

*Descriptive account*

## Promoting Engagement: Using Species Action Plans to bring together Students and Conservation Professionals

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### Abstract

*We describe an exercise, the production of a species action plan, which utilises components of both transmission mode and experiential learning. This exercise brings together students and a professional role model to promote a stronger engagement with aspects of local biodiversity management. We outline perceived benefits and outcomes of the exercise in the context of a professional ecologist, a student participant and a course tutor, all of whom agree that the completion of the task is a valuable learning opportunity.*

**Keywords:** Engagement, experiential learning, conservation, ecology

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### Introduction

Positive engagement with ecology and issues related to conservation should be a key objective of biology teaching in higher education (see, for example, QAA, 2007). Within this context students should be enabled to integrate professional skills and practices with biological knowledge and theory (Matter and Steidl, 2000), preferably through the completion of real-world tasks as a form of experiential learning (Millenbah and Millspaugh, 2003; Touval and Dietz, 1994).

The involvement of a professional ecologist (i.e. one that is employed outside Higher Education) can be an excellent way of providing students with a real-world context to their learning. The involvement of this stakeholder in the design of the learning task is also an excellent way of maintaining the currency of the material to be learned. Furthermore, an encounter with a professional ecologist may be a positive factor in the development of realistic career aspirations; more than 20% of first year students in our home department express an intention to work in conservation (Scott and Mozzon-McPherson, 2008), a proportion not dissimilar to that cited by Henderson *et al.* (2007) (24–27%) in their report of a survey of final-year biology students at the University of Liverpool, UK.

Here we describe an exercise which combines elements of transmission and experiential learning (Kolb and Kolb, 2005) through which students engaged with a professional ecologist (a local Biodiversity Officer) and carried out a professional task that is an element of the day-to-day work of that person, as well as many other UK based conservation professionals e.g. employees of Natural England, Defra, wildlife trusts. Our evaluation of the exercise is based upon our differing perspectives as the tutor responsible for the exercise (GWS), the professional facilitating it (ST) and a student who has completed it (JS). We do not present formal quantitative information based upon a whole class evaluation of the task and recognise that because of this our qualitative evaluation is a synthesis of our personal critical reflections.

Most HE institutions will have a local Biodiversity Officer in their area; a professional ecologist/biologist employed by the local authority or wildlife trust, with responsibility for biodiversity

management. One of their key responsibilities is ensuring the delivery of Local Biodiversity Action Plans (LBAPs), which include Species Action Plans (SAPs) and Habitat Action Plans (HAPs). These LBAPs are a major, albeit non-statutory, contribution to the delivery of the UKBAP, as the main UK delivery of its commitments under the Conservation of Biological Diversity agreement, signed in Rio in 1992 (HMSO, 1995). Biodiversity Officers are often willing to interact with students, indeed in many cases engagement with the local community, (including educational institutions) is part of their remit. It is significant that their focus is upon local biodiversity because we believe that there is considerable value in providing students with a local dimension to their ecology. This is particularly so in a time of global TV wildlife programmes, when students may know more about the ecology and conservation biology of plants and animals on the other side of the planet than they do about those close to home (GWS *personal observation*).

### **The learning exercise**

This exercise is part of a second-year (level 5) module taken by students following a BSc Biology with Ornithology programme. It takes place in the spring term, but could be carried out at any time of year. The task is assessed and contributes 20% of the marks available to the students as part of a 20 credit module *Applied Ornithology*. Students at the University of Hull complete 120 credits per level (year) of study. The outline of the activity, which was completed in a single 3 hour long teaching session with two weeks for follow-up study, was as follows:

1. The Biodiversity Officer for Hull (ST) provided an overview of the UK Biodiversity Action Plan (UKBAP) explaining its core aim (the protection and enhancement of biodiversity) and its implementation, largely through the production and implementation of LBAPs (devolved to regional/local officers and partnerships). We think of this as the training phase of the exercise and adopt a transmission mode of teaching. Examples of real SAPs and HAPs with direct relevance to the regional, and more importantly local, context of the university were described and discussed. It was explained that SAPs and HAPs follow a common structure which brings together biological information, ecological data and legislative perspectives. Typically they begin with some introductory material which explains the basic biology/ecology of the species or habitat concerned. They then go on to put into context the current status of the species/habitat (e.g. population size or distribution and recent trends in them). Threats facing the species/habitat are described and their impact is explained. Any current legislative protection, management techniques in operation and key research related to conservation is described. Finally, an action plan is proposed which sets targets with measurable outcomes, and identifies methods to be used to meet them. In this plan the key lead partners who will co-ordinate the action are nominated.
2. Students were made aware of the Biological Action Reporting System (BARS), the national database which captures LBAP and Lead Partner relevant information (concerning for example current LBAP actions and species trend data).
3. As an experiential learning task students were given the name of a species and allowed one hour of self directed study to draft a SAP. The species chosen were all birds that occur in Hull and which are not necessarily of obvious current conservation concern. This minimised the possibility that a real SAP might be downloaded from the internet. Other animals or plants could have been used instead of birds. During the exercise the students had access to the university library and to the world-wide web. They were also asked to think about the whole package i.e. how action would be funded; who would do it; how it would be monitored, in relation to potential student opportunities for volunteering, species specialization etc., not just the species in isolation.

4. Drafts were critically discussed with the Biodiversity Officer and tutor: this was a formative stage and students received verbal feedback. During these discussions students often came to realise that theirs was only one view-point amongst several (*personal observation* GS, ST).
5. Two weeks were then allowed for revision of this SAP prior to submission for formal summative assessment by the tutor. As an example of the work produced the SAP submitted by one of the authors (JS) is provided as **Appendix 1** of this paper.

We feel that the merits of the task for students in terms of learning and employment opportunities are clear. In writing the introduction to the SAP students were required to provide a general biology/ecology of the species concerned. The search for this material encouraged them to utilise field guides, taxon-specific monographs, taxon interest group web-sites etc. In this way students practised information retrieval and synthesis, and communication skills and they broadened their awareness of local biodiversity. In assessing the current status of their given species they were required to retrieve population size/distribution information at global, national, regional scales. The exercise often highlights the paucity of available information (even within BARS), it also exposes students to the fact that multiple sources often do not agree with one another (*ST personal observation*). Students were therefore required to evaluate critically the quality and value of the information they used. They were then required to identify the factors which may contribute to species decline and in doing so linked population/distribution trends to causal agents thereby integrating “pure” and applied aspects of biology. In identifying current actions taken to promote particular species students acquired knowledge related to current conservation policy and legislation and multiple conservation/management techniques. Finally, students were required to propose achievable steps for the promotion of the species. An important dimension of this section of the SAP is a demonstration of an awareness of the future dynamism of ecosystems and the factors affecting them, including societal pressures and therefore issues of environmental ethics. Students were also required to think about environmental economics and how any proposed actions might be funded and managed sustainably.

## Discussion

In our different roles as a student completing the exercise (JS), a biodiversity officer facilitating it (ST) and a lecturer setting and assessing it (GS), we each have our own perspective on the task and its usefulness to us.

We believe that because this task was presented to the students as an example of an element of the day to day work of a professional biodiversity officer we have given their learning a real world context. This kind of interaction with professionals is seen as being essential if learning in the conservation context is to be effective and students are to acquire the core knowledge and skills that will enable them to become conservation professionals themselves (Touval and Dietz, 1994), an aspiration of 20%-27% of sampled student bodies (Henderson *et al.*, 2007; Scott and Mozzon-McPherson, 2008). From the perspective of a participating student this combination of interaction with a professional ecologist and the undertaking of an exercise that is in effect an example of professional practice was very stimulating and promoted strong engagement with the task in hand (*JS personal communication*).

The transmission/training phase of the task (the overview given by the biodiversity officer) provided the students with essential background information that stimulated extensive “brainstorming” on both the biology of the species considered during the experiential learning phase of the task and the nature of the task itself (*JS personal observation*). It also permitted the biodiversity officer to promote the concept of LBAPs to a student audience that might include the LBAP officers of the future. It highlighted to the students some of the practical elements

of nature conservation, but perhaps more importantly it provided an opportunity to explain the context of biological conservation *per se* as being just one element of an interdisciplinary whole. This is an essential aspect of meaningful conservation education (Brewer, 2006).

