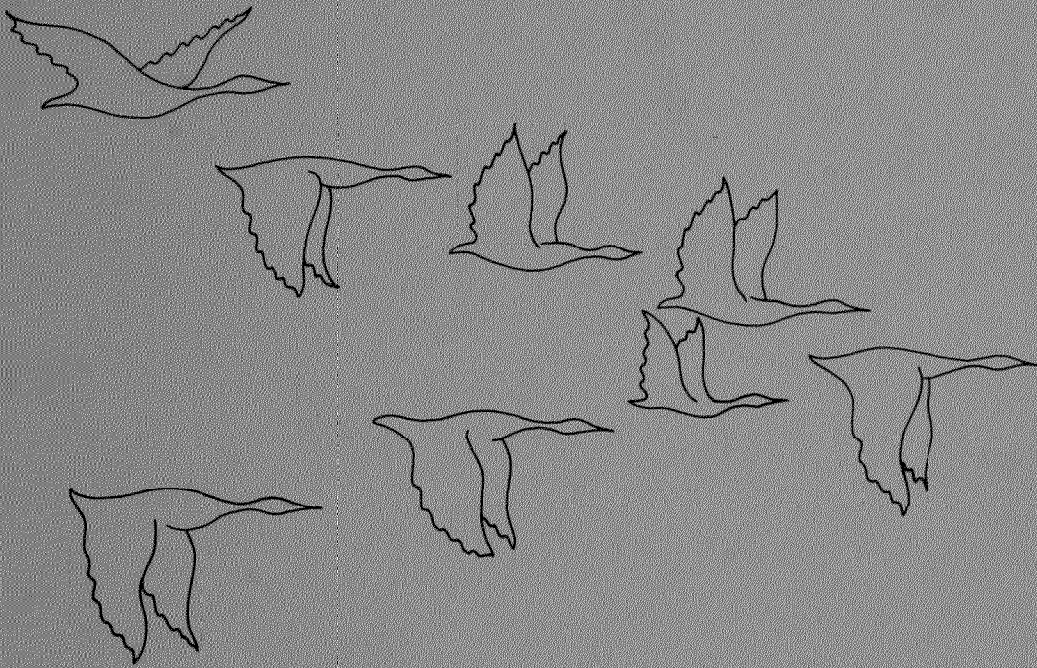


*Annual Review*  
1985-1986



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 (Ste-Foy); Ontario (Ottawa); Western and Northern (Edmonton, Alberta); and Pacific and Yukon (Delta, British Columbia).

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## MIGRATORY BIRDS CONSERVATION PROGRAM

In 1985-86 the Migratory Birds Conservation 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, impact and protection, population monitoring and surveys, impact assessment, native land claims, and international liaison.

### Headquarters

Headquarters staff is concerned with managing and co-ordinating CWS Migratory Birds programs at the national level. Co-ordinators 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 produces Migratory Game Bird Hunting Permits, runs national harvest surveys to monitor kill, and co-ordinates the North American Bird Banding Program in Canada. The Biometrics Section advises CWS staff on the proper statistical design and analysis of studies and surveys.

### North American Waterfowl Management Plan

One of the major achievements of the Migratory Birds Conservation Program during 1985-86 was the finalization of the North American Waterfowl Management Plan with the U.S.

A draft document was released in early December for public review and many supportive comments were received. In late February, the federal cabinet approved the focus and intent of the Plan and gave permission for CWS to pursue new initiatives designed to meet the federal funding requirements. A final draft of the document was produced in March and it is expected that the Minister of the Environment and the U.S. Secretary of the Interior will jointly sign the Plan in May, 1986.

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.



The Plan will require a co-operative approach to waterfowl management by all public and private conservation organizations in Canada. New administrative arrangements will be necessary to implement the strategies. A North American Waterfowl Management Committee will be established to oversee the implementation and updating of the Plan.

#### 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 in the kill of all prairie ducks. Drought conditions in western Canada have hampered duck breeding success for several seasons. Previous restrictions on Black Duck harvest in eastern Canada were extended to 1985.

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.

#### Habitat Management

CWS has completed a process for rating and ranking habitats of importance to migratory birds. More than 200 areas have been rated so far and the data are stored by computer in the regional office in Winnipeg. Data will be added to the system as additional areas are examined.

The Wetland Mapping and Designation Program saw the completion of the mapping and rating of all inland and coastal wetlands in P.E.I. and Nova Scotia. The data will be used in the design of waterfowl surveys, by land-use planners, and by environmental consultants. The mapping of New Brunswick wetlands in 1986 will mark the substantial completion of the project in the Maritimes.

A study of the feasibility of using Landsat-D data to identify wetland plant communities and monitor changes was completed in B.C. Early results indicate the technique will be useful over broad areas, particularly for estuaries and the pothole country of the Prairies, and possibly in remote areas, such as Labrador-Ungava.

CWS has proposed the establishment of three new Migratory Bird Sanctuaries to protect seabird colonies in the Northwest Territories. The recommended areas are at Cape Searle and Reid Bay off the southeast coast of Baffin Island and Prince Leopold Island off the northeast coast of Somerset Island. The Department of Indian Affairs and Northern Development and the Government of the Northwest Territories have agreed and discussions are under way with native groups to gain their approval.

Negotiations continue with the Government of the Northwest Territories in developing a co-operative management agreement for Polar Bear Pass, which will become the first National Wildlife Area established in the North. A draft management plan for the area has been prepared.

1985 was the worst crop damage year on the Prairies since 1974. 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 1985-86 appropriation of \$800,000 by \$200,000.

#### Seabird Management

The completion of a major report on energy consumption by seabirds in eastern Canadian waters provided more detailed information than had previously been available on the interaction between seabirds and their food stocks. This is part of a continuing evaluation of possible seabird-fisheries interactions in eastern Canada.

Publication in the CWS Report Series of "A Natural History of Digges Sound" marked the completion of the Hudson Strait Seabird Project, field work for which was carried out from 1980 to 1983. Two new long-term banding studies were initiated as part of a program to study the population dynamics of Thick-billed Murres on Coats Island, N.W.T. and Ancient Murrelets on Reef Island, B.C.

#### Whooping Crane Recovery Program

Canada and the U.S. signed a Memorandum of Understanding in April to ensure international co-ordination and co-operation in efforts to restore populations of the Whooping Crane. A Canadian Whooping Crane Recovery Plan and appendices have been drafted. Operational portions have been implemented and the package is presently being reviewed by co-operating agencies. Response to date has generally been favourable.

A five-year program was initiated to understand the hydrology of the marsh ponds in Wood Buffalo National Park where the cranes nest. Undertaken in conjunction with Parks Canada and the National Hydrological Research Institute, the study will yield results intended to relate microclimate to groundwater recharge of this critical habitat.

#### Comprehensive Native Land Claims

CWS, under the direction of the ADM of the Conservation and Protection Service, is the lead departmental agency for all 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 1985, CWS attended caucus and negotiation sessions for the Tungavut Federation of Nunavut and Dene/Metis claims in the Northwest Territories, and also provided input for claims in Quebec, Newfoundland (Labrador), B.C. and Yukon.

Implementation of the Western Arctic Claim (COPE), finalized in 1984, proceeded slowly. An omnibus Treasury Board submission for resources to meet federal government responsibilities received approval in January 1986. CWS has recommended its members for the N.W.T. and Yukon Wildlife Management Advisory Boards, to be appointed in the spring.

Input was provided to the Coolican Task Force Review of Indian Affairs and Northern Development. 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 1986.

#### International Ornithological Congress

Canada will host the 19th International Ornithological Congress in Ottawa from June 22-29, 1986. CWS is cohosting the Congress in conjunction with the National Museum of Natural Sciences. While the latter organization is the lead agency, CWS is a major participant in planning, organizing and funding this congress. Anticipated attendance of more than 1500 delegates from 84 countries will make this the largest meeting of the world's ornithologists ever held.

#### Latin American Program

New strategies and priorities were proposed for the CWS Latin American Program and approved at a Chiefs' meeting in May. These included development of a proposal to create a system of Pan-American Shorebird Reserves to protect critical shorebird staging and wintering areas in Canada, the U.S., and Latin America.

