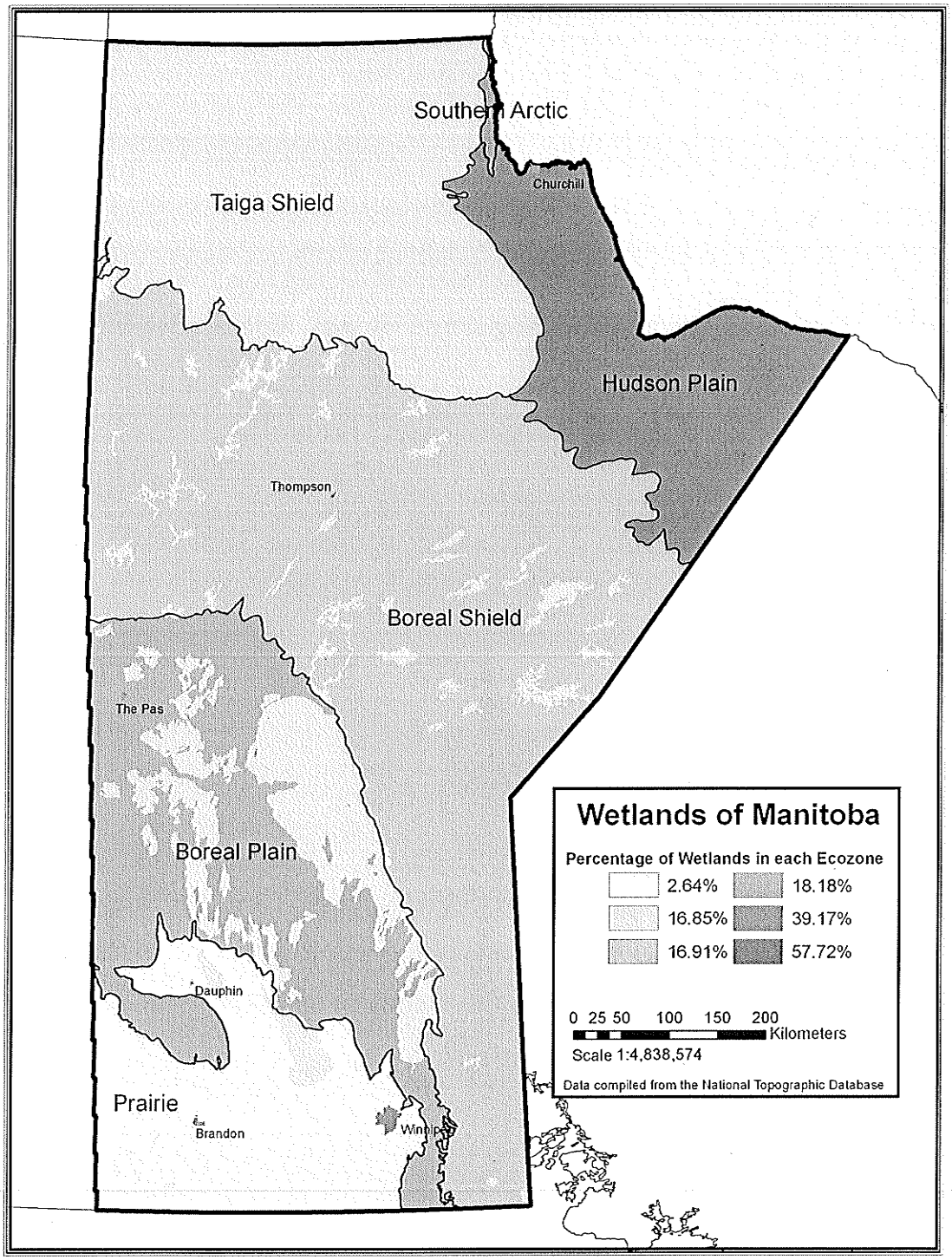
Manitoba has one of the highest densities of wetlands of any province in Canada. The value of wetlands in maintaining healthy watersheds and the quality and quantity of water has been quantified by scientific research, yet wetlands continue to be drained and degraded. Manitoba does not currently have a policy that protects these valuable ecosystems.

The wetlands found in Manitoba include fens and peatbogs found in the Boreal region of southeast central and northern Manitoba, peatbogs found in the Low Subarctic and saltwater coastal marshes found in the High Subarctic around Hudson Bay, the 'great lakes' wetlands associated with Lakes Winnipeg and Manitoba, and the "prairie potholes" found in the Prairie region in the south western and south-central areas of the province (Manitoba Water Stewardship 2006; National Wetlands Working Group 1988). The majority of wetlands are found in the central and northern areas (Map 1) however it is the wetlands found in the Prairie ecozone region of southern Manitoba that are most threatened and are the focus of this study. This is also the area where Rubec (1994) determined that the threat to wetlands was highest. This is also referred to as the Prairie Pothole Region because of the high density of potholes found in this area. The discussion of wetlands in Manitoba in the rest of this chapter refers to these prairie potholes.

I determined that the prairie ecozone of Manitoba would be the study area of this research. There are certainly many different types of wetlands found in Manitoba which are ecologically unique and also face different threats. However, the situation in southwestern Manitoba demonstrates what could happen in other areas of the province if

pressures to convert wetlands to other uses develop in the future. I concluded that a policy framework developed from a case study of the highly threatened wetlands found in the prairie ecozone would provide the vision and strategy needed to protect the other wetlands in the province that were facing less immediate threats. Thus this study could easily be expanded to address situations identified by stakeholders in other ecozones.

Map 1: Manitoba Ecozones: Percentage of Wetland Cover



Adapated from National Wetlands Working Group, 1988.

2.2 PRAIRIE POTHOLES

Prairie potholes are a common feature of the prairie ecozone of southern Manitoba, which is a part of the Prairie Pothole Region. The Prairie Pothole Region encompasses 750,000 km2 across south central Canada and north-central United States. This landscape is dotted with millions of depressions that fill with water from meting snow and rain. These wetlands range in size and may be from 0.1 hectares to more than 10 hectares in size and vary considerably in depth. Some of the larger ones form permanent lakes, with the smaller ones forming innumerable temporary sloughs or potholes that dry out most years (Canadian Wildlife Service 2002). Prairie potholes generally undergo drastic seasonal variations in water level and vegetation, changing from open water ponds in spring to drying basins covered by closed stands of vegetation in summer and fall. These wetlands are primarily dependent on precipitation for their water regime, therefore annual variations in precipitation results in significant changes in the appearance and composition of the wetlands. Dramatic changes in prairie wetlands occur during periods of drought as vegetation changes significantly as the wetland dries out (National Wetlands Working Group, 1988).

Prairie potholes are part of the working agricultural landscape found in southwestern Manitoba, and they perform a number of ecosystem functions that are critical to maintaining the ecological and economic integrity of this landscape (MacGregor 2003). Resource planning and management in this landscape requires balancing the requirements of agricultural production with the need for wetland conservation and maintenance of ecological integrity (McCartney et. al. 2005).

Plate 1: Aerial view of prairie potholes in the agricultural landscape
Photo courtesy of Ducks Unlimited Canada.

2.3 HISTORICAL CONTEXT

During most of the past century wetlands in the Canadian Prairies were seen as obstacles that needed to be drained, filled or built around in order to be made useful. It is estimated that since European settlement, Canada has lost about 20 million hectares of wetlands to agricultural development (Wilken et. al. 2003). Approximately 71% of wetlands in the Canadian Prairies have been degraded and in southwestern Manitoba 57% of wetlands have been lost entirely (Batt 1996).

The legal history of the Prairie provinces shows that from the earliest days of agricultural settlement in the 1870s until almost the present day, wetlands were regarded as a nuisance. Both the common law and statutes were designed to ensure that wetlands could be easily drained to foster agricultural development. Over the years this process created a complex web of law that contained a number of incentives to drain wetlands (Percy, 1993). Policies related to land use focused on increasing agricultural production not only for economic gain but for the benefit of society. This created a production

oriented mindset which still persists today. In more recent history, however, as wetland functions and values become better understood and appreciated, mindsets were changing. Policies are evolving, moving from exploitation for maximizing agricultural production to conservation to maintain ecological function (Heimlich et. al. 1998).

2.4. DEFINING WETLANDS

Many definitions of the term wetland can be found in the published literature. However, no comprehensive and binding definition of the term 'wetland' is found in federal or provincial legislation or policy. The second edition of the *Canadian Wetland Classification System, Wetlands in Canada,* the *Federal Policy on Wetland Classification* and the National Wetlands Working Group have all adopted the following definition of a wetland:

> ..."land that is saturated with water long enough to promote wetland or aquatic processes as indicated by poorly drained soils, hydrophytic vegetation and various kinds of biological activity which are adapted to a wet environment. Wetlands include bogs, fens, marshes, swamps and shallow water (usually two meters deep or less)" (Rubec and Lynch-Stewart 1998:3).

Wetlands occupy the transitional zones between permanently wet and generally dry environments – they share characteristics of both environments yet cannot be classified unambiguously as either aquatic or terrestrial. The key is the presence of water for some significant period of time which changes the soils, micro-organisms, and plant and animal communities such that the land functions in a different way from either aquatic or dry habitats (Barbier et. al. 1997).

There is not currently a single definition of wetland that all agencies, scientists, policymakers or landowners use for all purposes. While definitions have been developed by various agencies and organizations, the process of delineating wetlands on the ground

and deciding which ones are subject to specific policies is a matter of continuing debate. Wetlands can be broadly defined, but administering wetland programs requires delineating a wetland's boundaries on the ground by applying specific criteria at a particular site (Heimlich et. al. 1998). This is particularly difficult as the presence of water and the appearance of the wetland varies seasonally and annually depending on weather conditions.

Stewart and Kantrud developed a wetland classification system in 1971 specifically for the glaciated northern plains, which encompasses the Prairie Pothole region of Manitoba. This system classifies wetlands into seven different classes based on vegetation characteristics, which also reflects differences in water permanence. The Stewart and Kantrud wetland classification system has been adopted by many organizations involved with the wetlands in this study area. Manitoba Water Stewardship has used this classification system in its *Drainage Policies*.

Riparian areas associated with wetlands are the transition areas between wetlands and their adjacent upland terrestrial ecosystems (National Research Council 2002). Riparian areas support unique plant and animal communities that establish watershed function. Inappropriate land management practices that damage riparian areas will also result in the degradation of adjacent wetlands (Fitch and Adams 1998), therefore a wetland policy should also address the management of riparian areas.

2.5 PRIMARY THREATS TO WETLANDS IN THE STUDY AREA

Intensification of agriculture in the Prairie region of Manitoba since the 1950s has resulted in larger and more mechanized farms, increased specialization, increased use of chemical inputs (pesticides and fertilizers) and a corresponding increase in production

(Vaisey et. al. 1996). The primary cause of wetland loss in the study area is the filling, and draining of wetlands to increase acreage under cultivation (Brinson and Malvarez 2002). Many current agricultural practices in the upland areas surrounding wetlands result in the degradation of the wetlands, even if they appear to remain intact. Inappropriate agricultural practices result in an increased risk of contamination of surface and ground waters by pollutants such as eroded soil, fertilizers and pesticides. Elevated concentrations of nutrients and pesticides are frequently detected in surface waters draining croplands (Chambers et. al. 2002), resulting in the degradation of wetlands.

The ecological consequences of modern agricultural practices are being increasingly recognized. However, many issues facing the agricultural industry make it difficult for farmers to focus on long-term sustainability at the perceived expense of short- term economic gain. These issues include pressures to compete internationally, large capital and operating costs, high levels of debt and fluctuating commodity prices. To sustain their livelihoods, farmers must focus on maximizing agricultural production and minimizing costs. Farmers may understand that agricultural lands contain ecosystems whose functioning benefit society at large. In most situations, however, no payments are available for maintaining these ecosystems or for the adoption of new farming techniques that maximize ecosystem benefits. The adoption of new farming techniques may result in increased costs and increase risk, either real or perceived. As a result there is often little incentive or financial ability for farmers to conserve natural areas such as wetlands. A lack of understanding as to how changes in farm management can reduce environmental impacts and at the same time provide both economic and ecological benefits to the farm is an issue that needs to be addressed (Olewiler, 2004).

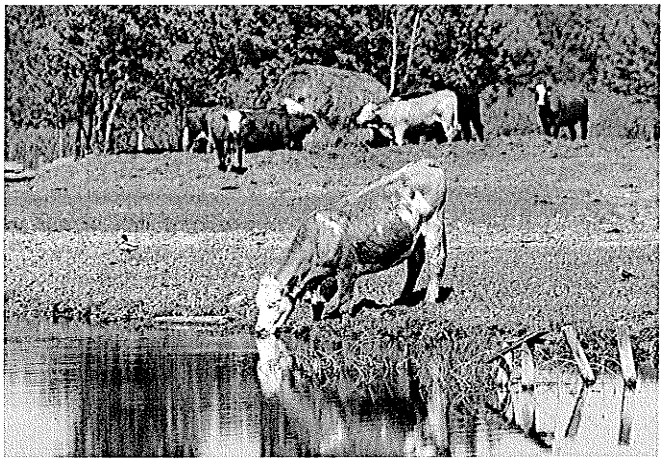


Plate 2: Agricultural practices in surrounding uplands can threaten the ecological integrity of wetlands. Photo courtesy of Ducks Unlimited Canada.

While the threats associated with increased agricultural production are considered to be the most significant, other factors that threaten wetlands include the invasion of exotic species (Brinson and Malvarez 2002) and the projected impacts of climate change (Wiken *et al* 2003).

Climate change could affect wetlands through increased air temperature, shifts in precipitation, floods, drought, severe weather, and increased carbon dioxide concentration (Wiken *et al.* 2003). The projected increase in the severity and intensity of drought would have a significant impact on wetlands which, because of their shallow depth, small size, and hydrology, are very sensitive to climate variations (Yew Gan 2000). Precipitation drives the hydrology of seasonal prairie wetlands, which in turn drives key ecological processes including hydroperiod, species composition, water permanence class, and primary and secondary productivity "...climate variability of the magnitude suggested by global climate change models would profoundly affect wetland hydrology and many other linked processes and attributes" (Johnson *et al.* 2005:864).

However, the primary threats to wetlands are anthropogenic and a wetland policy should focus on human impacts.

2.6. ECOLOGICAL GOODS AND SERVICES

Wetlands provide a number of ecological functions that are of value to society. These are frequently referred to as ecological goods and services. The sustainable management of wetlands requires that the wetland be maintained in a state that ensures these functions can be sustained in the future.

What complicates wetlands as a policy issue is that many of these ecological goods and services accrue to society at large or individuals other than the wetland owners (i.e., downstream properties). As a result, many landowners choose to convert wetlands to agricultural production for their own benefit, even when such conversion is costly to society (Heimlich *et al.* 1998).

The ecological goods and services provided by wetlands can be divided into five categories: hydrological functions, water quality functions, maintenance of biodiversity, mediation of climate change, and aesthetic values (Table 1). The hydrological functions include water storage, flood abatement and groundwater recharge. The water quality functions include the transformation and cycling of nutrients, accumulation of inorganic sediments, and detoxification and decomposition of wastes and pesticides. Wetlands provide ideal growth conditions for a wide variety of unique flora and fauna, thereby maintaining biodiversity. Wetlands are important in mediating the anticipated effects of climate change through the sequestration of carbon as well as mitigating the impacts of increased incidences of drought and flooding projected by many climate models. Wetlands also provide important recreational and spiritual benefits for many people.

Table 1: Ecological Goods and Services Provided by Wetlands

Hydrological Functions	-storage and eventual release of surface water -recharge of local and regional groundwater supplies -reduction in peak floodwater flows -erosion prevention
Water Quality Functions	-act as natural filters improving water quality and help neutralize a variety of contaminants including suspended solids, pathogenic microbes, and anthropogenic pollutants such as pesticides and herbicides -remove cycle nutrients such as phosphorus and nitrogen from water flowing into lakes, streams, rivers, and groundwater -accumulation of inorganic sediments
Maintenance of Biodiversity	-provide habitat for a vast array of plant and animal species -approximately 600 species of wildlife use wetlands in NA during some part of their lifecycle
Mitigation of Impacts of Climate Change	-sequestration of carbon -minimizing impacts of droughts and flooding
Aesthetic Values	-recreational opportunities such as bird watching and hunting - spiritual values, particularly to Aboriginal groups

2.6.1 Hydrological Functions

The hydrological functions of wetlands include the storage and eventual release of surface water, recharging local and regional groundwater supplies, reducing peak floodwater flows, and preventing erosion (Gabor et al. 2004).

The ability of wetlands to store incoming water is highly variable. The temporary wetlands typical of the Prairie Pothole Region could be among the most important for flood reduction. Four-tenths of a hectare of wetlands can store over 6,000 cubic meters of flood water. When wetlands are destroyed the probability of flooding, particularly overland flooding associated with extreme rainfall, increases significantly (Olewiler 2004).

Groundwater recharge occurs when water percolates slowly from wetlands to underground aquifers. Wetlands are the main source of recharging regional aquifers on the prairies (Gabor *et al.* 2004).

2.6.2 Water Quality Functions

Because of their high biological productivity, wetlands act as natural filters that improve water quality and help neutralize a variety of contaminants, including suspended solids, pathogenic microbes and anthropogenic pollutants such as pesticides. Wetlands also remove and cycle nutrients such as phosphorus and nitrogen from water flowing into lakes, streams and rivers as well as groundwater (Gabor *et al.* 2004; Olewiler 2004). Research has found that shallow wetlands, like those found on the Canadian Prairies are particularly important for the maintenance of water quality because of their high ratio of sediment surface relative to water volume, which makes them more effective in removing suspended solids, phosphorus, nitrogen and ammonia. These wetlands have also been found to have specific characteristics that increase their potential for intercepting and dissipating pesticides (Crumpton and Goldsborough 1998).

2.6.3 Maintenance of Biodiversity

Wetlands provide habitat for a vast array of plant and animal species (Plate 3). Approximately 600 species of wildlife, including many species at risk, use wetlands during some part of their life cycle (Olewiler 2004). A reduction in the number and types of wetlands as well as the deterioration in the condition of the remaining wetlands will undoubtedly result in a loss of biodiversity (Brinson and Malvarez 2002).

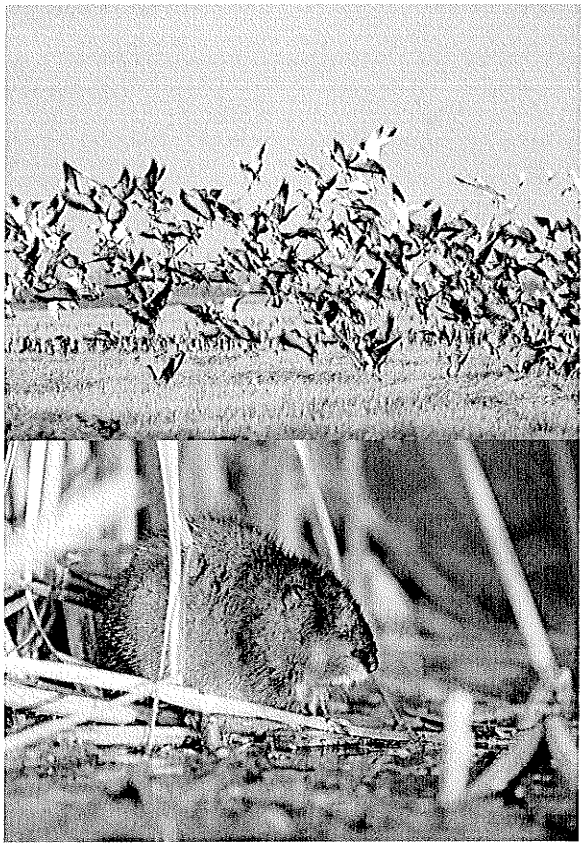


Plate 3: Wetlands provide many ecological services including the maintenance of biodiversity. Photo courtesy of Ducks Unlimited Canada.

Many animals, particularly waterfowl, require wetland clusters or complexes composed of a mix of small shallow basins and larger deeper basins. These complexes, with their different types of wetlands, collectively provided a diverse and reliable habitat for breeding waterfowl. It is common practice to consolidate a number of smaller scattered wetlands into a single large wetland. These large solitary wetlands do not provide the variety of habitat of the original landscape and generally have fewer kinds of waterfowl using them compared to similar wetlands within a complex (Galatowitsch and Van der Valk 1998).

2.6.4 Mitigation of Climate Change

Healthy ecosystems are necessary to increase resilience to the impacts of climate change. Wetlands act as reservoirs for water and have the ability to mitigate the impacts

of flooding and drought, both of which are projected to increase under most climate change models. Prairie wetlands are an important biological carbon sink and have the potential to sequester more than twice as much carbon as cropland under best management practices (Euliss *et al.* 2006).

2.6.5 Aesthetic Values

Wetlands provide many aesthetic, recreational and spiritual benefits to society. Wetlands create a variety in the landscape that many people find beautiful, aesthetically pleasing and a source of inspiration. Wetlands are places of spiritual significance to many cultures, particularly First Nations peoples and religious values are attached to various aspects of wetland ecosystems. Recreational opportunities provided by wetlands include hunting, fishing, boating and bird watching (Millenium Ecosystem Assessment 2005).

2.6.6 Public Benefits and Private Costs – Who Pays

Activities that degrade and destroy wetlands result in the loss of these ecological goods and services. Replacing these natural services may be much more expensive in the long run than maintaining the natural ecosystem. When decision makers, both government policy makers and individual producers, undervalue the long-term benefits of the ecological goods and services provided by wetlands, they underestimate the full costs of converting wetlands to agricultural production. Left intact, these wetlands may generate more value to society than they do to the landowner under agricultural production (Olewiler 2004). It has been estimated that when all ecosystem services are accounted for, intact freshwater marshes have a total economic value of approximately $5,800 per hectare. If these marshes are drained and used for agriculture, a number of the

ecosystem services are lost and the value is reduced to $2,400 per hectare (Millennium Ecosystem Assessment 2005).

Public recognition of the value of wetlands has risen rapidly over the past 25 years. However, this increased recognition has not resulted in economic value that individual landowners can capture in the marketplace (Heimlich *et al.* 1998). The development or conversion of a wetland generally produces marketable goods through increased agricultural production, while maintaining the wetland in a natural or managed state usually leads to the preservation of non-market goods such as water quality or the maintenance of biodiversity and the hydrological regime. The undervaluing of these non-market ecological goods and services is a major reason for the misallocation of wetland resources (Barbier *et al.* 1997). Although these non-market wetland services are important to society, they have often been undervalued relative to converting wetlands to other uses such as agricultural production (Heimlich *et al.* 1998). As a result landowners have no ready means of capturing the social and economic benefits generated by maintaining wetlands on their property. Maintaining wetlands also results in increased production costs due to inefficiencies created by having to farm around the wetland. Therefore many landowners find it inefficient to preserve wetlands and instead drain them for agricultural use (Olewiler 2004). The problem is that the benefits of conservation practices which result in benefits to society at large are at the expense, either real or perceived, of the individual landowner, while any returns to the landowner are only realized much later (Oborne 1995).

Wetland goods and services must be given a quantitative value if their conservation it to be chosen over alternative uses (Barbier *et al.* 1997). Economic value

is a measure of what the worth of the good or service is perceived to be by society. Placing an economic value on an ecosystem service is an attempt to measure the contribution it makes in maintaining the present level of societal well being. (Acharya 1998).

Van de Velde (2000) found that most farmers needed some type of economic incentive to encourage them to maintain natural areas. While most farmers seemed to be conservation minded, the reality was that ecological goods and services - like wildlife, groundwater recharge, flood and erosion control, soil and water quality, etc. - required a defined monetary value in order to make landowners put the effort into preserving them.

There is ongoing discussion attempting to resolve the question as to how farmers should be compensated for the public benefits associated with the ecological goods and services provided by wetlands that are maintained on the landscape. The costs borne by the landowner include the nuisance cost of farming around wetlands and the lost opportunity to increase acreage under cultivation (Scarth 1998).

2.7 CONSERVATION PROGRAMS

A number of policies have been developed that promote the development of programs that reward landowners for their efforts to maintain ecological goods and services on their property. Government departments and non-governmental conservation organizations play an important role in developing and implementing these programs. The type of program developed depends very much on the goal of the program. The preservation of specified natural areas, the use of best management practices; and the mitigation of damage to natural areas are such goals for which specific programs have been developed in Manitoba.

2.7.1 Preservation

Preservation programs maintain pristine areas in as close to their natural state as possible. Generally these are areas of high priority and ecological sensitivity that have not been significantly altered. These include protected areas, preserves, and parks that are managed and maintained by government agencies and protected by the legislation that created the park or protected area.

Donations of ecologically sensitive land involve the transfer of ownership of land to an eligible conservation organization for which the landowner generally receives a tax benefit. The land is then the responsibility of the conservation agency.

Land retirement programs can also be included in this category, although the land enrolled in the program is not always in its pristine state and is considered environmentally sensitive. These lands are privately owned and program participants agree to maintain natural areas or convert sensitive farmland to conservation uses in return for lease or easement payments that reflect the value of the foregone agricultural activity (Ailery 2006). Conservation agreements involve the transfer of certain rights relating to the use of the property. The conditions of the contracts can be individually tailored to meet the needs of the landowner and the conservation goals of the conservation agency involved. The conditions of the agreements are registered with the title of the property and stay with the property if it is sold. This ensures permanent protection while allowing private ownership and limited economic use (Wright 1994).

