

June 14, 2019

Scientific Reports Publishing Team,

I have concerns about a potential conflict of interest with regards to the following scientific paper published in Scientific Reports: <https://doi.org/10.1038/s41598-019-40025-7>

Piscine orthoreovirus demonstrates high infectivity but low virulence in Atlantic salmon of Pacific Canada

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In the published paper under the “Competing Interests” section it states:

“The authors declare no competing interests.”

It also states under the “Acknowledgements” section:

“Funding for this work was provided by the Program of Aquaculture Regulatory Research within Fisheries and Oceans Canada awarded to KG.” (i.e., Kyle Garver, Fisheries and Oceans, Canada)

Your journal, Scientific Reports, defines a competing interest here (<https://www.nature.com/srep/journal-policies/editorial-policies/#competing>) as:

“competing interests are defined as financial and non-financial interests that could directly undermine, or be perceived to undermine, the objectivity, integrity and value of a publication, through a potential influence on the judgments and actions of authors with regard to objective data presentation, analysis and interpretation.”

It goes on to say a financial competing interest includes:

“Funding: Research support (including salaries, equipment, supplies, and other expenses) by organizations that may gain or lose financially through this publication.”

It appears the Fisheries and Ocean Canada (DFO) website for the Program of Aquaculture Regulatory Research (PARR) (found here: <https://www.dfo-mpo.gc.ca/aquaculture/rp-pr/parr-prra/projects-projets/fhtt-etsp-2016-p-03-eng.html>) lists this project as FHTT-2016-P-03.

I submitted an Access To Information and Privacy (ATIP) request for DFO PARR funding amounts (see Appendix 1 of this letter). This ATIP reveals that the FHTT-2016-P-03 project has

Marine Harvest (now rebranded as Mowi) and the B.C. Salmon Farmers Association MERP listed as partners. MERP is the BC Salmon Farmers Association's Marine Environmental Research Program established in 2014 and committed \$1.5 million to fund research (https://bcsalmonfarmers.ca/wp-content/uploads/2016/11/BCSFA_Nov2016_MERP_Call4Proposals.pdf). Two non-government funding amounts under project FHST-2016-P-03 are redacted due to Canada's Privacy Act.

From this information, it appears this published research may have been financially and/or non-financially supported by salmon farming industry partners. Considering your journal's definition for a competing interest, it appears to me this may comprise a potential conflict of interest that was not fully disclosed.

Such an ethical lapse by DFO authors may also violate the Conflict of Interest section (Part 3) of DFO's Ethics Code (<http://www.dfo-mpo.gc.ca/reports-rapports/vicr-virc/vicr-virc2012-eng.htm#part3>).

There is much scientific debate around the risks and impacts of parasites and viruses from marine salmon farms to wild fish, and while genuine debate can produce robust scientific conclusions, manufactured debate can delay meaningful policy change through a strategy known as Scientific Certainty Argumentation Methods (or SCAMs).^{1,2}

I think the B.C. Salmon Farmers Association and Marine Harvest, as partners in this research, may have a vested interest in scientific papers that do not find significant impacts and risks from their operations on salmonids (including wild salmon). Two reasons for this include:

1. Positive media stories arising from published scientific papers about the salmon farming industry can benefit the industry's "social licence" and marketability of their product. A few examples of positive media stories that resulted from this paper include:

Sea West News. New studies reaffirm PRV is not a salmon killer
<https://seawestnews.com/new-studies-reaffirm-prv-is-not-a-salmon-killer/>

Globe and Mail. Deadly PRV virus not 'sole cause' of disease affecting farmed Atlantic salmon in B.C., study finds
<https://www.theglobeandmail.com/canada/british-columbia/article-deadly-prv-virus-not-sole-cause-of-disease-affecting-farmed-atlantic/>

CBC. Virus at centre of farmed salmon controversy isn't as harmful as some believe, studies suggest
<https://www.cbc.ca/news/canada/british-columbia/studies-shed-light-on-impact-of-virus-on-farmed-atlantic-salmon-in-bc-1.5056464>

¹ Proboszcz, S. (2018) Integrity of DFO's Science Process in Question. Policy Options. <http://policyoptions.irpp.org/magazines/april-2018/integrity-of-the-dfos-science-advisory-process-in-question/>

² Freudenburg, W., et. al. (2008) Scientific Certainty Argumentation Methods (SCAMs): Science and the Politics of Doubt. Sociological Inquiry. 78:2-38
<https://onlinelibrary.wiley.com/doi/full/10.1111/j.1475-682X.2008.00219.x>

2. Published papers reporting insignificant or minor effects of piscine reovirus (PRV) on salmonids may support the continuation of salmon farm operations in the Discovery Islands (near Campbell River, British Columbia). Canada's current federal government committed to implementing the recommendations from the Federal Cohen Inquiry into the Decline of Fraser River Sockeye Salmon.³ Recommendations 18 and 19 from the Inquiry state a significant number of salmon farms should be removed in September 2020, unless the government can provide evidence that the farms are not more than a minimal risk of serious harm to wild salmon.⁴ The recommendations also state those salmon farms should be removed immediately if at any point before 2020, the risk is deemed greater than a minimal risk of serious harm to wild salmon.

