Environmental	
Studies	
Research	
Fund	

Annual Report 2012

2012

ANNUAL REPORT FOR

THE ENVIRONMENTAL STUDIES RESEARCH FUND

FEBRUARY 2013

Environmental Studies Research Fund

Profile

The Environmental Studies Research Fund (ESRF) is a research program that sponsors environmental and social studies. It is designed to assist all involved stakeholders in their decision-making related to oil and gas exploration and development on Canada's frontier lands. The ESRF program, initiated in 1983 under the *Canada Oil and Gas Act* (COGA), now receives its legislated mandate through the superseding legislation, the *Canada Petroleum Resources Act* (CPRA), proclaimed in February 1987. Funding for the ESRF is provided through levies on frontier lands by interest holders such as oil and gas companies. The ESRF is directed by a joint government/industry/public Management Board and is administered by a Secretariat that resides within the Office of Energy Research and Development of Natural Resources Canada in Ottawa, Ontario.

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Background on the Structure and Operation of the Fund

The Environmental Studies Research Fund (ESRF) finances environmental and social studies pertaining to the manner in which, and to the terms and conditions under which, petroleum exploration, development and production activities on frontier lands should be conducted. Subsection 101(1) of the Canada Petroleum Resources Act (CPRA) defines an environmental study as "work pertaining to the measurement or statistical evaluation of the physical, chemical, and biological elements of the lands, oceans, or coastal zones, including winds, waves, tides, currents, precipitation, ice cover and movement, icebergs, pollution effects, flora and fauna, both onshore and offshore, human activity and habitation, and any related matter."

The Environmental Studies Research Fund is directed by a twelve-member Management Board that has representation from the federal government, the Canada–Nova Scotia Offshore Petroleum Board (CNSOPB), the Canada–Newfoundland and Labrador Offshore Petroleum Board (CNLOPB), the oil and gas industry and the general public.

The ESRF Management Board directs the business of the ESRF, sets priorities for study topics, determines the program budget and facilitates the development of study proposals on behalf of the Minister of Natural Resources Canada and the Minister of Aboriginal Affairs and Northern Development Canada.

The program operates on a calendar year basis. The Board generally meets three times a year; however, the frequency of meetings may be adjusted as circumstances dictate. The Board assesses the information requirements of government and industry to determine priorities for the study program for the coming year. The budget to support the study program and its administration forms the basis for the calculation of the levy rate schedule. The budget and levy rates are submitted to the Ministers for approval by November 1 of each year. The projects under the study program are initiated following the collection of levies that generally occurs in the first quarter of the calendar year.

Message from the Chair

The Environmental Studies Research Fund (ESRF) was initiated in 1983. As we are beginning the

ESRF program for 2013, we can celebrate the 30th year of existence of the Fund. This is a great

opportunity to reflect on what was accomplished.

The Fund has sponsored and published almost 200 environmental and social studies on issues related

to oil and gas exploration and production on frontier lands. Ranging from studies on habitat and

wildlife, prevention of and response to hydrocarbons spills, socio-economics impacts and

environmental monitoring, those studies helped to improve the understanding of Canada's frontier

lands with respect to hydrocarbon-related activities. Stakeholders having an interest in frontier lands

were able to use this information in order to improve their practices.

Over the 30 years of the Fund, the context of petroleum resources has changed significantly in

Canada. The Fund adapted its research priorities to shifting concerns. The research now performed

through the Fund in frontier lands is more relevant than ever as scientific socio-environmental

information on which to base exploration, development or production activities is in increased

demand.

In the years to come, it is anticipated that the pace of development activities in frontier lands will

continue to increase. More questions will arise on new and different subjects. The Fund will continue

adapting to the evolving context in order to inform best practices and decisions in Canada's frontier

lands.

Paul Barnes

Chairman

Environmental Studies Research Fund

Management Board

R. Paul Barras

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ESRF Management Board Members

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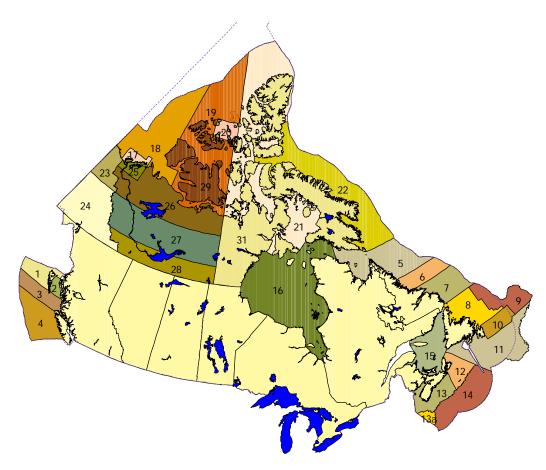
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ESRF Regions

Descriptions and maps can be viewed on the ESRF website at: http://www.esrfunds.org/legloi_e.php



Study Program - 2012

The ESRF Management Board approved the following five new studies for the 2012 study program:

Northern Studies – 2012

Oil Spill Prevention and Management

- Uniqueness of Fishes and Habitat Utilization in Oil and Gas Lease Blocks Relative to Non-Lease
 Area in the Beaufort Sea
- Oil Spill Countermeasure Field Trials in Arctic Marine Waters

East Coast Studies - 2012

Hydrocarbon Spill

Biodegradation of Natural and Chemically Dispersed Crude Oils from Atlantic Canada

Socio-Economics

 Stakeholders' Summary of an ESRF Study on the Potential Socio-Economic Effects on the Labrador Coast from Resumption of Offshore Oil and Gas Exploration and Development and Possible Future Production.

