



American White Pelican *(Pelecanus erythrorhynchos)* in Ontario

Ontario Recovery Strategy Series

Recovery strategy prepared under the *Endangered Species Act, 2007*

February 2011

Natural. Valued. Protected.

About the Ontario Recovery Strategy Series

This series presents the collection of recovery strategies that are prepared or adopted as advice to the Province of Ontario on the recommended approach to recover species at risk. The Province ensures the preparation of recovery strategies to meet its commitments to recover species at risk under the Endangered Species Act, 2007 (ESA, 2007) and the Accord for the Protection of Species at Risk in Canada.

What is recovery?

Recovery of species at risk is the process by which the decline of an endangered, threatened, or extirpated species is arrested or reversed, and threats are removed or reduced to improve the likelihood of a species' persistence in the wild.

What is a recovery strategy?

Under the ESA, 2007, a recovery strategy provides the best available scientific knowledge on what is required to achieve recovery of a species. A recovery strategy outlines the habitat needs and the threats to the survival and recovery of the species. It also makes recommendations on the objectives for protection and recovery, the approaches to achieve those objectives, and the area that should be considered in the development of a habitat regulation. Sections 11 to 15 of the ESA, 2007 outline the required content and timelines for developing recovery strategies published in this series.

Recovery strategies are required to be prepared for endangered and threatened species within one or two years respectively of the species being added to the Species at Risk in Ontario list. There is a transition period of five years (until June 30, 2013) to develop recovery strategies for those species listed as endangered or threatened in the schedules of the ESA, 2007. Recovery strategies are required to be prepared for extirpated species only if reintroduction is considered feasible.

What's next?

Nine months after the completion of a recovery strategy a government response statement will be published which summarizes the actions that the Government of Ontario intends to take in response to the strategy. The implementation of recovery strategies depends on the continued cooperation and actions of government agencies, individuals, communities, land users, and conservationists.

For more information

To learn more about species at risk recovery in Ontario, please visit the Ministry of Natural Resources Species at Risk webpage at: www.ontario.ca/speciesatrisk

RECOMMENDED CITATION

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DECLARATION

The recovery strategy for the American White Pelicans has been developed in accordance with the requirements of the *Endangered Species Act, 2007* (ESA). This recovery strategy has been prepared as advice to the Government of Ontario, other responsible jurisdictions and the many different constituencies that may be involved in recovering the species.

The recovery strategy does not necessarily represent the views of all of the individuals who provided advice or contributed to its preparation, or the official positions of the organizations with which the individuals are associated.

The goals, objectives and recovery approaches identified in the strategy are based on the best available knowledge and are subject to revision as new information becomes available. Implementation of this strategy is subject to appropriations, priorities and budgetary constraints of the participating jurisdictions and organizations.

Success in the recovery of this species depends on the commitment and cooperation of many different constituencies that will be involved in implementing the directions set out in this strategy.

RESPONSIBLE JURISDICTIONS

Ontario Ministry of Natural Resources
Environment Canada – Canadian Wildlife Service, Ontario

EXECUTIVE SUMMARY

The American White Pelican (*Pelecanus erythrorhynchos*) was assessed by the Committee on the Status of Species at Risk in Ontario (COSSARO) as threatened in 2009, a re-assessment in status that reflects the species' expanding range and population in Ontario. American White Pelicans were formerly classified as endangered.

Range expansion of this migratory bird within Ontario, and the establishment of new breeding colonies, has contributed to improved population viability; however, threats to recovery persist, namely susceptibility to disease and human disturbance and/or harassment. Other threats include predation, vulnerability to water level extremes and exposure to pollution/contaminants on wintering grounds.

American White Pelicans make use of an array of freshwater and marine environments such as rivers, lakes, marshes and estuaries for foraging grounds in both summer and winter habitats. All American White Pelicans breeding in Ontario seem to require habitats with isolated breeding islands remote from disturbance and access to an adequate source of prey.

Aspects of American White Pelicans biology make it vulnerable to significant and immediate population declines and potential extirpation from Ontario. In Ontario, American White Pelicans are at the northeastern edge of their range; however, what limits them to their current range is unknown. As a colonially nesting species, American White Pelicans concentrate and breed in close proximity, enabling rapid disease transmission. Human disturbance, through either deliberate persecution or inquisitive interest, can result in offspring mortality or colony abandonment. Among colonial nesting species, American White Pelicans are considered highly sensitive to disturbance. Some breeding sites in Ontario have been in long-term continual use since colony establishment. Site fidelity of individual birds remains unknown; however, recent genetic evidence indicates high levels of gene flow among colonies, suggesting low levels of natal site fidelity and high levels of dispersal. This is an important finding as it provides evidence that American White Pelicans in Ontario are part of a single meta-population that ranges over all or most of North America.

While the number of breeding locations of American White Pelicans has increased in recent years, the fundamental threats to recovery remain.

Through the development of this recovery strategy, knowledge gaps were identified. Fundamentally, the gaps are of two kinds: first, there is a lack of information on American White Pelican abundance and distribution in Ontario; second, threats to the species have not been quantified.

The goal of the strategy is to maintain, and allow for the increase of, successfully breeding American White Pelicans at colonies in Ontario while minimizing threats to their recovery.

This goal recognizes the importance of recovery of American White Pelican within the historical range of this mid-continent affiliated species, while acknowledging and affording recovery consideration to new colonies beyond what is believed to be their historic distribution. Sustaining an adequate number of well-distributed breeding colonies will minimize the likelihood of extirpation from Ontario by buffering negative impacts at any one breeding site, should they occur. Recovery objectives are as follows:

1. identify and protect occupied and newly identified nesting habitat of the American White Pelican;
2. identify, and where feasible, reduce or eliminate known threats to the American White Pelican population in Ontario and its habitat;
3. raise awareness and promote stewardship of American White Pelicans;
4. inventory/assess the population status and monitor spatial trends of American White Pelicans; and,
5. ensure there is consistent, comprehensive, and up-to-date provincial information on the American White Pelican so that population status can be monitored, assessed and re-evaluated as required.

