



Basin Head Marine Protected Area: 2013-2014 Management Plan Implementation Progress Report

Fisheries and Oceans Canada, Gulf Region
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2015

Gulf Region Basin Head Management Series 2015/02





Gulf Region Basin Head Management Series

The Gulf Region Basin Head Management Series of publications are reports on management initiatives and monitoring undertaken in the Basin Head Marine Protected Area in the Gulf Region. This series consist of monitoring progress reports, operational management plan, consultant reports, scientific studies, workshops and other public documents related to the Basin Head Marine Protected Area. The Basin Head Management Series was established in 2014. Reports in this series have been written by or prepared under the guidance of staff of the Department of Fisheries and Oceans - Gulf Region. The content of this series is meant as a source of information for public and internal dissemination.

Série sur la gestion de Basin Head de la Région du Golfe

La série de publications sur la gestion de Basin Head de la Région du Golfe regroupe des rapports au sujet d'initiatives de gestion et de monitoring entrepris dans la zone de protection marine de Basin Head dans la région du Golfe. Cette série se compose principalement de rapport de progrès sur le monitoring effectué à Basin Head, plan de gestion opérationnel, d'études scientifique, de rapports de consultants, d'ateliers et d'autres documents publics relié à la zone de protection marine de Basin Head. La série sur la gestion de Basin Head a été créée en 2014. Ces rapports ont été rédigés par le personnel du Ministère de Pêches et Océans ou ont été préparés sous la direction de ceux-ci – dans la Région du Golfe. Le contenu de cette série se veut une source d'information pour une diffusion publique et interne.




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ABSTRACT

This Progress Report for the Basin Head Marine Protected Area outlines the activities and monitoring associated with the four regulatory conservation objectives that occurred during the 2013-14 fiscal year. This report also highlights the different management actions taken in 2013-14 and the future steps and priorities for the integrated management of the Basin Head Marine Protected Area.

RÉSUMÉ

Ce rapport de progrès pour la zone de protection marine de Basin Head décrit les activités et la surveillance associé avec les quatre objectifs de conservation réglementaires qui ont eu lieu au cours de l'année financière 2013-14. Ce rapport met également en lumière les différentes mesures de gestion prises en 2013-14 ainsi que les prochaines étapes et les priorités pour la gestion intégrée de la zone de protection marine de Basin Head.

1.0 INTRODUCTION

The Basin Head Marine Protected Area (MPA) was designated on September 26, 2005. This MPA has been established via regulations under the statutory authority of Canada's *Oceans Act* (Basin Head Marine Protected Area Regulations).

The MPA encompasses Basin Head, a tidal inlet and harbour, as well as an adjacent offshore buffer zone, in eastern Prince Edward Island within the Gulf of St. Lawrence bioregion (Figure 1). The MPA was designated by regulations to conserve and protect a unique form of an otherwise common marine alga, Irish moss (*Chondrus crispus*). This form of *Chondrus* is thought to exist only within the confines of Basin Head. It is believed that certain habitat conditions within the inlet, not yet understood, give rise to this form of *Chondrus*. Thus the MPA was designated under the *Oceans Act* Section 35, paragraph (1) c (conservation and protection of unique habitats), as well as paragraph (1) e.

