Application for New Permit 23783

Part I- Project Background Information

1. Nature of research (Select one or more of the following) :

Natural Science

Archaeology

2. Heritage Area name:

Wrecks of HMS Erebus and HMS Terror National Historic Site of Canada

3. Additional Heritage Areas:

4. Type of application:

New

5. Duration:

Multi Year

6. Name of Principal Investigator (75 characters maximum):

Ryan Harris

7. Address of Principal Investigator (250 characters maximum):

1800 Walkley Road
Ottawa, Ontario
K1H 8K3

8. Phone number of Principal Investigator (20 characters maximum):

613-816-3868

9. Fax number of Principal Investigator (20 characters maximum):

613-993-9796

10. E-mail address of Principal Investigator (50 characters maximum) - Enter ONLY one single email address:

ryan.harris@pc.gc.ca

11. Principal Investigator affiliation (2000 characters maximum):

Senior Underwater Archaeologist
Underwater archaeology team
Parks Canada

12. Contact information for the Principal Investigator while conducting fieldwork (2000

characters maximum):

613-816-3868
or Through Marty Magne, Director Archaeology and History Branch, Parks Canada (613) 617-2183

13. Qualifications of Principal Investigator (2000 characters maximum):

MA in Maritime History and Nautical Archaeology.
East Carolina University, Greenville NC (2007)

BA (Honours) in Anthropology B Specialist Archaeology (1995), University of Toronto.

Senior Underwter Archaeologist, Underwater Archaeology Team, Parks Canada 2008-present

Marine Archaeologist, Underwater Archaeology Team, Parks Canada 1998-2008

Directed five survey projects in Nunavut to search for the Erebus and Terror shipwrecks (2010 to 2014), participated in another one (2008)

Directed the 2010 project in Western Arctic to search for the wreck of HMS Investigator

Directed the 2011 project in Western Arctic to do archaeological investigations of the wreck of HMS Investigator

Directed the 2015 project in Nunavut to do archaeological investigations of the wreck of HMS Erebus

Pariticipated in more than 40 underwater archaeological projects in Canada and in the USA

14. Sponsoring institution(s) (2000 characters maximum):

Parks Canada

Arctic Research Foundation: The Arctic Research Foundation (ARF) is a Canadian private charitable foundation established in 2011. The vision of ARF is to support long-term sustainability in the Arctic through innovation in knowledge and research capacity by promoting the mobilization and use of shallow-draft near-coastal research vessels in the Arctic.

Weston Foundation: The Weston Foundation is mandated to support education, land conservation, science in Canada's North and Neuroscience. The Weston Foundation has a goal of advancing Northern science and research in Canada's North

ArcticNet: ActicNet, head-quartered at the Université Laval, Québec is a Network of Centres of Excellence of Canada. Its objective is to study the impacts of climate change and modernization in the coastal Canadian Arctic thus contributing to the planning for a sustainable and prosperous Arctic

15. Name(s), address(es), telephone no.(s), e-mail(s) of other investigator(s) (2000 characters maximum):

Marc-André Bernier,
Chief, Underwater archaeology Team, Parks Canada
1800 Walkley Road, Ottawa, Ontario, K1H 8K3
613-993-2125, marc-andre.bernier@pc.gc.ca

Jonathan Moore,
Senior Underwater Archaeologist, Underwater archaeology Team, Parks Canada
1800 Walkley Road, Ottawa, Ontario, K1H 8K3
613-993-2125, jonathan.moore@pc.gc.ca

Filippo Ronca
Senior Underwater Archaeologist, Underwater archaeology Team, Parks Canada
1800 Walkley Road, Ottawa, Ontario, K1H 8K3
613-993-2125, Filippo.Ronca@pc.gc.ca

Charles Dagneau
Underwater Archaeologist, Underwater archaeology Team, Parks Canada
1800 Walkley Road, Ottawa, Ontario, K1H 8K3
613-993-2125, Charles.Dagneau@pc.gc.ca

Thierry Boyer
Underwater Archaeologist, Underwater archaeology Team, Parks Canada
1800 Walkley Road, Ottawa, Ontario, K1H 8K3
613-993-2125, Thierry.Boyer@pc.gc.ca

Joe Boucher
Underwater Archaeology technician, Underwater archaeology Team, Parks Canada
1800 Walkley Road, Ottawa, Ontario, K1H 8K3
613-993-2125, Joe.Boucher@pc.gc.ca
Flora Davidson
Conservator, Conservation Team, Parks Canada
1800 Walkley Road, Ottawa, Ontario, K1H 8K3
613-993-2125, Flora.Davidson@pc.gc.ca

