

2018 ROAD ECOLOGY PROGRAM

ESCOLA SUPERIOR DE AGRICULTURA LUIZ DE QUEIROZ (ESALQ), UNIVERSITY OF SÃO PAULO, PIRACICABA, BRAZIL

Report to Funding Organization:

*Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP)
São Paulo Research Foundation, São Paulo, Brazil*

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August 2018

DISCLAIMER

DISCLAIMER STATEMENT

The opinions and conclusions expressed or implied are those of author of this report and are not necessarily those of their employers or their sponsors.

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I would also like to thank the following people and organizations for their contributions to the post-graduate road ecology course at ESALQ: the guest speakers Fernanda Abra (PhD student at ESALQ), Alex Bovo (PhD student at ESALQ), Simone Freitas (Universidade Federal do ABC), Francini Garcia (Universidade Federal de São Carlos), Osnir Giacon (Invepar), Edgar van der Grift (Wageningen Environmental Research, Netherlands), Kari Gunson (Eco-Kare International, Canada), Marcelo Magioli (PhD student at ESALQ), Kylie Soanes (University of Melbourne, Australia), Fernanda Z. Teixeira (Universidade Federal de Minas Gerais), and Itirapina Ecological Research Station (Estação Ecológica de Itirapina) and Carlos Botelho State Park (Parque Estadual Carlos Botelho). Naturally, a course is not possible without students; many thanks to Hector Ribeiro Benatti, Laura Piacentini Casarin, Douglas Cirino, Henrique Villas Bôas Concone, Janaina Leite de Souza, Juan Camilo Diaz Ricaurte, Mariana Bueno Landis, Vinicius Alberici Roberto.

I also thank André Martinez and Eleonore Setz at the State University of Campinas (Universidade Estadual de Campinas - UNICAMP) for inviting me for a guest lecture. Finally I would like to thank Renata Cristina Batista Fonseca, Daniela Polizeli Trafficante, and Vera Lex Engel from the São Paulo State University, Botucatu campus (Universidade Estadual Paulista, Botucatu -UNESP) for making it possible to teach a two-day road ecology course. Also, thanks to the students for attending the course in Botucatu: Telma Regina Alves, Andra Carolina Dalbeto, Jose Roberto Silveira Mello Junior, Samara da Silva Nascimento, Rita Camila Sampaio Nobre, Celso Anibal Yaguana Puglla, Luís Felipe da Silva, Brigitte de Almeida Torrezan, and Daniela Polizeli Traficante.

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1. GOALS AND OBJECTIVES

My goals for this visiting professorship were to:

- Teach road ecology to Brazilian students.
- Advise Brazilian students on their road ecology research.
- Stimulate students to study road ecology as part of their MSc or PhD thesis.

My specific objectives were to:

- Teach a road ecology course to students (Master of Science level) and other interested individuals (scientists, policy makers, consultants) at ESALQ, University of São Paulo, Piracicaba.
- Advise students on their road ecology research projects.
- Write and submit one or more peer-reviewed scientific road ecology articles based on existing data through collaborations with Brazilian scientists.
- Propose and organize a symposia or workshop in road ecology at the SER 2017 – World Conference on Ecological Restoration.
- Promote road ecology and recruit road ecology students through a guest lecture at the State University of Campinas (Universidade Estadual de Campinas - UNICAMP) and a two-day course at São Paulo State University, Botucatu campus (Universidade Estadual Paulista, Botucatu - UNESP).
- Propose and organize a symposia or workshop in road ecology at the SER 2017 – World Conference on Ecological Restoration.

This report is organized according to the objectives described above.

2. ROAD ECOLOGY COURSE ESALQ

I taught an eight credits (120 hours) road ecology course at ESALQ, University of São Paulo, Piracicaba between 4 June 2018 and 29 June 2018 (see Appendix A for declaration). The road ecology course was attended by 8 students (Table 1).

Table 1: Students who attended the road ecology course.

Hector Ribeiro Benatti
Laura Piacentini Casarin
Douglas Cirino
Henrique Villas Bôas Concione
Mariana Bueno Landis
Juan Camilo Diaz Ricaurte
Vinicius Alberici Roberto
Janaina Leite de Souza

There were several guest lecturers who contributed to the road ecology course (Table 2).

