

# Digital Library on Bruchids

*Reference Manual for using features on Website*

*Released on: March 2011*

Brought to you by  
**National Bureau of Plant Genetic Resources**  
Pusa, New Delhi – 110012, INDIA

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## Table of Contents

<b>Section</b>	<b>Page Number</b>
1) Introduction	3
2) Steps to Register online with NBPGR	5
3) Browse Library	10
4) Bruchids Identification	13
5) Photo Gallery	29
6) Glossary	33
7) Document Repository	34
8) Change Password	37
9) Feedback form	39
10) Other Useful Links	40

## User Manual for NBPGR Website

### Introduction:

#### About website

The present Digital Library on Bruchids including database and digitized keys of bruchids have been developed under a Department of Agriculture and Cooperation (DAC), Ministry of Agriculture, Government of India- funded project entitled: *Preparation of digitized keys for quick and reliable identification of insect pests of Family Bruchidae of quarantine significance*. Work under the project was initiated in 2007 when collection of literature on bruchids was the main activity. The various parameters for compiling information on Bruchids were finalized and data entry started.

Bruchids commonly known as seed beetles belong to Family Bruchidae is a family of beetles with > 1200 species reported from various parts of the world. Of these, > 48 species have been reported from India. Bruchids belonging to Family Bruchidae are serious pests of seeds and remain undetected for a major part of their life cycle because of their immature stages developing within the seed. The larvae mostly live in seeds of Leguminosae causing great injury to peas, beans, lentils etc. On account of this habit they are often carried from one country to another in cargoes of seeds. X-ray radiography is employed to detect their presence in seeds during quarantine processing. Hence, the risk of introducing Bruchids is very high and they are often intercepted during quarantine processing. These have been repeatedly intercepted during quarantine processing of germplasm of more than 340 plant genera at NBPGR. When intercepted in quarantine, the identity of the Bruchid species needs to be established speedily to determine the quarantine risk posed by the pest and the suitable disinfestations procedure to be applied.

The importance of insect taxonomy is further enhanced in the present era of WTO/ SPS Agreement which is now governing trade wherein this information is

being used for trade negotiations. Under the SPS Agreement scientific evidence is required to substantiate claims regarding the presence or absence of pests. India being a country of diverse ecological conditions has a wide spectrum of insect pest population reported from various regions, yet, there are several species/ biotypes not recorded from India and they need to be looked for in imported material during quarantine. Identification of Bruchids is difficult because few institutions have an insect reference collection with representatives of all Bruchid genera. Also, information on Bruchid genera is available, but it is scattered in various journals and quick retrieval is a problem. This is perhaps because the taxonomists working on this group have largely restricted themselves to certain regions or to old and the new world genera. Therefore, an attempt would be made to consolidate the taxonomic information for the preparation of a digitised key for the identification of Bruchid genera and species of quarantine importance. It is hoped besides plant quarantine workers it will also be used by those engaged in the study of Insect Taxonomy and in identification of stored grain pests.

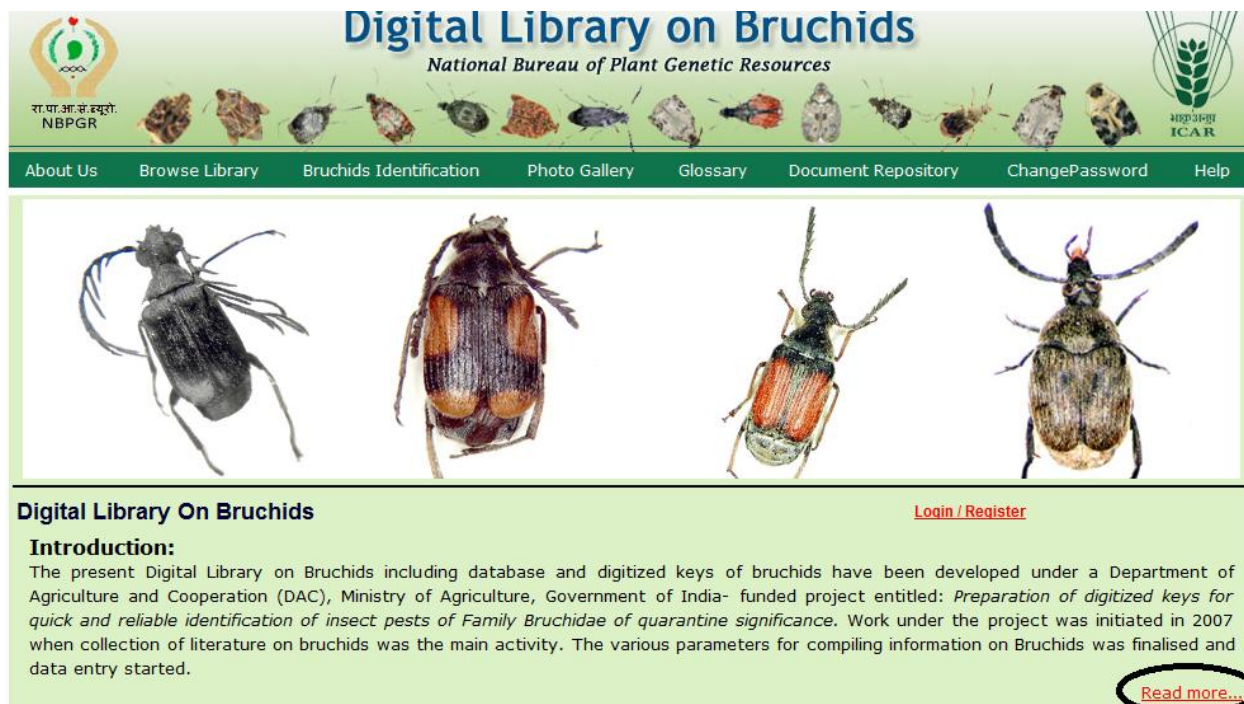
The importance of the work is further highlighted by the fact that during trade negotiations the occurrence and detection of insect pest infestations often assume a centre stage.

### **Project Objectives**

- To compile an annotated checklist of insect pests belonging to Family Bruchidae of quarantine significance to India
- To compile information and develop a database comprising ecological and other features of Bruchid pests
- To conduct taxonomic studies in Bruchids associated with seed
- To prepare digitized diagnostic key for identification of the Bruchid species

Following document will guide the users to access the website and view the contents in the website.

Type the URL of the website on the address bar of the browser to find the website.



The screenshot shows the homepage of the Digital Library on Bruchids. At the top, there is a header with the title "Digital Library on Bruchids" and the subtitle "National Bureau of Plant Genetic Resources". To the left of the header is the NBPGR logo, and to the right is the ICAR logo. Below the header is a navigation menu with the following items: "About Us", "Browse Library", "Bruchids Identification", "Photo Gallery", "Glossary", "Document Repository", "ChangePassword", and "Help". Below the navigation menu is a row of four large images of bruchid beetles. Below the images is a section titled "Digital Library On Bruchids" with a "Login / Register" link. Below this section is an "Introduction:" section with the following text: "The present Digital Library on Bruchids including database and digitized keys of bruchids have been developed under a Department of Agriculture and Cooperation (DAC), Ministry of Agriculture, Government of India- funded project entitled: *Preparation of digitized keys for quick and reliable identification of insect pests of Family Bruchidae of quarantine significance.* Work under the project was initiated in 2007 when collection of literature on bruchids was the main activity. The various parameters for compiling information on Bruchids was finalised and data entry started." A "Read more..." link is located at the bottom right of the introduction section.

Click on “Read more” to know more about the website.

**Introduction:**

The present Digital Library on Bruchids including database and digitized keys of bruchids have been developed under a Department of Agriculture and Cooperation (DAC), Ministry of Agriculture, Government of India- funded project entitled: *Preparation of digitized keys for quick and reliable identification of insect pests of Family Bruchidae of quarantine significance*. Work under the project was initiated in 2007 when collection of literature on bruchids was the main activity. The various parameters for compiling information on Bruchids was finalised and data entry started.

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The importance of insect taxonomy is further enhanced in the present era of WTO/ SPS Agreement which is now governing trade wherein this information is being used for trade restrictions. Under the SPS Agreement scientific evidence is required to substantiate claims regarding the

In order to view the contents of this website, user needs to fill an online registration form and submit the same to NBPGR.

