On the origin of 'bloopergenes': unraveling the evolution of the balanced lethal system in Triturus newts

Visser, M.C. de

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Appendix II: Awards & Publications

Below is a list of awards and prizes that Manon received, followed by a list of her scientific (peer-reviewed) publications and preprints, a list of her popular (non-peer-reviewed) scientific publications, and a list of the popular science and children's books that feature her (scientific) opinion on certain biodiversity-related matters. The information is provided in chronological order (newest to oldest).

Awards & Prizes

- **Selected as 'Face of Science 2023'** by the Royal Netherlands Academy of Arts and Sciences (KNAW), The Youth Academy (De Jonge Akademie) and NEMO Kennislink, after being nominated by Associate Professor and marine biologist: Dr Lisa Becking.
- **"1st prize for one-minute pitch"** at the Netherlands Society of Evolutionary Biology PhD & Postdoc meeting 2021 (NLSEB2021), for the pitch: "The balanced lethal system in *Triturus*: an evolutionary trap!"
- **"3rd best oral presentation"** at the Programming For Evolutionary Biology Conference 2021 (miniPEB2021), Freie Universität Berlin, for the talk: "Studying the lethality and evolutionary origin of the balanced lethal system in *Triturus* newts".
- **"1st prize for oral presentation"** within subtheme: Global Health - Humans and Animals" at the University of Copenhagen EuroLeague of Life Sciences (ELLS) Student Conference 2017, for the MSc project "The importance of genomics for the conservation management of the critically endangered pygmy hog (*Porcula salvania*)".
- **"Best oral presentation"** at the Benelux International Society of Applied Ethology (ISAE) meeting 2016, for the MSc project "The effect of exposure to visitors on stress in the critically endangered blue-eyed black lemur (*Eulemur flavifrons*) and other primate species at Apenheul Primate Park, the Netherlands."

Scientific publications

- Mars, J., Koster, S., Babik, W., France, J., Kalaentzis, K., Kazilas, C., Martínez-Solano, I., **De Visser, M.C.**, Wielstra, B. (2025). Phylogenomics yields new systematic and taxonomical insights for *Lissotriton* newts, a genus with a strong legacy of introgressive hybridization. *Molecular Phylogenetics and Evolution* 204: 108282
- Kalaentzis, K., Kazilas, C., Arntzen, J.W., Bogaerts, S., Franzen, M., Litvinchuk, S.N., Olgun, K., France, J., **De Visser, M.C.**, Wielstra, B. (2025). Phylogenomics resolves the puzzling phylogeny of banded newts (genus *Ommatotriton*). *Molecular Phylogenetics and Evolution* 203: 108237.

- Koster, S., Polanen, R., Avcı, A., Bogaerts, S., Bozkurt, E., Goudarzi, F., Hemami, M., Olgun, K., Pasmans, F., Steinfartz, S., Üzüm, N.,azan, **De Visser, M.C.**, France, J., Theodoropoulos, A., Wielstra, B. (2024). Discordance between phylogenomic methods due to introgression in Near Eastern mountain newts (*Neurergus*, Salamandridae). *SSRN* preprint 5077292. [Submitted to and Under Review at *Molecular Phylogenetics and Evolution*]

- **De Visser, M.,** France, J., Paulouskaya, O., Brown, T., Fahrbach, M., Van der Ploeg, C., Wielstra, B. (2024) Conserved gene content and unique phylogenetic history characterize the 'bloopergene' underlying *Triturus*' balanced lethal system, *bioRxiv* preprint 2024.10. 25.620277. [This thesis, Submitted to and Under Review at *Nature Communications*]

- France, J., **De Visser, M.**, Paulouskaya, O., Arntzen, J.W., Babik, W., Cvijanović., M., Ivanović, A., Smith, J., Vučić, T., Wielstra, B. (2024) Genomic evidence suggests the balanced lethal system in *Triturus* newts originated in an instantaneous speciation event, *bioRxiv* preprint 2024.10. 29.620207. [In prep for Journal Submission]

- **De Visser, M.C.**, France, J., McCartney-Melstad, E., Bucciarelli, G.,M., Theodoropoulos, A., Shaffer, H.B., Wielstra, B. (2024) NewtCap: an efficient target capture approach to boost genomic studies in Salamandridae (True Salamanders and Newts), *bioRxiv* preprint 2024.10. 25.620290. [This thesis, Submitted to and Under Review at *Molecular Ecology Resources*]

- **De Visser, M.,** Van der Ploeg, C., Cvijanović, M., Vučić, T., Theodoropoulos, A., Wielstra, B. (2024) PAV-spotter: using signal cross-correlations to identify Presence/Absence Variation in target capture data, *bioRxiv* preprint 2024.10. 25.620064. [This thesis, Submitted to and Under Review at *Molecular Ecology Resources*]

- **De Visser*, M.C.**, Meilink*, W.R.M., Theodoropoulos, A., Fahrbach, M., Wielstra, B. (2024) Determining zygosity with multiplex Kompetitive Allele-Specific PCR (mxKASP) genotyping *bioRxiv* preprint 2024.10: 25.620256. [This thesis, Submitted to and Under Review at *Molecular Ecology Resources*]
  * = *Authors share a first authorship / equal contribution.*

- Kazilas, C., Dufresnes, C., France, J., Kalaentzis, K., Martínez-Solano, I., **De Visser, M.C**., Anrtzen, J.W., Wielstra, B. (2024) Spatial genetic structure in European marbled newts revealed with target enrichment by sequence capture, *Molecular Phylogenetics and Evolution* 194: 108043.

- Kalaentzis K., Arntzen J.W., Aziz A., Van den Berg V., Beukema W., France J.M., Olgun K., Van Riemsdijk I., Üzüm N., **De Visser M.C.** & Wielstra B.M. (2023) Hybrid zone analysis confirms cryptic species of banded newt and does not support competitive displacement since secondary contact, *Ecology and Evolution* 13(9): e10442.

- Robbemont J., Van Veldhuijzen S., …, **De Visser M.C.** & Wielstra B.M. (2023) An extended mtDNA phylogeography for the alpine newt illuminates the provenance of introduced populations, *Amphibia-Reptilia* 44(3): 347-361.

