

COMMUNITY CONSERVATION PLAN



for the

NETLEY-LIBAU MARSH *IMPORTANT BIRD AREA*

(South Basin of Lake Winnipeg)

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Preamble.

This document is not intended to be static. It is hoped that the community groups involved will use this CCP to guide their conservation efforts and continue to add to sections of this document over time.

Executive Summary

Netley-Libau Marsh IBA

The Important Bird Area Program

The Canadian Important Bird Areas Program (IBA) was established by the Canadian Birdlife Partners, the Canadian Nature Federation and Bird Studies Canada, as part of an international effort to identify and conserve sites important to all bird species worldwide. Initiated in Manitoba in August 1999, the IBA program is being delivered and administered by the Manitoba Naturalists Society.

Goals of the Canadian IBA Program

The goals of the program are to identify a network of sites that conserve the natural diversity of Canadian bird species and are critical to the long-term viability of naturally occurring bird populations; to determine the type of protection or stewardship required for each site and ensure the conservation of each site through partnerships with local stakeholder groups who develop and to implement on-the-ground community conservation plans.

Netley-Libau Marsh

The Netley-Libau Marsh was officially dedicated as a Canadian Important Bird Area on October 1st, 2000. The Netley-Libau Marsh is also a candidate Heritage Marsh under the Manitoba Heritage Marsh Program. It is

an area of 24,381-ha of upland and wetland habitat with 848-km of shoreline. It is located in the southern basin of Lake Winnipeg, approximately 65-km north of Winnipeg, Manitoba. The marsh is a complex of lakes and streams whose water levels are influenced by Lake Winnipeg.

Significant Bird Species

The Netley-Libau Marsh is a *globally significant* IBA based upon numbers of Forster's Tern nests (325 nests in late 1970s) which is about 1.5% of the global population. A number of bird species in the IBA meet the Canadian IBA criteria for Congregatory Species, which identifies species that concentrate in significant numbers usually greater than 1% of their global, biogeographical, or national population. Other species meeting IBA criteria include Franklin's Gulls (4,500+ breeding pairs), Black-crowned Night-Herons (100+ breeding pairs), Yellow-headed and Red-winged Blackbirds (fall migrants >100,000), Swallows (fall migrate 10,000) and Waterfowl. Numbers of Sandhill Cranes, Canada Geese and Western Grebes come very close to meeting IBA population thresholds.

Surveys conducted in the 1980's identified 114 bird species. Gulls, terns and Western Grebes are the most common nesting species while American White Pelicans and Double-crested Cormorants are common non-nesters on the marshes

(Verbiwski 1986). The Western Grebe is reported to be the most significant species (Verbiwski 1986). Waterfowl use the marsh for staging, molting and nesting. Mallards and male Wood Ducks are the most common molting species with estimates as high as 25,000 birds reported (Verbiwski 1986). Waterfowl use of the marsh has declined sharply over the years as the habitat has been degraded. A 1986 estimate for annual duck production was 635 broods with the lack of upland nesting habitat and fluctuating water levels being the major limiting factors.

Threats

Water Levels. Historically the Netley-Libau Marsh has produced and supported extremely high muskrat and waterfowl populations. Since water regulation of Lake Winnipeg by Manitoba Hydro the capability of the marshes to support wildlife has been reduced. Stabilized water levels are recognized as the principle factor affecting the marsh and its flora and fauna. Although current water management negatively impacts the Netley-Libau Marsh, solutions to water management are not addressed within this Community Conservation Plan (CCP).

Invasive Exotic Species. There are large infestations of Purple Loosestrife, Flowering Rush and Common Carp within the marsh. Purple Loosestrife and Common Carp are having deleterious impacts upon the marsh habitat. A biological weed control program is currently being delivered by the Manitoba Purple Loosestrife Project against Purple Loosestrife. Flowering Rush has invaded the marsh and can be found around the End of Main Street. Common Carp can be found throughout the marsh impacting water quality and turbidity. There are no efforts to manage

carp populations. Globalization will lead to further introductions of alien species.

Conservation Actions

The IBA working group, lead by the Netley Marsh Waterfowl Foundation, has identified the following areas for conservation action. The working group received a \$5,000 grant in 2000 and an additional \$1,500 in 2001 from the IBA Community Conservation Fund to carry out its conservation objectives.

Bird Surveys. Provisions of this CCP would include bird surveys of the marsh led by the Selkirk Bird Watching Club. Surveys were conducted in 2000 and will continue through 2001.

Habitat Restoration. Artificial nesting structures for waterfowl will be constructed and placed in the marsh by the Netley Marsh Waterfowl Foundation.

Purple Loosestrife. A biological weed control program against Purple Loosestrife will be continued and expanded.

Contacts

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1.0 Introduction

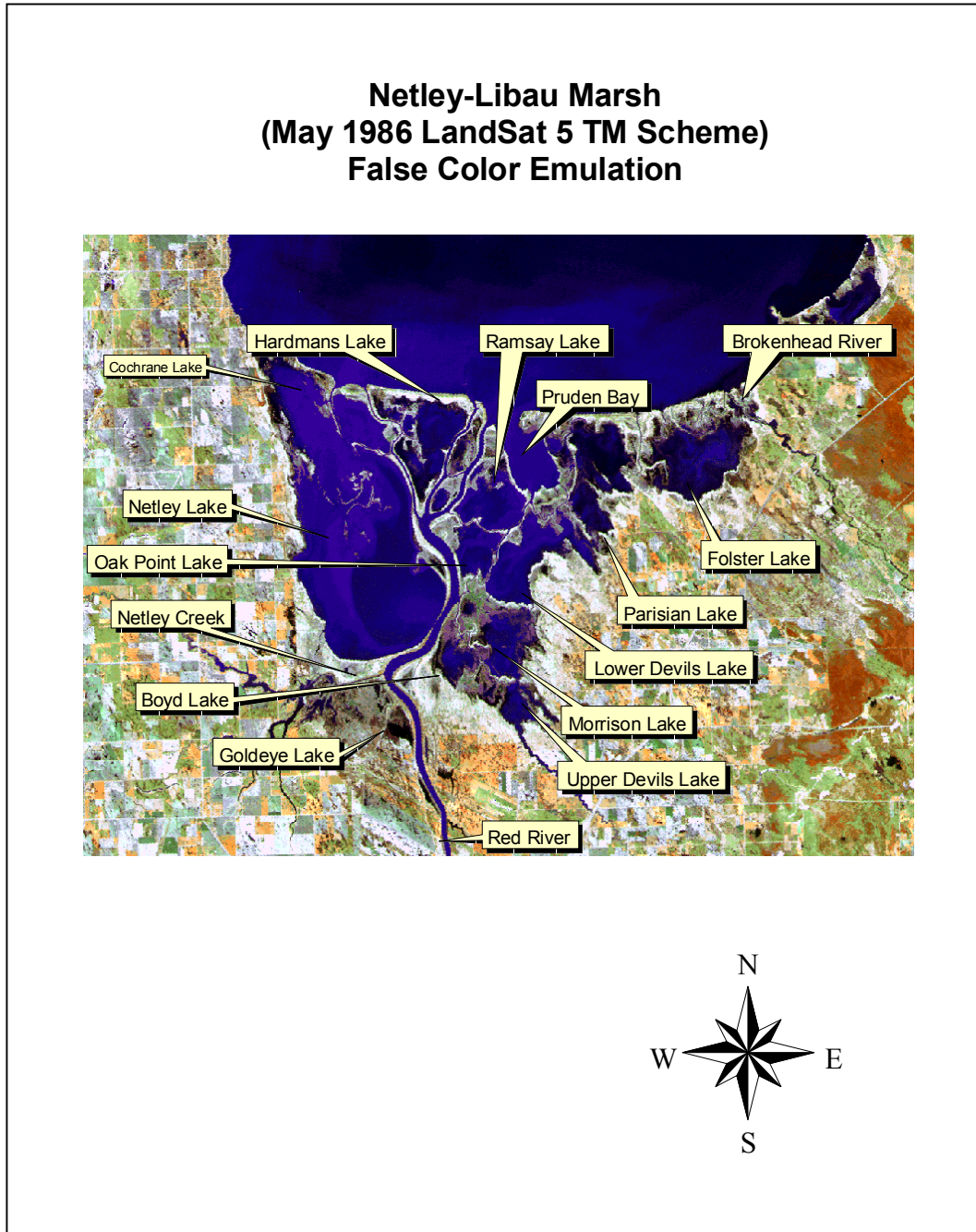
The Netley-Libau Marsh is an area of 24,381 hectares of upland and wetland habitats (Verbiwski 1986) (see figure 1). The marsh is best known for its formerly large concentrations of southward-migrating birds. Historical numbers of geese and ducks have exceeded 100,000 birds during fall migrations and at least 25,000 moulting ducks have been found in the marshes. Waterfowl use of the marsh has been greatly reduced as a result of stabilized water levels on Lake Winnipeg.

Red-winged and Yellow-headed blackbirds congregate here in the late autumn in numbers exceeding 100,000 birds. Franklin's Gulls nest in large colonies within the marsh in numbers exceeding 4,500 pairs. This represents at least 1.3% of the North American population. In the late 1970's, 325 Forster's Tern nests were recorded in the marsh or about 1.5% of the global population. Over 100 pairs of Black-crowned Night-Herons have been observed nesting in the marsh, which account for 2% of the estimated national population.

Bird species that breed in large numbers however not meeting IBA population thresholds include the Eared Grebe, Western Grebe, Sandhill Cranes and Canada Geese. It is evident that many of the bird records reported in this document are older records. There is a need to update bird records especially for the colonially nesting species.

Historically, the marsh has produced and supported extremely high muskrat and waterfowl populations. In the early 1980's both Manitoba Conservation (formerly Department of Natural Resources) and Ducks Unlimited Canada explored managing the marshes to benefit waterfowl and other wildlife. The efforts of the Netley Marsh Waterfowl Foundation Inc. (the champion of this plan) have more recently rekindled interest in water and overall marsh management.

Figure 1. Netley-Libau Marsh.



2.0 The IBA Program

The IBA program is an international initiative coordinated by BirdLife International, a global partnership of over 100 countries seeking to identify and protect sites important to the conservation of bird species worldwide. Through the protection of birds and habitats, IBA's also promote the conservation of the world's biodiversity. IBA programs are currently in place in Europe, Africa, the Middle East, Asia, and the Americas.

The Canadian IBA Program was initiated in 1996 by two Canadian environmental non-government organizations - Bird Studies Canada (BSC) and the Canadian Nature Federation (CNF). BSC will focus on data collection, site evaluation, and research of Canadian IBAs. The CNF will work on policy development, advocacy, communications, and development and implementation of IBA conservation plans. The Canadian IBA program forms part of the Americas IBA program which includes the United States, Mexico, and 17 countries in Central and South America.

