



BRINGING
ENVIRONMENTAL
UNDERSTANDING TO ALL

Biology Fieldwork: Victim or sinner?

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Biology Fieldwork in Higher Education

A growth in opportunities?

*Number of universities and colleges offering courses
2003 (source UCAS)*

Biology	100
Environmental Conservation	60
Environmental Management	100
Environmental Science	80
Environmental Studies	50
Ecology	40

Biology Fieldwork in Higher Education

Insiders View...

Fieldwork is good for the subject

“The biosciences are essentially practical and experimental subjects.

Consequently, appropriate opportunities to participate in collecting data by undertaking experiments and practical investigations are integral to any scheme Eg. fieldwork

Qualifications Assessment Authority (2002).
Benchmarking for Biosciences (draft). www.QAA.org.uk

Biology Fieldwork in Higher Education

Insiders View...

Fieldwork is good for institutions

“ Strong indications from teaching quality assessment exercises that fieldwork was regarded as essential for high quality biological education”

John Davenport, Director *University Marine Biological Station Millport*
Marine biology field teaching forum, May 1998

Biology Fieldwork in Higher Education

Insiders View

Fieldwork is good for teachers

- Field courses give excellent opportunities to deliver good problem/method/solution teaching.
- Field course and good sites can demonstrate that quantitative work may reveal patterns that are not immediately obvious.
- Generating problems can be more valuable than generating solutions – because recognizing problems is vital.
- Interaction of teachers and students during fieldwork is important – it creates cohesion, stimulates close contact and fosters social interactions.

Arthur Lucas, Kings College London. Marine biology field teaching forum, May 1998

Biology Fieldwork in Higher Education

Insiders View Fieldwork is good for students

Table 1. A referee may be asked to score applicants on a scale from exceptional to poor, according to the following attributes and skills.

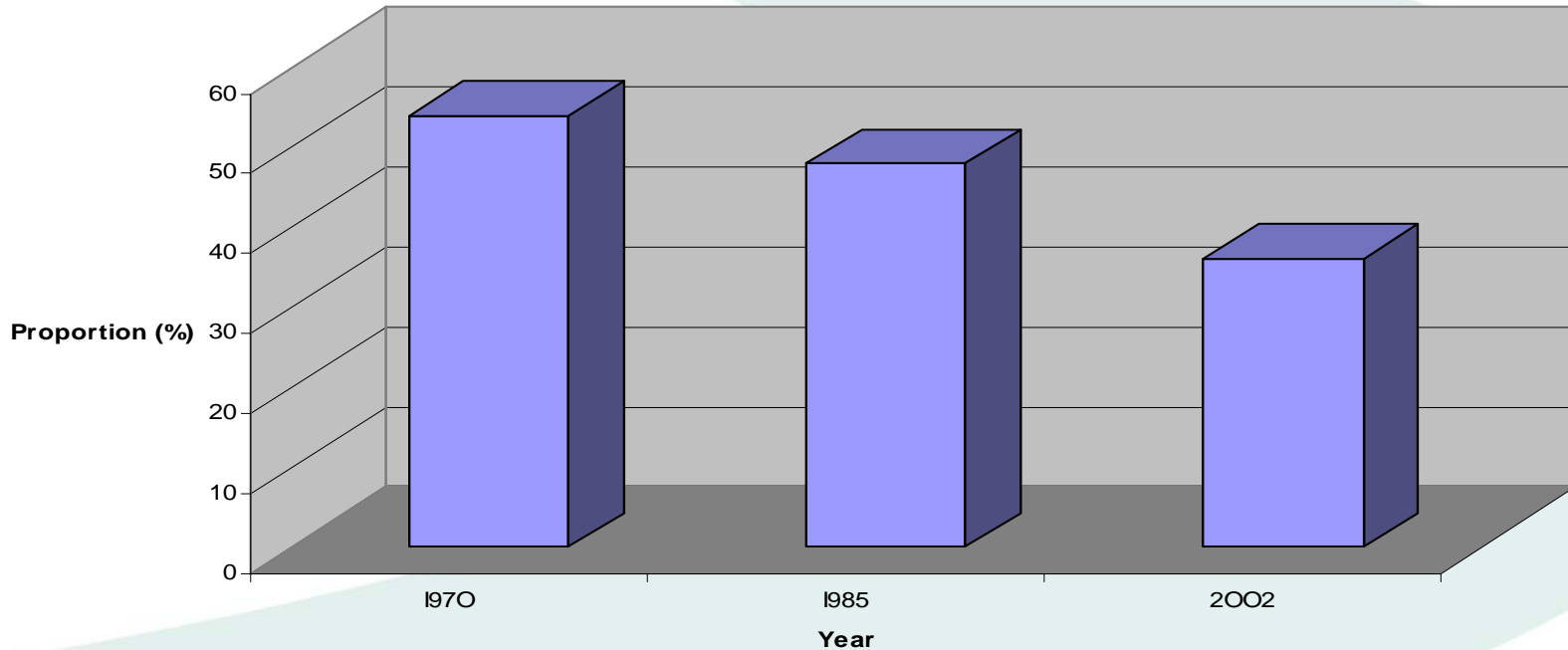
- | | | |
|-----------------------|----------------------------------|------------------------------|
| • technical ability | • self discipline, reliable | • communication – colleagues |
| • quality of work | • organisation and planning | • communication – supervisor |
| • quantity of work | • patience and tolerance | • public speaking |
| • efficiency | • commitment, perseverance | • working with others |
| • timeliness | • finding ways around problems | • networking skills |
| • data analysis | • adaptability | • leadership |
| • data interpretation | • imagination | • enthusiasm |
| • writing | • independence – thought, action | • energy, dynamism |
| • ambition | • dependable | • decisiveness |
| • honesty, integrity | • Key weaknesses | • Key strengths |

