

CURRICULUM VITAE

DANIEL E. RUZZANTE, PROFESSOR

CANADA RESEARCH CHAIR (TIER II) IN MARINE CONSERVATION GENETICS (2002-2012)
FEBRUARY 2013

Professional Address: Department of Biology, Dalhousie University, Halifax, Nova Scotia, B3H4J1
 (902)494-1688 (daniel.ruzzante@dal.ca)

Academic background

Ph.D. Biology Department of Biology, Dalhousie University (Sep 1986 -1991)

M.Sc. Biology Department of Biology, Dalhousie University (1984 - 1986)

Lic. en Ciencias Biologicas, Univ. Nacional Buenos Aires, Buenos Aires, Argentina (1973 - 1979)

Professional Academic Positions

Professor, Dalhousie University, Department of Biology (2010 -)

Canada Research Chair (Tier II) in Marine Conservation Genetics (2002 – 2012)

Associate Professor (2002 – 2010)

Senior Scientist, Danish Institute for Fisheries Research, Denmark (1998 – 2002)

Adjunct Professor, Dalhousie University, Department of Biology (1997 – 2002)

Honorary Research Scientist, Universidad Nacional del Comahue, Argentina (1995 -)

Research Associate in Genetics, Marine Gene Probe Laboratory, Dalhousie University
 Departments of Biology and Oceanography (1994 – 1998).

Editorial Activities

2010-Present: Associate Editor for *Proceedings of the Royal Society of London B*

2012 – Present: Editorial Board *Molecular Ecology*

2011: Guest Editor for a Special Issue of *Biol J Linnean Society* on Patagonian palaeoclimatology and palaeogeography: Implications for biodiversity.

2007 – 2009: Member of the Scientific Advisory Committee of ESRF (Endangered Species Recovery Fund, Co-sponsored by WWF-CANADA & Govt. of Canada (Env. Canada)

2006: Guest Editor for FSBI *Journal of Fish Biology* 2006 Symposium volume.

2004 – 2011 : Associate Editor, *Conservation Genetics*

2000 – 2005 : Assistant Editor, *Journal of Fish Biology* (Genetics and Evolution)

Teaching

Lecturer at Dalhousie

2002 – PRESENT: BIOL 2060 INTRODUCTORY ECOLOGY

2003 - PRESENT: BIOL 3042-5042 MOLEC. ECOLOGY/MAR. CONSERVATION GENETICS

2007: BIO 2040 EVOLUTION

Graduate Modules:

The Theory of Island Biogeography Theory Revisited – A Discussion of the book edited by JB Losos & RE Ricklefs (Princeton Univ Press 2010)

Analysis of molecular data in Ecology & Evolution (Feb 2006, Mar 2007)

Adaptive radiation (October 2003)

Invited lecturer (Recent):

2007 – Present: Invited lecturer and member of the scientific committee of REGENEC (Red Latino Americana de Genética de la Conservación). This organization, led by a group from the Simón Bolívar University in Venezuela, organizes a two-week long course annually on Conservation Genetics. This team-taught course is aimed at graduate students from across Latin America. I have participated as a lecturer in this course since 2007.

Training of Highly Qualified Personnel (HQP)

Postdoctoral Fellows (5)

Current:

Dr Denis Roy, PhD Univ Windsor, Canada, Dalhousie Univ. (2009 -).

Past:

Dr Merel Dalebout, PhD U. Auckland, NZ 2001. Killam Postdoc (2003-2005) (with Dr Whitehead).

Dr Daniel Gómez-Uchida, PhD Oregon, 2006. Parks Canada fellow (01/01/07-31/07/09)

Dr Juan Pablo Barriga, PhD Univ Comahue, CONICET, Argentina (2007).

Dr David Hardie, PhD Dalhousie, 2007, NSERC Postdoctoral fellow (2008- 31/12/2009).