## Steps to Register online with NBPGR:-

Step 1:-click on 'Login/Register' button found in the NBPGR Home page. A window like the one shown in the screen below will appear. Click on 'Click for New Registration with NBPGR' button to find the user registration form.



Step 2:-Fill all the fields in the User Registration form with appropriate information and submit the form.

On successful submission of the form, the system will display a confirmation message and a security code will be sent to the e-mail id provided in the form.



Step 3:- Find the mail from NBPGR and click on the link to proceed further.

Please click on the Link and enter the Security code to confirm your registration on NBPGR :

Security Code **16JT0W67**

Please [ Click on the link OR Copy the link and Paste to new browser ] to Login : <http://localhost:4112/NBPGR/User/UserConfirmPage.aspx>

Thanks !  
NBPGR,Delhi



Step 4:- In the window which appears, enter the security code and submit.



The screenshot shows the top banner of the website with the title "Digital Library on Bruchids" and the subtitle "National Bureau of Plant Genetic Resources". Below the banner is a navigation menu with links: "About Us", "Browse Library", "Search Library", "Photo Gallery", "Glossary", "Document Repository", and "Help". A "Login" button is also visible. The main content area features a text input field labeled "Enter Security Code\*" with a red circle around it. Below the input field are two buttons: "Submit" (circled in red) and "Re-Set".

Step 5:-Once the security code is verified by the system for the email id, a login page will appear like the screen shown below. User can log into the website using the e-mail id and password.



The screenshot shows the "Login / Registration Page" of the website. The page has a light blue background. At the top, there is a navigation menu with links: "Login / Registration Page", "Browse Library", "Search Library", "Photo Gallery", "Glossary", "Document Repository", and "Help". A "Login" button is also visible. The main content area features two text input fields: "E-MailID\*" and "Password\*", both with red circles around them. Below the input fields are two buttons: "Login" (circled in red) and "Re-set". A link "Click for New Registration with NBP" is located in the top right corner.

Step 6:-The NBPGR Home page for online user will be displayed. Users can view all the contents in the website.

National Bureau of Plant Genetic Resources

About Us Browse Library Bruchids Identification Photo Gallery Glossary Document Repository ChangePassword Help

Logged in as [nbpgrtestadmin] Logout

**Digital Library On Bruchids**

**Introduction:**  
The present Digital Library on Bruchids including database and digitized keys of bruchids have been developed under a Department of Agriculture and Cooperation (DAC), Ministry of Agriculture, Government of India- funded project entitled: *Preparation of digitized keys for quick and reliable identification of insect pests of Family Bruchidae of quarantine significance*. Work under the project was initiated in 2007 when collection of literature on bruchids was the main activity. The various parameters for compiling information on Bruchids was finalised and data entry started.

[Read more...](#)

The content of the website is grouped into various modules. The features and use of each module is explained in the following sections of this document. Once logged in the registered users can view the contents of all the modules.

To close the user session, click on 'Logout' button.

## Browse Library:-

This module contains the list of all genera. Under each genus, there could be multiple Species. Each species detail (Profile) can be viewed in this module.

Search Criteria:-

Under ‘Search Criteria’, click on any alphabet and the list of all genus names starting with that alphabet will be listed down.

The list of species names present under each genus name can be found by clicking on ‘View Species’ button in the row of that Genus name.

**Digital Library on Bruchids**  
National Bureau of Plant Genetic Resources

About Us Browse Library Bruchids Identification Photo Gallery Glossary Document Repository ChangePassword Help

Logged in as [nbpgrtestadmin] Logout

**Browse Library**

Search Criteria

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

You have selected Keyword [D]

S.No.	Genus Name	Action
1.	Diegobruchus	<a href="#">View Genus Detail</a> / <a href="#">View Species</a>
2.	Decellebruchus gen.nov	<a href="#">View Genus Detail</a> / <a href="#">View Species</a>
3.	Dahlibruchus	<a href="#">View Genus Detail</a> / <a href="#">View Species</a>

## List of Species Names In the selected Genus Name:-

The list of all species names present in the selected Genus Name will be listed as shown in the screen below.

The Profile (details) of each Species can be viewed by clicking on the ‘view Detail’ button in the row of that species name.

**List of Species in the Selected Genus [Diegobruchus]**

[Print](#) [Close](#)

S.No.	Species Name	Action
1.	Diegobruchus mauritii (Pic)	<a href="#">View Detail</a>
2.	Diegobruchus multinotatus Pic	<a href="#">View Detail</a>
3.	Diegobruchus rubroguttatus (Fairmaire)	<a href="#">View Detail</a>
4.	Diegobruchus soarezius (Pic)	<a href="#">View Detail</a>

### Species Details:-

Click on the 'view Detail' button in the row of any Species Name and the Profile details of that species will be displayed as shown in the screen below.

All words in red color are cross links.

Click on any cross link to find the description about that term as shown in the screen below.

Digital Library on Bruchids - Species Profile

Print

**Genus Name:** Diegobruchus

**Species:** Diegobruchus soarezius (Pic)

**Synonyms:** Bruchus soarezius Pic

**Host Plant:** Unknown

**Morphology Key/Feature:** Body length 3.0-6.0 mm, 2.1-3.6 mm, body stouter than in Caryopemon, head elongate, **Antennae** extending to humeral callus, **Pectin** fifth article, **proNotum** strongly narrowed **Anterad**, sides slightly convex, **Scutellum** minute, square. **Elytral** disc flat, or slightly convex, six internal **Striae** attaining **Elytron**. **Striae** 2 and 9 and 3 and 8 closed posterad. Hind **Femur** strongly **Incrassate**, shorter and more swollen than in related genera. **Pecten** with one large gradually smaller blunt **Denticles**, margin before **Pecten** without large spines. **Median** lobe tubular, **Ventral** valve not articulated, strongly bent ventrad, acute **Apically** lobes fused, with **Ventral** part only slightly gutter-like, apices free, flat, incised medially.

**Key Characters:** "Body length 3.0-6.0 mm, width 2.1-3.6 mm. Body stouter than in Caryopemon. Head elongate, **Postocular lobe** not longer than half length of eye. **Carinate** posterad. **Frons** with **Median Carina**. Eyes moderately bulging, **Emarginate** to about half length. **Antennae** extending to humeral callus **Pectinate** from fifth **ProNotum** strongly narrowed **Anterad**, sides slightly convex, **Lateral Carina** **Obsolete**. Disc convex, without gibbositities or depressions or with **Median** channel. **P** process trian**Gular**, acute **Apically**, separating **Procoxae** at most to 0.9 their length. **MesoSternum** parallel sides, **Truncate** **Apically**. **Metasternal** process **AnGulate** i **Scutellum** minute, square. **Elytral** disc flat, or slightly convex. Six intrrenal **Striae** attaining **Base** of **Elytron**. **Striae** 2 and 9, and 3 and 8 closed posterad. Hind **Femur** **Incrassate**, shorter and more swollen than in related genera. **Pecten** with one large and 3-5 gradually smaller blunt **Denticles**, margin before **Pecten** without large spines with several small teeth. Hind **Tibia** arcuate, **Carinate**, mucronate **Apically**. **Vestiture** dense, variegated. Male- **Elytral Intervals** 9 and 3 without polished areas. Last shorter, shallowly **Emarginate**. **Median** lobe tubular, **Ventral** valve not articulated, strongly bent ventrad, acute **Apically**. **Lateral** lobes fused, with **Ventral** part only

The 'Glossary Terms Detail' page shows the description of the cross link term.

Digital Library on Bruchids - Glossary Terms Detail

**Term Name:** Femur

**Description:** The third segment of an insect leg; the thigh

## Bruchids Identification

### Is Your Insect Bruchid?

This link helps users to find all the information about the Insect 'Bruchid'. This is an easy way to find the brief details of Bruchid along with a link to a pdf document for further information.

The following search functions can be performed with the links provided on the top of the page.


- 1.) Subfamily Details
- 2.) Keyword Search for Genus
- 3.) Keyword Search for Species
- 4.) Guided Search for Species

[Home](#)

[Subfamily Details](#)   [Keyword Search For Genus](#)   [Keyword Search For Species](#)   [Guided Search For Species](#)

**Your beetle could be a bruchid if**  
It is associated with leguminous seeds or with any plant genera as in [Bhalla et al,2002.](#)

**Seeds show symptoms as below:**



Click on the pdf link to find view or to download the document.



