



Technical  
University of  
Denmark



## 2018 USER MANUAL

**smartdots** 

SMARTDOTS

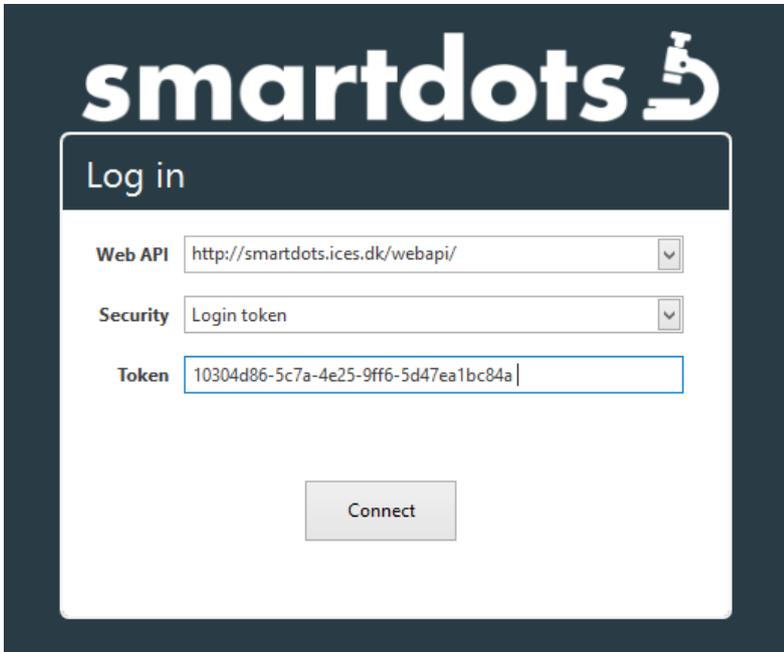
<http://www.ices.dk/marine-data/tools/Pages/smartdots.aspx>

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## Login

You need to connect to the ICES web api using the Token authentication. A token can be obtained here <http://ices.dk/marine-data/tools/Pages/smartdots>. The token provided should be copied and pasted into the login screen shown in the image below. Press connect to continue.