The most sensitive and critically important aspect of American White Pelican ecology is associated with breeding; and for this reason many of the recovery approaches presented in this recovery strategy are intended to address threats to nesting colonies. Broad social acceptance of American White Pelican is required to ensure success, and is best addressed through education.

The recovery team recommends that the area prescribed as habitat in a regulation for American White Pelican includes breeding colonies (areas with eggs and active parental attendance) and the area within 300 m used for parental care and behavioural learning. Based on an estimated lifespan of 26 years, it is recommended that the prescribed area is included in regulation until such time that there is no record of nesting activity for one full generation, or 26 years.

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1.0 BACKGROUND INFORMATION

1.1 Species Assessment and Classification

COMMON NAME: American White Pelican

SCIENTIFIC NAME: *Pelecanus erythrorhynchos*

SARO List Classification: Threatened

SARO List History: Threatened (2009), Endangered (2008), Endangered - Regulated (2004)

COSEWIC Assessment History: Not at Risk (1987)

SARA Schedule: N/A

CONSERVATION STATUS RANKINGS:

GRANK: G4

NRANK: N4B

SRANK: S2B

The glossary provides definitions for the abbreviations above

1.2 Species Description and Biology

Species Description

The American White Pelican (*Pelecanus erythrorhynchos*) is one of eight recognized species within genus *Pelecanus*. Only two of these species are found in North America: the American White Pelican and the Brown Pelican (*P. occidentalis*). The plumage of American White Pelicans is almost entirely bright white, except for the black primary and outer secondary flight feathers. In the spring, and until after breeding, the breast and covert feathers have a yellowish hue. Their legs and feet are orange while their large bill and pouch are a yellow-orange. This species is noted for its large body size, long bill and pouch. It has a wingspan of about 2.4 to 3 meters and weighs between 5.0 and 9.1 kg (Knopf and Evans 2004). Males are larger than females. Apart from the difference in size, males and females appear indistinguishable by plumage. The culmen (upper mandible) length can be used to determine sex (Dorr et al. 2005). The upper mandible can also be used to distinguish between breeding and non-breeding birds. Breeding birds develop a temporary, but prominent, fibrous epidermal plate (or “horn”) on top of the bill, which is shed following egg-laying.

Species Biology

The age of sexual maturity of American White Pelican is not clearly known (D.T. King pers. comm. 2010) but is thought to occur in their third year (Knopf and Evans 2004). Breeding and non-breeding birds begin returning to Ontario in April.

Individual site fidelity to breeding colonies (both natal and breeding site fidelity) remains unstudied, but genetic evidence suggests low natal site fidelity due to genetic homogeneity across the range (Reudink et al. In Revision). Frequent fluctuations in colony sizes (e.g., due to changes in water levels, disturbance) and the subsequent redistribution of individuals suggest that individual breeding site fidelity may also be low. In addition, data from stable-isotope analysis of pelican feathers suggest substantial numbers of individuals at breeding colonies that molted elsewhere in the range in the previous year (Reudink and Nocera unpubl. data).

Breeders initiate egg-laying in May, typically laying two eggs on the ground in a depression usually found in thin soil or sand with sticks and vegetation piled up on the outside. Clutch sizes from one to three eggs have been documented in Ontario (Peck and James 1983). Three-egg clutches may be the result of an adult retrieving an abandoned egg that may have rolled from nearby nests (Knopf and Evans 2004). The incubation period averages 31 to 32 days. After the eggs hatch, the altricial (helpless, naked, and blind) young are cared for by both parents for three to four weeks. It is rare that greater than one young is fledged (Evans and McMahon 1987). The youngest chick often dies of starvation, pecking, or exposure caused by more aggressive, older sibling(s). Evans and McMahon (1987) found that only 15 percent of second chicks survived to age two to three weeks compared with 88 percent of first chicks.

Young start to leave the nest by day 17, and all have left the nest by 25 days (Evans 1984). Groups of two to three young, called pods or crèches, begin to form when they are 17 days old and the adults start to leave the nest site unattended. Crèche size increases rapidly as more adults leave nests and 100 percent of the young within a subcolony may have aggregated into crèches by 25 days (Evans 1984). Crèches tend to be larger at night and diminish in size during the day as young disperse to some extent. By 35 days, all young in subcolonies tend to form one large crèche. This behavior may serve an anti-predator function, help in thermoregulation of chicks, and partially substitute for parental care such as brooding and protection of young, thereby allowing parents to spend more time foraging (Abraham and Evans 1999; Dentressangle et al. 2008).

The young fledge at nine to ten weeks and remain in or near the colony until late August or early September when they are about 10 to 11 weeks old, about one week after their first flight (O'Malley and Evans 1982).

Knopf and Evans (2004) report reproductive success between 0.34 to 0.68 young/nest for August counts and estimated further losses between four to ten percent before young leave the colony. First year of live survival is approximately 59% (Strait and Sloan 1975).

At Chase Lake, North Dakota, round-trip foraging distances of up to 611km have been reported for breeding American White Pelicans, based on the original release location of tagged fish found in the diet (Johnson and Sloan 1978). However, American White Pelicans are frequently observed on waterbodies surrounding colonies and Johnson and Sloan (1978) report that most of the recovered fish tags (28/31) indicated foraging within a 128km radius of the breeding colony. Similarly, Findholt and Anderson (1995a) report that most round-trip distances at Pathfinder Reservoir, Wyoming, are less than 160 km (Findholt and Anderson 1995a). Non-breeding birds are not well studied.

American White Pelicans feed almost exclusively on fish, although some crustaceans are eaten. Fish are taken in shallow waters between 0.3 to 2.5 m deep (Knopf and Evans 2004), or at the surface over deeper waters when cooperatively feeding with Double-crested Cormorants (*Phalacrocorax auritus*) (Anderson 1991). American White Pelicans forage singly, in small flocks and in conjunction with Double-Crested Cormorants. Cooperative flock feeding among American White Pelicans often drives fish into shallower water, where the capture rate is higher (O'Malley and Evans 1982; Anderson 1991).