PhD Supervisor:

Current:

Angela Fuentes Pardo (2011 -) Supervisor

Ivan Vera (2010 -) Supervisor

Berenice Trovant (2009 -) Supervisor; student @ U Comahue AR, Co-Supervisor N

Basso

Edmund Halfyard (Co-Supervisor w Fred Whoriskey) (2009 – present)

Past:

Friso Palstra (Supervisor, 2003 – 2008)

Tyler Zemplak (Supervisor, 2006 – 2011) (Dr SJ Walde Co-supervisor)

Cecilia Carrea (Supervisor, 2007 – 2011) (@ U Comahue, AR, VE Cussac Co-Supervisor)

Master: Supervisor

Current:

Anahi Jorquera (2010 -) Co-Supervisor w Dr Ellen Kenchington

Past:

Greg McCracken (2010 – 2012) Supervisor

Devon Johnstone (2010 – 2012) Supervisor

Kincaid Chan (MSc 2007 – 2009) – Co-Supervisor (Dr Sandra Walde Supervisor)

John Zinck (MSc. 2005 – 2007) Supervisor

David Marson, (Master in Marine Management, 2005) Supervisor

Supervisory Committee:

Jackie Lighten (2010 –) PhD

Joanna Augusto (2010 –) PhD

Mark Coulson (2003 –) PhD

Lindsay Baillie (2010 – 2012) MSc

Daniel Hasselman (2004 – 2010) PhD

Krista Patriquin (2005 – 2012) PhD

Megan McCusker (2002 – 2009) PhD

Kim Murray (2003 – 2005) MSc

Dorte Bekkevold (1999 – 2003, Univ. Aarhus, Denmark) PhD
3 other students (Dalhousie University, prior to 1998)

Honours thesis supervision

Current:

Samantha Parmelee, BSc Honours for 2014

Past: Kristen Hill, BSc Honours 2010
Emily Adams, BSc Honours 2007
Kathryn Dunphy, BSc Honours 2007
Christina Jones, BSc Honours 2005
Alondramaría García-Revilla, BSc Honours 2005
Raelene Ward, BSc Honours 2004

Honours thesis co-supervision

Matt Logan, BSc Honours (Dalhousie 1999) (with Dr Sara Iverson)
Valeria Ojeda, Lic (Univ. Nac. Comahue, Arg. 1998) (w. Dr Victor Cussac, Univ Comahue)

Technicians

Past: Abby van der Jagt, (2008 - 2012)
Heather Schnore, student technician, Jan – Apr 2011
Sarah Holland Reid (Mar 09 – Feb 2010)
Erica Newton (Jan 09 – Apr 09)
Trina Peters, BSc (Oct 2007 – Mar 08)
Aimée Lee Houde, Co-Op student, Jan – May 2006
Colin Davis, student technician, Jan – June 2005
Jacob Seibert, BSc (2003 – 2005)

Student technicians

Livia Anthes (Experiential Learning Jan – Apr 2013)
Kristen Wilson (Co-Op student Jan – Apr 2013)
Kaila Lawton BSc (NSERC-USRA and Co-Op student May – Aug 2012)
Sarah Sampson BSc (Co-Op student May – Aug 2010)
Gregory McCracken BSc (Aug 09 – Apr 2010)
Kristen Hill (Aug 09 – Apr 2010)
Aimée Lee Houde, Co-Op student (Jan – May 2006)

Research Contributions (Students: **bold**, *Postdocs: bold Italics*, Techs underlined)

Special Issue Editor

Ruzzante DE, J Rabassa (Eds.) **2011**. Palaeogeography and Palaeoclimatology of Patagonia: Effects on Biodiversity. *Biological Journal of the Linnean Society* 103(2): 221-529

Ruzzante DE, JA Craig (Eds.) **2006**. Fish Population Structure: Implications to Conservation. FSBI Symposium. University of Aberdeen, Scotland, UK. 10-14 July 2006. *Journal of Fish Biology* **69**. **Supplement C (December 2006)**. 270 pp.

