

## Inter-meeting course 'Introduction to meta-analysis in ecology'

3<sup>rd</sup> – 7<sup>th</sup> April 2017  
Coimbra, Portugal

The inter-meeting course 'Introduction to meta-analysis in ecology' will take place at Coimbra, Portugal, between 3<sup>rd</sup> – 7<sup>th</sup> April 2017.

This course is directed to members of the Iberian Limnological Association (AIL). To become a member of the AIL, fill in the form at <http://www.uv.es/ael/boletin.htm>.

Any member of the AIL can register for the course, but since the number of vacancies is limited to 20, priority will be given to members of the J-AIL, on a first come first served basis.

You can register for the course at

<https://docs.google.com/forms/d/e/1FAIpQLSd4umYGBdyP5ezULEdBqxTbkqrgZcBBACLQsjUHjojVO82ixg/viewform>; the deadline to register is the 28<sup>th</sup> February 2017.

The course has a registration fee of 50 Euros to cover for coffee breaks, lunches and a writing kit; travel and accommodation will be at the participants' expenses. The payment of the registration fee should be made by bank transfer after receiving confirmation of having been selected to attend the course. Invoices will be issued using the information provided in the registration forms. J-AIL members will be reimbursed of the registration fees by the AIL after attending the course; for that the invoice needs to be issued on behalf of the participant.

Bank transfer to:

IMAR-Instituto do Mar

Swift code (international transfers): TOTA PTPL

IBAN (international transfers): PT 5000 18 0269 00200010529 69

Bank name and address: Santander - Totta; Balcão da Universidade de Coimbra, Pólo I, Rua Larga S/N, 3004-516 Coimbra, Portugal

Mandatory transfer reference: meta2017

*(any bank expenses associated with the payment should be supported by the participant)*

Classes will be given in English and participants are required to bring their own laptops. The class room has internet connection.

Information on the program, course venue, accommodation and travel can be found below.

For inquiries, contact Verónica Ferreira ([veronica@ci.uc.pt](mailto:veronica@ci.uc.pt)).

Scientific coordination:

Verónica Ferreira

MARE/University of Coimbra

Organization:



# Introduction to meta-analysis in ecology

by Verónica Ferreira  
MARE, University of Coimbra, Portugal

## Introduction

Meta-analysis is a statistical tool for combining the results of primary studies on the same topic, taking into account study precision, to allow general conclusions and evaluation of the consistency of results across studies. As it is an objective and powerful tool for summarizing evidence, the number of meta-analyses in ecology has been rising in recent years. This course will introduce the basics of meta-analysis and make participants aware of this tool as well as prepared to evaluate its quality and interpret its results.

**Program** (3<sup>rd</sup> – 7<sup>th</sup> April 2017)

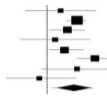
	9h00 – 12h30	14h00 – 17h30
Monday	<ul style="list-style-type: none"><li>. Class introductions</li><li>. General introduction (T)</li><li>. Types of revisions</li><li>. Systematic revision</li><li>. Meta-analysis</li><li>. Examples of meta-analyses (T)</li><li>. Types of data in ecology (T)</li></ul>	<ul style="list-style-type: none"><li>. Effect size and precision (T)</li><li>. Conversion between effect sizes (T)</li><li>. Factors that affect precision (T)</li><li>. Exercise: Extract primary data from selected papers; Estimate effect sizes and precision (P)</li><li>. Group projects: Distribution of topics, papers and matrices; Formulate a question (P)</li></ul>
Tuesday	<ul style="list-style-type: none"><li>. Global effect size (T)</li><li>. Fixed effect and Random effects models (T)</li><li>. Forest plot (T)</li><li>. Publication bias (T)</li><li>. Example: Compute effect sizes and precision; Estimate a global effect size; Assess publication bias (P)</li></ul>	<ul style="list-style-type: none"><li>. Group projects: Estimate effect sizes and precision; Estimate the global effect size and produce a forest plot; Assess publication bias (P)</li></ul>
Wednesday	<ul style="list-style-type: none"><li>. Heterogeneity (T)</li><li>. Moderators (T)</li><li>. Subgroup analysis (T)</li><li>. Meta-regression (T)</li><li>. Example: Assess heterogeneity; Perform subgroup analysis and meta-regression (P)</li></ul>	<ul style="list-style-type: none"><li>. Group projects: Assess heterogeneity; Perform subgroup analysis and meta-regression (P)</li></ul>
Thursday	<ul style="list-style-type: none"><li>. Multiple effect sizes per study (T)</li><li>. Study-generated vs. review-generated evidence (T)</li><li>. Sensitivity analysis (T)</li><li>. Cumulative meta-analysis (T)</li><li>. Example: Perform cumulative meta-analysis; Perform a sensitivity analysis (P)</li></ul>	<ul style="list-style-type: none"><li>. Group projects: Perform sensitivity analyses; Perform cumulative meta-analysis (P)</li></ul>
Friday	<ul style="list-style-type: none"><li>. Meta-analysis report (T)</li><li>. Criticism to meta-analysis (T)</li><li>. Use of meta-analysis in primary studies (T)</li><li>. Software and bibliography (T)</li></ul>	<ul style="list-style-type: none"><li>. Group projects: Presentations (P)</li><li>. J-AIL assembly</li></ul>

