POINTS OF VIEW—PUNTOS DE VISTA—PONTOS DE VISTA

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IS SPECIMEN-TAKING OF BIRDS IN THE NEOTROPICS REALLY "ESSENTIAL"? ETHICAL AND PRACTICAL OBJECTIONS TO FURTHER COLLECTION

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Vuilleumier (1998) recently presented a Point of View in Ornitología Neotropical on "The need to collect birds in the Neotropics". Below, I criticise his line of argument, considering whether or not specimen-taking can be considered "essential" as Vuilleumier claims. I also put forward further ethical and practical considerations which should be borne in mind when considering whether to engage in specimen-taking. As this article is intended as a reply to Vuilleumier (1998) and references were not quoted in his piece, I have likewise not included literature sources here.

I will first deal with Vuilleumier's points, before considering the additional question of whether one or more specimens are really necessary to describe new taxa, and then drawing some conclusions.

VUILLEUMIER'S ARGUMENT

Vuilleumier starts by refuting three objections which are apparently put forward by those who object to collecting: (1) Ornithologists who collect birds for research are accused of engaging in slaughter and of endangering wild bird populations; (2) There are already large numbers of birds in museums, so why collect more?, and (3) Collecting birds is a "thing of the past."

He then puts forward his argument that specimen information is the "*sine qua non* basis for conservation" and concludes "no collection, no conservation."

Ornithologists who collect birds engage in slaughter and endanger the survival of wild bird populations. As Vuilleumier suggests, this point is not a particularly valid one. It is clear that, save in exceptional circumstances, the impact on bird populations of selective specimen-taking will be minimal in the short to medium term, and virtually nil in the long term. Other human impacts of deforestation, hunting and car mortalities have a much more profound effect

on bird populations.

However, there may be exceptional circumstances in which the collection of even a small number of specimens could have a significant impact on a population. For instance, the Pale-headed Brush-Finch (*Atlapetes pallidiceps*) is considered to have a total population of just 5–15 pairs (Agreda *et al.*, 1999). A museum expedition to collect a series of specimens of this species could have a catastrophic effect on its conservation. This should thus be borne in mind by over-enthusiastic collectors on the discovery of an interesting find.

There are already large numbers of specimens in museums, so why collect more? Vuilleumier, instead of addressing this valid point, instead prefers an equivocal citation of random facts which do little to convince the reader that this point is not a valid one. His argument appears to read thus: (1) Museum collections have permitted scientists to inventory birds; (2) Therefore we are able to see how much biodiversity has been lost; (3) Therefore we should carry on collecting in order to be able to see what more biodiversity is lost; and (4) If we do not collect, we will not know what has been lost.

This chain of thought does not stand up to analysis. Can we not bear witness to lost biodiversity using photographs and list-inventories based on observation and mist-netting? Publication of information in international journals and deposition of photographs in international photographic libraries, the internet and books are far better methods of informing people of the biodiversity of tropical forests than cataloguing dead birds in the drawers of some museum.

The way in which this question is unconvincingly discussed by Vuilleumier suggests that he does have an answer to it. There is a type-specimen of every known subspecies of every bird. Is more than this needed in order to conduct research or produce fieldguides? In an age when we are able to travel all around the world with relative ease to conduct field-studies on live birds which are then released, are these resources sufficient for research purposes or are further specimens necessary? In order to answer the question, "Is collection necessary today?", we must determine whether current specimen collections are sufficient or if further ones are necessary. This fundamental point is not dealt with by Vuilleumier. Discussions of sustainable populations and "things of the past" pale into insignificance: this is the crucial point in the argument over the merits of collecting. The lack of a coherent, logical and watertight counter-argument by Vuilleumier suggests that he does not have one.

Collecting birds is a thing of the past. This weak point is apparently "an often heard comment". However, here I agree with Vuilleumier. That something is a practice which has been going along for a long time – a thing of the past – does not mean that it is a bad thing. I have deliberately avoided the use of a fatuous and meaningless phrases starting "at the dawn of a new millenium ..." in this article. It adds nothing to an argument. People have been eating, wearing clothes and even bird-watching for hundreds of years, yet these are good things, we suppose. However, we should continue to evaluate old practices in the light of new developments in technology.

"No collection, no conservation" ... or not. Vuilleumier here comes to what is apparently the crux of his argument. Although it is difficult to decipher, I have (I hope) summarised it briefly below: (1) Artists and writers use specimens as a basis of field guides; (2) Birds collected today are catalogued extensively with skeleton, skin, tissue, parasite and DNA samples, and are incorporated in inventories and published; (3) Specimen information is

indispensible to systematics, phylogeny, relationships, feeding ecology, moult, parasite loads, and many other topics; (4) This is the indispensible basis of conservation knowledge; and (5) No collection, no conservation.

Vuilleumier is correct in saying that the specimen record is a great aid to textbook writers. Artists and writers spend hours in museums. But do we need more specimens for this purpose? Cannot artists work with the current selection? Most book reviewers' critiques of fieldguides involve substantive, analytical or structural improvements or a lack of up-to-date-ness with references. Few criticisms are ever levelled at the quality of plates and the accuracy of their depiction of birds in the field. Variations in quality have more to do with the skill of the artist and depth into which species descriptions are made than with the availablility of specimens.

It is also probably true that specimens today are prepared more carefully and less wastefully than in previous decades, as Vuilleumier points out. However, we have to consider that much of this information could be collected by alternative and less destructive means, though for those who work with skeletal and tissue samples, this is clearly very difficult.

