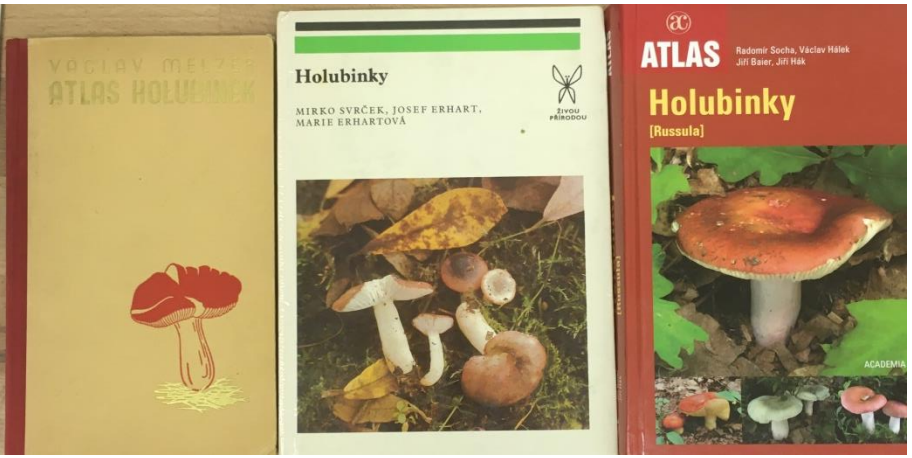
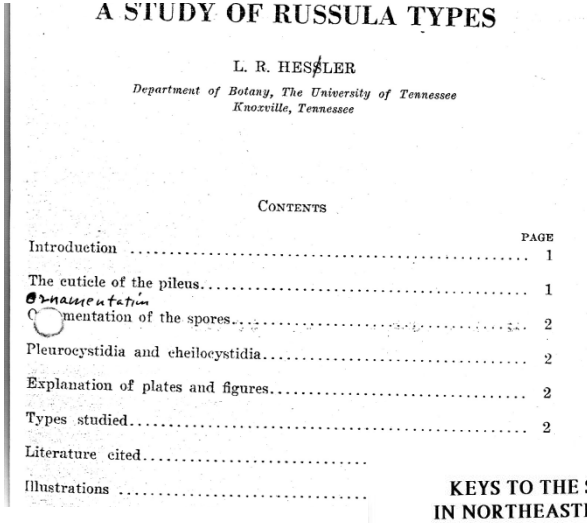
Russula is where passion meets science

Slavomír Adamčík,
Soňa Jančovičová,
Chance Noffsinger,
Chemi Traba,
Miroslav Caboň

