Curriculum Vitae

PERSONAL INFORMATION

Svensson, Erik

Researcher ID: **E-8324-2010**

Nationality: Sweden

Date of birth: 8 January1967

http://www.biology.lu.se/erik-svensson

Research profile and overall publication statistics: Phenotypic evolution, especially frequency-dependent selection, polymorphism maintenance, thermal adaptation, phenotypic plasticity and speciation processes. My publications include high-profile journals like *Current Biology*, *Nature*, *Nature Communications*, *Proc. Natl. Acad. Sci. USA*, *Science* and *Trends Ecol. Evol.* **A total of 117 ISI-publications. H-index = 45. Total number of citations = 6358 (September 2017)**.

MAJOR RESEARCH ACHIEVEMENTS AND A BRIEF BIOSKETCH

I defended my PhD-thesis about avian life-history ecology and evolution in 1997 in Lund (Sweden). Major publications that emerged from my thesis included the first field evidence that female birds could adaptively manipulate offspring sex ratio in relation to mate quality (Svensson & Nilsson, *Proc. R. Soc. Lond.* B. **263:** 357; 121 citations), which inspired many other researchers and resulted in much media attention, including coverage in the *National Geographic Magazine*. Other major publications included a pioneering study using immunological methods to investigate costs of energy turnover and temperature stress in birds (Svensson *et al.* 1998; *Funct. Ecol.* **12:** 912), and an in-depth analysis of selective regimes operating on timing of breeding (Svensson, *Evolution* **51:** 1276). The publications that emerged from my thesis work have been cited > 1000 times, well above the average for ecological and evolutionary articles from Sweden. After obtaining postdoctoral scholarships from the Fulbright Foundation and STINT, I moved to University of California (Santa Cruz, USA) in 1997. I worked together with leading evolutionary biologist **Barry Sinervo** on a heritable throat colour polymorphism in side-blotched lizards (*Uta stansburiana*). We experimentally investigated how density- and frequency-dependent selection in natural populations interacted to maintain this enigmatic polymorphism (Svensson & Sinervo 2000, *Evolution* **54:** 1396; Sinervo *et al.* 2000, *Nature* **406:** 985). We also demonstrated, for the first time in natural populations, correlational selection between immunity and colouration, and established the links between correlational selection, genetic architecture and sexual dimorphism (Svensson *et al.* 2000 *PNAS* **98:** 12561; Svensson *et al.* 2009, *Evolution* **63:** 3124). My postdoctoral research gained a lot of attention from other evolutionary biologists and ecologists, and the articles that I published from this work have so far been cited > 900 times. My postdoctoral training in evolutionary biology and quantitative genetics nicely complemented my ecological PhD-background in life-history biology.

In 2000, I established my own independent research laboratory after obtaining external funding from the Swedish Research Council (VR). I have used insects as my main model system, and my group has grown to become a highly international research environment. My main interest is phenotypic evolution and integrative biology. I strive to integrate theory with experiments to investigate frequency-dependent selection, evolutionary dynamics in natural populations and speciation processes. I have recruited a number of talented PhD-students and postdocs from all over the world, and almost all of them are still active in academic research. Externally funded postdocs contact me frequently with requests to join my laboratory, and they usually bring with them their own funding from various agencies, such as from the **National Science Foundation (NSF)** and **EU ("Marie Curie").** Among our recent research, I would like to highlight our study on how female mating polymorphism in insects affects population fitness, extinction risk and genetically effective population size (N_e)(Takahashi *et al.* 2014, *Nature Comm.* **5:** 4468), how humans shape the evolution of other organisms and the effects on ecosystem services (Hendry *et al.* 2017; *Phil. Trans. R. Soc.* B **372:** 20160028) and how global climatic factors drive natural selection at the level of local populations (Siepielski *et al.* (2017). *Science* **355**: 959-962). Another major recent contribution is our recently edited research volume ***"The Adaptive Landscape in Evolutionary Biology"*** (E.I. Svensson & R. Calsbeek, Oxford University Press, 2012). I have also been invited to join several editorial boards of leading scientific journals in ecology and evolution and I became an elected council member of the **European Society for Evolutionary Biology (ESEB).** I take my commitments to the international evolutionary biology community seriously, and I have arranged several scientific meetings. I also regularly get invitations to give research talks at conferences, symposia and research schools.