The goals of the Canadian IBA program are to:

- identify a network of sites that illustrate and conserve the natural diversity of Canadian bird species and are critical to the long-term viability of naturally occurring bird populations;

- determine the type of protection or stewardship required for each site, and ensure the conservation of sites through partnerships between local stakeholder groups who develop and implement appropriate on-the-ground conservation plans; and
- establish ongoing local involvement in site protection and monitoring.

IBA sites are identified by the presence of birds falling under one or more of the following internationally agreed-upon categories:

- 1) Sites regularly holding significant numbers of an endangered, threatened, or vulnerable species,
- 2) Sites regularly holding an endemic species, or species with restricted-ranges,
- 3) Sites regularly holding an assemblage of species largely restricted to biome.
- 4) Sites where birds congregate in significant numbers when breeding, in winter, or during migration.

Important Bird Areas Funding.

In October 1998, the Government of Canada announced funding for the Natural Legacy 2000 project, a major initiative under the Canadian Millennium Partnership Program (CMPP). In total, \$10 million CDN were awarded to a consortium of four of Canada's largest nature conservation organizations -

Canadian Nature Federation, World Wildlife Fund Canada, the Nature Conservancy of Canada and Ducks Unlimited Canada. A portion of the grant, \$1.25 million was awarded to the Canadian Nature Federation for the Canadian Birdlife International Partners to conduct the Important Bird Areas Program in Canada. In Manitoba, funding was received from the Murphy Foundation in 2000 and from the Sustainable Development Innovations Fund in 2001.

For further information on the IBA Program contact: www.ibacanada.com

2.1 IBA Manitoba

The Manitoba Naturalists Society (MNS) is cooperating with the Canadian Nature Federation and Bird Studies Canada to deliver the conservation planning component of the Manitoba IBA program. The MNS is a non-profit organization made up of individuals who share a common concern for the well-being of Manitoba's nature. It was founded in 1920 for the popular and scientific study of nature.

The MNS believes that the chance to experience an undamaged environment in peace and tranquility is a joy and a privilege. It also believes in the importance of sound stewardship, the wise use of our natural resources, fostering an awareness and appreciation of the natural

environment and an understanding of humanity's place therein.

The objectives of the MNS include:

- providing an association and a voice for those interested in natural history and the outdoors,
- to cooperate with individuals and organizations with similar objectives,
- to arrange educational and recreational programs and field trips to promote an understanding of the natural environment,
- to stimulate research and to record and preserve data and material in natural history and allied subjects,
- and to work for the preservation of our natural environment.

In 1996, a number of Manitoba birders began identification of potential Manitoba IBA's. By 1999, over 100 locations were nominated for IBA status in Manitoba. In August of 1999, the MNS began IBA community conservation planning with the hiring of a conservation biologist. Shortly after, strategy meetings were held to further identify Manitoba IBA's with local community interest. Advice was solicited from the Manitoba Naturalists Society (Avian Research Committee), Canadian Wildlife Service, Ducks Unlimited Canada, Manitoba Conservation, The Nature Conservancy of Canada, Manitoba Habitat Heritage Corporation and local birders.

3.0 IBA Site Information

The Netley-Libau Marsh is an area of 24,381 hectares of upland and wetland habitats (Dept. Natural Resources 1986). The lakes of the marsh are alkaline hard waters rich in nutrients. It is located at the southern end of Lake Winnipeg, south of the beach ridge, and approximately 65-km north of Winnipeg, Manitoba. Lake Winnipeg and the Netley-Libau Marsh are remnants of glacial Lake Agassiz. The marsh is often referred to as the Red River Delta because the Red River flows through the marsh prior to entering Lake Winnipeg (Verbiwski 1986).

The Netley-Libau Marsh is a complex of lakes and streams whose water levels are influenced by Lake Winnipeg and were historically an important waterfowl nesting, staging, and molting habitat. The Libau portion of the marsh is the area which extends east of the Red River and west of the Brokenhead River. The Netley portion of the marsh extends west of the Red River. The marsh is located in Townships 16 and 15, Range 5 east, Township 16, Range 6 east and portions of Townships 17, 16, and 15 Ranges 4, 6, and 7 (EPM). Marsh inlets are the Red River, Devils Creek, Netley Creek, Wavy Creek, and the Brokenhead River.

Climate. Mean monthly temperatures range from -19.8 °C in January to +19.1 °C in July while mean annual precipitation is 507.2 mm (Environment Canada 1981).

3.1 Vegetation

A list of the dominant plant species found in the Netley-Libau Marsh was compiled by Verbiwski (1986) (see Appendix VI). In general, it reports that 38.5% (8,567.4-ha) of the Netley-Libau Marsh is open water. The dominant plant communities in 1979 were comprised of 20% cattail (*Typha spp.*), 13% bulrush (*Scirpus spp.*), 4% river bulrush (*Scirpus fluviatilis*), 7% sedge (*Carex spp.*), and 3% reed grass (*Phragmites spp.*). The uplands were 2% of the marsh and were comprised of 8% agricultural, 4% trees, 1% willows and 0.4% dwellings.

Purple Loosestrife

The Netley-Libau Marsh contains the highest levels of Purple Loosestrife



(*Lythrum salicaria*) in Manitoba (see photos taken in August 1999). Purple loosestrife was originally introduced to the East Coast of North America in the 1800's, probably as a contaminant of ship ballast. Purple loosestrife aggressively invades wetland habitats. In Manitoba,

Purple Loosestrife has Noxious Weed Status. Purple loosestrife and other invasive exotic species are further discussed in the Threats section.



Libau PFRA 1998 Survey

A survey conducted by Manitoba Conservation between July and September 1998 found 129 plant species and reported that 22% of these species were non-native (Ruta et al. 1999). The area immediately north of the Libau Prairie Farm Rehabilitation Area (PFRA) Community Pasture was surveyed. The area was found to be dominated by invasive species such as reed canary grass (*Phalaris arundinacea*) as well as the exotic purple loosestrife.

4.0 IBA Species Information

The avian species list includes 114 individual species sightings (Verbiwski 1986). Gulls, Terns, and Western Grebes are the most common nesting species on the Netley-Libau Marsh while Pelicans and Double-crested Cormorants are common but do not nest in the marsh

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(Dept. of Natural Resources 1986). Verbiwski (1986) reported that the Western Grebe is the most significant species (Verbiwski 1986). The Netley-Libau Marsh supports shiner populations and fingerlings of other fish species which are an important food source for Western Grebes.

Although waterfowl use the marsh for staging, moulting, and nesting, the numbers of waterfowl using the marsh are much diminished. Hydro projects have stabilized water levels in the marshes decreasing the amount of vegetation available to waterfowl. In an earlier report, moulting Mallards and male Wood Ducks were common with estimates as high as 25,000 birds (Verbiwski 1986). By 1986, only 635 broods were found with lack of upland nesting habitat and fluctuating water levels being the limiting factors.

A literature search revealed no information on the number of songbirds or shorebirds nesting, migrating, or staging in the Netley-Libau Marsh. It is likely that these birds frequent the marsh in large numbers. There is a need to collect baseline data on these species.

4.1 IBA Species

Five bird species in the IBA meet the Canadian IBA criteria, all under the Congregatory Species which identifies species that concentrate in significant numbers greater than 1% of their global, biogeographical, or national population (Table 1). The Netley-Libau Marsh is a globally significant IBA based upon numbers of Forster's Tern nests (325

nests in late 1970s) which is about 1.5% of the global population. Other species meeting IBA criteria are the Franklin's Gull (4,500+ breeding pairs), the Black-crowned Night-Heron (100+ breeding pairs), the Yellow-headed and Red-winged Blackbird (fall migrates 100,000+), Swallows (fall migrates 10,000) and Waterfowl (Table 1).

twelve species of ducks breed – mostly puddle ducks - breed in the IBA.

Netley-Libau Marsh is best known for its concentrations of southward-migrating birds. Past records for geese and ducks have exceeded 100,000 during fall migration. Red-winged and Yellow-headed blackbirds congregate here in late autumn in numbers exceeding 100,000. As well, at the beginning of the fall migration in August, swallows are found here in the thousands.

In addition to the numerous species that staging at the IBA site during fall migration, several bird species breed at this site in significant numbers. Franklin's Gulls nest in large colonies within the marsh, in numbers exceeding 4,500 pairs. This represents at least 1.3% of the North American population, based on upper level population estimates. In the late 1970s, 325 Forster's Tern nests were recorded in the marsh, which is about 1.5% of the global population.

In addition, over 100 pairs of Black-crowned Night-Herons have been observed nesting in the marsh, which account for 2% of the estimated national population. Species that breed in large, though not significant numbers at the site include the Eared Grebe (100+ pairs) and the Western Grebe (125+ pairs). At least

Table 1: Netley-Libau Marsh bird species information. Information is very limited.

Common Name	IBA Category	Numbers Reported	Meet Threshold	Year of Occurrence
Foster's Tern	4	38 nests		June 28 1971
Foster's Tern	4	325 nests	Yes	1979
Franklin's Gull	4	400 nests		1979
Franklin's Gull	4	4,500 pairs	Yes	1999
Franklin's Gull	4	150 pairs		1982
Franklin's Gull	4	1500 pairs		1983
Sandhill Crane	4	100's	Close	Fall 1999
Canada Geese	4	1000-5000		n/a
Canada Geese	4	4,389	Close	Aug 21 1972
Snow Geese	4	2,077		Oct 9 1974
Ducks (moulting)	4	25,000	Yes	1980 drought
Mallard	4	9,822		Sept 12 1973
Pintail	4	1,387		Sept 13 1972
Blue-winged Teal	4	5,480		Aug 30 1972
Lesser Scaup	4	4,945		Oct 5 1973
Redhead	4	3,591		Oct 5 1973
American Coot	4	2,600		Oct 5 1973
Yellow Rail	4	n/a		
Black-crowned Night Heron	4	100 pairs	Yes	
Yellow headed Blackbird	4	n/a	Yes	n/a
Red-winged Blackbird	4	100,000	Yes	n/a
Western Grebe	4	899 birds	Close	Aug-Sept 1979
Western Grebe	4	100 pairs		n/a

4.2 Natural History of IBA Species

Forster's Tern

Sterna forsteri

The Forster's Tern is similar to the Common Tern but adults in breeding plumage have a greyish tail, breast and belly are white and the bill is more yellowish-orange (Godfrey 1986).

The Forster's Tern nests only in North America breeding in inland marshes across the prairie provinces (Godfrey 1986). Early nesting records report Forster's Terns along the south borders of Lake Winnipeg and in the Netley Marshes (Thompson 1891). Hatch (1971) reported on a colony of 38 nests (June 28, 1971) in the Netley Marsh scattered over a 400 yard distance close to a Franklin's Gull colony (see Table 1). Nests are comprised by plant material and feathers built on a mat of floating vegetation in water 8-10 cm in depth (Godfrey). Hatch (1971) added nest may be on muskrat houses and on platforms of fresh vegetation. It is associated with only deep portions of large cattail marshes Cadman and Eagles 1987).

Colonies can be found by the conspicuous aerial courtship behavior that continues well after nesting begins. Typically several colonies can be clustered in a single large marsh with the nest numbers ranging from two to 325 per colony (Koonz and Rakowski 1985).

