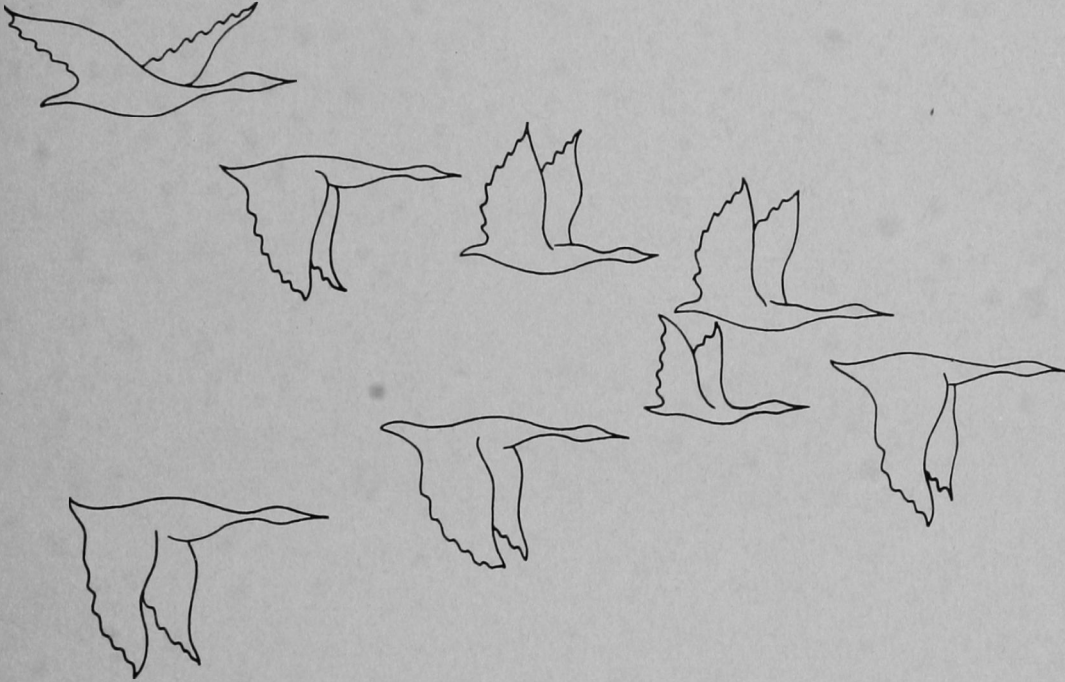


# *Annual Review* 1986-1987



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Canadian Wildlife Service  
**Canada**

## **CANADIAN WILDLIFE SERVICE**

The Canadian Wildlife Service (CWS) is part of Environment Canada, a federal department, and is responsible for the protection and management of migratory birds through development of regulations, habitat management, and supporting research and surveys. With the provinces and territories, the Service undertakes programs of research and management related to other wildlife where there is a national interest and advises other federal agencies on wildlife matters. CWS participates in international agreements and programs on wildlife conservation.

Administratively, CWS is organized into a Headquarters Office in Hull, Québec, and five regional offices: Atlantic (Sackville, New Brunswick); Québec (Sainte-Foy); Ontario (Ottawa); Western and Northern (Edmonton, Alberta); and Pacific and Yukon (Delta, British Columbia).

## TABLE OF CONTENTS

<b>MIGRATORY BIRDS CONSERVATION PROGRAM</b>	<b>Page</b>
North American Waterfowl Management Plan	1
Waterfowl Management	2
Habitat Management	2
Whooping Crane Recovery Program	3
Comprehensive Native Land Claims	3
Protocol to Amend the Migratory Birds Convention	4
International Ornithological Congress	4
Latin American Program	4
Wildlife Habitat Canada	4
 Regional Activities	
Atlantic Region	5
Quebec Region	11
Ontario Region	15
Western and Northern Region	21
Pacific and Yukon Region	26
 <b>WILDLIFE RESEARCH AND CONSERVATION PROGRAM</b>	
Headquarters	31
COSEWIC	31
CCEA	31
Humane Trapping	31
Regional Activities	
Western & Northern Region	33
Pacific & Yukon Region	36
 <b>TOXIC CHEMICALS</b>	
Headquarters	37
Regional Activities	
Atlantic Region	41
Quebec Region	41
Ontario Region	41
 <b>LONG-RANGE TRANSPORT OF AIRBORNE POLLUTANTS (LRTAP)</b>	42
Regional Activities	
Atlantic Region	44
Quebec Region	44
Ontario Region	45
National Wildlife Research Centre	45
 <b>CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA (CITES)</b>	46
Scientific and Technical Publications	48
Socio-economic Knowledge and Advice	48
Activities Related to Wildlife '87	49

## MIGRATORY BIRDS CONSERVATION PROGRAM

In 1986-87 the Migratory Birds Program consisted of about 200 person-years nationally with an operating budget of \$3.5 million. This accounted for more than half of total CWS resources across the country. The program is directed toward the management and protection of migratory bird species and involves the establishment and enforcement of regulations under the Migratory Birds Convention Act and Canada Wildlife Act, habitat management and protection, population monitoring and surveys, environmental impact assessment, native land claims, and international liaison.

### Headquarters

Headquarters staff is concerned with managing and coordinating CWS Migratory Birds programs at the national level. Coordinators are responsible for several national programs, including regulations and enforcement, habitat management and protection, waterfowl management, seabird management, native land claims, and the Latin American Program. As well, the staff produced Migratory Game Bird Hunting Permits, runs national harvest surveys to monitor kill, and coordinates the North American Bird Banding Program in Canada.

### North American Waterfowl Management Plan

A major achievement of the Migratory Birds and Wildlife Conservation Branch during 1986-87 was the signing of the North American Management Plan by the Minister of the Environment and the U.S. Secretary of the Interior on May 14, 1986.

This landmark document was endorsed by all provincial and territorial wildlife ministers, and received overwhelming public support during a consultation process. The Plan advocates a cooperative approach to waterfowl management by all public and private conservation organizations in Canada. A North American Waterfowl Management Plan Committee was struck to oversee implementation of the Plan. The Committee has met frequently, and initiatives are under way to generate the required funding.

The Plan focuses on the problem of maintaining and restoring waterfowl habitat on the continent. A joint venture is proposed to restore 3.6 million acres of duck breeding habitat on the Canadian Prairies at a cost of \$1 billion over the next 15 years. The cost of this project will be shared, with 75% of the funds coming from American sources. Nesting and migration habitat in the Great Lakes-St. Lawrence lowlands will also be protected at a cost of \$20 million.

## Waterfowl Management

Severe declines in continental duck populations in 1985 prompted Canada and the U.S. to take unified action to restrict harvest opportunities to effect a 25% reduction of the kill of all prairie ducks. Breeding populations increased slightly in 1986 on the prairies, but not enough to discontinue restrictive regulations. Drought conditions prevail throughout the prairies in late winter, 1987, and continental populations of ducks continue to decline in mid-winter inventories. It seems likely that interim restrictive regulations will continue for the 1987 hunting season. In addition, previous restrictions on black duck harvest in eastern Canada have been continued.

Low waterfowl population levels in recent years have lead to a decline in hunting success and in the sale of Migratory Game Bird Hunting Permits. In 1985-86, a total of 375,000 permits were sold. This represents a 28% reduction from the peak in 1978 when 525,000 permits were sold. In 1986-87, permit sales recovered slightly to 380,000.

## Habitat Management

Public consultation on the establishment of three new Migratory Bird Sanctuaries was initiated in early 1987 and is expected to be completed by early spring. The areas are major seabird colonies at Prince Leopold Island, Cape Searle and Reid Bay.

Eleven potential Ramsar sites totalling 2,538,475 ha have been deposited in IUCN's Conservation Monitoring Centre for inclusion in the List of Wetlands of International Importance.

An agreement to cooperatively manage Polar Bear Pass National Wildlife Area on Bathurst Island has been submitted to the Government of the Northwest Territories for approval. The first meeting of the Area Advisory Committee for developing the Area's management plan is scheduled for March 1987.

Wildlife Habitat Canada's board of directors approved a grant of \$400,000 to acquire properties for the completion of the Portobello National Wildlife Area in New Brunswick.

The Wetland Mapping and Designation Program saw the completion of the mapping and rating of all inland and coastal wetlands in New Brunswick. The data will be used in the design of waterfowl surveys, by land-use planners, and by environmental consultants. Land-use agreements based on the wetland data accumulated in all three Maritime Provinces will be negotiated in 1987.

1986, like 1985, was a bad crop damage year on the Prairies. Prolonged cold wet weather in the fall resulted in swathed grain being left in the fields well into October, subject to damage by migrating waterfowl. The crop damage prevention program was extended accordingly and the federal share of the costs exceeded the 1986-87 appropriation of \$800,000 by \$200,000.

#### Whooping Crane Recovery Program

Canada and the U.S. signed a Memorandum of Understanding in April, 1985 to ensure international coordination and cooperation in efforts to restore populations of the Whooping Crane. Canadian and U.S. program coordinators were appointed and are members of recovery teams in both countries. Canadian and U.S. Recovery Plans have been completed and approved.

The world population of Whooping Cranes in the wild and captivity now numbers 180, up from the 45 which existed in 1963 when the present program began. The population breeding at Wood Buffalo National Park in the Northwest Territories now stands at 111. In 1986, 21 chicks successfully migrated to Texas, a number equal to the 21 birds that existed in the migratory flock in 1941.

Operational portions of both recovery plans have largely been implemented and plans are being developed to begin an investigation of the possibility of creating a flock of migrating cranes in northern Ontario by 1995.

#### Comprehensive Native Land Claims

CWS, under the direction of the ADM of the Conservation and Protection Service, continued as the lead departmental agency for native land claims. Issues of special interest to DOE are native harvesting rights, environmental protection, conservation area establishment and management, and native participation in renewable resource management. In 1986, CWS attended caucus and negotiation sessions for the Tungavik Federation of Nunavut and Dene/Métis claims in the Northwest Territories, and also provided input for claims in Quebec, Newfoundland (Labrador), British Columbia and the Yukon.

Implementation of the Western Arctic Claim (COPE), finalized in 1984, proceeded somewhat more slowly than expected.

CWS continues to be involved in the implementation of the James Bay and Northern Quebec Agreement.

## Protocol to Amend the Migratory Birds Convention

A Protocol to amend the subsistence hunting provisions of the Migratory Birds Convention was signed by Canada and the U.S. in 1979. However, it has not been ratified yet by the U.S. A discussion paper on an additional agreement between the two countries to spell out details of how the Protocol will be implemented has been prepared. It is expected to be released for public comment in both countries during 1987/88.

## International Ornithological Congress

Canada hosted the 19th International Ornithological Congress in Ottawa from June 22-29, 1986. CWS cohosted the Congress in conjunction with the National Museum of Natural Sciences. While the latter organization was the lead agency, CWS was a major participant in planning, organizing and funding this Congress. Attendance by more than 1500 delegates from 91 countries made this the largest meeting of the world's ornithologists ever held.

## Latin American Program

Projects funded in 1986 included further collection and toxic chemical analysis of prey species of Peregrine Falcons in Venezuela, a contribution to the National Museum of Natural Sciences survey of shorebirds in Guyane française, the provision of materials and CWS expertise for a banding workshop and field course at Paracas, Peru.

The study relating forest clearance in Central and South America to forest bird populations in Canada was completed and circulated widely within CWS and elsewhere for review and comment.

Work continued on the production of the South American Shorebird Atlas.

## Wildlife Habitat Canada

1986 saw the launching of Canada's second Wildlife Habitat Conservation Stamp, taken from an original work by Fenwick Lansdowne entitled "Canvasbacks in Spring". Purchase of the \$4.00 stamp was required with each Migratory Game Bird Hunting Permit, to be affixed to each licence.