During the summer, their prey consists of “rough” fish (Findholt and Anderson 1995b). They also consume salamanders, crayfish, and slow-moving bottom feeders and may take game fish injured by fish hooks and lures (Knopf and Evans 2004). No comprehensive diet studies have been conducted in Ontario, however the American White Pelicans on Lake of the Woods are believed to commonly target schooling fish such as Yellow Perch (*Perca flavescens*), Cyprinids, and Brown Bullheads (*Ameiurus nebulosus*). Sportfish species such as Sauger (*Sander canadense*), Pike (*Esox spp.*), Walleye (*Sander vitreum*) and Bass (*Micropterus spp.*) do not appear to be prominent components of their diet (Ratcliff 2005). On wintering grounds, consumption of farm-raised Catfish (*Ictalurus spp.*) has been a challenge for the aquaculture industry (King 2005; King et al. 2010).

Young American White Pelicans feed primarily on minnows and suckers (*Catostomidae spp.*) provided by adults (Findholt and Anderson 1995b). In one study, ten day old American White Pelicans ate approximately 0.2 kg of fish daily; 30-day-olds ate 0.9 kg; and by day 55 young were consuming 1.8 kg per day, the same as adults (Hall 1925; Knopf and Evans 2004).

1.3 Distribution, Abundance and Population Trends

American White Pelican was among the very first species to be regulated under Ontario's former *Endangered Species Act* (1971). The 1977 endangered status was transferred to the Species at Risk in Ontario (SARO) List when this became policy in 2004 and subsequently incorporated into the current *Endangered Species Act, 2007* (ESA). The species was re-evaluated in 2009 by the Committee on the Status of Species at Risk in Ontario (COSSARO). Following this evaluation, the status of American White Pelican on the SARO List was changed to threatened in February

2009. American White Pelicans are also afforded protection in Ontario under the *Fish and Wildlife Conservation Act* as a 'Specially Protected Bird'. Its conservation status is ranked as apparently secure globally and nationally (NatureServe 2009) and imperiled provincially (NHIC 2010). American White Pelicans are not listed under the *Migratory Bird Convention Act, 1994* and designated as 'Not at Risk' federally by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

In North America, the American White Pelican is distributed from the Pacific Ocean in the west to Lake Michigan and north to Lake Nipigon, Ontario in the east, though individual American White Pelicans are often sighted across much of Ontario and as far east as New Brunswick. In Canada, breeding occurs mainly in the three Prairie Provinces, although important breeding colonies also exist in British Columbia and Ontario.

It is widely accepted that American White Pelicans typically do not over-winter in Ontario, however, a few observations of 1 or 2 individuals occurring in southern Ontario during the winter months have been documented by the Ontario Bird Records Committee (Mark Cranford pers. comm. 2010). These occurrences are anomalies as American White Pelicans breeding in central Canada and the central northern United States primarily winter along the Gulf Coast, though some birds appear to cross southern Mexico and over-winter on both the Pacific and Atlantic coasts of Central America (Anderson and Anderson 2005). Western breeders appear to over-winter primarily on the Pacific Coast of Mexico, including Baja California (Diem and Condon 1967; Anderson and Anderson 2005). Interestingly, Anderson and Anderson (2005) note that no eastern-banded birds four years of age or older (i.e., putative breeders) were recovered along the Gulf of California or west of 110° longitude, potentially suggesting highly restricted movement of older birds from east to west.

More generally, the American White Pelican over-winters from central California and southern Arizona south to Baja California, western Mexico and Nicaragua and from Florida, the Gulf states, and southern Texas south through the central plateau of Mexico to the northern Yucatan Peninsula (Knopf and Evans 2004).

From a continental perspective, the recent demographic history of American White Pelican demonstrates a marked rebound in abundance. In the late 1800s and early 1900s, population sizes of American White Pelicans were drastically reduced through direct persecution (e.g., shooting adults, clubbing young, breaking eggs) aimed at increasing fish availability for profit (Thompson 1933; Palmer 1962; Keith 2005; Sovada et al. 2005). Populations were further affected by transformation of wetland and marshland areas for water diversion, recreational boating and agriculture (coupled with extensive use of fertilizers and insecticides) which led to colony abandonment across the range (Keith 2005).

Introduction of the National Wildlife Refuge system in the United States in 1903, and protections afforded by the *Migratory Birds Treaty Act* (USA, 1918), quickly led to a range-wide increase in American White Pelican numbers from the 1933 estimate of only 30,000 adults (Thompson 1933; Keith 2005).

By the early 1960s, the continental population of American White Pelicans appeared to have stabilized at about 63,000 birds (Johnsgard 1993), but numbers continued to increase over the next three decades to about 109,000 breeding individuals in 1979 to 1981 (Sidle et al. 1985). In 2005, King and Anderson estimated the overall abundance of American White Pelicans at about 134,000 breeding adults in North America. However, no continental analysis has been completed in recent years to reflect any further change in abundance.

Across their continental range, the prevalence of disease and disturbance impacts on recruitment may be increasing – resulting in notable population decreases. Four major colonies located in the northern plains that contain approximately 50 percent of the continental population have demonstrated a decline, likely in part due to disease transmission (Sovada et al. 2008). Further, disturbance of a formerly large North Dakota colony may be contributing to what appears to be range expansion in Ontario, with American White Pelicans more broadly observed throughout the province (D.T. King pers. comm. 2010).

Currently, American White Pelicans are grouped into Eastern and Western metapopulations separated by the Continental Divide – namely because of the frequent local extinction and recolonization events and differential patterns of exchange between local and distant colonies (Anderson and King 2005). However, band return data indicate some degree of movement across the Continental Divide (Anderson and Anderson 2005). Genetic data (both microsatellite DNA analysis and mtDNA analysis) suggest that this movement is enough to prevent any potential isolating effects from the Continental Divide. American White Pelicans appear to be completely panmictic (all individuals are potential partners), lacking any genetic differentiation across the entire range (Reudink et al. In Revision)

In Ontario, there are currently two primary breeding localities; Lake of the Woods and Lake Nipigon. Other secondary breeding localities include the north shore of Lake Superior where the number of nests is less than 25.