- Kuijt, M., Oskam, L., Den Boer, I., Dufresnes, C., France, J., Gilbert, M. J., **De Visser, M.C.**, Struijk, R.P.J.H, Wielstra, B. (2023) The introduction of three cryptic tree frog species in the Dutch coastal dunes challenges conservation paradigms. *Amphibia-Reptilia* 44(1), 1-10.
- Koster, S., Prins, N., Dufresnes, C., France, J., **De Visser, M.C.**, Struijk, R.P.J.H., Wielstra, B. (2023) The conservation paradox of an introduced population of a threatened species: spadefoot toads in the coastal dunes of the Netherlands. *Amphibia-Reptilia* 44(1), 11-18.
- De Brouwer, J., Helder, B., France, J., **De Visser, M.C.**, Struijk, R.P.J.H., Wielstra, B. (2023) An isolated crested newt population in Dutch coastal dunes: distribution relict or introduction? *Amphibia-Reptilia* 44(1), 19-26.
- Vliegenthart, C., Van de Vrede, M., Den Boer, I., Gilbert, M., Lemmers, P., France, J., **De Visser, M.C.**, Struijk, R.P.J.H., Wielstra, B. (2023) The limits of mtDNA barcoding for determining the provenance of invasive species: a midwife toad example. *Amphibia-Reptilia* 44(1), 27-33.
- Van der Groot, A., **De Visser, M.**, Hiemstra, A.F. (2022) Smooth newts *Lissotriton vulgaris* observed hibernating in a waterfowl nest. *Herpetological Bulletin*: 162: 41-42.
- **De Visser M.**, Prins E., Bosse M., Crooijmans R., Ter Meulen T. (2022). Maximum longevity and juvenile mortality in zoo-housed mangabeys. *Zoo biology*: 1-11.
- Fahrbach M., **De Visser M.C.,** Wielstra B.M. The hybrid zone between the Italian and Northern crested newts (*Triturus carnifex* and *T. cristatus*) reaches Germany, *Salamandra* 57(3): 428-434.
- **De Visser M.C.,** Liu, L., Bosse, M. (2021). Pygmy hogs, *Current Biology* 31(8):R366-R368.
- Liu, L., Bosse, M., Megens, H.J., **De Visser, M.C.,** Groenen, M.A.M., Madsen, O. (2020) "Genetic consequences of long-term small effective population size in the critically endangered pygmy hog." *Evolutionary Applications* 14:710-720.
- Van Tuijl, C., Van Bochove, K., **De Visser, M.C.** (2019). Genetic structure of badger populations in a fragmented landscape: how do barriers affect populations on a genetic level? *Lutra* 62: 65-76.

Popular Science Articles

- Wielstra, B.M., **De Visser, M.C.**, Stark, T., Struijk, R.P.J.H. (2023) Herkomst van exotische Alpenwatersalamanders blootgelegd, *Schubben & Slijm* 15(3).
- Struijk, R.P.J.H., Prins, N., Koster, S., Putters, N., Jansen, N., Esselaar, J., **De Visser, M.C.**, France, J.M., Wielstra, B.M. (2024) Knoflookpad in Callantsoog: verspreiding, voortplanting en geografische herkomst, *RAVON* 26(1): 2-5.

- **De Visser, M.C.**, Prins, N., France, J.M., Struijk, R., Wielstra, B. (2023) Exotische amfibieën in de duinen ontmaskerd met mtDNA barcoding. *Holland's Duinen* 82(1): 25-29.
- Wielstra, B.M., Den Boer, I., France, J.M., **De Visser, M.C.**, Struijk, R. (2023) MtDNA barcoding van exotische amfibieën in de duinen. *RAVON* 89(2): 26-29.
- Struijk, R.P.J.H., Backx, B., Demirkapu, B., **De Visser, M.**, Wielstra, B. (2022). 'Rise and fall' van een populatie westelijke smaragdhagedissen in Scheveningen. *RAVON* 24(4): 24-27.
- Helder B., De Brouwer J., Ouwehand J., **De Visser M.** & Wielstra B. (2021). Koi-kamsalamander, *Schubben & Slijm* (48): 8.
- Meilink W.R.M., France J., **De Visser M. C.** & Wielstra B. (2021). Balanced lethal systems: an evolutionary mystery. *Frontiers For Young Minds*. 9:632945.
- **De Visser M.C.**, France J.M., Meilink W.R.M. & Wielstra B.M. (2021). Een evolutionair raadsel: het dodelijke chromosoom 1 syndroom in *Triturus*-salamanders, *RAVON* 23(1): 9-12.
- Struijk R.P.J.H, Demirkapu B., **De Visser M.C.** & Wielstra B.M. (2021). Exotische smaragdhage-dissen in de duinen bij Scheveningen, *Kijk op Exoten* (34): 12-13.

Appearance in Popular Science Books

- Future for Nature Academy (2025) *De geheim vissendief - en andere avonturen van jonge natuurhelden*. Details: A fictional children's book featuring various conservation stories inspired by the work of (former) Future For Nature Award winners, including one chapter by **De Visser, M.C.** which focuses on the critically endangered Togo slippery frog in Africa.
- Jansen, J. & Jansen, D. (2022). *PromovendA tot Z – 26 vrouwen in de wetenschap over hun vak en 26 columns van Dolf Jansen over ongeveer hetzelfde.* Details: A popular science book for adults, featuring 'A through Z' stories scientifically backed by young female scientists - including one chapter on climate change (under 'K' for 'Klimaatverandering'), partially written by **De Visser, M.C.**
- Brouwer, D. (2022). *Otje & Ik en de (te) gekke superkracht van mijn axolotl*. Details: A fictional children's book about a pet axolotl with superpowers, featuring a fun and educational 'fact versus fiction' chapter at the end, by **De Visser, M.C.**


Vroege Vogels, BNNVARA, NPO Radio 1
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Appendix III: Outreach items & Media attention

Below is a list of outreach items and media attention that relate to Manon's (scientific) work and 'PhD life'. This includes – but is not limited to – projects and interviews that resulted in magazine articles, newspaper articles, radio items, television items, awards, ambassadorships, blogs, vlogs, books, and guest lectures meant for children. The information is provided in chronological order (oldest to newest) and many of these items can still be read, watched, or listened to online today.

