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## The Biology Curator

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we've succeeded to some extent in raising the profile of wildlife enforcement here. We are looking in-house now at how to take these matters forward.

A booklet is being prepared to help raise the level of awareness of wildlife crime amongst magistrates and others in the judiciary, basically because it was felt that there was a disparity in sentencing. Similar cases being taken in different parts of the country were getting very different penalties. In particular, this document is intended to emphasise the effect of such crimes on the conservation status of rare species. Traffic and the RSPB have jointly sponsored it, and I think it will be published in the next couple of months. One of the problems we've experienced in trying to raise the level of awareness concerning wildlife crime, and in arguments to change the legislation, is that there is no central record of wildlife incidents or even prosecutions. Basically there is a great deal of anecdotal information, but very little hard data to work with. Many organisations, including ourselves, gather information, but it's often incomplete or difficult to access, and we know that there is quite a significant level of duplication. So we bid in-house for some resources within DETR's research project to gather some hard evidence on wildlife crime over a given period. Also, and perhaps more importantly, to try and devise a means by which such data can be gathered in the future without costing us too much and without too much resources being put into it. I am already aware that some work has recently been done by a researcher in Scotland, Ed Conway, sponsored by the Scottish Office. I'm looking forward to receiving the publication of his report, which I believe is imminent, and certainly we are going to take that on board when we review and write the specification for the project which we are due to let, I hope, in the early autumn of this year.

So, just to recap then. I began by outlining where DETR fits in to the wildlife law enforcement equation. I reviewed the background and structure to the partnership including its terms of reference. I've discussed a number of the key initiatives, ten in fact. There are a lot more activities that we're involved with which I haven't had time to mention here, but one of the key objectives is to provide opportunities for all those involved in enforcement to be able to share expertise and knowledge, and that manifests itself in many ways. So just building up contacts by meetings has been extremely successful. And finally, I've looked at the future. I hope I've been able to convince you that the Partnership really is an exciting development in the fight against wildlife crime. I believe we've taken some major steps in the last two and a half years or so, and I recognise that there is a great deal to be done, but I think we have proved that the partnership approach is a very effective way

forward and it will be useful in combating this type of wildlife crime.

## Guidelines for destructive use of biological material

*Richard Thomas, Natural History Museum*

I'm going to talk about guidelines for the destructive use of biological material. Effectively there are two versions of this talk I could give you. There's the short version. There is really no difference in principal between destructive sampling of specimens for molecular work and any other kind of destructive sampling. In fact, as you have probably gathered from some of the stuff that Alan was saying earlier, destructive sampling for molecular work is sometimes much less destructive than some of the techniques used as standard by morphologists when they are doing some of their techniques. I'll give you the slightly longer version of the talk which is derived from an article in a now extinct publication called 'The Ancient DNA Newsletter' six years ago, and written by Havov , Bob Wayne and myself and much of the material in that article has subsequently been incorporated in the NHM's policy document on sampling for molecular purposes from the collections.

The somewhat longer version: I think we need the somewhat longer version because there is this cultural difference between molecular biologists and museum curators. Curators often see molecular biologists as sort of evil interlopers who soak up valuable resources and take up space that could be better used for storing collections. Some of the molecular biologists see curators as traditionalists who don't recognise or are incapable of recognising the path-breaking importance of their research. There needs to be some way of mediating between those two sorts of cartoon extremes. Specifically you need criteria for evaluating requests for the use of material and that pre-supposes having somebody around who is qualified to evaluate the requests. You also need to consider that a museum or holders of a collection should expect to get back from a loan of material.

In 1992 we came up with five criteria for evaluating requests for destructive sampling of specimens. The scientific value and the feasibility of the project, the qualifications of the investigator or the lab to do the work, could they possibly get this material some other way other than destroying specimens like from captive populations or wild populations. The volume of the material required relevant to what is in the collections, so if they are going to grind up half of the single existing individual of something it would probably not be a good thing. And finally, the staff effort required to

fulfil the terms of the loan. I will go through all of these in slightly more detail.

