



Bhutan Biodiversity Portal User Manual

(www.biodiversity.bt)

An official repository of information on Bhutan's biodiversity, built through citizen science.



**Dedicated to the 40th birth anniversary of
His Majesty the King Jigme Khesar Namgyel Wangchuck**

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Introduction

A major challenge for Bhutan is access to reliable and up-to-date biodiversity information for effective conservation planning and sustainable use of natural resources. The Bhutan Biodiversity Portal was launched on 17th December 2003 to address this issue. It is an open access, one-stop citizen science data repository for biodiversity information. The portal aims to aggregate biodiversity data recorded through citizen science, while facilitating a platform for the flow and discussion of biodiversity related information between scientific experts and amateurs alike, in order to promote biodiversity conservation within the community.

This citizen science initiative aims to promote and harness collective effort in generating and verifying content in a comprehensive, cost-effective and inclusive manner, thereby alleviating the monumental task of documenting the rich biodiversity of Bhutan. Additionally, having a consortium of different biodiversity stakeholders helps address the issue of duplicative efforts in developing and managing isolated information systems and databases around the country.

The Bhutan Biodiversity Portal contains a wide range of reference material such as species information (curated and detailed description of individual species found in Bhutan); maps (spatial information such as roads, settlements, Important Bird Areas which can be layered and viewed through an interactive user-interface); datasets of specific taxonomic groups, for example a species checklist of fish species found in Bhutan; as well as journal articles and other literature related to local biodiversity.

There are two ways to access the Bhutan Biodiversity Portal, one is through a mobile app (iOS and Android) and the other is through the website: *www.biodiversity.bt*.

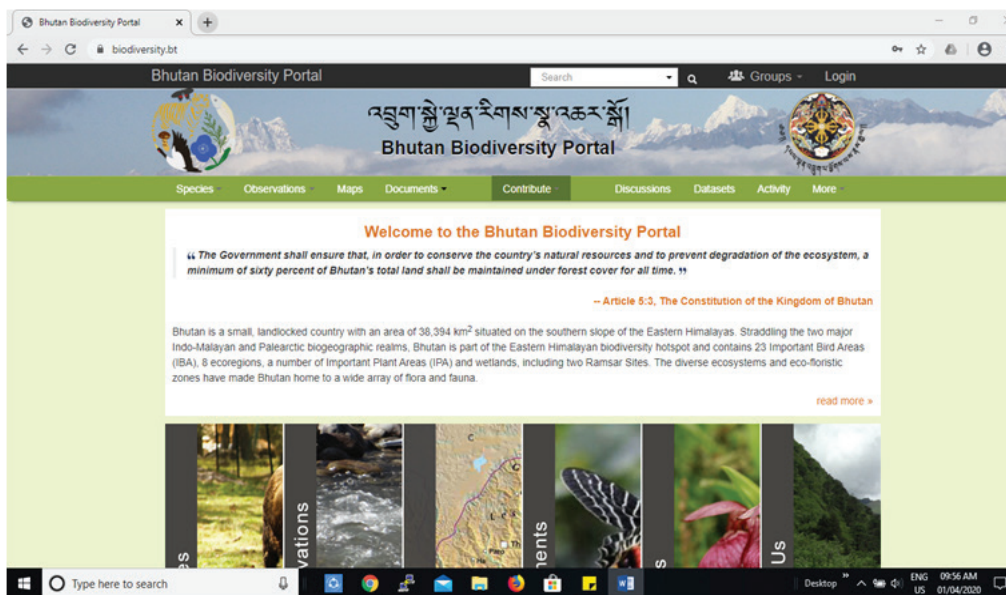
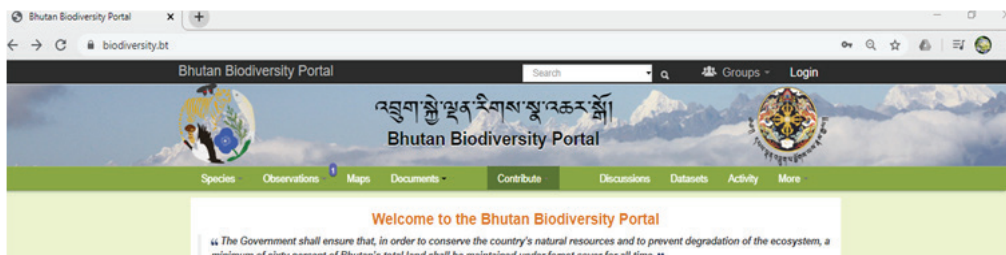


Fig. The home page of biodiversity webpage (www.biodiversity.bt)

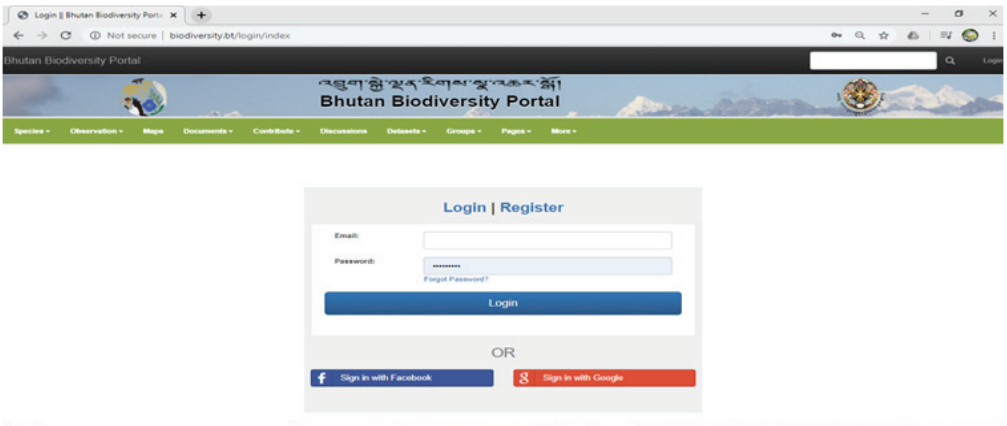
The main objective of developing this manual is to encourage citizen participation in documenting Bhutan's rich biodiversity. While the portal is accessible to all, users will have to first register in order to contribute data and/or utilise biodiversity information in the portal. The process of registration is outlined below:

Registration

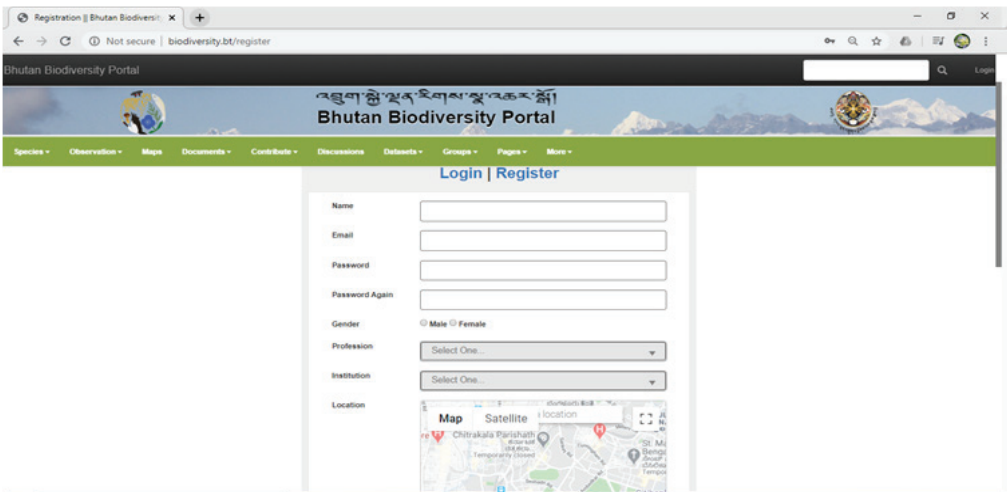
1. Go to the top right corner and click on the Login tab.



2. After you click Login, you will be shown the window below. Click on the Register tab to register.

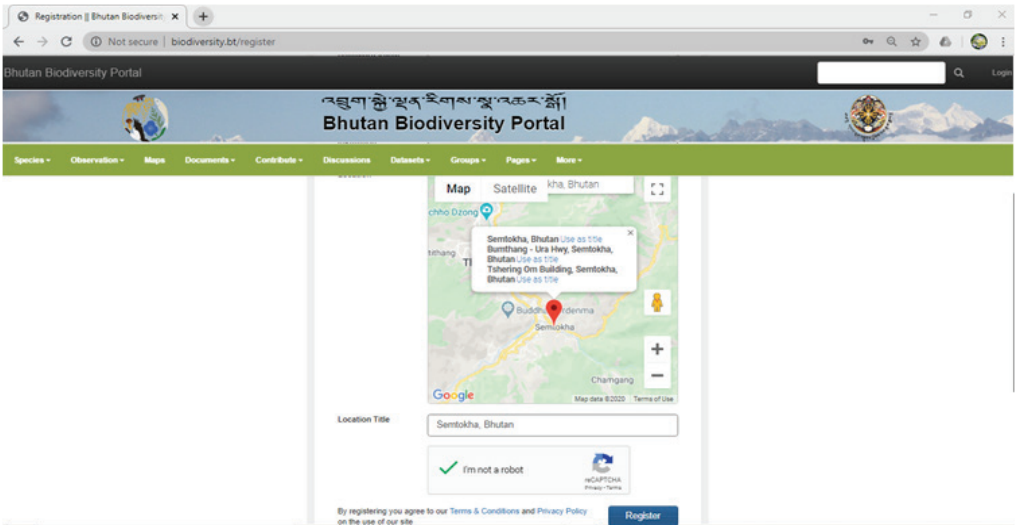


3. Below is the register form you need to fill-in to get registered. Scroll down to complete the form.

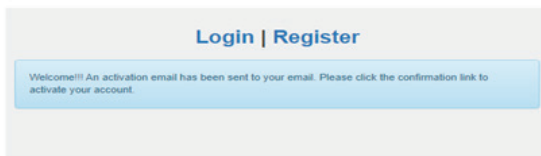


(While registering your location, drag the map pointer to your location in the map or type your location in the search field and select your location).

