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Universiteit Leiden



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**Author:** Schwallier, Rachel Marie

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**For everything:** My family.

## About the Author

Rachel Marie Schwallier was born in a blizzard on the 11<sup>th</sup> of January 1982 in Grand Rapids, Michigan, USA. Curiosity of the natural world brewed early in her life on her parent's orchard, and after her 4<sup>th</sup> grade teacher brought an awe-driving beehive into the classroom, her interest in the sciences catapulted. She asked for flower presses for her birthday, traded pizza parties for microscopes and blanketed her walls with Zoobook magazine tear-outs.

In 2000, her first steps into college were with a volleyball scholarship at Grand Rapids Community College. She transferred to Grand Valley State University where she earned her BSc in secondary education of biology and chemistry in 2004. During her undergraduate years, she oversaw the university greenhouse, which inspired her to begin a master's thesis entitled, *Studies on the influence of seed maturation on desiccation tolerance for long term ex situ orchid seed storage*. During her time there, Rachel completed an international course on the Great Barrier Reef of Australia and fieldwork research in Nicaragua. She completed her MSc degree in 2007.

After graduating and a lovely stint at Frederik Meijer Gardens and Sculpture Park, Rachel began her PhD research at Naturalis Biodiversity Center and the Hortus botanicus of Leiden University in the Netherlands in 2011. Her fieldwork in Malaysian Borneo hallmarked her thesis studies along with volunteer work for Operation Wallacea in Honduras. The findings in this thesis were presented at international conferences in Seekonk (2012), Austin (2012), New Orleans (2013), Boston (2013), Cairns (2014), Edmonton (2015), Savannah (2016) and many local conferences in the Netherlands and Michigan. With travel and research stamping her passport well, Rachel returned to Michigan in 2016 as a Visiting Associate Professor at Grand Valley State University - a still point in her turning world.

## SCI Publications

- Schwallier R**, Gravendeel B, de Boer H, van Heuven BJ, Sieder A, Sumail S, van Vugt RR, Nylinder S, Lens F. In press. Evolution of wood anatomical characters in *Nepenthes* and close relatives of Caryophyllales. *Annals of Botany*.
- Schwallier R**, Raes N, de Boer H, Vos R, van Vugt R, Gravendeel B. 2016. Phylogenetic analysis of niche divergence reveals distinct evolutionary histories and climate implications for tropical carnivorous plants. *Diversity and Distributions* 22: 97-110. Merckx VSFT, Hendriks KP, Beentjes KK, Mennes CB, Becking LE, Peijnenburg KTCA, Afendy A, Arumugam N, de Boer H, Biun A, Buang MM, Chen P-P, Chung AYC, Dow R, Feijen FAA, Feijen H, Feijen-van Soest C, Geml J, Geurts R, Gravendeel B, Hovenkamp

P, Imbun P, Ipor I, Janssens SB, Jocqué M, Kappes H, Khoo E, Koomen P, Lens F, Majapun R.J, Morgado LN, Neupane S, Nieser N, Pereira JT, Rahman H, Sabran S, Sawang A, **Schwallier R**, Shim P-S, Smit H, Sol N, Spait M, Stech M, Stokvis F, Sugau JB, Suleiman M, Sumail S, Thomas DC, van Tol J, Tuh FYY, Yahya BE, Nais J, Repin R, Lakim M & Schilthuizen M. 2015. Evolution of endemism on a young tropical mountain. *Nature*. 524: 347–350.

**Schwallier R**, de Boer H, Visser N, van Vugt RR, Gravendeel B. 2015. Traps as treats: a traditional sticky rice snack persisting in rapidly changing Asian kitchens. *Journal of Ethnobiology and Ethnomedicine* 11: 24.

**Schwallier R**, Bhoopalan V, Blackman S. 2011. The influence of seed maturation on desiccation tolerance in *Phalaenopsis amabilis* Hybrids. *Scientia Horticulturae* 128: 136-140.

**Schwallier R**, van Wely V, Baak M, Vos R, van Heuven BJ, Smets E, van Vugt RR and Gravendeel B. Ontogeny and anatomy of the dimorphic pitchers of *Nepenthes rafflesiana*. In preparation for *American Journal of Botany*.

### Conference and Public Media

**Schwallier R**, Gravendeel B, de Boer H, van Heuven BJ, Sieder A, Sumail S, van Vugt RR, Nylinder S, Lens F. 2016. Botany Conference presentation. Evolution of wood anatomical characters in *Nepenthes* and close relatives of Caryophyllales. Savannah, USA.

**Schwallier R**. 2016. GVSU Science on Tap invited lecturer. Connecting science and the public in an approachable and welcoming setting. Grand Rapids, Michigan.

**Schwallier R et al.** 2015. GVSU seminar series invited lecture. The evolution, endemism and edibility of tropical carnivorous plants revealed. Allendale, Michigan.

**Schwallier R**, de Boer H, Visser N, van Vugt RR, Gravendeel B. 2015. Botany Conference presentation. Traps as treats: a traditional sticky rice snack persisting in rapidly changing Asian kitchens. Edmonton, Canada.

**Schwallier R**, Raes N, de Boer H, Vos R, van Vugt R, Gravendeel B. 2015. Botany Conference presentation. Peril for pitcher plants. Edmonton, Canada.