- **Blog**: *'Werken met een supercomputer'* [Dutch] / *'Working with supercomputers'* [English]. Bilingual blog explaining how Manon can easily work from home during the pandemic, as she uses a high performance computer cluster. 28-4-2020, **Naturalis website**

- **Interview**: *Naturalis spotlight*. A livestream interview through LiveScience Naturalis (not in person due to the pandemic). Video still available online. 25-6-2020, **LiveScience, Naturalis' YouTube**

- **Video**: '*Manon's DNA talk 1 | een vreemd salamander syndroom*'. A personal vlog explaining my PhD research to a broader audience. 30-6-2020, **Naturalis' YouTube**

- **Video**: '*Manon's DNA talk 2 | wat is DNA?'* A personal vlog explaining what DNA is to a broader audience. 17-9-2020, **Naturalis' YouTube**

- **Video**: *'Manon's DNA talk 3 | Evolutie'*. A personal vlog explaining what evolution is to a broader audience. 25-11-2020, **Naturalis' YouTube**

- **Newspaper Article**: *"Leidse bioloog ontdekt hoe het kan dat de helft van de embryo's van kamsalamanders al in het ei doodgaan [video]".* An article in local newspaper Leidsch Dagblad, describing a *RAVON* publication. *Leidsch Dagblad*. 24-3-2021, **Leidsch Dagblad**

- **Blog**: *'Waarom zijn de eitjes van de kamsalamander gedoemd te sterven?'* [Dutch] / *'Why are crested newt eggs doomed to die?'* [English]. Bilingual blog on Nature Today, explaining the *RAVON* publication. 20-3-2021, **Nature Today**

- **Blog**: *'Grote liefde voor de kleinste varkens'* [Dutch] / *'Big love for the world's smallest pig'* [English]. Bilingual blog about the *Current Biology* 'Quick Guide' published by Manon and co-authors, about pygmy hogs. 29-4-2021, **Nature Today**

- **Radio Interview**: '*Het salamander mysterie'* radio fragment, being interviewed live at the Vroege Vogels studio of BNNVARA, NPO Radio 1. 2-5-2021, **BNNVARA, Vroege Vogels**

- **Interview**: '*Salamander raadsel*' article, belonging to the Vroege Vogels / BNNVARA NPO Radio 1 item. 2-5-2021, **BNNVARA, Vroege Vogels**

- **Video**: '*Manon's DNA talk 4 | Hoe ontstaan soorten*?' A personal vlog explaining the concept of speciation to a broader audience. 7-5-2021, **Naturalis' YouTube**

- **Blog**: Launch of Manon's personal website about science and biology (the 'Wild Science' blog by her company 'Wild DNA'). 10-6-2021, **Wild DNA / Personal site**

- **Blog:** *'Duitse kamsalamanders met "Italiaans" bloed!'*, a personal blog describing a new publication about admixed crested newts in Germany. 18-8-2021, **Wild DNA / Personal site**

- **Video**: '*Manon's DNA talk 5 | DNA barcoding van amfibieën*'. A personal vlog explaining the mtDNA barcoding student projects of our lab. 31-8-2021, **Naturalis' Youtube**

- **Blog**: '*Salamanders and Lizards: 14 ways to tell them apart!*' A personal blog, which Manon worked out during the *scicomm* course of Leiden University's HRM Learning Environment. 23-9-2021, **Wild DNA / Personal site**

- **Lesson/Module**: '*Les 2: een evolutionair raadsel - een dodelijk salamander syndroom*'. An online 'Natuurlab' lesson/module about the balanced lethal system, comprising of assignment, informative texts, and explanatory videos. 1-12-2021, **Naturalis' Natuurlab**

- **Magazine Article**: '*Waarom houden kikkers en padden hun voorpoten voor hun ogen als ze zich bedreigd voelen?'* Q&A section, an interview about why frogs and toads keep their forelimbs in front of their eyes when they are in danger. 1-2-2022, **Quest**

- **Children's lecture**: '*Waarom is de salamander een superdier?'* A lecture designed for children, about the fascinating traits of salamanders, provided at the Naturalis' 'tribune' room. 13-2-2022, **MuseumJeugdUniversiteit**

- **Blog**: '*Monkey Business: publicatie in '*Zoo Biology'', a personal blog about one of Manon's papers that came out and focused on population demography of captive mangabeys in zoos. 6-4-2022, **Wild DNA / Personal site**

- **Blog**: '*De pygmy hog: nu te zien bij 'favo items' in LiveScience!'* A personal blog about Manon's efforts to bring the pygmy hog specimen to the public temporarily, at the LiveScience hall of the Naturalis' museum. 3-5-2022, **Wild DNA / Personal site**

- **Blog**: '*One pond, four species!'* A personal blog about field work during which Manon observed all native, Dutch newt species at once in the same pond close to her home – a rare sight. 8-5-2022, **Wild DNA / Personal site**

- **Magazine Article**: *'Deze salamander doet aan parachutespringen',* an article by *KIJK Magazine* featuring Manon's opinion on a 'skydiving' salamander study. 25-5-2022, **KIJK Magazine**

- **Magazine Article**: 'The tragedy of *Triturus*', an article in Leiden Science Magazine, written by a first year BSc student in response to the guest lecture Manon provided at the Symposium 'Populair Wetenschappelijk Schrijven'. 9-6-2022, **Leiden Science Magazine**

- **Video**: *'Bioloog Manon de Visser over mangabeys en dierentuinen'.* A personal video/interview about a mangabey paper (a journal publication in *Zoo biology*, with Leiden University as one of the affiliations). In the video Manon discusses the importance of collaborations between zoos, museums and universities. 12-6-2022, **Naturalis' YouTube**

- **Magazine Article**: *'Kikker kan door kleine oren niet goed springen*', an article by *KIJK Magazine* featuring Manon's opinion on a recently published paper about 'clumsy mini-frogs'. 17-6-2022, **KIJK Magazine**

- **Keynote Talk**: *'I see the beauty in DNA and the 'mistakes' that nature makes therein*', a keynote lecture at the Hooglandse Kerk during Leiden2022 (the Leiden European City of Science 2022), for the art exhibition 'TRINITY: contemporary triptych in Leiden'. 28-6-2022, **Leiden2022 / TRINITY / Wild DNA**