In Manitoba, Ducks Unlimited Canada and the Manitoba Habitat Heritage Corporation are the primary conservation agencies involved in land retirement schemes.

The *Conservation Agreements Act* (1986) provided the legislative authority for the purchase of conservation agreements in Manitoba.

The Wetland Restoration Incentive Program is a provincial initiative that combines conservation agreements and an ecological goods and services incentive that pays landowners an ecological goods and services payment for restoring wetlands and then protects those wetlands with a conservation agreement.

2.7.2 Sustainable Use and Best Management Practices

The majority of the wetlands in the study area are part of an agricultural landscape. The impact that farming practices have on wetlands has been well documented and the importance of conservation practices has been recognized (Ailery 2006).

'Working-land' programs promote land use practices that minimize the negative impact of agricultural production on the ecosystem functions of wetlands (Ailery 2006).

Farming methods that minimize the environmental risks associated with farming are known as best management practices. Wetlands are an important part of the agricultural landscape and appropriate management practices allow wetlands to maintain their ecological functions while maintaining the agricultural productivity of the landscape (Plate 4). It is well recognized that agricultural practices in upland areas surrounding wetlands have a profound impact on wetland quality and their ability to maintain ecological function. Best management practices minimize these impacts but vary in their effectiveness and the subsequent costs to implement (Hillard *et al.* 2002).

Plate 4: Appropriate management practices allow wetlands to maintain ecological functions in an agricultural landscape. Photo courtesy of Ducks Unlimited Canada.

A number of policy instruments have been developed that encourage landowners to implement best management practices on their farms. These include short-term easements, tax incentives, grants, educational programs and the provision of technical support.

The Alternative Land Use Services (ALUS) program was a pilot project in the Rural Municipality of Blanchard. It was developed by the Keystone Agricultural Producers (KAP) and implemented by partnerships with provincial and federal government agencies and non-governmental organizations. ALUS provided annual payments to farmers to maintain and enhance certain types of landscapes (including wetlands) which were recognized as providing ecological goods and services. The primary purpose of the pilot project was price and participation discovery. Under what terms and conditions were farmers willing to participate in this program, and what level of incentives were needed. Incentives for wetland conservation were set at approximately $15 an acre. The results of this pilot project are still being compiled but will provide valuable insight into how to structure similar province-wide programs in the future.

2.7.3 The Mitigation Hierarchy

Controlling wetland conversion to other uses is essential. Given the pressures from agriculture, urbanization, industrial development and other land uses, some development is unavoidable, and it is not reasonable to expect that all existing wetlands can be conserved. An effective wetland policy will need to accommodate economic development while maintaining environmental stewardship. The mitigation hierarchy is a step-by-step decision-making process that allows for development while ensuring that the full range of wetland function is maintained on the landscape.

The mitigation hierarchy achieves wetland conservation through the application of a hierarchical progression of alternatives implemented during the planning stage of a project: avoiding impacts, minimizing unavoidable impacts; and compensating for residual impacts that cannot be minimized. The steps between each stage should be perceived as huge barriers that are only to be breached in rare circumstances (Cox and Gross 2000).

The first step of avoidance involves the prevention of impacts, either by choosing an alternate project design or site for development. It is the preferred choice of mitigation alternatives and may be the most efficient and cost-effective way of conserving wetlands. Avoidance is particularly crucial when high priority wetlands are being impacted.

The next step of minimization, should only be taken after it has been determined there are no reasonable alternative sites or project designs that will not impact a wetland. Minimization involves designing the project so as to cause the least impact on the ecological functioning of wetlands at all project stages.

Compensation is the last resort in the mitigation process and should be considered a failure of the two earlier steps. It should only be considered for residual effects that were impossible to minimize. Compensation refers to a variety of alternatives that attempt to 'make up for' the unavoidable loss of or damage to wetland functions and values, usually by improving wetlands off-site from the development. Preferred methods include the restoration and enhancement of wetlands, although the creation of a new wetland would also be a potential compensation method.

The Habitat Mitigation/Compensation Program is a formalized agreement between Manitoba Conservation (MC) and Manitoba Infrastructure and Transportation (MIT). The program uses the mitigation process to meet or surpass the federal wetland policy goal of no net loss of wetland function as a result of MIT development projects. The approach is to avoid disturbance, minimize disturbance and then mitigate through a compensation banking program for unavoidable disturbances, degradation and loss of wetlands (Tom Moran pers. Comm..: November 28, 2008).

Compensation banking offsets the loss of habitat due to development projects in one area with the creation, restoration or preservation of comparable habitat in another location (Morris *et al.* 2006). When impact is unavoidable, habitat impacts are measured, compensation ratios applied and the amount of compensation determined based on the cost of implementing various mitigation approaches. Because the compensation banking approach provides flexibility in creating worthwhile conservation projects of a meaningful size in appropriate surroundings, it is considered to be a very effective means of compensating for strip losses occurring as a result of linear projects such as road and highway developments (Tom Moran, pers. Comm..: November 28, 2008).

Heimlich et al. (1998) consider the drawbacks of mitigation projects are that they tend to be small scale, expensive to implement, and possible having highly variable results, depending on the methods used in their construction. As well, the project specific focus of mitigation efforts may not reflect broader wetland priorities. Despite this, the mitigation hierarchy is considered to be an important policy tool for slowing and stopping the loss of wetlands in Canada (Rubec and Hanson 2009).

2.8 POLICY INSTRUMENTS

There are a variety of policy instruments that can be used for environmental conservation and protection. Although they are rarely used in isolation, for the purposes of this study they have been divided into three types: regulatory, economic and moral/educational.

2.8.1 Regulatory

Regulatory approaches to conservation involve the passing and enforcement of laws restricting activities that are detrimental to wetlands. The main regulatory instruments include zoning, land-use restrictions, standards and some types of licenses and bans (Young *et al.* 1996; Davis and Cocklin 2001). Regulation is commonly criticized for being inefficient, inequitable, intrusive, expensive to administer, difficult to enforce, detrimental to finding innovative ways of using resources more efficiently, and ineffective in achieving conservation goals if the active support of the landowners is necessary for habitat maintenance (Davis and Cocklin 2001; Young *et al.* 1996).

Proponents of regulatory approaches claim they are economically efficient, impartial, value-free, predictable, and provide a uniform minimum standard of compliance for all lands to which they apply. Regulatory measures focus principally on

restricting inappropriate use rather than promoting appropriate management (Young *et al.* 1996). Regulations provide a safety net that may be needed in extreme cases and prevent degradation by individuals who cannot be persuaded by voluntary approaches (Davis and Cocklin 2001). Regulation coupled with the moral force of law, will in general, provide greater assurance of compliance than market-based incentives (Young *et al.* 1996).

Wetland regulation has developed as a major tool in the United States, however this may have little application in other nations (Ramsar Convention Secretariat 2004). In Canada there is no comprehensive legislation that focuses exclusively on conserving wetlands. Regulations are used only where necessary to protect the needs of the general public. Wetland conservation efforts in Canada emphasize voluntary stewardship of private lands encouraged by education and economic incentive programs (Lynch-Stewart *et al.* 1999).

In Manitoba regulations impacting wetlands comply with the *Water Rights Act* (1987). The *Manitoba Drainage Policies* developed under the *Water Rights* Act have recently been revised. The *Drainage Policies* require a license for the diversion of water or the construction of a water control work. Under current policies Class 4 and 5 wetlands under the Steward and Kantrud classification system cannot be drained and a license is required for the drainage of Class 3 wetlands. Historically the *Manitoba Drainage Policies* were inadequately enforced as a result much illegal drainage of wetlands occurred and a culture of ignoring the *Drainage Policies* developed in rural Manitoba (Manitoba Ombudsman 2008). Improvements have been made to the Department of Water Stewardship's enforcement powers, new staff have been hired and trained, penalties have been strengthened and a mechanism has been developed to stop

unlicensed work and to order compliance to the *Water Rights Act* (Steve Topping pers.comm.: December 5, 2009).

2.8.2 Economic

Whether a wetland is used for agriculture or maintained in its natural state is often a matter of economics. Economic considerations are paramount in many farm management decisions (MacGregor 2003). Landowners have to reconcile their own environmental and economic goals within constraints determined by processes outside their control, such as agricultural policy, the internationalization of the market place, global agreements, commodity prices, etc. (Davis and Cocklin 2001). A number of different types of programs offer a variety of economic incentives that offset the costs and production losses resulting from altered land management activities. These programs reflect the value placed on the ecological services provided by the preserved ecosystems. Incentive programs include land retirement programs, best management programs, grants and tax incentives. In this study, Section 2.7.1 Preservation and 2.7.2 Sustainable Use and Best Management Practices provide examples of some of these programs.

Disincentive programs penalize landowners who engage in activities that degrade the environment. Common disincentive programs include cross compliance programs that tie eligibility for agricultural support to meeting specific environmental criterion, and tax levies on farm inputs such as pesticides and fertilizers.

2.8.3 Moral Suasion/Education

In Canada, moral suasion has been the most extensively used means of promoting environmental quality objectives. These are primarily educational programs with the

objective of increasing awareness of environmental problems associated with agricultural production. Education programs can be broadly divided into two categories, those that aim to raise the awareness of the general public, and those directed at landowners. Education programs that are directed at landowners are referred to as extension programs and focus on the adoption of farming techniques that are beneficial to the environment.

Young et al. (1996) found that the more information on environmental issues that an individual is provided with, the greater the tendency there will be for that individual to behave in an environmentally responsible way. However, Rhodes et al. (2002) found that changes in behavior require not only awareness of the existence of a problem, but also knowledge of appropriate strategies and adequate resources to address it. Positive attitudes are not useful for environmental change if landowners do not possess the resources to make the necessary changes. While education and the provision of accurate and relevant information is required to make informed decisions, knowledge of environmental problems in and of itself cannot be relied on to ensure conservation practices are adopted. Landowner surveys in New Zealand, Australia, and Canada all confirm that landowners are aware of many of the environmental concerns associated with modern industrial agriculture (Environics Research Group 2000; Rhodes *et al.* 2002). Rhodes et al. (2002) found that informed farmers were more likely to report intentions to carry out conservation initiatives, but the level to which this actually occurred was dependent on receiving funding rather than education level.

The effectiveness of these programs are limited given that market forces particularly commodity prices, may favor increasing agricultural production at the expense of conservation goals (Van de Velde 2000). Although they have much to offer,

motivational approaches are not usually relied on exclusively because of the considerable gap that can exist between people's attitudes and intentions and their actual behaviour (Davis and Cocklin 2001). It can be concluded that both information and financial assistance are important complimentary aspects of conservation programs (Rhodes *et al.* 2002).

All policy instruments have strengths and limitations (Table 2). The selection of an appropriate approach involves the consideration of ecological goals (Table 3), cause of degradation, funding availability and landowner preferences. Most often a single instrument does not operate in isolation. Combinations of different types of instruments work alongside each other to achieve the desired environmental outcome.

Table 2: Strengths and Limitations of Policy Instruments

Policy Instrument	Strength	Limitation
Land Retirement	-Easements provide long-term protection -Depending on conditions of easement the land can still be under production	-Landowners reluctant to give up long-term control -Small-scale, limited impact on the landscape
Management Agreements	-Use knowledge and expertise of landowner to develop plan suitable to the individual -Greater acceptability by landowner	-Monitoring necessary -Need to be periodically renegotiated -Do not promise long-term conservation
Grants/Cost Share	-Well subscribed -Preferred by landowners -Projects selected based on prioritizing criteria-allows for the best projects to be selected	-Program funding varies -Linked to one-time projects -Projects proposed in isolation from each other -Short-term projects with little monitoring or follow-up
Tax Incentives	-Easy to administer because infrastructure is already in place -Appropriate to accomplish conservation objectives with province-wide benefits	-Not well subscribed in any jurisdiction due to uncertainty of actual financial value to the landowner
Disincentive Programs	-Levies can internalize environmental costs of certain practices - more efficient use of inputs such as fertilizer and pesticides -Generates funds for conservation programs	-Politically unpopular -Can create negative feelings towards conservation. -Taxes have to be high to change use patterns.
Moral Suasion	-Cost-effective -Creates understanding of environmental issues – empowers landowners to find appropriate solutions	-Cannot be relied upon because economic interests often outweigh environmental ideals

Table 3: Ecological Goals and the Selection of Conservation Programs

Ecological Service	Cause of Degradation	Program
Water Quality	-Nutrient and pesticide loading in run-off; non point source pollution	-Best management practices that reduce soil and water erosion -Buffer strips to maintain riparian areas
Hydrological Services	-Altering of hydrological regime; draining and filling to increase area under agricultural production	-Removal of drainage mechanism to restore hydrological regime; retirement of marginal lands from agricultural production -Wetland reconstruction
Biodiversity	-Preservation of high priority areas which provide habitat for various species	-Long-term preservation – conservation easements, land retirement

2.9 WETLAND POLICY IN CANADA

At the federal level a number of provisions provide some protection to wetlands through species and habitat conservation measures. These include *The Migratory Birds Convention Act, The Canada Wildlife Act,The National Parks Act,The Fisheries Act, The Canadian Environmental Assessment Act, The Income Tax Act and The Species at Risk Act* (Appendix 4).

The *Federal Policy on Wetland Conservation* was implemented in 1992 with the objective to "promote the conservation of Canada's wetlands to sustain their ecological and socio-economic function" (Lynch- Stewart *et al.* 1999: 6). This policy focuses on the 'wise' or 'sustainable' use of wetlands in Canada. Two key commitments include: no net loss of wetland functions; and rehabilitation of wetlands where the continued loss or degradation of wetlands or their functions have reached critical levels (Rubec and Lynch-Stewart 1998).

While the federal government retains control over wetlands on federal land, the responsibility for the management of wetlands lies with provincial governments, as each province maintains ownership of the natural resources that lie within its borders (Rubec and Lynch-Stewart 1998). Table 4 provides an overview of the status of wetland protection in each province.

Table 4: Status of Wetland Protection in Canadian Provinces

Jurisdiction	Status of conservation
British Columbia	No wetland policy in place Water stewardship in the Ministry of Environment portfolio Wetland Stewardship Partnership consists of 13 partners from government, industry, community and environmental NGOs – created a Wetland Action Plan goals: promote wetland conservation policy and legislation, strategic planning, public education, wetland securement, wetland restoration and enhancement
Alberta	Interim Policy: Wetland Management in the Settled Areas of Alberta in place, currently preparing wetland policy. Alberta Water Council implemented the Provincial Water Strategy - created a Wetland Policy Project Team to draft a wetland policy and implementation plan.
Saskatchewan	Saskatchewan Wetland Policy (1995) in place but ineffective: does not state no net loss does not reference mitigation, has no goals or objectives and does not consider all wetland classes; reluctance by government to revisit the policy.
Ontario	No wetland policy in place, a number of other regulations and acts may protect wetlands. Planning Act revised to enhance existing wetland protection policy
Quebec	No wetland policy in place The Water Policy refers to the need for protecting water quality and aquatic ecosystems using a watershed-based approach to management.
Nova Scotia	No specific wetland policy in place. Protection provided through the Environment Act and its Environmental Assessment Regulations. Wetlands not mentioned in the goals or objectives, reference to wetlands, wetland definition included in the Act
New Brunswick	Two policies provide significant legislative protection to wetlands: the Wetland Conservation Policy and a Coastal Areas Protection Policy. Protect all coastal wetlands, provincially significant wetlands and all wetlands greater than one hectare. Wetlands less than one hectare are protected but may be altered using a permit system.
Newfoundland and Labrador	No wetland policy in place. Some protection to wetlands through a permit system for undertakings that might affect wetlands through the Water Resources Act.
Prince Edward Island	Extensive protection to wetlands through its Wetland Conservation Policy that applies to all wetlands and advocates a no net loss of wetland or wetland function. The Environmental Protection Act provides additional protection through a legislated minimum of a 10 metre buffer zone on all stream or tidal marsh wetlands.

2.10 POLICY IMPACTING WETLANDS IN MANITOBA

Manitoba's water policy objectives are contained in The *Manitoba Water Strategy* 2003. The goal of this strategy is "to support and maintain our ecosystems while meeting the water needs of all Manitobans" (*The Manitoba Water Strategy* 2003). Although actions called for in a number of these policy areas will have an indirect effect on wetlands, policy area two, 'conservation', makes explicit reference to wetlands and calls for the followin: conservation of wetland values; retention of wetlands primarily through the provision of incentives, but with regulation where required; and special consideration for water bodies with values of provincial or national significance. Policy area six, 'drainage', also calls for specific efforts to maintain the viability of wetland areas (Manitoba Water Strategy, 2003; Applying Manitoba's Water Policies, 2003).

Manitoba's *Provincial Land Use Policies,* and the *Manitoba Drainage Policies* also impact wetlands conservation. The *Manitoba Drainage Policies* have recently been revised and the *Provincial Land Use Policies* are currently under review. The *Provincial Land Use Policies* require that any development maintain a 30 metre setback from all natural waterways and water bodies, including ephemeral or intermittent wetlands. Development must not alter permanent or semi-permanent wetlands by ditching, filling, subsurface drainage, pumping, consolidation of wetlands or any other means (Provincial Land Use Policy).

The only regulations in Manitoba currently protecting wetlands are the *Manitoba Drainage Policies.* The Drainage Policies have recently been revised and do not allow for any drainage of Class 4 and 5 wetlands and require a license for the drainage of Class 3 wetlands.

Manitoba has a number of acts dealing with water and water management that can be used to conserve wetlands. However, none of these acts deal specifically with wetlands and provide only incidental protection to wetlands. These include T*he Ecological Reserves Act*, T*he Provincial Parks and Lands Act, The Wildlife Act,Tthe Endangered Species Act, The Water Rights Act, The Environment Act, The Habitat Heritage Act, The Conservation Agreements Act, The Conservation Districts Act* and *The Water Protection Act* (Appendix 5).

The *Water Protection Act* (2005) provides the legislative mandate required to develop a wetland policy. Section 2 (f) of the act states that "the purpose of this Act is to provide for the protection and stewardship of Manitoba's water resources and aquatic ecosystems, recognizing the need to protect riparian areas and wetlands..." (The Water Protection Act 2005). The Act however does not state how this is to be implemented, and what the role of a Wetland Policy would be.

2.11 THE NEED FOR A PROVINCIAL WETLANDS POLICY

Currently provincial and federal statutes and policies provide only incidental protection and do not address the unique issues facing wetlands or recognize the inherent values of wetland ecosystems. The development of a comprehensive wetland policy would be an important step in acknowledging the value of wetlands, recognizing the threats they face and developing targeted action to address these concerns. A wetland policy would reflect that a cultural shift has taken place and attitudes towards wetlands have changed. Wetlands are no longer seen as wastelands that need to be drained to be productive, but are recognized as valuable ecosystems that provide ecological goods and services that are essential to society.

A wetland policy should draw attention to wetland issues, articulate clear goals and objectives, identify the specific responsibilities of the government and create an expectation that the government will actually deliver on these commitments. A stand-alone provincial wetland policy should function as a framework that enables clear conclusions to be drawn about what actions are required, and what end result is expected, providing the comprehensive vision and strategy needed for maintaining the ecological integrity of these unique ecosystems (Ramsar Convention Secretariat 2004).

2.12 THE POLICY PROCESS

Policy is often portrayed as the systematic pursuit of goals, the exercise of authority to achieve collective purposes, a projected program of goals, values and practices, and a course of action by government designed to achieve certain results (Colebatch 2002). Policy is developed and implemented by an authority who outlines what will be done in a particular area. The goal is to ensure that all stakeholders follow a specific course of action to achieve the goals stated in the policy, which are in the best interests of society, rather than pursuing their own individual goals and courses of action.

Traditionally policy development has relied on a positivist approach, in which the problem is identified, various objectives and alternative ways of pursuing the policy are developed and the tools of microeconomics, particularly cost-benefit analysis, are used to identify the most cost-effective option to be pursued (Colebatch 2002, Yanow 2000). This form of policy development is well established. However, it has been argued it has a limited capacity and should not be solely relied on when developing a policy. Rather, the policy process should be used to clarify the issues and options to be addressed by a

particular policy and provide a framework for debate on the policies by all stakeholders and interested parties (Colebatch 2002).

> Any given policy will involve people from a range of organizations; an important part of policy work consists of drawing these various participants into a common framework. What draws them together is a program of action to which all of them can contribute, and which makes sense to all of them, though not necessarily for the same reasons... (Colebatch 2002:60)

A policy outlines how the various stakeholders should act under various circumstances. However, there are many participants and various perspectives involved. A policy needs to create or identify common goals which all stakeholders can agree on and work towards (Colebatch 2002). An interpretive approach to policy development focuses on the values, beliefs and priorities of the stakeholders involved in a particular issue, and how those values and beliefs affect their decisions and activities and shape their perception of what a policy should involve. This shifts the discussion away from an economic analysis of costs and benefits to an assessment of the role of beliefs and values in determining human behaviour (Yanow 2000). Policy development then becomes not a process of calculating costs and benefits, but rather a "weaving together" of the activities, values and beliefs of a range of stakeholders to create a shared understanding of what action should be taken (Colebatch 2002:79).

2.13 DEVELOPING A FRAMEWORK FOR A WETLAND POLICY IN MANITOBA: AN INTERPRETIVE APPROACH

An interpretive approach to policy development focuses on the various stakeholders affected by a policy and recognizes that different stakeholders will see the same issue very differently, will have different issues and priorities, and will interpret the policy differently (Yanow 2000).

> It is not that they would have different ways to answer the question, they would have different questions. So the policy process involves not simply the pursuit of shared goals, but the more difficult task of constructing a basis for collective action among participants who may have quite diverse views on the nature of the task (Colebatch 2002:4)

The first step of interpretive policy development is to identify groups of people who share common ideas, goals and understandings of the issue. Various terms have been developed to identify these groups. Yanow (2000) uses the term interpretive communities to identify groups who can be identified through a shared point of view and similar understandings of policy ideas and language. Colebatch uses the term policy collective to identify "relatively stable aggregations of people from a range of organizations who find themselves thrown together on a continuing basis to address policy questions" (2002:33).

An interpretive approach does not try to determine which interpretive community or policy collective has the 'correct' point of view but recognizes that differences have developed because of different prior experiences. This does not mean that all positions are to be considered 'right' but all perspectives must be given consideration. The process of policy development should help the parties understand the differences underlying each other's positions. Conflict occurs not only because each group will focus on different elements of a policy issue, but because they value different elements differently (Yanow 2000).

> It is usually not a matter of choosing between competing objectives, but one of negotiating a shared understanding among rival interpretations of the situation and what might be done about it" (Colebatch 2002:19).

There are a number of stakeholders who will be influenced by a provincial wetlands policy and each has his/her own priorities and agendas. In order to create change it is necessary to understand the factors that influence the actions of various stakeholders on the ground and then identify how policy can influence these activities to make a positive change on the landscape. In order to do this it is necessary to find common ground which the various stakeholders can agree to and then develop a framework and program of action on which they can all agree, and to which they can all contribute, that makes sense to all of them (Colebatch 2002).

> There are many participants and they all have varied agendas...policy is not primarily about promulgating formal statements, but about negotiating with a range of significant participants so that when formal statements are made, they accurately reflect what participants have agreed to do, and have a significant impact on what they actually do (Colebatch 2002:112)

Developing an understanding of the broad range of stakeholders requires local knowledge. Interviews and observation are the main methods used for accessing local knowledge in interpretive policy analysis. Interpretive policy analysis often begins with document analysis which provides background information for conversational interviews with key actors. The key actors are initially identified through the documentary sources and very often the persons interviewed are asked to suggest others who should also be interviewed (Yanow 2000). This research used an interpretive approach to policy analysis to develop a framework for a wetland policy. It should be noted that this framework is not the final policy and that the final policy will be written by government and reflect those priorities and objectives as well as the interests of stakeholders.

2.14 POLICY LEARNING

It has become common practice for policy-makers to look to other jurisdictions to see how a particular issue has been addressed and the impacts of various policy elements (Evans 2006). Policy makers can examine how other jurisdictions have dealt with a similar problem, drawing lessons from it that will help them deal more appropriately with their own problems. A variety of terminology has been used to describe various aspects of this concept including policy transfer, policy convergence, diffusion learning, evidence based practice, policy emulation, lesson drawing and policy learning (Dolowitz and Marsh 2000, Evans 2006, Colebatch 2002, James and Lodge 2003, Rose 1993). Each of these varies in their approach but they are fundamentally referring to the process by which information about the policies and programs in one jurisdiction is used in the development of policies and programs in another jurisdiction (James and Lodge 2003). For the purpose of this research the process of policy learning and more particularly lesson drawing, has been used.

Lesson drawing is a type of voluntary policy transfer in which policy makers actively search abroad for new and innovative ideas for addressing domestic issues (Dolowitz and Marsh 1996).). Dolowitz and Marsh (1996) identify seven areas of policy which are potential areas of policy learning: policy goals, structure and content; policy instruments or administrative techniques; institutions; ideology; ideas, attitudes, and concepts; and negative lessons. Lesson drawing is distinctive because it uses a rational, action oriented approach to draw on foreign experience to propose programs that can deal with problems confronting policymakers in their own jurisdictions (Evans 2006: 483).

2.15 SUMMARY

This chapter provided an overview of wetland issues in Manitoba, and the current state of policy and legislation impacting them. Given the rate of wetland loss, it is apparent that current wetland conservation practices and policy are inadequate.

