

Gayani Senevirathne

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Website: [https://www.researchgate.net/profile/Gayani\\_Senevirathne](https://www.researchgate.net/profile/Gayani_Senevirathne)

### Research interests

Evolutionary developmental biology; evolution of morphologies (internal and external), lineage diversification and adaptive radiations; gene expression; phylogenetic comparative analyses; systematics; vertebrates.

### Education

#### University of Chicago

2016–

PhD. Integrative Biology, Dept. of Organismal Biology & Anatomy

#### Postgraduate Institute of Science, University of Peradeniya

2014–2016

M.Phil. Master of Philosophy,

(coursework and research components completed, writing)

Dissertation topic: “Phylogenetic, morphological and ecological correlates of Sri Lanka’s endemic genera of anurans (Anura: *Adenomus*, *Lankanectes*, *Nannophrys* and *Taruga*).”

Advisor: Dr. Madhava Meegaskumbura

#### University of Peradeniya

2009–2014

BSc, Honors degree in Zoology. (First Class) : Cumulative GPA 3.75

Undergraduate dissertation topic: “Ossification patterns and processes within a monophyletic group (Rhacophoridae: *Taruga*, *Polypedates* and *Pseudophilautus*).”

Advisor: Dr. Madhava Meegaskumbura

### Academic awards/ Grants

University Award for Academic Excellence

2013

(Bachelor of Science (Special) Degree Examination), University of Peradeniya

National Research Council (NRC) of Sri Lanka - Merit award for research (for year 2013)

2015

Carl Gans Travel Award

2016

Rufford small Grant - DNA-Barcoding and Documenting the Morphology of Sri Lankan

Tadpoles to Species-Level to Advance Amphibian Ecology and Conservation in the Region

2016

Mohamed Bin Zayed Grant - Distribution, ecology and population genetics of

*Pseudophilautus semiruber*: a Data Deficient species known only from two specimens

2016

### Publications in Indexed (SCI) journals

**Senevirathne G**, Kerney R, Meegaskumbura M. Comparative postembryonic skeletal ontogeny in two sister lineages of Old World tree frogs (Rhacophoridae: *Taruga*, *Polypedates*) 2016. PLoS One (In review)

**Senevirathne G**, Thomas A, Kerney R, Hanken J, Biju SD, Meegaskumbura M. From clinging to digging: the postembryonic skeletal ontogeny of the Indian Purple frog, *Nasikabatrachus sahyadrensis* (Anura: Nasikabatrachidae). 2016. PLoS One. DOI: 10.1371/journal.pone.0151114

**Senevirathne G**, Garg S, Kerney R, Meegaskumbura M, Biju SD. Unearthing fossorial tadpoles of family Micrixalidae. PLoS One. 2016. DOI: 10.1371/journal.pone.0151781

Biju SD, **Senevirathne G**, Garg S, Mahony S, Kamei R, Thomas A, Shouche Y, Raxworthy C, Meegaskumbura M, Van Bocxlaer I. *Frankixalus*, a new genus of tree hole breeding frogs (Rhacophoridae) with oophagous tadpoles from Northeast India. 2016. PLoS One. 11(1): e0145727

Wijayathilaka N, Garg S, **Senevirathne G**, Karunarathne N, Biju SD & Meegaskumbura M. A new species of *Microhyla* (Anura: Microhylidae) from Sri Lanka using an integrative taxonomic approach. 2016. Zootaxa.

**Senevirathne G**, Meegaskumbura M. Life among crevices: osteology of *Nannophrys marmorata*. 2015. Zootaxa. 4032 (2): 241–245.

Meegaskumbura M, **Senevirathne G**, Biju, SD, Garg S, Meegaskumbura S, Pethiyagoda R, Hanken J, Schneider C. Patterns of reproductive mode evolution in Old World tree frogs (Anura, Rhacophoridae). 2015. Zoologica Scripta. 44(5): 509–522.

Meegaskumbura M, **Senevirathne G**, Wijayathilaka N, Jayawardane B, Bandara C, Manamendra-Arachchi K, Pethiyagoda R. The Sri Lankan torrent toads (Bufonidae: Adenominae: *Adenomus*): species boundaries assessed using multiple criteria. 2015. Zootaxa. 3911: 245–261.