EDUCATION

1997 PhD: *"Costs, benefits and constraints in the evolution of avian reproductive tactics"*. Lund (Sweden).

CURRENT POSITION(S)

2008 – Present Full Professor. Faculty of Science, Department of Biology, Lund University, Sweden.

PREVIOUS POSITIONS

2010 - 2012 Visiting Professor, Stellenbosch University, South Africa.

2000 – 2008 Junior and subsequently Senior Research Fellow. Department of Biology, Lund (Sweden).

1997 – 1999 Postdoctoral Fellow, Dept of Ecology & Evolutionary Biology, Univ. Calif. (UCSC), USA

FELLOWSHIPS AND AWARDS

2004 *"Tage Erlanders Prize: Research in Natural Sciences".* Royal Swedish Academy of Sciences (KVA).

1997–1999 Fulbright Postdoctoral Fellow and and postdoctoral grant from STINT. UCSC, USA.

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

Supervisor of 11 postdoctoral fellows: *Shawn Kuchta* (2007-2009), *Maren Wellenreuther* (2007-2012), *Sophia Engel* (2009-2011), *Machteld Verzijden* (2010-2012), *Thomas Gosden* (2011-2014), *Yuma Takahashi* (2012-2013), *Natsu Katayama* (2012-2013), *Lesley Lancaster* (2012-2013), *Rachael Dudaniec* (2013-2015), *Katie Duryea* (2014-2016), *Viktor Nilsson-Örtman* (2014-2017), Stephen De Lisle (2016-2018) and Maarit Mäenpää (2017-2019).

Main supervisor of 7 PhD-students, of which 5 have successfully defended their theses: *Jessica Abbott* (2002-2006), *Thomas Gosden* (2004-2008), *Fabrice Eroukhmanoff* (2005-2009), *Kristina Karlsson Green* (2005-2010), *Anna Runemark* (2007-2012), *John Waller* (2013-2017) and *Beatriz Willink* (2014-2018).

TEACHING ACTIVITIES

2000–2015 15 % teaching: *Evolutionary Animal Ecology*, *Human Biology & Evolution* and *Faunistics.*

ORGANISATION OF SCIENTIFIC MEETINGS

2016 *"Evolution in Sweden".* Chair of organization committee (Lund, Sweden).

2012 *"The role of behaviour in non-adaptive and non-ecological speciation".* Funded by European Science Foundation **("FroSpects").** Chair of organization committee (Lund, Sweden).

2012 *"International Behavioural Ecology Congress"* (ISBE). Organization committee. Lund, Sweden.

2009 *"The phenotype-fitness map revisited".* ESEB-symposium in Turin (Italy).

INSTITUTIONAL RESPONSIBILITIES

2010–2014 Member of Graduate Student Education Committee. Dept. Biology, Lund University, Sweden.

2000–2004 Organiser of Seminar Series within Dept. Ecology, Lund University, Sweden

COMMISSIONS OF TRUST, EDITORIAL BOARDS AND INTERNATIONAL ACTIVITIES

2016 – Elected Faculty Member to the section for Evolutionary Ecology in "Faculty of 1000"

2015 – Elected Fellow to the Royal Physiographic Society in Lund (Sweden).

2014 - Member of *National Committee for Biology*, Royal Society of Sciences (KVA), Stockholm, Sweden.

2014 –2015 Chair of Election Committee for the *European Society of Evolutionary Biology* (ESEB).

2012 Vice Chair *Ecology, Evolution & Systematics* Panel, Swedish Research Council, Stockholm, Sweden.

2011–2015 Panel member *Ecology, Evolution & Systematics*, Swedish Research Council, Stockholm.

2011–2015 Council Member of the *European Society for Evolutionary Biology* (ESEB).