Prints of the original painting were also available for purchase.

Artwork for the 1987 Stamp was unveiled in Ottawa in April. The painting is by George McLean.

## **Regional Activities**

### **Atlantic Region**

#### **Regulations and Enforcement**

Illegal spring hunting of Canada Geese and seaducks increased in NE New Brunswick. A total of 45 charges were laid during the spring of 1986. Enforcement was made more difficult because of certain provisions of the new N.B. Varmint Act. After lengthy discussions the province has remedied the problem and it is hoped that the spring of 1987 will see the beginning of improved compliance.

A task force comprised of members of the RCMP, provincial Lands and Forests personnel and federal Fisheries officers has been highly effective in combating illegal waterfowl hunting along the south coast of Nova Scotia. Dozens of charges were laid for seaduck hunting at night and, after an intensive operation, a group of well organized poachers was apprehended and convicted for jacking Canada Geese in Port Joli Sanctuary. Each was fined \$2300.

Following intensive public information efforts on migratory bird regulations in Newfoundland, a successful coordinated enforcement effort by CWS, RCMP, and provincial Rangers was launched in several communities where the sale of Murres and other seabirds was reported. Charges have been laid against 17 individuals known to be major vendors of murres. Ongoing enforcement efforts related to waterfowl hunting netted one group with 650 seaducks over limit plus many less spectacular charges.

#### **Habitat Protection and Management**

Seven new sites were recommended to be listed under RAMSAR as wetlands of international importance. Data sheets were compiled on all seven sites and three of them, Shepody Bay, New Brunswick; Grand Codroy, Newfoundland; and Musquodoboit Harbour, Nova Scotia will be officially listed in 1987.

A Wildlife Habitat Canada proposal for completion of acquisition at the Portobello Creek National Wildlife Area was submitted and approved. Land purchases at the site will proceed over the next four years to a total of \$400,000.

A proposal for cooperative funding of a wetlands protection and enhancement project on Prince Edward Island was prepared in association with the province and Ducks Unlimited Canada.

A draft Newfoundland and Labrador Habitat Protection Plan for Migratory Birds was produced in conjunction with the provincial Wildlife Division.



The Maritimes wetland inventory was completed with the production of the New Brunswick Wetlands Atlas and its associated data summaries from the computer data base.

The feasibility of a wetlands inventory for Newfoundland and Labrador was explored using remote sensing and existing peatlands mapping.

Work was begun on identification of critical wintering habitat for Black Ducks on the Eastern Shore of Nova Scotia. This is to provide background information for future protection initiatives.

Resource Inventories and Impoundment Monitoring were carried out at Tintamarre and Wallace Bay NWAs along with avifaunal surveys at Margaree Island and Boot Island. Brackish Impoundments were studied at Cape Jourimain and Chignecto NWAs and ecosystem mapping continued at Portobello Creek NWA.

The number of visitors to Machias Seal Island Migratory Bird Sanctuary continued to increase with 1986 having the highest number of visitors (20/day) in the fourteen years that CWS has had a summer caretaker on the Island. During July 1986 there were five incidents where the regulations were violated by the American charter boat operators. An operational manual for the Sanctuary was prepared as well as a report on the 1986 visitation statistics.

#### Impact Assessment

Several oil spills occurred and advice on bird resources and protection strategies were provided as our contribution to the Regional Environmental Emergency Team. On site inspections were made to a New Brunswick gold mine using a cyanide extraction process and a new gypsum mine in Cape Breton. Eider tissue samples were provided to the Atlantic Radiation Laboratory as part of the Point Lepreau monitoring program. A technical review was coordinated on the guidelines for an EIS on low level military flying in Labrador and Quebec.

Monthly surveys of 25 beaches were continued on the Avalon Peninsula and Miquelon to determine the proportion of seabird corpses drifting ashore which had oil on them. An average of 25% of the birds were oiled, and 92% of the samples taken from oiled birds, and analyzed by the Environmental Protection Service, proved to be heavy bunker fuel oil of the type used by medium and large coastal and fishing vessels.

#### Population Monitoring and Surveys

A Black Duck breeding pair survey was initiated in Nova Scotia where 45 five km x five km square plots were selected and flown. Breeding pair and brood surveys were conducted on Prince Edward Island in cooperation

with the P.E.I. Fish and Wildlife Division. In 1986, long-term waterfowl breeding ground surveys were in place in the three Maritime Provinces.

In Newfoundland, a pilot project was undertaken using a random 25 km<sup>2</sup> plot survey but was unsuccessful due to an early spring and numerous forest fires making helicopters unavailable.

Waterfowl banding received major support from the Atlantic Flyway Cooperative Banding Program. A total of 5317 birds were banded in the four Atlantic Provinces including over 2500 Black Ducks.

A detailed analysis of band recoveries from Atlantic Region Black Ducks was completed in March, 1987.

In the Species Composition Survey, approximately 3600 waterfowl wings and tails were received from Atlantic Province hunters. That total is slightly higher than the 1985 season total.

A pilot project was conducted on seaduck harvest survey techniques in Newfoundland. The study which will help assess the accuracy and appropriateness of a questionnaire type format to monitor seaduck harvests in Newfoundland, is still ongoing (data compilation and analysis) but appears to favor a tallyman type of approach.

Two thousand more Thick-billed Murre chicks were banded on Coats Island, and research and public awareness work continued in the winter murre-hunting season in Newfoundland. Community meetings, radio interviews and newspaper articles were used to explain the effects of the present over-harvest of murres, and to prepare murre hunters for new regulations. The public now seem convinced that some type of regulation of the hunt is necessary and it remains with us to find an effective and fair method of so doing.

A project was launched to assess the present status of the Common Eider on Hare Bay and Grey Islands, Northern Newfoundland. The project involved considerable public relations and information and direct coverage by the media. The local community of Main Brook was successful in obtaining a grant from Ducks Unlimited to construct and place nesting shelters on the more important of the Grey Islands. It is hoped to improve nesting success through reduced gull predation. The project was an apparent success resulting in a rapidly increasing colony of eiders on Grey Islands whereas Hare Bay Islands remains unchanged since 1962 despite an apparent higher hatching success rate. The community council is actively seeking outside support funding for an enhancement project working toward future potential for resource based industry in eider down.

The international woodcock singing ground survey was coordinated with the U.S. Fish & Wildlife Service and provincial wildlife agencies. Canadian Singing Ground Survey results indicated a slight increase in the population

over previous years. Harvest per hunter effort information was solicited from a sample of known hunters. The number of woodcock hunters responding was increased 106 per cent in 1986.

Participation in the Maritimes Nest Records Scheme reached record levels in 1986 with 130 cooperators submitting 1645 cards during the year. The repository now contains 33,562 cards for 191 species of birds.

The Maritimes Breeding Bird Atlas project got off to a good start, 7000 hours of field work being contributed by volunteers. Increased momentum will be required to achieve coverage targets, and additional funding needed to maintain administrative support and coordination functions.

Last summer, 2500 shorebirds (mainly Semipalmated Sandpipers) were banded at Dorchester Cape. This brings the total banded since 1981 to nearly 6000 birds with 5 recoveries of Semipalmated Sandpipers banded in 1981 and 1982. Two birds were recovered in Guyana. One recovery was made near Delaware Bay, New Jersey, in spring. These preliminary findings support the presumed migratory route of Fundy shorebirds to the northern coast of South America, their northward return to the large staging area in Delaware and New Jersey. Agreement was reached with New Brunswick to create a Hemispheric Shorebird Reserve in the Shepody Bay Area in 1987.

"Revised Atlas of Eastern Canadian Seabirds. I. Shipboard Component" was published by CWS. "Part II. Aerial Component" is in active preparation. Papers were prepared on the pelagic ecology of phalaropes and Storm-Petrels off southern Nova Scotia. An environmental vulnerability gazetteer for seabirds and seaducks at marine sites in Atlantic Canada is in preparation; the chapter on George's Bank and the outer Bay of Fundy has been completed.

A reassessment of the size and distribution of the Northern Gannet population in North America which totals about 40,000 breeding pairs (70% breeds in the Gulf of St. Lawrence and 30% on the Atlantic coast of Newfoundland) was carried out. Population analyses of Leach's Storm-Petrel (Oceanodroma leucorhoa) and Atlantic Puffin at Baccalieu Island were completed. Results indicate the Leach's Storm-Petrel population at Baccalieu Island to be the largest colony of the species known in the world: 2-3 million breeding pairs.

## Research

The study of eider bioenergetics and survival continued on the large population of eiders breeding on The Wolves in the Bay of Fundy. Nearly 850 nests were found and monitored throughout the breeding season. Two hundred and four nesting females were banded and nasal-tagged bringing the total number banded to 700. Sub-tidal areas around The Wolves were sampled to estimate the species composition and biomass of potential prey species. As on the two previous seasons, breeding Black-backed Gulls preyed heavily

on eider ducklings resulting in very low fledging success. Banded females were recovered from numerous locations between Black's Harbour, N.B. and Boston Harbour, MA. Moreover, nasal-tagged females were identified at St. Andrews from December 1986 to March 1987, supporting an earlier view that the eider population in southwestern N.B. consists of both non-migratory and migratory sub-populations.

Translocation of 200 Atlantic Puffin chicks Fratercula arctica from Great Island, Witless Bay, Newfoundland to Eastern Egg Rock (Muscongus Bay) and Seal Island (Penobscot Bay) in the Gulf of Maine was successfully completed. Chicks were reared in captivity from about two weeks of age until they fledged at age six to seven weeks. Experiments were performed to determine responses of growing young to changes in the quantity and quality of their food supply, information important to understanding the possible impact of commercial fisheries on seabirds in SE Newfoundland and the Gulf of Maine. The 1986 transplant was part of a 12-year program by CWS and National Audubon on reintroducing puffins to sites in Maine where the species formerly bred.

Studies on the ecological requirements of Common and Thick-billed Murres breeding at the Gannet Islands in Groswater Bay, SE Labrador were completed. Papers in press include: parental care in incubation and brooding of Common Murres, morphometrics and timing of breeding, breeding site characteristics and performance of reproduction, and development of young.

Summary reports, prepared for the 6th International Ocean Sciences Symposium, Asilomar, California, on the incidental catch of marine birds and mammals in summer fishing nets around the east coast of Newfoundland indicated a kill toll in excess of 100,000 animals between 1981-1984.

Surveys of populations of Northern Fulmars Fulmarus glacialis breeding in NE Baffin Island were completed.

#### Bird Problem Mitigation

Liaison with the Nova Scotia Department of Fisheries was initiated in an attempt to solve the problem of eider predation on cultivated mussels. This rapidly expanding aquaculture industry presents a potential conflict with existing eider colonies all along the Atlantic coast.

#### Rare and Endangered Species

CWS Atlantic Region in cooperation with Fundy National Park released a record of 21 young Peregrine Falcons in the Upper Bay of Fundy. A total of sixty-one birds have been released from 1981 to 1986. The initial 5 year reintroduction program ended on a positive note with a pair of falcons taking up residence at the Fundy Park site. Although they did

not nest in 1986, success in 1987 is anticipated. An increased effort through "mass-hacking", a release of at least 30 birds per season, will begin in 1987 with major financial support of the World Wildlife Fund Canada and sponsorship of Mount Allison University. An aerial survey of the former peregrine nesting sites in the Bay of Fundy was conducted by CWS in July, 1986 as part of the national five-year survey. No nesting birds were found.

Assistance was given in the production of the first draft of the National Piping Plover Management (Recovery) Plan. Cooperative beach protection projects were continued with the provinces in 1986. A major beach survey was planned for 1987. Research continued toward a preparation of a Harlequin Duck status report for the eastern North American population. Funding from World Wildlife Fund to the Cape Shore Development Association was combined with CWS funding and direction to launch a project compiling historical and current information on the Harlequin Duck distribution and harvest in coastal Newfoundland.