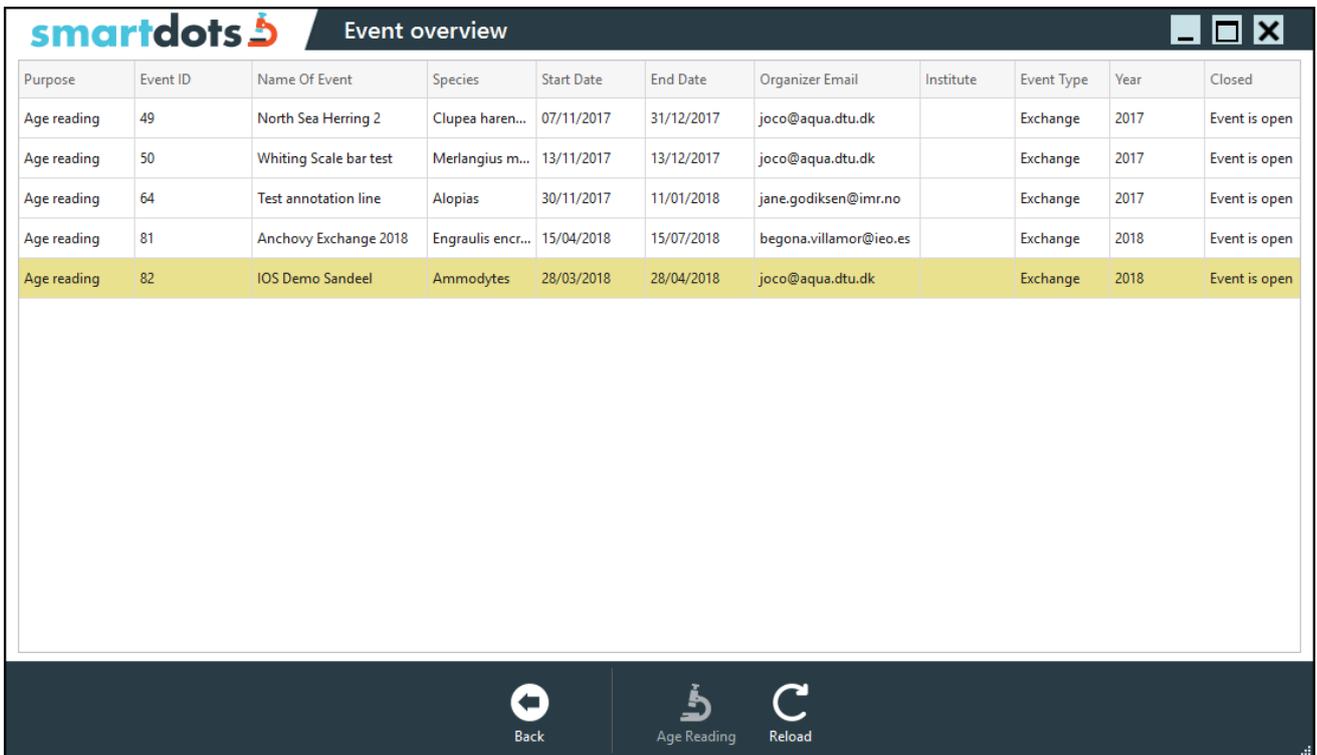


The image shows the Smartdots login interface. It features a dark blue header with the 'smartdots' logo. Below the header is a white box titled 'Log in'. Inside this box, there are three input fields: 'Web API' with the value 'http://smartdots.ices.dk/webapi/', 'Security' with the value 'Login token', and 'Token' with the value '10304d86-5c7a-4e25-9ff6-5d47ea1bc84a'. A 'Connect' button is located at the bottom of the white box.

## 1. Event screen

On this screen we get a list of all available workshops/exchanges to make age readings on. Double-Click on your exchange/workshop to start the age reading.

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The image shows the 'Event overview' screen in the Smartdots application. It features a table with the following columns: Purpose, Event ID, Name Of Event, Species, Start Date, End Date, Organizer Email, Institute, Event Type, Year, and Closed. The table contains five rows of data, with the last row highlighted in yellow.

Purpose	Event ID	Name Of Event	Species	Start Date	End Date	Organizer Email	Institute	Event Type	Year	Closed
Age reading	49	North Sea Herring 2	Clupea haren...	07/11/2017	31/12/2017	joco@aqu.dtu.dk		Exchange	2017	Event is open
Age reading	50	Whiting Scale bar test	Merlangius m...	13/11/2017	13/12/2017	joco@aqu.dtu.dk		Exchange	2017	Event is open
Age reading	64	Test annotation line	Alopias	30/11/2017	11/01/2018	jane.godiksen@imr.no		Exchange	2017	Event is open
Age reading	81	Anchovy Exchange 2018	Engraulis encr...	15/04/2018	15/07/2018	begona.villamor@ieo.es		Exchange	2018	Event is open
Age reading	82	IOS Demo Sandeel	Ammodytes	28/03/2018	28/04/2018	joco@aqu.dtu.dk		Exchange	2018	Event is open

At the bottom of the screen, there is a dark blue navigation bar with three icons: 'Back' (a left-pointing arrow), 'Age Reading' (a microscope icon), and 'Reload' (a circular refresh icon).

## 2. Age reading

This is the screen where everything related to age reading happens. This screen consists of multiple components.