## Quarantine Risk Associated with Exchange of Plant Genera Carrying Hidden Infestation

**Shashi Bhalla, Manju Lata Kapur, B Lal, BR Verma and Charan Singh**


*Division of Plant Quarantine, National Bureau of Plant Genetic Resources, New Delhi-110 012*

**Key Words: Latent/Hidden Infestation, Plant Genera, Quarantine, X-ray Radiography**

A large number of plant germplasm samples are being exchanged throughout the world for crop improvement programmes. In addition, the liberalized trade in the present global scenario (WTO regime) has increased the flow of agricultural commodities across different countries. These exchanges always carry the risk of inadvertent introduction and spread of exotic pests. Such pests, if established may prove more devastating in the new geographical areas in the absence of natural enemies and competitors. The risk of introduction of exotic pests could be minimized by undertaking quarantine of the planting material under exchange. The effective

alongwith the shipment of douglas fir (*Pseudotsuga taxifolia*) seeds. The rose seed chalcid [*Megastigmus aculeatus* (Swedrus)] was introduced into New Jersey (USA) through the seeds of *Rosa multiflora* from Japan (Weiss, 1917). The crop losses reported to have been caused by various introduced chalcid pests include seed damage over 80% by *Bruchophagus roddi* in the seeds of alfalfa (Strong, 1962) and about 40% by *Systole albipennis* in various umbelliferous seeds (Gupta, 1962). Seed damage to the extent of about 40% has been reported in *Trifolium alexandrium* by bruchids, viz., *Bruchidius alfieri* and *Bruchidius trifolii*

**Click on the 'click to show video' link to play the videos.**



[Click to show video 1](#)  
[Click to show video 2](#)  
[Click to show video 3](#)



**Video Clip of Bruchid(s) : Bruchid 1**  
(Please wait for a moment it is loading...)

[Video Bruchid 1](#)

[Video Bruchid 2](#)

[Video Bruchid 3](#)



**Video Clip of Bruchid(s) : Bruchid 2**

(Please wait for a moment it is loading...)

[Video Bruchid 1](#)

[Video Bruchid 2](#)

[Video Bruchid 3](#)



**Video Clip of Bruchid(s) : Bruchid 3**  
(Please wait for a moment it is loading...)

[Video Bruchid 1](#)

[Video Bruchid 2](#)

[Video Bruchid 3](#)



### **Search Library:-**

This module helps users in searching various records based on certain search criteria. In this module there are four types of search options.

- 1.) Subfamily Details
- 2.) Keyword Search for Genus
- 3.) Keyword Search for Species
- 4.) Guided Search for Species

## Subfamily Details:-

This list of all Subfamilies can be seen here. Click on ‘View Key Character’ button to see the details.

**Digital Library on Bruchids**  
National Bureau of Plant Genetic Resources

About Us | Browse Library | Bruchids Identification | Photo Gallery | Glossary | Document Repository | ChangePassword | Help

Logged in as [nbpgrtestadmin] [Logout](#)

[Home](#) **Subfamily List**

S.No.	Subfamily Name	Action
1.	Amblycerinae	<a href="#">View Key Characters</a>
2.	Bruchinae	<a href="#">View Key Characters</a>
3.	Eubaptinae	<a href="#">View Key Characters</a>
4.	Kytorhininae	<a href="#">View Key Characters</a>
5.	Pachymerinae	<a href="#">View Key Characters</a>
6.	Rhaebinae	<a href="#">View Key Characters</a>

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In the subfamily details page, all words in red color are cross links. Click on any cross link to find the description about that term.

**Digital Library on Bruchids - Subfamily Details** [Print](#)

**Subfamily Name:** Amblycerinae

**Key Characters:**

- Mesopleural [Suture](#) distinct, free from mesometapleural [Suture](#).
- Mes [Epimeron](#) attaining coxal cavity with about its width at middle.
- One to three pairs of [Tibiae](#) sometimes bi [Calcarate](#) at [Apex](#), Prothorax with [Carina](#) separating flank from [Dorsum](#).
- hind [Femur](#) sometimes strongly [Incrassate](#), hind [Tibia](#) then strongly acruate, Hind [Femur](#) not strongly [Incrassate](#), only half as wide as coxa, channeled and bi [Carinate](#) beneath, [Carinae](#) usually unarmed, never with more than one short blunt tooth, hind coxa very broad, wider than length of first [Sternite](#) behind it.
- Hind [Tibia](#) straight, not mucronate, bi [Calcarate](#); hind [Tarsus](#) as long as [Tibia](#).
- Front and middle [Tibiae](#) not [Calcarate](#).
- Pro [Notum](#) without [Impressed](#) line above [Lateral Carinae](#).

The description about the cross link is as shown in the screen below.

### Digital Library on Bruchids - Glossary Terms Detail

**Term Name:** Suture

**Description:** Line of juncture of two sclerites.

### Keyword Search for Genus:-

Move the mouse over “Bruchids Identification” and click on ‘Keyword Search for Genus’ button.

Type some keyword characters and a drop down list showing all keywords (matching the entered character) will appear. Select any keyword from the drop down list.

Or

Enter the Keyword name and search to find the list of Genus names which contains the matching keyword.



In the result page click 'View Detail' button of any Genus name to view the Genus profile page.

The Keyword (Key character) used in the search criteria can be found in the Genus Profile page of all records.

The screenshot shows the 'KEYWORD SEARCH FOR GENUS' interface. The search criteria for the key feature is 'Antennal club black'. The search results display one record for the genus 'Althaeus' with the description 'al'. The 'View Detail' button is circled in red.

S.No.	Genus Name	Description	Action
1.	Althaeus	al	<a href="#">View Detail</a>

As shown in the screen below, the Keyword (Key character) used in the search criteria can be found in the 'Genus Profile' page.

In the Genus profile page, all words in red color are cross links. Click on any cross link to find the description about the term.

The screenshot shows the 'Genus Profile' page for 'Althaeus'. The 'Key Character' section contains several terms in red, which are cross-links to other pages. The terms are: [Antenna](#), [Antenna](#), [Antennal club black](#), [proNotum](#), [Latera](#), [Elytral Striae](#), [Tubercles](#), [hind Femur](#), [Ventral](#), [Median](#), [Sclerites](#), [Base](#), [Ventral](#), [Internal sac](#).

The 'Glossary Terms Detail' page shows the description of the cross link term along with the image(if any).

Digital Library on Bruchids - Glossary Terms Detail Print

**Term Name:** Antenna

**Description:** (pl., antennae). Pair of segmented appendages located on the head and usually sensory in function - the 'feelers'

**Photos**  
NULL

### Keyword Search for Species:-

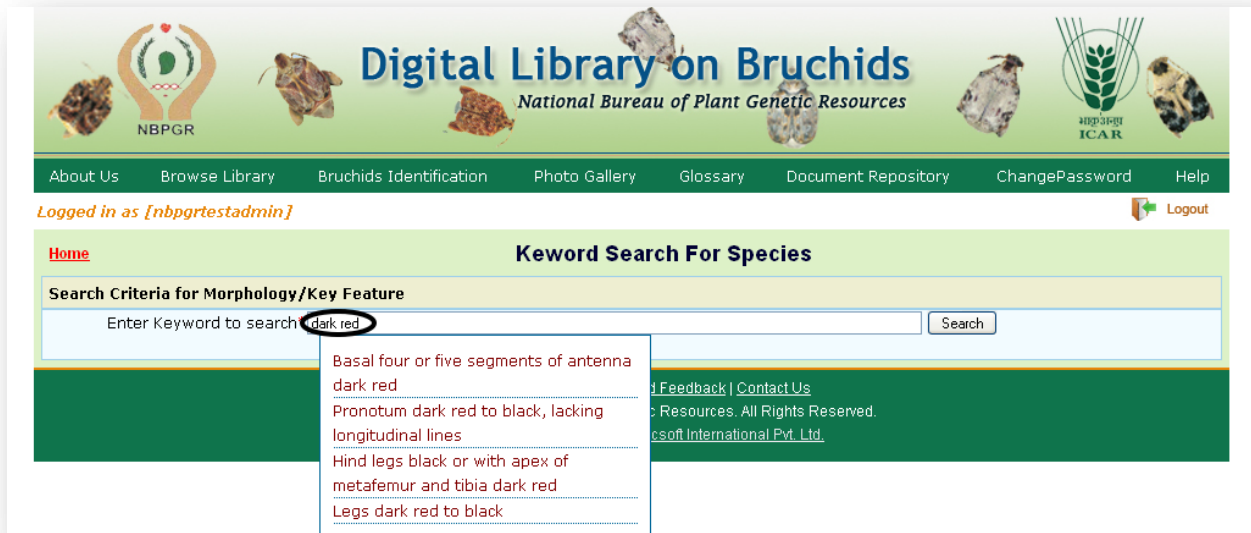
In this section the keyword can be used to find the list of all species matching the given Morphology Key/Feature.