Mark Costello, Ecological Consultancy Services. Marine biology field teaching forum, May 1998

Biology Fieldwork in Higher Education

TRENDS FSC overall

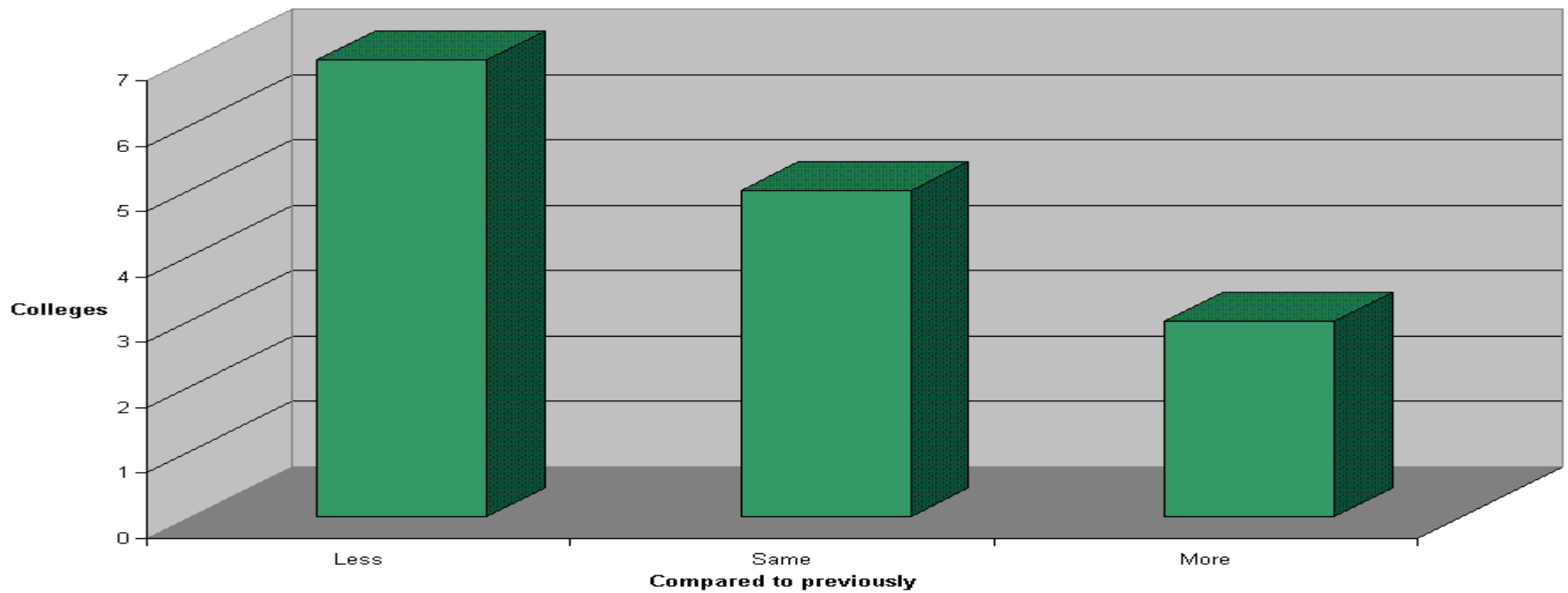
Biologists as proportion of total groups