Koonz and Rakowski (1985) report the future of Manitoba's Forster's Tern is uncertain due to manipulation of water

levels by hydro projects, the draining and dyking of marshes and increased human activity near nesting colonies. Duncan (1996) listed the Forster's Tern status as "vulnerable" in Manitoba.

Western Grebe

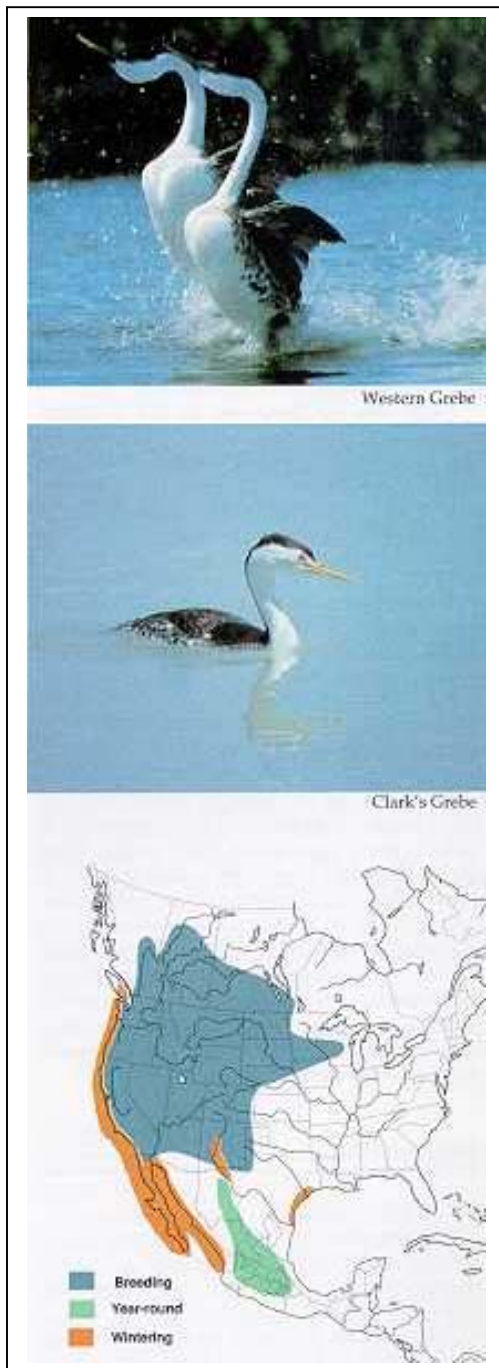
Aechmophorus occidentalis

Family Podicipedidae

The following life history information and photo on the right, except where otherwise referenced, is taken from Storer and Nuechterlein (1992). A conspicuous water bird of western North America known for their elaborate and energetic courtship rituals (see Figure 2) complex series of ritualized displays. The scientific name of the Western Grebe, *Aechmophorus* (from a Greek word meaning "one who carries a spear"), refers to the bird's sharp pointed bill, and *occidental* means "western".

Identification. The Western Grebe closely resembles the Clark's Grebe and was long considered a color morph of it. However, both mate assortatively, have different vocalizations and some DNA differences. The Western Grebe can be distinguished from Clark's Grebe by the yellowish green bill and black crown extending below bright red eyes. Line drawings indicate that the black crown extending below the eyes is the key to identification. The Clark's Grebe has an orange bill with a more sharply defined black culmen. Western Grebe tends to have less white in wing and on flanks than Clark's Grebe. Sexes nearly 100% separable on bill size and shape.

Figure 2. Dancing Western Grebes



Migration. Migration is nocturnal and thought to be in flocks. Western Grebes banded in the Delta Marsh IBA (n=28) were recovered on the Pacific coast from extreme southern British Columbia to southern California. The Pacific coast represents the wintering habitats of Western and Clark’s Grebes.

Food Habits. Main food taken is fish (81%). Grebes will frequently peer into the water with eyes below the surface searching for fish or predators. Western Grebes have a spearing mechanism for rapid extension of neck like that of herons and anhingas that is used for spearing small fish. Will also eat salamanders, crustaceans, polychaete, worms, and insects.

Vocalizations and Behavior. A number of vocalizations have been identified including an advertising call, ratchet call, threat call, begging call, copulation duet and four courtship calls (tick-pointing, barge trilling, neck-stretch trilling, and arch and storer). The rushing and weed displays of the Western Grebe occur in a predictable order. The “Rushing Ceremony” includes advertising, ratchet-pointing, dip-shaking, rushing and diving. The “Weed Ceremony” includes neck-stretching, bob shaking, weed-diving, weed-dancing, bob preening and arch-clucking. The weed ceremony occurs late in pair formation and pairs may follow the rushing with weed ceremony.

Breeding. Birds are monogamous and breeding range is restricted to western North America. The Western Grebe is

and range map.

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highly gregarious in all seasons with nesting colonies of up to several thousand birds. At Delta Marsh, birds arrive about May 1, nest from late May through to late July and depart in October. Colony localities are somewhat traditional. At Delta Marsh, hardstem and softstem bulrushes (*Scirpus acutus* and *S. validus*) were preferred (98% in 1973) to Common Reed (*Phragmites communis*) which were in turn preferred to common cattails (*Typha latifolia*). Preferences reflects water depth more than structure of vegetation – 99% of nests are located in water over 25-cm deep (Nuechterlein 1975).

The nest is built by the male and female of material brought from underwater, the surface and near the nest. Eggs are very pale bluish. Clutch sizes range from 3.7 to 3.11 depending upon initiation date. The incubation period is about 24 days. Chicks leave nest on parents back at end of incubation period. Young stay with parents until migration and associations thereafter unknown.

Human Impacts. Chicks frequently become separated from parents and die from exposure if adults dive to avoid motor boats. If colonies are disturbed parents are likely to abandon eggs. Large gulls, American Crows, Common Ravens, American Coots and Forster's Terns predate on chicks and eggs usually after human disturbance. Repeated disturbances by curious boaters lead to high incidence of nest abandonment. Hundreds of young have been found on Lake Manitoba after wind storms.

Population Status. In Manitoba, Western Grebes are listed by the Manitoba Conservation Data Centre (1996) as "apparently secure". However, on their coastal wintering grounds threats include the effects of oil spills and insecticides. These chemicals are present in their food and accumulate in their bodies, reducing their breeding success. No thorough survey available. Total North American population is assumed to be over 118,000. Populations may be declining. Nuechterlein (1975) notes that Western Grebes do not home to natal colonies, "colonial nomadism", (colony locations will vary annually according to water levels), hence data on number of nests at individual colony locations are meaningless for determining population trends. However, he reports Western Grebes do home to natal marshes so population data should be collected on the basis of bodies of water.

Conservation and Management. From the early 1890s until 1906, tens of thousands Western Grebes were shot for their "fur". Pesticides drastically reduced some populations and the drainage of lakes for agricultural purposes has also reduced nesting habitats. Oil spills and gill nets are major causes of mortality. Winter kill of fish required to sustain local populations often a problem. Colony locations are semi-traditional in large marshes and may change year to year with water conditions. Population declines within an entire marsh are a cause for concern but not declines at a specific colony site within a marsh. Fluctuating water levels are important to produce ideal breeding habitats comprised of large

bulrush islands, open channels for diving, and vegetative stands providing protection from wave/wind action. Wave action can be a large factor resulting in nesting losses.

Research. Nuechterlein (1975), who studied Western Grebes in the Delta Marsh IBA between 1973-1974, provided a number of methods that may be employed in a survey of the Netley-Libau Marsh for breeding Western Grebe colonies including aerial surveys, aerial photos and portable "muskrat house" blinds.

Franklin's Gull

Larus pipixcan

Family Laridae

Unless otherwise cited, the following life history information is from Burger and Gochfeld (1994). Franklin's Gulls nest in dense colonies, forage in flocks and commute to and from foraging sites (Kopachena 1987). It is a small, black hooded gull that nests in marshes of interior North America.

"The Franklin's Gull depends on extensive prairie marshes for breeding, and entire colonies may shift from year to year depending on water levels. Once threatened by habitat loss due to large-scale drainage projects and the Dust Bowl years, this species has regained numbers with the creation of large wetlands, mainly on protected national wildlife refuges. Colony shifts continue to occur, however, influenced by drought and fluctuating water levels (Burger and Gochfeld 1994,

p. 1)".

Historical Population Changes.

Requires large prairie marshes for nesting, depending on water levels colonies will shift nesting sites in favour of suitable sites. Many colonies disappeared entirely during the Dust Bowl years of the 1930s and these populations were not regained. Populations began increasing after the 1930s with the creation of wildlife refuges and protected areas of marshland. It was formerly an abundant summer resident in Saskatchewan but has declined in the 1980's. Many colonies have been destroyed as a result of wetland draining across the Canadian prairies.

Population Status. North American population estimated at 500,000 birds. Some controversy over recent population trends. Based on U.S. Fish and Wildlife Service BBS's, which reported a 7.4% annual decline or a 90% decline overall. Negative trend is not consistent with reports from breeding colonies. Nesting habits of the Franklin's Gull which prefer remote, large marshes makes breeding birds difficult to survey. Main factors regulating populations are sufficient and suitable nesting habitats on large marshes. These marshes are vulnerable to drought, draining, and burning.

It is reported as a common breeder in southwestern Manitoba. The Manitoba Conservation Data Centre (1996) ranks the Franklin's Gull as "apparently secure" with five or six main nesting colonies with 12,000 breeding pairs in 1994 (W. Koonz, personal communication, 2000).

Habitat and Predators. Birds nest over water on floating mats of vegetation, on muskrat houses or floating debris in inland freshwater marshes or lakes. Colonies in cattails (*Typha* spp.), bulrushes (*Scirpus* spp.), reed grass (*Phragmites communis*) or other emergents. Nests over water for predators are mainly aerial or aquatic such as Mink (*Mustela vison*), Muskrat (*Ondatra zibethica*), Northern Harrier (*Circus cyaneus*), Great Horned Owl (*Bubo virginianus*), Peregrine Falcons (*Falco peregrinus*). Black-crowned Night-Herons (*Nycticorax nycticorax*) and American Coots will take young chicks and eggs.

Food Habits. Eats earthworms, grubs, insects, seeds, mice, fish, fish offal, crab, snails, and invertebrates. Forages in flocks in wet pastures. During breeding season feeds aerially on swarming insects and on water for aquatic insects as well as on the ground for earthworms and insects.

Vocalizations and Behaviour. There has been considerable research on Franklin's Gull vocalizations and behaviour. The vocal array includes an alarm call, long call, landing call, gakkering, and a mew call. Numerous displays have been identified such as wing-flapping, swoop and soar, threat, pursuit flights, upright, oblique, head-tossing, choking, and gakkering.

