Final report

Internship abroad

Personal data and general information on the internship

Subject of studies: Biology

Bachelor/Master/State exam: Evolution, Ecology and Systematics

Time of internship: 03.09-04.11

Place of internship: Seville, Spain

Internship institution: University of Seville

Guidelines:

- The report should have a length of at least **4 DIN A4 pages** (Times New Roman, 12pt, 1.5 line spacing)
- If you want to give names, please do not give the full name of the person. Use only the first name or abbreviations such as "L.".
- When integrating photos, please note that your report requires the consent of the person(s) photographed when published and distributed.
- Please save your report as a word document (max. file size: 8 MB) and upload it to MoveON.
- If you are looking for a little inspiration for your own report or would like to compare your experiences with those of other students, please feel free to have a look at our website.

You may structure your report as follows:

1. Planning and preparation (e.g. application process, finding accommodation, language course)
2. Internship (tasks, typical workday, workload)
3. Social contacts
4. Everyday life and leisure
5. Financing (cost of living, shopping tips)
6. Internship and studies (Were you able to apply what you learned during your studies, How has the internship changed your motivation to study and/or your attitude towards your future profession)
7. Conclusion (were your expectations met, challenges, particularly defining experiences, tips for future interns)

I am in the final year of my Master's in Evolution, Ecology, and Systematics (EES) at the LMU Munich. For my mandatory internship, I have chosen to work with Prof. J.R.P. from the University of Lausanne (UNIL), whose research on the evolution of sex and reproductive systems aligns closely with my interests in population genetics and evolutionary theory. His work was formative for me during my Bachelor's, and I am lucky to have had the opportunity to engage with these topics under his supervision.

To apply for an internship in his group, I contacted him by email and we exchanged several messages in Spring 2025 about the topics I was interested in and the various fieldwork options he could offer. As we found the summer project in Spain logistically feasible given my availability, I applied for the Erasmus+ program and was fortunately accepted.

This report describes my mandatory internship, which took place in Spain and involved traveling across the Iberian Peninsula for fieldwork and establishing a common garden at the University of Seville.

The squirting cucumber, *Ecballium elaterium*, is a fascinating study system. Native to North Africa, it has migrated into southern Spain from the Strait of Gibraltar and into northern Spain from Eastern Mediteranean coast. During its migration in the East, a particular sexual reproduction system evolved: while the ancestral plants were unisexual (each individual plant bearing flowers of only one sex), the eastern and northern Spain populations became monoecious (both sexes on the same plant, different flowers). Interestingly, despite occupying very similar and highly disturbed habitats, the two systems remain separate — hybrids are not found in nature, even though they can be produced experimentally. This system therefore raises important questions about the evolutionary advantages of one reproductive strategy over the other.

Before my internship began, I joined the research group at the University of Lausanne, Switzerland. There, I met with Prof. J.R.P. and his PhD student J.B. to organize our flights and accommodation for the first night in Spain. On 03.09 we flew from Geneva to Bilbao, rented a car and began our journey toward Seville, where we would lay the groundwork for the following two months.

The purpose of this journey was to collect seeds and make preliminary observations. The seeds were to be brought to the University of Seville for experimental use. We reflected on what was known and still unknown about the species, and on practical matters such as sampling design. Each night we stopped at a different location, progressing southward during the day and taking turns for driving. We used the iNaturalist app to locate populations of *E. elaterium* along our way, typically near the highway so to minimize detours and maintain steady progress toward Seville. We collected seeds in teabags and pressed leaves for preservation.

We made it to Seville in five days. At the University of Seville, we met our collaborators – Prof. M., a botanist, and the staff of the herbarium. J.B. presented her fieldwork plan, explaining the data to be collected and the purpose, Prof. M. offered suggestions and helped organize the necessary equipment (e.g. silica gel beads). I took notes on the insightful contributions made by all participants. On the second day, we visited the site designated for the experimental garden, which J.B. and I would later set-up as part of her PhD project. That afternoon, we prepared the seeds collected en route to Seville for germination on Petri dishes. While we worked on the field in the following month and a half, those seeds indeed germinated and grew into small plants, taken care by the herbarium staff (watering, growth monitoring). Prof. J.R.P. returned to Lausanne that same day.

The next day, the 10.09, J.B. and I resumed fieldwork, following her specific plan for data collection. Until the 25.10, we traveled extensively across Spain, visiting numerous sites to gather samples. J.B. determined our destinations based on reported populations in iNaturalist, and I planned out the route. Each morning or evening, she would share the coordinates of the target population and our accommodation for the night. As a result, we changed lodging daily. The first three to four weeks were especially intense: we worked around ten hours per day, six or seven days per week, including several hours of driving. Despite the demanding schedule, the beauty of rural Spain made the experience rewarding — with its sunrises, olive groves, rice fields, and both mountainous and coastal landscapes.

