

# SIMEON QUIRINUS SMEELE

## CONTACT INFO

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## ABOUT ME

I'm a tenure track researcher at Ecoscience, Aarhus University. I work with deep neural networks to detect and classify bat species from audio and image data and use the results to model space use and migration. I'm looking to build a small research group to expand bat monitoring in Denmark and surrounding countries.

## EDUCATION

- Dr. rer. nat.** 2019-2023  
*University of Konstanz | Konstanz, Germany*
- Behavioural Ecology, *magna cum laude*
  - Within and between species approaches to the study of communication and cognition in parrots
  - Supervisors: Dr. Mary Brooke McElreath and Dr. Lucy Aplin
- Master of Biology** 2016-2018  
*University of Southern Denmark | Odense, Denmark*
- Courses in behavior, bio-acoustics, terrestrial ecology, statistics, research projects, Matlab, sound and hearing, marine mammals, biodiversity.
  - Thesis topic: "Pinniped cognition: the ability to recall own behaviour on cue"
- Bachelor of Biology (minor in Mathematics)** 2013-2016  
*University of Southern Denmark | Odense, Denmark*
- Courses in zoology, botany, ecology, ecotoxicology, statistics and mathematics.
  - Thesis topic: "Spatial memory in Daubenton's bats"

## EXPERIENCE

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**Tenure track researcher** **2025 - current**  
*Wildlife Ecology, Ecoscience, Aarhus University* | Aarhus, Denmark

- Passive acoustic monitoring of bats
- Camera trapping of bats
- Population modelling of bats

**Post doctoral researcher** **2023 - 2024**  
*Wildlife Ecology, Ecoscience, Aarhus University* | Aarhus, Denmark

- Passive acoustic monitoring of bats
- Camera trapping of bats

**IMPRS doctoral researcher** **2019 - 2023**  
*Max Planck Institute of Animal Behavior and Max Planck Institute for Evolutionary Anthropology* | Radolfzell, Germany

- Within and between species approaches to the study of communication and cognition in parrots
- Supervisors: Dr. Mary Brooke McElreath and Dr. Lucy Aplin

**Staff member** **2022**  
*Museum Haus Otto Dix* | Hemmenhofen, Germany

- Helping visitors (in German) in the museum during weekends in the summer season

**Research assistant** **2019**  
*University of Southern Denmark* | Odense, Denmark

- Analysing large datasets on species demography and conservation
- Supervisor: Professor Dalia Amor Conde

**Study group supervisor** **2015-2017**  
*University of Southern Denmark* | Odense, Denmark

- Helping first year Natural Science students work in groups on biology and mathematics projects

**Teaching assistant** **2014-2015**  
*University of Southern Denmark* | Odense, Denmark

- Teaching first year Natural Science students in the general biology course

## VOLUNTEERING

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**Volunteer** **2023 - current**  
*Save the Children* | Aarhus, Denmark

- Co-management volunteer group
- Registering participation
- Cooking food with Ukrainian children and their parents

- Research assistant (internship)**
**2018 - 2019**
- University of Southern Denmark and Fuglezoo* | Odense, Denmark
- Co-supervising master student working on cooperative and vocal behaviour in parakeets
  - Supervisor: Professor Ole Næsby
- Animal trainer**
**2017 - 2018**
- Marine Biological Research Centre* | Kerteminde, Denmark
- Training grey seals, great cormorants and common murre
  - Assisting with data collection for psychophysics, conservation and cognition
  - Supervisor: Dr. Kirstin Anderson Hansen
- Trainer and member general board**
**2014 - 2018**
- Odense SportsKlatreKlub (climbing gym)* | Odense, Denmark
- Training the youth elite team, adult advanced team and schools
  - Moving the club to new facilities and setting up the new management structure
- Field assistant**
**2014**
- University of Southern Denmark* | Odense, Denmark
- Collecting data from tit nest boxes
  - Conducting observational study of great tit foraging behaviour
  - Supervisor: Prof. Owen Jones

## TEACHING

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- Biology field course**
**2021**
- Max Planck Institute of Animal Behavior* | Radolfzell, Germany
- I gave a lecture on bio-acoustics and co-supervised a group of master students working on local dialects and aggression in great tits
- General introduction biology**
**2014-2015**
- University of Southern Denmark* | Odense, Denmark
- I worked as a teaching assistant during the biology part of a larger course that introduced natural science students to different subjects in the wider field
  - I had the responsibility for groups of 20-30 students that worked on exercises and presented the solutions