(T), theoretical session; (P), practical session; 14h theoretical + 16h practical = 30h total

Group projects: students will be divided into small groups according with their study topics, and will put into practice the knowledge acquired in the theoretical sessions by carrying out small meta-analyses based on a set of pre-selected primary papers

The software to be used in the course is OpenMEE, which can be downloaded in advance and for free at <http://www.cebm.brown.edu/openmee/download.html>

## Course venue



AIL course  
Introduction to meta-analysis in ecology

Coimbra, 3<sup>rd</sup> – 7<sup>th</sup> April 2017  
Polo II, Coimbra



## Accommodation at Coimbra

The **course venue** will be at the new University campus 'Pólo II', on the following address:

Instituto de Investigação Interdisciplinar da Universidade de Coimbra  
Casa Costa Alemão - Pólo II  
Rua Dom Francisco de Lemos  
3030-789 COIMBRA

This is a little displaced from the city centre, but only at a ~ 30 mins walk from Portagem (a central location downtown); maps will be provided. There are busses going from downtown to Pólo II.

### Some possibilities for accommodation are listed below:

[http://www.trivago.pt/?iSemThemeld=3078&sem\\_keyword=alojamento+coimbra&sem\\_placement=&sem\\_creativeid=35849052753&sem\\_network=g&sem\\_device=c&sem\\_param1=&sem\\_param2=&sem\\_matchtype=e&sem\\_target=&sem\\_adposition=1t2&iPathId=51069&cip=35112007015106911](http://www.trivago.pt/?iSemThemeld=3078&sem_keyword=alojamento+coimbra&sem_placement=&sem_creativeid=35849052753&sem_network=g&sem_device=c&sem_param1=&sem_param2=&sem_matchtype=e&sem_target=&sem_adposition=1t2&iPathId=51069&cip=35112007015106911)

Coimbra tourism website: <http://www.turismodecoimbra.pt/index.php?lang=en> (click in 'Where to stay' to find a list of suggestions)

Coimbra youth hostel: <http://microsites.juventude.gov.pt/Portal/en/PCoimbra.htm>

Hostels in Coimbra:

[http://www.portuguese.hostelworld.com/Albergues/Coimbra/Portugal?source=googleadwordscitiespt&KID=25262126&AID=2&sub\\_keyword=hostels%20coimbra&sub\\_ad=e&sub\\_publisher=ADW](http://www.portuguese.hostelworld.com/Albergues/Coimbra/Portugal?source=googleadwordscitiespt&KID=25262126&AID=2&sub_keyword=hostels%20coimbra&sub_ad=e&sub_publisher=ADW)

There is also the possibility for accommodation at the **University residences** (double room: 10€/night/person; single room: 20€/night), but vacancies will be confirmed only after the registration deadline or as soon as the course is full.



## HOTÉIS HOTELS



- |   |   |
|---|---|
| 1 Quinta das Lágrimas**** • Tel.: 239 802 380 | 9 Dona Inês*** • Tel.: 239 855 800              |
| 2 Tivoli Coimbra**** • Tel.: 239 858 300      | 10 Oslo*** • Tel.: 239 829 071                  |
| 3 Tryp Coimbra**** • Tel.: 239 480 800        | 11 Ibis** • Tel.: 239 852 130                   |
| 4 Vila Galé**** • Tel.: 239 240 000           | 12 Jardim** • Tel.: 239 825 204                 |
| 5 Astória*** • Tel.: 239 853 020              | 13 Residencial Alentejana** • Tel.: 239 825 903 |
| 6 Best Western D. Luís*** • Tel.: 239 802 120 | 14 Avenida* • Tel.: 239 822 156                 |
| 7 Bragança*** • Tel.: 239 822 171             | 15 Domus* • Tel.: 239 828 584                   |
| 8 Comfort Inn Almedina*** • Tel.: 239 855 500 | 16 Larbelo Residencial * • Tel.: 239 829 092    |