The experiential learning component of the task, the opportunity to: practice a skill (SAP production) immediately following training; reflect upon their SAP during the initial feedback session and subsequent re-writing period; and, the chance to re-formulate their ideas (for submission) is likely to have facilitated deeper learning (Millenbah and Millspaugh, 2003) (although we acknowledge that we have not directly assessed this). As a whole the exercise provided students with an opportunity to develop/demonstrate competence in a wide range of the practices/competencies/skills that they are required to demonstrate as part of their *graduateness* (QAA, 2007) and that they will require in working life (Clarkeburn *et al.*, 2000).

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### References

- Brewer, C. (2006) Translating data into meaning: Education in conservation biology. *Conservation Biology*, **20**(3), 689–691
- Clarkeburn, H. Beaumont, E. Downie, R. and Reid, N. (2000) Teaching biology students key skills. *Journal of Biological Education* **34**(3), 133–137
- Henderson, D., Stanisstreet, M and Boyes, E. (2007) Who wants a job in biology? Student aspirations and perceptions. *Journal of Biological Education* **41**(4), 156–161
- HMSO (1995) *Biodiversity: The UK Steering Group Report: Volume 1: Meeting the Rio Challenge*. HMSO, London
- Kolb, A.Y. and Kolb, D.A. (2005) Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning and Education*, **4**(2), 193–212
- Matter, W.J. and Steidl, R.J. (2000) University undergraduate curricula in wildlife: beyond 2000. *Wilson Society Bulletin* **28**(3), 503–507
- Millenbah, K.F. and Millspaugh, J.J. (2003) Using experiential learning in wildlife courses to improve retention, problem solving, and decision making. *Wilson Society Bulletin* **31**(1), 127–137
- QAA (2007) *Biosciences 2007*. The Quality Assurance Agency for Higher Education. UK, available at [http://www.qaa.ac.uk/academicinfrastructure/benchmark\\_honours/biosciences.pdf](http://www.qaa.ac.uk/academicinfrastructure/benchmark_honours/biosciences.pdf) (accessed 27 August 2008).
- Scott, G. and Mozzon-McPherson, M. (2008) *Internationalizing the science curriculum: Student and Staff perceptions*. Available at [http://www.heacademy.ac.uk/resources/detail/events/conference/Ann\\_conf\\_2008\\_Graham\\_Scott](http://www.heacademy.ac.uk/resources/detail/events/conference/Ann_conf_2008_Graham_Scott) (accessed 27 August 2008)
- Touval, J.L and Dietz, J.M. (1994) The problem of teaching conservation problem solving. *Conservation Biology*, **8**(3), 902–904

**Appendix 1.** Species Action Plan produced by Mr James Spencer.

## **Chaffinch – *Fringilla coelebs***

### **Current status**

The Chaffinch is a medium sized songbird, distributed widely across the UK at all but the highest elevations (Cramp, 1994). It is reliant on stands of trees for breeding and flourishes in deciduous and coniferous woodlands. Latest estimates using the Common Bird Census (CBC) (Website 1) put the population estimate at nearly 6 million breeding pairs. The New Bird Atlas (Gibbons et al, 1993) gives a population estimate of 5.4 million breeding pairs. It is unclear whether there is any real change in numbers as the previous atlas has a population estimate of 7 million breeding pairs (Sharrock, 1976) and yet Cramp (1994) suggests that the population actually increased in this period due to the maturation of coniferous plantations. It is a widespread and increasing species in Europe especially in the north of its range with an estimated 230 million pairs occurring (Hagemeijer and Blair, 1997). Large numbers of birds from the near continent and Fenno-scandia winter in Britain giving an estimated winter population of 30 million individuals made up of approximately half British *Fringilla coelebs gengleri*, and half continental *F.c. coelebs*, birds (1986).

The Chaffinch is protected under the Wildlife and Countryside Act (1981) (Website 2), The Wildlife (Northern Ireland) Order 1985 (Website 3)

### **Current factors causing loss or decline**

There are no mentions of population declines in any of the modern atlases except the New Atlas which suggests that a range contraction on some of the Hebridean islands is due to deforestation (Gibbons *et al.*, 1993). It is assumed that any local population declines are due to loss of trees as there has been no research into the cause of local declines.

As the British wintering population is made up of large numbers of immigrant birds from the continent it is appropriate to note that these birds feed more markedly on stubble fields than British breeders. Recent changes to the set aside laws are potentially disadvantageous in this respect as stubble fields become suboptimal (Website 5) but the impacts of these law changes aren't apparent at this stage.

