

Dr. Aurélie Coulon

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RESEARCH INTERESTS

Movement ecology: I study the determinants of animal movements and gene flow, with a particular emphasis on the influence of landscape composition and structure, and on their consequences for population structure.

EDUCATION

- 2003-2006 Ph.D. Université Toulouse III (France): Influence of landscape structure on roe deer dispersal in a fragmented landscape. Laboratory Comportement et Ecologie de la Faune Sauvage (Wildlife Behavior and Ecology), Institut National de la Recherche Agronomique (INRA)
- 2002 M.Sc. Université Rennes I (France), Ecology, Ethology, Evolution
- 2001 B.Sc. Université Toulouse III (France), Population and Ecosystem Biology

APPOINTMENTS

- 2009 – 2012 : Animator of the EvolTrait lab
- 2008 – : Associate Professor, Muséum National d'Histoire Naturelle, UMR 7179 then UMR 7204, France
- 2006 – 2008: Post-doctoral fellow, Evolutionary Biology Program, Laboratory of Ornithology, Cornell University

PUBLICATIONS

24. Durand J., Legrand A., Tort M., Thiney A., Michniewicz R.J., **Coulon A.** & Aubret F. (in press) Effects of geographic isolation on anti-snake responses in the wall lizard, *Podarcis muralis*. *Amphibia-Reptilia*.
23. **Coulon A.**, Fitzpatrick J.W., Bowman R. & Lovette I.J. (in press) Mind the gap: genetic distance increases with habitat gap size in Florida Scrub Jays. *Biology Letters*.
22. Bonte D., Van Dyck H., Bullock J.M., **Coulon A.**, Delgado M., Gibbs M., Lehouck V., Matthysen E., Mustin K., Saastamoinen M., Schtickzelle N., Stevens V.M., Vandewoestijne S., Bague M., Barton K., Benton T., Chaput-Bardy A., Clobert J., Dytham C., Hovestadt T., Meier C.M., Palmer S.C.F., Turlure C., Travis J.M.J. (2012) Costs of dispersal. *Biological Reviews* 87, 290-312.
21. Fellous S., Duncan A., **Coulon A.** & Kaltz O. (2012) Quorum sensing and density-dependant dispersal in an aquatic model system. *Plos One* 7(11) e48436.
20. Richard M., Stevens V.M., Le Hénanff M., **Coulon A.**, Lourdais O., Clobert J. (2012) Fourteen new polymorphic microsatellite loci for the wall lizard *Podarcis muralis* (Sauria : Lacertidae). *Molecular Ecology Resources* 12, 374-376.
19. Palmer S.C.F., **Coulon A.**, Travis J.M.J. (2011) Introducing a “stochastic movement simulator” for estimating habitat connectivity. *Methods in Ecology and Evolution* 2(3) 258-268.
18. Bonnot N., Gaillard J.-M., **Coulon A.**, Galan M., Cosson J.-F., Delorme D., Klein F., Hewison A.J.M. (2010) No differences between the sexes in fine-scale spatial genetic structure of roe deer. *Plos One* 5(12) e14436.

