TOLKIN System End User Guide

Information Management and Analytical Bioinformatics

All Modules

TOLKIN System User Guide Table of Contents

About This End User Guide

This End User Guide offers guidance on the various features and functions within each of the TOLKIN modules. This guide is intended to aid in becoming a more confident and skilled user of the system.

For users to continuously improve and progress throughout the system, Help topics are also available online within the TOLKIN web application and can be accessed through the Help menu.

It's important to note that Tolkin is under active development and this document serves as a guide to the features that were available at the time of this writing. This document is also under active development.

TOLKIN Introduction

TOLKIN is an information management and analytical web application to provide informatics support for phylodiversity and biodiversity research projects. As a web-based application, TOLKIN is able to support collaborative projects by providing shared access to a variety of data on voucher specimens, taxonomy, bibliography, morphology, DNA samples and sequences.

Web Browser Interface

The browser has control over the appearance and functionality of the browser window use to launch the system. The following diagram explains the elements of the web browser interface.
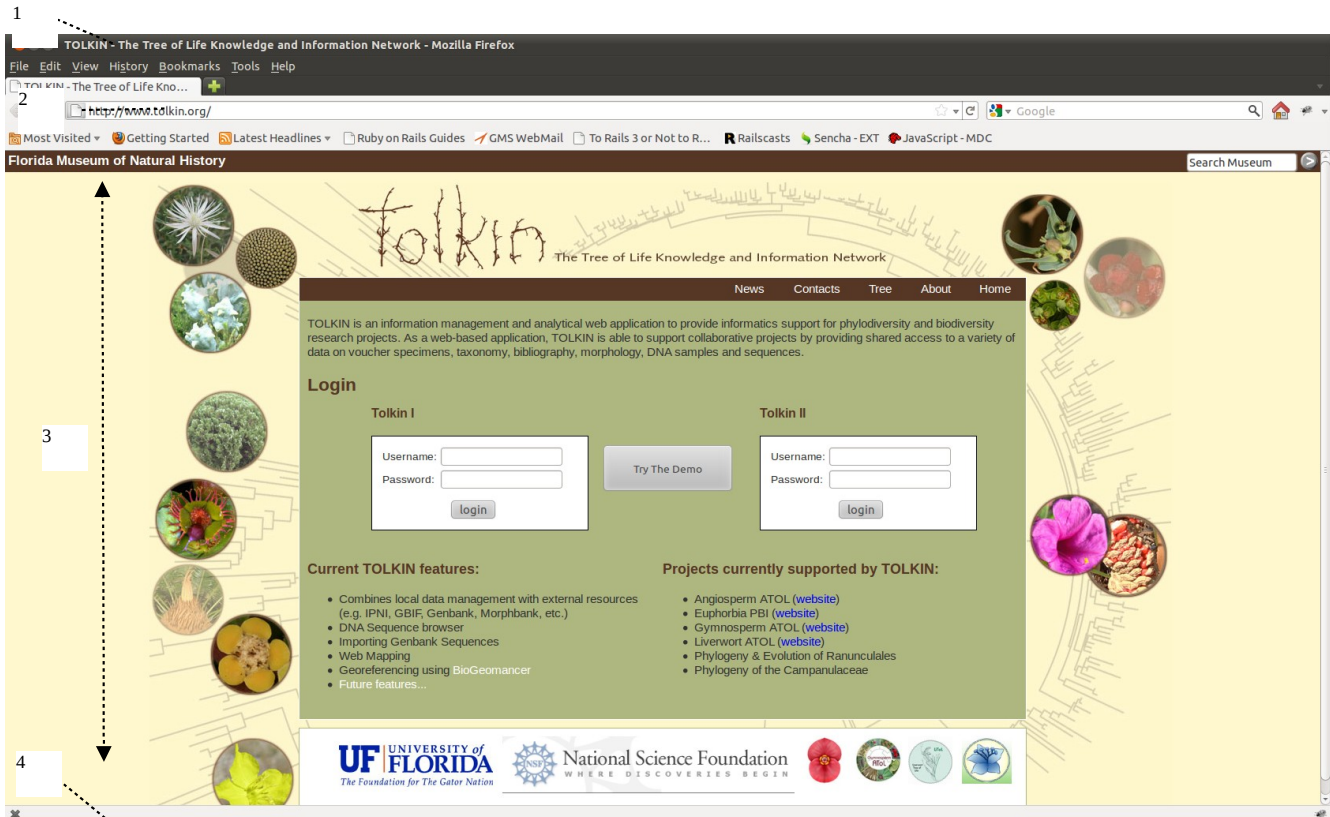
1. **Title bar –** displays the web pages title

2. **Address bar –** displays the Uniform Resource Locator (URL) of the Internet File (protocol, server, path, and filename).

3. **System Interface –** appearance specific to the application

4. **Message bar –** displays any events occurring on the browser page, such as Downloading picture…also, if the mouse pointer is moved over a link, the link's URL is displayed

TOLKIN Projects Page

The TOLKIN Projects Page is a portal that displays the projects within the system that are in-progress. This page displays upon login.

Keywords and Application Definitions

The **Navigation Menu** displays all the modules that are a part of the TOLKIN system. All the modules have sub-menus delineating the different components of each module.

The **Projects and Login, User/Session** frame gives the option to navigate/select through projects, gives user and logout information.

The **Interact Mode Switch** frame provides the ability to interchange the user interaction with the system. This is based on user permissions and roles.

The **Projects** pane provides the links for the different areas, called projects, that the user has permission to browse or to edit based on permission and roles.

Portal Page Notes

The initial page loaded following login, a project must be chosen from the list.

After a project is chosen the application Home Page is displayed with Taxonomy information associated with the chosen project. Based on the user permissions profile, different module tabs will be displayed at the top of the frame. The sections expand into sub-tabs upon mouse-overs displaying the features associated with each of the modules.

Module Introduction: Taxonomy

The Taxonomy manages taxonomic information. It allows the user to manage the species names as an informatics tool. Taxonomy being the science that describes organisms.

Definitions:

Taxon – Any group of organisms, at any level of the hierarchical representation

Taxon Tree – Hierarchical representation of the relationship between species via their names

Otu – Operational Taxonomic Unit, an informal group of organisms for the purpose of study. Most times the names of Otus are arbitrary for ease of work within an organization.

I. Logging into Tolkin

1. Launch your browser (Firefox, Chrome, Safari, etc.) | Go to http://app.tolkin.org**/login** | enter **Username** and **Password** | click on the login button
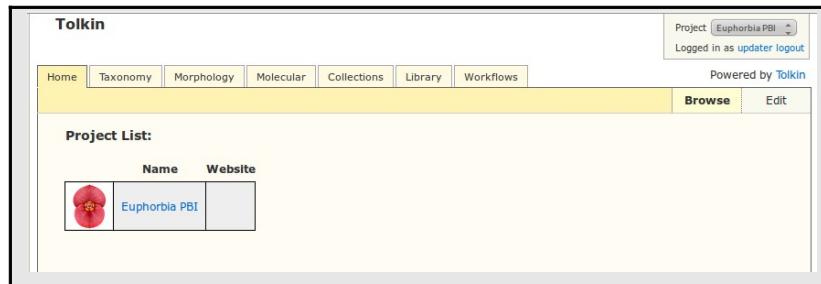
2. The Tolkin Projects page is displayed | Select the adequate project (i.e. Euphorbia PBI)

Note *After the project is selected, the Taxonomy count in the Launch page is displayed and Tab menus are made available*

🔍 If the mouse hovers on the Taxonomy tab, a sub menu appears displaying the options.

3. Click the **Taxonomy** tab or click the **Taxon Tree Icon**
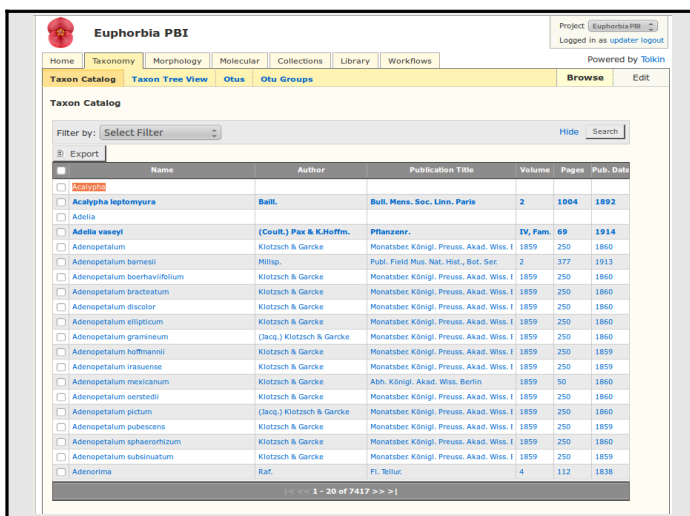
Note *To change the project in which work is being performed, you can also select from the top User/Session Frame Project drop-down menu.*

4. Click the **Home** tab | **Logout** of the application 🛑

II. Navigation and Search Filters

1. After the user is logged into the TOLKIN application | From the Projects Page select **Euphorbia PBI**

2. From the **Home/Taxonomy Details** page click the **Taxonomy** tab

Note *Whenever the user clicks the Taxonomy tab, the frame will display the Taxon Catalog by default*

::Tip:: In Tolkin the pages that display the list of items is called Index Pages (i.e. Taxon Index Page)

Note *The bottom of the catalog contains the pagination bar with the buttons to browse through all the records*

3. To search for a specific Taxon, click/expand the **Filter by:** drop-down menu | Select criteria (i.e. Subgenus) | Fill out the information desired | Click the button

4. Click the **Edit** button in the Interact Mode Switch (top right-hand corner) | The Create , Delete , Export , Set Permissions buttons

5. To show the Detail Page of a record click on the desired Taxon

Note *When a Probe is newly created the Details Page will look empty and ready for information and files to be added/attached.*

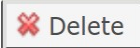*::Tip:: To make sure the desired Taxon is clicked, when the mouse is hovered over it the*

row should change color to yellow.

