

# **National Habitat Monitoring Framework**

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DRAFT

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## Preface

The development of a National Habitat Monitoring Framework (NHMF) has been initiated in order to ensure an improved, predictable, coherent, and modernized delivery of the HMP. The first step in developing the framework was to identify what monitoring activities were being conducted within the regions and to obtain a regional perspective on what should be included in the National Habitat Monitoring Framework. This was completed through a national survey, and the results were published in *Monitoring Activities in Support of the Fish Habitat Management Program* (DFO 2005). This report was followed by a 2-day workshop in Montréal in June 2005 with regional and national headquarters (NHQ) representatives from Habitat Management, Science, Conservation and Protection, and the Audit and Evaluation Directorate. The objectives of this workshop were as follows:

- share information on monitoring conducted in support of the HMP nationally;
- establish a common understanding of NMF initiative and reach a general agreement on its elements;
- identify the key challenges and opportunities in implementing a NMF;
- identify the next steps required to further the development and implementation of the NMF;

The objectives were met and recommendations were published in the *Report on Monitoring Workshop June 21-22, 2005* (DFO 2005).

Following this work shop, a discussion paper on “Methodologies for Estimating Changes in Productive Capacity from Whole-lake / Stream Destruction and Related Compensation Projects” was completed in July, 2005 and discussed at a second workshop in Ottawa. The objectives of this workshop were to:

- review findings in the discussion paper;
- review case studies on whole-lake destruction projects;
- discuss approaches for measuring change in productive capacity from whole lake destruction; and
- discuss next steps in the development of effectiveness monitoring methodologies in support of the NHMF.

The workshop report and the discussion paper are currently being combined into a Canadian Manuscript Report.

The work completed to date through workshops and discussion papers has helped advance the NHMF significantly. The following document provides the Habitat Management Program (HMP) with a statement of the objective, goals, underlying principles, and approaches to monitoring for the NHMF. The roles and responsibilities, management structure, resources, policy and training, data management and reporting necessary for the successful implementation of the NHMF are also briefly discussed.

## Introduction

The Environmental Process Modernization Plan (EPMP) is a long-term continuous improvement plan to re-define and modernize how the Habitat Management Program (HMP) delivers on its responsibility for the conservation and protection of fish habitat. As part of this plan, the development of a National Habitat Monitoring Framework (NHMF) has been initiated in order to ensure an improved, predictable, coherent, and modernized delivery of the HMP. The NHMF will build the capacity within Fisheries and Oceans Canada (DFO) to conduct compliance, effectiveness, and fish habitat health monitoring in collaboration with public, proponents, and partners. Information gathered will be used to ensure continuous improvement in the conservation and protection of Canada's aquatic ecosystems.

