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The Canadian Register of Marine Species Photo Gallery: A User's Guide Version 1

by

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TABLE OF CONTENTS

LIST OF FIGURES

ABSTRACT

Kennedy, M.K., Nozères, C., Miller, R., Vanhoorne, B. and Appeltans, W. 2011. The Canadian Register of Marine Species Photo Gallery: A User's Guide, Version 1. Can. Tech. Rep. Fish. Aquat. Sci. 2933: v + 47 pp.

The Canadian portal of the World Register of Marine Species (WoRMS) hosts taxonomic information specific to aquatic regions in Canada. A user-contributed photogallery serves to complement the taxonomic records for Canadian regions with digital images of species. Images are also viewed by partner registers and species portals around the world. This guide will assist users with the preparation of images and related data to be uploaded to the photogallery, thereby ensuring correct species names and author credit, and facilitate discovery and browsing of taxonomic entries using this public web resource.

RÉSUMÉ

Kennedy, M.K., Nozères, C., Miller, R., Vanhoorne, B. and Appeltans, W. 2011. The Canadian Register of Marine Species Photo Gallery: A User's Guide, Version 1. Can. Tech. Rep. Fish. Aquat. Sci. 2933: v + 47 pp.

Le portail canadien du registre mondial d'espèces marines (WoRMS) héberge des informations taxonomiques spécifiques aux régions aquatiques du Canada. Des photos fournies par des utilisateurs complémentent les informations taxonomiques de différentes régions du Canada en permettant à d'autres utilisateurs de voir des images numériques des espèces. Les images sont aussi consultées par des registres partenaires et autres portails d'espèces du monde. Ce guide aide les utilisateurs à préparer les images et leurs données associées avant de les téléverser vers la galerie de photos, aidant à ce que les noms d'espèces soient exacts et que les auteurs soient identifiés et facilitant la découverte et la recherche des informations taxonomiques à partir de cette ressource publique dans internet.

BACKGROUND – WHAT IS CARMS?

In spring 2009, Fisheries and Oceans Canada's National Science Data Management Committee (DFO-NSDMC) created a national activity with the mandate to promote the use of taxonomic standards within the Science Branch of DFO and to develop and implement best-practice procedures for the quality control of biological names used by Fisheries and Oceans Canada.

A Canadian register of aquatic biodiversity was to be developed as part of this project with the objectives to compile and manage an authoritative list of species occurring in geographical areas of interest to Canadian scientists and to establish a standard reference for aquatic (marine, estuarine and freshwater) biodiversity research, conservation and sustainable management. The marine component of the project's database was assigned the name Canadian Register of Marine Species (CaRMS).

The taxonomic scope of CaRMS covers species from the three realms of the ocean: the seafloor, the water column and the sea-ice (Kennedy et al, 2010). CaRMS is a register of species containing authoritative distribution records for areas of interest to Canadian researchers. CaRMS will contain detailed distribution records for taxa found in three oceans: the Atlantic, the Arctic and the Pacific. However, CaRMS is not restricted to containing only species from Canadian regions, as areas of interest may fall outside of Canadian waters. For more information see http://www.marinespecies.org/carms/.

The intent of CaRMS is not to duplicate the World Register of Marine Species (WoRMS) http://www.marinespecies.org/). The primary objective of CaRMS is to gather a comprehensive distribution overview for all taxa found in our area of interest. CaRMS is recognized by WoRMS as a regional species database and content from CaRMS is shared with WoRMS.

The WoRMS web site is hosted by the Flanders Marine Institute, Belgium (VLIZ). VLIZ has provided CaRMS data management support and services through their connection with WoRMS. VLIZ hosts the CaRMS website and provides the tools on the CaRMS web page. VLIZ developed and maintains a consolidated database called 'Aphia' which contains marine species registers and the database code numbers associated with taxonomic names in the database are called 'AphiaIDs'.

The CaRMS editorial board consists of taxonomic and data management experts. The CaRMS editorial board maintains the register and web page content but is aware that this content may not be complete and may contain errors. The board cannot be held responsible for any errors or misuse of data contained in the register. Comments from our users are welcome. To signal incorrect or incomplete information, or to contribute to this initiative, please contact CaRMS@dfo-mpo.gc.ca.

SHOWING READERS WHAT SPECIES LOOK LIKE

The World Register of Marine Species (Appeltans et al, 2011) and associated databases are an index to the book of life, but our further goal is for every species to have its face on the web:
http://www.marinespecies.org/news.php?p=show&id=2062

Journals and media websites are full of images of beautiful or sometimes scary-looking species. Clearly images attract far more readers than species names. These images may convey information on a species life-style, size, color, behavior, habitat, and/or feeding. Collectively they illustrate the diversity of life, and can instill a sense of wonder about biodiversity.

The WoRMS picture gallery in December 2010, had 14,000 images of 6,600 species, and is an example of a scientist-reviewed public picture gallery to serve the marine biological community. These images may also help users check they have the correct organism, and provide material for users to use in lectures and presentations.

Some benefits of our picture gallery in a nutshell:

- user-controlled upload and display of web-sized images, without forcing creation of accounts and log-ins (but account holders have edit privileges)
- automatically reads embedded camera capture metadata
- permits user-added minimal metadata: title, author, email, keywords
- keywords are part of a controlled vocabulary and multiple entries are possible: drop-down list of taxonomic names
- multiple uses: images are automatically shared between regional (e.g. Canadian, European, Antarctic portal), thematic (Harmful algae) and global (e.g. Porifera, Copepoda, etc) databases. In addition the images and metadata are harvested every three weeks by EOL
- recognize sources by citing institute or photographer from author field
- choose between copyright or Creative Commons license
- peer-review and data quality: verification status of taxonomic names and photo ID are indicated
- editors respond quickly to edits, corrections, additions
- search for any term (title, author, …) linked to the images
- the number of times an image has been viewed is tracked
- automatically resizes the image to 800 pixels wide; it stores the original size and creates a thumbnail (if permitted by the image provider, the original size file can be made publicly available upon request)
- editors can link images to specimens, which can have additional metadata (e.g. details on code number, storage, identification, locality, biology etc)
- an option to allow users to provide comments, which are moderated by the database administrator
- the picture gallery can also store and display video files

CARMS PHOTOGALLERY

As mentioned in the introduction, the CaRMS web site is hosted by VLIZ and therefore has access to many of the tools and products available on the WoRMS web site. A photogallery of Canadian contributions is currently being developed with the objective to make accessible images for taxa contained in the CaRMS register. The following guide was developed to assist users by providing easy step by step instructions on how to submit images and relevant information to be viewed by visitors to CaRMS and their partner websites. Feedback is welcome. Contact us at CaRMS@dfo-mpo.gc.ca.

The photogallery main page has been divided into a set of albums to organize image content based on the WoRMS taxonomic classification (http://www.marinespecies.org/carms/photogallery.php). As content in each album grows, then sub-albums may be created. Albums and contents in the CaRMS photogallery are arranged alphabetically. To date, the albums refer to specific groups of taxa, except for one album that is the designated holder for special collections (Table 1).

Table 1. List of album and sub-album names in the CaRMS photogallery (March 2011)

Album name	**Sub-albums**
Bryozoans	
Chaetognaths	
Cnidarians	
Crustaceans	Amphipoda, Cirripedia, Copepoda, Cumacea, Decapoda, Euphausiacea, Isopoda, Lophogastrida, Mysida, Ostracoda, Stomatopoda
Ctenophores	
Echinoderms	brittle stars, sea cucumbers, sea stars, sea urchins
Fish	sharks and skates, drawings
Hemichordates	
Macroalgae	Chromista
Mammals	
Marine birds	
Molluscs	Bivalvia, Cephalopoda, Gastropoda, Polyplacophora,
Other groups	
Phytoplankton	diatoms, dinoflagellates, flagellates and ciliates (and others)
Polychaetes	
Protozoans	Foraminifera, Radiolaria
Sponges	
Tunicates	
Special theme albums	Aquatic Invasive Species, Hudson 70 Photos, Life History Stages, Mesozooplankton, Ocean Tracking Network

Album names for taxonomic groups are selected on a practical basis, and thus are a mixture of scientific and common names. All albums, except the special theme albums, are associated with a CaRMS/WoRMS taxon name. This association will be described in more detail under Step 4 - CaRMS name.

Note – Images may be displayed in multiple albums. For example, crustacean zoea may be displayed in the Crustacea album as well as in the special theme Life History Stages album.

Thumbnail images of photos in an album are automatically displayed and additional pages are added to the albums as content grows. When a user clicks on a specific thumbnail image, a photo page opens displaying a larger view of the image (up to 800 pixels wide) along with associated information. If the original submitted image was of finer resolution users may contact CaRMS/WoRMS and request a copy of this larger sized image.

To save an image from an album, a user can simply use their mouse and 'right click' to copy and save the image. Most images on this site are marked as free to use for non-commercial use (see the section describing the Creative Commons licenses) but users must reference the author of the image and the CaRMS photogallery as the source.

The citation for each image in the photogallery is displayed on each photopage. Example, the citation for the image in Figure 1 is: 'CaRMS Photogallery / Fisheries and Oceans Canada, W.D. Bowen'.

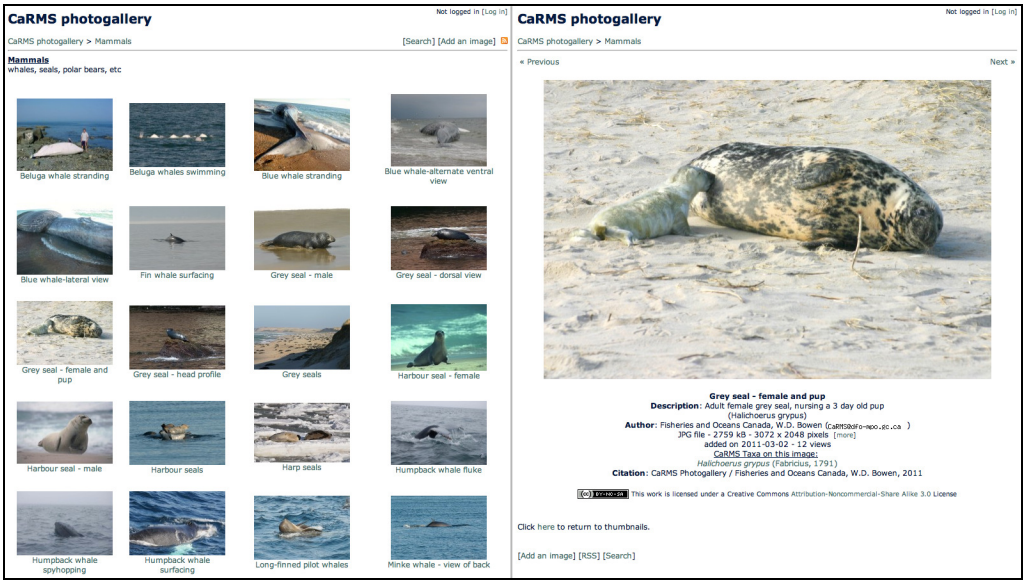


Figure 1. Grey seal – female and pup. In CaRMS photogallery>Mammals.

IMAGE TYPES

The objective of the CaRMS photogallery is not to act as an image repository or archive for all Canadian specimen images but rather as a representative selection of images for the taxa listed in the Canadian Register of Marine Species. The intent of the photogallery is to show a general appearance of a species along with taxonomic name details, and to not serve as an identification guide.

Whole organism images are preferred. However, an image submitter may wish to post a good example of particular structure that is clearly shown at 800 pixels (the horizontal image size that will be displayed on CaRMS) (Figure 2).

