smartdots

ICES SmartDots Web Application Manual

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Contents

1 SmartDots WebAPI

The SmartDots WebAPI was developed by ICES to facilitate the setup of Exchanges, Workshops, and Training events. This system was envisaged and developed by ICES, ILVO, DTU, and IMR. ICES Working Group on Biological Parameters (WGBIOP), the main user, will further develop the finer details by testing the system and ensuring that the system covers the needs of the community.

The main aims of the SmartDots WebAPI are to allow the community to store and update age readers' expertise, organize events, and store and allow images to be read by the SmartDots software. The WebAPI is a client of the SmartDots database developed in Microsoft SQL server. The SmartDots interface allows operations such as managing the age reader expertise, creating and managing events and uploading samples and images.

The web interface currently has three areas:

- The **front page** that is public but is currently only a static page with the explanation of the system and links to relevant resources. By clicking on "view events" on the front page, the published events are publicly available.
- The **manage area** where a user login is required.
- The **administrative area** where very few users (only for chairs of WGBIOP and WGSMART) have access and allows defining an age reader as national coordinator and endorsing events

To access the manage area (http://smartdots.ices.dk/manage) users must have an ICES login, which can be requested by sending an email to: advice@ices.dk.

In the manage area there are two types of users:

a) National coordinators.

b) Age readers.

Table 1. Permission options by role.

Permissions	Age readers	National coordinators
List of age readers expertise	✓	✓
List of events	✓	✓
Verify if a sample file is according to the format	✓	✓
Add new users		✓
Set up users expertise		✓
List of age readers expertise	✓	✓
Manage current events		✓
Propose a new event		✓
Verify if a sample file is according to the format		✓

2 Page descriptions

Each page listed in Figure 1 is explained in this section.
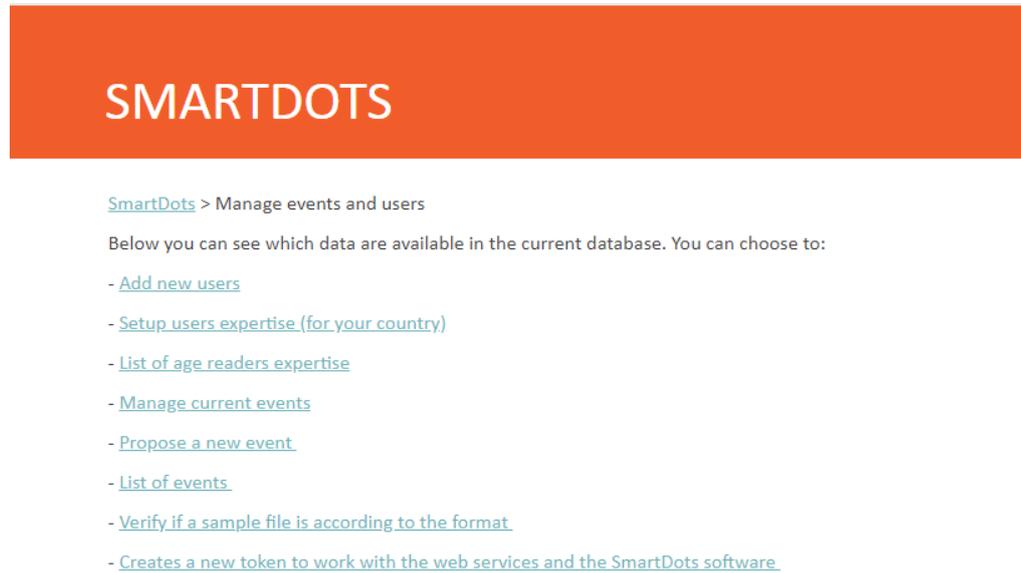
Figure 1. Print screen of the list of operations in the page "manage event and users" (login as a national coordinator).

2.1 Add new users

This page allows the national coordinators to insert, edit, or delete users in the system (only for their country).

The page shows a list of all the age readers for the national coordinator's country. At the bottom of the page, there is a textbox (Figure 2) where the national coordinator can insert the SharePoint usernames or email addresses of the users he wants to give access to in the system (multiple emails need to be split by commas). Once the national coordinator has inserted all the emails, s/he can push the button to add the users. For each user that is added to the system, the national coordinator will have an information line that can be one of the following:

a) If the email was found in ICES users directory and it was not listed as a SmartDots user, the system will retrieve the message "the user xxxx has now access to the system".

b) If the email was found in ICES users directory and it is already listed as a SmartDots user, the system will retrieve the message: "the user was already part of the SmartDots application".

c) If the email was not found in ICES users directory, then the system will retrieve the message "the email was not found in the system, please contact advice@ices.dk to add this email to the system".