2013

- (91) **Trovant B**, DE Ruzzante, N Basso, JM (Lobo) Orensanz. **2013**. Distinctness, Phylogenetic Relations and Biogeography of Intertidal Mussels (*Brachidontes*, MYTILIDAE) from the Southwestern Atlantic. *J Marine Biology Association of the UK*, accepted Jan 8, 2013.
- (90) **Gomez-Uchida D, FP Palstra**, T Knight, DE Ruzzante. **2013**. Contemporary population and metapopulation effective size (N_e and meta- N_e): Comparison among three salmonid species inhabiting a fragmented system and differing in gene flow and its asymmetries. *Ecology and Evolution*, available online. DOI: 10.1002/ece3.485
- (89) Bradbury IR, Hubert S, Higgins B, Bowman S, Paterson IG, Snelgrove P, Morris C, Gregory R, Hardie D, Hutchings JA, Borza T, Ruzzante DE, Taggart CT, Bentzen P. **2013**. Genomic islands of divergence and their consequences for the resolution of spatial structure in an exploited marine fish. *Evolutionary Applications*, available online.
- (88) Halfyard EA, AJF Gibson, MJW Stokesbury, DE Ruzzante, FG Whoriskey. **2013**. Correlates of early marine survival of Atlantic salmon (*Salmo salar*) smolts from Nova Scotia's Southern upland. *CJFAS*, available online.
- (87) **Johnstone D**, MF O'Connell, FP Palstra & DE Ruzzante. **2013**. Mature male parr contribution to the effective size of an anadromous Atlantic salmon (*Salmo salar*) population over 30 years. *Molecular Ecology*, available online.
- (86) **Elgueta A, J Gonzalez**, DE Ruzzante, SJ Walde, E Habit. **2013**. Trophic interference by *Salmo trutta* on *Aplochiton zebra* and *Aplochiton taeniatus* in southern Patagonian lakes. *Journal of Fish Biology*, available online.
- (85) **Carrea C**, VE Cussac, DE Ruzzante. **2013**. Genetic and phenotypic variation among *Galaxias maculatus* populations reflects contrasting landscape effects between northern and southern Patagonia. *Freshwater Biology* **58**: 36 – 49.

2012

- (84) Habit E, **J Gonzalez**, DE Ruzzante, SJ Walde. **2012**. Native and introduced fish species richness in lacustrine Chilean Patagonia: Inferences on species invasion success from salmonid free lakes. *Diversity and Distributions*, 18(12):1153-1165.
- (83) **Halfyard EA**, AJF Gibson, DE Ruzzante, MJW Stokesbury, FG Whoriskey. **2012**. Migratory behavior and survival of Atlantic salmon smolts from Nova Scotia's Southern Upland. *Journal Fish Biology*, 81: 1626-1645.
- (82) **Carrea C; JP Barriga**; VE Cussac, DE Ruzzante. **2012**. Genetic and phenotypic differentiation among *Galaxias maculatus* populations in a Patagonian postglacial lake system. *Biological Journal of the Linnean Society*, **107**: 368-382.
- (81) Fraser CI, R Nikula, DE Ruzzante, JM Waters. **2012**. Poleward bound: biological impacts of Southern Hemisphere glaciations. *Trends in Ecology and Evolution*, **27**(8): 462-471.
- (80) Arias et al. **2012**. Molecular Ecology Resources Primer Development Consortium. Permanent Genetic Resources added to Molecular Ecology Resources Database 1 December 2011 – 31 January 2012. [**Zemlak TS, C Carrea, E Newton**, IG Paterson, DE Ruzzante. Isolation and characterization of nine microsatellite markers for a galaxiid fish endemic to Patagonia]. *Mol Ecol Res*, **12**: 570-572.

(79) Roy D, T Hurlbut, DE Ruzzante (2012) Biocomplexity in a demersal exploited fish, white hake (*Urophycis tenuis*): Depth related structure and inadequacy of current management approaches. *Can J Fish & Aquat Sci*, **69**(3): 414 - 429.

(78) Pampoulie C, AK Danielsdottir, V Thorsteinsson, E Hjörleifsson, G Marteinsdóttir, DE Ruzzante. 2012. The composition of adult overwintering and juvenile aggregations of Atlantic cod (*Gadus morhua* L.) around Iceland using neutral and functional markers: a statistical challenge. *Can J Fish & Aquat Sci.*, **69**(2): 307-320.

2011

(77) Zemlak TS, SJ Walde, E. Habit, DE Ruzzante. 2011. Climate induced changes to the ancestral population size of two Patagonian galaxiids: the influence of glacial cycling. *Mol Ecol* 20: 5280-5294.

