School for International Training | 1 Kipling Road, PO Box 676 | Brattleboro, VT 05302-0676 USA
Tel 888 272-7881 | Fax 802 258-3296 | studyabroad.sit.edu

Ecosystems and Biodiversity: Flora

ECOL-3030 (4 credits)

Biodiversity & Conservation in Europe

This syllabus is representative of a typical semester. Because courses develop and change over time to take advantage of unique learning opportunities, actual course content varies from semester to semester.

Course Description

This course investigates Europe's rich botanical diversity through a comparative study of plant life across three ecologically distinct regions: the temperate woodlands of Ireland, the Mediterranean ecosystems of Spain, and the alpine habitats of Switzerland. Students will explore the ecological roles of native flora, plant community dynamics, and the environmental and human influences shaping plant biodiversity. Key topics include plant adaptation, pollination networks, invasive species, conservation strategies, and the impacts of climate change on vegetation. Through hands-on field research, case studies, and ecological assessments, students will deepen their understanding of the challenges in preserving Europe's plant diversity.

Learning Outcomes

Upon completion of the course, students will be able to:

1. **Identify and classify native plant species** across varied ecosystems, recognizing key morphological and ecological traits.
2. **Analyze the ecological roles** of plant species within their native communities, including interactions with pollinators, herbivores, and invasive species.
3. **Compare biodiversity patterns and conservation strategies** across program sites, evaluating how climate, topography, land use, and policy affect regional flora.
4. **Interpret field data and scientific literature** to evaluate plant community dynamics and ecological resilience in divserse landscapes.
5. **Reflect on the cultural, aesthetic, and scientific values** associated with plant biodiversity and how these values inform conservation priorities.

Language of Instruction

This course is taught in English.

Instructional Methods

SIT's philosophy of education is rooted in experiential learning model, which drives the design of this class. Each module allows for experience, reflection, and application. Experiences range from critical analyses of datasets to site visits and conversations with local experts. These experiences are framed by readings, multimedia texts, and class discussion. Reflection occurs throughout the learning process in various forms, such as verbal debriefs after learning on location experiences to reflexive components in papers/projects. Through reflection, students are encouraged to become aware of their process of learning, to make sense of their experiences, and connect the learning acquired on the program with previous experiences and information. Application activities reinforce learning by practicing communication skills, experimenting with theories, and preparing to transfer learning to future contexts.

Required Texts and Materials

- Articles on Course Reserve
- Field Journal (weatherproof)
- Field glasses (recommended)
- Smartphone with iNaturalist App

Assignments and Evaluation

1. **Participation & Professional Engagement - 10%** (Ongoing: Weeks 1–15)
   Includes attendance, contribution to field discussions, cultural site visits, and group collaboration during workshops.
2. **Field Journal and Sketchbook – 30%** (Ongoing: Weeks 1–15)
   Students document plant communities through weekly entries, sketches, and ecological notes in each country. The journal includes plant ID, adaptations, land use context, and pollination observations. Entries will be reviewed after each country block. The format can be print or digital. **Note:** This assignment is combined with the European Ecosystems and Biodiversity: Fauna course. Credit for this course will focus on the Flora entries.
3. **Habitat Narratives and Reflective Comparison – 40%** (3 narratives @ 10%, one per location; 10% for reflective comparison)
   - Narratives: Drawing from insights from the flora entries in the Field Journal and Sketchbook, students will adopt a specific ecological lens (e.g., pollination networks, invasive species, alpine adaptations, or disturbance ecology) and write short essays (800 words max) describing a representative plant community visited in the field. Each narrative should highlight key species interactions, ecological context, and evidence of environmental change or anthropogenic threats.
   - Multimedia Component: Students will accompany each written narrative with a **curated visual element** (photo montage, habitat sketch, annotated image, or

short video/audio clip) that conveys the sensory, spatial, or seasonal qualities of the plant community.

- Comparative Reflection: After completing all three narratives, students write a reflection (600–800 words) that compares their ecological lens across locations and integrates cultural, aesthetic, and scientific perspectives on plant biodiversity and conservation values. Students should use their curated visual elements to illustrate their insights.

  Note: This assignment is combined with the European Ecosystems and Biodiversity: Fauna course. Credit for this course will focus on the Flora entries.