6. To create, edit, delete, export the meta-data associated of a Taxon, make sure that Edit is selected in the Interact Mode Switch (top right-hand corner)

Note *Only users that have the appropriate matrix of roles and permissions associated with them will be able to create/modify information.*

7. To reach the Index Catalog, click the Taxonomy sub-menu option to return to the Probes Index page or "X" out the page, on the top right of the window
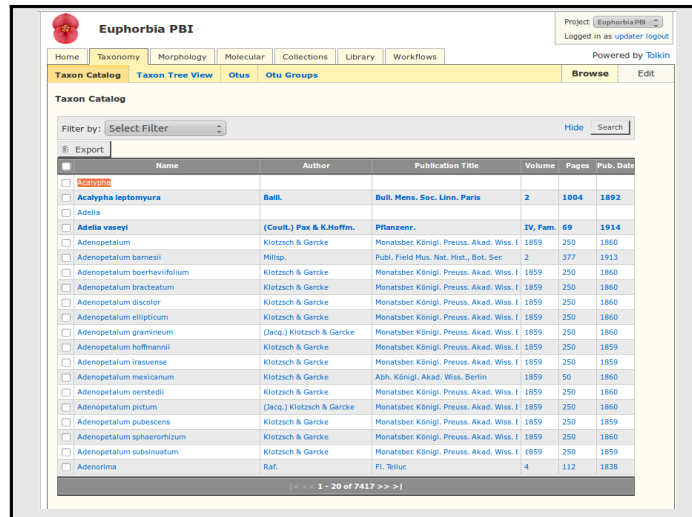
8. To delete a Taxon, select the check-box | Click the **❌ Delete** button
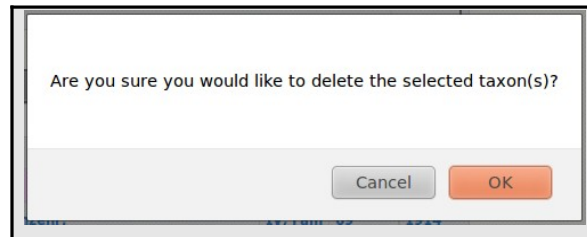
Are you sure you would like to delete the selected taxon(s)?

Cancel   OK

9. When the confirmation alert box appears click **OK** 🛑

III. Taxon Catalog Navigation

1. After the user is logged into the TOLKIN application | The **Euphorbia PBI** project is selected | when **Taxon Catalog** is being displayed
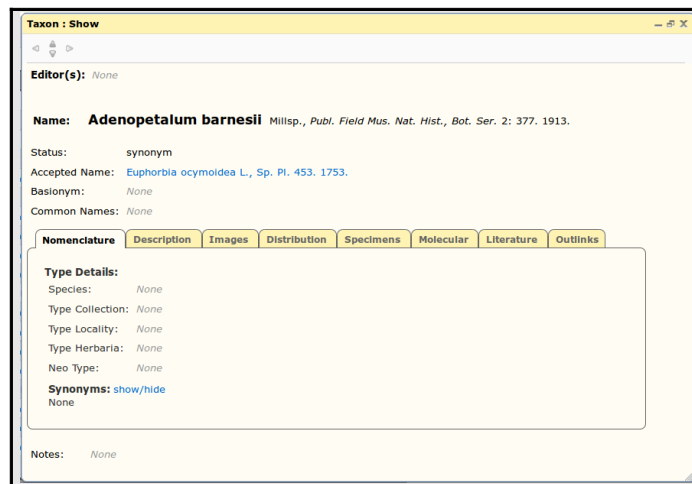

2. From the **Taxonomy Catalog** page click the record to be viewed/inspected

Note *Whenever the user clicks the record to be viewed, a frame will pop-up displaying the Taxon*

::Tip:: All the information regarding a Taxon can be found by clicking on the tabs within this window: Nomenclature, Distribution, Specimens, etc.

IV. Taxon Tree View Navigation

1. After the user is logged into the TOLKIN application | The **Euphorbia PBI** project is selected | when **Taxon Tree View** is being displayed
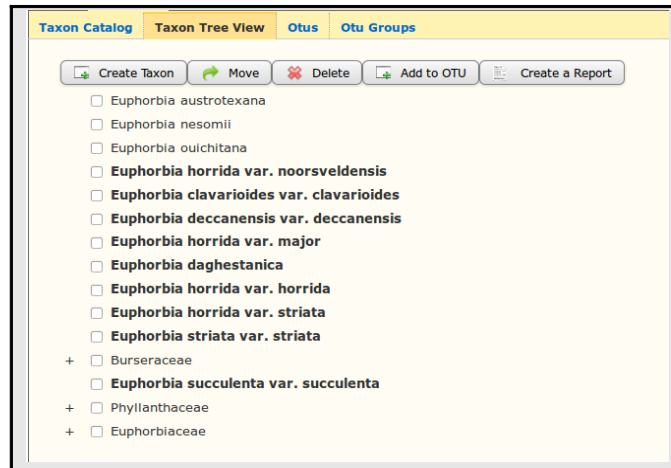
*::**Tip**:: In the **Taxonomy Tree View** page Instructions can be found on the top right-hand corner of the frame*

Instructions:

+ : Expand View.
− : Collapse View.
Press key A and click a taxon to select/unselect a taxon.
Press keys A + R and click a taxon to select/unselect a taxon and its children recursively.
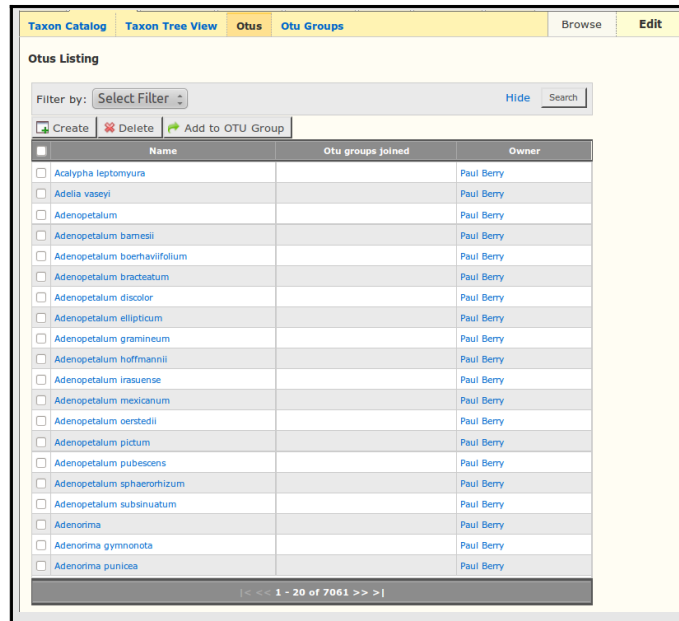
Note *Whenever the user clicks the record to be viewed a frame will pop-up window will display the Taxon*

IV. Otus Navigation

1. After the user is logged into the TOLKIN application | The **Euphorbia PBI** project is selected | when **Otus** page is being displayed in Catalog form

2. To add Otu(s) to a group, select the records and click the [Add to OTU Group] button | Fill out the information desired | Select or Create group and click the [Add] button

3. To display the details click on a particular Otu

Note *To add Taxons and/or Images to the Otu click the respective links in the top left-hand corner of the screen.*

V. Otu Groups

1. After the user is logged into the TOLKIN application | The **Euphorbia PBI** project is selected | when **Otu Groups** page is being displayed in Catalog form | click on a particular Otu Group to edit the name
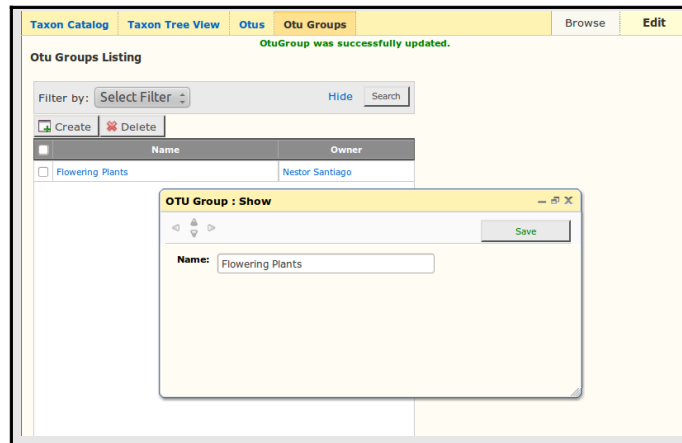
Note *Otu Groups can be added through the Otus section as well.*

Module Introduction: Collections

The Tolkin end user will need to enter, process and retrieve research information/data regarding the collection of specimens for further study. Information about the specimen helps to define the species that it pertains to.

