High-level accessibility review – BTAA (Elsevier ScienceDirect - final version)

Primary Point of Contact

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ELSEVIER'S SCIENCEDIRECT

Summary (top 3 problems for Elsevier)

Despite a first page that seemed to promise a very accessible experience. this application returned a high number of issues through automated testing. We had as many as 70 issues returned by Axe on some of the pages. Too many issues, in fact to be able to get very far with the time that was allocated for this testing. The top 3 issues found in this application were:

1. Wayfinding when using a screen reader, has keyboard focus is not always properly handled,
2. PDF documents not being tagged, resulting in a very inaccessible experience,
3. Form element values (labels) not being programmatically conveyed to assistive technologies.

Accessibility findings

Project wide issues

The issues presented in this section were identified in multiple pages, and are recorded here to avoid repetition.
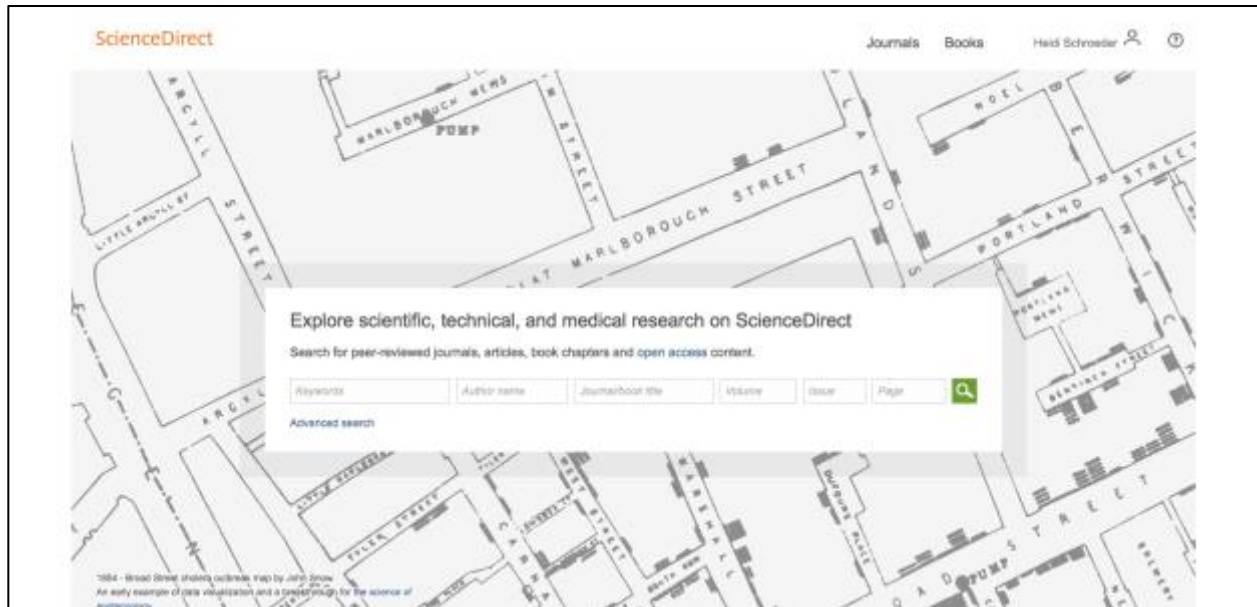
Automated findings using Axe

- **WCAG 1.3.1 -** Certain aria roles are being used without their expected counterparts, such as the listbox and textbox roles being used without the appropriate roles on the child element.
- **WCAG 3.1.1 -** The HTML document must contain a valid lang attribute or must correspond to a valid lang code for multilingual screen reader users who may prefer a different language.
- **WCAG 4.1.1 -** ID attribute values must be unique. Some ID values are duplicated in the pages.
- **WCAG 4.1.2 -** Buttons must have discernible text that clearly describes the destination, purpose, function, or action for screen reader users.