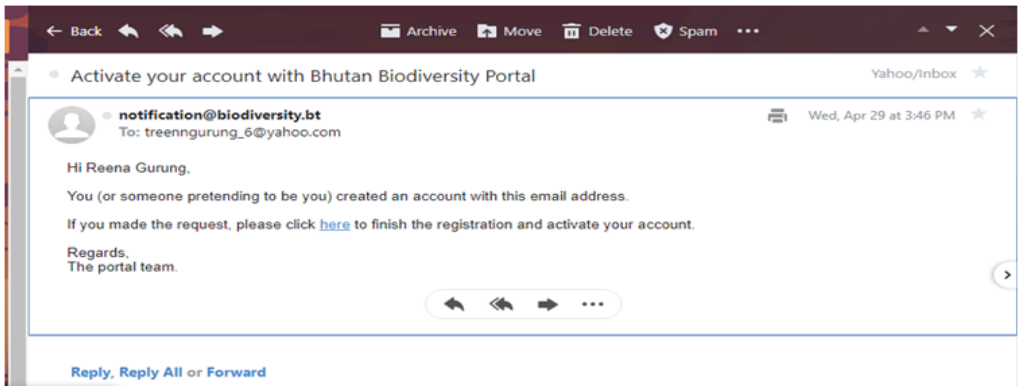
4. Once you have completed the form, click on the Register button to submit your form.



5. Once you have clicked on the Register button, the message below will be displayed.



6. The registration step is not complete yet. You need to check your email (with which you have registered) for confirmation of registration and verification (see below).



In the confirmation email, you will receive a link to click to finish the registration process. Once you click, you will receive a message confirming your registration as shown in the picture below.

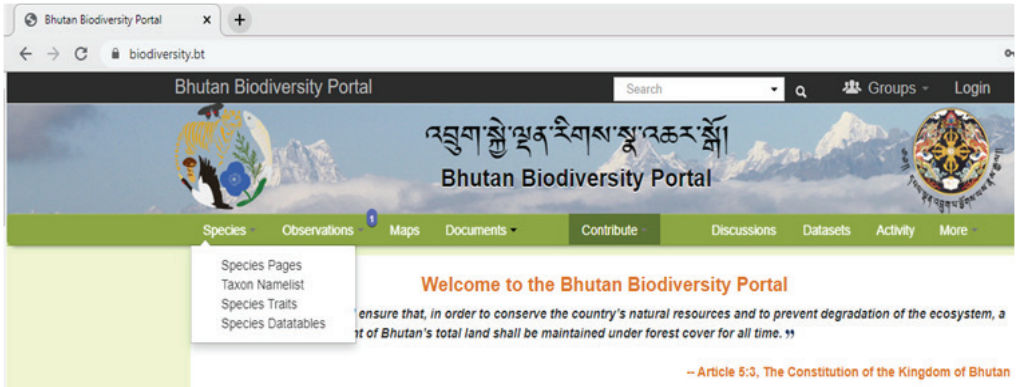


Once your registration is complete, you can login with your email and password to contribute and/or use data.

Main Features of the Bhutan Biodiversity Portal

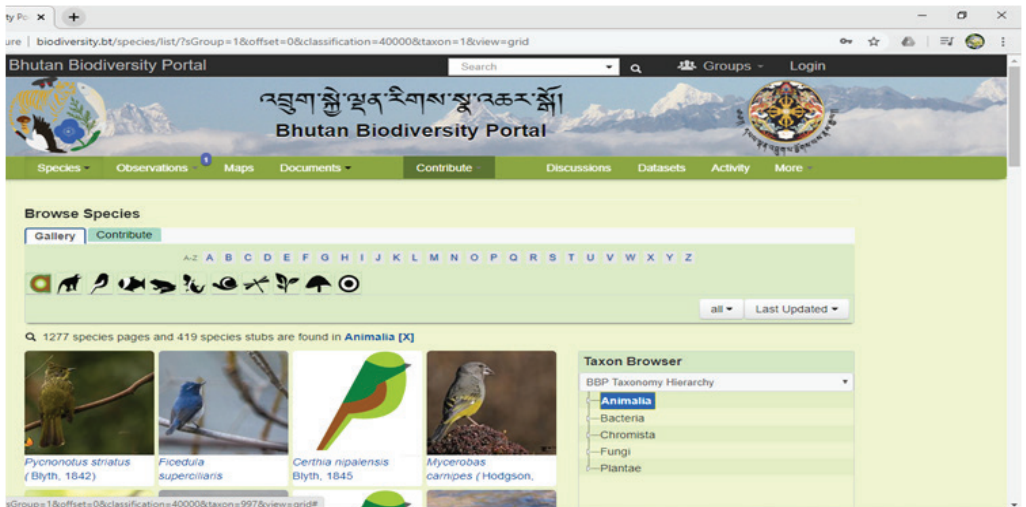
Species

There are four options under the Species tab namely species pages, taxon namelist, species traits and species datatables.



Species Page

The species page can be used to browse different species using the Taxon Browser for easy search. For example, the result below is of Animalia which has 1,277 species pages of 419 species, with the number increasing with each observation.



Taxon Namelist

The Taxon Namelist is the list of accepted and verified species names. This feature is used only by curators and admins.

The screenshot shows the 'Taxon Namelist' page on the Bhutan Biodiversity Portal. The page header includes the portal's name in English and Dzongkha, along with navigation links for Species, Observations, Maps, Documents, Contribute, Discussions, Datasets, Activity, and More. A 'Taxon Selector' on the left shows a hierarchy with 'Plantae' selected. The main content area displays a table of taxonomic ranks and their corresponding names, with filters for Rank (Kingdom, Phylum, Class), Status (Accepted Name, Synonym, Provisionally Accepted Name), and Position (Raw, Working, Clean). The table lists the following ranks and names:

Rank	Name	Status	Position
Kingdom	Plantae	ACCEPTED	CLEAN
Phylum	Bryophyta	ACCEPTED	WORKING
Phylum	Marchantiophyta	ACCEPTED	WORKING
Phylum	Charophyta	ACCEPTED	WORKING
Phylum	Tracheophyta	ACCEPTED	CLEAN

At the bottom, it indicates 'Total: 5' and 'Showing 5 accepted names and their synonyms'.

Species Traits

Here the users can use filters based on the Taxonomy Hierarchy, Conservation Status and General Habitat of different species to derive more information on the species. In the image below, Critically Endangered species from all Habitats are selected.

The screenshot shows the 'Species Traits' page on the Bhutan Biodiversity Portal. The page header is identical to the previous screenshot. The main content area is titled 'Traits Beta' and shows '3 traits found'. It features a 'Taxon Browser' on the left with 'Plantae' selected. The main content area is divided into two sections: 'Demography and Conservation > Conservation Status' and 'Habitat and Distribution > General Habitat'. The 'Conservation Status' section shows a grid of filters for IUCN Red List Categories, with 'Critically End.' selected. The 'General Habitat' section shows a grid of filters for Habitats, with 'All' selected.

















Demography and Conservation > Conservation Status
IUCN Red List Category

- All
- Least Concern
- Near Threat...
- Vulnerable
- Data Deficient
- Critically End.**
- Endangered
- Lower Risk/L...
- Lower Risk/...
- Extinct in the...
- Lower Risk/...
- Extinct
- Undefined

Habitat and Distribution > General Habitat
Habitat

- All**
- Terrestrial
- Marine
- Freshwater

The picture below shows the result of the filter made above. A total of 10 species are Critically Endangered from all Habitats.

Species	Traits	No of Observations
 <i>Raphiolepis fairmaireum</i>		8
 <i>Ardea insignis</i> Hume, 1878		42
 <i>Nardostachya jatamansi</i> DC.		4
 <i>Gehalia gangeticus</i> (Gmelin in Linnaeus, 1789)		3
 <i>Sarcogyps calvus</i> (Scopoli, 1786)		2
 <i>Manis pentadactyla</i> Linnaeus, 1758		0
 <i>Gyps bengalensis</i> (Gmelin, 1788)		4
 <i>Dicranophorus sumatrensis</i> (G. Fischer, 1814)		0

Species Datatables

Species datatables can be used to view all the species data stored in the portal. Users can click on the datatable of interest to display the list of species within the table. For example, there are 11 Species under Fishes of Bhutan.

Data Table

6 datatables found

Last Updated ▾

12 ▾

- Data Table : An annotated checklist of fishes from Bhutan- Species Pages (82 Species) ▾
- Data Table : Eleven new species and one new record of black flies (Diptera: Simuliidae) from Bhutan flies (12 Species) ▾
- Data Table : Odonata of Bhutan (94 Species) ▾
- Data Table : Trichoptera of Bhutan (154 Species) ▾
- Data Table : Freshwater Algae of Bhutan (86 Species) ▾
- Data Table : Fishes of Bhutan (11 Species) ▾

Title

Cirrinus cirrhosus (Bloch, 1795)

Cyprinon sempiotum (McClelland, 1839)

Salmo trutta

Mystus vittatus

Channa striata

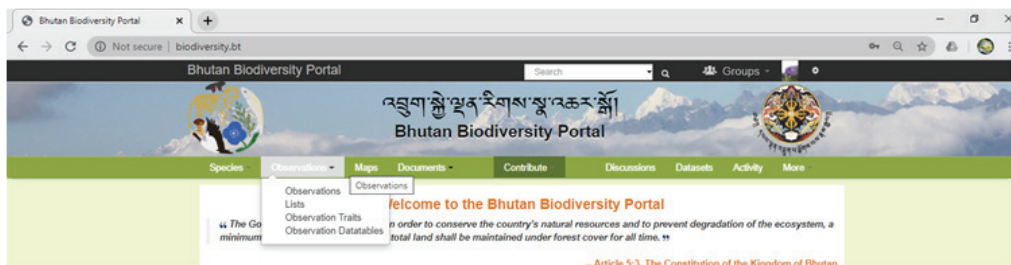
Once the user clicks on the species of interest, the user will be presented with all the information on that species found in the Portal. For example, if you select *Salmo trutta*, you will be taken to another page where you will be presented with all the information about *Salmo trutta* such as Ecological Status, Common names, Size, General Habitat, Description and Occurrence, Conservation Status, etc.