Lake of the Woods

The Lake of the Woods colony is the largest and oldest in Ontario. The first recorded breeding at this site was in 1938; however, American White Pelicans were documented in the area as early as 1775 (Peck and James 1983). At this time it is unknown whether or not there is inference to American White Pelican in the archeological record. The Ojibwa name for this species is zhede –pronounced zhay day. Vermeer (1970) estimated 440 nests at Lake of the Woods, and Sidle et al. (1985) estimated 2,140 nests in 1980 and over 2,750 in 1983. Peck (1987) estimated that 6,500 pairs nested there in 1986. These estimates are comparable to data presented by Macin (1991) for those early years (Figure 1). In 1991, American White Pelican abundance peaked at 7,500 nesting pairs within Ontario waters of Lake of the Woods, while in 2001, Lockhart and Macin (2001) estimated a very modest decline to 6,393 nesting pairs. In 2009 the number of nesting pairs was estimated at 5,595 (S. Lockhart pers. comm. 2010). In 2010 a new nesting island was discovered that may support a few hundred additional

nesting pairs. American White Pelican nesting is not restricted to the Ontario waters of Lake of the Woods; nesting also occurs on nearby islands located in Minnesota waters. In 1997 the number of nesting pairs in Minnesota waters was estimated at 832 (DeSellas et al. 2009). On four annual nest counts, 2004-2009, numbers ranged from a high of 1,344 in 2006 to a low of 428 in 2009 (K. Haws pers. comm. 2009). There are likely annual movements of nesting birds between Ontario and the five sites in Minnesota.

In Ontario, nesting records from Lake of the Woods have been collected consistently since 1965 (Ratcliff 2005). Over this period, the breeding population of the American White Pelican gradually increased, stabilized, and has since declined. In all cases, the estimates for Lake of the Woods, and elsewhere, reflect the number of nesting attempts. Very limited information on the number of young fledged (recruitment) has been obtained. At least for 2009, there is reason to believe that there was low recruitment based on observations reported from the adjacent Minnesota colony (K. Haws pers. comm. 2009).

In 2010 five nesting islands were occupied in Ontario waters of Lake of the Woods.

Lake Nipigon

American White Pelicans were first observed and reported on Lake Nipigon as early as 1979 (Bryan 1991). In 1991, at least three pairs were found nesting on Lake Nipigon (Bryan 1991) and three more colonies, totaling 14 nests, were found elsewhere on the lake in 1992 (Escott and Bryan 1993; Austen et al. 1994). In 2006, 638 nests were counted (R. Swainson pers. comm. 2009). In 2009, the number of nests was estimated at 733 (R. Swainson pers. comm. 2009), including the establishment of a new island site in 2009, which suggests this population is continuing to expand. Currently there are five nesting islands in Lake Nipigon.

Lake Superior North Shore

The main Lake Superior colony, located in Black Bay, is a new breeding site for American White Pelicans in Ontario and the first nesting site on the Canadian Great Lakes. In May 2007, Pekarik et al. (2009) flushed 37 American White Pelicans from an island and found a total of 20 nests in two groups. In 2009, 18 active nests were observed at the same site (D.J. Moore pers. comm. 2009). Also in 2009, five and six American White Pelican nests, were found on two small islets in Thunder Bay on Lake Superior. However, both these sites appeared to have been abandoned based on a site visit conducted on 8 July of that year. (D.J. Moore, unpubl. data). The Black Bay site was active in 2010 with 12 nests observed (B. Ratcliff pers. comm. 2010).

Other Attempts

Breeding at Lac Seul, near the community of Sioux Lookout, was first reported to the Ministry of Natural Resources in 2009. The site contained between 15 and 20 nests; however, these attempts were unsuccessful (D. Berube pers. comm. 2009). The site had been occupied by non-breeding birds for approximately ten years before a nesting

attempt was reported. In 2010, between 30 and 40 nests were observed. These attempts were again unsuccessful.

Breeding has also been attempted in James Bay (Peck 2007). While this site is not located in Ontario, the very close proximity of the island to the Ontario border makes this observation noteworthy. In 2010 an estimated 14 nests were observed on an island in the strait between Akimiski Island and the west coast of James Bay (K. Abraham pers. comm. 2010).

The Lac Seul and James Bay sites are not currently considered established breeding colonies and require continued observation.

Provincial Trends

American White Pelicans are responding positively to current environmental conditions with more frequent and substantive reports of their presence in eastern Ontario. These observations may be related to significant, but largely temporary, colony abandonment at Chase Lake, North Dakota. In 2004, 15,000 nesting pairs vacated this established site as a result of disturbance and some birds may have come to Ontario in their search for new nesting opportunities. (D.T. King pers. comm. 2010). The following year (2005) approximately 7,500 pairs returned to the Chase Lake site.

The estimated Ontario breeding population, as reflected by nest counts is summarized in Table 1.

Recovery Strategy for the American White Pelican in Ontario

Table 1. Nesting records for American White Pelican in Ontario (modified from Ratcliff 2005 and Macin 1991).