- **Children's lecture**: A guest lecture, designed for children, provided by Manon to kick-start the 2022 Summerschool Junior of Leiden University (by *ICLON*). Both children and their parents were present. Manon discussed what it is like to be a biologist, and talked about salamanders. 25-8-2022, **University/college**

- **Video**: '*Manon's DNA talk 6 | Wat zijn hybriden?'* A personal vlog explaining the nature of hybrid species, using crested vs. marbled newts and hybrids as an example, showcasing amazing fieldwork footage. 6-10-2022, **Naturalis' YouTube**

- **Podcast Item**: At the *Podcast NPO Radio 1: "Alledaagse Vragen"* of BNNVARA/NPO Radio 1, Manon was interviewed about the basic biology/genetics behind (human) sex ratios. 26-10-2022, **BNNVARA, "Alledaagse Vragen"**

- **Media Storm / Book**: For a popular science book featuring young, female scientists, Manon was asked to provide input. The book is called '*PromovendA tot Z'*, and includes Manon under Chapter K (which stands for 'Klimaatverandering' / 'Climate change'). 3-10-2022, The book got discussed by; **AD, NPO Radio 1, Eva Jinek, Parool, New Scientist, De Volkskrant & more**.

- **Book**: For a children's book about a boy and his pet axolotl, Manon provided the end chapter. The book is called *'Otje & ik'* and tells a fictional story. In her chapter, Manon explains in a fun way what is salamander fact, and what is salamander fiction ('feit of fabel'). 16-11-2022, see **Personal site / Wild DNA**

- **Blog**: '"*Aliens in de duinen!?" Exotische amfibieën ontdekt'.* A personal blog describing the articles that got pre-published online (in the journal *Amphibia Reptilia*) about exotic amphibians in the Dutch dunes. 1-12-2022, **Wild DNA / Personal site**

- **Blog**: *'Boomkikkers ontmaskerd'* [Dutch] / *'Tree frogs exposed'* [English]. Bilingual blog on *Nature Today*, explaining the *Amphibia Reptilia* papers. 1-12-2022, **Nature Today**

- **Video**: '*Manon's DNA talk 7 | "Buitenlandse boomkikkers"'* A personal vlog explaining the results of the amphibian mtDNA barcoding studies of her research group, including amazing field- and lab-work footage. 1-12-2022, **Naturalis' YouTube**

- **Media Storm / Newspaper Articles**: Different media picked up on the *Amphibia Reptilia* publications regarding exotic amphibians in the Dutch dunes and reported the slightly shocking results. 12-2022, **NOS, AD, ATLAS, Omroep West, Noordhollands Dagblad, West Wordt Wakker (Radio Interview), Scientias, Kidsweek & more**.

- **Blog:** 'Salamanders overwinteren in vogelnesten', a blog about a discovery in the Leiden canals where smooth newts were observed hibernating in a fowl's nest, that Manon described with co-workers as a 'Natural History Note' in *The Herpetological Bulletin*. The item incorporated Manon's commentary on the matter. 26-12-2022, **Nature Today**

- **Blog**: '*The chimp and the bananas: how I helped design the new Evolution exhibition of Naturalis*'. The exhibition designers of the Naturalis museum asked Manon for help designing their concept and content for in the new museum hall called 'Evolution'. Manon wrote a blog about how her ideas got incorporated. 14-1-2023, **Wild DNA / Personal site**

- **Magazine Article**: *'Kippen-DNA vervuilt genen wilde oerkip',* KIJK Magazine asked Manon to comment on the dangers of admixture/hybridization between domestic and wild chicken, related to a paper published by the National University of Singapore. 20-1-2023, **KIJK Magazine**

- **Newspaper Article**: *'Ondergronds oeramfibie duikt op'*; a Bionieuws article about a paper by paleobiologists describing ancient caecilian fossils, featuring Manon's comments on it. 27-1-2023, **Bionieuws**

- **Radio Interview:** *SLAM!* interviewed Manon on live radio, talking about dodo- dinosaur- mammoth- and salamander DNA (and the pros and cons of de-extinction). 2-2-2023, **SLAM!**

- **Interview / Newspaper Article**: *'Bioloog Manon de Visser heeft 'een voorliefde voor slijmerige beesten''.* NRC published an extensive, personal interview with photos taken at Naturalis/LiveScience to shine a light on what it is like to be a young biologist and PhD candidate. 3-3-2023, **NRC rubriek 'Jong Geleerd'**

- **Award:** Manon was selected as *'Face of Science 2023'* by the KNAW, the Youth Academy (Jonge Akademie), NEMO Kennislink, and Stichting Lira. *Faces of Science* is a KNAW initiative that gives a platform to successful, young academics so they can openly talk/blog/vlog about anything that inspires them and their work. 9-3-2023, **KNAW / NEMO / Faces of Science**

- **Newspaper Article**: *'Waarschuwingskleuren evolueren stapsgewijs',* a Bionieuws article about a study related to aposematism / camouflage evolution in amphibians, featuring Manon's comments. 24-3-2023, **Bionieuws**

- **Newspaper Article**: *'Er zijn steeds minder padden, maar vrijwiligers proberen het tij te keren'*, Manon was interviewed to talk about the big toad migration in spring, and about how toads benefit from volunteers that help them cross roads. 27-3-2023, **De Volkskrant**

- **Radio Interview**: *'Kokerjuffers, de Nationale Bloem en bonttest'* A reporter from Vroege Vogels joined Manon's students and herself during amphibian-related fieldwork. The talks, and muddy sounds, were recorded and broadcasted. 16-4-2023, **BNNVARA, Vroege Vogels**

- **NEMO Blog**: *'Amfibieën vertellen ons hoe gezond de natuur is'*, as Face of Science and NEMO Kennislink blogger, Manon writes about topics that inspire her. English versions are on her personal site. 25-4-2023, **KNAW / NEMO / Faces of Science**

- **NEMO Blog**: *'Zes redenen waarom amfibieën wereldwijd achteruit gaan'*, as Face of Science and NEMO Kennislink blogger Manon writes about topics that inspire her. English versions are on her personal site. 25-4-2023, **KNAW / NEMO / Faces of Science**

- **Interview**: *'Evolutie is gedachteloos, lui en imperfect - en dat is precies waarom het zo goed werkt!'* The personal Faces of Science profile of Manon got launched, portraying a lengthy interview and links to her KNAW / NEMO / Faces of Science blogs. 1-5-2023, **KNAW / NEMO / Faces of Science**