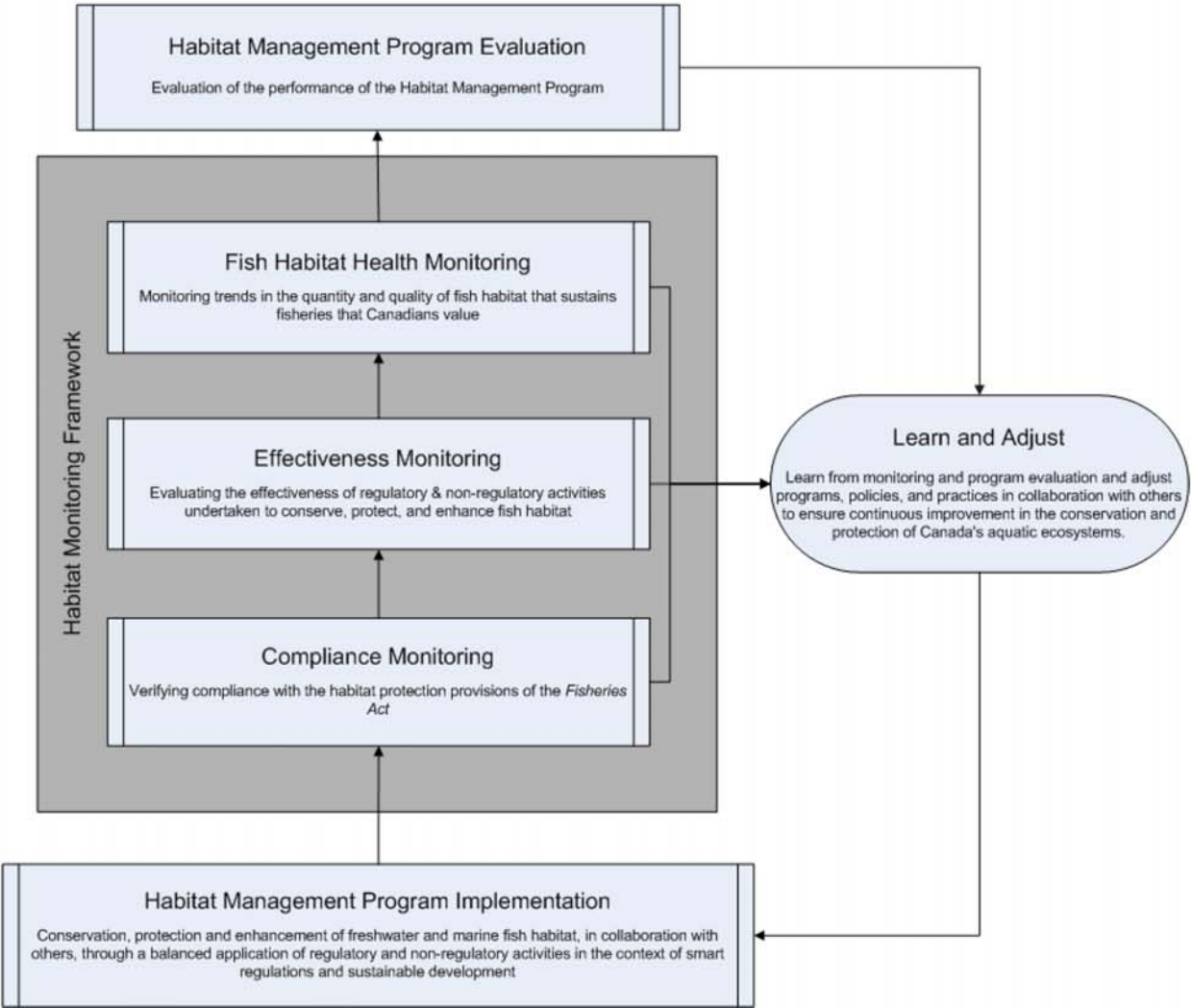
In addition, each type of monitoring will be used to provide the information base for program evaluation, enabling DFO to assess the performance of the HMP in meeting its mandate and make the necessary modifications to continually improve program delivery (Figure 1). This is consistent with the Treasury Board's Evaluation Policy which is to ensure that government has timely, strategically-focused, objective and evidence-based information on the performance of its policies, programs and initiatives to produce better results for Canadians.

The NHMF will help foster an organizational culture that emphasizes learning and responsiveness and will increase the credibility, predictability and coherence of habitat management decisions and policy adjustments by ensuring they are informed by a sound knowledge base gained through monitoring activities. The NHMF will also improve our knowledge about ecosystem responses, thresholds and dynamics allowing us to adapt practices to fit changing social values and ecological conditions.

To implement the NHMF successfully, it will be key to engage the public, partners and proponents and provide a mechanism through which they can contribute to monitoring and data collection to support the objective of the NHMF. The NHMF's science-based and multi-faceted approach will also require expertise, knowledge, and assistance of different sectors within DFO. Indeed, a cooperative effort is fundamental to the a successful implementation of the NHMF.

This document provides the Habitat Management Program (HMP) with a statement of the objective, goals, underlying principles, and approaches to monitoring for the NHMF. The roles and responsibilities, management structure, resources, policy and training, data management and reporting necessary for the successful implementation of the NHMF are also briefly discussed.

**Figure 1. Improving the Habitat Management Program, policies, and practices using the National Habitat Monitoring Framework and Program Evaluation**



## **The Objective**

The objective of the NHMF is to build the capacity within DFO to conduct compliance, effectiveness, and fish habitat health monitoring in collaboration with public, proponents, and partners. Information gathered will be used to ensure continuous improvement in the conservation and protection of Canada's aquatic ecosystems.