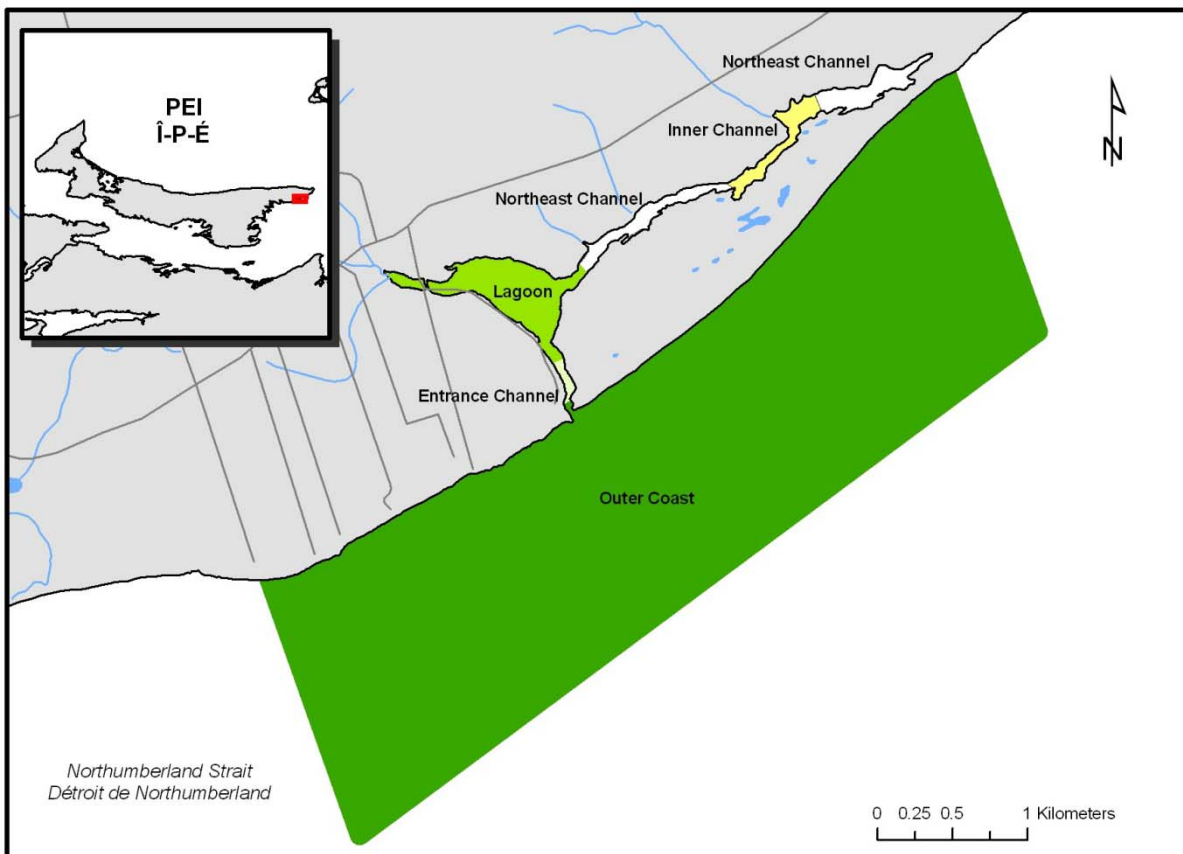


Figure 1: Basin Head Marine Protected Area

The Basin Head MPA Operational Management Plan (OMP) was written in 2009, to serve as a guide for informed decisions in the management of this unique ecosystem. The management plan forms the basis for development of comprehensive conservation and management strategies. It provides information on regulatory measures, monitoring, enforcement and compliance, managing certain human activities via an activity approval process and other non-regulatory management measures. It also provides the detail required to ensure that



management decisions, prohibitions, and activity applications processes are clearly understood.

Personnel from Ecosystems Management, Fisheries and Oceans Canada (DFO), Gulf Region are responsible for efforts at achieving the objectives described in the OMP. Management of the MPA is also guided by the advice of the local community and stakeholders, other federal and provincial government departments, and Aboriginal groups, acting through the Basin Head MPA Advisory Board.

The Basin Head MPA OMP is intended to serve as a “living” document which may be amended as required to ensure management objectives and monitoring requirements are met. The OMP is scheduled to be reviewed every five years with provisions for amendments on a continuing basis. The periodic reviews will examine the conservation objectives of the MPA to determine if they remain appropriate, evaluate the success of management actions in achieving the conservation objectives, and identify emerging priorities for subsequent reviews of the OMP.

The purpose of this Progress Report is to record activities in the Basin Head MPA during the 2013-2014 fiscal year. This report and past reports will serve as guides for the Operational Management Plan review, which will be completed in 2015.

2.0 MANAGEMENT HIGHLIGHTS FOR 2013-14

- Regular monitoring for water quality and aquatic species populations was performed during summer and autumn of 2013.
- A scientific survey carried out in July and August 2013 revealed a similar estimate for the *Chondrus* biomass in the MPA. As in 2012, a continuous bed of *Chondrus* no longer exists, and that the *Chondrus* now survives only as isolated clumps with a total combined cover of approximately 1.88 m² (compared to 1.63 m² in 2012).
- The Memorandum of Understanding between DFO Gulf Region and the National Research Council (NRC), for the maintenance of 10 kg of Basin Head *Chondrus* at the NRC's Sandy Cove facility, was renewed for 2013-2014.
- The Basin Head Marine Protected Area Advisory Board held a meeting on November 5, 2013 at the Fisheries and Oceans Area Office in Charlottetown, PEI. The advice provided by the Director General of Ecosystems Management was reviewed and next steps were discussed. There was agreement on the 2012-13 MPA Progress Report and the status of the MPA interactive display was given.