End of discovery period in Europe and North America



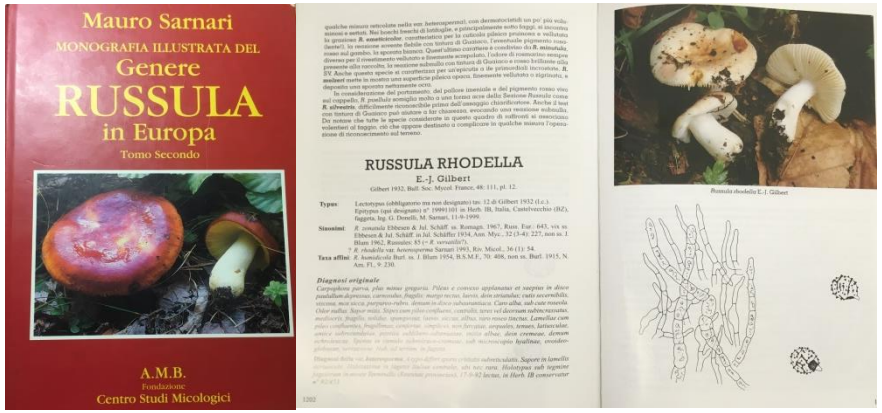


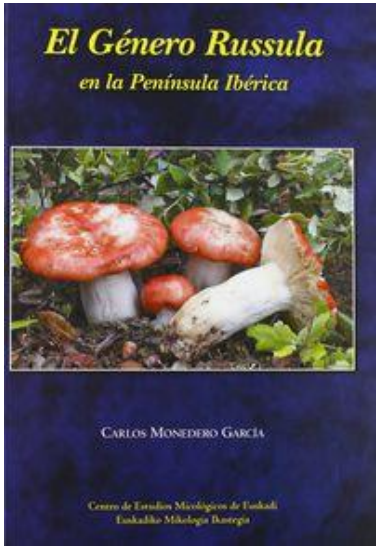
A STUDY OF RUSSULA TYPES

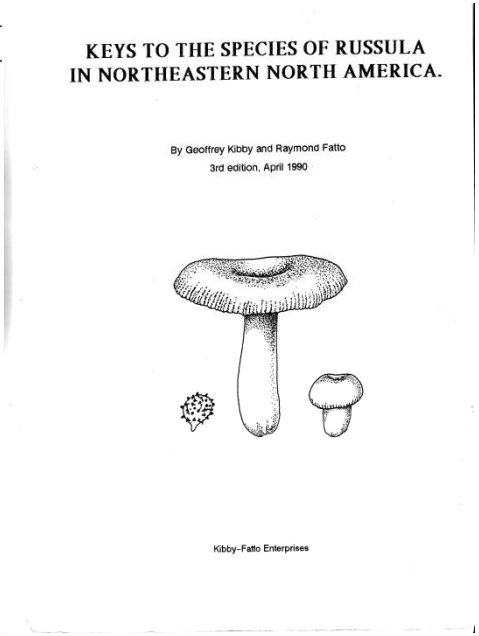
L. R. HESSLER

Department of Botany, The University of Tennessee
Knoxville, Tennessee

CONTENTS





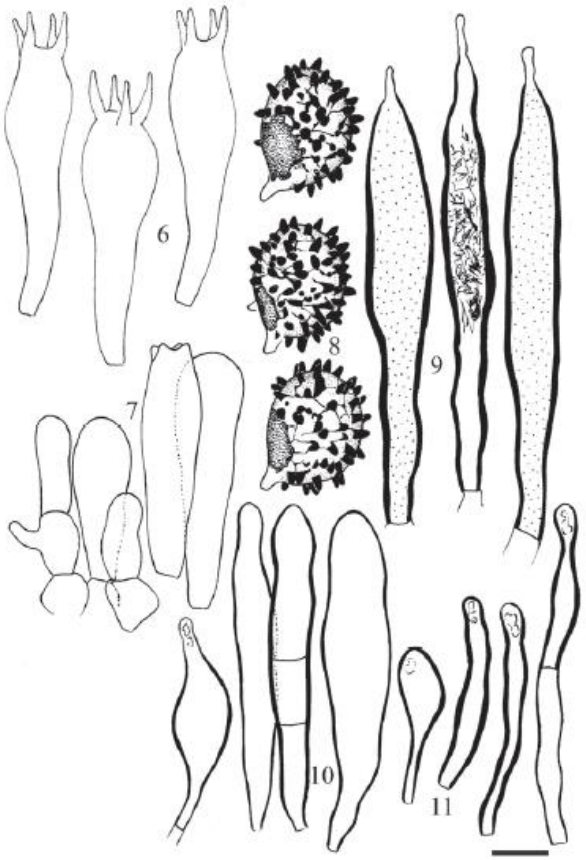


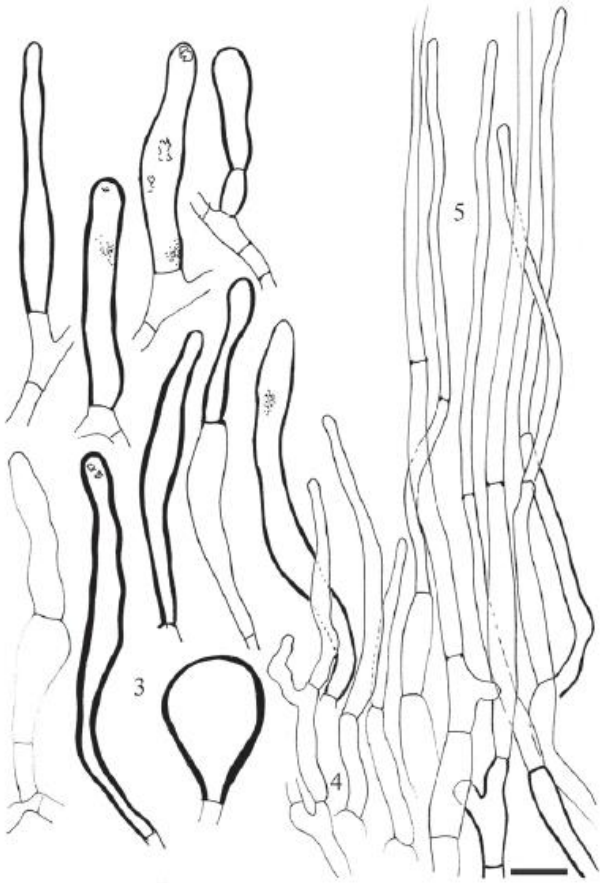
Rediscoveries

Cryptogamie, Mycologie, 2011, 32 (4): 403-412

Russula hixsonii Murrill, a rare and intriguing southern species of uncertain systematic position, rediscovered in Georgia, USA

Bart BUYCK [a], Arleen BESSETTE [b] & Slavomír ADAMČÍK [c]