- **Video**: *'Welke afwijkingen hebben salamanders in het DNA?'* A YouTube video by KNAW presenting Manon and her research, which was recorded at Naturalis Biodiversity Center. 1-5-2023, **KNAW YouTube**

- **NEMO Blog**: '*Wat is jouw lievelingsdier*? En andere gekmakende vragen!', as Face of Science and NEMO Kennislink blogger Manon writes about topics that inspire her. English versions are on her personal website. 28-6-2023, **KNAW / NEMO / Faces of Science**

- **Magazine Article**: *'Deze zeeslang kan weer kleuren zien'*, KIJK Magazine asked Manon to comment on a new paper about the evolution of color vision in sea snakes and incorporated her commentary in their article. 13-7-2023, **KIJK Magazine**

- **Blog**: '*Exotische Alpenwatersalamanders blijken wijdverspreid'* A Leiden University press release, coinciding with a Nature Today blog, about a new paper focused on identifying populations of exotic alpine newts across The Netherlands. 2-8-2023, **Nature Today & Leiden University**

- **Radio Interview**: *'Evolutionair foutje? Het mysterie rondom salamandereieren'* A live, radio interview about Manon's PhD project an Halloween hobby. 4-9-2023, **NPO Radio 1, "Villa VdB"**

- **Video**: '*Manon's DNA talk 8 | "Bandsalamanders zijn als olie en water"'* A personal vlog explaining the results of a study of the group on banded newt hybridization. 5-9-2023, **Naturalis' YouTube**

- **Podcast item**: *'#6 – Staan voor de zaak: Henk Grol, verslaafd aan zitten, Golden Earring ontleed en een fout in de evolutie'*, the Villa VdB radio interview was selected as one of the best four interviews of the week and therefore ended up in an additional Villa VdB podcast episode. 8-9-2023, **Podcast "Villa VdB"**

- **Magazine Article**: *'Rondworm kweekt enorme mond om familie op te eten'*, *KIJK Magazine* interviewed Manon on the topic of cannibalism, as a response to a recent paper on the genetics and cannibalistic traits of certain roundworm species. 15-9-2023, **KIJK Magazine**

- **Interview**: *'Kikkerbillen: weten we eigenlijk wel wat we eten?'* Together with *KRO-NCRV* and the *Keuringsdienst van Waarde* Manon co-supervised two BSc students to analyze the DNA of frozen frog legs from the supermarket, which led to a shocking reveal. 20-9-2023, **KRO-NCRV & Keuringsdienst van Waarde**

- **Blog**: *"Kikkerbillen eten? Dit moet je eerst weten…"* In response to the shocking reveal of the *KRO-NCRV* and *Keuringsdienst van Waarde* frog legs test, Manon wrote a personal blog, which got picked up by *Faces of Science* / NEMO Kennislink. 20-9-2023, **Wild DNA / Personal site & KNAW / NEMO / Faces of Science**

- **Interview / Magazine Article**: *"Leuk stel: Manon de Visser en Chris van der Ploeg uit Breda trekken regelmatig samen de nacht in"* Journalists from the *ANWB Kampioen Magazine* interviewed both my husband and me to talk about our passion for 'night walks in nature'. 28-9-2023, **ANWB Kampioen**

- **Magazine Article**: *'Vormen kruisingen tussen verschillende diersoorten een probleem?'*, *KIJK Magazine* interviewed me regarding a recent discovery of a hybrid offspring of a dog and fox and the genetics and dangers tied to such phenomena. 9-11-2023, **KIJK Magazine**

- **Lesson/Module**: *'NEMO Science Night 2023: Getsie, gatsie, genetica',* as *Face of Science* I was invited to present during the *NEMO Science Night 2023*, to provide biology teachers with materials and inspiration that would support their DNA/genetics classes. I uploaded many of these materials on my website shortly after, too. 23-11-2023, **Wild DNA / Personal site & KNAW / NEMO / Faces of Science**

- **Blog**: *'Wat was er eerst, de kip of het ei?'*, a journalist from *NEMO Kennislink* reached out to discuss what came first: the chicken or the egg? And my comments were incorporated in an online article. 8-12-2023, **NEMO Kennislink**

- **Blog**: *'Op bezoek bij het Douane DNA lab'*, together with two students of our group I visited the DNA laboratory of the Dutch customs in Amsterdam. I wrote a personal blog about. 22-1-2024, **Wild DNA / Personal site**

- **Lecture / Workshop / Theatre**: *'Moving Animals Festival Naturalis: Workshop Exoten, van welkom tot invasief'*, together with a historian from *Maastricht University*, I organized a workshop for the broader public about exotic species at *Naturalis* during the *Moving Animal Festival* – including a small acting performance. 2-2-2024, **Naturalis Biodiversity Center**

- **Magazine Article**: *'We danken ons supersnelle zenuwstelsel deels aan virussen',* KIJK Magazine requested me to comment on a new paper that described the evolution of the neural system, and on how viruses played a role in it. 15-2-2024, **KIJK Magazine**

- **Blog**: *'Mijn stokoude dieren-top10',* as Face of Science and NEMO Kennislink blogger Manon writes about topics that inspire her. English versions are on her personal website, 19-2-2024 **KNAW / NEMO / Faces of Science**

- **Blog**: *'Wat is taxidermie?'* A personal blog about taxidermy, as Manon started working as a taxidermy volunteer for the Naturalis team in February, 2024. 21-3-2024, **Wild DNA / Personal site**

- **Blog**: *'Wilde wezens juichen om een bosbes van golfbal-formaat'* A personal blog about how the natural instinct of humans and other animals to be fascinated by objects that are out of the ordinary. 25-3-2024, **Wild DNA / Personal site**

- **Blog**: '*Alweer een jaar 'Face of Science' winnaar bij de KNAW*' A personal blog about being a Face of Science. It was picked up and published by NEMO too. 28-3-2024. **Wild DNA / Personal site & KNAW / NEMO / Faces of Science**

- **Ambassadorship**: an ambassadorship for *'De Week van de Biologie 2024'* events, as selected by NIBI (the Dutch Institute for Biology). 1-4-2024, **NIBI**