Projects funded in 1985 included the last major shorebird surveys along the coasts of Peru, Ecuador, Colombia, and Brasil to complete the South American Shorebird Atlas; shorebird and Common Tern banding in Brasil's Lagoa do peixe; a study to determine the vulnerability of migratory birds to wintering habitat loss in Latin America; and a study to determine the magnitude of pesticide use in Latin America.

#### Wildlife Habitat Canada

1985 saw the launching of Canada's first wildlife Habitat Conservation Stamp, taken from an original work by Robert Bateman entitled "Mallard Pair - Early Winter." 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 and sales in Canada and the U.S. exceeded 50,000, bringing in as much revenue for wildlife habitat conservation as the stamp.

Artwork for the 1986 stamp was unveiled in Toronto in March. The painting by J. Fenwick Lansdowne is entitled "Canvasbacks in Spring."



## Regional Activities

### Atlantic Region

#### Regulations and Enforcement

Efforts to improve compliance with Migratory Bird Regulations in Newfoundland were increased through concerted action by the new enforcement coordinator and the biologists in the St. John's office. Community meetings were held to explain the need for conservation and regulations, with particular reference to the hunting of murre and eiders. Training sessions for enforcement personnel clarified the main directions for initial enforcement efforts, for curbing the sale of murre and the out-of-season hunting of eiders. Enforcement is being stepped-up gradually as the public education effort takes effect. In New Brunswick, efforts to control the spring shooting of sea ducks received a setback from a provincial licence allowing hunters, including those convicted of violating Migratory Bird Regulations, to carry firearms at any time on the excuse of hunting cormorants or crows; such hunters can only be charged if caught in the act of hunting or with migratory birds in possession.

#### Habitat Protection

Regulation of Machias Seal Island Migratory Bird Sanctuary went without incident during the summer of 1985. Visitation was down to less than 1000 due principally to poor weather conditions. A four-year study on the feeding ecology of Arctic Terns at Machias Seal Island was completed.

Resource inventory and impoundment evaluation at the Shepody National Wildlife Area were completed and all National Wildlife Areas were managed according to operational plans. Updated management plans were prepared for Wallace Bay and Sand Pond National Wildlife Areas. Through the assistance of Canada Works Grants sponsored by the Chignecto Naturalists' Club, major maintenance and habitat management was completed at Shepody, Tintamarre, Cape Jourimain, Chignecto, and Wallace Bay National Wildlife Areas.

The Chignecto National Wildlife Area was officially listed under the Ramsar Convention as a wetland of international importance.

The Maritimes wetland inventory proceeded on schedule with the central, southwestern, and northwestern sections of New Brunswick being completed. Canada Works Grants sponsored by Mount Allison University and the Maritime resource Management Service greatly facilitated the progress made with this project.

## Environmental Assessment

CWS Atlantic Region had a major contribution to Environment Canada's response to the Northern Grand Banks (Hibernia) Environmental Impact Statement. The CWS contribution was applauded as greatly strengthening the departmental position. CWS was named lead agency in future FEARO review of NATO air training exercise centred on Goose Bay, Labrador.

## Migratory Bird Surveys and Management

The revised manuscript of a compendium of waterfowl population studies in the Region was submitted for CWS publication; it includes background data and perspective to guide regional waterfowl management planning.

With increased emphasis on Black Duck populations in the North American Waterfowl Management Plan, surveys to monitor waterfowl numbers were extended to New Brunswick and continued in Nova Scotia and Prince Edward Island. Progress was reviewed with federal and provincial personnel, and the program for 1987 was modified to meet projected requirements. Banding of waterfowl again received major financial support from the Atlantic Flyway Council; among some 5500 birds banded in 1985 were over 2400 Black Ducks, with 134 Canada Geese - mostly captured by rocket-netting, and 410 Common Eiders caught during special studies. Examination of banding recoveries accumulated over the past 21 years was initiated. Discussions were initiated for development of a recovery plan for breeding eiders in Newfoundland, Monitoring of seabird numbers and breeding success in some colonies in Newfoundland and the eastern Arctic was effected in spite of the shortage of support staff resulting from the 1984 cuts. CWS support for the Maritimes Breeding Bird Atlas, with start-up funding through an unsolicited proposal to DSS, helped to get this project under way; field data collection will continue in 1986-90.

## North American Waterfowl Management Plan

The draft of the North American Waterfowl Management Plan, agreed to by Canada and the United States, was circulated within the Region, and briefing sessions were held at provincial wildlife federation meetings.

## Seabird Research

A book-length monographic review of "The Atlantic Alcidae" was published by Academic Press in November. Papers on the ecology of the alcid community breeding on the Gannet Islands, Labrador, were nearing completion. Research continued into the effects of murre hunting in Newfoundland on the species' population, with data assembly on numbers of licence status of hunters, size and species and age composition of the kill, origin of harvested birds - through band recoveries, and foods taken through the season; management recommendations are anticipated late in FY 1986-87, after data analyses are completed. Investigations were continuing on tern breeding success in the face of gull predation on Sable Island, and of eider ecology in the Bay of Fundy.

Problems with increasing numbers and boldness of gulls have burgeoned in the Region recently. Gull predation of eggs and young is having impacts on reproduction of eiders in southwestern New Brunswick and in Newfoundland, of terns in Nova Scotia, and of Puffins in Newfoundland. Gulls dropping shells on paved roads in Nova Scotia led to increased complaints of damage to automobile tires, and gulls damaging or fouling fish in nets, on wharves, or spread out to dry, are an increasing problem throughout Newfoundland. Development of a gull management plan has been identified as a priority.

### Quebec Region

#### Habitat Program

##### Protection

Technical advice was provided to environmental groups involved in wildlife habitat protection. Two projects were funded with about half a million dollars by the Wildlife Habitat Canada Foundation: one in the Berthier-Sorel Archipelago, and the other in the St. Lawrence River middle estuary.

Computerization of our data bank on migratory birds and their habitats along the St. Lawrence River was carried out. Publication of a report and an atlas on waterfowl using this river system and its shores represented seven years of effort. This document has been made available to consultants and regional municipalities along the St. Lawrence to give direction to their decisions.

Seventy files on environmental impact with respect to the federal Environmental Assessment and Review Process (EARP) were carefully reviewed. From this number, 11 received special attention and resulted in a firm position. Our participation in the environmental debate has, however, not been entirely successful in spite of outstanding exceptions, such as the Longueuil sand bars.

##### Management and Development

There was a serious epidemic of avian cholera on Blanche Island, a future national wildlife area. To stop this threat that threatened one of the most important colonies of the Common Eider in the St. Lawrence estuary, a development plan for the island in co-operation with Ducks Unlimited was prepared and implemented. This collaboration with Ducks Unlimited has also been carried out on other wildlife areas with the planning of three other projects that could start early in the summer of 1986.

The controlled hunt of the Greater Snow Goose occurred for a fourteenth consecutive year in the Cap Tourmente National Wildlife Area. The daily experimental hunt to make the resource accessible at a lower price allowed for a refinement of the hunt conditions for the 1986 season, which was well received by the public.

At Cap Tourmente, interpretation services have been provided by the Société linnéenne, after cutbacks to the program formerly administered by the Canadian Wildlife Service. A reduction in the number of visitors led to a deficit that was made up by the department. This difficult situation did not hinder the interpretation program and activities offered to the public that were carried out in accordance with the pre-established schedule and theme for the site. In 1985, the Société linnéenne welcomed approximately 55,000 visitors.

#### Population Management Program

##### Research on Populations

Photographic census of the Greater Snow Goose done in the spring in the St. Lawrence estuary indicates a population of 260,000 birds. Summer and fall inventories show that the success of reproduction is maintained; young represented 25.8% of the flock this fall. The fall migration, very unusual, was characterized by the late arrival of geese and shorter stays in the estuary. This behaviour engendered a remarkable reduction in bird harvest and caused a 35% reduction of harvest in the controlled hunt at Cap Tourmente compared with 1984. The development of a mathematical model of the Greater Snow Goose population is under way.

The Canadian Wildlife Service has been involved in the organization and realization of an eider inventory in the Hudson Bay area in co-operation with the Makivik Corporation. In addition, it has been involved in the preparation and follow-up of a study, at post-doctorate level, on the wintering food ecology of the eider in the Gulf of St. Lawrence.

##### Regulations and Conservation

A regional strategy on the protection and enforcement of the Migratory Birds Convention Act has been developed to ensure an optimal utilization of current resources, especially in the unique context, in Quebec, of seabird protection on the Côte-Nord. These colonies remain threatened by poaching and egg collecting, and the region has approximately 70 km of rugged coastline.