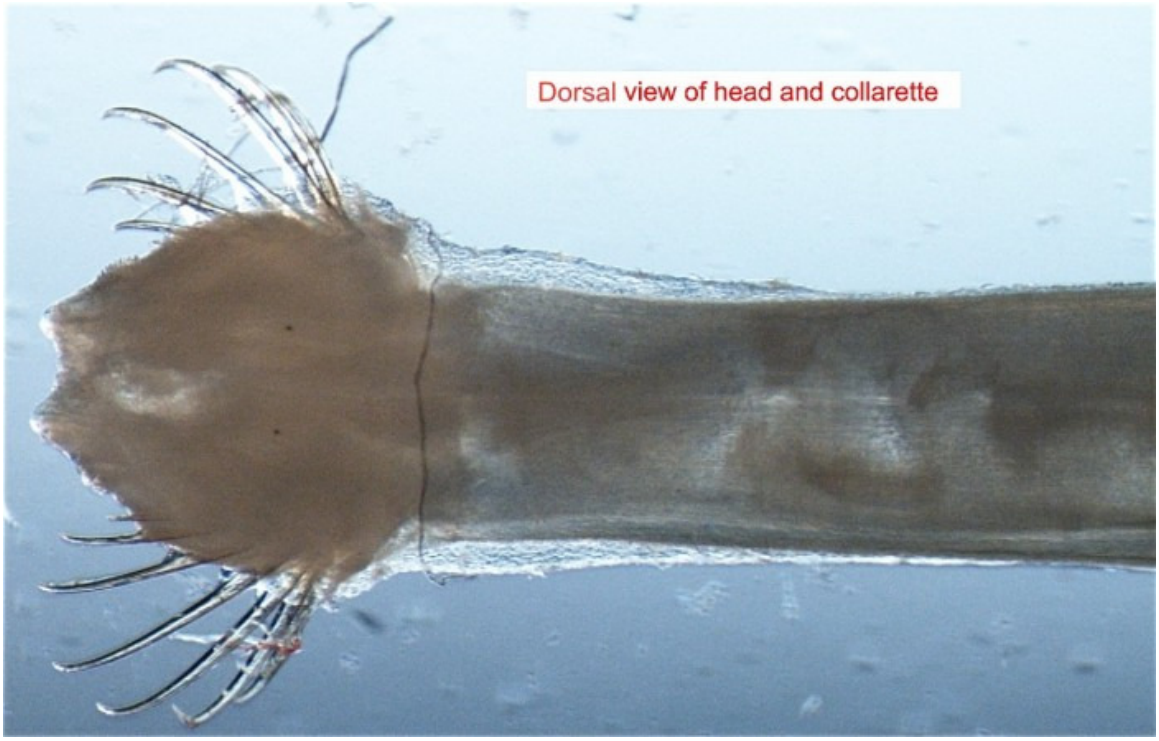


Figure 2. Dorsal view of the head and collarette of the chaetognath *Sagitta bipunctata*. In CaRMS Photogallery / Fisheries and Oceans Canada.

USES OF THE PHOTOGALLERY

Images in photo galleries may provide ready access to material for use in lectures and presentations, with sufficient resolution (800 pixels) to see the specimen, but not be unnecessarily large.

While the photogallery may be of some help during specimen identification, users are responsible to check they have the correct organism. Thus, while a taxonomist may use these images to obtain a general idea of a specimen at

hand, the use of proper taxonomic keys and descriptions are necessary to confirm identifications.

DATA PROVIDERS AND IMAGE SUBMITTERS

The CaRMS/WoRMS photogalleries accept public submissions of images. Images may be removed by the web site editors if not properly identified, of poor quality or generally not suitable.

Image submitters should be aware of the following notes:

- the original intent of the CaRMS photogallery was to collect images for taxa associated with distribution notes in the CaRMS database; it has since expanded to include images related to special themes or collections of interest to Canadian research
- if a valid scientific name has been assigned to the photo, the image uploaded to the CaRMS photogallery is automatically included in the WoRMS photogallery and partner sites such as ArcOD (Arctic) and MarBEF (Europe)
- images assigned a Creative Commons license in the CaRMS photogallery are shared with other biodiversity initiatives such as the Encyclopedia of Life (EOL).
- an "upload_date" and a "modified_date" is assigned to each image loaded into the photogallery so that partner sites will periodically update their entries with the modified image

Instructions below refer specifically to the CaRMS photogallery, but these guidelines could easily apply to submissions to the WoRMS photogallery.

Note – in the following section the text often refers to the species name but any taxonomic group name may be substituted, for example genus name or family name.

CARMS PHOTOGALLERY CONTENT

The following section describes content statistics related to CaRMS as of March 31, 2011. At that time the CaRMS dbase contained 14,447 records for all taxa. Figure 3 below shows a time line and the legend identifies the type of content submitted to CaRMS.

The WoRMS list of taxonomic names is the backbone of CaRMS and the starting date on the figure is set at 1997 which is the date associated with the oldest regional database in WoRMS. This initial list included species names that are also in CaRMS. In 2005 content from the precursor to CaRMS, the Northwest Atlantic Register of Marine Species (Van Guelpen and Kennedy 2011) was included in WoRMS. Many of the initial distribution notes were free text, example 'Bay of Fundy to Florida' and could not be added to the distribution table and so were uploaded as general notes and not distribution notes. Contributions to the photogallery are not included in this timeline figure.

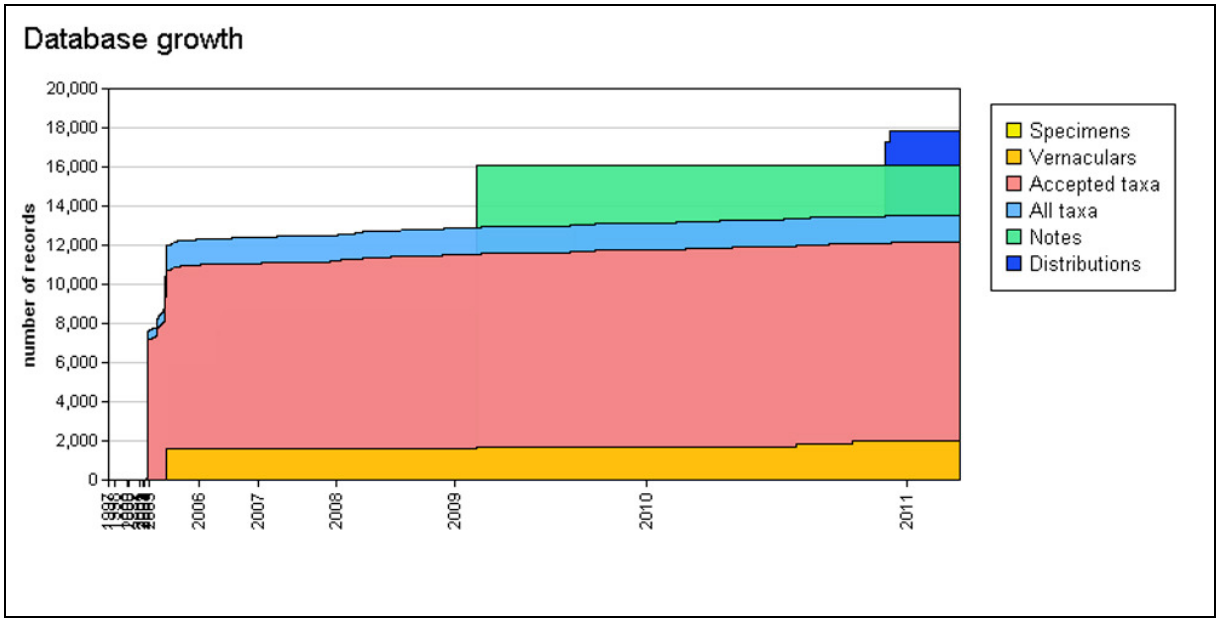


Figure 3. CaRMS database growth up to March 2011.

To address the question 'What is the taxonomic coverage in the photogallery?' it is possible to create a list of species vs number of images in the photogallery. An automated process that outputs these statistics is not currently available but this task can be run on a routine basis compliments of the VLIZ data management team.

The CaRMS photogallery was started in 2010 and by April of 2011 contained more than 1230 images with broad coverage (Table 2).

Table 2. Counts of images per phylum as of April 2011 in the WoRMS and CaRMS photogalleries.

Kingdom	Phylum	WoRMS	CaRMS
Animalia	Acanthocephala	0	0
Animalia	Acoelomorpha	0	0
Animalia	Annelida	200	59
Animalia	Arthropoda	563	370
Animalia	Brachiopoda	5	4
Animalia	Bryozoa	144	6
Animalia	Cephalorhyncha	9	4
Animalia	Chaetognatha	11	10
Animalia	Chordata	1816	413
Animalia	Cnidaria	261	38
Animalia	Ctenophora	11	0
Animalia	Echinodermata	179	76
Animalia	Echiura	0	0
Animalia	Entoprocta	4	0
Animalia	Hemichordata	4	2
Animalia	Mollusca	593	167
Animalia	Nematoda	0	0
Animalia	Nemertea	0	0
Animalia	Phoronida	0	0
Animalia	Platyhelminthes	31	0
Animalia	Porifera	28	3
Animalia	Rotifera	0	0
Animalia	Sipuncula	1	1
Bacteria	Cyanobacteria	0	0
Chromista	Bacillariophyta	298	34
Chromista	Heterokontophyta	72	6
Plantae	Chlorophyta	37	2
Plantae	Rhodophyta	98	3
Protozoa	Amoebozoa	0	0
Protozoa	Myzozoa	94	41

The primary source of content in the gallery as of March 2011 has been Fisheries and Oceans Canada. Many individual contributors should be acknowledged. To date, the list of image authors includes:

- Fisheries and Oceans Canada
    - Canadian Shark Research Lab, S. Campana
    - Carolyn Harvie

    - Claude Nozères
    - Cynthia Boubonnais
    - Daphne Themelis
    - Georg Jorgensen
    - Hedy Kling
    - Heinz Wiele
    - Jack F. Fife
    - Jim Reid
    - Kevin MacIsaac
    - Marie-Hélène Thériault
    - Megan Best
    - Melisa Wong
    - Moira Galbraith
    - Monica Bravo
    - Roberta Miller
    - W.D. Bowen
- Dalhousie University
    - Mary Lewis
    - Rajashree Gouda
    - Steve Angelidis
- Mount Allison University
    - F. Muise
    - L. Mather
    - M. Kinney
    - M.L. MacGillivary
- University of Alberta, A. Richard Palmer
- L'Université du Québec à Rimouski, Laure de Montety
- Hudson 70 Expedition, Roger Smith
- Bertin Gauvin
- Dan Blackwood
- Hilary Moors
- J.M. Spry
- John Chardine
- National Research Council of Canada, Nancy Lewis
- Sir Alister Hardy Foundation for Ocean Science (SAHFOS)

Contributions from the sources listed above include images that are a mixture of field images, lab images and drawings. Through questions raised during these initial submissions of images, a set of instructions was developed for use by data providers. These instructions are documented below.

SUBMISSION OF IMAGES TO CARMS PHOTOGALLERY

Images may be submitted to the CaRMS photogallery through a webpage entry form. A number of fields are available to provide information on the image. These fields are available for search queries by the community on CaRMS/WoRMS and other web portals such as the Encyclopedia of Life (EOL). In order to help submitters upload images and metadata, examples are described below.

STEP 1: CHECK FOR SPECIES AND IMAGES ALREADY PRESENT.

On the CaRMS website (http://www.marinespecies.org/carms), use the **TAXON SEARCH** tab and enter the scientific name associated with the image to be submitted (Figure 5). This is a good method to confirm the validity of the species name or synonym because the CaRMS accepted name will be selected to accompany the image in Step 4.

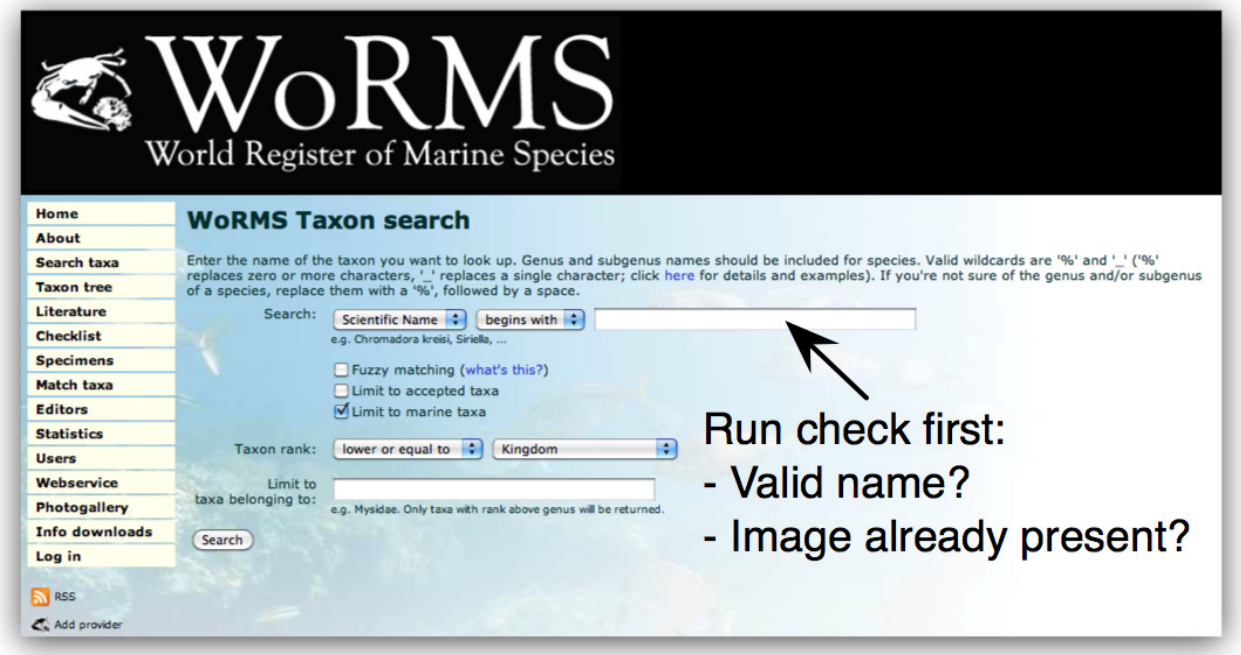


Figure 4. WoRMS **TAXON SEARCH** web form. Consulting CaRMS or WoRMS is useful to confirm the name of the species and the presence of other images.

