

AC21 Newsletter

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AC21 International Graduate School 2019 Held at Stellenbosch University

"Invasion Science for society: hands-on experience of environmental, social and economic impacts of alien species"

An epilogue of the International Graduate School 2019 (IGS 2019)

John MEASEY, Professor, Senior Researcher
Centre for Invasion Biology, Stellenbosch University

Invasive species offer many important challenges to society. Their presence is intrinsically linked to human actions, but their impacts are felt across a wide range of environmental and socio-economic levels. Despite the severe impacts from invasions in past centuries, new introductions continue at an unprecedented rate and we require a new generation of invasion scientists to tackle the growing range of issues that invasive species bring. To this end, the Centre for Invasion Biology (C.I.B), with its hub at Stellenbosch University, organised the 2019 AC21 International Graduate School (IGS): Invasions Science for society: hands-on experience of environmental, social and economic impacts of alien species. The course was designed to appeal to a wide range of participants from many backgrounds, whilst giving a uniquely African



viewpoint on the issues around invasive species.

The course took place within the breathtaking scenery of the Overberg, in South Africa's global biodiversity hotspot: the Cape Floral Region. Although it took place in the height of winter, the participants enjoyed some marvellous weather, as well as a taste of Cape storms. The course also took advantage of the local environment to make outings getting a handle on the different local challenges from invasions.



Spectacular! The setting for the 2019 AC21 postgraduate course: Invasion Science for Society

The IGS took the form of a series of workshops conducted by C I B staff together with two invited international guest lecturers.

Prof John Wilson (C-I-B) challenged course participants to locate and neutralise an incursion of invading Australian *Banksia ericifolia*. This species had been introduced by flower growers, but after abandoning their farm, the species spread into nearby fynbos habitat. Despite removing nearly 300 individuals, the habitat still needs more follow up visits to ensure that the treatments have been effective.



Collecting data on the invasive “Banksia ericifolia” before removing them.

Dr Tammy Robinson (C-I-B) took the students to the local port town of Gansbaai

to explain how marine invasions are transported through ocean going vessels. Large ships can carry invasive propagules in their ballast water, while smaller boats often carry invasive species as a result of hull fouling. Although these problems can be tackled through legislation, there are important economic impacts to be considered.



Dr Tammy Robinson shows students an invasive mussel attached to a kelp holdfast.

Prof Karen Esler (C-I-B) explained the complicated tasks of restoring local habitats after an invasion. After 10 years, the sites visited look considerably better, but still require a lot of attention before they can be considered as restored. Different invasive species leave different impacts on the invaded ecosystem, and this sometimes results in permanent impacts that can only be mitigated during the restoration process.



At a site of habitat restoration, AC21 students look at images of the site before it was restored 12 years ago, and learn about the need for continuing work.

Special guest lecturers, Prof Jana Fried (Coventry University, UK) and Prof Elizabeth Pienaar (University of Florida, USA) introduced AC21 participants to the role of social science and economics in invasive species. The students conducted a workshop to design a questionnaire to determine the socio-economic effects of invasive species, and then visited several locations in the area to ask people about how invasive species had impacted the lives of them, their households and their communities.



Workshopping the socio-economic roles of invasive species in society, above Prof Jana Fried (Coventry University) and below Prof Elizabeth Pienaar (University of Florida).

Dr Sabrina Kumschick (C-I-B) led a day-long workshop on how to make risk assessment for invasive species. In an innovative approach, students were broken up into groups to make assessments on fictional species, and then led discussions to imaginary stakeholder groups to determine the levels of potential conflicts for introducing the species.

All participants in the IGS left South Africa with a much greater appreciation for the wicked problems involved in tackling invasive species. They return to counties across the globe to cast fresh eyes on the problems within their own communities, prepared with novel insights and a new suite of tools so that they can engage and work toward solutions. They also become alumni of the Centre for Invasion Biology (C-I-B), part of a growing network of invasion scientists from around the world.



Assessments were made to gauge the risk of some fictional characters so that the course participants could determine feedback from different stakeholders' groups.



Learning through play: course participants each received a deck of CIB playing cards explaining the impacts of locally invasive species.