3.0 CONSERVATION OBJECTIVES AND ACTIONS TAKEN

Conservation objectives describe the desired ecological outcome of establishing an MPA and are based on the best available scientific and traditional ecological knowledge. These objectives guide the MPA establishment and management process by providing the basis for determining management measures. They also allow the setting of limits within which the nature and magnitude of human impacts on ecosystems and/or key ecological features of the MPA are assessed. Economic opportunities compatible with these conservation objectives may be permitted within the MPA or within specific zones.

There are four conservation objectives for Basin Head MPA:

Conservation objective 1: Maintain the quality of the marine environment supporting the *Chondrus crispus*.

Conservation objective 2: Maintain the physical structures of the ecosystem supporting the *Chondrus crispus*.

Conservation objective 3: Maintain the health (biomass and coverage) of the Basin Head *Chondrus crispus*.

Conservation objective 4: Maintain the overall ecological integrity of the Basin Head lagoon and inner channel. This includes avoidance of excessive *Ulva* growth, maintenance of adequate oxygen levels, and maintenance of diversity of indigenous flora and fauna.

Management actions taken during the 2013-14 fiscal year to fulfill short and long-term management goals for both regulatory and non-regulatory conservation objectives are shown in Table 1 and 2, respectively.

Table 1. Basin Head MPA Regulatory Conservation Objectives and Management Actions

| | Management Goals | Action Taken in 2013-2014 |
|---|--|--|
| <p>Regulatory Conservation Objective:</p> <p>Maintain the quality of the marine environment supporting the <i>Chondrus crispus</i></p> | <p>Short Term:</p> <ul style="list-style-type: none"> To maintain twice-monthly water quality monitoring (May through October) at 6 water stations within the MPA. Information will be collected on nitrate, nitrites, phosphates, suspended solids, temperature, oxygen and salinity. (Note: the monitoring in this goal has been expanded to the end of November). To monitor water temperature in the inner channel station and the main basin. To monitor 3 stations in the basin to test for <i>E.coli</i> contamination <p>Long Term: By using the data collected, determine if there is a significant decline in the quality of the marine environment supporting the <i>Chondrus crispus</i>.</p> | <p>11 sites sampled weekly to biweekly from June to November 2013, near high tide.</p> <p>Temperature loggers at three permanent locations were retrieved, downloaded, and re-deployed.</p> <p>Canadian Shellfish Sanitation Program (CSSP) sampling was not conducted in 2013.</p> <p>Prince Edward Island Wildlife Federation (PEIWF) – Souris and Area Branch monitored Young’s Hill Rd. as a point source of sediments; reported condition of boat slip to Province, as well as condition of Bothwell Beach Rd.; no stream cleaning done in 2013/14.</p> |

| | Management Goals | Action Taken in 2013-2014 |
|--|---|---|
| <p>Regulatory Conservation Objective:</p> <p>Maintain the physical structures of the ecosystem supporting the <i>Chondrus crispus</i></p> | <p>Short Term:</p> <ul style="list-style-type: none"> Establish the limits of the barrier dune structure at the ocean entrance and northern limit. <p>Long Term:</p> <ul style="list-style-type: none"> Using underwater video imaging, monitor the usage and erosion of the watershed area. (<u>Note: this goal changed from using aerial photography</u>) Monitor municipal land use and permit approval data. Develop water circulation model to evaluate any water circulation changes. | <p>An estuary model, which was developed by DFO in 2011, can be used to study scenarios of physical changes to the dune system and entrance channel. No further action was taken in 2013-2014.</p> <p>Aerial and underwater photography deemed no longer feasible due to extent of <i>Chondrus</i> decline.</p> <p>On-going; no issues arising in 2013-2014.</p> <p>Hydrological model integral to the estuary model noted above. Is consistent with field results. No further action taken in 2013-2014.</p> |
| <p>Regulatory Conservation Objective:</p> <p>Maintain the health (biomass and coverage) of Basin Head <i>Chondrus crispus</i></p> | <p>Short Term:</p> <ul style="list-style-type: none"> To initiate a photo mosaic of the entire basin every three years to quantify the <i>Chondrus crispus</i> and green algae coverage. Establish 3 permanent monitoring transects within the <i>Chondrus crispus</i> bed. <p>Long Term:</p> <ul style="list-style-type: none"> Maintain the biomass and coverage of <i>Chondrus crispus</i> to baseline data collected over the last 20 years. | <p>Photographs were taken at Chings Bridge, Elliot's Look Off and Foul Bay from June to November in order to establish record of green alga (<i>Ulva</i>) growth.</p> <p>In 2013, surveys were conducted on 25 July, 20 August, and 21 August. Transects (n=16 and n=8) were 2 m wide and ran north-south across the channel.</p> <p>This has not been successful; immediate cause of the <i>Chondrus</i> decline may be the invasive green crab, as per draft scientific paper (Cairns et al. unpubl.).</p> <p>MOU with NRC was renewed for maintenance of Basin Head <i>Chondrus</i> culture (10 kg) at the NRC research facility at Sandy Cove, Nova Scotia.</p> |
| <p>Regulatory Conservation Objective:</p> <p>Maintain the overall ecological</p> | <p>Short Term:</p> <ul style="list-style-type: none"> To continue the Community Aquatic Monitoring Program to monitor trends in community abundance and diversity of fish and benthic invertebrates within | <p>The CAMP Program was conducted in 2013 from May to September at Basin Head, PE.</p> |