I. Logging into Tolkin

5. Launch your browser (Firefox, Chrome, Safari, etc.) | Go to **10.243.11.94:3000/login** | enter **Username** and **Password** | click on the login button
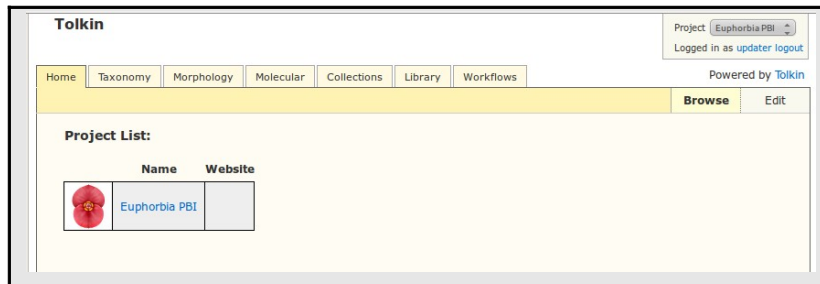
6. The Tolkin Projects page is displayed | Select the adequate project (i.e. Gymnosperm ATOL)

Note *After the project is selected, the Taxonomy count in the Launch page is displayed and Tab menus are made available*

If the mouse hovers on the Taxonomy tab a sub menu appears displaying the options.

7. Click the **Collections** tab or click the **Taxon Tree Icon** to display the Taxon Catalog

Note *To change the project in which work is being performed, you can also select from the top User/Session Frame Project drop-down menu.*

8. Click the Home tab | Logout of the application

II. Creating a Collection

10. Launch your browser (Firefox, Chrome, Safari, etc.) | Go to ==10.243.11.94:3000/login== | enter **Username** and **Password** | click on the **Login** button

11. From the Projects Page select **Gymnosperm ATOL**

12. From the **Home/Taxonomy Details** page click the **Collections** tab
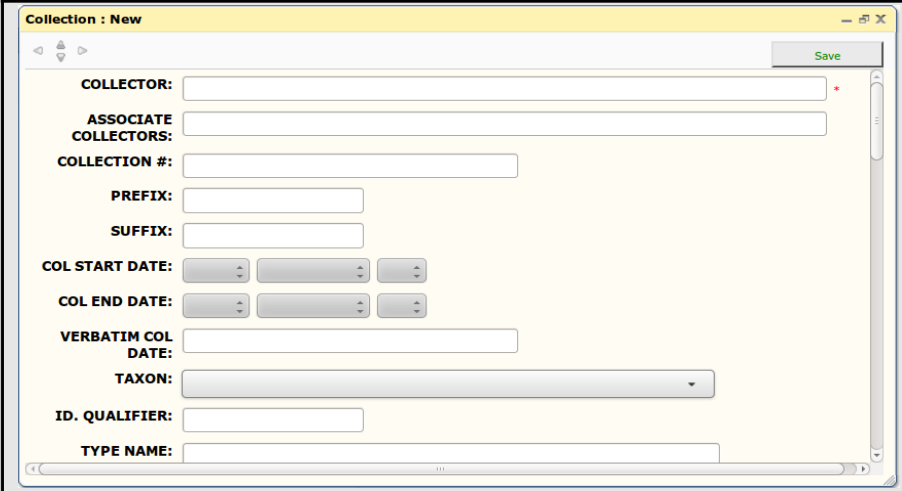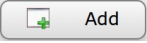
Note *Whenever the user clicks the Collections tab, the frame will display the catalog by default*

::Tip:: In Tolkin the pages that display the list of items is called Index Pages (i.e. Collections Index Page)

13. To search for a specific Collection, click/expand the **Filter by:** drop-down menu | Select criteria (i.e. Value) | Fill out the information desired | Click the Search button

14. Click the **Edit** button in the Interact Mode Switch (top right-hand corner) | In the Collections catalog click the Create button

15. Enter the **Collector Name** | Enter as much information as needed/provided

16. To enter **Annotations**, scroll to the respective section | Enter Taxon, Determiner, etc. | Click the Add button

Note *Red asterisks (*) by a field means that this field is required*

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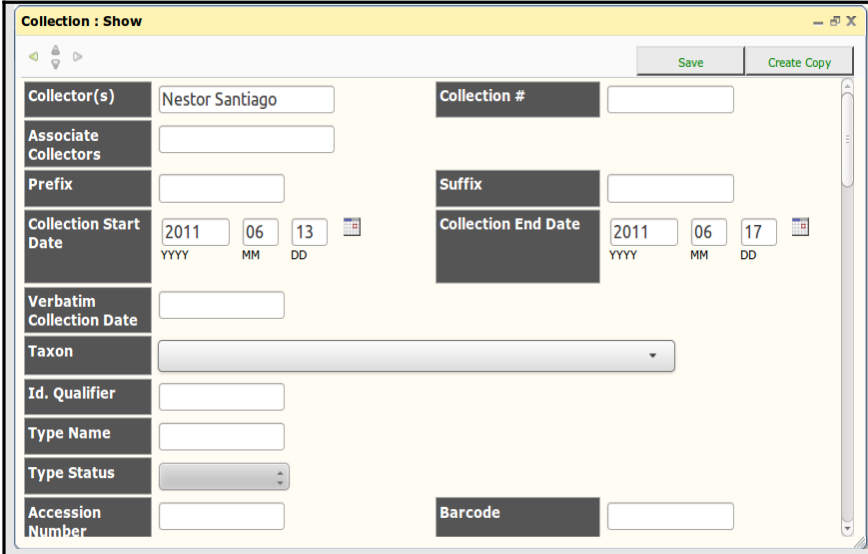
\[clipboard icon\] **Note** *After adding Annotations, the catalog under the form is populated with the information provided*

17. To remove Annotations, select the record | Click the \[✖ Remove \] button

18. Click the \[Save \] button

19. After saving the information the Detail Page of the Collection is displayed

\[clipboard icon\] **Note** *When a Collection is newly created the Details Page will have the open fields for information to be updated.*
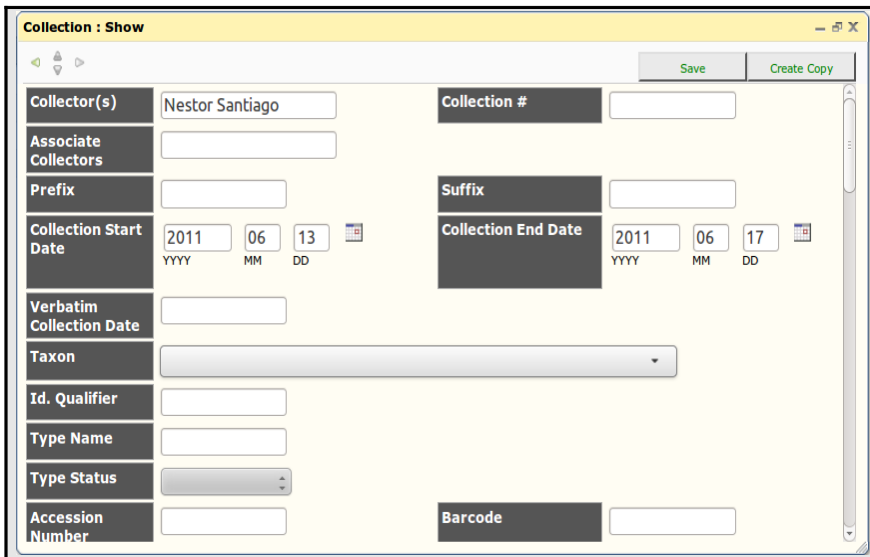
\[pushpin icon\] ::Tip:: *To make sure the desired Collection is clicked, when the mouse is hovered over it the row should change color to yellow.*
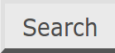
III. Editing a Collection

3. Launch your browser (Firefox, Chrome, Safari, etc.) | Go to **10.243.11.94:3000/login** | enter **Username** and **Password** | click on the **Login** button

4. From the Projects Page select **Gymnosperm ATOL**

5. With the mouse, hover over the **Collections** tab

6. Click the **Edit** button in the Interact Mode Switch (top right-hand corner) | Hover over the Collection required to be edited/updated and click

Collection : Show				
			Save	Create Copy
Collector(s)	Nestor Santiago	Collection #		
Associate Collectors				
Prefix		Suffix		
Collection Start Date	2011 06 13 YYYY MM DD	Collection End Date	2011 06 17 YYYY MM DD	
Verbatim Collection Date				
Taxon				
Id. Qualifier				
Type Name				
Type Status				
Accession Number		Barcode		

Note *When clicked the Collection will be displayed in a frame window*

7. Enter the the information required | click the [Save] button

8. For ease of use, to copy the information already entered to another new record click the [Create Copy] button

Note *When a Collection is edited/updated the frame window will remain open until it is closed.*
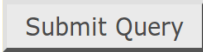
IV. Deleting a Collection

2. To Delete a Collection, go to the **Collections** Index Page by clicking the Collections menu tab

3. Select the check-box for a Collection | Click the [Delete] button

4. When the confirmation alert box appears click **OK**

V. Exporting a Collection

4. To Delete a a Collection, go to the **Collections** Index Page by clicking the Collections menu tab

5. Select the check-box for a Collection | Click the [Export] button

6. Select the parameters required to be exported from the dialog box | Click the [Submit Query] button

7. Choose the appropriate options in the browser dialog box

Module Introduction: Library

The Library provides research information/data regarding Tolkin database. It allows the user to find literatures related to the species.