4. **BioBlitz Field Biodiversity Surveys – 20%**
   In this immersive field-based activity, students will participate in a one-day BioBlitz—an intensive biological survey in which all species observed within a defined area and time are recorded. Working in small teams, students will identify flora present during the visit to Connemara National Park, using digital tools, field guides, and support from local experts. The goal is to develop ecological observation skills, contribute to biodiversity monitoring efforts, and reflect on the species richness, conservation value, and ecological roles of local wildlife in context. The BioBlitz has **3 stages** and **2 deliverables**:
   - Pre-field session: Introduction to BioBlitz methods and tools (e.g., iNaturalist or Seek app).
   - Field session: 3-hour BioBlitz survey in Connemara in designated micro-zones. Throughout the BioBlitz, teams will **Geo-tag entries in iNaturalist** with photos, GPS data, and basic taxonomic details. They will also submit digitally the **Team Species Inventory Sheet**.
   - Post-field session: Debrief and group species inventory submission.

   Note: This assignment is combined with the European Ecosystems and Biodiversity: Fauna course. Credit for this course will focus on the Flora entries.

Note on Attendance and Participation: Due to the nature of this experiential program, full participation in all classes and program activities is required. Students may not voluntarily opt out of required program activities. Valid reasons for absence – such as illness – must be discussed with the Program Director or other designated staff person. Absences impact academic performance, which may impact grades. Excessive, unexcused absences could result in program dismissal. Alternative work for absences will be expected.

Note on Late Assignments: IHP programs integrate traditional classroom lectures and discussion with field-based experiences, site visits and debriefs. It is critical that students complete assignments in a timely manner to continue to benefit from the sequences in assignments, reflections and experiences throughout the program. Extensions may be granted

on a case-by-case basis with approval from the Program Director or other designated staff person. Requests must be made in writing and at least 12 hours before the posted due date and time. Students who do not submit their work within the extension period will receive a failing grade.

Grading Scale

94-100%	A	74-76%	C
90-93%	A-	70-73%	C-
87-89%	B+	67-69%	D+
84-86%	B	64-66%	D
80-83%	B-	below 64	F
77-79%	C+		

Program Expectations
In order to make the most of the opportunities presented in program, communicate respectfully, prepare for student success, and demonstrate best possible engagement, SIT has the following expectations of students:

- **Content Considerations:** The texts and activities you will encounter in this course delve into sensitive topics that may be emotionally and intellectually challenging. Our classroom is a space where we can engage with challenging ideas, question assumptions, and navigate difficult topics with respect and maturity. As possible, I will flag content and activities that are especially graphic or intense, so we are prepared to address them soberly and sensitively. If you are struggling to keep up with the work or participate in the course because of the nature of the content and activities, you should speak with me and/or seek help from counseling services.

- **Learning Community:** Respect differences of opinion (classmates', lecturers, local constituents engaged with on the visits). You are not expected to agree with everything you hear, but you are expected to listen across differences and consider other perspectives with respect.
- **Presence.** Show up prepared. Be on time, have your readings completed and points in mind for discussion or clarification. Complying with these elements raises the level of class discussion for everyone.

- **Engage**. Ask questions in class. Interact with the lecturer. These are often very busy professionals who are doing us an honor by coming to speak.

- **Be Honest.** Comply with academic integrity policies (no plagiarism or cheating, nothing unethical).

- **Store Your Work:** Keep several copies of your work as back up and keep one copy accessible to you through an online forum, such as an attachment in your email, the course learning management system, or cloud-based storage. This way your work will always be available despite technical issues. Lost files, deleted drives, or computer crashes are not excuses for late, missing work.

- **Personal Technology Use**: Cell phones and other personal electronics can be used for taking notes and other class activities. Off-task usage is not acceptable, especially during a guest lecture or presentation from a peer. You may be marked as absent for habitually using them for something other than classroom activities.

- **Course Communication:** Course documents and assignments will be posted on the learning management system, Canvas. Although the course calendar provides a broad overview and the general sequence of work and assignments for the course, what we accomplish in class will vary, and revisions to the calendar will be posted at the course site. You will need to check the course site regularly. You are responsible for letting me know about any network-related problems that prevent you from accessing or submitting assignments.

- **Recording Policy:** To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use. Documented academic accommodations may supersede this policy.

SIT Policies and Resources

Please refer to the SIT Study Abroad Handbook and the Policies section of the SIT website for all academic and student affairs policies. Students are accountable for complying with all published policies. Of particular relevance to this course are the policies regarding: academic integrity, Family Educational Rights and Privacy Act (FERPA), research and ethics in field study and internships, late assignments, academic status, academic appeals, diversity and disability, sexual harassment and misconduct, and the student code of conduct.