- **Magazine Article**: *'Hoelang fokken mensen al kippen voor eieren?'* KIJK Magazine asked Manon to comment on a new paper about the domestication of chickens. 3-4-2024, **KIJK Magazine**

- **Blog / Ambassadorship**: '*Biologie zit in mijn DNA - en ook in dat van jou'* A personal blog, written for the NIBI Ambassadorship, about 'De week van de Biologie 2024'. 17-4-2024, **Wild DNA / Personal site**

- **Blog**: *'Minder biologie in onderwijs en wetenschap? Niet als het aan Wild DNA ligt…'*, A personal (/slightly political) blog about how primary school and high school level biology education is threatened – and what she does about it through Wild DNA jobs. 13-6-2024, **Wild DNA / Personal site**

- **Television Interview**: *'Dierbeschermers: niet-schattige dieren krijgen te weinig aandacht',* a national television item on a news channel for children featuring Manon standing up for 'less popular' animals, such as amphibians and reptiles. 27-6-2024, **NOS Jeugdjournaal / NPO Zapp**

- **Newspaper Article***: 'Kleuren en geld gaan voor: meest bedreigde vissoorten krijgen de minste aandacht'*, a article by NOS, featuring the commentary of Manon after being interviewed, regarding the so-called conservation bias in relation to a new reef fish study. 17-7-2024, **NOS**

- **Magazine Article**: '*Deze vis 'loopt' op de zeebodem en 'proeft' zijn prooien*', KIJK Magazine requested Manon's commentary on a new paper about the evolution of 'magical' appendices in gurnard fish, and included it in their article. 27-9-2024, **KIJK Magazine**

- **Blog**: *'Borneo avonturen: congres en rondreis!'*, a personal blog about the scientific conference in Borneo in 2024, and the travelling adventures connected to that event. 9-10-2024, **Wild DNA / Personal site**

- **Newspaper Article**: *'Zeven nieuwe kikkersoorten ontdekt die niet kwaken, maar fluiten'*, an item about the discovery of 'whistling' frogs, including Manon's thoughts on the discovery. 15-10-2024, **De Volkskrant**

- **Radio Interview**: '*Bioloog Manon de Visser over vreemde gedragingen en geluiden bij dieren*', a live radio item, discussing the odd behaviors observed in the animal kingdom. 20-10-2024, **NPO Radio 2 "Vroeg Pieken!"**

- **Podcast Item:** *'Can animals be childfree? (with Dutch Geneticist Manon de Visser)'*, a podcast interview published on Spotify (sneak preview), discussing the global news surrounding a Dutch, mass sperm donor, and general, evolutionary, reproductive strategies in nature/wildlife (+ the animal 'childfree lifestyle'). 24-12-2024, **Dinky Podcast (USA)**

- **Newspaper article**: *'Dit zijn de vijf bijzonderste nieuwe diersoorten van 2024'*, a newspaper from Belgium incorporating Manon's thoughts from the article by De Volkskrant that was published weeks earlier and focused on the whistling frogs discovery. 30-12-2024, **De Morgen (Belgium)**

A guiding light

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Appendix IV: Acknowledgements / Dankwoord

Completing a PhD is not an easy-peasy-lemon-squeezy thing to do. Yet, I have not been able to find a dissertation in which the author took the opportunity to thank themselves. But I believe self-recognition matters and that it should be less frowned upon. Therefore, I hereby – briefly, but wholeheartedly – thank myself for having done an amazing job. That being said, I could have never, ever conducted this research without the support of so many incredibly sweet and talented people – likely including you! So, the rest of this appendix is dedicated to you all. I will not mention names (except those of my cats, but that is because I think they are actual saints that require my worshipping or else bad things happen). Still, I am confident you will know what applies to you.

Colleagues

First of all, I am beyond grateful to my supervisors, mentors, colleagues, and students – especially those from IBL/Leiden University and Naturalis Biodiversity Center – for believing in me and in this project. Thank you for making this journey memorable and enriching.

I will never forget the fun and messy field work in the ponds, the inspiring teaching moments, the thrilling media performances, the crazy lab-disasters, the COVID-era Zoom meetings (and all the cats I could digitally worship thanks to those), the lab visits abroad, the fruitful debates, the countless shared meals and celebrations… And a special thanks goes to all members of my PhD monitoring-, dissertation-, and opposition committees.

I also deeply appreciate all my co-workers from beyond IBL and Naturalis, including those from CML, the Hortus, RAVON, KNAW, NEMO Kennislink, and different Universities, government institutes, museums, and zoos in The Netherlands. And the same goes for the many international collaborators. Amazingly, you entered my life and stayed connected from all corners of the world; Germany, England, France, Poland, Serbia, Greece, the United States, the Emirates, and beyond. Thank you so much for your invaluable contributions!

Friends

To my friends – whether research-related or simply there for mental support – thank you for your advice, your encouragement, and your sparkle.

Leiden friends from IBL, Naturalis, CML, Hortus, LUMC: I want to say I admire you so much! I'll never forget the 'Among Us' betrayals that somehow kept us sane during

lockdowns, the extravagant Christmas parties, the awkward online fitness sessions, the dinners, the home-baked-office-cookies (sorry for never returning the favor!), the creative painting and crafting times, the taxidermy lessons, and the joy of collaborating with you – especially in LiveScience. Thanks for the laughs and the co-venting. You made my 'off-work' moments in Leiden fun and exciting!

Childhood, college, scare-acting, and body-art friends: I deeply appreciate you all. You always help me through the rough times (even if you are not aware of it). And those who engage with me or my *scicomm*-work primarily through social media or my WildDNA-website: know that it means a lot to me that we became, or have simply always been, remote/online friends. Many of you are just one text or tag away – and I value that.

Family & Partner

If you are part of my family – whether by blood or 'aangetrouwd' – you already know I love you and am filled with gratitude for your support. Shout out in particular to the 'ChriRiLauManSte', 'Fries Before Guys', and 'Ploegies' *gang*s!

Foremostly, I want to thank my parents. Pap, mam: thank you, for teaching me to live the way I want (not the way others expect) and for raising me with the '010' and '*gewoon-doen-joh*' mentality. I would have not been where I am today if it were not for your parental love.

Also, I want to deeply thank my sister and her spouse. I enjoy going to concerts and events with you guys, and discussing the good and the bad stuff of life in our homes, and sending funny reels to each other – over and over. Sis, thank you for being just that: my sis, as well as my fellow 'environmental expert', busy bee, and even paranymph!