Therefore, any published science that reports insignificant or minor impacts from PRV, such as the paper in question, may have significant commercial benefits to the industry, in facilitating the perpetuation of salmon farms in British Columbia.

Thank you for your time. I hope you consider these conflict of interest concerns and take appropriate action to remedy any issues. I am not aware of what course of action your journal usually takes on these types of matters; hence, I look forward to your response and hearing about the steps and action that are to come.

Sincerely,

Stan Proboszcz

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³ Trudeau, J., (2018) Prime Minister of Canada Mandate Letter to the Minister of Fisheries and Oceans. <https://pm.gc.ca/eng/minister-fisheries-oceans-and-canadian-coast-guard-mandate-letter-august-28-2018>

⁴ Fisheries and Oceans Canada's update on the implementation of the Cohen Commission's recommendations. <http://www.dfo-mpo.gc.ca/cohen/report-rapport-eng.htm>

Appendix 1.

Number	Project Code	Title	Region	DFO PARR Financial	DFO Other Financial	DFO Other Financial	Non- Partner Financial	Partner Non-Financial	Partner Names
1	PARR-2018-P-05	Advanced developments in DFO's FVCOM models for the Discovery Islands and Broughton Archipelago	Pacific (PAC)	\$ 63,075	\$ 45,000	\$ 20,000			Pacific Northwest National Laboratory, University of British Columbia, Hakai Institute
2	PARR-2018-NL-04	Genomic assessment of potential genetic interactions of the use of European Lumpfish as a cleaner fish in Atlantic salmon aquaculture in Newfoundland	Newfoundland and Labrador (NL)	\$ 99,900	\$ -	\$ 70,000			Memorial University
3	PARR-2018-G-03	Conversion between bivalve aquaculture types: Consequences on hydrodynamics and food accessibility	Gulf (Gulf)	\$ 116,045	\$ -	\$ 70,000			Boutouche Bay Industries
4	PARR-2018-G-02	A tool for assessing the maximum sustainable production levels of blue mussels and eastern oysters in PEI	Gulf (Gulf)	\$ 170,913	\$ -	\$ 25,000			Dalhousie University
5	FHTT-2018-P-01	Characteristics of British Columbia isolates of Piscirickettsia salmonis relevant for understanding pathogen transmission and infectivity	Pacific (PAC)	\$ 80,604	\$ 29,404	\$ -	\$ -	\$ -	nil
6	PARR-2017-Q -09	Evaluation and comparison of Cranford-Wong and ISE methods for sediment sulfide and oxygen measurements in aquaculture-related organically enriched sediments using manipulative and observational approaches	Quebec (QC)	\$ 188,629	\$ -	\$ -	\$ -	\$ -	nil
7	PARR-2017-Q -04	Effect of mussel culture on long-term condition of rock crabs and lobsters	Quebec (QC)	\$ 120,183	\$ -	\$ -	\$ -		Université du Québec à Rimouski
8	PARR-2017-Q -03	Effect of mussel culture on catchability of rock crabs and lobsters	Quebec (QC)	\$ 215,213	\$ -	\$ -	\$ -	\$ -	nil
9	PARR-FHTT-2017-P -02	Viral hemorrhagic septicaemia virus (VHSV) evolution and adaptation potential in farmed Atlantic salmon in British Columbia	Pacific (PAC)	\$ 98,150	\$ -	\$ -	\$ -	\$ -	nil
10	FHTT-2017-P -01	Spatial heterogeneity in sea lice infestations on farmed salmon in BC	Pacific (PAC)	\$ 20,000	\$ -	\$ -	\$ -	\$ -	nil
11	PARR-2017-NL-07	An analysis of the perceived impact of mussel aquaculture on catch per unit effort (CPUE) for the seasonal lobster fishery on the Northeast coast of Newfoundland.	Newfoundland and Labrador (NL)	\$ -	\$ -	\$ -	\$ -	\$ -	nil
12	PARR-2017-NL-05	Genomic baseline for the quantification of indirect genetic impacts of triploid Atlantic salmon aquaculture in Placentia Bay Newfoundland	Newfoundland and Labrador (NL)	\$ 458,325	\$ -	\$ 260,000	\$ -	\$ -	nil
13	PARR-2017-G -10	Interactions between oyster farming and the productivity of wild oyster beds	Gulf (Gulf)	\$ 100,000	\$ -	\$ -	\$ -	\$ -	nil
14	PARR-2017-G -06	What is the overall effect of shellfish aquaculture on eelgrass, an ecologically significant species?	Gulf (Gulf)	\$ 31,100	\$ -	\$ -	\$ -	\$ -	nil
15	PARR-2017-G -01	Assessing elements of risk to wild Atlantic salmon due to Infectious salmon anemia (ISA) from farmed Atlantic Salmon in the East Coast of Canada: sub-lethal effects, life stage susceptibility, ISAV HPRO prevalence, herring and other risk factors.	Gulf (Gulf)	\$ 324,925	\$ 11,200	\$ -	\$ -		unsure source, collaborators: UNB, Atlantic veterinary College, NB Department of Agriculture, Aquaculture and Fisheries, Cooke Aquaculture Inc.
16	PARR-2017-CA-08	State of the knowledge of culturing native fishes in the Great Lakes: Applying an eco-genetic model to inform the risks and identify key knowledge gaps.	Central and Arctic (C&A)	\$ 56,736	\$ -	\$ 8,750	\$ -		Ontario Ministry of Natural Resources and Fisheries