Biology Fieldwork in Higher Education

TRENDS BES Members

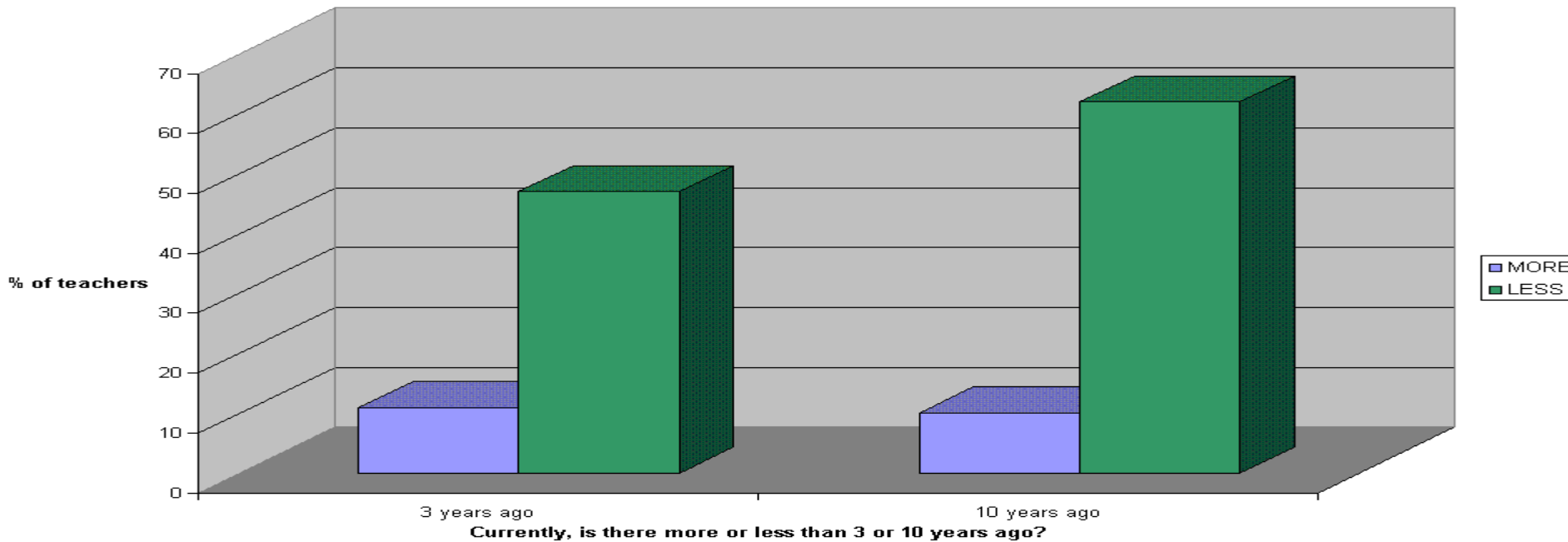
Trends in biology fieldwork



Biology Fieldwork in Higher Education

TRENDS BES Members

Perceived trends in biology fieldwork provision



FSC survey of BES members, 2001

Biology Fieldwork in Higher Education

TRENDS HE Forum

“The forum revealed serious concerns about declining levels of practical field education in schools and universities”

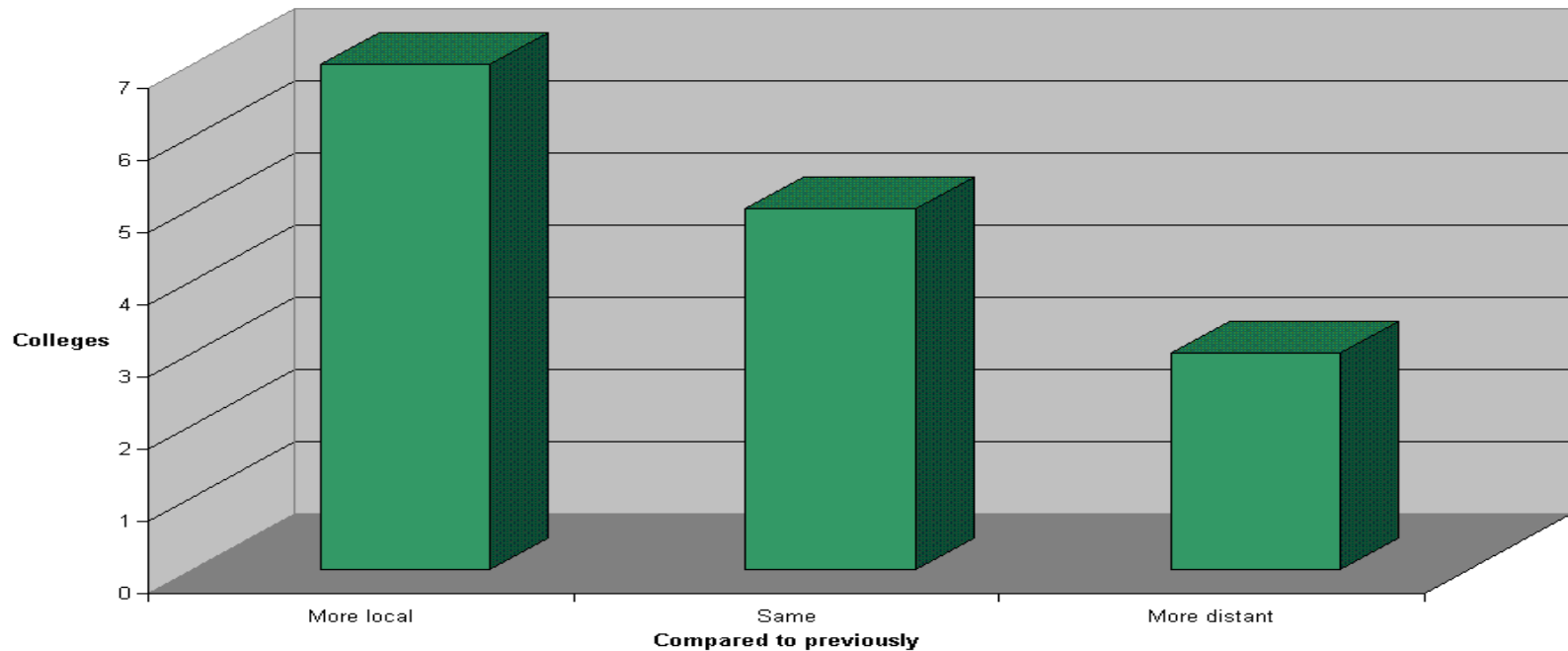
“Practical teaching may have declined by half over the last 25 years”