##### Inventories

###### Black Duck

Quebec Region has conceived a technique of inventory for Black Duck breeding populations that will allow a better evaluation of the population status. In May, two teams from the CWS and one from the

Quebec ministère du Loisir, de la Chasse et de la Pêche (MLCP) flew, by helicopter, over a sampling area of more than 100,000 km<sup>2</sup> in the boreal forest of the central part of Quebec. Preliminary results reveal the presence of 54,000 pairs representing 18 species of waterfowl. This number includes a few more than 12,000 pairs of Black Ducks, that is 15% of the population of breeding species. The MLCP has confirmed its involvement in the inventory for 1986.

#### Seabirds

An inventory of the major colonies of Black-legged Kittiwake revealed an increase in this species in the Gulf of St. Lawrence.

The colony of Bonaventure Island contains 23,544 pairs, while the major colony of Anticosti Island, Gull Cliff, contains 22,840 pairs. Together, these two colonies represent 66% of the overall gulf population. Since 1974, 11 new colonies have appeared in the gulf.

As a complement to the inventories, a detailed study on the reproduction ecology of the Black-legged Kittiwake has been carried out on Carrousel Island, situated in the Sept-Îles Archipelago. This archipelago is one of the best breeding sites for seabirds on the Côte-Nord. There is a colony of Leach's Petrels of more than 1000 individuals. On the whole archipelago, a total of 51,372 birds distributed in ten breeding species was counted.

#### Banding

Eight banding stations have been operated this year because of the collaboration of groups from the private sector and the MLCP. The majority was along the St. Lawrence and the Ottawa Rivers. Six thousand five hundred (6500) ducks were banded; half of them were Black Ducks. Results on recent banding campaigns will be available soon.

In addition, in August, 206 Brant were banded at Foxe Basin and on Bathurst Island.

#### Atlas

The participation of more than 700 amateur and professional ornithologists in the project is a sign of the project vitality and interest shown for the Quebec Breeding Bird Atlas. This year, ornithological data comes from all around the province, from Abitibi to Côte-Nord, and the Îles-de-la-Madeleine.

An exhibit on the Quebec Atlas seeking collaboration of ornithologists has begun its provincial tour. It was presented at Quebec and Trois-Rivières. It will be shown, during the year, throughout the region according to requests from ornithological clubs and corporations. The purpose of this approach is to complete tours of preliminary conferences for the active season in the field. All participants in the Quebec Breeding Bird Atlas will receive soon No. 2 of the Info-Atlas, now in printing. They will learn that, in 1984, 228 species have been observed: 189 nestings confirmed, 15 potential, 15 probable and 9 observed only. Data analysis for the 1985 season is under way and results will be available soon.

Ornithologists have forwarded 30,000 records a year since the beginning of the project.

### Ontario Region

#### Waterfowl Population Studies, Southwestern Ontario

Breeding waterfowl surveys were conducted on ground plots first established in 1971 in Ontario, south of 47°. Black ducks continued to decline but mallard numbers appeared to be stable. Aerial surveys were conducted on various inland staging areas, including several recent impoundments, to develop an understanding of the interchange of migrant waterfowl between new inland habitat and Lake Erie marshes such as Long Point. New banding sites were established in a number of inland production areas to see whether survival in such areas differs from that of birds banded in major (coastal) staging areas.

Blood sampling of mallards for lead levels continued at Lake St. Clair. Survey staff participated in the Continental Canvasback Survey, December Canada Goose Survey, Midwinter Waterfowl Survey as well as co-ordinating and hosting the field portion of the National Waterfowl Parts Survey.

#### Northern Ontario

Methodology for waterfowl breeding pair surveys in the Hudson Bay Lowlands was tested in the Moosenee area during late May: navigation over this featureless habitat is difficult and the distribution of waterfowl is very highly clumped. Special surveys carried out on a 70,000 km<sup>2</sup> section of northeastern Ontario as part of a concerted study of Black Duck populations throughout eastern Canada did not reveal any change in Black Duck population density from 1981.

In co-operation with the Ontario Ministry of Natural Resources a preliminary study was made of the important duck moulting area along the Ontario shore of Hudson Bay.



## Shorebird Studies

An important highlight was the completion of fieldwork for the Shorebird Atlas Project, one of the major components of the CWS Latin American Program. The objective is to determine the locations of critical areas used by shorebirds on their wintering grounds in South America, information vital for the future conservation of Canadian shorebird populations. Survey work was started five years ago in 1981 and has involved flights around most of the coastline of the continent. Fieldwork is carried out in close collaboration with biologists from the countries concerned.

In January-February 1986, Dr. R.I.G. Morrison and R.K. Ross spent seven weeks carrying out aerial surveys on the coasts of Brasil, Uruguay, Peru, Ecuador and Colombia. Notable assistance was provided by the Companhia Vale do Rio Doce in Brasil, where a helicopter was made available to cover a major section of the northern coast of the country.

A major result of the work has been the development of a new international conservation plan to set up a system of linked reserves - "Sister Reserves" - to protect the major sites used by the birds throughout their ranges: the future conservation of the group will depend on internationally co-ordinated management of this sort. The concept was developed by Dr. R.I.G. Morrison in collaboration with Dr. J.P. Myers of the Philadelphia Academy of Natural Sciences and has already been endorsed by organizations such as the World Wildlife Fund and the International Association of Fish and Wildlife Agencies. The first "Sister Reserve" has been created on Delaware Bay after an agreement between the State Governors of New Jersey and Delaware, and it is hoped that the CWS will follow up with development of the system both within Canada and in South America through contacts developed through the Latin American Program.

Other highlights included Dr. Morrison's invited participation in a shorebird banding workshop and training course held at the Lagoa do Peixe in southern Brasil (one of the sites discovered during Shorebird Atlas Project surveys), and the completion of a chapter summarizing knowledge of marine and coastal birds in the James Bay, Hudson Bay and Foxe Basin region.

## Colonial Waterbirds

Common Terns and Caspian Terns nesting at Tommy Thompson Park near Toronto, were censused and the impact of Ring-billed Gulls encroaching on their nesting habitat was monitored.

## Winter Ecology of Great Lakes Common Terns - LAP

Two scientific reports describing the results of fieldwork on the ecology of Common Terns wintering in southern Peru carried out early in 1985 were prepared.

## Gull Control

A census, commissioned by CWS, showed that the Ring-billed Gull population in the lower Great Lakes continues to increase. CWS monitored the effectiveness and side effects of gull scaring operations by a falconer at Tommy Thompson Park (eastern Headland of the Toronto Island Airport). Gull damage to tomatoes in southwestern Ontario was much less than during 1984-85. During July 1985 Ring-billed Gulls were eating cherries in the Niagara Peninsula. In several cases the gulls were observed alighting in the cherry trees.

## Canada Geese Control

During the past fiscal year many public contacts, concerning goose depredations occurred. A total of 1,365 adult geese from Toronto waterfront were shipped to Oklahoma while 324 goslings were shipped to MNR districts in Pembroke, Thunder Bay, Sudbury and Atikokan and 101 eggs to Fort Francis to assist with the establishment of local flocks.

Arrangements have been made to ship Toronto waterfront geese to North Carolina in 1986, while eggs from Upper Canada Village vicinity and the Toronto waterfront will be picked up by the State of Oklahoma.

We prepared a publication entitled, "Are There Too Many Giant Canada Geese in Southern Ontario?", which was distributed through the Ministry of Natural Resources' press release system and was well publicized by the media. Our purpose was to increase the kill of geese by increasing hunter access to previously closed land. The hunting season for Canada Geese was extended to December 31 with an additional week in January. The liberalization significantly increased the harvest of local Canada Geese.

## Atlas of Breeding Birds

The final year of the five-year field program for the Ontario Breeding Bird Atlas was completed, with coverage of all squares in the province. The data file contains over 400,000 records on which analysis and error-checking is progressing smoothly. This volunteer project, which has been actively supported by the Region, will reach completion in early 1987 with the publication of the Atlas.

## Habitat Acquisition and Management - southwestern Ontario

The Management Plan for the Big Creek National Wildlife Area was implemented, with major marsh development projects undertaken and completed by Ducks Unlimited.

