WEBiKEY (R) version 1.1 (31/03/2016)

GENERAL USAGE NOTES

WEBiKEY is a web application that can be used to develop a simple web-based multi-access interactive identification tool for any taxonomic group.

This document describes how to set up your own hosting environment on a Windows based system using Internet Information Services (IIS) Server so that WEBiKEY can be hosted on your local computer. If you wish to use a 3rd party hosting service, skip steps 2 and 3.

MINIMUM SYSTEM REQUIREMENTS FOR THE HOSTING ENVIRONMENT

- A system running Microsoft Windows 7 or a newer operating system.
- .NET Framework 4.5 or a newer version (freely available at: http://www.microsoft.com/en-us/download/details.aspx?id=42642).
- IIS 7 or a newer version (Component of Windows Operating System)
- SQL Server Express 2008 R2 or a newer version (freely available at: http://www.microsoft.com/en-us/server-cloud/Products/sql-server-editions/sql-server-express.aspx)
- Visual Studio Express for Web 2013 (freely available to download at: https://www.visualstudio.com/en-us/products/visual-studio-express-vs.aspx) or a newer version is recommended if users are planning to edit the source code
- Microsoft Excel 2010 or a newer version is required to create and edit worksheets containing the information that are uploaded to the application, such as characters, character states and species information.

INSTALLATION INSTRUCTIONS

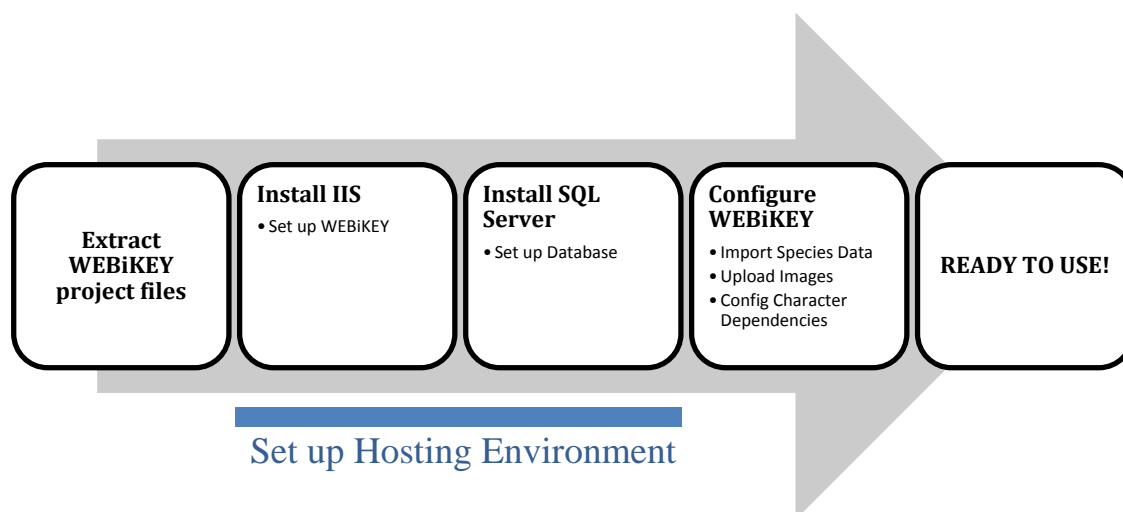| Extract WEBiKEY project files | **Install IIS** • Set up WEBiKEY | **Install SQL Server** • Set up Database | **Configure WEBiKEY** • Import Species Data • Upload Images • Config Character Dependencies | **READY TO USE!** |

Set up Hosting Environment

Fig. 1. Summary of the installation and setting up of WEBiKEY program.

You must have an account with administrative privileges to complete these installations.

1. **Extract the WEBiKEY project files to a suitable folder.**

     The complete project and its source code can be downloaded at:
https://github.com/WEBiKEY/InteractiveKey.

2. **Installation of the IIS Server**

     Make sure you have IIS installed on your computer. If not, go to **Programs and Features** under **Control Panel**, click **Turn Windows features on or off**, check **Internet Information Services** and, under Web Management Tools, check **IIS Management Console**. Click OK to install the selected components.