Figure 2. Print screen of the add users into the SmartDots web application.

2.2 Set up users expertise for your country

This page allows national coordinators to manage age reader's expertise. National coordinators can only setup age reader's expertise for their own country (Figure 3). It's the responsibility of the national coordinators to ensure their age readers expertise is up to date.

On this page, national coordinators have a dropdown menu with a list of all the age readers for their country. After selecting an age reader, the page will display a list of all the skills for that age reader (see Figure 4).

The national coordinator has the following operations available for the selected age reader:

a) Delete skills for that age reader.

b) Edit or change the expertise level for a specific species, preparation method, and stock or area in the case of the Mediterranean.

c) Add new skills to the user, to add new skills to the age reader the national coordinator will first choose the expertise level, the species, the preparation method, and one or multiple stock(s).
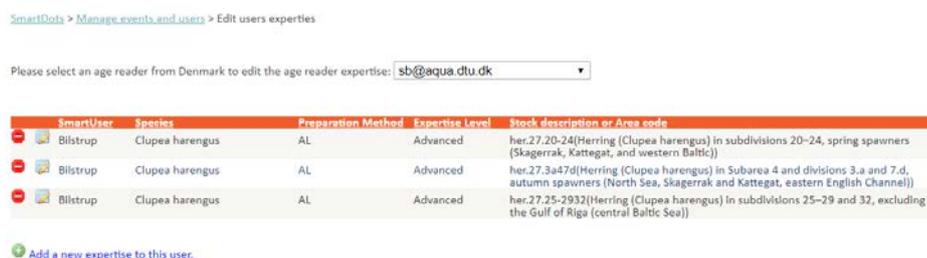

Figure 3. Page to manage the age reader expertise.

2.3 List of age reader expertise

This page is accessible to the age readers and to the national coordinators (Figure 4). In this page the system user can see a list of all the age readers and national coordinators in the system. The last column of the table will specify if it is a national coordinator or not.

The list can be filtered per country and the user can sort the table by any of the specified fields.

Figure 4. List of the age reader expertise.

Note: The age readers that have been added to the system but still don't have any expertise will also appear in this list.

2.4 Propose a new event

This page is only accessible to the national coordinators and this is where they can set up a new event.

There are several steps in this process, which are outlined here.

Complete all fields on the Propose a new event page (Figure 5)

- **Purpose of the event** (mandatory and with controlled vocabulary, the options are Age Reading and Maturity Determination).
- **Type of event** (mandatory and with controlled vocabulary, the options are To be endorsed (when it's a WGBIOP workshop or an exchange) or Training.
- **Species** (the species name in Latin) is a controlled vocabulary. Users can view the list here.
- **Event Name** (It is recommended that the event name clearly explains the intention of the event, this will be helpful in a few years when the national coordinator can have a long list of organized events). Specify the following:
  - **English name of the species**
  - **Year**
  - **ICES area codes/GFCM codes**
- **Email address** (this value is automatically filled).
- **Delegate the event** (this is where you enter the email address of a person (max 6 persons) other than the national co-ordinator who will co-ordinate the event).
- **Start date** (this field is the date when the event will become visible to and open for annotations by the readers).
- **End date** (this field is the end date when the event will close for annotations by the readers).
- **Sample files** (this is an XML file with the data of all the samples of the event), to prepare the file for upload ICES has provided an Excel template (SmartDotsSampleFile) to help the national coordinators follow the specified format for the samples.

Figure 5. Propose new event page.

Complete the SmartDotsSampleFile Excel template (to facilitate the upload of samples)

The template can be found here: https://smartdots.ices.dk/manage/EventForm and should be downloaded each time to get the most up to date version. The SmartDots-SampleFile Excel template was created to facilitate the work of building a sample list file. In this template (Figure 6):

- The controlled vocabularies are in drop down box.
- The mandatory fields are mark in red.
- Fields have the format defined above the cell.

To produce a sample file the user has to fill in all the fields in the file information sheet.

