Accessiblü

Managed Digital Accessibility Ops

Accessibility Evaluation Report:

BioOne Digital Library

April 28, 2025

Conducted by: Accessiblü, LLC

For: Library Accessibility Network (LAA)

Prepared by:
Accessiblü, LLC
882 Pompton Ave, STE A-2
Cedar Grove, NJ 07009
hey@accessiblu.com

Primary Contact:
Jeff Rodgers, MS Ed
Director of Digital Accessibility
Accessiblü
jeff@accessiblu.com

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

Table of Contents

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

Summary of Accessibility Findings

Accessiblü conducted a **high-level accessibility evaluation** of the BioOne Digital Library platform to assess its usability for individuals with disabilities. The review was conducted using the JAWS screen reader, keyboard-only navigation, and manual inspection for conformance to select WCAG 2.2 AA success criteria.

Key Findings

The BioOne platform has opportunities to improve accessibility, which could enhance the experience for users with disabilities. During our testing, we identified several areas where users faced challenges navigating the site, searching for academic resources, and accessing content.

While some aspects of the platform show evidence of accessibility considerations, such as proper heading structure in certain areas and some appropriate alternative text, the overall user experience for those using assistive technology is problematic. The platform's reliance on image-based PDFs for journal articles is most concerning, making the core content inaccessible for screen reader users.

The platform also suffers from inconsistent keyboard navigation, unlabeled or incorrectly labeled form controls, and interactive elements that do not communicate their states to screen readers. These issues collectively create a significant barrier to accessing the valuable academic content housed within the BioOne platform.

Addressing these concerns would significantly improve the experience for persons with disabilities and users of assistive technology, allowing them to access the wealth of scientific research and academic resources that BioOne provides.

Top 3 Issues Identified

1. **Image-Based PDFs for Journal Articles**
    a. Downloaded journal articles are saved as image PDFs rather than accessible text-based PDFs.
    b. Impact: Screen reader users cannot access the actual content of journal articles, which is the platform's primary purpose. This effectively renders the platform's core functionality unusable for screen reader users.
    c. WCAG Success Criteria: 1.1.1 Non-text Content (A), 1.4.5 Images of Text (AA)

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

2. **Inaccessible Filter Controls in Search Results**
    a. Filtering options on search results pages (checkboxes for collection, year, access, etc.) are not programmatically accessible to screen readers and are announced only as static text.
    b. Impact: Screen reader users cannot refine their search results, forcing them to navigate through potentially thousands of irrelevant results.
    c. WCAG Success Criteria: 4.1.2 Name, Role, Value (A), 2.1.1 Keyboard (A)

3. **Missing Submenu State Information**
    a. Navigation menus with submenus don't announce their expanded/collapsed state, and submenus are not accessible via keyboard navigation.
    b. Impact: Screen reader users are unaware that submenus exist, and keyboard-only users cannot access important sections of the website.
    c. WCAG Success Criteria: 4.1.2 Name, Role, Value (A), 2.1.1 Keyboard (A).

Disabilities Impacted

Blind and Low-Vision Users

- **Issues:** Missing alternative text for images, inaccessible PDFs, unlabeled form controls, inconsistent navigation patterns, lack of state information for interactive elements, and improper heading structures.

- **Impact:** Screen reader users may be unable to understand page content, navigate effectively, or interact with many of the platform's core functions. Most critically, they cannot access the actual journal content itself since it is provided in image-based PDFs, rendering the platform's primary purpose inaccessible.

Users with Motor Disabilities

- **Issues:** Keyboard focus is not always visible, focus order is unpredictable, and some interactive elements are not keyboard accessible.

- **Impact:** Keyboard-only users face significant barriers when navigating the site. Focus frequently jumps to unexpected locations, and interactive elements like dropdown menus and filter options cannot be consistently accessed without a mouse.

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

Neurodiverse Users

- **Issues:** Inconsistent UI patterns, unpredictable behavior when activating controls, lack of feedback when actions are taken, and overwhelming interface without clear organization.

- **Impact:** Users with cognitive disabilities will struggle to develop a mental model of how the interface works due to inconsistent patterns and behavior. The lack of clear feedback and status updates creates additional cognitive load, making the platform difficult to use effectively.

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

Page-Specific Findings and Impact Analysis

The following section lists the accessibility findings by **Page** and **WCAG violations** and describes their impact on users.

