smartdots

USER MANUAL

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Version 4

International Council for the Exploration of the Sea
Conseil International pour l'Exploration de la Mer

Recommended format for purposes of citation:

Contents

1 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.

In case users don't have an ICES login they can request a guest token. With a guest token the users can only view published events. To create a guest token, the user should click on the "Get guest token" button.
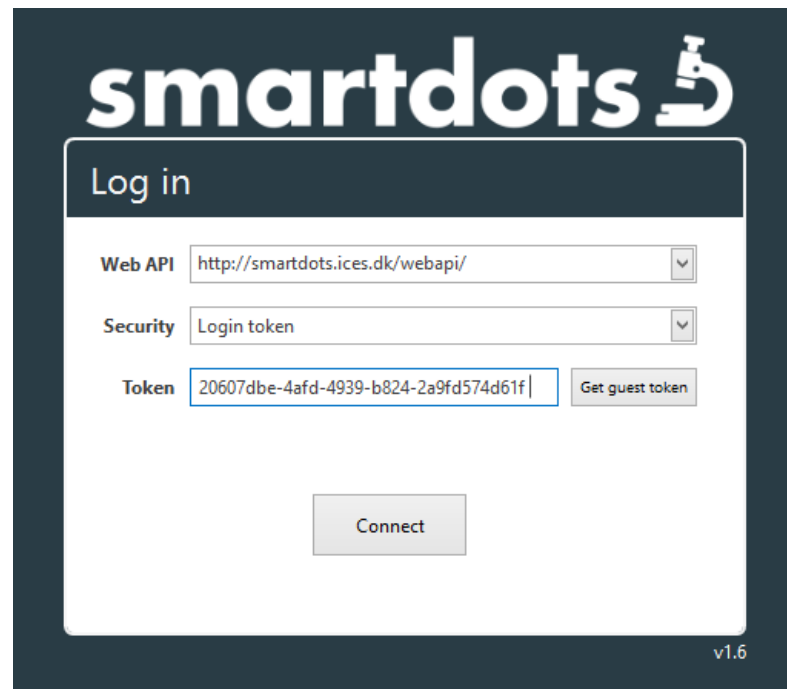

Figure 1. SmartDots login screen.

2   Event screen

On the event screen the user is presented with a list of all available workshops/exchanges to make age readings on. Double-Click on the required exchange/workshop to start the age reading.

Figure 2. Event overview screen.

There is a search field at the top of the screen. Entering text will filter the list below and will work for all fields.

HINT: All columns can be sorted by clicking in the header row. If you want to sort by multiple rows, you can click another column header while holding the Shift-button.

There is a "Finish/Reopen"-button in the event overview screen. Clicking on the button set the status of an event for the logged in user to "open" or "finished". The user can only perform age-readings for his open events.
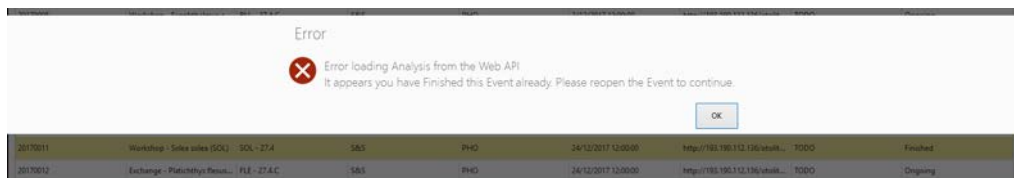
A '?' is found in the title bar which opens the web browser to the user manual
http://ices.dk/publications/library/Pages/default.aspx#k=smartdots%20handbook