Seismic

 Investigation of Association between Past Seismic Survey Activity and Snow Crab CPUE in Offshore Newfoundland

Continuing Studies 2012 – Northern Area

Regional Effects Management

- Beaufort Sea Legacy Data Synthesis (Seabed Stability Conditions in the Shelf/Slope Transition Zone, Canadian)
- Upstream Oil and Gas Waste Stream Study, NWT

Changing Sea Ice Conditions

- Detection of Oil Under Ice with Helicopter-borne Ground Penetrating Radar (GPR)
- Improving the Accuracy of the Short-term Ice and Ocean Forecasts in the Beaufort Sea

Oil Spill Prevention and Management

- E-Space: Emergency Spatial Pre-SCAT for Arctic Coastal Ecosystems Beaufort Sea/Mackenzie Delta
- Beaufort Sea Oil Spill Workshop (Technical Advisory Committee)

Marine Seismic

- Development of Aerial Survey Techniques and Whale Detection Methods for Seismic Operations in the Beaufort Sea
- Development of Ecologically-Based Criteria to Assess the Impact and Recovery of Seismic Lines

Continuing Studies 2012 – East Coast

Air Emissions

- Source Apportionment of Volatile Organic Compounds and Particulate Matter on Sable Island
- Modelling Air Emissions from Offshore Installations

Hydrocarbon Spills

- Effectiveness of Observers in Visually Detecting Dead Seabirds on Open Ocean
- Labrador Coast Seabird and Marine Mammal Baseline Surveys

Waste Management

- Assessment of the Potential for Impacts on Early Life Stages of Fish and Zooplankton around Petroleum Development Sites on the Grand Banks
- Biological Effects of Produced Water on Various Life Stages of Marine Fish
- Refinement and Validation of Numerical Risk Assessment Models for use in Atlantic Canada

Seismic

- Fish Behaviour in Response to Seismic Sound Workshop
- Lobster Feeding in Response to Seismic Sound
- Compilation of Cetacean Vocalizations for Passive Acoustic Monitoring (PAM) Applications

Financial Statement

The total study expenditures incurred by the ESRF in 2012 amounted to \$1,453,426 for projects initiated between 2010 and 2012 (refer to Table 1). Administrative costs amounted to \$362,628 during the current year. Revenues from the levies collected amounted to \$2,198,333 (refer to Table 2).

In accordance with the Canada Petroleum Resource Act, when an interest is issued during the course of the year, levies for that year and the two years prior are collected by the Fund. The collection of unpaid levies is pursued on an ongoing basis by the ESRF Secretariat.

Table 1 - ESRF Operating Budget as of December 31, 2012 (in dollars)

Regions	Opening Cash Balance (January 1, 2012)	Total Levies Collected	Administrative Costs	Study Program Expenditures	Closing Cash Balance (December 31, 2012)
SOUTH:					
Regions 1 to 16	3,084,108	1,220,790	(181,314)	(303,917)	3,819,667
NORTH:					
Regions 17 to 31	2,231,958	977,543	(181,314)	(1,149,509)	1,878,678
				_	
TOTAL	\$5,316,066	\$2,198,333	(\$362,628)	(\$1,453,426)	\$5,698,345

Table 2 - ESRF Revenues

January 01, 2012 to December 31, 2012 (in dollars)