BioOne Landing Page

Issue	WCAG Success Criteria	Description	Example
Missing Alternative Text	**1.1.1 Non-text Content (A)**	Many images lack appropriate alt text, including journal covers and featured collection images	Journal cover image announced as "blank link, graphic ornithological science cover" without adequate description
Improper Heading Structure	**1.3.1 Info and Relationships (A)**	Heading levels are skipped (from H2 to H4) and an H1 appears after lower-level headings	News section heading jumps from H2 to H4, then later back to H1 for "Featured Articles"
Keyboard Navigation Issues	**2.1.1 Keyboard (A)**	Some interactive elements cannot be accessed via keyboard	Navigation submenus announced as simple links but contain dropdown content that is not accessible via keyboard
Improper Button Labeling	**4.1.2 Name, Role, Value (A)**	Search button is labeled as "enter button" rather than "submit"	The search form's button is announced as "enter button" rather than a submit button
ARIA States Missing	**4.1.2 Name, Role, Value (A)**	Navigation elements with dropdowns don't indicate their states	Browse and Resource navigation links don't indicate they contain submenus

Impact Summary:

Screen reader users face significant challenges on the landing page due to improper heading structure and missing alternative text. The navigation menu is particularly problematic as it contains dropdown submenus that are not announced to screen readers and cannot be accessed using keyboard navigation. This effectively hides essential sections of the website from users with disabilities. The search function, critical for finding resources, doesn't use proper semantics for its buttons, potentially confusing screen reader users.

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

BioOne Landing Page Screenshot

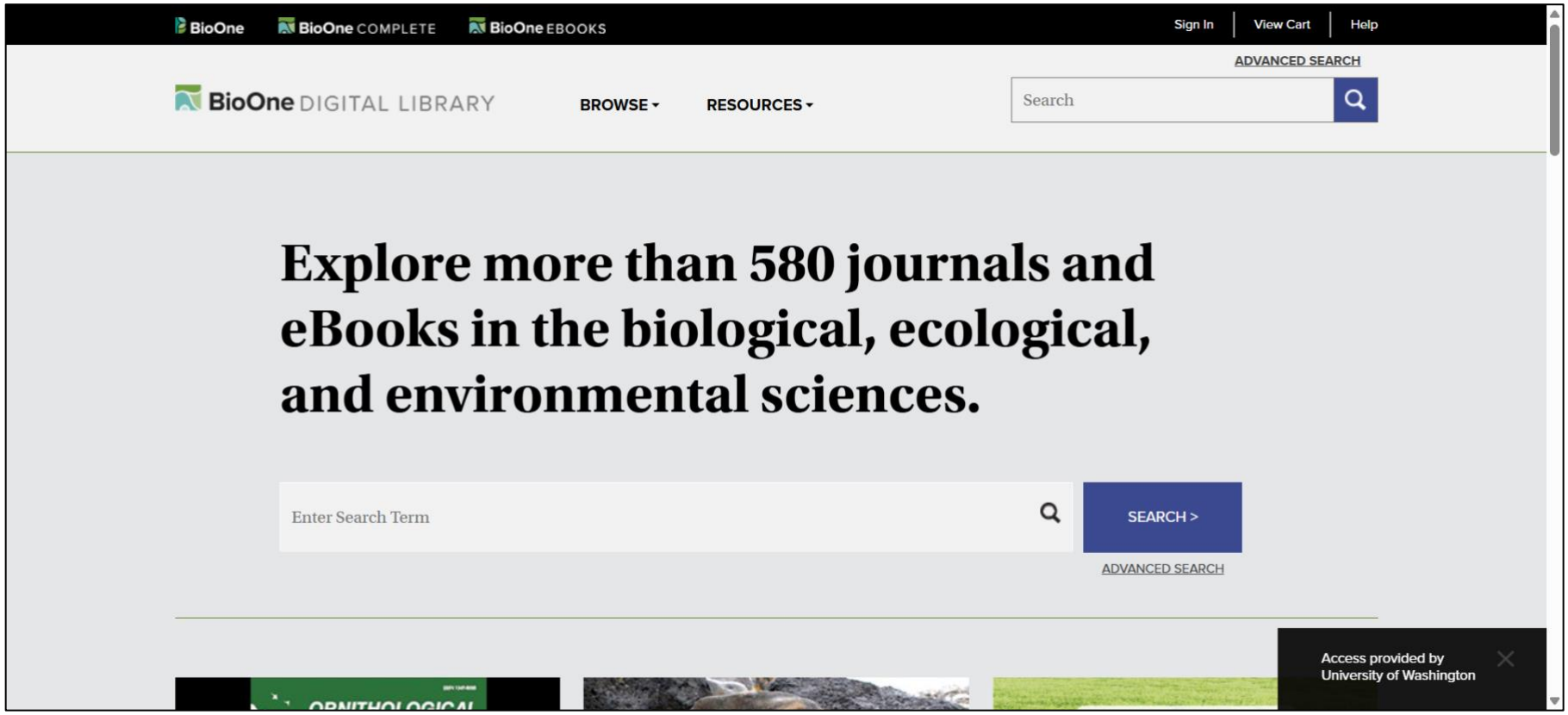

Figure 1. The BioOne Complete homepage features navigation options, search functionality, and highlighted resources including featured journals, articles, and collections.