I. Logging into Tolkin

9. Launch your browser (Firefox, Chrome, Safari, etc.) | Go to **10.243.11.94:3000/login** | enter **Username** and **Password** | click on the **login** button
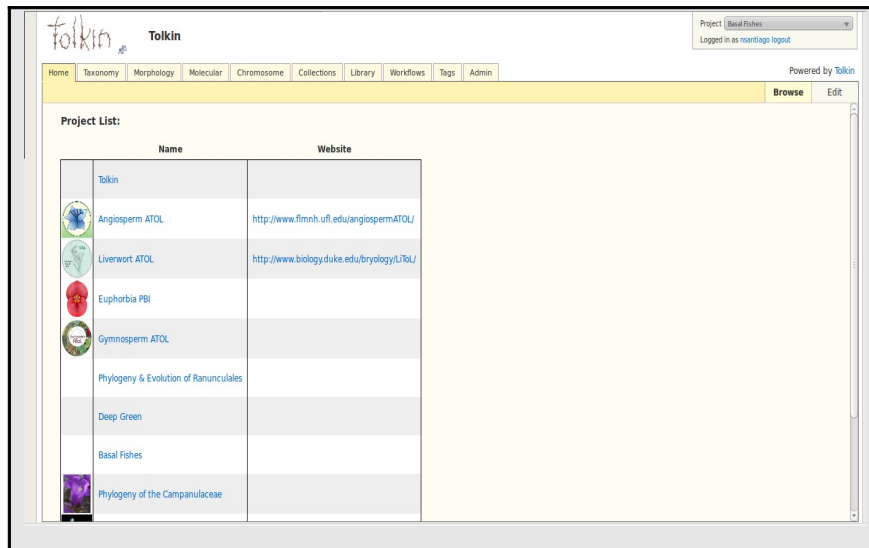
10. The Tolkin Projects page is displayed | Select the adequate project (i.e. Euphorbia PBI)

Note *After the project is selected, the Taxonomy information is displayed and Tab menus are made available*

If the mouse hovers on the Library tab, a sub menu appears displaying the options.

11. Click the **Library** tab

Note *To change the project in which work is being performed, you can also select from the top User/Session Frame Project drop-down menu.*
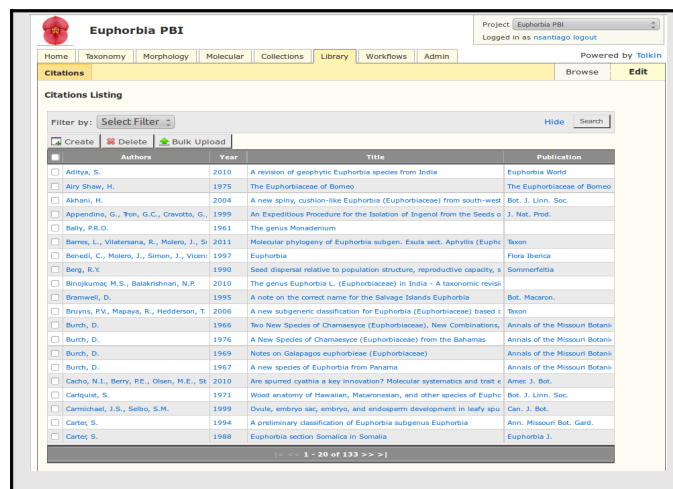
12. Click the **Home** tab | **Logout** of the application

II. Creating a Citation
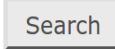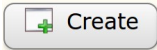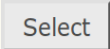
20. Launch your browser (Firefox, Chrome, Safari, etc.) | Go to `10.243.11.94:3000/login` | enter **Username** and **Password** | click on the **Login** button

21. From the Projects Page select **Euphorbia PBI**

22. From the **Home/Taxonomy Details** page | Click the **Library** tab

Note *Whenever the user clicks the Library tab, the frame will display the Citations by default*

::Tip:: In Tolkin the pages that display the list of items are called Index Pages (i.e. Citations Index Page)

23. To search for a specific Citation, click/expand the **Filter by:** drop-down menu | Select criteria (i.e. Authors) | Enter information | Click the Search button

24. Click the **Edit** button in the Interact Mode Switch (top right-hand corner) | In the Citations catalog click the Create button

25. Select the Citation Type from the drop-down menu (i.e. Journal) | click the Select button

26. Enter the all the information required | Select the Author(s), see *Appendix A* for instructions | Select a **Journal**, see appendix for instructions

27. Click the **Browse** button to attach a file to the citation

28. Click the [Save] button 🛑
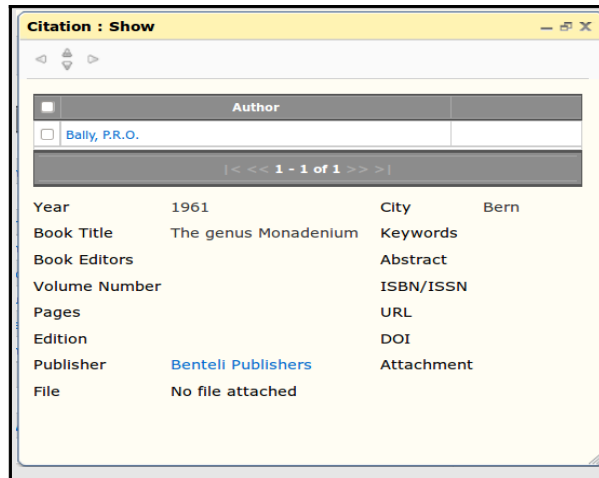
📋 ****Note**** *When a Citation is created, the Create Window will close itself and the Citation catalog will refresh itself to display the updated list of Citations*

III. Inspecting/Editing/Deleting a Citation

8. To show the Detail Page of a Citation, click on the desired **Citation**
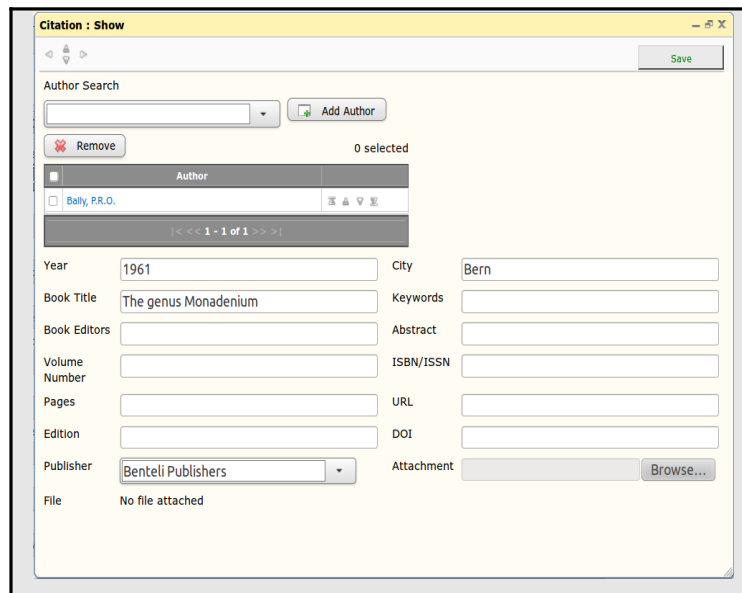
📌 *::**Tip**:: To make sure the desired Citation is clicked, when the mouse is hovered over it the row should change color to yellow.*

9. To edit the meta-data associated of a Citation, make sure that Edit is selected in the Interact Mode Switch (top right-hand corner) | Click the **Citation**

10. Edit/Change the Citation Information | Click the ☐ Save button

🗒 ****Note**** *When a record is created, updated and/or deleted, a notification will appear advising that the record has been successfully processed*

11. Close the window to return to the Citations Index Page/Catalog

12. To delete a Probe, select the check-box | Click the 🗙 Delete button

13. When the confirmation alert box appears, click **OK** 🛑

💡 Appendix A. Selecting/Adding/Removing Authors/Journal/Publisher/Books and Series Titles

9. From the **Collections Create Page**, click the ☐ ▾ button to see the list of available **Authors** | start typing the name to search the **Authors** table

10. Click the Author to populate the field | Click the 🗐 Add Author button
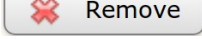
🗒 ****Note**** *When an author is added to the collection, the table will be automatically populated and there will be a notification indication the operation was successful.*

11. To remove the author, select the checkbox | click the [✖ Remove] button

💡 Appendix B. Citations Bulk Upload

5. When provided with a Citations Bulk Upload (XML) File, click the [⬆ Bulk Upload] button

6. Click the Browse button to attach/upload the file

Module Introduction: Chromosome

The Tolkin end user will need to enter, process and retrieve research information/data regarding chromosomal study. Associated with a particular molecular DNA sequence, the strands are broken into Sequences, sectioned into Probes, stained with dyes and the expressions are captured in images.

Definitions:

Sequence – The precious ordering of the nucleotides (A, C, G, and T) based on DNA composition

Contig - Contiguous sequence of DNA by assembling derived from a single genetic source

Probe - especially one designed to investigate and obtain information on a specific region

Dye – Composition of colors used to recognize the different expressions within a Probe

ZVI File - microscope image file to save multidimensional images (multichannel fluorescence, time lapse, z-stacks etc.)