Breeding. Breeding is highly synchronous over a 21-d period. Arrives near breeding colonies in April (Dakotas

and Minnesota). Subcolonies are formed around a series of epicentres which may coalesce. Birds often nest on same water body year after year but often use a new colony site. Pair formation occurs prior to arrival at colony. Egg laying begins about one week after nest construction usually in early to mid-May in Minnesota. Eggs hatch late May to mid June. Clutch sizes range from two to four eggs with a modal size of 3 eggs.

Conservation and Management. Sensitive to human disturbance early in the breeding cycle and will entirely desert a colony site with excessive exposure to humans. Eggshell thickness did not change during the DDT era suggesting limited exposure. Nesting habitat degradation occurs during drainage of marshes or intentional drawdowns for management of waterfowl habitat. Gulls cause some degradation of habitat because of net contribution of nitrogen and phosphorus to immediate area of nesting. No management programs other than the Migratory Bird Convention Act . Maintaining large marshes and suitable water levels is main management technique.

Black-crowned Night-Heron *Nycticorax nycticorax*

Unless otherwise references, life history information is taken from W. Davis (1993). The Black-crowned Night-Heron is a rather stocky heron. It looks as if it is hunched over with its head usually tucked down into its shoulders. Its plumage is gray and white with a distinctive black cap and a pair of white



plumes that extend from the back of the head. During the breeding season, the black feathers from the head and back emit a bluish-green gloss and the legs become red.

This bird is a nocturnal and noisy heron. While "day" herons and egrets are roosting during the night, the Black-crowned Night-Heron is up feeding on fish, frogs, crustaceans, small mammals and even the young of other colonial-nesting waterbirds. Their digestive acids are so strong that bones that are consumed simply dissolve in their stomachs.

Black-crowned Night Herons are colonial breeders and gregarious throughout the year usually among reeds in marshes, or up above the ground in trees. Their nests are seemingly haphazard piles of reeds, sticks or twigs that may, over the years, become very bulky. Often, more than a dozen nests can be found in a tree. Also roosts communal in the winter. Will nest with other herons. Male initially begins to build a new nest or refurbish an old one with 86% of birds using old nests. The males' twig ceremony gradually changes to nest building and may function to strengthen the pair bond.

Generally only 2-3 bluish-green eggs per clutch are laid between June and July. Eggs are laid in 2-day intervals, both parents incubate with eggs hatching in 23-26 days. After 2 weeks the young can leave the nest and after 3 weeks are often found clustered at top of tree. One brood per year but will renest if first nest fails. Juvenile birds disperse widely in all directions after nesting, however, the northern populations have received much attention as it is in the opposite direction from normal migratory movements.

Migration and Habitat. This heron migrates in large flocks almost exclusively at night, resting during the daylight hours. Southward migration begins in late September or October following the Mississippi River system pathways. Birds begin to arrive in the northeast by the end of March. Birds prefer wetlands with equal proportions of water and vegetation. Use of habitats fluctuates accordingly to water levels. General habitats used by Black-crowned Night Herons includes swamps, streams, rivers, lakes, lagoons, canals, ponds and wet agricultural fields.

Food Habits. Main foods taken include leeches, earthworms, aquatic and terrestrial insects, fish, lizards, rodents, snakes, eggs and plant material. Prefers to feed along shallow weedy pond margins and in marshes. Feeds primarily from evening to early morning but will feed during the day during the breeding season.

Behavior. Male chooses nest site and advertises for females. Pair formation

begins with males performing "Snap Displays" in which they walk about in a crouch and lower extended head and neck with feathers of head and neck and back somewhat erect, and snap mandibles together. At the time of pair formation the legs of both sexes turn pink, back and head plumage has a glossy bluish-green sheen, lores become black. The white cranial plumes displayed during courtship aid in pair formation.

Population Status. Nesting individuals tend to be inconspicuous during aerial surveys, hence aerial surveys underestimate true numbers. No population data is available for all of North America. Little historic data exist for Manitoba (Koonz and Rakowski 1985). Because of lack of census data population trends are difficult to assess. Drainage of wetlands may have caused some population declines due to loss of habitat.

In 1975 this species was listed on the National Audubon Society Blue List ("species which, in all or a significant part



of their range, currently exhibit potentially dangerous, apparently non-cyclical population declines"), with Quebec and

10/03/01

Ontario to the west coast also believed to be in population decline.

Habitat Destruction. Drainage of wetlands for development and agriculture, increased human disturbance, and usage of islands continues to threaten Black-crowned Night Herons. Koonz and Rakowski (1985) also identified marsh drainage, pesticides, predators and human disturbance as the important limiting factors for this species.

Conservation and Management. In the past, Black-crowned Night Herons have been shot and trapped at fish hatcheries and hunted for food. Declines in many of its populations were probably attributable to the use of DDT. Black-crowned Night Herons are high on the food chain and serve as excellent environmental indicators and are being evaluated as an indicator of estuarine contamination by the U.S. Fish and Wildlife Service's National Contaminant Biomonitoring Program (Custer et al. 1991). Pesticide contamination (organochlorine) also has been demonstrated in eggs of Black-crowned Night Herons.

Canada Goose

Branta canadensis

The Netley-Libau Marsh is recognized by Poston et al. (1990) as a locally important wetland for staging geese (1000 to 3000 birds), however, it is not recognized as an important wetland for breeding geese. The subspecies of Canada geese on Netley are *Branta canadensis*

maxima or giant Canada goose. They are most likely associated with the Interlake-Rochester flock which nests throughout the Interlake and spends at least a portion of the winter at Rochester Minnesota. They are not Western Prairie birds (Murray Gillespie, personal communication, March 2001).

Unless otherwise referenced, Canada Goose life history information was taken from Bellrose (1976). Bellrose (1976) delineated numerous races or subspecies of Canada Geese that have developed as a result of ecological or geographical isolation on the breeding grounds. The various races mix together on migration and in wintering habitats. According to range information provided by Bellrose (1976), the Netley-Libau Marsh would primarily be used by may be used by the Eastern Prairie population (EPP) and perhaps the Tallgrass Prairie population during migration.

Eastern Prairie Population. The range of the EPP birds extends from 25 miles east of York factory and 80 miles north of Churchill on Hudson Bay through Manitoba to southwestern Louisiana and southeastern Texas. The EEP population nest in Northern Manitoba west of Hudson Bay, migrate through Manitoba, Minnesota, and Iowa and primarily winter in Missouri (Humburg et al 1998). Bellrose (1976) reports that in 1969-73 there were 180,000 geese in the EEP population including 27,000 giant Canadas. Hanson (1965) reported Giant Canada Geese (*B. canadensis maxima*) nest at Dog Lake, Delta Marsh, Alf Hole Refuge near Rennie and East Meadow

Ranch near Oak Point. This would suggest that the Netley-Libau Marsh has suitable nesting habitat for Giant Canada Geese.

Breeding. Canada geese are one of the very first birds to nest in the spring. Most Canada geese return to their breeding grounds as family units and yearlings leave shortly after arrival. Canada geese will nest in the same area of a marsh year after year and prefer the same nest foundation as previous year. Breeding pairs will defend a territory that will include the nest. Average clutch sizes are 5.14 eggs with a range of 1 to 12 eggs. Egg laying commences shortly after nest construction. Incubation ranges from 25 to 28 days with an average of 26.8 days. The male defends the territory from a sentry position while the female incubates the eggs.

Food Habits. Canada Geese benefit from agricultural products of man. Feed and cereal crops have resulted in great increases in Canada geese populations over the last three decades. While agricultural crops are the mainstay geese will consume aquatic plants and native grasses.

Shorebirds

Various sites used by shorebirds may not be used in every year as they are affected by drought and drainage. The Netley-Libau Marsh is recognized as a wetland locally important for staging

shorebirds with flocks between 1000 to 2500 birds (Poston et al. 1990).

Waterfowl

The Netley-Libau Marsh is recognized as important wetland for breeding, staging and molting ducks (Poston et al. 1990). It is regarded as one of seven nationally important wetlands for duck staging. It is identified as a site of national importance for molting ducks as well as a wetland of regional importance for staging ducks with 5000 to 20,000 birds on a regular basis (Poston et al. 1990).

Colonial Waterbirds

The Netley-Libau Marsh as a wetland of national importance of colonial waterbirds (Poston et al. 1990). Parisian Lake within the Netley-Libau Marsh is recognized as a priority site for Western Grebes (locally important), Eared Grebes (regionally important - colonies from 300 to 800 nests), Franklin's Gull (locally important - 20 to 500 nests) and Forster's Terns (nationally important - > 350 nests) (Poston et al. 1990).

The Netley-Marsh is recognized as an locally important wetland for non-breeding colonial waterbirds) for the American White Pelican and Double-crested Cormorant (Poston et al. 1990), concentrations requiring 50-500 birds.

Other Birds

In the 1998, Ruta et al. (1999) surveyed the area north of the Libau PFRA and reported finding 43 species of birds (see Appendix IV). The PFRA lands provide habitat for a number of neotropical migrants. Bald Eagles nest in the Netley-Libau Marsh. Northern Harriers and Red-tailed Hawks are also common breeders. A number of species of warblers can be found nesting throughout the marsh.

5.0 Other Elements of High Conservation Value

5.1 Furbearers

Muskrats are the most common furbearer on the marsh, followed by fox, coyote, mink, beaver and river otter. The Muskrat populations have fluctuated since 1939 between 225,000 in 1944; 45,000 in 1950; 7,500 in 1979; and 120,000 in 1981 (Verbiwski 1986). Muskrats build their houses prior to winter freeze-up, Lake Winnipeg water levels are then drawn down by Manitoba Hydro and Muskrats are forced to abandon their house.

5.2 Fisheries

The marsh provides spawning and foraging areas for several species including Brown Bullheads, Northern Pike, Carp and Yellow Perch, Goldeye, Sauger, Walleye, Catfish. Fish yields were estimated at 19.6 pounds per acre of fish habitat (Verbiski 1986).

Approximately 8,567-ha were classified as fish habitat by Verbiwski (1986).

6.0 Land Use and Ownership

In 1986, the area was comprised of 90.1% Crown land, 8.3% private land, 1.1% Indian Reserve and 0.5% municipal land. Open water occupies 8,567-ha or 38.5% of the Netley-Libau Marsh complex (Verbiwski, 1986).

7.0 Conservation Management Achieved at the IBA Site

7.1 A Manitoba Heritage Marsh

Wetlands play a vital role in prairie soil, water and wildlife conservation. Manitoba's wetlands have been disappearing at an alarming rate. Paradoxically, their very productivity has contributed to their destruction. Farmers have been draining wetlands to increase production and accommodate larger machinery. On April 18, 1985, Manitoba Conservation partnered with Ducks Unlimited Canada, the Manitoba Naturalists Society, Wildlife Habitat Canada, and the Manitoba Wildlife Federation in an effort to designate, conserve, manage and develop some of the province's most significant marshes for the benefit of all Manitobans.

A Heritage Marsh is identified as a wetland with significant value for a diversity of wildlife, including waterfowl,

shorebirds and furbearing animals and also provides important recreational, economic or educational benefits to people.