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Number	Project Code	Title	Region	DFO PARR Financial	DFO Other Financial	DFO Other Financial	Non- Partner Financial	Partner Non-Financial	Partner Names
17	PARR-2016-Q -16	Evaluation of the transfer of energy from aquaculture systems through the benthic food web to fisheries-important species	Quebec (QC)	\$ 1,124,155	\$ -	\$ 765,000	\$ [REDACTED]	[REDACTED]	IFREMER, Celimer, BeBEST, Brazil Scholarship
18	PARR-2016-Q -04	Impact of finfish farms in eastern Canada on lobster distribution and condition	Quebec (QC)	\$ 470,062	\$ -	\$ 201,667	\$ -	\$ -	nil
19	PARR-2016-Q -01	Impact of mussel culture on infauna and sediment biogeochemistry	Quebec (QC)	\$ 237,763	\$ -	\$ 137,500	\$ [REDACTED]	[REDACTED]	Institut des Sciences de la Mer, Université du Québec à Rimouski

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20	PARR-2016-P -06	Development and validation of a biomonitoring tool to assess the impacts of salmon aquaculture on marine benthic communities using metabarcoding	Pacific (PAC)	\$ 476,088	\$ -	\$ -	\$ -	\$ -	nil
21	PARR-2016-P -03	Development of environmental DNA (eDNA)-based biosurveillance for aquatic invasive species (AIS) to inform management and policy decision-making associated with shellfish aquaculture movements	Pacific (PAC)	\$ 300,122	\$ -	\$ -	\$ -	\$ -	nil
22	FHTT-2016-P -03	Investigation of piscine reovirus (PRV) in the development of disease	Pacific (PAC)	\$ 218,200	\$ 98,000	\$ -	\$ -	\$ -	Norwegian Veterinary Institute, Marine Harvest Canada, BC Salmon Farmers Association- MERP
23	FHTT-2016-P -02	Epidemiological analysis and modeling of aquatic pathogens	Pacific (PAC)	\$ 65,000	\$ -	\$ -	\$ -	\$ -	Pacific Salmon Commission Northern Fund, Centre for Coastal Health
24	FHTT-2016-P -01	Marine reservoirs of infectious agents associated with proliferative gill disorders in farmed salmon	Pacific (PAC)	\$ 179,554	\$ 74,690	\$ 271,640	\$ -	\$ -	British Columbia Salmon Farmers Association, Marine Harvest Canada
25	PARR-2016-NL-14	Probability of detecting escaped aquaculture salmon is related to distance between production areas and rivers	Newfoundland and Labrador (NL)	\$ 33,000	\$ -	\$ -	\$ -	\$ -	nil
26	PARR-2016-NL-11	Hybridization of farmed escaped and wild Atlantic salmon: so what? An empirical and model based exploration of the consequences for wild populations throughout the North Atlantic	Newfoundland and Labrador (NL)	\$ 1,381,970	\$ 346,000	\$ 180,000	\$ -	\$ -	nil
27	PARR-2016-NL-09	Assessment of biodiversity and functional changes in NL benthic communities associated with aquaculture activities	Newfoundland and Labrador (NL)	\$ 112,513	\$ -	\$ -	\$ -	\$ -	nil
28	PARR-2016-NL-02	Quantifying direct genetic impacts of escaped farmed salmon on wild salmon in Atlantic Canada	Newfoundland and Labrador (NL)	\$ 982,393	\$ -	\$ 150,000	\$ -	\$ -	MUN/NSERC Strategic Grant
29	PARR-2016-M -13	BOD Dispersion model validation standards	Maritimes (Mar)	\$ 110,750	\$ -	\$ -	\$ -	\$ -	nil
30	PARR-2016-M -12	Characterization of Pesticide Post-Deposit Exposure Zones	Maritimes (Mar)	\$ 227,330	\$ -	\$ -	\$ -	\$ -	nil
31	PARR-2016-M -10	The feasibility of using bacterial community profiling with next-generation DNA sequencing to assess temporal and spatial environmental disturbances.	Maritimes (Mar)	\$ 31,900	\$ -	\$ -	\$ -	\$ -	nil
32	PARR-2016-M -08	Robustness of alternative benthic impact indicators: Quantification of spatial and temporal variability of alternative methods, and application at aquaculture sites across different farm and environmental conditions	Maritimes (Mar)	\$ 418,176	\$ -	\$ -	\$ -	\$ -	nil
33	PARR-2016-M -07	Alternative detection methods for performance indicators of the toxic state of bottom sediments: indicator inter-calibration and thresholds	Maritimes (Mar)	\$ 23,575	\$ -	\$ -	\$ -	\$ -	nil
34	PARR-2016-CA-15	Testing the Dual frequency IDentification SONar (DIDSON) as a monitoring tool of the attraction effect of aquaculture cages on wild fish in a marine environment	Central and Arctic (C&A)	\$ 41,120	\$ -	\$ -	\$ -	\$ -	nil
35	PARR-2015-Q -01	Impact of mussel culture in Malpeque Bay on lobster movement and condition	Quebec (QC)	\$ 481,328	\$ -	\$ 219,999	\$ -	\$ -	Ressources Aquatiques Québec RAQ, Institut des Sciences de la Mer, Université du Québec à Rimouski
36	PARR-2015-P -03	Evaluation of genetic structuring of California Sea Cucumber (Parastichopus californicus) across Transfer Zones in BC	Pacific (PAC)	\$ 20,260	\$ -	\$ 12,800	\$ -	\$ -	University of Toronto, Université Laval

