

## EDIT Workpackage 5 – Model 18 Detail

The taxonomist in this case is an ornithologist working in the Royal Museum for Central Africa, Tervuren. His work includes serving as the HOD for ornithology at the RMCA, research, assistant editor for a number of different journals, as well as research into taxonomy and ecology.

Between 1995 and 2002 the taxonomist produced a comprehensive revision of the family Platysteiridae for the book *Handbook of the Birds of the World*. Though this revision will form the basis of the process described below the model is not limited to this, and includes additional information from other areas of the taxonomist's work where appropriate.

The following table describes the individual steps of the process model in detail.

Trigger	Starting trigger	<p>What particular projects are chosen will be determined largely by the demands of the post in which the taxonomist is working, and these stem from the focus of the institution. Within these boundaries the taxonomist enjoys freedom to choose which particular taxonomic group to study.</p> <p>Earlier work in the taxonomist's career led to this project. Having previously published a book on the birds of Cameroon, there was a long-standing opportunity for a revision of this family.</p> <p>Current collaborative projects exist with partners in the Congo.</p>
Activity	Collecting activities/ Field work	<p>Specimen collecting trips are now rare, due to the ethical and logistical difficulties of collecting birds. Information would now be gathered on sightings and observations rather than specimen collecting. This is a European phenomenon; in the United States the collecting of specimens is more common.</p> <p>Collections are generally non-specific. With limited time available focussing on a single group would risk finding nothing, so all species are collected.</p>
Action	Arrange permits and practicalities	<p>Permits are required to collect and remove specimens. They differ according to locality and will be arranged with the assistance. They are usually arranged by collaborators when required.</p>
Action	Conduct collection	<p>In the past, specimens were collected by shooting live birds. Small cartridges and a keen eye were required if the specimen was to be of use for examination later on.</p> <p>Nowadays non-lethal collection is more common. Mist nets can be used to capture specimens alive for examination and release, or for more ethically acceptable killing with chloroform. Measurements are taken of standard morphology, colour, blood samples can be taken, and samples of ectoparasites such as lice and mites. Feathers can be clipped.</p>
Action	Skin and prepare	<p>After collecting the specimen needs to be processed</p>

	specimen	<p>as soon as possible; the skin is removed from the body and the stomach contents and some internal organs removed. These are stored in alcohol and ideally refrigerated at the next opportunity.</p> <p>Observations need to be taken immediately, as characters such as color will begin to fade very quickly, and obviously removing the skin also removes characters pertaining to body shape.</p> <p>After this field dissection, the skin is wrapped around humid cotton wool, preservative is applied, and it is stored. These skins will need to be dried upon returning to base camp.</p>
Action	Transport specimens home	By hand, or by sea-mail if required.
Activity	Select a sub-group to work on	Individual projects arise from numerous factors; this institutional focus, the scientist's own interests, and the natural direction of research into an area. The Platysteiridae family for example; as a group indigenous to Africa it satisfies the institutional focus of the RMCA. Having previously published a book on the birds of Cameroon, this project is a natural extension of the taxonomist's work. The project also seeks to gather information pertaining to the conservation status of these birds, making it both topical and useful outside the limits of pure taxonomy, which can only help with funding applications.
Activity	Search Literature	Studying the past literature is seen as the first step in the process, though specimens will often be examined.
Action	Identify existing literature	<p>Through sources such as</p> <ul style="list-style-type: none"> <li>- citations from other papers</li> <li>- the Zoological Record</li> <li>- Google</li> <li>- Knowledge of colleagues</li> <li>- RMCA library</li> </ul> <p>The goal is to acquire a full understanding of the work that has taken place before. The focus will first be on more recent articles, and those articles published by authors the taxonomist considers particularly sound, before moving on to the wider pool of literature.</p> <p>The taxonomist feels that focussing only on works in the English language risks leaving one's taxonomic knowledge incomplete.</p>
Action	Produce checklist	A checklist is prepared which will be used as reference for the rest of the study.
Action	Gather existing literature	Most works can be gathered through the library, either from the RMCA collection or via inter-library loan. Two other sources are commonly used for gathering literature; reprints acquired from