Administration of the Heritage Marsh Program is the responsibility of Manitoba Conservation. The Manitoba Heritage Marsh Program offers hope and security for our endangered wetlands and the diversity of wildlife they produce.

The Netley-Libau Marshes is a Manitoba Heritage Marsh (see Appendix II) for the following reasons (Manitoba Conservation 1999):

- A 24,000 hectare Red River Delta marsh at the south end of Lake Winnipeg. Over 90% is Crown land.
- A very fertile and dynamic system of marshes.
- Historically was an important breeding area for Redheads.
- Western Grebes, Franklin's Gulls and Black-crowned Night Herons nest regularly, plus other colonial nesting species.
- An important spawning area for Lake Winnipeg fish.
- Regulation of Lake Winnipeg water level has negatively impacted marsh health.

7.2 Management Plans and Issues in the 1980's

The two principal organizations that have explored potential marsh management projects have been Manitoba Conservation (formerly Dept. of Natural Resources) and Ducks Unlimited Canada. The formation of the Netley Marsh Waterfowl Foundation has rekindled management interest and concerns in the

marshes. The following section summarizes the main findings and views of these groups which are largely related to water management.

7.3 Ducks Unlimited Proposed Developments - 1980's

Sexton (1983) predicted changes to marsh habitat as a consequence of water management. "Historically Lake Winnipeg water levels underwent periodic fluctuations. Wetland basins peripheral to the lake presumably fluctuated at the same time. It was this wet-dry cycle that stimulated growth of marsh vegetation and maintained the wetland areas' high productivity. Beginning in 1975, Manitoba Hydro began regulation of Lake Winnipeg within a narrower range, higher water levels are held more frequently than had occurred naturally. Also, the annual variations in level will not follow the natural regime with high spring and lower summer levels. The resultant change plus the effects of wind sets will have severe impact on wetlands peripheral to Lake Winnipeg. This will have a negative impact upon waterfowl and muskrat production in particular. Sexton's (1983) assessment is applicable to the Netley-Libau Marsh and concluded three factors limit waterfowl production:

- (1) wind sets and subsequent high water affecting aquatic vegetation (submergent and emergent) as well as uplands vegetation,
- (2) overall poor upland nesting cover,

- (3) infestation of carp limits submergent growth and possibly invertebrate populations.

Mowbray (1980) also implicated water as the major factor limiting waterfowl and muskrat production in the Netley-Libau Marsh -

1. One of the major problems limiting waterfowl and muskrat production are fluctuations in water levels in the marsh due to wind tides and annual water level cycles on Lake Winnipeg. Short-term fluctuations due to wind tides on Lake Winnipeg and annual drop in water levels over the winter.
2. Higher water levels during low water cycles on Lake Winnipeg caused by the operation of Lake Winnipeg by Manitoba Hydro resulting in the lack of rejuvenation of marsh vegetation.

Roziere (1981) investigated potential use of water control structures and dykes to manage water levels in the Netley Libau Marsh. He reported Netley Marsh is subjected to considerable water level fluctuations because of its proximity to Lake Winnipeg. A combination of high lake level and severe north wind conditions may produce theoretical wind set up and wave-up rush on various dykes (Roziere 1981). A Ducks Unlimited management plan (1982) recommended:

- (1) protect the marsh against wind tide water level fluctuations,
- (2) protect the marsh against flooding from the Red River up to an including 1:10 events,

- (3) overwinter drawdown due to manipulation of Lake Winnipeg was to be prevented,
- (4) positive water level control with capability for periodic drawdown and refill for management purposes was to be provided for each unit independently, and
- (5) other limitations in nesting cover, pair sites, etc. were to be addressed via internal works or management procedures.

The Ducks Unlimited (1982) report divided the marsh into managed units and discussed management recommendations.

Upper Devil Unit would be protected from Red River flooding. The Ramsay Unit was to be protected from water level fluctuations due to wind set-up on Lake Winnipeg at the south along the Red River. Parisian Unit would be dyked with rock rip-rap to the south of Popular Point Lake. Earth dykes were also recommended for Folster Unit, Goldeye Lake, Netley Lake, Hardmans, and Harper south Units. The report estimated costs of water control and operation over a 30 year period was \$25,315,600 (in 1982 dollars) and an estimated 415,500 ducks would be produced.

7.4 Goldeye Lake Project - Ducks Unlimited

The following information is from a Ducks Unlimited report dated March 26, 1985. Ducks Unlimited became involved with the Goldeye Lake project with the intention of stabilizing water levels which had fluctuated widely.

Goldeye Lake is approximately 230 acres with close to five miles of shoreline attached to the Red River through Goldeye Creek.

A fixed crest weir was installed across Goldeye Creek in 1959 to arrest periodic backflooding from the Red River while at the same time maintaining favorable water levels within Goldeye Lake. Construction efforts did not alleviate backflooding. This condition existed as a major factor limiting waterfowl production. This dam was replaced with a new dam, control and spillway constructed upstream near the mouth of the creek. A stoplog variable control and a combination drainage and canal gate were installed to facilitate backflooding and drawdowns and to protect the marsh from wind set-ups. A fish screen may be provided in order to exclude predatory fish. Six nesting islands were constructed with a top elevation of 218.75, and 12 nest boxes have been placed around the lake (nesting boxes have not been maintained). During years of extreme flooding (1 in 20 year flood) water from the Red River will enter Goldeye Lake.

A drawdown by pumping was conducted in 1984 when island construction took place. It is suggested that subsequent drawdowns occur every seven or eight years. Following a drawdown, three to four years should allow emergent vegetation to become established within the large southern portion of the project.

Fisheries branch personnel determined that Goldeye Lake is suitable for use as a walleye rearing area. A Fisheries report by Mr. A.J. Derksen suggested stocking in early May with 5-10 day old walleye fry and releasing fish from late August to freeze-up. No rearing efforts have taken place to date.

The water in Goldeye Lake is slightly brackish and a severe turbidity problem exists. Upland vegetation includes sedges (*Carex* spp), whitetop (*Scolocholoa festucacea*), forbs and shrubs. Emergent vegetation includes 15% cattail (*Typha* spp), bullrush (*Scirpus* spp) and about 5% common grass (*Phragmites communis*). Submergent species include *Potamogeton vaginatus*, *P. richardsonii*, coontail (*Ceratophyllum demersum*), duck weeds (*Lemna* spp), burreed (*Sparganium* spp) and arrowhead (*Sagittaria cuneata*).

Purple loosestrife was discovered at Goldeye Lake in 1995 and it was evident that it had been present for several years. On July 31, 1996, 1000 adult *Galerucella californiensis* were released into the southern portion of the marsh (50° 17'18"; 96° 52'30"). These biocontrol agents established and were distributed around the lake in 2000.

7.5 Manitoba Department of Natural Resources Management Plans 1980's

In 1979 the Wildlife Branch of the Manitoba Department of Natural Resources initiated a series of

investigations and prepared a comprehensive wetland development and management plan for the Netley-Libau Marsh (Verbiwski 1986). These plans were intended to preserve and enhance the natural resources of the marsh. Historically the Netley-Libau Marsh produced and sustained extremely high muskrat and waterfowl populations from which local residents and communities benefited economically (Verbiwski 1986). Since water regulation of Lake Winnipeg water levels by Manitoba Hydro the capability of Netley-Libau Marsh to support wildlife populations has been greatly reduced. Fluctuating water levels were identified as the principle problem and most significant factor affecting waterfowl, furbearers, agricultural and recreational resources (Verbiwski 1986).

The 1986 report summarized the identified water concerns as follows:

"The fluctuations occur in response to water level conditions on Lake Winnipeg. Wind set-ups (seiches) and set-downs on Lake Winnipeg create short-term water level fluctuations in the marshes. Because several breaches have formed through the beach ridge when large volumes of water enter or exit the marshes. This creates rapid water level changes. Upland areas are flooded during set-up conditions and extensive mud flat areas are created during a set-down. Waterfowl nests, agricultural lands and recreational developments are flooded during set-up conditions.

"In the winter, the drawdown of Lake Winnipeg by Manitoba Hydro causes a corresponding drawdown on the marsh. Freeze-out conditions develop which force the muskrats to vacate their houses. Muskrat mortality may be exceptionally high under these circumstances.

Water level fluctuations also occur in response to spring flooding of the Red River. Several lagoons within the marshes act as temporary reservoirs for flood waters flowing into Lake Winnipeg. Peripheral marshes and upland areas generally are flooded during the spring run-off period"

The Verbiwski (1986) report recommended that to increase the wildlife, agricultural and recreation values, fluctuating water levels must be controlled or reduced. The report recommended isolation of portions of the marsh from Lake Winnipeg and the Red River through earth dykes, barriers, and water control structures, similar to the Ducks Unlimited Management Plan.

7.6 Netley Creek Provincial Park

Home to Netley Marsh, one of the greatest waterfowl nesting areas of North America, the park is where some 18 species of ducks nest and geese congregate

in the fall hunting season. A favorite spot for bird watchers and sportsmen. Location: junction of the Red River and Netley Creek, 16 km/10 mi. north of Selkirk on PR 320.

7.7 Netley Marsh Game Bird Refuge

The Netley Marsh Game Bird Refuge is in the Rural Municipality of St. Andrews approximately 5.5 miles northeast of Petersfield and centrally located in the marsh (see Appendix VIII). It is about 2,650 acres or 4.12 square miles in area and is all Crown Land. The Selkirk Game and Fish Association requested that the area, formerly a fur rehabilitation block, become a game bird refuge. On August 31, 1966, the Manitoba regulation 92/66 formerly established the area as the Netley Marsh Game Bird Refuge. Nest boxes for geese were erected by the Winnipeg and Selkirk Game and Fish Associations in 1965 and 1966.

The refuge was established to improve hunting in the surrounding public shooting grounds by providing a refuge area for migratory game birds, thus encouraging them to remain in the area longer in the fall. In September 28, 1972 the Manitoba Government prohibited the use of power boats on Netley Marsh except on designated channels or water routes.

8.0 IBA Stakeholder Group Activities

8.1 Netley Marsh Waterfowl Foundation Inc.

The Netley Marsh Waterfowl Foundation (marsh@mb.sympatico.ca), a non-profit organization, was formed in 1999 by citizens concerned with the continued deterioration of the marsh ecosystem and its failure to support migratory birds and other wildlife species. This group will lead IBA conservation efforts in the Netley-Libau Marsh. Their objective is to seek the rehabilitation of the marsh and to increase wildlife capabilities to historic levels. Activities of the foundation include:

- construction and installation of nesting tunnels and nest boxes for waterfowl to remediate the effects of stabilized Lake Winnipeg water levels on the marsh,
- locating areas of Purple Loosestrife infestation and rearing insects for biocontrol,
- assisting IBA surveys and research, determining the areas in the marsh which need habitat restoration,
- production of a newsletter and website, and conducting educational seminars and workshops for youth and adults,
- and holding the Canadian Waterfowl Festival each fall in Selkirk.