3. **Setting up the website**

     Open **Internet Information Services (IIS) Manager** from your Start menu. Expand the computer name root item under connections panel. For security and isolation purposes, it is recommended that you create a dedicated Application Pool for your website. For that, right click on Application Pools node and click "Add Application Pool…." On the "Add Application Pool" dialog, provide a name for your Application pool and select .NET CLR Version 4 for .NET CLR Version. For Managed pipeline mode, select Integrated and click OK to complete the dialog.

Right click on the Default Web site under Sites node and click "Add application…" to add a new website to your IIS Server. Provide an **Alias** for your site and make sure to select the application pool you created in the previous step. For the physical path, browse and select the "bin" sub-folder under the WEBiKEY project folder. Click OK to complete the dialog.

4. **Installation of SQL Server Express Edition**

Download and install the free version of Microsoft SQL Server (Express Edition) (http://www.microsoft.com/en-us/download/details.aspx?id=42299). When downloading, select the SQL Server Express with Tools option. Run the set up and complete the installation.

Open **SQL Server Management Studio** from the Start menu and connect to your local database server instance. In Object Explorer, right click on Databases and select Attach… Click Add... to browse and select the WEBiKEY-DB.mdf file in Database sub-folder under the WEBiKEY project folder. Click OK to finish attaching the database.

Now, from your browser, navigate to **http://localhost/[*Alias* you provided in the previous step]** to view the website. However, until you import your data in to the website, the interactive key is not functional.

Using a 3rd party hosting provider

If you decide to use a 3rd party hosting provider, make sure your hosting environment is capable of hosting ASP.NET 4.5 applications and SQL Server 2008 R2 or higher databases.

GETTING STARTED

If you have followed the previous steps or have your own hosting provider, now you should be able to view the website by navigating to the appropriate URL using your favorite browser. In the case of hosting on your local computer, as described earlier, navigate to **http://localhost/[*Alias*]** to view the website. When specifying URL's, this document assumes that you have hosted WEBiKEY locally. If you have used a 3rd party hosting provider, replace "localhost" with your **domain name** in all URL's as specified by your hosting provider.

1. **Admin Log in**

The Admin section of the website provides the ability to upload and administer data and files on the website (Fig. 2). To access the Admin site, navigate to **http://localhost/[*Alias*]/admin/**. Enter administrator username and password to log in.

Default administrator login Username: admin

Password: Password!2

Fig. 2. Admin login page.

2. Import data from Microsoft Excel spreadsheet

All information on the website can be imported from Excel files. There are two **data** import pages on the website: **Import Characters / States** and **Import Species / States** (Fig. 3). This website only supports Microsoft Excel 2007 or newer files and the first worksheet must contain data. If the workbook has more than one worksheet, only the first sheet will be used by the system to import data.

Fig. 3. Data import page that allows Admin to browse and select the "Characters / States" and "Species / States" data.

If you want to import Characters and their different character states along with the codes then click on the "Import Character/States…" button. Then the data import wizard will appear. The import process is designed as a wizard that will guide you through the import process. On the first step, click Browse… and select the Excel file that contains data. If you are adding more data to the database and none of the information on the Excel worksheet already exists in the database, select "Append". Otherwise, select "Overwrite Existing Data". Click Next.

The second step of the wizard: "Configure columns" is used to map columns between the Excel worksheet and the database. This gives you the flexibility of having any column header in the Excel file (except for importing the species and their character states, which requires specific column names as described below in step 3). The "Excel Column" shows you the list of column headers found in the Excel worksheet. The "Database Column" contains the list of database items that the Excel column can be mapped to. If you want to ignore information in a particular column in the Excel worksheet, select --ignore-- as the "Database Column" from the list. In the following example, the Notes column in the Excel worksheet is ignored (Fig. 4). Click Finish to begin importing data.

Fig. 4. Page that allows Admin to map columns between the Excel sheet and the database.