Please refer to the SIT Study Abroad Handbook and SIT website for information on important resources and services provided through our central administration in Vermont, such as Library resources and research support, Accessibility Services, Counseling Services, Title IX information, and Equity, Diversity, and Inclusion resources.

Course Schedule

**Please be aware that topics and excursions may vary to take advantage of any emerging events, to accommodate changes in our lecturers' availability, and to respect any changes that would affect student safety. Students will be notified if this occurs*

Note: This course schedule is a suggested sequence of modules, topics, texts, and experiential learning opportunites where each location offers parallel learning cycles with a comparative focus. Lead and local faculty should appropriately adapt how these topics are taught and select texts, case studies, guest speakers, and site visits that are relevant to the context and course themes.

LOCATION #1: IRELAND (weeks 1-5)

Module #1: Introduction to European Biodiversity and Flora Conservation
Topics: ecological and policy frameworks. IUCN Red List and species-level protection.

Readings:

- European Commission. (2020). EU biodiversity strategy for 2030: Bringing nature back into our lives (COM(2020) 380 final). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0380
- Evans, D. (2012). Building the European Union's Natura 2000 network. *Nature Conservation*, 1, 11–26. https://doi.org/10.3897/natureconservation.1.1808
- Lončarević, N., Liu, U., Stefanaki, A., Godefroid, S., Lauterbach, D., Randelović, V., ... & Kühn, I. (2024). Database of European vascular plants red lists as a contribution to more coherent plant conservation. *Scientific Data*, 11, 1138. https://doi.org/10.1038/s41597-024-03963-0

Learning on Location: Field trip to Special Protection Area, Cliffs of Moher

Assignment: Weekly Field Journal and Sketchbook entries

Module #2: Climate, Adaptation, and Plant Community Structure
Topics: Atlantic climate effects, native woodland structure, adaptive plant traits

Readings:

- Hollingsworth, L., & Collier, M. (2020). Ground flora of field boundary dry stone walls in the Burren, Ireland. *British & Irish Botany, 2*(4), Article 352. https://doi.org/10.33928/bib.2020.02.352
- Keane, S. (2021). Rare, threatened and characteristic plants of the Burren and the Aran Islands. https://burrenbotanist.ie/wp-content/uploads/2021/12/Rare_threatened-and_characteristic_plants_of_the_Burren_and_the_Aran_Islands.pdf

- McKeon, C. M., Finn, A., Long, M. P., Donohue, I., & Buckley, Y. M. (2022). Twin pressures of intensification and abandonment negatively impact grassland biodiversity in the Burren. *Biology and Environment: Proceedings of the Royal Irish Academy*, 122(2), 123–136. https://dx.doi.org/10.1353/bae.2022.0008
- Larkin, M., & Stanley, D. A. (2023). Impacts of local and landscape grassland management on the structure of plant-pollinator networks. *Basic and Applied Ecology*, 70, 50–59. https://doi.org/10.1016/j.baae.2023.05.003

Learning on Location: Field trip to Burren National Park, a biodiversity hotspot that is home to over 70% of Ireland's native plant species, including a high concentration of orchids.

Assignment: Weekly Field Journal and Sketchbook entries

Module# 3: Disturbance and Ecological Succession
Topics: Peatland recovery, bog rewetting, woodland succession

Readings:
- Farrell, C. A., Connolly, J., & Morley, T. R. (2024). Charting a course for peatland restoration in Ireland: A case study to support restoration frameworks in other regions. *Restoration Ecology*. https://doi.org/10.1111/rec.14216
- Renou-Wilson, F., Moser, G., Fallon, D., Farrell, C. A., Müller, C., & Wilson, D. (2019). Rewetting degraded peatlands for climate and biodiversity benefits: Results from two raised bogs. *Ecological Engineering*, 127, 547–560. https://doi.org/10.1016/j.ecoleng.2018.11.014
- Devaney, J., Shaw, H., Leniston, T., Mitchell, F. J. G., Darcy, E., & Roche, J. (2024). Mapping, monitoring, and protecting ancient and long-established woodland in Ireland. Irish Wildlife Manuals, No. 153. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.