This template is where you enter all of the data for your event samples. The "Export_data" sheet gives instructions on how to complete this file with links to find relevant codes and information. The "File_information" sheet must be filled in. The "Sample_data" sheet is where you enter all of the sample data, those fields in red are mandatory and those in green are optional. The controlled vocabularies are provided in this spreadsheet by a list box where the user can choose the description of the field and when exporting the descriptions will be converted to the code value (vocabulary).The number of characters in the Sample ID is limited to 50 characters. The "Vocabularies" sheet gives information on the relevant codes which should be used when completing the file.

File information record that has the following fields:

- ContactEmail (event co-ordinator)
- EDMO code
- Species

Note: The EDMO (European Directory of Marine Organisations) code is a controlled vocabulary and a full list of the EDMO codes here:

http://vocab.ices.dk/?ref=1398

http://www.seadatanet.org/Metadata/EDMO-Organisations

And the **Sample_Data**

- Fish ID (see note below)
- Sample ID (see note below)
- CatchDate
- AreaCode
- Latitude
- Longitude
- Area Type
- Area Code
- StatRec
- StockCode
- SampleOrigin
- SampleType
- PreparationMethod
- FishLength
- FishWeight
- Sex
- MaturityScale
- MaturityStage
- Comments

Note: The Sample ID is used to match the image to the sample. It is important that the beginning of the image file name should match the sample ID In each event, the sample ID's must be unique and within each event the Sample ID's need to be unique for each sample. (**Please avoid having samples that begin the same as other samples e.g. Npo1 and Npo11 should be called Npo001 and Npo11**).

Note: The Fish ID is used to match multiple samples from the same fish e.g. Fish ID NPout_001 should be used for Sample ID NPout_001_a and Sample ID NPout_001_b

Once all data is entered, it must be exported to XML format before the upload can be completed. This is done by clicking on the "Export data to XML" (Figure 7) button on the "Export_data" sheet and saving the file with your images.

Figure 6. The SmartDotsSampleFile Excel template for uploading samples, the sheet where users insert the information.

Figure 7. SmartDotsSampleFile Excel template for uploading sample for an event, the "Export_data" sheet where the users can export the file to XML.

Screen your SmartDots sample file (Excel template file) to ensure it is in the correct format

You should check that your sample file is in the correct format by following the link to "Verify if a sample file is according to the format" (on the Manage events and users page). This page is accessible to all the system users. The user can "screen" the file to verify if the file is according to the format, once the format has been checked (Figure 8) the screening utility will also run some QC procedures implemented by the data manager.

Result from the ICES DATa Screening Utility program for the following data:

Country:	2195
Dataset:	SmartDots sample data
FileName:	ICES_SmartDots_Reporting_Format_herring.xlsm.xml
Email:	joco@aqua.dtu.dk
Monitoring Year:	2017
Submiting date:	27/09/2017 14:14:00
Number of records in file:	
Max. Errors to return:	30000

Number of records per record type:	
record: HR	1 Row(s)
record: SR	39 Row(s)

Figure 8. Screen result when the file presents no problems and can be imported to an event.

Figure9. The format definition of SmartDots and associated checks can be found here: http://datsu.ices.dk/data/selRep.aspx?Dataset=129.

4. Create your event

After the user has clicked the "**create event**" button and all the fields have been filled in correctly, the national coordinator will be redirected automatically to the edit event page.

2.5 Manage current events

This page shows a list of all the events that the national coordinator has created and is only accessible to the national coordinators (Figure 9).

On this page, the event organizer can view the details of all the events and there are two possible operations which can be accessed by clicking the icon next to the event:

a. View an event

b. Edit an event

Figure 9. Page showing the list of events where the national coordinator is the organizer or has some readers involved in the event.

2.5.1 Edit event

Once an event has been proposed, the **edit event** page (Figure 10) allows the national coordinator or delegate to perform the following operations to the event:

1. **Edit event details** (event name, start date, and end date).

2. **Set the scale of all images,** this is a value calculated using the scale bar tool in the SmartDots software, once inserted here it will appear in the sample data for each sample in the SmartDots software.
3. **Delete samples or images**
4. **Update strata for reporting (see section reporting)**
User can use predefined strata by using the "update strata to be same as" fields (Area, Maturity Stage, Stock Code, Type Of Structure, Preparation Method). Or user can customize strata by using the "Update strata to" field. In this field you pick a self-chosen custom value (e.g. A or 1). In the field "where the sampleID contains" you fill in the part of the SampleID name for which you want the samples to be linked to this strata.
5. **Add more sample data to the event,** this will upload another sample file to the event, all samplesID in the file that exist already in the file will be deleted.
6. **Add sample images,** this is where you upload your images and this can be done in two ways, either by drag and drop or by clicking on the "Select file" button.
7. **Check if images are associated to the correct sample.** Each sample will have a green or red icon next to it. When sample data is uploaded all icons will be red, however once the user has uploaded the images the icons will turn green. The green icons are also a link to all the associated images of the sample.
8. **Add/include age readers to the event**, there are two ways:

   a) If an age reader has expertise in the species of the event, then the age reader will appear automatically in a summary table below. To add participants to the event, the national coordinator only has to click the icon of adding the age reader to the event. **Note:** The age reader will be removed from the summary list once it has been added to the event.

