

PROGRAMME

09:30 – 10:00	REGISTRATION AND COFFEE / TEA
10:00 – 10:20	WELCOME AND INTRODUCTION BY CHAIRS Liesbeth Bakker and Stefan Vriend, Netherlands Institute of Ecology
10:20 – 11:00	LONG TERM ECOLOGICAL RESEARCH AND COLLABORATION: INSIGHTS FROM CEDAR CREEK LTER Eric Seabloom, University of Minnesota, USA
11:00 – 11:30	COFFEE / TEA
11:30 – 12:10	EN ROUTE FROM SINGLE-SPECIES STUDIES TO A DIGITAL TWIN OF A FOREST SPECIES NETWORK: 70 YEARS OF HOLE-BREEDING PASSERINES RESEARCH AT THE VELUWE Marcel Visser, Netherlands Institute of Ecology
12:10 – 12:50	(SITTIN' ON) THE DOCK OF THE BAY, BUT NOTHING REMAINS THE SAME: FROM 77 YEARS OF MONITORING PHYTOPLANKTON TOWARDS A DIGITAL TWIN OF WADDEN SEA PRIMARY PRODUCTION Katja Philippart, Royal Netherlands Institute for Sea Research
12:50 – 14:00	LUNCH
14:00 – 14:20	Flash talk: LONG-TERM CHANGES IN FISH STOCKS IN THE MARSDIEP: WHAT WE CAN LEARN FROM 65 YEARS OF FYKE MONITORING Anieke van Leeuwen, Royal Netherlands Institute for Sea Research
14:20 – 14:40	Flash talk: FOREST HOVERFLY COLLAPSE OVER FOUR DECADES AT BOESCHOTEN ON THE VELUWE Theo Zeegers, EIS Foundation
14:40 – 15:00	Flash talk: OVER A CENTURY OF DIATOM RECORDS AS INDICATORS OF HUMAN IMPACTS ON VELUWE MOORLAND POOLS Herman van Dam, Water and Nature consultancy
15:00 – 15:20	Flash talk: WEASELS IN DECLINE: INSIGHTS FROM LIFE-LONG FIELD WORK ON THE VELUWE AND IN DRENTHE Rob Bijlsma, Author/ornithologist
15:20 – 15:50	COFFEE / TEA
15:50 – 16:30	THE FUTURE OF LONG-TERM ECOLOGICAL RESEARCH: TOWARDS A FAIR AND COLLABORATIVE DATA LANDSCAPE Daniel Kissling, University of Amsterdam
16:30 – 17:30	Plenary discussion: CHALLENGES AND CHANCES ON THE ROAD OF OPEN AND FAIR LONG-TERM ECOLOGICAL RESEARCH
17:00 – 18:00	Farewell drinks

Long-term ecological research: Scientific insights, Challenges and Opportunities

Thursday 14 November 2024

De Werelt, Lunteren

ORGANISERS:

Liesbeth Bakker (Netherlands Institute of Ecology)
Stefan Vriend (Netherlands Institute of Ecology)
Claudius van de Vijver (NERN)
Sanja Selaković (NERN)
Gilian van Duijvendijk (NERN)

SUPPORTED BY:

Netherlands Ecological Research Network (NERN)
Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO)



ABSTRACTS

10:20 LONG TERM ECOLOGICAL RESEARCH AND COLLABORATION: INSIGHTS FROM CEDAR CREEK LTER

Eric Seabloom (University of Minnesota)

Human activities are impacting Earth's climate and ecosystems via altered elemental cycles, disturbances, species extinctions, and the spread of invasive weeds, pests, and pathogens. The mechanisms underpinning ecosystem responses to these changes cannot be understood solely through observations or short-term experiments, as lags and long-term organism-environment feedbacks can amplify, dampen, or even reverse the effects of environmental change across multi-decadal timescales. To address questions that cannot be resolved with short-term studies, the United States National Science Foundation (NSF) created the Long-Term Ecological Research Program (LTER) over four decades ago. I will share some examples of how feedbacks can change organism-environment feedbacks arising from long-term experiments at Cedar Creek LTER, one of the longest-running LTER sites.