## ALOJAMENTO LOCAL GUEST HOUSE/ B&B

- |  |   |
|--|---|
| 17 A Lorvanense • Tel.: 239 828 182      | 29 Ideal • Tel.: 239 822 237                |
| 18 Académica • Tel.: 239 825 400         | 30 Infante D. Henrique • Tel.: 239 822 142  |
| 19 Aeminium • Tel.: 239 829 426          | 31 Internacional • Tel.: 239 825 503        |
| 20 Antunes • Tel.: 239 854 720           | 32 Lusa Atenas • Tel.: 239 826 412          |
| 21 Aviz • Tel.: 239 823 718              | 33 Moderna • Tel.: 239 825 413              |
| 22 Balada do Mondego • Tel.: 239 824 579 | 34 Moeda • Tel.: 239 824 784                |
| 23 Botânico • Tel.: 239 714 824          | 35 Paris • Tel.: 239 822 732                |
| 24 Casa Branca • Tel.: 239 701 196       | 36 Parque • Tel.: 239 829 202               |
| 25 Casa Pomal • Tel.: 239 835 175        | 37 Santa Cruz • Tel.: 239 823 657           |
| 26 Coimbra • Tel.: 239 837 996           | 38 Solar Navarro • Tel.: 239 827 999        |
| 27 Flôr de Coimbra • Tel.: 239 823 865   | 39 Vitória • Tel.: 239 824 049              |
| 28 Gouveia • Tel.: 239 829 793           | 40 River Suites Coimbra • Tel.: 239 440 582 |

## TER RURAL TOURISM

- T1 Casa Alda Martha • Solares de Portugal •  
Tel.: 239 931 750
- T Casa Morais • Tel.: 239 431 061

## POUSADA HOSTEL

- H1 Be Coimbra Hostel Rivoli • Tel.: 917 575 186
- H2 Dream on Coimbra • Tel.: 239 715 702
- H3 Grande Hostel de Coimbra • Tel.: 239 108 212
- H4 NS Hostel • Tel.: 239 821 343
- H5 Quebra-Luz • Tel.: 912 278 779
- H6 Serenata Hostel Coimbra • Tel.: 239 853 130
- H7 Sofia Chill House • Tel.: 239 824 126
- H8 Green Hostel • Tel.: 918 175 787
- Y Pousada da Juventude de Coimbra  
Youth Hostel • Tel.: 239 822 955