## **The Goals**

The goals of the NHMF will be to:

1. Enhance the capacity within DFO to monitor, improve, and promote compliance with the habitat protection provisions of the *Fisheries Act*;
2. Enable practitioners and proponents to systematically evaluate, and improve upon, the effectiveness of regulatory and non-regulatory activities carried out to conserve and protect fish habitat;
3. Enhance the capacity within DFO to monitor trends in the quantity and quality of fish habitat that sustains fisheries that Canadians value;
4. Provide a mechanism through which public, proponents and partners can contribute to monitoring and data collection to support the objective of the NHMF;
5. Facilitate program evaluation and adaptive management.

## **The Underlying Principles**

The underlying principles of the NHMF are as follows:

1. Monitoring conducted through the framework will be scientifically-based where appropriate and nationally consistent to allow inter-regional comparison;
2. A risk-based approach will be employed to strategically prioritize monitoring activities;
3. A multi-stakeholder approach will be adopted whereby public, proponents, and partners can contribute to monitoring, data collection, and information sharing to support the objectives of the NHMF.

## **Approaches to Monitoring**

The NHMF will support three types of monitoring: Compliance Monitoring, Effectiveness Monitoring, and Fish Habitat Health Monitoring. Each type of monitoring will be used to provide the information base for Program Evaluation, enabling senior

managers, practitioners, and proponents to practice adaptive management (Figure 1). An overview of the objectives, approaches, roles, and expected outcomes for compliance monitoring, effectiveness monitoring, fish habitat health monitoring, program evaluation, and adaptive management are presented in Figure 2. The science-based, multi-stakeholder, and multi-faceted approach of the NHMF will require that roles and responsibilities are spread out among the different sectors within DFO as well as outside the Department. Within DFO, Habitat Management and Science will play a key role in implementing the NHMF. Outside of the Department, proponents, provinces and territories, Aboriginal organizations, stakeholders, and community groups will also have key roles and responsibilities in contributing to the implementation of the NHMF. Key players for each type of monitoring are identified below. Appendix 1 provides more detail on roles and responsibilities for implementing the NHMF.

### **Compliance Monitoring**

The NHMF will provide for an enhanced capacity within DFO to monitor, improve, and promote compliance with the habitat protection provisions of the *Fisheries Act*. Habitat Management will take the lead on Compliance Monitoring with active support from proponents and partners.

Compliance Monitoring is project-level monitoring that consists of:

- verifying that mitigation measures have been implemented using best management practices found in federal or provincial guidebooks, Letters of Advice, Operational Statements, other guidance documents;
- verifying that activities governed by the *Fisheries Act* are carried out in accordance with its provisions, regulations, directions by Habitat Inspectors, Ministerial orders and authorization requirements;
- verifying compliance with injunctions and court orders under the *Fisheries Act*;
- establishing the degree of non-compliance to determine subsequent action to address non-compliance;
- conducting strategic audits of policies, processes, programs, or development activities to verify compliance with the fish habitat protection provisions and to identify areas for improvement in management systems, or areas of risk on a broad scale;
- reviewing reports, data and photographs submitted by proponents;
- reporting on the results of compliance monitoring activities.

### **Effectiveness Monitoring**

The NHMF will enable practitioners and proponents to systematically evaluate, and improve upon, the effectiveness of regulatory and non-regulatory activities in conserving and protecting fish and fish habitat. Habitat Management and proponents will take the

lead on Effectiveness Monitoring with active support from Science, partners and the public.

Effectiveness monitoring is project-level monitoring that consists of:

- monitoring to confirm that properly implemented / installed mitigation measures are successful in achieving their intended outcomes in terms of fish habitat protection;
- monitoring to confirm that properly implemented / installed habitat compensation measures are successful in achieving their intended outcomes in terms of ensuring No Net Loss in fish habitat productive capacity;
- monitoring to confirm that properly implemented / installed habitat restoration measures are successful in achieving their intended outcomes in terms of ensuring Net Gain in fish habitat productive capacity;
- monitoring to confirm that specific watershed plans, stewardship projects, and community outreach and public awareness initiatives are effective in achieving their intended goals and objectives;
- reviewing reports, data and photographs submitted by proponents;
- reporting on the results of effectiveness monitoring activities.