(76) Bekkevold D, LAW Clausen, S Mariani, C André, EMC Hatfield, E Torstensen, N Ryman, GR Carvalho, DE Ruzzante. 2011. Distributions of Atlantic herring populations in a mixed feeding area determined with genetic mixed-stock analysis. *MEPS* 442: 187-199.

(75) Palstra FP, DE Ruzzante. 2011. Contemporary meta-population effective size: Factors influencing its empirical estimation in salmonid fish. *Heredity*, **107**: 444-455.

(74) Jakobsdóttir KB, H Pardoe, Á Magnússon, H Björnsson, C Pampoulie, DE Ruzzante, G Marteinsdóttir. 2011. Historical changes in genotypic frequencies at the *Pantophysin* locus in Atlantic cod in Icelandic waters: Evidence of fisheries-induced selection? *Evolutionary Applications*, **4**(4): 562-573.

(73) Ruzzante DE, J Rabassa. 2011. Palaeoclimatology and Palaeogeography of Patagonia: Implications for biodiversity. *Biol J Linnean Soc*, **103**(2): 221-228.

(72) Ruzzante DE, SJ Walde, PJ Macchi, M Alonso, JP Barriga. 2011. Phylogeography and phenotypic diversification in the Patagonian fish *Percichthys trucha*: the roles of Quaternary glacial cycles and natural selection. *Biol J Linnean Soc*, **103**(2): 514-529.

(71) Hare M, L Nunney, M Schwartz, DE Ruzzante, M Burford, RS Waples, K Ruegg, FP Palstra. 2011. Understanding and Estimating Effective Population Size for Practical Application in Marine Species management. *Conservation Biology*, **25**(3): 438-449.

(70) André C, LC Larsson, L Laikre, D Bekkevold, J Brigham, GR Carvalho, TG Dahlgren, WF Hutchinson, S Mariani, K Mudde, DE Ruzzante, N Ryman. 2011. Detecting population structure in a high gene-flow species, Atlantic herring (*Clupea harengus*): direct simultaneous evaluation of neutral vs. putatively selected loci. *Heredity*, **106**: 270-280.

2010

(69) Bradbury IR, S Hubert, B Higgins, S Bowman, I Paterson, P Snelgrove, C Morris, R Gregory, D Hardie, JA Hutchings, T Borza, DE Ruzzante, CT Taggart, P Bentzen. 2010. Parallel adaptive evolution of Atlantic cod on both sides of the Atlantic Ocean in response to temperature. *Proceedings of the Royal Society of London B*, **277**: 3725-3734.

(68) Habit E, P Piedra, DE Ruzzante, SJ Walde, VE Cussac, M Belk, J Gonzalez, N Colin. 2010. Changes in the distribution of native fishes in response to introduced species and other anthropogenic impacts. *Global Ecology and Biogeography*, **19**: 697-710.

(67) Paterson IG, D Hardie, MA Treble, DE Ruzzante. **2010**. Development of 13 polymorphic microsatellite loci for the Greenland Halibut (*Reinhardtius hippoglossoides*). *Conservation Genetics Resources*, **2**: 97-100.

(66) **D Roy**, IG Paterson, TR Hurlbut, DE Ruzzante. **2010**. Development and design of five multi-locus microsatellite PCR panels for population genetic surveys of white hake (*Urophycis tenuis*) in the Northwest Atlantic. *Conservation Genetic Resources*, **2**: 45-49.

(65) **Zemlak, TS**, E Habit, SJ Walde, **C Carrea**, DE Ruzzante. **2010**. Surviving historical Patagonian landscapes and climate: molecular insights from *Galaxias maculatus*. *BMC, Evolutionary Biology*, 2010, **10**: 67 (<http://www.biomedcentral.com/1471-2148/10/67>)

(64) **Palstra, FP**, DE Ruzzante. **2010**. A temporal perspective on population structure and gene flow in Atlantic salmon (*Salmo salar*) in Newfoundland. *Can. J. Fish. Aquat. Sci.*, **67 (2)**: 225 – 242.

2009

(63) **Gomez-Uchida D**, T Knight, DE Ruzzante. **2009**. Interaction of landscape and life-history attributes on genetic diversity, neutral divergence and gene flow in a pristine community of salmonids. *Molecular Ecology*, **18**: 4854–4869.