Nadia Menard
Biologist, Ecosystem managments
Parks Canada, Saguenay St-Lawrence Marine Park, 182, rue de l'Église, PO Box 220
Tadoussac, Quebec G0T 2A0
(418) 235-4703 EXT. (244)
nadia.menard@pc.gc.ca

Philippe Archambault
Professeur-Chercheur, Écologie benthique / Institut des sciences de la mer de Rimouski
Université du Québec à Rimouski
310 allée des Ursulines
Rimouski, Québec
Canada
G5L 3A1
Tél : 418-723-1986 p. 1765
Fax : 418-724-1842
courriel/email : philippe_archambault@uqar.ca

Louis Fortier
Université Laval
Quebec-Ocean
Departement de Biologie, Pavillon Vachon
Quebec, Quebec G1K 7P4
Phone: +1-418-656-5646
Fax: (418) 656-2339
Email: louis.fortier@bio.ulaval.ca

Part II - Project Details

16. Project title (250 characters maximum):

Underwater Archaeology Investigation of HMS Erebus and A Biological Study of the HMS Erebus wreck site – Pilot Project
NOTE: THIS IS FOR HMS EREBUS NHS NOT SIMIRLIK NP

17. General description of study (4000 characters maximum):

The 2015 project on Erebus will build on the extensive multi-lateral partnership that has steadily developed since 2008, a collaboration which ultimately led to the discovery of HMS Erebus after six seasons of survey, engaging a growing number of government, private, and not-for profit partners, expertise, technology, and operational capability in the process.
The principal component of the project consists of archaeological investigations of the HMS Erebus wreck site. The archaeological work will build on the work started in April of 2015 that saw a little more than 5 days of diving through the ice to initiate baseline recording of the wreck and some punctual artefact recovery. The Underwater Archaeology Team will return to the wreck in August and September to continue with site recording, test excavation and more in depth investigations of the periphery and interior of the wreck site.
The summer dives will consist of a survey period approaching five weeks in duration. As the April dives did provide a good start for the recording and understanding of the site, the summer, the dives in August and September will focus more on targeted test excavation and the recovery of diagnostic artefacts to help reconstruct the final stages of the doomed expedition following the abandonment of the two ships in 1848. Among many research questions, the archaeological team will investigate 1) whether in fact some part of the crew returned to HMS Erebus, and who precisely the last survivors were 2) whether there were any provisions remaining on board and, if so, what condition they were in, 3) whether there was any coal remaining in the hold to heat the ship and/or drive the steam engine, 4) if the ship was rigged for sail or secured for winter quarters, 5) if the propeller was in place or retracted and stowed, 6) whether there are any indications of Inuit visitation to the ship and salvage of shipboard materials, and 7) if there is any surviving documentary evidence or other archaeological finds that might chronicle what transpired on board the ship post April 1848 and perhaps indicating what may have contributed to the failure of the expedition. Investigations will also continue the evaluation of site integrity, including a qualitative assessment of the structural condition of the hull and an examination of its debris field, as well as more quantitative assessment of the physical site environment.
This project also comprises a marine biology component that will be conducted prior to the archaeology work. The main goals of the biology pilot project are to characterize the benthic communities (fauna and flora) found on the wreck and use this information to better understand Arctic marine biodiversity, the factors limiting or enabling the development of benthic communities in Arctic regions and the impact of these communities on the vessel. Preliminary images of the newly found HMS Erebus show an impressive faunal diversity for Arctic waters suggesting that the wreck, potentially laying in an area protected from ice scouring, could have played a role of artificial reef over the last 165 years; enabling a local increase in biodiversity and biomass.

18. Proposed field work start date (10 characters maximum):

11/08/2015

19. Proposed field work end date (10 characters maximum):

19/09/2015

20. Proposed final report submission date (10 characters maximum):

31/03/2016

21. Budget

21a. Project Budget (4000 characters maximum):

250K for the Archaeology
50K for the Biology project
Plus significant in-kind support from Arctic Research Foundation and Coast Guard

21b. Parks Canada's contribution to Project. If there is no funding contribution please enter "0". (10 characters maximum):

250000

21c. Other sources. If there is no funding contribution please enter "0". (10 characters maximum):

50000

22. Project objectives (4000 characters maximum):

Underwater Archaeology Component:
- complete video and photo recording of hull structure, particularly on the port side
- complete video and photo recording of debris field around the periphery of the hull structure,
-continue establishement of reference points for accurate positioning of objects
- continue exploration of interior of vessel using small point of view cameras and mini-ROVs
- conduct a test excavation at the stern of the vessel
- survey the area around the shipwreck to locate other features of the wreck