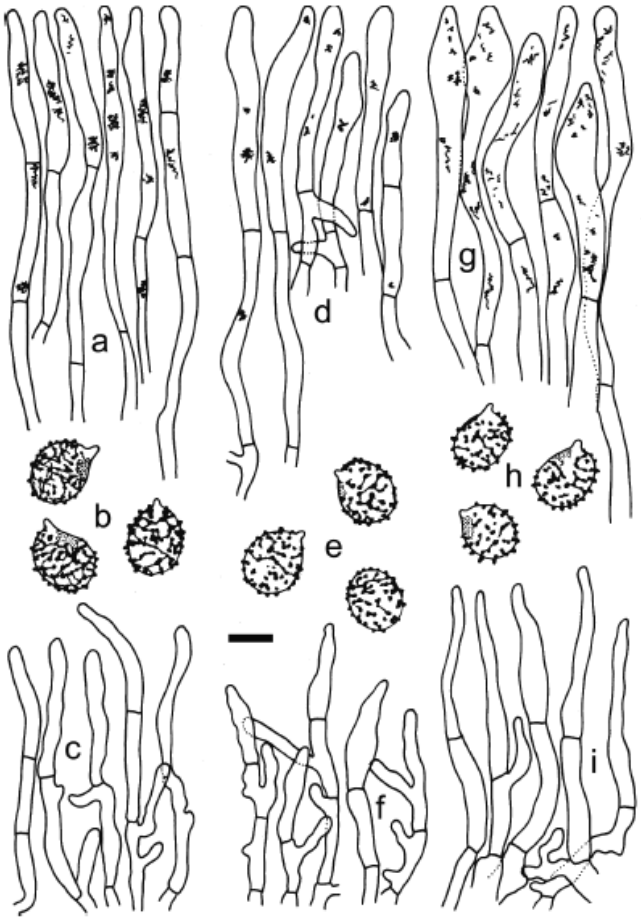


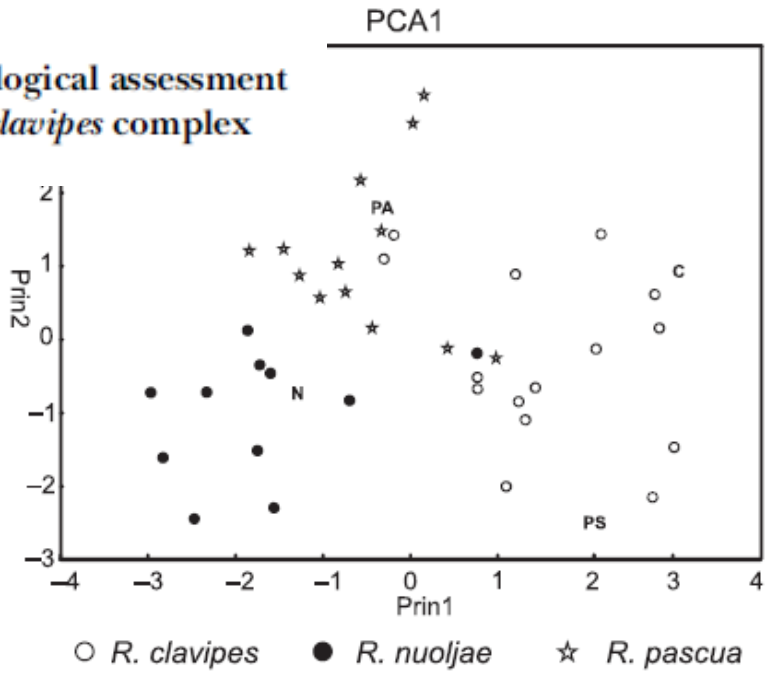


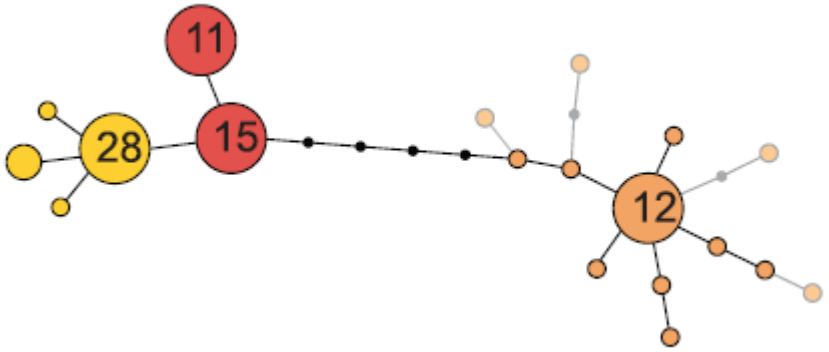
Synonyms and species complexes

Mycologia, 108(4), 2016, pp. 716–730. DOI: 10.3852/15-194

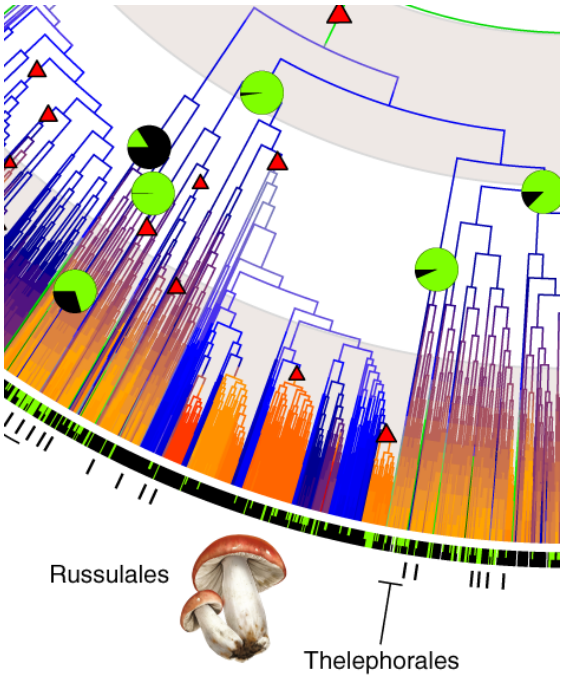
Molecular inference, multivariate morphometrics and ecological assessment are applied in concert to delimit species in the *Russula clavipes* complex







Understanding Russula lineage evolution



ARTICLES
https://doi.org/10.1038/s41559-019-0834-1
nature ecology & evolution
OPEN

Megaphylogeny resolves global patterns of mushroom evolution

Torda Varga[1], Krisztina Krizsán[1], Csenge Földi[1], Bálint Dima[2], Marisol Sánchez-García[3],

Review
New Phytologist

Research review

Russulaceae: a new genomic dataset to study ecosystem function and evolutionary diversification of ectomycorrhizal fungi with their tree associates

Authors for correspondence:
Brian P. Looney
Tel: +33 07 67 44 61 84

Brian P. Looney[1,2,3], Peter Meidl[1], Marek J. Piatek[1], Otto Miettinen[4], Francis M. Martin[3], P. Brandon Matheny[2] and Jessy L. Labbé[1,5]