The screenshot shows a web browser window with the URL `biodiversity.bt/species/show/4396`. The page content is as follows:

- Video Player:** A video player showing a close-up of a brown trout. Below the video, it lists the contributor as 'f. phumtsho' and shows a rating of 1 star.
- Search Bar:** A search bar with the placeholder text 'Search for taxon' and a search button.
- Traits:** A section titled 'Natural History > Ecology' with a sub-section 'Ecological Status' containing a green button labeled 'Introduced'.
- Common Names:** A section titled 'Others' with a list of common names in various languages, including: Lachförch, Lassföhren, Truta-de-lago, Truta-fário, Orret, Kumzha, Truite de mer, Patruh mosky, Denizalbaligi, Finnock, Brook trout, Truta marisca, Salmo trota, Sjøørret, Orred, Truite brune de mer, Aure, Umiö, Forelle, Morskaya forel, Galway sea trout, Sea trout, Losos' taimen, Breac geal, Whiting, Qwyniedyn, Patruh obecny, Meritaimen, Havsröing, Patruh obyčajny, Trutta, Trucha, Brown trout, Trucha marina, Zeeforel, Hering, Trucha común, Europäische Forelle, Lachforelle, Bachforelle, Sjøørret, Öring, Truta-marisca, Meerforelle, An breac geal, Truite brune, Skvín, Truite d'europe, Patruh obecny severomorský, Sevin, Losos taimen, Thalasopectrofa, Trota farlo, Trout, Pastrav de mare, Kvisech, Blacktail, Herling, Mahlazad-e-daryaye khazar, Sjøaure, Orange fn, Troc, Denizalasi, Taimen, Gillaroo, Whiting, Salmon trout, Peal, Orkney sea trout, Havarred, Morska postiv, Troc wedrowna.

Observations

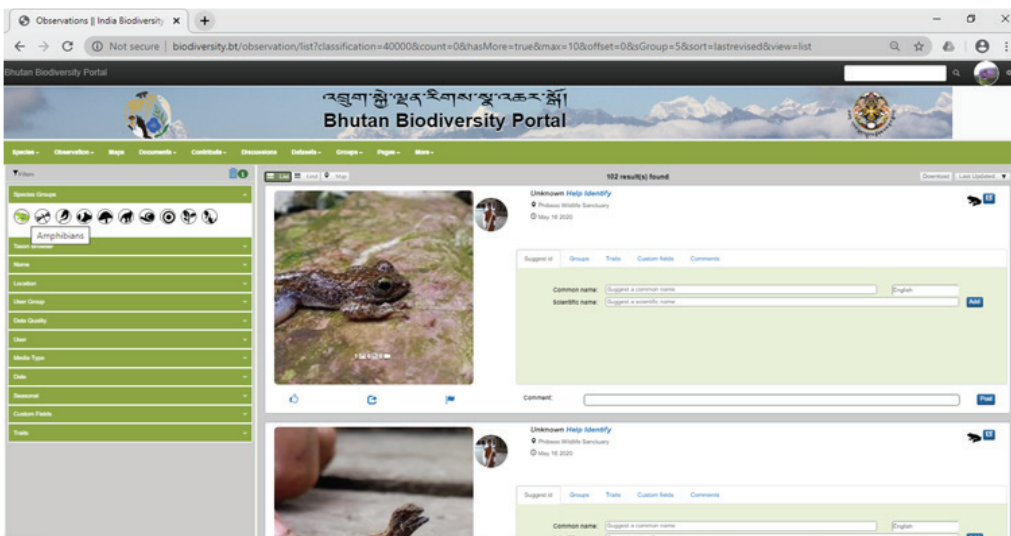
The observations page has four options which are Observations, Lists, Observation Traits and Observation Datables.



Observation

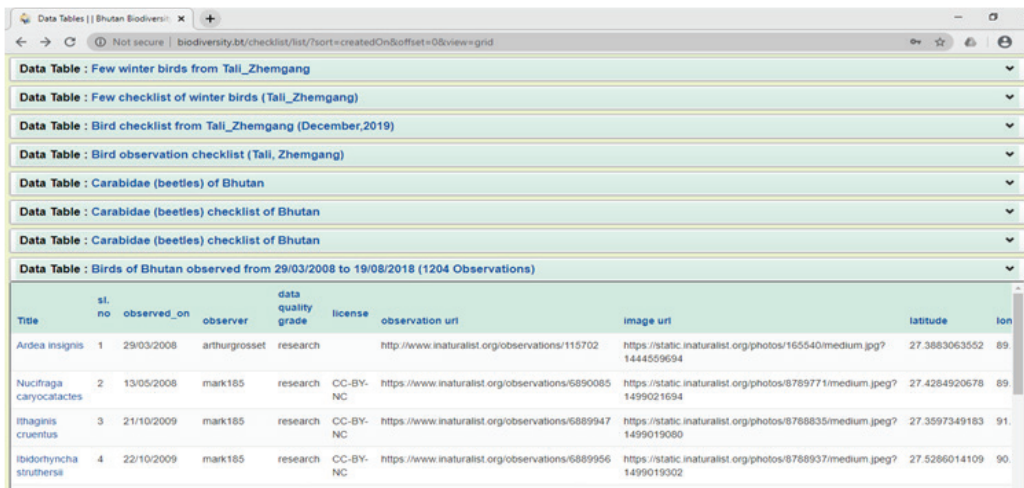
In the observation page, you will be presented with all the observations made by portal members. Here, you can sort the observation list by using the filter option located on the left side.

For example, if you have selected the list of amphibian observations made in the portal, only the results of amphibians will be shown.



Lists

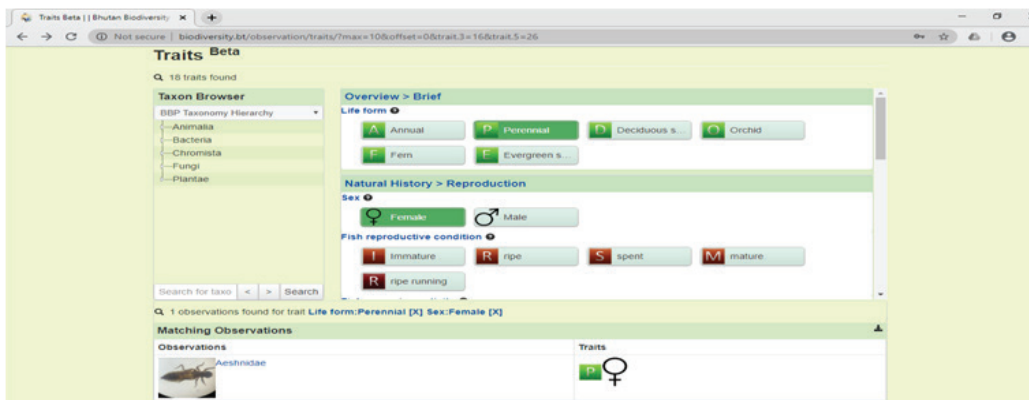
Lists are checklists of species observed and contributed in the form of tables by registered portal members. Users can view the lists based on their groups. If you click on the dropdown button at the right corner of the list, you will get a list which has been recorded. For example, the picture below shows 1,204 observation on Birds of Bhutan from 29/3/2008 to 19/8/2018.



Title	sl. no	observed_on	observer	data quality grade	license	observation url	image url	latitude	lon
<i>Ardea insignis</i>	1	29/03/2008	arthurgrosset	research		http://www.inaturalist.org/observations/115702	https://static.inaturalist.org/photos/165540/medium.jpg?1444559694	27.3883063552	89.
<i>Nucifraga caryocatactes</i>	2	13/05/2008	mark185	research	CC-BY-NC	https://www.inaturalist.org/observations/6850085	https://static.inaturalist.org/photos/8789771/medium.jpeg?1499021694	27.4284920678	89.
<i>Ithaginis cruentus</i>	3	21/10/2009	mark185	research	CC-BY-NC	https://www.inaturalist.org/observations/6889947	https://static.inaturalist.org/photos/8788835/medium.jpeg?1499019060	27.3597349183	91.
<i>Ibidorhyncha struthersi</i>	4	22/10/2009	mark185	research	CC-BY-NC	https://www.inaturalist.org/observations/6889956	https://static.inaturalist.org/photos/8788937/medium.jpeg?1499019302	27.5286014109	90.

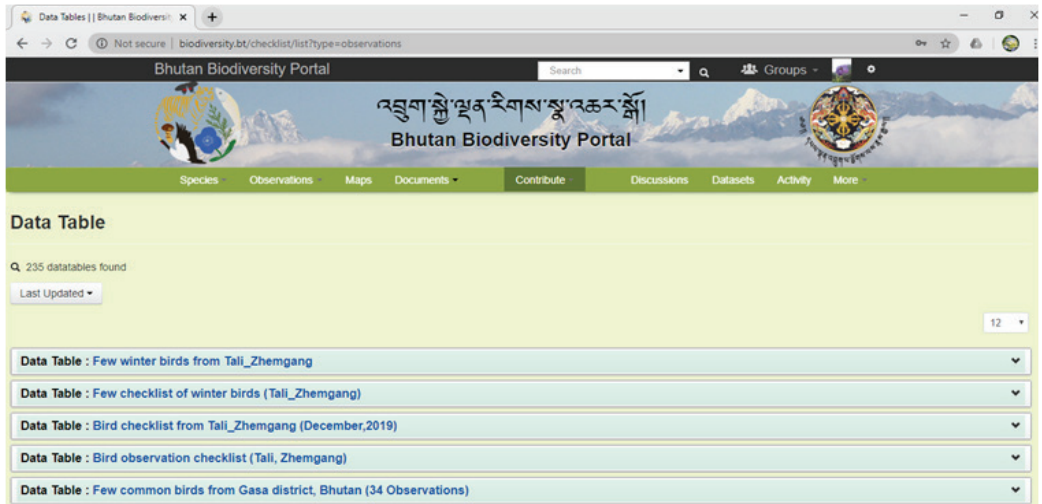
Observation Traits

The observation Traits option is for users who are looking for more filter options to have an accurate observation list as shown below:



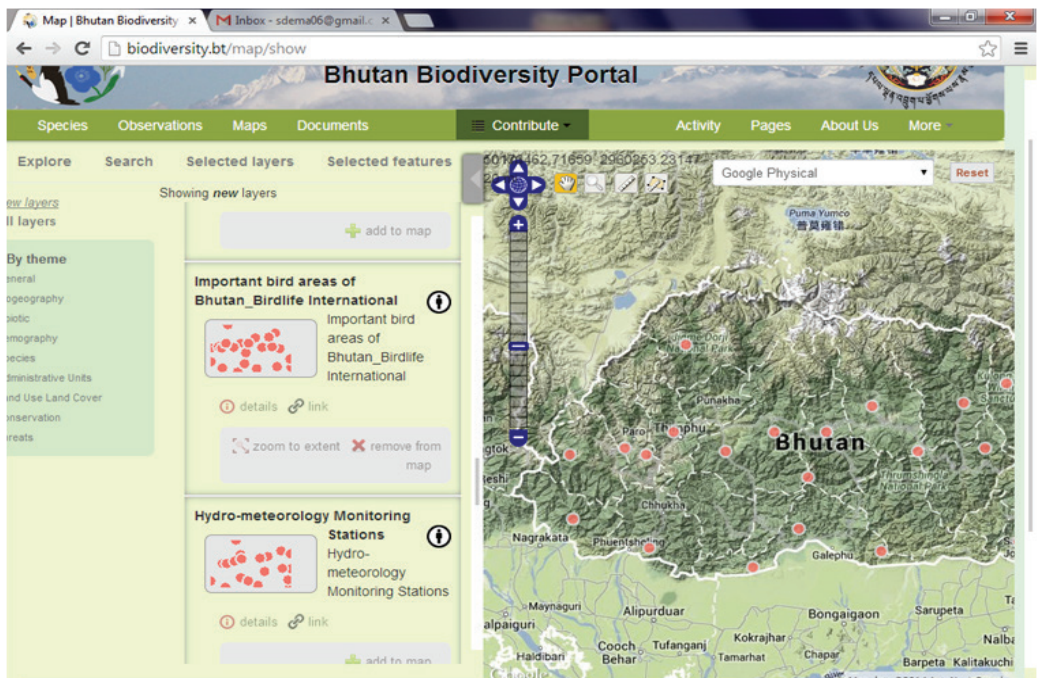
Observation Datables

Observation Datables have the same function as observation lists.