	ary 01, 2012 to December 31, 2	Levy #24	Levies	Levies	Previous	Total
RE	GIONS	(\$/ha)	Invoiced – Levy #24	Collected	Levies Collected during the current year	Levy Revenue Collected
			В	\mathbf{c}	D	(C+D)
1	Queen Charlottes North	0	0	0	0	0
2	Hecate Strait	0	0	0	0	0
3	Queen Charlottes South	0	0	0	0	0
4	Vancouver Island	0	0	0	0	0
5	Labrador North	0	0	0	0	0
6	Labrador Central	0.0912	87,083	87,083	99,664	186,747
7	Labrador South	0.0912	515	515	81,720	82,235
8	Northeast Newfoundland	0	0	0	0	0
9	Newfoundland Slope	0.1742	261,436	261,436	63,980	325,416
10	Grand Banks North	0.2059	246,882	246,882	0	246,882
11	Grand Banks South	0.1742	50,530	50,530	199,276	249,806
12	Scotian Shelf East	0	0	0	0	0
13	Scotian Shelf West	0	0	0	0	0
14	Scotian Slope	0	0	0	87,545	87,545
15	Gulf of St. Lawrence	0	0	0	42,159	42,159
16	Hudson Bay	0	0	0	0	0
17	Beaufort South	0	0	0	36,693	36,693
18	Beaufort North	0.7639	920,016	920,016	0	920,016
19	Western Archipelago-Offshore	0	0	0	0	0
20	Central Archipelago-Offshore	0	0	0	0	0
21	Eastern Archipelago-Offshore	0	0	0	0	0
22	Baffin Bay	0	0	0	0	0
23	Yukon North	0	0	0	0	0
24	Yukon South	0	0	0	0	0
25	Mackenzie Delta	0	0	0	0	0
26	Mackenzie North	0	0	0	19,067	19,067
27	Mackenzie Central	0	0	0	0	0
28	Mackenzie South	0	0	0	1,767	1,767
29	Western Archipelago-Onshore	0	0	0	0	0
30	Central Archipelago-Onshore	0	0	0	0	0
31	Eastern Archipelago-Onshore	0	0	0	0	0
	TOTAL		1,566,462	1,566,462	631,871	2,198,333

Amendment to the financial statement of 2011

Errors in the 2011 financial statement have been recognized retroactively and corrections are provided below. The most significant of the errors was an omission of expenses. The expenses were incurred near the end of the government fiscal year 2010-2011, but were not processed in the financial system until the start of the fiscal year 2011-2012. A new financial system was launched at NRCan at the start of fiscal year 2011-2012. Based on accounting principles, these expenses had to be recognized in the fiscal year 2010-2011, and therefore they were entered in the retired financial system. This period was an oversight at the time of the ESRF calendar year 2011 reporting. Other errors are also identified and corrected in this report.

Table 3 - ESRF Operating Budget as of December 31, 2011 (in dollars)

Regions	Opening Cash Balance (January 1, 2011)	Total Levies Collected	Administrative Costs	Study Program Expenditures	Closing Cash Balance (December 31, 2011)
SOUTH: Regions 1 to 16					
Published (2011)	3,627,943	22,513	(186,028)	(198,565)	3,265,863
Corrections (see notes)				(181,988) ^a	233 ^b
Revised 2011	3,627,943	22,513	(186,028)	(380,553)	3,084,108
NORTH: Regions 17 to 31					
Published (2011)	2,206,123	893,347	(186,028)	(683,152)	2,230,290
Corrections (see notes)	(38) ^c	1,706 ^d			
Revised 2011	2,206,085	895,053	(186,028)	(683,152)	2,231,958
REVISED TOTAL	\$5,834,028	\$917,566	(\$372,056)	(\$1,063,705)	\$5,316,066

a - Correction for error of omission of expense amount from the ESRF Annual Report 2011

b - Correction of carry forward from March 31st in fiscal year 2010-2011 to April 1st in fiscal year 2011-2012

c - Correction of discrepancy between actual and recorded amount in 2004-2005.

d - Correction for error of omission of levy amount from the ESRF Annual Report 2011

Plans for 2013

In September 2012, the ESRF Management Board established the budget for the 2013 program which will be supported by Levy #25. The associated levies were recommended by the Management Board and have been submitted for approval to the Minister of Natural Resources Canada and the Minister of Aboriginal Affairs and Northern Development Canada. The total 2013 program budget is \$3,705,000, continuing studies from 2012 will be funded from the balance of existing funds.

The ESRF Management Board has established the following research priority areas for 2013:

North

- Oil Spill Preparedness, Fate & Effect
- Regional Effects Management

East Coast

- Hydrocarbon Spills
- Seismic

Publication of Reports

All ESRF studies are subject to a scientific/technical peer review. Reports that are deemed to be scientifically or technically significant are published in the ESRF Technical Report Series. Since its inception in 1983 until December 31, 2012, the ESRF has published 190 reports and 3 related studies. All reports and studies are available to download for free on the ESRF website.

Publications are listed under the following categories:

Bibliographies
Environmental Effects and Monitoring
Environmental Loading and Design
Frontier Social and Economic Issues
Ice-Icebergs-Ice Detection
Oil Spill Research and Countermeasures
Sea Bottom Ice Scour
Sediment Transport
Waves

Recent Publications - 2012

- Sikimuit Environmental Management Ltd. *An Assessment of Predicted Socio-Economic Impacts of Labrador Shelf and Gas Activity on Labrador Communities and Individuals*. December 2011. 156 p.
- 190 CEF Consultants Ltd. Report of a Workshop on *Fish Behavior in Response to Seismic Sound*. November 2011. 109 p.

Appendix – ESRF Publications 1985 – 2012

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- Young, S.C. *Bibliography on the Fate and Effects of Arctic Marine Oil Pollution*. March 1986. 212 p.
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- Hunter, S.P. and J.H. Vandermeulen. *Bibliography of Aquatic Oil Pollution Fate and Effects*. December 1994. CD-Rom.
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