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

Search Results Page

Issue	WCAG Success Criteria	Description	Example
Missing Search Results Count	**1.3.1 Info and Relationships (A)**	Search results count is not programmatically announced	"10,703 results" appears visually but is not announced to screen readers
Inaccessible Filter Checkboxes	**2.1.1 Keyboard (A), 4.1.2 Name, Role, Value (A)**	Filter options are announced as static text rather than interactive checkbox controls	"Bio one complete left paren 10,700 right paren" is announced as text, not as a checkbox
Focus Management Issues	**2.4.3 Focus Order (A)**	Focus returns to top of page after interacting with filters or using sorting options	When changing sort order, focus moves back to the top navigation rather than remaining in context
Insufficient Link Text	**2.4.4 Link Purpose (A)**	Generic link text such as "Read Abstract" and "Download Paper" without context	Links are announced as simply "read abstract plus" and "download paper" without identifying which article they relate to
Clickable Elements Announced Incorrectly	**4.1.2 Name, Role, Value (A)**	Filter category headings are announced as "clickable" but function as expand/collapse controls without proper state information	"Heading level 4 year dash clickable" doesn't indicate its expanded/collapsed state

Impact Summary:

The search results page presents major barriers for screen reader users who cannot access filter options, which are essential for refining search results. Users are not informed of how many results their search returned, and the generic link text for actions like "Read Abstract" or "Download Paper" makes it difficult to determine which article each action applies to. Additionally, focus management issues force users to repeatedly navigate from the top of the page after making any selection, creating a frustrating and inefficient experience.