Importing Characters, Character States and Character Categories

Table 1 shows the actual spreadsheet that consists of different characters, character states and major character categories of *Kuruna*. This is available as a sample dataset on GitHub at https://github.com/WEBiKEY/InteractiveKey.

3. Importing Species and their Character States

To prepare an Excel worksheet to import Species and their Character States follow these steps: in your Excel worksheet, create a column for species names and list all your species names in that column. Then, create a column for each character and use character code as the column header. For each species and each character code, put the character state code in the corresponding cell as shown in Table 2.

Note. For the species import process to work properly, you must import all the characters and character states prior to importing the species data matrix with different character states. Leave the corresponding cell on the worksheet blank for unknown, missing or not applicable data.

Table 1. The actual spreadsheet that consists of different characters, character states and major character categories of *Kuruna*.

Category Name	Character Code	Character Description	Character State Code	Character State Description
Habitat	H1	Habitat	0	Understory
Habitat	H1	Habitat	1	Open grassland
Habitat	H1	Habitat	2	Open rocky plains
Roots / Rhizomes / Culm Bases (in adult or mature plants)	R1	Primary root air canals	0	Absent
Roots / Rhizomes / Culm Bases (in adult or mature plants)	R1	Primary root air canals	1	Present
Roots / Rhizomes / Culm Bases (in adult or mature plants)	R2	Pachymorph rhizomes	0	Absent
Roots / Rhizomes / Culm Bases (in adult or mature plants)	R2	Pachymorph rhizomes	1	Present
Roots / Rhizomes / Culm Bases (in adult or mature plants)	R3	Culm base morphology	0	Slender (all internodes more or less equal in diameter) and more or less vertical
Roots / Rhizomes / Culm Bases (in adult or mature plants)	R3	Culm base morphology	1	At least some proximal internodes thicker than the distal internode(s) emerging from the soil and more or less horizontal (pachymorph)
Roots / Rhizomes / Culm Bases (in adult or mature plants)	R4	Culm base branching (tillering)	0	Tillering absent
Roots / Rhizomes / Culm Bases (in adult or mature plants)	R4	Culm base branching (tillering)	1	1 tiller per culm base present
Roots / Rhizomes / Culm Bases (in adult or mature plants)	R4	Culm base branching (tillering)	2	2 or more tillers per culm base present
Roots / Rhizomes / Culm Bases (in adult or mature plants)	R5	Culm neck development	0	Short (neck < the length of the culm base section with relatively short, bud-bearing internodes)
Roots / Rhizomes / Culm Bases (in adult or mature plants)	R5	Culm neck development	1	At least some culm necks long (neck > the length of the culm base section with relatively short, bud-bearing internodes)
Culms	C1	Habit	0	Erect
Culms	C1	Habit	1	Apically arching/pendulous
Culms	C1	Habit	2	Clambering/scandent
Culms	C1	Habit	3	Twining
Culms	C1	Habit	4	Decumbent
Culms	C2	Culm internodes	0	All solid (at least when young)
Culms	C2	Culm internodes	1	All hollow
Culms	C2	Culm internodes	2	Some internodes solid, some internodes hollow in the same individual plant
Culms	C3	Wall thickness (ratio of 2X wall thickness culm diameter)	0	Walls very thin (ratio up to 0.15)