Type some keyword characters and a drop down list showing all keywords (matching the entered character) will appear. Select keyword from the drop down list.

Or

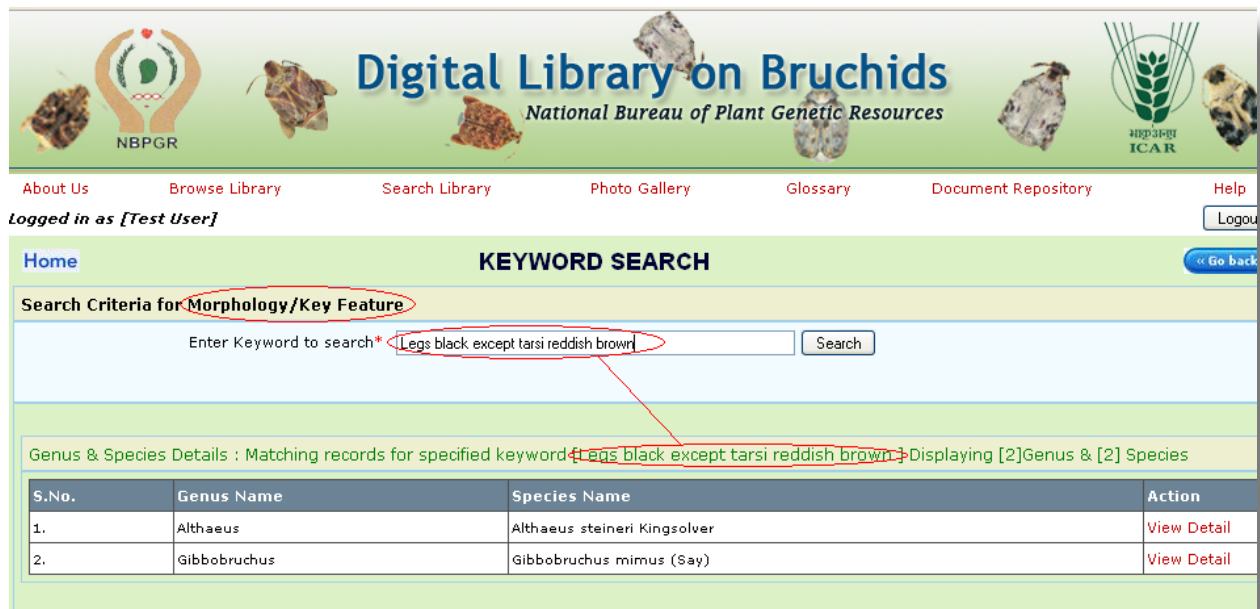
Enter the Keyword name and search to find the list of Species names which contains the matching keyword (morphology).





In the result page click 'View Detail' button of any species name to view the species profile page.

The Keyword used in the search criteria can be found in the species Profile page of all records.





As shown in the screen below, the Keyword (Morphology key) used in the search criteria can be found in the 'species Profile' page.

In the species profile page, all words in red color are cross links. Click on any cross link to find the description about the term.

The screenshot shows a web page titled "Digital Library on Bruchids - Species Profile" with a "Print" button in the top right corner. The page contains the following information:

- Genus Name:** Althaeus
- Species:** Althaeus steineri Kingsolver
- Synonyms:** New species
- Host Plant:** Kostelezkya virginia
- Morphology Key/Feature:** Legs black except tarsi reddish brown; basal 4 or 5 segments of Antenna dark red, Antennal club black; MetaTibial mucro sub equal Lateral and Coronal Denticles; Denticles of metaFemur. Body length 2.3-2.5mm, width 1.5-1.6 mm.
- Key Characters:** Legs black except tarsi reddish brown; basal four or five segments of Antenna dark red, Antennal club black; MetaTibial mucro Subequal in size to Lateral and Coronal Denticles
- Comparative Notes:** It is closely resembles to the Althaeus folkertsi than A. hibisci whereas the external body characters seem to more closely associate A. folkertsi than A. hibisci. This species might be confused with Acanthoscelides alboscuteallatus because of the black body and appendages and vaguely ocellate pattern of setae on elytra.
- Geographical Distribution:** Maryland, Columbia
- Habitats Storage Records Biology:** Not available

## Guided Search for Species:-

This search helps users to find the list of Species that matches any attribute name and related attribute values.

Following are the steps to do a guided search.

Step 1:-

Select any subfamily name from the drop down list and then select any attribute from the list of attribute names.

The screenshot shows the website's header with logos for NBPGR and ICAR, and the title "Digital Library on Bruchids National Bureau of Plant Genetic Resources". A navigation menu includes "About Us", "Browse Library", "Bruchids Identification", "Photo Gallery", "Glossary", "Document Repository", "ChangePassword", and "Help". The user is logged in as [nbpgrtestadmin]. The main content area is titled "Guided Search For Species" and features a "Select Attribute" section with a dropdown menu set to "Amblycerinae". Below this is a table with columns "S.No.", "Attribute Name", and "Select".

S.No.	Attribute Name	Select
1.	ANTENNAE	<input type="radio"/>
2.	ELYTRA	<input type="radio"/>
3.	LEGS	<input type="radio"/>
4.	MALE GENITALIA	<input type="radio"/>
5.	PRONOTUM	<input type="radio"/>

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## Step 2:-

In the search field enter the word for searching. While entering the word all the keywords related to the entered word will appear in a drop down list.

Select any one keyword and search.

The screenshot displays the 'Guided Search For Species' interface. At the top, there are logos for NBPGR and ICAR. The navigation menu includes 'About Us', 'Browse Library', 'Bruchids Identification', 'Photo Gallery', 'Glossary', 'Document Repository', 'ChangePassword', and 'Help'. The user is logged in as 'nbpgrtestadmin'. The search process is shown with the 'SubFamily Name' set to 'Amblycerinae'. A table of attributes is shown with 'LEGS' selected. A search box contains the word 'LEGS', and a 'Your Selection - Attribute' table shows 'LEGS' is selected. Below this, a table titled 'Genus & Species Details: Matching records for Applied search' displays two results for the genus Spermophagus.

S.No.	Attribute Name	Select
1.	ANTENNAE	<input type="radio"/>
2.	ELYTRA	<input type="radio"/>
3.	LEGS	<input checked="" type="radio"/>
4.	MALE GENITALIA	<input type="radio"/>
5.	PRONOTUM	<input type="radio"/>

S.No.	Genus Name	Species Name	Action
1.	Spermophagus	Spermophagus albosparsus Gyllenhal	<a href="#">View Detail</a>
2.	Spermophagus	Spermophagus latescenta sp. nov. Arora	<a href="#">View Detail</a>

### Step 3:-

Select the attribute value, then the system will find the Genus & Species Details that matches the given search criteria and displays them.

**Home** **Guided Search For Species**

Select Attribute

Select SubFamily Name : Amblycerinae

S.No.	Attribute Name	Select	Select Attribute from the left then enter word to search		Your Selection - Attribute		Delete
1.	ANTENNAE	<input type="radio"/>	Fore and middle legs dark brown <input type="button" value="Search"/>		LEGS		X
2.	ELYTRA	<input type="radio"/>					
3.	LEGS	<input checked="" type="radio"/>	1.	Fore and middle legs dark brown	<input type="checkbox"/>		
4.	MALE GENITALIA	<input type="radio"/>					
5.	PRONOTUM	<input type="radio"/>					

**Genus & Species Details: Matching records for Applied search**

S.No.	Genus Name	Species Name	Action
1.	Spermophagus	Spermophagus albosparsus Gyllenhal	<a href="#">View Detail</a>
2.	Spermophagus	Spermophagus latescens sp. nov. Arora	<a href="#">View Detail</a>

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#### Step 4:-

The selected attribute name and attribute value will be highlighted on the right side of the window as shown in the screen below. If users wish they can delete previously searched criteria before proceeding for a fresh search.

