Bi Byte
The Quarterly Newsletter of
Project BioMap

www.biomap.net

Increasing biodiversity knowledge to support conservation

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Editorial

Why continue to collect bird specimens?

In the previous editorial, Robert Prýs-Jones discussed the importance of museum bird collections for research, and the direct bond between research and conservation. Now I want to address the following question: why is it important to continue collecting? By this I refer to responsible scientific collection, in which skins are prepared with complete and correct data and deposited in institutions whose cataloguing requirements, maintenance and access stipulated by the Ministry of the Environment are fulfilled. There are many bird enthusiasts, and many ornithologists with little contact with collections, who are against scientific collecting. Nevertheless there are good reasons to justify the continuation and intensification of responsible scientific collecting.

One of the strongest reasons for collecting is that the existing specimens are not sufficient for many types of investigations, and this lack will become acute in the future. There are about 9 million bird specimens in the world, an average of a little less than a thousand per species. It sounds impressive, but it is necessary to take into account that these were collected over a period of more than 200 years, with the great majority between 1850 and 1950. During this period, the standards for documentation were far more lax than the present ones, with a high proportion of specimens having insufficient data for scientific studies (e.g. the locality 'Bogotá' for specimens sent from this city but obtained from much of the Colombian territory and, in some cases, to Ecuador). Of the specimens with precise data of locality and date, the great majority do not carry mach information taken at the point of collection, such as habitat, state of the gonads, ossification of the skull, subcutaneous fat, stomach contents and colours of soft parts: of all specimens, less than 10% have relatively complete data. If we consider that for many types of studies, samples of 20 or more are required, by species, sex, and population, to have statistical validity, we begin to see the magnitude of the problem. Furthermore, if one requires a series of specimens from the same locality in different periods of time (e.g. to study levels of some polluting agent across time), or if specimens in fresh plumage for a taxonomic study are required, the proportion of specimens that constitute the useful sample is reduced still more. In addition, the specimens are not distributed uniformly between species: for example, in the ICN collection (which contains a total of about 30,000 specimens of 1,500 species), 50 species have more than 100 specimens but over 500 species are represented by just five specimens or less – and many of the latter are the most important for the implementation of conservation programmes.

The specimens that we collect now, with their complete data, could provide important information to solve future problems of conservation – and given the rate of destruction of natural habitats, they could be our only witnesses of the original birds in many regions. A museum collection is the best form of documentation for many types of study or registries of distribution because it will be available for future studies, possibly with new taxonomic criteria (that will depend as well to a great extent on the museum collections). The existence of other means of identification and documentation has not eliminated the necessity of museum collections, far from it: a visual registry is not subject to independent verification in the future (a basic characteristic of good science), we have to trust the original identification totally, which can be based on a field guide that does not illustrate or describe all the plumages of the species, or the subspecific variation. It is almost impossible to standardize the light, angle and position of the bird for a photo – necessary for the determination of the subspecies – and it is not possible for accurate measurements to be taken from a photo. In many groups of birds, the recordings require voucher specimens for their reliable identification.

An objection to scientific collecting that is frequently heard by the misinformed is that it damages or endangers bird populations. This argument ignores the fact that in bird populations, individuals are dying naturally all the time, being replaced by young individuals: they are renewable natural resources. An example illustrates this point. Consider a bird with a restricted

distribution (10,000 km^2) of which as little as 20% is habitat suitable for the species (2,000 km^2). Let us say that our species lives in this habitat at a density of a pair per five hectares, or 40 individuals/km^2. The total population would be then 80,000 individuals, of which about 20,000 would be replaced every year (for many small species, the rate of annual mortality is considerably higher). The collection of a sample of 20 individuals (feasible for the great majority of the cases) would be equivalent to 0.1% of natural mortality. Another view would be that this is equivalent to the destruction of 50 hectares of habitat, with the great difference that the scientist does not affect the habitat while forest destruction permanently removes the population: no longer is it a renewable resource. At the present time, between 500 and 800 specimens per year enter Colombian collections, of perhaps 300 species. The same number of species could be found in one hectare of Amazonian forest. If their density average were the same as our species in the previous example, then the total density of birds would be 120 individuals per hectare. Thus, all collected birds in Colombia per year equates to the same immediate mortality as the deforestation of five or six hectares of the Amazonia, but without permanent effects as the population persists.