Category Name	Character Code	Character Description	Character State Code	Character State Description
Culms	C3	Wall thickness (ratio of 2X wall thickness culm diameter)	1	Walls thin (ratio 0.16-0.30)
Culms	C3	Wall thickness (ratio of 2X wall thickness culm diameter)	2	Walls moderately thick (ratio 0.31-0.45)
Culms	C3	Wall thickness (ratio of 2X wall thickness culm diameter)	3	Walls thick (ratio 0.46-0.60)
Culms	C3	Wall thickness (ratio of 2X wall thickness culm diameter)	4	Walls very thick (ratio 0.61-0.99)
Culms	C4	Lacuna size	0	Lacuna large, > 1/3 the diameter of the culm
Culms	C4	Lacuna size	1	Lacuna small, < 1/3 the diameter of the culm
Culms	C5	Nodal line diameter	0	More or less the same diameter as the adjacent internodes
Culms	C5	Nodal line diameter	1	Borne on a flange-like extension (patella), its diameter greater than the adjacent internodes
Culms	C6	Supranodal ridge	0	Inconspicuous (a line, diameter less than at the nodal line)
Culms	C6	Supranodal ridge	1	Conspicuous (a ridge, diameter equal to or greater than at the nodal line)
Buds and branching	B1	Relative sizes of secondary branches developing from the central (or sole) primary axis	0	Secondary axes two, subequal and divergent
Buds and branching	B1	Relative sizes of secondary branches developing from the central (or sole) primary axis	1	Secondary branches more than two, subequal, and variable in position
Buds and branching	B1	Relative sizes of secondary branches developing from the central (or sole) primary axis	2	At least some of the secondary axes no more than one-half the diameter of the central (or sole) primary axis
Buds and branching	B2	Bud prophyll margins	0	Prophyll unitary, margins free (open)
Buds and branching	B2	Bud prophyll margins	1	Prophyll unitary, margins fused (closed)
Buds and branching	B2	Bud prophyll margins	2	Binary (divided), margins free (open)
Buds and branching	B3	Bud/branch complement base	0	Indistinguishable from the adjacent nodal region (promontory absent)
Buds and branching	B3	Bud/branch complement base	1	Swollen, forming a promontory that bears the bud/branch complement
Culm leaves	CL1	Culm leaf persistence	0	Persistent
Culm leaves	CL1	Culm leaf persistence	1	Deciduous
Culm leaves	CL2	Girdle	0	Absent or poorly developed
Culm leaves	CL2	Girdle	1	Present as a band at least 1 mm wide, no flap, prominent or not
Culm leaves	CL2	Girdle	2	Prominent, with or without a flap covering the bud complement
Culm leaves	CL3	Abaxial sheath surface	0	Stiff, dark, irritating hairs present
Culm leaves	CL3	Abaxial sheath surface	1	Only soft hairs present

Category Name	Character Code	Character Description	Character State Code	Character State Description
Culm leaves	CL3	Abaxial sheath surface	2	Glabrous, no hairs present
Culm leaves	CL3	Abaxial sheath surface	3	Scabrous
Culm leaves	CL4	Adaxial sheath surface	0	Glabrous, shiny
Culm leaves	CL4	Adaxial sheath surface	1	Scabrous-pubescent toward the apex
Culm leaves	CL5	Sheath apex	0	More or less horizontal
Culm leaves	CL5	Sheath apex	1	Symmetrically convex
Culm leaves	CL5	Sheath apex	2	Symmetrically concave
Culm leaves	CL5	Sheath apex	3	Asymmetrical/irregular
Culm leaves	CL6	Sheath apex (or summit or shoulders) indument	0	Glabrous
Culm leaves	CL6	Sheath apex (or summit or shoulders) indument	1	Fimbriate
Culm leaves	CL7	Sheath summit extension	0	Absent
Culm leaves	CL7	Sheath summit extension	1	Present on one or both sides
Culm leaves	CL8	Culm leaf blade position	0	Erect to slightly spreading
Culm leaves	CL8	Culm leaf blade position	1	Reflexed
Culm leaves	CL9	Culm leaf blade shape	0	Broadly triangular
Culm leaves	CL9	Culm leaf blade shape	1	More or less narrowly triangular
Culm leaves	CL9	Culm leaf blade shape	2	Cordate, some constriction at the base
Culm leaves	CL9	Culm leaf blade shape	3	Pseudopetiolate lanceolate
Foliage leaves	FL1	Foliage leaf blade shape	0	Lanceolate
Foliage leaves	FL1	Foliage leaf blade shape	1	Narrowly triangular
Foliage leaves	FL1	Foliage leaf blade shape	2	Narrowly oblong
Foliage leaves	FL1	Foliage leaf blade shape	3	Cordate
Foliage leaves	FL2	Sheath summit extension	0	Absent
Foliage leaves	FL2	Sheath summit extension	1	Present on one or both sides
Foliage leaves	FL3	Sheath summit indument	0	Glabrous
Foliage leaves	FL3	Sheath summit indument	1	Ciliate
Foliage leaves	FL3	Sheath summit indument	2	Fimbriate
Foliage leaves	FL4	Auricle (blade-derived appendage) development	0	Absent
Foliage leaves	FL4	Auricle (blade-derived appendage) development	1	Present
Foliage leaves	FL5	Auricle size	0	Auricles more or less equal on both sides of the blade base
Foliage leaves	FL5	Auricle size	1	Strongly unequal, at least 2 times as large (or long) on one side as on the other side