Learning on Location: Field visit to Bog restoration site, such as The Carrownagappul Bog Special Area of Conservation in Galway

Assignment: Weekly Field Journal and Sketchbook entries

Module #4: Invasive Species and Biodiversity Threats
Topics: Causes and effects of plant invasions

Readings:
- Gioria, M., O'Flynn, C., & Osborne, B.A. (2018). A review of the impacts of major terrestrial invasive alien plants in Ireland. *Biology and Environment: Proceedings of the Royal Irish Academy* 118B(3), 157-179. https://dx.doi.org/10.1353/bae.2018.0000.

- Dehnen-Schmutz, K., & Williamson, M. (2006). Rhododendron ponticum in Britain and Ireland: social, economic and ecological factors in its successful invasion. *Environment and History,* 12(3), 325-350.

Learning on Location: Field trip to rhododendron thicket to learn about mapping and removal

Assignment:
- Weekly Field Journal and Sketchbook entries
- Habitat Narrative #1 due

Module #5: Pollination Networks and Ecosystem Services
Topics: Native pollinators, ecosystem service resilience

Readings:
- National Biodiversity Data Centre. (2021). All-Ireland Pollinator Plan 2021–2025. National Biodiversity Data Centre. https://pollinators.ie/wordpress/wp-content/uploads/2021/03/All-Ireland-Pollinator-Plan-2021-2025-WEB.pdf
- National Biodiversity Data Centre. (2020). Working together for biodiversity: Tales from the All-Ireland Pollinator Plan 2015–2020. National Biodiversity Data Centre. https://pollinators.ie/wordpress/wp-content/uploads/2020/12/Tales-from-the-All-Ireland-Pollinator-Plan-2015-2020-PDF.pdf
- National Biodiversity Data Centre. (n.d.). Flower-Insect Timed Count (FIT Count). https://biodiversityireland.ie/surveys/fit-counts/
- Burns, K. L. W., Fitzpatrick, Ú., & Stanley, D. A. (2021). Public perceptions of Ireland's pollinators: A case for more inclusive pollinator conservation initiatives. *Journal for Nature Conservation*, 61, 125999. https://doi.org/10.1016/j.jnc.2021.125999

Learning on Location**:** BioBlitz at Connemara National Park

Assignments:
- Weekly Field Journal and Sketchbook entries
- BioBlitz Team Species Inventory Sheet and Geotags in iNaturalist

LOCATION #2: SWITZERLAND (weeks 6-10)

Module #6: Climate, Adaptation, and Plant Community Structure
Topics: Elevation gradients, short-stature plants, alpine phenology

Readings:
- Asam, S., Callegari, M., Matiu, M., Fiore, G., De Gregorio, L., Jacob, A., Menzel, A., Zebisch, M., & Notarnicola, C. (2018). Relationship between spatiotemporal variations of climate, snow cover and plant phenology over the Alps—An Earth

observation-based analysis. *Remote Sensing*, 10(11), 1757. https://doi.org/10.3390/rs10111757

- Vitasse, Y., Ursenbacher, S., Klein, G., Bohnenstengel, T., Chittaro, Y., Delestrade, A., Monnerat, C., Rebetez, M., Rixen, C., … & others. (2021). Phenological and elevational shifts of plants, animals and fungi under climate change in the European Alps. *Biological Reviews*, 96(5), 1816–1835. https://doi.org/10.1111/brv.12727
- Körner, C., & Hiltbrunner, E. (2021). Why is the alpine flora comparatively robust against climatic warming? *Diversity*, 13(8), 383. https://doi.org/10.3390/d13080383

Learning on Location: Alpine ecotone hike near Mont Salève

Assignment: Weekly Field Journal and Sketchbook entries

Module #7: Disturbance and Ecological Succession
Topics: Primary succession, retreating glaciers

Readings:

- Caccianiga, M., Luzzaro, A., Pierce, S., Ceriani, R. M., & Cerabolini, B. E. L. (2016). Factors affecting primary succession of glacier foreland vegetation in the European Alps. *Alpine Botany*, 126(2), 105–117. https://doi.org/10.1007/s00035-016-0166-6
- Obuchowicz, C., Poussin, C., & Giuliani, G. (2023). Change in observed long-term greening across Switzerland – Evidence from a three decades NDVI time-series and its relationship with climate and land cover factors. *Big Earth Data*, 8(1), 1–32. https://doi.org/10.1080/20964471.2023.2268322
- Khelidj, N., Balestra, S., Caccianiga, M. S., Cerabolini, B. E. L., Tampucci, D., & Losapio, G. (2025). Plants' contributions to people shift with glacier extinction. *People and Nature*. https://doi.org/10.1002/pei3.70041

Learning on Location: guest speaker from Research Center on Alpine Environment (CREALP) to discuss environmental monitoring and natural risks relevant to glacial environments.

