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

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

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 murres
- 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

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

Grants
- 2025 ÅV Jensen Nature Foundation (€ 334,725)
- 2025 Research Reserve Grant, AU (€ 40,000)
- 2022 Small Cluster Grant, CASCB (€ 10,000)
- 2021 Small Cluster Grant, CASCB (€ 10,000)

ACTIVITIES

Peer reviews
- 2025 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

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 voiceprints 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., Brinkløv, 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., Papageorgiou, 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 INTERSPEECH (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

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

- 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. 2024. **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

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

- Brinkløv, S.M.M., **Smeele, S.Q.**, Fjederholt, E.T., Skalshøi, 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

CONFERENCES

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

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

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

- ● ○ ○   Matlab, Bash, Git

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

REFERENCES

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Aarhus University
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Prof. Lucy M. Aplin

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Dr. Mary Brooke McElreath

Research Scientist
Department of Human Behavior, Ecology and Culture
Max Planck Institute for Evolutionary Anthropology
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mary_mcelreath@eva.mpg.de

PERSONAL

Date of Birth   02-08-1992

Place of Birth   Assen, The Netherlands

Nationality   Dutch

Location   Aarhus, Denmark