

ARNAULT LE BRIS - Curriculum Vitae

CONTACT INFORMATION

Centre for Fisheries Ecosystems Research
Fisheries and Marine Institute
Memorial University of Newfoundland
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St. Johns, NL, A1C 5R3, CANADA

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CURRENT POSITIONS

Research Scientist **September 2016 - Present**

Centre for Fisheries Ecosystems Research
Fisheries and Marine Institute of Memorial University of Newfoundland

Adjunct Professor **September 2017 - Present**

Biology Department - Memorial University of Newfoundland

RESEARCH INTERESTS

Fisheries ecology, Climate change and marine ecosystems, Population dynamics, Fish tracking, Telemetry, Habitat restoration, Life-history theory

EDUCATION

Ph.D. Biology. Memorial University of Newfoundland, St. John's, NL 2009 - 2014

- Dissertation title: Mechanisms and consequences of variation in the migratory behaviour of Atlantic cod (*Gadus morhua* L.) in the northern Gulf of St. Lawrence
- Co-advisors: Joe Wroblewski and Alain Fréchet

M.Sc., Oceanography. Université de la Méditerranée, Aix-Marseille 2 2006 - 2008

One year exchange program CREPUQ - Université du Québec à Rimouski (2007 - 2008).

- Dissertation title: Estimation of fish stock exploitation rates based on tagging data
- Co-advisors: Jean-Claude Brêthes and Alain Fréchet

B.Sc., Biology, Université de Rennes 1, France 2003 - 2006

PROFESSIONAL EXPERIENCE

Postdoctoral Research Associate 2014 - 2016

Gulf of Maine Research Institute and University of Maine. Integrated modeling of the impacts of climate change and fishing on New-England lobster fisheries. Supervisor: Dr. Andrew Pershing.

Consultant - Fish Stock Assessment 2008 - 2017

Department of Fisheries and Oceans Canada. Involved in the assessment of several fish stocks (Atlantic cod, redfish, Atlantic halibut) from the Gulf of St. Lawrence. Role: estimation of the stock exploitation rate from mark-recapture data.

Research Assistant May-June 2013

Memorial University of Newfoundland. Statistical analyses of fish diversity, abundance, and presence-absence data in relation to habitat characteristics. Supervisor: Dr. Joseph Wroblewski.

Research Internship Jan-June 2008

Institut des sciences de la mer de Rimouski - Department of Fisheries and Oceans Canada. Development of a model to estimate the exploitation rate of the northern Gulf of St. Lawrence Atlantic cod stock from tagging data. Supervisors: Dr. Jean-Claude Brêthes, Alain Fréchet.

GRANTS /
SCHOLARSHIPS

2019-2024 NSERC Discovery Grant. PI. Modelling groundfish spatial dynamics in the Northwest Atlantic. \$165,000 + \$12,500 Discovery Launch Supplement.

2019-2021 MEOPAR Early Career Faculty Grant. PI. Monitoring juvenile American lobster (*Homarus americanus*) to forecast productivity in the growing Newfoundland lobster fishery. \$99,999.

2019 NSERC Engage Grant. PI. Development of a new Acoustic Data Storage Tags to track aquatic species. \$22,700.

2017-2021 Ocean Protection Plan - Coastal Restoration Fund. PI (Funding attributed to the Centre for Fisheries Ecosystems Research). *Restoring Placentia Bay Coastal Ecosystem*. \$4,779,255.

2017-2020 NSERC Strategic Partnership Grants. Role: co-PI (PI: Dr. Dominique Robert. co-PIs: Drs. Jonathan Fisher, Dany Dumont, Pascal Sirois). *Quantifying spatial dynamics and stock structure of Atlantic halibut within the Gulf of St. Lawrence to improve sustainable exploitation and management*. Total funding: \$566,472. Portion attributed to me: \$153,172.

2017-2021 Ocean Frontier Institute - Canada First Research Excellence Fund. co-investigator (PIs: Drs. Noel Cadigan, Jonathan Fisher. Paul Winger). *Sustainable capture fisheries and their ecosystems*. Total funding: \$3,509,628. Portion attributed to me: \$353,125.

2015-2017 Subaward on a Saltonstall-Kennedy Grant - NOAA Fisheries. Collaborator (PIs: Drs. Geoffrey Cowles and Steven Cadrin. SMAST - University of Massachusetts Dartmouth). \$131,491. Portion attributed to me: \$9,493.