A report on the status of the Roseate Tern Sterna dougallii in Canada was submitted to COSEWIC resulting in the Roseate Tern being designated a THREATENED SPECIES in Canada. There are only approximately 125 breeding pairs in Canada, all nesting in Nova Scotia.

## Quebec Region

### Habitat Program

#### Protection

Two new National Wildlife Areas (NWA) were established in June - Îles de l'estuaire and Pointe-au-Père. The latter was inaugurated officially on July 1, 1986, in conjunction with Canada Day celebrations. This ceremony was initiated by the Musée de la mer located in the vicinity of the reserve. This museum has been actively involved in the establishment of the Pointe-au-Père NWA for the last several years.

The management plans of 5 of the 8 NWAs in Quebec are now complete.

Several comments were sent to Wildlife Habitat Canada (WHC) and the Saint-Gédéon, lac Saint-Charles and l'Île-Verte projects were closely monitored. A noteworthy event was the recent acquisition of l'île aux Lièvres by the Société Duvetnor because of multiple sources of funding, including WHC. With the acquisition of this island, all the islands of the maritime estuary are now protected. The future management plan for this area is now being discussed by the various concerned parties. These include Parks Canada, Ducks Unlimited, Office de la planification du Québec, Quebec Wildlife Foundation, ministère du Loisir, de la Chasse et de la Pêche (MLCP) and, above all, the Société Duvetnor, the owner of Îles Pèlerins, Pot à l'Eau-de-Vie and aux Lièvres.

#### Management and Development

The development of Île Blanche, neighbouring l'Île aux Lièvres and part of Îles de l'estuaire NWA was quite successful. The aim of this operation was to stop the recurrence of avian cholera which caused the death of 2,800 Common Eiders in 1984 and 1985. In 1986, 2,200 female eiders nested on the island; 760 used artificial nests, which represents a 95% rate of utilization. This confirms the usefulness and appeal of such installations.

The breeding rate of the Greater Snow Goose population was much lower than usual this year. The fifteenth year of controlled hunting in the Cap Tourmente NWA was therefore disappointing for hunters; however, a single registration system making hunters eligible for both the traditional hunt and for the self-guided hunt was well received by the public and also made operations more efficient. In order to ensure better enforcement, we hired conservation officers this year to serve as guides for hunters. This brought about quite a noticeable improvement over last year's operations.

The interpretation services provided by the Société linnéenne attracted 65,000 visitors to the wildlife area this year. In the fall, two new partners offered additional attractions to the public: the Craftmen's Market of Saint-Joachim represented local artisans, while the foundation Les Oiseleurs Inc. held an exhibition of decoys and works of art at the Maison de la faune and gave an on the-site demonstration of duck banding operations.

The agreement between CWS and the MLCP regarding employees at the Percé Wildlife Interpretation Centre was extended for another two years.

#### Endangered Species

CWS and the Fondation pour la sauvegarde des espèces menacées (FOSEM) worked in close cooperation to organize a joint release of Peregrine Falcons at Sainte-Foy on the roof of the federal building. A stand at a nearby large shopping centre and an excellent media coverage of the event contributed to public awareness of threats to the Peregrine Falcon and other species. According to FOSEM, the booth where the falcons could be seen "live", on a TV screen connected by cable to a camera placed inside the falcons' cage, attracted at least 50,000 persons.

#### Population Management Program

##### Regulations and Conservation

The enforcement of the Migratory Bird Sanctuary Regulations on the North Shore Migratory Bird Sanctuaries was restructured: six conservation officers instead of three now keep a closer watch over the three most important sites of the Lower North Shore. Starting in the 1987 season, more modern equipment will be provided to conservation officers. The three CWS enforcement teams will also be able to count on the cooperation of Parks Canada wardens in the Mingan area and on that of Fisheries and Oceans Canada inspection officers. The efforts of conservation officers will be reinforced by an information and awareness program for the Lower North Shore residents.

#### Research and Inventories

##### a) Seabirds

A Razorbills marking program was initiated in 1986 in the same region of the Gulf of St. Lawrence. This program will be continued in 1987 to discover the reasons for the decline of this species along the Lower North Shore. A study on Razorbills reproduction is planned for 1988 to complete required information on this species.

The computerization of the data on the distribution and the abundance of all seabird species nesting in the estuary and the Gulf of St. Lawrence is now complete. As economic and recreational activities are rapidly growing in these areas, this data base has already become a very useful tool to determine the status of populations in these two ecosystems. In addition, the computerization of these data was done in such a way as to permit the evaluation of impacts of each type of development.

Several reports and documents on the dynamics of seabirds populations in the Gulf of St. Lawrence were also produced. Among them was the publication of a study on population, productivity and contaminants in the Northern Gannet of the Île Bonaventure.

b) Game Birds

Black Ducks

The Quebec Region has now completed the inventory of the Black Duck population in the boreal forest of the central part of Quebec. This was the second inventory to be carried out in the series of five planned between 1985 and 1989. MLCP of Quebec contributed to this project by providing one of the three teams required for its completion.

The Canada-U.S. cooperative banding program was carried on. Six thousand six hundred (6,600) ducks were banded this year at the half-dozen banding stations throughout the province; 38% of them were Black Ducks. The cooperation of groups from the private sector made it possible to operate a banding station at the Cap Tourmente NWA.

Snow Geese

For the first time, more than 300,000 birds were counted in the spring inventory of the Greater Snow Goose population.

On the other hand, and this was predictable at the beginning of the summer, the most inclement northern climatic conditions in the last 12 years prevailed this year. As a result, the breeding rate was extremely low. In the fall, the very low recruitment rate of 3% certainly greatly compromised the success of the hunting season. The results of the final phase of the study on the sedge of the Cap Tourmente marshes indicate that Snow Geese consume their favorite food without excess. They move around or feed in other marshes as the sedge supplies diminish, thus avoiding the overexploitation of marshes.



## Common Eiders

Eider ducks in Canada, edited by Austin Reed, was published as number 47 of the Canadian Wildlife Service Report Series. This publication consists of 18 separate papers in French, in English and in both languages and also presents abstracts of 11 articles of special interest to Inuit in Inuktitut. It gathers important contributions to the knowledge of this species whose populations are still threatened in several of its breeding and wintering grounds.

CWS acted as an advisor to a group of Inuit who conducted Common Eider inventories on the archipelago of Belcher Islands and of a few other neighbouring islands. These inventories were chiefly undertaken for economic purposes, such as the potential commercial use of eiderdown by local communities, they also added new complementary data to last year's inventory along the east coast of Hudson Bay. The population of the east coast of the Bay, including the islands, was estimated at 41,000 pairs.

This winter a doctoral student of Laval University supported by CWS and Parks Canada worked on the second part of his project on the ecology of Common Eiders along the North Shore.

## Terrestrial Birds

The Quebec Breeding Bird Atlas project still elicited the same enthusiasm from volunteers. More than 850 ornithologists participated. Eight students hired through the CHALLENGE '86 Program counted birds in 112 squares. This effort for the 1986 season was completed by four expeditions in remote areas, including one in canoes.

About 40,000 records were added to the 70,000 ones accumulated in two years. These 110,000 records have now been entered in the computerized data bank and the integration and analysis of data for the first three years of the project are under way.

The many hours of volunteer work plus the financial participation of the Société québécoise pour la protection des oiseaux and of FAPEL-FAUNE both contributed to the success of the 1986 campaign. A first meeting of all regional coordinators was recently held to evaluate the first three years of the project and to formulate relevant recommendations for the two years before its completion.

The Quebec Region also prepared the first draft of a consultation project with MLCP on migratory birds populations and their habitats. Negotiations are still going on and a revised outline of the project should soon be endorsed by both parties.

## Ontario Region

### Waterfowl Assessment

#### Waterfowl Population Studies, Southwestern Ontario

Aerial surveys were conducted in inland staging areas as well as at Long Point to monitor annual changes in waterfowl use. The surveys team also completed the Ontario portion of the Continental Canvasback survey and coordinated the Ontario field portion of the national parts survey. Ground surveys of waterfowl wintering on the Niagara River were completed. Black Duck research projects were begun at the St. Clair National Wildlife Area and elsewhere in cooperation with the University of Western Ontario. These included mate choice and relative condition studies of Mallards and Black Ducks. A publication entitled "Increasing Mallards, decreasing Black Ducks, coincidence or cause and effect" was accepted by The Journal of Wildlife Management.

A record number of waterfowl (1,900) were banded by the surveys team at National Wildlife Areas and inland production areas. The results of such banding should enable comparisons of relative rates of survival on production vs. staging areas to be made. Currently there is a great shortage of data for birds banded on production areas in Ontario.

#### Northern Ontario

A special survey was undertaken over a 10,000 km<sup>2</sup> area centred on Huntsville which contains the highest recorded breeding density of Black Ducks in the province. Black Ducks breeding density was similar to that recorded in 1981 although numbers of the closely-related Mallard had risen markedly. This may set the stage for increased introgression with the Black Duck.

Final tests were made of breeding pair survey methodology for the Hudson Bay Lowlands near Moosonee. It was established that upcoming operational surveys in 1987 and 1988 will employ helicopter coverage of plots of 4 km<sup>2</sup> laid out in a stratified random sampling scheme over designated blocks of 100 km on a side.

#### Eastern Ontario

A study was started concerning the usage of the important Wolfe Island area by staging diving ducks. Surveys were made of food resources in the important bays, and diets were assessed from stomach contents of ducks provided by local hunters. It appears that in the fall, distribution of ducks is strongly affected by the widespread illegal baiting activities.

A series of coastal surveys for migrant waterfowl was flown in the spring and fall around Prince Edward County and the Bay of Quinte. Results were compared with those from 1976 - 1977; little change in waterfowl usage levels was evident although data are still being analyzed. In coordination with these flights, survey staff also participated in the Continental Canvasback Survey, the December Canada Goose Survey and the Mid-winter Waterfowl Survey.

### Shorebird Project

In September 1986, a series of aerial surveys was completed of the north-central coast of Brazil in cooperation with the Brazilian mining company, Companhia Vale do Rio Doce (CVRD), to determine staging areas used by Nearctic shorebirds. Previous surveys with CVRD in January 1986 had identified this region as one of the most important wintering areas for shorebirds on the north coast of South America. Results from the previous surveys were presented at an International Seminar organized by CVRD in Belem, Brazil, in September 1986, following the flights. The Seminar was attended by a wide range of government agencies and international conservation organizations and provided valuable opportunity to present CWS work and promote our international conservation initiative to set up a Western Hemisphere Shorebird Reserve Network (WHSRN).

Other international conference presentations included a poster paper on the WHSRN at the IOC in Ottawa in June 1986 and a major review paper on Shorebird Flyways in the New World at the Wader Study Group Workshop in Edinburgh, Scotland, in September 1986. Other field studies included work on the migration patterns and physiology of high arctic shorebird migrants at Alert, Ellesmere Island, as part of a coordinated international study, and work on the breeding populations of shorebirds in the Foxe Basin, an area likely to be of enormous importance for shorebirds but about which very little is presently known.

Promotion of the WHSRN within the CWS was continued and has led to proposals to nominate the first Canadian "sister reserve" of hemispheric importance in the Bay of Fundy in the summer of 1987 by the Minister of the Environment. WHSRN activities within the CWS are coordinated by the Shorebird Project. The Maritimes/International Shorebird Surveys operation, involving a network of volunteer observers who census shorebirds at selected sites throughout eastern and central Canada, was continued for spring and fall seasons, and arrangements made to expand and reorganize administration of the operation in western and eastern Canada. Processing of data from the South American Shorebird Atlas Project and preparation of text and maps for the forthcoming Atlas were completed.