Geoff Moore, Marine biology field teaching forum, May 1998
University Marine Biological Station Millport

Biology Fieldwork in Higher Education

TRENDS Views....the tutors

Trend in location of fieldwork



Biology Fieldwork in Higher Education

TRENDS

Views....the providers

“At Millport, we have witnessed a 23% reduction in the average duration of field courses held here between 1976 and 1998, and a reduction of 13% in the numbers of student days spent here”

Geoff Moore, Marine biology field teaching forum, May 1998
University Marine Biological Station Millport

Biology Fieldwork in Higher Education

STATUS

Views...from the outside

“What’s the difference between an otter and a mink? Unsure? Don’t ask the new breed of conservationist”

“The shortage of competent field workers has serious implications for Britain’s nature conservation”

“The crisis is so bad that environmental consultancies, besieged with work, are sending new recruits on identification skills courses”

Guardian 3/9/03

Biology Fieldwork in Higher Education

STATUS

Views....the employers

- 44 environmental agencies and consultants surveyed
- 80% had experienced difficulties in recruiting staff in past 5 years
- Lack of field skills was a particular problem
- A 'worrying number said that candidates lack a love of, a feel for ecology and the environment'

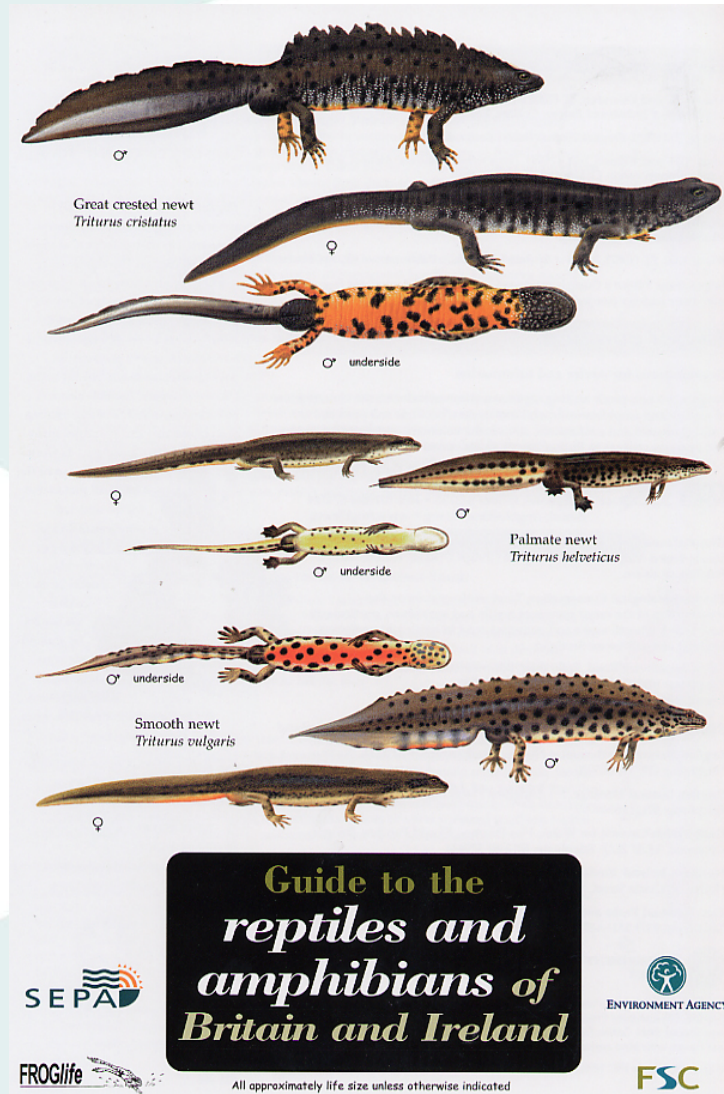
The Graduate Skills Base (2003),
Samantha Hillcox, MSc Ecology and Management of the Natural Environment. University of Bristol