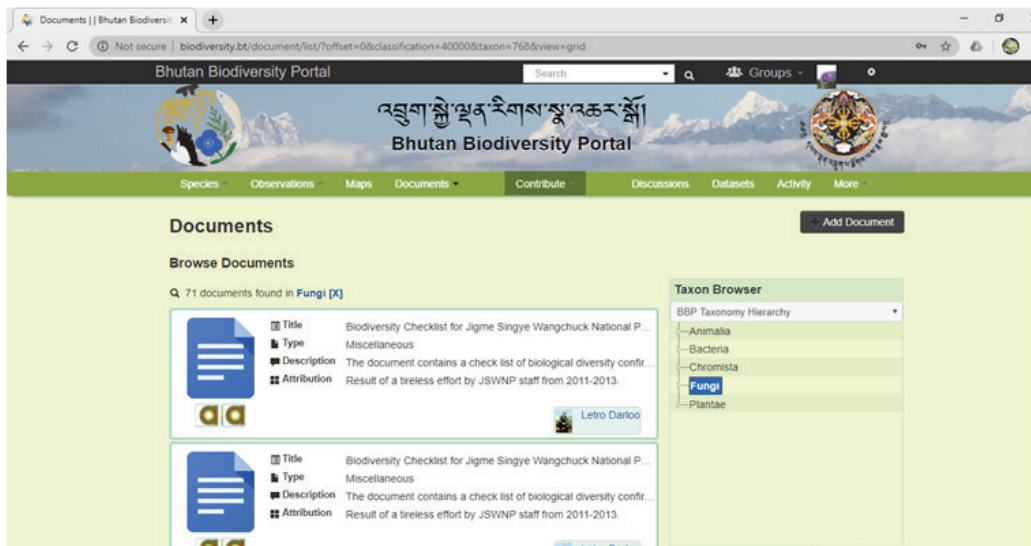
Maps

Maps help the user to find out the location of the species in the country. The location of observations are automatically linked to the map section and in addition map layers can be added when required. For example, the user can add the Important Bird Areas (IBA) layer to the map to view the distribution of IBAs. The screen shot of this page is shown below:



Documents

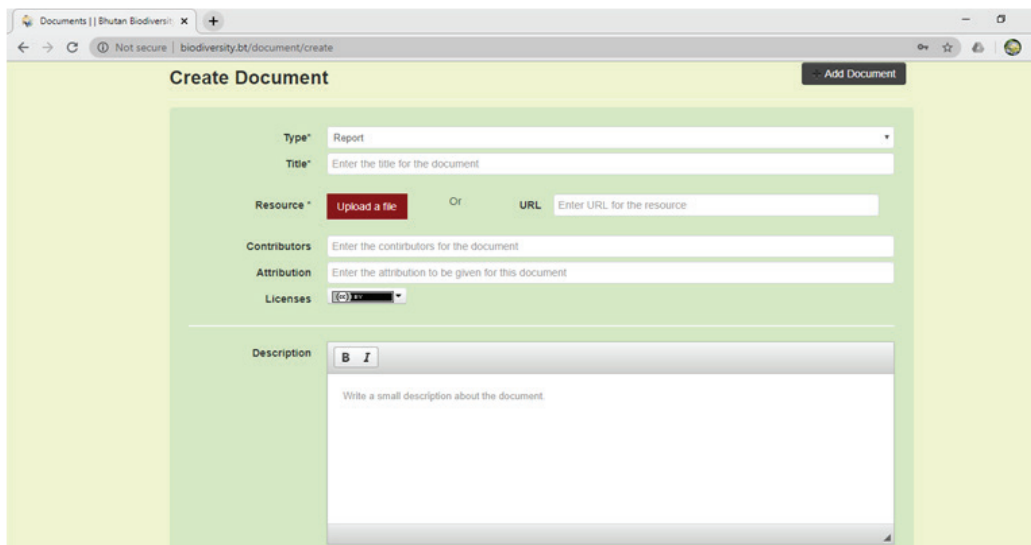
Documents include a list of research articles, thesis, reports, projects, books, government documents, and news articles related to Bhutan's biodiversity. Users can also search for specific group of documents using the Taxon Browser located at the right side of the page.



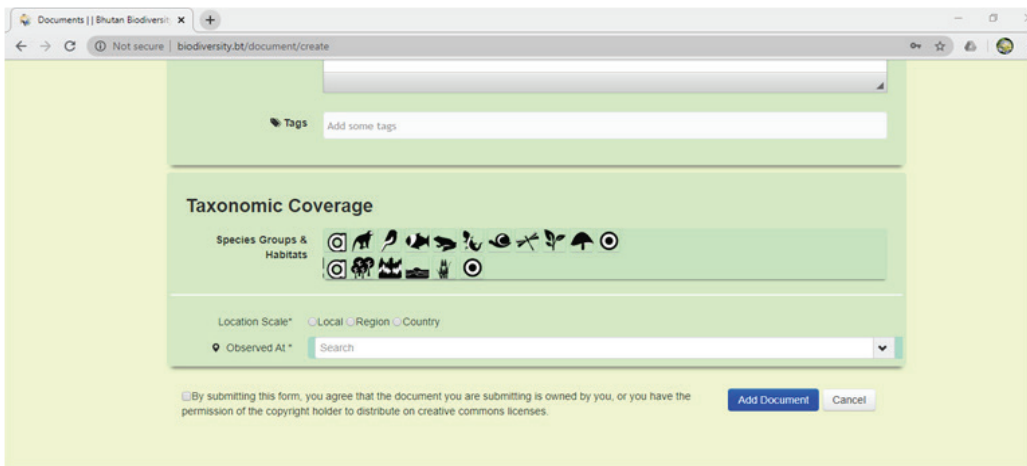
The screenshot shows the 'Documents' page of the Bhutan Biodiversity Portal. The page features a navigation bar with 'Documents' selected. Below the navigation bar, there is a search bar and a 'Taxon Browser' on the right side. The main content area displays a list of documents, with two visible entries. Each entry includes a document icon, a title, type, description, and attribution. The 'Taxon Browser' shows a hierarchy of taxonomic groups, with 'Fungi' selected.

Uploading Documents

A user has to be a member of the portal to upload documents. In order to upload a document, you have to click on the Add Document button on the right side of the page (see below). Fill in the fields to complete the process. Fields marked with asterisks are mandatory fields.



The screenshot shows the 'Create Document' page of the Bhutan Biodiversity Portal. The page features a form with several fields for creating a new document. The fields are: 'Type' (a dropdown menu), 'Title' (a text input field), 'Resource' (a red 'Upload a file' button and a text input field for 'URL'), 'Contributors' (a text input field), 'Attribution' (a text input field), and 'Licenses' (a dropdown menu). Below these fields is a 'Description' section with a text area and a 'Write a small description about the document.' prompt. The 'Add Document' button is visible in the top right corner.

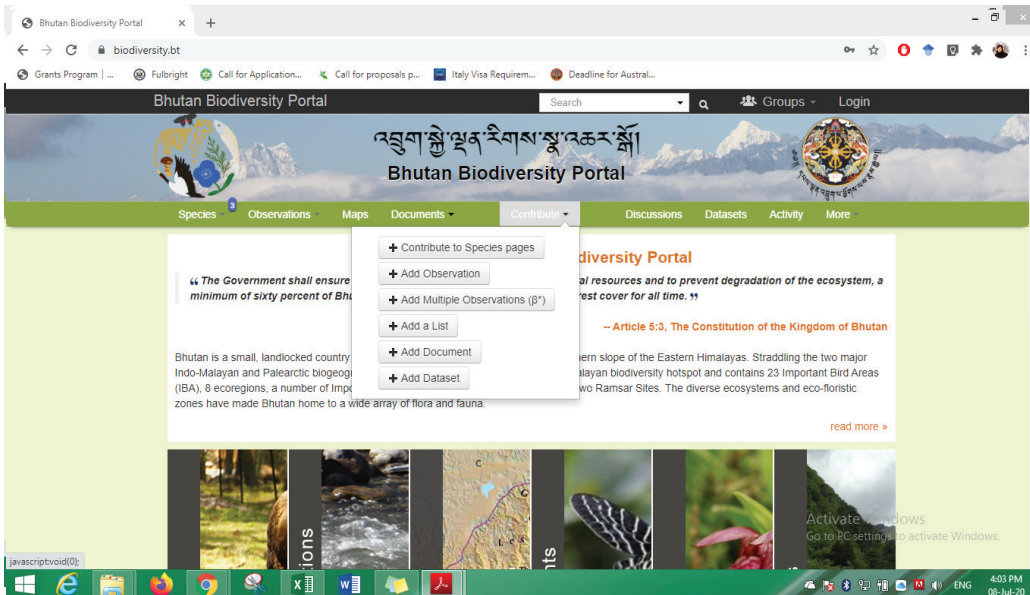


Viewing or Downloading Documents

Anyone can view and/or download documents without registering as a member of the portal.