Table 2 Proposed hypotheses for the Russulaceae Genome Inititative (RGI) dataset with relevant cited studies

Hypotheses	Formulations	Relevant publications
Tropical origin	Ectomycorrhizal Russulaceae originated in the palaeotropics *c*. 60 Myr ago during the early Palaeogene period.	Buyck *et al*. (1996), Looney *et al*. (2016), Wisitrassameewong *et al*. (2016) and De Crop *et al*. (2017)
Conserved niche	Closely related members of Russulaceae have taken advantage of similar niches in different geographical regions to fulfil specific roles for a phylogenetically wide range of hosts.	Talbot *et al*. (2014) and Adamčík *et al*. (2016)
Plant host bridge diversification	Plant hosts act as bridges for ectomycorrhizal Russulaceae to disperse and diversify by occupying novel niches in new habitats.	Looney *et al*. (2016) and Geml *et al*. (2009)

Distribution limits

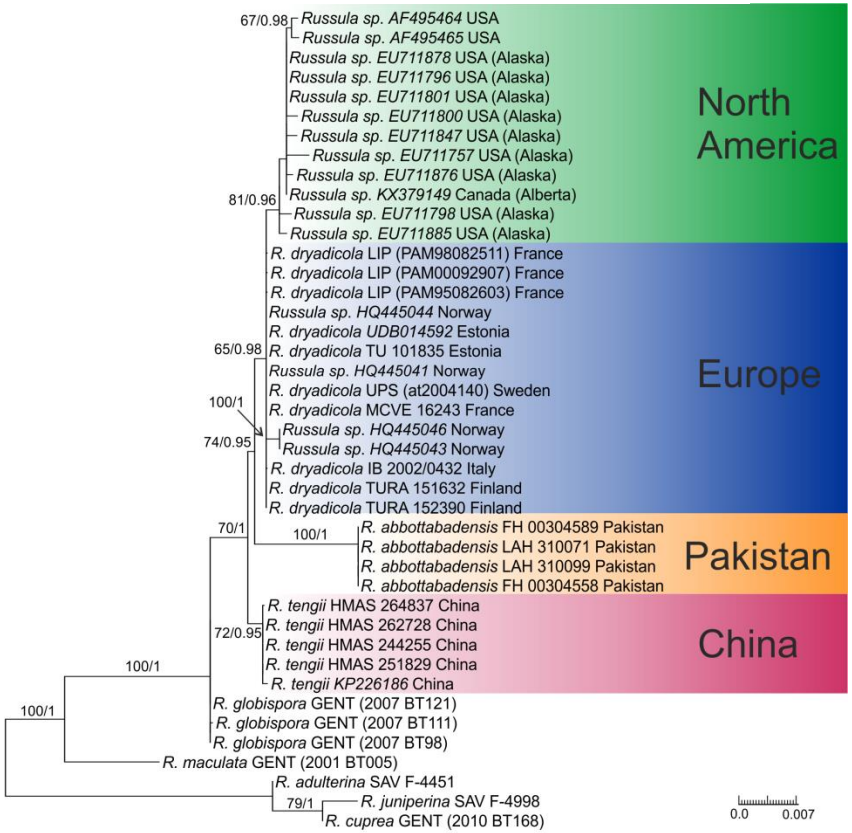
Caboň et al. IMA Fungus (2019) 1:5
https://doi.org/10.1186/s43008-019-0003-9