In the United States, 15,000 birds are collected annually. Annual mortality figures that man inflicts on bird populations are as follows: vehicle hits on highways = 10 million; structure hits (buildings, windows, TV electrical towers, fencings etc.) = 2 million; sports hunting = 5 million; domestic animals (especially cats) = 5 million; contamination and poisons (including agrochemicals) = 1 million... and this did not quantify the damage caused by the destruction of habitat due to urban, suburban and agricultural development. From all these sources of mortality, the only one that can benefit the birds is scientific collections, through the increase of our knowledge of the species.

Many people reject scientific collections because they consider the slaughter of a bird immoral. It is our hope that such people, for the sake of assuming a consistent position, also gives up their use of cars, electricity, television, glass windows, pets, paper, meat and products whose culture depends on agrochemicals, among other accessories of modern life. Nevertheless, the subject goes more to the heart: these people show to a deep confusion between their particular morality and the main target of conservation, that it is the preservation of populations and species, not specific individuals. If a population eliminates itself, the death of a particular individual is inevitable and in certain way, irrelevant: the population's destiny is already sealed. But if the death of an individual helps to produce information that could avoid or mitigate the destruction of other populations, as could happen if the individual is collected and deposited in an institution that makes available material in perpetuity, it would not have been in vain.

In conclusion, we see that now more than ever there is the necessity to increase bird collections, in addition to improving their maintenance and access. To object to scientific collecting is the view of people who do not have contact with collections, and do not appreciate the true mission of conservation – and the important part that bird collections can fulfil.

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NewsByte summary

June 1: Second issue of BIOBYTE newsletter (English and Spanish versions) was emailed to over 700 people and institutions as well as downloadable from www.biomap.net.

June 1-15: Zoological collection management course at ICN completed by the Colombian Coordinator and two cataloguers.

June 17: Darwin Seminar in London - BioMap presentation and discussion with the U.K. Minister of the Environment – Rt Hon. Michael Meacher MP and Marian Jenner of the Darwin Initiative (see photo below).

June 18-21: Colombian BioMap staff meet with Alvaro Espinel in ICN to discuss databasing protocols and activities.

July 4: Team progress meeting with Paul, Sussy, Diana, and Andrea in ICN, also with Gary Stiles and Gonzalo Andrade.

July 5: BioMap presents at the Annual Conference of the Society of Conservation GIS 'Biodiversity Spatial Datasets: Essentials for Information Interchange' in California, USA.

July 8-12: BioMap presentation at the outcomes definition workshop for the Andes Center for Biodiversity Conservation held in Bogotá. Colombian Minister of the Environment present (photo with CI-Colombia Director, Fabio Arjona).

Aug 1: Darwin Initiative meeting with Marian Jenner (DI) regarding proposed development of Project BioMap.

Aug 15–19: Technical workshop for monitoring forest birds in the Otún-Quimbaya Flora & Fauna Sanctuary, sponsored and assisted by BioMap, completed with 65 participants.

Aug 18–24: BioMap manager visits AMNH to assist with databasing and discuss project with Thomas Trombone, Data Manager for the Division of Vertebrate Zoology – Ornithology.

Sept 1: Distinguished ornithologist Nigel Cleere joins BioMap to database European bird collections, after a four-month training period in Colombian avifauna at NHM.

Sept 2: DEFRA (UK Government) press release of Darwin Initiative, including Project BioMap, at Global Environment Summit at Johannesburg (*available on request*).

