ANTONELLA PETRUZZELLA, PhD

Centre for Biological Control (CBC)
Department of Zoology & Entomology
Life Sciences building, Rhodes University
African Street, Grahamstown/Makhanda, 6139, South Africa
Nationalities: Brazilian/Italian | Date of Birth: 11/03/1989
+27 78 046 8392
antonellabio@gmail.com

www.antonellapetruzzella.com

EDUCATION

Ph.D., Environmental Biology | June 2015 – June 2019
Netherlands Institute of Ecology (NIOO-KNAW)/Utrecht University, Wageningen, the Netherlands
Thesis title: Biotic resistance to alien plant invasions in tropical and temperate freshwater ecosystems
Supervisors: Prof. Dr. Elisabeth S. Bakker, Prof. Dr. Ellen van Donk, Dr. Casper H. A. van Leeuwen

M.Sc., Ecology | March 2013 – March 2015
Universidade Federal do Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil
Thesis title: Influence of herbivore damage on methane emission from emergent aquatic macrophytes
Supervisor: Prof. Dr. Francisco de Assis Esteves

B.Sc., Biology | Aug 2008 – March 2013
Universidade Federal do Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil

PROFESSIONAL EXPERIENCE

Oct 2019 – present Postdoctoral Fellow, CBC, Rhodes University, Grahamstown, South Africa
Achieving the goal "more natives, less invasives": Priority effects as a potential tool for restoration
Principal Investigator: Prof. Dr. Julie A. Coetzee

Sep 2021 – present Young Research Fellow (voluntary)
Brazilian Platform for Biodiversity and Ecosystem Services (BPBES), Brazil
Contributor to the Brazilian version of the thematic assessment of invasive alien species and their control been produced by the IPBES – Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services)

Sept – Oct 2022 Teaching Assistant (Zoology 102), Department of Zoology & Entomology, Rhodes University, Grahamstown, South Africa

March 2015 Research Assistant, Monitoramento Limnológico do Igarapé Água Fria - Porto Trombetas (Amazonia), Pará, Brazil (Biomonitoring of Amazonian streams)
Monitoring of biotic communities (e.g., phytoplankton, zooplankton, macroinvertebrates, etc..) and limnological variables | Limnos Consultoria Ambiental LTDA

2013 – 2014 Research Aassistant, Estudos limnológicos na FLONA de Carajás (Amazonia), Pará, Brazil (Biomonitoring of Amazonian lagoons)
Survey and identification of aquatic macrophyte species, monitoring of biotic communities (e.g., phytoplankton, zooplankton, macroinvertebrates, etc..) and limnological variables | Limnos Consultoria Ambiental LTDA

PUBLICATIONS (students under my supervision are underlined)

Summary 8 peer-reviewed journal articles (6 first-authored)
158 Citations, h-index of 7 (Google Scholar as of April 2023)

8- **Petruzzella A.,** Rodrigues T.A.S.S.R., van Leeuwen C.H.A., Esteves F.A., Figueiredo-Barros M.P., Bakker E.B. **(2020)** Species identity and diversity effects on invasion resistance of tropical freshwater plant communities. *Scientific Reports* 10:5626

7- **Petruzzella A.**, van Leeuwen C.H.A., van Donk E., Bakker E.S. **(2020)** Direct and indirect effects of native plants and herbivores on biotic resistance to alien aquatic plant invasions. *Journal of Ecology* 00:1-10

6- Zhang P., Grutters B.M.C., van Leeuwen C.H.A., Xu J., **Petruzzella A.**, van den Berg R.F., Bakker E.S. **(2019)** Effects of rising temperature on the growth, stoichiometry, and palatability of aquatic plants. *Frontiers in Plant Science* 9:1947

5- **Petruzzella A.**, Manschot J., van Leeuwen C.H.A., Grutters B.M.C., Bakker E.S. **(2018)** Mechanisms of invasion resistance of aquatic plant communities. *Frontiers in Plant Science* 9:134

4- **Petruzzella A.**, Grutters B.M.C., Thomaz S.M., Bakker E.S. **(2017)** Potential for biotic resistance from herbivores to tropical and subtropical plant invasions in aquatic ecosystems. *Aquatic Invasions* 12(3): 343-353

