Science - The Key to Our Future

By constantly testing the performance of new conservation initiatives, the PHJV is determined to maximize its efficiency and work in areas that will result in the most sustainable waterfowl production for dollars spent.

Science - The Key to Our Future

Looking to the future a number of major areas of study remain for the PHJV:

- Continued evaluation of factors that influence duck production at landscape scales,
  - *This information is needed to test and refine key assumptions currently being used in the Waterfowl Productivity Model.*
- Identifying limiting factors affecting declining species like pintail and scaup,
  - *This knowledge will be used to guide conservation programs for these species.*
- Evaluating Ecological Goods and Services pilot projects,
  - *This step will guide policy to ensure that the most beneficial practices for waterfowl and wildlife are identified and promoted on private lands.*
- Understanding the implications of climate change as well as carbon sequestration and carbon credit initiatives,
  - *Conservation programs would benefit through improved planning for future changes in land use and wetland availability.*
  - *The role of wetlands and associated riparian areas in carbon storage and cycling will guide policy for enhanced wetland restoration and protection.*
- Determining relationships between bird populations in prairie/parkland and boreal landscapes,
  - *Such knowledge will inform agencies about the relative benefits of conservation investments in each of these key regions.*
- Better estimates of historic wetland loss rates in important waterfowl areas of the Canadian Prairies,
  - *Estimates would identify areas in need of additional wetland restoration and protection effort, as well as likely impacts of these changes on waterfowl productivity.*

Given the PHJV's track record of seeking, developing and using the best science available to deliver effective waterfowl habitat conservation programs and applying adaptive management to strengthen program delivery, the PHJV will continue to focus on science-based solutions to increase waterfowl habitat and productivity in the Canadian Prairies.

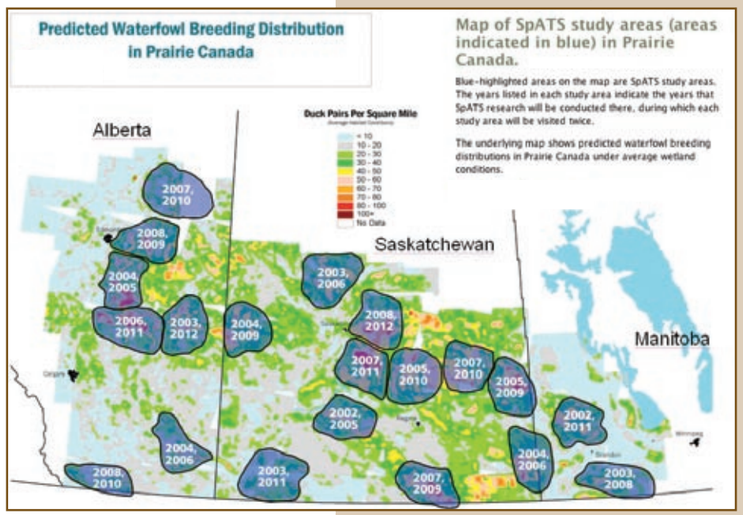
Commitment to Learning

- **The Northern Pintail**

Prairie Canada is critical to northern pintail recovery, as it once attracted the majority of the North American population. However now, it is the centre of one of the most dramatic population declines on the Canadian Prairies. The results of several studies and modeling exercises have allowed the PHJV to identify priority landscapes and deliver a habitat program mix designed for this species to maximize population recovery.

- **Spatial and Temporal Nesting Study (SpATS)**

SpATS is studying a total of 120 different sites throughout the Prairie and Parkland biomes of Canada. Sites differ in the amounts of perennial cover and duck population densities. Launched in 2002, each site will be studied twice during an 11-year period. Information from SpATS will refine the assumptions and parameters within the Waterfowl Productivity Model.



prairie habitat *joint venture*

The Prairie Habitat Joint Venture (PHJV) partnership was established to deliver the North American Waterfowl Management Plan (NAWMP) on the Canadian prairies. NAWMP remains the PHJV's key focus today.

Originally signed in 1986, NAWMP has provided a continental response to waterfowl habitat conservation and has received strong commitments from the United States, Canada and Mexico.

North America's Prairie Pothole Region, found largely in Canada, is recognized as the most important breeding area for continental waterfowl and it is important for many other bird populations as well.

The PHJV's broad-based partnerships and conservation activities are crucial to achieving the continental NAWMP goal of restoring waterfowl populations to the levels of the 1970s.