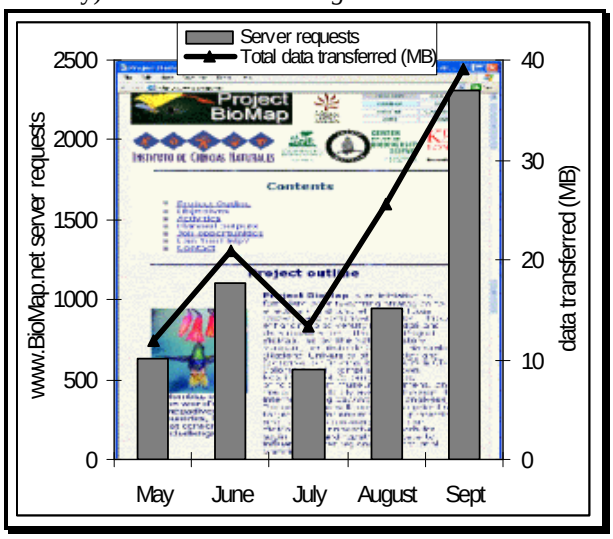
Sept 13: Darwin Fellows finish cataloguing 26,000 Colombian specimens in AMNH. Many thanks to Paul Sweet, Thomas Trombone and Joel Cracraft of AMNH - Ornithology.

Sept 15: Data Entry Tool for observation data completed.

Sept 16: Cataloguing of The Natural History Museum Colombian bird collection – databased over 7,000 specimens.

Sept 23: Darwin Fellows commence MSc at King's College.

September: Increasing website hits!
www.biomap.net: 2,313 hits in September, plus 40 MB of downloads (see statistics graphics below).
www.nhm.ac.uk/zoology/biomap: 195 hits in August (up from 134 in May) … *and still increasing!*



General NewsBytes

The past few months have been a hectic whirlwind of activities, with positive developments and excellent progress – we're well on course for completing our ambitious goals.

Core activities of the project – databasing specimens in North America, Europe, and Colombia – have proceeded well. Databasing by Juan Carlos and Clara Isabel has almost been completed in AMNH where over 26,000 specimens were databased from catalogues and most records verified against the specimens held in the collection. This ground-truthing of the bird collection in AMNH is the first of its kind and is yielding interesting results. We hope this assists AMNH in its bid to start databasing their entire collection in earnest.

Juan Carlos and Clara Isabel have now commenced an MSc course at King's College, London, under the supervision of Dr. Mark Mulligan. Two terms of taught courses in Environmental Modeling, Monitoring and Management will lay an excellent foundation for analyzing the BioMap data in 2004.

Paul completed databasing The Natural History Museum Colombian bird collection, with the assistance of Nigel Cleere who volunteered to help. Every taxon and all plumage types represented in the collection of Colombian origin were recorded with digital photographs (3,500 in total). It is hoped that an archive of high quality images (especially of all types) will provide an invaluable source of identification material.

The Darwin Initiatives annual meeting and workshop on 17 June was an exciting event with an opportunity to present BioMap to the British Minister of the Environment, Rt Hon. Michael Meacher MP, and outline future developments.

After an intensive four-month voluntary training period on Colombian avifauna, distinguished ornithologist Nigel Cleere (author of much ornithological literature) commenced in September assisting BioMap by assuming responsibility for databasing all European bird collections. He will travel widely

throughout Europe for 14 months. This assistance has permitted the Project Manager to take on the additional responsibility of working across the Tropical Andes for Conservation International and for expanding the scope of BioMap to this region for both birds and other important indicator taxonomic groups. Tentative plans are afoot, of which we hope to bring more news shortly.

In Colombia, the Colombian Coordinator, Sussy de la Zerda, and cataloguers, Diana Arzuza and Andrea Morales, have been very active preparing and supervising two courses/workshops in August and September. Details of both are presented in the following articles. Up to September, Andrea and Diana have continued to systematically database the ICN ornithological Collection with almost a third of all specimens completed, including all specimens from the families Tinamidae to Caprimulgidae, and Parulidae, Vireonidae, and Coerebidae.

BioMap Diary

Oct 13-18: VIII Latin American Botanical Congress. BioMap presenting 'Increasing biodiversity knowledge to assist conservation'

Oct 13-18: AndinoNET (part of BioNET International) implementation workshop in Maracay, Venezuela. Project BioMap will be presenting.

November 7–11: XV Colombian Ornithological Meeting in Valledupar. BioMap staff present 2–3 talks on the project.