## Colonial Waterbirds of the Great Lakes

A joint Canada/US project was begun to determine the impact of the burgeoning Ring-billed Gull and Double-crested Cormorant populations on Caspian Terns nesting in the Great Lakes area. The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) considers the Caspian Tern a rare species and the Great lakes are their main nesting area in Canada. Field work included visits to colonies in Lake Huron and experiments at a colony in Lake Ontario. The project is to be continued in 1987-88.

## Gull Control

CWS coordinated and monitored control operations at six Ring-billed Gull colonies located at urban or industrial sites in southern Ontario. A report describing the results of these operations was submitted for publication in "Colonial Waterbirds". In 1986, Herring Gulls and Ring-billed Gulls nested on roofs of three buildings in the Bruce Peninsula. CWS coordinated control of the roof nesting gulls and a report describing this new nesting behaviour was submitted for publication in the Journal of Field Ornithology. A study of adult mortality of Ring-billed Gulls nesting near Ottawa was initiated.

## Canada Goose Control

Activities involved surveys of breeding Giant Canada Geese throughout Southern Ontario as part of a cooperative Atlantic Flyway program. In addition, bird numbers were controlled in both the Toronto waterfront and Upper Canada Migratory Bird Sanctuary vicinities by bird and egg shipment.

A total of 600 eggs were picked up by the State of Oklahoma in the vicinity of the Upper Canada Migratory Bird Sanctuary near Morrisburg to assist in the establishment of a breeding flock in Oklahoma.

At Toronto, 1,160 adult geese were shipped to North Carolina, and 241 goslings were shipped to Ministry of Natural Resources staff in Thunder Bay, Atikokan and Sudbury.

## Boreal Bird Populations

The first year of a new cooperative study with Laurentian Forestry Centre (CFS) on the effect of bird predation on spruce budworm populations was very successful. In the detailed population dynamics study led by CFS scientists, budworm collected twice weekly from inside and outside of full tree enclosures on white spruce and balsam fir are reared in the lab allowing creation of dynamic life history tables. In 1986 the SBW population in the study area continued to decline with a notable 99.5%

mortality on uncaged white spruce compared to 97.2% on caged trees; a difference that resulted in a five-fold difference in density at pupation. Bird populations were among the highest ever recorded with a density of more than 3,000 prs/km<sup>2</sup> on the relatively small study plot.

#### Migratory Birds - General

The Canadian Wildlife Service, Ontario Region made significant advances in EDP capabilities during the year. A significant cost saving and increased efficiency have been realized by a major shift from service bureau mainframe to in-house micro computers. Effective implementation of CAD (computer assisted drafting) has resulted in most (several hundred) figures for publication being plotted produced including all maps for the Winter Shorebird Atlas for S. America. All waterfowl surveys are now in D-Base and most staff regularly make use of Micro-SAS and other software.

#### Status of Migratory Birds

The Canadian Wildlife Service continued through technical and management committees and financial contributions to support the Ontario Breeding Bird Atlas in its penultimate year. Among notable achievements were verification of the final data base, development and implementation of the digitized mapping system in which the final printer plates are prepared by laser scanner, and the writing of the text for 300 species accounts by over 80 authors. The atlas will be published during the fall of 1987.

#### Habitat Management - Southwestern Ontario

The majority of activities were related to the ongoing management of National Wildlife Areas. At Long Point NWA, the fourth year of the Bald Eagle hacking project was successfully completed with the release of six more birds. This co-operative project with OMNR and ELSA has so far augmented the natural eagle population by 22 birds. Monitoring of deer exclosure/control plots continued to determine and demonstrate the effect that deer are having on tree regeneration and plant growth at Long Point. A major effort was required at Big Creek NWA to complete repairs and renovations after the severe December 1985 storm. The two-celled DU impoundment was reflooded in 1986 and monitoring of the response of vegetation to water level manipulations was initiated. A waterfowl banding station operated successfully again in August 1986. Public awareness activities included numerous talks and slide shows for naturalist and fish and game clubs, and the walking trail around the DU perimeter dyke was opened to the public. Support for NGO research at Long Point/Big Creek included work on beach/foredune erosion and deposition (University of Guelph); breeding ecology of map turtles (ROM); bowfin ecology (University of Western Ontario); mallard/black duck and

scaup studies (UWO); and, archaeology (Ontario MCC). At St. Clair NWA activities centred on marsh management by water level manipulation and provision of logistical support for the extensive mallard/black duck hybridization studies by University of Western Ontario and University of Guelph.

#### Habitat Protection - Southwestern Ontario

Ramsar designation proposals were completed for Polar Bear Provincial Park, Walpole Island marshes, and the Southern James Bay Migratory Bird Sanctuaries. Cooperation with OMNR continued for the implementation of the Canada/Ontario wetlands evaluation system. Work was ongoing with OMNR, Ducks Unlimited Canada and Wildlife Habitat Canada toward a wetland protection program for Ontario.

#### Habitat Assessment and Mitigation

CWS continued its commitment to EARP through involvement with the RSCC, remedial action plans and the provision of advice and expertise to NGOs and industry, e.g. participation in Bruce Nuclear Generating Station Monitoring Program Workshop. CWS/OR participation in Wildlife '87 included planning and coordination of Regional CWS events and provision of support and advice for the involvement of Ontario NGOs in this endeavour.

As part of the effort to protect habitats important to the welfare of migratory birds, studies were conducted of waterfowl feeding beds on the St. Lawrence River (Wolfe Island), a migration stop-over area. Benthic studies were coordinated with duck stomach analyses and surveys of migrant waterfowl.

#### Enforcement

CWS coordinated a Waterfowl Enforcement Workshop at the Leslie M. Frost Natural Resources Centre at Dorset, upgrading training for 25 RCMP and OMNR officers in MCB Act, taxidermist inspections, handling firearms/hunters in field syndicate situations plus enforcement techniques.

The number one regional enforcement priorities were Lake St. Francis, and Lake St. Clair and involved illegal activities of off-shore duck hunters and illegal marketing of waterfowl. The work encompassed a united RCMP, MNR, CWS five week enforcement effort, terminating November 14 due to ice conditions.

Activities of Permits Unit - number of permits issued or renewed

Avicultural:	881	(10,917 birds kept, 50 species)
Taxidermy;	253	
Scientific:	85	
Damage:	167	
Salvage:	133	
Baiting:	<u>54</u>	
Total	1,573	

## Western and Northern Region

### Population Management

Spring water conditions in prairie Canada declined somewhat from 1985 levels, although pond numbers were still well above the current 10-year average. However, waterfowl breeding habitat was increasingly disturbed by agricultural practices. Total duck breeding populations continued the downward trend and were 21% below average. Mallard numbers increased over 1985 although still below the long-term average. The report on the hunter performance program for prairie Canada was completed and distributed to cooperating agencies. The draft report on the 5-year CWS/USFWS cooperative study of stabilized hunting regulations has been completed and distributed to cooperating agencies, where it was well received. Major papers from this study were presented at the 52nd North American Wildlife and Natural Resources Conference held in Quebec City.

### Migratory Bird Studies

Emphasis has continued on studies of duck philopatry, nest-site selection and fall residency at the St-Denis NWA study area, with the completion of the fourth year of the project. Erection of predator fences and predator control has allowed important data on the effects of predator exclusion on duck nesting success to be gathered. Nesting success in 1986 was the highest since the study began and a large number of ducklings were tagged at the nest site. A progress report and several refereed publications are being completed. Two graduate students will be pursuing related studies in this area next year.

The study of prescribed burning as a management tool at Last Mountain Lake has been extended for one additional year. A progress report has been drafted which describes the work to date. Results so far indicate that bird species diversity can be expected to increase after burning, while that of small mammals will decrease in the short term. This work has received much attention from other agencies wishing to learn and use the techniques which we have developed.

The results of a study of factors which affect field feeding selection by sandhill cranes have been prepared for journal publication and include recommendations to minimize damage to grain crops. Studies on feed grain preference by captive cranes have been completed and a manuscript prepared.

The three-year study of the effects of Aspen patch size on song birds is being completed, and a progress report will be available shortly. Insectivorous birds seem to be most affected by forest patch size.



## Enforcement and Regulations

Management of the Migratory Birds Convention Act and associated Regulations resulted in the issuance of 710 permits for the control of activities relating to aviculture, taxidermy, scientific studies and sanctuary access. Major activities in all sanctuaries has ceased and Kendall Island Sanctuary is going through a clean-up process.

Continued low waterfowl populations and wet fall weather conditions restricted hunter opportunity and resulted in reduced recreational hunter activity. The training of members of cooperating law enforcement agencies continues to be a high priority throughout the region. The emphasis placed on training has resulted in greater cooperation between the agencies concerned, which should result in maximum quality in the enforcement effort. Enforcement effort during the past year concentrated on commercial hunters and large hunt clubs with excellent results being obtained. These types of enforcement efforts will be continued and expanded upon.

## North American Waterfowl Management Plan (NAWMP)

Western and Northern Region has committed a full-time person-year to coordinate North American Waterfowl Management Plan activities within the region, plus coordinate initiatives between W&NR and other Canadian Wildlife Service regions, with the Provinces and with Private Sector Agencies. In 1986-87 W&NR expanded its involvement in the Prairie Habitat Joint Venture, established to oversee implementation of NAWMP undertakings in W&NR. The W&NR coordinator, along with the Head, Migratory Bird Studies, represents W&NR on a public-private agency evaluation organization, established to assess present and future NAWMP initiatives. W&NR's Arctic Goose Management Biologist represents CWS on a multiagency Arctic Goose Scoping Committee. This group will eventually yield to an Arctic Goose Joint Venture, that will plan and implement future NAWMP related goose management programs.

Staff of the Habitat Conservation Section participated with provincial representatives in the development of Provincial action plans for the NAWMP. Pilot projects for the NAWMP are under way in all three prairie provinces. CWS is carrying out population and habitat monitoring projects at Redvers to measure responses of waterfowl populations to land-use changes.

As solutions to waterfowl production problems on the prairies must come incidentally to changes in agricultural land-use practices, CWS staff has initiated a long-term cooperative project to measure the efficiency of conservation grazing techniques in providing secure cover for nesting waterfowl.

Habitat Conservation and Population Management staff has been committed to the Prairie Pothole Project in Saskatchewan to assist with design and

analysis of the 5-year biological evaluation project jointly undertaken by Saskatchewan Department of Parks and Renewable Resources and Wildlife Habitat Canada to evaluate the effectiveness of a system of financial and program incentives designed to induce Saskatchewan landowners to retain and enhance waterfowl habitat on their lands.

An investigation and evaluation of artificial nesting structures as a method of increasing waterfowl production on private farm lands has been initiated. It is anticipated that artificial nest structures could be a successful method of increasing waterfowl production from small wetlands with intensively cultivated farm lands in Western Canada.

#### Polar Bear Pass National Wildlife Area

Progress was made on the designation and management of Polar Bear Pass NWA. The NWA was officially declared on 18 September, 1986 and added to the Wildlife Area Regulations. Concurrence has been reached with GNWT on "The Cooperative Management of Wildlife of Polar Bear Pass National Wildlife Area" and the agreement should be signed in 1987.

#### Proposed Northern Migratory Bird Sanctuaries

CWS began public consultation on three proposed sanctuaries in the eastern Arctic. Consultations have been held with the Baffin Regional Hunters and Trappers Association and with the communities nearest the proposed sanctuaries. There has been general support for the initiative and it is anticipated that new sanctuaries will be established during 1987.