17. **Coulon A.**, Fitzpatrick J.W., Bowman R., Lovette I.J. (2010) Effects of habitat fragmentation on effective dispersal of Florida Scrub-Jays. *Conservation Biology*, 24 1080-1088.
16. **Coulon A.** (2010) GENHET: an easy-to-use R function to estimate individual heterozygosity. *Molecular Ecology Resources*, 10 167-169.
15. Gibbs M., Saastamoinen M., **Coulon A.**, Stevens V.M. (2010) Organisms on the move: ecology and evolution of dispersal (meeting report). *Biology Letters* 6 146-148.
14. Balkenhol N., Gugerli F., Cushman S.A., Waits L.P., **Coulon A.**, Arntzen J.W., Holderegger R., Wagner H.H. & participants of the Landscape Genetics Research Agenda Workshop 2007 (2009) Identifying future research needs in landscape genetics: where to from here? *Landscape Ecology*, 24 455-463.
13. Guillot G., Leblois R., **Coulon A.**, Frantz A. (2009) Statistical methods in spatial genetics. *Molecular Ecology*. 18 4734-4756.
12. Stenzler L.M., Makarewicz C.A., **Coulon A.**, Ardia D.R., Lovette I.J., Winkler D.W. (2009) Subtle edge-of-range genetic structuring in transcontinentally distributed North American Tree Swallows (*Tachycineta bicolor*). *The Condor* 111(3): 470-478.
11. **Coulon A.**, Morellet N., Goulard M., Cargnelutti B., Angibault J.-M. & Hewison A.J.M. (2008) Inferring the effects of landscape structure on roe deer (*Capreolus capreolus*) movements using a step selection function. *Landscape Ecology*, 23 603-614.
10. **Coulon A.**, Fitzpatrick J.W., Bowman R., Stith B.M., Makarewicz C.A., Stenzler L.M. & Lovette I.J. (2008) Congruent population structure inferred from dispersal behaviour and intensive genetic surveys of the threatened Florida Scrub-Jay (*Aphelocoma coerulescens*). *Molecular Ecology*, 17 1685-1701. Featured in the News and Views section of the same journal issue.
9. Barnett J., Ruiz Gutierrez V., **Coulon A.** & Lovette I.J. (2008) Weak genetic structuring indicates ongoing gene flow across White-ruffed Manakin (*Corapipo altera*) populations in a highly fragmented Costa Rica landscape. *Conservation Genetics*, 9 1403-1412.
8. Gaillard J.-M., Hewison A.J.M., Kjellander P., Pettorelli, N., Bonenfant C., Van Moorter B., Liberg O., Andren H., Van Laere E., Klein F., Angibault J.-M., **Coulon A.** & Vanpé C. (2008) Population density and sex do not influence fine-scale natal dispersal in roe deer. *Proceedings of the Royal Society of London, Series B*, 275 2025-2030.
7. Van Moorter B., Gaillard J.-M., Hewison A.J.M., Said S., **Coulon A.**, Delorme D., Widmer O., Cargnelutti B. & Angibault J.-M. (2008) Evidence for exploration behaviour in young roe deer (*Capreolus capreolus*) prior to dispersal. *Ethology Ecology & Evolution*, 20 1-15.
6. Cargnelutti B., **Coulon A.**, Hewison A.J.M., Goulard M., Angibault J.-M. & Morellet N. (2007) Testing Global Positioning System performance for wildlife monitoring using mobile collars and known reference points. *Journal of Wildlife Management*, 71(4) 1380-1387.
5. Hewison A.J.M., Angibault J.M., Cargnelutti B., **Coulon A.**, Rames J.L., Serrano E., Verheyden H. & Morellet N. (2007) Using radio-tracking and direct observation to estimate roe deer density in a fragmented landscape – a pilot study. *Wildlife Biology*, 13(3) 313-320.
4. **Coulon A.**, Cosson J.-F., Morellet N., Angibault J.-M., Cargnelutti B., Galan M., Aulagnier S. & Hewison A.J.M. (2006) Dispersal is not female biased in a resource-defence mating ungulate, the European roe deer. *Proceedings of the Royal Society of London, Series B*, 273 341-348.

3. **Coulon A.**, Guillot G., Cosson J.-F., Angibault J.M., Aulagnier S., Cargnelutti B., Galan M. & Hewison A.J.M. (2006) Genetic structure is influenced by landscape features: empirical evidence from a roe deer population. *Molecular Ecology*, 15 1669-1679.

2. Zannèse A., Morellet N., Targhetta C., **Coulon A.**, Fuser S., Hewison A.J.M. & Ramanzin M. (2006) Spatial structure of roe deer populations: towards defining management units at a landscape scale. *Journal of Applied Ecology*, 43 1087-1097.

1. **Coulon A.**, Cosson J.-F., Angibault J.-M., Cargnelutti B., Galan M., Morellet N., Petit E., Aulagnier S. & Hewison A.J.M. (2004) Landscape connectivity influences gene flow in a roe deer population inhabiting a fragmented landscape: an individual-based approach. *Molecular Ecology*, 13 2841-2850.

BOOK CHAPTER

1. Stevens V.M. & **Coulon A.** (2012) Landscape effects on spatial dynamics: the natterjack toad as a case study. In *Dispersal Ecology and Evolution* (eds J. Clobert, M. Baguette, T.G. Benton & J.M. Bullock). Oxford University Press.

OTHER TYPES OF PUBLICATIONS

4. **Coulon A.**, Cosson J.-F., Ray N. & Hewison A.J.M. (2007) Inferring the influence of landscape on roe deer gene flow using connectivity estimates based on a weighted combination of several landscapes features. In *25 years of Landscape Ecology: Scientific Principles in Practice - Proceedings of the 7th IALE World Congress - Part 1*. 303-304.

3. Cosson J.-F., Estoup A., **Coulon A.**, Galan M., Mortier F., Hewison A.J.M. & Guillot G. (2006) Un modèle géostatistique pour la détection et la localisation des discontinuités génétiques spatiales entre populations. *Les Actes du BRG*, 6 41-55.

2. **Coulon A.**, Cosson J.-F., Morellet N., Angibault J.-M., Cargnelutti B., Galan M., Aulagnier S. & Hewison A.J.M. (2006) ¿Dispersan más las hembras que los machos? *Boletín de la Asociación del Corzo Español*, 9 24-25.

1. **Coulon A.** (2006) Etude de l'influence du paysage sur la dispersion du Chevreuil (*Capreolus capreolus*) en milieu fragmenté. Manuscrit de thèse, Université Paul Sabatier, Toulouse, France. 195pp.