I. Logging into Tolkin

13. Launch your browser (Firefox, Chrome, Safari, etc.) | Go to `10.243.11.94:3000/login` | enter **Username** and **Password** | click on the login button
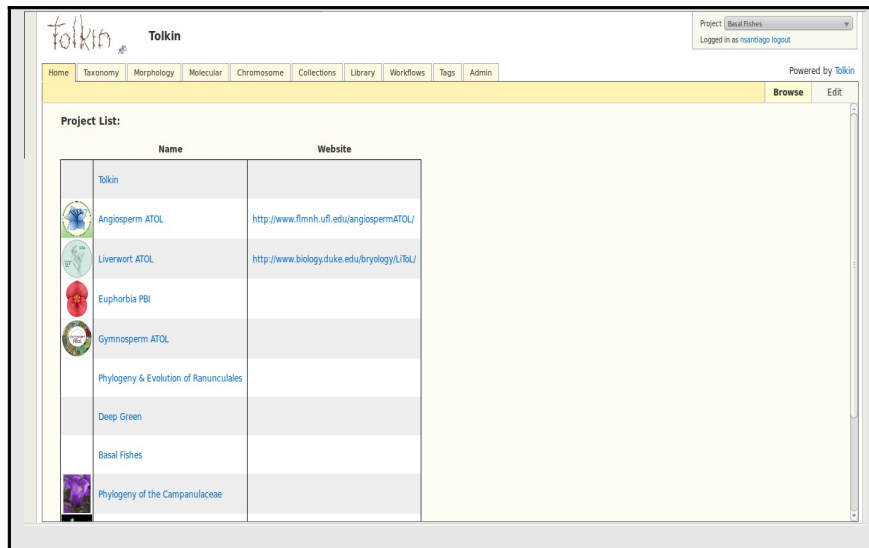
14. The Tolkin Projects page is displayed | Select the adequate project (i.e. Basal Fishes)

Note *After the project is selected, the Taxonomy information is displayed and Tab menus are made available*

If the mouse hovers on the Chromosome tab a sub, menu appears displaying the options.

15. Click the **Chromosome** tab

> **Note** *To change the project in which work is being performed, you can also select from the top User/Session Frame Project drop-down menu.*
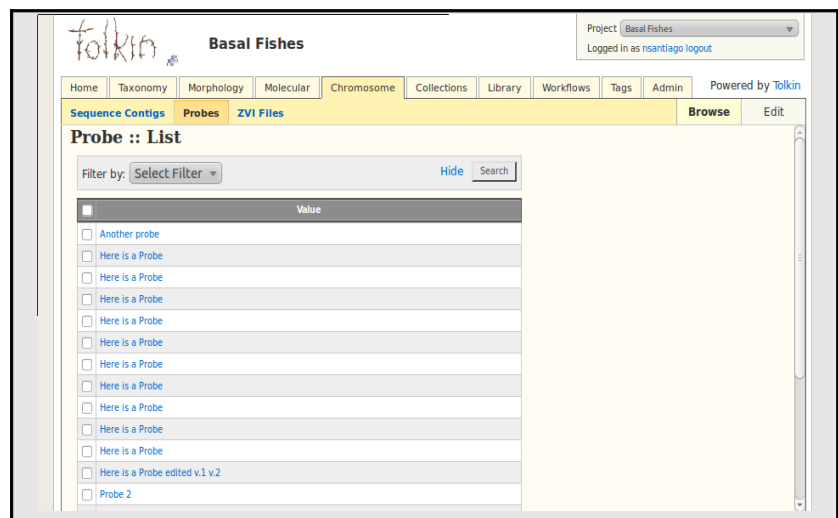
16. Click the **Home** tab | **Logout** of the application

II. Creating/Inspecting/Editing/Deleting a Probe

29. Launch your browser (Firefox, Chrome, Safari, etc.) | Go to <mark>**10.243.11.94:3000/login**</mark> | enter **Username** and **Password** | click on the **Login** button

30. From the Projects Page select **Basal Fishes**

31. From the **Home/Taxonomy Details** page click the **Chromosome** tab
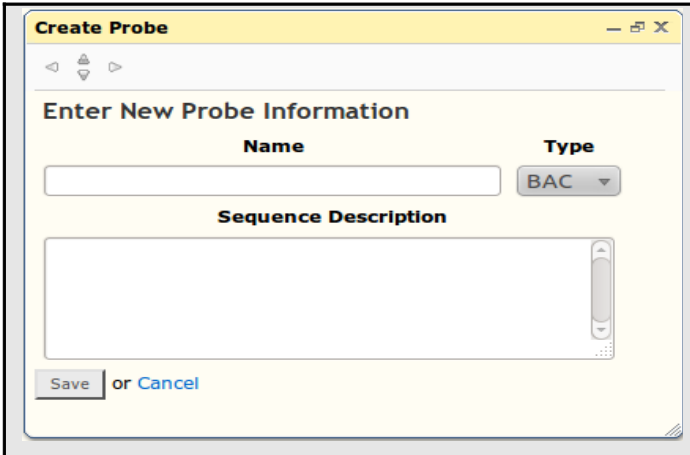
Note *Whenever the user clicks the Chromosome tab, the frame will display the Probes by default*

*::**Tip**:: In Tolkin the pages that display the list of items are called Index Pages (i.e. Probes Index Page)*

32. To search for a specific Probe, click/expand the **Filter by:** drop-down menu | Select criteria (i.e. Value) | Click the Search button

33. Click the **Edit** button in the Interact Mode Switch (top right-hand corner) | In the Probes catalog click the Create button

Create Probe

Enter New Probe Information

Name | Type

BAC ▾

Sequence Description

Save or Cancel

34. Enter the Probe **Name** | Select the **Type** | Enter a **Sequence Description**

35. Click the Save button

Note *When a Probe is created, the Create Window will close itself and the Probe catalog will refresh itself to display the updated Index of Probes*

36. To show the Detail Page of a Probe, click on the desired Probe

Note When a Probe is newly created, the Details Page will look empty and ready for information and files to be added/attached.

*::**Tip**:: To make sure the desired Probe is clicked, when the mouse is hovered over it the row should change color to yellow.*

37. To edit the meta-data associated of a Probe, make sure that Edit is selected in the Interact Mode Switch (top right-hand corner) | Click the `Edit Probe Information` button

38. Edit/Change the Probe Information | To manage the Dyes and ZVI Files from the Probe Details page see Appendix A.

39. Click the `Save` button

Note *When a record is created, updated and/or deleted, a notification will appear advising that the record has been successfully processed*

40. Click the Probes sub-menu option to return to the Probes Index page or press the **Back** link at the bottom of the Details page

41. To delete a Probe, select the check-box | Click the [Delete] button

42. When the confirmation alert box appears click **OK** 🛑

III. Creating/Inspecting/Editing/Deleting a Sequence

12. Launch your browser (Firefox, Chrome, Safari, etc.) | Go to **10.243.11.94:3000/login** | enter **Username** and **Password** | click on the **Login** button

13. From the Projects Page select **Basal Fishes**
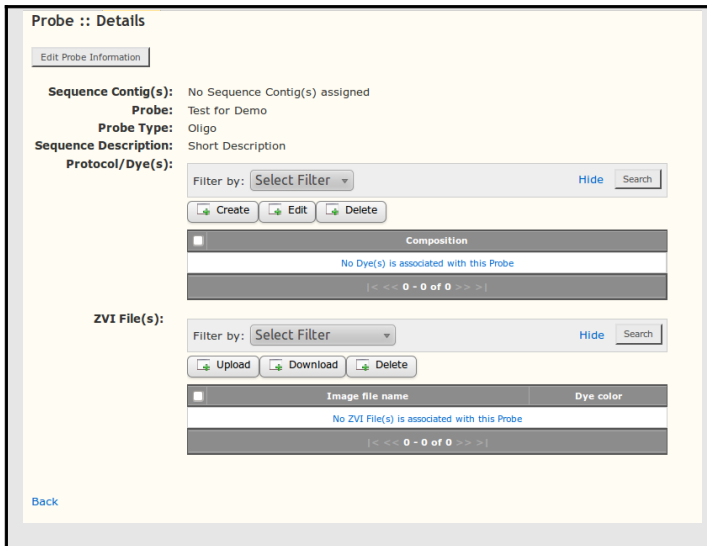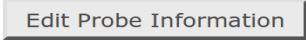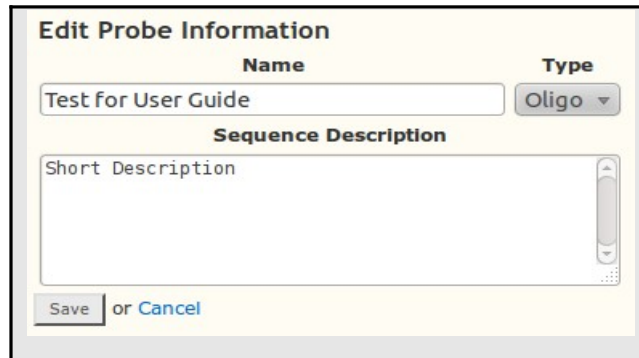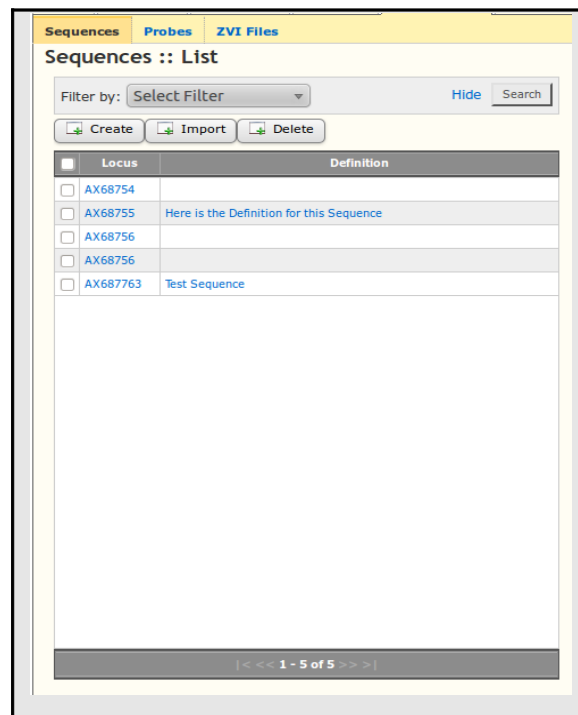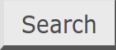
14. With the mouse, hover over the **Chromosome** tab | Click the **Sequences** sub-menu