PRIORITY GOALS

- Sustain average waterfowl populations of the 1970s.
- Stop further wetland loss.
- Stop further loss of native lands, especially native grasslands.
- Restore lost wetlands, especially small basins.
- Restore function of upland habitats in landscapes conducive for maintenance of bird populations.

CONTACT:
Email: phjv@ec.gc.ca

January 2006

North American Waterfowl Management Plan
Plan nord-américain de gestion de la sauvagine
Plan de Manejo de Aves Acuáticas de Norteamérica

Science - The Key to Our Future

"... A strong scientific base underpins everything the Plan does and is vital to its continuing success in conservation". - 2004 North American Waterfowl Management Plan (NAWMP) Update

Science is the foundation of the Prairie Habitat Joint Venture's (PHJV) multi-faceted landscape program. The PHJV is committed to ongoing evaluation and adaptive management to build a prairie landscape that assures sustainable support for waterfowl and other wildlife.

The PHJV is committed to ongoing evaluation and adaptive management in order to build a prairie landscape that assures sustainable support for waterfowl and other wildlife.

Research on the Prairies.

Grounded In Science

During the initial years, the PHJV drew on the wealth of scientific data collected since the 1930s with respect to duck distribution and waterfowl ecology. The United States Fish and Wildlife Service (USFWS) was instrumental in duck distribution studies and by the 1950s systematic aerial waterfowl surveys were being flown throughout the key Canadian Prairie breeding habitat areas. These data have been used by the PHJV to target and refine priority areas.

Banding a mallard.

Studies during the 1970s and '80s, conducted throughout the United States and Canadian Prairies, suggested that nest success was the key limiting factor for waterfowl production. In response, the PHJV focused its habitat interventions to improve nest success.

In 1989, a state-of-the-art Computer Planning Tool was created; it combined the U.S. developed mallard model with an economic component. This tool predicted duck production benefits of specific habitat treatments and estimated costs for each target landscape. Using this tool, the PHJV established clear objectives, funding required, and a plan to deliver a combination of habitat programs and policy initiatives to meet the objectives, and ultimately, the NAWMP goal.

Science - The Key to Our Future

Learning and Adapting As We Go

Prior to full NAWMP implementation, "First Step Projects" were developed to test planning, delivery and underlying assumptions. Building on the successes and lessons learned from those projects, an adaptive, landscape-based program was developed. Over the years, new broad scientific knowledge and extensive practical management experience have shaped PHJV conservation plans.

By embracing adaptive management, the PHJV is committed to iterative cycles of planning, implementation and evaluation to ensure continuous improvement in program performance.

Increasing Our Knowledge and Understanding

Expanding the scientific knowledge of the PHJV is critical. Alongside program implementation, partners undertook a number of major scientific initiatives to continually improve and evaluate the program. Major initiatives include:

- PHJV Assessment Study,
- PHJV enhancements to the USFWS and Canadian Wildlife Service (CWS) population surveys and banding program,
- PHJV Habitat Monitoring Program,
- PHJV Avian Botulism Study,
- PHJV Spatial and Temporal Variation Study,
- PHJV programs designed specifically for northern pintails (Pintail Action Group, established in cooperation with continental partners).

In addition to directed studies, the PHJV has continued to refine its program targeting based on improved knowledge of duck populations, wetland abundance and changes in the landscape since the 1970s. Within target landscapes the most cost effective and ecologically sustainable conservation actions are applied.

The latest data have also improved the understanding of landscape impacts on waterfowl productivity, and led to the development of a new science-based tool, the Waterfowl Productivity Model to guide program planning and evaluation.

Improving Our Delivery

By constantly testing the performance of new conservation initiatives, the PHJV is determined to maximize its efficiency and work in areas that will result in the greatest waterfowl production for dollars spent. By embracing the latest advances in knowledge, the PHJV has adapted the way it prioritizes its landscapes and adjusted program delivery and targeting.

