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From molecules to monitoring: integrating genetic tools into freshwater quality assessments

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CIRRUCULUM VITAE

Kevin Beentjes was born on the 2nd of May 1987 in Zaanstad in the Netherlands. After finishing high school at RSG 't Slingerbos in Harderwijk in 2005, he started his BSc in Biomedical Sciences at the University of Amsterdam, from which he graduated cum laude. He continued his education with the MSc Forensic Science at the same university. The subject of his MSc research project and thesis at the Zoological Museum of Amsterdam, under the supervision of Herman de Jong, was the use of Trichoceridae in forensic entomology, which included DNA barcoding of prevalent Dutch species for molecular identification. After graduating in 2010, he started working at Naturalis Biodiversity Center in Leiden as a research technician in the DNA barcoding campaign funded by the Fonds Economische Structuurversterking, working on sponges, spiders and many other taxonomic groups. In 2015, he started his PhD on the subject of the integration of molecular techniques in water quality assessments at the Naturalis Biodiversity Center and the University of Leiden, under the supervision of Menno Schilthuizen and Arjen Speksnijder, and funded by the Gieskes-Strijbis Fonds. In 2019, while still in the process of writing his thesis, he continued his work at Naturalis Biodiversity Center, where he is involved in applied biomonitoring projects through the BioMon spin-off and collaborations with other institutions, as well as the ARISE project, which will continue the work of creating a genetic reference for all Dutch flora and fauna.



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ABSTRACTS

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ABBREVIATIONS

Overview of abbreviations used throughout this thesis.

AIC	Artificial internal control
BLAST	Basic local alignment search tool
BOLD	Barcode of Life Database
COI	Cytochrome c oxidase subunit I
eDNA	Environmental DNA
EQR	Ecological quality ratio
HTS	High-throughput sequencing
KRW	Kaderrichtlijn Water (Dutch adaptation of the WFD)
LCA	Lowest common ancestor
(M)OTU	(Molecular) operational taxonomic unit
NGS	Next-generation sequencing
NMDS	Nonmetric multidimensional scaling
PCoA	Principal coordinates analysis
PCR	Polymerase chain reaction
qPCR	Quantitative polymerase chain reaction
SEM	Standard error of the mean
WFD	Water Framework Directive