2009-13 Graduate Fellowship. Memorial University of Newfoundland. \$30,000

2009-12 DFO Academic Research Contribution Program. \$30,000

2008 Mobility scholarship. French Ministry of Research and Education. 4500€

PUBLICATIONS

Peer-reviewed

2019. Liu C., Cowles G.W., Zemeckis D.R., Fay G., **Le Bris A.** and Cadrin S.X. A hardware-accelerated particle filter for the geolocation of demersal fishes. *Fisheries Research*, 213: 160-171.

2018. **Le Bris A.**, Mills K., Wahle R.A., Chen Y., Alexander M., Allyn A., Schuetz J., Scott J.D., and Pershing A.J. Climate vulnerability and resilience in the most valuable US fishery. *PNAS*, 115 (8) 1831-1836.

2018. Schuetz J., Mills K.E., Allyn A.J., Stamieszkin K., Le Bris A. and Pershing A.J. Complex patterns of temperature sensitivity, not ecological traits, dictate diverse species responses to climate change. *Ecography*, doi.org/10.1111/ecog.03823.

2018. *Le Bris A* and Wroblewski J.S. Species composition and habitat preferences of the nearshore fish fauna of Bonne Bay, Newfoundland. *Marine Biodiversity Records*, 11:12.

2017. Fisher J.A.D, Robert D., **Le Bris A.**, and Loher T. Pop-up satellite archival tag (PSAT) temporal data resolution affects interpretations of spawning behaviour of a commercially important teleost. *Animal Biotelemetry*, doi.org/10.1186/s40317-017-0137-8

2017. **Le Bris A.**, Fisher J.A.D., Murphy H.M., Galbraith P.S., Castonguay M., Loher T., and Robert D. Migration patterns and potential spawning habitats of Atlantic halibut (*Hippoglossus hippoglossus*) in the Gulf of St. Lawrence revealed by geolocation of pop-up satellite archival tags. *ICES Journal of Marine Science*, doi.org/10.1093/icesjms/fsx098

2017. Murphy H.M., Fisher J.A.D., **Le Bris A.**, Desgagnés M., Castonguay M., Loher T., and

Robert D. Pop-up satellite archival tags provide the first characterizations of depth distributions, temperature associations, and seasonal migrations of Atlantic halibut in the Gulf of St. Lawrence. *Marine and Coastal Fisheries*, doi.org/10.1080/19425120.2017.1327905

2016. **Le Bris A.**, Pershing A.J, Gaudette J., Pugh T.L., and Reardon K.M. Multi-scale quantification of the effects of temperature on size at maturity in the American lobster (*Homarus americanus*). *Fisheries Research*, 186: 397-406.

2016. Pershing A.J., Alexander M.A., Hernandez C.M., Kerr L.A., **Le Bris A.**, Mills K.E., Nye J.A., Record N.R., Scannell H.A., Scott, J.D., Sherwood G.D., and Thomas A.C. Response to Comments on "Slow adaptation in the face of rapid warming leads to the collapse of an iconic fishery". *Science*, 352 (6284): 423.

2015. Pershing A.J., Alexander M.A., Hernandez C.M., Kerr L.A., **Le Bris A.**, Mills K.E., Nye J.A., Record N.R., Scannell H.A., Scott, J.D., Sherwood G.D., and Thomas A.C. Slow adaptation in the face of rapid warming leads to the collapse of an iconic fishery. *Science*, 350 (6262): 809-812.

2015. **Le Bris A.**, Pershing A.J., Hernandez C.M., Mills K.E., and Sherwood G.D. Modelling the effects of variation in reproductive traits on fish population resilience. *ICES Journal of Marine Science*, 72: 2590-2599.

2013. **Le Bris A.**, Fréchet A., and Wroblewski J.S. Supplementing electronic tagging with conventional tagging to redesign fishery closed areas. *Fisheries research*, 148: 106-116.

2013. **Le Bris A.**, Fréchet A., Galbraith P.S., and Wroblewski J.S. Evidence for alternative migratory behaviours in the northern Gulf of St Lawrence population of Atlantic cod (*Gadus morhua* L.). *ICES Journal of Marine Science*, 70: 793-804.