Table 2: Guest lecturers for the road ecology course.

Name	Affiliation
Fernanda Abra	PhD student at ESALQ
Alex Bovo	PhD student at ESALQ
Simone Freitas	Universidade Federal do ABC
Francini Garcia	Universidade Federal de São Carlos
Osnir Giacon	Invepar
Edgar van der Grift	Wageningen Environmental Research, The Netherlands
Kari Gunson	Eco-Kare International, Canada
Marcelo Magioli	PhD student at ESALQ
Kylie Soanes	University of Melbourne
Fernanda Z. Teixeira	Universidade Federal de Minas Gerais

In addition, I am grateful to Itirapina Ecological Research Station (Estação Ecológica de Itirapina) and Carlos Botelho State Park (Parque Estadual Carlos Botelho) for allowing us to visit and discuss road ecology topics inside these protected areas. During the two field trips the students experienced four different road types: 1. Dirt roads in the Estação Ecológica de Itirapina; 2. A two-lane road through Estação Ecológica de Itirapina; 3. A 4-lane motorway (SP-225) with mitigation measures (wildlife fencing and wildlife and multi-functional underpasses) between Brotas and Itirapina; and 4. An Estrada Parque with canopy crossings and erosion and drainage control measures through Parque Estadual Carlos Botelho. The students were asked to fill out an evaluation survey for the road ecology course after completing the course (Appendix B).

3. ADVICE TO STUDENTS AND OTHER RESEARCHERS

I advised the following students on road ecology studies or proposals.

Table 3: Students advised by Dr. Marcel P. Huijser.

Student	Activity
MSc Fernanda Delborgo Abra (PhD student)	Advised on PhD thesis "Impacto de Rodovias nas Comunidades de Médios e Grandes Mamíferos e suas implicações para a conservação". ESALQ, USP, Piracicaba, São Paulo.
Dr. Marcelo Magioli and MSc Alex Bovo (PhD student)	Advised on manuscript for peer reviewed journal.
Josiane Siqueira Barbieri	Advised on MSc thesis on canopy crossing structures for arboreal mammals along SP -139 through Parque estadual Carlos Botelho – SP.
MSc Vinicius Alberici Roberto (PhD student)	Advised on potential road ecology components of PhD thesis on giant anteaters and roads and traffic.
MSc Francini Garcia (potential future PhD student)	Advised on initiation of potential PhD thesis on black lion tamarin and roads and traffic.
MSc Henrique Villas Bôas Concone (PhD student)	Advised on potential road ecology components of PhD thesis on ocelot and roads and traffic.
Douglas Cirino (potential future MSc student)	Advised on potential road ecology components of MSc thesis on wildlife movements along dirt roads.
MSc Mariana Bueno Landis (PhD student)	Advised on potential article on road effect zone for the Estrada Parque through Parque Estadual Carlos Botelho.
Brigitte de Almeida Torrezan (potential future MSc student)	Advised on potential MSc thesis on the effectiveness of wildlife warning in reducing crashes with large mammals.

4. PEER REVIEWED ARTICLES

I am a co-author on three submitted or published papers with Brazilian scientists. I worked on these papers under the FAPESP grant.

Paper 1

Abra, F.D., M.P. Huijser, C.S. Pereira & K.M.P.M.B. Ferraz. 2018. How reliable are your data? Verifying species identification of road-killed mammals recorded by road maintenance personnel in São Paulo State, Brazil. *Biological Conservation* 225: 42-52.