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About Us | Browse Library | Bruchids Identification | Photo Gallery | Glossary | Document Repository | ChangePassword | Help

Logged in as [nbpgrtestadmin] Logout

**Home** **Guided Search For Species**

Select Attribute

Select SubFamily Name : Amblycerinae

Select Attribute from the left then enter word to search

S.No.	Attribute Name	Select
1.	ANTENNAE	<input type="radio"/>
2.	ELYTRA	<input type="radio"/>
3.	LEGS	<input checked="" type="radio"/>
4.	MALE GENITALIA	<input type="radio"/>
5.	PRONOTUM	<input type="radio"/>

Fore and middle legs dark brown

S.No.	Attribute value(s) of Attribute [LEGS]	Select
1.	Fore and middle legs dark brown	<input checked="" type="checkbox"/>

Your Selection - Attribute	Delete
LEGS	<input type="button" value="X"/>

Your Selection - Attribute	Your Selection - Attribute Value(s)	Delete
LEGS	Fore and middle legs dark brown	<input type="button" value="X"/>

**Genus & Species Details: Matching records for Applied search**

S.No.	Genus Name	Species Name	Action
1.	Spermophagus	Spermophagus albosparsus Gyllenhal	<a href="#">View Detail</a>

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Step 5:-

Click on the 'View Detail' button to see the profile page.

In the Species profile page, all words in red color are cross links. Click on any cross link to find the description about the term.

### Digital Library on Bruchids - Species Profile

**Genus Name:** Acanthoscelides

**Species:** Acanthoscelides fraterculus (Horn)

**Synonyms:** Bruchus fraterculus Horn; Mylabris fraterculus Leng

**Host Plant:** Arbuspraecatorius, Astragalusbisulcatus, A. caryocarpa, A. crassicus var. paysonii, A. drumondii, A. hyalinus, A. missouriensis, A. mollissimus, A. pattersoni, A. pectinatus, A. racemosus, Astragalus sp., Glycyrrhizalepidota, hedysarumboreale, Lotus crassifolius, L. mearnsii, L. rigidus, Lotussp., Vicia sp.

**Morphology Key/Feature:** **Vestiture** of moderately dense to extremely dense white **Setae**; body and **Appendages** usually all black except basal four **Antennal** segments reddish orange, sometimes with **Elytral** apices and **Apical** portions of legs reddish orange. **ProNotum** bell shaped, strongly convex, **Lateral Carina** ridgelike, reaching nearly to **Procoxal** cavity, **Scutellum** nearly 2 times as long as wide, **BiDentate Apically**.

**Key Characters:** Eye in **Lateral** aspect not protruding below plane of **Gula**; **Lateral** margins of **Ventral** valve usually incurved; **Vestiture** of body white to yellow, **Vestiture** of moderately dense to extremely dense white **Setae**; body and **Appendages** usually all black except basal four **Antennal** segments reddish orange, sometimes with **Elytral** apices and **Apical** portions of legs reddish orange. **Internal sac** differently armed; **Elytral Vestiture** uniform.

The 'Glossary Terms Detail' page shows the description of the cross link term.

### Digital Library on Bruchids - Glossary Terms Detail

Print

**Term Name:** Vestiture

**Description:** Hair, scales, or setae covering the integument of the body.

Photos

## Photo Gallery:-

This module contains the collection of various images used in this project.

Choose any keyword from the search options (genus, species, Glossary of term) to find the list of all images matching the keyword.

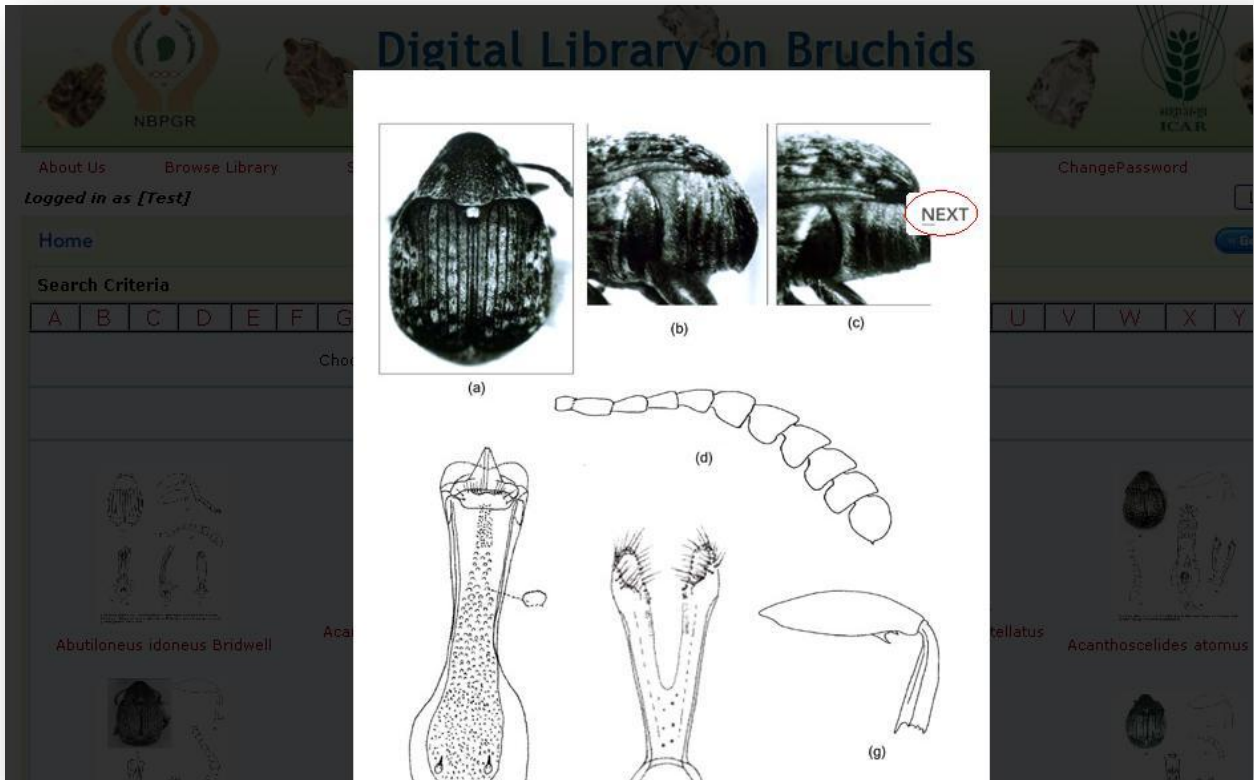
To further streamline the search, click on any alphabet under 'Search Criteria' and then choose the keyword from the search option.

The Screen shown below shows the search result with 'Search Criteria' A for the keyword 'Species'.

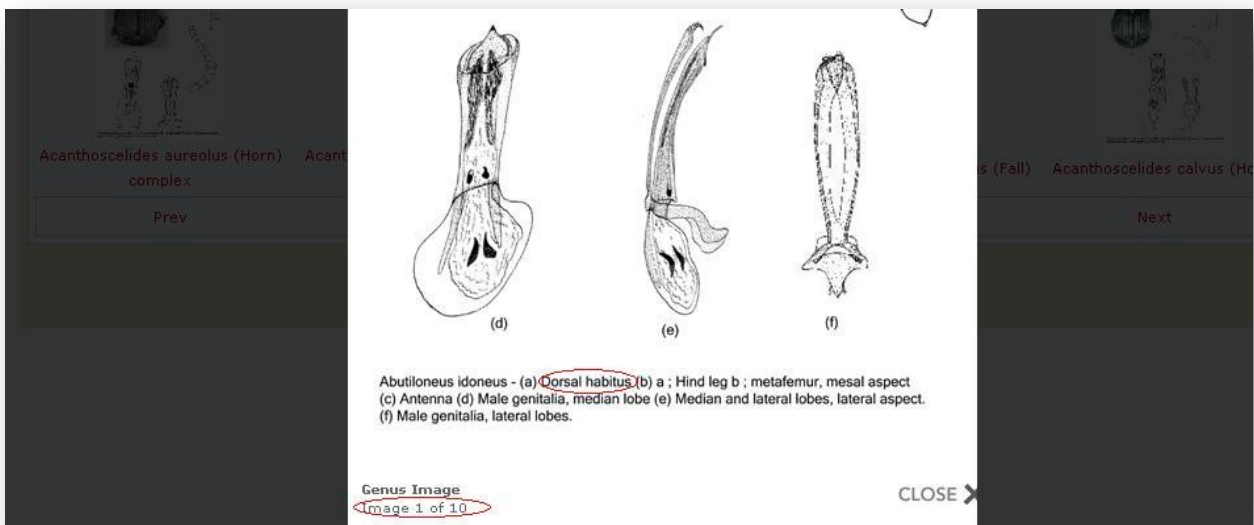
To view the enlarged image, place the mouse pointer inside the image and click it.