Despite taking place in the midst of the Cape winter, the AC21 course had only smiles as they teamed up to take on the problems of invasive species.



Participant's Voice: AC21 International Graduate School 2019

Vincent Pamugas REYES
Graduate School of Bioagricultural Sciences, Nagoya University

Invasive alien species can cause harmful impacts not only on biodiversity but also on human health, livelihoods, and well-being. Last July 12-21, 2019, Stellenbosch University in South Africa hosted the 2019 AC21 International Graduate School (IGS) which was attended by about 16 students from different AC21 universities around the world. This year's theme was, "*Invasion Science for society: hands-on experience of environmental, social and economic*



impacts of alien species". The main goal of the program is to introduce and further broaden the students' knowledge on invasive alien species.

A workshop led by Prof. Sabrina Kumshick discussed a new method of assessing the invasive species based on socio-economic aspects. SEICAT (Socio-economic impact classification of alien taxa), a new system of ranking the impacts of invasive alien species, is based

on the Nobel prize-winning welfare economics approach. Impacts are assigned in five different levels, from minimal to massive, according to several criteria they are into. Unlike other methods, this uses changes and development in community activities as a common criterion for assessing the impact of alien invasive species. Guest lecturers from Coventry University in the UK and University of Florida in the USA discussed the role of social science and economics with regard to invasion science. A workshop led by Prof. Jana Fried and Prof. Elizabeth Pienaar was organized to design questionnaires that would evaluate the socio-economic

impacts of alien species. After the workshop, students were grouped and assigned to visit different areas of Western Cape to assess the impact of invasive species based on individual, households, and communities.

Invasive alien species have different impacts on the invaded ecosystems and one of the main goals is to restore the ecosystems after eradicating the invasive alien species. A workshop on restoration ecology was conducted and headed by Prof. Karen Esler. She explained the complexity of the restoration process and students had ocular investigation of the sites that have been under restoration for 10 years. Three sites were observed to have improvements as compared to their



previous states, but restoration success of each site is highly dependent on the alien invasive species that previously invaded the area. On the other hand, a workshop on marine invasions was headed by Prof. Tammy Robinson. Students visited a local port in Gansbaai to observe invasive



mussels and discussed the role of the large ships as vectors for these marine invasive species.



In addition to these workshops, Ms. Suzaan Kritzinger-Klopper took the students for a three-hour walk around the great floral cape of Fynbos. Another fieldwork led by Prof. John Wilson tackled eradication of invasive alien species specifically the *Banksia ericifolia*. This plant species is native in Australia, was introduced in South Africa as a horticultural plant, and now considered as invasive species as it out-competes natural vegetation in the ecosystem. Using a global positioning system (GPS), positional data of the *Banksia ericifolia* were gathered. Moreover, phenotypic data such as plant height, number of immature/mature, and presence/absence of dropped seeds were also collected for data analysis. The last workshop was about the assessment of students' understanding of invasion science based on making risk assessment for invasive species. Led by Prof. Sabrina Kumschick,

students were grouped and asked to determine the long-term effects and impact of species on an individual, household, and community level. To make the activity fun, each group was given a Pocket Monster (Pokemon) as their fictional invasive species.



The last day of the program aimed to integrate the students learning in different aspects of invasion science. As compared to basic knowledge that invasion science is only about biodiversity and species control, students have learned that invasion science is trans-disciplinary and should have a data-driven approach. Invasion science encompasses knowledge from the general public, stakeholders, policymakers, and scientists. In order to achieve success in controlling these invasive alien species, adaptive management and total engagement from the communities and people involved are needed.



17th AC21 Steering Committee Meeting Report

Junko Iwatsuki, Project Coordinator
AC21 General Secretariat, Nagoya University

On May 28, 2019, the 17th AC21 Steering Committee (STC) was hosted by Nagoya University at the Japan Society for the Promotion of Science (JSPS) Washington Office in the U.S.



Annual AC21 Steering Committee Meetings (STC) are usually called at the time of major AC21 events; however, this year the STC member universities met in Washington D.C. during the NAFSA 2019 Conference. Participating universities were; University of Adelaide (Australia), University of Freiburg (Germany), North Carolina State University (the U.S.), Stellenbosch University (South Africa, joined via Skype conference), Northeastern University (RP China) and Nagoya University (Japan).