3- **Petruzzella A.**, Guariento R.D., Gripp A.R., Marinho C.C., Figueiredo-Barros M.P., Esteves F.A. **(2015)** Herbivore damage increases methane emission from emergent aquatic macrophytes. *Aquatic Botany* 127: 6-11

2- **Petruzzella A**., Marinho C.C., Sanches L.F., Minello M., Esteves F.A. **(2013)** Magnitude and variability of methane production and concentration in tropical coastal lagoons sediments. *Acta Limnologica Brasiliensia* 25(3): 341-351

1- Gripp A.R., Marinho C.C., Sanches L.F., **Petruzzella A.**, Esteves F.A. **(2013)** The role played by aquatic macrophytes regarding CO_2 balance in a tropical coastal lagoon (Cabiúnas Lagoon, Macaé, RJ). *Acta Limnologica Brasiliensia* 25(3): 291-301

OTHER PUBLICATIONS

2- Coetzee J.A.**,** Galvanese E.F., Harpenslager S.F., Hilt S., Köhler J., Misteli B., Motitsoe S.N., Padial A.A., **Petruzzella A.**, Schneider S.C., Schechner A., Sebola K., Thiebaut G., Thiemer K., Vermaat J.E. **(2022)** Guidelines for managing mass developments of aquatic plants: a cookbook tool (https://www.niva.no/en/projectweb/madmacs/madmacs-cookbook)

1- Schneider S.C., Coetzee J.A.**,** Galvanese E.F., Harpenslager S.F., Hilt S., Immerzeel B., Köhler J., Misteli B., Motitsoe S.N., Padial A.A., **Petruzzella A.**, Schechner A., Sebola K., Thiebaut G., Thiemer K., Vermaat J.E. **(2022)** Causes of macrophyte mass development and recommendations for managing water courses with dense aquatic vegetation. Technical report (https://www.niva.no/en/projectweb/madmacs/madmacs-key-messages)

FORTHCOMING PUBLICATIONS

IN REVIEW

1- Vermaat J.E., Thiemer K., Immerzeel B., Schneider S.C., Sebola K., Coetzee J.A.**, Petruzzella A.**, Motitsoe S.N., Baldo M., Misteli B., Thiebaut G., Hilt S., Köhler J., Harpenslager S.F. Effects of managing nuisance abundance of aquatic plants on a suit of ecosystem services. *Journal of Applied Ecology*

IN PREPARATION

2- Capítulo 3: Vetores diretos e indiretos que afetam a introdução, o estabelecimento e a disseminação de espécies exóticas invasoras. In Relatório temático Brasileiro sobre espécies exóticas invasoras, biodiversidade e serviços ecossistêmicos (Brazilian version of the thematic assessment of invasive alien species and their control been produced by the IPBES – Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services)

3- Sandenbergh E., **Petruzzella A**., Coetzee J.A. Distribution and sexual reproductive output of *Iris pseudacorus* L. (Iridaceae) in South Africa. Invasion Note. Intention to submit to *Biological Invasions*

4- Petruzzella A., Motitsoe S.N., Coetzee J.A., Hill J.M., Hill M.P. Epiphytic algae response to invasive floating plant control. Joint first authorship. Intention to submit to *Hydrobiologia*

5- Petruzzella A., Coetzee J.A., Hill M.P., Motitsoe S.N. Comparison of passive and active aquatic macroinvertebrate collection: insights for experimental biodiversity inoculation. Intention to submit to *Aquatic Ecology*

6- Bando F.M., Figueiredo B.R.S., Mormul R.P., Thomaz S.M., **Petruzzella A.**, Michelan T.S. Joint effects of timing of arrival, nutrient enrichment, and removal of plant cover on the performance of an invasive Poaceae. Intention to submit to *Journal of Applied Ecology*

7- Misteli, B., Motitsoe S.N., **Petruzzella, A.**, Llopis S., Tshithukhe G., Pannard A., Piscart C., Coetzee J.A., Thiebaut, G. Long-term effects of macrophyte removal on aquatic biodiversity. Intention to submit to *Functional Ecology*