8.2 Selkirk Bird Watchers Club

The Selkirk Birdwatchers Club formed over 6 years ago. The Club meets on the first Wednesday of the month at the Gordon Howard Seniors Centre except during the summer months. There are about 40 members whose main interests are birds and bird related topics. Presentations are done by members and invited guests and speakers. The group visits sites of interest, conducts field trips, participates in the annual Christmas Bird Count and this past February also began taking part in the third annual Great Backyard Bird Count.

The club participates in variety of community activities. The Club spearheaded the development of a nature trail with support from the Selkirk Lions Club, The Gordon Howard Seniors Centre, and the Selkirk Operations Department. The trail starts at the Selkirk Marine Museum and follows the dike along the river into Selkirk Park. The trail will be open year round and the Club hopes that it will become part of the Trans Canada Trail which could pass through Selkirk. The Birdwatchers Club took part in the Birds Hill Park Open House on February 23, 2000 through a display of its activities and bird houses.

The Selkirk Birdwatchers Club were the lead partner conducting a bird survey of the marshes in 2000. Four survey routes were identified for the survey and the 2000 survey dates are in brackets:

1. Shoreline from West Channel to Main Channel (May 28, July 28 & Oct. 13th) Route Captain Gerry Cooper;
2. Marsh west side (Netley) (May 27, June 25, July 15, Sept 25) Route Captain Doug Schindler;
3. Marsh east side (Libau) (May 27, June 24, July 21, Oct. 18) Route Captain Bill Purvis;
4. End of Main Street & Goldeye Lake (May 29, June 27, July 18, Sept 30) Route Captain Gerald Machnee and Ralph Massey.

The survey required a total of 35 person days and 280 hours and data are currently being analyzed. Surveys were conducted according to the instructions for conducting a North American Breeding Bird Survey as provided by the Canadian Wildlife Service and it is expected that they will be repeated in 2001.

8.3 Ducks Unlimited Canada

Founded in 1938, Ducks Unlimited Canada is a private, non-profit organization dedicated to the conservation of wetlands for the benefit of North America's waterfowl, wildlife and people. To date Ducks Unlimited has secured and protected over 7 million hectares of habitat, established nearly 6,000 projects, and are formally recognized as the nation's most trusted and respected conservation organization. Ducks Unlimited is a registered charitable organization,

governed by 80 board of directors representing business, industry and commerce across Canada. Operations are managed by the Executive Vice President and carried out by 450 staff employees across 40 offices. Head office is located at Oak Hammock Marsh, Manitoba. Today, Ducks Unlimited Canada has over 150,000 members and supporters and over 8,000 volunteers.

9.0 Opportunities

9.1 Recreation

The forested sand beach ridge, scenic shorelines and numerous waterways provide for a wide array of recreational activities including boating, sailing, canoeing and bathing (Verbiwski 1986). Provincial recreational developments are located at Patricia Beach, Netley Creek and Breezy Bend along the Red River. The lack of public access and limited user facilities have reduced the area's capabilities as a primary recreation area (Verbiwski 1986).

9.2 Birding Opportunities

The observation tower located at the End of Main Street (boat launch, boat rentals, food, and wayside) provides an ideal location from which to observe birds.



The viewing tower (above) has interpretative signage discussing the Netley-Libau marshes. From the tower you can observe Goldeye Lake, Netley Creek and The Red River. Bird species you may see include Red-winged Blackbirds, American Crow, Ravens, Mallards, Eastern Flycatchers, Yellow Warblers, American Gold Finches, Chipping Sparrows, Brown-headed Cowbirds, American White Pelicans and Western Grebes.

9.3 Education

The Netley-Libau IBA provides unlimited educational opportunities. The Netley Marsh Waterfowl Foundation has led educational programs into the marsh in partnership with the Ducks Unlimited Greenwings Program. In 2000, the IBA program in partnership with the Lockport High School conducted a one-day bird-a-thon near the End of Main Street. The marsh could be used as a living classroom for local schools and opportunities exist for the University of Winnipeg and University of Manitoba.

10.0 Threats

10.1 Exotic Invasive Species

The marshes have a large number of exotic invasive species and weedy species (Ruta et al. 1999). The following species are presently having the greatest impacts.

Purple Loosestrife. Purple Loosestrife (*Lythrum* spp) is an Eurasian perennial that was accidentally introduced into North America in the early 1800's. Purple Loosestrife has been described as an invasive alien, an exotic alien, a noxious weed, a wetland invader, a beautiful killer, as well as a beautiful perennial flower. Purple Loosestrife destroys natural habitats, displacing native vegetation and forming dense monodominant stands. Wildlife that depend upon native vegetation for food, shelter and breeding areas are forced to leave habitats invaded by Purple Loosestrife.

Verbiwski's (1986) vegetation survey of the Netley-Libau Marsh, conducted in 1979, reported purple loosestrife as a plant of common occurrence. Based upon reports of purple loosestrife populations located on the Red River near Lockport in 1944 (Ottenbreit, 1991), purple loosestrife most likely was established down river in the Libau Marsh in the late 1940s to early 1950s. A vegetation survey carried out by D. Hinks (1936) under the authority of the Winnipeg Game and Fish Association examined thirteen waterbodies with the

Netley-Libau Marsh and did not identify any purple loosestrife infestations. Purple Loosestrife was present in many areas of the Netley-Libau Marsh by the 1980's and by 1992 it could be found throughout the marsh.

In an effort to control Purple Loosestrife in the Netley-Libau Marsh a biological weed control program was established in 1993 with the release of *Galerucella californiensis*.

Flowering Rush. In North America Flowering Rush (*Butomus umbellatus*) has been described as an aggressive plant that outcompetes native aquatic vegetation. Flowering Rush is an aquatic plant that most often grows as an emergent on wet soil or in shallow water to about one meter deep (Hroudova 1989). The species can also grow as a terrestrial plant (*B. umbellatus* forma *terrestris*) on drier areas, but emergent and terrestrial plants are identical in appearance. Flowering Rush is native to Asia, Europe and Africa and was not known to occur in North America before European settlement. It is likely there have been several separate Flowering Rush introductions into North America (Stuckey 1968). Dense stands of flowering rush may impede water recreational activities, and in turn may negatively impact local economies. Some studies suggest degraded water quality and/or habitat alteration result in loss of native plant species diversity. Flowering Rush can be found near the End of Main Street in the roadside ditches and is spreading in the IBA.

Common Carp. By 1938, the Common Carp had found its way into Manitoba from the Red River system in North Dakota. Carp were prized as ornamentals and as food; a number of agencies and private citizens stocked and farmed this species. Large populations of carp are established in Manitoba's three major lakes, as well as in several other waterbodies. Its range now extends as far north as Hudson's bay.

Common Carp are currently considered an aquatic pest fish and a detriment to the aquatic habitats that they invade. Carp infestations are typically associated with a decrease in water quality and an increase in turbidity. As a result of their feeding activity they destroy aquatic plants either directly by consuming or uprooting them or indirectly by increasing turbidity, thereby reducing the amount of light available for photosynthesis. Carp may also lead to an overall decline in the quality of the habitat, by destroying breeding habitats for birds and fish. It has also been reported that Common Carp prey on eggs of native fish species. Furthermore, carp may compete for resources with ecologically similar species.

Once they become established in a water body, carp are difficult and expensive to eliminate. The Common Carp has also contributed to the destruction of many wetland habitats and spawning areas including the Delta Marsh and the Netley-Libau Marsh. The Common Carp was recognized as a problem as early as 1944 by McLeod and Moir (1944).

Other exotic invasive species of concern include Eurasian water-milfoil (*Myriophyllum spicatum* L.) which was found in North Dakota along the Sheyenne River in 1996 and Salt Cedar (*Tamarix ramosissima*) which was introduced from Eurasia in the 1800's as an ornamental, is now wide spread in the United States. The invasion since the 1920's by exotic saltcedar (*Tamarix ramosissima* throughout the western United States and, more recently, *T. parviflora* in California) has caused enormous damage to native plant and animal communities in riparian ecosystems. Salt Cedar is a deciduous or evergreen shrubs or small trees, usually 5 to 20 feet tall. Damage by saltcedar includes the displacement of the extremely valuable cottonwood, willow, seepwillow baccharis, mesquite and other native plant communities, often by dense monotypic thickets of saltcedar. Also, it uses great amounts of groundwater and lowers water tables, causing springs to dry up and native plants to perish. It increases soil salinity and is highly susceptible to fires, both of which kill associated intolerant cottonwoods and other plants. Some 41 threatened or endangered species, especially birds and fishes, are severely impacted and many other species are declining. Also, it causes sedimentation and narrowing of channels, increases flooding, interferes with recreational usage, and reduces agricultural production (DeLoach and Lewis 2000)

10.2 Water Regulation on Lake Winnipeg

Manitoba Hydro regulates Lake Winnipeg water levels. Manitoba Hydro was granted licensed authority to regulate Lake Winnipeg water levels between 216.7 meters (711.0') ASL (above sea level) and 217.9 meters (715.0') ASL in 1975 (Verbiwski 1986). Prior to 1975, the range of water level fluctuations was much higher.

Water regulation on Lake Winnipeg has altered the physical structure of the marshes which has resulted in the loss of wetland habitat and decreased waterfowl nesting as well as a recession of plant communities. For example, in 1960 approximately 50 individual water bodies comprised the Netley-Libau Marsh, by 1980 there were 17 such water bodies. Shoreline erosion is also a threat to the marsh. In addition, habitats subjected to disturbed water regimes are also more vulnerable to invasion by exotic species.

10.3 Expansion of Libau Prairie Farm Rehabilitation Administration

A survey by Ruta et al. (1999) indicated that the potential expansion of the Libau PFRA area would impact a variety of avian species. Grazing would have a deleterious impact on ground nesting species and food supply. About 10 species that utilize reed canary grass habitat for breeding would be affected. These include at least two species of special interest, Le Conte's Sparrow and Nelson's Sharp-tailed Sparrow, since Manitoba contains a major part of their limited breeding ranges (Ruta et al. 1999).

Grazing would also eliminate cover for nesting waterfowl.

10.4 Waterfowl Hunting Declines

The Netley-Libau Marsh has historically been renowned for its waterfowling. It is reported that prior to the high water years in 1960 and 1964 the marshes supported high hunter populations, with 121 hunting lodges on the marshes. Since the early 1970's numbers of waterfowlers and waterfowl in the Netley Libau Marsh have declined.

Hunters, including waterfowl hunters, play a large role in financing the Manitoba provincial budget for delivery of wildlife management programs. A recently completed study by Gary Mauser (B.C. Wildlife Federation) reported that in Manitoba hunting license revenue made up approximately 80% of the provincial budget for wildlife management 1998-1999. Some of these funds also support conservation efforts by local organizations such as the Netley Marsh Waterfowl Foundation.