The Bear Creek Marsh was acquired and added to the existing St. Clair National Wildlife Area. Marsh development work will be undertaken by Ducks Unlimited in 1986-87.

In the third successful year of the co-operative CWS/OMNR Bald Eagle Project, six additional Bald Eagles were "hacked" and released at the Long Point National Wildlife Area. Continued sightings of wing-tagged eagles attest to the initial success of the project.

#### Habitat Management - Eastern Ontario

The management plan for the Prince Edward Point National Wildlife Area has been finalized and printed in French and in English. The last three management plans for the region (Mississippi Lake NWA, Scotch Bonnet NWA and Wellers Bay NWA) were circulated for public input.

#### Habitat Protection - Southeastern Ontario

The Ontario Ministry of Natural Resources continued to implement the wetland evaluation system developed by OMNR and CWS. Staff of CWS again assisted with evaluation training courses.

Wetlands of critical importance to waterfowl were identified in a co-operative effort with OMNR. Methods for their protection, including utilization of Wildlife Habitat Canada funding, are being reviewed. CWS continued to participate with the World Wildlife Fund, Nature Conservancy of Canada and OMNR in the Carolinian Canada Project in southwestern Ontario.

#### Habitat Assessment and Mitigation - Southwestern Ontario

An account of Polar Bear Provincial Park was finalized with the co-operation of OMNR, to support the declaration of the area as a Wetland of International Importance (Ramsar site).

#### Habitat Assessment - Eastern Ontario

A baseline study of wetlands along the St. Lawrence River was completed as part of the program to protect habitats important to the welfare of migratory birds. Wetland assessments were co-ordinated with surveys of migrant and breeding waterfowl.

#### Enforcement

Response time to complaints made by farmers suffering crop depredation was shortened. An improved system for the issuance of scare/kill permits is in place as part of a variety of strategies to deal with the Ring-billed Gull problem.

The permit unit has compiled a full inventory of migratory birds kept under 901 avicultural permits in Ontario. Some 12,523 birds are kept, an average of 13.9 birds per permit holder.

## Western and Northern Region

### Whooping Crane Program

As part of the continuing efforts to protect and conserve the endangered Whooping Crane, CWS carried out aerial surveys in 1985, to monitor cranes and nests in or near Wood Buffalo National Park. At least 28 nests were constructed, one less than the record set in 1984. Only one nest contained a single egg, all other nests had the usual two eggs. Twenty-seven surplus eggs were removed and 28 eggs remained in Wood Buffalo National Park. At least 16 chicks were still alive there by 31 July. Seven pairs lost their chick or egg in May or early June and five chicks disappeared later in June or July.

The 27 eggs collected were tested for viability and 23 live eggs were placed in nests of Greater Sandhill Cranes at the Grays Lake National Wildlife Refuge in Idaho, as part of a co-operative USA-Canada management program. Of these 23 eggs, 21 chicks hatched and 11 are believed to have flown from Grays Lake with their foster parents. The only live egg shipped from Wood Buffalo National Park to the Patuxent Research Centre in Maryland hatched, and that bird will be used for captive propagation purposes.

Production in Wood Buffalo National Park in 1985 was the highest on record with 16 of 21 chicks hatched successfully completing their first fall migration to Texas. About 55 colour-banded birds in the Wood Buffalo National Park population have survived, some as long as nine years, and sightings of these banded birds continue to increase our knowledge of Whooping Crane biology.

As of January 1986 the world population of Whooping Cranes was about 170 birds, including 96 wild birds currently in Texas, 39 birds in captivity, and about 35 wild birds in New Mexico.

### Anatum Peregrine Falcon Recovery Project

The Wainwright Captive Breeding facility produced a total of 68 young peregrines in 1985. Seven young were held as breeders and the remaining sixty-one sent for release. Young were released in seven provinces at sixteen release locations.

Aside from the production and release aspects of the program, the two major activities in the project centred around the Wainwright Audit and the work on the building which will be used for food production.

The Wainwright Audit begun in April and was completed in November. All eggs, young and adults were accounted for during the period 1969 through 1984. Three discrepancies were noted and accounted for and all records, genealogies and shipments of peregrines and gyrfalcons were updated and supported by documentation.

With completion of the work on the new building at Wainwright in March, quail production should begin in time for this breeding season. It is anticipated that Wainwright could be self-sufficient in food production by the fall of 1986.

#### Assessment

Environmental impact assessment activities have concentrated on Beaufort Sea related projects funded under the Northern Oil and Gas Action Program. These projects have been undertaken to prepare government for increased oil and gas activities in the future. The Rafferty Dam proposal and the expansion of heavy oilfield development in Saskatchewan, the Shoal Lake development and the Limestone Dam proposal in Manitoba, and the expansion of oil and gas activities in the Hay-Zama area of Alberta are other significant projects that have been under review.

#### Crop Damage Prevention Program

Harvest was characterized by poor weather conditions. As the farmers could not get the crop off the fields, damage was high. Expenditures exceeded the entire allotment and as a result payments were pro-rated.

#### Northern Conservation Areas

Efforts were continued to establish three new migratory bird sanctuaries and to formalize Polar Bear Pass as a National Wildlife Area. Late in the fiscal period, TFN registered its opposition to the establishment of new areas pending the settlement of their native claims.

#### National Wildlife Area and Migratory Bird Sanctuary Management

Management plans were completed for several MWAs. Migratory Bird Sanctuaries were reviewed for their current suitability within the Habitat Program. Recommendations were made to Headquarters and their direction is pending. •

#### North American Waterfowl Management Plan

Representatives of the Habitat Section participated with provincial representatives in the development of action plans and of pilot projects within the three prairie provinces. Project planning commenced with the objective of focusing primary activity upon the implementation of NAWMP.

#### Enforcement and Regulations

Management of the Migratory Birds Convention Act and Regulations required issuance of 687 permits for various activities, such as aviculture, taxidermy, scientific and sanctuary access. Kendall Island Sanctuary continues to be subject to oil and gas exploration activities. Low

waterfowl populations and small bag limits restricted hunter activity and lowered the infraction occurrences. Major efforts were applied to development of training programs for field officers. Resource reductions will require more effort toward training for officers of other agencies to maximize the quality of enforcement effort that is delivered.

#### Population Management

Spring water conditions, low levels of returning populations, further habitat degradation and poor recruitment contributed toward one of the poorest recreational opportunity years on record. Spring mallard populations were significantly below the fail safe limits acceptable between Canada and the USA to sustain populations. All jurisdictions undertook actions to effect a 25% reduction in the allowable harvest of at least Mallard. The stabilized hunting regulations reports by province were finalized and collation of analysis for the prairies was completed. An agreement with the USA has significant Canada input being provided for the international report on stabilized regulations. This report will be completed in draft by June 1986 with final collation by December 1986.

Habitat conservation strategies and policy reviews are under way as steps toward development and implementation of the North American Waterfowl Management Plan.

#### Migratory Bird Studies

Weather conditions provided the environment for high waterfowl depredation activity. This has enabled completion of field studies on duck foraging strategies, with published reports expected early in the fiscal year (1986/87). IWD, Parks Canada and CWS implemented the first year of waterfowl monitoring of surface and ground water about the whooping crane nesting area by piezometer and gauge installation.

The values of northern deltas for migratory bird resources were successfully presented to the public in the brochure on Northern Deltas. Significant progress on analysis of the hydrological monitoring data by IWD has been made toward evaluating the biological impact of the mitigating strategy on the Peace Athabasca Delta.

The study of biases in methods of estimating snow goose survival from leg band returns by comparison with known true survival estimates has progressed smoothly into its final year (1986/87). A study of the effect of aspen patch size on song birds will conclude in 1986-87. The study of the efficiency of crows as predators on waterfowl has been completed with papers submitted for journal publication. The progress report on three years data for the mallard and teal residency study has shown a higher proportion of unsuccessful to successfully nesting hens due to predation



rates. The application of predator proof fencing and predator management will enable comparison of behavior of successful hens with unsuccessful hens and the effect on productivity in subsequent years of successful hens that return to the study area.

### Pacific and Yukon Region

#### Waterfowl

British Columbia has the greatest density and diversity of cavity nesting waterfowl in Canada. One species, the Barrow's Goldeneye is characteristic of the region and has been the subject of five years of detailed study. Most of that research has been published in technical journals and has aroused considerable interest because of its unique approach and unexpected results. The results have been used to prepare a management plan for the species to cope with the threats posed by logging and grazing practices.