11:30 EN ROUTE FROM SINGLE-SPECIES STUDIES TO A DIGITAL TWIN OF A FOREST SPECIES NETWORK: 70 YEARS OF HOLE-BREEDING PASSERINES RESEARCH AT THE VELUWE

Marcel Visser (Netherlands Institute of Ecology)

We have been studying hole-breeding songbirds at the Veluwe for 70 years. Over this period the world has significantly got warmer, and I will present how this has affected our population of great tits (*Parus major*). To understand the effects of climate change on a single species we need to also study the species it interacts with. In the case of the great tits these are the caterpillars which the birds use to feed their offspring, which we have now studied for 30 years, allowing an analysis how their interaction has been changing over the last decades. We should even go beyond simple food chains and study how entire species networks are changing under climate change. This poses challenges in terms of finding and integrating long-term data sets, combining abiotic and biotic data and linking these to models. To do so, we are "en route" to develop a Digital Twin of a forest species network. This not only requires an infrastructure, such as LTER-LIFE will provide, but also a community that is working on Long-Term Ecosystem Research (LTER) sites together

12:10 (SITTIN' ON) THE DOCK OF THE BAY, BUT NOTHING REMAINS THE SAME: FROM 77 YEARS OF MONITORING PHYTOPLANKTON TOWARDS A DIGITAL TWIN OF WADDEN SEA PRIMARY PRODUCTION

Katja Philippart (Royal Netherlands Institute for Sea Research)

More than a half-century ago, the NIOZ started to sample buckets of seawater throughout the year from a jetty located in the Marsdiep, the westernmost tidal inlet of the Wadden Sea. These long-term field observations already revealed major changes in biomass, species composition and primary production of phytoplankton. Many of these changes could be attributed to consequences of human activities, including eutrophication, introduction of new species and climate change. We do not know, however, to which extent such changes have occurred in the Wadden Sea at large and what to expect if human pressures further intensify. To answer these questions, we are now developing a digital twin of the Wadden Sea (using data and insights from the jetty) which will enable us to explore what the future might hold for phytoplankton dynamics.

14:00 Flash talk: LONG-TERM CHANGES IN FISH STOCKS IN THE MARSDIEP: WHAT WE CAN LEARN FROM 65 YEARS OF FYKE MONITORING

Anieke van Leeuwen (Royal Netherlands Institute for Sea Research)

Worldwide, marine ecosystems suffer from human disturbances including the climate crisis. Particularly coastal systems see increasing pressures, while these are often habitats of crucial importance in the life-cycle of fish species. I will discuss trends and shifts in the species composition and abundance of the fish community in a 60-year time series. This time-series originates from a historical fishing program, carried out by the Netherlands Institute for Sea Research, which is continued up to this day. Catches done in a single snapshot in space elucidate detailed ecological patterns due to their unique resolution in time. In combination with long-term information on abiotic variables, such as sea surface temperature, we aim to unravel the ecological processes that underly the observed patterns.

ABSTRACTS

14:20 FLASH TALK: FOREST HOVERFLY COLLAPSE OVER FOUR DECADES AT BOESCHOTEN ON THE VELUWE

Theo Zeegers (EIS Foundation)

Over forty years, species and numbers of hoverflies were counted by netting on a transect at Boeschoten forest on the Veluwe. Over this period, numbers declined by 80% (4% yearly on average), number of recorded species declined by 44%. The characteristic set of dry-forest hoverflies disappeared nearly completely over these four decades. Species with aphidophagous larvae are in strongest decline, those with saproxylic larvae the least, though contra general belief also this group is not improving. Since little changes occurred in the forest itself and its management, causes of hoverfly decline are believed to come from outside the forest, i.e., nitrogen deposition, pesticides and climate change. Other studies confirm the strong decline of hoverflies, which should be a major source of concern.