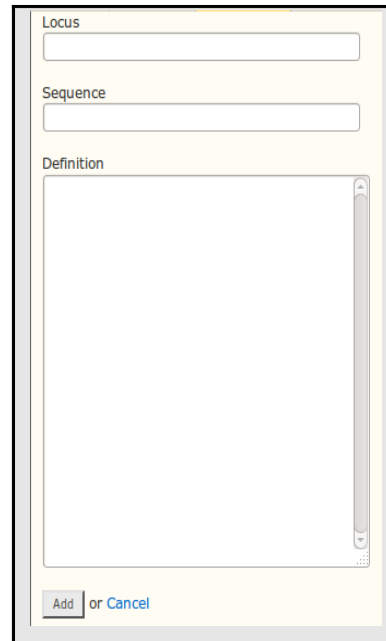📌 *::**Tip**:: In Tolkin the pages that display the list of items are called Index Pages (i.e. Sequences Index Page)*

15. To search for a specific Sequence, click/expand the **Filter by:** drop-down menu | Select criteria (i.e. Locus) | Click the [Search] button

16. Click the **Edit** button in the Interact Mode Switch (top right-hand corner) | In the Sequences catalog click the [Create] button

Note To create a
Sequence all that is
required is to enter the
Locus, Sequence and the
Definition. The rest of the
information associated with
the Sequence can be
entered within the Details
page.
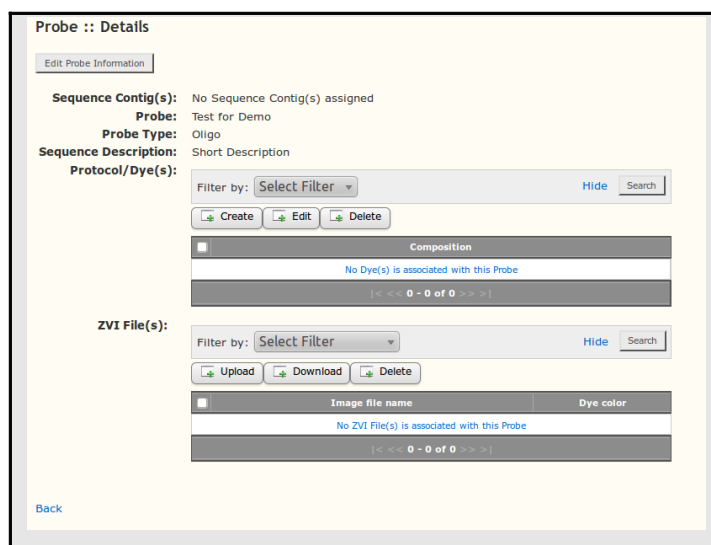
17. Enter the **Locus** | Enter the **Sequence** | Enter a **Definition**

18. Click the Add button

_____

Note When a Sequence is created, the catalog will refresh itself to display the
updated Index of Sequences

19. To show the Detail Page of a Sequence, click on the desired Sequence

Note When a
Sequence is newly
created, the Details Page
will look empty and ready
for information and files to
be added/attached.

🖈 *::Tip:: To make sure the desired record is clicked within a catalog, when the mouse is hovered over it the row should change color to yellow.*

20. To edit the meta-data associated of a Sequence, make sure that Edit is selected in the Interact Mode Switch (top right-hand corner) | Enter the information that needs to be added

21. Click the Save button

📋 ****Note**** *When a record is created, updated and/or deleted, a notification will appear advising that the record has been successfully processed*

22. If there are Probes that need to be associated with the particular Sequence, scroll to the bottom of page and find the Probe association panel
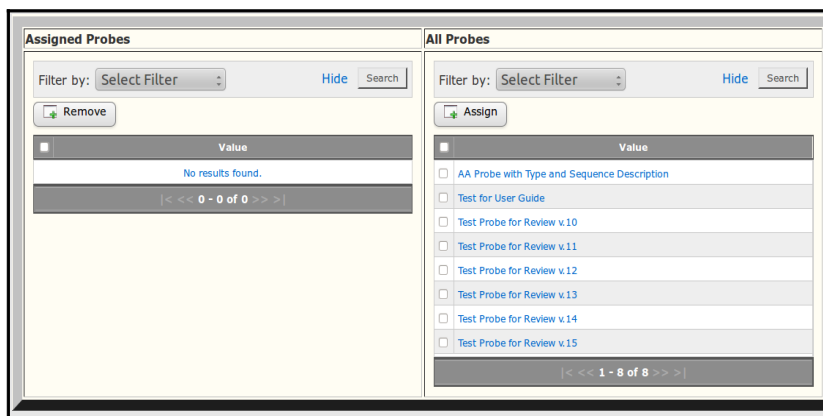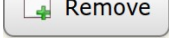

23. From the All Probes section select the check box of the appropriate record | click the Assign button
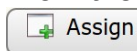
🖈 *::Tip:: To see preliminary information about a particular Probe within the Probes Panel, hover the mouse over a record and a "tooltip" will appear displaying information.*

24. To dis-associate a Probe, select the check-box | Click the Remove button

🖈 *::Tip:: A Probe Details Page can be accessed by clicking the Probe in the catalog*

25. To Delete a Sequence, go to the **Sequences Index Page** by clicking the Sequences sub-menu | Select the check-box for a Sequence | Click the Delete button

26. When the confirmation alert box appears click **OK**
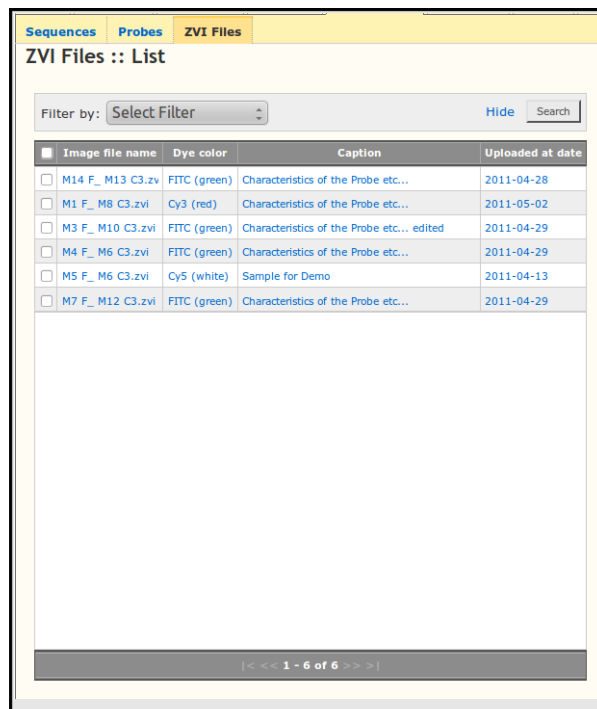
IV. Creating/Downloading/Inspecting/Editing/Deleting a ZVI File

7. Launch your browser (Firefox, Chrome, Safari, etc.) | Go to **10.243.11.94:3000/login** | enter **Username** and **Password** | click on the **Login** button

8. From the Projects Page select **Basal Fishes**

9. With the mouse hover over the **Chromosome** tab | Click the **ZVI Files** sub-menu

10. To search for a specific ZVI File, click/expand the **Filter by:** drop-down menu | Select criteria (i.e. Caption) | Click the **Search** button

11. Click the **Edit** button in the Interact Mode Switch (top right-hand corner) | In the ZVI Files catalog click the **Upload** button

36 of 46
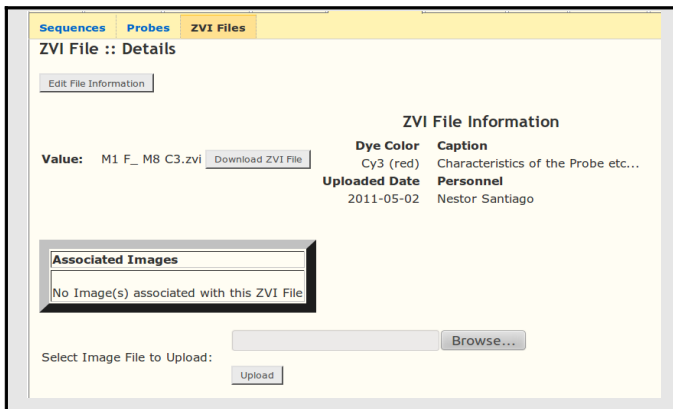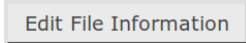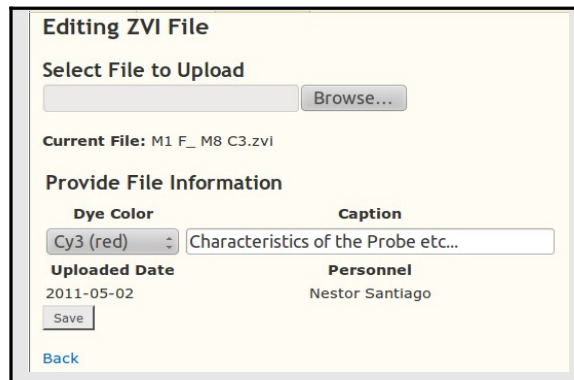
12. Select the file to be uploaded by clicking the **Browse** button | Select the **Dye Color** | Provide text in the **Caption** field | Click the **Upload** button

13. To save a file, select the check-box of the record | Click the [Download] button

14. In dialog window, select options regarding downloading (browser specific) | Click **OK**

15. To show the Detail Page of a ZVI File, click on the desired ZVI File

Note When a ZVI File is newly created from the Index page, the Details Page no Images or Probes will be associated with this record.
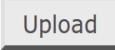
::Tip:: To make sure the desired record is clicked, when the mouse is hovered over it the row should change color to yellow.