#### Crop Damage Prevention Programs

As in 1985, harvest in 1986 was characterized by poor weather conditions Prairie-wide. Farmers experienced delays in harvesting during the swath stage, consequently damage was widespread and high. Expenditures for preventing damage in over 75 areas across the Prairies exceeded the \$1 million federal share. Agriculture agencies provided substantial contributions over and above the Compensation Agreement commitments which assured payments to landholders at the established rates of \$71/acre at maximum.

#### Toxic Chemicals Monitoring

Activities of the Toxic Chemicals program began December 1, 1986, when the Pesticides Impact Assessment Biologist reported for duty. Communications have been established with key people in federal, provincial and nongovernment agencies, and a collaborative study of the effects of grasshopper spraying on prairie songbirds, coordinated by the Toxicology Research Centre, University of Saskatchewan, is in progress. Consultation is under way with Delta Waterfowl & Wetlands Research

Station and Prairie Environmental Services concerning project design and funding of work on bromoxynil in aquatic ecosystems and effects of pesticides on strike reproduction.

#### Trumpeter Swans

Efforts have been initiated to determine and document the size of the NWT Trumpeter Swan flock. Using collar marking and banding efforts, migration route and wintering habitats of this flock will also be determined. Data on habitat use, food habits and swan morphometrics will also be collected. This information will be the basis for determining management, habitat and protection needs for this rare species of migratory bird.

#### Whooping Crane Ecology and Rehabilitation

As part of the continuing efforts to protect and conserve the endangered Whooping Crane, CWS carried out aerial surveys in 1986 to monitor cranes and their nests in and near Wood Buffalo National Park. At least 29 nests are known to have been constructed in 1986, equalling the record established in 1984. Three nests contained a single egg, 24 nests contained the usual two eggs and contents of the remaining two nests were unknown but contained at least one egg each.

Twenty-five surplus eggs were removed and at least 28 eggs remained in Wood Buffalo National Park. Twenty-five chicks are known to have hatched and of these, 21 survived at least until 10 August when 18 chicks were colour banded.

Production in Wood Buffalo National Park in 1986 was the highest on record with all of the 21 chicks successfully completing their first fall migration to Texas. There they were joined by all of the 16 chicks which fledged the previous year, underlining the excellent survival of young Whooping Cranes. Over 60 colour-banded birds in the Wood Buffalo National Park population are believed to have survived, some as long as almost 10 years, and sightings of these banded birds continue to increase our knowledge of Whooping Crane biology.

Of the 25 surplus eggs removed from Wood Buffalo National Park, 15 live eggs were placed in nests of Greater Sandhill Cranes at the Grays Lake National Wildlife Refuge in Idaho, as part of a cooperative USA-Canada management program. Although 11 of the 15 eggs hatched, an extremely serious drought took a heavy toll of Whooping Crane chicks and only two eventually fledged. Many native Sandhill Crane chicks also succumbed.

Two of four live eggs shipped to the Patuxent Research Centre in Maryland, USA hatched and these birds will eventually be used for captive propagation purposes.

The remaining six surplus eggs had been tested for viability upon removal from the breeding range in Wood Buffalo National Park. The eggs were non-viable and were sent to the Patuxent Research Centre for examination.

As of January 1986 the world population of Whooping Cranes was about 179 birds, including 111 wild birds currently in Texas, about 40 birds in captivity, and about 25 wild birds in New Mexico. It is the first time, since at least 1938, that the Wood Buffalo National Park Whooping Crane population has numbered over 100 birds on the winter range.

A whooping crane hot-line was set up and the public responded well by reporting 107 possible sightings of Whooping Cranes during the spring migration and 92 during the fall migration. This has provided information used to identify important staging areas for this species. This work will be expanded next year to include information on foraging and roosting habitat requirements as well.

#### Anatum Peregrine Falcon Recovery Project

In 1986 the Wainwright Captive Breeding Facility produced 69 young. Six were held back as future breeders including one female returned from a release site, after having been injured. Therefore 63 young were released at nine release sites, in six provinces, but of these, six died due to various reasons.

Most major work on the quail rearing building has now been completed, allowing maximum production of quail.

In June, the National Wildlife Directors approved the Anatum Peregrine Falcon Recovery Plan in principle and created a National Recovery Team. The team met in October in Montreal to redraft the plan and coordinate its implementation. A revised plan was sent to the Directors in April for their consideration at the June 1987 meeting.

## Pacific and Yukon Region

### Waterfowl

British Columbia supports a diverse array of waterfowl, and CWS has continued to monitor populations in important areas in cooperation with other agencies. Joint surveys were undertaken with Ducks Unlimited in the Kamloops area to determine the most efficient sampling strategy for future monitoring. Surveys of wintering waterfowl in the Fraser River area were continued and the previous year's results were published. Some waterfowl banding was conducted near Kamloops with the assistance of the B.C. Wildlife Branch and Ducks Unlimited. And the B.C. Waterfowl Technical Committee has been reactivated with an initial task to revise the 1983 B.C. Waterfowl Management Plan.

The Pacific and Yukon Region participated in initial discussions to establish the Arctic Goose Joint Venture. In parallel with the intent of that joint venture, a snow goose banding operation was conducted on the Alaksen National Wildlife Area. This was another cooperative effort involving Washington State Department of Game, B.C. Waterfowl Society, British Columbia Wildlife Branch, Ducks Unlimited, and the British Columbia Institute of Technology. Observations of collared geese were made subsequently in the Vancouver area, on the Skagit River Delta in Washington and in Oregon and California.

Two intensive studies of snow goose biology were started on the Fraser River Delta. One involved an investigation of behaviour during the winter as it may affect survival of young birds and ultimately recruitment to the population. The other study is investigating the impact of the geese on their estuarine and upland habitat, with the intent of determining the carrying capacity of the habitat. In addition, a study of the level of harvest of snow geese on the Fraser River Delta over the past years was completed.

The Yukon coastal plain is the fall staging ground for a large part of Canada's western arctic snow goose population. In fall 1986, CWS conducted aerial surveys to better determine the distribution patterns of staging snow geese and the types of tundra habitats they use on the coastal plain. This information will ensure adequate protection of these habitats when land-use decisions are made in the future. CWS also played a major cooperative role with the Yukon Government Department of Renewable Resources in gathering field data for producing a habitat map for coastal plain from Landsat satellite imagery.

CWS, in cooperation with the Yukon Government Department of Renewable Resources and Ducks Unlimited Canada, continued efforts to monitor populations of waterfowl in key spring staging areas in the Southern Lakes region, and also formed a "Yukon Waterfowl Working Group" in conjunction with these agencies to ensure maximum communication and

cooperation in waterfowl research and management in Yukon. In September and October we conducted and subsequently reported on waterfowl surveys in Southeast Yukon as part of the Southeast Yukon Planning Initiative under funding from DIAND'S Land Use Planning Directorate.

#### Marine Birds

Seabird inventories and marine bird surveys remained a priority in response to the recommendations of the EARP panel on offshore petroleum exploration. Baseline Studies Funds continued to support research into the utility of nestling growth rates as an indicator of the health of marine resources. That project has been completed and a report is in preparation.

Colony inventories for the Queen Charlotte Islands were completed with surveys of Englefield Bay and the southern tip of the Moresby Archipelago for burrow-nesting species and a survey of the whole area for surface nesting species. A previously unknown colony of Rhinoceros Auklets was found in Englefield Bay; the southernmost Ancient Murrelet colony was found on Kunghit Island; and remeasuring the density of Cassin's Auklet nesting on the Kerouard Islands led to a revision in the total population estimates for that species. Overall, British Columbia seabird colonies are now estimated to contain 70 percent of the known North American population of Cassin's Auklets, Ancient Murrelets, and Rhinoceros Auklets.

#### Forest Birds

Two technical reports were completed: "A Reconnaissance of Bird Communities in Old-Growth Coastal Hemlock Forests, British Columbia" and "A Study of Riparian Bird Communities from The Dry Interior of British Columbia". Field work was completed on studies on the effects of selection logging in Interior Douglas-Fir and Ponderosa Pine Forests. Data analysis and report writing will be completed in 1987-88, although the Forest Bird Project itself has been discontinued because of redeployment of the project leader and person-year to other activities.

#### Ornithology Altas

The most recent comprehensive treatment of the bird fauna of British Columbia was in 1947 when "A Review of the Bird Fauna of British Columbia" by J.A. Munro and Ian McTaggart-Cowan was issued. Since that time, there have been many studies on the birds of the province and their habitat which have resulted in new information on aspects of the natural history, and in extensions or reductions of the known distribution of many species. In addition, over the past 40 years, many changes have occurred to bird habitat through industrial and agricultural practices and urbanization which have affected the birds and their distribution

within the province. The British Columbia Provincial Museum, B.C. Wildlife Branch, and the CWS have been working cooperatively to bring together all existing information on the birds of British Columbia, to review and synthesize that information, and to complete species accounts and distribution maps on the over 440 species of birds that are known to occur or have occurred in the province. In 1986, all species accounts for the non-passerine birds were completed and sent for review, and a first draft of all distribution maps was completed. The first volume, "The Birds of British Columbia: Non-passerines", will be ready for publication early in the 1987 fiscal year; volume 2, "The Birds of British Columbia: Passerines" should be ready for publication by 1989.

#### Great Blue Heron Studies

Pooled samples of eggs collected from four colonies in 1983 indicated that some herons had elevated levels of contaminants. Concerns about their reproductive success spurred a cooperative study between NWRC and CWS, P&Y Region on the annual cycle of the Great Blue Heron on the B.C. coast. The study examined contaminant levels in eggs, prey and tissues collected at colonies with different contamination levels compared the reproductive success at each nest. Nestlings were banded to examine dispersal distances. In winter the study focused on the habitats used by herons in the Fraser River Delta.

#### Wetland Mapping

The objective of the Landsat Study was to test the feasibility of using Thematic Mapper (Satellite) data for mapping wetlands. Ground-truthing was completed in 1984 for three study areas. Digital analysis took place in 1985 and by September, 1986, a final report and maps were produced by the contractor, B.C. Research. The intent now is to summarize that report and adapt it to a CWS regional manuscript report format.

The objective of the Riske Creek Study was to assess the importance of selected habitat variables of wetlands to 23 species of aquatic birds. Bird data were collected from 1980-85. Water chemistry, aquatic invertebrate, plant and morphometric data for 114 wetlands were collected from 1983-85. The abiotic data plus maps of each wetland were presented in a regional CWS manuscript report. A report on the importance of the abiotic variables to birds is almost finished. One on the biotic data will be prepared next summer.

We are in the final stage of completing an assessment of the historical alienation of estuarine habitat on Vancouver Island. The contractor has finished a draft report and, after revision, it will be printed as a CWS manuscript report.

## Habitat Management and Assessment

Habitat protection activities in B.C. concentrated on influencing land use policies and programs of federal and provincial agencies. Advice with respect to habitat requirements of migratory birds was provided in several joint federal-provincial land use planning schemes including the Fraser, the Squamish and the Cowichan river estuary management plans, and by responding to more than 300 interagency land use referrals. Active participation in DOE (RSCC) Task Forces providing input to EARP Panel projects was also continued.

We continued monitoring habitat rehabilitation projects at Campbell River, Cowichan River, Englishman River, and Squamish River. Habitat acquisition and management was promoted by preparing reviews of Migratory Bird Sanctuaries and National Wildlife Areas, and preparing submissions for several new areas as potential RAMSAR sites.

In Yukon, reconnaissance of wetlands continued in the Frances Lake area on early open-water sites. A draft report was completed in July. We continued to cooperate with Yukon Department of Renewable Resources and Ducks Unlimited in population and habitat studies in the Needlerock area, which included gathering data on water quality and invertebrates. In August, Trumpeter Swan breeding areas were surveyed in southeast Yukon, and a paper was later presented at the Trumpeter Swan Society Conference held in Grande Prairie, Alberta, and planning is continuing into the production of a Catalogue of Yukon Waterfowl Habitat, with the initial chapters describing individual wetlands anticipated next year. We also participated in the Land Use regulatory process by reviewing permit applications referred to us by DIAND, and by participating in occasional meetings.