Assignment: Weekly Field Journal and Sketchbook entries

Module #8: Invasive Species and Biodiversity Threats
Topics: Horticultural introductions, urban plant invasions

Readings:

- Federal Office for the Environment (Switzerland). (2022). Switzerland’s action on invasive alien species [PDF]. Convention on Biological Diversity. https://www.cbd.int/invasive/doc/legislation/Switzerland.pdf
- Swissinfo. (2019, May 22). How Switzerland is battling invasive species: The Swiss Alps are beautiful, but are they biodiverse?. Swissinfo.

https://www.swissinfo.ch/eng/sci-tech/invasive-species-in-switzerland-_foreign-element-endangering-swiss-biodiversity/44978842

- Lindemann-Matthies, P. (2016). Beasts or beauties? Laypersons' perception of invasive alien plant species in Switzerland and attitudes towards their management. *NeoBiota*, 29, 15–33. https://doi.org/10.3897/neobiota.29.5786
- Junge, X., Hunziker, M., Bauer, N., Frick, J., & Buchecker, M. (2019). Invasive alien species in Switzerland: Awareness and preferences of experts and the public. *Environmental Management*, 63(1), 80–93. https://doi.org/10.1007/s00267-018-1115-5

Learning on Location: BioBlitz at Parc Agro-Urbain Bernex et Confignon

Assignments:

- Weekly Field Journal and Sketchbook entries
- BioBlitz Team Species Inventory Sheet and Geotags in iNaturalist

Module #9: Pollination Networks and Ecosystem Services
Topics: Phenological mismatch, climate effects on pollinators

Readings:

- Trunschke, J., Junker, R. R., Kudo, G., & Albrecht, M. (2024). Effects of climate change on plant-pollinator interactions and its multitrophic consequences. *Alpine Botany*, 134, 115–121. https://doi.org/10.1007/s00035-024-00316-w
- Tu, B. N., Khelidj, N., Cerretti, P., Losapio, G., Caccianiga, M. S., & Pellissier, L. (2024). Glacier retreat triggers changes in biodiversity and plant–pollinator interaction diversity. *Alpine Botany*, 134, 171–182. https://doi.org/10.1007/s00035-024-00309-9
- Kudo, G. (2014). Vulnerability of phenological synchrony between plants and pollinators in an alpine ecosystem. *Ecological Research, 29*(4), 571–581. https://doi.org/10.1007/s11284-013-1108-z

Learning on Location: Visit Rhône River Restoration Corridor to learn about the impact of river restoration on pollinators

Assignment:

- Weekly Flora Field Journal and Sketchbook entries
- Habitat Narrative #2 due

LOCATION #3: SPAIN (weeks 11-15)

Module #10: Climate, Adaptation, and Plant Community Structure
Topic: Drought adaptations, evergreen shrublands, seasonal variation

Readings:

- Cano, E., et al. (2019). Mitigating climate change through bioclimatic applications and cultivation techniques in agriculture (Andalusia, Spain). In M. Jhariya, A. Banerjee, R. Meena, & D. Yadav (Eds.), *Sustainable agriculture, forest and environmental management* (pp. 15–33). Springer. https://doi.org/10.1007/978-981-13-6830-1_2
- Morote, Á.-F., Olcina, J., & Hernández, M. (2019). The use of non-conventional water resources as a means of adaptation to drought and climate change in semi-arid regions: South-eastern Spain. *Water*, *11*(1), 93. https://doi.org/10.3390/w11010093
- Zunzunegui, M., Barradas, M. C. D., Ain-Lhout, F., Novo, F. G., & Álvarez-Cansino, L. (2005). To live or to survive in Doñana dunes: Adaptive responses of woody species under a Mediterranean climate. *Plant and Soil*, 273(1), 77–89. https://doi.org/10.1007/s11104-004-6806-4

Learning on Location: Flied trip to Sierra de Andújar Natural Park

Assignment: Weekly Field Journal and Sketchbook entries

Module #11: Disturbance and Ecological Succession
Topics: Fire adaptation, secondary succession

Readings:

- Ortega, M., Lora, Á., Yocom, L., Zumaquero, R., & Molina, J. R. (2025). Effects of fire recurrence and severity on Mediterranean vegetation dynamics: Implications for structure and composition in southern Spain. *Science of The Total Environment, 961*, 178392. https://doi.org/10.1016/j.scitotenv.2024.178392
- Chozas, S., Mira, A. F., Serrano, M., Medina, N. G., Hortal, J., & Díaz-Barradas, M. C. (2025). Dynamics of post-fire plant community assembly in Doñana coastal dunes. *Scientific Reports, 15*(1), 1–13. https://doi.org/10.1038/s41598-025-04400-x
- Pastor, E., Muñoz-Navarro, J. A., Caballero, D., Àgueda, A., Dalmau-Rovira, F., & Planas, E. (2019). Wildland–urban interface fires in Spain: Summary of the policy framework and recommendations for improvement. *Fire Technology, 56*(5), 1941–1967. https://doi.org/10.1007/s10694-019-00883-z
- Vadell, E., de-Miguel, S., & Pemán, J. (2016). Large-scale reforestation and afforestation policy in Spain: A historical review of its underlying ecological, socioeconomic and political dynamics. *Land Use Policy, 55*, 37–48. https://doi.org/10.1016/j.landusepol.2016.03.017
- Navarro-Cerrillo, R. M., Rivas, C. A., Quinto, L., Palacios, G., Sánchez, J., & Pérez, L. (2023). Afforestation on agricultural land in southern Spain: An important driver to improve forest landscape connectivity. *New Forests, 54*, 1061–1084. https://doi.org/10.1007/s11056-022-09956-4

Learning on Location: field trip to the Metropolitan Green Corridor within La Corchuela peri-urban park to assess fire risk

Assignment: Weekly Field Journal and Sketchbook entries

Module #12: Invasive Species and Biodiversity Threats
Topic: forestry introductions, biodiversity conflict

Readings:

- Gallardo, B., & Capdevila-Argüelles, L. (2024). Climate change and non-native species in the Spanish Network of National Parks. *Biological Invasions, 26*, 4345–4361. https://doi.org/10.1007/s10530-024-03451-x
- Garcia-Murillo, P., Díaz-Paniagua, C., & Fernández-Zamudio, R. (2025). Decline of aquatic plants in an iconic European protected natural area. *Journal for Nature Conservation, 84*, 126814. https://doi.org/10.1016/j.jnc.2024.126814
- Bayón, Álvaro, Godoy, O., & Vilà, M. . (2022). Invasion risks and social interest of non-native woody plants in urban parks of mainland Spain. *Anales Del Jardín Botánico De Madrid*, *79*(1), e121. https://doi.org/10.3989/ajbm.2623
- García-Mozo, H. (2024). Assessment of the diversity, abundance and range of invasive alien plant species in Córdoba, a Mediterranean urban area. *Diversity, 16*(12), 777. https://doi.org/10.3390/d16120777

Learning on Location: BioBlitz at to Doñana National Park

Assignments:

- Weekly Field Journal and Sketchbook entries
- BioBlitz Team Species Inventory Sheet and Geotags in iNaturalist

Module #13: Pollination Networks and Ecosystem Services
Topics: Mediterranean flowering rhythms, pollination decline

Readings:

- Pareja-Bonilla, D., Arista, M., Morellato, L. P. C., & Ortiz, P. L. (2025). Better soon than never: Climate change induces strong phenological reassembly in the flowering of a Mediterranean shrub community. *Annals of Botany, 135*(1–2), 239–254. https://doi.org/10.1093/aob/mcad193
- Llodrà-Llabrés, J., & Cariñanos, P. (2022). Enhancing pollination ecosystem service in urban green areas: An opportunity for the conservation of pollinators. *Urban Forestry & Urban Greening, 74*, 127621. https://doi.org/10.1016/j.ufug.2022.127621
- Vidal-Cordero, J. M., Angulo, E., Molina, F. P., Boulay, R., & Cerdá, X. (2023). Long-term recovery of Mediterranean ant and bee communities after fire in southern Spain. *Science of The Total Environment, 887*, 164132. https://doi.org/10.1016/j.scitotenv.2023.164132

Learning on Location: Wildflower–pollinator interaction observation

Assignments:

- Weekly Field Journal and Sketchbook entries
- Habitat Narrative #3 due

Module #14: Cross-Regional Comparisons
Topics: Synthesis, Comparative Analysis, Reflection

Assignment: Reflective Comparison