		colleagues, and literature gathered direct from a different institute during an opportune visit.
Activity	Gather specimens	The identification and gathering together of existing specimens
Action	Identify existing specimens	<p>Most collections will be known to the taxonomist, from a career in ornithology. There are also useful publications in this field listing important collections and accepted names, such as <i>Checklist of the Birds of the World</i>, by J. L. Peters.</p> <p>Queries can also be sent direct to the curator of a collection, asking about specific specimens or features.</p>
Action	Gather existing specimens	<p>The size of most avian specimens makes loaning impractical. Therefore, specimens are commonly examined <i>in situ</i> at the housing institute. Visits can be arranged specifically, or, more commonly, the opportunity is taken during other foreign travel.</p> <p>As at any one time, the taxonomist may have several projects either running or at least in planning, there will be a wide range of specimens to be sought out.</p>
Action	Quarantine specimens	Specimens can harbour parasites that can infect and damage the institute's own collection. So all incoming specimens are placed into quarantine to kill off any such organisms.
Activity	Examine specimens	<p>Measurements are recorded by hand into a notebook. Illustrations are rarely recorded. Because so many specimens are examined in their host institute, it is not possible to view the whole specimen set at one time. As a result, particular care is taken to record the same standard measurements for all specimens, as to allow meaningful comparison later on.</p> <p>Many characters, such as song, can only be observed in living specimens, so require observation <i>in situ</i>.</p>
Action	First visual examination	Perform a 'first-pass' examination to familiarise with the collected specimens and determine the major characters.
Action	Sort specimens	<p>The initial sort tends to be based on geography. The specimens are sorted by distribution, and as most described species will benefit from a number of stored specimens, the finest example will be taken from the group for further study. There can be a wide variation in the quality of stored specimens.</p> <p>The specimens will be laid out, and literally sorted into groups based on these criteria.</p> <p>Further sorting will take place, based on morphological characters. It is through this process</p>

		that the taxonomic relationships between the specimens comes to light.
Action	Detailed visual examination	In this case, detailed examination takes place with a magnifying glass. Microscopes are not required.
Decision	Further analysis?	Statistical analysis and sound analysis are considered.
Action	Further analysis	As mentioned, some characters can only be observed in living specimens. Bird song is one of these. The recording and comparison of bird song is a common character in ornithology, which in this case is undertaken by an assistant or collaborator.  The taxonomist does not perform molecular analysis of specimens.
Decision	Assess emerging theory	Although the development of the taxonomic theory is continuous with the examination, there will be a stage at which the theory is assessed and a decision made as to whether to move on.
Decision	Publish paper	Is the study worthy of publication?
Activity	Apply nomenclatural rules	A broad category representing the application of the rules of nomenclature to the specimen groups.
Activity	Resolve type specimens	Type specimens are assigned to each group, according to the rules of the ICBN.
Action	Resolve nomenclature	Nomenclature is resolved for the type specimens in each group.
Activity	Prepare paper	The process of compiling a scientific paper and arranging for publication. The taxonomist frequently collaborates on work with a number of colleagues, and also members of the amateur community. The involvement and particular contribution of each colleague varies project by project, and publication credits will change according to this.
Action	Compile manuscript	Prepare the various sections of the scientific paper, and compile according to the editorial guidelines of the intended journal. Typical sections include: <ul style="list-style-type: none"> <li>- Taxonomic treatment. The basis of a revision.</li> <li>- Distribution maps</li> <li>- Comparison tables summarising main features</li> <li>- A taxonomic key</li> <li>- A discussion of previous work</li> <li>- A discussion of the main findings and any other related work</li> <li>- Graphs and tables illustrating other findings</li> <li>- Photographic Images of the specimens, usually prepared, occasionally in the wild</li> <li>- Illustrations indication the main features</li> <li>- References and a bibliography</li> </ul>

		The various sections will be prepared using the appropriate software. Compilation is with MS Word.
Action	Friendly review	This is an informal review of the manuscript by colleagues, arranged to gather comment on the paper before submission to a journal.
Action	Revise paper	Revise the paper in the light of comments and suggestions.
Action	Submit to journal	The manuscript is submitted to the intended journal, usually by email, again in accordance with the editorial guidelines.
Decision	Manuscript reviewed	This action is of course external to the taxonomist's work process, but important as it's results will affect the direction of the project. There are 4 possibilities: <ul style="list-style-type: none"> <li>- Accepted outright. It is relatively uncommon for a paper to be accepted entirely without revision.</li> <li>- Minor revision. The paper is accepted subject to minor revisions. These can be presentational or concerned with the subject matter.</li> <li>- Major revision. Significant changes are suggested. These may be related to the findings or other key aspects of the paper. The journal may also feel that the paper needs a different approach to fit within it's subject boundaries.</li> <li>- Rejected outright. Also relatively uncommon, and can be related to suitability to a particular journal, or simply the quality of the paper</li> </ul>
Activity	Curation activities	Most specimens used in a study will tend to be from collections rather than newly collected. Curation therefore, tends to be a matter of re-labelling. All curation activities are undertaken by the departmental assistant, with supervision of
Action	Update collection database	The RMCA has a computerised database. This can be completed by the taxonomist, or more likely an assistant.
Action	Label specimens	Labels are now printed out, the information coming direct from the RMCA collections database.
Action	Return loaned specimens / send out paratypes	Specimens will either be posted, or more commonly taken in person, usually as part of another visit.
Action	Place specimens in local collection	The specimens are placed in the local collection