Wetland conservation involves a number of stakeholders with different perspectives and goals; therefore an interpretive approach to policy development was introduced as an effective approach to the development of a framework from which a wetland policy can be drafted for Manitoba.

CHAPTER 3: STATEMENT OF METHOD

3.1 INTRODUCTION

The purpose of this study was to collect and analyze the data necessary to develop a framework for a wetland policy for Manitoba. The data included information about the environmental, economic and social/political aspects of wetland management in Manitoba. A qualitative grounded theory approach to interpretive policy analysis was used.

A qualitative grounded theory approach involves several phases of data collection using a different method of data collection in each phase, with the data collected in each phase providing information and context for the following phase. Each phase has a unique but complimentary focus. Upon completion of the data collection, data from all research phases was integrated and analyzed to meet the stated objectives of the study. The use of more than one type of data collection for each objective ensured that a broad spectrum of views was included, that the information was not biased by any particular agenda, and ensured that as much as possible all relevant information was taken into consideration.

Interpretive policy analysis seeks to understand the values, beliefs and feelings of the various audiences that are directly affected by a particular policy (Yanow 2000). The first step in interpretive policy analysis is to identify the various groups that share a common perspective on a particular policy issue. These groups are referred to as interpretive communities or policy collectives. They arise around a shared point of view relative to a policy issue (Yanow 2000) and often find themselves working together on

policy issues (Colebatch 2002). For the purpose of this study the term interpretive communities has been used, although either term would be appropriate.

Interviews and document analysis are the main methods for identifying interpretive communities and understanding their different perspectives on an issue. Document analysis provides background information for conversational interviews with key actors that have been identified through documentary sources. Persons interviewed are also asked to suggest others whom the analyst should talk to (Yanow 2000).

The data for this study was collected during three phases using three different methods:

1) Research Phase I – a review and analysis of existing literature and informal telephone interviews,
2) Research Phase II – semi-structured interviews with key informants, and
3) Research Phase III – workshop with selected participants.

Upon completion of the data collection, data from all research phases was integrated and analyzed using content analysis and comparative analysis to meet the stated objectives of the study.

3.2 RESEARCH PHASE I: REVIEW AND ANALYSIS OF LITERATURE

The review and analysis of literature included published literature, government documents, official websites, pamphlets and brochures. The purpose of the literature review was to:

- provide an understanding of the issues surrounding wetland conservation in Manitoba,

- identify the key components of a wetland policy, with a focus on the assessment of policies in other jurisdiction and
- identify the lead agencies involved in wetland conservation in Manitoba, including their conservation goals and strategies.

The identification of lead agencies and their conservation goals is considered essential in an interpretive policy approach. The Ramsar Convention Secretariat (2004) has determined that

> ...a key step in any policy initiative is to define who is either affected by, or potentially involved with, the design, discussion and implementation of the Policy. This is important to ensure consultations include all those groups with a vested interest or capacity to make the end result as effective and achievable as possible (Ramsar Convention Secretariat 2004:20).

Potential lead agencies were identified and possible interview participants contacted. An interview schedule was developed for each interview and gaps in knowledge that needed be filled during the interviews identified.

A second goal of this phase of research was to conduct a comparative analysis of wetland policies in other jurisdictions to identify key components of a wetland policy and aspects of those policies applicable to Manitoba. The benefits of drawing lessons from policies in other jurisdictions were outlined in Chapter 2.14. Five policies were analyzed, three Canadian provincial policies from Alberta, Prince Edward Island and New Brunswick, and two Australian state policies from New South Wales and Western Australia. These jurisdictions were selected because it was determined through the literature review that they had developed effective wetland policies.

The results of the literature review were used to provide context for research phase II, interviews with key informants. Expert opinion provided feedback as to the

suitability of policies in other jurisdictions for a wetland policy for Manitoba and the viability of some of the ideas gleaned through the lesson drawing stage.

This data was also presented as background information to workshop participants during research phase III, and also contributed to the development of the framework for the wetland policy.

3.3 RESEARCH PHASE II: INTERVIEWS

In person semi-structured interviews with representatives from lead agencies involved in wetland conservation in Manitoba were conducted between April 10 and May 22, 2007. Interview participants included representatives from government departments, non-governmental organizations and producer organizations. Participants were identified during the literature review in research phase 1 as well as being referred by other interview participants using the snowball sampling technique. The snowball sampling technique is used for finding research subjects in which one subject gives the researcher the name of another subject, who in turn provides the name of a third, and so on (Atkinson and Flint 2001).

The interviews were valuable because they allowed for probing discussions with individuals that are active in wetland conservation and provided access to current, practical information and perspectives not available in the published literature (Berg 2001; and Steinar 1996). The objective was not to find a sample population, but to identify experts or the "elite" as they are sometimes called. The elite is comprised of the leaders or decision makers who… play (or have played) a unique role in the set of events or decision being studied"(Feldman 1981: 32). The interview participants were deliberately chosen for their expertise in the area of wetland conservation and their

familiarity with policy related issues in Manitoba. They also represented the various interpretive communities identified during the review of literature: government agencies, non-governmental agencies and producer groups. A total of 19 interviews were conducted: five from government agencies, nine from non-governmental agencies, and five from producer groups. The list of interview participants was developed using the snowball technique. Each interview participant was asked if there were any other agencies that should be interviewed. All agencies identified were contacted for an interview. All agencies contacted agreed to being interviewed with the exception of the Association of Manitoba Municipalities and Manitoba Pork Council.

The interviews were guided by an interview schedule on predetermined topics and issues (Appendix 2). However, respondents were free to digress and talk about what was of interest to them. Given the diversity of the agencies involved, the interview schedule was adapted for each agency depending on its involvement in wetland conservation in Manitoba therefore each interview was unique. Certain issues were addressed with all participants, particularly the role of the agency in wetland conservation in Manitoba, its goals, and how these goals are met. Existing conservation programs were also discussed, particularly the characteristics of effective and ineffective programs with which the participant was familiar. Threats and causes of continued wetland loss in Manitoba, the role of policy and regulation in conserving wetlands, and the objective of a wetland policy were also discussed.

The interviews were recorded and then transcribed verbatim. The transcripts were then condensed and coded using an inductive grounded theory approach to identify trends, contradictions and themes. These were then categorized to identify key themes,

ideas and concepts. These were condensed and edited to provide an overall picture of the key themes, ideas and concepts discussed during the interview process. All interviewing, transcribing, condensing and editing was done by the same researcher to ensure consistency. A document consisting of the condensed and coded interview results was provided to all interview participants for comment to make sure all viewpoints had been included and to ensure the validity of the analysis (Appendix 10).

These interviews confirmed and extended the findings of the literature review and provided expert input into the development of a framework for a wetland policy, particularly with regards to the key components of such a policy.

3.4 RESEARCH PHASE III: WORKSHOP

The third and final stage of data collection involved a workshop with selected experts from lead organizations. These participants were selected from those interviews and represented the various interpretive communities identified. Interview participants were asked if they would be willing to participate in the workshop, all interview participants agreed.

The Ramsar Convention Secretariat (2004) recommends the use of workshops in the development of wetland policies.

> Stakeholder workshops have been shown to be an effective consensus-building mechanism. They may be organized to reach a common understanding of the issues related to wetland conservation and management, to identify obstacles and problems in dealing with these issues, and to suggest solutions or means to overcoming existing problems…The goal is to develop guidance for the drafting of the concepts and general approach for a Wetland Policy. These workshops are designed to be of use to the government to lead the development of a Wetland Policy. Guidance is required to formulate a set of policy statements (Ramsar Convention Secretariat 2004:20).

Workshops are fundamentally different from in-depth interviews because data is generated in a group. It is a dynamic process based on interaction between a number of people which fosters types of communication that are unlikely to occur in an in-depth interview. These forms of communication are an important source of data. This is often termed the "group effect" which serves as a unique source of data and is the reason why focus group data is not equivalent to the sum total of individual interviews. Group interviews are extremely useful for identifying the language, definitions and concepts the research participants find meaningful. Group work ensures that priority is given to the respondents' hierarchy of importance, their language and concepts (Hesse-Biber and Leavy, 2006).

The purpose of the workshop was to facilitate discussion among stakeholders, with the goal of identifying areas of common ground and potential consensus related to wetland conservation in Manitoba, identify issues that need to be addressed in a wetland policy, and demonstrate the value of stakeholder involvement in the early stages of policy development. The agenda for the workshop is found in Appendix 11. The specific objectives of the workshop were to:

1. present the results of the interview process and identify areas of common concern,
2. identify the role of stakeholders in the policy development process,
3. identify possible objectives for a wetland policy,
4. identify possible guiding principles for a provincial wetland policy,
5. develop a strategy for dealing with the diversity of wetland types and issues facing wetlands in Manitoba.

Twelve of the interview participants were invited to participate in the workshop, of which nine were able to attend. The workshop was held on June 1, 2007 at the University of Manitoba. The results of the literature review and the in-depth interviews were presented to provide context and background information. A facilitator directed the discussions and ensured the participants remained focused. Two recorders took extensive notes of the discussions. These two sets of notes were cross referenced to ensure validity. The discussions of the workshop expanded upon and extended the findings of the interviews and literature review.

The results of all three research phases were compiled and an overall analysis was conducted, conclusions drawn and a framework for a wetland policy developed. Quotes from the interviews and workshop were used to support the analysis and represented both majority and marginal views. Participants were identified only by interpretive community to ensure anonymity.

CHAPTER 4: RESULTS AND ANALYSIS OF DATA COLLECTION

4.1 INTRODUCTION

This chapter presents the results of the data collection and analysis of the three research phases. Section 4.2 presents the agencies involved in wetland conservation in Manitoba. The key components of a wetland policy and an assessment of wetland policies in other jurisdictions are presented in section 4.3. Sections 4.4 and 4.5 present the results of the interviews and workshop as they relate to the key components of a wetland policy as identified in section 4.3. Section 4.6 presents areas of common ground on which all research participants agreed.

4.2 KEY PLAYERS IN MANITOBA

This section provides an analysis of the agencies involved in wetland conservation in Manitoba. Knowledge of these agencies proved to be useful in understanding the current state of wetland conservation practice in the province and provided background information for the interviews. An internet search provided a preliminary list of agencies who were contacted for interviews. The snowball technique was used to ensure that the final interview list included all agencies involved in wetland conservation in the study area. At the beginning of each interview, participants were given the list of agencies to be interviewed and asked to add others they felt should be included in the study.

The goals and objectives of all agencies were identified as well as the strategies employed to meet these objectives. This analysis provided a good understanding of the current status of wetland conservation in Manitoba.

The agencies were grouped into three interpretive communities based on common ideas, goals and understanding of wetland conservation, as explained in section 2.12. The three interpretive communities identified were: government agencies and departments; non-governmental organizations; and producer agencies.

4.2.1 Government Agencies:

Both provincial and federal agencies were identified as being involved in wetland conservation in Manitoba. The federal agencies were the Agro-Environmental Services Branch of Agriculture Canada (AESB) and Environment Canada (EC). The provincial agencies were Manitoba Water Stewardship (MWS), Manitoba Conservation (CONS), and Manitoba Agriculture Food and Rural Initiatives (MAFRI).

The goals of these government agencies are spelled out by their mandates. Although they have different priorities, they were grouped together because they represent provincial interests and have a similar understanding of the issues surrounding wetland conservation (Table 5). MWS, CONS and EC are responsible for environmental protection. MAFRI and AESB priorities are related to sustainable agricultural production. All government agencies develop education and incentive programs and recognize the importance of engaging landowners in wetland management.

Table 5: Government Agencies Involved in Wetland Conservation

Agency	Goals/Objectives/ Responsibilities	Strategy
Manitoba Water Stewardship	- protect the social, economic and environmental value of water - manage water and fish resources sustainably	-watershed based planning -policy/legislation development -economic incentives that value ecological services
Manitoba Conservation	-wildlife branch- protection of wildlife and wildlife habitat	-develop programs, policies, and legislation for biodiversity conservation and habitat management
Agri-Environmental Services Branch of Agriculture Canada	-develop a viable agricultural industry and sustainable rural economy	-rural water supply and water quality improvement projects -promotion of best land management practices to ensure water quality
Manitoba Agriculture Food and Rural Initiatives	-accelerate the prosperity and capacity of agricultural producers	-ensure that high quality lands remain in agricultural production and are used sustainably for agriculture in an environmentally safe manner -extension services
Environment Canada	-mandate includes water in transboundary regions, flowing water	-conduct research necessary for the scientific basis for regulation

4.2.2 Non-Governmental Organizations (NGOs)

The goals of NGOs are based on the stated ideology of the organization. The primary concern of all NGOs interviewed was environmental protection and conservation (Table 6).

Table 6: Non-Governmental Organizations Involved in Wetland Conservation

Agency	Goals/ Objectives	Strategy
Ducks Unlimited Canada (DUC)	-conserve, restore and manage wetlands and associated habitats for the benefit of waterfowl, wildlife and people	-restore and secure key threatened areas -fund wetland research -influence public policy -public education. -extension programs for landowners
Nature Conservancy of Canada (NCC)	-direct protection of biodiversity and habitat protection for both flora and fauna	-land securement and easements
University of Manitoba Delta Marsh Field Station (U of M)	-wetlands research facility for the faculty of science -teaching, research and community service	-provide research and teaching facilities to the University of Manitoba; school-age programs and community outreach and education
Manitoba Habitat Heritage Corporation (MHHC)	-conserve, restore and enhance fish and wildlife habitat	-promote conservation practices that will benefit wildlife habitat and help sustain farm income and the productive use of land -conservation easements
International Institute for Sustainable Development (IISD)	-promote sustainable development through innovation, partnerships, research and communication	-research on sustainable use of wetlands, public awareness, influencing policy
Manitoba Wildlife Federation (MWF)	-conserve natural resources, particularly those affecting fish and game species	-public education programs -land securement
Lake Winnipeg Stewardship Board (LWSB)	-assist the provincial government in reducing phosphorus and nitrogen in Lake Winnipeg	-develop a watershed management plan for Lake Winnipeg -public education
Delta Waterfowl (Delta)	-increase waterfowl populations, secure the future of waterfowl and waterfowl hunting	-research, public education, influencing policy, preserving and promoting hunting
Riparian Health Council (RHC)	-enhance riparian areas and surface water quality	-riparian stewardship extension programs -public education -promote networking and partnerships between other conservation agencies

Ducks Unlimited Canada, Manitoba Habitat Heritage Corporation, Manitoba Wildlife Federation and Delta Waterfowl are focused on habitat protection for wildlife, with a particular focus on waterfowl. These agencies develop education programs and also secure land through conservation agreements. Ducks Unlimited Canada and Delta Waterfowl are also involved in wetlands research.

The Riparian Health Council and Lake Winnipeg Stewardship Board are primarily concerned with the improvement of water quality. The University of Manitoba Delta Marsh Field Station and International Institute for Sustainable Development are concerned with the management of wetlands for both water quality and habitat. Delta Marsh is more focused on the environmental aspects and research while IISD focuses more on sustainable development.

All NGOs in this study considered public education a high priority. Research, policy development, land securement through conservation agreements (CAs), promotion of hunting programs, and the promotion of sustainable agriculture through the use of best management practices (BMPs) were also priority areas. Table 7 summarizes the priority areas of the NGOs involved in wetland conservation

Table 7: Priorities of Non-governmental Organizations

Agency	Habitat protection	Water Quality	Research	Public Education	Policy	Hunting	Sustainable Agriculture BMPs	CAs
DUC	High	High	High	High	High	High	High	High
NCC	High	Low	High	High	Med	Low	Low	High
Uof M	Low	High	High	High	Low	Low	Low	N/A
MHHC	High	Low	Low	High	Med	Low	High	High
IISD	Low	High	High	High	High	Low	High	N/A
MWF	High	Low	Low	High	Low	High	Low	High
LWSB	Low	High	High	High	High	N/A	Low	N/A
Delta	High	Low	Low	High	High	High	Low	N/A
RHC	Low	High	Low	High	Med	Low	High	N/A

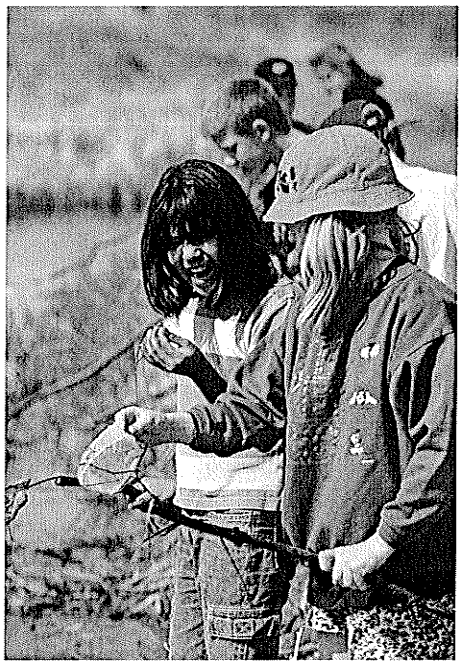


Plate 5: Non-governmental organizations consider educational programming to be a high priority. Photo courtesy of Ducks Unlimited Canada.

4.2.3 Producer Organizations

Producer organizations are voluntary organizations that represent the interests of agricultural producers. The producer organizations interviewed include Keystone Agricultural Producers (KAP), Manitoba Forage Council (MFC), Farm Stewardship Association of Manitoba (FSAM), Manitoba Cattle Producers Association (MCPA), and the Manitoba Conservation Districts Association (MCDA). The goals of producer organizations were related to sustainable agriculture, with the main concern being the maintenance of agricultural production and maintaining the economic and environmental stability of agriculture. Producer organizations recognized that responsible management of natural resources is necessary for the long term viability of the agricultural industry, however economic considerations were also of primary concern (Table 8).

Table 8: Producer Organizations Involved in Wetland Conservation

Agency	Goals/ Objectives	Strategy
Keystone Agricultural Producers	-promote the social, economic and physical well being of Manitoba agricultural producers	-influence policy -Alternative Land Use Services (ALUS) pilot project -public education -extensions programs
Manitoba Forage Council	-develop and promote a sustainable hay, forage and livestock industry -encourage producer profitability while protecting land, water and biodiversity	-extension programs -supporting research activities -public education -product development
The Farm Stewardship Association of Manitoba	-advance Canada's role as a world leader in environmentally responsible agriculture	-administer and promote Environmental Farm Plans program -extensions programs
Manitoba Cattle Producers Association	-represent all cattle producers within industry to government, consumers and others to improve prosperity and ensure a sustainable future	-communication -advocacy -research -education
Manitoba Conservation Districts Association	promote and communicate long term environmental stewardship and sustainable development practices	-watershed management plans -general education -extension programs

All producer groups have placed a high priority on education - both public education, and extension programs promoting environmentally sustainable agricultural practices. KAP and MCPA actively lobby the government in an effort to influence policy development. Both organizations are also actively involved in influencing the development of an ecological goods and services (EGS) program. KAP, MFC and MCDA provide some level of support to research activities (Table 9).

Table 9: Priorities of Producer Organizations

Agency	Policy	EGS	Public Education	Research	Extension Programs
KAP	High	High	High	Low	High
MFC	Low	Low	High	High	High
FSAM	N/A	Low	High	Low	High
MCPA	High	High	High	High	High
MCDA	Low	Moderate	High	Moderate	High

Identifying stakeholders who would be impacted by a provincial wetlands policy and understanding their priorities and agendas was an important step in this research. In order to create change it is necessary to understand the factors that influence the actions of stakeholders and then identify how policy can influence those activities to make a positive change on the landscape. It is also necessary to identify stakeholders and involve them in the policy development process so they feel a sense of ownership and are more accepting of the policy.

4.3 KEY COMPONENTS OF A WETLAND POLICY

The key components of a wetland policy were identified in the literature review and reviewing wetland policies from other jurisdictions. Wetland policies generally have two primary sections - a background section and a policy statement section.

4.3.1 Background Section

The background section provides the context for the wetland policy. Wetland policies in the jurisdictions studied included some or all of the following: a statement of wetland functions and values, the consequences of wetland loss, history of wetlands, current status of wetlands, status of various types of wetlands, current state of wetland management, current state of legislative and regulatory management, legislative authority for the development of a wetland policy, and relevant definitions.

4.3.2 Policy Statements Section

The policy statement section states the purpose of the policy and is a clear statement of what the government will do with regards to wetlands. It includes a discussion of the scope and application of the policy, the primary goal, guiding principles, sub-objectives, and implementation plan for the policy

4.3.3 Status of Wetland Policies in Other Jurisdictions

Wetland policies from other jurisdictions were evaluated to assess which components were included in their background and policy statements sections and which were the most applicable to the Manitoba context. Five policies were analyzed: three Canadian provincial policies and two Australian state policies. The provincial wetland policies of Prince Edward Island, New Brunswick and Alberta were selected because it was found in the literature review that these provincial wetland policies are considered to be effective policies. Australia was selected because it has a similar political structure as Canada, with the national government having developed a national wetland policy but individual states also developing state policies.

Alberta currently has a cabinet approved interim *Wetland Policy* for the settled area of the province and a draft *Wetland Policy* for the boreal portion of the province

A new draft wetland policy was submitted to the Government of Alberta in September 2008. This draft policy has been assessed for this research. Although it has not yet been approved, it provides valuable insight into policy development in the Canadian Prairies. The objective of the draft Alberta policy is to conserve, mitigate, enhance and restore wetlands, and applies to all wetlands in the province.

Prince Edward Island's *Wetland Conservation Policy* provides extensive protection to wetlands. It applies to all wetlands and advocates a zero net loss of wetlands and wetland functions.

The New Brunswick *Wetlands Conservation Policy* 2002 commits the province to no loss of provincially significant wetland habitat and no net loss of wetland functions for all other wetlands in the province. This policy is complemented by the *Coastal Areas Protection Policy* that recognizes marshes as coastal features and restricts development within 30 metres of a coastal marsh.

The *Strategy for the Conservation and Management of Wetlands in Western Australia* 1999 provides a framework to guide state agencies responsible for wetland management and sets out initiatives to encourage and assist landholders to sustainably manage wetlands under their control. The *Environmental Protection (Water) Policy*, 1997 regulates environmental impacts on waters, including wetlands.

The New South Wales Wetlands Management Policy, 1996 sets out objectives and management principles for the management of wetlands. It is overseen by the NSW State Wetland Action Group (SWAG), a whole-of-government committee.

The three Canadian provincial wetland policies contained all of the elements suggested in the literature review, and all followed a similar order and outline. The Australian state policies did not have as extensive a background section as the Canadian policies (Table 10).

Table 10: Background Information Provided by Wetland Policies in Other Jurisdictions

	P.E.I	New Brunswick	Alberta	New South Wales	Western Australia
Wetland definition	X	X	X	X	X
Relevant definitions	X		X		
Types of wetlands	X	X	X		X
Statement of wetland function and value	X	X	X	X	X
Consequences of wetland loss	X	X	X		
Historical influences on wetland management	X	X	X		
Current approach of wetland management	X	X	X		
Current state of legislation and regulation	X	X	X	X	
Legislative authority for the development of a wetland policy	X	X	X		
Role of government departments in wetland management	X	X	X		X
Principles of wetland protection	X	X	X		
Causes of wetland loss	X	X	X		X

4.4 INTERVIEW RESULTS

In person interviews with representatives from agencies involved in wetland conservation in Manitoba were conducted between April 10 and May 22, 2007. The interviews were guided by an interview schedule (Appendix 9) on predetermined topics and issues, however respondents were free to digress and talk about what was of interest to them. Given the diversity of agencies involved, the interview schedule was adapted for each agency depending on their particular involvement, therefore each interview was unique.

All interviewees were asked the following questions:

- Who should take the lead in the development of a provincial wetland policy?
- What are the primary goals of the organization?
- How do you achieve these goals?
- Which wetland conservation initiatives have you found the most effective?
- Does your organization have a definition of the term 'wetland' that it uses?
- What are the most important issues and greatest threats facing wetlands?
- Should the mitigation process be adopted in Manitoba?
- Do you feel the voluntary approach and the focus on incentive programs currently adopted by Manitoba is effective?
- Should Manitoba rely more heavily on regulation?

The transcripts of the interviews were condensed and coded using an inductive grounded theory approach to identify trends, contradictions and themes. These were then categorized to identify key themes, ideas and concepts. They were condensed and edited to provide an overall picture of the key themes, ideas and concepts discussed during the interviews. A document consisting of the condensed and coded interview results was provided to all interview participants for feedback to make sure all viewpoints had been included and to ensure the validity of the analysis (Appendix 10).

These interviews confirmed and extended the findings of the literature review and provided expert input into the development of a framework for a wetland policy, particularly with regards to the key components of a wetland policy.

4.4.1 Lead Agency and Stakeholder Involvement in Policy Development

Manitoba Water Stewardship was suggested by participants most frequently as the government department that should take the lead in the development of a wetland policy. It was noted several times that the protection and conservation of wetlands would fall under the department mandate. Manitoba Conservation was suggested several times as a lead or co-lead given that it has an interest particularly in the areas of wildlife and habitat MC also has a longer history working with conservation agencies involved in wetland conservation and a clearer focus on issues surrounding upland areas and the landscape as a whole.