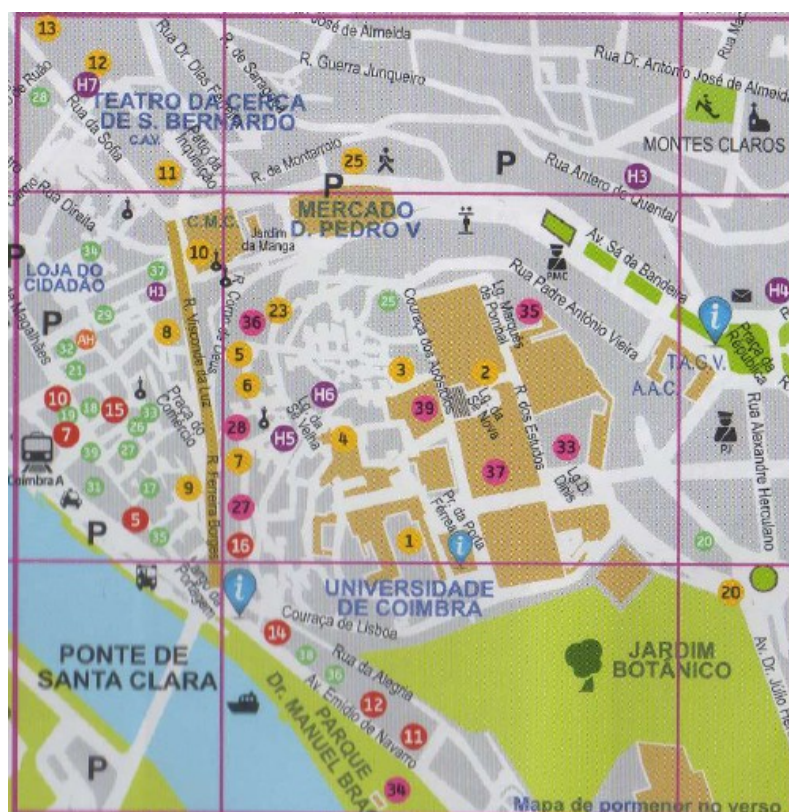
## APARTHOTEL

- AH Coimbra Vintage Lofts • Tel.: 964 326 556

## PARQUE DE CAMPISMO CAMPING

- Parque Municipal de Campismo de Coimbra  
Tel.: 239 086 902

Map of the city centre with the location of the some accommodation options listed above:




## Travel: Arrival to Coimbra

If you are arriving to Portugal by plane, you can land in either Lisbon/Lisboa or Oporto/Porto. The best way to go from these cities to Coimbra is by train.

### To go from Lisbon/Lisboa airport to Coimbra:

**1a.** At the entrance of the airport you can take a **taxi to the train station Oriente** (the trip will take ~ 10 mins and cost ~ 10 Euros).

**1b.** In alternative to the taxi, you can take the **subway from the airport to the train station Oriente** (the trip will take ~ 10 min and cost 1.40 Euros): once you leave the restricted area inside the airport, you should turn right and look for the subway symbol  (still inside the airport); buy a ticket in a self-service machine or at the desk; take the subway and leave 3 stations after (**Oriente**; red line).


**2.** Take the next **train to Coimbra** (either Alfa or Intercidades; 19 – 23 Euros). The trip will take 1h30 – 2h00, and you will leave at **Coimbra-B**.

**3a.** Take a **taxi to your residence**.

**3b.** In alternative, take a **train connection between Coimbra-B and Coimbra** (city centre) using the same train ticket you already have and **walk to your residence**.

### To go from Oporto/Porto airport to Coimbra:

**1a.** At the entrance of the airport you can take a **taxi to the train station Porto-Campanhã**.

**1b.** In alternative to the taxi, you can take the **subway from the airport to the train station Porto-Campanhã** (the trip will take ~ 30 min and cost 1.85 Euros): look for the subway symbol ; buy a ticket in a self-service machine or at the desk; take the subway and leave 19 stations after (**Campanhã**; purple line).

**2.** Take the next **train to Coimbra** (either Alfa or Intercidades; 18 – 23 Euros). The trip will take ~ 1h30, and you will leave at **Coimbra-B**.

**3a.** Take a **taxi to your residence**.

**3b.** In alternative, take a **train connection between Coimbra-B and Coimbra** (city centre) using the same train ticket you already have and **walk to your residence**.

## Travel: Departure from Coimbra

In case you need to go to Lisbon/Lisboa or Oporto/Porto.

### To go from Coimbra to Lisbon:

**1a.** Take a **train** (Alfa or Intercidades: **Coimbra-B – Oriente**). The trip will take 1h30 – 2h00 and cost 19 – 23 Euros.

**1b.** In alternative you can take an **Expresso bus** at Terminal Rodoviário, Rua Fernão Magalhães, Coimbra. This is a good alternative only if you need to be at the airport very early in the morning and need to travel to Lisbon during the night; for the trips made during the night the bus will stop at the departures' entrance of the airport. The trip will take ~1h30 and cost 13.80 Euros.

### To go from Coimbra to Oporto:

The best way to go from Coimbra to Oporto is probably by train.

## Travel: in Coimbra

The **course venue** will be at the new University campus 'Pólo II', on the following address:

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3030-789 COIMBRA

This is a little displaced from the city centre, but only at a ~ 30 mins walk from Portagem (a central location downtown); maps will be provided.

In alternative you can take either bus 34 (links old university/high city to Polo II) or bus 38 (links downtown (Portagem) to Polo II); schedules will be provided.

### Travel websites:

Portuguese trains (CP): <http://www.cp.pt/>

Busses (Expresso): <http://www.rede-expressos.pt/>

Lisbon subway (Metro): <http://www.metrolisboa.pt/>

Oporto subway (Metro): <http://www.metrodoporto.pt/>

SMTUC (busses in Coimbra): <http://www.smtuc.pt/>