

C
O
N
F
É
R
E
N
C
E

Christoph Rosche, Assistant Professor of Plant Ecology
Martin Luther University Halle-Wittenberg

Herbarium specimen collections as a treasure trove of temporally and geographically broad samples

JEUDI, 30 JUILLET à 12 h 30

Pavillon Charles-Eugène-Marchand, salle Hydro-Québec (1210)

Abstract:

Herbarium collections have traditionally supported taxonomy, species identification, teaching, and the documentation of biological records. However, their scientific value extends far beyond these classical uses. Millions of specimens collected across large geographic areas and over periods of decades or centuries provide unique information on ecological and evolutionary changes through space and time.

This presentation introduces several examples of how herbarium specimens can be used in population ecology, phenology, biogeography, and evolutionary research. Historical plant material can help reconstruct changes in genetic diversity and population structure. Herbarium records can also be combined with environmental data to study changes in plant phenology. One global study of forest understorey herbs, for example, revealed geographic differences in how the spring light window has changed under recent climate conditions.

The main case study focuses on the diploid and tetraploid cytotypes of *Centaurea stoebe*. More than 13,000 specimens from 167 herbaria were used to reconstruct their historical distributions. The results indicate that tetraploids expanded from south eastern into Central Europe more recently than previously assumed. This hidden range expansion changes our understanding of the species' native distribution and raises broader questions about cryptic invasions within continents. Measurements of functional traits on herbarium specimens also provide evidence for rapid evolutionary changes in tetraploid populations introduced to North America.

Together, these examples show that herbarium collections are powerful research infrastructures for studying long term ecological and evolutionary processes.

Hôte: Damase P. Khasa

Responsables: Juan Carlos Villarreal Aguilar et Ilga Mercedes Porth
juan-carlos.villarreal-aguilar@bio.ulaval.ca et ilga.porth@sbfl.ulaval.ca