| | Management Goals | Action Taken in 2013-2014 |
|---|---|---|
| integrity of the Basin Head lagoon and inner channel. | <p>Basin Head.</p> <ul style="list-style-type: none"> To create detailed contour maps of percent of cover by major plant species. <p>Long Term:</p> <ul style="list-style-type: none"> Maintain the diversity of indigenous flora and fauna within the Basin Head Marine Protected Area. | <p>Ongoing monitoring via CAMP.</p> <p>Not initiated but baseline exists for <i>Ulva</i> and <i>Chondrus</i>.</p> |

Table 2. Basin Head MPA Non-Regulatory Conservation Objectives and Management Actions.

| | Management Goal | Action Taken in 2013-2014 |
|--|---|--|
| <p>Non-Regulatory Objective:</p> <p>To ensure the participation of interested and affected stakeholders in the operation of the MPA.</p> | <p>Short Term:</p> <ul style="list-style-type: none"> Continuation of Advisory Board meetings to ensure stakeholder support and involvement. <p>Long Term:</p> <ul style="list-style-type: none"> Investigate the possibility of establishing an Irish moss centre of expertise within the area. Increase Aboriginal involvement in the MPA. | <p>Advisory board meeting held in Charlottetown on November 5, 2013 to review advice provided by the DG of Ecosystems Management and discuss next steps.</p> <p>Deferred to next fiscal year.</p> <p>Deferred to next fiscal year.</p> |
| <p>Non-Regulatory Objective:</p> <p>To increase the public awareness of the <i>Chondrus crispus</i>, the ecosystem of the Basin Head MPA and its conservation measures.</p> | <p>Short Term:</p> <ul style="list-style-type: none"> To develop a Basin Head MPA website. To enhance the existing on site laboratory to maximize education potential. <p>Long Term:</p> <ul style="list-style-type: none"> To increase public awareness through publication of brochures and involvement in community events. | <p>No action taken in 2013-14; existing info link to DFO site; PEI Wildlife Federation site partnering in highlighting the MPA.</p> <p>No further action required in 2013-14.</p> <p>On-going. Brochures available at the Basin Head Fisheries Museum. An interactive computer kiosk will be installed in Basin Head Museum in 2014.</p> <p>PEIWF – Souris and Area Branch communicates regularly to local stakeholders through the “Souris & Area Watershed News” on activities that involved the Basin Head MPA.</p> |

| | Management Goal | Action Taken in 2013-2014 |
|---|--|---|
| | <ul style="list-style-type: none"> Support the establishment of an Irish moss centre of expertise within the area. | Deferred to next fiscal year. |
| <p>Non-Regulatory Objective:</p> <p>To promote scientific research to increase the level of understanding of the Basin Head MPA.</p> | <p>Short Term:</p> <ul style="list-style-type: none"> To continue to collaborate with the Island Nature Trust and the University of Prince Edward Island to meet the monitoring requirements identified in the Operational Management Plan. Development of Activity Plans and Approvals as outlined in Section 5.0 of the Basin Head MPA Regulations. <p>Long Term:</p> <ul style="list-style-type: none"> To continue to identify potential partners for collaborative research projects. | <p>A contract with PEIWF – Souris and Area Branch, was in place to provide assistance with the summer and fall monitoring program.</p> <p>Approval Process in place; activity plans for 2013 season were submitted and approved.</p> <p>On-going; PEIWF – Souris and Area Branch contracted to provide monitoring assistance plus engagement in the greater watershed initiative.</p> |
| <p>Non-Regulatory Objective:</p> <p>To maintain and enhance the quality of the Basin Head ecosystem</p> | <p>Short Term:</p> <ul style="list-style-type: none"> To continue to collaborate with Island Nature Trust and University of Prince Edward Island to meet the monitoring requirements identified in the Operational Management Plan. Development of Activity Plans and Approvals as outlined in Section 5.0 of the Basin Head MPA Regulations. <p>Long Term:</p> <ul style="list-style-type: none"> To implement best management practices to reduce the impact of nutrient enrichment on marine environmental quality within the Basin Head ecosystem. To reduce the spread of aquatic invasive species in the Basin Head ecosystem. | <p>A contract with PEIWF – Souris and Area Branch, was in place to provide assistance with the summer and fall monitoring program.</p> <p>Approval Process in Place; activity plans for 2014 season were submitted and approved.</p> <p>No action taken in 2013-2014. It has been reported that farmers are more diligent in the use of fertilizer, partly because of the cost; also new farm practices are being examined or considered for soil conservation.</p> <p>Monitored through the Aquatic Invasive Species program (AIS) and CAMP; no additional invasive species reported in the Lagoon in 2013.</p> <p>Continued implementation of the Basin Head Watershed Management Plan.</p> |