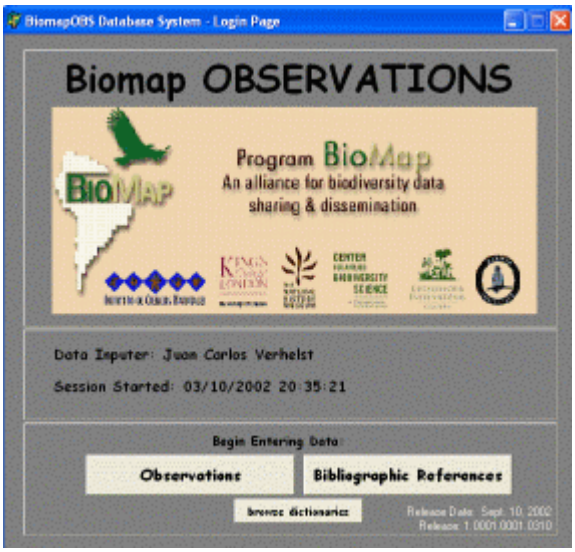
October–December: BioMap plans to visits various European bird collections, including Zoological Museum, University of Copenhagen (ZMUC), in October 2002. Many thanks to Jon Fjeldså and Niels Krabbe there for helping arrange this.

January 1: Issue 4 of BioByte to be prepared.

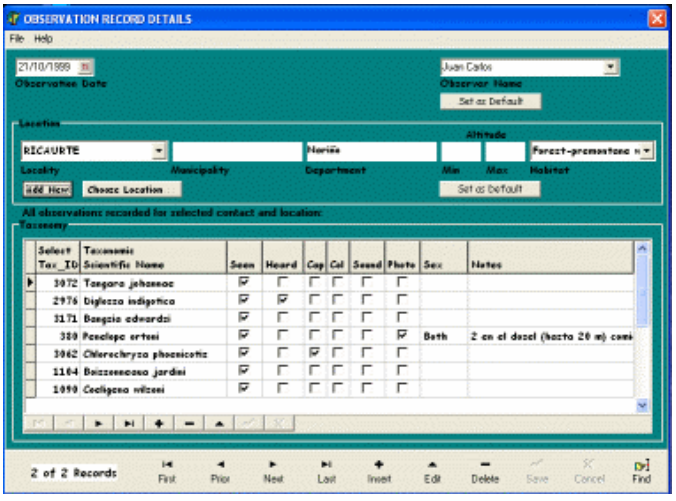
Data Entry Tool

Again, our special THANKS to **Alvaro Espinel** at CI-CABS for a vast effort in assisting with the BioMap Data Entry Tool development and integrating databases.

We are proud to have advanced operational beta releases of the Data Entry Tool for both Specimens and Observations/Bibliography (interface of the later shown below). Both Tools are compatible and developed in Delphi programming language, so available in self-standing packages for any user no matter what software they operate.



Sadly, Alvaro has moved departments within CI-CABS so can no longer manage the database. We are presently seeking a replacement Data Base Manager within the region to develop the BioMap Tools and integrate the database.



To request a copy email biomap@nhm.ac.uk. The file is 4.3 MB (zipped) and comes with a complete listing of all Colombian bird taxa and over 1,500 site localities. They can also be downloaded from the project website.

ProAves-BioMap training course

From 15–19 August the 'II Training Course for observation, identification and techniques for the study of terrestrial birds' was conducted in the Sanctuary of Fauna and Flora of Otún-Quimbaya, organized by ProAves-Colombia, with the support of BioMap (including providing eight scholarships) and collaboration of the National Parks System, University of Antioquia, and SAO.

The Project BioMap participation in the training course was very active as each staff member was an instructor and led or assisted with groups of students. Gary Stiles lectured on taxonomy while Sussy de la Zerda discussed the importance and handling of biological collections. Diana Arzuza and Andrea Morales presented BioMap and assisted study groups.

The course was very encouraging, with about 50 students and various professionals from different regions of Colombia participating, which gave a very special insight into a diversity of interests and backgrounds; some people had greater knowledge of birds than others who were beginners. All participants were divided into groups of eight people, who rotated through a variety of activities from learning to use of mist-nets, observations, sound-recording techniques, to telemetry. Each activity offered an opportunity to be with different instructors and in different sites around the reserve. Conferences and discussions were held in the evening. During the final two days each group conducted an investigation; the groups had time to plan their projects and had time to present their draft results to the rest of the course participants and instructors. During the mini-investigation, teams applied methods on the last day, made their analyses and prepared the presentation of their results. In general, the projects were very good and the students learned a great deal in formulating and conducting them.