**Schwallier R**, Raes N, de Boer H, Vos R, van Vugt R, Gravendeel B. 2014. International Carnivorous Plants Conference presentation. 3D morphometrics and pitcher plants. Cairns, Australia.

**Schwallier R**, Valeri van Wely, Gravendeel B, van Vucht RR. Botany 2013. Conference Presentation. Pitcher ontogeny of *Nepenthes*: defining developmental stages through morphology and microstructures. New Orleans, USA.

**Schwallier R**, Raes N, Gravendeel B. 2012. Plant Biology Conference presentation. Ecological niche divergence in tropical pitcher plants. Austin, USA.

**Schwallier R**, Raes N, Gravendeel B. 2012. International Carnivorous Plant

Society presentation. Are we murdering our murderous plants? Seekonk, USA.

**Schwallier R**, 2011. Naturalis Biodiversity Center. Diversity in carnivorous pitcher plants. Leiden, The Netherlands.

**Schwallier R**, Blackman S. 2007. American Society of Plant Biologists Conference. The influence of maturation on seed quality in *Encyclia tampensis*. Chicago, USA.

**Schwallier R**. Looking for a botanical toilet on Mt. Kinabalu. 2012. Scientific America.

Media for Kinabalu expedition featured in, but not limited to the following: The journal *Science*, Science Daily, Huffington Post, CBS News, Scientific Malaysian Magazine, Wildlife Extra, Daily Express, The Why Files, The Brunei Times and many more.

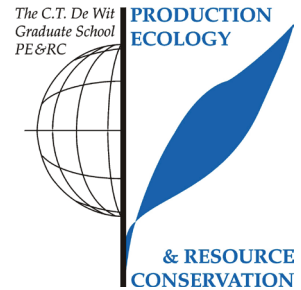
Media for Ethnobotanical research in Malaysia featured in the following: Science Daily, Beyond Babel, Science Nordic, Forskning, Alpha Galileo.

Grand Valley State University featured my alumni story and research in, 'Finding Fellowships,' July 2015. Grand Valley Magazine.

Joris van Alphen. Photo and research featured in, 'The Mystery of Mount Kinabalu,' February 2013 of National Geographic.

## PE&RC Training and Education Statement

With the training and education activities listed below the PhD candidate has complied with the requirements set by the C.T. de Wit Graduate School for Production Ecology and Resource Conservation (PE&RC) which comprises of a minimum total of 32 ECTS (= 22 weeks of activities)



### Review of literature (6 ECTS)

Niche differentiation, molecular phylogenetics, wood anatomy, ontogeny and traditional use of *Nepenthes* (Nepenthaceae: Caryophyllales) (2012-2016)

### Writing of project proposal (4.5 ECTS)

Niche differentiation of tropical pitcher plants (2012)

### Post-graduate courses (7.5 ECTS)

Geometric morphometrics training course; Transmitting Science, Barcelona, Spain (2012) Online tools for ecological modelling, visualization and geo-processing; Consortium for Conservation Biologists, Baltimore, USA (2013) Scanning Electron Microscopy (SEM) of *Nepenthes* wood; Leiden University (2013) Anatomical slide preparation and light microscopy; Leiden University (2013)

### Laboratory training and working visits (12 ECTS)

Ecological niche modelling of tropical pitcher plants; Grand Valley State University (2012)

### Invited review of (unpublished) journal manuscript (1 ECTS)

Blumea: *Nepenthes* taxonomy (2013)

### Deficiency, refresh, brush-up courses (4.5 ECTS)

Plant Families of the Tropics; Leiden University (2012)

### Competence strengthening / skills courses (4.2 ECTS)

Time management; Leiden University (2012) Far from help; Wilderness Medical Training, Glenmore Lodge, Scotland (2012) Communication in science; Leiden University (2013) Effective communication; Leiden University (2013) On being a scientist; Leiden University (2015)

### PE&RC Annual meetings, seminars and the PE&RC weekend (1.2 ECTS)

6<sup>th</sup> Workshop plant-insect interaction; UVA (2011) Mini-symposium



collections and spatial analysis-introduction of Naturalis Geoportal; Naturalis (2011) PhD Day; PE&RC (2011) Voyager GIS data discovery and spatial analysis with Naturalis Geoportal; Naturalis (2012)

**Discussion groups / local seminars / other scientific meetings (9 ECTS)**

Tuesday colloquia series of Naturalis (2012-2016) Character evolution focus group meetings (2013-2016)

**International symposia, workshops and conferences (12.7 ECTS)**

Plant Biology; poster presentation; Austin, USA (2012) International Carnivorous Plant Society conference; oral presentation; Seekonk, USA (2012) Botany conference; poster presentation; New Orleans, USA (2013) International Carnivorous Plant Society conference; poster presentation; Cairns, Australia (2014) Botany conference; oral and poster presentation; Edmonton, Canada (2015) Grand Valley State University fall symposium; oral presentation; Allendale, USA (2015)

**Lecturing / supervision of practicals / tutorials (5.4 ECTS)**

Plant Families of the Tropics course - carnivorous plants lecture; Leiden University (2012-2013) Geometric morphometric application and analysis with 3D laser scanning; Leiden University (2014) Honduran biodiversity lecture; Muskegon Community College, USA (2016)

**Co-supervision of MSc Student (3 ECTS)**

Valeri van Wely: *Nepenthes* (Nepenthaceae: Caryophyllales) pitcher ontogeny