CONFERENCE PRESENTATIONS

2010 Talk, **Conference on "Social systems: demographic and genetic issues"**, Paimpont, France

2010 Talk, **1st conference of French Scientific Ecology**, Montpellier, France

2009 Talk, **4th meeting of the International Dispersal Workgroup**, Ghent, Belgium

2009 Talk, **79th meeting of the Cooper Ornithological Society**, Tucson, USA

2008 Talk, **93rd Ecological Society of America Annual Meeting**, Milwaukee, USA

2008 Poster, **American Ornithologists' Union Meeting**, Portland, USA

2008 Poster, **12th International Behavioral Ecology Congress**, Ithaca, USA

2008 Talk, **Cornell Ecology and Evolutionary Biology Symposium**, Ithaca, USA.

2007 Talk, **Dispersal conference**, Paris, France

2007 Talk, **7th IALE World Congress**, Wageningen, Netherlands.

2007 Talk, **Cornell Ecology and Evolutionary Biology Symposium**, Ithaca, USA.

- 2007 Talk, **40th Annual Meeting of the Population Genetics Group**, Manchester, U.K.
- 2005 Talk, **Xth Congress of the European Society for Evolutionary Biology**, Cracow, Poland.
- 2005 Talk, **VIIth European Roe Deer Meeting**, Jerez de la Frontera, Spain.
- 2003 Talk, **Symposium « Dispersal in fragmented landscapes »**, Louvain-la-Neuve, Belgium.
- 2003 Talk, **VIth European Roe Deer Meeting**, Calda do Gerês, Portugal.
- 2003 Poster, **4th Congress of Mammalogy**, Brno, Czech Republic.
- 2002 Poster, **XXIVth Petit Pois Dérivé meeting** (French group of population genetics and population biology), Montpellier, France.

INVITED SEMINARS

- 2009 Institute of Biological and Environmental Sciences, Aberdeen University, Scotland
- 2009 Génétique et Evolution des Populations Végétales, Université Lille 1, Lille, France
- 2006 Center for Population Biology, Imperial College London, England
- 2006 Department of Ecology and Evolutionary Biology, Cornell University, USA
- 2005 Unité de Biométrie, INRA, France
- 2004 Dipartimento di Scienze Animali, Università di Padova, Italy

REVIEWING WORK

Journals: Acta Oecologica, Biology Letters, Biological Journal of the Linnean Society, Conservation Genetics, Ecography, Ecological Applications, Emu, Ethology, Evolutionary Applications, International Journal of Ecology, Journal of Applied Ecology, Journal of Environmental Management, Journal of Zoological Systematics & Evolutionary Research, Landscape Ecology, Mammalian Biology, Molecular Ecology, Oikos, Proceedings of the Royal Society of London Series B, Wildlife Research, Wildlife Society Bulletin

Research grants: Cornell Sigma Xi, Graduate Women In Science

Conferences: Invited member of the scientific committee of a Spanish Conference on roe deer management, March 2007, Mieres, Spain.

TEACHING EXPERIENCE

- 2012 Restoration of habitat and population connectivity, 3h, Université Montpellier 2
In charge of the UE "Introduction to sampling, inventory and monitoring methods" (master 2).
Introduction to ecology, population genetics, introduction to sampling, inventories and monitoring.
- 2009 - Organization and teaching of a doctoral level course on "spatial ecology", MNHN
- 2007 Ornithology Seminar, Cornell University
- 2005 Practicals on population genetics (15h), masters students, Université Toulouse III
- 2004 Practicals on conservation biology (14h), masters students, Université Toulouse III
- 2003 Practicals on ethology and behavioural ecology (32h), undergraduate students, Université Toulouse III

STUDENT SUPERVISION

- 2011 - Théo Flavenot, PhD student: Effects of quarries on connectivity
- 2010 Théo Flavenot, AgroParisTech, Master 2
Kévin Fournière, Muséum National d'Histoire Naturelle, Master 1 (Florida Scrub-Jay landscape genetics)
Bérenger Bourgeois, Université Paris Sud, Master 1 (colour polymorphism in wall lizards)
- 2009 Nadège Bonnot, University of Toulouse (France), Master Student (population genetics)
- 2008 Nancy Chen, Cornell University, Graduate student (rotation - population genetics)
- 2007 Jacob Barnett, Cornell University, Honors thesis (population genetics)
- 2005 Sophie Delpierre, IUT Auch (France), B.Sc. project (GIS)

GRANTS

2010-2013. Programme ANR 6^{ème} extinction, 716000 euros.

Mobigen: une approche physiologique, génétique et génomique de l'évolution de la mobilité en réponse aux changements climatiques.

PI: Anthony Herrel (UMR 7179).

2010, crédit « équipements » du MNHN, 8730 euros

2012-2015. Programme DIVA 3 (MEDDTL), 161000 euros

AMELI : Analyse-Multi-Echelle des Lisières pour la réalisation de la trame verte de la région Poitou-Charentes

PI: Xavier Amelot (Université de Bordeaux).

2012-2014. Programme Biodiversité 2011 (Nord-Pas-de-Calais, FRB), 148333 euros.

CUBA : les Corridors des Uns sont les Barrières des Autres.

PI: Cédric Elleboode (Biotope).