Status: Published (June 2018)

Abstract: Across the world, many wildlife studies rely on data collected by volunteers. Roadkill studies often rely on data collected by non-experts including road maintenance personnel and volunteers, but data quality control is rarely applied. We investigated whether maintenance personnel correctly identified the species of road-killed mammals along toll roads in São Paulo State, Brazil. We investigated 3222 images of road-killed animals and compared the original species descriptions by road maintenance personnel (non-experts) with our identification (experts). We also presented images of alive and road-killed mammals to road maintenance personnel (n=179) and asked them to describe the species. We found that road maintenance personnel typically correctly identified certain common, large, or highly recognizable species. However, rare or rarely seen species, species that resemble other species (e.g. small wild canids and felids), or species that are not highly recognizable were often misidentified, ambiguously described, or not identified at all. We also found that the ability of road maintenance personnel to correctly identify the most common road-killed small wild canids and felids is dependent on the context. When similar species are rare, road maintenance personnel typically correctly identifies the most common road-killed small wild canids and felids. However, common small canids and felids are not reliably identified if similar species are more abundant. To improve the reliability of species identification by non-experts, we recommend training in species identification, including images with a scale to accompany all roadkill records, and verification of the roadkill records and associated images for selected species by experts.

Paper 2

Marcelo Magioli, Alex Augusto Abreu Bovo, Marcel Pieter Huijser, Fernanda Delbogro Abra, Renata Alonso Miotto, Victor Hugo Vasconcellos Prado Andrade, Adriana Marques Nascimento, Máisa Ziviani Alves Martins & Katia Maria Paschoaletto Micchi de Barros Ferraz. Short and narrow roads cause substantial damage on wildlife.

Status: Accepted for publication in *Oecologia Australis*

Abstract: Short and narrow roads are generally overlooked when assessing road impacts on biodiversity. However, these roads bisect natural environments and may cause significant impacts on wildlife in local scale. Thus, we monitored roadkills along a short two-lane road (CPM road) and propose mitigation strategies to reduce wildlife mortality. We monitored roadkilled vertebrates along CPM road from 2010-2016 and we also compiled data from previous studies along the same road. We conducted a hotspot analysis to identify CPM road areas with significant roadkill aggregation. We recorded 77 roadkilled vertebrates from 14 taxonomic groups along the CPM road. Mammals were the most frequently recorded group (91% of roadkills), which represented 56% of all medium- and large-sized mammal species known to occur in the study area. We identified three roadkill hotspots along the CPM road. Two of them were located at two stream crossings, where the road cut across the associated riparian forests, and the other was at a road section with water drainage from a pond, also connected to a riparian forest. These riparian forests are part of the remaining natural habitat that provides connectivity between the forest remnants in the landscape, and therefore, for wildlife. Our results showed that even short and narrow roads can have considerable roadkill, which may have severe effects for wildlife on a local scale. The results stress the need to carefully look at these types of roads and propose measures to reduce impacts. We propose the creation of safe crossing opportunities in the hotspot zones combined with wildlife fencing to keep the animals off the road and guide them towards the safe crossing opportunities.

Paper 3

Fernanda Abra, Beatriz Granzieira, Marcel Huijser, Katia Maria Ferraz, Camilla Haddad & Roberta Paolino. Pay or prevent? Human safety, costs to society and legal perspectives on animal-vehicle crashes in São Paulo State.

Status: Submitted 20 August 2018

Abstract: Roads are one of biggest threats to biological conservation. Direct road mortality and the barrier effect are typically identified as the greatest danger to wildlife. In addition, collisions with large mammals are also a threat to human safety and represent an economic cost to society. We documented and explored the effects of animal-vehicle crashes on human safety in São Paulo State, Brazil. We estimated the costs of these collisions to society, and we summarized the legal perspectives. On average, the Military Highway Police of São Paulo State reported 2,611 animal-vehicle crashes per year (3.3% of total crashes). About 18.5% of these resulted in human injuries or fatalities. The total annual cost to society was estimated at R\$ 56,550,642 (US \$ 25,144,794). The average cost for an animal-vehicle crash, regardless if and how many human injuries and fatalities occurred, was R\$ 21,656 (US \$ 9,629). The Brazilian legal system overwhelmingly (91.7 % of the cases) holds the road manager liable for animal-vehicle crashes, both with wild and domestic species. On average, road managers spent R\$ 2,463,380 (US \$ 1,005,051) per year compensating victims. The logical conclusion is that the Brazilian legal system expects road managers to keep animals, both wild and domestic species, off the road. We suggest a better coordination between the laws that relate to animal-vehicle crashes and human safety, and the process for environmental licenses that focusses on reducing collisions with wildlife and habitat connectivity. In addition, we suggest a better management practices and social change with regard to abandoned domesticated animals including horses, cattle, and dogs. This should ultimately result in a road system with increased human safety, reduced unnatural mortality for both domestic and wild animal species, safe crossing opportunities for wildlife, and reduced monetary costs to society.