Biology Fieldwork in Higher Education

STATUS

Views....the employers

- Concerns about quality of fieldwork



Biology Fieldwork in Higher Education

BARRIERS

Benchmarking

Teaching and learning strategies...may include
Laboratory classes, computing/bioinformatics sessions
and/or fieldwork

Qualifications Assessment Authority (2002).
Benchmarking for Biosciences (draft). www.QAA.org.uk

Biology Fieldwork in Higher Education

Level of biological fieldwork 11-16 provision (% of Secondary Schools)

	<u>Local</u>	<u>Residential</u>
<i>Biology</i>		
11-14 KS3	43	2
14-16 KS4	49	4
<i>Geography</i>		
11-14 KS3	85	12
14-16 KS4	77	41

Biology n=106 , Geography n=163

Biology Fieldwork in Higher Education

BARRIERS **Syllabus content**

“The failure to train undergraduates is partly the result of overemphasis in syllabuses on selected areas of modern biology”

Martin Wilkinson, Heriot-Watt University, Marine biology field teaching forum, May 1998

Biology Fieldwork in Higher Education

A LEVEL Teachers

Why do you do fieldwork at this level?

<u>Reason</u>	<u>BIOLOGY</u>		<u>GEOGRAPHY</u>	
	<u>% Critical</u>	<u>Rank</u>	<u>%Critical</u>	<u>Rank</u>
Develops fieldwork skills	82.5	1	76.6	2
Covers some of the curriculum	70.9	2	56.8	4
Helps to complete coursework needs	68.9	3	49.7	7
The FSC deliver specialist aspects	67.0	4	54.2	5
Always done it - integral to my course	62.7	5	82.5	1
Provides a contrasting location	59.4	6	65.5	3
Covers statistics requirements	58.4	7	34.7	10
Helps with personal development	47.6	8	51.4	6
Encourages progression to next level	28.3	9	47.6	8
Raises profile of subject..recruitment	12.9	10	41.7	9
Provides evidence of key skills	11.3	11	20.7	11

Biology Fieldwork in Higher Education

BARRIERS

Funding

“It is to be regretted that in all institutions, provision of field courses is being cut severely and access restricted to fewer students who now have to make substantial financial contributions to this highly desirable component of their degree programme”

Scottish Higher Education Funding Council. Quality Assessment Annual Report
1996-1997

Biology Fieldwork in Higher Education

BARRIERS

Lack of internal support

“Antipathy towards fieldwork by laboratory-based scientists was recognised as a major institutional problem”

John Davenport, Director University Marine Biological Station Millport. Marine biology field teaching forum, May 1998