| | Lake of the Woods (No. of nests) | Lake Nipigon (No. of nests) | Lake Superior (No. of nests) | Other (No. of nests) | Ontario Total (No. of nests) | Ontario Breeding Birds ¹ |
|-------------------|-------------------------------------|--------------------------------|---------------------------------|-------------------------|---------------------------------|-------------------------------------|
| 1938 | 4 | -- | -- | -- | 4 | 8 |
| 1954 | 5 | -- | -- | -- | 5 | 10 |
| 1960 | 50 | -- | -- | -- | 50 | 100 |
| 1961 | 360 | -- | -- | -- | 360 | 720 |
| 1962 | 500 | -- | -- | -- | 500 | 1000 |
| 1963 | 300 | -- | -- | -- | 300 | 600 |
| 1964 | 400 | -- | -- | -- | 400 | 800 |
| 1965 | 120-130 | -- | -- | -- | 120-130 | 250 |
| 1967 | 335 | -- | -- | -- | 335 | 670 |
| 1968 | 540 | -- | -- | -- | 540 | 1080 |
| 1970 | 670 | -- | -- | -- | 670 | 1340 |
| 1971 | 965 | -- | -- | -- | 965 | 1930 |
| 1972 | 710 | -- | -- | -- | 710 | 1420 |
| 1973 | 1234 | -- | -- | -- | 1234 | 2468 |
| 1974 | 1300 | -- | -- | -- | 1300 | 2600 |
| 1975 | 1166 | -- | -- | -- | 1166 | 2332 |
| 1976 | 1000 | -- | -- | -- | 1000 | 2000 |
| 1977 | 1000 | -- | -- | -- | 1000 | 2000 |
| 1978 | 1740 | -- | -- | -- | 1740 | 3480 |
| 1979 | 3360 | -- | -- | -- | 3360 | 6720 |
| 1980 | 2140 | -- | -- | -- | 2140 | 4280 |
| 1981 | 1818 | -- | -- | -- | 1818 | 3636 |
| 1982 | 2308 | -- | -- | -- | 2308 | 4616 |
| 1983 | 4308 | -- | -- | -- | 4308 | 8616 |
| 1986 | 5902 | -- | -- | -- | 5902 | 11804 |
| 1987 | 7270 | -- | -- | -- | 7270 | 14540 |
| 1988 | 5385 | -- | -- | -- | 5385 | 10770 |
| 1989 | 4046 | -- | -- | -- | 4046 | 8092 |
| 1990 | 7885 | -- | -- | -- | 7885 | 15770 |
| 1991 | 7476 | 3 | -- | -- | 7479 | 14958 |
| 1992 ² | ----- | 14 | -- | -- | 6803 | 13606 |
| 1993 | 6789 | -- | -- | -- | | |
| 2001 | 6393 | -- | -- | -- | ----- | ----- |
| 2004 ² | 7432 | -- | -- | -- | 8070 | 16140 |
| 2006 | ----- | 638 | -- | -- | | |
| 2007 | ----- | -- | 20 | -- | ----- | ----- |
| 2008 | ----- | -- | -- | -- | ----- | ----- |
| 2009 | 5595 | 733 | 18 | x ³ | 6346 | 12692 |

¹ Total Ontario nests times (X) two adults = estimated breeding birds

² Surveys have been aggregated to illustrate the provincial trend

³ Nest attempts at Lac Seul confirmed failure



Figure 1. Current distribution of breeding American White Pelican in Ontario (modified from Ratcliff 2005).

→ Location of James Bay nesting attempt adjacent to Ontario

1.4 Habitat Needs

American White Pelicans make use of an array of freshwater and marine environments such as rivers, lakes, marshes and estuaries for foraging grounds in both summer and winter habitats. All American White Pelicans breeding in Ontario seem to require habitats with two important features: (1) isolated breeding islands remote from disturbance; and (2) access to an adequate source of prey.

American White Pelicans nest primarily on isolated islands and in Ontario are associated with larger waterbodies. They generally require remote islands to reduce human disturbance and predation. It is unclear whether treeless or vegetated sites are favored by American White Pelicans in the initial selection of islands for colonization. Islands may be treed upon first establishment of colonies comprised of American White

Pelicans and/or cormorants, however their use of the islands reduces vegetation as the colony grows over time (Anderson and Bartonek 1967).

American White Pelicans are foraging habitat generalists that can make use of many types of aquatic environments to forage (Findholt and Anderson 1995a, b). American White Pelicans typically focus their foraging efforts on areas with the greatest prey density (primarily small-bodied schooling fish), regardless of the waterbody type. Waterbodies with adequate prey need not be close to breeding colonies for them to be important habitat features; American White Pelicans often forage greater than 50 km from the breeding colonies (Findholt and Anderson 1995a; King 2005; King and Michot 2002).

1.5 Threats to Survival and Recovery

American White Pelican colonies range in size from a few individuals to more than 30,000 and fluctuate regularly, with repeated local extirpations and subsequent recolonization events, leading, in part, to the supposition that American White Pelicans fit a metapopulation model (Knopf and Evans 2004; Anderson and King 2005). This is particularly important in Ontario, where American White Pelicans are at the northeastern edge of their continental distribution. Declines, or extirpation, should they occur, are often first observed at the edge of the range, either attributed to natural variability or to vulnerability due to occupying the margin of the range for the species. (Wilson et al 2002). Range edges may shift significantly due to environmental change.

Although nesting colonially on islands poses advantages for American White Pelicans, it concentrates birds, which can render them increasingly vulnerable to large-scale and acute catastrophes, such as disease outbreaks or pollution events (see below). Concentrations of nesting birds are also liable to experience greater negative effects from more chronic perturbations such as human persecution and/or disturbance of nesting colonies, predation, and high or low water level extremes (see below).

Disease

Some Ontario American White Pelican nesting islands have a large number of breeding pairs. With concentrated density, the spread of disease could be devastating to such colonies. While not reported in Ontario, periodic outbreaks of diseases such as avian botulism, Newcastle Disease and West Nile Virus have all been reported as affecting American White Pelican populations (Rocke et al. 2005; Sovada et al. 2008; Johnson et al. 2010). In the western United States, the number of disease related die-offs appears to have increased (Rocke et al. 2005).

There has been no follow-up to assess and monitor Ontario colonies. The recovery team views disease monitoring as a high priority because of potential population level impacts. Monitoring the prevalence and pervasiveness of diseases at several scales is important. For example, botulism is initiated through the consumption of infected fish; therefore, understanding diet is important. Early detection at colonial nesting sites is

important to enable a management response, such as carcass clean-ups of both dead fish and birds to reduce proliferation of infected maggots (Evelsizer et al. 2010). Any reactive measures to a disease outbreak will not insulate the colony(ies) from some level of population decline; such measures are merely mitigation. It is therefore important to ensure that American White Pelican colonies are viable, numerous, and widely distributed (no less so than they are now). Large colonies in close proximity put American White Pelicans at risk of major population level stochastic events.

Persecution

Beginning in the 1880s, adult American White Pelicans were shot and clubbed, and eggs and young were intentionally destroyed largely because the birds were thought to compete with humans for fish. In more recent years shootings have been reported as the greatest mortality factor influencing band returns on the wintering grounds (Wiemeyer et al. 2005, 2007). In Ontario, deliberate acts of persecution have not been recorded at breeding colonies, as has been the case elsewhere.