   b) There is a text box below the list where the national coordinator can insert the email(s) or SmartUser names of the age readers to be added to the event. Emails/usernames should be separated by commas. Once the email or username for each reader is added to the text box you click on "Add Users" and the age readers are added to the event. This gives access to the selected users and the system will retrieve some information for each of the users. For each new user added the system one of three messages will be returned:

      i) If the email/username was found in ICES users directory and it was not previously included in the event the message "the user xxxx was added to the event" will show up.

      ii) If the email/username was found in the age readers included for the event then system will retrieve the message: "the user is already part of the event".

      iii) If the email/username was not found in ICES users directory then the system give the message "the email was not found in the system, please contact advice@ices.dk to add this email to the system".

   c) Edit or delete users from this event. For each user there are two icons:

      i) One to delete a user.

      ii) One to edit the user details. Click on the edit icon and enter a reader number in the box provided. Here you must rank the readers by their level of expertise in reading that partic-

ular species by the defined preparation method (this is important for the analysis), you can also edit their expertise level and select whether or not they provide age data for assessment (based on the particular species and the defined preparation method).

Note: the national coordinators of the countries whose readers are taking part in an event will automatically be added to an event but their names will not appear on the list of age readers.

1. **Send an email to the participants** of the event by clicking on the button "Send an email to age readers"
2. You can **order your age readers by experience in two ways. This is important for the modal age calculation in the report** (see reporting section 3 for more information)**.**
   - by clicking the "Generate the no. of age readers". This will allocate a random number to participants
   - by clicking on the "edit user details" icon, you can order participants based on years of experience.

Figure 10. Edit event page

2.5.2 View event page

The view event page under "manage current events" can be accessed by clicking on the view event icon of the event you want to access (Figure 11). This page gives an overview of the event details and samples and allows the event coordinator to track

the progress of an event. Also thumbnails of all images are provided and you can filter the samples by quarter and area.

List of the current events for the user:

View event	Edit event	Event ID	Name Of Event	Species	Start Date	End Date	Protocol	Organizer Email	Institute	Event Type
		197	WKARHOM3 2018 T mediterraneus	Trachurus mediterraneus	07/11/2018	09/11/2018		Kelig.Mahe@ifremer.fr		To be endorsed
		196	workshop 2018 T trachurus	Trachurus trachurus	07/11/2018	09/11/2018		Kelig.Mahe@ifremer.fr		To be endorsed
		195	North Sea Sandeel 2018	Ammodytes	18/11/2018	18/11/2019		joco@aqua.dtu.dk		Training

Figure 11. Manage current events page

As an event coordinator, you will be able to see additional links:

Summary Annotations Per Age Reader. It gives an overview of the number of annotations approved/not approved per reader

Open/close event. The event needs to be closed to be able to download data and report. You can reopen it if needed (e.g. If a reader has not approved all annotations) as long as the event has not been published.

Download data. Will produce a zip file with 2 excel documents: an annotation file and a file with the distances between the dots and additionally one data disclaimer document.

Download report. Will produce a standardized report based on the strata chosen under edit event (see Section 3. Reporting). Downloading the report can take a number of minutes.

Report log. Logs if errors have occurred when downloading.

Clicking on any of the thumbnails will give information on the readers annotations. Depending on your role in the SmartDots event, you will have access to different information (Figure 12). The event coordinator will see the results of all readers in the event.

As a national coordinator with participating age readers, in addition to the overview list, you can see the results of your own readers when clicking on the thumbnails.

As an age reader, you will be able to see your own readings when clicking on the image thumbnails.

Figure 12. Sample information when clicking on the thumbnails.

2.6   List of events

This page is accessible to all the system users and lists all the events that have taken place, the list can be filtered per year. Sorting of events is possible by clicking on any o the headings.

2.7   Verify if a sample file is according to the format

Allows you to check if your file is according to the format.