Research documents

Brassard C., Gauthier J., Schwab P., **Le Bris A.**, Way M., and Collier, F. The status of cod in the Northern Gulf of St. Lawrence (3Pn, 4RS) in 2014. DFO Can. Sci. Advis. Sec. Res. Doc. 2016-010

Le Bris A., Fréchet A., and Brêthes J.-C. 2009. Estimation of the exploitation rate of the northern Gulf of St. Lawrence Atlantic cod (*Gadus morhua*) stock, based on tagging data. DFO Can. Sci. Advis. Sec. Res. Doc. 2009-012

Fréchet A., Gauthier J., Schwab P., Lambert Y., **Le Bris A.**, Tournois C., Way M., and Collier, F. The status of cod in the Northern Gulf of St. Lawrence (3Pn, 4RS) in 2008. DFO Can. Sci. Advis. Sec. Res. Doc. 2009-090

STUDENTS /
POSTDOC
SUPERVISION

Dr. Paul Gatti. Postdoctoral Research Associate **2018-2020**
Fisheries and Marine Institute - Memorial University of Newfoundland. *Modelling movement of Atlantic halibut in the Northwest Atlantic.*

Tanya Prystay. Ph.D. student. Fisheries Science **2018-**
Fisheries and Marine Institute - Memorial University of Newfoundland. *Variability in ecosystem functions among eelgrass meadows.*

Caley Ryan. M.Sc. student. Fisheries Science (Fisheries Science and Technology) **2018-**
Fisheries and Marine Institute - Memorial University of Newfoundland. *Efficacy of the green crab removal fishery in Placentia Bay, NL.*

Rachel Marshall. M.Sc. student. Fisheries Science (Fisheries Science and Technology) **2018-**

	Fisheries and Marine Institute - Memorial University of Newfoundland. <i>Spawning and feeding behaviour of Atlantic halibut.</i>	
	Andrés Beita. M.Sc. student. Fisheries Science (Stock assessment)	2017-
	Fisheries and Marine Institute - Memorial University of Newfoundland. <i>Spatio-temporal variability in northern shrimp life history traits.</i>	
COSUPERVISION, COMMITTEE, EXAMINER	Co-supervisor. Benjamin Gosselin. Ph.D. student. Supervisor: Dominique Robert.	2018-
	ISMER - Université du Quebec à Rimouski	
	Thesis committee member. Chang Liu. Ph.D. student.	2015-2019
	School for Marine Science and Technology - University of Massachusetts Dartmouth	
	Comprehensive examination committee member. Devin Flawd. Ph.D. student.	2017
	Biology department - Memorial University of Newfoundland	
	Thesis examination committee. Tomas Araya-Schmidt. M.Sc. student.	2017
	Environmental Science Program - Memorial University of Newfoundland	
TEACHING EXPERIENCE	<i>Teaching</i>	2017-present
	Instructor of a population dynamic module in graduate courses FISH6001: Ecology, Management, and Practice of North Atlantic Fisheries.	
	<i>Workshop facilitator</i>	2012
	Estimating fish stock exploitation rate from conventional tagging data. Maurice Lamontagne Institute, QC. Attended by biologists from the Department of Fisheries and Oceans Canada.	
	<i>Teaching assistant:</i> Biology 4750. Fisheries Ecology.	2010-2012
	Memorial University of Newfoundland. Instructor: Dr. Joseph Wroblewski. Duties: laboratories coordination and marking, plus 4 hours of lectures.	
	<i>Teaching assistant:</i> Biology 3714. Estuarine Fish Ecology.	2010-2012
Summer field course at the Bonne Bay Marine Station. Instructors: Drs. Craig Purchase, David Methven and Joseph Wroblewski. Duties: logistic coordination and data recordkeeping.		
	<i>Teaching Certificates</i>	
	Graduate Program in Teaching Certificate (School of Graduate Studies, MUN)	2010
	International Teaching Assistant Training Program Certificate (MUN)	2010
PROFESSIONAL SERVICES	<i>Expert activities</i>	
	Testimony for House of Commons of Canada. Committee on Fisheries and Oceans. Study on lobster and snow crab migration and carapace size.	
	Eternal Reviewer. Fisheries and Oceans Canada. Stock Framework for American lobster in LFAs 27-33.	
	<i>Committee Service</i>	
	Member of the Academic Advisory Committee, Fisheries Science Graduate Program	2017-
	School of Fisheries, Marine Institute of Memorial University of Newfoundland	
	<i>Guest Editor</i>	
	Bulletin of Marine Science	
	<i>Reviewer - Peer-reviewed journal</i>	