The screenshot displays the 'PHOTO GALLERY' search interface. At the top, there is a 'Home' link and a 'Go back' button. Below the title, the 'Search Criteria' section shows a grid of letters from A to Z, with 'A' selected. A search bar contains the text 'Choose any keyword to search' and three radio buttons: 'Genus', 'Species' (selected), and 'Glossary of Term'. Below the search bar, it indicates 'Your selected alphabet (A)' and 'Your selected keyword (Species)'. The main content area displays a grid of 10 beetle images, each with a caption below it. The captions are: *Abutiloneus idoneus* Bridwell, *Acanthoscelides aequalis* (Sharp), *Acanthoscelides albopygus* Johnson, *Acanthoscelides alboscuteatus* (Horn), *Acanthoscelides atomus* (Fall), *Acanthoscelides aureolus* (Horn) complex, *Acanthoscelides baboquivari* Johnson, *Acanthoscelides bisignatus* (Horn), *Acanthoscelides biustulus* (Fall), and *Acanthoscelides calvus* (Horn). At the bottom, there are 'Prev', 'Page [1] of [7]', and 'Next' navigation links.

The enlarged view of the image can be seen as shown in the screen below, click on next or previous links to navigate to view the desired image.

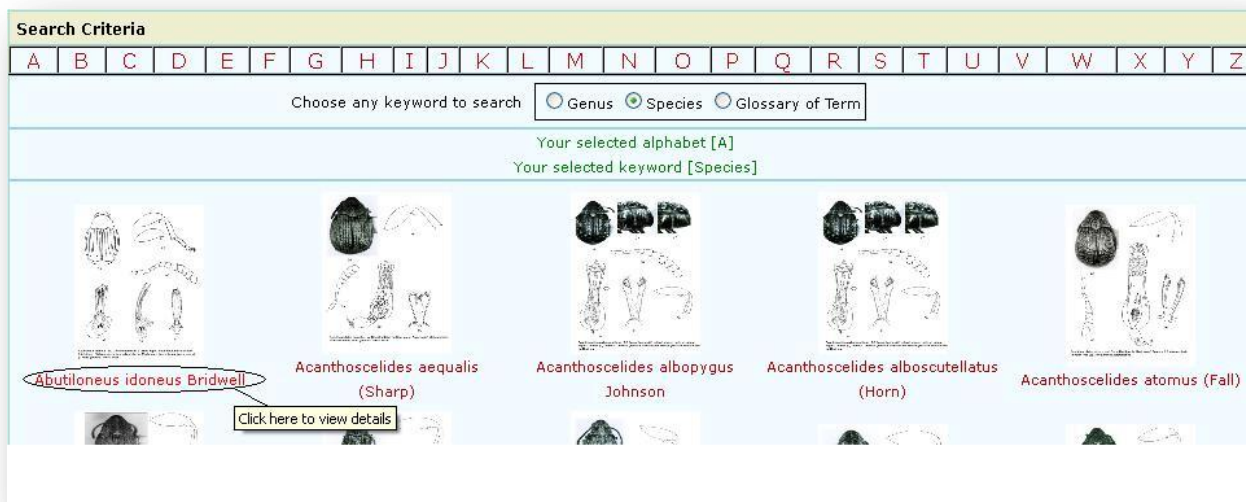


The sections in each image can be found in the bottom of the image. Click on each section name to find that image.

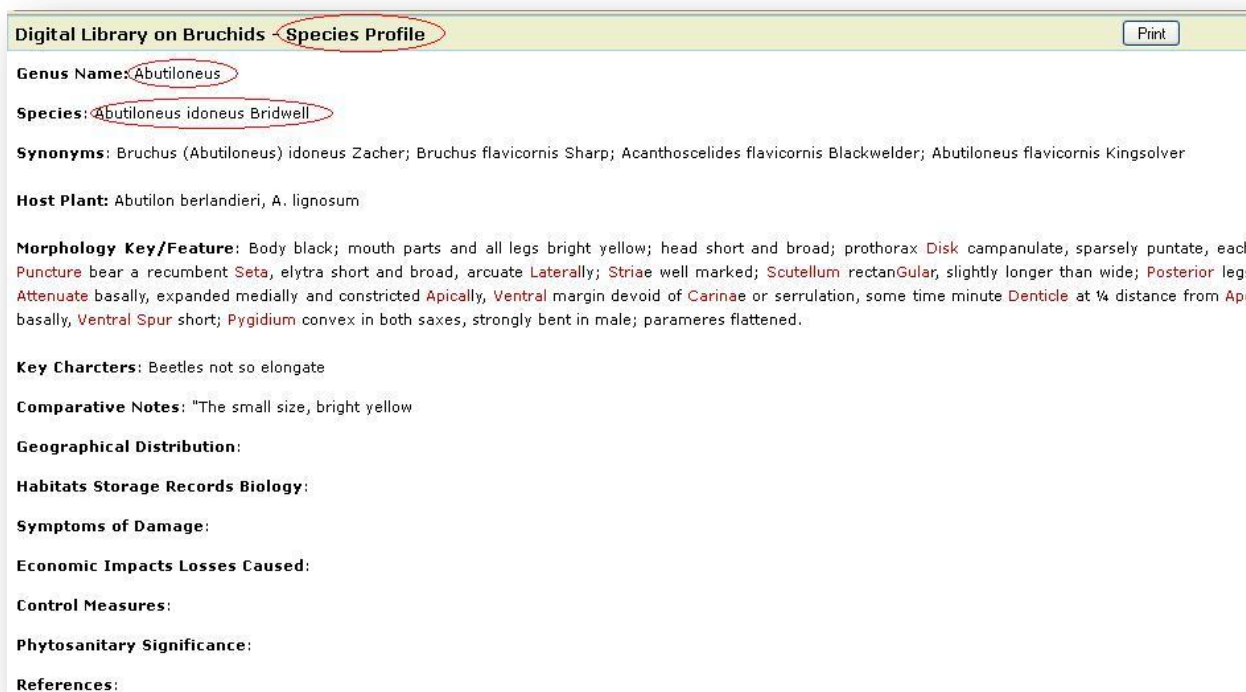




Click on the image name to view the profile of that image.



The Profile details for the image will be as shown in the screen below.



## Glossary:-

It contains the description of all keywords used in the project.

There are two ways to search for the keyword.

- 1.) Using Search Criteria
- 2.) Using specific word for search

### 1.) Using Search Criteria:-

Click on any alphabet under ‘Search Criteria’ and all the keyword Names starting with that alphabet will be listed. If there is any image, click on the image to view it in full size.