(62) Gaggiotti O, D Bekkevold, **H Jorgensen**, **M Foll**, G Carvalho, C Andre, DE Ruzzante. **2009**. Disentangling effects of evolutionary, demographic & environmental factors influencing genetic structure of natural populations: Atlantic Herring as a case study. *Evolution* **63-11**: 2939–2951.

(61) Molecular Ecology Resources Primer Development Consortium **2009**. Permanent Genetic Resources Note. **Paterson IG**, **MI Trucco**, ML Lasta, DE Ruzzante. Isolation and characterization of 11 microsatellite loci for the Patagonian Scallop, *Zygochlamys patagonica*. *Mol. Ecol. Res.*, **9**: 1460-1466.

(60) **Carrea C**, **IG Paterson**, VE Cussac, DE Ruzzante. **2009**. Ten novel microsatellite loci characterized for a remarkably widespread fish: *Galaxias maculatus* (Galaxiidae). *Mol. Ecol. Res.*, **9**: 1503-1505.

(59) **Palstra FP**, MW O’Connell, DE Ruzzante. **2009**. Age structure, demography and effective population size in Atlantic salmon (*Salmo salar*). *Genetics*, **182(4)**:1233-1249.

2008

(58) **Zemlak TS**, EM Habit, SJ Walde, MA Battini, **E Adams**, DE Ruzzante. **2008**. Across the southern Andes on fin: Glacial refugia, drainage reversals & a secondary contact zone revealed by the phylogeographic signal of *Galaxias platei* in Patagonia. *Mol. Ecol.*, **17**: 5049-5061.

(57) **Gomez-Uchida D**, **KP Dunphy**, MF O’Connell, DE Ruzzante. **2008**. Genetic divergence between sympatric Arctic charr *Salvelinus alpinus* (L.) morphs in Gander Lake, Newfoundland: roles of migration, mutation, and unequal effective population sizes. *J Fish Biol*, **73**: 2040-2057.

(56) **Palstra FP**, DE Ruzzante. **2008**. Genetic estimates of contemporary effective population size: what can they tell us about the importance of genetic stochasticity for population persistence in the wild? *Molecular Ecology*, **17**: 3428 – 3447 (*Invited Review*).

(55) Stet RJM, **K Mudde**, JW Wynne, A Nooijen, TG Dahlgren, DE Ruzzante, C Andre. **2008**. Characterization of a major histocompatibility Class II A gene (*Clha – DAA*) with an embedded microsatellite marker in Atlantic herring, *Clupea harengus*. *J Fish Biol*, **73**: 367 - 381.

(54) Ruzzante DE, SJ Walde, JC Gosse, VE Cussac, E Habit, **TS Zemplak, EDM Adams. 2008.** Climate Control on Ancestral Population Dynamics: Insight from Patagonian Fish Phylogeography. *Molecular Ecology* **17**: 2234 - 2244.

(53) Paterson I, S Walde, V Cussac, E Habit, D Ruzzante. **2008.** Isolation and characterization of 13 microsatellite loci for *Percichthys trucha* (Percichthyidae). *Mol Ecol Res* **8**: 907-909.

(52) **Jørgensen H**, C Pertoldi, MM Hansen, DE Ruzzante, V Loeschcke. **2008.** Genetic & environmental correlates of morphological variation in a marine fish: the case of Baltic Sea herring. *Can J Fish Aquat Sci*, **65**: 389-400.

2007

(51) **Palstra F**, MW O'Connell, DE Ruzzante. **2007.** Population structure and gene flow reversals in Atlantic salmon (*Salmo salar*) over contemporary and long-term temporal scales: effects of population size and life history. *Molecular Ecology*, **16**: 4504-4522.

(50) **Buria L**, SJ Walde, M Battini, **PJ Macchi**, M Alonso, DE Ruzzante, VE Cussac. **2007.** Movement of an endemic perch (*Percichthys trucha*) in a montane Patagonian lake during spawning and pre-spawning periods. *J Fish Biol*, **70**:215–230.