If the WoRMS species page returned as a result of the TAXON SEARCH query recommended above shows that several images are currently associated with this name, try to offer an image of a different nature (juvenile vs. mature specimen, characteristic body part, fresh vs. preserved appearance). For example, enter the name *Gadus morhua* on the TAXON SEARCH tool form – the result shows images that include stamps, drawings, live and dead specimens (Figure 6). In a second example where the name chosen was a crab (*Carcinus*

maenas (Linnaeus, 1758)) one can see that images include the dried carapace, the specimen in natural habitat, different life stages, dorsal and ventral views, etc. (Figure 7).

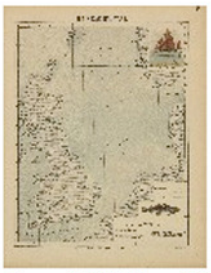
Gadus morhua
added on 2010-06-10 - author: Collection VLIZ
qualitystatus: not checked

Kabeljauw
added on 2008-03-21 - author: Karl Van Ginderdeuren
qualitystatus: not checked

Poll (1947, figuur 130)
added on 2008-08-12 - author: H. Dupond in Poll (1947) (naar Smitt)
scan provided by VLIZ - www.wetenschatten.be
qualitystatus: not checked

Gadus morhua Linnaeus, 1758
added on 2006-08-16 - author: RIVO/Henk Heessen/2005
qualitystatus: not checked

Gilson (1921, figuur 63)
added on 2008-06-12 - author: Anoniem in Gilson, G. (1921)
scan provided by VLIZ - www.wetenschatten.be
qualitystatus: not checked



Olsen (1883, kaart 20)
added on 2008-07-24 - author: O.T. Olsen
scan provided by VLIZ - www.wetenschatten.be
qualitystatus: not checked

Kabeljauwen
added on 2009-03-16 - author: Van Ginderdeuren, Karl
qualitystatus: not checked

Figure 5. Types of images associated with the name *Gadus morhua* (WoRMS photogallery, March 2011).

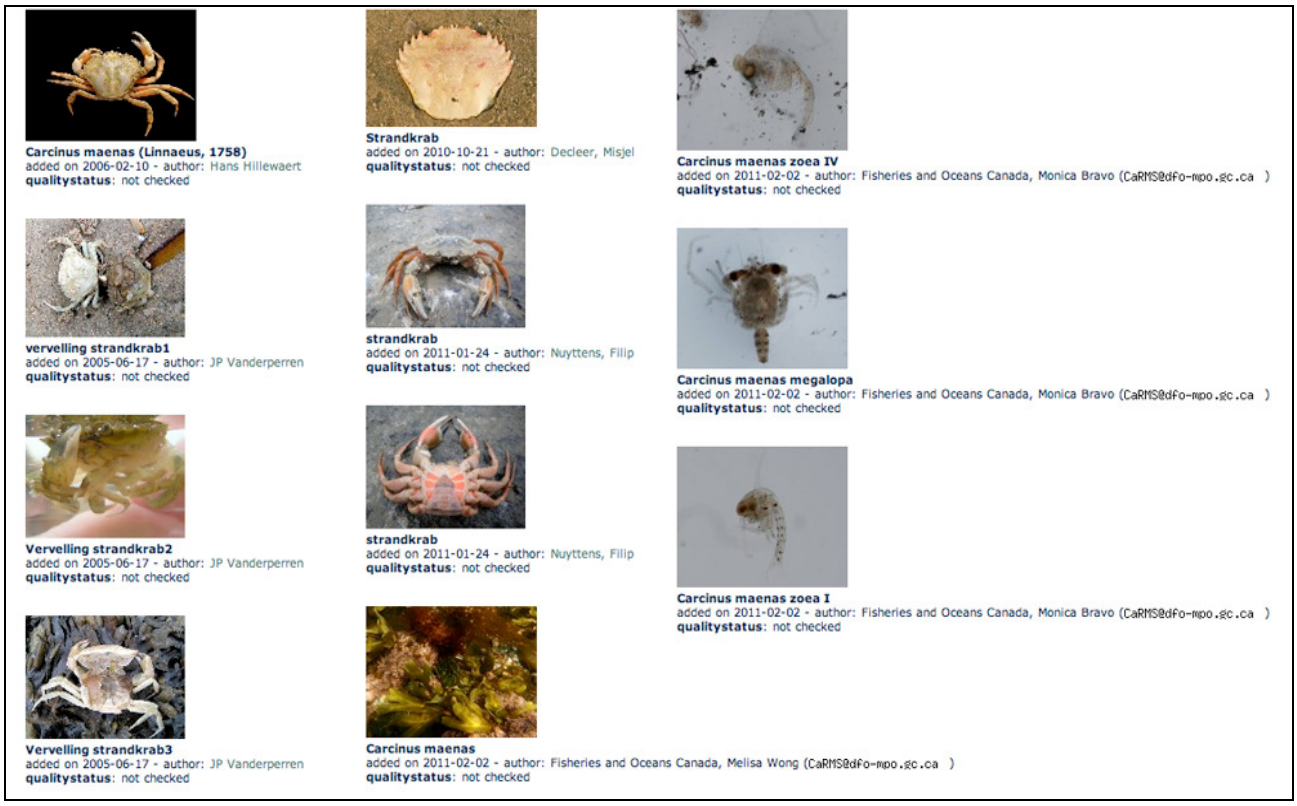


Figure 6. Types of images associated with the name *Carcinus maenas* (WoRMS photogallery, March 2011).

NOTE

1. CaRMS is a work in progress, therefore not all species found in Canadian waters are listed in the register. If a name match is not returned when the CaRMS TAXON SEARCH tool is used, this indicates that the name is not included in the list of names associated with distribution notes currently compiled in CaRMS. The user is then advised to try again the TAXON SEARCH tool feature on the WoRMS site for a global list of all marine taxa. If the name cannot be matched on WoRMS, it may indicate that the name belongs to a freshwater species, in which case the user may confirm the name with other principal sources: uBio (www.ubio.org), ITIS (www.itis.gov), FishBase (www.fishbase.org), Malacolog (www.malacolog.org), or Algaebase (www.algaebase.org). If the name still cannot be resolved, the user should contact regional or WoRMS taxonomic experts to confirm the assigned name.

2. It is possible that when using the TAXON SEARCH tool that the scientific name may be associated with multiple records in CaRMS or WoRMS. If this happens, then one must select the appropriate name based on the associated scientific authorship.

STEP 2: PREPARE IMAGE.

Prepare a copy of the image to be submitted to the gallery. The preferred file types are:

- JPG (best for photos)
- PNG (best for drawings)

The photogallery photo page will also display photo capture metadata (EXIF) (Figure 7). In some cameras, custom details such as creator name, address, and GPS can be embedded in EXIF, which should be reviewed and edited if they are not to be shared. Once the image has been uploaded into the photogallery this information cannot be edited through the online interface.

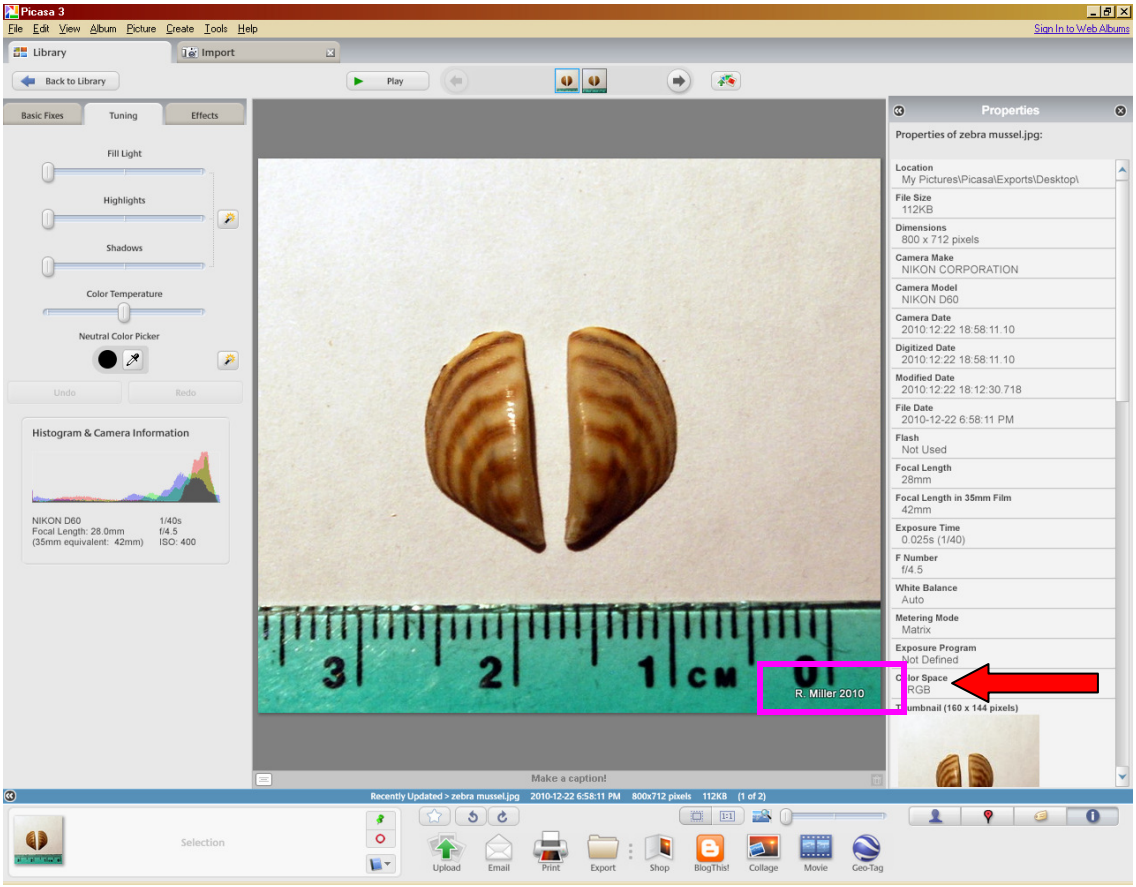


Figure 7. Image preparation.. The red arrow points to the optional watermark of the author's name (in highlighted box).

Image preparation procedures may include the following steps: export a copy (resizing and name tagging if desired) and preview the image metadata before submitting to the photogallery. In the example shown in Figure 7 the editing process used the free Picasa 3 software. See Nozères (2011, in prep.) for detailed information on image preparation.

Resolution and image size

Large image size is normally not an issue as the photogallery automatically resizes the image for display on the web site while storing the image in its original format and enabling the download of the full sized image upon request.

It is up to the submitter if they prefer to send downsized images (800 pixels or 1600 pixels wide are suggested as common web sizes). CaRMS/WoRMS will only display the standard 800 pixel wide image along with a smaller thumbnail for browsing.

One reason to upload full-size images is because it is easy, not requiring the effort to downsize files in advance with photo tools.

Another reason is because the pixel size dimensions will be posted (e.g., 3000x2000, instead of 800x600), informing the viewer as to original file size in the WoRMS archive before enquiring further.

On the other hand, there is the notion that if only a low resolution version (800 pixels or less) image is posted in the gallery that this will reduce copying and republishing of images elsewhere. If this is a concern to image providers then they should consider watermarking their images and/or assigning copyright. CaRMS image contributors have commented that they routinely mark their images since their experience is that images posted online may be copied without accreditation by other users on the web.

