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Version: Supplemental Material

# Article:

Cooke, J, Araya, Y, Bacon, KL et al. (27 more authors) (2021) Teaching and learning in ecology: a horizon scan of emerging challenges and solutions. Oikos, 130 (1). oik.07847. pp. 15-28. ISSN 0030-1299

https://doi.org/10.1111/oik.07847

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# Supplementary Information

Respondent location	% respondents survey 1	% respondents survey 2
UK	84 %	83 %
Europe (but not UK)	6 %	4 %
Africa	0 %	0 %
Australasia	3 %	9 %
North America	4 %	2 %
South America	3 %	2 %
Asia	1 %	0 %
Total Respondents	97	46

# Table S1. Locality of survey participants. Due to rounding, the totals do not add up to 100%.

**Table S2. Occupations of survey participants.** Due to rounding, the totals do not add up to 100%.

Respondent Occupation	% respondents survey 1	% respondents survey 2
Higher Education	58 %	76 %
Secondary Education	14 %	4 %
Primary Education	8 %	2 %
Government	6 %	0 %
NGO	6 %	4 %
Policy Development	3 %	0 %
Consultancy	12 %	2 %

Industry	2 %	2 %
Research	18 %	24 %
Post graduate student	12 %	17 %
Undergraduate student	2 %	0 %
Other	10 %	0 %
Total Respondents	97	46

**Figures S1-14. Rankings of main categories and subcategories.** Rankings were determined by first translating the ordering of issues, applied by each respondent, into numbers by assigning the highest ranked issue a score of n (where n = number of issues in the category), then second ranked allocated n-1 etc. For example, in the main categories, where there were 17 issues, if a respondent ranked "Disconnect between people and nature" first, it was given 17 points. The \*\*\*I don't want to rank below this line\*\*\* option was also given a score, even if ranked last and any issues ranked below the \*\*I don't want to rank below this line\*\* were automatically scored equal last. Scores were then summed for each issue across participants and these totals used to determine the overall ranking with highest scores representing the highest ranked issues. Here they are presented as relative rankings with the highest given a score of 100, and all other rankings listed in proportion to this. Rankings of subcategories not explicitly discussed at the workshop are not included.



Figure S1. Rankings of main categories

Figure S2. Rankings of issues associated with disconnect between people and nature



Figure S3. Rankings of issues associated with fieldwork and practical science

- Costs of field courses relative to other forms of teaching
  - Restricted budgets for field-based teaching -

Costs to students of fieldwork \*

- Finding time for field work -
- Limited number of practitioners to support training
- Teaching skills to large groups in the field -
  - Decline of field-based teaching \*
- Making the case for fieldwork in general -
- Time required for fieldwork administration -
  - Restricted budgets for field equipment -
    - Access to quality field equipment -
- Making the case for local/regional fieldwork -
- Restricted budgets for field-based teaching in \_\_\_\_\_\_\_schools
  - Delivering field-based teaching generally -
    - Teaching field sampling techniques -
  - Equality and diversity issues for field-based \_ teaching
- Conflict between increasing online delivery and \_ need for field-based teaching
- Building links with communities and organisations \* Increased mental health issues of students,
  - particularly in the field
- Increasing administrative burden on educators \* Health and safety issues as a barrier to fieldwork -

  - Physical demands of fieldwork for students -
  - Access to field sites especially in urban areas -
    - Time & self-directed learning required for acquiring field skills
- Health and safety issues as a barrier to fieldwork in schools
  - Lack of focus on urban ecology \*
  - Reduction in interest in students studying the \_\_\_\_\_\_
    - Lack of interest in fieldwork by students \*
- Work-life balance for students doing fieldwork (eg \_ early morning and late night surveys)
- Access to quality lab equipment (eg. microscopes) -
  - \*\*\*\*I do not think it is important to rank any \_ challenges below this line\*\*\*\*
  - Emotional demands of fieldwork for students
  - Greater reliance on team based approaches to \_ \_ \_ problems



# Figure S4. Rankings of issues associated with data handling and analysis, including statistics and programming



Figure S5. Rankings of issues associated with graduate career opportunities



Figure S6. Rankings of issues associated with school curricula



Figure S7. Rankings of issues associated with society perceptions



### Figure S8. Rankings of issues associated with technology and ecology



Figure S9. Rankings of issues associated with basic language, numerical and computer skills







Figure S11. Rankings of issues associated with the provision of graduate capabilities



Figure S12. Rankings of issues associated with pedagogy and teaching



- Integrating ecological theory and practice \*
- Developing transdisciplinary skills: agriculture, conservation, molecular ecology
- Challenge of finding individuals who are \_ knowledgeable practitioners and competent teachers
  - Putting ecology in an interdisciplinary context -
    - Critical thinking -
  - Enabling students to apply ecological theory in \_ professional practice
    - Finding time for field work -
  - Need for teachers with in-depth knowledge and \_\_\_\_\_\_ field skills
    - Engaging students in less superficially charismatic subjects or taxa
    - Teaching of fundamental ecological concepts -
    - School teachers lacking expertise in ecology -
  - Maintaining an up-to-date curriculum -Need for retaining elements of ecology in allied degrees (e.g. environmental science, geography, biology).
    - Reduced time for delivery of content \*
  - Maintaining diverse curriculum to allow students to specialise
  - Making ecological teaching broadly accessible \*
  - Developing teaching practice to make best use of \_ new technologies (e.g. lecture capture)
    - Teaching technological skills\*
      - GIS skills -
      - Teaching large groups \*
    - Teaching a multi-disciplinary subject -
  - Improve the relationship between decision makers \_ and researches
    - Shifting away from textbook based learning to \_ field work
      - Teaching report writing -
  - Need for open repositories of teaching resources -
    - Teachers having specialised knowledge eg \_ Biochemistry over generalised biology
      - Reduced feedback opportunities \*
    - Increasing uptake of environmental degree \_ apprenticeships
    - Teaching students who are not science majors \*
  - Engaging students in the historical development of the subject
    - \*\*\*\*I do not think it is important to rank any challenges below this line\*\*\*\*
      - Lack of up-to-date textbooks
      - Developing critical evaluation skills for increasingly huge information volume





## Figure S14. Rankings of issues associated with emerging biological challenges



Loss of biodiversity

Climate change \*

Need for better communication with people beyond \_\_\_\_\_\_academia

Rapidly changing ecosystems \*

Anthropogenic activities -

Social and cultural aspects of conservation \*

- Change in theoretical approach (ie. shift from
- whole organism and community approaches to genetic and molecular)
  - Difficulties in integrating interdisciplinarity -

Difficulties associated with teaching legislation and policy

\*\*\*I do not think it is important to rank any \_ challenges below this line\*\*\*