8- Wood K.A., Jupe L.L., Aguiar F.C., Collins A.M., Davidson S.J., Kirkpatrick L., Magalhães T.L., McKinley E., Nuno A., Pagès J.F., **Petruzzella A.**, Pritchard D., Reeves J.P., Thomaz S.M., Thornton S.A., Walton-Freeman W., Yamashita H., Newth J.L. The intangible benefits of blue spaces: a global systematic review of cultural ecosystem services provided by wetlands. *Journal has not been decided*

GRANTS AND AWARDS

2023 IOBC (International Organisation for Biological Control) - Global Early Career Award (to support biocontrol researchers and practioners to attend XVI International Symposium on Biological Control of Weeds, Puerto Iguazu, Misiones, Argentina) (€ 500)

Rhodes University Postdoctoral Research Fellowship, South Africa (R180 000 (≈ € 10 000))
Proposal: Achieving the goal “more natives, less invasives”: Priority effects as a potential tool for restoration

2022 Rhodes University Travel & Subsistence grant (‘MadMacs’ research workshop at the Norwegian Institute for Water Research (NIVA), Norway), South Africa| Grant number: TSP24/2022 (R30 000 (≈ € 1650))

ICAIS 2022 Diversity Bursary program (registration fee as a virtual speaker to the 22nd International Conference on Aquatic Invasive Species) (€ 200)

Rhodes University Research Committe Grant, South Africa (R15 000 (≈ € 870))
Proposal: Achieving the goal “more natives, less invasives”: Priority effects as a potential tool for restoration

2015 Science Without Borders Scholarship (full PhD abroad). CNPq – Brazilian National Council for Scientific and Technological Development, Brazil| Grant number: 207514/2014-3 (≈ € 100,000.00)

2014 Bolsa Nota 10 (scholarship awarded to two best students of the master program). FAPERJ – Carlos Chagas Filho Foundation for Research Support of the State of Rio de Janeiro (R$ 26 400 (≈ € 8 500))

STUDENT SUPERVISION

PhD
MSc

2023 – Ongoing **Eva A.M.M. Rekkers**, Leiden University, Leiden, the Netherlands
Thesis: Phytoplankton responses to invasive alien aquatic plant control in South African freshwater systems (co-supervising with Prof. Emily F. Strange and Dr Samuel N. Motitsoe)

2023 – Ongoing **Lulutho Mancunga**, Centre for Biological Control – Rhodes University, South Africa
Thesis: Aquatic invertebrate responses to revegetation following invasive alien plant control (co-supervising with Dr Samuel N. Motitsoe and Prof. Julie A. Coetzee)

March 2018 – March 2020 **Tauany Aparecida da Silva Santa Rosa Rodrigues**, Federal University of Rio de Janeiro, Brazil
Thesis: Efeito da diversidade de espécies de plantas nativas sobre a resistência à invasão em ecossistems tropicais e subtropicais
(co-supervised with Prof. Francisco de Assis Esteves)

Feb – Dec 2016 **Johan Manschot**, Radboud University, Nijmegen, the Netherlands
Thesis: The resistance mechanism of aquatic plant communities to invasion by Lagarosiphon major
(co-supervised with Prof. Liesbeth S. Bakker)

Hons

2023 – Ongoing **Hlumelo Theo Mantshi**, Centre for Biological Control – Rhodes University, South Africa
Thesis: Aquatic invertebrates recovery following invasive alien floating plant management
(Main supervisor, supervising with Dr Samuel N. Motitsoe)

TEACHING EXPERIENCE

Feb – March 2023 **Lecturer**
Biological statistics course (Hons level), Department of Zoology & Entomology, Rhodes University, South Africa. Module: Design and analysis of experiments. Planed and taught lectures with R tutorials. Co-lectures: Dr. Shelley Edwards and Dr. Martin Villet

Sept – Oct 2022 **Teaching assistant**
Zoology 102 course (BSc level), Department of Zoology & Entomology, Rhodes University, South Africa. Marked essays and tests. Course leader: Dr Candice Owen

April – May 2022 **Lecturer**

Biological statistics course (Hons level), Department of Zoology & Entomology, Rhodes University, South Africa. Module: Design and analysis of experiments. Planed and taught lectures with R tutorials. Co-lectures: Dr. Shelley Edwards and Dr. Martin Villet