3 Age reading

The age reading screen contains all the age-reading information. This screen consists of multiple components numbered 1-7 in Figure 3.
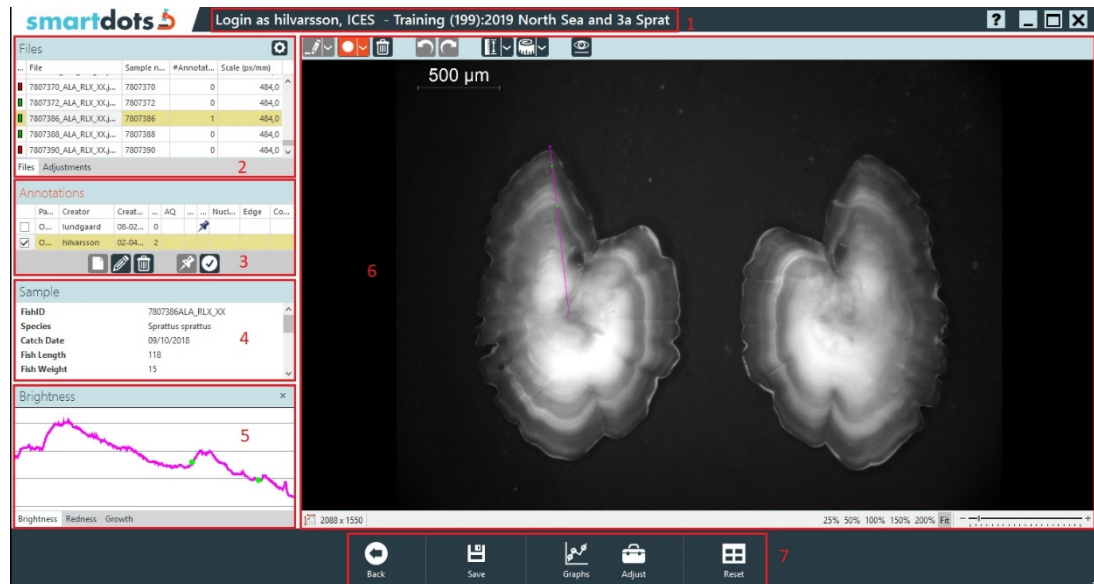
Figure 3. Age reading screen.

3.1 Title

Shows information about the logged in user and the current workshop/exchange he/she is working on.
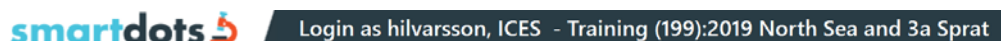
Figure 4. Title bar

3.2 Files

Contains information about all loaded image files. All columns can be sorted by clicking in the header row. When closing SmartDots and opening it again, the sorting changes back to default, which is sorting by file name.

By right-clicking in the header row and selecting the option "Show search panel", a search input box will be shown and can be used to filter the file list.

The first column indicates the file's status. Hovering over this shows more information. *Red – no annotation; Orange – annotation not approved; Green – approved annotation*. 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 the length of the scale bar converted to 1 millimeter when the image is zoomed 100%.

It is possible to navigate through files with next and previous buttons. It is optional and can be turned on by clicking on the cog symbol in the upper right corner. A popup will appear with the option to turn this feature on or off. Your choice will be saved and remembered for the next time you use SmartDots.

Figure 5. Files information.

3.3   Annotations

Figure 6. Annotations information.

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 etc.

Creator is the reader. This property and the creation date are automatically set.

The AQ indicates the quality of the age reading. An AQ score must be provided for each age.

- AQ1: Easy to age with high precision.
- AQ2: Difficult to age with acceptable precision.

- AQ3: Rings cannot be counted, the calcified structure is considered unreadable (no age assigned).
- AQ3_QA: Rings cannot be counted, the calcified structure is considered unreadable. Age is assigned for Quality Assurance purposes only.

Figure 7. AQ scores.