2006

(49) Pampoulie C, DE Ruzzante, V Chosson, T Jörundsdóttir, L Taylor, V Thorsteinsson, A Danielsdottir & G. Marteinsdottir. **2006.** The genetic structure of Atlantic cod (*Gadus morhua*) around Iceland: insight from microsatellites, the *Pan I* locus & tagging experiments. *Can J Fish Aquat Sci*, **63**: 2660-2674. (CP is postdoc in Iceland, DER contributed w data analysis, interpretation, writing, DER led genetics package of proposal to EU).

(48) Ruzzante DE, SJ Walde, VE Cussac, et al. (2006) Phylogeography of the Percichthyidae in Patagonia: roles of orogeny, glaciation, and volcanism. *Molec. Ecology*, **15** (10): 2949 - 2968.

(47) **Dalebout ML**, DE Ruzzante, H Whitehead, N Øien. 2006 Genetic distinctiveness and population connectivity in North Atlantic bottlenose whales (*Hyperoodon ampullatus*). *Mol Ecol*, **15**: (11): 3115 – 3129.

(46) Seibert, J. & DE Ruzzante. **2006.** Isolation and characterization of eight microsatellite loci for white hake (*Urophycis tenuis*). *Mol Ecol Notes*: **6**: 924 – 926..

(45) Ryman N, **S Palm**, C André C, GR Carvalho, **TG Dahlgren** PE Jorde, L Laikre, **LC Larsson**, **A Palme**, DE Ruzzante. **2006.** Power for detecting genetic divergence: difference between statistical methods and marker loci. *Molecular Ecology*, **15**: 2031 - 2045.

(44) Ruzzante DE, Mariani S, D Bekkevold, et al (17 authors in totl) **2006.** Biocomplexity in a highly migratory pelagic marine fish, Atlantic herring. *Proc R. Soc London B*, **273**:1459– 1464.

(43) **Milano D**, DE Ruzzante, VE Cussac, **PJ Macchi**, RA Ferriz, **JP Barriga**, **JA Aigo**, **ME Lattuca**, and SJ Walde. **2006.** Latitudinal and ecological correlates of morphological variation in *Galaxias platei* (Pisces: Galaxiidae) in Patagonia. *Biol. J. Linn. Soc.*, **87**: 69 – 82.

OTHER EVIDENCE OF IMPACT

1) PEER REVIEW ACTIVITIES

Journals: American Naturalist, Evolution, Molecular Ecology, Proceedings of the Royal Society of London B, Ecological Applications, Canadian Journal of Fisheries and Aquatic Sciences, Marine Ecology Progress Series, Marine Biology, Oikos, Biol. J. Linnean Society, Journal of Fish Biology, Aquaculture, Hereditas, Fishery Bulletin, ICES Journal of Marine Science.

Granting Agencies: NSF – USA, NERC – UK, Sea Grant College Program, University of Maine and University of New Hampshire – USA; Alaska Sea Grant College Program, University of Alaska, Fairbanks – USA; CANON-AAAS PhD competition fund

2) SYMPOSIA ORGANIZING COMMITTEE

- **2010:** Convener, Symposium: “Patagonia Phylogeography: Common Patterns Across Taxa” held at the “2010 Southern Connection Congress”, Universidad Nacional del Comahue, Bariloche, Argentina. February 2010.
- **2009:** Convener of workshop titled: “Paleogeography and Paleoclimatology of Patagonia: Effects on Biodiversity”, held at Universidad Nacional de La Plata (Argentina) in May 2009
- **2006:** Co-convener (w Gudrun Marteinsdottir (MRI - Iceland) and Peter Wright (Fisheries Research Services, MARLAB, Scotland, UK) of the 2006 Fisheries Society of the British Isles (FSBI) Annual meeting.
- **2003:** Co-convener (with L Bernatchez and P Bentzen of a symposium on the “Use of genetic markers for management and conservation: beyond population structure analyses”, organized for the American Fisheries Society 2003 Annual meeting, Quebec city in August 2003.
- **2001:** Co-convener (w Svein-Erik Fevolden, Norway) of a symposium on ‘Atlantic cod genetic structure: State of the Art’ for the 2001 Annual Science Conference (ASC) of ICES (International Council for the Exploration of the Sea), September 2001 in Oslo, Norway.
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Languages: English and Spanish