The screenshot shows the smartdots software interface. At the top, the user is logged in as 'decoster, ICES - Exchange (82):IOS Demo Sandeel'. The interface is divided into several sections:

- Files Table (1):** A table listing image files with columns for File, Sample number, #Annotations, and Scale (px/mm). The file '82\_7414304\_108\_32.jpg' is highlighted.
- Annotations Table (2):** A table with columns for Param..., Lab technician, Created, A..., AQ, A..., FL..., and Comm... The entry for 'OVR' by 'decoster' is highlighted.
- Sample Details (3):** A section showing sample information: Species (Ammodytes), Catch Date (27/11/2016), Fish Length (120), Fish Weight (4), Area (27.45), Stock Code (san.sa.1r), Statistical Rectangle (39F1), Sex, and Sample Origin (surv).
- Brightness Graph (4):** A line graph showing brightness levels across the image.
- Main Image Area (5):** Two grayscale images of fish otoliths. A vertical purple line is drawn through the center of the left otolith, with green dots at the top and bottom.
- Navigation Bar (6):** A bottom bar with buttons for Back, Save, Graphs, Adjust, and Reset.

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### 2.1. Title

Shows info about the logged in user and the current workshop/exchange he/she is working on.



Login as decoster, ICES - Exchange (82):IOS Demo Sandeel

### 2.2. Files

File	Sample number	#Annotations	Scale (px/mm)
82_7414302_108_30.jpg	2009	0	280,0
82_7414304_108_32.jpg	2010	1	0,0
82_7414305_108_33.jpg	2011	0	0,0
82_7414310_108_38.jpg	2012	0	0,0
82_7414311_108_39.jpg	2013	0	0,0

Contains information about all image-files that are loaded. The file name is the physical file name the image has. The sample number is the link between the image and the sample (= fish) the otolith originates from. The #Annotations is the number of readings the user can see. The scale is the amount of pixels that represent 1 millimeter when the image is zoomed

100%.

## 2.3. Annotations

Annotations								
	Parameter	Lab technician	Created	Age	AQ	Approved	Fixed reading line	Comment
<input checked="" type="checkbox"/>	OWR	decoster	06-04-18		2			

Shows information about the age readings for the selected file. Parameter describes what type of annotations are made. This can be winter rings, summer rings, day rings, ... Lab technician is the reader. The AQ indicates the quality of the age reading. Approved means the user has approved the reading so that it can be included in reporting. The fixed reading line indicates that the line for this age reading will be used for everyone who creates an age reading. Only administrators can create fixed reading lines. The comment is optional but can be used by the user to add remarks.

There are several buttons here which need explaining. From left to right:

- Create: Creates a new record for age reading. The user can now start making annotations.
- Edit: A popup shows up with the properties that the user can change. Here you can also add comments.
- Delete: delete the reading
- Pin: This is only for administrators. It creates the fixed reading line. All users will have to annotate on this line.
- Approve/Disapprove: Toggles the approval of the reading.

You do **NOT** need to mark the centre or the outermost edge of the otolith. You **MUST** place your mark at the end of the winter ring and **ONLY** on the winter rings which are counted as a year when estimating the age. SmartDots will automatically give the age of the fish based on the number of annotations that you make.

Please provide an AQ score for each age that you give: AQ1: Easy to age with high precision; AQ2: Difficult to age with acceptable precision; AQ3: Unreadable or very difficult to age with acceptable precision.

You **MUST** approve the final annotation for each otolith that you wish to have included in the reporting.

## 2.4. Sample

Sample	
Species	Ammodytes
Catch Date	27/11/2016
Fish Length	120
Fish Weight	4
Area	27.4.b
Stock Code	san.sa.1r
Statistical Rectangle	39F1
Sex	
Sample Origin	surv
Sample Type	otolith

This window shows all information about the sample fish linked with the image. Everything here is read-only.

## 2.5. Graphs

Graphs show information about the selected age reading's line and annotations. There are currently 3 graphs in SmartDots.

## 2.5.1. Brightness

Displays the brightness of the image under the line from start to end. This can be used to detect rings. The graph will display the location of the cursor if hovered near the line. When Dot-mode is active, the user can click the graph on a specific location to add the dot.