10.5 Drainage Issues along Netley Creek

Drainage issues along Netley Creek (photo below) represent loss of wildlife habitat. In an effort to increase water drainage from the surrounding agricultural lands, riparian areas are being denuded of all vegetation. This is resulting in a loss of avian habitat and loss of overall biological diversity. This is a

result of provincial policies that mandate the rapid removal of water off cereal and oil seed production areas within the Netley Creek watershed. Increased drainage from agricultural lands will also increase pesticide run-off into the marshes.



10.6 Water Diversion Projects

Water diversion projects such as the proposed North Dakota Devils Lake and Garrison Diversion would potentially introduce foreign biota into the Netley-Libau IBA which could potentially impact bird habitat. An outlet from Devil's Lake would divert water and ease flooding in the area. Water from the lake would then flow into the Red River, the Netley-Libau Marsh, Lake Winnipeg, and finally the Hudson Bay. Opponents of the project fear that such a move would introduce foreign fish and other biota into Manitoba, resulting in negative effects on the natural ecosystem.

Opposition resulted in the 1970s and 1980s over the Garrison Diversion Project, which proposed the diversion of

water from the Missouri/Mississippi river basin into Manitoba via the Red River and then into the Netley-Libau Marsh.

Although some elements of the plan were built, construction was halted in 1984 due to environmental and other concerns raised by Canada and by U.S. stakeholders, which were supported by an International Joint Commission ruling in 1977.

Despite the halt in construction, advocates of the Garrison Diversion Project have been buoyed by reformulation of the initial project in 1986 and amendments to legislation in 1999, which keep hopes of an eventual waterway diversion alive.

11.0 Conservation Goals and Objectives

Vision

The Netley-Libau Marsh Community Conservation Plan is comprised of four general goals:

1. To protect bird populations and their use of the Netley-Libau Marsh;
2. To further protect the habitat recognized as the Netley-Libau Marsh;
3. To foster a greater awareness of the Netley-Libau Marsh and the associated birds through educational endeavors that will further generate community support leading to sustained conservation actions as well as providing economic opportunities;
4. To encourage the implementation of basic research initiatives with emphasis on annual population monitoring.

The Netley-Libau Marsh IBA working group has identified a number of areas of conservation interest and these are described below. Some threats, including the impact of stabilized water levels, drainage, and pesticides will be addressed at a later point. Objectives are not ranked in any level of priority.

1. Habitat Protection

<i>Item</i>	<i>Rationale</i>	<i>Current Status / Action</i>
<p>Loss of marsh habitat as a result of water regulation. Stabilized water levels have had a deleterious impact on the marsh ecosystem and reduced the number of waterfowl using the IBA.</p>	<p>Loss of overall habitat has resulted in loss of suitable nesting habitat for a variety of birds including waterfowl.</p>	<p>Expand program to provide artificial nesting structures. Nesting Tunnels and Boxes will be monitored and maintained.</p> <p>Lead Agency: Netley Marsh Waterfowl Federation (NMWF). Timeline: Winter 2000-01</p>
<p>Invasion of non-indigenous species such as <i>Lythrum salicaria</i> (Purple Loosestrife).</p>	<p>Alien plant species are second only to habitat loss with regards to threatened species and loss of overall biological diversity</p>	<p>The Netley-Libau Marsh currently has the highest levels of Purple Loosestrife within Manitoba. Need to continue biological weed control program.</p> <p>Lead Agency: MPLP and NMWF. Timeline: Ongoing</p>

2. Educational and Research Opportunities.

<i>Item</i>	<i>Rationale</i>	<i>Current Status / Action</i>
<p>Bird Surveys.</p> <p>There is an overall lack of information on neotropical migrants using the Netley-Libau Marsh. Other bird records are 20 to 30 years old.</p>	<p>Monitoring bird population trends serve to indicate overall biodiversity of Netley-Libau Marsh.</p> <p>Bird surveys will also identify any threatened or endangered populations and identify critical habitats.</p>	<p>Only available data is a list provided by B. Verbiwski (1986). There is a need to conduct a quantitative breeding bird survey.</p> <p>Lead Agency: Selkirk Bird Watching Club. Timeline: First surveys completed in 2000. Surveys will be ongoing.</p>
<p>Educate local community on conservation of wetland habitats and birds of the Netley-Libau Marsh</p>	<p>Greater public awareness regarding the importance of wetlands and the associated flora and fauna will provide support for local conservation efforts.</p>	<p>Provide opportunities for general public, especially youth groups, to visit the Netley Marsh Waterfowl Federation Camp. Press releases. Information placed on NMWF website and in NWMF newsletter.</p> <p>Lead Agency: NMWF Timeline: Winter 2000/2001</p>

12.0 Evaluating Success

The Netley-Libau IBA community conservation plan will be reviewed on an annual basis by the present working group comprised of community stakeholder groups and led by the Netley Marsh Waterfowl Foundation.

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Canadian IBA database information was provided by the Canadian BirdLife International co-partners, Bird Studies Canada and the Canadian Nature Federation. Updated information can be obtained by contacting Bird Studies Canada/Études d'Oiseaux Canada, P.O. Box 160, Port Rowan, Ontario, Canada, N0E 1M0 Tel: 1-888-448-BIRD Fax: 1-519-586-3532. Email: generalinfo@bsc-eoc.org.

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Appendix I: Netley-Libau CCP Key Contacts

<i>Name</i>	<i>Organization</i>	<i>Contact Numbers</i>
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Appendix II: The Manitoba Heritage Marsh Program

What is a Heritage Marsh ??

The intent of the Manitoba Heritage Marsh Program is to change the attitude regarding marshlands from one of discouragement to one of optimism. Partnerships will be established between conservation organizations and the Province to face the problems of marshland conservation. Key marshes will be identified, issues described, solutions worked out and cost-sharing agreed upon. Primary participants will be Manitoba Conservation, Ducks Unlimited Canada and the Manitoba Wildlife Federation. Benefits of the program include tourism revenue, resolution of land and resource conflicts, partnerships between organizations, land use policies will be implemented, public awareness and involvement and the principles of resource stewardship will be promoted. Marshes identified for the program will have characteristics that include:

- significant wildlife values (especially for waterfowl, shorebirds and furbearing animals);
- provide recreational, economic or educational benefits to the adjacent communities;
- marshes where land use conflicts have resulted in degradation of wildlife production leaving the marsh in jeopardy;
- marshes where considerable Crown land is present; and
- marshes that are of joint interest to the major participants.

Potential projects identified in 1982 included the Saskeram WMA, Delta Marsh, Oak & Plum Lake Marshes, Oak Hammock Marsh, Dennis Lake, Whitewater Lake, **Netley-Libau Marsh**, Turtle River Marsh, Lizard Lake, Big Grass Marsh, and Lidcliff Marshes.

Appendix III: Avian Species List of Netley-Libau Marsh (Verbiwski 1986)

Common Name	Scientific Name	Occurrence
WATERBIRDS		
Eared Grebe	<i>Podiceps nigrocollis</i>	Common
Western Grebe	<i>Aechmophorus occidentalis</i>	Common
Pied-billed Grebe	<i>Podilymbus podiceps</i>	Common
American White Pelican	<i>Pelecanus erythrorhynchos</i>	Common
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	Common
Great blue Heron	<i>Ardea herodias</i>	Common
Black-crowned night Heron	<i>Nycticorax nycticorax</i>	Common
American Bittern	<i>Botaurus lentiginosus</i>	Common
Least Bittern	<i>Ixobrychus exilis</i>	Common
GULLS & TERNS		
Herring Gull	<i>Larus argentatus</i>	Common
Ring-billed Gull	<i>Larus delawarensis</i>	Common
Franklin's Gull	<i>Larus pipixcan</i>	Common
Common Tern	<i>Sterna hirundo</i>	Common
Black Tern	<i>Chlidonias niger</i>	Common
American Coot	<i>Fulica americana</i>	Common
SHOREBIRDS		
Killdeer	<i>Charadrius vociferus</i>	Common
Black-bellied Plover	<i>Pluvialis squatarola</i>	UnCommon
Ruddy Turnstone	<i>Arenaria interpres</i>	UnCommon
Upland Sandpiper	<i>Bartramia longicaudra</i>	UnCommon
Sora	<i>Porzana carolina</i>	Common
Common Snipe	<i>Capella gallinago</i>	Common

Spotted Sandpiper	<i>Actitis macularia</i>	Common
American Avocet	<i>Recurvirostra americana</i>	UnCommon
Red-necked Phalarope	<i>Lobipes lobatus</i>	Common
Wilson's Phalarope	<i>Steganopus tricolor</i>	Common
Greater Yellowlegs	<i>Tringa melanoleuca</i>	Common
Lesser Yellowlegs	<i>Tringa flavipes</i>	Common
Willet	<i>Catoptrophorus semipalmatus</i>	UnCommon
WATERFOWL		
Snow Goose	<i>Chen caerulescens</i>	Common
Canada Goose	<i>Branta canadensis</i>	Common
Mallard	<i>Anas platyrhynchos</i>	Common
Black Duck	<i>Anas rubripes</i>	Common
Gadwall	<i>Anas strepera</i>	Common
Northern Pintail	<i>Anas acuta</i>	Common
Green-winged Teal	<i>Anas crecca</i>	Common
Blue-winged Teal	<i>Anas discors</i>	Common
American Wigeon	<i>Anas americana</i>	Common
Northern Shoveler	<i>Anas clypeata</i>	Common
Wood Duck	<i>Aix sponsa</i>	Common
Redhead	<i>Aythya americana</i>	Common
Canvasback	<i>Aythya valisineria</i>	Common
Lesser Scaup	<i>Aythya affinis</i>	Common
Greater Scaup	<i>Aythya marila</i>	UnCommon
Ring-necked Duck	<i>Aythya collaris</i>	Common
Common Goldeneye	<i>Bucephala clangula</i>	Common
Bufflehead	<i>Bucephala albeola</i>	Common
Ruddy Duck	<i>Oxyura famaricensis</i>	Common

Hooded Merganser	<i>Lophodytes cucullatus</i>	Common
Common Merganser	<i>Mergus merganser</i>	Common
Old Squaw	<i>Clangula hyemalis</i>	Rare
Sandhill Crane	<i>Grus canadensis</i>	Common
Tundra Swan	<i>Olor columbianus</i>	UnCommon
HAWKS AND BUTEOS		
Northern Harrier	<i>Circus cyaneus</i>	Common
Red-tailed Hawk	<i>Buteo jamaicensis</i>	Common
Northern Goshawk	<i>Accipiter gentilis</i>	UnCommon
Sharp-shinned Hawk	<i>Accipiter striatus</i>	UnCommon
American Kestrel	<i>Falco sparverius</i>	Common
Golden Eagle	<i>Aquila chrysaetos</i>	Common
OWLS		
Great Horned Owl	<i>Bubo virginianus</i>	Common
Great Gray Owl	<i>Strix nebulosa</i>	UnCommon
Snowy Owl	<i>Nyctea scandiaca</i>	Common
GROUSE		
Ruffed Grouse	<i>Bonasa umbellus</i>	Common
Sharp-tailed Grouse	<i>Pedioecetes phasianellus</i>	Common
Mourning Dove	<i>Zenaida macroura</i>	Common
Rock Dove	<i>Columba livia</i>	Common
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	Common
Common Nighthawk	<i>Chordeiles minor</i>	Common
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	Common
Belted Kingfisher	<i>Megaceryle alcyon</i>	Common
Common Flicker	<i>Calaptes auratus</i>	Common

Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	Rare
Eastern Kingbird	<i>Tyrannus tyrannus</i>	Common
Western Kingbird	<i>Tyrannus verticalis</i>	Common
Tree Swallow	<i>Iridoprocne bicolor</i>	Common
Barn Swallow	<i>Hirundo rustica</i>	Common
Blue Jay	<i>Cyanocitta cristata</i>	Common
SONGBIRDS		
Black-capped Chickadee	<i>Parus atricapillus</i>	Common
Wren	<i>Cistothorus platensis</i>	Common
Brown Thrasher	<i>Toxostoma rufum</i>	Common
American Robin	<i>Turdus migratorius</i>	Common
Swainson's Thrush	<i>Catharus ustulatus</i>	Common
Yellow Warbler	<i>Dendroica petechia</i>	Common
Yellow Rumped Warbler	<i>Dendroica coronata</i>	Common
Common Yellowthroat	<i>Dendroica dominion</i>	Common
House Sparrow	<i>Passer domesticus</i>	Common
Western Meadowlark	<i>Sturnella neglecta</i>	Common
Bobolink	<i>Dolichoryx oryzivorus</i>	Common
Yellow Headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	Common
Red Winged Blackbird	<i>Agelaius phoeniceus</i>	Common
Common Grackle	<i>Quiscalus quiscalus</i>	Common
Baltimore Oriole	<i>Icterus galbula</i>	Common
Brown-headed Cowbird	<i>Molothrus ater</i>	Common
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	UnCommon
American Goldfinch	<i>Carduelis tristis</i>	Common
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	UnCommon
Savannah Sparrow	<i>Passerculus sandwichensis</i>	Common

Dark-eyed Junco	<i>Junco hyeralis</i>	Common
Chipping Sparrow	<i>Spizella passerina</i>	UnCommon
Swamp Sparrow	<i>Melospiza georgiana</i>	Common
Song Sparrow	<i>Melospiza melodia</i>	Common

Appendix IV: Avian Species List Libau PFRA (Ruta et al. 1999).

Scientific Name	Common Name	Notes
<i>Agelaius phoeniceus</i>	Red-winged Blackbird	Common
<i>Ammodramus lecontei</i>	Le Conte's Sparrow	Common
<i>Ammodramus nelsonii</i>	Nelson's Sharp-tailed Sparrow	Common
<i>Anas acuta</i>	Northern Pintail	Uncommon
<i>Anas platyrhynchos</i>	Mallard	Common
<i>Aythya americana</i>	Redhead	Uncommon
<i>Bombycilla cedrorum</i>	Cedar Waxwing	Common
<i>Branta canadensis</i>	Canada Goose	Common
<i>Buteo jamaicensis</i>	Red-tailed Hawk	Uncommon
<i>Carduelis tristis</i>	American Goldfinch	Common
<i>Chen caerulescens</i>	Snow Goose	Common
<i>Circus cyaneus</i>	Northern Harrier	Uncommon
<i>Cistothorus palustris</i>	Marsh Wren	Common
<i>Cistothorus plantensis</i>	Sedge Wren	Common
<i>Contopus virens</i>	Eastern Wood-Pewee	Uncommon
<i>Dendroica coronata</i>	Yellow-rumped Warbler	Common
<i>Dendroica palmarum</i>	Palm Warbler	Uncommon
<i>Dendroica petechia</i>	Yellow Warbler	Common
<i>Dolichonyx oryzivorus</i>	Bobolink	Common
<i>Dumetella carolinensis</i>	Grey Catbird	Uncommon
<i>Empidonax minimus</i>	Least Flycatcher	Common

<i>Falco sparverius</i>	American Kestrel	Common
<i>Gallinago gallinago</i>	Common Snipe	Common
<i>Geothlypis trichas</i>	Common Yellowthroat	Common
<i>Hirundo rustica</i>	Barn Swallow	Uncommon
<i>Icterus spurius</i>	Orchard Oriole	Rare
<i>Melospiza georgiana</i>	Swamp Sparrow	Common
<i>Melospiza melodia</i>	Swamp Sparrow	Common
<i>Parus atricapillus</i>	Black-capped Chickadee	Uncommon
<i>Phalacrocorax auritus</i>	Double-crested Cormorant	Uncommon
<i>Picoides pubescens</i>	Downy Woodpecker	Uncommon
<i>Picoides villosus</i>	Hairy Woodpecker	Uncommon
<i>Porzana carolina</i>	Sora	Common
<i>Sitta carolinensis</i>	White-breasted Nuthatch	Uncommon
<i>Spizella pallida</i>	Clay-coloured Sparrow	Uncommon
<i>Sturnella neglecta</i>	Western Meadowlark	Uncommon
<i>Troglodytes aedon</i>	House Wren	Uncommon
<i>Tyrannus verticalis</i>	Western Kingbird	Uncommon
<i>Tyrannus tyrannus</i>	Eastern Kingbird	Common
<i>Vireo gilvus</i>	Warbling Vireo	Common
<i>Vireo olivaceus</i>	Red-eyed Vireo	Common
<i>Zenaida macroura</i>	Mourning Dove	Common
<i>Zonotrichia albicollis</i>	White-throated Sparrow	Uncommon

Appendix V: Mammalian species list of the Netley-Libau Marsh (Verbiwski 1986).

Common Name	Scientific Name	Occurrence
Muskrat	<i>Ondatra zibethica</i>	Common
Beaver	<i>Castor canadensis</i>	Common
Raccoon	<i>Procyon lotor</i>	Common
Mink	<i>Mustela vison</i>	Common
Striped Skunk	<i>Mephitis mephitis</i>	Common
Red Fox	<i>Vulpes fulva</i>	Common
Coyote	<i>Canis latrans</i>	Common
Eastern Grey Squirrel	<i>Sciurus carolinensis</i>	Common
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	Common
Franklin Ground Squirrel	<i>Citellus franklini</i>	Common
Thirteen-lined Ground Squirrel	<i>Citellus tridencemlineatis</i>	Common
Woodchuck	<i>Marmota monax</i>	Common
Meadow Vole	<i>Microtus pennsylvanicus</i>	Common
Badger	<i>Taxidea taxus</i>	UnCommon
Snowshoe Hare	<i>Lepus americanus</i>	Common
Whitetail Jack Rabbit	<i>Lepus townsendi</i>	Common
River Otter	<i>Lutra canadensis</i>	Common
Whitetail Deer	<i>Odocoileus virginianus</i>	Common
Moose	<i>Alces alces</i>	Common
Elk	<i>Cervus canadensis</i>	Rare
Black Bear	<i>Ursus americanus</i>	Rare

Appendix VI: Plant species list of the Netley Libau Marshes (Verbiwski 1986).

Common Name	Family	Scientific Name	Occurrence
Field Horsetail	Equissetaceae	<i>Equisetum arvense</i>	Common
Common Cattail	Typhaceae	<i>Typha latifolia</i>	Common
Narrow Leaved Cattail		<i>Typha angustifolia</i>	Common
Bur Reed	Sparganiaceae	<i>Sparganium eurycarpum</i>	Common
Sago Pondweed	Zosteraceae	<i>Potamogeton pectinatus</i>	Common
Richardon's Pondweed		<i>P. richardsonii</i>	Common
Flat Stemmed Pondweed		<i>P. zosteriformis</i>	Common
Water Plantain	Alismataceae	<i>Alisma triviale</i>	Common
Arrowhead		<i>Sagittaria cuneata</i>	Common
Flowering Rush	Butomaceae	<i>Butomus umbellatus</i>	UnCommon (Exotic)
Canada Waterweed	Hydrocharitaceae	<i>Elodea canadensis</i>	Common
Tapegrass		<i>Vallisneria americana</i>	UnCommon
Couch-grass	Gramineae	<i>Agropyron repens</i>	Common
Slough-grass		<i>Beckmannia syzigachne</i>	Common
Northern Reed Grass		<i>Calamagrostis inexpansa</i>	Common
Canada Wild Rye		<i>Elymus canadensis</i>	UnCommon
Virginia Wild Rye		<i>E. virginicus</i>	UnCommon
Fowlmeadow Grass		<i>Glyceria striata</i>	Common
Foxtail Barley		<i>Hordeum jubatum</i>	Common
Timothy		<i>Phleum pratense</i>	Common
Reed Grass		<i>Phragmites communis</i>	Common

Appendix VII: IBA Canada Partners

BirdLife International

A pioneer in its field, BirdLife International (BL) is the first non-government organization dedicated to promoting world-wide interest in and concern for the conservation of all birds and the special contribution they make to global biodiversity. BirdLife operates as a partnership of non-governmental conservation organizations, grouped together within geographic regions (e.g. Europe, Africa, Americas) for the purpose of planning and implementing regional programs. These organizations provide a link to on-the-ground conservation projects that involve local people with local expertise and knowledge. There are currently 20 countries involved in the Americas program throughout North, Central and South America.

For further information about BirdLife International, check the following web site: <<http://www.birdlife.net/>.

The Canadian Important Bird Areas Program has been undertaken by a partnership of two lead agencies. The Canadian Nature Federation and Bird Studies Canada are the Canadian BirdLife International partners.

The Canadian Nature Federation (CNF)

The Canadian Nature Federation is a national conservation organization with a mission to be Canada's voice for the protection of nature, its diversity, and the processes that sustain it. The CNF represents the naturalist community and works closely with our provincial, territorial and local affiliated naturalists organizations to directly reach 100,000 Canadians.

The strength of our grassroots naturalists' network allows us to work effectively and knowledgeably on national

conservation issues that affect a diversity of ecosystems and human populations in Canada. The CNF also works in partnership with other environmental organizations, government and industry, wherever possible.

Our approach is open and cooperative while remaining firm in our goal of developing ecologically-sound solutions to conservation problems. CNF's web site is <<http://www.cnf.ca>.

Bird Studies Canada (BSC)

The mission of Bird Studies Canada is to advance the understanding, appreciation and conservation of wild birds and their habitats, in Canada and elsewhere, through studies that engage the skills, enthusiasm and support of its members, volunteers, staff and the interested public. Bird Studies Canada believes that thousands of volunteers working together, with the guidance of a small group of professionals, can accomplish much more than could the two groups working independently. Current programs collectively involve over 10,000 volunteer participants from across Canada.

Bird Studies Canada is recognized nation-wide as a leading and respected not-for-profit conservation organization dedicated to the study and understanding of wild birds and their habitats. Bird Studies Canada's web site is <<http://www.bsc-eoc.org/>

Appendix VIII: Netley Marsh Game Bird Refuge

The shaded area in the middle, known as Hardmans Lake, represents the bird refuge.