The central plateaus of British Columbia also support a variety of other waterfowl. For the past six years, breeding populations of ducks and grebes have been monitored near Riske Creek and we are now ready to expand the monitoring to other areas. Results of the past six years will be analyzed in 1986-87. Many of our breeding species also moult and winter in the region. In 1985, we examined the potential of the Audubon Society's Christmas Bird Counts to monitor coastal populations and polled local representatives of other conservation agencies for details of spring migration. We have also analyzed historical banding records to identify gaps in our understanding of harvested species. In 1986, we plan to use all of this information to complete a problem analysis and recommend actions in keeping with the intent of the North American Waterfowl Management Plan.

Colonial species are a special conservation concern wherever they are found. In British Columbia, little is known about the Eared Grebe and we have just completed initial surveys to identify the sites in use for breeding. A graduate student has undertaken research on the breeding biology of the species and will prepare conservation recommendations in exchange for help with his field work. Research on the Western Grebe, that proceeded with CWS support at Creston, was completed in 1985 and will be published soon.

In 1985 Trumpeter Swan breeding surveys were conducted throughout their range. We participated by doing surveys in northern British Columbia and Yukon. Also in Yukon, waterfowl use of fall staging areas was surveyed in co-operation with Government of Yukon and Ducks Unlimited.

Attention has been focussed on the Yukon North Slope by Beaufort Sea Development and the settlement of the Inuvialuit land claim. In 1985, we conducted aerial and ground surveys of breeding waterfowl on the eastern North Slope and completed a literature review of evaluation of the status of migratory bird populations and their habitats in northern Yukon.

## Marine Birds

Marine birds were an important issue in DOE presentations to a joint federal/provincial panel on the feasibility of offshore petroleum production. CWS participated in the DOE regional task force, prepared background documents of interest to the public and intervenors, and made submissions to the panel. The report of panel should be released in March, 1986 but actual drilling would not begin for two years.

The Baseline Studies Fund supported a second year of research on Rhinoceros Auklets. We are trying to determine the normal variation of growth rates by monitoring the development of young on three different islands. If major variations are linked to environmental quality, we will have a tool for predicting impacts while stresses are occurring. Currently, we have to wait for population fluctuations that may take several years to become evident and can be confounded with a variety of other events.

Colony surveys have been completed and monitoring plots established for the southeast Moresby Archipelago and Anthony Island in the Queen Charlotte Islands. Although some small sites were found to be deserted, others were much larger than expected. The survey crew of students and volunteers found a colony of 17,000 pairs of Rhinoceros Auklets on Anthony Island and 15,000 pairs of Ancient Murrelets on Alder Island. These results increase the number of large colonies of Rhinoceros Auklets to six and reduces the concern for Ancient Murrelets by showing that they are much more evenly distributed than previously reported although all of its colonies are on the Queen Charlotte Islands.

## Forest Birds

Three reports were completed and circulated in 1985-86. Their titles give an idea of the range of activities undertaken: "Relationships Between Forest Bird Densities and Forest Age in Southern British Columbia"; "The Effects of Forest Management on Bird Communities of the Coastal Islands of Southern British Columbia - Problem Analysis"; and "A Simulation of Predation by Non-game Birds on the Mountain Pine Beetle". Field studies continued on the effects of selective logging on bird communities of interior British Columbia forests. More emphasis is being placed on information and technology transfer. A brochure titled "Wildlife Trees Need Your Help" was produced by CWS and is being distributed by the B.C. Wildlife Branch. CWS continues to host an annual forest birds workshop and is participating in the B.C. Habitat Handbook project and the B.C. Wildlife Tree Committee.

## Ornithology Atlas

For the past dozen years or more, the British Columbia Provincial Museum has been compiling records of bird sightings, collections, and studies. CWS has sponsored job creation projects and provided financial and technical assistance in organizing those records and making them accessible. In 1985, all of the records for non-passerine birds were

reviewed; all their sightings and breeding records were plotted on maps; and an account of the natural history of each species was drafted. In 1986, the draft manuscript will be reviewed by experts and readied for publication as "The Birds of British Columbia, Volume 1." A second volume, on the passerine birds, should be ready for the publishers by 1989.

#### Wetland Mapping

The Landsat study is testing the feasibility of using Thematic Mapper (satellite) data for mapping wetlands. Ground-truthing in the Fraser River estuary, Riske Creek-Williams Lake and the upper Columbia River valley study areas was completed in 1984. Since then, digital tapes of those areas have been subjected to various kinds of image analyses and a final report and maps are being produced now.

The Riske Creek study is assessing important habitat variables of wetlands for several species of waterfowl. Bird data have been collected from 1980-85. Water chemistry, aquatic invertebrate, plant and morphometric data have been collected from 1983-85. The data have been entered into our computer and subjected to statistical analysis. Final reports are being produced now.

In Yukon, the reconnaissance of wetlands in the Carmacks area continued as a co-operative program with Government of Yukon and Ducks Unlimited. The potential importance of this area was only recently identified through joint aerial surveys with Ducks Unlimited. The actual importance is now being assessed.

#### 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 such as the Fraser River Estuary Management Plan, 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.

Habitat use information was made available to the public by publishing bird use data for the Squamish River estuary, and by supporting production of vegetation maps of several river estuaries, and vegetation surveys of 12 inlets on the south-east coast of Moresby Island. We continued monitoring habitat rehabilitation projects at Campbell River, Cowichan River, Englishman River, and Squamish River.

## Regulations and Enforcement

The Regulations and Enforcement Section maintained close liaison with RCMP, B.C. Conservation Officer Service, Yukon Game Branch, Department of Fisheries and Oceans and other enforcement agencies. Part of the liaison took the form of co-operative patrols, assistance at road blocks and providing training. Training was given to selected RCMP and all Fisheries officers within the region. Hunter compliance and awareness has improved, and enforcement was concentrated on known long-term and multiple offenders. Enforcement personnel represented CWS at the annual Canada Goose egg pickup in the Okanagan. This co-operative program with B.C. Fish and Wildlife Service and Ducks Unlimited was initiated to reduce the resident population of geese in the Okanagan valley, a well known goose problem area. Enforcement personnel provided the liaison with the media to explain the program.

A new program of avicultural and taxidermy inspections was initiated with the RCMP. It was successful, with the RCMP inspecting almost 100% of all permit holders. Two investigations were initiated on market hunting at the close of last hunting season. Both will resume in the 1986-87 hunting seasons. Assistance was given to the B.C. Conservation Officer Service on two covert operations involving wildlife and fish.

## WILDLIFE RESEARCH AND CONSERVATION PROGRAM

### Headquarters

#### COSEWIC and CCEA

Secretariat services were provided to the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and to the Canadian Council on Ecological Areas (CCEA).

Twenty-three additional species with nationally defined status were added to the COSEWIC list, bringing the total to 116 species. Two of the newly added species were freshwater fish, recognized as extinct on the basis of historic data - none have been seen for at least two decades. A "procedures manual" for Committee use is ready for adoption. A proposal for jurisdictional sharing of the costs of status report production was earlier presented to a meeting of the Canadian Wildlife Directors, received approval-in-principle, but has not yet been fully implemented.

The third Annual Meeting of CCEA was held in Saskatoon, and included two Workshops of Council. Financial requirements of \$59,000 were identified and jurisdictional participation according to the CCREM formula was again discussed, but has not been agreed to by all parties. A first biennial report was tabled, along with the Taschereau Report, "Status of Ecological Reserves". These two projects were published together, as the first public actions of Council.

#### Humane Trapping

Environment Canada provided \$500,000 to the Fur Institute of Canada (FIC) as part of its commitment of \$1.5 million over four years commencing in 1983/84 specifically for research and development of humane trapping systems. The CWS Co-ordinator, Humane Trapping Program, convened, as Chairman of the FIC's Humane Trap Research and Development Committee, four major planning sessions to develop research protocols.

Construction of a Humane Trap Research and Testing facility at Vegreville, Alberta, was completed in the Fall of 1985 and is now fully operational. The research is being carried out by a five-person team led by a biologist (Phd) and a mechanical engineer. Animal/Trap Approach studies with mink, raccoon and marten began in late 1985 and is continuing.