Watermarking

Software may be used to add a digital watermark i.e. displaying source and/or copyright notice on the image. Because the photogallery displays the source on the photo page, a visual watermark on the image is not required; if used, it is preferable to be discreet in order to maintain the visual utility of the image, for example in education presentations. The authors note that it is unlikely that web site users who download small image versions of species will be able to sell these images. In addition, the stated Creative Commons license is for non-commercial use. For watermarking examples see Figures 7 and 8. Watermarking may be important for some labs and charismatic species, i.e., whales, sharks, etc.

Figure 8. Example of an image with a watermark (red arrow).

STEP 3: LOAD THE WEB PAGE FOR SUBMISSIONS.

Navigate to the web site
http://www.marinespecies.org/carms/photogallery.php

Member log in

The **Log in** tab is in the upper right on the CaRMS Photogallery page. Note: it is not necessary to register or log in to submit an image. Logged in users have the advantage that they can edit photos that were submitted and associated with their email address. CaRMS and WoRMS editors may edit all photos in the gallery.

Figure 9. The CaRMS login form.

Once logged in users may upload and post images. A web button to add an image in CaRMS is located near the top-right (Figure 10). A second button is located at the bottom-left corner of the photogallery page.

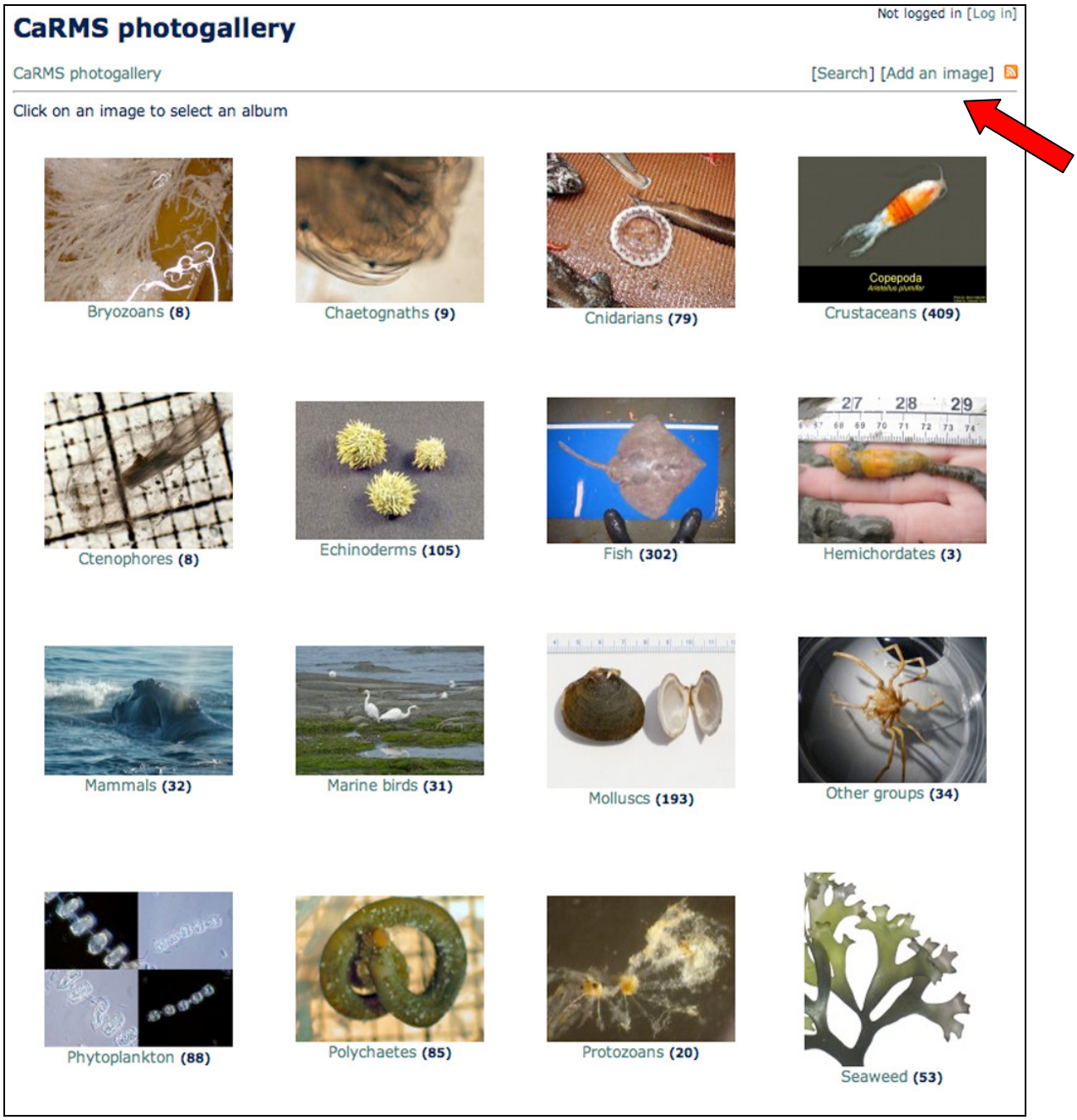


Figure 10. CaRMS Photogallery. The red arrow points to the button [Add an image].

STEP 4: ENTER INFORMATION BEFORE UPLOADING A FILE.

The only requirement to submit an image is to choose a file to upload. However entering information such as a title, author, and species name are important assets for images by making them searchable and attributable on the web (Figure 11).

At the present time, CaRMS is recommending the use of English-only in the data fields as the images are to be shared with international projects like WoRMS and EOL.

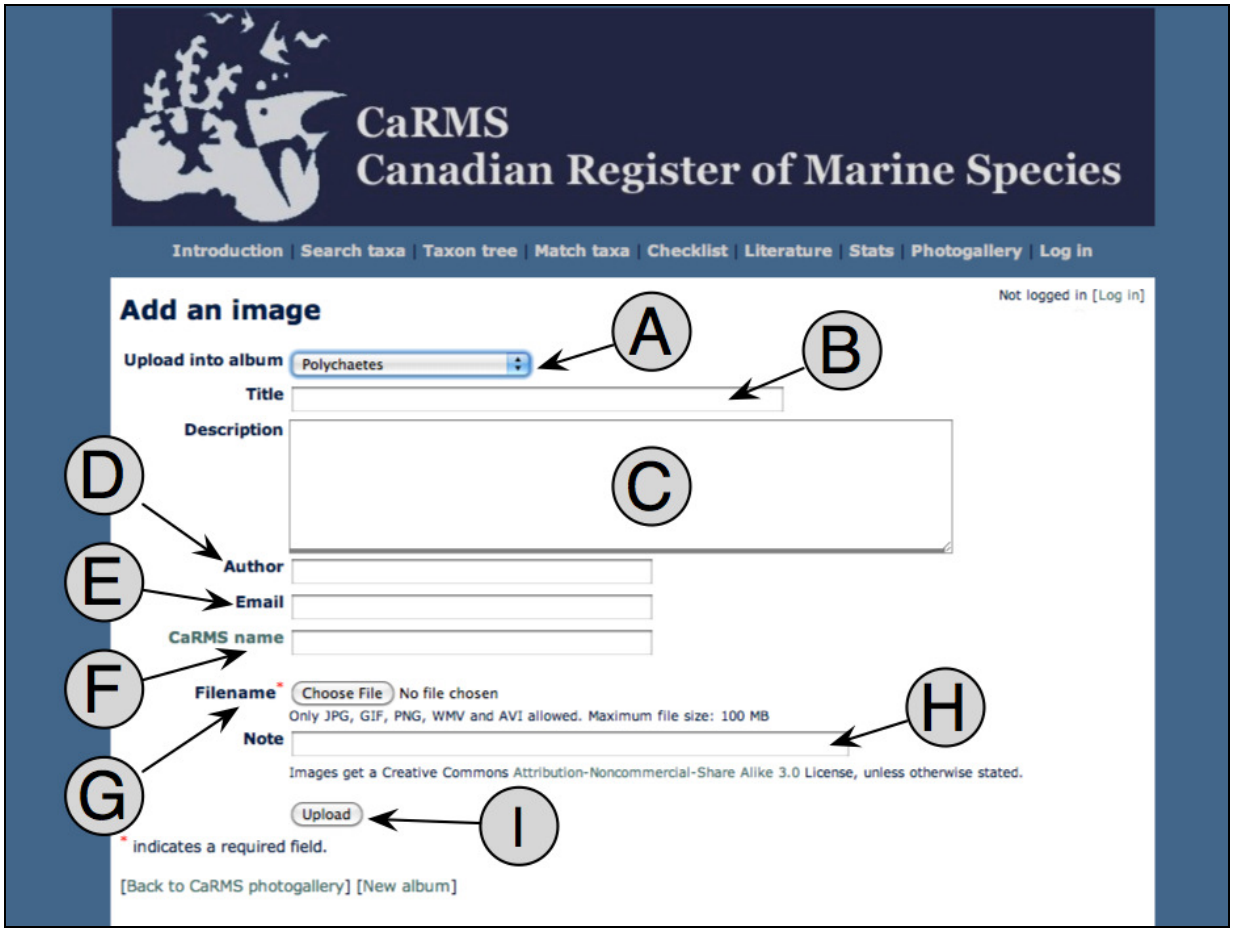


Figure 11. Image submission web form. After choosing a file (G), information may be entered into several fields to describe the image and its source.

(A) Upload into album

Click and choose from the drop-down list for the album gallery group to which the species belongs. In this example, we see 'Polychaetes'. If a group is not listed, new ones may be added. If the photo should be shown in more than one group, for example, Mesozooplankton and Crustaceans, log in to edit the image. (Step 5)

(B) Title

Title is posted to the photogallery thumbnails and the photo page. This information will be searchable on the web. Descriptive names are suggested, to be helpful during searches for images by users.

Examples of Title:

- *Mya truncata* (a species name)
- *Hyas coarctatus*, zoea (name and life stage)
- *Melinna cristata* in tubes (name and setting)
- *Euspira heros* - moon snail (names, scientific and common)
- Green crab (a common name)
- Cephalopods of the St. Lawrence (group shown in an image plate)

General guidelines for CaRMS image titles are as follows:

- Scientific name for species if no common name is widely-used
- Scientific name and common name for commercially-harvested species
- Common name, and optionally scientific name, for birds and mammals.

(C) Description (optional)

Provide a summary of specimen details. Good examples of information include state or maturity, provider (e.g., from a survey, a museum, or an individual), location, and magnification for microscope images. The image source/owner may also be listed here, e.g.: 'Specimen from DFO-Quebec'. If cells have been cultured, then this comment should be added to the description.

Description is seen under the title on the full page picture, followed by author, file type and size and a [more] link for photo/camera details and/or collecting location, upload date, number of views and a link to the CaRMS taxa page.

(D) Author

This gives the credit for the image source. Author appears along with the description on the full page picture and on other web portals (such as the EOL).

Example of instructions for submissions by DFO data providers:
Enter Fisheries and Oceans Canada (unilingual English) either by itself or followed by person's name. Do not use the abbreviated form of DFO. Do not include the DFO Region or an institute, but do include partner institutes: e.g, Dalhousie University.
Examples:

- Fisheries and Oceans Canada
- Fisheries and Oceans Canada, Roberta Miller
- Fisheries and Oceans Canada, Dalhousie University

If the author is not with DFO, then simply add name or organization, followed by name.

(E) Email

If desired, add author's email or if copies of the images are stored by CaRMS data managers then add the generic email address CaRMS@dfo-mpo.gc.ca

The email address is useful for WoRMS data managers or a viewer to contact the original photographer regarding image details such as confirming species.

For privacy and security, the provided address is not machine-readable, and is visible only on the individual photopage.

(F) CaRMS name

As the taxonomic name is entered, a drop-down list of names will be presented. Selecting the name will assign it to the photo, along with its taxonomic hierarchy in CaRMS/WoRMS. The name selected here will be the key for referencing the image across WoRMS and partner portals.

Posted images have a label below with 'unverified' until checked. Obvious errors noticed by viewers are emailed to WoRMS for correction. Image authors may be contacted, and CaRMS and WoRMS editors can correct entries.

If an image is not associated with a scientific name then the image is not automatically shared with other portals.

(G) Filename – choose file

This is the only obligatory step – serving as a reminder that the image upload will not take place until a file has been chosen (select the prepared copy from Step 1).