The importance of including stakeholders and producers in the development stages of the policy was clearly stated a number of times. The creation of an advisory committee with representation from a number of organizations currently involved in wetland conservation was suggested by several participants. The difficulty in creating a policy with a stakeholder committee was emphasized. However the benefits in terms of increased buy in, sense of ownership, and more valuable feedback at the public consultation stage was considered to outweigh the difficulties.

> We have to include the landowners because they manage 80-90% of the landscape in southern Manitoba - interview with producer group.

All government agencies interviewed recognized that the development of a wetland policy would fall under the mandate of Manitoba Water Stewardship; however, they considered that all departments and agencies with a vested interest in wetland conservation should be involved through a stakeholder or advisory committee.

Non-governmental organizations were split 50-50 with some thinking that Manitoba Water Stewardship would be the best department to take the lead since the

department was created specifically to deal with water related issues. Others felt that Manitoba Conservation would be better suited as the management of wetlands involves the surrounding upland areas and the department has a longer history of dealing with the issues. The NGOs also felt that some sort of stakeholder/advisory group would be a very good idea.

Producer groups felt very strongly that stakeholders should be heavily involved in the development of the policy. They were also split in half with 50% believing Manitoba Water Stewardship should take the lead and 50% believing Manitoba Conservation should take the lead. The lead agency was not their primary concern. Their main concern was that producers be involved in the process.

4.4.2 Wetland Definition

Most organizations do not have an official 'wetland' definition. Ducks Unlimited and Manitoba Habitat Heritage Corporation use the Stewart and Kantrud Wetland Classification system. Many agencies and organizations that partner with them also adopted this system. Although none of the interview participants could cite a wetland definition used by their agency, they all agreed it was essential to develop or adopt a clear and concise wetland definition.

> Developing or adopting a common wetland definition and classification system is essential. Given the number of players involved in wetland conservation and the variety of wetland types in Manitoba, we need a common language to communicate effectively and to minimize confusion.- interview with NGO.

4.4.3 Scope and Scale of the Policy

Manitoba has a wide variety of types of wetlands, all facing very different threats. Although this study focused only on the wetlands in the southern portion of the province,

a provincial wetland policy would have to be relevant to wetlands throughout the province. Interview participants were asked how they thought a wetland policy should address the variety of wetland types in Manitoba. Should the policy attempt to include the entire province or should its scope be narrowed and multiple policies be developed?

Most participants recognized this was a significant issue but had not really given a lot of thought to it prior to it being brought up in the interview. There were generally two schools of thought: develop more than one policy, or develop one policy that had some sort of functional divisions. Advocates of the single policy approach were concerned that multiple policies could get confusing, thus it would be better to have a single policy with overarching goals and then address the diversity in some way within the policy. The main concern of the proponents of the multiple policy approach was that developing a single policy would be too time consuming and a policy dealing with high risk areas should be developed first and another policy dealing with low risk areas being developed later.

> In order to be effective it would be necessary to have a single province wide policy. We need to state that this is our province and this is what's important to us and as such this is the policy…if we had different policies for different part of the province it would certainly leave a lot of grey areas and it would be much more likely that the policy would be ignored - interview with government agency.

> I think we need to create a series of provincial wetland policies, if there was one policy it would have to be an awful long policy to address all the different types of wetlands in Manitoba. If we try to do it all at once it will take forever. Tackle something that we can do, focus on the regions facing the most immediate threat first, make a policy, get it right and move on to the next one - interview with producer group.

Opinions on this issue could not be differentiated based on policy community, with opinions from NGOs, government, and producer groups all split 50-50 between a single policy and multiple policy approaches.

4.4.4 Primary Threats Facing Wetlands

When asked to identify the greatest threats and concerns facing wetlands, the impacts of agricultural production, particularly draining wetlands to increase the area under production, was seen as the primary cause of wetland loss and degradation in southern Manitoba. The root cause of this is economic. Wetlands provide ecological goods and services to society but there is no mechanism by which farmers can be financially compensated for providing these goods and services. Thus the wetlands are considered to have no value. Rather they are considered a nuisance because wetlands on the landscape decrease efficiency when using large farm machinery and increase operating costs. Degradation of wetlands is also a concern and this is the result of a lack of understanding of the ecological functioning of wetlands. Invasive species, climate change and altered hydrology were also mentioned, as was a decline in the number of waterfowl hunters who are champions for the cause of wetland conservation.

Government agencies and NGOs recognized that market forces played an important role in landowner decisions to drain wetlands to increase production, but also considered lack of understanding of the ecological functions of wetlands to be an important underlying cause for the loss and degradation.

Producer groups considered economic and market forces to be the primary cause of landowner decisions to drain and degrade wetlands and did not mention a lack of education or understanding of the ecological function as a factor in decision making.

Landowner decision making, in their opinion, was driven more by commodity prices and maximizing efficiency and economic influences than lack of information

NGOs also considered the 'clean farming' mentality, in which landowners clear the landscape with the primary goal of maximizing production, to be a major cause of wetland loss.

> Many people are operating from the economic driver and from the short term of their lifetime and there are very few people who really understand the ecology of a wetland and how important it is to our prairie ecosystem - interview with government agency.

> One of the big problems is that people don't know what a wetland is...people don't understand the value of maintaining the whole complex and the way that all the wetlands function together - interview with NGO.

> The ultimate cause of wetland loss is the signals that the system is sending to producers to increase production. This includes the public and private systems and the market place. Producer's net income is still decreasing and the one way to beat that is to grow a bigger crop - interview with producer group.

Plate 6: Aerial view of drained wetlands. Photo courtesy of Ducks Unlimited Canada.

4.4.5 Characteristics of Effective Wetland Conservation Programs

Wetland conservation programs will operate within the bounds of a wetland policy. A well structured policy should support existing programs that are effective and also generate the development of new programs to fill current gaps. Looking at existing programs and characteristics that make them effective or ineffective can contribute valuable insight for the policy writing process.

When asked to define the characteristics of effective programs, a number of themes developed. The importance of education was the top issue by all policy communities. There are two aspects of education programs, general education programs to raise public awareness of the value of wetlands to generate the political will to conserve wetlands, and extension programs that provide technical assistance directly to the landowner that will result in a change in the way the landscape is managed.

NGO and government agencies placed equal emphasis on both public education and extension programs. One of the major concerns is that the general public must realize the value of wetlands and importance of maintaining them in order to generate the political will needed to protect them. At the same time it was recognized that technical assistance and extension programs to landowners are essential so they have the information they need to make the best management decisions.

> We need big time public education. Not just a little ad in the paper with the buffalo in the corner, but something innovative and massive to reach everybody. All sectors of society need to understand the role that they play in creating the problem and the responsibility they have for improving the situation - interview with NGO.

> Education is huge. People need to realize the value of these ecosystems and the importance of maintaining them. We need to educate the general public to create the political will to act. We need to provide the technical assistance and extension programs to landowners so that they have the information they need to make the best management decisions - interview with government agency.

Producer agencies placed much more emphasis on the technical assistance to landowners. One-on-one extension was considered to be the best way of changing production methods, even more so than incentive programs.

> Whether it was developing a grazing plan or a nutrient management plan, whatever issue needs to be dealt with, it's the one on one assistance in developing clear goals, objectives and solutions, specific to that operation that is most effective - interview with producer group.

Producer groups were also interested in programs that provide practical, rational and producer-friendly technical help that makes sense to the landowner.

It was considered necessary to promote all of the ecological functions that wetlands provide in order to appeal to the broadest possible audience.

> Agriculture needs to see that there are a lot of opportunities in an incentive based wetland policy that will help them deal with issues like water quality and nutrient

> management and also make their operations not only more environmentally friendly but financially efficient as well - interview with NGO.

It was considered very important to develop a variety of different types of programs, both financial and non-financial, in order to provide options to landowners and increase buy in. At the same time concerns were raised about potential frustrations when too many disjointed programs compete for landowners' attention. Producer groups considered that when developing incentive programs, understanding different production methods was important, as well as adopting a whole farm approach that takes into account all aspects of the farm operation and not dealing with wetlands in isolation.

> Programs need to provide practical, rational, producer friendly technical help that makes sense to the landowner. Workshops work well in creating interest but they can't replace one on one individualized farm specific assistance - interview with producer group.

> One-on-one extension is the best way of changing production methods, even more so than incentive programs. Whether it is developing a grazing plan or a nutrient management plan, whatever issue needs to be dealt with, it's the one on one assistance in developing clear goals, objectives and solutions, specific to that operation that is most effective - interview with producer group.

> Programs need to provide education and awareness as well as reassurance to the producer that the steps they are taking are appropriate for the land under their management and provide some recognition that they are doing the right thing - interview with producer group.

All producer groups felt very strongly that the rights of landowners needed to be taken into consideration, not only when developing particular programs but also when developing policy in general. While all producer groups considered this a high priority, it was not mentioned by any of the government or non-governmental agencies interviewed, although these agencies did recognize that a program had to be acceptable to landowners in order to be effective.

> Respecting landowner rights is very important. Landowners recognize that they don't have a right to complete control over the land...but they do manage these things on behalf of the public and need recognition of the right to make management decisions - interview with producer group.

> Programs need to be developed by the landowners and on their terms - interview with producer group.

Clearly stated and measurable goals were considered necessary in order to monitor the effectiveness of the program and identify adjustments that may need to be made. Long-term sustainability taking into account social, economic and environmental aspects was considered essential for effective program implementation.

4.4.6 Role of Regulation

Regulations generally fell into two categories: those regarding drainage and those protecting sensitive areas. The concerns with drainage regulations were primarily lack of adequate enforcement. The concerns with regulations protecting sensitive areas were primarily that they would interfere with agricultural production.

Everyone interviewed agreed there was a need for some level of regulation but there were also a lot of concerns over a negative backlash from producers and the ability to enforce regulations adequately. Education and incentive programs were seen as a much better approach. Regulations were generally seen to be necessary to deal with individuals who choose not to comply with voluntary approaches and to protect high priority areas. All interview participants recognized that lack of adequate enforcement of existing regulations, particularly regarding drainage, was a problem. This was stated most emphatically by producer groups who expressed a lot of frustration on behalf of landowners.

> There are regulations regarding drainage, but they just haven't been enforced and a lot of producers and landowners are not happy. There are a lot of unhappy people out there because of the lack of enforcement of the existing legislation when it comes to drainage - interview with producer group.

Concerns were raised about new regulations that would interfere with agricultural production. All interview participants recognized that while regulations were necessary, incentive and education programs were preferable. Again producer groups stated this the most emphatically.

> Regulations have a role to play when there's going to be a distinct negative impact on society or health of people downstream. We need a three pronged approach involving incentives, regulation and increased public awareness of the importance and value of wetlands - interview with government agency.

> Regulations will keep you from hell, but stewardship is what takes you to heaven...regulations will just get you the lowest common denominator and should be looked at as a backstop to an effective incentive program. Regulations are needed to deal with the egregious situations that occur when people ignore guidelines and incentives, take a bull headed approach and cause problems to their neighbors and society by their activities on their land - interview NGO.

> there are concerns with regulation and that it will affect the profitability of the farm operation. A lot of producers don't think that anyone should tell them what to do on their own land...but I'm sorry if you want to live together with other people you've got to be willing to work together on these things...in our society there have to be some controls to ensure that everybody can live together - interview with producer group.

4.4.7 Policy Statements

One of the primary tasks in developing a wetland policy is to devise appropriate goals, objectives and guiding principles. In order to assess the priorities of stakeholders, as well as generate ideas for discussion, interview participants were asked what they thought the primary objective of a provincial policy should include. Responses included no net loss of wetlands; no net loss of ecosystem function and health; sustainable use;

recognition of their value to society; the importance of maintaining the wetland complex; the need for restoration; and the need for landscape level management.

> No net loss of wetland function and ideally it should also create a springboard from which we can try to recreate some of the lost wetland function - interview with NGO.
>
> We've got to make sure that we save the whole complex, not just isolated wetlands - interview with government agency.
>
> The big issue is wetland function. We need to look more closely at the functions that are more directly meaningful to broader bases in society and unfortunately in the agricultural landscape those are the things that will challenge agriculture - interview with NGO.
>
> A wetland policy should recognize the protection of wetland ecosystems as a significant responsibility under the *Water Protection Act*. It must recognize that there will always be conflicts related to protection of natural systems and economic development, and so it would have to be enough of a statement of the importance and value of these ecosystems that development objectives don't take priority over environmental concerns - interview with government agency.
>
> To restore wetland function on a large enough scale to deliver ecological goods and services on a scale large enough to make a significant environmental difference in Manitoba - interview with NGO.
>
> It would be broad based concerned with maintaining the sustainability of wetlands and recognized their importance. Wetlands have to be seen as a valuable part of a sustainable multi-use landscape - interview with producer group.
>
> Sustainable development, to provide a healthy, sustainable and diverse landscape capable of providing social, economic and environmental benefits to current and future generations - interview with producer group.

4.5 RESULTS OF THE WORKSHOP

Nine of the interview participants participated in the half-day workshop, which was held on June 1, 2007 at the University of Manitoba. Representatives from all three interpretive communities were represented: government agencies included Manitoba Water Stewardship, Manitoba Conservation and Prairie Farm Rehabilitation Association; NGOs included Manitoba Habitat Heritage Corporation, Ducks Unlimited Canada, and

the International Institute for Sustainable Development; producer organizations included Keystone Agricultural Producers, Farm Stewardship Association of Manitoba, and Manitoba Conservation Districts Association.

The results of the literature review and the in-depth interviews were presented to provide context and background information. A facilitator directed discussions and ensured the participants remained focused on the issues identified in the agenda (Appendix 11). The discussions of the workshop expanded upon and extended the findings of the interviews and literature review.

4.5.1 Lead Agency and Stakeholder Involvement

Interview discussions lead to the consensus that Manitoba Water Stewardship had the legislative mandate to be the lead agency in the development of a wetland policy. Producers felt very strongly they should be involved in the process through a stakeholder committee. When probed as to the level of involvement in the actual policy development, producer groups did not want to be directly involved in a policy development committee that would be responsible for the actual writing of the policy. They did want to ensure their opinions were taken seriously by the policy makers.

4.5.2 Scope and Scale of the Policy

Since opinion was split during the interviews as to the development of a single policy or multiple policies, this issue was specifically addressed during the workshop. The opinions expressed during the interviews were presented to the group, followed by discussion. A consensus was reached that a single policy should be developed as multiple policies would leave too many grey areas. The issue was raised that producers would prefer a "landscape" policy which dealt with all the issues on the landscape rather

than compartmentalizing the landscape into different segments. This was discussed and it was recognized this was not practical or feasible.

4.5.3 Policy Statements

Appropriate policy statements were also discussed. It was reiterated that a single wetlands policy was needed that clearly stated the distinctive ecological contributions of wetlands and gave a clear and consistent message about the intrinsic value of wetlands to society. It was decided the policy should have a simple objective that gave a clear and consistent message specific to wetlands which could then be linked to landscape policies.

Producer groups felt wetland issues should be considered as part of a broader landscape level policy. They felt wetlands are only one part of the landscape that needed to be managed and a whole farm approach related to the management of the entire landscape was required.

NGO representatives thought a wetland policy needed to be linked to the ecological functions of wetlands and the benefits those ecological functions provide to society.

All interpretive communities agreed that stopping the loss of wetlands was an urgent issue and this sense of urgency should be included in the guiding principles of the policy.

The use of the mitigation process in situations where wetland loss or degradation could not be avoided was identified as a guiding principle, and agreed to by all participants during the workshop. Other potential guiding principles discussed included:

- decisions and programs should be based on sound science and the best available information;

- the policy needs to recognize natural capital and the ecological goods and services provided by wetlands;
- the policy should focus on incentives to stewardship and use regulation only as a backstop for those who do not respond to incentives;
- the policy should recognize the rights of landowners and the role they play in conservation.

4.6 AREAS OF COMMON CONCERN

One of the goals of this study was to identify areas of common concern for all stakeholders. These areas of common ground can provide common goals on which stakeholders can all agree and serve as the foundation for the development of a wetland policy.

4.6.1 Sense of Urgency

There was a tremendous amount of support expressed for the need to develop a provincial wetland policy. Many interview participants said it was long overdue. There was a strong sense of urgency that something needed to be done to curb wetland loss in Manitoba, before the remaining wetlands were lost. There was concern that the policy would not be developed quickly enough and would not be effective enough to stop wetland loss. This sense of urgency was expressed by all three policy communities; NGO, government and producer agencies.

4.6.2 Threats to Wetlands

When asked to identify the greatest threats and concerns facing wetlands, the impacts of modern industrial agricultural production was cited by every interview participant as the primary cause of wetland loss in southern Manitoba. Although other

threats such as invasive species and climate change were identified, the drainage of wetlands to increase the area under agricultural production was seen as the primary cause of wetland loss and degradation in southern Manitoba. This was reiterated during the workshop. While other threats were again discussed, drainage to increase area under cultivation was clearly considered to be the primary threat to wetlands in the study area. While a number of factors were identified as contributing to this, it was apparent from this study, that an effective wetland policy must address this issue.

4.6.3 Strategy for Addressing Wetland Diversity.

Manitoba has many different types of wetlands facing very different threats. A strategy for addressing this diversity was discussed quite extensively during the workshop. The discussion revolved around the pros and cons of developing a single province-wide policy as opposed to developing multiple policies. It was unanimously decided that a single policy should be developed, as it would be too difficult to develop and implement multiple policies. Issues related to wetland diversity would best be dealt with within the bounds of a single policy and then addressed either in the sub-objectives or guiding principles of the wetland policy.

4.6.4 Cohesion Between Agencies

There are a number of agencies involved in wetland management in Manitoba, each with its own vision and mandate. While they have been grouped together into policy communities for the purposes of this study, they each function as distinct agencies pursuing their individual goals. A major concern that was raised repeatedly during the interviews and the workshop was landowners being sent mixed messages about the value of wetlands by government agencies, NGOs and the market place. Producer groups

expressed the greatest frustration with this however, all interview participants recognized this as a major challenge that needed to be addressed.

> We need to develop a common vision of what we want the landscape to look like interview with NGO.

> Need to clarify the roles of various participants. Non-governmental organizations and producers have a strange relationship. Historically we have competed for the control of resources on the landscape, but have also worked together very successfully on projects where we have had shared interests. But it can be quite confrontational in areas where we have different views of the landscape and how it should look and be managed - interview with NGO.

> Need to integrate wetland conservation into sustainable farm systems. Farmers look at their operation as a whole, not in bits and pieces. Programs need to take into account the entire farm operation, not just one small aspect of it - interview with producer group.

> We need integration. We need to look at creating links between the payment for ecological goods and services and environmental farm plans and integrated watershed management schemes. Not that they have to be combined into a single big program, but linked in some way so they are not working in isolation of one another - interview with producer group.

4.6.5 Perverse Incentives and Mixed Messages

Closely related to the previous section, a major concern that was raised repeatedly in both the interviews and workshop is that landowners are constantly sent messages by government agencies, non-governmental organizations and the market that directly or indirectly encourage the draining of wetlands. Wetlands are not recognized as having any value and market signals encourage drainage. While some government agencies are trying to promote wetland conservation, other government agencies are directly and indirectly promoting the drainage of wetlands. At the same time NGOs are promoting various programs that compete for landowner attention and resources.

While all interview participants recognized the importance of removing perverse incentives, producer groups were very adamant about this and the absolute necessity of sending a strong message about what landowners need to be doing.

> Farmers have to have a really clear signal to make the right choices. They are bombarded with different messages not only from the market, but from government and from NGOs, all telling them something different and none of it is integrated. The waters are so muddied, he can't make any sense of it - interview with producer group.

> Different departments within the government send very different messages, one will say that wetlands are important and we need to conserve them, and at the same time another department is showing you how to put in tile drains to get rid of them - interview with producer group.

> Producers are actually rewarded by various grants and government funding for putting marginal land into production. I know some people along the Red River that know full well that their land is going to flood every year. But they plant it anyway, watch it flood, and then file for compensation - interview with NGO.

4.6.6. Education

The importance of education was a top issue and was raised by all interview participants and considered a key issue by all workshop participants. For the purposes of this study, the term 'education' included two areas:

- general education programs designed to raise public awareness of the value of wetlands necessary to generate the political will to conserve wetlands, and
- extension programs that provide technical assistance directly to the landowner that will result in a change on how the landscape is managed.

All agencies involved in this study included an educational component in their goals and implementation strategies.

Government agencies were involved in both extension programs and public education. Depending on the mandate of the department, their focus varied, but all were involved in education.

All non-governmental organizations considered general education to be essential and their organization were directly involved in this in some way. Some NGOs considered education of the public one of their primary goals. Some NGOs were very actively involved in extension programs, usually in partnership with producer organizations and/or government agencies.

Producer groups, while recognizing the need to educate the general public, were much more concerned with increasing extension programs available to landowners. Many producer groups considered providing technical assistance to landowners in the form of school, workshops and tours to be one of their primary goals.

4.7 SUMMARY

This chapter presented the data collected during the literature review, interviews and workshop. The findings summarize the key components of a wetland policy, the key components of wetland policies in other jurisdictions and the components stakeholders felt should be included in a wetland policy. The data demonstrates that while there are some areas where opinions and priorities differ between policy collectives, there is much common ground on which to base a wetland policy for Manitoba.

CHAPTER 5: DISCUSSION

5.1 INTRODUCTION

The data analysis in the preceding chapter identified the major players involved in wetland management in Manitoba, determined the key components of a wetland policy, and identified common ground on which all stakeholders involved in the study could agree. In this chapter these issues will be discussed further with input from the literature review as well as additional data from the interviews and focus group. This discussion will be the basis for the development of a framework from which a draft wetland policy for Manitoba can be developed.

5.2 MAJOR PLAYERS IN MANITOBA

The first objective of this study was to identify the major players involved in wetland conservation in Manitoba, including their goals and the strategies and methods used to achieve these goals. This was important as it identified many of the stakeholders who would be affected by a wetland policy and created an understanding of the current state of wetland conservation and management in Manitoba and also developed an understanding of the different perspectives of the various stakeholder groups. The Ramsar Convention Secretariat (2004) considered that "a key step in any policy initiative is to define who is either affected by, or potentially involved with, the design, discussion and implementation of the Policy". Colebatch considered it essential that a policy be framed in a way that recognizes the different perspectives of stakeholders.

> There are many participants and they all have varied agendas, so the policy task is to pull them together...policy is not primarily about promulgating formal statements, but about negotiating with a range of significant participants so that when formal statements are made, they ...have a significant impact on what they (the stakeholders) actually do (Colebatch 2002:112).

The major players involved in wetland conservation in Manitoba identified in this study have been divided into three interpretive communities: non-governmental organizations, government agencies and producer groups. Interpretive communities arise around a shared point of view and similar understandings of policy ideas and language (Yanow 2000). Colebatch described interpretive communities as "relatively stable aggregations of people from a range of organizations who find themselves thrown together on a continuing basis to address policy questions" (Colebatch 2002:33). For the purpose of this research the term policy collective was used, although both terms would be considered appropriate.

5.2.1 Non Governmental Organizations

Non governmental organizations are primarily driven by the goal of conservation and preservation of the natural landscapes for their intrinsic values. The maintenance of biodiversity through the preservation and restoration of habitat, particularly for waterfowl, is the primary goal for a number of the major NGOs involved in wetland conservation. NGOs focus on developing partnerships with government and producer groups. They also develop education, extension programs, conservation agreements, and try to influence government policy.

5.2.2 Government Agencies

Government agencies are driven by their mandates. These mandates represent the provincial or national interests. A number of government agencies and departments impact wetland management and in some cases their mandate can be contradictory to the maintenance of wetlands. Although their priorities and goals may differ, these agencies

have been placed in the same policy collective because they have similar understandings of policy ideas and language and they frequently work together on policy questions.

5.2.3 Producer Groups

Producer groups are organizations that represent and promote the interests of agricultural producers. Their primary focus is to protect and promote their industry. Most are involved in some or all of the following areas: local and national lobbying, product development and marketing, research and education. With regards to environmental issues their primary concern is to maintain the resource base on which their industry depends. Many form partnerships with government and NGOs to promote environmentally sound management practices.

5.3 KEY COMPONENTS OF A WETLAND POLICY

The second objective of this study was to identify the key components of a wetland policy. This was done through a review of the literature and an assessment of wetland policies in other jurisdictions. Most wetland policies can be divided into two sections - a background section that provides the history and context for the policy, and the policy statement section that states the government commitment to the management of wetlands.

Sections 5.4 and 5.5 outline the information that should be included in the background and policy statement sections of a policy specifically designed for Manitoba. This will fulfill objective four of the study and provide a framework for the development of a wetland policy for Manitoba. Objective three, assessing the potential applicability of policies in other jurisdictions, is incorporated into and informs the discussion in sections 5.4 and 5.5.

5.4 BACKGROUND INFORMATION

This section provides the background information and context for the policy. It should include the following information:

- a wetland definition,
- a description of the types of wetlands,
- a statement of wetland function and value,
- the consequences of wetland loss,
- the historical influences on wetland management,
- the current approach to wetland management,
- the current state of legislation and regulation,
- the legislative authority for the development of a wetland policy,
- the role of various government departments in wetland management,
- the principles of wetland protection, and
- the causes of wetland loss.

5.4.1 Wetland Definition

All wetland policies from the jurisdictions studied had a clearly stated wetland definition. Some jurisdictions had a separate section for definitions either included in the background information sections or an appendix at the end of the policy.