The final day evaluation of the course by participants was very positive. The students were very satisfied with the instructors and learned a great deal in those five days. Also, the instructors were very content with the course and their students. We want to congratulate ProAves, organizers of the course, as it was really an excellent experience for the BioMap team and a great learning opportunity for students.

Summary: Roundtable meeting of Colombian Bird Collections

We present a summary of the weekend roundtable meeting of Colombian bird collection curators (13–15 September 2002) at ICN, Bogotá Project BioMap in collaboration with ICN and CI-Colombia. The aim was to gather the key ornithological curators in Colombia to explore closer collaborative links and strengthening of the ornithological collections in Colombia.

Participants were: Roque Casallas, Wilson Valencia, Catalina Angel, Guillermo Ramírez (U. de La Salle-Bogotá), Mauricio Alvarez, Sergio Córdoba (IAvH-Villa de Leyva), Camilo Peraza (U. Javeriana-Bogotá), Fernando Valencia Vélez (U. Antioquia-Medellín), Humberto Alvarez (U. del Valle-Cali), Germán Gómez (U. del Cauca-Popayán), Luz Myriam Moreno (U. del Atlántico-Barranquilla), Andrés Mauricio López (U. de Caldas-Manizales), Jorge Morales, Osvaldo Cortés (U. Distrital-Bogotá), Yaneth Muñoz, Eduardo Flórez, Gonzalo Andrade (ICN-Bogotá), Adriana Rivera and Claudia Rodríguez (MMA-Bogotá), José Vicente Rodríguez (Conservación Internacional-Bogotá), Gary Stiles (ICN), Sussy De La Zerda, Diana Arzuza, and Andrea Morales (ICN-BioMap).

Summary of the agenda and discussion

i) Introduction – Importance of the collections: Gary Stiles

ii) Environmental investigation in Colombia – Political and Legal Framework: Gonzalo Andrade (Director of ICN)

iii) Collection management: Yaneth Muñoz (ICN)

iv) The Colombian Association of Zoological Collections: Eduardo Flórez and Yaneth Muñoz (ICN)

v) Presentation of each bird collection in Colombia:

1. Universidad del Atlántico: Luz Myriam Moreno
   The collection was created in 1999 and represents the Departments of Atlantic, Magdalena, Bolivar, Guajira and Sucre. It has specimens of 12 families, 25 genera, and 125 species
2. Museo de la Salle: Hermano Roque Casallas
   The collection was created in 1904 by the scientific brothers and on 9 April 1948 it burnt down. Nicéforo Maria reconstructed the collections, and it now has 9,000 skins of 1,200 species and 74 families; c.70% of Colombian avifauna is represented.
3. Universidad de Antioquia, Museo Universitario: Fernando Vélez
   The collection holds c.1,465 specimens of 66 families, with 268 used for exhibitions and teaching. The collection has on occasions been without a curator and consequently is in poor condition. The great majority of specimens have data and have been catalogued.
4. Universidad del Cauca: Germán Gómez
   The collection holds 4,200 skins and 750 on exhibition. Lehman created the collection in 1937 and Von Sneidern exchanged many skins across the country from 1950. An earthquake in 1983

destroyed much material, and subsequently there were some interchanges of labels. Everything is inventoried and systematized in Excel. It is hoped to provide the data on the webpage in future.