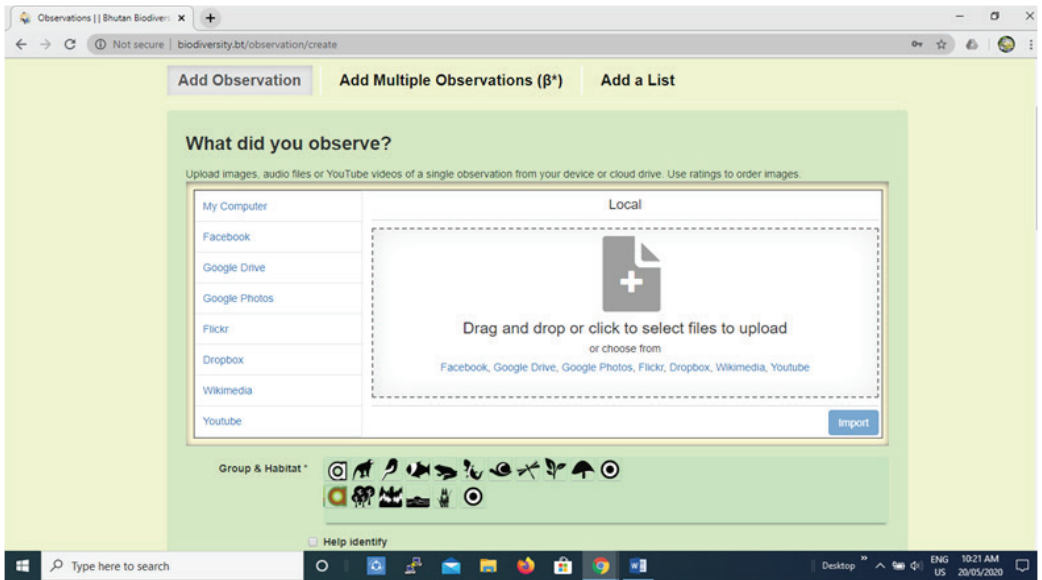
Contribute

To contribute to the portal, you need to log in first. Upon clicking the Contribute tab, you will see a drop down list (See below).

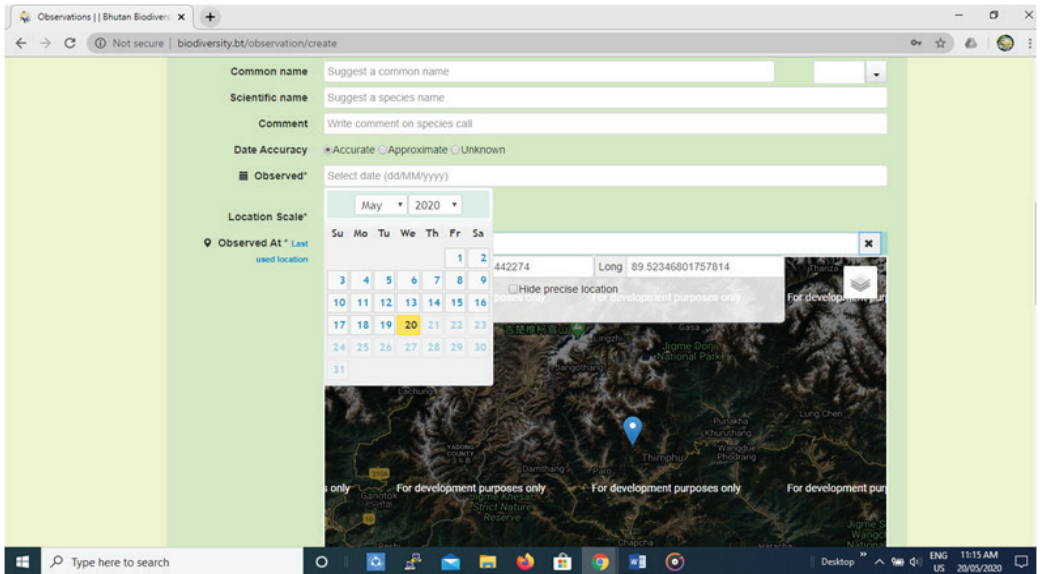


Add Observation

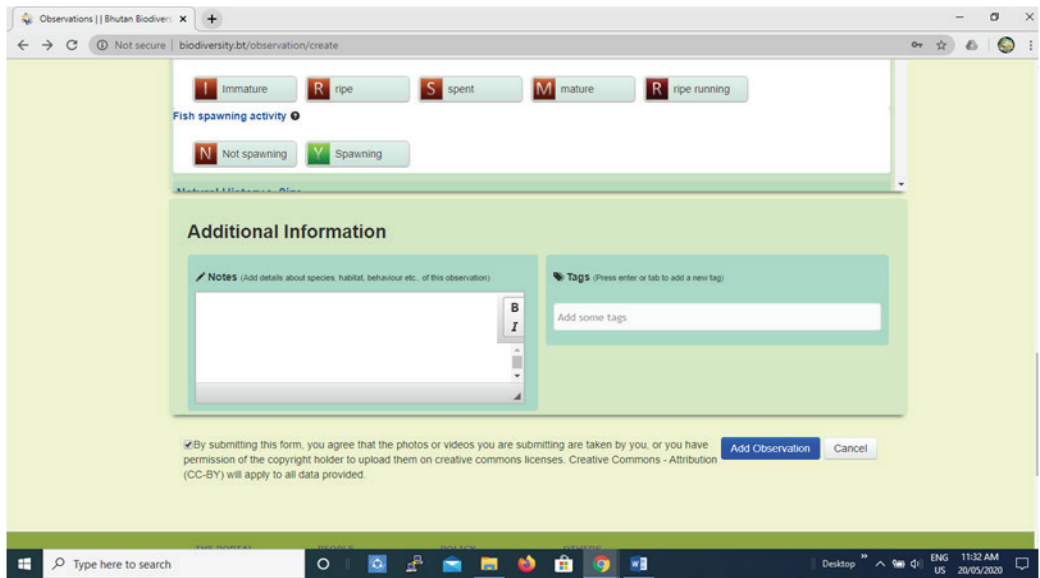
To add observations, select the option to Add Observation. Then, select the option to add relevant picture, audio or YouTube video followed by the group or habitat they belong to. If you are unable to identify the species, you can tick the Help Identify check box in order to get help in identification.



Fields marked with asterisks are mandatory fields.

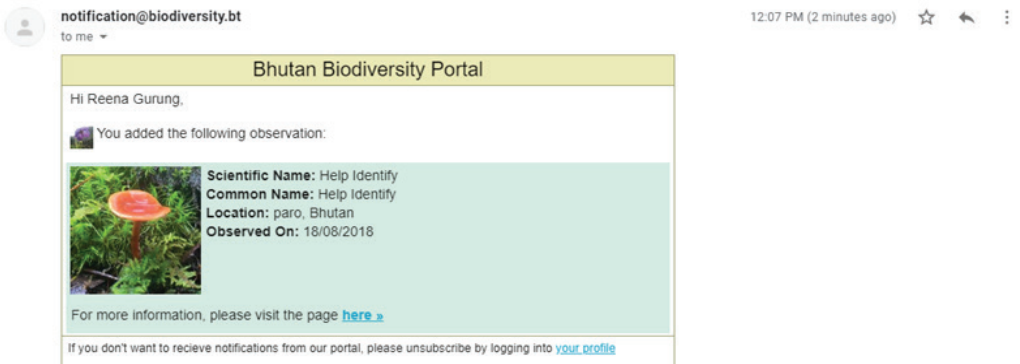


Before completing the final step, there is an optional field to write a note about your observations and give Tags. The last step to complete the process is to agree to the terms and conditions and click on Add Observation button.



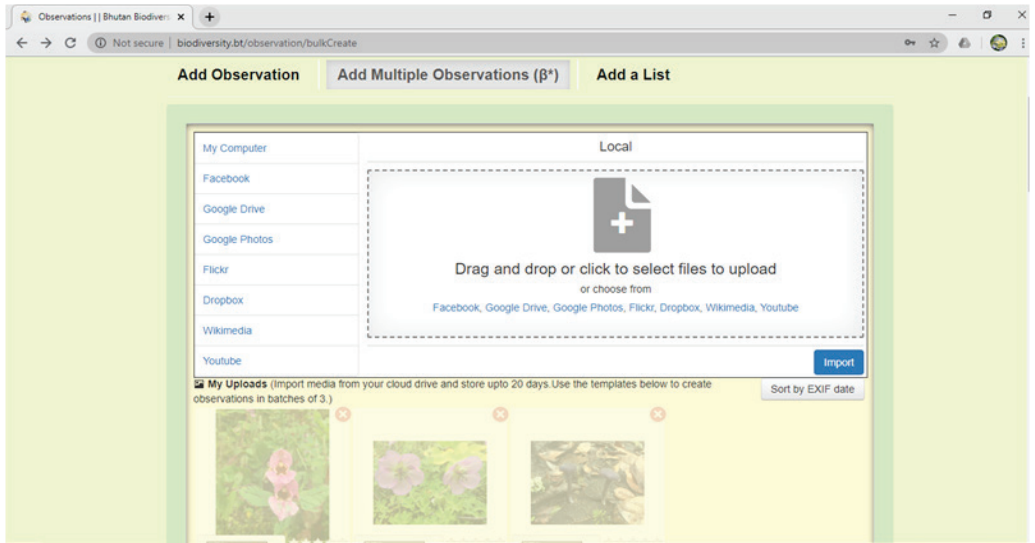
The screenshot shows a web browser window at `biodiversity.bt/observation/create`. At the top, there are several buttons for life stages: 'I Immature', 'R ripe', 'S spent', 'M mature', and 'R ripe running'. Below these is a section for 'Fish spawning activity' with 'N Not spawning' and 'Y Spawning' buttons. The main form area is titled 'Additional Information' and contains a 'Notes' text area (with a 'B' and 'I' icon) and a 'Tags' input field. At the bottom of the form, there is a checkbox for terms and conditions and two buttons: 'Add Observation' and 'Cancel'. The Windows taskbar is visible at the bottom of the browser window.

Once you submit your observation, you will receive an email saying that you have added the following observation as below.