Canadian Journal of Fisheries and Aquatic Sciences (3), Conservation Physiology (1), Fisheries Oceanography (4), Global Change Biology (1), ICES Journal of Marine Science (4), Journal of Animal Ecology (1), Marine Biodiversity Records (1), Marine Ecology Progress Series (2), PlosOne (1)

Reviewer - Grant proposal and others

NOAA Saltonstall-Kennedy Grant Program (x2)

Ocean Frontier Institute - Seed Fund (x2)

Gulf of Maine Research Institute - Sustainable seafood program (x2)

AWARDS

2014 Fellow of the School of Graduate Studies. Memorial University of Newfoundland

2012 Best PhD talk awarded at the 5th Biology Graduate Student Symposium. Memorial University of Newfoundland

ACTIVE

Jonathan Fisher: CFER - Memorial University of Newfoundland

COLLABORATORS

Dominique Robert: ISMER - Université du Québec à Rimouski

Andrew Pershing, Kathy Mills: Gulf of Maine Research Institute

Yong Chen, Rick Wahle: University of Maine

Mike Alexander: NOAA - Earth System Research Laboratory

Tim Loher: International Pacific Halibut Commission

Steve Cadrin, Geoffrey Cowles, Chang Liu, Douglas Zemeckis: SMAST - UMass Dartmouth

Eric Pedersen, Peter Galbraith, Frederic Cyr, Elizabeth Coughlan: Fisheries and Oceans Canada

Guy Claireaux: Université du Bretagne Occidentale

PRESENTATIONS

Summer School

IMBER ClimEco5: Towards more resilient oceans: Predicting and projecting future changes in the ocean and their impacts on human societies. Natal, Brazil. August 10-17, 2016. *Travel support provided by Ocean Carbon Biogeochemistry.*

- Modeling of climate, population and fleet dynamics to predict fisheries productivity.

Workshops

IMBER IMBIZO IV. Workshop 3: Integrated modeling to support assessment and management of marine social-ecological systems in the face of global change. Trieste, Italy. October 27-30, 2015. *Travel support provided by Ocean Carbon Biogeochemistry.*

- **A. Le Bris**, A.J. Pershing, K.E. Mills, A.M. Dayton, J. Sun, and D.S. Holland. Using integrated modeling to predict the effects of climate change and variability on the American lobster fisheries.

Trait-based approaches to ocean life. Waterville Valley, NH, USA. October 5-8, 2015. *Expenses covered by an award from workshop steering committee.*

- **A. Le Bris** and A.J. Pershing. 2015. Temperature induced variation in life-history trade-offs.
- A.J. Pershing, L.K. Kerr, **A. Le Bris**, and K.E. Mills. 2015. Trait-based strategies for estimating population abundance.
- K.E. Mills, A.J. Pershing, and **A. Le Bris**. 2015. Using size structure and metabolic theory to forecast fish community characteristics in a changing climate.

International conferences (* indicates presentations by members of my lab)

*Beita-Jimnez A., **Le Bris A.**, Pedersen E. 2019. Spatiotemporal patterns of northern shrimp (*Pandalus borealis*) life-history traits and its relation to density and environmental variability. 48th Benthic Ecology Meeting. St. John's, NL.

*Gatti A., Fisher JAD., Marshall R., Robert D., **Le Bris A.** 2019. Satellite tracking of bottom dwelling fish to inform their conservation and management: The case study of Atlantic halibut in the Gulf of Saint Lawrence. 48th Benthic Ecology Meeting. St. John's, NL.

*Prystay T., **Le Bris A.** 2019. Exploring the relationship between eelgrass structural complexity and the variability in oceanographic parameters in Placentia Bay, Newfoundland. Poster. 48th Benthic Ecology Meeting. St. John's, NL.

*Marshall R., **Le Bris A.**, Fisher JAD., Gatti P., Robert D. 2019. Spawning Behavior of Atlantic halibut (*Hippoglossus hippoglossus*) in the Gulf of St. Lawrence inferred from Pop-up Satellite Archival Tags. Poster (Awarded best poster). 48th Benthic Ecology Meeting. St. John's, NL.