5. Museo de Historia Natural, Uni. de Caldas: Andrés López
   Created c.1975 by Lehmann with 310 bird skins with minimum data (at least locality), with 50 specimens for teaching and 460 specimens on exhibition.
6. Universidad del Valle: Humberto Alvarez
   There are 5,500 specimens and some nests, eggs and skeletons. The collection was created in c.1966 by Jose Ignacio Borrero with material from Lehmann. Its objective is to support fauna studies of the Cauca Valley (ecology, distribution and conservation). It is representative of the Pacific coast, Farallones de Cali, Cauca Valley and Cordillera Central. The collection is open to the public and has been used for many publications.
7. Instituto Alexander von Humboldt: Mauricio Alvarez
   The collection holds 12,000 specimens, c.400 in spirit, between 100–200 skeletons and one collection of 12,000 eggs from across the world. Represents 65% of the Colombian birds. This was originally the collection of Inderena, created in 1972. Of 7,500 specimens, c.800 disappeared, while some have very complete labels and others are without data. From 1997 IAvH managed the collection and c.500 specimens per year are collected. From 1998 IAvH have DNA samples in Palmira and a sound laboratory, which archives c.1,000 bird vocalization samples.
8. Museo Javeriano de Historia Natural, U. Javeriana: Camilo Peraza
   The collection holds 833 units of 297 species of four countries, with 200 to be catalogued and 120 to be mounted. 17 departments of Colombia are represented, but the majority is from Cundinamarca (467 specimens). The catalogues are incomplete and in disorder due to a lack of continuity in maintenance.
9. Universidad de los Andes: Paula Sarmiento
   The collection holds 142 skins and 26 specimens of exhibition. Many are without identification and locality, while others have some data. Plans are afoot to repair specimens.
10. Universidad Distrital: Jorge Morales
    The collection holds 167 specimens, of which 63 are catalogued and the others are in process of labelling and cataloguing; also includes a catalogue of 150 slides, 15 blood samples.

vi) Presentation of Project BioMap: Diana Arzuza and Andrea Morales (BioMap)

vii) Visit to the ICN bird collection: Gary Stiles

viii) Health Index of the collection: Yaneth Muñoz
In an ideal collection, 70% of specimens must be over level 6 (10 is prime condition). The index can be calculated and monitored daily. Action priorities include: (i) conservation; (ii) physical organization [level 2-4]; (iii) accessibility [exemplary of level 5–6]; and (iv) inventories of species, publications, etc.

ix) Analysis of Weaknesses, Opportunities, Strengths and Threats (DOFA) of all collections: This analysis was undertaken jointly by all roundtable participants:

j) Analysis of 'DOFA' of each collection

k) Cooperation, agreements and memorandums
After the analyses of 'DOFA', the meeting participants made the following determinations:

- Create a National Network of Bird Collections for improving cooperation and strengthening collections.
- Establish a series of commitments, with the purpose of initiating the network. The key objectives, tasks and commitments are:

1. To seek to generate resources for the collections.
2. List of communications (BioMap).
3. Document stating the importance of the collections will be distributed to institutions, individualized for each collection (importance, regionalization, role and effort).
4. Manual on Collection Management (Yaneth Muñoz/ICN) for 2002, distributed to all collections (CI-Colombia)
5. To try to recover 'lost collections' within Colombia and to incorporate them into institutions with the capacity to care for them.
6. To act and to think with respect to the law; for example, to try to open options to incorporate illegal collections.
7. Main collection to 'adopt' and assist smaller collections.
8. To stimulate collaboration between regions.
9. To communicate with all collections when undertaking collecting trips to try to incorporate personnel of the region
10. To strengthen relations with foreign collections
11. To stimulate and to strengthen the repatriation of data and information inside Colombia and to share it.
12. To form a consultative body that advises central and regional government decision makers (long-term aim).
13. To organize training course to standardize collecting organized by Gary Stiles (ICN/BioMap) and Mauricio Alvarez (IAvH) in early 2003 and financed by BioMap.
14. Write and publish a manual for Bird Collecting, with protocols of collection management, curation, politics, loan and collaboration, relevant literature, etc.
15. To document the history of the bird collections in Colombia.
16. To clarify the filters for restoration of the collection registry by IAvH (BioMap).
17. Permanent endorsement of the Network by all collections.
18. To obtain necessary basic literature for each collection. If possible, finance the scanning of key literature to produce a CD for all collections (Meyer de Schauensee, Phelps, etc.).
19. To support the creation and operation of the Association of Zoological Collections.
20. For the Network to regularly meet; next meeting during the Bogotá training course (early 2003).

To obtain full details of the meeting, email: biomap@nhm.ac.uk

BioMap Directive Committee

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