Additional manual findings using NVDA screen reader

- **WCAG 1.3.1 -** List structures used under "Research Highlights" and "Highlights" are misleading, as both the bullets and the content are announced as list items. Change the structure of DL lists to regular UL lists to prevent this.
- **WCAG 2.4.3 -** Focus is not properly managed when the Feedback modal is displayed, requiring screen reader users to explore around a little when it is exposed.
- **WCAG 2.4.3 -** Focus is also not captured in the modal, so users can unwillingly exit it. Focus should remain captive in the modal until it is either dismissed or interacted with.
- **WCAG 2.4.3 -** Focus is set to specific areas of the page by default, requiring additional cognitive efforts from the perspective of non-sighted users who cannot visually identify where the focus is set. It amplifies challenges related to wayfinding and makes efficient navigation more difficult.
- **WCAG 2.4.4 -** The "Feedback" button at the right bottom of the page is only announced as "blank" when focus is set to it.
- **WCAG 3.3.2 -** Placeholder text labels are not persistent and may cause issue for users who have certain cognitive challenges, such as short term memory loss or Attention Deficit Disorders. It would be preferable to rely on visible text labels, or at least make sure these labels remain visible when keywords are set to the fields.

1. Elsevier landing page

Automated findings using Axe

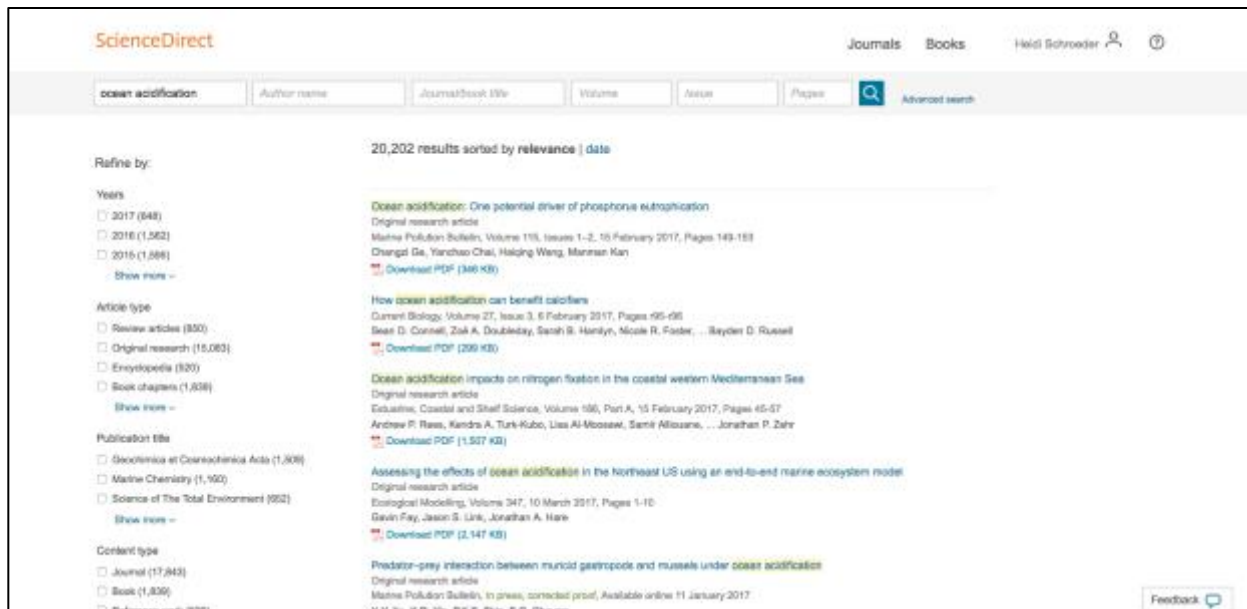- Nothing beyond what has been reported under "Project-wide issues".

Additional manual findings using NVDA screen reader

- Nothing beyond what has been reported under "Project-wide issues".

Notes

Menus, search boxes, dropdowns, icons, and links below search boxes were all quickly tested for accessibility as per instructions.

2. Simple search results page

Automated findings using Axe

- **WCAG 1.3.1 -** Lists must be marked up correctly, meaning they must not contain content elements other than <li> elements. The <UL> elements used to mark up the login links and the footer navigation do not rely on <LI> elements to structure the links.
- **WCAG 1.4.3 -** All text elements must have sufficient contrast between text in the foreground and background colors behind it in accordance with WCAG 2 AA contrast ratio thresholds. Some of the text in pages has insufficient contrast.
- **WCAG 4.1.2 -** Multiple invalid aria attribute values are being used on the page (25 in this case). These values must be spelled correctly and correspond to values that make sense for an attribute to perform as intended.