Feb 2016/2018 **Teaching assistant**

Aquatic Ecology course – practical module (MSc level), Utrecht University, the Netherlands. Trained students in literature searches, experimental design, lab techniques and analyses. Taught lectures, provided in lab supervision, and marked assignments. Course leader: Prof. Ellen van Donk

Aug 2013 **Lecturer and teaching assistant**

IBE405 Ecologia de aguas doces (Freshwater Ecology course) (BSc level), Department of Ecology, Federal University of Rio de Janeiro (Macae Campus), Brazil (Co-designed course structure). Trained students in limnological sampling (abiotic variables, phytoplankton, zooplankton, sediment) and aquatic macrophyte species identification in tropical coastal lagoons (Jurubatiba Sandbank National Park, Brazil). Taught lectures and marked assignments. Course leader: Prof. Francisco de Assis Esteves

Feb 2011 **Undergraduate teaching assistant**

IBE405 Ecologia de aguas doces (Freshwater Ecology course) (BSc level), Department of Ecology, Federal University of Rio de Janeiro (Macae Campus), Brazil. Trained students in limnological sampling (abiotic variables, phytoplankton, zooplankton, sediment) and aquatic macrophyte species identification in tropical coastal lagoons (Jurubatiba Sandbank National Park, Brazil). Course leader: Prof. Francisco de Assis Esteves

2009-2010 **Undergraduate teaching assistant**

IBE121 Elementos de ecologia (Elements of Ecology course) (BSc level), Department of Ecology, Federal University of Rio de Janeiro (Rio de Janeiro Campus), Brazil. Trained students in river sampling techniques. Supervised and marked assignments. Course leader: Prof. Vinicius Fortes Farjalla

PRESENTATIONS AT SCIENTIFIC CONFERENCES AND MEETINGS

2023 Does native aquatic plant diversity recover after biological control of invasive floating plants? |XVI International Symposium on Biological Control of Weeds (ISBCW 2023) | Puerto Iguazú, Misiones, Argentina | **Oral presentation**

2022 Achieving the goal “more natives, less invasives”: Priority effects as a potential tool for restoration | National Symposium on Biological Invasions 2022 | Alice, EC, South Africa | **Oral presentation**

MadMacs: “Mass development of aquatic macrophytes: causes and consequences of macrophyte removal for ecosystem structure, function, and services” | ICAIS 2022 - 22nd International Conference on Aquatic Invasive Species | Oostende, Belgium (Hybrid event) | **Virtual oral presentation**

2021 MadMacs: Mass development of aquatic macrophytes: causes and consequences of macrophyte removal for ecosystem structure, function, and services | National Symposium on Biological Invasions 2021 | South Africa (Online event) | **Virtual oral presentation**

2019 Direct and indirect effects of native plants and herbivores on biotic resistance to alien aquatic plant invasions **|** XVII Congresso Brasileiro de Limnologia & II Congresso Ibero-Americano de Limnologia | Florianopolis, SC, Brazil | **Oral presentation**

2018 Mechanisms of invasion resistance of tropical freshwater plant communities | ASLO Summer meeting (Association for the Sciences of Limnology and Oceanography) | Victoria, BC, Canada | **Oral presentation**

Mechanisms of invasion resistance of aquatic plant communities |15th International Symposium on Aquatic Plants | Queenstown, New Zealand | **Oral presentation**

2016 Is there a latitudinal gradient of biotic resistance to plant invasion? | XXXIII SIL (International Society of Limnology) | Turin, Italy | **Oral presentation**

Biotic resistance strength against invasive aquatic macrophytes in tropical and temperate wetlands | NAEM 2016 (Netherlands Annual Ecology Meeting) | Lunteren, the Netherlands | **Poster presentation**

2015 Does herbivore damage increase methane emissions from emergent aquatic macrophytes? | 14th International Symposium on Aquatic Plants | Edinburgh, Scotland | **Poster presentation**

2014 Does herbivore damage increases methane emission by aquatic macrophytes? 99th Ecological Society of America Annual Meeting (ESA) | Sacramento, CA, USA | **Poster presentation**

2013 Influencia da herbivoria sobre a emissao de metano por macrofitas aquaticas: uma abordagem experimental | XIV Congresso Brasileiro de Limnologia | Bonito, MS, Brazil | **Oral presentation**

2011 Variacao diaria do fluxo de CO2 de duas macrofitas aquaticas e sua importancia para o balanco de carbono em uma lagoa costeira do litoral norte do Rio de Janeiro | XIII Congresso Brasileiro de Limnologia | Natal, RN, Brazil | **Poster presentation**

Presentations that I was not the main presenter are listed on my website.