Achieving broad social acceptance of American White Pelicans as part of our native biodiversity is a challenge. People's relationship and perspective on American White Pelican densities and foraging habits differ widely. The most significant threat to colony abandonment, and consequently recruitment, is intentional vandalism followed by inadvertent disturbance. These threats are especially problematic given that most colonies are accessible with modern watercraft.

Disturbance

American White Pelicans are sensitive to human disturbances, especially during nesting and fledging periods. Single or repeated disturbances at colonies may cause birds to abandon nests or result in avian predation. Among colonially nesting birds, the American White Pelican may be the most sensitive to human disturbance (D.T. King pers. comm. 2010). Past exposure to disturbance, even at different locations makes them susceptible to colony abandonment (D.T. King pers. comm. 2010).

Inquisitive or unintentional disturbance (e.g., by humans approaching colonies too closely) can lead to temporary or long-term abandonment of a colony. Temporary abandonment can result in death of chicks through overheating due to insufficient thermoregulation by the parents. Untimely disturbance can be especially detrimental if it results in mass predation of the eggs or young, usually by co-nesting gulls.

The setback distance required to protect nesting birds from disturbance is uncertain and is considered a knowledge gap in Ontario, recognizing that circumstances vary. Inadvertent and low levels of disturbances may occur at Ontario breeding sites.

To mitigate the impacts of disturbance Carney and Sydeman (1999) recommended buffers of 100 to 600 m around breeding colonies. In Alberta, seven breeding areas have been designated seasonal wildlife sanctuaries. In that province it is illegal to enter or approach within 800 m of these sites between April 15 and September 15. Brown Pelicans have suffered negative effects from human activity at 600 m, In contrast, some researchers have found approaches of 100 m by foot and less than 75 m by boat have

not flushed birds (Carney and Syndeman 1999). British Columbia has established aerial restrictions; aircraft are required to maintain a minimum overhead height of 610 m (Bunnell et al. 1981).

Predation

Predators are a natural threat to American White Pelicans. However, unsustainable predation at a colony, either naturally, or more often as a result of disturbance can result in population level responses such as recruitment failure or colony abandonment. Human alteration of landscapes that result in higher levels of disturbance may lead to unbalanced predation. For example, when disturbed by humans, adult American White Pelicans leave eggs and chicks temporarily unattended and thus vulnerable to predation from gulls and other opportunistic predators. As with many threats to American White Pelican recovery, there is a poor understanding of threshold levels. American White Pelicans may abandon a well-established colony following the addition of a predator such as Coyotes (*Canis latrans*) as was observed in Chase Lake, North Dakota (Sovada et al. 2005). Conversely, co-habitation with gulls, an opportunistic predator, is common and losses occur as a result.

Water Levels

American White Pelican populations may be significantly affected by either extreme high or low water levels, managed or natural. High-water levels and corresponding wave-washing as a result of storm events can lead to flooding of nests, or conversely, low water levels may connect islands to the mainland, creating a land bridge for predators.

While in some jurisdictions water levels have affected American White Pelican, in most cases, the current Ontario colonies seem well positioned to accommodate high or low water levels. General observations of Ontario colonies suggest that the nesting islands afford enough elevation to avoid most high water events and do not connect to mainland during low water events.

Nevertheless, aerial photography from 2009 illustrated that a number of nests at Lake of the Woods were located at lower elevation on the island therefore in proximity to the water's edge (S. Lockhart pers. comm. 2010).

How American White Pelicans respond to Island topography has not been systematically assessed in Ontario.

Pollution/Contaminants

Oil industry and other industrial processes and transport leaks can also cause serious problems for American White Pelicans. There are many large industrial centres along the Gulf of Mexico where many Canadian populations overwinter. Exposure to pollution and contaminants can be detrimental to the health of the birds that breed in Ontario.

It is very likely that American White Pelicans from Ontario colonies experience negative consequences from oil spills in the Gulf of Mexico region. The extensive delta regions of Louisiana and Mississippi are major over-wintering sites for American White Pelicans

(King and Michot 2002). American White Pelicans are particularly at risk of experiencing adverse effects from spills (Kerr et al. 2010).

Although it is not possible to engage in recovery action in Ontario that would mitigate impacts directly, it will be important to monitor the demographic carry-over effects of such events on American White Pelicans in Ontario. Within Ontario there are no known point sources of pollution associated with the breeding colonies; however, exposure to pollutants and contaminants may occur through atmospheric deposition or at other locations used for foraging.

1.6 Knowledge Gaps

The following are a list of knowledge gaps that apply to the recovery of American White Pelican in Ontario.

Essential:

- Baseline information on diet and recruitment, and up-to-date information on location, population size and trends for all breeding sites in Ontario.

Necessary:

- Information on the source of mortality, including the presence/prevalence of disease in Ontario colonies.
- An understanding of threshold tolerance levels of colonies to human disturbance (i.e., how close is too close?) as well as an examination of the frequency of human disturbance/visitation currently experienced at Ontario colonies. Information on the origin of birds breeding in Ontario, their fate, and interchange among colonies, including investigation of source and sink dynamics.
- Information on the foraging and movement patterns from the breeding colony.

Useful:

- An understanding of the effects of pollution and contaminants on the breeding grounds, as well as carry-over effects from pollution and contaminants from the non-breeding period.
- An evaluation of the impacts of water level changes on existing breeding colonies, especially Lake of the Woods.
- A comprehensive understanding of the contribution of non-breeding adults to population viability.

1.7 Recovery Actions Completed or Underway

Land Tenure

The most significant colonies in Ontario have been afforded protection through land tenure. The nesting sites on Lake of the Woods are located within a provincial park.

The Lake Nipigon, Lac Seul, and Lake Superior sites are all located within conservation reserves.

Inventory

In 2009, the Ministry of Natural Resources undertook aerial nest counts of active American White Pelican colonies in Ontario. This information contributes to monitoring long-term trends of nest numbers, confirms that established colonies are still active, and contributes to the discovery of new nesting locations.