## ACHIEVEMENTS

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- Grants**
- 2026 Co-applicant HORIZON EU (€ 10,997,000)
  - 2025 ÅV Jensen Nature Foundation (€ 335,000)
  - 2025 Research Reserve Grant, AU (€ 40,000)
  - 2022 Small Cluster Grant, CASCBS (€ 10,000)
  - 2021 Small Cluster Grant, CASCBS (€ 10,000)

## ACTIVITIES

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### Peer reviews

- 2025 Royal Society Interface, Methods in Ecology and Evolution, Methods in Ecology and Evolution
- 2024 Ethology, Ethology, Proceedings of the Royal Society B, Journal of Ornithology, Bioacoustics, Royal Society Open Science, Royal Society Open Science
- 2023 Methods in Ecology and Evolution
- 2022 PLOS Computational Biology, Scientific Reports, Ethology, Ethology, Scientific Reports
- 2021 Ecology and Evolution

### Organisation

- 2021-current Preprint Team Member, Proceedings of the Royal Society
- 2021-2023 member Sustainability Group MPI-AB
- 2021 co-host Virtual ESLR Workshop (GatherTown)
- 2021 co-host Virtual IMPRS Grand Challenges Symposium (Zoom)
- 2020-2022 external PhD representative Max Planck Institute of Animal Behavior

## PUBLICATIONS

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### 2025

- **Smeele, S. Q.**, , Senar, J. C., McElreath, M. B., & Aplin, L. M. (2025). **The effect of social structure on vocal flexibility in monk parakeets.** R. Soc. open sci. <https://doi.org/10.1098/rsos.241717>
- Staerk, Johanna, Dalia A. Conde, Morgane Tidière, Jean-François Lemaître, András Liker, Balázs Vági, Samuel Pavard, Mathieu Giraudeau, **Simeon Q. Smeele**, Orsolya Vincze, Victor Ronget, Rita da Silva, Zjef Pereboom, Mads F. Bertelsen, Jean-Michel Gaillard, Tamás Székely, and Fernando Colchero, **Sexual selection drives sex difference in adult life expectancy across mammals and birds.** Sci. Adv.11, eady8433 (2025). <https://doi.org/10.1126/sciadv.ady8433>
- Keck, Sarah M., Alex Barnhill, **Simeon Quirinus Smeele**, Maxine Hsu, Ailin Dolson-Fazio, Christian Bergler, Gregory F. Ball, Cara A. Krieg, and Karan J. Odom. (2025). **Deep machine learning allows classification of male and female songbird songs in a species with highly variable repertoires.** Behaviour, 1(aop), 1-35. <https://doi.org/10.1163/1568539X-bja10324>

2024

- *preprint* Ortiz, S.T., **Smeele, S.Q.**, Osvath, M., Guerrero, A.M., Sanchez, A.H., Ramirez, C.U., Almunia, J. and von Bayern, A.M.P. (2024). **Awareness of the future: Dolphins know when they need to remember for the future.** *bioRxiv*, 2024-11. <https://doi.org/10.1101/2024.11.28.625857>
- *preprint* Krasheninnikova, A., **Smeele, S. Q.**, Snijders, M., Haldar, E., Carpenter, J., Zamora, R., Naguib, M., Wolf, J. B., Gahr, M. and von Bayern, A. M. (2024). **Evolution of vocal production learning in parrots.** *bioRxiv*, 2024-11. <https://doi.org/10.1101/2024.11.05.622162>
- **Smeele, S. Q.\***, Tyndel, S. A.\*, Klump, B. C., Alarcon-Nieto, G. & Aplin, L. M. (2024). **callsync: An R package for alignment and analysis of multi-microphone animal recordings.** *Ecology and Evolution*, 14, e11384. <https://doi.org/10.1002/ece3.11384> [\* co-first author]
- **Smeele, S. Q.\***, Tyndel, S. A.\*, Aplin, L. A. & McElreath, M. B. (2024). **Multilevel Bayesian analysis of monk parakeet contact calls shows dialects between European cities.** *Behavioral Ecology*, Volume 35, Issue 1, January/February 2024, arad093, <https://doi.org/10.1093/beheco/arad093> [\* co-first author]

2023

- **Smeele, S. Q.**, Senar, J. C., Aplin, L. A. & McElreath, M. B. (2023). **Evidence for vocal signatures and voice-prints in a wild parrot.** *R. Soc. open sci.* <https://doi.org/10.1098/rsos.230835>
- Mooney, A., Teare, J. A., Staerk, J., **Smeele, S. Q.**, Rose, P., Edell, R. H., King, C. E., Conrad, L., & Buckley, Y. M. (2023). **Flock size and structure influence reproductive success in four species of flamingo in 540 captive populations worldwide.** *Zoo Biology*, 1-14. <https://doi.org/10.1002/zoo.21753>