5. GUEST LECTURES AND COURSES

I was invited as a guest lecturer or course instructor by various organizations (Table 5).

Table 4: Guest lectures and workshops provided by Dr. Marcel P. Huijser in Brazil.

Date	Activity	Location	Certificate / documentation
3 July 2018	Guest lecture.	Universidade Estadual de Campinas (UNICAMP, State University of Campinas), Campinas, São Paulo State, Brazil	Appendix C1
14 July 2018	Invited speaker at conference. Road Ecology: Are we taking the right turns. 1° workshop de mitigação dos impactos das rodovias sove a faina no centro oeste Paulista.	Bauru, São Paulo State, Brazil	Appendix C2
6 and 7 August 2018	Two-day day road ecology course.	Universidade Estadual Paulista in Botucatu (UNESP, São Paulo State University, Botucatu campus), Botucatu, São Paulo State, Brazil	Appendix C3

6. ROAD ECOLOGY WORKSHOP SER 2017 CONFERENCE

Together with Fernanda Abra, I organized a workshop in road ecology at the SER 2017 – World Conference on Ecological Restoration (Appendix C4):

Ecological Restoration and Road ecology. Workshop at VII World Conference on Ecological Restoration, Society for Ecological Restoration, 29 August 2017, Foz do Iguassu, Brazil.

7. FUTURE PLANS

The road ecology course at ESALQ was well received by the students (see Appendix B). In addition, there are a number of students who have initiated MSc, PhD or other studies related to road ecology (see Chapter 3) and these students are interested in having further input from me. In addition, the existing network of researchers and practitioners (Huijser et al., 2015) from both the public and private sector was further strengthened (see Chapter 3, 5, 6) and there appears to be a great need for better design, implementation and maintenance of mitigation measures aimed at reducing wildlife-vehicle collisions and maintain a certain degree of habitat connectivity for wildlife. The positive feedback regarding the activities developed by me in São Paulo state (as well as several other states), with FAPESP and ESALQ support, demonstrates that the objective of developing a road ecology program and stimulating road ecology activities in Brazil was reached successfully. The feedback on the activities developed so far and the interest that was expressed in the development of a more permanent road ecology research program at ESALQ has motivated us to continue the partnership between ESALQ and the Western Transportation Institute. Therefore Dr. Katia Ferraz (ESALQ, USP) and I are planning to write another grant proposal. The new proposal would contain the following elements:

1. A Biennial (once every two years) road ecology course for post-graduate students.
2. Advising students that are conducting their MSc and PhD in road ecology at ESALQ.
3. Continue setting up and stimulating a larger research program involving different research groups in different parts of Brazil representing different biomes. The research program would focus on the impacts of road and traffic on the natural environment (and potentially also on indigenous people) and avoidance, mitigation and compensation strategies aimed at reducing these impacts. This effort should result in practical guidelines and recommendations for road (re)construction projects in different biomes throughout Brazil.

Reference:

[Huijser, M.P.](#) & K.M.P.M.B. Ferraz. 2015. Initiation of road ecology program at Escola Superior de Agricultura Luiz Quiroz (ESALQ), University of São Paulo, Piracicaba, Brazil. Report to Funding Organization: Coordination for the Improvement of Higher Education Personnel (CAPES), Ministry of Higher Education, Brazil. Western Transportation Institute – Montana State University, Bozeman, Montana, USA.

APPENDIX A: ROAD ECOLOGY COURSE ESALQ, USP



UNIVERSIDADE DE SÃO PAULO
ESCOLA SUPERIOR DE AGRICULTURA "LUÍZ DE QUEIROZ"



DEPARTAMENTO DE CIÊNCIAS FLORESTAIS

Av. Pádua Dias, 11 • Cep 13418-900 • Piracicaba, SP • Brasil
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DECLARAÇÃO

Declaro, para os devidos fins, que Marcel Huijser ministrou a disciplina de Pós-Graduação ECO5045 – Ecologia de Rodovias e a Conservação da Biodiversidade na ESALQ/USP no período de 4 a 29 de junho de 2018, totalizando 120 horas-aula.