(H) Note (optional)

The Note field is not public so do not put any descriptive information into this field – it is intended to provide information to the WoRMS data managers and it is visible to the image submitter if they were logged in when the image was originally uploaded to the CaRMS photogallery.

This field is generally left blank, but it could include editorial comments such as copyright information. Notice is given on the photogallery that a Creative Commons license[1] (attribution, non-commercial, share-alike) will be applied to the image unless different rights are stated in the Note field (Figure 12).

---

[1] All images with a Creative Commons BY-NC-SA license in the WoRMS photo gallery are shared unless flagged by the WoRMS data managers. See http://creativecommons.org/licenses/by-nc-sa/3.0/deed.en for more information.

STEP 5: UPLOAD

The **upload** button (Figure 11) triggers the uploading of the image file and associated filled-in data fields. You will receive confirmation that the image was successfully added and the image may then be viewed, a new file may be submitted or you may return to the photogallery.

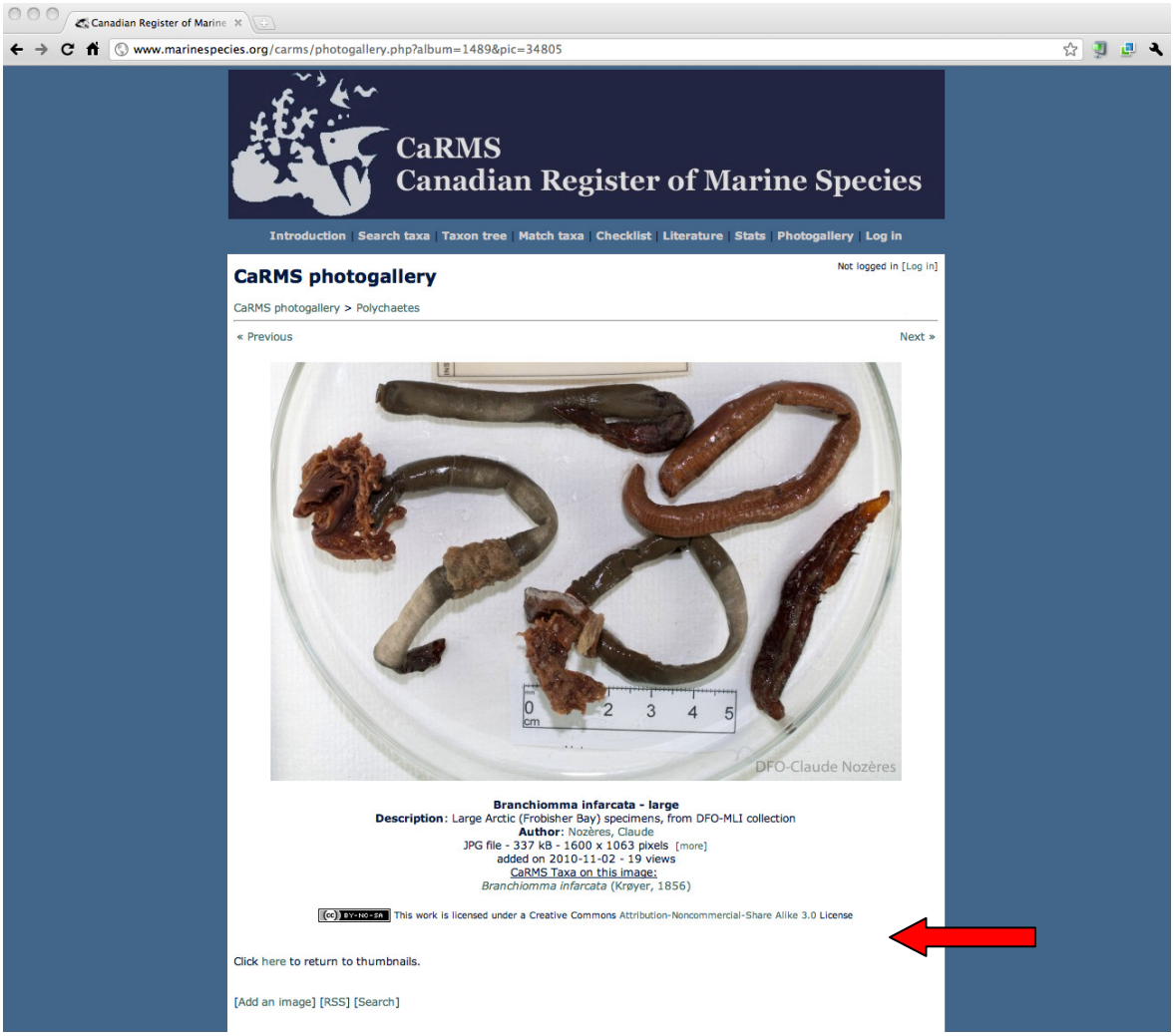


Figure 12. Each photo page includes the Creative Commons agreement statement for free use providing that there is attribution and non-commercial use.

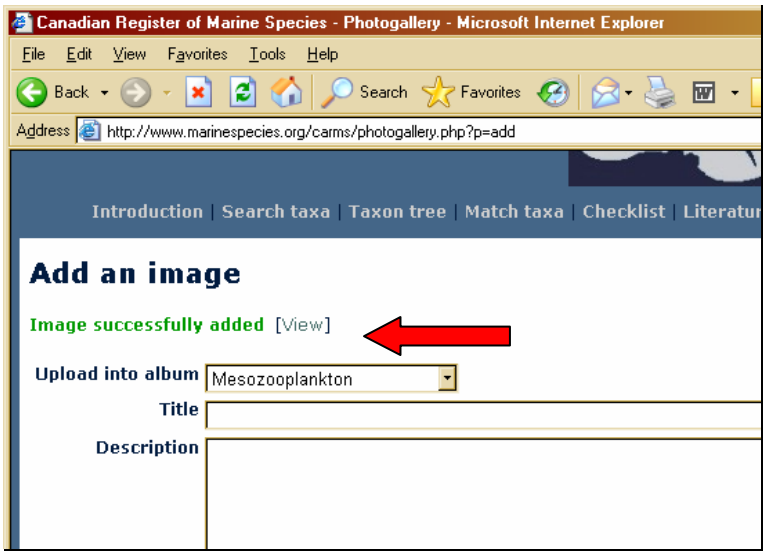


Figure 13. Click on [View] to check the added image and its associated information

Figure 14. Individual photo page. Data shown includes title, description, author, file size, and taxon name.

Individual photo pages may include the scientific name associated with the image. If the user clicks on the name below “CaRMS Taxa on this image” the taxon detail page in CaRMS will be opened. The **quality status** under the image is indicated as “not checked” until it is verified by a WoRMS editor (Figure 15).

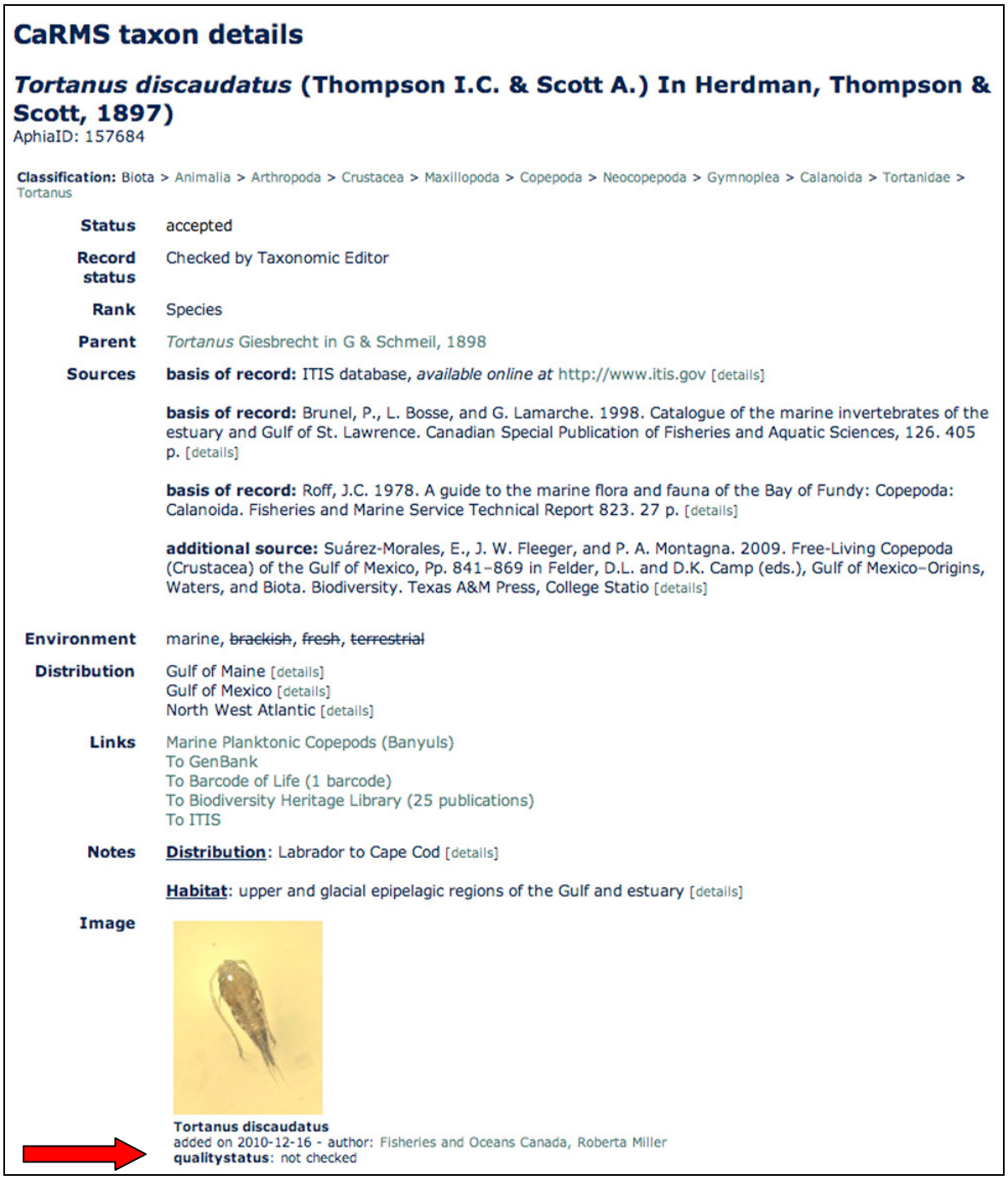


Figure 15. CaRMS species page for *Tortanus discaudatus*. The red arrow highlights the location of the quality status flag for the image.

Note – If the species name is not in the CaRMS register, but is in the WoRMS database (i.e., the species name appears in the dropdown list in Step 4) then the image will be displayed on the WoRMS species detail page.

If the image is not associated with either a CaRMS or WoRMS name (Figure 16), then the image will only be visible in the photogallery and will not be associated with any taxon detail pages, nor will it be automatically shared with partner web portals.

Figure 16. Example of a CaRMS photogallery image not associated with taxa names. This image shows a grouping of specimens captured during the Hudson Expedition around the Americas in 1970, posted as a Special Theme album.

The image details may include additional information – if the button for **[more]** is present to the right of the picture size, clicking on it will show any photo and geospatial information that is available with the photo, which depends on the photo editor used to prepare the image.