When "AQ3" is selected, all dots will be erased from the annotation (if there are any) and the Age field will become empty. The software will now display a warning when the user tries to assign AQ3. The user has to confirm the message.
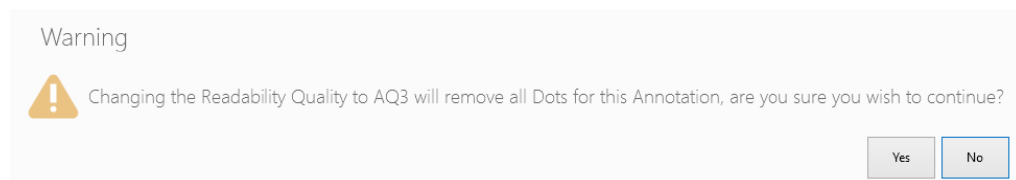
Figure 8. AQ3 warning.

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.

It is also possible for the organizer to add two extra columns (Nucleus and Edge) when needed. You can manage the Edge and Nucleus properties directly in the grid. The available options for both properties are: Opaque, Translucent, NA (not applicable) (Figure 9). The software will translate NA to null (nothing). The Edge and Nucleus fields are also integrated in the popup window to edit/save the annotation (Figure 10).

Figure 9. Nucleus and edge columns.

Figure 10. Edit/save annotation popup window.

The comment is optional but can be used by the user to add remarks. If you want to add a comment about a specific annotation, hover over the annotation and at the bottom of the editor panel you will see which age it corresponds to (Figure 11) and add this to the comment.
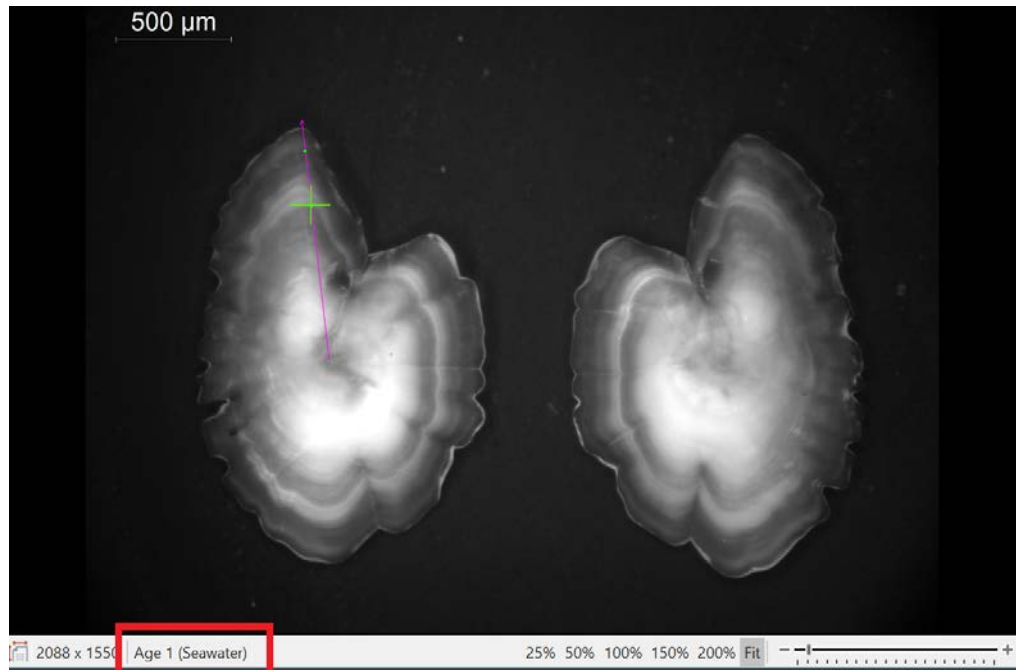
Figure 11. Editor panel with annotation and corresponding age.

There are several buttons at the bottom of the annotation component.

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.