Biju SD, Garg, S, Mahony S, Wijayathilaka N, **Senevirathne G**, Meegaskumbura M. DNA barcoding, phylogeny and systematics of Golden-backed frogs (*Hylarana*, Ranidae) of the Western Ghats-Sri Lanka biodiversity hotspot, with the description of seven new species. 2014. Contributions to Zoology. 83: 269–335.

Bowatte G, Perera P, **Senevirathne G**, Meegaskumbura S, Meegaskumbura M. Tadpoles as Dengue mosquito (*Aedes aegypti*) egg predators. 2013. Biological Control. 67: 469–474.

## Articles

**Senevirathne G**, Bowatte G, Meegaskumbura M. An Ecological Service of Frogs: Tadpoles feeding on Dengue mosquito eggs. 2014, FrogLog. 22(109).

Meegaskumbura M, **Senevirathne G**. Leaping through gel: how tree-frogs invade land. 2015, Hantana Vision, The research magazine of the University of Peradeniya. 2: 12–13.

## Conference presentations

**Senevirathne G**, Kerney R, Meegaskumbura M. Comparative postembryonic skeletal ontogeny in two sister lineages of Old World tree frogs (Rhacophoridae: *Taruga*, *Polypedates*). World Congress of Herpetology, 2016, Hangzhou, China.

Jayawardena B, **Senevirathne G**, Wijayathilaka N, Karunaratna N, Meegaskumbura M. Molecular phylogenetic analysis of the Dwarf Toads: *Duttaphrynus scaber* and *D. atukoralei* (Bufonidae: Adenominae). Annual Research Congress. 2015, Postgraduate Institute of Science, University of Peradeniya.

Wijekoon D, Kodithuwakku S, **Senevirathne G**, Meegaskumbura M. Death, stunting, delayed metamorphosis and malformations: pernicious effects of commonly used fungicide “Mancozeb” on *Polypedates cruciger* tadpoles. Peradeniya University international research sessions - iPURSE. 2015, Faculty of Engineering, University of Peradeniya.

Gunaratna, A, Wijayathilaka N, **Senevirathne G**, Meegaskumbura M. Call repertoire of *Pseudophilautus viridis* (Anura: Rhacophoridae), an endemic shrub frog Sri Lanka. Peradeniya University international research sessions - iPURSE. 2015, Faculty of Engineering, University of Peradeniya.

Epa R, Perera N, Tennakoon S, Premaratne S, **Senevirathne G**, Manamedra-Arachchi K, Meegaskumbura M. Studying Aruwakkalu Miocene Fossils of Sri Lanka. In-House Seminar on Science of Archaeology & Archaeological Sciences. 2014, Department of Geology, University of Peradeniya, Sri Lanka.

**Senevirathne G**, Bowatte G, Meegaskumbura M. Comparative skull development in *Taruga* and *Polypedates* (Ranidae: Rhacophoridae). Conference in Herpetological Conservation and Biology. 2012, Postgraduate Institute of Science, University of Peradeniya, Sri Lanka.

### Professional experience

Research Assistant 2014 Jan.–2014 Jun.

Faculty of Science, University of Peradeniya

- conducted lab-work (double staining for bone and cartilage, PCR, gel electrophoresis, purifications, extractions, DNA sequencing, histological staining)
- conducted phylogenetic analyses
- planned field work

Meegaskumbura Lab, Research Team 2012 Jan.–2016 Aug

- conducted field surveys on amphibians, fish, reptiles
- tissue sample collection; tadpole collection; captive breeding of amphibians

### Teaching experience

1. Conducted practical sessions for the course “Molecular Phylogenetics and Evolution” 2014, 2015

- taught: alignment, phylogenetic inference, determination of node support, comparative analyses

2. Trained four undergraduate students to complete their dissertation research under the supervision of Dr. M. Meegaskumbura

- trained in field work
- designed experiments
- taught double-staining techniques and lab work, DNA extraction, PCR, gel electrophoresis
- helped in writing
- taught phylogenetic analyses

1. Ms. DWMDN Wijekoon, (submitted, December, 2014) “Effects of Mancozeb on growth, behaviour, survival, metamorphosis and development of the common hour glass tree frog (*Polypedates cruciger*).”