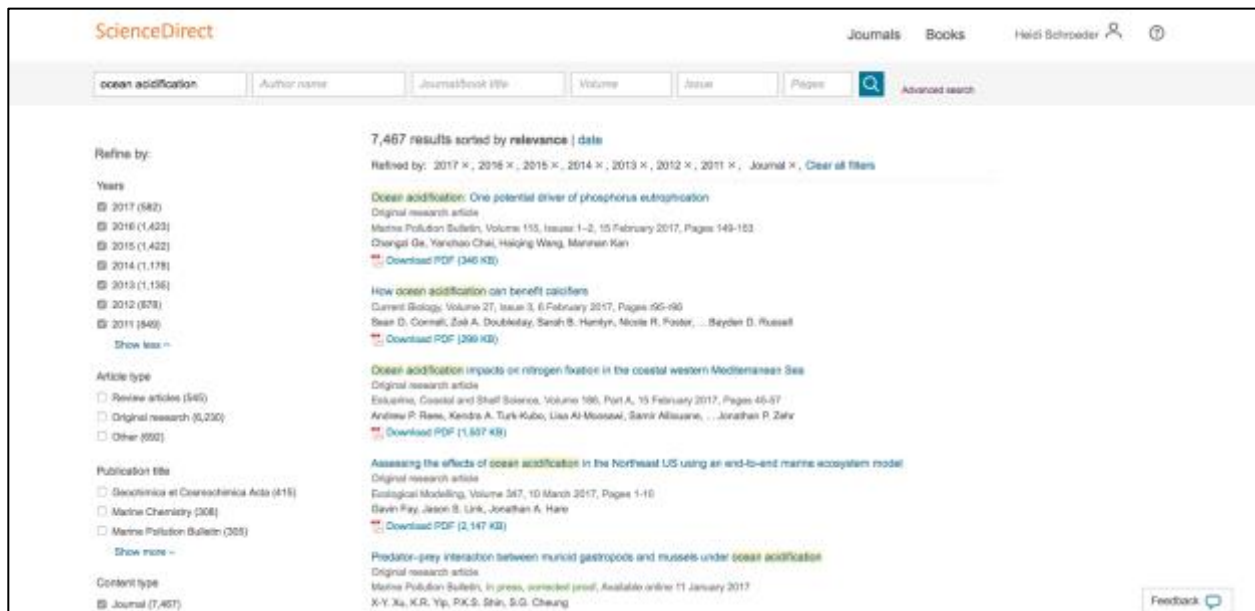**Additional manual findings using NVDA screen reader**

- **WCAG 1.1.1 -** The images shown under the "Graphical abstract" button are only described in text using the word image. They need to be described in text in an equivalent manner, so the content they display is also conveyed to screen readers.
- **WCAG 1.3.1 -** "Science direct" and filters on the left column such as "Year", "Publication title", "Topic", etc. are made to look like a heading for the page, but is not marked up as such.
- **WCAG 1.3.3 -** The checkboxes to the left of the publications are meant to allow users to select which resources they want to download, but that information is not conveyed as part of the information announced to users when focus is set to each checkbox. The user only hears about the resource title.
- **WCAG 2.1.1 -** The "Relevance" and "All access types" dropdown menus are only triggered on hover. Setting focus to them with the keyboard and triggering it has no effect. They also need to work independently with the keyboard.
- **WCAG 2.4.4 -** "View more" links in the left column rely on alt attributes on the links to provide additional context. This is not a suitable way to achieve the desired effect. Rely on aria-label attribute values, like it is done on MacOs/Firefox.

- **WCAG 3.2.1 -** Under the "Export" feature, tabbing through the radio button options automatically and unexpectedly launches the export feature, making it impossible for someone using a keyboard to choose different options.

Notes

Features offered vary greatly between the MacOS and Windows versions of this application. Some features were not available at all in MacOS. Testing has been conducted in both platforms. Findings above (as well as those found in the "Project-wide" section) reflect low hanging fruits identified in the time allocated for testing, and include testing the search results page, looking at the export, sort by/relevance and access type buttons, selecting checkboxes next to the items as well as expanding abstracts and other details.

3. Refine results view

Automated findings using Axe

- Same results as the previous screen, plus what has been reported under "Project-wide issues".

Additional manual findings using NVDA screen reader

- **WCAG 3.2.1 –** Selecting any of the filters on the left with MacOS\Firefox automatically and unexpectedly refreshes the list of resources in the search results, without the user knowing. Contrary to the Windows version where a "Apply filter" button is made available; no such button is made available on the MacOS version.
- **WCAG 3.2.4 -** Checkboxes checked for filters are automatically unchecked as the search results are filtered in Windows, making it impossible for a user to validate if the filters were properly applied. No information is provided as to the filters once the search results have been updated.