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

Search Page Screenshot

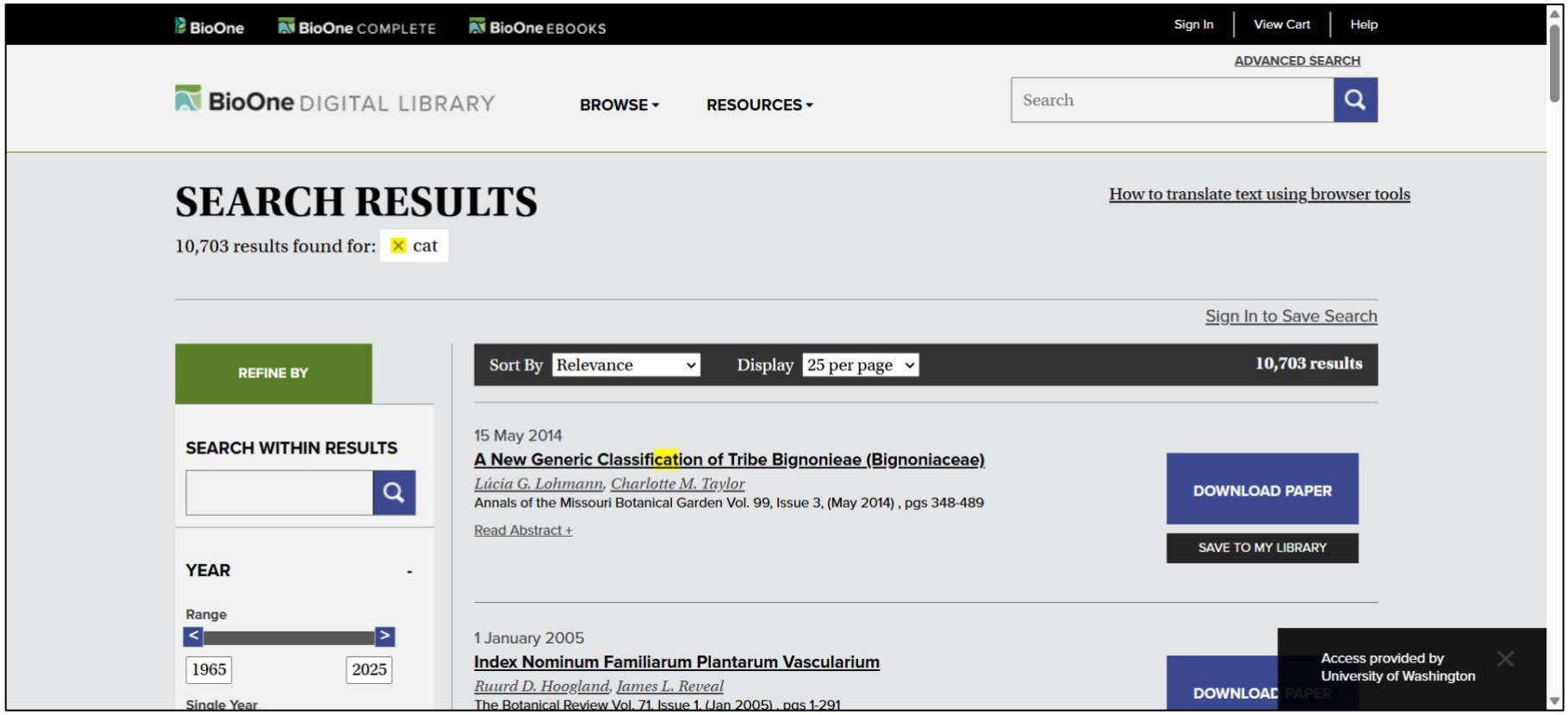

Figure 2. The search results page displays filtering options on the left and journal article listings on the right, with options to refine search criteria and sort results.

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

Advanced Search Page

Issue	WCAG Success Criteria	Description	Example
Radio Button Group Missing Labels	**1.3.1 Info and Relationships (A)**	Radio button groups lack proper group labeling	Radio buttons for search options are not associated with a group label
Focus Management Issues	**2.4.3 Focus Order (A)**	Description of WCAG criteria violation /issue	Provide one example of the corresponding WCAG violation.
Missing Form Labels	**3.3.2 Labels or Instructions (A)**	Form fields lack proper labels	Input field for date has no discernible label: "Edit blank" is all that's announced
Inaccessible Dropdown Menus	**4.1.2 Name, Role, Value (A)**	Dropdown options like "AND/OR" operators don't announce their state or available options	"Combo box collapsed AND" doesn't indicate what options are available
Dialog Not Announced	**4.1.3 Status Messages (AA)**	Advanced search dialog opens without being announced	When selecting "Advanced Search," a dialog appears but is not announced to screen readers

Impact Summary:

The advanced search page, which should offer more precise search capabilities, is largely inaccessible to screen reader users. The dialog doesn't announce itself when opened, and users are not properly moved into the dialog context. Form fields lack proper labels, making it unclear what information should be entered. Dropdown menus and radio buttons are not properly implemented, making it difficult to understand and select options. These issues collectively prevent users with disabilities from effectively using the advanced search functionality.