Feasibility and scientific value: Is it of sufficient interest to justify the damage done to the collections? A lot of ancient DNA work initially started out looking a little bit like stamp collecting, saying ooh, we got the oldest sequence and that is about as far as it went. If some question of general importance is not being asked you might ask yourself whether it is worth destroying the specimen. Is it technically feasible? We have heard a lot about what is and isn't feasible today. It is a rapidly moving field. Techniques are improving. I think PCR was probably the one big thing and there is not much we are going to be able to do with specimens where the DNA is just no longer there. Hence there are limits, and I would be extremely sceptical for requests for material over a few tens of thousands of years at the very outside. Also, be very sceptical of projects requiring intact DNA of more than, at the very outside, a few hundred base pairs. Evaluation of the scientific value and feasibility usually requires having somebody around with a little bit of experience in this and I realise that most smaller museums don't have any in-house experience. The NHM and some of the other larger museums that do have that type of experience are generally willing to help evaluate the requests for the use of material.

The qualifications of the investigating laboratory to do the research. Do they have the technical competence. You might ask if they have a relevant publication record or some other relevant experience that indicates that they have got the technical competence, the facilities and the ability to work carefully enough to maintain the sort of standards that we've heard from Alan. Working from ancient material or material out of collections is often a little bit hit and miss. The success rates are generally not anything like 100 percent and if somebody comes in and asks to have a sample of all 532 specimens from a particular family, you'd tell them that you could give them half a dozen or so and see how they get on before they come back and slash and burn their way through the rest of your collection.

Could they get this material some other way? Generally speaking, with the difficulties of working with material from collections people generally aren't going to treat your collection as a free candy store to go pick up anything they need rather than making a slightly greater effort to get it from a fresh source. There are quite a few situations in which sampling from a collection is definitely legitimate in my view for extinct and endangered taxa. Increasingly in the world it is getting logistically or politically harder to sample from some groups of organisms in some places.

This might be a good point to bring up a point that I was hoping Alan would but didn't - Museums being repositories of specimens that maintain DNA in a very good state rather than in frozen tissue or other methods of preserving nucleic acids and other bio-molecules in a very high state of preservation. We maintain a small frozen tissue collection at the museum which fairly opportunistically gets specimens from, for example collecting trips along the continental slope - fish that are fabulously expensive, each of these individual fish costs hundreds of pounds if you cost it out to collect. We take small samples of muscle tissue and freeze them at -80 degrees. Again, that not something a lot of museums are going to have the wherewithal in funds, space and expertise to do but there are places like our institution and a number in North America and increasingly some of them will be willing to take on specimens like that.

Volume of material relevant to what someone wants: I recall us having a request for somebody wanting a pretty sizeable fraction of a grasshopper that had been collected on one of the Cook voyages. That was a very unique and historically important specimen. Rightly in my mind the curators in the museum decided that they shouldn't really grind up most of this specimen for molecular purposes. But in many cases, like in our vertebrate collections, somebody wants a few square millimetres of hide or a few bits of muscle tissue it's not doing significant damage to the specimen. There is a huge grey area between these extremes and that's where the judgement of the curator comes in and consultation, where required, with people with the relevant molecular experience.

The staff effort required to fulfil the terms of the loan. Obviously you all work very hard and your funding is not adequate and you don't have time to do the basic stuff you need to do to maintain four collections so you don't have time to deal with molecular workers swanning, in wanting huge amounts of your time and lop bits off your specimens. So molecular workers, in general should be willing to travel to collections and do the sampling themselves where that's appropriate under the eyes of the curator and at the convenience of the curatorial staff. I think fees for the loan requests and bench charges can be required where appropriate. I'm not suggesting they be required all the time but where appropriate it is a reasonable thing to ask. Molecular work tends to be regarded as expensive and is often supported by grants so it's a relevantly minor thing to include bench fees when processing fees for loans within a grant proposal.