The half-day meeting started in the afternoon. AC21 Director Professor Hideki Kasuya, opened the meeting by welcoming the members. The AC21 General Secretariat gave an overview of the key activities last year: NAFSA 2018, APAIE 2019, AC21 International Forum (IF) 2018, IF 2020, Special Project Fund (SPF) 2018 and 2019, Financial Report of 2018, and Financial Plan for 2019. With regard to SPF 2019, the AC21 General

Secretariat explained that the SPF is awarded to 3 proposals each year, with up to 2 additional awards available to exceptional applications. This year, 5 proposals were selected out of 14 applications, after careful consideration by the STC members, as those 5 proposals were all highly evaluated and cover diverse research disciplines (Information Science, Agriculture, Linguistics, Political Science, and Civil Engineering).

Subsequently, a progress report on the 3rd AC21 International Graduate School 2019 (July 12-21, 2019) was delivered by Robert Kotze, Senior Director, SU International, Stellenbosch University. The theme for this year's IGS2019 was "Invasion science for society: hands-on experience of environmental, social and economic impacts of alien species".

The focal point of the discussions in the second half of this meeting was in regards to strategy and governance to further enhance AC21 activities. The AC21 General Secretariat collected comments from the STC member universities prior to the meeting to maximize the efficiency of the meeting. Based on those comments on the "strengths" and "weaknesses" of AC21, the members discussed the future vision of AC21 in order to determine our goals, aims and purposes for the next few years. The Vision statement in the AC21

ARTICLES was read out to the members and suggestions were made that "education" and "research" within the AC21 network should be redefined in order to establish a more concrete aim.

After the three-hour intensive meeting, the members agreed upon the following;

AC21 would choose one (or two) theme(s) from the list of the UN SDGs; and all the current AC21 activities (IF, SWF, IGS and SPF) will be connected together under that particular theme.

The ultimate goal is that AC21 will influence public policies through various research activities and possibly be invited to the UN to give a presentation within approximately 10 years.



Discussions regarding the above ideas will continue through email and Skype communications. By the end of 2019, the STC will propose a direction and a theme to the General Assembly. The STC Meeting ended on a very successful and positive note.

Upcoming AC21 Activities and Events

YEAR	DATES	EVENT/ACTIVITY	LOCATION
2019	November 1	Call for application for SPF 2020 (~January 31, 2020)	
	December 12	AC21 Steering Committee Meeting (Via Skype)	
2020	March (TBD)	Announcement of SPF 2020 results	
	March 21	AC21 Steering Committee Meeting	Vancouver, Canada
	December 6-10	10 th International Forum	Kasetsart University (Thailand)
	December 8	18 th Steering Committee Meeting	Kasetsart University (Thailand)
	December 9	10 th General Assembly	Kasetsart University (Thailand)

AC21 General Secretariat Activities (Apr 2019 - Oct 2019)

YEAR	DATES	EVENT/ACTIVITY	LOCATION
2019	May 26-31	Attendance at NAFSA 2019	Washington D.C. (USA)
	May 28	17 th Steering Committee Meeting	JSPS Washington Office (USA)
	July 12-21	3rd International Graduate School	Stellenbosch University (South Africa)
	August 8	AC21 Steering Committee Meeting	Via Internet

AC21 Members

As of November, 2019

Australia The University of Adelaide
China Jilin University
 Nanjing University
 Northeastern University
 Shanghai Jiao Tong University
 Tongji University
France University of Strasbourg
Germany University of Freiburg
Indonesia Gadjah Mada University

Japan Nagoya University
Laos National University of Laos
New Zealand University of Canterbury
South Africa Stellenbosch University
Thailand Chulalongkorn University
 Kasetsart University
USA North Carolina State University
 University of Minnesota

What is AC21?

AC21 is an international academic consortium comprised of higher education institutions from around the world. It was established in 2002 at the initiative of Nagoya University, with the aim of creating an academic network that transcends borders to address global issues by sharing knowledge and expertise. The network is managed by the AC21 General Secretariat located at Nagoya University.



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