And hubby: I do not know how you put up with me, honestly… But you are, somehow, always there. You are my family, my best friend, my partner in crime, and even my anti-fireworks comrade, handyman, mind reader, paranymph, co-author… (*do you secretly have superpowers?!)* You held me close – through my highs and lows – despite your own PhD project, marathons, and other worries. I love you so, so much. *감사합니다 - "gam-sa-ham-ni-da"*

Cats

As foretold, I finally have to glorify Siri and Goya. I thank them for being so adorably cute (and for being blissfully unaware of it). They – like the cats that already came before them – remind me that cats are our true saints and saviors. Take it from a crazy cat lady, that one that became quite fond of newts, too.


Pixabay

Appendix V: *Curriculum Vitae*


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Manon de Visser was born on June 11, 1993, in Spijkenisse, The Netherlands. After completing high school at Emmauscollege Rotterdam in 2011, she pursued a BSc in Biology at Utrecht University, focusing on animal behavior and cognition. She concluded her BSc with a research project on nestling sea turtles in Costa Rica in 2014 and graduated in 2015.

That year, she enrolled in a 'double MSc' specialization in Biology at Wageningen University & Research, where she studied a wide range of animals (incl. primates and hogs) while closely collaborating with zoos and other NGOs. Her MSc research covered different fields, such animal genomics, conservation, ecology, behavior, and population management.

After finalizing her MSc in 2018, Manon worked as a project manager in ecology at Econsultancy and simultaneously as an environmental DNA (e-DNA) researcher and science communication officer at Datura Molecular Solutions B.V. This included plenty of desk work, as well as field work, that related to the legal protection of Dutch flora and fauna (incl. birds, reptiles and mammals such as bats and badgers). She worked for these companies until late 2019. Then, she joined the Institute of Biology Leiden at Leiden University, as well as Naturalis Biodiversity Center, to begin her PhD at the Wielstra Lab, studying the evolution of balanced lethal systems in *Triturus* salamanders. This research was fully funded by the European Research Council.

Alongside her PhD project, Manon also contributed to other herpetological studies and she actively worked towards attaining broader public outreach. In line with this, Manon also founded Wild DNA in 2022: her personal science communication company, in which she is self-employed. Following a formal contract extension (through a COVID-19 compensation arrangement), Manon continued her work at the Wielstra Lab as a postdoc (or 'pre-doc') in 2024, again funded by the European Research Council, in order to conclude her *Triturus* studies.

As of April 2025, Manon will continue her career in zoo science, as she will join the Conservation & Science Center of the zoo in Rotterdam: Diergaarde Blijdorp. She will work there as a Research Officer, overseeing scientific projects at the zoo, while also remaining affiliated with Naturalis Biodiversity Center.

**(permission to use picture granted)*

Diergaarde Blijdorp (Rotterdam Zoo)

Appendix VI: Career story

Childhood

Manon de Visser was born in Spijkenisse, The Netherlands, on June 11, 1993. As a naturally curious child, she developed a love for both drawing and animals, and frequently visited petting farms and zoos. Growing up in Rotterdam with her parents and sister, she visited Rotterdam Zoo (Diergaarde Blijdorp) most often – at times weekly – and this would shape her future career aspirations.

During her school years at Ds. J.J. Buskesschool (primary school) and Emmauscollege Rotterdam (high school), her favorite subjects were art and biology, and she aspired to be a zoologist. In 2011, before graduating high school, she was invited to deliver the final graduation speech at the New Luxor Theatre in Rotterdam, representing all HAVO, VWO, and Gymnasium-level pupils that graduated that year. Despite her social anxiety, she accepted the challenge and spoke in front of a large crowd.

Bachelor

In 2011, Manon initiated her BSc in Biology at Utrecht University (UU). She joined the editorial team of BioSCOPE magazine, worked as a Teaching Assistant for a BSc-level animal anatomy course, and worked as a communications intern for Stichting Trésor. She pursued a Minor comprising veterinary sciences, as well as psychology related courses, and she conducted her BSc thesis research on the influence of global warming on temperature-dependent sex determination in sea turtles. For this research, she spent time at Reserva Playa Tortuga in Costa Rica, where she also assisted in caiman and mammal studies and road kill studies (by conducting dead animal street monitoring). During her Bachelor studies, Manon received her 'Safe Microbial Techniques' certification (2011), and also followed additional evening workshops offered by UU in 2014 ('Career business for Biologists', 'Herpetology', and 'Bee keeping for Biologists'). Moreover, during her BSc she volunteered at a Dutch hedgehog rehabilitation centre (EgelopvangZHZ). She graduated her Bachelor's program in 2015 with a final GPA of 3.95.

Master

In 2015, Manon began her MSc in Biology at Wageningen University & Research (WUR), specializing twice by undertaking two Master's thesis projects and two Master's

internships (instead of just one of each). She conducted her studies at the Resource Ecology Group and the Animal Breeding and Genomics Centre. Her favorite project involved whole-genome data analysis of pigs, focusing particularly on the pygmy hog – the smallest and most threatened pig species in the world – in collaboration with the Pygmy Hog Conservation Programme in Assam, India, and Durrell Wildlife Conservation Trust at Jersey Zoo. During this time, she also earned a certificate in Basic Breeding Programme Management through a European Association of Zoos and Aquaria (EAZA) course at ARTIS, and the 'Companion Animals Advanced' certificate via PTC+ (a practical training centre for agriculture, horticulture and animal husbandry).

The rest of her MSc projects included a study on blue-eyed black lemur stress-related behaviors and -hormones (at Apenheul Primate Park and the Biomedical Primate Research Centre), a study on the demography of captive grey-cheeked and black-crested mangabey populations (at GaiaZOO), and a study on chimpanzee welfare and stress-behaviors via ChimpanZOO (a project of the Jane Goodall Institute Global, conducted at Apemanagement). For the latter project, Dr. Jane Goodall personally acknowledged Manon's contributions via handwritten letters. Manon also won several awards for oral presentations at international conferences and – in line with this – became a Teaching Assistant for a WUR course on oral presentation skills. She also participated in an Academic Consultancy Traineeship with BirdLife Netherlands, served on the program's 'Master's Committee', and was recruited as student member of the Appointment Advisory Committee (BAC) for a tenure-track selection procedure at the Animal Breeding and Genomics Centre. She also obtained her certification in Laboratory Animal Science (Article 9 of the Experiments on Animals Act law), allowing her to more easily conduct certain animal studies in the future. During her studies, Manon had always worked several side-jobs (in sales, entertainment, retail, etc.) to support her college fees. She eventually graduated her Master's program in 2018, with a final GPA of 4.0.