*Ryan C., **Le Bris A.**, Best K., McKenzie CH. 2019 Evaluating the impact of a removal program for the invasive European green crab (*Carcinus maenas*) in Placentia Bay, Newfoundland. Poster. 48th Benthic Ecology Meeting. St. John's, NL.

*Marshall R., **Le Bris A.**, Fisher JAD., Gatti P., Robert D. 2018. Distribution and Seasonal Behavior of Atlantic halibut (*Hippoglossus hippoglossus*) in the Gulf of St. Lawrence based on data from Pop-up Satellite Archival Tags. Poster. 16th Flatfish Biology Conference. Westbrook, CT.

*Gatti P., **Le Bris A.**, Fisher JAD, Robert D. 2018. Tracking Atlantic Halibut in the Gulf of St. Lawrence with Pop-up Satellite Archival Tags to Identify Spawning Areas and Help Design a New Longline Survey. 148th American Fisheries Society Annual Meeting. Atlantic City, NL.

Le Bris A. Climate vulnerability and resilience in the most valuable North American fishery. 2018. 4th International Symposium on The Effects of Climate Change on the World's Oceans. Washington, DC.

Le Bris A. 2018. Using pop-up satellite tags to study the migratory behaviour of large demersal fish: the case study of Atlantic halibut in the Gulf of St. Lawrence. Ocean Science Meeting. Portland, OR.

Le Bris A., Fisher J., Robert D., Galbraith P., Loher T., Murphy H. Tracking flatfish using electronic tags: the case study of the Gulf of St. Lawrence Atlantic halibut. 2017. 10th International Flatfish Symposium. Saint Malo, France.

Le Bris A. Climate vulnerability and resilience in the most valuable North American fishery. 2017. 11th International Conference and Workshop on Lobster Biology and Management. Portland, ME. *Session chair on climate change and lobster fisheries.*

Le Bris A., Pershing A.J. 2016. Predicting the effects of climate-change on the American lobster fishery. Benthic Ecology Meeting. Portland, ME.

Pershing A.J., Kerr L.A., **Le Bris A.**, Mills K.E., Nye J.A., Record N.R., Sherwood G.D., Thomas A.C. 2016. Ecological and Fishery Implications of the Rapid Warming in the Gulf of Maine. Benthic Ecology Meeting. Portland, ME.

Le Bris A., Pershing A.J., Holland D.S., Mills K.E., Sun C.-H. 2016. Integrating climate science, marine ecology, and fisheries economics to predict the effects of climate change on New England lobster fisheries. Ocean Sciences Meeting. New-Orleans, LA.

Pershing A.J., Alexander M.A., Hernandez C.M., Kerr L.A., **Le Bris A.**, Mills K.E., Nye

J.A., Record N.R., Scannell H.A., Scott, J.D., Sherwood G.D., and Thomas A.C. 2015. Slow adaptation in the face of rapid warming leads to the collapse of Atlantic cod in the Gulf of Maine. Ocean Sciences Meeting, New-Orleans, LA.

A. Le Bris, A.J. Pershing, K.E. Mills, A.M. Dayton, J. Sun, and D.S. Holland. 2015. Using integrated modeling to predict the effects of climate change and variability on the American lobster fisheries. *Oral presentation*. The American lobster in a changing ecosystem II: a US-Canada science symposium. Charlottetown, PEI.

Sun J., Chiang, F., and **A. Le Bris**. 2015. Changing Climate, Changing Economics: Global Market Integration of US-Canada American Lobster in the Emerging Chinese Market. Oral presentation. The American lobster in a changing ecosystem II: a US-Canada science symposium. Charlottetown, PEI.

A. Le Bris and A.J. Pershing. 2015. Large scale temperature effects on length-at-maturity in American lobster. Poster. The American lobster in a changing ecosystem II: a US-Canada science symposium. Charlottetown, PEI.

J.A.D. Fisher, D. Robert, **A. Le Bris**, and T. Loher. 2015. Effects of pop-up satellite archival tags (PSAT) temporal data resolution on interpretations of behavior, habitat use and movement. American Fishery Society 145th Annual Meeting, Portland, OR.