Most organizations involved in the study do not have an official 'wetland' definition. Ducks Unlimited Canada and Manitoba Habitat Heritage Corporation use the Stewart and Kantrud Classification System, and many of the organizations that partner with them also adopt this system. This classification system was designed for the glaciated northern Great Plains, which includes the Prairie ecozone in southern Manitoba.

While the Stewart and Kantrud Classification System is applicable for the study area of this research, it is not adequate for defining the wetlands found in the other areas of Manitoba.

Although few agencies have adopted an official definition, the development or adoption of a common wetland definition was seen as essential by many of the informants.

> Given the number of players involved in wetland conservation and the variety of wetland types in Manitoba, we need a common language to communicate effectively and minimize confusion - interview with NGO.

> The very first thing we have to do is determine what exactly we are talking about when we're talking about wetlands - interview with government agency.

As legal protection of and scientific attention to wetlands have increased, so have the number of wetland definitions contained in provincial and federal laws. Most of these definitions vary slightly but share common terms and concepts. Both provincial and federal governments, as well as wetland advocates, agree that a single, legally accepted definition of wetlands would be helpful to ensure effective wetlands regulation (Ramsar Convention Secretariat 2004).

The *Water Protection Act* includes wetlands in the definition of a "water body" which is defined as "any body of flowing or standing water, whether naturally or artificially created and whether the flow or presence of water is continuous, intermittent or occurs only during a flood, including but not limited to a lake, river, creek, stream, slough, marsh, swamp and wetland including ice on any of them" (*Water Protection Act* 2004).

The *Provincial Land Use Policies* define wetlands as "lands that are seasonally or permanently covered by shallow water as well as lands where the water table is close to

or at the surface, such as swamps, marshes, bogs and fens" (*The Provincial Land Use Policies* 2008).

The wetland definition adopted by the Ramsar Convention is:

> ...areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide dose not exceed six meters including areas which may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands" (Ramsar Convention Secretariat 2004:3).

It is important to realize that when developing a wetland definition to be used in policy, it has to be a legal definition which must hold up to the scrutiny of the courts and legal system as opposed to a working definition which must be effective on the ground. A wetland policy is likely to be challenged in the courts. Therefore it is essential the definition of a wetland be robust enough to stand up to examination by lawyers and judges who may have a very limited background in wetland ecology. Court cases have been lost simply over the definition of what constitutes a wetland. Concern should focus not only on a scientifically accurate definition of wetlands, but one that will also stand up to litigation. We need to consult lawyers as well as scientists.

5.4.2 Diversity of Wetlands Found in Manitoba

Manitoba has one of the highest densities of wetlands in any province in Canada. This includes fens and peatbogs found in southeastern, central and northern Manitoba, saltwater coastal lowlands along Hudson Bay, freshwater coastal wetlands on the shores of Lakes Manitoba and Winnipeg, and the prairie potholes found in the southern areas of the province. Although this study focused on the potholes found in southern Manitoba that currently face the greatest risk of loss and degradation, a provincial wetland policy

will need to take into account this diversity, the different ecological functions, and threats they are under.

> If we're going to have a wetland policy for Manitoba it must take into account the diversity of wetlands that we have here. There are different wetlands that perform different ecological functions, have different needs, face different threats, some are privately owned, some are on crown land. They are all really quite distinct and unique - interview with NGO.

This section should include not only scientific definitions and ecological functions of the variety of wetlands found in Manitoba but also legal and cultural differences as well.

> There are essentially two divisions in Manitoba, one heavily influenced by anthropogenic activity, particularly drainage, agriculture, cottage development, urban development and the like. The other class is less directly impacted by anthropogenic activities. The focus there should reflect that it is part of our pure natural capital, In the northern areas it's more of a conservation issue, whereas in the southern areas wetlands are a part of a working landscape and that's more of a management issue. Conservation is still important but the benefits of active management are more of an issue in the southern areas - interview with NGO.

5.4.3 Statement of Wetland Function and Value

The wetland policy should clearly state the function and value of the various wetlands found in the province. This would include the hydrological, water quality and biodiversity functions performed by wetlands. The section should also include the value of the ecological goods and services provided by wetlands. This topic is discussed in more detail in sections 2.5 and 2.6.

5.4.4 Consequences of Wetland Loss

The consequences of the loss of wetlands should be clearly stated. This statement should demonstrate the urgency for the need for the development of a wetland policy, reiterate the rate of wetland loss, and be closely tied to the previous section on the functions and values of wetlands.

A recent study completed by Ducks Unlimited Canada quantified the impacts of wetland loss in Manitoba. The impacts of the loss of wetlands in the Broughton Creek watershed during the last 25 years was a 31% increase in phosphorus export, 41% increase in average annual sediment loading, 30% increase in the total watershed outflow and 28% reduction in waterfowl production potential. The study scaled this information to all of southwestern Manitoba which demonstrated that the amount of phosphorus reaching Lake Winnipeg increased by 114 thousand tones per year (Yang *et al.* 2008). This same study demonstrated that wetland drainage in southwestern Manitoba has resulted in the loss of 5.0 million tones of carbon that was stored in sediment and vegetation.

5.4.5 Historical Context

The history of wetland use explains how the current situation came about and provides insight into what needs to be changed. During most of the past century wetlands in the Canadian Prairies were seen as obstacles that needed to be drained, filled, or built around in order to be made useful. The legal history of the Prairie provinces shows that from the earliest days of agricultural settlement in the 1870s until almost the present day, wetlands were regarded as a nuisance. Both the common law and statutes were designed to ensure that wetlands could be easily drained to foster agricultural development. Over the years this process has created a complex web of law that contains a number of incentives to drain wetlands (Percy 1993). These incentives to drain wetlands need to be addressed in a wetland policy. In particular the concept of what is considered productive land needs to be changed, and the value of the ecological goods and services that wetlands provide to society should be reiterated.

> We need to take a broader look at what we consider to be productive land. Right now we only consider land to be productive if it is producing agricultural goods. We don't take into account what the natural wetland contributes to the landscape and the products that are being lost when we drain it - interview with producer group.

5.4.6 Current Approach to Wetland Management

This section should provide a brief explanation of the current approach to wetland management in Manitoba. The wetlands found in southwestern Manitoba are predominantly on privately owned land, therefore individual landowners are responsible for their management. Producer groups felt strongly that a wetland policy should recognize the efforts of landowners in wetland conservation.

> A policy should acknowledge that farmers are the number one conservationists. They manage the land and need to make a profit while doing it. The fact that there are natural areas that haven't been put onto production is because farmers have chosen to leave them in their natural state. There needs to be some recognition that they are doing something worthwhile and valuable - interview with producer group.

This would be an appropriate place to acknowledge the efforts of private landowners in wetland management, as well as the role that NGOs play in wetland conservation. The rights of First Nations, although outside the scope of this research, could also be mentioned in this section.

5.4.7 Current State of Legislation

A number of pieces of legislation have the ability to provide some protection to wetlands. This protection is incidental within a broader mandate. An overview of international, national and provincial legislation and policies impacting wetlands should be included in the background section of the policy. In Manitoba this would need to include the Ramsar Conventions on Wetlands, North American Waterfowl Management Program, *National Wetland Policy*, Provincial *Water Protection Act* 2003, *Water Rights*

Act 1986, *Provincial Land Use Polices* and the Manitoba Water Strategy 2003. The wetland policy should be written within the context of these existing policies. They should relate to and strengthen the wetland policy, and in turn the wetland policy should address shortcomings in existing policy documents.

> The policy should be written within the context of existing policies, particularly those related to land use and agriculture. Efforts should be made to clarify priorities and avoid conflicting messages and to ensure that wherever possible the policies are complimentary and strengthen each other - interview with government agency.

5.4.8 Legislative Authority

The legislative authority for the development of a wetland policy is found in *The Water Protection Act* 2003. Section 2e states, "The purpose of this Act is to provide for the protection and stewardship of Manitoba's water resources and aquatic ecosystems, recognizing (e) the need to protect riparian areas and wetlands; and (f) the benefits of providing financial incentives for activities that protect or enhance water, aquatic ecosystems or drinking water sources" (Water Protection Act 2003:1).

5.4.9 Role of Agencies – Partnerships and Cohesion

A number of provincial government departments directly or indirectly impact wetlands. Manitoba Water Stewardship has the mandate to protect wetlands through the *Water Protection Act* 2003. Manitoba Conservation also has an interest in wetlands, particularly as it manages wildlife and fish habitat. Wetlands in the study area are part of the agricultural landscape, therefore Manitoba Agriculture Food and Rural Initiatives should be involved. Each department has its own mandate and priorities, however it is very important that government departments send the same message with regards to wetland management.

A major concern expressed during the interviews was that different government agencies send very different messages. While some government agencies are trying to promote wetland conservation, other agencies are directly and indirectly promoting the draining of wetlands. Colebatch (2002:9) has identified that "a major source of difficulty is the problem of consistency between different government departments who may have differing goals which conflict with the goals of another government department... much policy work is concerned with the way different agencies handle the same policy issue".

> There needs to be a common message, we need unity from the top, there should be an attempt to simplify and unify the overall message, the policy needs to link everything together to a broader concept - interview with NGO.

The wetland policies of Prince Edward Island and New Brunswick both specifically refer to enhancing cooperation among local, municipal, provincial and federal governments, and private sector stakeholders in this section of their policies.

5.4.10 Principles of Wetland Protection

There are a variety of policy instruments that can be used for the conservation and protection of wetlands including regulatory, economic, and moral and educational instruments. These are rarely used in isolation and range from the implementation of laws and regulation, to economic incentives designed to change behavior and educational programs aimed at both the general public and individual landowners see section 2.8.

Controlling wetland conversion to other uses is essential. However, given the pressures from agriculture, urbanization, industrial development and other land uses, some development is unavoidable, and it is not reasonable to expect that all existing wetlands can be preserved. In situations where development pressures are exerted on wetlands, the mitigation process should be adopted. The mitigation hierarchy is a process

for achieving wetland conservation through the application of a hierarchical progression of alternatives which include avoidance of impacts, minimization of unavoidable impacts, and compensation for residual impacts that cannot be minimized. Rubec and Hanson (2009) consider the mitigation hierarchy an essential component of an effective wetland policy. Prince Edward Island, New Brunswick, and Alberta have included the mitigation hierarchy in their wetland policies.

5.4.11 Causes of Wetland Loss

The causes of wetland loss need to be identified in order to ensure the issues are adequately addressed by the policy. While it is necessary to consider the current threats facing wetlands when developing a wetland policy, it is essential these issues are revisited on a regular basis because the threats will change and there is no way of knowing what the future threats will be. For example, the increased demand for biofuels resulted in an increase in certain commodity prices which encouraged farmers to drain and cultivate marginal lands. "Five years ago no one anticipated that biofuels would be one of the biggest causes of wetland loss in the last 50 years" (Clayton Rubec, pers. comm. September 2008).

Based on the results of this study, the primary threat to wetlands in southern Manitoba is drainage to increase acreage under agricultural production. This point was reiterated repeatedly during the interviews as every interview participant mentioned this as the primary threat to wetlands in the study area.

> Farmers are trying to increase farm size, that plays the biggest role. They are economically driven to create more land base and in many cases the only way to do that is to drain a wetland. For most producers drainage is the only way that they can increase the amount of acreage they have in production - interview with producer group.

The underlying reason for this is that wetlands in their natural state are not considered to have any value but are often seen as a nuisance. Landowners are not able to receive any economic payment for the benefits to society that are a result of maintaining wetlands. Thus they are not seen as having any value that can be captured on the market. In order for the land to be financially productive, the wetlands are drained and cultivated for agriculture. Market forces consistently send this message to producers. This message is also sent by some government departments whose mandate is to maintain agricultural production. Producer groups were all concerned with addressing the economic drivers that encourage wetland drainage.

> If wetlands are to be maintained, there must be an economic incentive that over rides the messages currently being sent by the market - interview with producer group.

> There is pressure to increase the area of land in agricultural production, we need to have a broader idea of what is considered the productive use of land and recognize the value of the ecological services that wetlands provide - producer group at workshop.

The importance of recognizing the value of wetland ecosystems was clearly stated in both the interviews and workshop as the most important aspect of a wetland policy.

An inadequate understanding of the ecological functions of wetlands and the wetland complex was also cited as a major cause of the loss of wetland function.

> A big issue is the engineered management of wetlands. Putting weirs and water control structures on wetlands to control the amount of water in the wetland is often seen as a fairly benign practice, but it severely degrades wetland function - interview with government agency.

> There is also a misconception that you can consolidate wetlands and the creation of one larger wetland will compensate for the loss of the smaller wetlands, while wetland area may be maintained there has been a significant loss of wetland function in terms of waterfowl habitat, groundwater recharge, water filtration and all those kinds of things. Although we are still keeping something on the

landscape, we are not mitigating for the loss of those smaller wetlands - interview with NGO.

Invasive species, climate change and altered hydrology were also mentioned as threats to wetlands, as was a decline in the number of waterfowl hunters who are champions for the cause of wetland conservation.

5.4.12 Sense of Urgency

The need for urgent action in preserving the remaining wetlands should be clearly stated and the importance of developing a wetland policy as part of this action clearly articulated. A wetland policy draws considerable attention to wetland issues, particularly by legislators and the public (Ramsar Convention Secretariat 2004).

There was a tremendous amount of support expressed for the need for the development of a provincial wetland policy, with many interview participants saying it is long overdue. There was a strong sense of urgency that something needed to be done to curb wetland loss in Manitoba before the remaining wetlands were lost. Most participants expressed concern that the policy would not be developed quickly enough and it would not be effective enough to stop wetland loss. This sense of urgency was expressed by all interpretive communities NGOs, government and producer groups - and reiterated repeatedly during the workshop.

5.5 POLICY STATEMENTS

The policy section should clearly state the government position on wetlands and its commitments to their preservation and management. Clear goals and objectives should be articulated and the responsibility of the government identified with an expectation created that the government will act on these commitments. "It will function

as a framework that enables clear conclusions to be drawn about what actions are required...and what end result is expected" (Ramsar Convention Secretariat 2004:12)

The section should start with a general policy statement stating the need for and role of a wetland policy, identifying who is responsible for the policy, what will be done and how it will be achieved. The scope and scale of the policy should be clearly identified. The bulk of the policy statement section will be a discussion of the primary objectives, guiding principles, sub-objectives and implementation strategy.

5.5.1 General Policy Statement

Most of the wetland policies in the jurisdictions studied began with a general statement clearly stating the following:

Who is responsible for the policy:

- it is the policy of the New South Wales government...
- the provincial government of New Brunswick will...
- the provincial government through the Department of Fisheries Aquaculture and Environment will...

What will be done:

- control development in and adjacent to wetlands
- prevent the loss of provincially significant wetland habitat and achieve the goal of no net loss of wetland function for all other wetlands
- halt and where possible reverse loss of wetland vegetation, declining water quality, declining natural productivity, loss of biological diversity

How it will be achieved:

- utilizing existing wetlands management and protection mechanisms and developing new management tools as appropriate,
- promote and develop wetlands education and awareness programs,
- promote stewardship and securement of wetlands through enhanced cooperation, and
- encourage projects and activities which will restore the quality of wetlands.

5.5.2 Role of a Wetland Policy/Need for a Wetland Policy

The need for the wetland policy and the role it will play in the conservation and management of wetlands should also be clearly stated in the policy statements section. A provincial wetland policy needs to provide the comprehensive vision and strategy needed for maintaining the ecological integrity of wetlands throughout the province. It functions as a framework for decision making that enables clear conclusions to be drawn about what actions are required and what end result is expected (Ramsar Convention Secretariat 2004).

> A wetland policy needs to provide a strong voice for wetlands, raising the awareness of their importance on the landscape and recognizing the value of the ecological goods and services they provide to society. A wetland policy must recognize that there will always be conflicts related to protection of natural systems and economic development, and so it would have to be enough of a statement of the importance and value of those ecosystems that the development objectives don't take priority over environmental concerns - interview with government agency.

5.5.3 Scope and Scale of the Policy

Although this study focused on the wetlands in southern Manitoba that currently face the greatest risk of loss and degradation, a provincial wetland policy will also need to address the issues facing all of the wetlands in the province.

> If we are going to have a wetland policy in Manitoba it must take into account the diversity of wetlands that are found here. There are different wetlands that perform different ecological functions, have different needs, face different threats, some are privately owned, some are on Crown land. They are all quite distinct and unique - interview with NGO.

Different jurisdictions handled this issue in different ways. New Brunswick developed policies that addressed the issues surrounding.different types of wetlands. Alberta, prior to the development of its 2009 draft policy had interim policies based on settlement patterns and the identified threats for wetlands.

Policies in other jurisdictions all clearly defined the scope and scale of the policy. The different types of wetlands to be included, the geographic extent of the policy, and the ownership of the wetlands were specifically identified and discussed.

During the interview section of the study, participants were divided into two schools of thought: develop more than one policy, or develop one policy that had some sort of functional divisions. Advocates of the single policy approach were concerned that multiple policies could get confusing; thus it would be better to have a single policy with overarching goals and then address the diversity in some way within the policy. The main concern of the proponents of the multiple policy approach was that developing a single policy would be too time-consuming and the current focus should be on the high risk areas, and we could deal with the low risk areas later.

> Whether its more than one policy or a policy that recognizes that there are different regions where there is a Part A and a Part B to the policy, we certainly have to deal with very different types of wetlands and very different cultures as well. The Aboriginal culture and the development issues in the North with dams and hydro and mining, and the southern culture and the impacts of urbanization and populations and development and agriculture. There are certainly very different policy needs within that larger southern municipal area and the northern area. However, there are certain over riding high level policy issues that should be sacrosanct in both. Particularly those relating to the alteration, drainage, degradation and destruction of wetlands without any kind of justification. There

> needs to be checks on those activities wherever you are in the province. But when we get into the details of the types of use and types of wetlands, there are some very major differences that need to be addressed - interview with NGO.
>
> In order to be effective it would be necessary to have a single province wide policy. We need something that can be implemented across the province. We need to state that this is our province and this is what's important to us and as such this is the policy. If we had different policies for different parts of the province it would certainly leave a lot of grey areas and it would be much more likely that the policy would be ignored - interview with government agency.

During the workshop consensus was reached that a single wetland policy should be developed as multiple policies would be too confusing and there would be too many grey areas and potential gaps. Since wetland management is already considered disjointed, it was determined it would be best to have a single policy and ensure it was capable of addressing the issues surrounding the diversity. The policy should develop a goal that is relevant to all wetlands, and the issues surrounding diversity could be addressed in the guiding principles, sub-objectives and implementation tools.

> Wetland management already seems disjointed. We need a single policy, then we can break it down and deal with the diversity at the sub objective and tools level. We need a goal that is relevant to all wetlands in the province regardless of location, tenure, etc. something to the effect of recognizing the value of wetlands and the need to preserve them, variation can be dealt with at the tools level, if we get the objectives and guiding principles right we'll be able to develop tools to address the variation - interview with NGO.

5.5.4 Policy Goal

One of the primary tasks in developing a wetland policy is to devise appropriate goals and objectives. The *Ramsar Handbook on National Wetland Policies* (Ramsar Convention Secretariat 2007) recommends that a wetland policy should include one, or at most a few, simple goal statement(s). This statement should clearly articulate the high

level goal for wetlands in Manitoba. This should be a goal that all stakeholders can identify with and understand

> (The policy should) frame the action in a way which recognizes the different perspectives. This is often done by trying to draft a set of goals to which all the participants may give assent... their meaning lies in the fact that they do exist, and that participants from all the diverse policy perspectives can draw on them (in different ways) for support...in this way goals provide a framework for the negotiation of order in the policy process...policy is a way of making sense of the action, drawing disparate forms of activity into a common framework (Colebatch 2002:63).

The policy goal is a high level statement. Some of the wetland policies from other jurisdictions referred to it as the primary objective. The primary objective or policy goal was then divided into more actionable sub-objectives. Interview participants were asked what they thought the primary objective of a provincial policy should include. Responses included no net loss of wetlands, maintain ecosystem function and health, sustainable use, recognition of their value to society, the importance of maintaining the wetland complex, the need for restoration and the need for landscape level management.

> No net loss of wetland function, and moving towards a net gain. But before we can gain we have to get to the point where we're not losing...No loss of wetland function and ideally it should also create a springboard from which we can try to recreate some of the lost wetland function - comment at workshop from NGO.

> A wetland policy needs to put more focus on the value of wetlands and the need to preserve them - interview with producer group.

> In the agricultural landscape the main issue is net gain or loss of wetlands function. We think we can drain a bunch of small wetlands and then create one large wetland in a more convenient location to mitigate for the loss of the smaller ones but the result is a substantial net loss of wetland function. We have to go beyond just acreage measurements and focus on net gain or loss of wetland function - interview with government agency.

The primary objective of the wetland policies in the jurisdictions studied frequently referred to what was to be done, how it was to be done, and why it was to be done. Examples of what was to be done included; the conservation, protection, maintenance, management, ecologically sustainable use of, and restoration of wetlands. Examples of how this was to be done included increasing awareness and education, government initiatives, management of human activity, and development of wetland stewardship. Examples of why this was to be done included to sustain the ecological and socio-economic functions of wetlands; achieve no net loss of wetland function; and maintain wetland area such that the ecological, social and economic benefits that wetlands provide are maintained (Appendix 7).

5.5.5 Guiding Principles and Sub-objectives

Guiding principles are statements that demonstrate how the government views its responsibilities to implement the policy, consistent with constitutional jurisdictional and cultural practices. The Ramsar Convention Secretariat (2007) recommends developing eight to ten guiding principles.

Sub-objectives should identify how the primary objective is to be reached. They identify specific issues that need to be addressed in order to meet the primary objective. The Ramsar Convention Secretariat (2007) suggests that five to ten sub-objectives be developed.

Guiding principles and sub-objectives are closely linked. What is considered as a guiding principle in one jurisdiction is often identified as a sub-objective in another jurisdiction the difference is often a matter of rhetoric. For this reason, the guiding principles and sub-objectives are being dealt with in the same section. The important

thing is that all of the important issues are addressed. Whether an issue is included as a guiding principles or sub-objective should be determined during the policy writing process.

The important thing to note is that all stakeholders should be able to agree on the primary objective, guiding principles and sub-objectives of the policy. It should be recognized that not all guiding principles and sub-objectives will be of equal importance to all stakeholders.

Guiding principles and sub-objectives found in the wetland policies of the other jurisdictions studied included:

- recognition of the numerous valuable social, economic and environmental functions of wetlands/ recognition of the full range of wetland values,
- recognition of historical and on-going wetland loss and the need for efforts to protect and conserve remaining wetlands,
- the need for protection, conservation and restoration of wetlands,
- development of public support through education and increased awareness of wetland functions and values,
- encouragement of voluntary stewardship through incentives and education,
- the integration of land use and management practices that maintain or rehabilitate wetland habitats,
- managing impacts to wetlands through the use of the wetland mitigation sequence,
- sustainable development,
- securing wetlands through acquisition, co-management and partnerships, and

- foster the development of cooperative relationships among local citizens, stakeholder groups, the private sector, and municipal, provincial and federal governments.

A number of potential guiding principles and sub-objectives were identified by stakeholders during the interviews and workshop phases of this study. These include:

- recognizing the value of wetland ecosystems,
- sense of urgency,
- the development of incentive programs,
- the need for the establishment and targeting of high priority areas,
- the need to identify and recognize the ecological goods and services provided by wetlands,
- the need for increased public awareness and education,
- respect for landowner rights,
- recognition of the need to integrate land and water management – landscape policy,
- sustainable use,
- mitigation of lost wetlands,
- recognition of the importance of the wetland complex,
- recognition of the different types of wetlands found in Manitoba, and
- addressing perverse incentives and mixed messages being sent to landowners

Table 11 summarizes the principles and sub-objectives found in other jurisdictions and the principles and sub-objective identified by stakeholders in Manitoba.

Table 11: Guiding Principles and Sub-Objectives

Principles and Sub-Objectives Found in Other Jurisdictions	**Principles and Sub-Objectives Identified by Stakeholders in Manitoba**
Recognition of the social, economic and environmental functions of wetlands full range of wetland values	Recognize the value of wetland ecosystems
Recognition of historical and on-going wetland loss and the need to protect and conserve the remaining wetlands	Sense of urgency
The need for protection, conservation and restoration of wetlands	
Education of the general public to generate support for the policy	Need for increased awareness and education
Encourage voluntary stewardship through incentives and education	Focus on the development of incentive programs
Integration of land use and management practices that maintain or rehabilitate wetland habitats	Recognition of the need to integrate land and water management
Managing impacts through the use of the wetland mitigation sequence	Mitigation of lost wetlands
Sustainable use of wetlands	Sustainable use of wetlands
Securement of wetlands through acquisition, co-management and partnerships	
Foster the development of cooperative partnerships	
	Targeting of high priority areas
	Identify and compensate for the ecological goods and services provided by wetlands
	Respect for landowner rights
	Recognition of the importance of the wetland complex
	Recognition of the variety of types of wetlands found in Manitoba
	Addressing perverse incentives and mixed messages

5.6 SUMMARY

A number of stakeholders will be impacted by the development of a provincial wetland policy. Consultation with key informants has provided the basis for a framework

from which a wetland policy can be drafted. The key components of a wetland policy and the issues important to stakeholders in southwestern Manitoba have been identified.