16. To edit the meta-data associated of a ZVI File, make sure that Edit is selected in the Interact Mode Switch (top right-hand corner) | Click the [Edit File Information] button

17. Edit/Change the ZVI File Information | Click the [Save] button
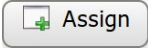
18. To attach Images to the ZVI File, from the **Details Page** click the **Browse** button below the Images panel | Select the Image to upload | Click the **Upload** button
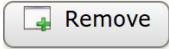
19. If there are Probes that need to be associated with this particular ZVI File, scroll to the bottom of page and find the Probe association panel
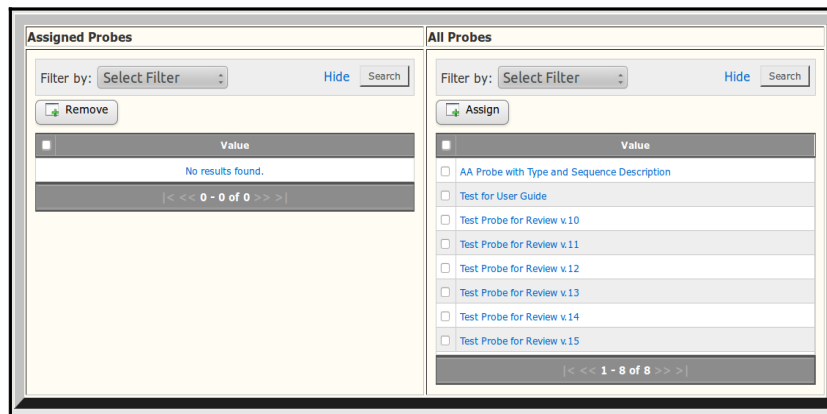
20. From the All Probes section select the check box of the appropriate record | click the **Assign** button

📌 *::**Tip**:: To see preliminary information about a particular Probe within the Probes Panel, hover the mouse over a record and a "tooltip" will appear displaying information.*

21. To dis-associate a Probe, select the check-box | Click the **Remove** button

📌 ::**Tip**:: *A Probe Details Page can be accessed by clicking the Probe in the catalog*

22. To Delete a ZVI File, go to the **ZVI Files Index Page** by clicking the ZVI Files sub-menu | Select the check-box for a ZVI File | Click the [⊞ Delete] button

23. When the confirmation alert box appears, click **OK** 🛑

💡 Appendix A. Managing Dyes and ZVI Files from the Probes Detail Page

Once in the Probes Detail Page...

Probe :: Details

[Edit Probe Information]

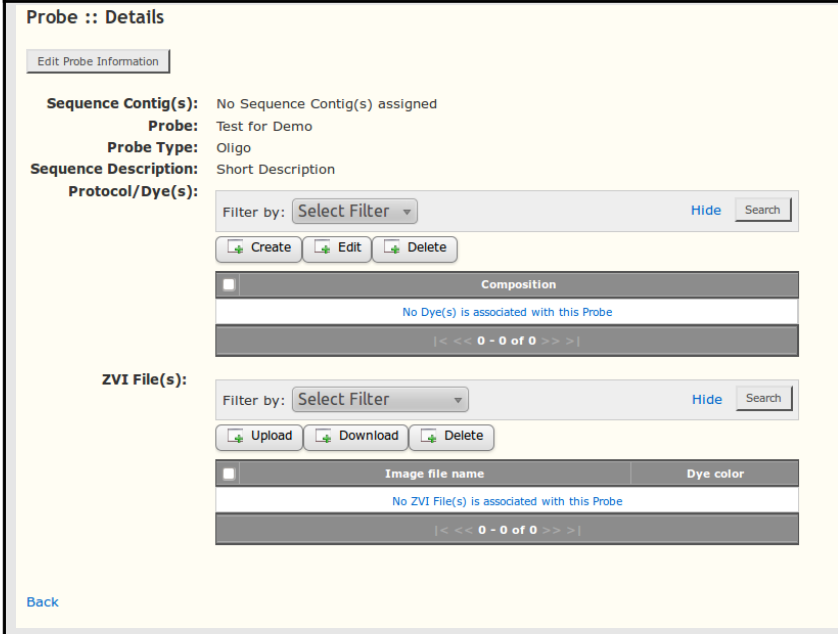|	
Sequence Contig(s):	No Sequence Contig(s) assigned
Probe:	Test for Demo
Probe Type:	Oligo
Sequence Description:	Short Description
Protocol/Dye(s):	

Filter by: [Select Filter ▾]   Hide [Search]

[⊞ Create] [⊞ Edit] [⊞ Delete]

☐	**Composition**
	No Dye(s) is associated with this Probe
	|< << **0 - 0 of 0** >> >|

ZVI File(s):

Filter by: [Select Filter ▾]   Hide [Search]

[⊞ Upload] [⊞ Download] [⊞ Delete]
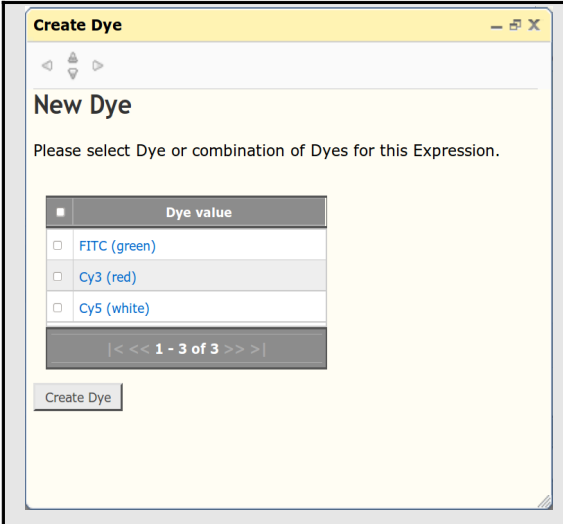
☐	**Image file name**	**Dye color**
	No ZVI File(s) is associated with this Probe	
	|< << **0 - 0 of 0** >> >|	

Back

14. To **Create** a Dye, while in **Edit Interaction Mode**, click the [⊞ Create] button in the Dyes catalog

Create Dye   — ⊡ X

◁ ⚲ ▷

New Dye

Please select Dye or combination of Dyes for this Expression.
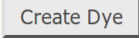
☐	**Dye value**
☐	FITC (green)
☐	Cy3 (red)
☐	Cy5 (white)
	|< << **1 - 3 of 3** >> >|
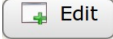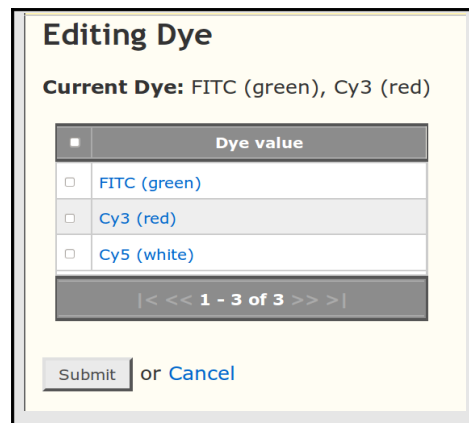
[Create Dye]

15. Select the **Dye** or combination of Dyes | Click the Create Dye button

16. To **Edit** a Dye, select the check-box of the record | Click the Edit button

Editing Dye

Current Dye: FITC (green), Cy3 (red)

■	Dye value
☐	FITC (green)
☐	Cy3 (red)
☐	Cy5 (white)
|< << **1 - 3 of 3** >> >|	
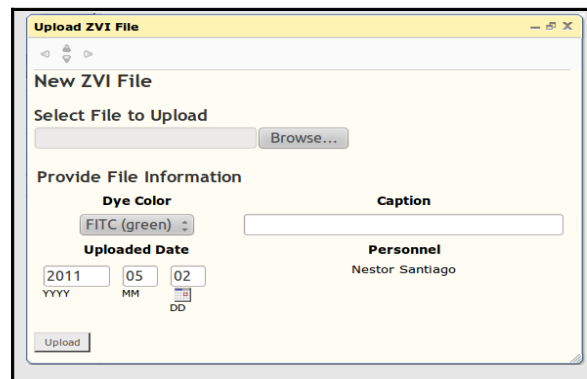
Submit or Cancel

17. Select the new combination | Click the Submit button

18. To **Delete** a Dye, select the check-box of the record | click the Delete button

19. When the confirmation alert box appears, click **OK**

20. To **Upload** a ZVI File, while in **Edit Interaction Mode**, click the Upload button in the ZVI File's catalog
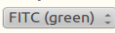
Upload ZVI File — ⊟ X

New ZVI File

Select File to Upload

[   ] Browse...