Category Name	Character Code	Character Description	Character State Code	Character State Description
Foliage leaves	FL6	Auricle indument	0	Glabrous
Foliage leaves	FL6	Auricle indument	1	Ciliate
Foliage leaves	FL6	Auricle indument	2	Fimbriate
Foliage leaves	FL7	Foliage leaf blade margin color	0	Green
Foliage leaves	FL7	Foliage leaf blade margin color	1	Pale yellow
Foliage leaves	FL8	Foliage leaf margin indument	0	Glabrous
Foliage leaves	FL8	Foliage leaf margin indument	1	Scabrous
Foliage leaves	FL9	Marginal trichome length	0	ca. 0.1-0.2 mm
Foliage leaves	FL9	Marginal trichome length	1	ca. 0.6 mm
Foliage leaves	FL10	Foliage leaf blade/pseudopetiole position	0	Pseudopetiole (if present) and blade upwardly directed, blade fully erect or arching over
Foliage leaves	FL10	Foliage leaf blade/pseudopetiole position	1	Pseudopetiole (and therefore the blade) reflexed
Synflorescences	S1	Synflorescence with pulvinate branches	0	Absent
Synflorescences	S1	Synflorescence with pulvinate branches	1	Present
Synflorescences	S2	One or more gemmiparous bracts subtending the spikelet proper	0	Absent
Synflorescences	S2	One or more gemmiparous bracts subtending the spikelet proper	1	Present, buds developing subsequently or not
Synflorescences	S3	Subtending bract at the base of the axis bearing the spikelet or spikelet proper	0	Absent
Synflorescences	S3	Subtending bract at the base of the axis bearing the spikelet or spikelet proper	1	Present
Synflorescences	S4	Subtending bract morphology	0	Scale like or present as a scar or rim, no more than a few mm long, blade absent
Synflorescences	S4	Subtending bract morphology	1	Well developed with both a sheath and a blade (this often modified)
Synflorescences	S5	Prophyll at the base of the axis bearing the spikelet or spikelet proper	0	Absent
Synflorescences	S5	Prophyll at the base of the axis bearing the spikelet or spikelet proper	1	Present
Synflorescences	S6	Prophyll apex	0	Whole
Synflorescences	S6	Prophyll apex	1	At least some deeply cleft to split lengthwise into two halves
Synflorescences	S7	One or more spatheate bracts associated with clusters of spikelets or spikelets proper	0	Absent