Research in connection with live trapping systems got under way at the University of Minnesota and in Alberta. The U.S.A. project is designed to evaluate physiological and behavioural changes through comparative blood chemistry analysis between free ranging red foxes and foxes constrained in "soft hold" trapping devices. The Alberta project will test a variety of live holding devices for catch efficiency and extent of injury.

Canada was successful in securing the interest of six countries to participate in the development of International Humane Trapping Standards. Representatives of Canada, U.S.A., Federal Republic of Germany, Finland, Sweden and Australia will form a Technical Committee under the auspices of the International Organization for Standardization (ISO). Canada will provide the secretariat for the Committee.

The Executive Committee of the Interdepartmental Steering Committee on Humane Trapping met periodically to monitor events related to the humane trapping issue and to consider ongoing federal government strategies.

#### Socio-Economic Knowledge and Advice

Four supplementary reports sponsored by the Federal-Provincial Wildlife Conference are being published based on a National Survey on the Importance of Wildlife to Canadians conducted by Statistics Canada. The first (A User's Guide to the Methodology of the 1981 National Survey) was released in June 1985. The second (An Executive Overview of the Recreational Economic Significance of Wildlife) will be made public by March 31, 1986. It reveals that expenditures of participants in wildlife-related activities contributes \$8.8 billion annually to the Canadian business sector, supports 185,000 jobs, and provides government tax revenues worth nearly \$2 billion. It also shows that participants themselves receive immense direct benefits from wildlife activities. The third publication is a technical report explaining the data, models, and assumptions that underlie the second publication. The fourth publication provides managerial insights into the nature of the constituents who benefit from wildlife management programs. It reports that the majority of participants in wildlife activities partake not in one but in several different types of activities during the year and provides forecasts of participation for the year 2001. The last two publications are scheduled to be made public in time for the Federal-Provincial Wildlife Conference.

### **Regional Activities**

#### Atlantic Region

##### Rare and Endangered Species

The Atlantic Region successfully released five young Peregrine Falcons from the Cape D'Or hack site near Advocate, Nova Scotia. A total of 19 birds have been released from that site since 1982 with releases planned for 1986 and 1987.

Surveys of Piping Plover nesting beaches in northeastern New Brunswick were completed in 1985. For the second year in a row, a severe early June storm destroyed many nests. Regional estimates of nesting piper numbers are 240 pairs.



## Wildlife Toxicology

A major study of the effects on songbirds of a new forest spray chemical, Zectran, was completed and reports presented to the chemical company (Union Carbide). Newfoundland fenitrothion studies were carried out by a contractor with CWS completing laboratory analyses.

### Quebec Region

#### Threatened Species

In 1984, an experimental release of 14 Peregrine Falcons was made at the Cap Tourmente National Wildlife Area. In order not to disturb the return or installation of a potential pair, it was decided not to release falcons there in 1985. That was a good decision since a pair had shown reproduction signs over several weeks. These birds were banded at Wainwright and their failure to reproduce leads us to believe they were immature.

#### Toxic Products

A pilot program for the seeking of methods to determine the level of contamination in the flesh of waterfowl along the St. Lawrence has been carried out in Lake Saint-Pierre.

Colonies of Ring-billed Gulls, Herring Gulls and Double-crested Cormorants in the Baie Comeau Region, where there is high risk of PCB contamination, were studied in 1984. Analyses are now completed; there are low levels of contamination found in eggs and livers that do not have any effect on the reproduction of these species.

### Ontario Region

#### Wildlife Conservation and Environmental Quality

##### Surveillance of Contaminants in Wildlife in the Great Lakes

In 1985-86 the Annual Great Lakes Herring Gull Egg Monitoring Program was in its 12th year. The most recent results (1984) showed that for routinely monitored chemicals (DDE, dieldrin, mirex, PCBs, etc.), colonies in Lake Michigan, Saginaw Bay (Lake Huron), the Detroit River and Lake Ontario continue to be the most contaminated. Levels of dioxin (TCDD) were greatest in eggs from Lake Ontario and Saginaw Bay and least in eggs from Lakes Michigan and Erie. In general, contaminant levels in Herring Gull eggs decreased between 1983-1984; only those of mirex and alpha- and gamma-chlordane showed more significant increases than decreases.

Double-crested Cormorants on the Canadian Great Lakes continued to show congenital anomalies (deformities) and a high rate of population increase. Though no deformities were noted in young cormorants at colonies on Lakes Erie, Huron (proper), Superior and Nipigon the rate of occurrence reached 0.87% on Lake Ontario a rate higher than that found on Canadian colonies in 1983 or 1984. We do not know if this represents a real increase or simply greater skill in finding deformities. Population levels of cormorants on colonies censused in both 1984 and 1985 increased at a rate of 44.3% per annum, i.e. consistent with the annual rate of increase over the last 10 years.

#### Forestry-Wildlife

A study, completed in March 1985 after just over four years of intensive field studies, examined marten habitat selection, diet choice, hunting behaviour, populations, and movements in logged and natural areas. Prey populations were also assessed on areas cut 1 to 40 years ago and on uncut areas. Despite having lost the person-year and budget for this study, most of the data have been analyzed and reported in several upcoming publications and a doctoral thesis at Queen's University. A synchronous decline in all prey species in the last three years provided a rare opportunity for comparing various aspects of marten ecology and behaviour when resources were first abundant and then scarce. Marten clearly fare best in uncut forest. In logged areas there is an initial total loss of habitat, and populations recover to only one third of their original density on areas with at least 10 years of regeneration. Not all logged areas contain marten and the presence of considerable advance growth balsam fir is needed for marten use. Marten in logged areas are rarely successful breeders because they are readily trapped during their first winter. Marten were most active in summer and substantially less active in winter, when they were found to stay in dens for up to 60 hours. Diet choice was primarily of large prey including: hare, grouse, and squirrels. Small mammals were least important in winter but provided about 50 per cent of the caloric intake in summer.

#### Western and Northern Region

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

A five-year study of the effects of forest fires in the Northwest Territories on the movements and physical condition of the Beverly herd of barren-ground caribou is in its fourth year. The adequacy of the present forested winter ranges 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 co-operating in this aspect of the study. The movements of the herd in relation to burns is monitored every 4-6 weeks from October to May. The biomass of caribou forages on the winter range is 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.

### Polar Bear Studies

Studies of the influence on polar bears of ice conditions, of seal distribution and abundance, and of polynyas continued at Dundas Island in April. The biological importance of polynyas to overwintering populations is being evaluated by studying winter and early spring distribution and abundance in and out of polynya areas. Under-ice walrus vocalizations were recorded and data collected on walrus behaviour. Monitoring of the polar bear population continued, with some mark-recapture work in the area of the polynyas.

The 1985 field study of the distribution and abundance of polar bears in Hudson Bay centred on the population of bears ashore on the western coast during the summer. Of 98 bears captured and marked along the coast, 45 were radio-collared to determine distribution, movement patterns, and population discreteness. Over 650 relocations of radioed and marked bears were obtained from incidental sightings and from two surveys between August and November. The data will be analyzed in conjunction with data collected in previous years to design an accurate and unbiased method of estimating the population size. Research continued on the deposition and utilization of fat in polar bears as a method for determining physical condition. Data collection on hunter-killed polar bears was conducted out of Coral Harbour. Techniques were developed for field measurements of the distribution and partitioning of fat within the bodies of bears of all conditions. As well, the relationship of muscle and bone tissues to fat reserves was emphasized. Finally, laboratory analysis of fat, muscle and bone tissues collected in the field will measure their fatty acid composition.

In 1986, specimens will be collected in Resolute in the spring and in Coral Harbour in the fall.

In 1986, a three-year agreement on the status of the Polar Bear population in the Beaufort Sea was initiated as part of the NOGAP Program. 178 Polar Bears were captured and radio collars were put on 14. Analysis of data and specimens in the lab is continuing.

### Rare and Endangered Species

Three endangered species' programs are currently under way to rehabilitate wood bison, to rehabilitate swift fox and to determine the current status of Peary caribou in the Canadian High Arctic.

Under the terms of a co-operative five-year agreement, signed with the Yukon, 34 wood bison were transported from the source herd at Elk Island National Park to the southern Yukon in March 1986. The bison are being

held there in a corral and are scheduled for release in two years. The release of bison from captive herds at Hay-Zama, Alberta and Waterhen, Manitoba have been delayed because of poor calf production.