K.E. Mills, A.J. Pershing, and **A. Le Bris**. 2015. Climate change impacts on marine biodiversity and resilience. Oral presentation. Third international symposium: Effects of climate change on the world's oceans. Santos, Brazil.

V. Harvey, **A. Le Bris**, M.O. Hammill, and C. Brassard. 2013. Are cod and grey seals swimming together? New insights from telemetry data. Poster. ICES/NAFO symposium on Gadoid fisheries. St Andrews, NB.

A. Le Bris, A. Fréchet, P.S. Galbraith, and J.S. Wroblewski. 2012. Partial migration in the northern Gulf of St. Lawrence Atlantic cod population. Paper presentation. ICES Annual Science Conference. Bergen, Norway. *750€: Young scientist travel fund provided by conference steering committee*.

A. Le Bris. 2012. Bays and fjords as critical habitats for Atlantic cod in the northern Gulf of St. Lawrence. Oral presentation. CURRA International Symposium. Norris Point, NL.

Regional and local presentations

*Beita-Jimenez A., **Le Bris A.**, Pedersen E. 2019. Spatiotemporal patterns of northern shrimp (*Pandalus borealis*) life-history traits and its relation to density and environmental variability. Fisheries and Oceans Canada Northern Shrimp stock assessment (SFA 4-6). St. John's, NL (Invited).

Le Bris A.. 2018. Climate vulnerability and resilience into the most valuable North American fisheries. Coastal Matters Speaker Series. Corner Brook, NL (Invited).

Le Bris A.. 2018. Restoring Placentia Bay Coastal Ecosystem. Coastal Zone Canada Conference. St. John's, NL.

Le Bris A.. 2017. Climate vulnerability and resilience into the most valuable North American fisheries. MUN Biology Seminar Series. St. John's, NL.

Le Bris A.. 2017. La pêche et la recherche sur le flétan atlantique au Canada: une collaboration entre l'industrie, le gouvernement et le monde académique. Dyneco Seminar. 2017. IFREMER, Brest, France. (Invited).

Le Bris A.. 2017. Climate vulnerability and resilience into the most valuable North American fisheries. MUN Biology Seminar Series. St. John's, NL.

D. Robert, **A. Le Bris**, J. Fisher, H. Murphy, T. James, M. van den Heuvel, L. Ramsay, P. Galbraith, M. Desgagnés, M. Castonguay, and T. Loher. 2017. Distribution, migrations and ecology of 4RST Atlantic halibut inferred from satellite tagging 2013-2016. Fisheries and Oceans Canada 4RST Atlantic halibut stock assessment (Invited, presented by **A. Le Bris**).

J.A.D. Fisher, D. Robert, **A. Le Bris**, and T. Loher. 2015. Effects of pop-up satellite archival tags (PSAT) temporal data resolution on interpretations of behavior, habitat use and movement. Canadian Conference for Fisheries Research, St. John's, NL.

A. Le Bris, Pershing A.J., Hernandez C.M., and Mills K.E. 2014. Does size structure affects marine fish population stability and resiliency? Poster. RARGOM annual meeting. Boston, MA.

A. Le Bris. Mechanisms and consequence of variation in the migratory behavior of Atlantic cod from northern Gulf of St. Lawrence. 2014. GMRI Seminar. Portland, ME.

A. Le Bris. 2012. Migration behaviour of Atlantic cod in the northern Gulf of St. Lawrence: results from an electronic tagging program. MUN Marine Institute Seminar Series. St. John's, NL.

A. Le Bris. 2012. Migration behaviour and habitat use by cod in the northern Gulf of St. Lawrence. Biology Graduate Student Symposium. St. John's, NL.

A. Le Bris, J.S. Wroblewski, and A. Fréchet. 2009. 3 Poster. Community University for Recovery Alliance (CURRA) workshop. Norris Point, NL.

A. Le Bris. 2009. Presentation of the Data Storage Tag Program. DFO-FFAW Post Fishing Season Meetings. Port aux Basque, Stephenville, Corner Brook, and Port au Choix, NL.

A. Le Bris. 2009. Estimation of the Exploitation Rate Based on Tagging Data; NAFO Area 3Pn, 4RS. Zonal Advisory Process for Cod. St. Johns, NL.

LAST UPDATE: April 17, 2019