2022

- **Smeele, S. Q.**, Conde, D. A., Baudisch, A., Bruslund, S., Iwaniuk, A., Staerk, J., Wright, T. F., Young, A. M., McElreath, M. B. & Aplin, L. M. (2022). **Coevolution of relative brain size and life expectancy in parrots.** *Proceedings of the Royal Society B*, 289(1971), 20212397. <https://doi.org/10.1098/rspb.2021.2397>
- **Smeele, S. Q.** (2022). **Using relative brain size as predictor variable: Serious pitfalls and solutions.** *Ecology and Evolution*, 12, e9273. <https://doi.org/10.1002/ece3.9273>
- Bergler, C., **Smeele, S.Q.**, S.A., Barnhill, A., Ortiz, S.T., Kalan, A.K., Cheng, R.X., Brinklöv, S., Osiecka, A.N., Tougaard, J. and Jakobsen, F. (2022) **ANIMAL-SPOT enables animal-independent signal detection and classification using deep learning.** *Sci Rep* 12, 21966. <https://doi.org/10.1038/s41598-022-26429-y>
- Torres Ortiz, S., **Smeele, S.Q.**, Champenois, J. & von Bayeren A. M. P. (2022). **Memory for own actions in parrots.** *Sci Rep* 12, 20561. <https://doi.org/10.1038/s41598-022-25199-x>

2021

- Cantor, M.\*, Chimento, M.\*, **Smeele, S. Q.\***, He, P., Pappageorgiou, D., Aplin, L. M., & Farine, D. R. (2021). **Social network architecture and the tempo of cumulative cultural evolution.** *Proceedings of the Royal Society B*, 288(1946), 20203107. <https://doi.org/10.1098/rspb.2020.3107> [\* co-first author]

2020

- Nielsen, R. O., da Silva, R., Juergens, J., Staerk, J., Sørensen, L. L., Jackson, J., **Smeele, S. Q.**, & Conde, D. A. (2020). **Standardized data to support conservation prioritization for sharks and batoids (Elasmobranchii)**. Data in brief, 33, 106337. <https://doi.org/10.1016/j.dib.2020.106337>
- Bergler, C., Schmitt, M., Maier, A., **Smeele, S.**, Barth, V., & Nöth, E. (2020). **ORCA-CLEAN: A Deep Denoising Toolkit for Killer Whale Communication**. In INTER-SPEECH (pp. 1136-1140). <http://dx.doi.org/10.21437/Interspeech.2020-1316>

2019

- **Smeele, S. Q.**, Anderson Hansen, K., Ortiz, S. T., Johansson, F., Kristensen, J. H., Larsson, J., Siebert, U. & Wahlberg, M. (2019). **Memory for own behaviour in pinnipeds**. Animal cognition, 22(6), 947-958. <https://doi.org/10.1007/s10071-019-01286-x>

## REPORTS

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2026

- **Smeele, S. Q.**, Grethen, K. J., Brinkløv, S. M. M., Fjederholt, E. T., & Elmeros, M. (2026). **Modelling offshore bat activity over danish waters.**, Aarhus University, DCE - Danish Centre for Environment and Energy. [https://dce.au.dk/fileadmin/dce.au.dk/Udgivelser/Videnskabelige\\_rapporter\\_600-699/SR691.pdf](https://dce.au.dk/fileadmin/dce.au.dk/Udgivelser/Videnskabelige_rapporter_600-699/SR691.pdf)