A wetland policy should consist of two sections - a background section and a policy statement section. The background section should include a wetland definition; description of the types of wetlands; statement of wetland function and value; consequences of wetland loss; historical influences on wetland management; current approach to wetland management; current state of legislation and regulation; legislative authority; role of government departments in wetland management; principles of wetland protection; and the causes of wetland loss.

The policy statement section should include a general policy statement; an explanation of the need for a wetland policy; the scope and scale of the policy; the policy goal or primary objective on which all stakeholders can agree; and guiding principles and sub-objectives which outline how the primary objective will be reached and how it reflects the issues identified by the stakeholders.

CHAPTER 6: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter presents a brief summary of the research purpose and design, the results of the research, and recommendations for the development of a wetland policy for Manitoba. The last section provides suggestions for future research.

6.2 RESEARCH PURPOSE AND DESIGN

Despite scientific research that quantifies the essential role wetlands play in maintaining healthy watersheds and water quality and quantity, wetlands continue to be drained and degraded. Manitoba does not currently have a wetland policy. A provincial wetland policy is needed that recognizes the value of these ecosystems and provides a framework for decision making that will maintain their ecological integrity.

The purpose of this study was to develop a framework for a provincial wetland policy. Current wetland conservation practices were assessed through interviews with key informants involved in wetland conservation in Manitoba. Provincial and federal policies that impact wetlands in the study area were evaluated to identify strengths, weaknesses and gaps in current wetland conservation efforts. Wetland policies in other jurisdictions were also reviewed for their applicability to the Manitoba context. The objectives of the study were:

1) to identify the major players involved in wetland conservation in Manitoba, including their goals and the strategies and methods used to achieve those goals;
2) to determine the key components of an effective wetland policy;
3) to assess the potential applicability of policies and regulations in other jurisdictions for use in Manitoba; and

4) to develop a framework from which a wetland policy for Manitoba can be drafted.

Manitoba has one of the highest densities of wetlands of any province in Canada. Wetlands in Manitoba vary greatly with regards to type, size, ownership and use of surrounding uplands, and the nature and severity of the threats they face. The majority of wetlands found in Manitoba are in the central and northern areas however, the wetlands found in southwestern Manitoba are the most threatened. This study focused on the prairie potholes found in the Prairie ecozone of southwestern Manitoba. These wetlands face extensive pressure from agricultural development and a high population density. The wetlands in southwestern Manitoba have been extensively degraded and demonstrate what could happen to wetlands in other areas of the province if pressures to convert them to other uses develop in the future. I determined that a policy framework developed based on a case study of the highly threatened wetlands found in the Prairie ecozone would provide the vision and strategy needed to protect the other wetlands in the province. This framework was structured in such a way that it could be expanded to address issues identified in other areas of the province and the concerns of stakeholders not included in this study could be easily integrated.

The research used a qualitative grounded theory approach to interpretive policy analysis. Qualitative data collection methods included: 1) a review and analysis of existing literature, including wetland policies from other jurisdictions, 2) semi-structured interviews with key informants from lead organizations involved in wetland conservation, and 3) a workshop with selected participants from lead organizations. Nineteen interviews were conducted and nine of those interviewed participated in a half day workshop. The data collected during the interviews and workshop was reviewed and

analyzed using content analysis to identify trends contradictions and themes that would be useful in the development of a framework for a wetland policy for Manitoba.

The primary goal of interpretive policy analysis is to identify common themes and identify goals and objectives on which all stakeholders can agree. These were identified through the analysis of the data collected during the interviews and workshop. These common themes were combined with the data collected during the literature review and analysis of wetland policies in other jurisdictions, and a framework from which a wetland policy for Manitoba could be drafted was developed.

6.3 CONCLUSIONS:

During most of the past century wetlands in the Canadian Prairies were seen as obstacles that needed to be drained, filled or built around in order to be made useful. Both the common law and statutes were designed to ensure wetlands could be easily drained to foster agricultural development. Policies related to land use focused on increasing agricultural production to promote economic development. This focus on maximizing agricultural production still persists in the mindset of many landowners. As the functions and values of wetlands are becoming better understood these mindsets are changing. However, a number of economic drivers continue to send the message to landowners to drain wetlands.

The importance of preserving and protecting wetlands has been acknowledged by various levels of government. A national wetland policy is in place, programs to help protect or manage wetlands have been implemented, a number of local, provincial, national and international organizations are working to preserve wetlands, producer groups recognize the importance of maintaining wetlands as part of a productive

agricultural landscape, yet wetlands are still being drained, filled and polluted. The situation in southwestern Manitoba demonstrates what could happen to wetlands in other areas of the province if pressures to convert them to other uses develop in the future. A wetland policy is needed to dispel the myth that wetlands are wastelands. It needs to provide a strong voice for wetlands, raising the awareness of their importance on the landscape and recognizing the value of the ecological goods and services they provide to society.

There are a number of stakeholders who will be impacted by the development of a provincial wetland policy. If a wetland policy is to be effectively implemented, it is essential that stakeholders be consulted in the policy making process. This thesis focused on data provided by key informants, or the 'elite' who are the leaders and decision makers in this area. Interview participants were chosen for their expertise and represented the organizations to which they belong, and their comments were not meant to represent the opinions of the general public.

The research has led to the conclusions presented below.

6.3.1 Role of Stakeholders in Policy Develoment

As already mentioned the involvement of stakeholders in the development of a wetland policy is essential if the policy is to be effectively implemented. The key stakeholders involved in wetland conservation and management in Manitoba were identified through a review of the literature. Interviews were conducted with representatives from each of these agencies and the goals and objectives of each of these agencies as well as the strategies employed to meet these objectives were discussed. The stakeholders were grouped into three interpretive communities based on common

ideas, goals and understanding of wetland conservation and policy. The three interpretive communities identified were government agencies and departments, non-governmental organizations, and producer agencies.

The opinions of these stakeholders were essential in the development of the policy framework. The goal was to identify the issues and concerns of the stakeholders but also to find common ground on which all stakeholders could agree. This common ground was the basis around which the policy framework would be developed.

6.3.2 Key Components of a Wetland Policy

The key components of a wetland policy were identified through the review of literature and analysis of policies from other jurisdictions. These were then discussed during the interviews and workshop to determine which components were most relevant and applicable to the situation in Manitoba.

6.3.3 A Framework for a Wetland Policy for Manitoba

Analysis of the interviews and workshop identified a number of issues that were of concern to all stakeholders and fit well with the key components of a wetland policy that had been previously identified through the literature review and analysis of policies in other jurisdictions. Since finding common ground is the role of interpretive policy analysis, the common themes identified by the interpretive communities were juxtaposed into the key components identified in the earlier stages of the research to develop a framework for a wetland policy for Manitoba. I have concluded the following elements should be included in a wetland policy for Manitoba.

I. Background Information:

- wetland definition,

- description of the types of wetlands,
- statement of wetland function and value,
- consequences of wetland loss,
- historical influences on wetland management,
- current approach to wetland management,
- current state of legislation and regulation,
- legislative authority for the development of a wetland policy,
- role of various government departments in wetland management,
- principles of wetland protection, and
- causes of wetland loss.

II. Policy Statements

- general policy statement,
- role of a wetland policy/need for a wetland policy,
- scope and scale of the policy,
- policy goal/primary objective,
    - no net loss of wetland function
    - recognition of the social, economic and environmental functions of wetlands
- guiding principles and sub-objectives,
    - sense of urgency
    - need for the protection, conservation and restoration of wetlands
    - education
    - voluntary stewardship through incentives and education

- integration of land and water management
- managing impacts through the use of the wetland mitigation sequence
- sustainable use of wetlands
- securing high priority wetlands through acquisition, co-management and partnerships
- fostering the development of cooperative partnerships
- targeting high priority areas
- identify and compensate for the ecological goods and services provided by wetlands
- respect for landowner rights
- recognition of the importance of the wetland complex
- recognition of the variety of types of wetlands found in Manitoba
- addressing perverse incentives and mixed messages

6.4 RECOMMENDATIONS – Developing a Wetland Policy for Manitoba

A wetland policy is needed to provide protection to these ecosystems. It must provide immediate protection to wetlands that are currently threatened but also provide the vision and strategy needed to protect wetlands from currently unforeseen threats that may develop in the future. A wetland policy must recognize there will always be conflicts related to the protection of natural systems and economic development. It will have to strongly state the importance and value of those ecosystems so the development objectives don't take priority over environmental concerns. It must send a clear signal about the importance of wetlands and the need to manage the land in a way that maintains

the ecological integrity of the landscape. The policy should function as a framework for decision making enabling clear conclusions to be drawn about what actions are required and what end result is expected. It should clearly state the government position on wetlands and its commitments to their preservation and management. Clear goals and objectives should be articulated and the responsibility of the government clearly stated and an expectation created that the government will act on these commitments.

Canada developed the *Federal Policy on Wetland Conservation* in 1992, however each province maintains ownership of the natural resources that lie within its borders, therefore it is the responsibility of individual provinces to ensure that their wetlands are protected. In Manitoba, the *Water Protection Act* specifically recognizes the need to protect wetlands and provides the legislative mandate to develop a wetland policy. This policy should be developed within the context of existing legislation that currently provides some limited protection to wetlands. These include the *Ecological Reserves Act, Provincial Parks and Lands Act, Wildlife Act, Endangered Species Act, Environment Act, Habitat Heritage Act, Conservation Agreements Act, Conservation Districts Act* and the *Water Rights Act.*

The *Manitoba Drainage Policies* developed under the *Water Rights Act* currently provide the regulatory framework needed to protect class 4 and 5 wetlands and require a license for the drainage of class 3 wetlands. A wetland policy should provide the impetus to strengthen this legislation and provide more protection to vulnerable wetlands.

The *Water Protection Act* called for the development of a Manitoba Water Council to act as a senior advisory committee to the Minister of Water Stewardship. Manitoba Water Stewardship was identified as the appropriate agency to take the lead in

developing a wetland policy. The Manitoba Water Council would be the appropriate body to take the lead in developing a wetland policy for Manitoba. The Alberta Water Council, a similar committee, developed the recommendations for the Alberta Wetland Policy. The first recommendation is to create a Wetland Policy Sub-Committee on the Manitoba Water Council with the mandate to create a provincial wetland policy.

A major finding of this research is that all stakeholders felt it was essential they be involved in the development of a wetland policy. This was stated strongly during both the interviews and workshop. It was stated most emphatically by producer groups but also by the NGOs and government agencies. The second recommendation of this research is that the Wetland Policy Sub-Committee should develop a stakeholder advisory group to provide input into the development of a wetland policy.

A policy writing team should be developed from members of the Wetland Policy Sub-Committee and include, Manitoba Water Stewardship, Manitoba Conservation, and Manitoba Agriculture Food and Rural Initiatives, with Manitoba Water Stewardship taking the lead. Other interested government departments could also be involved. Non-government stakeholders would be consulted regularly by this policy writing team.

A draft wetland policy should be written and brought to the public for consultation for input and feedback, which would inform the final version of a wetland policy which would be presented to Cabinet.

6.5 SUGGESTIONS FOR FUTURE RESEARCH

The findings of this research suggest several potential areas for future research.

1. This study focused on the wetlands found in the Prairie ecozone of southwestern Manitoba, the area of the province where wetlands are at greatest risk. A policy

framework based on a case study for this area should provide the vision and strategy needed to protect wetlands in other areas. Research is needed that would expand on this study and involve stakeholders not included in this study. These would include First Nations, Manitoba Hydro, cottage owners, the resource extraction industry, among others.

2. For the purpose of this research, representatives from producer groups were consulted to represent the interests of the agricultural sector. The opinions of these individuals, however, cannot be considered to be representative of landowners in general. An assessment of the attitudes and opinions of landowners towards a wetland policy is needed to understand their viewpoint towards a wetland policy. Public consultations are also needed to determine the opinion of the general public towards a wetland policy
3. An assessment of policy instruments, particularly incentive programs that would inform the development of an implementation strategy for the wetland policy is also needed.

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APPENDIX 1: Ethics Certificate

APPROVAL CERTIFICATE

05 March 2007

TO: **Rhonda Pankratz** (Advisor T. Henley)
Principal Investigator

FROM: **Wayne Taylor, Chair**
Joint-Faculty Research Ethics Board (JFREB)

Re: **Protocol #J2007:016**
"An Assessment of Wetland Policy and Practice: Towards a Strategy for the Development of a Wetland Policy for Manitoba"

Please be advised that your above-referenced protocol has received human ethics approval by the **Joint-Faculty Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement. This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note:

- **if you have funds pending human ethics approval, the auditor requires that you submit a copy of this Approval Certificate to Kathryn Bartmanovich, Research Grants & Contract Services (fax 261-0325), including the Sponsor name, before your account can be opened.**

- **if you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.**

The Research Ethics Board requests a final report for your study (available at: http://umanitoba.ca/research/ors/ethics/ors_ethics_human_REB_forms_guidelines.html) **in order to be in compliance with Tri-Council Guidelines.**

APPENDIX 2: Interview Schedule
The objectives of this study are:

1) To identify the major players involved in wetland conservation in Manitoba, including their goals and the strategies and methods used to achieve those goals.

2) To determine the key components of an effective wetland policy

3) To assess the potential applicability of policies and regulations in other jurisdictions for use in Manitoba; and

4) To develop a strategy that will underpin the development of a wetland policy for Manitoba

INTERVIEW SCHEDULE

GENERAL QUESTIONS

Objective 1: To identify the major players involved in wetland conservation in Manitoba, including their goals and the strategies and methods used to achieve those goals.

1. Which organizations are the major players involved in wetland conservation or represent stakeholders who have an interest in wetlands in Manitoba? How would you categorize them?

2. Who should take the lead in developing a wetland policy for the province?

3. What are the main goals of your organization?

4. What are the strategies you use to reach those goals? Are these prioritized?

5. Which current wetland conservation initiatives that you are involved in or are aware of are effective/ promising? Which are ineffective? Do any have a negative impact

6. Does your organization have a working definition of the term 'wetland'. How do you determine what a 'wetland' is?

7. Based on your conservation/management goals, what are the most important issues, greatest threats, facing wetlands?

Objective 2: To determine the key components of an effective wetland policy.

1. What would you like to see included in a provincial wetland policy?
Primary goal – very broad i.e. sustainable development, conservation/preservation, no net loss, etc.

Guiding Principles - broad statements on how the government views its responsibilities: wise use, mitigation process, aboriginal rights, landowner rights

Objectives – key words (5-10) more specific goals, often associated with implementation strategies, who is in charge of ensuring those objectives are met, and how they will accomplish it.

Objective 3: To assess the potential applicability of policies and regulations in other jurisdictions for use in Manitoba.

1. Many conservation policies address all or some of the following areas:
conservation and preservation – dealing mainly with the impacts of developments and land retirement;
restoration – focusing on restoring ecological function in degraded wetlands and rebuilding/ replacing lost wetlands ; and
management – focus on maintaining ecological function in the working landscape, through the use of best management practices.

Should these all be included in a wetland policy?
Should they all be weighted evenly, or should they be prioritized?

2. Prince Edward Island uses the process of wetland mitigation when dealing with development affecting wetlands. Should Manitoba adopt this process?
Mitigation is a process for achieving wetland conservation by following a three step decision making process when dealing with developments that affect wetlands.
1st step Avoidance – main goal, avoid impacting wetlands altogether – implemented in the planning stage of the development process
2nd step – Minimization of the adverse effects
3rd step - Compensation for impacts that cannot be avoided.

3. Currently Manitoba relies on a voluntary approach to wetland conservation, focusing efforts on incentive programs such as easements, tax incentives, grants, etc. Have you found any of these more or less effective?
Do you feel the voluntary approach currently in use is effective?
How could it be made more effective?

4. Some other jurisdictions, particularly the US, rely heavily on regulation to protect wetlands. Is this an approach that should be adopted in Manitoba?

5. Is there anything else you would like to add?

APPENDIX 3: Provincial Legislation Impacting Wetland Conservation

Statute	Focus	Strengths	Limitations
Ecological Reserves Act	Preserve examples of unique or representative natural and modified ecosystems	Sites set aside for ecosystem and biodiversity preservation, research, education and nature study; they are not intended to be recreational, resource harvest, or multiple-use areas	May only be established on Crown Land
Provincial Parks and Lands Act	Conserve ecosystems and maintain biodiversity. Preserve unique and representative natural, cultural and heritage resources. Provide outdoor recreational and educational opportunities	Wetlands within park boundaries are protected	Cannot be used to on privately owned lands
Wildlife Act	Matters associated with wildlife management, research and protection of property and persons. Prohibits killing, capturing, taking, possessing, importing, exporting, buying or selling of wild animals	Can be used to protect wetlands as habitat for wildlife	Does not recognize the full range of wetland values
Endangered Species Act	Prohibits human activities that would kill, disturb or interfere with any endangered species	Prohibits human activities that damage, destroy or remove habitats and natural resources that protected species depend on for life and propogation	
Water Rights Act	Established the priorities of allocating water resources. Issues water rights licenses	License required for the construction of water control works on privately owned land. Drainage	Has not been adequately enforced, much unlicensed drainage has taken place

		licenses not issued for Class 4 & 5 wetlands	
Environment Act	Environmental assessments Pollution prevention	Potential to protect specific wetlands through the granting and withholding of permits, licenses and approvals	
Habitat Heritage Act	Creation of the Manitoba Habitat Heritage Corporation	Protection of wetlands on privately owned agricultural land through direct purchase or conservation easements	Protects only small isolated parcels of wetlands
Conservation Agreements Act	Provides for the purchase or donation of conservation easements of habitats including wetlands	May provide a mechanism for long-term wetland securement on a large scale	Protects only small isolated parcels of wetlands
Conservation Districts Act	Provides for the conservation, control and prudent use of resources through the establishment of conservation districts	Many conservation districts include the protection of wetlands in their management plans	Development of wetland programs voluntary, no consistency across CDs
Water Protection Act	Provide for the protection and stewardship of Manitoba's water resources and aquatic ecosystems	Focus on watershed planning, specific reference to the need to protect riparian areas and wetlands.	Focus on maintenance of water quality, does not recognize all of the ecological goods and services provided by wetlands

APPENDIX 4: Federal Policies Impacting Wetland Conservation

Statute	Focus	Strengths	Limitations
Migratory Birds Convention Act	Migratory birds and their nests	Authorizes designation of Migratory Bird Sanctuaries for nationally significant habitat	Does not protect habitat, except that it prohibits the deposit of harmful substances in waters frequented by migratory birds
Canada Wildlife Act	Wildlife research, conservation, and interpretation	Authorizes designation of National Wildlife Areas (NWA) to protect nationally significant habitats ,40% are wetlands Prohibits activities harmful to wildlife and the environment. Established the North American Wetland Conservation Council (Canada)	Clear federal jurisdiction limited to migratory birds. Potential for industrial development in protected areas still exists
National Parks Act	Acquisition and management of land to leave unimpaired for future generations	Authorizes designation of National Parks that offer relatively strong legal protection, through maintenance of ecological integrity and unimpaired clauses	Long onerous process to establish National Parks in legislation
Fisheries Act	Applies to all Canadian fisher waters. Pollution prevention and conservation and protection of fish habitat	Prohibits the harmful alteration, disruption or destruction of fish habitat, including wetlands. Requires plans of projects with potential to interfere with fish habitat. Prohibits deposit of deleterious substances in water frequented by fish	Federal jurisdiction limited to those aquatic habitats contributing to a fishery. Focus on fisheries resources not ecosystem conservation. Exercise of federal power sometimes controversial, especially on the Prairies
Canadian Environmental Assessment	Applies to projects anywhere in	Casts a broad net over many of the potential ways that the federal	Lack of clear criteria or guidelines for determining the acceptability of projects

Act	the world where the federal government holds decision making authority	government can affect wetlands. Primary means of implementing the Federal Policy on Wetland Conservation	and appropriate mitigation measures
Income Tax Act	Ecological Gifts Program applies to ecologically sensitive sites, including wetlands	Fosters use of voluntary land donations and conservation easements in return for tax deductions	Depends on the enactment of supporting provincial easements or covenants legislation
Species at Risk Act	To prevent wildlife species from becoming extirpated or extinct, to provide for the recovery of wildlife species that are extirpated or threatened	Protects wetlands that provide habitat for endangered species	The Act does not define 'protection, i.e. 'legally protected', 'effectively protected' and what constitutes 'destruction of any part of' critical habitat Limited to the protection of critical habitat for 'species at risk' on federal lands

Adapted from: Lynch-Stewart, 1999

APPENDIX 5: Policy Statements in other Jurisdictions

Jurisdiction	Policy Statements
Prince Edward Island	The provincial government through the Department of Fisheries, Aquaculture and Environment will: -utilize existing wetlands management and protections mechanisms to control development in and adjacent to wetlands, and develop new management tools as appropriate, to ensure no net loss of wetlands and wetland function, -promote and develop wetlands education and awareness programs, -promote stewardship and securement of wetlands through enhanced cooperation among local, municipal, provincial and federal governments and the private sector.
New Brunswick	The Government of New Brunswick will: -prevent the loss of Provincially Significant Wetland habitat and achieve the goal of no net loss of wetland function for all other wetlands (Note: All coastal marshes are considered Provincially Significant under this policy and will receive the highest degree of protection), -promote and develop wetland education and awareness programs and supporting materials, -promote stewardship and securement of wetlands through enhanced cooperation among local, municipal, provincial and federal governments and private sector stakeholders
Alberta	
New South Wales	It is the policy of the NSW Government to: -encourage the management of the wetlands of the State so as to halt and where possible reverse: loss of wetland vegetation; declining water quality; declining natural productivity; loss of biological diversity; and declining natural flood mitigation, -encourage projects and activities which will restore the quality of the State's wetlands, such as: rehabilitating wetlands; re-establishing areas of buffer vegetation around wetlands; and ensuring adequate water to restore wetland habitats -Government in its decision making, will give explicit consideration to the biophysical requirements of wetlands with the goal of ensuring their sustainable management.
Western Australia	The Government of Western Australia, recognizing that wetlands, -are essential habitats for a multitude of plant and animal species, many of which have high public appeal; -play a key role in supporting the diversity and abundance of species within surrounding terrestrial ecosystems; -add considerable landscape diversity and aesthetic appeal to a mainly arid land; -provide many opportunities for enjoyment for the people of Western Australia;

	-are, in some cases, of international significance, particularly as habitats for migratory bird species; -have other significant values, including flood mitigation, water resource, soil conservation, biological filtration, fish nurseries, Aboriginal and historical significance, recreation and tourism; -form one of the habitats that will be most affected by possible climate change; -have, in many instances, been unnecessarily lost or diminished in value through inappropriate use or management of the wetlands themselves and their catchments -may be conserved and enhanced through proper planning and management -is committed to identifying, maintaining and managing the State's wetland resource, including the full range of wetland values, for the long term benefit of the people of Western Australia.