IMA Fungus

RESEARCH Open Access

Phylogenetic study documents different speciation mechanisms within the *Russula globispora* lineage in boreal and arctic environments of the Northern Hemisphere

Miroslav Caboň[1], Guo-Jie Li[2], Malka Saba[3,4,8], Miroslav Kolařík[5], Soňa Jančovičová[6], Abdul Nasir Khalid[4], Pierre-Arthur Moreau[7], Hua-An Wen[2], Donald H. Pfister[8] and Slavomír Adamčík[1*]



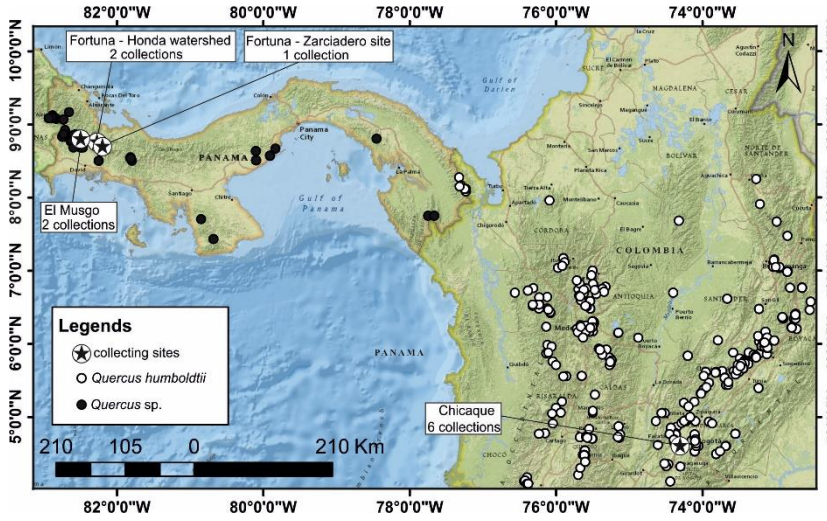
MYCOLOGIA
2021, VOL. 113, NO. 4, 807–827
https://doi.org/10.1080/00275514.2021.1897377

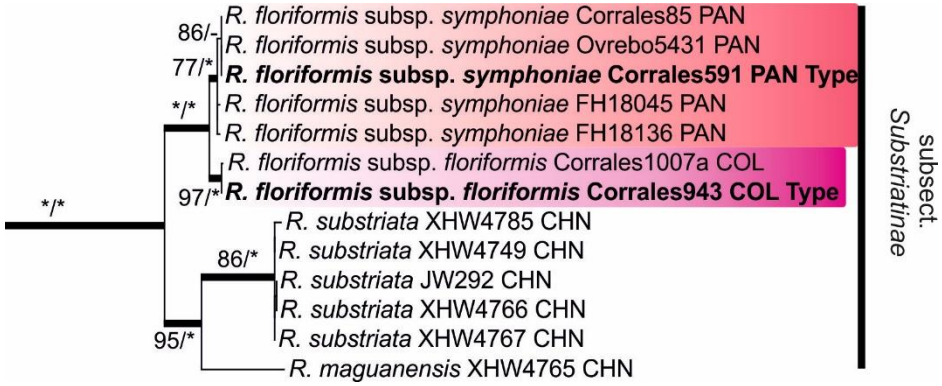
Taylor & Francis
Taylor & Francis Group

Check for updates

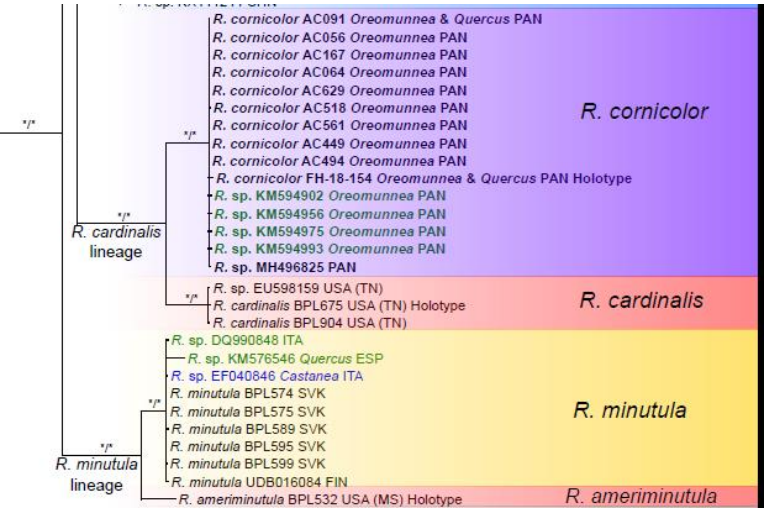
Morphological and genetic diversification of *Russula floriformis*, sp. nov., along the Isthmus of Panama