2025

- Brinkløv, S. M. M., **Smeele, S. Q.**, Uebel, A. S., Grethen, K. J., Fjederholt, E. T., & Elmeros, M. (2025). **Baseline surveys of Birds, Bats and Marine Mammals in areas for Offshore Wind Farms in the Danish North Sea (North Sea I): Bats-Baseline surveys 2023-2025 North Sea I.**, Aarhus University, DCE - Danish Centre for Environment and Energy. 66 p. [https://dce.au.dk/fileadmin/dce.au.dk/Udgivelser/Eksterne\\_udgivelser/2025/NSI\\_WPC\\_BATS\\_TR\\_Y2\\_2025\\_101025-4.pdf](https://dce.au.dk/fileadmin/dce.au.dk/Udgivelser/Eksterne_udgivelser/2025/NSI_WPC_BATS_TR_Y2_2025_101025-4.pdf)
- Nielsen, L. T., Brinkløv, S. M. M., Elmeros, M., Galatius, A., Grønkjær, P., Hansen, J. W., Hansen, J. L. S., Koziol, A. L., Larsen, M. M., Lønborg, C., Mohn, C., Petersen, I. K., **Smeele, S. Q.**, Strand, J., Stæhr, P. A., Sveegaard, S., Teilmann, J. & Tougaard, J. (2025). **Review af datablade for effektovervågning i danske havvindmølleparker**, Aarhus University, DCE - Danish Centre for Environment and Energy. 39 p. [https://dce.au.dk/fileadmin/dce.au.dk/Udgivelser/Notater\\_2025/N2025\\_29.pdf](https://dce.au.dk/fileadmin/dce.au.dk/Udgivelser/Notater_2025/N2025_29.pdf)

2024

- Brinkløv, S.M.M., **Smeele, S.Q.**, Uebel, A.S., Fjederholt, E.T. & Elmeros, M. (2024). **Bats surveys - pre-investigations for offshore wind farms in the area North Sea I.** Energinet Eltransmission A/S. [https://dce.au.dk/fileadmin/dce.au.dk/Udgivelser/Eksterne\\_udgivelser/2024/Bat\\_surveys.pdf](https://dce.au.dk/fileadmin/dce.au.dk/Udgivelser/Eksterne_udgivelser/2024/Bat_surveys.pdf)
- Brinkløv, S.M.M., **Smeele, S.Q.**, Fjederholt, E.T., Skalshøj, M.R., Elmeros, M. (2024). **Bestandsovervågning af flagermusarter i Mønsted Kalkgruber med fotofælder og citizen science.** Aarhus Universitet, DCE - Nationalt Center for Miljø og Energi, 27 s. - Videnskabelig rapport nr. 604. [https://dce.au.dk/fileadmin/dce.au.dk/Udgivelser/Videnskabelige\\_rapporter\\_600-699/SR604.pdf](https://dce.au.dk/fileadmin/dce.au.dk/Udgivelser/Videnskabelige_rapporter_600-699/SR604.pdf)

## CONFERENCES

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### IBAC

2025

*University of Southern Denmark, Kerteminde*

- Talk: 'Quantification of bat offshore activity above the North Sea'

### Oikos

2025

*Innovate - Aalborg University*

- Talk: 'Using Neural Networks for Continuous Monitoring of Bat Populations in Mønsted Kalkgruber'

### IBAC AI in Bioacoustics

2024

*Copenhagen University, Denmark (online)*

- Talk: 'Passive acoustic monitoring of bats above the Danish North Sea using deep learning'

### Active Sension Seminar

2024

*Aarhus University, Denmark*

- Talk: 'Animal Spot, a convolutional neural network to detect bat calls and classify genus/species'

### Vocal Complexity and Social Learning Workshop

2023

*Max Planck Institute for Evolutionary Biology, Germany*

- Talk: 'Vocal flexibility in monk parakeets'

### CES Hybrid Conference

2022

*Aarhus University, Denmark (online)*

- Talk: 'Monk parakeets exhibit individual vocal signatures and population-level dialects in their vocalisations'

### ASAB Easter Virtual Meeting

2021

*University of Bristol, UK (online)*

- Talk: 'Brainy lives: do larger brained parrots live longer?'

## SKILLS

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R, driving licence, GitHub, acoustic analysis, first aid, sea survival, elementary fire

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LaTeX, Python, Bayesian statistics, teaching and supervision, international collaborations, field work

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Matlab, Bash, Git

### Languages

- English (fluent)
- Danish (fluent)
- Dutch (fluent)
- German (intermediate)

## REFERENCES

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<b>Morten Elmeros</b>	Senior Advisor Department of Ecoscience Aarhus University +45 87 15 89 16 elm@ecos.au.dk
<b>Prof. Lucy M. Aplin</b>	Group Leader Research School of Biology Australian National University +61 2 6125 7714 lucy.aplin@anu.edu.au
<b>Dr. Mary Brooke McElreath</b>	Research Scientist Department of Human Behavior, Ecology and Culture Max Planck Institute for Evolutionary Anthropology +49 341 3550 330 mary_mcelreath@eva.mpg.de

## PERSONAL

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<b>Date of Birth</b>	02-08-1992
<b>Place of Birth</b>	Assen, The Netherlands
<b>Nationality</b>	Dutch
<b>Location</b>	Aarhus, Denmark