## Regulations and Enforcement

The Regulations and Enforcement Section spent the spring months responding to urban Canada Goose complaints. The complaints involved Canada Geese nesting on the Law Courts building in downtown Vancouver and on the fireworks barge at "Expo". In most cases a satisfactory conclusion to the complaint was accomplished. In an attempt to reduce future problems, CWS participated, along with the B.C. Wildlife Branch, Ducks Unlimited, B.C. Waterfowl Society, the SPCA and Vancouver Parks Board, in the development of a strategic plan for the management of problem Canada Geese in the urban environment.

In 1985-86 we targetted long-term and multiple offenders as an enforcement priority. Of the individuals targetted a 70% success rate was accomplished by further convictions.



Cooperation from RCMP, B.C. Conservation Officer Service and Federal Fisheries in the Enforcement of Migratory Birds in most cases was excellent. Given other demands on their time, a number of cooperative enforcement patrols in key times and areas were achieved.

Enforcement personnel represented CWS at the annual Canada Goose pickup in Stanley Park. A total of 1400 moulting birds were captured and distributed to various parts of the lower mainland. During the goose roundup, a biologist from the province was threatened by an individual with a knife. This person objected to the birds being moved. A CWS enforcement person disarmed and held him for police.

Our program of RCMP avicultural and taxidermy inspection was again successful. A number of non-permit holders who held birds turned themselves in when they heard the RCMP were checking permits and facilities.

Training was provided for RCMP, Federal Fisheries and Yukon Parks' personnel. Assistance was given to Western and Northern Region for training RCMP in Manitoba and Alberta.

## WILDLIFE RESEARCH AND CONSERVATION PROGRAM

### Headquarters

#### Committee on the Status of Endangered Wildlife in Canada (COSEWIC)

CWS supplies a secretariat, Secretary and office space in Place Vincent Massey. At the 1986 annual meeting in April, 25 species were assigned official status in Canada. A similar number of species is expected in '87 which will mark four consecutive years of high Committee productivity. Election of a new Chairman is anticipated; Tony Keith having served several elected terms, now wishes to step down.

#### Canadian Council on Ecological Areas (CCEA)

CWS also supplies a staffed secretariat for CCEA. At the 1986 meeting in Montreal during August, the first elected Chairman Dr. David Munro (former Director of CWS, and former Director General of IUCN), stepped down after two elected terms. Council then unanimously elected the former Vice Chairman Mr. Ross Thomasson, Chief of Land Use Planning, Department of Natural Resources for Manitoba, as Chairman of CCEA. At a late February meeting of the Board of Directors, Mr. Thomasson began planning the second phase of Council work; the first organizational phase having been substantially completed under the able direction of the first Chairman David Munro.

#### Humane Trapping

Environment Canada provided \$582,000 to the Fur Institute of Canada (FIC) as its final commitment of the \$1.6 million over four years specifically for research and development of humane trapping systems. The FIC over the four-year period entered into agreements or contracts with the Alberta Environment Centre at Vegreville and the University of Minnesota to carry out the research.

The six-person, full time, research team at AEC evaluated several killing type traps used for mink, marten and raccoon. One particular device for marten successfully passed all six phases of the research protocol and prototypes were used on two experimental traplines during December. Preliminary results indicate that the device, when properly set, will provide a humane death for trapped pine marten. This success indicates that the research protocols are correct and that with a continuing research effort, humane trapping systems can be found for all furbearer species.

The two-year project at the University of Minnesota will conclude in June 1987, but it too has been successful. Preliminary results of blood chemistry analysis, heart rate and body temperatures, indicate that red fox caught in "soft holding" foot traps experience an initial increase in "stress" which levels out over a short time to that which is experienced by free ranging foxes running, running scared or eating. This is encouraging because live holding systems will always be required for certain trapping situations.

The Technical Committee set up by the International Organization for Standardization to develop international Humane Trapping Standards held its first meeting in Quebec City. Four of the seven countries which expressed interest in participating in this effort were able to send representatives. Canada was nominated to chair the Committee for 3 years. Three Working Groups were established to carry forward various aspects of the Standard drafting process and this initiative is expected to bring other countries into the program.

A Standing Committee on Aboriginal Affairs and Northern Development held hearings on the Fur Issue over a one-year period and tabled its Recommendations in the House last December. It praised the work on humane trap research and strongly recommended that the work be continued. The government's response to the Standing Committee Report was tabled in the House on April 15, 1987.

## **Regional Activities**

### **Western and Northern Region**

#### **Wood Bison**

The health and status of wood bison herds currently being held in corrals in Alberta, Manitoba, and Yukon were monitored under the terms of five-year cooperative agreements signed with each of these jurisdictions to establish populations in the wild. During summer 1986, 2, 12, and 11 calves, respectively, were born on site at the corral locations. Total herd sizes within compounds now number 34, 102, and 45, respectively. Poor calf production continues to plague the Alberta project but corrective measures have now been instituted. The first releases of wood bison to the wild from captive herds at Hay-Zama, Alberta, and Waterhen, Manitoba, are scheduled for spring 1988. The Dene Tha Indian Band and the Waterhen Indian Band are actively involved in the Alberta and Manitoba reestablishment projects, respectively. With successful reproduction in 1987, soon it may be possible for a COSEWIC downlisting of wood bison from the endangered to the threatened category.

#### **Peary Caribou**

Aerial surveys of Peary caribou by CWS on Bathurst, Alexander, Marc, Massey, Vanier, Cameron, Helena, Loughheed, and Edmund Walker islands, Northwest Territories, in summer 1985 indicated that Peary caribou had increased slightly in the overall area since 1974. However, the 1985 estimate still remains at less than 15% of the 1961 estimate. Aerial surveys of Peary caribou by CWS on Prince Patrick Island, Eglinton Island, and Emerald Isle, Northwest Territories, in summer 1986 indicated that the number of Peary caribou has continued to decrease from 1974 and now is less than 10% of number estimated in 1961. These opposing findings do not allow an evaluation of the current status of Peary caribou in the Canadian High Arctic until Melville Island, the major Peary caribou island among the Queen Elizabeth Islands, is surveyed in summer 1987. When Melville Island is completed, the CWS will be able to evaluate the current status of Peary caribou and make recommendations to COSEWIC regarding the need for the protection of Peary caribou as one of Canada's truly unique forms of wildlife and an important part of Canada's natural heritage.

#### **Research on Barren-ground Caribou, Beverly Herd**

The final field season of a study of the effects of forest fires in the Northwest Territories on the habitats, movements and physical condition of the Beverly herd of barren-ground caribou was completed in March. The adequacy of the present forested winter range to support the population

is being assessed by examining the physical condition of the caribou in early and late winter. The Fort Smith Hunters and Trappers Association is cooperating in this aspect of the study. The movements of the herd in relation to burns was monitored in December and March. The biomass of caribou forages on the winter range was measured during the summer months to learn more about habitat changes with time following fire. Preliminary results suggest that sufficient winter range is available to the herd; however the caribou are not using portions of the historical winter range that have a high burn rate. Major reports on phases of the study will be completed by April 1988.

#### Swift Fox

CWS, in cooperation with the governments of Alberta and Saskatchewan, the University of Calgary and a number of external funding sources (Esso, World Wildlife Fund, Alberta Recreation, Parks and Wildlife) have continued the swift fox rehabilitation program. Mortality of released foxes on the Alberta site was high. A few foxes have survived and their status is insecure, due largely to coyote predation. Alternate release sites are being investigated.

Releases to date in Saskatchewan appear more promising. In the winters of 1986 and 1987 activity by foxes were noticed at three of five release pens and a small core population appears to be surviving. Additional releases are planned for 1987. Food habit studies of free-roaming foxes in Saskatchewan have been initiated.

#### Polar Bear Research

In 1986, the second year of field work on a three year program to re-evaluate the status of the population of polar bears in the Beaufort Sea was completed as part of the NOGAP program. 228 bears were captured in 1986 and 178 in 1985. The mean litter size of cubs was 1.94, which is the highest that has been recorded in the Beaufort Sea. The average ages of males and females 5 years of age or greater was 10.03 and 11.34 years. Survival of adult males and females appears to be high. The final year of field work will be conducted in 1987 and a final report is due by March 31.

Studies of the influence on polar bears of ice conditions, of seal distribution and abundance, and of the importance of polynyas continued at Dundas Island for 4 weeks in April and May. The importance of polynyas to overwintering populations is being evaluated by studying their use of these areas in the late winter and early spring. Particular attention is being paid to the underwater vocalizations of walrus and to their behavior in the early spring which appears to be when they breed. The study of reproductive ecology of polar bears on the western coast of Hudson Bay was completed and the results are now being published. Of particular interest is the fact that at least 40% of the

adult females wean their cubs in only 1 1/2 years instead of 2 1/2 years as they do in most other populations in other parts of the arctic. This means they can breed in alternate years instead of every three years and has the potential for considerably increasing their reproductive output. Their mean litter size (2.0) is one of the highest in the world as well. Females showed a high degree of fidelity to the general denning area but not specific sites within it.

Specimens of polar bears killed by Inuit hunters were collected from Resolute, Eskimo Point, and Coral Harbour for a study of condition in the species. Analysis of the data will continue through the next year before the study is completed.

The final report is being written on the study of movements of polar bears on the land on the western coast (Manitoba) of Hudson Bay. In September 1986, 119 polar bears were caught as part of a pilot study to evaluate the practicality of studying age and sex-specific mortality rates in polar bears. Over 60% of the bears captured were previously tagged. Over 1,800 individual polar bears have been marked in that population including 5 cohorts of cubs in the denning area from 1980-84. The size of the marked population in the Churchill area and the amount of other background information make it a unique place to investigate questions related to survival which are so essential to management of the polar bear.

The National Computerized Data Base continues to be maintained and now has over 16,000 records. It is presently held on the University of Alberta computer. Analysis of specimens in the lab continues and personnel on the polar bear project continue to provide assistance and training in lab and field work to other jurisdictions on request.

Pacific and Yukon Region

Porcupine Caribou Herd

CWS has been involved in Porcupine Caribou research during the last two decades. Our approach in researching the herd has been twofold:

1. To concentrate on the range relations of the herd, i.e., how the animals interact with their environment, the identification of critical habitats, etc.
2. To cooperate with other agencies on the monitoring of the herd via radio tracking, census, composition counts, harvest estimates.

In the 1986-87 fiscal year CWS completed the third year of a project on summer range relations of the herd, particularly in relation to insect relief areas. This project, funded through the Northern Oil and Gas Action program, is designed to provide baseline data to be incorporated in the planning and development of Beaufort Sea Oil and Gas reserves. As part of the overall project, CWS, with NOGAP funding, organized and funded two computer modelling workshops involving all agencies dealing with the herd's management. The purposes of the modelling efforts are to collate all existing data into a rigorous model framework, identify data gaps, and construct a predictive tool to explore the implications of human development.

As part of our cooperative program with management agencies, CWS participated in a number of radio tracking flights monitoring the movements and mortality of individuals, conducted a composition count on the herd in conjunction with census efforts of Yukon Wildlife Service, US Fish and Wildlife Service and Alaska Department of Fish and Game, and organized and funded a study (Northern Affairs NOGAP program) on the physical condition of the herd via the Institute of Arctic Biology, University of Alaska.