For example:

- existing wetland and upland habitats, which are most at risk of loss to ducks, are being targeted with permanent securement options,
- more emphasis being placed on wetland restoration because the basic assumption that the wetland habitat base would not erode was proven incorrect,
- increased emphasis on cropland conversion to perennial cover to increase habitat for nesting waterfowl,
- the winter wheat program was developed to provide nesting waterfowl with an attractive and safe annual cropland habitat,
- delayed haying and grazing system programs were narrowed and refined based on projected benefits for waterfowl,
- flushing bars were designed to prevent hen mortality in hayland,
- predator fenced dense nesting cover plots and conservation fallow treatments (underseed and chemical) proved not to be cost-effective for the production of waterfowl. *See "PHJV Achievements" fact sheet.*

Commitment to Learning

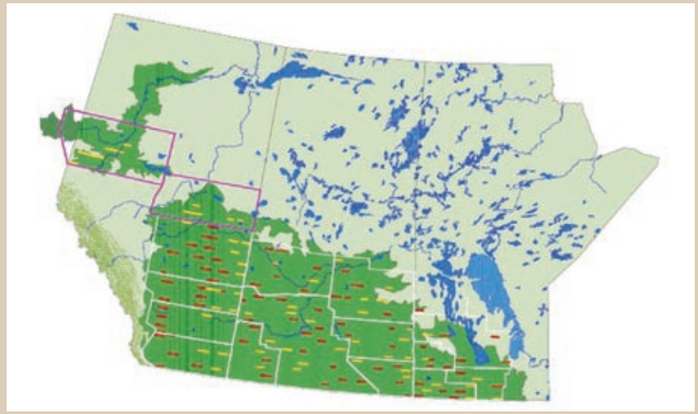
- **Avian Botulism**

The PHJV has evaluated the effect of avian botulism on waterfowl populations and the effectiveness of clean-up actions. The result is a comprehensive disease management plan recommending reduced clean-up activities allowing PHJV partners to focus resources and efforts more efficiently.

- **Winter Wheat Extension Program**

Studies showed that northern pintails can hatch up to 18 times as many nests in fall-seeded crops compared to other spring seeded cropping systems. This knowledge has led to PHJV initiatives like the Winter Wheat Extension Program.

- **Enhanced Spring Waterfowl Survey**



To better inform conservation managers and improve planning products, the U.S. Fish and Wildlife Service and Canadian Wildlife Service enhanced the annual spring waterfowl breeding pair survey.

The USFWS/CWS May Breeding Ground Survey is organized by strata (white boxes). The survey area was originally designed with the boreal and Peace/Parkland Biome (northwestern Alberta and northeastern British Columbia) combined as one stratum. In the late 1980s, this area was restratified into smaller areas (pink boxes) to allow for data differentiation between the PHJV area and the boreal.

In addition, the corresponding ground segments that complement the air survey were doubled. The red transect lines represent the original ground segments, and the yellow are the additional segments that were added in the late 80s-early 90s to provide better information for the PHJV. This included adding ground segments to the Peace/Parkland Biome because prior to the PHJV, there were no ground segments in that area.

The targeted approach of the Waterfowl Productivity Model maximizes the dollars available for conservation to secure and restore the best habitat in areas that provide the greatest long-term benefits for waterfowl.

Targeted landscapes are prioritized based on duck populations, wetland abundance and changes in the landscape since the 1970s.

With a strong track record of using science for innovative action on the ground, the PHJV is well-positioned to deliver upon its solid plan to achieve the NAWMP goal.

"Improving the cost-effectiveness of Plan actions, and strengthening the scientific foundations of waterfowl plans are key to maintaining the Plan's leadership role in conservation."

- 2004 North American Waterfowl Management Plan (NAWMP) Update

PHJV Assessment Study Leads to Waterfowl Productivity Model

Radio-tracking nesting mallards.

PHJV Assesment Study (1993 to 2000)

The PHJV Assessment Study was the largest single study of duck nesting ecology ever completed across the Canadian Prairies and resulted in program assessments and modifications to further strengthen program delivery.

The Numbers:

3,600+	Radio Marked Mallards
19,000+	Duck Nests Found
900+	Mallard Broods Monitored
250+	Field Staff

Waterfowl Productivity Model

A new science-based tool called the Waterfowl Productivity Model has been developed as a direct result of the PHJV Assessment Study. This model is used to better measure the impact of the PHJV program on duck populations and to refine program delivery.

By identifying deficits in duck hatched nests between the 1970s and today, a mix of habitat interventions can be determined to restore the capability of the landscape for waterfowl. This world class planning tool is the foundation for meeting PHJV/NAWMP goals and allows the PHJV to set measurable habitat objectives for specific conservation programs.

The Waterfowl Productivity Model allows us to ask:

- How have past upland and wetland habitat changes affected duck productivity?
- How do conservation actions affect duck productivity?
- What are the most effective or efficient means of improving productivity?

This targeted approach maximizes the dollars available for conservation to secure and restore the best habitat in areas that provide the greatest long-term benefits for waterfowl.