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

Advanced Search Page Screenshot

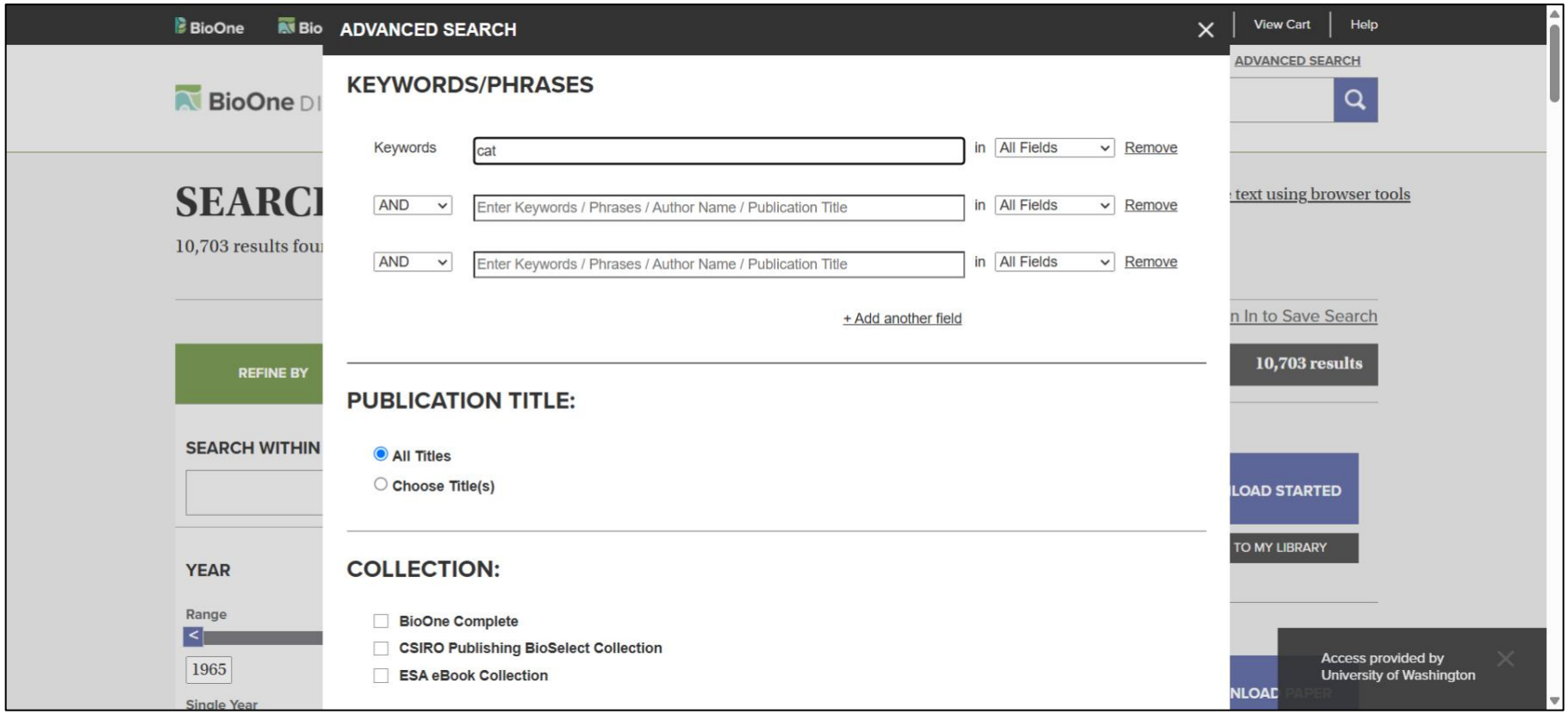

Figure 3. The advanced search dialog provides multiple search fields with options to specify search terms, select fields to search within, and filter by various criteria.

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

Book/Resource Page

Issue	WCAG Success Criteria	Description	Example
Image-Based PDFs	**1.1.1 Non-text Content (A)**	Downloaded articles are image-based PDFs rather than accessible text	Downloaded PDFs are announced by JAWS as "This page is blank" indicating they are image-based
Missing Alternative Content	**1.1.1 Non-text Content (A)**	No alternative accessible formats are provided for image-based PDFs	No HTML or accessible PDF alternatives are offered for articles
Lack of Document Structure	**1.3.1 Info and Relationships (A)**	PDF documents lack proper structure tags	Screen reader announces "alert: empty page" when attempting to read downloaded content
Focus Issues After Download	**2.4.3 Focus Order (A)**	After initiating a download, focus is lost and moved to an unpredictable location	After clicking "Download Paper," focus moves back to the top navigation rather than remaining in context
Login Dialog Issues	**4.1.2 Name, Role, Value (A)**	Login dialog reads all content at once rather than allowing navigation of individual elements	Login dialog announces "dialogue email password forgot your password show remember email on" all at once

Impact Summary:

The most critical issue on the resource pages is that the core content—the articles themselves—are provided as image-based PDFs that are completely inaccessible to screen reader users. This represents a fundamental barrier that prevents the platform from fulfilling its primary purpose for users with visual disabilities. Additional issues with focus management and dialog implementation compound the problems, making the overall experience frustrating and ineffective.