2014 – Founding Editorial Board of ***Oxford Bibliographies in Evolutionary Biology.***

2008 - Editorial Board of *American Naturalist.*

2010–2013 Editorial Board of *Evolution.*

2004–2008 Editorial Board of *Journal of Evolutionary Biology.*

2006–2009 Editorial Board of *PLoS ONE*

2003–2008 Editorial Board of *Proc. R. Soc. Lond.* B.

2003–2005 Expert Evaluator ("Marie Curie Research Networks"). Brussels, Belgium.

RESEARCH WORKING GROUPS, NETWORKS AND SCIENTIFIC SOCIETIES

2012–2014 Scientific working group *"Environmental and demographic determinants of natural selection"* National Evolutionary Synthesis Centre (NESCent), North Carolina, USA.

2014 Participant in Catalysis Meeting: *"Enabling dragonfly genomics".* National Evolutionary Synthesis Centre (NESCent), North Carolina, USA.

2000 – Member of *American Society of Naturalists* (ASN), *Society for the Study of Evolution* (SSE) and European Society for Evolutionary Biology (ESEB).

Funding history and research grants

Ongoing and Recently Finished Grants *

Project Title	*Funding source*	*Amount (SEK)*	*Period*	*Role*
Linking microevolutionary processes to macroevolutionary diversification through integrative studies of animal phenotypes	Swedish Research Council (VR)	3 200 000	2017-2020	Main applicant (PI)
Ecology and evolution of thermal adaptations: from microevolutionary processes to macroevolutionary diversification	Swedish Research Council (VR)	4 800 000	2012-2016	Main applicant (PI)
Genomic signature of sexual conflict in a polymorphic insect	Carl Tryggers Foundation	220 000	2014-2015	Main applicant (PI)
Coevolution of genetic architecture, gene expression differences and microbiomes in colour polymorphic damselflies	Erik Philip-Sörenssons Foundation	220 000	2016-2018	Main applicant (PI)
Evolutionary ecology of thermal adaptations in insects	Gyllestiernska-Krapperup Foundation	165 000	2014-2015	Main applicant (PI)

*** Total Grant History (2000-2020)**

I have had regular research grants without any interruption since 2000 (17 years) from the **Swedish Research Council (VR),** the main funding agency for basic research in Sweden. My current (ongoing) grant runs out in the end of 2016, and currently amounts to **800 000:**-/year. In addition to these project grants from VR, I have also had grants from the applied Swedish Research Council **FORMAS** and and a number of private foundations such as **The Crafoord Foundation**, **Carl Tryggers Foundation**, **The Royal Swedish Academy of Sciences**, **Oscar & Lili Lamm Foundation**, **The Royal Physiographic Society**, **The Swedish Foundation for Cooperation in Research and Higher Education (STINT)** and **Erik Philip-Sörensens Foundation.** In addition, I have hosted several postdocs who obtained their funding from **EU ("Marie Curie")** and the **National Science Foundation (NSF, USA),** and as postdoc host I was either main or co-applicant on these applications.

*My total individual-level project funding from VR and other these other competitive grant agencies amounts to **27 860 824 SEK** for the period 2000-2020.*

In addition to these individual-level grants, I have also been Principal Investigator (PI) and co-applicant of two major "Centre of Excellency"- and "Strategic" research grants from the Swedish Research Council to the Biology Department at Lund University: ***"Centre for Animal Movement Research" (CAnMove)*** (14 PI:s; **50 000 000 SEK**) and ***"Biodiversity and Ecosystem Services in a Changing Climate" (BECC)***(50 PI:s; **100 000 000 SEK**). I have obtained funding for two postdocs from these two programmes, and participated to increase the visibility of both through my research. I have also been co-PI on several large-scale international collaborative research grants, including ***"Putting the Extended Evolutionary Synthesis to Test"*** (project leaders Tobias Uller and Kevin Laland; **16 000 000 SEK**) and ***"Linking Local Adaptation with the Evolution of Sex Differences"*** (project leaders Hanna Kokko, Tim Conallon, Florence Debarre and Erik Svensson; **485 000 SEK**).