Public Outreach

Requests for public assistance in reporting American White Pelicans have been issued in areas of the province where American White Pelican observations are uncommon but appear to be increasing in frequency. Public awareness has been enhanced through development of fact sheets, initiatives of the Ontario Government's Species-at-Risk Program, as well as the development of an American White Pelican website established by Trent University dedicated to ecology and research (www.ontariopelicans.com).

Research

Ontario researchers, with support of many jurisdictions throughout North America, have initiated a study to examine movement patterns and delineate the origin of new colonizers. Reudink et al. (In Revision) are using microsatellite and mtDNA markers, stable-isotopes, and trace-element analysis to characterize potential source colonies and assign new colonizers to source populations. This information is important for assisting in our understanding of recovery potential as well as assessing Ontario's population in the context of the continental population.

Other researchers (Weseloh and King) are considering the importance of population dynamics and initiating study proposals. Recovery Team members, through the examination of other jurisdictional approaches to monitoring American White Pelican, are exploring opportunities to incorporate these methods into future Ontario inventory programs.

2.0 RECOVERY

2.1 Recovery Goal

The recovery goal is to maintain, and allow for the increase of, successfully breeding American White Pelicans at colonies in Ontario while minimizing threats to their recovery.

2.2 Protection and Recovery Objectives

Table 2. Protection and Recovery Objectives

| No. | Protection or Recovery Objective |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | Identify and protect occupied and newly identified nesting habitat of the American White Pelican. |
| 2. | Identify, and where feasible, reduce or eliminate known threats to the American White Pelican population in Ontario and its habitat. |
| 3. | Raise awareness and promote stewardship of American White Pelicans. |
| 4. | Inventory/assess the population status and monitor spatial trends of American White Pelicans. |
| 5. | Ensure that there is consistent, comprehensive and up-to-date provincial information on the American White Pelican so that population status can be monitored, assessed and re-evaluated as required. |

2.3 Approaches to Recovery

Table 2. Approaches to recovery of the American White Pelican

| Relative Priority | Relative Timeframe | Recovery Theme | Approach to Recovery | Threats or Knowledge Gaps Addressed |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.0 Identify and protect occupied and newly identified nesting habitat of the American White Pelican. | | | | |
| Necessary | Short-term | Inventory | 1.1 Compile existing habitat data from across the province. | <ul style="list-style-type: none"> • Determine important habitat characteristics unique to Ontario |
| Necessary | Short-term | Inventory | 1.2 Develop provincial protocol for surveying pelican colonies. | <ul style="list-style-type: none"> • Consistent population abundance monitoring |
| Beneficial | Ongoing | Inventory | 1.3 Encourage partner and multi-agency reporting for observations. | <ul style="list-style-type: none"> • Consistent population abundance monitoring |
| Critical | Ongoing | Protection | 1.4 Ensure American White Pelican habitat is protected under the provisions of the ESA. | <ul style="list-style-type: none"> • Disturbance • Determine important habitat characteristics unique to Ontario |
| 2.0 Identify, and where feasible, reduce or eliminate known threats to the American White Pelican population in Ontario and its habitat. | | | | |
| Critical | Short-term | Monitoring, Management | 2.1 Develop a monitoring strategy to work with adjacent agencies to monitor the health of American White Pelicans. <ul style="list-style-type: none"> - develop a response strategy for use in the event that a diseased colony is found. - develop a response strategy for predator control. | <ul style="list-style-type: none"> • Monitor presence of disease in Ontario colonies • Levels/concentrations of contaminants |

Recovery Strategy for the American White Pelican in Ontario

| Relative Priority | Relative Timeframe | Recovery Theme | Approach to Recovery | Threats or Knowledge Gaps Addressed |
|-------------------|--------------------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| Necessary | Short-term | Research | 2.2 Gain a better understanding of diet preferences and diseases associated with fish consumption. | <ul style="list-style-type: none"> • Diet variations • Disease |
| Critical | Long-term | Management | 2.3 Protect colonies ¹ as necessary to ensure viability in the event of disease outbreak. | <ul style="list-style-type: none"> • Disease |
| Critical | Ongoing | Protection, Education and Outreach, Communication | 2.4 Develop a best management practices document for use of American White Pelican habitat (as defined in a provincial habitat regulation) <ul style="list-style-type: none"> - Public communication at access points/landings - Post access restriction signs on nesting islands - Enforcement of habitat and species protection through boat patrols. | <ul style="list-style-type: none"> • Disturbance |
| Necessary | Short-term | Research | 2.5 Improve understanding of nesting area suitability as it relates to proximity of disturbance. <ul style="list-style-type: none"> - Actively study or assess other studies to determine appropriate allowable distances for types of disturbance in relation to nesting American White Pelicans and what makes the nesting area less suitable. | <ul style="list-style-type: none"> • Disturbance • Tolerance levels to disturbance |
| Beneficial | Short-term | Research, Management | 2.6 Determine the effects of current water level management and natural water levels on American White Pelican. | <ul style="list-style-type: none"> • Predation • Water levels |

¹ here defined as a congregation of breeding pelicans (>2 pairs) nesting in a discrete easily-identified geographic area (e.g., an island), where individuals are nesting closer together than would otherwise be predicted by 'complete spatial randomness'

Recovery Strategy for the American White Pelican in Ontario

| 3.0 Raise awareness and promote stewardship of American White Pelicans. | | | | |
|----------------------------------------------------------------------------------------------------------|------------|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Necessary | Ongoing | Stewardship, Communication, Outreach and Education | 3.1 Develop communication tools to support best management practices and future habitat regulation. | <ul style="list-style-type: none"> • Disturbance |
| Beneficial | Ongoing | Communication, Outreach and Education | 3.2 Develop communication/outreach tools encouraging reporting by agencies/individuals. | <ul style="list-style-type: none"> • Population abundance monitoring |
| Necessary | Ongoing | Stewardship | 3.3 Encourage and support education and outreach opportunities <ul style="list-style-type: none"> - Communicate findings of dietary needs accordingly to commercial fishermen. | <ul style="list-style-type: none"> • Disturbance |
| 4.0 Inventory/assess the population status and monitor spatial trends of American White Pelicans. | | | | |
| Critical | Ongoing | Inventory, Monitoring and Assessment | 4.1 Conduct annual surveys of known colonies provincially. <ul style="list-style-type: none"> - Conduct aerial surveys during peak incubation time. - Monitor reproductive success of large colonies and selected Lake Nipigon colonies annually. - Compare surveys in relation to other assessments across North America. | <ul style="list-style-type: none"> • Population abundance monitoring |
| Beneficial | Long -term | Research | 4.2 Determine relative importance of non-nesting birds as potential replacements for breeding individuals. | <ul style="list-style-type: none"> • Non-nesting adults |
| Beneficial | Ongoing | Research | 4.3 Assess age class distribution and determine age at first breeding. | <ul style="list-style-type: none"> • Population abundance monitoring • Age at first breeding |