What the museum or collection holder should get back from a destructive sample of a specimen. The NHM requires that people give back all the extracted nucleic acids. We have a facility to store them, it's not a problem for us, some institutions it will be a problem

and there needs to be more communication amongst curators about what to do with returns from molecular projects like this. We require, minimally, an electronic copy of any sequence data taken or derived from a specimen and hopefully the people that go to the trouble to do this are going to submit the information with a sequence data base where it will have a proper accession number and hopefully they will have included the specimen registration number in the record (in the sequence data bases there are facilities for that). Museums should get back copies of experimental protocols where they differ from already published protocols so that other people, if they are successful, can use them as well.

We are all trying to justify our existence to funding bodies. It is important that, where appropriate, museum staff are authors on publications or at bare minimum the use of the collections are acknowledged. Collections have to justify their existence in the eyes of funding bodies. Sampling for some of these molecular projects adds value to the collection. You should get back reprints, status reports on projects using material from the museum collection, keep track on people like Alan who sits on material for years without doing anything with it.

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## A prosecution case study.

*Steve Downing, West Yorkshire Police*

Bob Philpott who was originally going to present this talk is committed on an operational matter so you've got me instead. Bob was going to talk to you about Operation Avocet. It was a Wiltshire case; it started in Wiltshire and spread throughout the country. I'll give you a brief insight into that and then talk about my own case.

Before I look at the case history we need to discuss the legislation to see why I did and why Bob did what we did, then what we did and what impact this will have on your selves. The legislation covering the collection of wild birds is not new. Whilst Henry VIII was busy collecting wives he was also busy preventing museums and egg collectors collecting eggs. He had an act of parliament that said no person shall from the first day of March to the last day of June take or destroy any egg of wildfowl from the nest upon pain of punishment of one year and to forfeit for every egg of crane or bustard twenty pence, every egg of heron, bittern or spoonbill eight pence and every egg of other wildfowl one pence. A long time ago those penalties were quite severe. I'm sure old Henry there was more concerned about protecting his menu than the birds but nonetheless I have to applaud his sentencing policy. From 1880 there was a succession of acts of parliament protecting wild birds and their eggs. In

1894 under the Wild Birds Protection Act the Secretary of State was enabled or empowered to prohibit on application by county councils the taking or destroying of eggs in any year or years in any place or places within that county. There was a second part which also allowed him to prohibit the taking or destroying of any kind of specified wild bird in that same county.

The next major milestone for the protection of birds was 1954. The Protection of Birds Act 1954 prohibited the taking, and only the taking, of eggs, not possession. Effectively that meant that you had to be caught in the first minute. Where does taking start and taking stop? Is it immediately after you've taken it? Is it the point where you give the egg to a person who didn't take it? Is that a joint taking? Is it when you're walking down the lane? It's definitely when you get home. But it is a grey area. There is a bit in between that is very difficult to sort out so effectively we didn't use it very much; it wasn't an effective piece of legislation. However, as far as you are concerned and as far as we are concerned i.e. the enforcement agencies, we will use that Act of Parliament to dispose of eggs.

By the time the Wildlife and Countryside Act came in (it is dated 1981 but it actually came into force in September 1982) Parliament clearly decided enough was enough as far as bird egg collections were concerned. For the first time we got rid of the problem with the original act and we had a definition of wild birds. No longer were we interested in County orders. No longer were we going to be specific to individual species in one area and change it next door (very difficult near county boundaries for example). This time it is any bird of a kind, which is ordinarily resident in, or a visitor to Great Britain in a wild state. I will apologise to the Scots contingent, I speak in English law, but I am fairly confident that that section is the same in the Act in Scotland.

Game birds are excluded but from the egg point of view they are given partial protection in Section 24 of the Game Act of 1831. Again, that was not so much to do with the preservation of the bird rather so that someone with authority could shoot them. That piece of legislation, which applies to game bird eggs, is only applicable to England and Wales, it doesn't apply in Scotland.

Now we know what a wild bird is if we have a look at the offences. The Wildlife and Countryside Act again, 1981. Section 1.1.3 'It is an offence to take or destroy the egg of a wild bird'. This is the piece of legislation that we use to seize egg collections. This is the only one that carries the power of seizure. This is an all-encompassing Act; it is the one we use for virtually everything and Section 1 deals almost entirely with birds. For the first time, Section 1.2, it is an offence to