4.0 ACTIVITY PERMIT APPLICATIONS

MPA regulations recognize that certain activities within an MPA may be consistent with conservation objectives. For some of these activities, Basin Head MPA regulations stipulate requirements for activity plan submissions and specify approval conditions. Ministerial approval of activity plans is one of the primary means of governing the activities proponents undertake in MPAs.

Proposed activity plans are reviewed to assess environmental impacts of the individual activity along with cumulative effect of all activities in the MPA, and to ensure that the activity is for the purpose of the conservation and/or management of the MPA, or for allowable scientific or educational purposes. Thus the requirement of the submission of an activity plan for certain activities is an important regulatory mechanism used to limit human impacts in MPAs before they occur. Activity approvals for the 2013-14 field season are shown in Table 3.

Table 3. Activity Approvals in Basin Head MPA.


| Study Name | Researcher | Affiliation | Purpose | Date Submitted |
|--|-----------------|-------------|--|----------------|
| a) Temperature loggers and b) Irish Moss monitoring by visual observation and recording | David Cairns | DFO - Gulf | Provide a long-term and continuous temperature record and Irish moss monitoring (visual monitoring and estimation by wading transects) for Basin Head MPA. | March 18, 2013 |
| Water quality monitoring | David Cairns | DFO - Gulf | Weekly water sampling for nutrient load and hydrographic parameters | March 21, 2013 |
| Community Aquatic Monitoring Program | Monica Boudreau | DFO - Gulf | Monitor marine environment of estuary | Feb 8, 2013 |

5.0 ENFORCEMENT AND COMPLIANCE

No enforcement issues were identified in the fiscal year 2013- 2014.

6.0 PUBLIC AWARENESS AND EDUCATION

Public education and outreach are critical factors in ensuring the long term success of an MPA. Compliance with MPA regulations is higher when community members, MPA users and the general public are aware of objectives and management strategies of an MPA. Education and outreach tools are most effective when they target appropriate user groups, stakeholders and the public, present a straightforward message, and use the most appropriate product to communicate the message.



Currently brochures and display panels explaining the purpose of the MPA are available to the public at the nearby Basin Head Fisheries Museum.

Planning as well as preparation of texts have begun for an interactive display kiosk at the Basin Head Museum, using a computer monitor with touch-screen technology to give historical and biological information on Basin Head, as well as general information on the Canadian MPA program. The texts and images may also serve to produce updated brochures.

7.0 NEXT STEPS AND PRIORITIES

Fisheries and Oceans Canada will focus on several priorities related to the implementation of the management plan in the next fiscal year. Priorities include:

- Continue annual monitoring of water quality.
- Follow-up on policy advice received from DFO National Headquarters and consider changes in focus for conservation, in light of *Chondrus* decline.
- The revision of the Basin Head Operational Management Plan has been rescheduled for the FY 2013-2014.

8.0 REFERENCES

Basin Head MPA Regulations, Canada Gazette Part 1, June 18, 2005.

Basin Head Watershed Management Plan, 2010, Souris and Area Branch, PEI Wildlife Federation, www.souriswl.ca

Cairns, D.K., G.J. Sharp, G.L. Bugden, M.-H. Thériault, S.C. Courtenay and A. Locke. Testing the roles of nutrient enrichment, climate warming, and invasive green crabs in the collapse of a unique Irish moss population. Unpublished manuscript.

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