Start of career

Right after obtaining her MSc diploma, Manon sought out a suited position in the zoo community – but found opportunities elsewhere. She worked at Datura, a molecular research agency specializing in environmental DNA monitoring, and at Econsultancy, an ecological advisory office focused on the legal protection of Dutch biodiversity, in 2018 and 2019. She gained extensive field and desk experience, and worked round the clock to research Dutch flora and fauna. In this period, she obtained her VCA certification ('Veiligheid voor Operationeel Leidinggevenden'). Meanwhile, she kept raising public awareness for the biodiversity and climate change crises in her free time (something she already did as a BSc and MSc student), for instance by raising funds for Stichting

Herpetofauna through modelling at body art events, or by volunteering at other NGOs like the Future For Nature Academy (as an events organizer), Rotterdam Zoo (as an educator), the Jane Goodall Instituut NL (as a social media manager), and IVN Natuurontdekkers (as a mentor at summer camps for children).

PhD and 'pre-doc'

In 2019, Manon started her PhD at the Wielstra Lab at Leiden University (LU, Faculty of Science), researching the balanced lethal system in *Triturus* newts. Her work was conducted at the Institute of Biology Leiden (IBL, Animal Sciences) in collaboration with the Understanding Evolution research group at Naturalis Biodiversity Center, and it was funded by a European Research Council (ERC) Starting Grant awarded to Dr. Ben Wielstra. Next to conducting her LU research, she concluded in-depth scientific courses such as via ForBio ('Target Enrichment', 2020) and Physalia ('Phylogenetic comparative methods' and 'Phylogenomics', 2021), as well as other types of education, like trainings on *soft skills*, scientific conduct, and project management via LU's HRM Learning & Development (2020-2022) and the 'Summer School Science Communication' via the LU research group Science Communication and Society (2024). She also taught several university-level courses herself, mostly the yearly Evolutionary Biology 2 LU Bachelor course (2020-2024) and the yearly Genomic Architecture' LU Master course (2022-2024). She also served as an events organizer for the Naturalis PhD Council (from 2020 until 2022) and she joined the JongerenXNaturalis youth initiative as a junior 'core group' expert for one year (in 2023).

Through her PhD and 'pre-doc' experiences, Manon deepened her understanding of evolution, DNA, biodiversity, and the urgent need to protect amphibians worldwide. She supported with the design of some of the educational texts that are on display in Naturalis' permanent 'Evolution' exhibit, she developed a high school level, online module about her PhD research topic through Naturalis' Natuurlab environment, and she created several, educational vlogs for Naturalis' YouTube channel dubbed 'Manon's DNA talks'. Also, she presented some of her findings at scientific conferences, such as at the 'mini PEB 2021' conference by the Freie Universität Berlin (winning the 'third best oral presentation' award), the Dutch 'NLSEB 2021' PhD & Postdoc meeting (winning the 'first prize for a one-minute pitch' award), and the Dutch 'NWO Life 2024' conference (with a two-day full display of her scientific art, due to being one of ten 'Visualization Contest' nominees). However, most notably was Manon presenting her work orally at the largest and the openly feministic 'World Congress of Herpetology' in 2024 in Borneo. Furthermore, Manon started volunteering for the Reptile, Amphibian & Fish Conservation Netherlands (RAVON) in her free time, by monitoring amphibians in the forests around her home town Breda and simultaneously used her monitoring permits to teach her students certain fieldwork skills.

Science Communication

In 2022, Manon founded her own science communication and arts business called 'Wild DNA'. Through Wild DNA, she co-authors popular science books and children's stories, delivers keynote talks and guest lectures, fact-checks biology-related information, and creates DNA art (primarily jewelry featuring real, extracted DNA strands). Her efforts in science communication led to her recognition as a 'Face of Science' by the Royal Netherlands Academy of Arts and Sciences (KNAW), The Young Academy (De Jonge Akademie), NEMO Kennislink, and Stichting Lira in 2023. Her media appearances include items by NRC, AD, NU.nl, NPO, Bionieuws, SLAM!, NOS Jeugdjournaal, De Volkskrant, and more, and she also was appointed as one of the ambassadors of the Dutch 'Week van de Biologie' by the Netherlands Institute for Biology (NIBI) in 2024.

Since 2024, Manon has additionally volunteered at Naturalis Biodiversity Center by supporting the taxidermy team with preparing study skins and skeletons of mostly small birds and mammals, often during live, public demonstrations at the LiveScience hall of the museum. She also regularly helps maintain and clean the specimen on display at the museum, including fragile, dinosaur skeletons. Also, as being a biologist as well as a vocal conservationist can be mentally demanding, Manon has been working as a 'scare-actress' at Walibi Holland's yearly *Halloween Fright Nights* events since 2017. While she sees this as a fun way to blow off steam, it also further enhances her knowledge and skills in engaging with the general public via another sector of the leisure industry: theme parks. This uniquely complements her experience working in zoos and museums.

Future prospects

Looking ahead, Manon plans to stay committed to her professional career in zoology, conservation (genomics), and science communication after being awarded the degree of Doctor. Her goal is to build effective collaborations, test new ideas, and bring the public closer to biodiversity science than ever before – all in the hope of supporting the ongoing study and protection of threatened species, including *Homo sapiens*, worldwide.

Recently, Manon took on a position as *Research Officer* at the Conservation & Science Center of Rotterdam Zoo: the place that is full of her childhood memories, and that sparked her dream of becoming zoologist already at a very young age. She thanks the pygmy hippo of the zoo, Eveline, specifically for inspiring the research ideas that contributed to her being eventually selected for the role. She will also remain affiliated with Naturalis Biodiversity Center and aims to strengthen the scientific collaborations between the two knowledge institutes. She will start working at the zoo in April, 2025.

Triturus *eggs wrapped in leaves of aquatic plants*