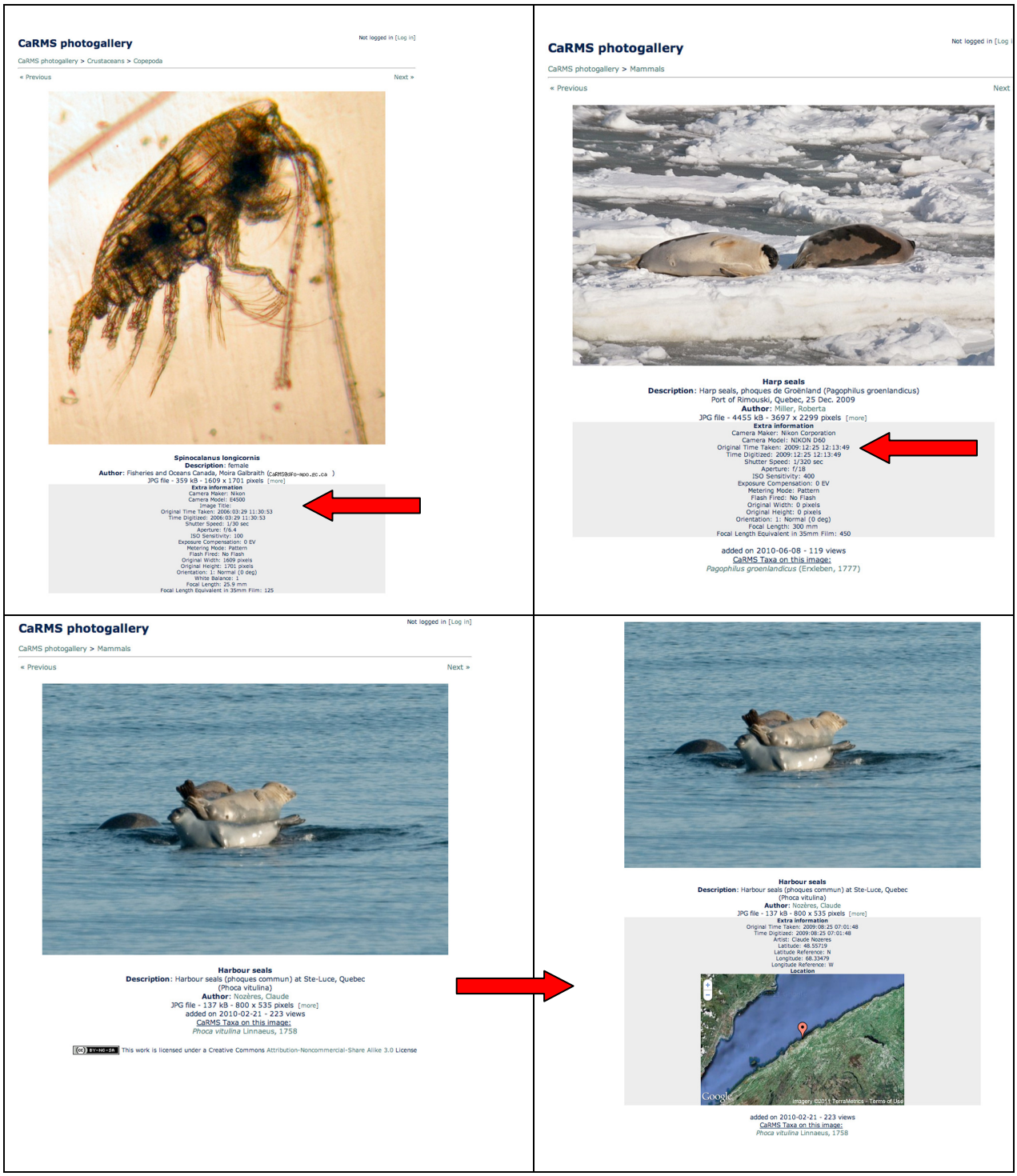


Figure 17. Examples of content available through the [more] button.

EDITING IMAGES

When logged in as a CaRMS editor or as a contributor to the CaRMS photogallery, the photos submitted by you and associated with your login information can be edited or deleted. A box in the upper right corner will show that you are logged in (Figure 18).

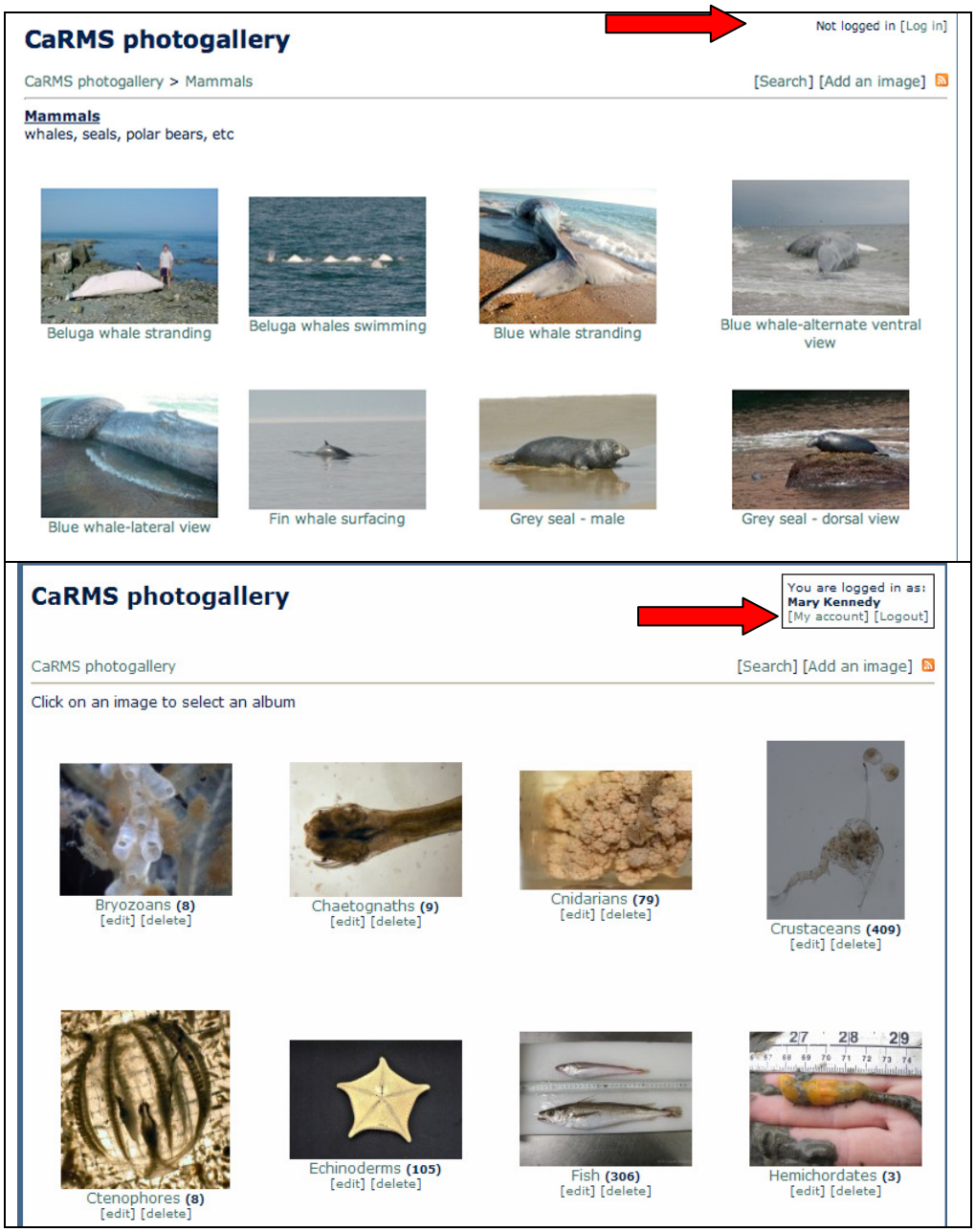


Figure 18. Thumbnail page when logged in. Notice [edit][delete] under the images.

When logged in, users may opt to edit or delete images that they submitted. Clicking on **[edit]** brings you to the editing page (Figure 19).

Figure 19. Selection of images illustrating the location of the edit and delete buttons.

In the Edit Image form the **[+]** under the Album name allows the option to add the image to a second or third album. In this example, *Tortanus discaudatus* will be displayed in the mesozooplankton album and in the Crustacea album.

The **[+]** under the CaRMS name allows the option to associate the image with multiple taxon names (Figure 20). For example, the photo of *Tortanus discaudatus* may be used to represent the Family Tortanidae. Another example would be if the photo contained images of multiple taxa. Click on the **EDIT** button when finished.

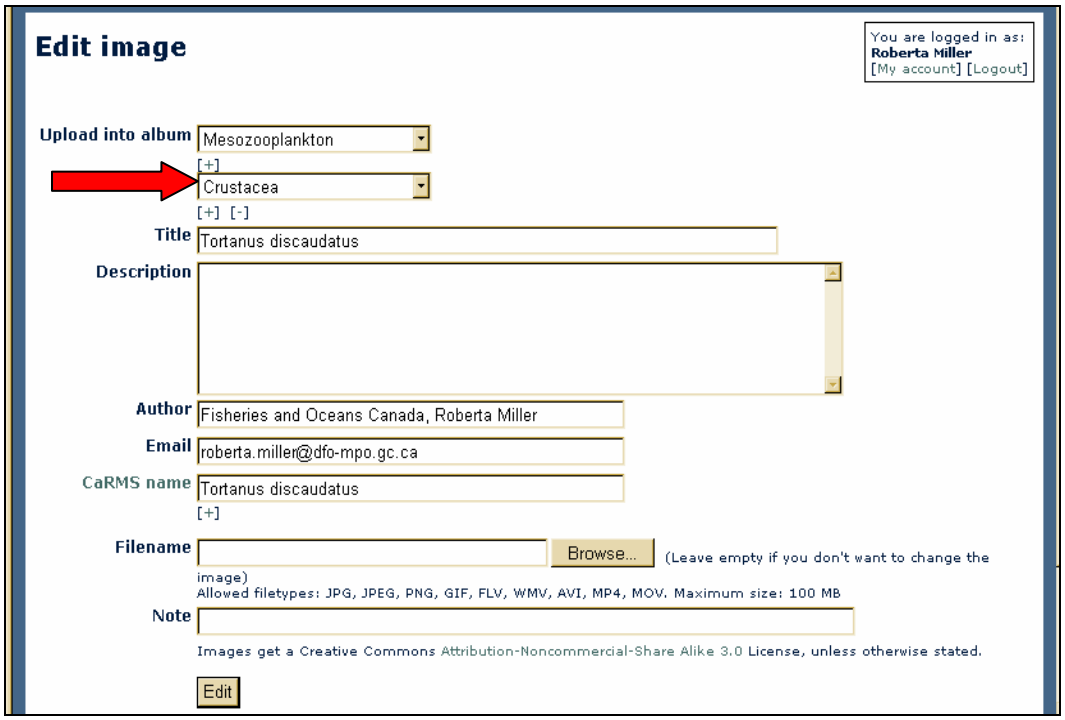


Figure 20. Form for editing images when logged in. The red arrow indicate the location of the [+] button.

NEW ALBUMS

New albums and sub albums may be added to the photogallery. The album description may be displayed under the album name (the default is to not display this information)

Click [Add an image] and then at the bottom select [new album]

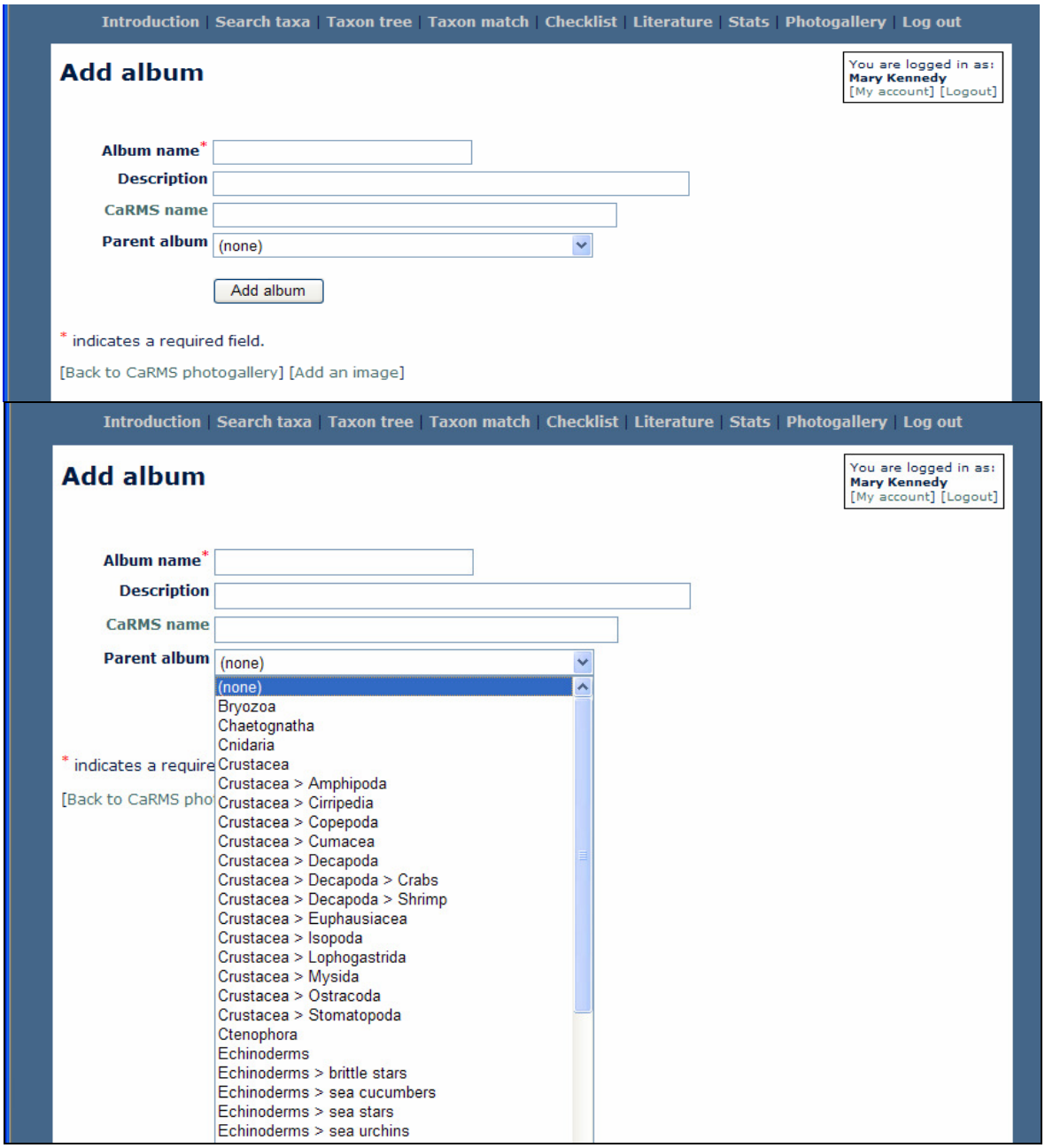


Figure 21. Screen capture of the top and bottom sections of each album page. Note the presence of the [search] buttons.