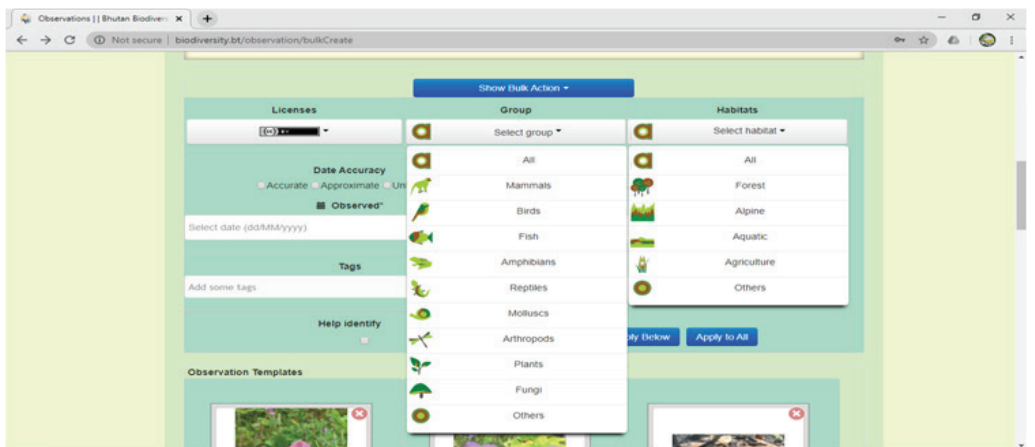


Add Multiple Observations (β*)

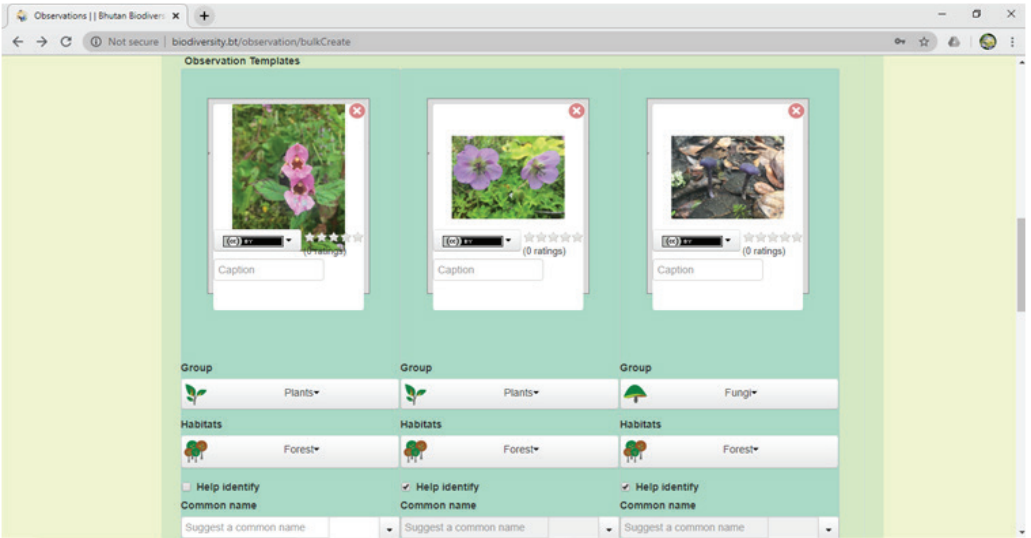
Adding multiple observations is the same as adding an observation except that you can add more than one species in one go.



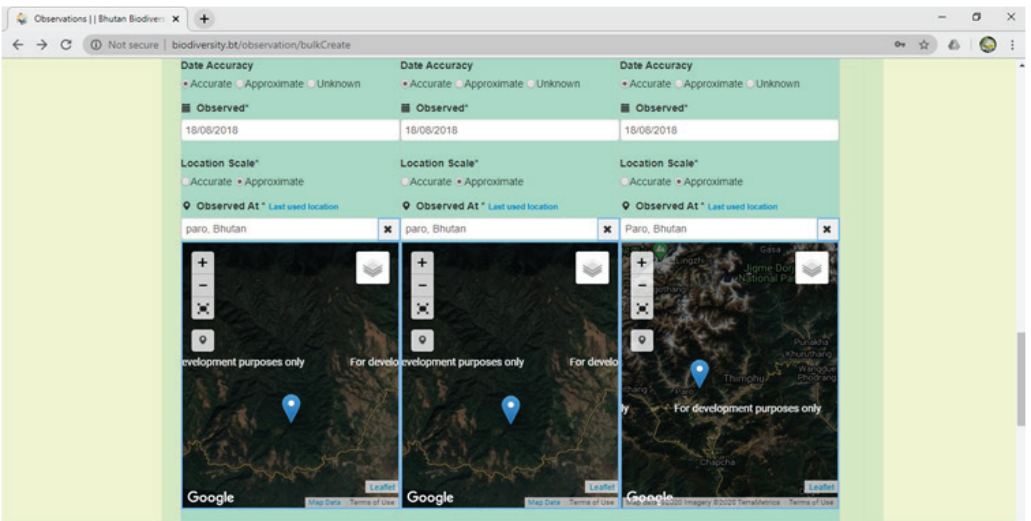
In case, your observations are of the same group and habitat, then there is an option called Bulk Action as below. When you click on Bulk Action, it will display drop down options that can be selected, saving time and making it easy to add multiple observations.



In case of multiple observations of different groups and habitats, follow the same process for each species. The example below shows two observations of Plants and one of Fungi with the same habitat.



The next step is to add the date and the location of the observations.



Before completing the final step, there is an optional field to write a note about your observations and give Tags. The final step is to agree to the terms and conditions and click on the Submit & Finish button.

In case you have more than three observations, you have to click on the Submit & Add More button and repeat the same process to add those observations.

[Note: Media files not yet submitted can be stored temporarily in the portal for 20 days.]

Notes (Add details about species, habitat, behaviour etc., of this observation)

Tags (Press enter or tab to add a new tag)

Add some tags

User Groups

By submitting this form, you agree that the photos or videos you are submitting are taken by you, or you have permission of the copyright holder to upload them on creative commons licenses. Creative Commons - Attribution (CC-BY) will apply to all data provided.

Submit & Add More Submit & Finish

The message below will pop-up on the top of the page when you complete adding observations.

biodiversity.bt says

Observations created successfully=3

Errors in observation submission=0

OK

Add a List

Registered members can add lists of species observations and associated information usually in a table format. The scientific names of the species should be in the first column of the table to be accepted as an observation. This information will be added in the Databases.

The steps to add the lists are as follows:

1. Type in the title for the list followed by a summary. The description is optional.

Add Databases

Add Observations

Title

Title*

Summary*

Description

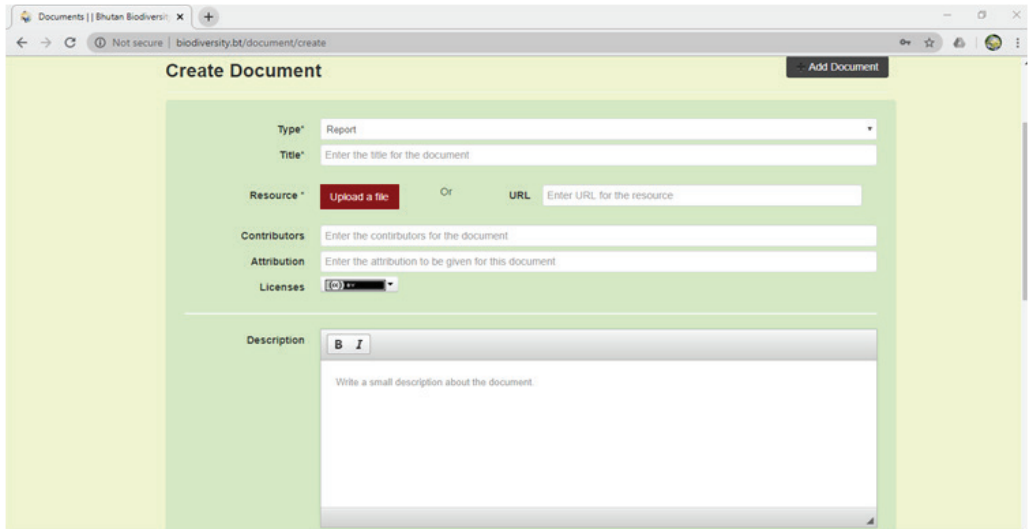
2. Select Usage Rights as appropriate from the drop down menu or leave it as default.
3. Select the relevant Taxonomic Group,
4. From the Temporal Coverage, Select Date(s) of Observation.
5. From the Geographical Coverage, select Location of Observation(s) on the map or search the location from the search bar .

6. Under Others, there is an option to add methods of data collection, if available.
7. Under Data Tables, select the Observation File to upload the list(s). For advanced users, the Observation Images button can used to add images of species in the Data Table.
8. The final step to complete the process is to agree to the terms and conditions and click on Add Observation button.

Add Document

In order to add documents to the portal, follow the steps below.

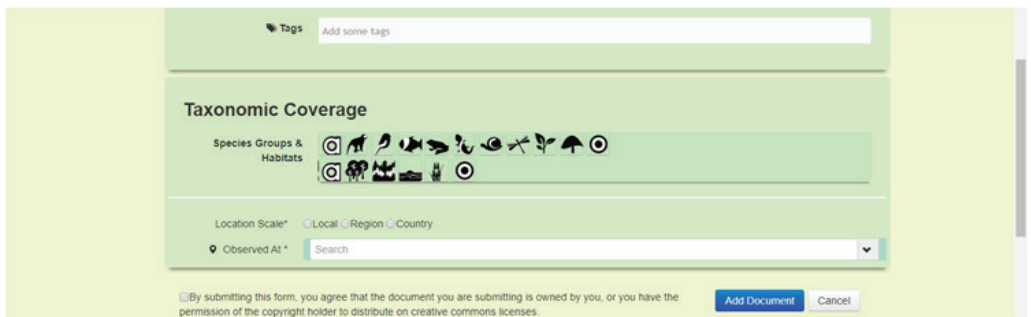
1. Select the Type of document from the list.
2. Type in the Title of your document and attach the file or type in the URL, if the document is available in other websites.
3. The other fields are optional.



The screenshot shows a web browser window with the URL `biodiversity.bt/document/create`. The page title is "Create Document". The form includes the following fields:

- Type***: A dropdown menu with "Report" selected.
- Title***: A text input field with the placeholder "Enter the title for the document".
- Resource***: A section with two options: "Upload a file" (a red button) and "URL" (a text input field with the placeholder "Enter URL for the resource").
- Contributors**: A text input field with the placeholder "Enter the contributors for the document".
- Attribution**: A text input field with the placeholder "Enter the attribution to be given for this document".
- Licenses**: A dropdown menu with a Creative Commons license selected.
- Description**: A rich text editor with bold (B) and italic (I) buttons and a placeholder "Write a small description about the document."

