Supplementary file 3. Comparison of Xper2 and Xper3 with DELTA (CSIRO and ALA) platforms in providing conventional and interactive keys in taxonomy.

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|  | **Xper (version 2 and 3)** | **DELTA (CSIRO and ALA versions)** |
| **Installation** | Xper2:   * Java-based, downloadable for MacOSX, Linux and Windows from http://www.infosyslab.fr/?q=en/resources/software/cai/xper2/downloads/last   Xper3:   * Online only, register to create your own database at http://xper3.fr/authregister | CSIRO version: (only for Windows, downloadable from https://www.delta-intkey.com/win64/delta.zip)   * Delta.exe (running delta editor). It is included in the folder of the complete program. * Intekey5.exe (running only interactive key). Can be downloaded separately from https://www.delta-intkey.com/win64/intkey.zip   ALA version: (downloads available for Windows and MacOSX at https://github.com/AtlasOfLivingAustralia/open-delta/releases/tag/1.0.3-beta) |
| **Publication** | Desktop (Xper2) and online version (Xper3) | Desktop and HTML |
| **Export** | Both versions: SDD (= XML), Nexus, csv, in Xper2 also HTML, wiki and zip with/without images. | DELTA, Nexus |
| **Import** | Both versions: SDD, csv. Xper3: import of only descriptors or only items can be used to append to an existing database. Xper2 cannot append to an existing database. | DELTA |
| **Characters (Descriptors)** | Two types: 1- numeric (real and integer allowed), 2- categoric (up to 63 states per character) | Five types: 1- Integer numeric, 2-real numeric, 3- ordered multistate, 4-unordered multistate, 5-text |
| *It is possible to:*   * Assign a weight score to each character, from 1 to 5. * Characters can be grouped by anatomical feature * Add character notes.   *It is not possible to:*   * Edit the typographic emphasis for each character. * Exclude characters from the key, but keeping them in the database | *It is possible to:*   * Assign a weight score (character reilabilty) to each character, from 1 to 8. * Edit the typographic emphasis for each character. * Add character notes. * Exclude characters from the key, but keeping them in the database. |
| It is not possible to define weights for characters differently for interactive and conventional key. | It is possible to define character weight (character reliability) differently for interactive and conventional key. |
| **Items** | Items can be grouped, which can be used to display a higher taxon on the description datasheet of a taxon. It is not possible to edit the typographic emphasis for item names. | It is possible to edit the typographic emphasis for item names. |
| **States** | Character dependencies can be defined: For inapplicable characters, a specific state (e.g., absent) controls other relevant charters. | Character dependencies can be defined: For inapplicable characters, a specific state (e.g., absent) controls other relevant charters. |
| It is possible to tick the “unknown data” box, which is useful when exporting to perform a phylogenetic analysis. | It does not have an “unknown data” box. We can leave the states unchecked or write “<unknown/no data>” in the lower left DELTA editor pane for each taxon’s character. |
| **Images** | Images can be inserted for taxon, character, and all states. | Images can be inserted for taxon and character. For states, the illustration should be only indluded in the character image. |
| Xper2:  The images are placed in a separate folder named “image” accompanied by the relevant Xper files, all on the local desktop.  Xper3:  The images must be uploaded online (outside of Xper3 e.g., Dropbox) and their URL must be added to the database to insert that image in Xper3. | In both CSIRO and ALA versions, the images should be in a separate folder named “image” accompanied by other relevant delta files. The images can be inserted either through the DELTA editor or directly by the DELTA files (timages, cimages). |
| It is not possible to provide a start image or title page when running the key. | It is also possible to provide a start image as title page when running the key, using file “kimages”. |
| **Statistics** | A summary of the number of states, groups, characters, items, and percentage of database completeness can be created. Errors can be found and corrected interactively. | Only the number of items and characters are provided. Instead two options of “tree” and “grid” view offer an overview of the database completeness. |
| **Interactive key** | Created by both Xper2 and Xper3. Both interfaces are intuitive and need no user training.  Xper2:  Characters can be sorted by descriptive power, Sokal Michener or Jaccard, and alphabetical. Characters cannot be searched.The user can choose to start the identification with any anatomical group provided.  Xper3:  No grouping is provided, but search is possible. Users can adapt various options and download the SDD file for import to Xper2 or to their own Xper3 account. | Both CSIRO and ALA versions provide “normal” and “advanced” modes. It offers many facilities for the users to search characters or start the identification per each anatomical group. Users can set the error tolerance to achieve a precise identification. In addition, it provides information regarding how to use the key, such as hints, introduction, more reference files etc. |
| **Conventional key** | Xper3: Format: plain text, pdf, HTML. The output can be configured by three different scoring methods (Xper, Sokal & Michener, Jaccard), weights can be applied, the number of characters used can be reduced by merging characters with identical remaining taxa | Format: rtf, HTML, the output can be configured to use only the most discriminant characters. |
| Xper2 and 3: The matrix of all items and their descriptors can be printed and used as a tabular key. | It provides a condensed tabular key with descriptors that descriminate each item, and a full table is provided in grid view of the database. |
| **Description** | No human language descriptions, but a list of states and chosen characters for each taxon, as well as images for the taxon. One file per taxon or all taxa in the same file can be printed (to pdf if desired) or saved as HTML. | Advanced human language descriptions with the possibility to modify the text using different commands. The description file for all taxa can be saved in one rtf file or separately for each taxon in separate rtf files. |
| Notes can be added to each state chosen for a taxon. and will appear on the descriptive list, but not in the key. | It is possible to add text with the states of specific taxa. For example, in the case of providing a key at the family level, we can choose different states of a character for different species in the same family and note which state is applicable to which species. |