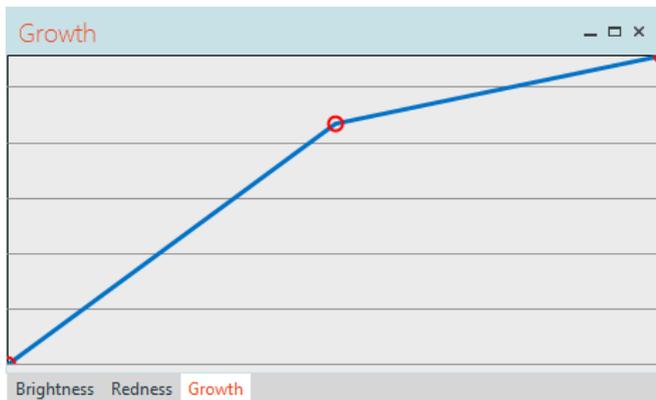


## 2.5.2. Redness

The same for Brightness applies to redness, but instead of the brightness of pixels it displays the red-value. This is only used for otoliths that are imbedded in a red colouring agent.

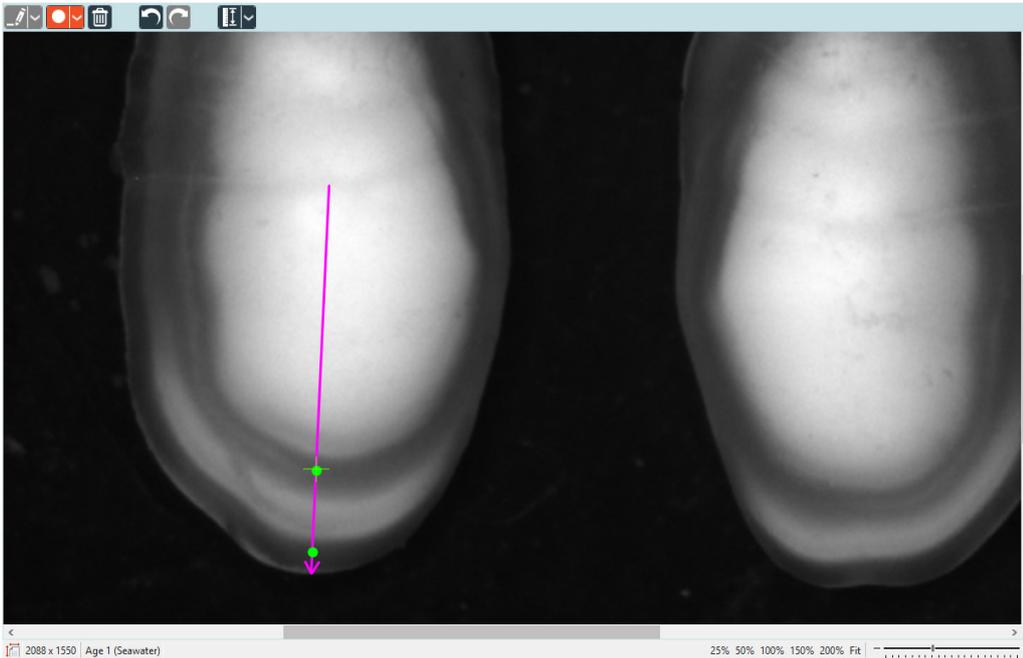
## 2.5.3. Growth

Shows the distance between annotations.



## 2.6. Editor

Here is where the drawing takes place.



At the top we have the 3 modes (line-mode to draw lines, dot-mode to draw dots and delete-mode to delete lines and/or dots). There are also buttons for undo/redo. The last button is used to measure the scale. All buttons with an arrow next to them have additional options.

In the middle is the image and all drawn shapes.

At the bottom is the information bar and the zoom options.

## 2.7. Toolbar



These buttons contain logic not specifically related to an age reading but can be helpful for the user.

- Back: return to the previous screen
- Save: save current progress
- Graphs: show/hid the graphs
- Adjust: show/hide the adjustments. Adjustments can be found as a tab under Files. It allows the user to temporarily adjust the brightness/contrast of the image.
- Reset: resets all layout