### **Fish Habitat Health Monitoring**

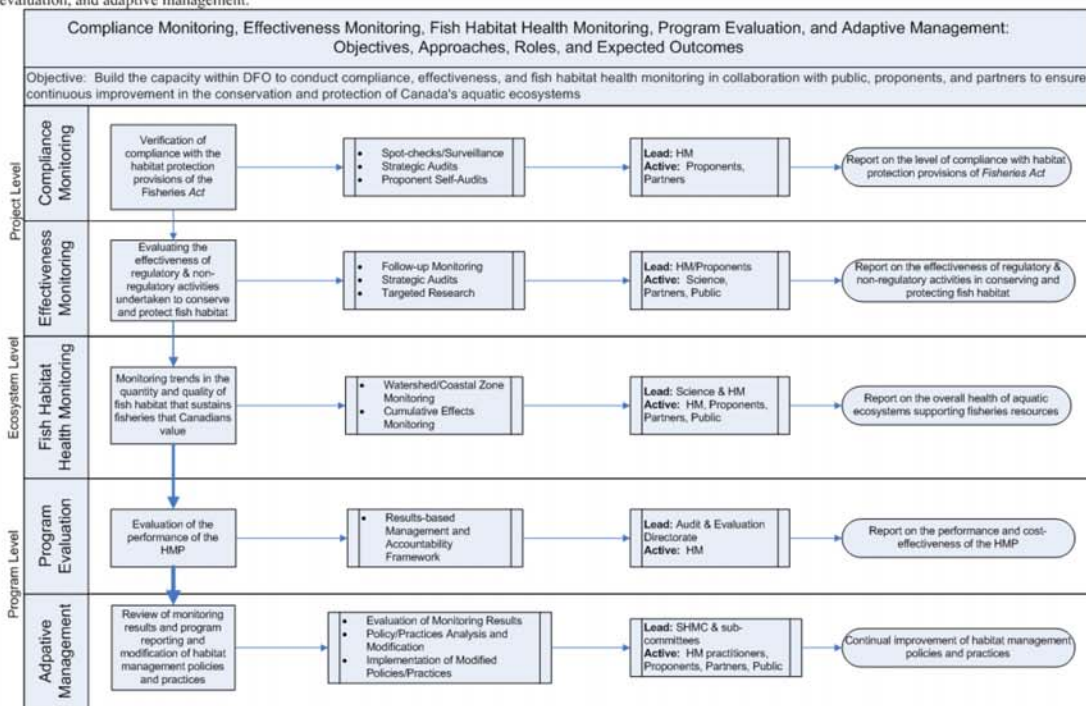
The NHMF enhance the capacity within DFO to monitor trends in the quantity and quality of fish habitat that sustains fisheries that Canadians value. Habitat Management and Science will take the lead on Fish Habitat Health Monitoring with active support from proponents, partners and the public.

Fish Habitat Health Monitoring is ecosystem-level monitoring that consists of:

- monitoring to measure the effects of development activities (e.g., aquaculture) on fish habitat when those effects are not clearly known in advance;
- monitoring to establish a baseline conditions within a watershed to provide a sound information base for planning and management. Monitoring could include determining fish species composition, populations, population dynamics and migration, habitat utilization and requirements, etc.;
- monitoring to determine the cumulative effects of multiple works or undertakings on fish habitat productive capacity (e.g. health of the aquatic system monitoring);
- providing guidance to proponents in establishing monitoring programs that extend over multiple seasons or years.



Figure 2. The objectives, approaches, roles, and expected outcomes of the compliance monitoring, effectiveness monitoring, fish habitat health monitoring, program evaluation, and adaptive management.