For the biology study:
- to identify the benthic communities living on vertical and horizontal substrates of the ship,
- to explore the colonisation time and process of benthic species,
- to identify potential non-native benthic species
- to assess the impact of biological fouling on the preservation of the vessel and surfaces

23. Expected project outputs (3000 characters maximum):

For the 2015 season, an archaeological report outlining the methodology of the work done, the work conducted and the results achieved. A similar report on the marine biology component of the project will be produced.
This 2015 project will be critical to establish the methodology and goals for the years to come which will see a large scale archaeological excavation of the wreck site and a more complex biology study of this artificial reef. Therefore, one of the outcomes of the project will be the establishement of an elaborate research design to move forward.
A number of outreach products are in the process of being developped, most of which will be web based.
Finally, the project for 2015 will see greater community involvement than in the past, with three people from the Northern communities to be hired.

24. Digital data products (3000 characters maximum):

- High resolution digital photographies
- High Definition video images
- 3D images from underwater laser scaner

- 3D images from multi-beam sonar
- 2D sonar images from side-scan sonar

25. Other data products (3000 characters maximum):

- two dimensional archaeological site plans
- artefact database
- field notes

all according to PCA standards

26. Relevance of proposed research to Parks Canada's current research priorities (2000 characters maximum):

The project will be conducted in Parks Canada's newest National Historic Site managed by the Agency, therefore the work on this site is essential to the proper management of the site. The well preserved wreck remains hold the enormous archaeological potential to reveal entirely unknown aspects of the lost Franklin expedition, and may eventually serve to identify the principal causes of the mission`s fatal undoing. At the same time, the national and international renown of the Franklin story and celebrity of his two ships Erebus and Terror provides a unique educational launching point to communicate to a broad multi-generational and multi-cultural audience the historical importance of British 19th-century arctic exploration, its relevance to Northern communities today, and the particular challenges and rewards of Arctic science in the 21st century. To this end, a partnership between Parks Canada and the Royal Canadian Geographical Society will see the development of lesson plans and resource kits for distribution to teachers in all provinces and territories, which will serve to substantially invigorate and enhance the history-based curricula in schools across Canada. In terms of regional significance, the discovery of the Utjulik wreck in Wilmot and Campton Bay stands as a clear validation and vindication of Inuit oral history. That the Inuit reported that they had not only seen one of the ships west of the Adelaide Peninsula, but in fact gone aboard this particular vessel, is the primary evidence giving researchers any justification to look in the Queen Maud Gulf for a Franklin ship. This study will continue to investigate what was observed by the Inuit, how they made use of salvaged materials from the ship, and how this influenced their material culture.

27. Methods (including, where applicable, discipline specific methods; construction or installation plans; decommissioning plans; proposed alteration of the resource and the resource altering activities where applicable) (10,000 characters maximum):

Parks Canada’s RV Investigator and 16’ rigid hull inflatable boat (RHIB) will be transported up north from Victoria on board the CCGS Sir Wilfrid Laurier (along with the majority of PCA survey equipment). It will be arranged for the Laurier to ferry the boats and equipment to the dive site at the outset of the survey, and to retrieve it all afterwards (the boats would return to Montreal via Nunavut Eastern Arctic Sealift container ship).

Diving operations would be conducted directly overhead of the wreck from the RV Investigator and the RHIB as well as from a small MARK V, anchored to mooring blocks carefully placed on all four sides of the site. Summer dive operations will involve both untethered SCUBA and surface supplied diving, particularly when working in overhead environments as would be found below the upper deck.

The Arctic Research Foundation vessel Martin Bergmann will support the work on HMS Erebus in providing accommodation for part of the research team, lab space for the preliminary treatment and storage of artefacts, communication equipment, as well as resupply of provisions, water, and fuel during periodic return trips to Cambridge Bay. The boats would tie up alongside the Bergmann when divers are not deployed.

In the fall, the UAT seeks to have a steel barge towed from Tuktuyuktuk or Cambridge Bay to Wilmot and Crampton Bay by commercial tug, which would then be securely anchored to the shore at a protected location close to the site in the lee of a small

island situated nearby. This barge would serve in the 2016 season as both a floating dock and staging platform bearing accommodation, workshop, office, and kitchen trailers, along with fuel stores and AC power generators. Ideally, this installation could be left on location over the winter in order to extend the length of the following archaeological season, with winter monitoring and maintenance contracted to residents of Gjoa Haven.