14:40 FLASH TALK: OVER A CENTURY OF DIATOM RECORDS AS INDICATORS OF HUMAN IMPACTS ON VELUWE MOORLAND POOLS

Herman van Dam (Water and Nature consultancy)

In the Veluwe region, there are over 200 shallow moorland pools, unbuffered or only slightly buffered shallow oligotrophic waters that are entirely or largely fed by rainwater. One pool has been sampled for diatoms and chemistry annually since 1978 and two pools have been sampled for diatoms and chemistry every four years from that year onwards. Diatoms are unicellular algae, whose different species occur at different pH ranges. Comparing samples from 1916–1920 with more recent ones reveals that the pools have significantly acidified since then. Mainly due to reduction of sulphur compounds in rainwater, the pools have partially recovered in the last few decades, but the former situation has not yet been reached, partly due to the high nitrogen load.

15:00 FLASH TALK: WEASELS IN DECLINE: INSIGHTS FROM LIFE-LONG FIELD WORK ON THE VELUWE AND IN DRENTH

Rob Bijlsma (Author/ornithologist)

The numbers of small mustelids are notoriously difficult to monitor. Usually, it was the prerogative of game managers via extermination of 'vermin' and recording the kills in ledgers. However, when the killing effort was not recorded, and it usually wasn't, trends and fluctuations were impossible to ascertain. Monitoring of mustelids became en vogue in studies of vole dynamics. Are they instrumental in causing vole 'cycles', or vice versa? Fact remains that long-term monitoring of small mustelids is difficult and rare, no matter the recent advent of trap cameras which changed to some extent the monitoring landscape. ('Long-term', by the way, hardly ever surpasses the duration of the study or the life of the scientist/amateur). During 1966–2017 I have spent 31,168 h on 5217 days on fieldwork on the SW-Veluwe, and 47,262 h on 9260 days in western Drenthe during 1982–2023. Although mainly focused on birds, mustelids were also systematically recorded when encountered. Calibrated for field effort this resulted in two trends of Weasels in two parts of the country some 100 km apart, with substantial overlap in the series. As a separate validation I use Buzzard predation on Weasels, as visible among 8579 prey items identified during 3073 nest visits in the Buzzard's nestling stage in 1974–2023 (Veluwe and Drenthe combined). The idea is that Buzzards kill Weasels more frequently when the latter are more abundant. Secondly, prey populations of Weasels were monitored in 1968–2023 using various methods, notably of Common Vole (farmland), Wood Mouse and Rabbit (woodland). Are Weasels fluctuating synchronously (with or without delay) with prey numbers? Exactly what has happened in the last half century in prey populations given the fact that small mustelids are down the drain?

15:50 THE FUTURE OF LONG-TERM ECOLOGICAL RESEARCH: TOWARDS A FAIR AND COLLABORATIVE DATA LANDSCAPE

Daniel Kissling (University of Amsterdam)

Historical data and long time series are extremely valuable for ecology, biodiversity science and monitoring. However, such data have often been collected by individual researchers over relatively small spatial extents and with funding models that provide little resources for data curation and sharing. Data are thus often not collected, indexed, or shared in a standardized way, limiting their findability and usability for other researchers. Over the last decade, the Findability, Accessibility, Interoperability, and Reusability (FAIR) data principles have emerged to provide guidance for an improved data management, knowledge discovery and innovation. In my talk, I will provide insights into how ecological data and metadata can be made FAIR. This includes aspects of how data can be better accessed (e.g. repositories and licenses), how data and metadata can be made human- and machine-readable (e.g. through standards, schemas, vocabularies and ontologies), and which tools exist to assess the FAIR status of data. I will conclude with suggestions for how to move ahead to create a FAIR and collaborative data landscape.