## Management Structure

## Governance Structure

The governance structure currently in place for the HMP is sufficient to direct all matters relating to the development of the NHMF. The development of the NHMF will be led by a working group reporting to the Habitat Sub-committee of the Senior Habitat Management Committee. The monitoring working group will be responsible for all aspects of the NHMF development, including the development of methodologies, tools, protocols, training, and data management and reporting standards related to monitoring. The working group will also be responsible for coordinating and ensuring the goals of the NHMF are achieved, ensuring that a proper communication plan is in place, and developing approaches for stakeholder involvement. This monitoring working group will work closely with Habitat Program Services Sub-committee and its working groups as they have the responsibility of developing the national training and data management systems. See Appendix 2 for the Terms of Reference of the Monitoring Working Group for fiscal year 05-06.

## Organizational Structure

To ensure successful implementation of the NHMF, regions will need to develop a capacity to monitor. It is proposed that the organizational structure within regions consist of a blended approach, utilizing both a separate monitoring and assessment unit at the RHQ level with area staff contributing to regional and national monitoring initiatives at the area level. Area staff would be able to provide immediate feedback at the project level while a dedicated monitoring and assessment unit at RHQ would contribute to strategic issues/initiatives and methodologies, tools and protocols and play a role in training on a regional level (See Appendix 1).

This organizational structure is consistent with the Dispersed Delivery Model currently proposed as the organizational structure for the Habitat Compliance Modernization Initiative in the Pacific and Central and Arctic Regions. The dispersed delivery model is based on establishing a distinct responsibility centre within the HMP at NHQ (i.e., National Monitoring Coordinator) to provide functional direction and accountability in the development of national operational policies, strategies, guidelines, and standards; provision of operational advice; and assessing and reporting program trends and effectiveness. Dispersed from RHQ, a new Regional Monitoring Lead position will provide leadership, technical support and line direction to Habitat Monitoring Coordinators in planning, coordinating, assessing, and reporting compliance, effectiveness, and fish habitat health monitoring activities. Habitat Compliance Technicians dispersed throughout area offices would be responsible for compliance promotion, monitoring and audit, and responding to occurrences and non-compliance. Habitat Monitoring Biologists in area offices would carry out compliance and effectiveness monitoring; collect and record monitoring information in PATH and report to RHQ on results; review proponent-responsible monitoring and summarizes results for the area; and contribute to the preparation of scientific and technical reports. Referral Biologist would play an integral role in assisting with all aspects of monitoring (see appendix 1 for more detail on roles and responsibilities for implementing the NHMF).

## **Resources**

Resourcing is a key element that has been identified as an obstacle to implementing effective and comprehensive monitoring. Results of a recent benchmarking exercise suggest that 15 to 20% of program resources should be assigned to monitoring. A significant investment is required initially to develop and implement the NHMF. This initial investment would support the creation of the appropriate management structure, the development and implementation of policy tools (e.g., practitioners guides) and associated training, and the creation of a data management and reporting systems.

While funds have been reallocated to the HMP to create and staff new Habitat Monitoring Technicians and Biologists in the Pacific and Central and Arctic Regions, additional funding and reallocation of resources within the HMP will be required for successful implementation of the NHMF in all Regions. This reallocation of funding should occur gradually over the next 3 fiscal years.

## **Policy and Training**

Standard methodologies, tools and protocols for monitoring will be identified and developed as they are an integral component of the NHMF. Methodologies related to compliance monitoring, effectiveness monitoring, and fish habitat health monitoring will be developed. Protocols on data management and reporting as well as QA/QC standards will also be developed. These protocols will ensure that monitoring data are inter-comparable between Regions.

Each protocol and methodology will require the development of associated training for DFO staff. Training and guidance in the review of monitoring studies conducted by proponents and third parties is also an important program requirement. Training for proponents and community groups on monitoring may also be developed. Prioritizing the development of methodologies and training related to the different types of monitoring will largely depend on the resources allocated to the NHMF and monitoring in general.

## **Data Management and Reporting**

A data management strategy is required to ensure that monitoring results can be effectively used to adjust and improve habitat management practices. The system will allow for single entry input of data, QA/QC, and broad access across Regions so that Practitioners can become aware of and take advantage of monitoring findings from other Regions.