APPENDIX 6: Scope and Scale of Wetland Policies in Other Jurisdictions

Jurisdiction	Scope
Prince Edward Island	This policy refers to all wetlands as defined by this policy and in the Prince Edward Island Wetland Inventory, regardless of ownership.
New Brunswick	This policy applies to all Provincially Significant Wetlands and to all other wetlands as defined by this policy, regardless of ownership.
Alberta	The policy is intended to act as a single comprehensive policy for the entire province including both the White and Green areas. The policy covers: all natural wetlands described in the Canadian Wetland Classification System including bogs, fens, swamps, marshes, and shallow open water. Types 1 through 7 of the Stewart and Kantrud Wetland Classification system including ephemeral watebodies; temporary ponds; seasonal ponds and lakes; semi-permanent ponds and lakes; permanent ponds and lakes; alkali ponds and lakes; and fen ponds; and all restored natural wetlands, as well as wetlands constructed and enhanced for the purpose of wetland mitigation
New South Wales	Statewide policy that applies to all naturally occurring wetlands. It does not apply to wetlands that have been constructed to serve other purposes.
Western Australia	Will include the full range of wetland values

APPENDIX 7: Primary Objectives in Other Jurisdictions

Jurisdiction	Primary Objective
Prince Edward Island	To promote the conservation and protection of P.E.I.'s wetlands to sustain their ecological and socio-economic functions, now and in the future
New Brunswick	Maintenance of Wetland Function – to manage human activity on or near wetlands in a manner which will achieve no loss of Provincially Significant Wetland habitat and not net loss of wetland function for all other wetlands Securement, Stewardship, Education and Awareness – to promote and facilitate the development of wetland stewardship, awareness, and education through government initiatives and cooperative relationships with local citizens, private sector stakeholders, and municipal, provincial and federal governments
Alberta	To provide direction and a framework for protecting, conserving and restoring Alberta's wetlands. To maintain wetland area such that the ecological, social and economic benefits that wetlands provide are maintained, thereby helping to ensure Albertans have healthy watersheds that provide safe and secure drinking water supplies, healthy aquatic ecosystems and reliable, quality water supplies for a sustainable economy. In recognition of the high rates of wetland loss in some watersheds, this policy also encourages Albertans to be proactive in increasing wetland area.
New South Wales	The ecologically sustainable use, management and conservation of wetlands in NSW for the benefit of present and future generations.
Western Australia	Committed to identifying, maintaining and managing the State's wetland resource, including the full range of wetland values for the long term benefits of the people of Western Australia

APPENDIX 8: Guiding Principles and in Other Jurisdictions

Jurisdiction	Guiding Principles
Prince Edward Island	-Wetlands serve numerous valuable social , economic and environmental functions -In recognition of historical and on-going wetland loss, concerted efforts are required to conserve and protect remaining wetlands -Because wetlands and their functions are inseparably linked to their surroundings, wetland conservation must be pursued through an integrated systems approach to environmental conservation and sustainable development. -Public support is essential and can be facilitated through education and awareness regarding the functions and values of wetlands
New Brunswick	-Wetlands serve numerous valuable social, economic and ecological functions which should be maintained -In recognition of the historical and on-going wetland loss, the remaining wetlands require conservation, and in some cases, protection; -Some wetlands are of provincial, national and international significance and are deserving of protection; -Securing of wetlands through acquisition, co-management and partnerships is a valuable conservation tool; -Public support can be facilitated through public education and awareness regarding the functions and values of wetlands
Alberta	-Wetlands have value and provide many benefits to Albertans -Wetlands are an integral component of Alberta's watershed and contribute to the achievement of healthy aquatic ecosystems as identified in Alberta's Water for Life strategy -Wetland values need to be considered in the context of ecological, social and economic values, and integrated into other sustainable resource and environmental management strategies and plans -Sound science that supports policy implementation should be sought and encouraged, but the lack of it should not hinder management actions -Wetlands and the natural and working landscapes in which they are found are diverse. This diversity must be recognized for wetland protection conservation and restoration to be implemented successfully -Essential characteristics: keep it simple and implementable; incorporate both regulatory and aspirational aspects into the policy goal; Include recognition of future watershed and regional objectives that will be developed; include workable mitigation processes that are implementable; ensure that knowledge and innovation continue to provide the foundations for the policy; continue to incorporate and recognize ongoing good works by stewardship groups, municipalities, industry and other stakeholders

	in protecting, conserving and restoring wetlands.
New South Wales	The Policy aims to minimize any further loss or degradation of wetlands and where possible, restore degraded wetlands, To achieve this goal the Policy adopts the following nine principles for the sustainable management of wetlands which will guide decision making -Water regimes needed to maintain or restore the physical, chemical and biological processes of wetlands will have formal recognition in water allocation and management plans -Land use and management practices that maintain or rehabilitate wetland habitats and processes will be encouraged; -New developments will require allowance for suitable water distribution to and from wetlands; -Water entering natural wetlands will be of sufficient quality so as not to degrade the wetlands -The construction of purpose-built wetlands on the site of viable natural ones will be discouraged; -Natural wetlands should not be destroyed, but when social or economic imperatives require it, the rehabilitation or construction of a wetland should be required; -Degraded wetlands and their habitats and processes will be actively rehabilitated as far as is practical; -Wetlands of regional or national significance will be conserved; -The adoption of a stewardship ethos and co-operative action between land and water owners and managers, government authorities, non-government agencies and the general community is necessary for effective wetland management
Western Australia	-To prevent the further loss or degradation of valuable wetlands and wetland types, and promote wetland conservation, creation and restoration. -To include viable representatives of all major wetland types and key wildlife habitats and associated flora and fauna within a Statewide network of appropriately located and managed conservation reserves which ensure the continued survival of species, ecosystems and ecological functions -To maintain, in viable wild populations, the species and genetic diversity of wetland-dependent flora and fauna, -To maintain the abundance of water bird populations, particularly migratory species, -To greatly increase community awareness and appreciation of the many values of wetlands, and the importance of sound management of the wetlands and their catchments in the maintenance of those values.

APPENDIX 9: Sub-Objectives in Other Jurisdictions

Jurisdiction	Sub-Objectives
P.E.I.	-To manage human activity on or near wetlands in a manner which will achieve no net loss of wetlands and wetland function. -Where developments are proposed on or adjacent to a wetland the process of wetland mitigation will be observed -To promote and facilitate the development of wetland stewardship awareness and education through government initiatives and cooperative relationships among local citizens, stakeholder groups, the private sector, and municipal, provincial, and federal governments
New Brunswick	
Alberta	-Manage impacts to wetlands through the use of the Wetland -------- -Mitigation Decision Framework -Be proactive by setting wetland objectives and be integrating policy and planning -Encourage voluntary stewardship- develop tools that facilitate stewardship to increase wetland area, as well as tools that facilitate working with landowners on wetland restoration construction and enhancement. These tools may include initiatives such as education and awareness, and voluntary programs and/or incentives that encourage wetland protection, conservation and restoration activities -Build knowledge and capacity through collaborative partnership, coordination, provision of infrastructure and financial and human capacity -Protect wetlands of exceptional value by developing a process, criteria and tools to identify and protect Alberta wetlands that are locally, regionally, provincially, nationally or internationally exceptional
New South Wales	
Western Australia	

APPENDIX 10: Summary of Interviews

In person interviews were conducted with representatives from the following organizations:

Government agencies:

Manitoba Water Stewardship. Manitoba Conservation, Manitoba Agriculture Food and Rural Initiatives, Prairie Farm Rehabilitation Association, Environment Canada, and the Department of Fisheries and Oceans (pending)

Non-governmental organizations:

Ducks Unlimited Canada, Nature Conservancy of Canada, International Institute for Sustainable Development, Manitoba Conservation Districts Association, Manitoba Wildlife Federation, the University of Manitoba Delta Marsh Field Station, the Lake Winnipeg Stewardship Board, Delta Waterfowl, and Riparian Health Council

Producer Organizations:

Manitoba Forage Council, Keystone Agricultural Producers, Farm Stewardship Association of Manitoba and Manitoba Cattle Producers Association

The interviews were recorded and transcribed verbatim. The transcripts were condensed and coded using an inductive grounded theory approach to identify trends, contradictions and themes. The transcripts were categorized to identify key themes, ideas and concepts. These were condensed and edited to provide an overall picture of the key themes, ideas and concepts discussed during the interview process. The interview summary document consisting of the condensed and coded interview results was provided to all interview participants for feedback to ensure that all viewpoints had been included and ensure the validity of the analysis.

LEAD AGENCY AND STAKEHOLDER INVOLVEMENT

Manitoba Water Stewardship was suggested most frequently as the government department that should take the lead in the development of a wetland policy. It was noted several times that the protection and conservation of wetlands would fall under the department mandate. Manitoba Conservation was also suggested several times as a lead or co-lead given that they have an interest, particularly in the areas of wildlife and habitat and have a longer history working with conservation agencies involved in wetland conservation and a clearer focus on issues in the surrounding upland areas and the landscape as a whole.

The importance of including stakeholders and producers in the development stages of the policy was clearly stated a number of times. The creation of an advisory committee with representation from a number of organizations currently involved in wetland conservation was suggested by several participants. The difficulty in creating a policy with a stakeholder committee was emphasized, however the benefits in terms of increased buy

in, sense of ownership, and more valuable feedback at the public consultation stage was considered to outweigh the difficulties.

We have to include agricultural producers because they manage between 83 – 93% of the landscape in southern Manitoba.

WETLAND DEFINITION:

Most organizations do not have an official 'wetland' definition. Ducks Unlimited and Manitoba Habitat Heritage Corporation use the Steward and Kantrud system. Many agencies and organizations that partner with them also then adopt this system.

Developing or adopting a common wetland definition and classification system is essential. Given the number of players involved in wetland conservation and the variety of wetland types in Manitoba, we need a common language to communicate effectively and to minimize confusion.

The first thing we have to do is determine what exactly we are talking about when we're talking about wetlands

ADDRESSING WETLAND DIVERSITY

Manitoba has one of the highest densities of wetlands in any province in Canada. This includes fens, and peatbogs found in southeastern, central and northern Manitoba, saltwater coastal lowland along Hudson Bay, freshwater coastal wetlands on the shores of Lakes Manitoba and Winnipeg, and the prairie potholes found in the southern areas of the province. Although this study focuses on the wetlands in southern Manitoba that currently face the greatest risk of loss and degradation, a provincial wetland policy will also need to address the issues facing all of the wetlands in the province. Participants were asked how they thought a wetland policy should address this.
Most participants recognized that this was a significant issue but had not really given a lot of thought to it prior to it being brought up in the interview. There were generally two schools of thought: develop more than one policy, or develop one policy that had some sort of functional divisions. Advocates of the single policy approach were concerned that multiple policies could get confusing and it would be better to have a single policy with overarching goals and then address the diversity in some way within the policy. The main concern of the proponents of the multiple policy approach was that developing a single policy would be too time consuming and that the current focus should be on the high risk areas, and we could deal with the low risk areas later.

If we're going to have a wetland policy for Manitoba it must take into account the diversity of wetlands that we have here. There are different wetlands that perform different ecological functions, have different needs, face different threats, some are privately owned, some are on crown land. They are all really quite distinct and unique.

The first thing would be to determine what is included in the term wetlands. We tend to have a southern focus on Prairie Canada. But if we're talking about a provincial policy, we need to take into account very different ecosystems. We have to talk about the fens and bogs and the Hudson Bay lowlands and all the issues surrounding those areas. If we're looking at a province wide policy then we have find some way to address the concerns in all these other areas not just what we think of as wetlands in the Prairie environment.

Whether its more than one policy or a policy that recognizes that there are different regions where there is a Part A and a Part B to the policy, we certainly have to deal with very different types of wetlands and very different cultures as well. The aboriginal culture and the development issues in the North with dams and hydro and mining, and the southern culture and the impacts of urbanization and populations and development and agriculture. There are certainly very different policy needs within that larger southern municipal area and the northern area. However, there are certain over riding high level policy issues that should be sacrosanct in both. Particularly those relating to the alteration, drainage, degradation and destruction of wetlands without any kind of justification. There need to be checks on those activities wherever you are in the province. But then when we get into the details of the types of use and types of wetlands there are some very major differences.

In order to be effective it would be necessary to have a single province wide policy. We need to state that this is our province and this is what's important to us and as such this is the policy. Within that policy we could break it down into different ecosystems and habitats and identify the concerns in different areas and understand that in different areas of the province the policy would be applied quite differently. I think if we had different policies for different parts of the province it would certainly leave a lot of grey areas and it would be much more likely that the policy would be ignored. As soon as you start putting lines on a map and say that this is what we're doing in this area and this is what we're doing in that area, a lot of people don't know exactly where they fit in.

You need something that can be implemented across the province. From there you look at your different ecotypes and decide how you're going to address those. Coming from a Prairie bias our number one concern is the loss of wetlands. In other parts of Manitoba there may be significantly different issues like pollution but because those habitats are so removed and we don't see them, very few people are aware of the issues. Generally when we can't see what's happening every day we don't think that there is a problem. Meanwhile in the agricultural landscape, there's activity everyday and everybody can see what's happening, and you can see how things are changing and people tend to focus on those issues.

To have more than one policy, I don't know, we could have different sections of it but if we have different policies there will be grey areas that are missed. If we've got a wetland area that's been drained and now its farmland, where does it fit in? And what if it's restored back to a wetland again? You'll be shifting back and forth between policies.

We have to figure out the best way to tighten it up. If there are separate policies they will have to be linked somehow.

I think we need an overall wetland strategy, establishing how they are valued, and what our political position is with respect to wetland conservation. From there we need to come up with a policy that states that we value our wetlands and identify what we will do to protect, preserve and conserve them, and that will differ from area to area based on land tenure, threat, physiography, etc. but overall because wetlands are important to us our policy is that we will try to protect them for the benefit of all Manitobans in general and future generations

I think we need to create a series of provincial wetland policies, if there was one policy, it would have to be an awful long policy to address all the different types of wetlands that we have in Manitoba. If we try to do it all at once it will take forever. Tackle something that we can do, focus on the regions facing the most immediate threat first, make a policy, get it right and move on to the next one, if we try to make it all inclusive, it won't happen for fifty years.

We should create different polices, deal with the agricultural area first, the boreal and the peat areas are of lesser urgency. I wouldn't try to deal with them all in one. Deal with the most urgent situation first.

I would say well crafted policy might be able to address the southern coastal wetlands and the prairie potholes. The relative significance of nutrient management and flood regulation and biodiversity may shift depending on the type of wetland but the same kinds of ecological goods and services are provided by both but just to different degrees. But the Northern wetlands, the marine coastal wetlands and the peat bogs are a different kettle of fish. There are essentially two divisions in Manitoba, one heavily influenced by anthropogenic activity, particularly drainage, agriculture, cottage development, urban development and the like. The other class is less directly impacted by anthropogenic activities. The focus there should reflect that it is part of our pure natural capital. In the northern areas its more of a conservation issue, whereas in the southern areas wetlands are a part of a working landscape and that's more a of a management issue. Conservation is still important but the benefits of active management are more of an issue in the southern areas.

There is a very strong distinction between wetlands that are on private lands and areas that are on public lands. The crown land marshes and wetlands are really not at risk the way the ones on privately owned lands are.

The more you encompass in a policy the more knowledge you have to have. You need to deal with a much larger body of knowledge if you were to develop a single policy and that amount of information can be very difficult to work with. If you compartmentalize it in some way you can deal with particular issues more effectively.

I think there are functional divisions. It strikes me that it makes sense to have separate policies for institutions like highways than institutions like agriculture or forestry companies. Whether you have one policy or more than one I think it needs to recognize there are significant institutional differences.

We have to look at where the impacts are coming from, are they anthropogenic? Is human activity going to impact whichever wetland we're referring to in the near future? If not then it wouldn't be a high priority area.

THREATS TO WETLANDS

When asked to identify the greatest threats and concerns facing wetlands, the impacts of agricultural production, particularly draining wetlands to increase the area under production was seen as the primary cause of wetland loss and degradation in southern Manitoba. The root cause of this is that wetlands are not considered to have any value but rather are often seen as a nuisance. Degradation is also a concern and this is the result of a lack of understanding of the ecological functioning of wetlands. Invasive species, climate change and altered hydrology were also mentioned, as was a decline in the number of waterfowl hunters who are champions for the cause of wetland conservation.

Drainage by humans, whether it be by the province, by the municipalities, or by individual landowners, drainage is the big one.

You can fly over southern Manitoba and see the drainage system that's been put in place over the years and its just massive, billions of dollars have been put into getting the water off of the land.

The ultimate cause of wetland loss is the signals that the system is sending to producers is to increase production, This includes the public and private systems and the market place. Producers' net income is still decreasing and the one way to beat that is to grow a bigger crop.

A big issue is that producers are trying to find ways to stay profitable. A lot of them are just barely getting by and they need to farm every piece of land that they have. Although this varies depending on the type of production, in areas where you have more permanent cover it's a little easier to maintain the wetlands.

Drainage of wetlands, which is driven by agricultural economics, intensification of agriculture, and economies of scale. Apparently without government subsidies, farm income would be negative and so farmers have to try and wring as much as they can out of each acre.

Annual crop producers keep getting bigger and their equipment keeps getting bigger. It becomes more difficult to maneuver around wetlands and easier to drain them. It costs farmers time and money to maintain wetlands.

In the agricultural area, agriculture and associated drainage is the main threat. The farmers are working around the wetlands, they're paying tax on those lands, and it costs them time and fuel to drive around them so of course they would want to get rid of them.

Farmers are trying to increase farm size that plays the biggest role, they are economically driven to create more land base and in many cases the only way to do that is to drain a wetland. For most producers drainage is the only way that they can increase the amount of acreage they have in production.

We have to look at the real and true economic costs of retaining wetlands and I think we could be scared by the results. It's pretty evident that farming is such a low margin enterprise that in most cases only the big enterprises make a profit. We're going to end up with big farms and small farms but very few medium size farms, and the big farmers are driven either by production or profit. The best farm managers are driven by profit, and they are the ones that are most likely to retain wetlands if they can see a value in it. The ones that are driven by maximizing production are going to be harder to change because no matter what you tell them they're going to think that if I drain that slough, I can get a little something off of it, it may not be much but at least its something, and that's what I'm here for, to grow food and as much of it as I can.

The primary one is economics, the second one I would say is cultural, there is still a pioneer ethic amongst agricultural producers the idea that they're feeding the world and we're going to maximize production and tame the land I'm doing the right thing, even if it costs me money to drain that last slough, I'm doing the right thing. Its part of that pioneer spirit to tame the land and feed the world.

It's the clean farming mentality. For a lot of farmers its an embarrassment to have a wetland in the middle of a field, its like having dandelions on your law.

Many people are operating from the economic driver and from the short term of their lifetime and there are very few people who really understand the ecology of a wetland and how important it is to our prairie ecosystem.

The other issue is lack of knowledge of the importance of wetlands in the environment. There are some farmers that value wetlands very highly and I think those are the farmers that understand the role that those wetlands play, for other farmers, its just the bottom line. It also depends on the type of farming that is being done, wetlands do have some value for cattle producers but if you're producing annual crops, they're just a pain.

Production agriculture and the economies of scale have played a part but the real issue is that they haven't been recognized as having any value and there hasn't been an environmental management strategy.

One of the big issues is drainage driven by pressure to maximize perceived income off of every square inch of land. Farmers are actually rewarded in various grants and

government funding for doing this. I know some people along the Red River that know full well that their land is going to flood every year, but they put it into production, watch it flood and then file for compensation

In dry years semi-permanent wetlands can be worked through, but then in a wetter or 'normal' year they think their land is flooded and they get crop insurance, when really they're farming a wetland.

Producers have to realize that if you farmed a piece of land and there are issues with water sitting in it every year, maybe they should consider doing something else with that land. It comes down to land management and finding the best use for different types of land, and having a broader definition of what is useful.

One of the big problems in MB is that people don't know what a wetland is, the temporary seasonal wetlands are in some ways more important than the bigger wetlands that are buried in the water table. They tend to be recharge ponds, they're incredibly important for biodiversity. We need to maintain the complexes, people don't understand the value of maintaining the whole complex and the way that all the wetlands function together.

There is also a misconception that you can consolidate wetlands and the creation of one larger wetland will compensate for the loss of the smaller wetlands, while wetland area may be maintained there has been a significant loss of wetland function in terms of waterfowl habitat, groundwater recharge, water filtration an all those kinds of things. Although we are still keeping something on the landscape, we are not mitigating for the loss of those smaller wetlands.

Consolidation of wetlands when you drain 10 smaller wetlands into a bigger wetland because you can't get rid of the big one but then you destroy the complex and that is extremely detrimental to the health of the wetland ecosystem because its those ephemeral and seasonal wetlands that are the most important for the higher level ecology of waterfowl, birds and a lot of small animals.

Class 3 and lower seasonal temporary and ephemeral wetlands are the types that are most at risk from human intervention, whether that be drainage, consolidation or plowing in dry years. These are also the ones that are most at risk for the impacts of climate change where it is predicted that we will have increased lengths of dry periods which leaves them vulnerable to being plowed or filled in with bush, a longer dry season will mean they are more vulnerable to human damage.

If you take a foot off of a wetland, some people think well you've still got the wetland there, but you've impacted the ecological integrity of the wetland, from a biological and certainly a hydrological point of view.

A big issue is the engineered management of wetlands. Putting weirs and water control structures on wetlands to control the amount of water in the wetland is often seen as a fairly benign practice, it severely degrades wetland function

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If we engineer the heck out of wetlands to deal only specifically with water quantity we will jeopardize our biodiversity base and that's what keeps our natural ecosystems healthy

Wetland loss is an issue, where once there was a wetland and it has been drained and is now gone, whether that is due to urbanization or agriculture, the wetland is gone. The other factor is degradation which is very important to waterfowl and biodiversity and watershed management and watershed health and very often wetland policies don't take that into consideration.

Water quality is a big issue, it doesn't matter if we have good water if it's filthy. In Manitoba you've got to have good water, everything revolves around that. Whether you're looking at biodiversity or agriculture, everything needs water to survive, and in our climate water is often, though not always, the limiting factor

Climate change is a big unknown, the predictions of the climate models don't look good for wetlands and there are an awful lot of unknowns. There are so many aspects that can't be predicted and haven't been thought of yet.

Invasive species has become a big issue in recent years. Hybrid cattails are spreading and outcompeting other wetland species and wetlands are becoming a monoculture of cattail.

Altered hydrology is a big issue on the lakes marshes, particularly Lake Manitoba which has been greatly affected by changes in natural water levels.

The loss of waterfowl hunters is a critical issue for wetlands and waterfowl because the hunters are the only group within the conservation community that focus on abundance, others look at biodiversity, endangered species, that type of thing but waterfowl hunting advocates we want abundance. In order to have abundant waterfowl we have to have abundant habitat and that needs to be a more important part of wetland conservation

PERVERSE INCENTIVES AND MIXED MESSAGES

A big concern that was raised repeatedly is that landowners are constantly being sent mixed messages about the value of wetlands by government agencies, non-government agencies and the market. Wetlands are not recognized as having any value and market signals encourage drainage. While some government agencies are trying to promote wetland conservation, other government agencies are directly and indirectly promoting the drainage of wetlands.

Farmers have to have a really clear signal to make the right choices. They are bombarded with different messages not only from the market, but from government and from NGOs

all telling them something different and none of its integrated. The waters are so muddied, he can't make any sense out of it.

Different department within the government send very different messages, one will say that wetlands are important and we need to conserve them, and at the same time another is showing you how to put in tile drains to get rid of them.

Government agencies that make regulation or development plans tend to describe wetlands as wasteland areas and to discount them as unproductive. The census system to this day describes them as unusable lands and wastelands and lump them with gravel pits. There is a lot of work that needs to be done in the policy area for us to even recognize when these kinds of negative and dismissive statements are being made about an ecosystem feature that is really the underpinnings of how the landscape is going to stay healthy, particularly as climate change begins to impact us more.

If you look at the assessment system wetlands are deemed wastelands, they are categorized as waste/slough/bush. And that is the way that a lot of administrators from municipalities and farmers look at them. Its an embarrassment to have a wetland in the middle of a field, its like having dandelions on your lawn. It's the clean farming mentality.

We need to change the culture and attitude towards wetlands. Many people still consider them to be wastelands and mosquito traps, not understanding how important they are to the environment. They need to be regarded as assets.

You can get permission to drain virtually any wetland in Manitoba probably within three months, but if you want to retain water on the land, it will generally take a year and a half.

Some lands that are deemed to have marginal production value for agriculture can actually be quite productive if we broaden our concept of production. But the producer is told that they should drain it to make it more productive. Yes we have to maintain production but we need to be more open minded when it comes to defining production.

Producers are actually rewarded by various grants and government funding for putting marginal land into production. I know some people along the Red River that know full well that their land is going to flood every year. But they plant it anyway, watch it flood, and then file for compensation.

One of the biggest reasons that producers resort to unsustainable crop rotations, which result in the overuse of fertilizers, is because of the market. The market drives production decisions.

Producers may realize that there are environmental impacts and loss of habitat and impacts in terms of nutrient loads and sustainability of watersheds associated with

draining wetlands, but they respond to the clearest economic imperative which is to drain and produce. It's the signal that the market sends.

Farmers say that if they didn't have to pay taxes on the land where there are wetlands that alone would be enough for some of them to leave the wetlands intact.

ROLE OF POLICY

What the role of a wetland policy is was not specifically asked during the interview but many participants volunteered information on it. The most common theme was that a wetland policy needs to make it abundantly clear that wetlands are valuable to society and provide ecological goods and services.

A wetland policy needs to provide a strong voice for wetlands, raising the awareness of their importance on the landscape and recognizing the value of the ecological goods and services that they provide to society.

A wetland policy has to make it clear that wetlands have value

We need a policy that will preserve the wetland base, it can still be in the working landscape but put some value on maintaining the wetland.

A policy needs to address the responsibility of all sectors of society both urban, rural. Society as a whole is part of the problem and society as a whole needs to be part of the solution.

Urbanites need to understand their dependence on the ecological goods and services from the rural landscape. This is central to the argument of linking upstream and downstream users of the watershed through the payment for ecological goods and services. There needs to be more economic linkages between the rural and urban populations. Why shouldn't the environmental obligations of cities be used to improve the social, economic, and environmental conditions in rural areas.

Should be written within the context of existing policies, particularly those related to land use and agriculture. Efforts should be made to clarify priorities and avoid conflicting messages and to ensure that wherever possible the policies are complimentary and strengthen each other.

Something needs to be done to try and develop some consistency in messaging around the whole issue of wetlands and land use

We need to develop a common vision of what we want the landscape to look like.

The concept of adaptive management needs to be applied in the policy.

Policy needs to provide a sense of what the landscape should look like and the role that wetlands play in that landscape.

A wetland policy needs to identify where wetlands fit into the bigger picture, within a larger overall strategy for the sustainable use of the land base. Wetland conservation needs to be a part of a larger land use planning and land management process.

I'm not really a fan of a wetland policy, it needs to be a landscape policy.

What I want to see is a working landscape model. Wetlands are part of a larger landscape and are affected by what happens in the surrounding uplands, so you can't really separate them out and deal with them in isolation

The policy should provide support for existing programs.

Should have clearly defined and articulated goals so that you know what it is that you are trying to accomplish and allows you to determine if your methods have been successful.

A wetland policy should understand and respect the needs of development, particularly in the agricultural realm but agriculture also needs to respect and value the ecological functions wetlands provide to society.

There will always be conflicts related to the protection of natural systems economic development. The policy needs to be a strong enough of a statement for the importance of these ecosystems that development objectives don't over ride them because there is not a good understanding of their importance

Our landscape is an integrated mix of farms and wetlands and communities and what we're trying to deal with is competing users on the landscape.

The policy has to be mindful of the effect that it will have on the rural economy

Need to develop a sense of what a sustainable landscape should look like and how it should function and the roles and responsibilities of the various players.

A policy should try to develop cooperation and coordination between agencies so that they don't compete or send conflicting messages. There are a lot of disjointed programs.