Category Name	Character Code	Character Description	Character State Code	Character State Description
Synflorescences	S7	One or more spatheate bracts associated with clusters of spikelets or spikelets proper	1	Present
Spikelets	SP1	Number of fertile florets per spikelet	0	1 floret
Spikelets	SP1	Number of fertile florets per spikelet	1	2-3 florets
Spikelets	SP1	Number of fertile florets per spikelet	2	more than 3
Spikelets	SP2	Apex of lowermost glume	0	Obtuse/truncate
Spikelets	SP2	Apex of lowermost glume	1	Mucronate
Spikelets	SP2	Apex of lowermost glume	2	Awned
Spikelets	SP3	Apex of next higher glume	0	Obtuse/truncate
Spikelets	SP3	Apex of next higher glume	1	Mucronate
Spikelets	SP3	Apex of next higher glume	2	Awned
Spikelets	SP4	Rachis extension (internode only, with or without rudimentary floret)	0	Absent
Spikelets	SP4	Rachis extension (internode only, with or without rudimentary floret)	1	Present
Spikelets	SP5	Relative length of the rachis extension (internode only, with or without rudimentary floret) when present	0	Short (shorter than or equal to about half the length of the floret)
Spikelets	SP5	Relative length of the rachis extension (internode only, with or without rudimentary floret) when present	1	Long (approximately equal to or longer than the floret)
Spikelets	SP6	Rachis extension (internode only)	0	Glabrous
Spikelets	SP6	Rachis extension (internode only)	1	Hairy
Spikelets	SP7	Rudimentary floret on the rachis extension	0	Absent
Spikelets	SP7	Rudimentary floret on the rachis extension	1	Present
Spikelets	SP8	Female-fertile lemma shape	0	Navicular
Spikelets	SP8	Female-fertile lemma shape	1	Spindle-shaped
Spikelets	SP8	Female-fertile lemma shape	2	Ellipsoid
Spikelets	SP8	Female-fertile lemma shape	3	Helmet-shaped
Spikelets	SP9	Female-fertile lemma apex shape	0	Obtuse
Spikelets	SP9	Female-fertile lemma apex shape	1	Acute
Spikelets	SP9	Female-fertile lemma apex shape	2	Mucronate
Spikelets	SP9	Female-fertile lemma apex shape	3	Awned
Spikelets	SP10	Female-fertile lemma texture	0	Chartaceous (membrano-chartaceous)
Spikelets	SP10	Female-fertile lemma texture	1	Rigid, hardened

Category Name	Character Code	Character Description	Character State Code	Character State Description
Spikelets	SP11	Palea keel wings	0	Absent
Spikelets	SP11	Palea keel wings	1	Present
Spikelets	SP12	Palea apex	0	Biapiculate (sinus shallow)
Spikelets	SP12	Palea apex	1	Tips long-divided (sinus deep)
Spikelets	SP12	Palea apex	2	Acute, not divided
Spikelets	SP13	Palea sulcus	0	Well developed for full length of palea
Spikelets	SP13	Palea sulcus	1	Well developed only toward the apex
Spikelets	SP13	Palea sulcus	2	Absent
Spikelets	SP14	Stamen number	0	Two
Spikelets	SP14	Stamen number	1	Three
Spikelets	SP14	Stamen number	2	Six
Spikelets	SP14	Stamen number	3	> 6

Table 2- *Kuruna* data matrix that imported species and their character states into the website. The empty cells represent unknown, missing or not applicable character states. Shaded cells show the polymorphic character states of C2 for *Kuruna serrulata*.

Species	H1	R1	R2	R3	R4	R5	C1	C2	C3	C4	C5	C6	B1	B2
Kuruna debilis (Thwaites) Attigala, Kathriar. & L.G. Clark	0	0	1	1	2	0	2	1	3	0	1	1	1	0
Kuruna densifolia (Munro) Attigala, Kathriar. & L.G. Clark	1	1	1	1	2	0	0	1	3	0	0	0	1	0
Kuruna floribunda (Thwaites) Attigala, Kathriar. & L.G. Clark	0	0	1	1	2	0	0	1	2	0	1	1	1	0
Kuruna scandens (Soderstr. & R.P. Ellis) Attigala, Kathriar. & L.G. Clark	0	0	1	1	2	0	2	1	4	0	1	0	1	0
Kuruna serrulata Attigala, Kathriar. & L. G. Clark	2	0	1	1	2	0	0	1	2	0	1	0	1	0
Kuruna serrulata Attigala, Kathriar. & L. G. Clark								2						
Kuruna walkeriana (Munro) Attigala, Kathriar. & L.G. Clark	0	0	1	1	2	0	0	1	3	0	1	0	1	1
Kuruna wightiana (Nees) Attigala, Kathriar. & L. G. Clark	0	0	1	1	2	0	0	1	2	0	1	1	1	0