CWS, in co-operation with the governments of Alberta and Saskatchewan, the University of Calgary, and the Wildlife Reserve of Western Canada, Cochrane, Alberta, has experimentally released swift foxes in both Alberta (October 1983) and Saskatchewan (July 1984). Monitoring of the Alberta release showed that three pairs bore a total of 12 pups in the spring of 1984. Six of these pups were collared but only one remains alive as of February 1985.

Coyote predation appears to be the most significant cause of mortality among released swift foxes in Alberta. At least seven have been killed by coyotes and two by bobcats.

Ten collared and seven uncollared swift foxes were experimentally released in southwestern Saskatchewan. Only two of the collared foxes remain alive after seven months. The reasons for this high mortality are unclear but could be related to extreme drought conditions. Recent surveys indicate that some uncollared foxes did survive. Additional releases will occur in 1986.

CWS is concerned with the current status of Peary caribou in the Canadian High Arctic; thus in 1984 CWS initiated an exploratory period devoted to development, field testing and evaluation of techniques for carrying out aerial surveys of Peary caribou.

Surveys of Peary caribou on Bathurst Island indicate that this population has increased in the past ten years, but is still well below the population levels of the early 1960s.

The evaluation of this testing will allow CWS to obtain better estimates of the current status of Peary caribou and in turn will permit CWS to provide COSEWIC with the necessary updating on the need for protection of Peary caribou as one of Canada's truly unique forms of wildlife and an important part of Canada's natural heritage.

### Pacific and Yukon Region

#### Porcupine Caribou Herd

The second field season on caribou use of summer range and the effect of insect harassment was completed with NOGAP resources. Staff participated in hosting the 4th International Reindeer/Caribou Symposium in Whitehorse in August. The Symposium, which was held in Canada for the first time, brought together researchers and managers from around the world. A Soviet-Canada exchange program to study caribou and reindeer took place in 1985. Soviet delegates attended the Reindeer/Caribou Symposium and visited Yukon and NWT following the

Reindeer/Caribou Symposium. The Canadian delgation (Federal, Yukon, and NWT representatives) travelled to the Soviet Union in October and visited operations involving both wild and captive reindeer in Siberia. Don Russell participated as the CWS member of the Canadian delegation.

The within-Canada Porcupine Caribou Management Agreement was signed in Old Crow in October completing several years of hard work by government and native people, and initial discussions on a bilateral caribou agreement with the U.S. were held in Vancouver in December.

## TOXIC CHEMICALS

### Toxic Chemicals Program - HQ

CWS at NWRC continued to provide advice on the impacts of toxic chemicals on wildlife to regulatory agencies. New resources were recently obtained to strengthen the CWS capability to review, at the request of Agriculture Canada, applications for research permits and product registrations under the Pest Control Products Act. Staffing of four new pesticide impact evaluator positions will be completed by mid-1986. Additional resources have also been allocated to strengthen the pesticide residue monitoring and impact assessment capability of the Service. Reports on the use of organochlorine insecticides in Latin America and the impacts of pesticides on prairie waterfowl will be ready for release in 1986.

Monitoring Service Unit at NWRC completed a review of environmental contaminants in Canadian seabirds. A large technical report was produced and 3 shorter manuscripts focusing on specific species: "Organochlorines and eggshell thinning in gannets from Eastern Canada, 1968-1984", "Organochlorine contaminants in eggs of seabirds from the Northwest Atlantic, 1968-84", "Organochlorines in seabirds from Prince Leopold Island, N.W.T.". A review of environmental contaminants in Canadian raptors was initiated and is ongoing. In co-operation with CWS-Ontario Region, three manuscripts were produced: "Heavy Metals in Herring Gulls from the Great Lakes, 1983", "Organochlorines in Mink from the Great Lakes Basin" and "Organochlorines in Snapping Turtles from the Great Lakes - St. Lawrence River Basin". Finally a "National Registry of Toxic Chemical Residues - User Guide" was completed and is ready for publication. The 1973-75 study of effects of mercury on loons in the English-Wabigoon River system was released as CWS Occasional Paper #56.

The assessment of the desirability of using dispersants to counter oil spills when hazard to seabirds is a prime consideration was completed. It was concluded that dispersants do not add to the toxicity of oil. The applications of this study to oil spill management were presented at the Arctic Marine Oil Producers conference. Work on the use of mixed function oxidases systems and the occurrence of hemolytic anemia as monitors of chronic oil pollution was extended to pelagic seabirds.

A new phase of the OECD hazard assessment exercise has been started. It focuses largely on the exposure side of hazard assessment. A brief on the use of wildlife, including biological changes, as an early-warning device has been submitted to OECD. The Canadian delegate for this exercise is Dr. Peakall.

After the elimination of the Wildlife Toxicology Program in November 1984 the setting up of a Wildlife Toxicology Fund was announced. This fund provides \$3M over 3 years in matching funds to the private sector. It is administered by the World Wildlife Fund (Canada) and the projects are evaluated by a Research Advisory Board. The CWS representative on the Board is Dr. D.B. Peakall. In 1985-86, 37 proposals were received; 18 have been approved and several more are still under consideration.



Methodology for determination of all tetrachloro to octachloro dibenzodioxin (CDD) and dibenzofuran (CDF) isomers using the semi-automated cleanup method was completed and validated. This methodology was applied to analysis of crab hepatopancreas samples from the Vancouver area to further elucidate the source of contamination in Great Blue Heron eggs from this area. The pattern of contamination was consistent with chlorophenols being the source of the major CCDs and CDFs. The existing data on CDDs and CDFs in biota from British Columbia were summarized for the B.C. Department of the Environment. A study on the possible effects of CDDs on the reproduction of Great Blue Herons in B.C. is being undertaken in 1986. As part of the continuing study of contaminants in the arctic, several Ringed Seal and Beluga Whale samples were also analyzed for CDDs and CDFs. Detectable levels of 2,3,7,8-TCDD were found in all samples.

Dr. Norstrom chaired the session and presented the keynote address on "Levels and Environmental Fate" at the Fifth International Symposium on Dioxins and Related Compounds at Bayreuth, Germany, in September 1985, and presented a poster summarizing CWS data obtained to date. He has been invited to co-author a chapter on "Occurrence in Humans and Major Exposure Routes", and contribute the CWS dioxin analysis method to a forthcoming monograph in the International Association for Research on Cancer series on Environmental Carcinogens.

A co-operative study between CWS and DFO on arctic contaminants was completed in August 1986, and Dr. D. Muir returned to the Freshwater Institute, Winnipeg. The study confirmed that chlordanes were a relatively major contaminant at all levels in the arctic marine food chain, and that toxaphene was a major contaminant in fish, but did not biomagnify in seals. Biomagnification factors for individual PCB isomers, DDE, chlordanes, alpha-HCH and hexachlorobenzene were obtained from the fish-seal-bear food chain. Analysis of Polar Bear tissues showed that contamination was quite uniform in all areas of the arctic and sub-arctic, with the highest levels occurring in Hudson Bay for most chemicals. Alpha-HCH levels were negatively correlated with latitude. Atmospheric transport is the main mechanism, but a role for ocean currents in distributing contamination from lower to higher latitudes cannot be ruled out. The results were presented at the International Association of Water Pollution Control Conference in Yellowknife in May 1985, and an Interim Report was distributed to various interested agencies and individuals. An invitation has been received to present the results of this research at the World Large Lakes Conference in Mackinac, Michigan in May 1986.

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

Research into the impacts of long-range air pollution on wildlife was reviewed by the Royal Society of Canada in February 1984. It is designed to provide an understanding of the mechanisms of effects of acidity on wildlife and to quantify dose-response relationships with deposition of sulphate. Studies were conducted in 1985-86 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) Influence of acidity on duckling growth in relation to competition with fish and nutrient status (Quebec Region);
- (3) Effects of acidic precipitation on waterfowl populations in northern Ontario (Ontario Region);
- (4) Effects of lake acidity on metal uptake by biota and the toxicity of low-level metal exposure to birds (NWRC, Hull, Quebec).

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 was held with USFWS Migratory Birds and Environmental Contaminants researchers in December 1985 to discuss findings to date on the subject of acidity and wildlife. Preliminary results indicate that waterfowl breeding success and duckling growth may be affected by reductions in prey organisms in acid-stressed habitats. As well, some species such as the loon may be exposed to higher levels of metals in their diet due to increased metal uptake by biota in acid lakes.