When the buttons are disabled, hovering over them with the cursor will display the reason.
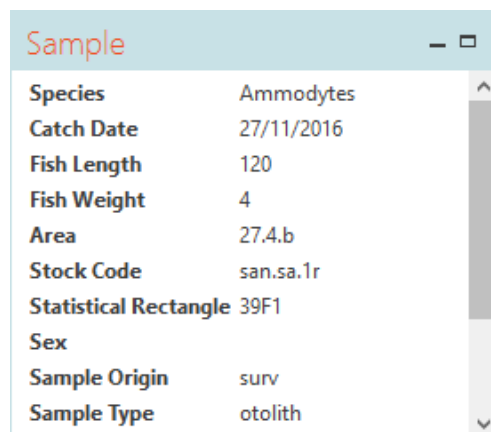
Do not annotate the centre of the otolith or the outermost edge of the otolith. Only place a dot at the end of each winter ring as these are counted when estimating the age. SmartDots will automatically give the age of the fish based on the number of annotations that you make.

The final annotation must be approved for each otolith that is to be included in the reporting. This is done in the popup window to edit /save annotations (Figure 10) or by clicking on the approve button in the annotation tool bar.

3.4   Sample

Figure 12. Sample information.

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

3.5   Graphs

Graphs show information about the selected age reading's line and annotations. There are currently three graphs in SmartDots. Graphs will use the same line and dot colors as the annotation it displays. Dots' sizes will also be displayed in the graphs. The Graphs' background may change to black in order to have a high contrast with the line colour.

3.5.1   Brightness
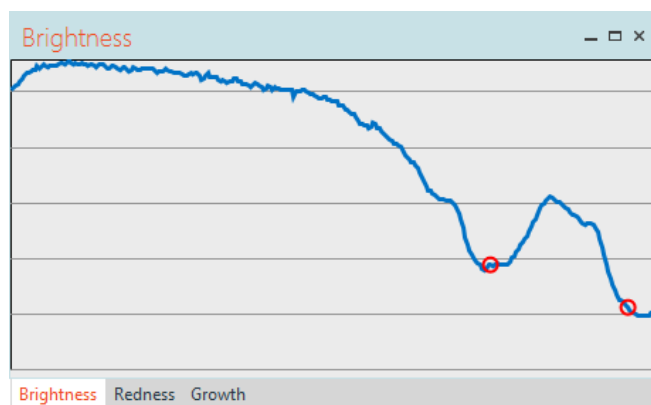
Figure 13. Brightness graph.

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.

HINT: It is possible to zoom in in this graph as well as in the Redness graph. Zooming allows for better accuracy. To zoom in, hold the shift button while selecting (click, hold and drag the left mouse button) the area in the graph you want to see more detailed.

3.5.2 Redness

Redness operates in the same way as brightness but displays the red value as opposed to the brightness of pixels. This is only used for otoliths that are imbedded in a red colouring agent.

3.5.3 Growth

Growth shows the distance between dots.
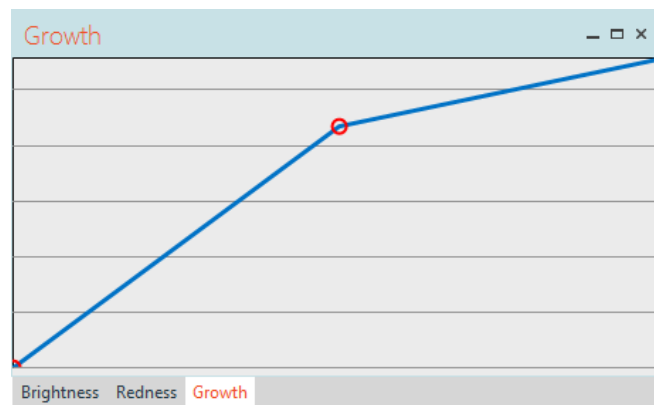
Figure 14. Growth graph.

In addition to the growth curve, all graphs can now display multiple lines. However, when displaying multiple lines, they lose their interactivity.