Vuilleumier considers that specimen information is "indispensable" to "studies of systematics, phylogeny, relationships, feeding ecology, moult, parasite loads, and a host of other topics." I do not have the space or time needed to address the points relevant to each of these study areas, as an extensive article, e.g., "The need (or lack of) to collect birds in the study of relationships", could be written concerning each of the topics cited and would run to several pages each. However, the apparently "indispensable" nature of collecting, especially to studies of feeding ecology and moult, appears tenuous if not spurious.

Vuilleumier now makes the claim, "No collection, no conservation." This sweeping statement is clearly in need of qualification. Collections made in the 19th and early 20th century greatly increased our knowledge of the world's biodiversity and encouraged people to pay more attention to it. Collections have also enabled this knowledge to be disseminated to some extent. And with better knowledge, conservation can be targeted more effectively and efficiently. However, ornithologists should stop thinking that in some grand way they are saving the world. Is conservation really impossible without a knowledge of parasite loads, moult sequences, phylogeny and systematics? And if this is the case, is further research into these topics "indispensable" to conservation? And if this is the case, is further research based on further new specimens "indispensable" to conservation? It is the crux of Vuilleumier's argument that these questions are all answered in the positive.

But will further studies into moult sequences really help educate local people into family planning to reduce population pressures which threaten to extirpate the world's few remaining forests? Will a greater knowledge of parasite loads lead to more sustainable farming methods in developing coutries? Will a greater knowledge of systematics stop illegal encroachment and hunting in National Parks? Those were rhetorical questions. If a fraction of the money spent on these areas of academic research were instead spent on land purchase of forested areas, on birth control programmes, or on environmental education projects in developing countries, conservation would be the winner. Collection of specimens as a facet of academic research is of academic interest, and brings with it only a limited conservation benefit.

The slogan, "No collection, no conservation" is a fallacious one. I offer a very recent example of an excellent piece of conservation

work in which not a single bird was collected to show that conservation is possible without collecting. In 1998, CORANTIOQUIA, a local governmental environmental organisation in northern Colombia, sponsored the local University bird study group to carry out surveys in a newly-discovered patch of primary forest. They used mist-nets and observation techniques to inventory the forest. No specimens were taken. Many rare, endemic and threatened species were found present, with findings detailed in a report (Cuervo *et al.* 1999). Within two months, the forest had been purchased and protected. A guard is now paid to enforce protection, and an education project has been initiated amongst the community. Vuilleumier may find it incredible that all this conservation action was possible without the collection of a single specimen, and without a new study into parasite loads based on new specimens taken from within the forest. However, this is surely a much greater outcome than anything that could result from a study of phylogeny, etc.

No collection, no conservation? No way.

DO YOU NEED A SPECIMEN TO DESCRIBE A NEW SPECIES?

I am part of a team of persons who are currently describing a new species of *Lipaugus* Piha from the Central Andes of Colombia (Cuervo *et al.*, in prep.). Although we were excited to have made such a significant discovery, there was also a certain sense of sadness, at least amongst some team members, that holotype and paratype were taken. We had taken full measurements of relevant exterior bird dimensions to the nearest 0.1mm using an accurate caliper. Moult sequences, emarginations and primary notches were documented using standard techniques. External parasites were removed and preserved. We had exquisite photographs taken with a macro lens and ring flash depicting each feather in lucid detail. We had recordings of vocalisations, and extensive notes on ecology and behaviour. We could have taken a blood sample for DNA, rather than the liver sample. Standard coloration charts could have been used in the field to confirm photographic evidence of plumage coloration. It seemed that the only thing that we obtained by taking a specimen was a specimen.

But perhaps this is the point. Although the holotype and paratype will be seen by only a handful of people in Universidad Nacional de Colombia, they remain an unarguable and long-lasting proof of the discovery. This appears a considerable practical justification for collecting, especially when fraudulent photographs could so easily be doctored by computer.

Yet this difficulty too could be surmounted with the removal of a small number of feathers which show diagnostic plumage features, and photographs of measurements being taken. Although some degree of discomfort and disablement would doubtless be caused to the bird, this is surely a fate better than death. The feathers could be catalogued and placed in a museum as the "Type Specimen". With photographs, a DNA sample, full measurements, behavioural notes, comparisons with coloration cards taken in the field, sufficient witnesses and a feather collection, even a new species could feasibly be described without the need for a specimen. But it would be a brave person who ran the risk of losing out in the "race" to describe, with the possibility of an unscrupulous person collecting a specimen and usurping the original discoverer. Publication may also be difficult: given past practice, it would be a brave journal to publish a new species without a specimen. Developments in new technology have thrown down a challenge to us all to engage in more ethical practices. I hope that the biological community will have the strength of character to take up this challenge.

CONCLUSIONS

My arguments above do not deny for one moment that taking specimens makes it easier to conduct some forms of research. Clearly, to identify a confusing mist-net capture, or to make a study of bird digestion or internal parasites is speedier and easier where one is able to kill the study piece. However, I argue from a position where I consider that to kill is wrong. This is apparently a controversial point of view. I consider that killing should not be undertaken lightly or for reasons of convenience as is currently the practice. And even if we consider that it is on the facts impossible to test a certain hypothesis without taking a specimen, we should ask a final important question: whether we as human beings have the right to find out the answer to that question where to do so would require the death of another creature.

This of course raises another question: whether mist-netting can be justified. Wherever mist-netting occurs, there is always a real possibility of fatalities. Is the person who installs mist-nets knowing that mortalities are very likely just as culpable as the one who collects a bird? Or is the contemplation of a possibility of mortality different from an intention to kill a specific individual? That is perhaps a discussion for another time.

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