Species	B3	CL1	CL2	CL3	CL4	CL5	CL6	CL7	CL8	CL9	FL1	FL2	FL3
Kuruna debilis	1	1	1	3	0	2	1	0	1	1	0	0	2
Kuruna densifolia	1	0	1	2	0	0	1	0	0	1	1	0	1
Kuruna floribunda	1	1	1	3	0	2	1	0	1	1	0	0	2
Kuruna scandens	1	0	1	3	0	2	1	0	1	2	2	0	1
Kuruna serrulata	1	0	1	2	0	0	1	0	0	1	0	0	2
Kuruna serrulata													
Kuruna walkeriana	1	1	1	3	0	2	1	0	1	1	3	0	2
Kuruna wightiana	1	1	1	0	0	0	1	0	0	1	0	0	2

Species	FL4	FL5	FL6	FL7	FL8	FL9	FL10	S1	S2	S3	S4	S5	S6	S7
Kuruna debilis	1	0	2	0	0		0	1	0	0		0		0
Kuruna densifolia	0			0	1	0	0	0	0	0		0		0
Kuruna floribunda	0			0	1	0	0	1	0	0		0		0
Kuruna scandens	0			0	0		1	1	0	0		0		0
Kuruna serrulata	0			1	1	1	0							
Kuruna serrulata														
Kuruna walkeriana	0			0	1	0	0	1	0	0		0		0
Kuruna wightiana	0			0	1	0	0	1	0	0		0		0

Species	SP1	SP2	SP3	SP4	SP5	SP6	SP7	SP8	SP9	SP10	SP11	SP12	SP13	SP14
Kuruna debilis	1	2	2	1	0	1	1	1	2	0	0	0	1	1
Kuruna densifolia	0	2	2	1	0	1	1	1	2	0	1	0	0	1
Kuruna floribunda	2	1	1	1	0	1	1	2	2	0	1	2	0	1
Kuruna scandens	1	2	2	1	0	1	1	2	2	0	1	2	0	1
Kuruna serrulata														
Kuruna serrulata														
Kuruna walkeriana	2	1	1	1	0	1	1	2	1	0	1	2	0	1
Kuruna wightiana	1	2	2	0	0	1	1	1	2	0	0	0	0	1

Note: Users must leave the unknown, missing or not applicable character states as blank.