Should clarify the role of the participants. Non-governmental organizations and producers have a strange relationship. Historically they've competed for the control of resources on the landscape, but have also worked together very successfully on projects where we had shared interests. But it can be quite confrontational in areas where we have different views of the landscape and how it should look and be managed.

Identify priorities and priority areas

A policy should acknowledge that farmers are the number one conservationists. They manage the land and need to make a profit while doing it. The fact that there are natural areas that haven't been put into production is because farmers have chosen to leave them in their natural state. There needs to be some recognition that they are doing something worthwhile and valuable.

There should be some recognition of the role that the waterfowl hunting community has played and continues to play in contributing to wetland conservation.

Needs to facilitate the development of institutional linkages for integrated watershed management, like conservation districts and payments for ecosystem services.

Recognize the importance of building partnerships. A wetland policy won't work if it's only a government policy, the public sector has to work together with the private sector, with conservation groups and agricultural groups

Identify and remove institutional barriers and disincentives and provide a clear and consistent message about the value of wetlands.

We've really got to focus on incentive programs.

Policy should promote the development of a number of tools for wetland conservation. We need to focus on the integrated development and use of a variety of tools: education, extension, research, incentive programs, land retirement, in order to achieve our goals. Policy will approach multiple audiences and so a variety of tools must be available to choose the tool that is most appropriate for a given audience, a particular objective or a specific situation.

There need to be incentives but also big time public education. Not just a little ad in the paper with a buffalo in the corner, but something innovative and massive, to reach everybody. Everybody needs to understand the role that they play in creating environmental problems, the impacts on the environment and on society, and their responsibility for fixing it.

It's a huge education issue. Ultimately policy responds to societal pressure and you can't expect to have a policy rammed down the throat of the public that they don't endorse. The only way anyone is going to endorse a wetland policy is if they understand the benefits of wetlands and the consequences of destroying them. They need to be educated on the benefits of wetlands. I think it should be integrated into the school curriculum, the whole idea of natural capital, ecological footprint, payment for ecological goods and services. We have to get them when they're young and open minded.

The policy needs to deal with the mixed messages that are being sent to farmers. Farmers have to have a really clear signal to make the right choices. When they are bombarded with different messages not only from the market but from government and from NGOs

all telling them something different and none of its integrated, and the waters are so muddied, he can't make any sense out of it.

Something needs to be done to try and develop some consistency in messaging around the whole issue of wetlands and land use.

Must be based on good solid science.

The concept of adaptive management needs to be applied to the policy.

The mitigation process should definitely be looked into more closely. There is probably a role for some level of wetland mitigation because what it does is reinforces the importance of whatever ecosystem that you are going to be impacting and stresses that we can't afford to lost it. It's something that really has to be seriously considered in the policy area for Manitoba.

REGULATION:

Regulations generally fell into two categories, regulations regarding drainage and those protecting sensitive areas. There are regulations that are currently in place that deal with drainage, and the impacts that drainage on one property has on downstream and neighbouring properties. The concerns with these regulations tended to revolve around lack of adequate enforcement. The concerns with regulations protecting sensitive areas are primarily that they will interfere with agricultural production.

Everyone interviewed agreed that there was a need for some level of regulation but there were also a lot of concerns over a negative backlash from producers and the ability to enforce regulations adequately. Education and incentive programs were seen as a much better approach. Regulations were generally seen to be necessary to deal with individuals who choose not to comply with voluntary approaches and to protect high priority areas.

Regulations will keep you from hell, but stewardship is what takes you to heaven

We shouldn't talk about regulations unless we talk about incentives.

Lead with incentives and backstop with regulations.

Regulations will just get you the lowest common denominator and should be looked at as a backstop to an effective incentive program. Regulations are needed to deal with the egregious situations that occur when people ignore guidelines and incentives, take a bull headed approach and cause problems to their neighbours and society by their activities on their land.

Regulations are needed to deal with that last 10 or 20% that are not willing to change.

If you can work upfront with producers and have them change their attitudes and how they perceive wetlands and how they manage the land, then it's a win-win for both sides. Whenever possible the use of incentive programs or the use of extension activities where there is a benefit for both sides would be preferred. We do recognize that there are always those few people who are not willing to change and that's where regulation does have a role to play.

We need backstop baseline regulation, but you can't regulate everything. The reality is that farmers do what they have to do to make a living and if regulation is too heavy handed farmers will find a way around it.

Regulations have a role to play when there's going to be a distinct negative impact on society or health of people downstream. We need a three pronged approach involving incentives, regulation and increased public awareness of the importance and value of wetlands.

We should go with concrete policy development coupled with education and incentive programs first. In high priority areas that are at particular risk and not getting the protection they need from education and incentive programs, we may need to resort to regulation.

Regulation has a role in terms of ensuring the health of the environment but we have to be very careful how we use regulations. Regulation is something that needs to be used only after voluntary approaches have not been effective.

Regulations have a role to play, we should rely on incentives first, but regulations will be necessary because the bottom line is, we can't afford to pay the incentives needed to conserve all the wetlands out there.

Regulation plays a role with regards to drainage. Regulations are in place to prevent people from draining certain classes of wetlands. But this has not been particularly effective because of the lack of enforcement officers. There is an attitude out there that I can do what I want on my own land. Although a regulation may be in place, if it hasn't been enforced in the past, the landowner doesn't see himself as really doing anything wrong by ignoring it.

There are regulations regarding drainage, but they just haven't been enforced and a lot of producers and landowners are not happy. There are a lot of unhappy people out there because of the lack of enforcement of the existing legislation when it comes to drainage.

There are concerns with regulation and that it will affect the profitability of the farm operation. A lot of producers don't think that anyone should tell them what to do on their own land. But the way it is now anyone who doesn't like some little bit of water on their land drains it and then it ends up on somebody else's land. I'm sorry if you want to live together with other people you've got to be willing to work together on these things. There are regulations all the time, building codes, speed limits, in our society there have

to be some controls to ensure that everybody can live together. There need to be guidelines that people follow, but if you don't follow the guidelines, there need to be regulations and penalties to back it up.

I think more legislation is needed, it would have to be very carefully drafted and the various user groups would need to be involved. It has to be reasonable. There has to be some give and take and we can't protect every wetland. We need to identify high priority areas.

We need better legislation to protect wetlands because current legislation almost encourages draining, so there has to be some legislation to discourage drainage of key wetland areas.

There definitely needs to be some regulation but it has to be followed up with enforcement and penalties that are enforced equally for everyone.

Producers don't react well to regulations, I think more resources would be used enforcing regulations than would be used developing good extension and incentive programs.

People don't respond well to rules and regulation, especially on their own land. Its much better if you can get them to sign up for programs voluntarily rather than resort to regulations.

I don't see being heavy handed with regulation as a good way to go. I think we can make a lot of inroads with clearly stated policy, enforcement of existing drainage regulations and education. To me that's a better route forward for the next 20 years than instituting punitive regulatory regimes for wetlands.

The incentive approach is much more accepted than the regulatory approach, if you really want to have impact in the long term then that's the way to go

CHARACTERISTICS OF EFFECTIVE PROGRAMS:

Wetland conservation programs will operate within the bounds of a wetland policy. A well structured policy should support existing programs and also serve to generate the development of new programs to fill current gaps. Looking at existing programs and characteristics that make them effective or ineffective can contribute valuable insight for the policy writing process.

When discussing the characteristics of effective programs, there were a number of themes that developed. The importance of education was the top issue. This included general education programs to raise public awareness of the value of wetlands to generate the political will to conserve wetlands, as well as extension programs that provide technical assistance directly to the landowner that will result in a change on the landscape. We have to look at making a change on the landscape on a large enough scale and this will require more integration of individual programs. It was also considered a very good

idea to promote all of the ecological functions wetlands provide in order to appeal to the broadest possible audience. It was considered important to develop a variety of different types of programs, both financial and non-financial, in order to provide options to landowners and increase buy in. At the same time concerns were raised about potential frustrations when too many disjointed programs compete for landowners' attention.

Understanding different production methods and adopting a holistic approach that takes into account the entire farm operation was seen as a very good approach. Clearly stated and measurable goals were considered necessary in order to monitor the effectiveness of the program and to identify adjustments that may need to be made. Long term sustainability taking into account social, economic and environmental aspects was considered essential

Education is huge. People need to realize the value of these ecosystems and the importance of maintaining them. We need to educate the general public to create the political will to act. We need to provide technical assistance and extension programs to landowners so that they have the information they need to make the best management decisions.

We need big time public education. Not just a little ad in the paper with the buffalo in the corner, but something innovative and massive to reach everybody. All sectors of society need to understand the role that they play in creating the problem and the responsibility they have for improving the situation

Generally most people want to be good environmental stewards if they know how.

Extension is education targeted at adults to influence their attitudes and to influence behavior as it relates to land use. It has a very specific purpose that focuses on a target audience with the goal of changing land use and behaviour.

Extension, technology transfer and education are very important, and there is a role to play for both government and private industry

Technology transfer is essential but it needs to be the appropriate use of technology. GPS programs for instance actually increase the likelihood of farmers draining wetlands because they can see exactly how much it costs them to go around them. But at the same time, in principle you could program information about the location of the wetlands and the program could generate the optimal pattern to drive around them and avoid overlap and minimize distance traveled and fuel consumption and all those things

Producers will come to us and say I know you've got money for this but what I really need is some technical help. So the individualized one on one help, specific to their operation is hugely important.

One on one extension is the best way of changing production methods, even more so than incentive programs. Whether its developing a grazing plan or a nutrient management

plan, whatever issue needs to be dealt with, it's the one on one assistance in developing clear goals, objectives and solutions, specific to that operation that is most effective.

Programs need to provide practical, rational, producer friendly technical help that makes sense to the landowner. Workshops work well in creating interest but they can't replace one on one individualized farm specific assistance.

We need to have a variety of tools available to achieve our goals: education, extension, research, incentive programs, tax rebates, land retirement and others we haven't even thought of yet.

Effective programs identify a particular need, and determine what is required to fill that gap, identify an appropriate tool, implement the tool, and monitor the results.

Programs need to have clearly defined and articulated goals so that you know what it is that you are trying to accomplish and that allow you to determine if your methods have been successful in meeting your objectives.

Producers particularly feel that they are being singled out, they need to see that they're not being singled out, and that everyone is doing their part.

Agriculture needs to see that there are a lot of opportunities in an incentive based wetland policy that will help them deal with issues like water quality and nutrient management and also make their operations not only more environmentally friendly but financially efficient as well.

Programs need to be broad based, wetlands are very complex systems and they perform many functions. You have to promote the function that appeals to the specific landowner. If wetlands are only promoted from the point of view of a single function that might not be the function that appeals to that particular landowner. We have to use a holistic approach saying these are all the functions that wetlands provide. You and I may value a wetland for completely different reasons, we need to promote the whole package in convincing people that wetlands are important.

In order to appeal to landowners we promote more how wetlands help preserve and recharge groundwater, sequestration of carbon, mitigating flood level, improving surface water quality. It depends what is of greatest concern in that area. We do promote the habitat aspect but for some landowners habitat is not a priority at all and they are concerned about destructive wildlife. We focus on the issues that would pique the interest of the landowner. To get people on board you have to word things appropriately. We emphasize the benefits that we think will appeal to the particular audience we are dealing with. You have to know your audience.

You need to have technicians and representatives out in the field. You can't run a program from Winnipeg.

Sometimes it's very hard to get people to change their outlook and the way they do things. It can take a long time for them to realize that although a practice was promoted for environmental reasons, there may be not only environmental but financial benefits. Zero tillage for example, people were skeptical at first but now its pretty much accepted practice. Of course you still get some die hards who aren't going to change.

Programs need to provide education and awareness as well as reassurance to the producer that the steps they are taking are appropriate for the land under their management and provide some recognition that they are doing the right thing.

Recognition of the work and effort that landowners put into conserving natural areas is vital.

Some farmers value wetlands and natural areas very highly, for whatever reason. Other farmers just look at the bottom line and think that they're a big nuisance.

Conservation programs need some sort of economic link. Financial incentives make it easier for people who are struggling to get their economic living off the land but also want to preserve some of the natural ecosystem health.

You have to sell it to the producers from the production side of things, for a lot of them it's about economics.

Depending on the type of production they are engaged in, landholders will have dramatically different views of wetlands. Cattle farmers use wetlands as late season forage sources and as sources for watering, they see them as having some productive value. Grain farmers tend to want to get rid of them, they see them as nothing but a nuisance that is costing them time and money.

You have to change the way farmers think about and look at wetlands, that's how you're going to get lasting change on the landscape. I've had farmers say to me, this is the first time I've driven around one of those things and not thought about how to drain it. That's real progress, that's the sign of a successful program.

Need to integrate wetland conservation into a sustainable farm system. Farmers look at their operation as a whole, not in bits and pieces. A lot of farmers look at a pothole and don't know what to do with it other than drain it. They don't understand the ecological values and how they can contribute to the long term ecological sustainability of the operation.

Programs need to take into account the entire farm operation, not just one small aspect of it.

Landholders lack confidence in the government and don't trust them. They trust other landowners who have done projects. They trust their neighbours. They seem to trust

PFRA because they've been around for a long time and their programs have been consistent and practical.
Respecting the landowner and farm family and realizing that the farm is their own personal space.

Respecting landowner rights is very important. Landowners recognize that they don't have a right to complete control over the land, the water, the birds, the air, but they do manage these things on behalf of the public and need recognition of the right to make management decisions.

People want to retain ownership and control, that's a natural tendency and that's the problem with retirement schemes. So we need to look at something that respects landowner rights.

Programs need to be simple and straight forward. Farmers are put off of a program if it looks like its going to be complicated.

Programs need to evolve to meet the changing needs of producers.

Recognition of landowner rights is important but at the same time there has to be some sort of assurance that all your work is not going to be undone because of ad hoc decision making be farmers who are going to follow market signals.

When you're devising programs there are a lot of unintended outcomes that you just can't plan for. So you use the best information available to you and do your best to get the programs as close to what you think is right and then recognize that adjustments will most likely need to be made. You need to understand the lay of the land and the landowners and take that into account and then monitor the program and make any adjustments that are needed.

The ALUS project provides incentives for producers to preserve wetlands, natural areas and riparian areas. The producer chooses the right mix of programs for their operation. What makes the program effective is having conservation done within the culture of agriculture. Programs need to be developed by the landowners and on their terms.

Pilot programs like the ALUS program are significant not because it is necessarily the perfectly designed program but because it is forcing people to think and react to this idea of paying landowners for the ecological goods and services their land provides, and that's a huge contribution. We really have to understand what we are paying for and ensure that the system is sustainable from the funding side. Flexibility is being promoted in the ALUS program but if farmers can opt out any time, it raises questions about the sustainability of the ecological element.

Programs have to be acceptable to land owners. The wetland issues in southwestern Manitoba are on the private land base. We have to develop tools to give farmers options and provide a financial incentive, something other than just buying land which has some

real social impediments to it. When leases were originally introduced they were only for five years and there was some real concern as to whether they would be accepted by landowners. As people got used to t \he idea, they were more comfortable with longer agreements especially when they realized that they were still allowed to use the land for certain uses. It was the same thing with the easement program and now farmers are lining up to sign on.

There is a sense of wanting to leave a legacy in the farming community, especially with the older farmers who don't want the back 40 knocked down as soon as they are gone, so they sign an easement in perpetuity and feel like they've saved something for future generations.

We need integration. We need to look at creating links between the payment for ecological goods and services and environmental farm plans and integrated watershed management schemes. Not that they have to be combined into a single big program, no, but linked in some way so they are not working in isolation of one another.

We need to conserve not just the specific pothole but focus on landscape scale conservation. The biodiversity in a region includes more than just the waterfowl that uses the pothole but all sorts of wildlife around it. We want landscape scale conservation, rather than bits here and there that are protected, we want to have a contiguous acreage so that plants, animals, insects and birds can all survive and still allow the landscape to be productive.

For a program to be effective it has to be on a large enough scale. How do you get scale on the agricultural landscape? You enlist the power of the public sector and find them a compelling reason to provide the necessary resources, and the compelling reason is that we the public are demanding public goods and services from the private landscape, so you strike a deal with producers, we will provide you with incentives and you will deliver us with goods and services.

The environmental services generated by wetlands accrue beyond the farm gate but the costs all accrue within the farm gate. And there are on-going costs. It is estimated that going around a wetland adds 15% to the cost of putting in a field, in extra fuel, extra time, harvest inefficiencies and that is a major incentive to get rid of that wetland. If society thinks that there is value in the natural capital, then society needs to share the cost or at the very least do away with the incentives to drain the wetlands

Farmers need a really clear signal to make the right choices, so we need to take out anything that muddies the waters. It doesn't necessarily need to be cash but there has to be no doubt in their minds that they're getting a reward for doing this. But when they are bombarded with different messages not only from the market but from government and from NGOs and they're all telling him something different and telling him what he should be doing on his land and they're all dealing with one particular issue and never taking into account the whole farming operation, then he just throws up his hands in frustration. Its so muddied he can't make any sense out of it and none of it is integrated

Farmers have to see a benefit of maintaining wetlands, preferably financial, because there are a lot of financial benefits to draining them. There are a lot of perverse incentives out put incentives to conserve that are of similar value.

EVALUATING THE EFFECTIVENESS OF PROGRAMS

In order to determine if a program is actually effective it has to be evaluated in some way. The criteria used for that evaluation needs to be carefully selected as the selection of appropriate measures will determine if the evaluation is accurate. Generally existing programs are evaluated in terms of uptake. More evaluation is needed on the impact of various programs on the landscape.

We tend to evaluate the effectiveness of programs in terms of program uptake, how much money was spent, how many people participated, were they happy with the program, that sort of thing. Its much more difficult to determine if a program effectively conserved the wetland or improved the water quality. So we do qualitative measures very well, but the quantitative research that will measure the actual impact on the landscape is much more difficult, and very, very expensive.

You determine the effectiveness of a program by looking at the net loss or gain of wetland function. In the agricultural landscape the main issue is net gain or loss of wetland function. We think we can drain a bunch of small wetlands and then create one large wetland in a more convenient location to mitigate for the loss of the smaller ones but the result is a substantial net loss of wetland function. I think we have to go beyond just acreage measurements, to the issue of net gain or loss of wetland function

The problem with wetland conservation, particularly with regards to waterfowl production is that it is generally done on too small of a scale. Scale is crucial. For real landscape results, conservation has to be done on a landscape level and the private conservation groups simply cannot raise or get enough money to do the conservation on the scale required to make a difference. Easements are great on a small scale, but you can't buy enough land, rural communities won't let you. One of the criteria of an effective program is that it has to be on a large enough scale.

In the end I don't think you judge how successful a program is simply by the uptake, you need to do an assessment of the area and determine if the objective of the program has been realized. You have to monitor what is actually going on and the impacts that it's having on the landscape. That would require that you have a benchmark at the beginning and then a final overall assessment of how well the area is doing in terms of the specific wetland conservation objective.

One measure of its effectiveness is that people continue to be involved in it

You can develop the greatest conservation program in the world but if there is no uptake, it's completely useless.

You have to change the way farmers think about and look at wetlands, that's how you're going to get lasting change on the landscape. I've had farmers say to me, this is the first time I've driven around one of those things and not thought about how to drain it. That's the sign of a successful program.

GOALS AND OBJECTIVES OF A WETLAND POLICY

One of the primary tasks in developing a wetland policy is to devise appropriate goals and objectives. To assess the priorities of stakeholders, as well as generate ideas for discussion, interview participants were asked what they thought the primary objective of a provincial policy should include. Answers included no net loss, maintaining ecosystem function and health, sustainable use, recognition of their value to society, the importance of maintaining the wetland complex, the need for restoration and the need for landscape level management.

We need to get a better handle on the state of our wetlands that needs to be a primary goal. We need an inventory and a monitoring system. We need to see where we are and develop some specific goals regarding where we want to be 10 and 20 years from now. Specific measurable goals with a specific time frame, and a strategy for meeting those goals, just 'making progress' isn't enough.

No net loss of wetland function, and moving towards a net gain. But before we can gain we have to get to the point where we're not losing.

No loss of wetland function and ideally it should also create a springboard from which we can try to recreate some of the lost wetland function.

First we have to reduce or limit drainage. We have to take stock of what we have and identify priority areas and focus on maintaining those and then we need to look at how to restore priority areas and maximize their wetland productivity.

We've got to make sure that we save the whole complex, not just isolated wetlands.

Something needs to be done to try and develop some consistency in messaging around the whole issue of wetlands and land use.

The first step would be protection and a rational for protecting what's existing so that there is not further degradation but then high priority marshes like the Libau - Netley marsh should look at being restored.

The big issue is wetland function. What are the values of wetlands and what have we lost in terms of value to society and what are we willing to pay to maintain the wetlands that we have left. We need to look more closely at the functions that are more directly meaningful to broader bases in society and unfortunately in the agricultural landscape

those are the things that will challenge agriculture. But if we consider the Red River Valley that used to be covered in wetlands and now there are very few wetlands but its some of the best farmland in the world. We need to respect the role of agriculture. We need to build a policy that understands the need to maintain viable agricultural systems. On the flip side all of that development has had consequences and there are major consequences as a result of the loss of wetlands. I honestly believe that we've come to a point that society has to stand up and say enough. We've reached that point when it comes to wetland function, in fact we're past enough, we're way past enough.

To restore wetland function on a large enough scale to deliver ecological goods and services on a scale large enough to make a significant environmental difference in Manitoba

The big issue is loss but I think the other one is quality. The remaining good quality, well functioning wetlands, wherever possible should be maintained. Then we should look at restoring and rebuilding the ones that have been lost or degraded but that is expensive so we should focus on keeping what we've got first. We should also look at mitigation. Sometimes it just makes more sense to drain a wetland in a particular area but then they should be required to make up for that somewhere else.

A provincial policy would have a broader objective than a policy that focuses only on prairie wetlands. On the prairies we would want something like a zero loss or in many instances you want to have a gain. Provincially I think the issue that I would be most concerned is ecosystem health. It wouldn't consider only prairie wetlands but the health of all wetlands in the province. Wetlands play an essential role in ecosystem function, we need to consider the role that wetlands play in the ecosystem and maintain the health of the wetlands in order to maintain the health of the entire ecosystem. We really have to respect the diversity of the types of wetlands in the province. We can't just maintain the big permanent wetlands but we need the smaller seasonal ones as well. So one of the issues would be maintaining the wetland complex in the landscape. It has to address more than just conserving individual wetlands.
Wetland management is a fundamental component of integrated watershed management and planning. Their exceptional status and their particular dynamic in the ecosystem needs to be analyzed, understood and managed as a critical ecological element of integrated watershed management.

It would be broad based concerned with maintaining the sustainability of them and recognize their importance. Wetlands have to be seen as a valuable part of a sustainable multi-use landscape.

Sustainable development, to provide a healthy, sustainable and diverse landscape capable of providing social, economic and environmental benefits to current and future generations. . It must encompass social, economic and environmental aspects with environmental issues being the primary concern.

A wetland policy should recognize the protection of wetland ecosystems as a significant responsibility under the Water Protection Act. It must recognize that there will always be conflicts related to protection of natural systems and economic development, and so it would have to be enough of a statement of the importance and value of those ecosystems that development objectives don't take priority over environmental concerns.

A wetland policy needs to put more focus on the value of wetlands and the need to preserve them. The government has spent a whole lot of money draining them and very little saving them. We need to put a moratorium on drainage right now, until we get things figured out. Water quality is becoming more and more of a concern. We have a huge issue with Lake Winnipeg, more and more boil water advisories and all sorts of water quality issues all over southern Manitoba. These will become worse as we go down the road with climate change, population increase, intensification of agriculture and other developments. Water quality is going to be a huge issue.

APPENDIX 11: Workshop Agenda

An Assessment of Wetland Conservation Policy and Practice: Towards A Strategy for the Development of a Wetland Policy in Manitoba

Workshop – June 1 12:00-4:00
Natural Resources Institute Winnipeg

Objectives:

The purpose of this workshop is to facilitate discussion among stakeholders, with the goal of identifying areas of common ground and potential consensus related to wetland conservation in Manitoba and to demonstrate how these could be reflected in a provincial wetland policy. The objective is not to develop a wetland policy, or a draft wetland policy, but to identify areas of common concern and to demonstrate the value of stakeholder involvement in the early stages of policy development.

1. To present the results of the interview process and identify areas of common concern
2. To identify the role of stakeholders in the policy development process
3. To identify potential objectives for a wetland policy
4. To identify potential guiding principles for a provincial wetland policy.
5. To develop a possible strategy for dealing with the diversity of wetland types and issues facing wetlands in Manitoba.

Agenda:

TIME	PERSON	CONTENT
12:00-12:45	Rhonda Pankratz	-Working Lunch -Introductions and objectives of the workshop -Presentation of interview results
12:45-1:15	Facilitated Discussion	Role of stakeholders in policy development
1:15-1:30	Rhonda Pankratz	Wetland diversity in MB Overview of policies in other jurisdictions – dealing with diversity
1:30 – 2:45	Facilitated Discussion	Strategies for dealing with wetland diversity in MB
2:45 - 3:00	Break	
3:00 – 3:15	Rhonda Pankratz	Overview of policies in other jurisdictions – objectives and guiding principles
3:15 – 4:00	Facilitated Discussion	Primary objectives and guiding principles in the Manitoba context