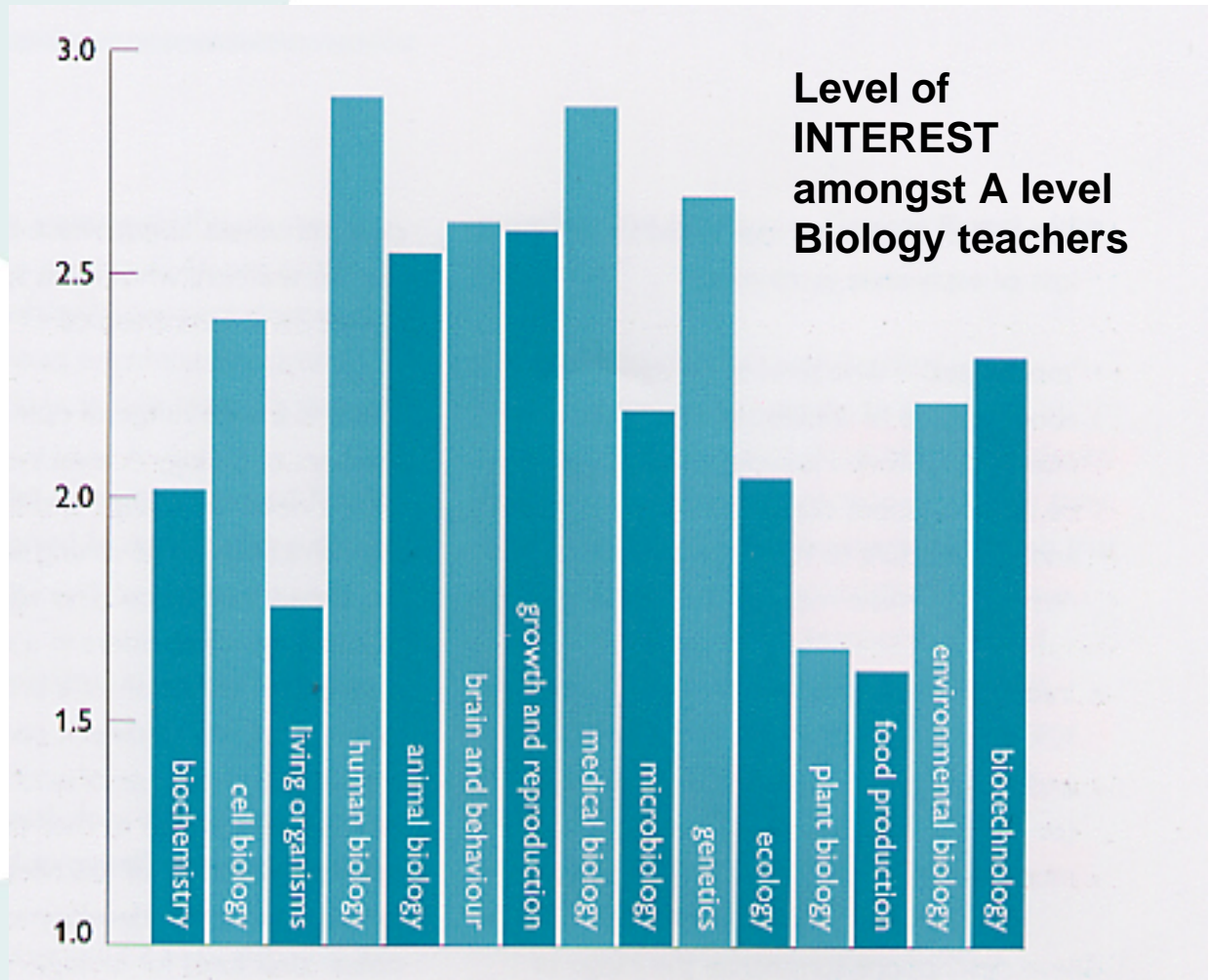
Biology Fieldwork in Higher Education

BARRIERS Interest



Life study
Biology A level in the 21st century

Recommendations and summary of research findings
March 2004



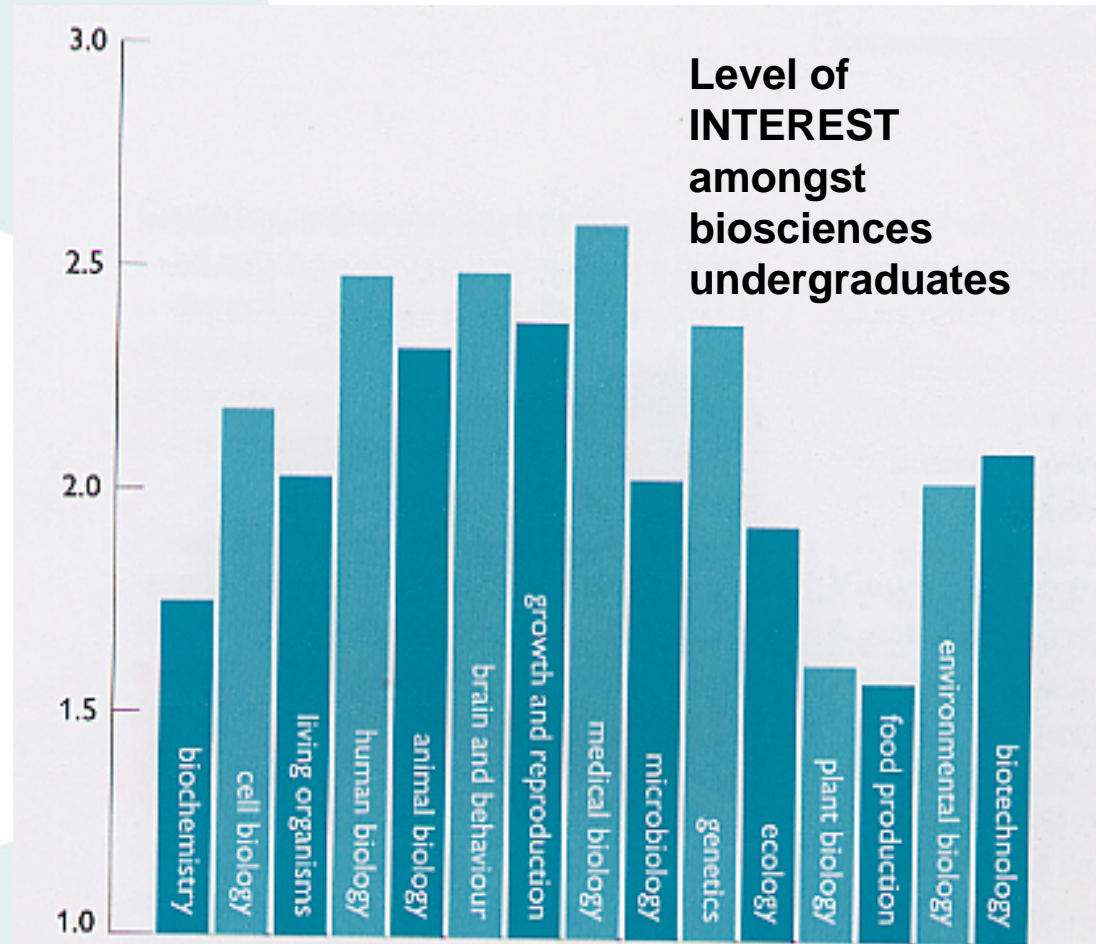
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Biology Fieldwork in Higher Education