### **Current action**

No specific action is currently undertaken to promote population increase in Chaffinches. Would benefit from any woodland conservation as makes up 1/5 – 2/5 of the woodland bird community (Cramp, 1994). On the 'Green List' as population has not declined by more than 10% in the last ten years (Website 6).

### **Action Plan Objectives & Targets**

- In the short-term, to prevent any decline & promote population growth so that the Breeding Birds Atlas 2007-11 shows no decline (Website 8).
- In the long-term, to see an increase in urban areas as they are regenerated. Manage existing woodlands in a sensitive manner to prevent rapid deforestation and clear felling ensuring that the population remains stable (monitored with CBC).

### **Proposed actions with lead agencies**

- **Policy and legislation** – Take into account Chaffinch populations when redeveloping woodland. Propose improved management of woodland sites in urban areas using Local Biodiversity Action Plans (Website 7). Liaise with partner countries within

the EU Birds directive (Website 4) to monitor any proposed control schemes used on Chaffinches that winter in the UK but breed abroad (none at present for UK wintering population).

- **Site safeguard and management** – none proposed.
- **Species management and protection** – none proposed.
- **Advisory** – Ensure that land owners are aware of the status of this and other woodland species and how this should affect the way they manage their woodland.
- **Future research and monitoring** – Ensure that regular population monitoring occurs using the integrated scheme from the BTO/JNCC/RSPB, especially the breeding bird survey and common bird census. Investigate nesting densities in different types of woodland to establish importance of differing habitats. Monitor numbers of wintering Chaffinches using ringing recoveries and Bird Atlas fieldwork to ascertain the impact of the removal of set-aside legislation.
- **Communications and publicity** – Promote a change in perception of wild plants as a food source for wintering passerines rather than as weeds. Use the male Chaffinch as a figurehead bird to promote replanting of woodland. Encourage feeding the birds to the public.

#### Links with other action plans

None at present although linking to any future species action plan for Brambling, *Fringilla montifringilla*, would be advised.

#### References

- Cramp, S. (1994) *The Birds of the Western Palearctic – Handbook of the birds of Europe, the Middle East and North Africa, Volume VIII – Crows to Finches*. Oxford: Oxford University Press
- Gibbons, D.W., Reid, J.B. & Chapman, R.A. (1993) *The New Atlas of Breeding Birds in Britain & Ireland: 1988–1991*. Frome: T & AD Poyser
- Hagemeijer, J.M. & Blair, M.J. (1997) *The EBCC Atlas of European Breeding Birds – Their Distribution & Abundance*. London: T & AD Poyser
- Lack, P. (1986) *The Atlas of Wintering Birds in Britain & Ireland*. London: T & AD Poyser
- Sharrock, J.T.R. (1976) *The Atlas of Breeding Birds in Britain & Ireland*. Calton: T & AD Poyser

#### Websites (Accessed 23<sup>rd</sup> April 2008)

Website	Site description	URL
1	British Trust for Ornithology	<a href="http://www.bto.org/">http://www.bto.org/</a>
2	Wildlife & Countryside Act (1981)	<a href="http://www.jncc.gov.uk/page-3614#download">http://www.jncc.gov.uk/page-3614#download</a>
3	Wildlife (Northern Ireland) Order 1985	<a href="http://www.ruralni.gov.uk/index/environment/countryside_management_main/environmental_legislation/wildlife.htm">http://www.ruralni.gov.uk/index/environment/countryside_management_main/environmental_legislation/wildlife.htm</a>
4	EC Birds Directive	<a href="http://www.jncc.gov.uk/page-1373">http://www.jncc.gov.uk/page-1373</a>
5	RSPB: Loss of Set-aside threatens farmland bird recovery	<a href="http://www.rspb.org.uk/news/details.asp?id=tcm:9-182116">http://www.rspb.org.uk/news/details.asp?id=tcm:9-182116</a>
6	RSPB: Red, Amber & Green explained	<a href="http://www.rspb.org.uk/wildlife/birdguide/status_explained.asp">http://www.rspb.org.uk/wildlife/birdguide/status_explained.asp</a>
7	Local Biodiversity Action Plans	<a href="http://www.ukbap.org.uk/GenPageText.aspx?id=57">http://www.ukbap.org.uk/GenPageText.aspx?id=57</a>
8	Bird Atlas Homepage	<a href="http://www.bto.org/birdatlas/">http://www.bto.org/birdatlas/</a>