*The total funding obtained from these large-scale collaborative research programmes amounts to **166 485 000 SEK**.*

Detailed Track Record

1. Ten representative publications from my laboratory

The topics of my selected publications include thermal adaptation in insects (4), evolutionary processes and frequency-dependent genetic dynamics (8,10), natural and sexual selection regimes in both model (3) and non-model organisms (5,7-10), phenotypic plasticity, learning and canalization (4,5), speciation processes (3,6-7), phylogenetic comparative analyses of macroevolutionary diversification in phenotypic traits (4) and modelling evolutionary dynamics (8, 10).

1. Siepielski A.M., Morrissey M.B., Buoro M., Carlson S.M., Caruso C.M., Clegg S.M., Coulson T., DiBattista J., Gotanda K.M., Francis C.D., Hereford J., Kingsolver J.G., Augustine K.E., Kruuk L.E.B., Martin R.A., Sheldon BC, Sletvold N., **Svensson E.I.**, Wade M.J. and MacColl A.D.C. 2017. Precipitation drives global variation in natural selection. *Science* **355:** 959-962.

2. Hendry, A.P., Gotanda, KM. and **Svensson, E.I**. 2017. Human influences on evolution, and the ecological and societal influences. *Phil. Trans. R. Soc.* B. **372:** 20160028

3. Katayama, N., Abbott, J.K, Kjaerandsen, J, Takahashi, Y. and **Svensson, E. I.** 2014. Sexual selection on wing interference patterns in *Drosophila melanogaster*. *Proc. Natl. Acad. Sci.* USA **42:** 15144-15148. **Altmetric score: 105 (September 2017).**

Publication 3 *was the first demonstration that sexual selection operates on Wing Interference Patterns (WIP's) in the classical model organism Drosophila melanogaster. This article received considerable media attention, including coverage in* ***BBC***, ***Der Spiegel***, ***New York Times*** *and* ***Washington Post.***

4. Svensson, E.I. and Waller, J.T. 2013. Ecology and sexual selection: evolution of wing pigmentation in calopterygid damselflies in relation to latitude, sexual dimorphism and speciation. *Am. Nat.* **182:** E174-E195.

5. Svensson, E. I., Eroukhmanoff, F., Karlsson, K., Runemark, A. and Brodin, A. 2010. A role for learning in population divergence of mate preferences. *Evolution* **64:** 3101-3113.

A recent theme of research in my laboratory has been the role of adaptive phenotypic plasticity in the early stages of evolutionary differentiation. In ***publication 5****, we presented the first experimental evidence that population divergence in mate preference among natural insect populations develops by phenotypic plasticity and learned mate preferences (we got the journal cover, right). We followed up this empirical study with an in-depth review of the available evidence for how learning can affect sexual selection and speciation in other animal groups, and discussed the evolutionary implications. Media coverage:* ***Alpha Galileo*** *and* ***Science Daily.***

6. Svensson, E.I., Karlsson, K., Eroukhmanoff, F. and Friberg, M. 2007. Gender differences in species recognition and the evolution of asymmetric sexual isolation. *Curr. Biol.***17**:1-5.

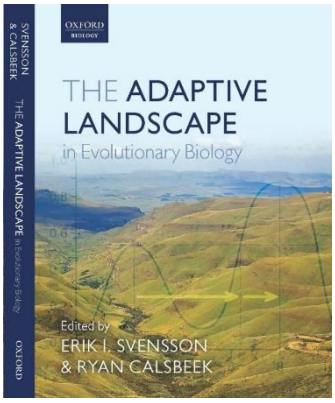
7. Svensson, E.I., Eroukhmanoff, F. and Friberg, M. 2006. Effects of natural and sexual selection on adaptive population divergence and premating isolation in a damselfly. *Evolution* **60:** 1242-1253.

8. Svensson, E.I., Abbott, J. and Härdling, R. 2005. Female polymorphism, frequency dependence and rapid evolutionary dynamics in natural populations. *Am. Nat.* **165:** 567-576.

9. Svensson, E, Sinervo, B. and T. Comendant. 2001. Density-dependent competition and selection on immune function in genetic lizard morphs. *Proc. Natl. Acad. Sci.* USA **98:** 12561-12565.