Outdated
See ICES library for latest version
12 |
SmartDots 2018 User Manual
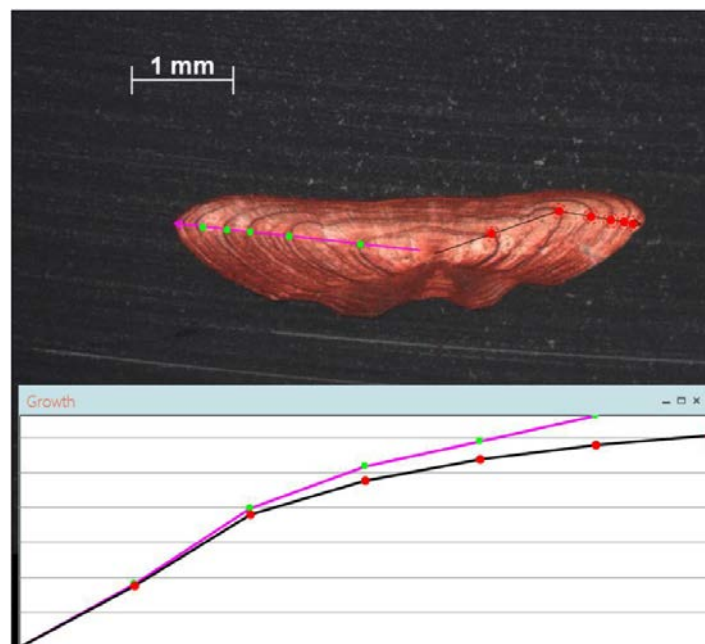
3.6   Editor

This is where users can draw lines and dots on the otolith image.
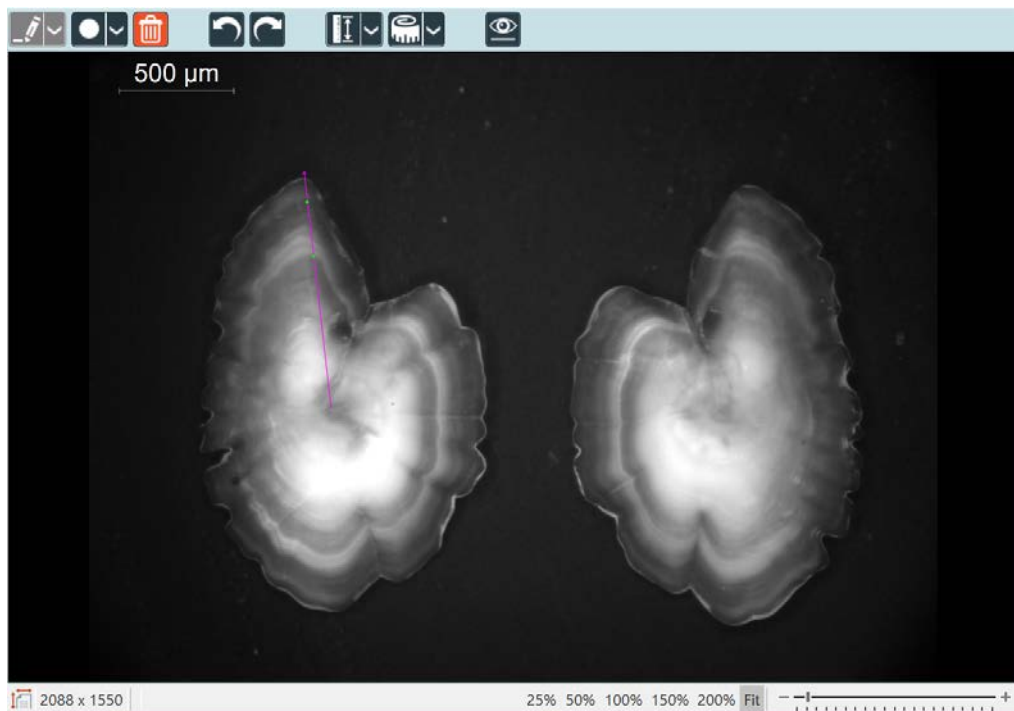
Figure 15. Editor screen with otolith image, drawing modes (top bar), and scaling options (bottom bar).

At the top, there are three modes :

- line-mode to draw lines.

  When the line tool is selected the user can draw a line by clicking in the image. A line can contain multiple segments, every click adds a new segment. To end the line the user should right-click.