4. Tags are optional and can be used to share information.
5. Select relevant Groups and Habitats.
6. Select the location on the map or type in the location name in the search bar.
7. The final step to complete the process is to agree to the terms and conditions and click on Add Document button.



The screenshot shows the bottom portion of the form, including:

- Tags**: A text input field with the placeholder "Add some tags".
- Taxonomic Coverage**: A section with two rows of icons representing different species groups and habitats. The first row includes icons for a cow, bird, fish, insect, and plant. The second row includes icons for a bear, dog, and other animals.
- Location Scale***: Radio buttons for "Local", "Region", and "Country".
- Observed At***: A search input field with the placeholder "Search".
- Terms and Conditions**: A checkbox with the text "By submitting this form, you agree that the document you are submitting is owned by you, or you have the permission of the copyright holder to distribute on creative commons licenses.".
- Buttons**: "Add Document" (blue) and "Cancel" (grey).

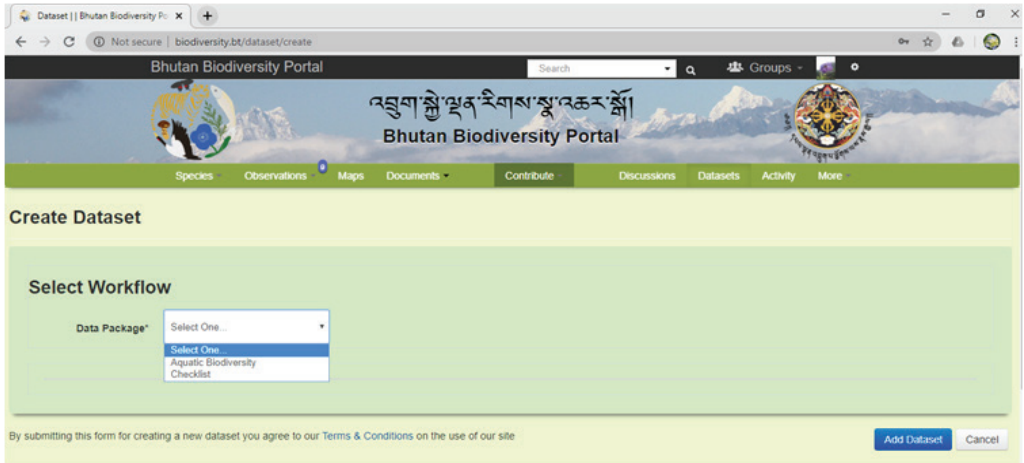
Create Dataset

This function can be used only by the administrators of the portal. Currently, under datasets, there are two data packages namely, Aquatic Biodiversity datasets and Checklist datasets. Members can add datasets only under these two data packages.

Add Dataset

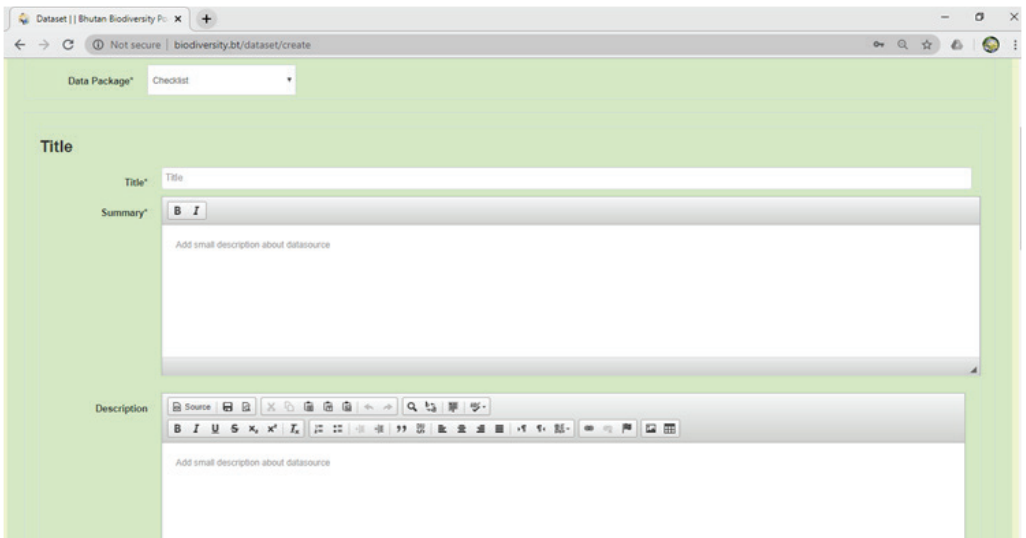
To add a dataset, the steps below have to be followed:

1. Click Datasets tab, select one of the data packages from the Select Workflow field.
2. Click Add Dataset.



The screenshot shows the 'Create Dataset' page on the Bhutan Biodiversity Portal. The page has a green header with the portal's name in English and Dzongkha, and a navigation menu with tabs for Species, Observations, Maps, Documents, Contribute, Discussions, Datasets, Activity, and More. The main content area is titled 'Create Dataset' and features a 'Select Workflow' section. A 'Data Package' dropdown menu is open, showing three options: 'Select One', 'Aquatic Biodiversity', and 'Checklist'. Below the dropdown, there is a checkbox for 'By submitting this form for creating a new dataset you agree to our Terms & Conditions on the use of our site'. At the bottom right, there are 'Add Dataset' and 'Cancel' buttons.

3. Type in the title and summary of your dataset. The description field is optional.



The screenshot shows the 'Create Dataset' page with the 'Data Package' dropdown menu set to 'Checklist'. The 'Title' field is empty. The 'Summary' field is a rich text editor with a toolbar and a placeholder text 'Add small description about datasource'. The 'Description' field is also a rich text editor with a toolbar and a placeholder text 'Add small description about datasource'.

4. Select Usage Rights as appropriate from the drop down menu or leave it as default.

5. Select the relevant Taxonomic Group,
6. From the Temporal Coverage, Select Date(s) of Observation.

From the Geographical Coverage, select Location of Observation(s) on the map or search the location from the search bar .

Dataset | Bhutan Biodiversity P... x

← → ↻ Not secure biodiversity.bt/dataset/create

Usage Rights

Licenses

Taxonomic Coverage

Group

Temporal Coverage

Date Accuracy Accurate Approximate Unknown

Observed*

Geographical Coverage

Location Scale* Accurate Approximate

Observed At*

9. Under Others, there is an option to add methods of data collection, if available.
10. The final step to complete the process is to click on the Add Dataset button.

Others

Methods

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Datasets

Currently, the datasets page here is developed only for the Aquatic Biodiversity of Bhutan, including the aquatic biodiversity assessments carried out for Hydro-power projects.

Dataset

24 datasets found

Last Updated Aquatic Biodiversity 24

Dataset	Aquatic Biodiversity of Kurichhu 2015
No of DataTables	6
Observed	November 1, 2015 - November 15, 2015 (Accurate)
Submitted	March 15, 2018
Updated	March 15, 2018
Attribution	Ugyen Wangchuck Institute for Conservation and Environmental Research (UWICER)
Fishing permit or license number	
Mode of observation	Scientific survey
Summary	An assessment of aquatic biodiversity in Kurichhu river.

Dataset	Fishes of Western Bhutan
No of DataTables	1
Observed	June 1, 2014 - January 2, 2017 (Approximate)
Submitted	March 15, 2018
Updated	March 15, 2018
Attribution	National Research Centre for Riverine and Lake Fisheries (NRCRLF), Department of Livestock, Haa, Bhutan.
Fishing permit or license number	

Discussions

The discussions page is a forum to enable members to discussion biodiversity issues/queries. Registered members can post comments in the forum (see below). You can also browse the discussions by topic.

Bhutan Biodiversity Portal

འབྲུག་གླེ་ལྗན་རིགས་སྐོར་འཆར་སློབ།
Bhutan Biodiversity Portal

Species Observations Maps Documents Contribute Publications Datasets Activity More

Discussions Add Discussion

Featured Discussions

Imported plants affecting native plants.
Check out new features
Hello everyone. I am being told by a Japanese researcher that imported plants like cactus, eucalyptus and lantana wipe out the aboriginal Bhutanese plant
Featured on August 16, 2016

Browse Discussions

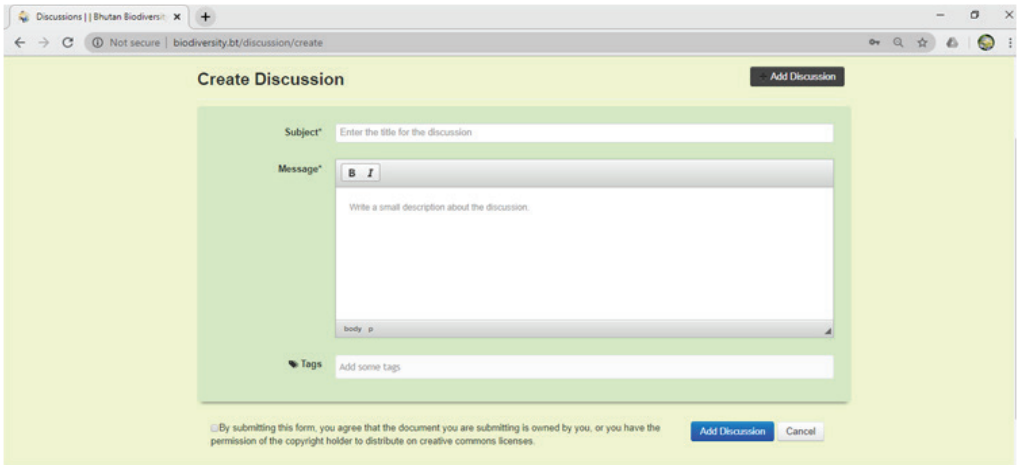
6 discussions found

Subject	Imported plants affecting native plants.
Message	Hello everyone. I am being told by a Japanese researcher that imported plants like cactus, eucalyptus and lantana wipe out the aboriginal B...
Updated	March 12, 2020

All Discussion Tags

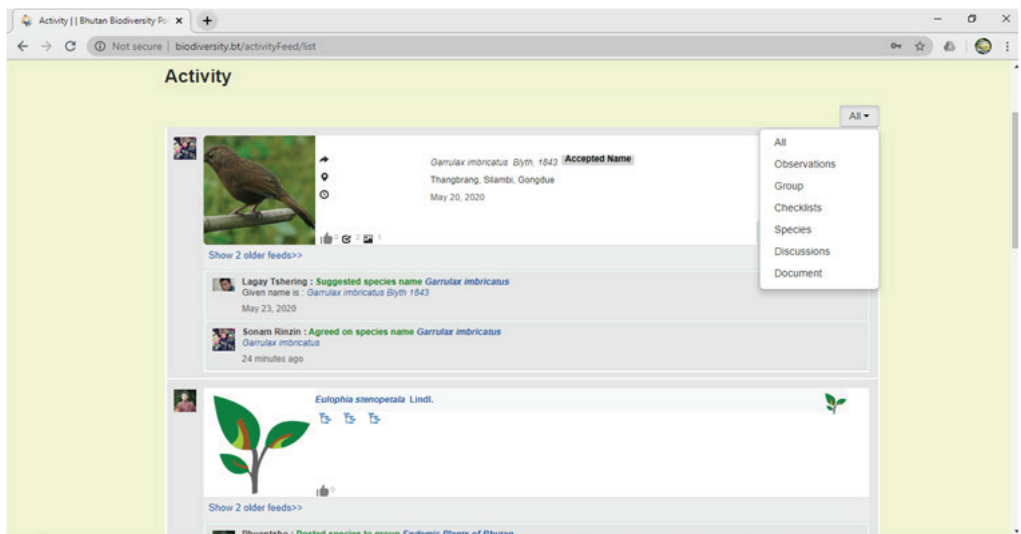
bbp upgrade new features more tags

To create new topics of discussion, you need to click on Add Discussion button.