Artefact recovery

To delve into the circumstances surrounding the final days of the Franklin Expedition, which is to say subsequent to the (initial) abandonment of the ships off Victory Point in April of 1848, and to learn as much as possible about the outfitting of Royal Navy ships of polar exploration in the mid-19th century and the material culture associated with shipboard life on these vessels, will necessitate artefact recovery and exploratory excavation. This will likely be relatively modest in scope during the 2015 season when the emphasis will be on pre-disturbance whole-site structural recording and photo-video documentation, but will see a test excavation at the stern area of the site.

Test excavation will use aluminium grids for reference and will be done using water dredges activated with water pumps.
Inspections of the interior will be done with a Video Ray ROV.

28. Schedule (4000 characters maximum):

10 August :
Depart Cambridge Bay for the Marine Biology Pilot Project component

11-August-16 August
Marine Biology Pilot Project component

16 August:
Change of crew, departure of biologists, arrival of archaeologists

17 August:
Begining of archaeological work

September 18
Completion of archaeological work and return to Cambridge Bay

29. Study Area

29a. Description of study area(s) (4,000 characters maximum):

Wreck site of HMS Erebus within Wrecks of HMS Erebus and HMS Terror National Historic Site of Canada.
Wilmot and Crampton Bay, Queen Maud Gulf

29b. Borden number (4000 characters maximum):

N/A

29c. Parks Canada archaeological site number (4000 characters maximum):

89M

30. Collections Management

30a. Repository, disposition and export (3000 characters maximum):

Parks Canada:
Underwater archaeology laboratories and Archaeological Conservation Services
1800 Walkley Road, Ottawa, Ontario, K1H 8K3

30b. Care and maintenance of the collection in the field (4000 characters maximum):

The Arctic Research Foundation vessel Martin Bergmann will support the work on HMS Erebus in providing lab space for the preliminary treatment and storage of artefacts. This will include refrigerators, a freezer, water tanks of various sizes, fresh water makers, cleaning tables and various types of storage equipement.

A professional conservator specialised in underwater material will be on site.

30c. Collection conservation arrangements (post field) (4000 characters maximum):

All artifacts will brought to the Parks Canada Conservation laboratory for conservation treatments
Archaeological Conservation Services
1800 Walkley Road, Ottawa, Ontario, K1H 8K3
Parks Canada

30d. Retention of collection for research (10 characters maximum):

2050/12/31

31. Site conservation methods (4000 characters maximum):

The data recovered will be used to establish future strategies for long term preservation of the site.

32. Site security and protection measures (4000 characters maximum):

Protection measures have been put in place in 2015 through an Order in Council to ensure that legislative measures are in place to prevent looting and illicit visitation.

33. Health and safety concerns (2000 characters maximum):

Diving will be conducted according to Parks Canada Dive directives

34. Special Access Requirements (2000 characters maximum):

N\A

35. Potential adverse effects of project activities, and mitigation measures (10,000 characters maximum):

N/A

36. Will the study affect a species listed in Schedule 1 of the Species at Risk Act as extirpated, endangered or threatened, its critical habitat or the residences of its individuals? You can find the list at http://www.sararegistry.gc.ca/the_act/HTML/Part20_e.cfm Please select yes or no.

no

37. Where one or more of these species may be involved or affected, elaborate on the following:

37a. Outline all reasonable alternatives that were considered (alternatives to the research as well as alternative methods of carrying the research out) in order to reduce the impact on the species (its individuals, the residences of its individuals, or the critical habitat of the species). Include a brief explanation of why the chosen option was considered the best solution for the species and why the other alternatives are not appropriate or are less favoured options for the species (Max. 2000 characters):

37b. Outline all feasible measures that will be taken to minimize the impact of the activity on the species (its individuals, the residences of the individuals or the critical habitat of the species) (Max. 2000 characters):

37c. Identify any population-level impact that the research may have on the species (such as a decrease in survival rates of one or more life stages) and explain briefly how the benefits gained from the research outweigh any risk of jeopardizing the survival or recovery of the species by the research (Max. 2000 characters):

38. Potential for Disturbance to:

38a. Traditional uses of the Heritage Area. Select yes or no. If yes, describe the nature of the disturbance (2000 characters maximum):

no

38b. The visiting public. Select yes or no. If yes, describe the nature of the disturbance(s) (2000 characters maximum):

no

38c. Heritage Area residents. Select yes or no. If yes, describe the nature of the disturbance(s) (2000 characters maximum):

no

39. What Parks Canada assistance is required or has been secured?

39a. Funding:

yes

If yes, describe (2000 characters maximum):

Funded primarily by Parks Canada through a Treasury Board submission. Funding also provided by Arctic Research Foundation, and Garfield Weston Foundation