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## TOXIC CHEMICALS

### Headquarters

CWS at NWRC continued to provide advice on the impacts of toxic chemicals on wildlife to various client agencies. Three new pesticides evaluators were hired this year. Besides screening numerous applications for permits for pesticide research and new product registration, major reviews of the following pesticides were undertaken: carbofuran (flowable and granular), diazinon, clofentezine, triadimenol, dicofol, metsulfuron-methyl, bendiocarb and ethalfluralin. In support of the Environmental Contaminants Act, over 150 new chemical notifications were screened, a preliminary review (under contract) of the effects of selenium on western wildlife was completed and reviews of hexachlorohexane, chlorobenzenes and chlorosytnenes were initiated.

A long-term project to develop scientific criteria for assessment of ecological effects of pesticides and to improve guidelines to registrants for the scientific and technical information that should be submitted to support claims for product safety to wildlife was initiated. Baseline information on wildlife use of agricultural habitat in mixed wood plain ecozones has been completed and computerized. These data will be used to develop terrestrial exposure scenarios for pesticide evaluation. CWS participated in a U.S. task force on terrestrial wildlife impact assessment and methodology development. Two preliminary reviews, one of plant testing protocols, the other of interspecies variability to cholinesterase inhibiting pesticides, were completed.

New resources, including two person-years for NWRC and one for W&N Region, were obtained as part of Environment Canada's three year plan of action to strengthen its pesticides monitoring and impact assessment program. These additional resources have restored a minimum operational capability at NWRC to assure the quality of pesticide and other contaminant analysis as well as to measure biochemical and physiological effects of these chemicals on wildlife. An assessment of the CWS in-house capability to analyze pesticides in wildlife, as well as a survey of the private sector capability was completed and a report on quality assurance guidelines to contract laboratories published. A minimum wildlife-toxicology program has now been established in western Canada.

A preliminary study of impact of chemical control of grasshoppers on the Burrowing Owl, a threatened species, in Saskatchewan was completed and a report published. Carbofuran was shown to have a significant impact on the Owl's reproductive performance. Carbaryl appears to have had no effect and results for chlorpyrifos are inconclusive. Further research is planned.



The potential of three widely used organophosphate insecticides to cause elevated levels of porphyrins (i.e. porphyria) in wild birds was studied. Chicken embryo liver cells in a cell culture system and/or live Japanese Quail were exposed to fenitrothion, chlorpyrifos and diazinon, as well as to PCB (Aroclor 1254) and hexachlorobenzene. The latter two compounds are known porphyric agents. Some chemicals were also tested using Zebra Finch. A contractor's report has been submitted. Results suggest that extrapolation from one test system (e.g. cell cultures) to another (a live species) must be made with great caution and that measurement of porphyric patterns does not hold much potential as an indicator of sublethal exposure of birds to non-persistent and readily metabolized organophosphates.

In a related toxicology study, the porphyrogenic potential of three PCB congeners (3,4,3',4',5'-, 2,3,4,3',4'- and 2,4,5,2',4',5'-) was examined in Japanese Quail and American Kestrels and related to their MFO induction capacity. Experimental work for this study is in progress.

Research was also carried out on the extent of porphyria in Herring Gulls in the Great Lakes. Markedly elevated levels, over coastal sites, were found and these were highest in Lakes Michigan and Ontario. Modification of cholinesterase assays for blood and brain were modified to improve sensitivity and a filter paper method for field samples developed. Determination of the degree of cholinesterase inhibition was made on a variety of field samples including burrowing owls and blackbirds from the prairies and geese and peregrine suspected of being poisoned by organophosphate pesticides.

The systematic review of CWS organochlorine and heavy metal residue data for purposes of rationalizing and refining the national program for monitoring contaminants in wildlife continued. A comprehensive (275 page) technical report of the trends and effects of contaminants in seabirds over the period 1968 to 1985 was published. A number of more specialized papers on contaminants and seabirds were also completed and submitted to scientific journals. A similar review of contaminants in raptors, with special attention on the Peregrine Falcon and its prey, was initiated. In support of the National Peregrine Falcon Recovery Plan, a toxicological evaluation of the peregrine release program was completed. Papers prepared in cooperation with CWS Ontario Region on heavy metals and Herring Gulls and organochlorines in mink are now in press.

Laboratory Services processed 1350 wildlife specimens for chemical analyses and archiving in the CWS National Specimen Bank and 350 samples were actually analyzed in-house for organochlorine compounds in support of various regional and HQ projects. These projects included eggs of Herring Gull from the Great Lakes, caribou and polar bears from northern Canada, waterfowl from the St. Lawrence, Lake St. Clair, Hamilton Harbour and James Bay, Great Blue Herons from B.C. and Quebec and peregrine and prey samples.

A pilot program to assess organochlorine levels in migrating raptors (e.g. Sharp-shinned and Cooper's hawks, merlins) by taking blood samples of birds captured during banding was initiated. Preliminary results suggest that the birds are exposed to higher levels of organochlorine compounds in their winter habitats, mainly in Latin America, than in their breeding habitats in Canada.

CWS collaborated with H&W Canada, NWTG, and the province of Quebec in carrying out a survey of radionuclide contamination ( $Cs^{134}$ ,  $Cs^{137}$ ,  $I^{131}$ ) in caribou collected throughout northern Canada. Preliminary results show a small contribution from Chernobyl to residual radioactivity from 1960's weapons testing. Radioactivity levels measured to date are considered not to be harmful to people eating caribou by NHW.

Individual Great Blue Heron eggs and prey samples from 5 colonies in British Columbia were analyzed for polychlorinated dibenzodioxins (PCDDs) and dibenzofurans (PCDFs) as part of a reproductive assessment undertaken by P&Y Region biologists. Hexachloro and pentachloro- and tetrachloro- (TCDD) dioxins were found in herons from all areas, including the control site, but were highest at Crofton, where chlorophenols are used for wood preservation. PCDD and PCDF contamination in prey (mainly fish) was near or below the detection limit in most cases. Pooled samples of Great Blue Heron Eggs from various areas in Quebec, where the population is non-resident, showed much lower levels of PCDDs. The hypothesis that chlorophenols are the source of the PCDD contamination in B.C. is being further tested in 1987/88 in a joint project between NWRC and C&P, Pacific and Yukon Region.

Analytical methodology and results of PCDD and PCDF trends in Great Lakes Herring Gulls were presented at the 6th Conference on Dioxins and Related Compounds at Fukuoka, Japan. PCDD trends in the more contaminated areas, Lake Ontario and Saginaw Bay, Lake Huron, continue to decrease slowly toward the "background" levels in the other lakes. Three lectures on dioxin research and on research into contamination in Arctic marine biota were also presented by Dr. Norstrom at Ehime University, Matsuyama, Japan.

Two papers summarizing the cooperative research between NWT, DFO and CWS on organochlorine contamination of Arctic Cod, Ringed Seals and Polar Bears were submitted for publication in 1986. The results of this research and a review of the literature in the context of long-range transport were presented at the World Large Lakes Conference in Mackinac, Michigan in May, 1986. A histopathology examination of Polar Bear tissues from Hudson Bay in cooperation with the University of Saskatchewan did not reveal any obvious signs of organochlorine toxic effects. The density of specialized cells (Ito cells) in polar bear liver, which were thought to be a storage site for Vitamin A, were found to correlate with Vitamin A content. Tissue distribution of

organochlorines was also studied in these samples. Contaminants were distributed in most tissues according to lipid content (liver excepted). An unusual finding was the relatively high levels of alpha-HCH in brain stem tissue.

A meeting of the OECD Hazard Assessment Group was held in Vienna in April 1986 with a working group, chaired by Dr. Peakall, on target species. The OECD protocols, especially those for Minimum Pre-Market Data, are likely to be incorporated in the new Environmental Protection Act.

The Wildlife Toxicology Fund, administered by World Wildlife Fund Canada, has completed its second year of operation. During the year, the priorities for the fund, from the viewpoint of CWS, were put together jointly by NWRC and the Regions. They were transmitted to WWFC and have been widely circulated by them to Canadian universities. So far 41 projects have been approved by the Research Advisory Board.

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## **Regional Activities**

### Atlantic Region

Pre-registration evaluation of candidate spruce budworm control agents was pursued, the data package on methacarbamate impacts on forest songbirds being completed through field studies in New Brunswick. The relevance of innovative spray technology as a hazard to migratory birds was also explored in that province through a field investigation of the operational insecticide fenitrothion. Regional expertise and laboratory services were again provided in support of monitors of a hemlock looper fenitrothion spray program in Newfoundland. A regional C&P pesticides strategy and action plan was prepared with EPS and IWD. Organochlorine contamination of shorebirds was determined near Peregrine Falcon release sites in the upper Bay of Fundy. The hazards to migratory birds of industrial point sources of chemical contamination of the environment were assessed by a private consultant. A successful wildlife toxicology workshop was held in the region.

The analysis of organochlorine residue levels in high arctic colonially breeding seabirds at Prince Leopold Island and a report comparing the productivity and DDT contamination trends of Gannets at Bonaventure Island, Quebec from 1967-1984 were completed.

### Quebec Region

The latest round of inspection of Quebec heronries was undertaken in the summer of 1986. This project was initiated in 1976 to monitor toxic chemicals in the eggs of the Great Blue Heron and to gather data on population trends. Results of analyses will be processed and a report will be published in the next few months.

### Ontario Region

Surveillance of Toxic Chemicals in Great Lakes Wildlife (Herring Gull Program)

Herring Gull eggs were collected at 16 sites from throughout the Great Lakes and the St. Lawrence River. Analysis of these 1986 eggs showed levels of major contaminants remained unchanged or decreased from 1985. Embryonic mortality was monitored in Herring Gull eggs on the lower Great Lakes and found to be elevated at Hamilton Harbour and the Detroit River. Cormorant nests on the Canadian Great Lakes were censused and found to have increased by approximately 20% since 1985. Wild and domestic ducks were used to study contaminant levels at Lake St. Clair and Hamilton Harbour. Forster's Terns and Black-crowned Night Herons were also examined from Lake St. Clair. CWS-Burlington has had considerable input to the Remedial Action Plan (RAP) process for Hamilton Harbour.

### LONG-RANGE TRANSPORT OF AIRBORNE POLLUTANTS (LRTAP)

Research continued on the impacts of long-range air pollution on wildlife. It is designed to provide an understanding of the mechanisms and magnitude of the effects of acidity on wildlife. Studies were continued in 1986-87 on:

- (1) Kejimikujik integrated watershed baseline characterization, and study of the effects of acid deposition on benthic nutrient release and wetland productivity (Atlantic Region);
- (2) Breeding distribution and productivity of waterfowl in acid-sensitive waters of southwestern New Brunswick (Atlantic Region: new study);
- (3) Influence of acidity on duckling growth in relation to competition with fish and nutrient status (Quebec Region);
- (4) Effect of Maple die-back on insectivorous forest birds (Quebec Region: (pilot study);
- (5) Effects of acidic precipitation on waterfowl populations in northern Ontario (Ontario Region);
- (6) Effects of wetland acidity on breeding biology of Tree Swallows (Ontario Region);
- (7) Effects of lake acidity on metal uptake by biota and the toxicity of low-level metal exposure to birds (NWRC).

Scientific advice on the impacts of acid precipitation on wildlife is provided to the Interdepartmental LRTAP Science Subcommittee (ILC) and the Federal-Provincial Research and Monitoring Co-ordinating Committee (RMCC) for LRTAP. Assessments of the current state of knowledge of LRTAP impacts on wildlife were prepared in conjunction with the RMCC Aquatic and Terrestrial Effects Assessment Task Groups.

A technical session on Acidification and Wildlife, co-chaired by Dr. D.B. Peakall, was held at the 52nd North American Wildlife and Natural Resources Conference in Quebec City in March 1987. Six of the nine papers presented were co-authored by CWS scientists jointly with U.S. colleagues. This Conference was opened by the Prime Minister, who referred in his speech to the impacts of acid rain on wildlife.