Piracicaba, 01 de agosto de 2018.

Profa. Dra. Katia Maria P. M. de Barros Ferraz

APPENDIX B: EVALUATION ROAD ECOLOGY COURSE BY THE STUDENTS

The students answered questions 1, 2 and 4 on a Likert Scale.
The average response score by the students is shown for each question.

Legend:

Strongly disagree	1
Disagree	2
Neither agree or disagree	3
Agree	4
Strongly agree	5

Q1: How do you rate the road ecology course?

The course met my expectations	4.8
The course covered the topics I expected to be covered	4.6
The topics were covered with sufficient depth and detail	4.6
The course matched what I think I should know in the "real world"	4.9
The instructions and expectations on what I had to do for the course were clear	4.9
The instructor (Marcel) listened to the student's questions	5.0
The instructor (Marcel) answered the student's questions	5.0
The instructor (Marcel) stimulated discussions during the course	5.0
The instructor (Marcel) explained the thinking behind statements	4.9
The instructor (Marcel) treated the students with respect	5.0
Having access to the PDFs of the presentations was useful	4.6
Having access to selected literature was useful	4.9
The field trip to Itirapina was useful	4.9
The field trip to Carlos Botelho State Park was useful	4.5
Though the class was taught in English, I understood it well enough	5.0
I will likely recommend the class to other students	5.0

Q2: The guest lectures by the following people were useful

Fernanda Teixeira	4.5
Fernanda Abra, SP225 underpasses	4.8
Simone Freitas	4.5
Marcelo Magioli and Alex Bovo	4.5
Kylie Soanes	4.7
Edgar van der Grift	4.7
Kari Gunson	4.7
Francini Garcia	4.6
Fernanda Abra, species identification	4.7
Osnir Giacon	4.7

Q3: Suggestions for guest speakers (open text)

No responses

Q4: For the next road ecology course, should we...

Increase the lectures in class by Marcel	2.9
Increase the number of guest lectures	2.9
Increase the number or duration of the excursions	3.3
Increase reading requirements	3.6
Increase the final student project	3.0

Q5: What did you like best about the road ecology course? (open text, unedited)

The relationship between real world and academy.
A maneira de exportar o conteúdo científica na solução de problemas para a conservação.
How much of it can be applied in the real world. I really liked the approach of the course.
Realize that there is much more to building a highway (in regards to wildlife) than I could imagine
I think that the classes were very usefull and I really liked the way they were given for us. I didn't know a lot of things about road ecology, and what I liked most about the classes was that all the subjects were teach for those who didn't know about it. Every subject started from the simpliest parts until the most specific ones. Besides, I think that the Professor taught us with an amazing enthusiasm and respect, which made the classes pretty enjoyable.
I really liked the scientific thinking that the course made us to do. Not only understanding issues related to road ecology, but importantly, how to adress the properly. It was a very good exercise that is very useful for any subject of interest.
I liked the methodology used by Professor Marcel and also the way he explained the topics addressed. I really enjoyed the experience.
What I liked the most was to have deepened my knowledge on the subject, and on the difficulties and mitigation strategies that are being developed.

Q6: What did you like least about the road ecology course? (open text, unedited)

I think that we could wrk woth real data to learn
O tempo disponível para leitura dos artigos foi um problema para mim.
I missed a lot of classes, unfortunately!
The field tripo to Carlos Botelho was not well prepared
Actually, there was nothing that i think it was least enjoyable about the classes. All the lectures given were very well explained; the trip to Itirapina was perfect for understanding some ideas that had been discussed during classes; the articles that we read were very interesting; and I liked a lot the final project
I think we could have had more time in the field. If there is a way to have lectures in the field (like the Itirapina base), it would be a gain for the course.
I think that as is the course it is good. although I think that the advice in the final project could be increased.
Nothing displeased me.

Q7: What changes would you recommend to the road ecology course? (open text, unedited)

More practice.
Nenhuma!
None.
More reading and more field trips
I don't have any recommendations
Longer field trips. Two-day trip to Carlos Botelho. Extended time for handing final report (one week more?)
I do not think necessary any change.
Nothing to suggest.