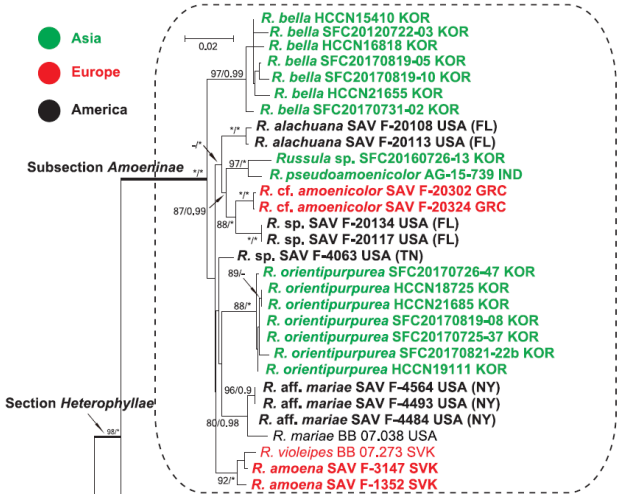
Michelle Vera[a], Slavomír Adamčík[b], Katarína Adamčíková[c], Felix Hampe[d], Miroslav Caboň[b], Cathrin Manz[e], Clark Ovrebo[f], Meike Piepenbring[e], and Adriana Corrales[a]





International collaborations and phylogenetic sampling





PLOS ONE

RESEARCH ARTICLE

Four new species of *Russula* subsection *Roseinae* from tropical montane forests in western Panama

Cathrin Manz[1]*, Slavomír Adamčík[2], Brian P. Looney[3], Adriana Corrales[4], Clark Ovrebo[5], Katarína Adamčíková[6], Tina A. Hofmann[7], Felix Hampe[8], Meike Piepenbring[1]

MycoKeys 75: 1–29 (2020)
doi: 10.3897/mycokeys.75.53673
https://mycokeys.pensoft.net

RESEARCH ARTICLE

A peer-reviewed open-access journal
MycoKeys
Launched to accelerate biodiversity research

Taxonomic revision of *Russula* subsection *Amoeninae* from South Korea

Komsit Wisitrassameewong[1,2], Myung Soo Park[1], Hyun Lee[1,9], Aniket Ghosh[3], Kanad Das[4], Bart Buyck[5], Brian P. Looney[6], Miroslav Caboň[7], Slavomír Adamčík[7], Changmu Kim[8], Chang Sun Kim[9], Young Woon Lim[1]

Taxonomic stability in Russula

MYCOLOGIA
https://doi.org/10.1080/00275514.2021.2018881

Taylor & Francis
Taylor & Francis Group

Check for updates

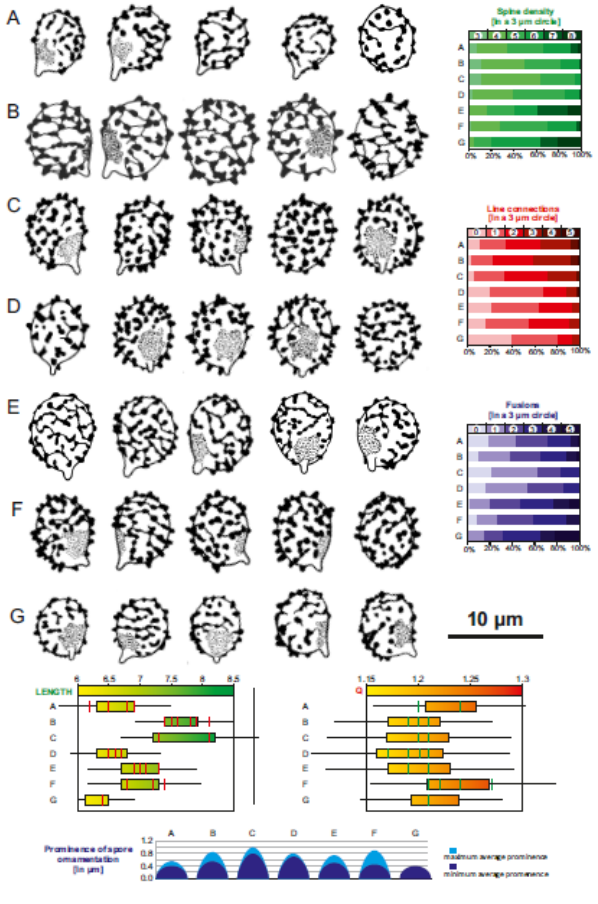
Systematic revision of the Roseinae clade of *Russula*, with a focus on eastern North American taxa