39b. Logistical:

yes

If yes, describe (2000 characters maximum):

All dive and archaeological equipement provided by Parks Canada Underwater

Archaeology Team

39c. Data:

yes

If yes, describe (2000 characters maximum):

All data from previous work resides with Parks Canada

39d. Special requests (2000 characters maximum):

N/A

Part III - Reviews and/or Consultations Required

40. Peer review (2000 characters maximum):

N\A

41. Proposals to inform Heritage Area visitors or local communities about the project and its results (2000 characters maximum):

An Inuit will be hired by Parks Canada as a liaison agent to ensure that the communities are informed of the project and its outcomes

42. Consultations Conducted (2000 characters maximum): (as required under a comprehensive land claim, cooperative management or other contractual agreement with Aboriginal groups and/or stakeholders. Note: Certain agreements establish an obligation to consult to which Parks Canada is bound. Or, in certain cases, Parks Canada may have a common law duty to consult with Aboriginal groups in respect of a proposed activity. Consultation may be required before Parks Canada can issue, amend or cancel a permit). Contact the Research Coordinator before filling out this section (Note: It is Parks Canada's responsibility to consult). List all consultations carried out on your proposed research to date.

Permit information to be posted for 45 days by Field Unit; Information session held in Gjoa Haven with stake holders on June 17, William Beveridge Executive Director of IHT has participated in a project planning session in Gatineau on May 20-21 2015.

43. Aboriginal and/or Stakeholder(s) Reviews

43a. Aboriginal and/or Stakeholder(s) Reviews Conducted?: (as required under a comprehensive land claim, cooperative management or other contractual agreement with Aboriginal groups and/or stakeholders. Note: Certain agreements establish a review process to which Parks Canada is bound. Depending upon the agreement the permit application may have to be reviewed before Parks Canada can issue, amend or cancel a permit). Contact the Research Coordinator before filling out sections 43a to 43c. Select Yes, No, or N/A

yes

43b. If yes, Was the application sent? (Note: It is Parks Canada’s responsibility to send the application): Select Yes or No.

no

43c. If yes, name the body responsible for the review, and indicate the permit or authorization number if applicable (50 characters maximum):

44. Additional Authorizations, permits and/or licenses (2000 characters maximum):

45. Ethical Committee Review for research involving human subjects

45a. Reviewed by Ethical Committee for research involving human subjects?

N/A

45b. If yes, describe recommendations received from the review committee (2000 characters maximum):

Part IV - Animal Care

46. Animal Care Committee

46a. Reviewed by Animal Care Committee? Select the appropriate response - Yes, No or Not Applicable. If yes, send an electronic copy of the complete approved protocol and approval letter from the Animal Care Committee that reviewed the project to the appropriate Research Coordinator. If No, the following questions must be addressed. (For further information and guidelines please consult the Canadian Council on Animal Cares "Guidelines on the care and use of wildlife" at: http://www.ccac.ca/en/CCAC_Programs/Guidelines_Policies/GDLINES/Wildlife/Wildlife.pdf:

no

46b. How many animals will be used to meet the requirements of the study including species, sex, and age? These numbers must be justified using power analysis or other statistical method. (2000 characters maximum):

46c. Provide a detailed description of all planned animal handling activities including what will happen to subject animals from start to finish; how animals will be captured, restrained, transported and monitored; details of any chemical immobilization including drug dosages, suppliers, reversal agents, and what measures will be taken to ensure drug residues do not enter the human food chain; identify who will perform each procedure, and how they are qualified to do so (include CVs or resumes as attachments and e-mail to the appropriate Research Coordinator) (3000 characters maximum):

46d. If animal holding is required (>4 hours), please specify details of holding plan including diet, monitoring, and facility design (2000 characters maximum):

46e. If animals will be marked in any way, provide details of permanent or semi-permanent marking to be used (2000 characters maximum):

46f. Describe, in detail, any surgery upon animals proposed in this study and qualifications and training of individuals performing surgeries (2000 characters

maximum):

46g. Specify methods of euthanasia and carcass disposal that will be available in the field and their appropriateness for use in the species being studied as well as potential non-target animals (1500 characters maximum):

46h. Specify any possible replacement, refinement and/or reduction alternatives that were explored or utilized for this study, and justification if these are not to be employed, or a description of efforts to find such alternatives (1500 characters maximum):

46i. CCAC Category of Invasiveness. Select one from A,B,C,D or E: (http://www.ccac.ca/en/CCAC_Programs/Guidelines_Policies/GDLINES/Guidelis.htm)