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37	PARR-2015-NL-07	Temporal assessment of organic loading from finfish aquaculture on hard ocean substrates in Newfoundland	Newfoundland and Labrador (NL)	\$ 235,765	\$ -	\$ -	\$ -	\$ -	nil
38	PARR-2015-G -11	Improving ecological models for a sustainable development of bivalve culture in eutrophic estuarine complexes	Gulf (Gulf)	\$ 419,375	\$ -	\$ 115,000	\$ -	\$ -	Institute des Sciences de la Mer, PEI Dept of Communities, Land and Environment
39	PARR-2015-G -10	Feeding pressure of <i>Styela clava</i> on plankton (phytoplankton and zooplankton) in Malpeque Bay, PEI.	Gulf (Gulf)	\$ 303,885	\$ -	\$ -	\$ -	\$ -	nil
40	PARR-2015-G -08	Bay Characterization for Nova Scotia Bivalve Aquaculture	Gulf (Gulf)	\$ 309,900	\$ -	\$ -	\$ -	\$ -	nil
41	PARR-2015-G -06	Mussel stock structure and density in longline culture	Gulf (Gulf)	\$ 95,900	\$ -	\$ -	\$ -	\$ -	nil
42	PARR-2015-G -04	Validation of indicators, thresholds and monitoring protocols for each Pathways of Effects endpoint for shellfish aquaculture for the new Fisheries Protection Provisions.	Gulf (Gulf)	\$ 19,571	\$ -	\$ -	\$ -	\$ -	nil
43	PARR-2015-G -02	Characterization of lobster habitat and fishery's spatial use in relation to shellfish aquaculture leases in Malpeque Bay, PEI	Gulf (Gulf)	\$ 42,336	\$ -	\$ -	\$ -	\$ -	nil
44	PARR-2015-CA-05	Analysing the impact of freshwater aquaculture on wild fish populations using DIDSON technology	Central and Arctic (C&A)	\$ 118,970	\$ -	\$ -	\$ -	\$ -	nil
45	FHTT-2015-P -02	Laboratory exposure studies to assess impacts of <i>Caligus clemensi</i> infections on juvenile sockeye salmon	Pacific (PAC)	\$ 81,972	\$ -	\$ -	\$ -	\$ -	nil
46	FHTT-2015-P -01	Susceptibility of Sockeye salmon to viral hemorrhagic septicemia virus	Pacific (PAC)	\$ 68,490	\$ -	\$ 5,500	\$ -	\$ -	Aquaculture industry fish, US Government Scientist, SPF Herring
47	PARR-2014-P -13	Does infection with Piscine Reovirus (PRV) effect how salmon respond to challenge with and vaccination against Infectious Hematopoietic Necrosis Virus (IHNV)?	Pacific (PAC)	\$ 232,114	\$ -	\$ -	\$ -	\$ -	nil
48	PARR-2014-P -12	The effect of sea lice in modulating salmonid susceptibility to viruses	Pacific (PAC)	\$ 414,800	\$ -	\$ -	\$ -	\$ -	nil
49	PARR-2014-NL-07	Evaluating the efficacy of the fallowing period as a mitigation tool at predominantly hard-bottom aquaculture sites in Newfoundland	Newfoundland and Labrador (NL)	\$ 243,270	\$ -	\$ -	\$ -	\$ -	nil
50	PARR-2014-NL-04	Spatial and temporal distribution and survival of farmed Atlantic salmon after experimental release from sea cage locations	Newfoundland and Labrador (NL)	\$ 417,956	\$ -	\$ -	\$ -	\$ -	nil
51	PARR-GITT-2014-NL-02	Detecting hybridization among wild and farmed escaped Atlantic salmon in southern Newfoundland: field collections	Newfoundland and Labrador (NL)	\$ 91,500	\$ -	\$ -	\$ -	\$ -	nil
52	PARR-GITT-2014-NL-01	Genetic and genomic impacts of escaped farmed salmon in Atlantic Canada: evaluating the use of archived Atlantic salmon scales as a source of pre-impact DNA.	Newfoundland and Labrador (NL)	\$ 96,285	\$ -	\$ -	\$ -	\$ -	nil
53	PARR-2014-M -06	Assimilation Capacity of Organic Matter from Salmon Aquaculture (ACOM): Improving Model Predictions of Benthic Impacts	Maritimes (Mar)	\$ 720,359	\$ -	\$ -	\$ -	\$ -	nil
54	PARR-2014-M -05	Development and validation of alternative detection methods for performance indicators of the oxic state of bottom sediments.	Maritimes (Mar)	\$ 283,476	\$ -	\$ -	\$ -	\$ -	nil