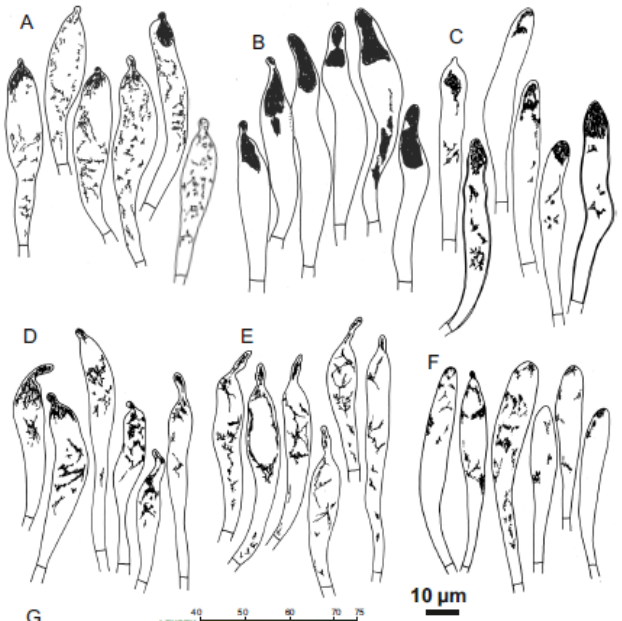
Brian P. Looney[a], Cathrin Manz[b], P. Brandon Matheny[c], and Slavomír Adamčík[d]

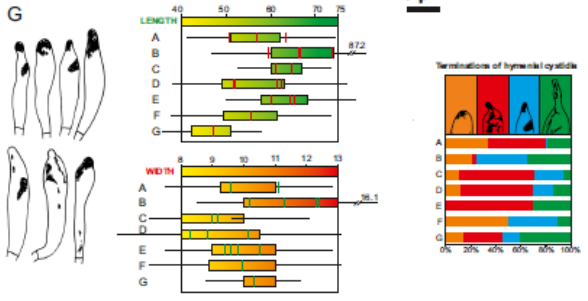
semicryptic species may appear in a lineages of closely related taxa

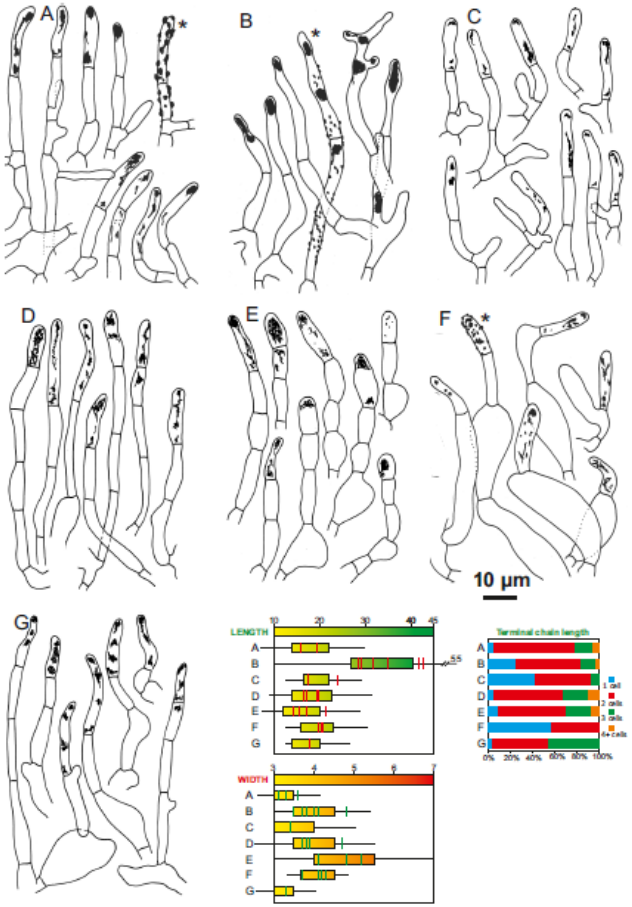
biological relevance is important

taxonomic stability needs unpenetrable arguments for easy and correct identifications









How much is the budget

field trip per day and person 100 eur (living expences, travel, accomodation), gaining well doccumneted samples across distribution area may take time and money

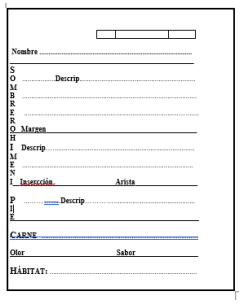
Microscopy min 1500 eur initial investment, but relatively cheap

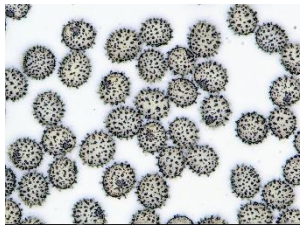
DNA extraction, PCR, sequencing 3 regions ca. 50 eur per sample

in sum collecting and DNA sequencing require considerable budged but decrease with focus to certain lineage