10. Sinervo, B., E. Svensson and T. Comendant. 2000. Density cycles and an offspring quantity and quality game driven by natural selection. *Nature* **406:** 985-988

2. Edited research volume



Svensson, E.I. and Calsbeek, R. 2012. *The Adaptive Landscape in Evolutionary Biology*. Oxford University Press, Oxford.

This research volume focuses on the role of the Adaptive Landscape in evolutionary biology. The book contains contributions about the influences of the adaptive landscape for ecology, population and quantitative genetics, conservation biology, developmental biology and from the perspective of history of science. We published this volume 80 years after the late population geneticist Sewall Wright published his paper where he coined the term "Adaptive Landscape", which became one of the most influential idéas and concepts in modern evolutionary biology. This volume received a favourable review in ***Trends in Ecology and Evolution***, and it has also inspired two recent high-profile papers in *Science* (**1**, **2**).

3. Invited speaker: international conferences, research schools and departments (last 10 years)

1. Seminar at Evolutionary Biology Centre (EBC), Uppsala University, Sweden (2017).
2. European Evolutionary Biology Congress (ESEB), Groningen, Netherlands (2017)
3. Plenary speaker to International Congress of Odonatology, Cambridge, UK (2017)
4. Seminar at School of Earth and Environmental Sciences, Manchester, UK (2016).
5. Annual Meeting ("Blodbadet") at Department of Zoology, Stockholm, Sweden (2015).
6. "Gordon Research Conference *"Speciation 2015"*, Ventura, California, USA (2015).
7. *Lecture series in Behavioural and Evolutionary Ecology*, Bern, Switzerland (2014).
8. Symposium: *"Metaphors and analogies in evolutionary biology"*, Bristol, UK (2014).
9. Seminar at Department of Zoology, Cambridge University, UK (2013).
10. ESF-symposium *"Behaviour and Speciation"* ("FroSpects"), Oslo, Norway, (2013).
11. Seminar at Department of Integrative Biology, University of Texas, Austin, USA (2012).
12. *Graduate school "Genomes and Phenotypes",* Uppsala, Sweden (2011).
13. *13th Congress of the European Society for Evolutionary Biology* (Tuebingen, Germany 2011).
14. Seminar at Department of Zoology, Oxford University, UK (2010)
15. Seminar at Centre for Ecological and Evolutionary Synthesis (CEES), Oslo, Norway (2009).
16. *12th Congress of the European Society for Evolutionary Biology* (ESEB; Turin, Italy, 2009).
17. *6th Symposium on the Lacertid Lizards of the Mediterranean Basin* (Mytilene, Greece; 2008).
18. *13th Annual European Meeting of PhD Students in Evolutionary Biology* (Höör, Sweden; 2007).
19. *6th Ecological Genetics Symposium*, Leuven, Belgium (2007).

4. Major contributions to the early careers of excellent researchers

I have supervised a total 21 PhD-students and postdocs (12 women and 9 men), of which 14 have now left my laboratory (5 PhD-students and 9 postdocs). Of these 14 that have moved on to other positions, 13 (93 %) are still active in academia, and either received prestigious postdoctoral scholarships or established themselves as lecturers, junior researchers or assistant professors. Among these excellent young researchers who have now established independent lines of research are **Jessica Abbott, Rachael Dudaniec, Fabrice Eroukhmanoff**, **Shawn Kuchta**, **Lesley Lancaster, Anna Runemark** and **Yuma Takahashi**. My first PhD-student (Jessica Abbott) recently obtained a prestiguous and highly competitive "Starting Grant" from the European Research Council (ERC). The five PhD-students that have finished their PhD with me as their main supervisor all obtained competitive postdoctoral scholarships from The Swedish Research Council (VR), and two of them (Fabrice Eroukhmanoff, Thomas Gosden) also received postdoctoral scholarships from the EU-funded "Marie Curie"-program. I have recruited and supervised PhD-students and postdocs from all over the world and from countries including Britain, Canada, Costa Rica, Finland, France, Germany, Japan, Netherlands, New Zeeland, Sweden and the US. My highly international research laboratory has probably contributed to the high success rate of my former postdocs and PhD-students.