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55	PARR-2014-M -02	Defining the risk of sea lice infections through the development of an understanding of the early life history population dynamics of sea lice associated with Atlantic salmon aquaculture sites in the Bay of Fundy.	Maritimes (Mar)	\$ 264,736	\$ -	\$ -	\$ -	\$ -	nil
56	PARR-2014-M -01	Fish Pest and Pathogen Cultured to Wild Transfer Potential: Stocking Density Effect	Maritimes (Mar)	\$ 675,704	\$ 3,000	\$ 78,000	\$ -	\$ -	nil
57	PARR-2014-G -11	Infectious salmon anemia virus susceptibility and health status of wild vs cultured Atlantic salmon, a comparative study	Gulf (Gulf)	\$ 270,200	\$ -	\$ -	\$ -	\$ -	nil
58	PARR-2014-G -10	The effect of cultured filter feeders on eelgrass productivity, in estuaries of NB and PEI.	Gulf (Gulf)	\$ 520,549	\$ -	\$ 221,600	\$ -	\$ -	Applied Geomatics Research Group at Nova Scotia Community College (AGRG-NSCC)
59	PARR-2014-G -03	Effects of husbandry practices and mitigation treatments on the long-term control of tunicate infestation in PEI mussel farms	Gulf (Gulf)	\$ 115,934	\$ -	\$ -	\$ -	\$ -	nil
60	PARR-2014-CA-09	Meta-analysis of freshwater aquaculture provincial water quality monitoring data	Central and Arctic (C&A)	\$ 42,075	\$ -	\$ -	\$ -	\$ -	nil
61	PARR-2014-CA-08	Development of Sediment Biogeochemical Indicators for Regulation of Freshwater Cage Aquaculture	Central and Arctic (C&A)	\$ 1,596,020	\$ -	\$ -	\$ -	\$ -	nil
62	PARR-2013-M -02	Seasonal Variations in Comparative Filter-Feeding Dynamics	Maritimes (Mar)	\$ 95,000	\$ -	\$ -	\$ -	\$ -	nil
63	PARR-2013-G -01	Identification of vectors of MSX to support I&T decisions related to inter-provincial movements of mussels: Is mussel intra-valvular liquid a vector for MSX transmission?	Gulf (Gulf)	\$ 49,900	\$ -	\$ -	\$ -	\$ -	nil
64	PARR-2012-P -07	Assessing trace-element indicators of benthic organic enrichment associated with aquaculture activities	Pacific (PAC)	\$ 73,400	\$ -	\$ -	\$ -	\$ -	nil
65	PARR-2012-P -04	Determine the distribution and concentration patterns of SLICE and Calicide (where used) in sediments at high, medium and low energy aquaculture sites where multiple treatments have taken place (East and West coasts)	Pacific (PAC)	\$ 80,300	\$ -	\$ 135,000	\$ -	\$ -	collaborators: Marine Harvest Canada and Simon Fraser University
66	PARR-2012-P -02	Impacts of shellfish aquaculture on marine vegetation	Pacific (PAC)	\$ 50,035	\$ -	\$ -	\$ -	\$ -	nil
67	PARR-2012-NL-14	Identification of the food sources of opportunistic polychaete (OPC) worms found at finfish aquaculture sites on the south coast of Newfoundland	Newfoundland and Labrador (NL)	online but no data in the folder...					
68	PARR-2012-M -06	Exploration of methodologies for environmental effects monitoring of finfish aquaculture sites in sandy bottom environments with natural disturbances: Shelburne, N.S.	Maritimes (Mar)	\$ 20,000	\$ -	\$ -	\$ -	\$ -	nil
69	PARR-2012-M -03	Evaluation of the FVCOM modelling system to map the far field dispersal of aquaculture waste	Maritimes (Mar)	\$ 59,800	\$ -	\$ -	\$ -	\$ -	nil
70	PARR-2012-G -05	Comparing the impact of bottom and suspended oyster culture on bay-scale food resources	Gulf (Gulf)	\$ 132,000	\$ -	\$ 60,000	\$ -	\$ -	nil
71	PARR-2012-G -01	Influence of Eastern oyster aquaculture (Crassostrea virginica) overwintering on eelgrass (Zostera marina)	Gulf (Gulf)	\$ 48,700	\$ -	\$ -	\$ -	\$ -	nil
72	PARR-2011-Z -22	Assessing the value of bivalve meat yield as an indicator of ecosystem health	Gulf (Gulf)	\$ 107,000	\$ -	\$ 91,000	\$ -	\$ -	Dalhousie University
73	PARR-2011-Z -12	Quantifying benthic transport of aquaculture waste material for inclusion in predictive models.	Pacific (PAC)	\$ 220,690	\$ -	\$ -	\$ -	\$ -	nil