- dot-mode to draw dots

  When the dot tool is selected the user can place dots on the line. Every click adds a new dot.

- delete-mode to delete lines and/or dots

All buttons with an arrow next to them have additional options.

Additional line properties

Addition dot properties
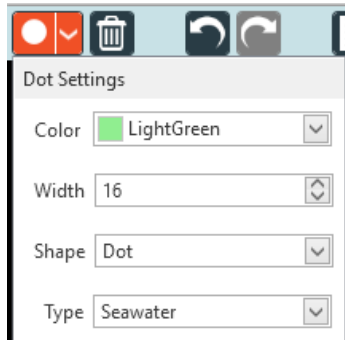
There are also buttons for undo/redo.

There is a button used to measure the scale shown on the image. The scale can be measured automatically by selecting the 'automatic' option. If you select 'manual' you can set the scale size manually. Therefore you have to click on the starting point and click again on the end point of the scale. You can confirm by clicking on the accept button.

With this button the user can measure distances on the otolith image.

Measurements will appear as a dashed colored line with text above or below it. The line width and font size are as displayed when the image is viewed on 100% size. The user can modify the measure settings.

To start measuring click on the Icon (left hand side) and draw a line on the image as you would make an annotation line. As you are drawing the line, the length of it is display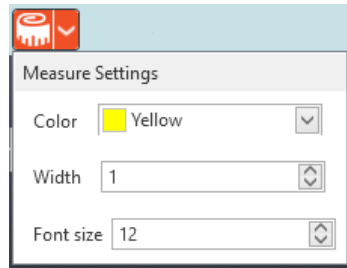ed along with it in pixels (if the scale is not known) or in metric lengths (if the scale is known). To end a measurement the user should (left-)click another time.

Measuring's can only contain one line segment. You can draw as many measuring lines as wished. The measuring line settings will be remembered between sessions, *however measuring lines are temporary and are thus not saved.*
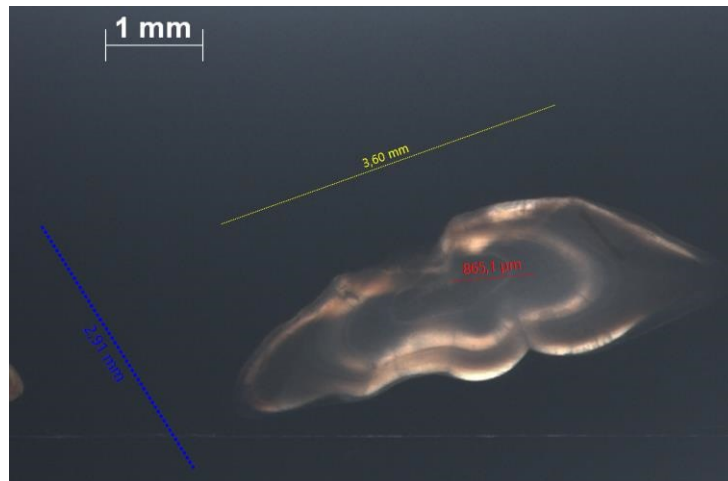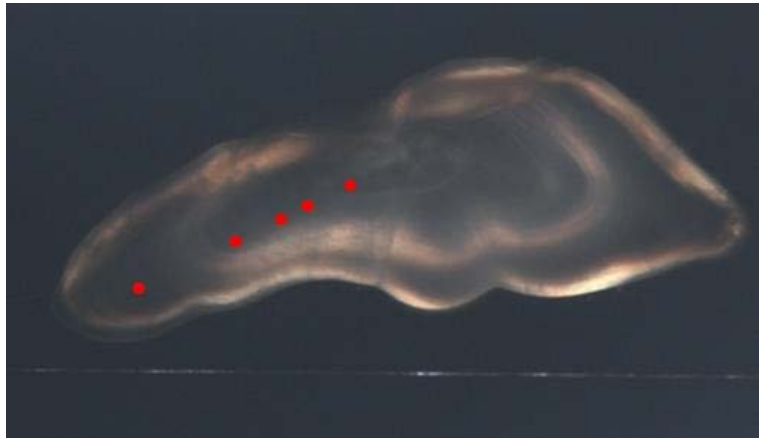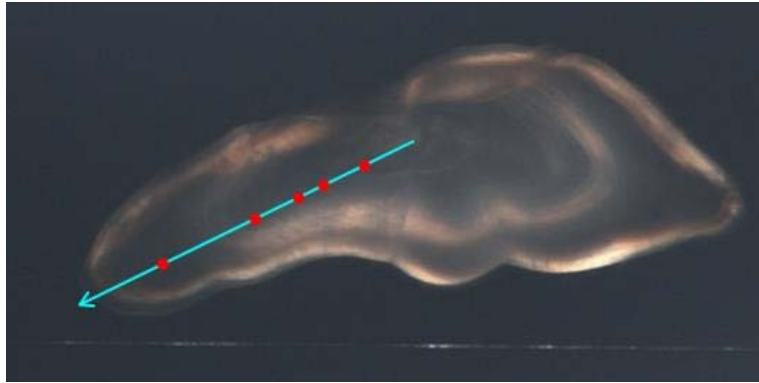