What does require modern Russula research

basic ability to recognise and describe Russula



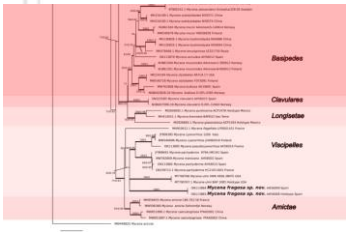


skills in microscopy

lab work

sequence editing

phylogenetic analyses



How the data are used

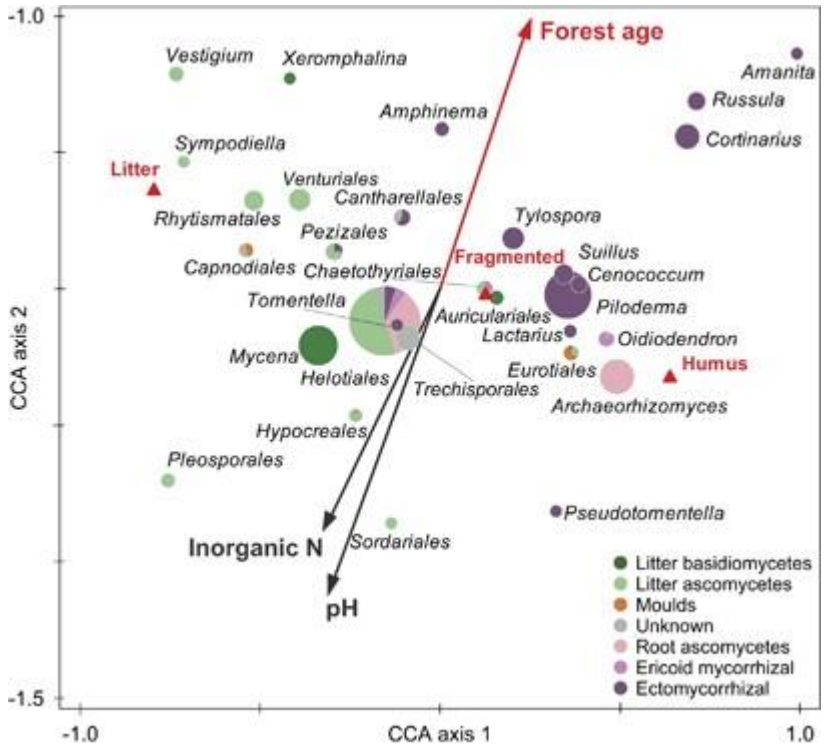
The ISME Journal (2017) 11, 863–874

www.nature.com/ismej

ORIGINAL ARTICLE

Shift in fungal communities and associated enzyme activities along an age gradient of managed *Pinus sylvestris* stands

Julia Kyaschenko[1], Karina E Clemmensen[2], Andreas Hagenbo[2], Erik Karltun[1] and Björn D Lindahl[1]

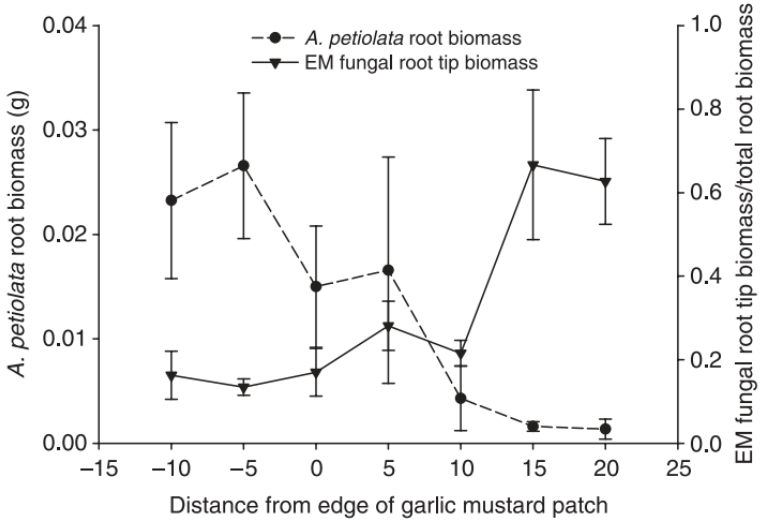


Journal of Ecology

Journal of Ecology 2008, **96**, 777–783 doi: 10.1111/j.1365-2745.2008.01389.x

The invasive plant *Alliaria petiolata* (garlic mustard) inhibits ectomycorrhizal fungi in its introduced range

Benjamin E. Wolfe[1]*, Vikki L. Rodgers[2], Kristina A. Stinson[3] and Anne Pringle[1]



APVV-19-0134 Aliens among us: Spatio-temporal dynamics of plant invasions and their adverse impact on ecosystems

APVV-20-0257 Tree and country – influence of trees on diversity of soil microorganisms in agricultural land