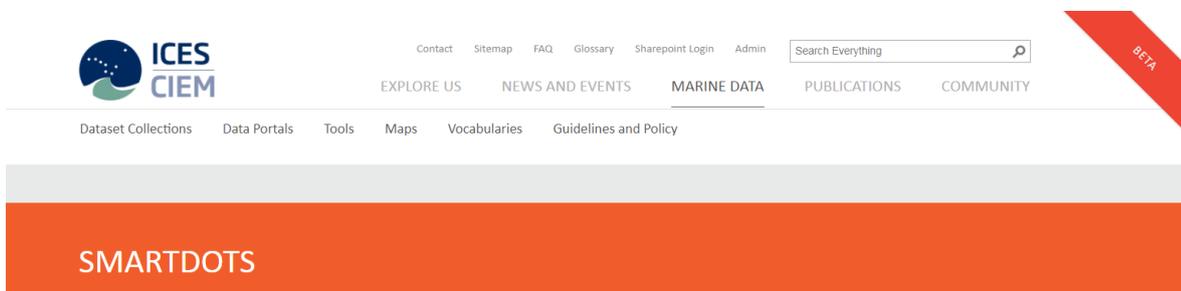




Technical
University of
Denmark



IOS 2018 DEMO MANUAL

SMARTDOTS

<http://www.ices.dk/marine-data/tools/Pages/smarddots.aspx>

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. WGBIOP is it's main future user will help 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 is to allow the community to store and update age readers expertise, organize events and of course store and allow images to be read into SmartDots (software). In reality, the WebAPI is a database developed in Microsoft SQL server accessed via an interface. This 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
- The **manage area** where a user login is required.
- The **administrative area** where very few users have access and allows defining an age reader as national coordinator.

To access the manage area (<http://smartdots.ices.dk/manage>) it is required that the users have an ICES login, an ICES login 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 co-ordinators
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		✓

The following section gives a description of each page

Each page listed in Figure 1 is explained in this section

SMARTDOTS

[SmartDots](#) > Manage events and users

Below you can see which data are available in the current database. You can choose to:

- [Add new users](#)
- [Setup users expertise \(for your country\)](#)
- [List of age readers expertise](#)
- [Manage current events](#)
- [Propose a new event](#)
- [List of events](#)
- [Verify if a sample file is according to the format](#)
- [Creates a new token to work with the web services and the SmartDots software](#)

Figure 1: Print screen of the list of operations in the page “manage event and users” (login as a national coordinator)

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 table with the list of all the age readers for the country of the national coordinator. At the bottom of the page there is a textbox (Figure 2) where the national coordinator can insert the sharepoint username or email of the users he wants to give access to in the system (multiple emails need to be split by comas). Once the national coordinator has inserted all the emails he can push the button to add the users. For each users that have to be 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 the ICES users directory and it was not listed has a SmartDots user then the system will retrieve the message “the user xxxx has now access to the system”
- b) If the email was found in the ICES users directory and it is already listed has a SmartDots user then then system will retrieve the message: “the user was already part of the SmartDots application”
- c) If the email was not found in the 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”

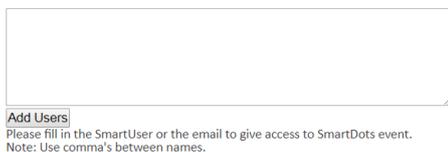


Figure 2: Print screen of the add users into the SmartDots web application.

Set up users expertise (for your country)

This page allows the national coordinators to manage age reader’s expertise. National coordinators can only setup age reader’s expertise from their own country (Figure 3).

In this page the 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 available the following operations for the selected age reader:

- a) Delete skills for that age reader
- b) Edit or change the expertise level for a specific species and stock

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

SmartDots > Manage events and users > Edit users expertise

Please select an age reader from Denmark to edit the age reader expertise:

SmartUser	Species	Preparation Method	Expertise Level	Stock description or Area code
Bilstrup	Clupea harengus	AL	Advanced	her.27.20-24(Herring (Clupea harengus) in subdivisions 20-24, spring spawners (Skagerrak, Kattegat, and western Baltic))
Bilstrup	Clupea harengus	AL	Advanced	her.27.3a47d(Herring (Clupea harengus) in Subarea 4 and divisions 3.a and 7.d, autumn spawners (North Sea, Skagerrak and Kattegat, eastern English Channel))
Bilstrup	Clupea harengus	AL	Advanced	her.27.25-2932(Herring (Clupea harengus) in subdivisions 25-29 and 32, excluding the Gulf of Riga (central Baltic Sea))

[Add a new expertise to this user.](#)

Figure 3: Page to manage the age reader expertise.

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.