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74	PARR-2011-QC-15	Cumulative impacts, kinetics and tissue distribution of anti-lice pesticides in non-target organisms	Quebec (QC)	\$ 153,000	\$ 153,000	\$ -	\$ -	\$ -	nil
75	PARR-2011-P -21	Developing a carrying capacity framework in Baynes Sound, B.C.	Pacific (PAC)	\$ 210,300	\$ -	\$ -	\$ -	\$ -	nil
76	PARR-2011-P -13	The development of video monitoring methods and management thresholds to characterize the fish farm impacts on hard-bottom substrates.	Pacific (PAC)	\$ 88,900	\$ -	\$ -	\$ -	\$ -	nil
77	PARR-2011-P -11	Additional Support for Studies of Sea lice Infection Levels on and Health of Juvenile Salmon in the Strait of Georgia and Adjacent Waters	Pacific (PAC)	\$ 223,800	\$ 68,800	\$ -	\$ -		unsure, collaborators: Marine Harvest Canada, Pacific Salmon Foundation
78	PARR-2011-P -10	Are shellfish transfers a likely vector for aquatic invasive species movement from the west to the east coast of Vancouver Island?	Pacific (PAC)	\$ 135,445	\$ -	\$ -	\$ -		Mac's Oysters Ltd.
79	PARR-2011-P -09	Development of management zones for finfish aquaculture in British Columbia. Phase 1: data collection and evaluation, Phase 2: information integration to provide advice and recommendations in support of finfish aquaculture management.	Pacific (PAC)	\$ 22,000	\$ 5,000	\$ 30,000	\$ -	\$ -	nil
80	PARR-2011-P -08	Establishing zones for managing risks related to pathogens and/or pollutants originating on finfish aquaculture facilities in the Broughton Archipelago and Discovery Islands	Pacific (PAC)	\$ 158,000	\$ -	\$ -	\$ -	\$ -	nil
81	PARR-2011-NL-14	Evaluating Beggiatoa and OPC as indicators of benthic habitat condition on hard ocean substrates using visual data collected seasonally at new finfish aquaculture sites and near the end of production at established sites.	Newfoundland and Labrador (NL)	\$ 203,900	\$ -	\$ -	\$ -	\$ -	nil
82	PARR-2011-M -20	Simple model estimations of bay-scale ecological carrying capacity for suspended mussel culture.	Maritimes (Mar)	\$ 76,000	\$ 44,500	\$ -	\$ -	\$ -	nil
83	PARR-2011-M -16	Transport and Dispersal of Discharged Sea Lice Chemical Therapeutants in Southwest New Brunswick: Zooplankton sub-component	Maritimes (Mar)	\$ -	\$ -	\$ -	\$ -	\$ -	budget shared across M-03 and M-16
84	PARR-2011-M -03	Transport and Dispersal of Discharged Sea Lice Chemical Therapeutants in Southwest New Brunswick: Zooplankton sub-component	Maritimes (Mar)	\$ 219,000	\$ -	\$ -	\$ -	\$ -	nil
85	PARR-2011-M -02	Dose-responses for non-target crustaceans based on semi-natural laboratory and field-based mesocosm exposures to chemo-therapeutants.	Maritimes (Mar)	\$ 59,500	\$ -	\$ -	\$ -	\$ -	nil
86	PARR-2011-M -01	Biological Effects of anti-lice pesticides on non-target organisms	Maritimes (Mar)	\$ 166,000	\$ -	\$ -	\$ -	\$ -	nil
87	PARR-2011-G -19	Analysis of relationships between bivalve aquaculture and eelgrass coverage on a bay-wide scale	Gulf (Gulf)						
88	PARR-2011-G -05	Identifying critical ecological thresholds for tunicate infestation on mussel farms.	Gulf (Gulf)	\$ 352,500	\$ -	\$ -	\$ -	\$ -	nil
89	PARR-2011-G -04	To validate the robustness of the ecosystem carrying capacity models being developed for St Peter's Bay (PARR-2010-G-06)	Gulf (Gulf)	\$ 125,300	\$ -	\$ -	\$ -	\$ -	nil