Provide File Information

Dye Color	**Caption**
FITC (green) ⇕	[ ]
Uploaded Date	**Personnel**
2011	05	02	Nestor Santiago
YYYY	MM	DD	
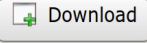
Upload

21. Select the file to be uploaded by clicking the **Browse** button | Select the **Dye Color** | Provide text in the **Caption** field | Click the **Upload** button

22. To save a file, select the check-box of the record | Click the [⊞ Download] button

23. In dialog window, select options regarding downloading (browser specific) | Click **OK**

24. To Delete a ZVI File, go to the **ZVI Files Index Page** by clicking the ZVI Files sub-menu | Select the check-box for a ZVI File | Click the [⊞ Delete] button

25. When the confirmation alert box appears click **OK** 🛑

Module Introduction: Morphology

The Taxonomy manages taxonomic information. It allows the user to manage the species names as an informatics tool. Taxonomy being the science that describes organisms.

Definitions:

Taxon – Any group of organisms, at any level of the hierarchical representation

Taxon Tree – Hierarchical representation of the relationship between species via their names

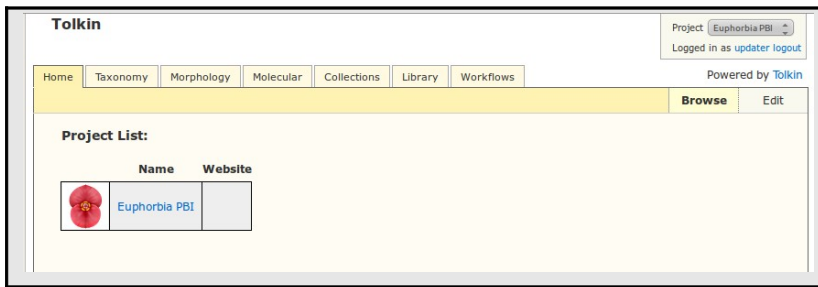**Otu –** Operational Taxonomic Unit, an informal group of organisms for the purpose of study. Most times the names of Otus are arbitrary for ease of work within an organization.

I. Logging into Tolkin

17. Launch your browser (Firefox, Chrome, Safari, etc.) | Go to **10.243.11.94:3000/login** | enter **Username** and **Password** | click on the login button

Note *To change the project in which work is being performed, you can also select from the top User/Session Frame Project drop-down menu.*

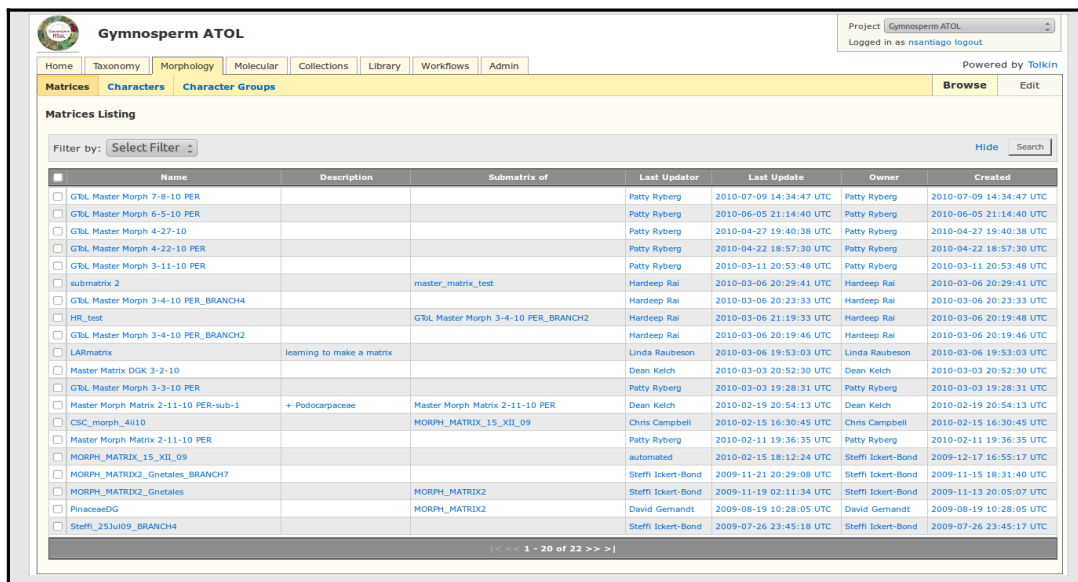18. The Tolkin Projects page is displayed | Select the adequate project (i.e. Gymnosperm ATOL)

Note *After the project is selected, the Taxonomy count in the Launch page is displayed and Tab menus are made available*

If the mouse hovers on the Taxonomy tab a sub menu appears displaying the options.

19. Click the **Morphology** tab or click the **Taxon Tree Icon**

20. Click the **Home** tab | **Logout** of the application

II. Navigation and Search Filters

43. After the user is logged into the TOLKIN application | From the Projects Page select **Gymnosperm ATOL**

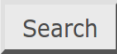44. From the **Home/Taxonomy Details** page click the **Morphology** tab

Note *Whenever the user clicks the Morphology tab the frame will display the Matrices Catalog by default*

*::**Tip**:: Within the Morphology module the pages that display the list of items is called a Listing (i.e. Characters Listing)*

Note *The bottom of the catalog contains the pagination bar with the buttons to browse through all the records*

45. To search for a specific Matrix/Character/Character Group, click/expand the **Filter by:** drop-down menu | Select criteria (i.e. Name) | Click the Search button

46. Click the **Edit** button in the Interact Mode Switch (top right-hand corner), buttons will be displayed

47. To show the Detail Page of a record click on the desired Matrix
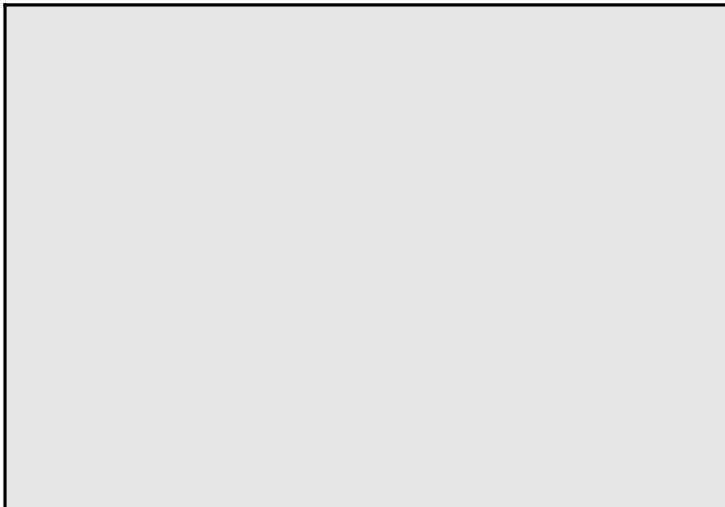
Note *When a Matrix is newly created the Details Page will look empty and ready for information and files to be added/attached.*

*::**Tip**:: To make sure the desired Matrix is clicked, when the mouse is hovered over it the row should change color to yellow.*
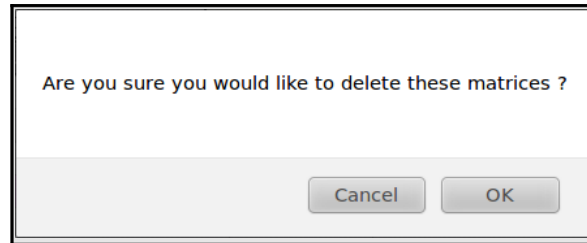
Note *Only users that have the appropriate matrix of roles and permissions associated with them will be able to create/modify information.*

48. To reach the Matrices Listing Catalog, click the Morphology menu option or the Matrices sub-menu option to return to the Matrices Listing page

49. To delete a Matrix, select the check-box | Click the ❌ Delete button

Are you sure you would like to delete these matrices ?

Cancel   OK

50. When the confirmation alert box appears click **OK**

III. Characters Listing Navigation

27. After the user is logged into the TOLKIN application | The Gymnosperm ATOL project is selected | navigate to Morphology/Characters to display the **Characters**
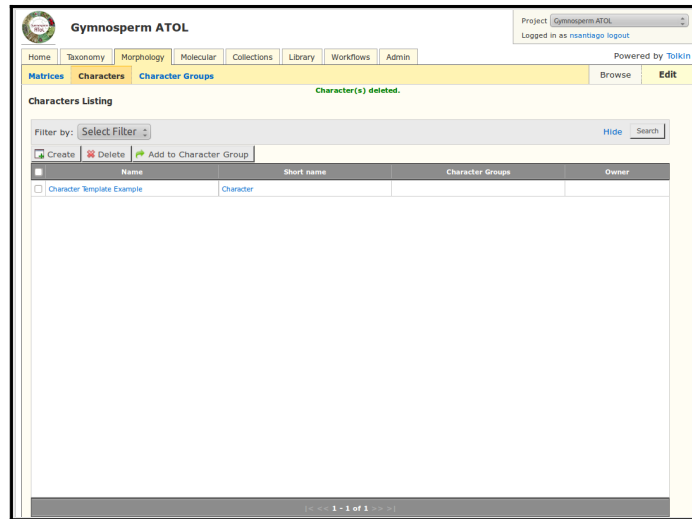
28. From the **Characters Listing** catalog page click the record to be viewed/inspected