SEARCH OPTIONS

On the top right corner and bottom left corner of the each album page is a [search] button (Figure 22).

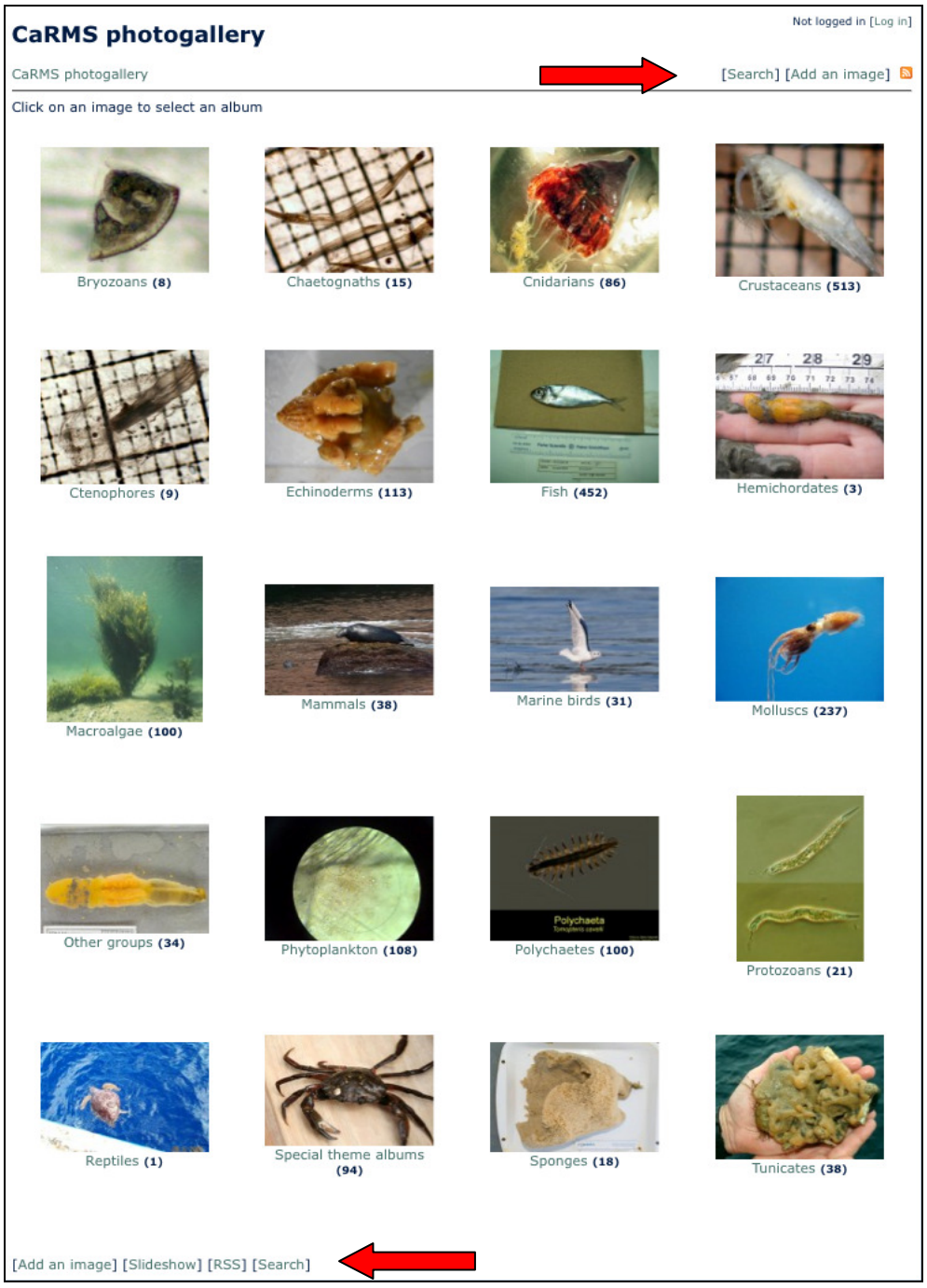


Figure 22. Screen capture of the top and bottom sections of each album page. Note the presence of the [search] buttons.

The search feature only queries the fields in the photogallery metadata (title, description, and author). Example, if you enter a common name associated with a taxa on the search form but this name is not associated with any of the images' metadata then a list of images associated with this name will not be returned even though the CaRMS/WoRMS species detail page includes this name.

Figure 23. The photogallery search form.

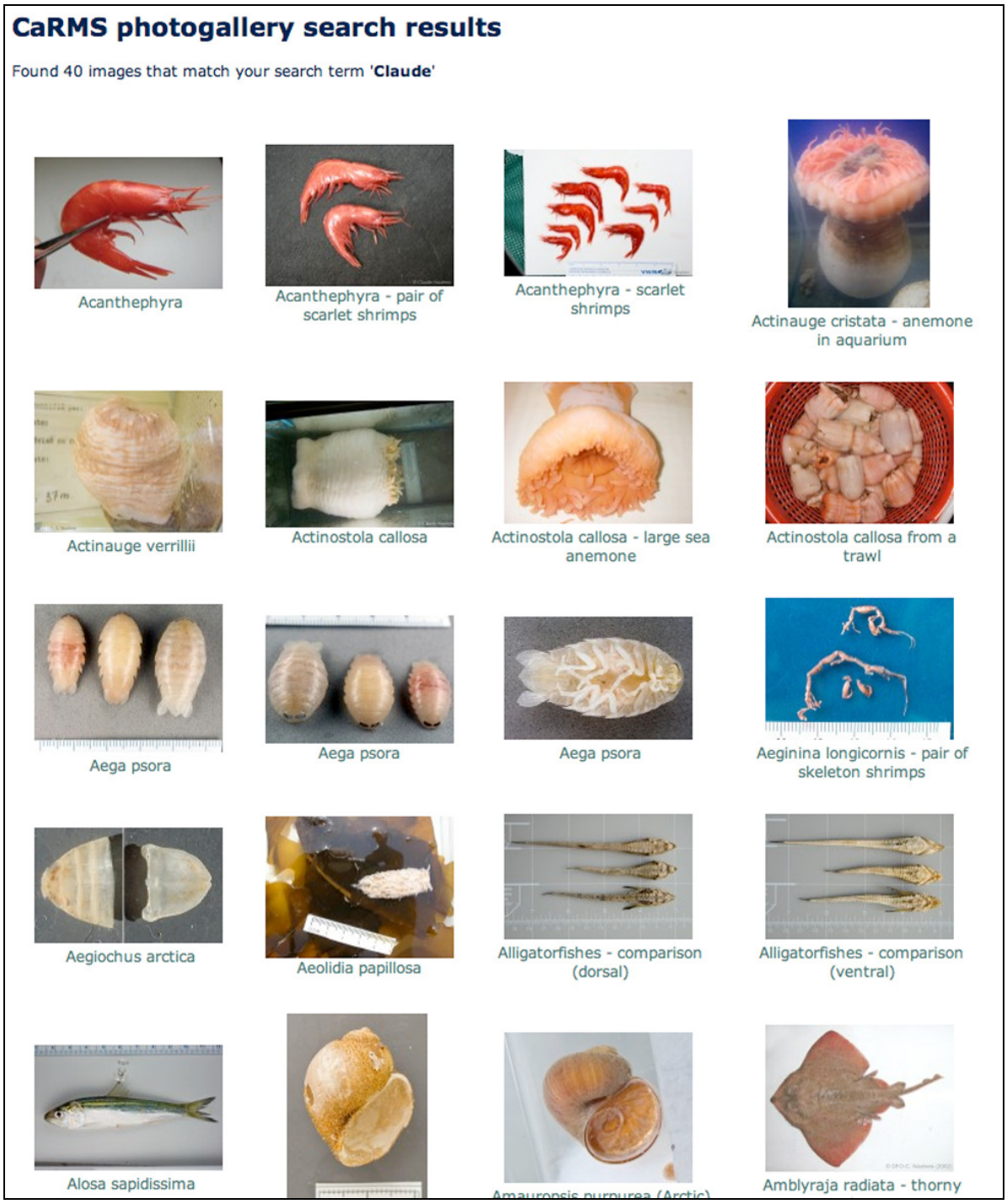


Figure 24. Example of search results for a contributor's name [Claude].

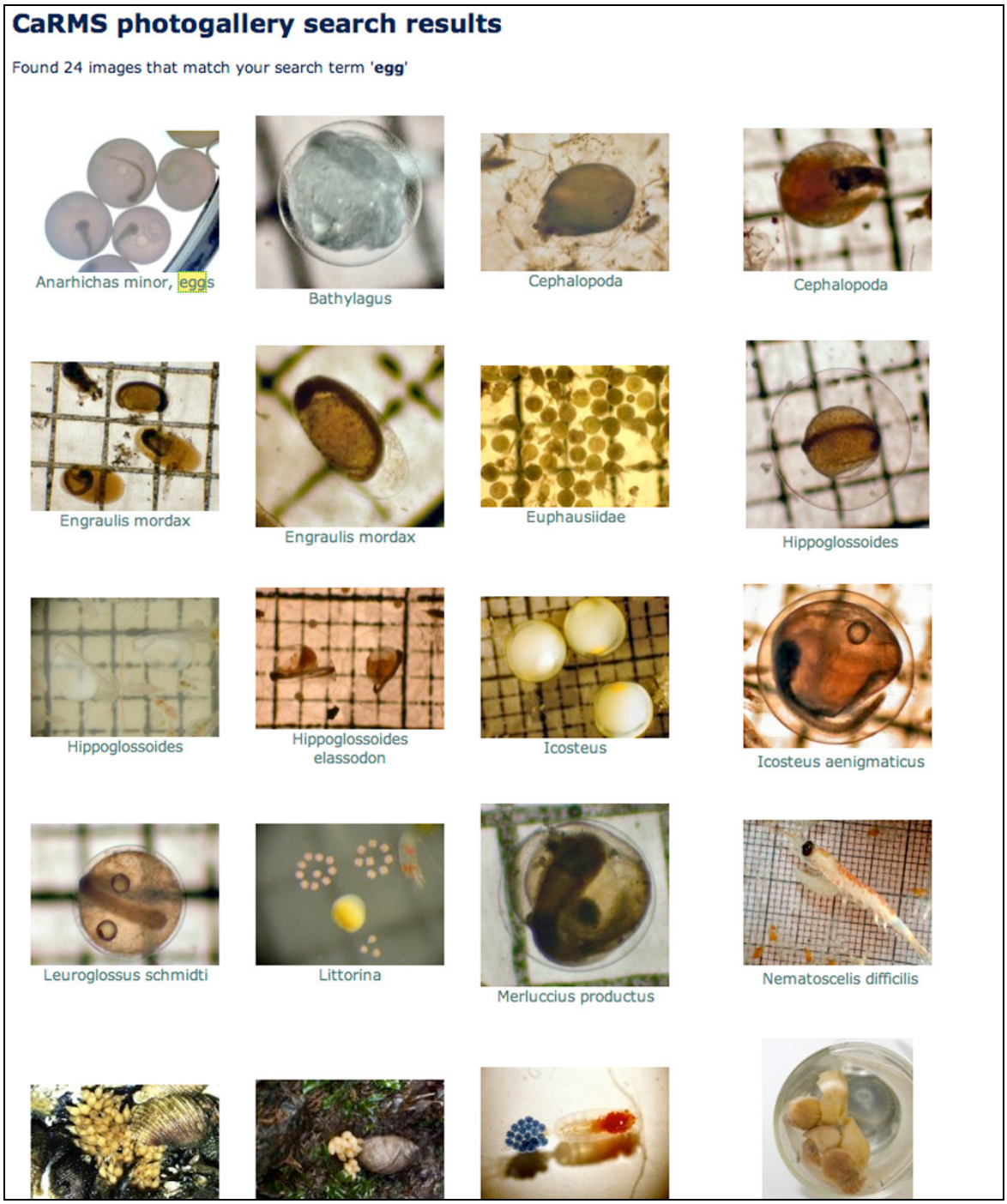


Figure 25. Example of search results for a life stage term [egg].