4. Handling polymorphic characters

WEBiKEY can also handle polymorphic characters. This is accomplished by coding the polymorphism as another character state for the species which has more than one state for a particular character. Polymorphic characters can be of two types. If two or more character states exist in the same individual of a species, it is recognized as "polymorphic character type 1". If there are some individuals with one character state and some with a different character state for the same character of a same species, it is recognized as "polymorphic character type 2". Fig. 5 shows an example of a polymorphic character type 1. "Culm internodes" (C2), is a polymorphic character where Character state 2 ["Some internodes solid, some internodes hollow in the same individual plant"], includes both solid and hollow internodes in the same individual. In *Kuruna*, if a user selects character state 2 for C2, WEBiKEY will show *K. serrulata* in the "Selected Species" section as *K. serrulata* is the only *Kuruna* species that possess both solid and hollow internodes in the same culm. Further, there are some individuals in *K. serrulata* that have only hollow culm internodes (Fig. 5). Thus, if the user selects culm internodes as "All hollow" (character state 1), WEBiKEY will show *K. serrulata* in the "Selected Species" along with all the other species with hollow culm internodes. Here the Admin simply needs to add character states 1 and 2 in the data matrix for *K. serrulata* as two separate rows (Table 2).
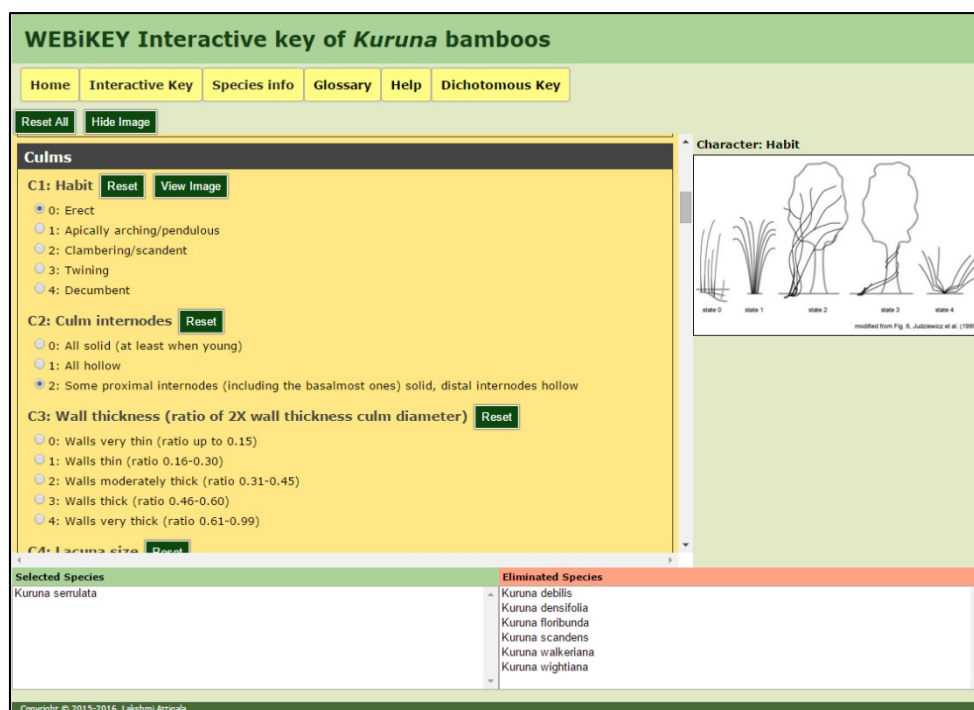

Fig. 5. An example of a polymorphic character: "Culm internodes" (C2).

5. Uploading character images

This website allows you to upload an image for each character in the database. To upload character images, in the Admin section click "Upload Character Images…". First select the character code from the drop-down list that you wish to upload an image for. If that character already has an image in the database, it will be shown below. If you decide not to have an image for the selected character, click Remove Image. If you want to upload a new image for the character, click Browse…, select the image and click Upload (Fig. 6).

Fig. 6. Page that allows the Admin to upload images for different characters in the database.

6. Configuring Character Dependencies

Character dependencies are the situations for which you wish to disable (or turn off) a character when the end-user selects a character state of another related character. The website allows you to configure these types of character dependencies through the Admin pages. Click Configure Character Dependencies… to go to character dependency configuration page. Fig. 7 shows an example from the *Kuruna* data set. Here, if the user selects "subtending bracts at the base of the axis bearing the spikelet: absent", then they would not be able to select the other character states related to subtending bracts, such as subtending bract morphology.

In order to configure these types of character dependencies, first, select a character and one of its character states from the "Character" and "State" drop-down lists. Then from the "Disabled Character"

drop-down, select the character(s) that you wish to be turned off (or disabled) when this character state is selected. Then click update to add this dependency to the system. The list of dependencies that are already in the system is shown below. Click the Delete link, if you want to remove that character dependency from the system. In *Kuruna* data set there are six character dependencies (Fig. 7).

Fig. 7. Page that allows character dependency configurations.

7. Uploading species descriptions

By selecting the "Uploading Species Descriptions…" button, the Admin can upload a document containing species information for each selected species (Fig. 8). These descriptions could be in any document format such as PDF or Microsoft Word format.

Fig. 8. Page that allows uploading species descriptions for each study species.

8. Uploading Glossary file

A glossary can be added to the application simply by selecting "Upload glossary file…" and it could also be either in PDF or MS Word format.

Fig. 9. Page that allows uploading of a glossary.

9. Editing the Home page contents

You can use your favorite HTML editor to change the contents of the home page including the main graphic. Simply open the Default.aspx file in the src\WEBiKEYSolution\WEBiKEYApplicaion folder of the extracted web project files and make the desired changes.

CONTACT

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