MEDIA & SCIENCE OUTREACH

2022 – present Insect mass-rearing satellite stations – *Cyrtobagous salviniae* weevil
It is a community engagement project which local community members and government act together to assist in controlling weeds, in this case *Salvinia molesta*, with the support of the CBC team. We teach them how to rear the biological agents, how to release them at their local impacted site and how to monitor the invasion status. I am currently involved in areas on the Garden Route such as George, Jeffreys Bay and Plettenberg Bay, where *Salvinia molesta* is prevalent.
(https://www.news24.com/news24/community-newspaper/kouga-express/humble-beetle-to-rescue-local-dam-20220706)

2022 Scifest Africa – South Africa's National Science Festival
Scientifically interacting with visitors (https://www.scifest.org.za/)

2021 – present Centre for Biological Control social media (Instagram) co-moderator.
Science communication through social media. I contribute with monthly posts and content that will help the general public understand who we are, what we do in the lab and field and how science is applied to solve daily problems (https://www.instagram.com/rhodesunicbc/).

2019 Opinion: 'Salary gap among PhD students is very unfair' – Resource WUR Magazine, the Netherlands (https://resource.wur.nl/en/show/opinion-salary-gap-among-phd-students-is-very-unfair.htm)

2016 Netherlands Institute of Ecology (NIOO) open days
Scientifically interacting with visitors (https://nioo.knaw.nl/en/open-day-2016-aftermovie)

2013 Writing for the Laboratory of Limnology (UFRJ, Rio de Janeiro, Brazil) blog (https://limnonews.wordpress.com/2013/07/11/o-maravilhoso-mundo-das-macrofitas-aquaticas/)

2010 Semana Nacional de Ciencia e Tecnologia na UFRJ
Scientifically interacting with visitors (https://semanact.mcti.gov.br/)

TRANSNATIONAL ACTIVITIES AND RESEARCH VISITS

2020 – 2022 Collaborator within the MadMacs project (Mass development of aquatic macrophytes – causes and consequences of macrophyte removal for ecosystem structure, function, and services). Joint transnational call: 2017 Water Challenges for a Changing World by Water JPI. The project is a consortium between South Africa, Norway, France, Germany, and Brazil. Project leader: Dr Susanne C. Schneider (NIVA, Norway). Role: I coordinated the South African field samplings (5). Responsible for the South African data management and exchange, co-writing the deliverables including scientific papers, technical report, and guidelines for managers (see Other publications and Forthcoming publications sections) (https://www.niva.no/en/projectweb/madmacs)

MadMacs final working group workshop, 24-27/10/22, Norwegian Institute for Water Research (NIVA), Oslo, Norway.

2020 Shared threats, opportunities and collaboration avenues in aquatic invasion ecology between South Africa, Argentina and Brazil. Working group workshop, 12-14/02, Kenton, South Africa

2017 Visiting PhD student at the NUPEM/Federal University of Rio de Janeiro, Macae-RJ, Brazil to run an experiment on plant species diversity effects on invasion resistance in tropical freshwater ecosystems (6 months)

COLLABORATION NETWORK

South America - Prof Francisco de Assis Esteves (Instituto de Biodiversidade e Sustentabilidade (NUPEM), BRA), Prof Vinicius Fortes Farjalla (Universidade Federal do Rio de Janeiro, BRA), Prof Andre A. Padial (Universidade Federal do Parana, BRA), Prof Sidinei Magela Thomaz (Universidade Estadual de Maringa, BRA), Prof Roger Paulo Mormul (Universidade Estadual de Maringa, BRA), Prof Bruno R.S. Figueiredo (Universidade Federal de Santa Catarina, BRA), Thaisa S. Michelan (Universidade Federal do Para, BRA), Claudio Baigun (University of General San Martín, ARG)