Figure 26. Example of search for a project name [CAMP] (Community aquatic monitoring program)

Future versions of the photo gallery may implement more intelligent searches such as:

- Provide all images of taxa that belong to Family X
- Provide all images of taxa that have a common name that contains “dolphin”

RSS

Rich Site Summary, or RSS, is an XML-based format for content distribution in real time. It allows users to see updates/additions to the photogallery, if they are equipped with an RSS reader.

- Using your mouse, right click on the RSS feed below you would like to subscribe to (Figure 27, red arrow).
- The pop-up menu that appears will vary based on your web browser.
- Internet Explorer users, select the Copy Shortcut option.
- Users of Firefox or other web browsers, select the Copy Link Location option.
- Launch your RSS aggregator or feed reader program and paste the copied URL into an Add New Feed window.
- Detailed instructions on how to add news feeds are included in the news reader application that you choose.

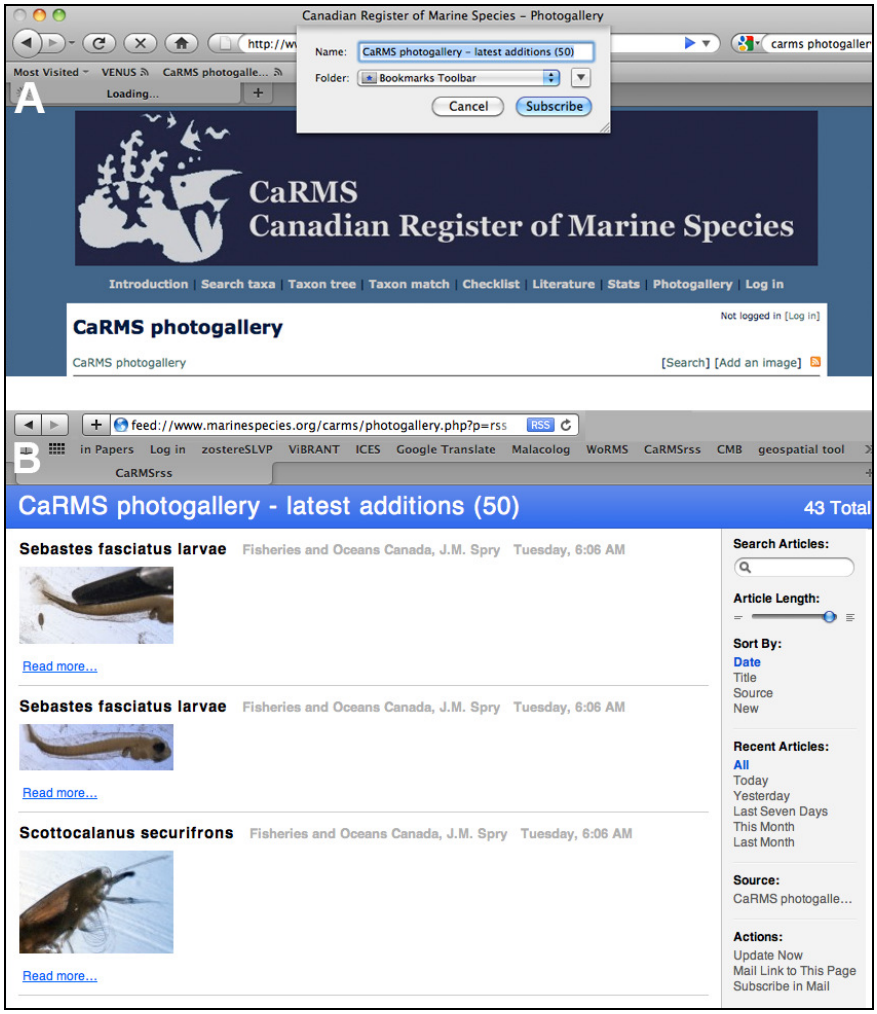


Figure 27. RSS feed services from CaRMS photogallery. A) Adding a feed in the Firefox browser. B) Resulting feed preview and synopses in the Safari browser.

SUBMITTING A BATCH OF IMAGES

For assistance with the submission of a bulk load of images to the photogallery please contact CaRMS data managers CaRMS@dfo-mpo.gc.ca.

The first step is to prepare an Excel spreadsheet with the following information:

- (exact) filename
- album_id
- author
- email
- AphiaID
- *AphiaID_2 (required if multiple taxon names are to be associated)**
- title
- description (optional)

The album_id can be found in the URL of each image. Example in URL http://www.marinespecies.org/carms/photogallery.php?**album=1985**&pic=36055; the album_id is 1985 (=Life History Stages)

*Note - When there are two species for one image, please do not make a second row, just add additional columns for each species AphiaID. "AphiaID_2" and so on.

USE OF CARMS IMAGES BY EOL

Figure 28 below demonstrates how a partner web site displays image entries to CaRMS.

Figure 28. Example of a CaRMS/WoRMS image as displayed on EOL web pages.

Frequently Asked Questions

A list of frequently asked questions was compiled and is presented below.

Q. I added the following under notes - should part of this have gone in the description?
Community Aquatic Monitoring Program (CAMP) coverage extended from northeastern New Brunswick, along the Gulf coast as far as Mabou in Nova Scotia and all around Prince Edward Island. http://www.glf.dfo-mpo.gc.ca/e0006182
A. I think that looks good, with useful information that way. The use of the extra details in 'Note' is interesting – I would keep it there and not in description. Remember that description shows up in public views and searches, while note is not public. In this case, I think you don't necessarily want that information public, but only to editors, as is the present case.

Q. I copied 4 images just to prove to myself that I was capable of loading a few images, but afterwards when I looked at the root photogallery page the number (1) is next to the Life History Stages album and not (4).
A. The number (1) is cached. So, tomorrow or so, it will be updated to 4.

Q. For all images I am adding the given name and not changing it to the accepted name. Is this OK?
A. The best is indeed to assign the original name to the image, the image will show up in CaRMS/WoRMS associated with the accepted taxon automatically.

Q. I just loaded images of larval stages of decapods to the life stage album and not to the decapod album. Must I go back and assign the second album?
A. If given a CaRMS (or WoRMS) scientific name from the dropdown list during the submission (Step 4, F), the image will automatically be assigned to the correct classification album. The WoRMS editors routinely run a 'classification-album' query. This means that when a picture is added into the system and linked to a taxon name, it will automatically be added to the 'classification' albums e.g. Decapoda

Q. My spiny dogfish images were loaded on WoRMS before the CaRMS photogallery was created. Will these images show up in CaRMS since I am a Canadian contributor?
A. No. CaRMS images will be displayed in the WoRMS photogallery but not vice versa. If you wish to have your WoRMS images associated with CaRMS you must contact the editors: CaRMS@dfo-mpo.gc.ca.

Q. Should I load all my images to the photogallery even though some might be poor quality or low resolution?

A. If no other images exist for a particular taxon (check with a search in WoRMS), it may be worthwhile to post the files. These poorer quality images may be removed from the photogallery when better quality images are posted.

Q. Should I load my images for a particular taxonomic group if there are already a number of images for that group in the album?
A. Not if the views in the new images are similar to existing images.

Q. My images are in TIFF or BMP format. Why can't I load these?
A. TIFF and BMP are unnecessary for quality viewing, plus they are relatively huge in file size, taking more time to upload. It is easier for web use to convert the files and upload as JPG files.

Q. How do I download a copy of the image?
A. The displayed image may be saved locally by ctrl-clicking (or right mouse button) on the image.

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Special thanks to all the contributors of images to the photogallery. Keep submitting!

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Appendix 1. Step by step summarized instructions

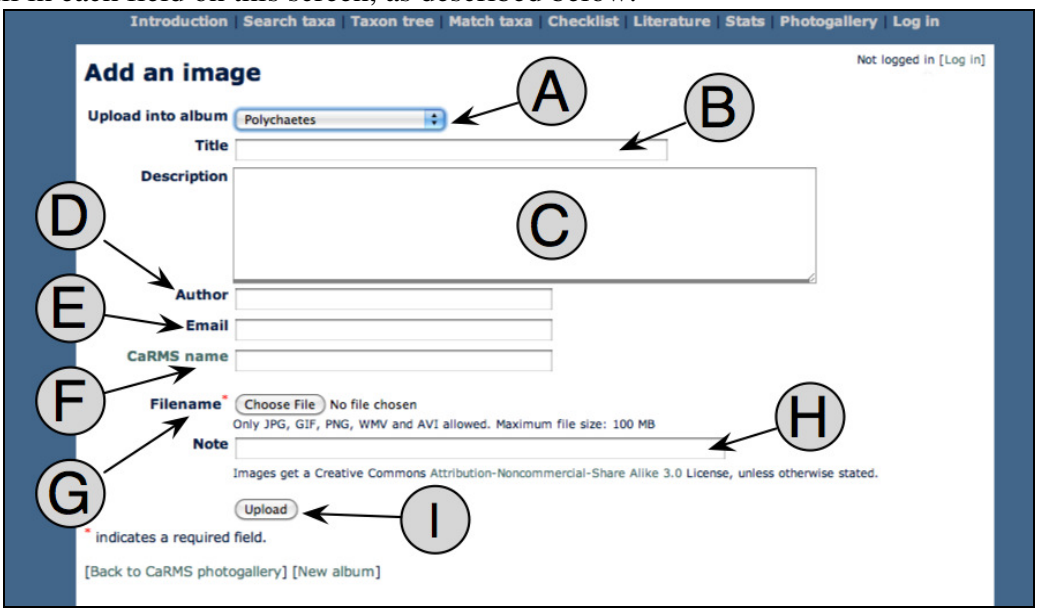
To add images simply follow the following instructions:

1. Navigate to the web site:
   http://www.marinespecies.org/carms/photogallery.php

2. Click [add an image]

3. At this screen, first choose a specific album. If undecided, add images to 'Other Groups' (from the drop-down list).

4. Fill in each field on this screen, as described below.



B) Title
Title is posted to the photo gallery thumbnails and the photo page. This information will be searchable on the web (e.g., Google).

C) Description (recommended)
Description is seen under the title on the full page picture, followed by author, file type and size and a (more) link for photo/camera details and/or collecting location, upload date, number of views and a link to the CaRMS taxa page.

D) Author
Enter Fisheries and Oceans Canada either by itself or followed by person's name. Do not include the region or the institute. Examples:

- Fisheries and Oceans Canada
- Fisheries and Oceans Canada, R. Miller
- Fisheries and Oceans Canada, Dalhousie University

The author's name appears along with the description on the full page picture

E) Email
If desired, add author's email or the generic email address CaRMS@dfo-mpo.gc.ca
The email address is useful for WoRMS or a viewer to contact the original photographer regarding image details such as confirming species.

F) CaRMS name
From the drop-down web list, choose the correct scientific name to associate with the image.
Posted images have a label below with 'unverified' until checked. Obvious errors noticed by viewers are emailed to WoRMS for correction and editors can correct entries on their own.

G) File name (compulsory)
Upload the full sized image (virtually no limit). The photo gallery automatically resizes the image for the web site but will store and enable download of the full sized image upon request.

H) Note (optional)
Generally left blank – could include editorial comments

I) Upload
Press the upload button to complete the process.

For more information please contact CaRMS@dfo-mpo.gc.ca