4. Individual item
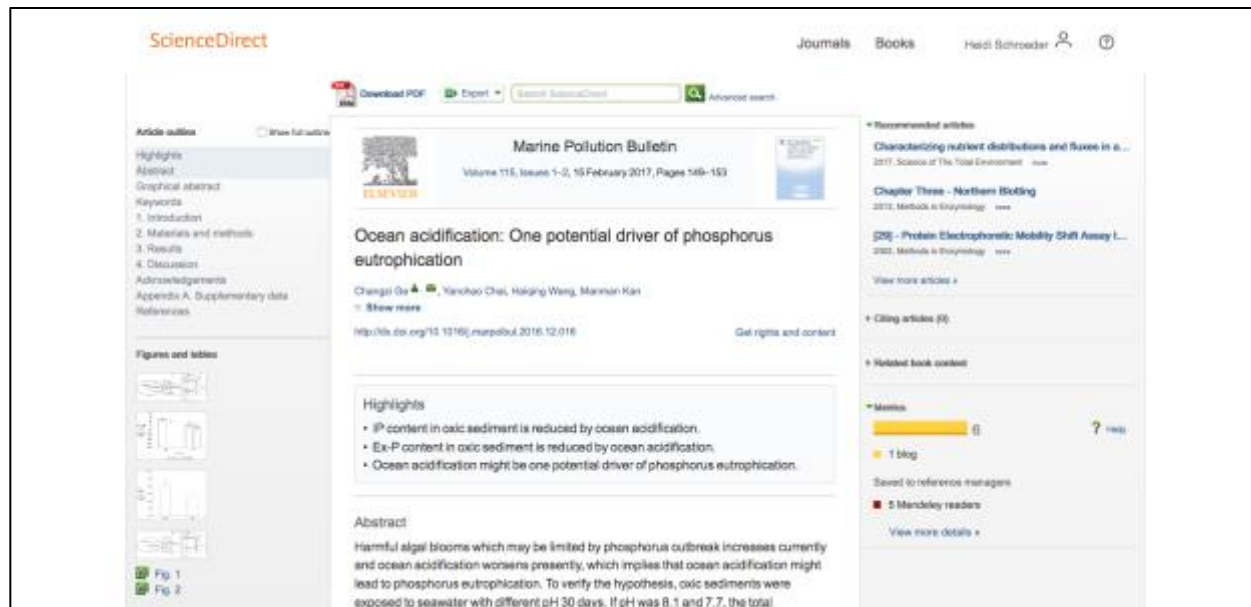
Automated findings using Axe

- **WCAG 1.3.1 –** <DL> elements must be marked up correctly, meaning they must not contain content elements other than <DT> and <DD> elements. They cannot be empty either.
- **WCAG 4.1.2 -** Link text (and alternate text for images, when used as links) must be discernible by a screen reader, must not have a duplicate label, and must be focusable.

Additional manual findings using NVDA screen reader

- **WCAG 1.1.1 -** Complex graphics, such as diagrams and histograms shown in the page are not fully described in text.
- **WCAG 1.1.1 -** Images such as the ones displayed under "Figures and Tables" and "Graphical Abstract" are not properly described in text. Same for the cover image next to the page title, which is not clearly describing what the book title is.
- **WCAG 1.1.1 -** Other images, such as "Crossmark", have no alt attributes at all. As a result, the filename is conveyed instead.
- **WCAG 1.3.1 -** The main heading of the page (above the book title) is made to look like a heading but is not marked up as such.
- **WCAG 1.3.1 -** Heading structure provides a misleading document outline, as they are not hierarchically organized in a way that reflects the content of the page.
- **WCAG 2.4.4 -** Links to bibliographical references are not meaningful as they are only announced as "2 link", "3 link", etc.
- **WCAG 4.1.2 -** The "Export" button is only announced as "clickable" and its purpose is not clearly communicated to screen reader users.
- **WCAG 4.1.2 -** The "Show more" link next to authors does not convey the current state to screen reader users (collapsed or expanded). Neither does the "Figure options" and "Table options" links (dropdown button).

5. Individual PDF document

Reference

http://ac.els-cdn.com/S0025326X16310013/1-s2.0-S0025326X16310013-main.pdf?_tid=229e3cf2-083d-11e7-850f-00000aab0f01&acdnat=1489444612_ea2ac2d4286bbb7146c2611c93f54992.