The last button in the age-reading window is a toggle button.

Clicking on this button toggles the line visibility.

When the line is invisible, dots can still be added. The button also toggles on-screen measuring's.

The information bar and zoom options are shown at the bottom of the window (Figure 14). You can select a preset zoom value by clicking on the desired zoom factor. You can also zoom in or out by clicking on the '-' or '+' sign or by clicking in the slider.
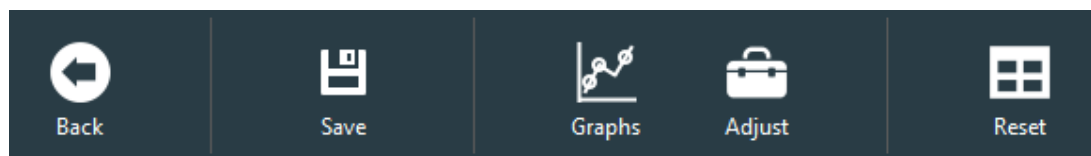
3.7   Toolbar

Figure 76. Toolbar buttons.

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. By selecting a new file all data related to the previous file will be saved automatically.
- Graphs: show/hide 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 (Figure 16).
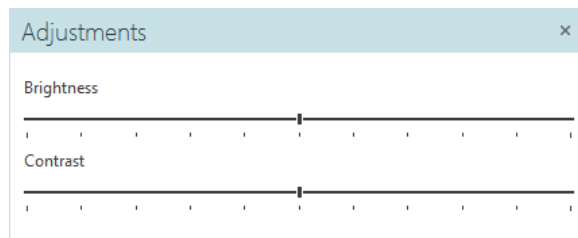- Reset: resets all layout.

Figure 17. Adjustments panel.

4 Video tutorials

Video tutorials are now available on YouTube.

https://www.youtube.com/channel/UCa4bjXo-eBDfW0cm1oElWeQ/playlists

5   Contacts

The following people can be contacted about SmartDots:

- Carlos Pinto, ICES Data Centre: carlos@ices.dk
- Julie Coad Davies, DTU Aqua: joco@aqua.dtu.dk
- Kevin De Coster, ILVO: Kevin.DeCoster@ilvo.vlaanderen.be
- Joana Ribeiro, ICES Data Centre: joana.ribeiro@ices.dk

6   Change log

Date	Change	Prepared by
8 November 2018	Initial version created	Carlos Pinto, ICES; Kevin De Coster, ILVO; Julie Krogh Hallin, ICES
12 October 2019	Updated after release of version 2	Annelie Hilvarsson, SLU
14 November 2019	Updated	Carlos Pinto, ICES
3 April 2020	Updated after release of new version (2.1)	Annelie Hilvarsson, SLU