SmartDots > Manage events and users > List of Age readers Expertise

List of current users for:

SmartUser	Email	Species	Expertise Level	Stock or Area	Preparation Method	Country Coordinator	Country
Abaroa	cabaroa@azti.es	Trachurus trachurus	Advanced	hom.27.2a4a5b6a7a-ce-k8	Broken and burnt	No	Spain
Acosta	jesus.acosta@ma.ileo.es	Trachurus trachurus	Advanced	hom.27.3a4bc7d	Broken and burnt	No	Spain
Acosta	jesus.acosta@ma.ileo.es	Trachurus trachurus	Advanced	hom.27.9a	Broken and burnt	No	Spain
Acosta	jesus.acosta@ma.ileo.es	Trachurus trachurus	Advanced	hom.27.2a4a5b6a7a-ce-k8	Whole	No	Spain
Acosta	jesus.acosta@ma.ileo.es	Trachurus trachurus	Advanced	hom.27.3a4bc7d	Whole	No	Spain
Acosta	jesus.acosta@ma.ileo.es	Trachurus trachurus	Advanced	hom.27.9a	Whole	No	Spain
Ada	A.Chatzispyrou@hcmr.gr					No	Greece

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.

Manage current events

This page shows a list of all the events that the national coordinator has created (this page is only accessible to the national coordinators) (Figure 5). On this page, the event organizer can view the details of all the events and there are two possible operations:

- a) Edit an event
- b) View an event

List of the current events for the user:

Edit event	Event ID	Name Of Event	Species	Start Date	End Date	Protocol	Organizer Email	Institute	Event Type
	24	My Event 4	Gadus morhua	27/09/2017	29/09/2017		carlos@ices.dk		Workshop
	25	Mine and Colin	Gadus morhua	19/09/2017	03/10/2017		carlos@ices.dk		Exchange
	28	Carlos Test	Gadus morhua	28/09/2017	30/09/2017		carlos@ices.dk		Exchange
	31	Test 114	Clupea harengus	27/09/2017	28/09/2017		carlos@ices.dk		Training
	32	My event and Anna	Gadus morhua	29/09/2017	01/10/2017		carlos@ices.dk		Exchange
	33	My event and Anna	Gadus morhua	29/09/2017	01/10/2017		carlos@ices.dk		Exchange
	34	Test event upload images	Gadus morhua	05/10/2017	07/10/2017		carlos@ices.dk		Exchange

Figure 5: Page that shows the list of events where the national coordinator is the organizer or has some readers involved in the event.

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 (1 - 5) here.

1. Complete all fields on the **Propose a new event page** (Figure 6)

- **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 Internal or Training).
- **Species** (the species name in Latin) it is a controlled vocabulary and users can view the list [here](#).
- **Event Name** (we recommend the event name to be self-explainable about what is the intention of the event, this will also facilitate in a few years when the national coordinator can have a long list of organized events).
- **Email address** (this value is automatically filled).
- **Delegate the event** (this is where you enter the email address of a person 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 to help the national coordinators follow the specified format for the samples. The template can be found here:
<https://smartdots.ices.dk/manage/EventForm>

Propose a new event

Set up the event details and upload the samples meta-data and images

Purpose of the event: Age reading

Type of event: Internal

Enter the species (latin name): Alopias

Enter the event name: [text box]

Enter the e-mail address: joco@aquadtu.dk

Delegate the event (write the email): [text box]

Enter the startdate: [calendar icon]

Enter the end date: [calendar icon]

Select the Samples File to validate (Maximum 50Mb's): Choose File | No file chosen

Create Event

[View file screening](#)

Convert from Excel to XML [download template](#)

Figure 6: Propose new event page

2. Complete the SmartDots **Sample file Excel template** (to facilitate the upload of samples)

The SmartDots Sample file Excel template was created to facilitate the work of building a sample list file. In this template (Figure 7):

- 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.

You should download a template by following the link on the Propose a new event page. 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 Sample ID matches the image file name. 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 eg. Npo1 and Npo11 should be called Npo01 and Npo11).

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

Once all data is entered you are required to Export the data to XML format before the upload can be completed. This is done by clicking on the “**Export data to XML**” (Figure 8) button on the “Export_data” sheet and saving the file with your images.

3	Fish unique identifier (this field must be unique for each fish)	Sample unique identifier (this field must be unique for each row)	dd-mm-yyyy	WGS84, decimal degrees	WGS84, decimal degrees	Vocabulary	Vocabulary	Vocabulary	Vocabular
4	FishID	SampleID	CatchDate	Latitude	Longitude	Area type	AreaCode	StatRec	StockCo
5									
6									
7									
8									
9									
10									
11									
12									

Figure 7: The SmartDots Sample file Excel template for uploading samples, the sheet when users insert the information.

SMARTDOTS
 Template for generating XML sample data files

1) FILL OUT THE EXCEL FILE tabs:

File_information
 Sample_Data

This worksheet should always be filled in
 This worksheet should always be filled in

All red outlined cells are mandatory and should be checked / completed

All green outlined cells are optional

2) When the data sheets are completed, press the "Export data to XML" button here:

This will export the completed Excel data template to XML.

Figure 8: SmartDots Sample file Excel template for uploading sample for an event, the "Export_data" sheet where the users can export the file to XML.

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

Verify if a SmartDots sample file is according to the 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 9) the screening utility will also run some QC procedures implemented by the data manager (Figure 10).