Observations

- Some of the issues found in the PDF document include:
- Most of the document is not tagged at all.
- The document does not have any headings.
- Links in the PDF would not be reliably recognized as such by screen reader software.
- No semantics are provided to help screen reader users navigate through the PDF
- Images are not marked up and provided with appropriate alt text.
- Some annotations are not tagged properly or associated to the right tag elements.
- The tabbing order shows issues while navigating using only the keyboard.
- The primary language of the document is not identified.
- The document is not assigned a meaningful descriptive title in the document properties.
- Etc.

Notes

While it would be much easier for someone with a screen reader to navigate through the PDF file directly, as opposed to navigating through the viewer provided, the PDF documents assessed present problems that would make using them difficult at best for someone who was blind.

6. Advanced Search
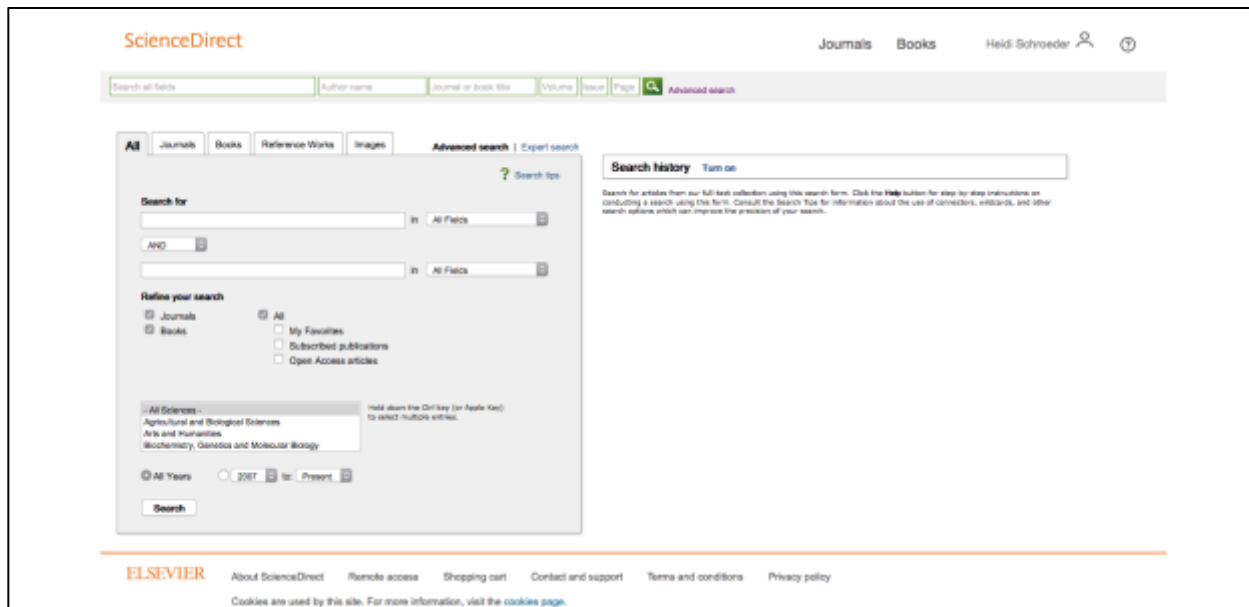
Automated findings using Axe

- **WCAG 1.3.1 -** Each form element must have a programmatically associated label element. Ensure that every form element has a programmatically associated label.
- **WCAG BP -** All checkbox groups must have either a proper aria-labelledby value for all group members, or a proper containing <fieldset> or ARIA group to associate them programmatically for screen reader users.
- **WCAG BP -** Radio buttons that relate to each other must have a common label. Ensure that radio button groups have a common label.

Additional manual findings using NVDA screen reader

- **WCAG 1.3.1 –** Groups of checkboxes are not programmatically associated with their common group labels. The group labels are not identified as such to assistive technologies.
- **WCAG 1.3.1 -** Tabs are visually displayed, but they are handled as individual links, leading to different URLs. They are not behaving like tabs at all, and would benefit from being marked up using list markup instead.
- **WCAG 4.1.2 -** Instructions about how to use the multi select dropdown list are not conveyed to assistive technologies.
- **WCAG 4.1.2 –** "Turn On" and "Turn Off" links do not convey any information back to screen reader users about their purpose and their updated states.

Notes

Instructions provided for testing were followed on the page shown above for advanced search. The findings above (as well as those found in the "Project-wide" section) reflect low hanging fruits identified for search boxes, tabs, fields, etc. in the time allocated for testing.