The Program Activity Tracking for Habitat (PATH) system will be used by the HMP to track data collected through the NHMF. The system would facilitate the analysis of trends and patterns in habitat management practices and the quantity and quality of fish habitat that sustains fisheries that Canadians value. The system would also enable Program Evaluation and adaptive management to occur. The system would only be able to do this provided that the appropriate data is collected and recorded. Operational, technical, and security issues will be identified and the proposed cost of developing, implementing, and maintaining the new modules of PATH will be evaluated.

Time limits for DFO and proponents on reporting monitoring data and findings, along with specified reporting formats, where appropriate, will be identified. Provision should be made for peer review and approval of monitoring results and reports, so that their status as a DFO document is clear to potential users of the information.

Regional reports produced at the RHQ level by HMP and Science will be consolidated into a national report produced by the National Monitoring Coordinator annually. Monitoring data and information will be used to continually improve habitat management

decisions through adaptive management. As a component of this adaptive management, implementation and results from monitoring will be communicated to senior management through the existing governance structure. Proponents and stakeholders will be made aware of the results of the monitoring activities through the specified communications plan. DFO will work with proponents, partners, and the public to improve and promote compliance with the habitat protection provisions of the *Fisheries Act*; improve upon the effectiveness of regulatory and non-regulatory activities in conserving and protecting fish and fish habitat, and strive to improve the health of aquatic ecosystems.

## **Evaluation**

The NHMF will include an evaluation component to ensure that the framework is working effectively and delivering results that support continual improvement in habitat management decisions. A proper baseline will be established prior to the implementation of the NHMF so that its effectiveness can be gauged subsequent to its implementation. The methodology and the frequency of the evaluation will be established early on in the development of the NMF.

## **Appendix 1 -- Roles and Responsibilities**

### **Habitat Management Program**

The responsibility for designing and implementing the NHMF and executing monitoring under NHMF will rest with the Habitat Management. The design and implementation of the NHMF will be lead by NHQ, in consultation with the region and other sectors. The following represents an option for the division of roles and responsibilities at the national, regional and area levels:

#### **National Headquarters**

- Leads national monitoring working group reporting to Habitat Sub-committee;
- Leads monitoring policy development, including development of practitioners guides, through the national monitoring working group;
- Establishes evaluation criteria and performance indicators through a national monitoring working group;
- Develops and delivers technical monitoring training to practitioners to promote consistency in the application of the HMP;
- Leads the development of the data management module to be incorporated into the Program Activity Tracking for Habitat (PATH) system;
- Develops annual reports for the HMP and parliament;
- Prepares recommendations designed to improve regional consistency and effectiveness in the implementation of the regulatory and non-regulatory activities undertaken through the HMP
- Prepares technical correspondence, notes and briefs and scientific and technical reports for senior management;
- Modifies national policies based on reports through an adaptive management approach;
- Develops training materials and presentations for Practitioners, industry, First Nations, other government departments, provincial, municipal and regional authorities, the public sector and communities.

#### **Regional Headquarters**

- Implements the NMF regionally;
- Coordinates monitoring activities within the region, including coordination of monitoring activities with regional industry groups, provincial agencies, and regional stewardship and First Nation groups;
- Manages regional data collection through PATH;
- Reports annually on the monitoring activities and results to NHQ;
- Modifies regional policies based on reports through an adaptive management approach;
- Arranges joint research studies involving science and regional industry groups, provincial agencies, and regional stewardship and First Nation groups;

- Develops educational and information products relating to monitoring and stewardship and presents information publicly to increase awareness of habitat values, issues, policies and legislation.
- Provides training to various groups such as First Nations, industry, other government agencies on monitoring program design and assessment techniques to improve quality control on future projects and strengthen partnerships.
- Develops and maintains co-operative working relationships with area staff, NHQ staff, industry, other government departments, provincial, municipal and regional authorities, and communities to ensure effective implementation of monitoring activities and communication of results and potential policy changes through adaptive management.
- Provides advice and information to assist area field, technical and professional staff on approaches, techniques and evaluations.
- Extracts, analyzes and interprets physical and biological information from electronic databases (e.g. PATH) to prioritize the field assessments and make recommendations to senior management (RHQ and NHQ) to improve regional consistency and public accountability with respect to habitat management practices.