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90	PARR-2011-CA-18	Development of predictive modelling tools to assist with freshwater aquaculture site licensing decisions – project extension	Central and Arctic (C&A)	\$ 8,341	\$ -	\$ -	\$ -	\$ -	nil
91	PARR-2011-CA-17	Development of predictive modelling tools to assist with freshwater aquaculture site licensing decisions - project extension	Central and Arctic (C&A)	\$ 29,768	\$ -	\$ -	\$ -	\$ -	nil
92	PARR-2011-CA-07	Effects of cage aquaculture on freshwater benthic communities	Central and Arctic (C&A)	\$ 269,360	\$ -	\$ -	\$ -	\$ -	
93	PARR-2011-CA-06	Refinement of DEPOMOD validations for freshwater finfish sites	Central and Arctic (C&A)	\$ 133,268	\$ 10,000	\$ 10,968	\$ -	\$ -	Ontario Ministry of Agriculture, Food and Rural Affairs
94	PARR-2010-QC-05	Critical thresholds and dose-dependent relationships for biodeposition from farmed mussels and benthic responses: A combined theoretical – empirical approach	Quebec (QC)	\$ 267,865	\$ -	\$ 308,939	\$ -	\$ -	14.6K NSERC, Cawthron Institute and IFREMER, Réseau Aquaculture Quebec
95	PARR-2010-P -10	The development of video monitoring methods and management thresholds to characterize the fish farm impacts on hard-bottom substrates.	Pacific (PAC)	\$ 197,900	\$ 257,449	\$ -	\$ -	\$ -	Canadian Hydrographic Service and National Resources Canada, Marine Harvest Canada and Grieg Seafood Ltd.
96	PARR-2010-P -03	Modeling Sea Lice Dispersion and Estimating Encounter Rates with Pacific Juvenile Salmon in the Broughton Archipelago and Discovery Islands	Pacific (PAC)	\$ 54,000	\$ 50,000	\$ 50,000	\$ -	\$ -	unsure, collaborators: Broughton Archipelago Management Plan (BAMP), Marine Harvest Canada, Grieg Seafoods, Mainstream Canada, COMDA
97	PARR-2010-P -02	Sea lice infection levels on juvenile salmon during early seawater residency and migration out of the Strait of Georgia.	Pacific (PAC)	\$ 129,000	\$ -	\$ -	\$ -	\$ -	unsure, collaborators: Marine Harvest Canada, Pacific Salmon Foundation
98	PARR-2010-P -01	The effects of single and repeat Lepeophtheirus salmonis infections on the health of juvenile Pacific salmon.	Pacific (PAC)	\$ 49,200	\$ -	\$ -	\$ -	\$ -	nil
99	PARR-2010-NL-09	Oceanographic study of the south Coast of Newfoundland	Newfoundland and Labrador (NL)	\$ 668,910	\$ -	\$ -	\$ -	\$ -	nil
100	PARR-2010-M -11	Evaluate DEPOMOD or other depositional models in SWNB to predict the zones and intensities of impacts around farms sites.	Maritimes (Mar)	\$ 30,000	\$ -	\$ 6,000	\$ -	\$ -	nil
101	PARR-2010-M -08	Dye Dispersion Study to Characterize how sea lice bath treatment therapeutants will disperse from salmon farm cage sites in southwest New Brunswick	Maritimes (Mar)	\$ 120,000	\$ -	\$ 1,101,000	\$ -	\$ -	10K Environment Canada, NB Department of Agriculture and Aquaculture
102	PARR-2010-M -07	Potential effects of bath treatments on sensitive non-target organisms in southwest New Brunswick	Maritimes (Mar)	\$ 130,000	\$ -	\$ -	\$ -	\$ -	nil
103	PARR-2010-G -06	Management of husbandry practices to maintain water column environmental carrying capacity for bivalve culture	Gulf (Gulf)	\$ 31,000	\$ -	\$ -	\$ -	\$ -	nil
104	PARR-2010-CA-04	Zone of Impact Modeling for Lake Huron Cage Farms	Central and Arctic (C&A)	\$ 72,146	\$ -	\$ -	\$ -	\$ -	nil
105	PARR-2009-P -08	EST sequencing and the development of genomic tools for the assessment of impacts of aquaculture activities on native little neck clams (Protothaca staminea).	Pacific (PAC)	\$ 11,650	\$ -	\$ -	\$ -	\$ -	nil
106	PARR-2009-P -07 PARR-2008-P -12	Evaluation of the Environmental Fate and Biological Effects of the Anti-Seallice Chemotherapeutant SLICE®.	Pacific (PAC)	\$ 25,000	\$ 10,000	\$ 110,000	\$ -	\$ -	University of Victoria, non-fin. Pacific Salmon Foundation, Environment Canada, non-fin. Ministry of Ontario Environment, Pacific Prawn Fishers Association

s.13(1)(c)
s.20(1)(b)
s.20(1)(c)