**Digital Library on Bruchids**  
National Bureau of Plant Genetic Resources

About Us Browse Library Search Library Photo Gallery Glossary Document Repository Help

Logged in as [Test User] Log

Home **GLOSSARY** Go back

**Search Criteria**

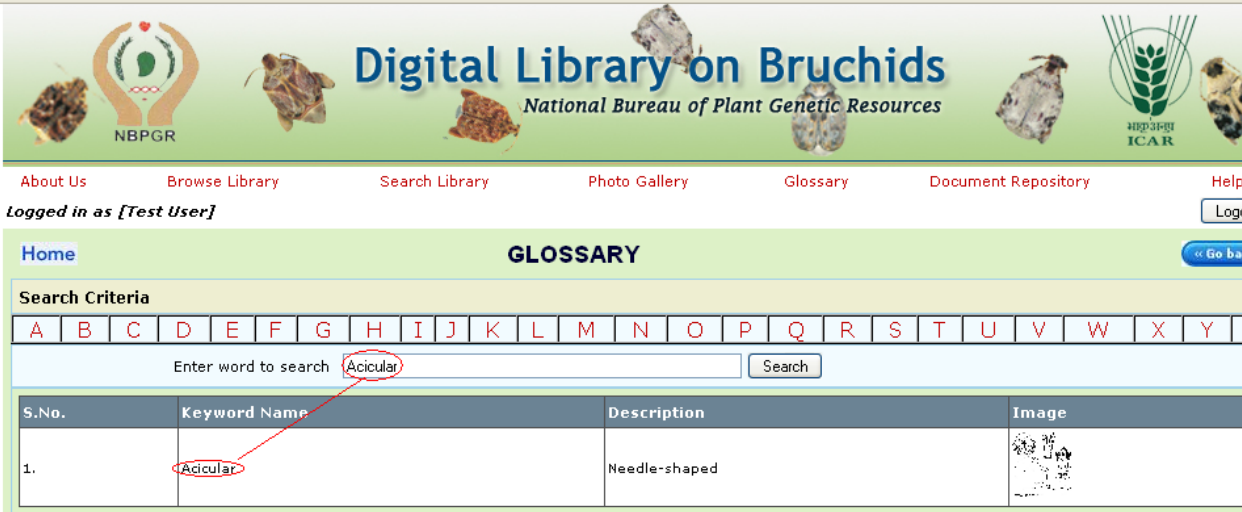
A B C D E F G H I J K L M N O P Q R S T U V W X Y

Enter word to search  Search

S.No.	Keyword Name	Description	Ima
1.	Basal denticle	A tooth like structure at the base of an elytral stria	
2.	Basal lobe	The broad, antescutellar lobe of the posterior margin of the pronotal disk	
3.	Base	The end of a body part or segment that is attached to another part; for instance, the margin of the pronotum adjacent to the base of the elytra.	
4.	Bidentate	Bearing two teeth or denticles.	
5.	Bifid	Divided into two parts; forked.	
6.	Bifurcate	Separated into two branches.	
7.	Boss	Elevated, glabrous raised area, usually on frons	

## 2.) Using specific word for search:-

Enter any keyword name in the search box to find the description and image (if any) of that specific keyword. If there is any image, click on the image to view it in full size.



The screenshot shows the 'Digital Library on Bruchids' website interface. At the top, there are logos for NBPGR and ICAR, and the title 'Digital Library on Bruchids' with the subtitle 'National Bureau of Plant Genetic Resources'. Below the header, there are navigation links: 'About Us', 'Browse Library', 'Search Library', 'Photo Gallery', 'Glossary', 'Document Repository', and 'Help'. The user is logged in as '[Test User]'. The main content area is titled 'GLOSSARY' and features a search criteria section with a grid of letters (A-Z) and a search box containing the word 'Acicular'. Below the search box is a table with the following data:

S.No.	Keyword Name	Description	Image
1.	Acicular	Needle-shaped	

## Document Repository: -

All the documents saved in the project can be found in this module.

Select any type from the 'Document Type' Drop down box and all document names related to that document type will be listed in the 'Document Name' drop down box.

Navigation menu: About Us, Browse Library, Search Library, Photo Gallery, Glossary, Document Repository, Help

Logged in as [Test User]

### DOCUMENT REPOSITORY

Search Criteria

Document Type : All Category      Document Name : [dropdown]

Search    Reset

S.No.	Document Name	Document Type	Action
1.	Abutiloneus	.doc	<a href="#">View Detail</a>
2.	Acanthobruchidius	.doc	<a href="#">View Detail</a>
3.	Amblycerus	.docx	<a href="#">View Detail</a>
4.	Bonaerius	.docx	<a href="#">View Detail</a>
5.	Bruchus	.docx	<a href="#">View Detail</a>
6.	Cornutobruchus	.jpg	<a href="#">View Detail</a>
7.	Gibbobruchus	.jpeg	<a href="#">View Detail</a>
8.	Other Docs	.jpeg	<a href="#">View Detail</a>
9.	Select Genus	Select Doc Type	<a href="#">View Detail</a>
10.	Select Glossary	Select Doc Type	<a href="#">View Detail</a>

Select the Document Type.

Header: Digital Library on Bruchids, National Bureau of Plant Genetic Resources, NBPGR, ICAR

Navigation menu: About Us, Browse Library, Search Library, Photo Gallery, Glossary, Document Repository, Help

Logged in as [Test User]

### DOCUMENT REPOSITORY

Search Criteria

Document Type : Genus (dropdown menu open showing: All Category, Genus, Species, Glossary, Others)

Document Name : Select Genus Name (dropdown)

Search    Reset

Search not found !

As shown in the screen below, select any Document Name from the drop down box and click ‘search’.

The screenshot shows the 'DOCUMENT REPOSITORY' page. At the top, there are navigation links: About Us, Browse Library, Search Library, Photo Gallery, Glossary, Document Repository, and Help. The user is logged in as [Test User]. The search criteria section includes a 'Document Type' dropdown set to 'Genus' and a 'Document Name' dropdown set to 'Select Genus Name'. Below this is a table of documents with columns for S.No., Document Name, Document Type, and Action.

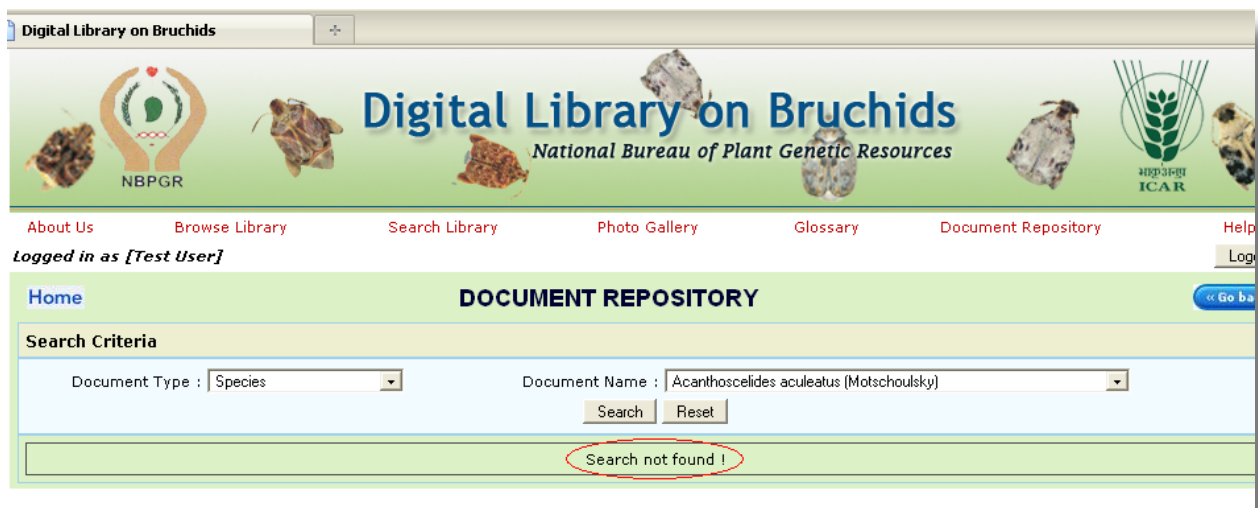
S.No.	Document Name	Document Type	Action
1.	Abutiloneus	.doc	<a href="#">View Detail</a>
2.	Acanthobruchidius	.doc	<a href="#">View Detail</a>
3.	Amblycerus	.docx	<a href="#">View Detail</a>
4.	Bonaerius	.docx	<a href="#">View Detail</a>
5.	Bruchus	.docx	<a href="#">View Detail</a>
6.	Cornutobruchus	.jpg	<a href="#">View Detail</a>
7.	Gibbobruchus	.jpeg	<a href="#">View Detail</a>
8.	Other Docs	.jpeg	<a href="#">View Detail</a>
9.	Select Species Name	Select Doc Type	<a href="#">View Detail</a>

The list of documents will be displayed as shown in the screen below. Click on ‘View Detail’ to see the document page.