A Round Table Discussion on "The Impacts of Acid Precipitation on Birds", co-convened by Dr. D.B. Peakall and K.L. Fischer, was held at the

International Ornithological Congress in Ottawa in June 1986, and included several presentations by CWS-LRTAP scientists. This meeting provided an international synopsis of acid-precipitation research; identified existing gaps and weaknesses; stressed the need for international collaboration and research; and emphasised the need for long-term studies to follow changes in acidity and the responses of birds and their prey to those changes. CWS-LRTAP scientists were also well represented at a Workshop on Birds as Bio-indicators, chaired by Dr. Peakall and H. Boyd, and convened by Dr. A.W. Diamond, at the 19th World Conference of the International Council for Bird Preservation held in Kingston, Ontario, immediately before the I.O.C. The Proceedings of this workshop are to be published, together with those of a Symposium on birds as Socio-economic Resources, as an I.C.B.P. Technical Publication on "The Uses of Birds", edited by A.W. Diamond and F.L. Filion.

CWS scientists from Quebec, Ontario and Atlantic Regions, and NWRC, also contributed to the first annual C&P Research Seminars held at CCIW, Burlington, Ontario in February 1987.

## **Regional Activities**

### Atlantic Region

The final year of field studies was completed in the Kejimikujik Calibrated Basins study. This work has shown that biological productivity can remain high in acidic waters if the external nutrient supply is maintained, and has clarified the interrelationships between organic and anthropogenic acidity. The influence of acidity on the retention and release of benthic nutrients is still being studied.

This was the first year of a 2-year pilot study on the effects of acidity on the distribution and productivity of waterfowl in an area of south-western New Brunswick which is highly sensitive to acidification.

### Quebec Region

#### **a) Aquatic Effects**

The last field season of the "Duckling project" was quite successful because of Ducks Unlimited employment program. The results of this project were presented by Dr. Jean-Luc Desgranges at the 52nd North American Wildlife Conference.

Two major articles on the participation of the Quebec Region in Phase I of the Long Range Transport Airborne Pollutant Program were completed and will soon be published in the CWS occasional papers series.

#### **b) Terrestrial Effects**

The summer of 1986 marked the beginning of CWS's involvement in the decline of the maple groves issue. A pilot study on the role of avian populations in this phenomenon was carried out through the CHALLENGE '86 employment program. The hypotheses put forward and the methodology followed were presented by Dr. Jean-Luc Desgranges during the 19th Conference of the International Council for Bird Presentation.

A new research project, with a proposed duration of four years, was developed in December. Although the ecosystematic approach is ambitious, it is aimed at gaining a better understanding of the mechanisms in addition to gathering data on the effects.

### Ontario Region

Field Work in 1986 was devoted to:

- (1) studies of waterfowl in headwater lakes - dietary studies of non-piscivorous waterfowl were completed, and included investigations of the sensitivity to acidity of major waterfowl foods;
- (2) wetland studies - reproductive impairment in Tree Swallows was correlated with wetland acidity, though more studies of the components of the diet of aquatic origin are required;
- (3) development of a biomonitoring protocol; preliminary work on a long-term biomonitoring study plan for Common Loons, waterfowl and their foods was completed.

### National Wildlife Research Centre

Controlled laboratory experiments to investigate the physiological and reproductive effects in birds of chronic low-level dietary metal exposure were continued. A comprehensive literature review of the effects of chronic low-level metal exposure in birds was accepted for publication in Environmental Pollution.

Ducklings and insects collected in Ontario Region were analyzed for metal residues to determine the effect of pH differences. Cadmium and lead levels were higher in insects from moderate pH lakes (5.5 - 6.0) than those from more acidic lakes (pH 4.4 - 5.0); there was no difference in tissue levels of mercury. Cadmium and mercury levels in duckling liver and kidney samples were also higher in lakes of higher pH, but there was no difference in lead levels. Metal concentrations in insect tissue averaged 8 ppm (range 0-32), in duckling tissue 1 ppm (range 0-5).



CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES  
OF WILD FAUNA AND FLORA (CITES)

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1986, being the year between biennial meetings of the Conference of Parties to the Convention, was a quiet year for international matters. A considerable amount of time was, however, spent on preparations for the Sixth Meeting of the Conference of Parties to be held in Ottawa during July 1987.

Before deciding upon Ottawa as the location for the 1987 biennial meeting, convention facilities in Vancouver, Banff National Park, Montreal, Quebec City, Charlottetown and Ottawa were checked. While cities such as Montreal do have appropriate convention facilities, they lack the international embassy or consul representatives that are very necessary for foreign government delegations visiting Canada. After consulting with the CITES Secretary General, it was agreed that the Sixth Meeting of the Conference of the Parties to CITES would take place in Ottawa. After viewing appropriate facilities it was agreed that the Meeting of between six and seven hundred delegates from at least 90 nations would be held in the Ottawa Congress Centre. An appropriate contract has been signed to lease the Centre for the period of the Meeting, July 12-24.

As host state for the Meeting, Canada has to provide equipment such as public address systems, word processors, electric typewriters, telephones and photocopiers and provide supplementary staff such as messengers, ushers, typists and other general support people. Contracts for equipment rentals have been contracted for and signed. Staff hiring will be completed shortly before the commencement of the Meeting.

On October 23, the Minister, on behalf of the Government of Canada, signed an Agreement with the CITES Secretary General, Mr. Eugene Lapointe, to hold the Sixth Meeting of the Conference of Parties to CITES in Canada, July 12-24, 1987.

A small CITES delegation consisting of 2 CWS officers and the Northwest Territories CITES representative attended a CITES Technical Committee Meeting held in Lausanne in June 1986. During the meeting a number of potential proposals to amend the CITES Appendices and a number of draft resolutions were discussed in preparation for the 1987 Meeting in Ottawa. Immediately following the Technical Meeting the CITES Administrator, in his capacity of Chairman of the CITES Working Group on Transportation, attended an International Air Transport Association (IATA) Live Animals Board Meeting in Geneva. The Board reviewed the Live Animal Regulations concerning "Container notes" that are applicable to crating, feeding, loading and general handling of animals in transit. The Parties to CITES have accepted the IATA Live Animal Regulations as meeting CITES requirements for the transportation of live animals by air carriers.

The 14th Meeting of the CITES Standing Committee took place in Ottawa during October in order to finalize the agenda and other matters pertaining to the July 1987 Meeting of the Parties. A strong Canadian delegation headed by the Director General, CWS, and a number of federal and provincial government observers attended the Meeting.

CITES training of Revenue Canada Customs and Excise Officers and RCMP Officers continued but at a reduced scale. During 1986 fewer requests for assistance in providing training programs were received from the RCMP and Revenue Canada. CWS did however, within budget restraints, meet all requests for such training.

During 1986, the federal government issued 1,789 (974) CITES Import and Export Permits, 71 (42) Transit Certificates and 42 (47) Scientific Certificates, while the provinces and territories issued 3,552 (3,261) Export Permits for CITES specimens being imported into and exported from Canada. Comparable 1985 figures are shown in brackets.

During January 1987 responsibility for the enforcement related aspects of CITES was transferred from the Program, Marketing and Operational Services Branch to the Legislation, Regulations and Enforcement (LRE) Division of the Migratory Birds and Wildlife Conservation Branch. Under the new arrangement, LRE will be the primary CWS contact for Customs and the RCMP Police concerning investigations, and the detention, seizure and forfeiture of CITES goods. The Administrator, CITES, will continue to look after the international CITES responsibilities, Canadian CITES permit policy and the issuance of CITES permits.

### Scientific and Technical Publications

In April, Scientific and Technical Publications launched a new series of publications, Technical Reports, intended to make available material that is either of interest to a limited audience or too extensive to be accommodated in scientific journals or other CWS publications series. Technical Reports are published regionally using guidelines developed by Scientific and Technical Publications. In the first year 15 titles were issued: 10, Pacific and Yukon Region; 1, Western and Northern Region; 1, Ontario Region; 2, Atlantic Region; and 1, Headquarters. Demand for many of the reports has been very strong.

Major scientific publications of 1986-87 were Eider ducks in Canada/Les eiders au Canada, Report No. 47, edited by Austin Reed, and Revised atlas of Eastern Canadian seabirds: 1, shipboard surveys, Special Publication, by R.G.B. Brown.

Two new titles were added to the Hinterland Who's Who series: American Goldfinch (Le chardonneret jaune) and Purple Martin (L'hirondelle pourprée). In addition several brochures (Bat, Raccoon, Marten, and others) were completely rewritten to incorporate recent research and maintain the series' reputation for reliable, accurate information. Conversion of Hinterland Who's Who public service announcements from film to video was completed, thus ensuring that television stations will be able to continue airing the announcements.

### Socio-economic Knowledge and Advice

The fifth and final report in the series the Importance of Wildlife to Canadians will be published during 1987. It is subtitled Emerging Issues in Current and Potential Demand for Wildlife and will likely be released as part of a new series of Environment Canada publications on the State of the Environment. At the request of the International Council for Bird Preservation, CWS organized an international Symposium on Birds as a Socio-economic Resource for the 19th ICBP Conference held in Kingston. The proceedings are being edited by CWS and will be published by ICBP during 1987. The Canadian Wildlife Directors Committee unanimously approved the proposal to update the 1981 Statistics Canada Survey on the Importance of Wildlife to Canadians for the 1987 calendar year. Implementation of this resolution is progressing on schedule and the survey is planned to take place during February, 1988. A major review of studies dealing with various forms of wildlife utilization and their value in Canada over the past 25 years was undertaken by CWS at the request of the Wildlife Conservation Colloquium Task Force. This review and a discussion of its implications for management will be circulated to government and non-government wildlife agencies when available.

### Activities Related to Wildlife '87

At a Wildlife Ministers' Conference held in May 1986 all Provincial Ministers and the Minister of the Environment agreed to make 1987 a special year for Wildlife Conservation in Canada in commemoration of the establishment of the first Wildlife Sanctuary at Last Mountain Lake in Saskatchewan in 1887 by Sir John A. Macdonald, the first Prime Minister of Canada. The Minister of the Environment officially designated 1987 as a special year for Canadian Wildlife Conservation at a Canadian Nature Federation annual meeting held in St. John's, Newfoundland on July 26, 1986. As a result of this announcement the Minister received a standing ovation and thus precipitated great expectations that tangible new wildlife conservation initiatives will be delivered in 1987.

The National Wildlife '87 Steering Committee was formed in February 1986 and the first official meeting was held in April 1986. The National Wildlife '87 Steering Committee is composed of major non-government organizations including Wildlife Habitat Canada, Canadian Nature Federation, World Wildlife Fund Canada, Ducks Unlimited Canada, Nature Conservancy of Canada, National Sportsmen Shows and many many others. The Canadian Wildlife Service has provided a secretariat.

The objective of the National Wildlife '87 Steering Committee was to facilitate and promote various Wildlife '87 activities and events across Canada and it has been active in organizing various communications networks. Regional offices now have coordinators in place who have been charged with organizing various private sector and non-government organizations. The provincial and federal representatives will sit down together and address the issues concerning wildlife in Canada and promote a public awareness of the importance of wildlife conservation. Information from the various provinces on planned activities is fed into the National Wildlife '87 Steering Committee and is collated and distributed across the country. The Wildlife '87 Steering Committee produces newsletters, updates, the logo, the theme, and various other items of interest such as hats, buttons, pins, posters, T-shirts. The main impetus however, is in the production of the Wildlife '87 Newsletter.

The national launching of the celebration took place on Prince Edward Island where the Minister participated in the Christmas Bird Count.