Number	Project Code	Title	Region	DFO PARR Financial	DFO Other Financial	DFO Other Financial	Non- Partner Financial	Partner Non-Financial	Partner Names	
107	PARR-2009-P -06	Spatial distribution of planktonic sea lice in the Broughton Archipelago, and cross-validation inputs to numeric model	Pacific (PAC)	\$ 65,000	\$ -	\$ -	\$ -	\$ -	nil	
108	PARR-2009-P -05	Modeling 2009 sea lice dispersion from salmon farms in the Broughton Archipelago	Pacific (PAC)	\$ 20,000	\$ -	\$ -	\$ -		Pacific Salmon Forum, Marine Harvest Canada and Grieg Seafoods	
109	PARR-2009-P -04	Characterizing benthic transport of aquaculture tracer material in support of siting authorization models	Pacific (PAC)	\$ 63,300	\$ -	\$ -	\$ -	\$ -	nil	
110	PARR-2009-NL-01	Oceanographic study of the South Coast of NL	Newfoundland and Labrador (NL)	\$ 200,000	\$ -	\$ 20,000	\$ -	\$ -	nil	
111	PARR-2009-G -02	Characterizing the zone of influence downstream of longline mussel leases	Gulf (Gulf)	\$ 57,000	\$ -	\$ -	\$ -	\$ -	nil	
112	PARR-2009-CA-03	Zone of Impact Modeling for Lake Huron Cage Farms	Central and Arctic (C&A)	\$ 30,000	\$ -	\$ -	\$ -	\$ -	nil	
113	PARR-2008-QC-10	Carrying capacity modeling for bivalve aquaculture: biodeposition	Quebec (QC)	online but no data in the folder...						
114	PARR-2008-QC-09 PARR-2008-QC-11	Evaluation of ecosystem-level effects of intertidal bivalve culture: Gaspé	Quebec (QC)	\$ 87,100	\$ -	\$ 5,000	\$ -		Institut des Sciences de la Mer (ISMER)	
115	PARR-2008-QC-08	Estimate of mussel drop-off from self-regulated collectors.	Quebec (QC)	\$ 15,943	\$ -	\$ -	\$ -	\$ -	nil	
116	PARR-2008-P -13	Evaluation of light traps as a monitoring and control tool for planktonic-stage sea lice	Pacific (PAC)	\$ 17,500	\$ -	\$ -	\$ -		Simon Fraser University	
117	PARR-2008-P-15	Evaluation of light traps as a monitoring and control tool for planktonic-stage sea lice	Pacific (PAC)	online but no data in the folder...						
118	PARR-2008-P-16 PARR-2008-P -14	The development of genomic tools for the assessment of impacts of aquaculture activities on the environment using mussels (<i>Mytilus edulis</i>) and native little neck clams (<i>Protothaca staminea</i>) as bio-indicator species.	Pacific (PAC)	\$ 22,600	\$ 2,000	\$ -	\$ -		Vancouver Island University	
119	PARR-2008-NL-01	Oceanographic study of the South Coast of NL	Newfoundland and Labrador (NL)	\$ 200,000	\$ -	\$ -	\$ -	\$ -	nil	
120	PARR-2008-M -07	Measuring far-field exposure of aquaculture feed on wild commercial species using biochemical tracers.	Maritimes (Mar)	\$ 22,600	\$ -	\$ -	\$ -	\$ -	nil	
121	PARR-2008-M -06	Identification and modelling of habitat suitability and sensitivity of coastal marine habitats for invertebrate fisheries resources in relation to the regulatory needs of aquaculture site assessment and management.	Maritimes (Mar)	\$ 19,000	\$ -	\$ -	\$ -	\$ -	nil	
122	PARR-2008-M -05	New methods for assessing the resuspension and transport of aquaculture wastes	Maritimes (Mar)	\$ 14,000	\$ -	\$ -	\$ -	\$ -	nil	
123	PARR-2008-M -04	Mussel Aquaculture Regulatory Effectiveness Monitoring: Validation of the Environmental Assessment and Monitoring Program in St. Ann's Harbour.	Maritimes (Mar)	\$ 15,000	\$ -	\$ -	\$ -	\$ -	nil	
124	PARR-2008-G -03	Shellfish Monitoring Network	Gulf (Gulf)	\$ 9,200	\$ -	\$ -	\$ -	\$ -	nil	
125	PARR-2008-G -02	Development of off-shore aquaculture in the southern Gulf of St. Lawrence: Bottom mapping.	Gulf (Gulf)	\$ 73,000	\$ -	\$ -	\$ -		Olex, Norway; CMC Electronics	
126	PARR-2008-CA-10 PARR-2008-CA-12	Data Collection in Support of Zone of Impact Modeling for Lake Huron Cage Farms	Central and Arctic (C&A)	\$ 94,915	\$ -	\$ -	\$ -	\$ -	nil	