#### **Area Offices**

- Plans, organizes, and leads field activities (surveys, inspections, investigations, and monitoring)
- Conducts compliance and effectiveness monitoring through field audits, bioengineering assessments, and intensive biological, hydrological and physical sampling;
- Collects and records monitoring information in PATH and reports to RHQ on results;
- Reviews proponent-responsible monitoring and summarizes results for area.
- Contributing to the preparation of scientific and technical reports.

#### **Science Sector**

Generally, regional habitat managers are of the opinion that the Science Sector should play an advisory role. Their responsibilities would be to:

- lead and manage science related to the HMP;
- advise on the design and implementation of monitoring programs conducted by habitat practitioners, proponents and others;
- aid in the development of standard methods, protocols, techniques, etc.;
- provide a QA/QC function;
- conduct detailed and targeted investigative research relating to the HMP, such as research on mitigation and compensation effectiveness directed towards achieving a net gain in productive capacity.

- design and lead monitoring, including environmental effects monitoring, aligned with the HMP's objectives, priorities, requirements;
- develop terms of reference for studies to be undertaken through centres of excellence in consultation with habitat management staff, other agencies, and/or industry;
- manage data and information (essentially core information used to provide advice and information to decision-makers and various clients);
- coordinate of the various science activities at the area, regional, and national level in interactions with other sectors, departments, clients and partners.

### **Stakeholders**

A multi-stakeholder approach to monitoring could be employed whereby proponents, provinces and territories, Aboriginal organizations, stakeholders, and community organizations are contributing to monitoring and data collection to support the objective of the NMF. Moreover, the HMP could benefit from data that has already been collected by stakeholders.

## Appendix 2 -- Terms of Reference for Monitoring Working Group

### MONITORING WORKING GROUP: TERMS OF REFERENCE

#### 1. TITLE OF WORKING GROUP

*Monitoring Working Group*

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#### 2. ESTABLISHMENT

*October 2005 – April 2006*

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#### 3. ROLES AND RESPONSIBILITIES

*The role of the Monitoring Working Group is to advance the implementation of the National Habitat Monitoring Framework through:*

- 1. Reviewing and providing input into drafts of a Practitioner's Guide to Monitoring for DFO Habitat Management staff. This guide will provide administrative and policy direction on numerous issues related to monitoring.*
- 2. Providing input into the development of PATH modules for compensation and monitoring via participation at a national workshop and review of preliminary prototypes of these modules. These modules will form part of a data management system design to ensure that monitoring results can be effectively tracked and used to adjust and improve habitat management practices. The strategy should allow for single entry input of data, QA/QC, and broad access across Regions so that Practitioners can become aware of and take advantage of monitoring findings from across Canada.*

*Responsibility for producing drafts of the guide, assessing/incorporating comments received from each region will be the responsibility of the Chair (Dave Harper, NHQ).*

*Where issues arise that cannot be resolved at the Working group level, these issues will be brought to the Habitat Protection and Sustainable Development Sub-committee for decision.*

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#### 4. MEMBERSHIP *(lists those identified to date – TO BE CONFIRMED)*



<i>Dave Harper/Kelly Cott</i>	<i>NHQ – conf.</i>
<i>One staff from each region with monitoring expertise</i>	<i>Habitat</i>
<i>Dave Scruton/Thomas Pratt</i>	<i>Science</i>
<i>TBD</i>	<i>C&amp;P</i>

## 5. CHAIR

*Dave Harper, Senior Habitat Advisor, NHQ.*

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## 6. MEETINGS

*Conference calls as required to provide overviews and updates on drafts of the practitioner's guide.*

*One workshop to discuss practitioners guide and PATH development*

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## 7. REPORTING

*The nature and timing of reports generated by the Monitoring Working Group will be established by and provided to the Sub-committee.*

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## 8. REVIEW AND EVALUATION

*The existence of Working Groups is subject to SHMC approval and priorities. Sub-committees are responsible to ensure recommendations brought forward to SHMC provide for informed decision-making.*

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## 9. EXPENSES

*Each region will be responsible for travel costs to meetings. The NHQ or Regional host of the meeting will provide facilities, audio-visual support, and logistical support.*