The screenshot shows the 'DOCUMENT REPOSITORY' page. At the top, there are navigation links: About Us, Browse Library, Bruchids Identification, Photo Gallery, Glossary, Document Repository, ChangePassword, and Help. The user is logged in as [nbpgrtestadmin]. The search criteria section includes a 'Document Type' dropdown set to 'Others' and a 'Document Name' dropdown. Below this is a table of documents with columns for S.No., Document Name, Document Type, and Action.

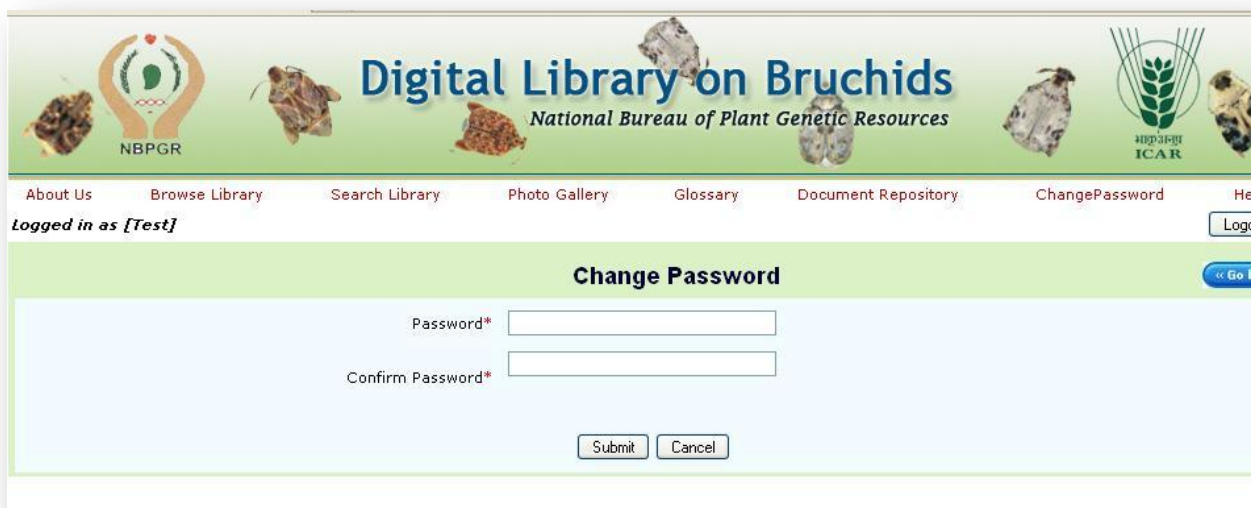
S.No.	Document Name	Document Type	Action
1.	Glossary of Morphological Terms	.pdf	<a href="#">View Detail</a>
2.	Key to Species of Bruchidae	.pdf	<a href="#">View Detail</a>
3.	Key to systematic identification of world Bruchid genera	.pdf	<a href="#">View Detail</a>
4.	Sorted Bruchids References-1	.pdf	<a href="#">View Detail</a>

In case if there is no document saved for any document name, then the system will display a message “Search not found”.



## Change Password:-

To change the password Click on 'Change Password' link and enter the new password and confirm the password.





## Forgot Password:-

If the user does not remember the password, then there is an option to retrieve the password from the system. As shown in the screen below click on “Forgot Password” link.



**Digital Library on Bruchids**  
National Bureau of Plant Genetic Resources

About Us Browse Library Bruchids Identification Photo Gallery Glossary Document Repository ChangePassword Help

**Login Page**

[New Registration](#) [Forgot Password](#)

Choose User Type\*  Online/Website  Intranet/Official

Login Re-set

A screen will appear like the one shown below, enter your email id in the field and submit it.



**Digital Library on Bruchids**  
National Bureau of Plant Genetic Resources

About Us Browse Library Bruchids Identification Photo Gallery Glossary Document Repository ChangePassword Help

**Forgot Password** [Login](#)

Enter Email Id

Submit Cancel

Check your email id to find the user id and password.



The screenshot shows the top navigation bar of the website with the title "Digital Library on Bruchids" and the subtitle "National Bureau of Plant Genetic Resources". Below the navigation bar is a "Forgot Password" form. The form has a header "Forgot Password" and a "Login" link. It contains a text input field for "Enter Email Id", a message "Your UserID and Password has been sent on your E-Mail ID, Please Check your E-Mail", and two buttons: "Submit" and "Cancel".

## Feedback form:-

Click on the 'Send Feedback' link to find the feedback form.

The importance of insect taxonomy is further enhanced in the present era of WTO/ SPS Agreement which is now governing trade wherein this information is being used for trade negotiations. Under the SPS Agreement scientific evidence is required to substantiate claims regarding the presence or absence of pests. India being a country of diverse ecological conditions has a wide spectrum of insect pest population reported from various regions, yet, there are several species/ biotypes not recorded from India and they need to be looked for in imported material during quarantine. Identification of Bruchids is difficult because few institutions have an insect reference collection with representatives of all Bruchid genera. Also, information on Bruchid genera is available, but it is scattered in various journals and quick retrieval is a problem. This is perhaps because the taxonomists working on this group have largely restricted themselves to certain regions or to old and the new world genera. Therefore, an attempt would be made to consolidate the taxonomic information for the preparation of a digitised key for the identification of Bruchid genera and species of quarantine importance. It is hoped besides plant quarantine workers it will also be used by those engaged in the study of Insect Taxonomy and in identification of stored grain pests.

The importance of the work is further highlighted by the fact that during trade negotiations the occurrence and detection of insect pest infestations often assume centre stage.

### Project Objectives

- To compile an annotated checklist of insect pests belonging to Family Bruchidae of quarantine significance to India
- To compile information and develop a database comprising ecological and other features of Bruchid pests
- To conduct taxonomic studies in Bruchids associated with seed
- To prepare digitized diagnostic key for identification of the Bruchid species

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Enter your feedback details and send it.



The screenshot shows a web browser window with a navigation menu at the top: 'About Us', 'Browse Library', 'Search Library', 'Photo Gallery', 'Glossary', 'Document Repository', 'ChangePassword', and 'Help'. Below the menu, it says 'Logged in as [Test]' and 'Logout'. The main content area is titled 'User Feedback' and contains a form with the following fields: 'Name\*' (text input), 'E-Mail ID\*' (text input), 'Subject of Feedback' (text input), and 'Comments' (large text area). At the bottom of the form are 'Send' and 'Re-Set' buttons.

## Other Useful Links:-

Find the links at the bottom of each page. Click on 'Download User Manual' to download the user manual.

### Co- Principal Investigators:

Dr. B Lal, Principal Scientist, NBPGR, New Delhi  
Dr. Manju Lata Kapur, Principal Scientist, NBPGR, New Delhi  
Dr. Shashi Bhalla, Principal Scientist, NBPGR, New Delhi

### Expert Advisor:

Dr. V V Ramamurthy, Principal Scientist, Indian Agricultural Research Institute, New Delhi

### Project Staff:

Dr. Ruquaeya Bano, Senior Research Fellow  
Dr. Chander Shekhar Gupta, Senior Research Fellow

### Technical Support:

Mr. Charan Singh, Technical Officer

### Acknowledgements:

The information, diagrams, drawings, photographs collected and used in the Digital Library from the sources cited in the "Document Repository" is duly acknowledged.

### Disclaimer:

The information compiled in the database is based on available published literature and is subject to change in future. More information available with any user may kindly be provided to update the database which will be duly acknowledged.

[Download User Manual](#), [Send Feedback](#), [Contact Us](#)

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## Contact Us:-

To find the contact details click on 'contact us' link.

The screenshot shows a navigation menu at the top with links: About Us, Browse Library, Bruchids Identification, Photo Gallery, Glossary, and Document Repository. Below the menu, it indicates the user is logged in as [nbpgrtestadmin]. The main content area is titled 'Contact Us' and contains the following text:

For Any Queries Contact:

**Principal Investigator of the Project**  
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Plant Quarantine Division  
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*For your feedback on this software and manual, please write to [info@lsipl.com](mailto:info@lsipl.com)*

*For reporting any issues or problems in accessing and using the software write to us at [info@lsipl.com](mailto:info@lsipl.com).*