We divided the data collection tasks. J.B. focused on mersitem use while I gathered phenotypic data such as size of plant, leaves, flowers, fruit. Additionally we collected leaves and seeds to bring to Lausanne for further examination, as well as buds flowers for gametes comparison between males and females.

This mandatory internship will corresponds to 12 ECTS, awarded upon submission of a grant proposal describing a specific research project (actually that of the master‘s thesis). As I was striving to progress towards my learning goals – namely, gain of fieldwork skills, theoretical and practical knowledge – and narrowing down my topic for my assignment (and, ultimately, my master‘s thesis), I needed to reach out to people who were willing and motivated to exchange about my observations and questions. I could always reach Prof. J. R. P. via Whatsapp and we had calls to touch base on the advancements of my research ideas. The professor of botany from the University of Seville and her PhD student, who both have lots of practice working in the field, were also very helpful and attentive to my questions. I was able to reach out to them and received ample help.

Afterwork, if I still had some energy left in me, I would go for a walk before dinner and enjoy some crocheting or reading before going to bed. In the later weeks (October), as J.B. approached the end of her data collection, I was able to allocate time for reading and contacting researchers to discuss my scientific inquiries. We also began staying two to three nights at each location, which allowed me to explore, within the town, archaeological sites such as castles and anscient factories – telling history through many ages – and even participate in a medieval festival (with historical recreations). I would ask about the regional specialties and locals, friendly and welcoming, were more than happy to tell me all there is to know about them. I must add here that I believe that my ability to speak Spanish fluently, even if not perfectly, was extremely advantageous. But even as I stumbled on my own words or misunderstood theirs, they were always patient and even curious as to where I was from and my whereabouts in their home. Many were surprised to learn that a common weed in their area was of high scientific interest for studying evolution. These explorations satisfied my needs for physical activity too, as they involved hours of walk.

We returned to Seville on 25.10 and stayed until 04.11. Unfortunately, due to developing carpal tunnel syndrome in both hands, I could no longer assist J.B. in transplanting the plants from the greenhouse to the experimental garden, so she was helped by the herbarium staff. I instead transcribed my handwritten field notes and continued refining my thesis project and grant proposal. I had already sought medical attention at a clinic before returning to Seville, but further examination (X-ray and physiotherapy) was arranged upon my return to Munich.

Food costs in rural Spain are low, allowing me to eat well at a modest price in roadside restaurants and village cafés. Because we changed accommodation daily, catering was often the most convenient and sometimes necessary option. Accommodation was also generally affordable.

There are three things that I learned during my field practicals undertaken throughout my studies that I was able to apply. Firstly, about measurements where high variations occur: when uncertain, round down the number (e.g. if the measurement is between 18.5 and 18.6 cm, round it down to 18.5). This reduced variability and increases consistency. On the field, accuracy is key. Secondly, sampling along transects. Following a straight transect ensures random sampling. To stay on course, fix your eyes on a visible point ahead; to create a perpendicular line, use your ankles to maintain a 90° angle. I applied this when sampling leaves across a population, ensuring plants were at least 8 m apart to avoid sampling close relatives. Thirdly, sample preservations. We used 1.5 mL tubes to store buds in ethanol. Because the lids lacked hooks, there was a risk of leakage and label smearing. I suggested keeping them upright, labelling the tube sides and covering it with transparent tape. Initially dismissed, this approach was later adopted after leaks occurred.

Encounters like these taught me about the importance of clear communication and collaboration. I was surprised to experience some uncooperative attitudes, as I had expected anyone in academia to be more collaborative than individualistic. I have since learned the importance of setting expectations early — both between colleagues and between supervisors and students — regarding guidance, responsibilities, and mutual respect, even if they seem obvious.

For my thesis, I will ensure to state my needs (guidance and mentorship) and expectations (open, frequent, and humble communication) clearly. I think this principle applies beyond academia — in professional and personal relationships alike.

My main takeaway from this internship is the importance of seeking truth over comfort. Certainty is safe but can hinder growth, whereas truth often requires confronting difficult realities. I realized late in the internship that J.B. was focused solely on her own data and not on my learning goals, despite my efforts to communicate openly. In hindsight, I could

have been more direct earlier. For example, it would have been much more valuable to organize the weekly or biweekly roundtable with J.B., meant to keep each other updated about our observations, thoughts, and ideas, had I suggested it in from the beginning of the fieldwork rather than near its end.

Nevertheless, I gained valuable knowledge and skills, including maintaining silica gel for drying leaves, preventing rot, and conducting pollination experiments in the wild. Although interpersonal challenges limited some learning outcomes, I am proud of my resilience and commitment. My main advice to future interns would be to discuss learning goals, mentoring needs, and communication styles upfront, and to ensure mutual understanding before committing to the internship.