Europe – Prof Liesbeth Bakker (Wageningen University, NL), Prof Ellen van Donk (Utrecht University, NL), Dr Casper van Leeuwen (Netherlands Institute of Ecology (NIOO), NL), Prof Jan Vermaat (Norwegian University of Life Sciences, NOR), Dr Susanne C. Schneider (NIVA, NOR), Prof Gabrielle Thiebaut (University of Rennes, FRA), Dr Jan Köhler (IGB, GER), Dr Kevin Murphy (University of Glasgow, UK), Dr Kevin Wood (WWT, UK), Dr Josie South (University of Leeds, UK)
Africa – Prof Julie A. Coetzee (CBC – Rhodes University, ZAF), Dr Samuel Motitsoe (CBC – Rhodes University, ZAF), Prof Martin Hill (CBC – Rhodes University, ZAF), Prof Ryan Wasserman (Rhodes University, ZAF), Dr Pedro Braganca (SAIAB, ZAF), Dr Tainã Gonçalves Loureiro (Centre for Invasion Biology (CIB), ZAF)
Asia – Dr Peiyu Zhang (Institute of Hydrobiology, Chinese Academy of Sciences (IHB-CAS), CHN)

MEMBERSHIP IN PROFESSIONAL SOCIETIES

British Ecological Society (since 2022)
Society for Ecological Restoration (since 2023)
International Organization for Biological Control-Afrotropical Regional Section (IOBC-ATRS) (2023)

PUBLIC AND PROFESSIONAL SERVICES

Reviewer for scientific journals
Global Change Biology (2023), Hydrobiologia (2019, 2020, 2022)**,** Aquatic Ecology (2021), Functional Ecology (2021), Aquatic Botany (2016, 2018)**,** Acta Limnologica Brasiliensia (2017)

Reviewer for governmental agencies
South African Alien Species Risk Analysis Review Panel (ASRARP, 2022)

Other organizational and leadership contribution

2022	**Judge** for best poster, National Symposium on Biological Invasions 2022 (6-8 July), Alice, South Africa
	Organizing Committee, Monthly departmental seminars – Department of Zoology & Entomology, Rhodes University, South Africa
2015-2019	**Co-organizer of PhD meetings and events** at the Netherlands Institute of Ecology (NIOO-KNAW), the Netherlands
2010-2011	**Co-organizer of the Biology Academic Week** at Federal University of Rio de Janeiro (UFRJ), Brazil

SKILLS

Laboratory Aquatic macrophyte culturing | Invertebrate culturing (e.g., snails) | Insect mass-rearing | Water quality and sediment analysis | Plant traits measurements

Field Aquatic macrophyte identification | Limnological monitoring (water quality parameters, phytoplankton, zooplankton, macroinvertebrates, periphyton, sediment) | Mesocosm and field experiment setup and monitoring | Plan and coordination of field surveys (short and long surveys) | Greenhouse gas sampling and analysis | PADI Open Water Diver certified | International driving license| Experienced hiker

Statistics Highly proficient in the statistical analysis software R. Design of experiments | Meta-analysis techniques | Mixed effects models (GLM, GLMM) | Multivariate analysis | Zero inflated models | Structural equation modeling

Languages Portuguese | Native
English | Fluent
Spanish | Intermediate
Italian | Basic

REFERENCES

Prof Julie Coetzee
Professor of Botany / Deputy Director

(+27) 82 886 5706, julie.coetzee@ru.ac.za,
Centre for Biological Control (CBC), Department of Botany,
Rhodes University, Grahamstown, South Africa

Prof Liesbeth S. Bakker
Professor in Rewilding Ecology

(+31) 317 473557, L.Bakker@nioo.knaw.nl,
Department of Aquatic Ecology, Netherlands Institute of Ecology (NIOO-KNAW), Wageningen University, Wageningen, the Netherlands

Prof Francisco de Assis Esteves
Professor in Ecology

(+55) 21 981016782, festeves@globo.com,
Departamento de Ecologia, Instituto de Biologia, Universidade Federal do Rio de Janeiro (UFRJ)/ Instituto de Biodiversidade e Sustentabilidade (NUPEM), Brazil

Distinguished Prof Martin Hill
Professor in Entomology / Director

(+27) 46 603 8763, m.hill@ru.ac.za,
Centre for Biological Control (CBC), Department of Zoology & Entomology, Rhodes University, Grahamstown, South Africa