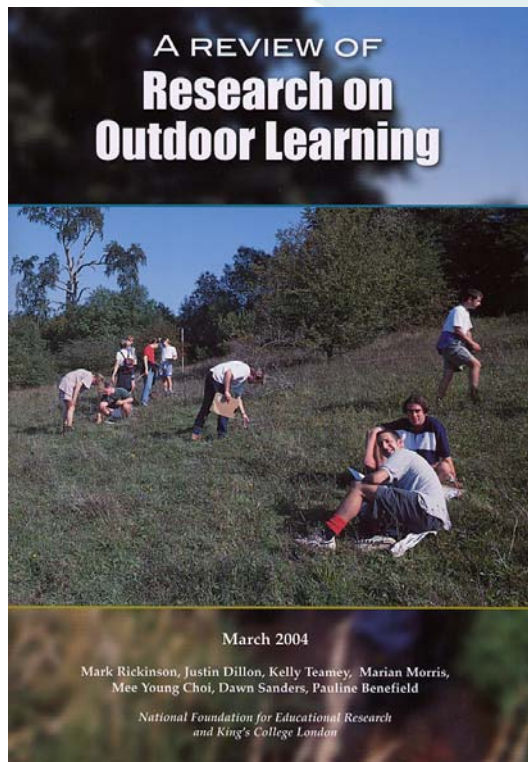
BARRIERS

Questionable quality

“A major problem for the health of field teaching was the perception by administrators and finance controllers that it was a sort of superior bird-watching”

John Davenport, Director University Marine Biological Station Millport. Marine biology field teaching forum, May 1998

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BARRIERS

Quality of provision

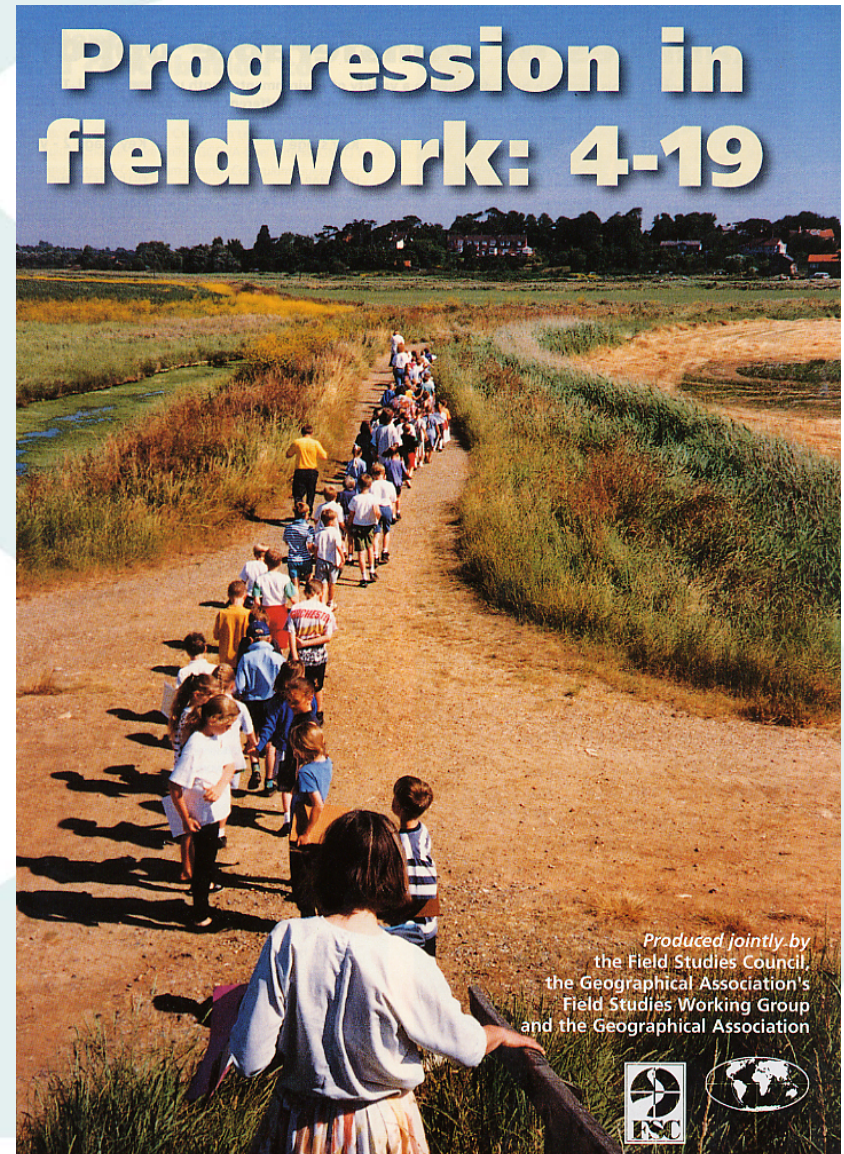
- Long enough?
- Well-designed preparation and follow-up?
- Range of carefully-structured learning activities?
- Links to the syllabus?
- Facilitation in the learning process?
- Links between programme aims and programme practices?