2. Ms. BMAK Gunarathne, (submitted, December, 2014) “Vocal repertoire and individual variation of dull green shrub frog (*Pseudophilautus viridis*).”

3. Mr. TP Sylvester, (submitted, November, 2015) “Phylogenetic relationships and species boundaries of a clade of diminutive shrub frogs (Rhacophoridae: *Pseudophilautus*).”

4. Mr. UHAJ De Silva (submitted, November, 2015) “Phylogenetic relationships and patterns of gene flow in two closely related endangered species of shrub frogs (Rhacophoridae: *Pseudophilautus*).”

## Skills

**Lab techniques:** DNA extraction procedures, PCR, gel electrophoresis and other molecular lab techniques; double-staining, histological staining

**Analytical skills:** Phylogenetic inference, molecular dating, ancestral-state reconstructions (using PAUP, MEGA, BEAST, Mesquite, GARLI, BayesTraits, RAxML, MrBayes, Lagrange, SIMMAP)

Geographic Information System analyses (QGIS)

Ecological Niche Modeling (using Maxent)

Statistical analysis (with R, Systat)

Bioacoustic analyses (using Raven Pro)

Photo editing (with Adobe Photoshop)

Figure making (using Adobe Illustrator)

Film making (using Final Cut Pro X)

**Field work:** Field sampling (ecological and bioacoustics)

Specimen and tissue collections (Sri Lanka and India)

Tadpole collections (Sri Lanka and India)

Curation of specimen

Maintaining reference collections

Macro photography and videography

Drone photography and cinematography

Underwater videography

**Languages:** English, Sinhalese, Tamil, Hindi

### Research featured in the news

Vidusara Science Magazine (in sinhala) : [https://www.researchgate.net/publication/259082186\\_Vidusara\\_PAGE\\_16-17\\_eps](https://www.researchgate.net/publication/259082186_Vidusara_PAGE_16-17_eps)

The Hindu : <http://www.thehindu.com/sci-tech/science/7-new-frog-species-reported-from-western-ghats-and-sri-lanka/article6545638.ece>

National Geographic : <http://news.nationalgeographic.com/news/2014/10/141029-golden-backed-frogs-animals-science-new-species/>

Sunday times : <http://www.sundaytimes.lk/150208/news/two-froggy-sisters-make-news-134922.html>

Nova taxa : <http://novataxa.blogspot.com/2015/05/rhacophoridae-reproductive-evolution.html>

### Contribution to dissemination of knowledge

Audio presentation, Biological Control : <https://www.youtube.com/watch?v=ncG99rFV0Xo>

University of Peradeniya video : <https://www.youtube.com/watch?v=3CjmfHf3gZ4>

University of Peradeniya video : <https://www.youtube.com/watch?v=3jsUoutjOYU>

### Extra curricular activities

Oriental Music : Sitar (Bhatkhande Sangit Vidyapith, Lucknow; Annual Examination passed)

Swimming

### Academic references

1. Prof. Madhava Meegaskumbura, Department of Molecular Biology & Biotechnology, Faculty of Science, University of Peradeniya, Peradeniya, 20400, Sri Lanka (E-mail: [madhava88m@gmail.com](mailto:madhava88m@gmail.com), [madhavam@pdn.ac.lk](mailto:madhavam@pdn.ac.lk))
2. Prof. Ryan Kerney, Department of Biology, Gettysburg College, Pennsylvania, United States of America (E-mail: [rkerney@gettysburg.edu](mailto:rkerney@gettysburg.edu), [ryankerney@gmail.com](mailto:ryankerney@gmail.com))
3. Dr. Hendrik Mueller, Institut für Spezielle Zoologie, Universität Jena, Erbertstrasse 1D-07743 Jena, (E-mail: [Hendrik.mueller@uni-jena.de](mailto:Hendrik.mueller@uni-jena.de))
4. Prof. James Hanken, Harvard University, Museum of Comparative Zoology, Herpetology Department 26 Oxford Street, Cambridge, MA 02138 (E-mail: [hanken@oeb.harvard.edu](mailto:hanken@oeb.harvard.edu))

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