### Regional Activities

#### Atlantic Region

A summary of the chemical and limnological characteristics of the Kejimikujik basin was prepared for publication in the ECS-LRTAP Technical series. The study of the effects of acidification on nutrient availability and productivity of aquatic bird habitat was continued. CWS participated in an organic acidity workshop to provide a consensus of the knowledge on the effects of acid deposition on organic waters and to develop future research requirements.

## Quebec Region

The study of the effects of acidity on duckling growth was continued in the Port-Neuf area of Quebec. The combined influence of acidity and competition with fish on duckling feeding and growth was tested in three lakes.

A summary of the findings in the four-year study of the distribution of bird communities in Quebec in relation to acidity was prepared as part of the LRTAP I write-up to be published in the CWS Occasional Paper series this year.

## Ontario Region

Studies of waterfowl breeding success were continued in the Wanapitei and Ranger Lake areas of Ontario. Stomach contents and foraging behaviour of females and young were examined to provide an understanding of feeding requirements. Invertebrate collections were undertaken to quantify the food base for breeding ducks and in order to make comparisons of food availability between acid-stressed and control lakes.

Data collection continued to characterize the relationships between wetland chemistry, aquatic biota and wildlife in 31 peatlands in northeastern Ontario.

## NWRC

Laboratory experiments were initiated to assess the effects of long term low-level metal exposure to captive birds. The form of metals absorbed by the birds was determined and the suitability of feathers as monitors of metal exposure is being assessed.

Ducklings and aquatic insects collected in the Ontario region study were analyzed for metal residues and are being compared to the dosing levels and results of the laboratory experiments to determine the types of effects which might be expected in the field.

The University of Toronto study of metal uptake and accumulation in fish-eating wildlife in relation to lake acidity found significantly higher mercury levels in mammals from the Muskoka and Ranger Lakes areas than in buffered sites of southern and central Ontario. The unusually low results for the Sudbury area are still being investigated but are believed to be due to the extremely low pH of the lakes (pH 5.0) which falls below the maximum solubility for mercury (pH 5.5-6.5).

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

The major event during 1985 was the Fifth Meeting of the Conference of the Parties to CITES in Buenos Aires, Argentina, 22 April to 3 May, 1985. Sixty-six of the 87 nations party to the Convention at the time of the Meeting took part along with four United Nations organizations, the European community, four non-party countries and 119 other organizations having an interest in wildlife conservation.

Canada was well represented at the Meeting not only in terms of the official Canadian Delegation but also through the large number of organizations granted observer status in Buenos Aires. The Delegation consisted of one Member of Parliament (Mr. Thomas Suluk, Member for Nunatsiaq), the Minister for the Department of Renewable Resources in the Government of the Northwest Territories (Ms. Nellie Cournoyea), three Canadian Wildlife Service officers including the Director General as Head of Delegation, a Special Assistant to the Minister of the federal Department of Environment, three persons from the Department of Fisheries and Oceans and one each from the Department of Indian and Northern Affairs and the Department of External Affairs. The provincial/territorial representative was from the Manitoba Wildlife Branch. A technical advisor from the University of Toronto rounded out the 13 member Canadian Delegation.

The number of Canadian organizations with an interest in CITES continues to increase. More Canadians participated as observers in Buenos Aires than at any of the four previous Meetings. Twenty-one people representing the following 12 organizations attended: Government of the Northwest Territories, Canadian Sealers Association, Dene Nation, Native Council of Canada, Inuit Tapirisat of Canada, Inuit Circumpolar Conference, Animal Protection Institute (Canada), Sierra Club of Canada, Fur Institute of Canada, Hudson's Bay Company, Fur Council of Canada and Canadian Wildlife Federation.

The Buenos Aires Meeting dealt with a number of major proposals. An Israeli proposal to give support-in-principle to a proposed international agreement for the protection of animals was rejected. Although the CITES Parties were sympathetic to the objectives of the proposed agreement, the Parties did not believe the matter fell within the mandate of CITES. Despite vigorous Canadian opposition to the Danish/Norwegian proposal to transfer North American populations of Gyrfalcons (Falco rusticolus) from Appendix II to Appendix I, the proposal was approved by 28 votes to 13. Similarly, the Parties accepted a proposal by the United Kingdom to include on Appendix II all Cranes (Gruidae) not already listed on Appendix I, a proposal which had been strongly opposed by Canada. Two other proposals involving species indigenous to Canada were not accepted by the Parties: a Swedish proposal to list hooded seals (Cystophora cristata) on Appendix II and a proposal by the Federal Republic of Germany to uplist the narwhal (Monodon monoceros) to Appendix I from II.

The majority of proposed resolutions and amendments to the Appendices concerned exotic species. The more important of these included: acceptance by the Parties of quotas for trade in Appendix I leopard (Panthera pardus) skins from Botswana, Kenya, Malawi, Mozambique, Tanzania, Zambia and Zimbabwe; establishment of a quota system for trade in raw African elephant (Loxodonta africana) tusks, special marking of such tusks and provision for monitoring the raw ivory trade; transfer from Appendix I to II of Nile crocodile (Crocodylus niloticus) populations in ten African countries for limited trade under a quota system; and transfer of the Australian and Indonesian populations of the saltwater crocodile (Crocodylus porosus) from Appendix I to II. The Parties also approved the establishment of a committee to monitor species found in trade in high volumes.

As meetings of the Conference of the Parties are held on a biennial basis, much of the work between Meetings is dealt with by committee. In Buenos Aires, Canada was elected to host the 1987 Meeting and thus, as a host nation, began a four-year term on the Standing Committee. In addition, Canada was appointed the North American Regional Co-ordinator on the Technical Committee. These responsibilities necessitated attendance at a meeting of the Standing Committee during October 1985 in Lausanne, Switzerland, and the convening of a North American Regional Meeting of the Technical Committee in Hull, Quebec, in September.

Canada was also elected to chair an international working group to make proposals for changes to the International Air Transport Association (IATA) Live Animal Regulations. These regulations were adopted by the Parties for CITES air transportation requirements. As chair of the working group, Canada met with the IATA Live Animals Board in Geneva during August and November 1985 and in Washington during February 1986.

Implementation of the CITES agreement nationally continued in earnest during 1985. Much work of the CITES office involves providing technical assistance to the enforcement agencies, namely Customs and Excise and the RCM Police. One form of this assistance is through provision of training seminars on CITES, a total of 13 seminars having been presented in 1985 to about 110 Customs officers in Vancouver, Edmonton, Calgary and Montreal. Approximately 50 RCM Police officers from across Canada received CITES training as part of a two-week course organized by the RCM Police on Customs and Excise regulations. As of 31 December 1985, about 1775 Customs and RCM Police officers had participated in over 150 CITES seminars since the inception of the program. Assistance is also provided to the enforcement agencies through maintenance of 15 contracts with specialists across Canada who identify wildlife and wildlife products to determine whether or not a specimen in trade is from a CITES-controlled species and thus, whether or not CITES permits are required. In addition, CITES office staff spent a total of 18 days identifying goods at the request of Customs in Montreal, Ottawa and Toronto. Technical advice is also provided to Customs and the RCM Police on a daily basis by responding to written and oral requests for information on CITES.

The Canadian CITES Management and Scientific Authorities gathered in Hull, 19-21 November, to discuss the results of the Buenos Aires Meeting, begin preparations for hosting the Sixth Meeting of the Conference of the Parties to CITES slated for Ottawa in July 1987 and to review and improve the CITES permit-issuing procedure. The CITES Administrator attended the September gathering of the Canadian Association of Zoological Parks and Aquariums to review the results from Buenos Aires. In August, the Assistant to the CITES Administrator participated in the two-week U.S. Wildlife Inspectors' Basic Training course organized by the U.S. Fish and Wildlife Service and presented a session on Canadian wildlife laws.

In 1985, federal, provincial and territorial CITES authorities issued 4,183 endangered species export permits mainly for Appendix II species. During the same period the federal authority approved 52 endangered species import permits for Appendix I specimens, 63 Transit Certificates primarily for temporary entry of circus animals, and 47 Scientific Certificates for the non-commercial loan, donation or exchange between scientists of prepared scientific specimens.

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