Biology Fieldwork in Higher Education

BARRIERS

Lack of progression

- Between age levels
- Between subjects



Biology Fieldwork in Higher Education

BARRIERS

Lack of progression

- Being aware of starting points



Biology Fieldwork in Higher Education

BARRIERS

Lack/use of suitable resources

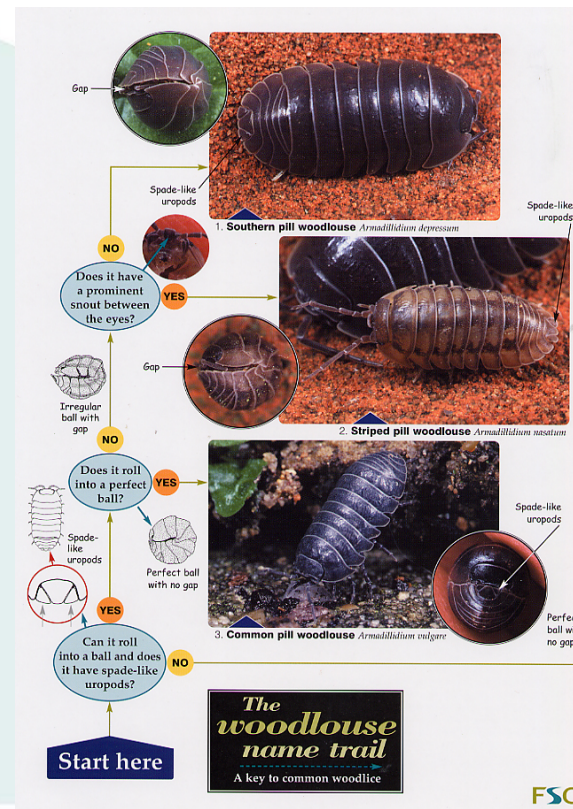
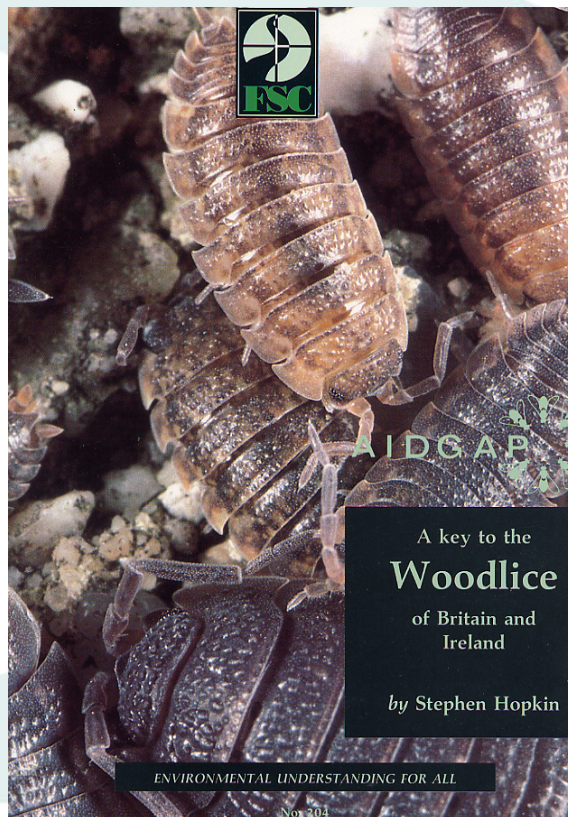
Synopses of the British Fauna (New Series)
edited by Doris M. Kermack, R.S.K. Barnes and J.H. Crothers
No. 49

Woodlice

P.G. Oliver and C.J. Meechan



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Biology Fieldwork in Higher Education

BARRIERS

Available skills...trained staff

“The failure to train undergraduates is.....partly a reflection of the dwindling numbers of lecturers who themselves possess the necessary knowledge or skills”

Martin Wilkinson, Heriot-Watt University, Marine biology field teaching forum, May 1998

Teaching biology outside the classroom

Is it heading for extinction?



A report on biology fieldwork

Creating the right balance



Delivering fieldwork for effective
16-19 ecology teaching

Biology Fieldwork in Higher Education

Action areas

- Curricula
- Funding
- Quality of provision
- Demonstrating impacts
- Assessment
- 'Teacher' Training
- Accreditation
- Progression
- Resources
- Health and Safety

Biology Fieldwork in Higher Education

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