Recovery Strategy for the American White Pelican in Ontario

| | | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 5.0 Ensure that there is consistent, comprehensive and up-to-date provincial information on the American White Pelican so that population status can be monitored, assessed and re-evaluated as required. | | | | |
| Beneficial | Ongoing | Inventory | 5.1 Ensure that American White Pelican observations conform with Natural Resources Values Information System data class structure for colonial nesting birds. | <ul style="list-style-type: none"> • Population abundance monitoring |
| Beneficial | Short-term | Inventory | 5.2 Integrate provincial survey protocol with NRVIS data management. | <ul style="list-style-type: none"> • Population abundance monitoring |
| Beneficial | Ongoing | Inventory | 5.3 Establish a standing group who collects, assembles and evaluates sightings. | <ul style="list-style-type: none"> • Population abundance monitoring |

2.4 Area for Consideration in Developing a Habitat Regulation

Under the ESA, a recovery strategy must include a recommendation to the Minister of Natural Resources on the area that should be considered in developing a habitat regulation. A habitat regulation is a legal instrument that prescribes an area that will be protected as the habitat of the species. The recommendation provided below by the recovery team will be one of many sources considered by the Minister when developing the habitat regulation for this species.

Islands free from human disturbance, mammalian predators, flooding and erosion are required for successful nesting (Koonz and Rakowski 1985). It is recommended that the area prescribed as habitat in a regulation for American White Pelican is delineated to include islands, portions of islands, or other lands occupied, where the presence of eggs, and/or young, with active parental attendance is observed.

Active parental attendance may include activities such as incubating eggs, brooding and/or feeding young but does not include sites where egg dropping may occasionally occur with no subsequent parental investment.

The American White Pelican Recovery Team recommends that a 300 m setback be established around the peripheral edge of the nesting colony. This setback would extend on land and water. On land the setback would serve to delineate the portion of island(s) considered habitat under regulation. The extension of the 300 m setback into adjacent waters recognizes the importance of this area in the behavioural development and training of offspring. This recommendation, while not studied explicitly, reflects the best judgment of the recovery team and best available advice from T. D. King (pers. comm. 2010), a recognized North American expert on American White Pelican. It is important to note that this recommendation pertains to the preservation of habitat and may or may not be appropriate for consideration as an allowable distance for types of disturbances/harassment that may make nesting areas less suitable, or lead to abandonment. Threshold disturbance distance(s) for various activities is a recognized data gap identified in this report.

For the purpose of the habitat regulation the American White Pelican Recovery Team recommends that the prescribed area remain in effect until such time that there is no recorded nesting activity at a site for at least one full (expected) life span, or 26 years (Wasser and Sherman 2010). Breeding (not natal) dispersal of American White Pelicans is a rather flexible behaviour. Individuals can abandon colonies easily (e.g., Chase Lake) and seek to establish new colonies elsewhere (e.g., as could have been the case in Ontario). Keith and O'Neill (2000) show that these movements can be made at any stage in a colony's history, hence it is important to consider habitat in the context of an individual's lifespan.

Waters in key foraging areas with an abundant prey base is habitat that is depended upon by the American White Pelican (Smith et al.1984). Although foraging sites close to their breeding area are more advantageous than ones further away,

American White Pelicans are known to travel long distances from nesting colonies to feed; traveling up to 611 km round-trip (Johnson and Sloan 1978), but more often <160 km (Johnson and Sloan 1978, Findholt and Anderson 1995a, Motschenbacher 1984). Given the broad area of the landscape used by American White Pelicans, it is not practical to include foraging habitat in the area prescribed in a habitat regulation.

Loafing and roosting sites are also important to American White Pelicans, with some areas demonstrating a high degree of traditional use. However, at this time, the extent of these sites is poorly known and relative importance is not understood. It is therefore recommended that these landscape features not be described in the habitat regulation at this time.

GLOSSARY

Committee on the Status of Endangered Wildlife in Canada (COSEWIC): The committee responsible for assessing and classifying species at risk in Canada.

Committee on the Status of Species at Risk in Ontario (COSSARO): The committee established under section 3 of the *Endangered Species Act, 2007* that is responsible for assessing and classifying species at risk in Ontario.

Conservation status rank: A rank assigned by NatureServe (www.natureserve.org) to a species or ecological community that primarily conveys the degree of rarity of the species or community at the global (G), national (N) or subnational (S) level. These ranks, termed G-rank, N-rank and S-rank, are not legal designations. The conservation status of a species or ecosystem is designated by a number from 1 to 5, preceded by the letter G, N or S reflecting the appropriate geographic scale of the assessment. The numbers mean the following:

- 1 = critically imperilled
- 2 = imperilled
- 3 = vulnerable
- 4 = apparently secure
- 5 = secure

B - Indicates Breeding

Endangered Species Act, 2007 (ESA): The provincial legislation that provides protection to species at risk in Ontario.

Species at Risk Act (SARA): The federal legislation that provides protection to species at risk in Canada. This act establishes Schedule 1 as the legal list of wildlife species at risk to which the SARA provisions apply. Schedules 2 and 3 contain lists of species that at the time the act came into force needed to be reassessed. After species on Schedule 2 and 3 are reassessed and if found to be at risk, they undergo the SARA listing process to be included in Schedule 1.

Species at Risk in Ontario (SARO) List: The regulation made under section 7 of the *Endangered Species Act, 2007* that provides the official status classification of species at risk in Ontario. This list was first published in 2004 as a policy and became a regulation in 2008.

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