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@aqu.dtu.dk
Monitoring Year: 2017
Submitting 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 9: Screen result when the file presents no problems and can be imported to an event.

Dataset:

Format / [Checks](#) / [Species](#)

Record:

Format

Start	FieldCode	Datatype	Code List	Mandatory	Description
1	RecordType	char(2)		<input checked="" type="checkbox"/>	i
2	FishID	char(15)		<input checked="" type="checkbox"/>	i
3	SampleID	char(50)		<input checked="" type="checkbox"/>	i
4	CatchDate	datetime(10)		<input checked="" type="checkbox"/>	i
5	Latitude	float(10)		<input type="checkbox"/>	i
6	Longitude	float(10)		<input type="checkbox"/>	i
7	AreaType	char(20)	AreaType	<input type="checkbox"/>	i
8	AreaCode	char(20)		<input type="checkbox"/>	i
9	StatRec	char(4)		<input type="checkbox"/>	i
10	StockCode	char(20)	ICES_StockCode	<input type="checkbox"/>	i
11	SampleOrigin	char(15)	SampleOrigin	<input checked="" type="checkbox"/>	i
12	SampleType	char(15)	SampleType	<input checked="" type="checkbox"/>	i
13	PreparationMethod	char(3)	PreparationMethod	<input checked="" type="checkbox"/>	i
14	FishLength	int(6)		<input checked="" type="checkbox"/>	i
15	FishWeight	decimal(7)		<input type="checkbox"/>	i
16	Sex	char(8)	SEXCO	<input type="checkbox"/>	i
17	MaturityScale	char(10)	MaturityScale	<input type="checkbox"/>	i
18	MaturityStage	char(6)	MaturityStage	<input type="checkbox"/>	i
19	Comments	char(500)		<input type="checkbox"/>	i

Figure 10: 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 if all the fields have been filled in correctly the national coordinator will be redirected automatically to the edit event page.

5. Edit your event – this is where you add your readers and your images to the event

Edit event

Once an event has been proposed, the **edit event** page (Figure 11) allows the national coordinator to perform the following operations to the event:

- a) **Edit event details** (event name, start date and end date).
- b) **Set the scale of all images**, this is a value calculated using the scale bar tool in SmartDots, once inserted here it will appear in the sample data for each sample in SmartDots.
- c) **Add more samples to the event**
- d) **Add sample images to the list of samples**, this is where you upload your images and can be done in two ways, either by drag and drop or by clicking on the “Select file” button.
- e) **Associate image with the samples**, each sample will have a green or red icon next to it. When samples are 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.
- f) **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 that to be added to the event. The emails or usernames should be separated by comas. After the event organizer pushes the button to

give access to the selected users, the system will retrieve some information for each of the users. For each new user added the system will return one of three messages:

- i. If the email/username was found in the ICES users directory and it was not 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 the 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 particular 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.

testing (EventID:75)

[Edit Event Details](#)

Set the scale of all images to

SampleID	No Linked Images	Catch Date	Area	Stat Rec	Stock Code	Sample Origin	Sample Type	Preparation Method	Fish Length	Fish Weight	Sex
Npout_001	2	01/11/2014	27.4.a	45F0	nop.27.3a4	land	otolith	AL	105	8	U
Npout_002	2	01/11/2014	27.4.a	45F0	nop.27.3a4	land	otolith	AL	105	8	U
Npout_003	2	01/11/2014	27.4.a	45F0	nop.27.3a4	land	otolith	AL	105	8	U

List current sample data:

[Add More sample data to the events](#)

Add sample images to the list of samples:

Drop files here

Please select file(s) to upload.

List of the age readers listed for this exercise:

Country	SmartUser	Email	No	Expertise Level	ProvidesDataForAssessment
DENMARK	carlos	carlos@ices.dk	1	Basic	<input type="checkbox"/>

Figure 11: Edit event page allows the user to edit the details of the event, add more samples, associate images with the samples and choose age readers to participate in the event.

View event

The view event page gives an overview of an event and allows the event coordinator to track the progress of an event. Thumbnails of all images are provided and you can filter your samples by quarter and area. Clicking on any of the thumbnails will give information on the readers annotations.

List of events

This page is accessible to all the system users and lists of all the events that have passed, the list can be filtered per year.

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

This page is to create a new token that the users can use as 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 in the SmartDots login screen (Figure 12).

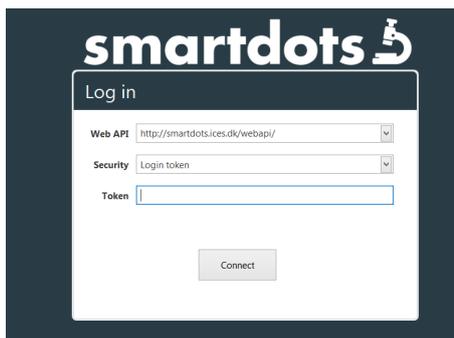


Figure 12: SmartDots login screen