Q8: What are the strengths of the instructor (Marcel)? (open text, unedited)

Respect and the efforts to made the students understand the theme.
Muito conhecimento sobre os temas e didática na abordagem.
He is great! He makes us think about our questions and our objectives before discussing any particular topic. He has a very critical view of the field and also a strong science background, which is extremely helpful during classes.
ability to transmit knowledge; respect with students; patience to teach to a heterogeneous audience
Marcel is a very good Professor. He knows how to make the subjects easy for understanding, even the difficult ones. He listens to the students, and never says that something that we said was wrong; instead, he always makes us think about it to come up with a final idea. Moreover, he is extremely polite, funny and respects all students.
He is very knowledgeable in his field, and a very good scientist. He made everyone exercise a lot critical thinking and study-designing, which I liked a lot. He also made a wonderful effort to make everyone comfortable and participating in the course. He is willing to share experiences and discuss ideas with anyone who would approach him for that. Very good professor.
The Professor Marcel is one of the best teachers I know. His way of teaching is unique. He is an excellent person, with passion for what he does, which he transmits to the students. Apart from being a great researcher, he is an excellent person.
Good mood and open to discussion.

Q9: What suggestions do you have to improve Marcel's teaching? (open text, unedited)

Nothing.
O curso foi excelente!
Tornar-se proficiente em língua portuguesa! ;)
none, I guess
I don't have any suggestions
I could not recall of anything... Very good professor!
May he never change the way he teaches.
For classes in Brazil, learn more Portuguese.

APPENDIX C1: GUEST LECTURE UNICAMP, CAMPINAS





Biofórum 2018

— Palestras em Ecologia —



Certificado

Certificamos que Marcel Huijser apresentou a palestra "Road ecology: are we taking the right turns?" no Biofórum, realizado no Instituto de Biologia, Universidade Estadual de Campinas, em 03 de Julho de 2018.

André Martinez

André Martinez
Camilla RabELO Oliveira Leal
Junia Carreira
Laura Lucas Trujillo
Marta da Graça Simbine
Comissão Organizadora

Prof. Dr. Martin Pajeja

Prof. Dr. Martin Pajeja
Programa de Pós-graduação
em Ecologia
UNICAMP

APPENDIX C2: ROAD ECOLOGY CONFERENCE BAURU

A Prefeitura Municipal de Bauru, através de seu Zoológico Municipal, convidam para o

1º WORKSHOP DE MITIGAÇÃO DOS IMPACTOS DAS RODOVIAS SOBRE A FAUNA NO CENTRO-OESTE PAULISTA

Data: 14/07/2018
 Horário: 9h às 17h
 Local: R. Amadeu Sangiovani, 4-47 - Vila Mariana, Bauru - SP, (Casa do Médico)

Inscrições em: <https://goo.gl/forms/kcxUFz11Td6EaWgr2>



Programação:

- 9h – Abertura oficial do evento
- 9h40 – A Fauna Selvagem no Centro-Oeste Paulista - Zootec. Luiz Pires - Diretor Zoo/Bauru
- 10h – Atropele! Cometi um Crime Ambiental?- Edis Milaré Advocacia
- 10h40 – Uma Passagem de Fauna Só, Não Faz a Solução - Biolª Drª Fernanda Abra
- 11h20 – E Lá Fora, a Coisa é Diferente? - Dr. Marcel Huijser (Montana State Universit- EUA)
- 12h10 – Brunch
- 13h10 – Tratei, Recuperei e Agora, o Que Fazer? - Representante SMA
- 13h50 – Áreas de Soltura, Uma nova Chance Para a Vida! Biolª Fernando Magnani - MPFauna
- 14h20 – Licenciamento Ambiental de Rodovias: Só as novas necessitam? Representante Cetesb
- 15h – Cases de Mitigação: A Experiência da Concessionária CART
- 15h30 – O Ministério Público e os Atropelamentos da Fauna Selvagem. Ações do GAEMA.
- 16h – Debate com os palestrantes
- 17h – Encerramento

Realização:

Apelo:



APPENDIX C3: TWO DAY COURSE UNESP, BOTUCATU



UNIVERSIDADE ESTADUAL PAULISTA
Câmpus de Botucatu



ATESTADO

ATESTAMOS que o Prof. Dr. Marcel O. Huijser, PASSAPORTE 447169300 USA, ministrou/ministra aulas aos discentes do Programa de Pós-graduação desta Unidade Universitária, conforme abaixo descrito:

Programa: Ciência Florestal

Disciplina	Ano	Dt.Início	Dt.Término	Curso	Discentes	Hr/Aula
Tópicos Especiais: Introdução à Ecologia de Estradas	2018	06/08/2018	07/08/2018	MD	3	15

Botucatu, 16 de agosto de 2018


Fabiana Regina Prado
Supervisora Técnica da Seção
Pós-Graduação-FCA/UNESP

APPENDIX C4: WORKSHOP SER 2017 CONFERENCE



Program book: http://ser2017.org/ser2017_programafinal-site.pdf

Daily Program of Sessions
111



August 29th, 2017

Ecological restoration is now a primary tool for both biodiversity conservation and improving human wellbeing, with over three trillion dollars invested annually across the globe. Forest ecosystems are a central focus for many countries that are working to contribute to ambitious restoration targets. To maximize the benefits, the planning, delivery, and monitoring of forest restoration activities must be improved. This “Knowledge Café” will provide an opportunity for conference attendees to share ideas in small groups about key needs for achieving global forest restoration targets, including developing priorities, international restoration standards, and policy and governance mechanisms. Ideas will build upon presentations in symposia sessions on Forest Landscape Restoration during the first two days of the conference. The objective of the “Knowledge Café” is to share perspectives, strengthen the global network of individuals working on forest restoration and advance collaborate efforts to improve the success of forest restoration efforts worldwide.

<p>⌚ 16h00 - 18h00 📍 Canon</p>	<p>O50 - RESTORATION IN THE CONTEXT OF AGROECOSYSTEMS/ AGROFORESTRY</p> <hr/> <p>16h00 - 16h20</p> <p>O50.01 - DEVELOPMENT AND FINANCIAL ANALYSIS OF AGROFORESTRY SYSTEMS FOR SMALL-SCALE PRODUCERS IN SOUTHERN BRAZIL (#13909) <i>Julio Thymus</i></p> <hr/> <p>16h20 - 16h40</p> <p>O50.02 - FOREST COCOA PROJECT: INCOME GENERATION AND FOREST RESTORATION AS ALTERNATIVE TO AMAZON DEFORESTATION IN SOUTH PARÁ STATE IN BRAZIL (#13837) <i>Rodrigo Mauro Fretre</i></p> <hr/> <p>16h40 - 17h00</p> <p>O50.03 - AGROFORESTRY SYSTEM UNDER DIFFERENT MANAGEMENT CONTRIBUTION TO CARBON SEQUESTRATION AND ENVIRONMENTAL GAINS AFTER GULLY EROSION STABILIZED AREA IN PINDORAMA, BRAZIL (#14037) <i>Maria Teresa Vilela Nogueira Abdo</i></p> <hr/> <p>17h00 - 17h20</p> <p>O50.04 - NUCLEATION THEORY INSPIRING THE DESIGN OF HIGH BIODIVERSITY SILVOPASTORAL SYSTEM ON ATLANTIC FOREST BIOME: ECOLOGICAL RESTORATION, FAMILY FARM LIVELIHOOD AND AGROECOLOGY (#13961) <i>Abdon Luiz Schmitt Filho</i></p>
<p>⌚ 16h00 - 18h00 📍 Minueto</p>	<p>WS1 - SEEDS FOR LARGE-SCALE RESTORATION: A MATTER OF SEED NETWORKS <i>Organizer: Danilo Ignacio Urzedo</i></p>
<p>⌚ 16h00 - 18h00 📍 Prelúdio</p>	<p>WS2- ROAD ECOLOGY AND ECOLOGICAL RESTORATION; HOW TO MAKE THE LINK? <i>Organizer: Marcel Hüljser</i></p>

S Symposium
O Oral Session
W Workshop