2.8   Creates a new token to work with the web services and the SmartDots software

Once an event is created and readers and images are added to an event, the event will be visible for the participants in the SmartDots reading software.

This page allows users to create a new token that can be used by clients of the secure webservices. This token can be requested for the period of 5, 30 or 100 days. The token can be copied directly from the SmartDots login screen (Figure 13).
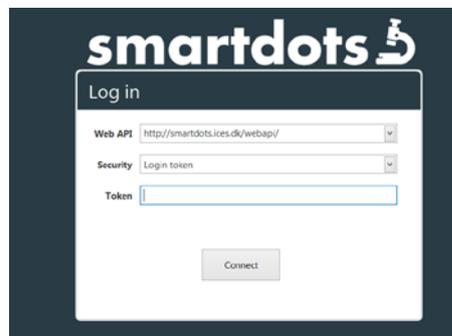

Figure 13. SmartDots login screen.

3   Reporting

In order to generate a report from an event, go to the "Manage current events" on the SmartDots website (smartdots.ices.dk). Click on the icon to the left (View event) to get the option to download report (Figure 14).

EventID: 195
Name of the event: North Sea Sandeel 2018
Event type: Training
Start date: 18/11/2018
End Date: 18/11/2019
Email of the Organizer: joco@aqua.dtu.dk
Species: Ammodytes
Purpose: Age reading
Closed: True

Summary Annotations Per Age Reader
Open Event
Download data
Download report
Report log

Figure 14: View event page

Only the coordinator of an event can generate and download the report. Only when an event is closed, the report and data can be downloaded. The coordinator can always close an event to download and open again.

3.1   Ranking readers

For an age reader to be included in the analyses of the report, he/she needs to be ranked before downloading the report. This is done on the "Edit event" page. Scroll down to the section where the readers are listed. Click the button for "Generate the no. of age readers" to activate (see section 2.5.1 for edit event).

The model age will be calculated based on the readers who got a rank. If the same number of readers have chosen different ages, then the rank will be used to prioritize the age readers with a higher rant to select the modal age.

Readers need to be ranked according to experience. The more experienced reader will have more "emphasis" on the modal age calculation.

3.2   Strata

The strata need to be defined under "Edit event" prior to downloading the report as they will be used in the report to split the samples for comparison between e.g. area, type of structure or whatever you defined. Samples for which no strata was defined won't be part of the report. If you change the strata, you will extract a different report. The report/s produced is/are not the final report to be published. Text needs to be provided, tables and figures needs checked and adjusted to fit the format.

Downloading the report can take a few minutes.

4   Publish the event

Only workshops and exchanges should be published. Once the event is closed and re-
ported, you can publish the event by going to "Manage current events" and then "Edit
event" page and click the "Publish the event" button. Then upload the report and the
summary report (mandatory to publish) and choose how you want the pictures to be
shown on the public "View events" page (Figure 15). If you want to use the dataset for
further training, good resolution pictures should be chosen.

Figure 15: Publish events page

5 General rules for setting up events

- Format of the images to upload should be jpg, png or gif. There is no maximum size, but bigger sizes will take more time to open.
- Naming of the images should be:
    - o English name of the species
    - o Year
    - o ICES area codes/GFCM codes
- Best practise is to pin the reading line in SmartDots software before sending out the mail to the age readers that the event is open. If you use a pinned reading line in the SmartDots software, use the best readable direction for age reading. This can be different for each otolith. If for one reason or another you don't use the pinned reading line, you won't be able to compare growth between readers.
- You should instruct the readers to refer to the SmartDots Users manual and if there are any special instructions for them to follow for your exchange or workshop a short concise document should be provided.
- Think about what you want in the report depending on the goals of the exchange/workshop you organized.

6   Contacts

The following people can be contacted about SmartDots:

- Carlos Pinto, ICES Data Centre: carlos@ices.dk
- Julie Olivia Davies, DTU Aqua: joco@aqua.dtu.dk
- Kevin DeCoster, ILVO: Kevin.DeCoster@ilvo.vlaanderen.be

7 Change log

Date	Change	Prepared by
8 November 2018	Initial version created	Julie Olivia Davies, DTU-Aqua; Carlos Pinto, ICES; Kevin DeCoster, ILVO; Julie Krogh Hallin, ICES
12 December 2018	Update	Carlos Pinto, ICES; Karen Bekaert, ILVO; Julie Olivia Davies, DTU-Aqua; Julie Krogh Hallin, ICES