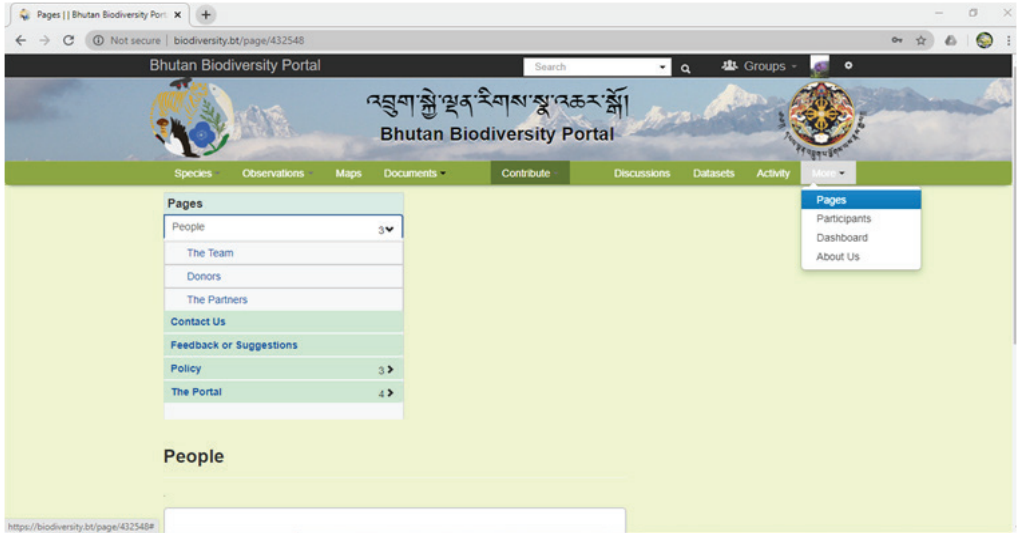
Activity

The activity page shows all the activities taking place in the Portal with the latest one appearing on top. In addition, you can filter the activities according to observations, groups, checklists, species and documents.

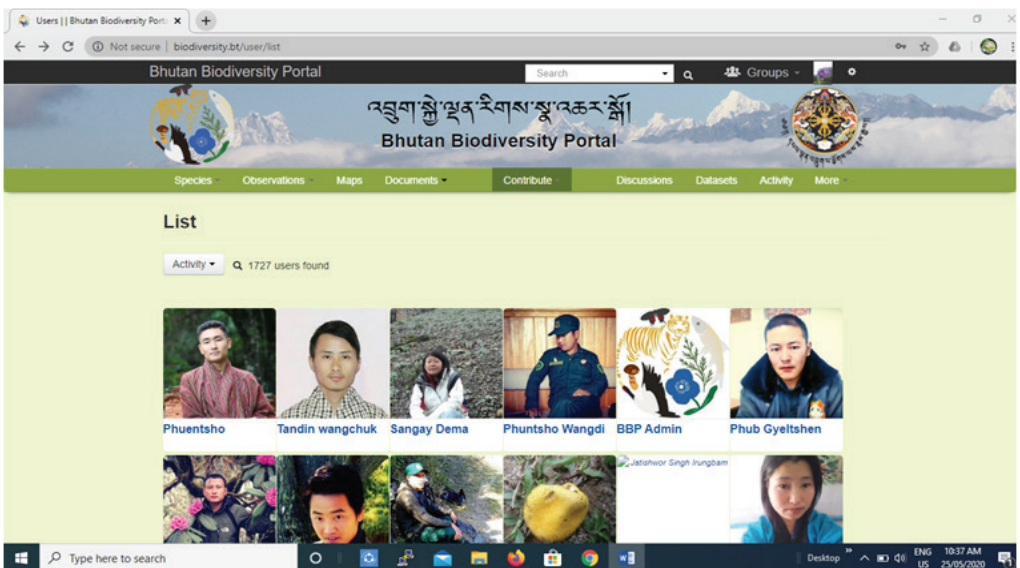


More

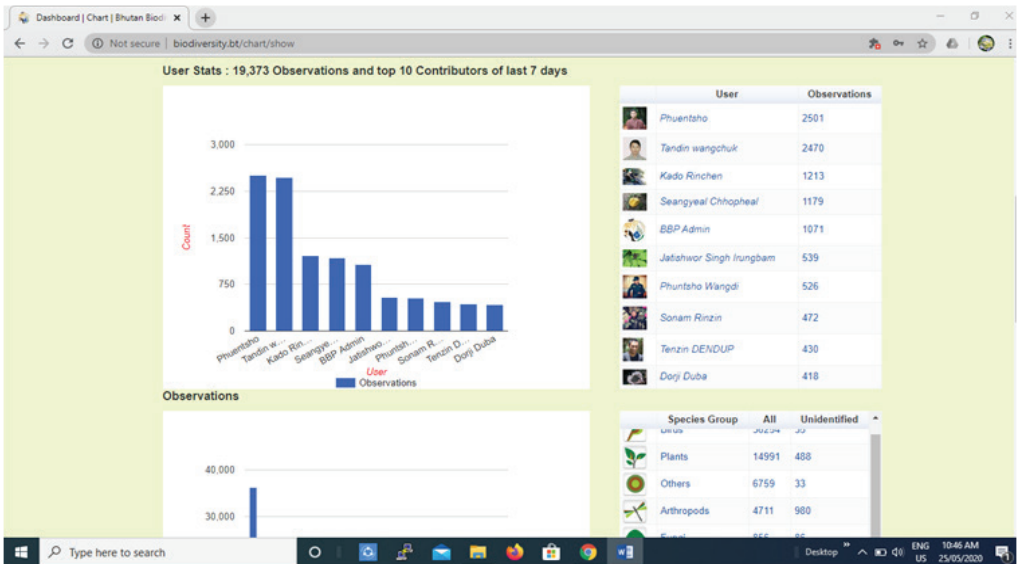
In the More page, there are four options namely, Pages, Participants, Dashboard and About Us. If you click on Pages, you will be provided with information related to the Portal Team, Donors and Partners related to the Bhutan Biodiversity Portal.



The next option is Participants. Here you will be presented with the list of registered members (see below). You can also filter this list based on activity, Last login, Latest member and Name.

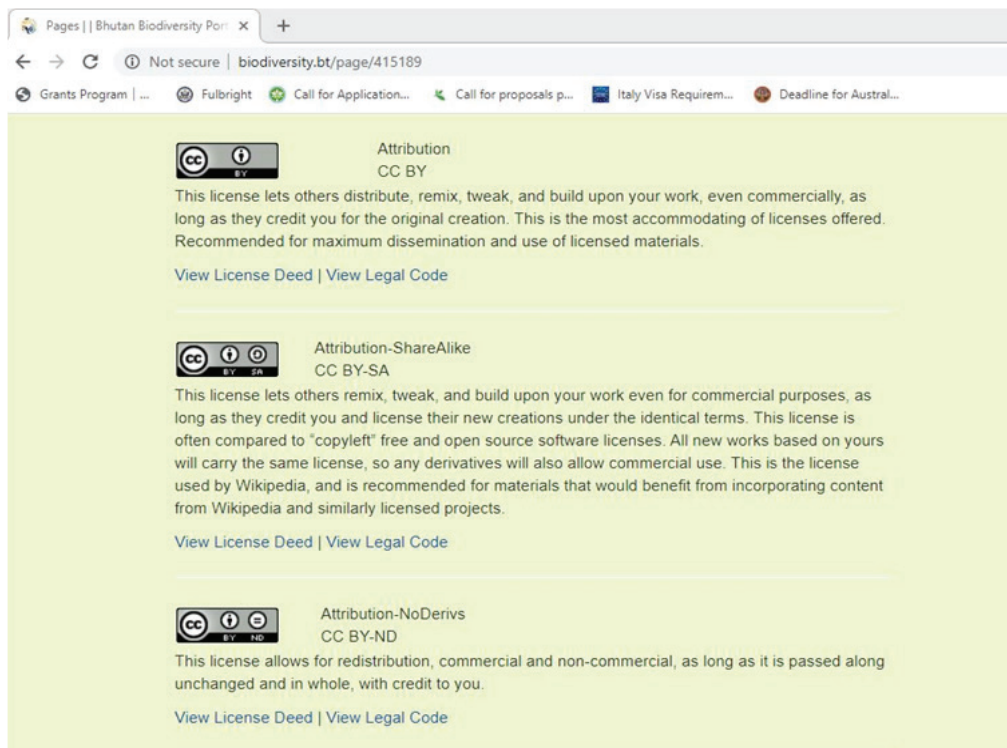


In the Dashboard, the users will have instant information about the current status of the portal, based on Observation and Species page. For example, the screenshot below shows a total of 19,373 observations and the top 10 contributors of the last 7 days.



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Pages | Bhutan Biodiversity Portal | +


← → ↻ ⓘ Not secure | biodiversity.bt/page/415189

Grants Program | ... Fulbright Call for Application... Call for proposals p... Italy Visa Requirem... Deadline for Austral...

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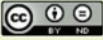
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