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

Book Page Screenshot

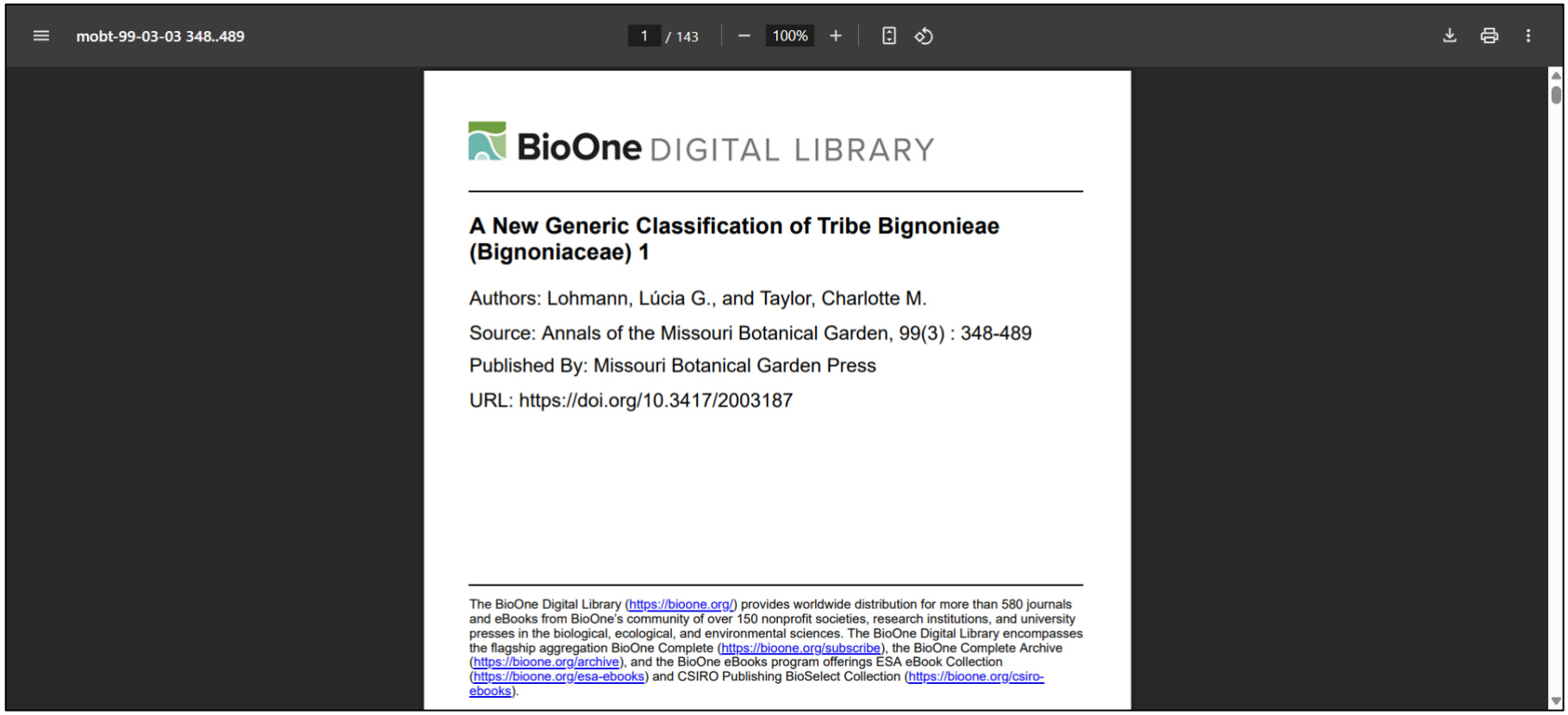

Figure 4. An individual article page displays the article title, publication information, and options to access the full content.

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

Code Snippets

The following are code snippets from some of the more critical WCAG issues and an example of a recommended fix.

1. Image-Based PDFs (1.1.1 Non-text Content)

Current implementation:

```
html
<!-- PDFs are generated as image-based files without text layer -->
<a href="/doi/pdf/10.3417/2003187" class="pdf-download">Download Paper</a>
```

Recommended fix:

```
html
<!-- Provide accessible PDF with proper tagging structure -->
<a href="/doi/pdf/10.3417/2003187" class="pdf-download">Download Paper</a>
<!-- And add alternative formats -->
<div class="alternative-formats">
  <h3>Alternative Formats:</h3>
  <ul>
    <li><a href="/doi/html/10.3417/2003187">HTML Version</a></li>
    <li><a href="/doi/epub/10.3417/2003187">EPUB Version</a></li>
    <li><a href="/doi/txt/10.3417/2003187">Plain Text</a></li>
  </ul>
</div>
```

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

2. Inaccessible Filter Checkboxes (4.1.2 Name, Role, Value)

Current problematic implementation:

```
html
<h4 class="facet-title clickable">Collection</h4>
<div class="facet-values">
  <div class="facet-item">Bio one complete (10,700)</div>
  <div class="facet-item">CSIRO publishing (3)</div>
</div>
```

Recommended fix:

```
html
<h4 class="facet-title" id="collection-heading">
  <button aria-expanded="true" aria-controls="collection-options">
    Collection
    <span class="visually-hidden">Click to expand or collapse</span>
  </button>
</h4>
<div id="collection-options" class="facet-values">
  <div class="facet-item">
    <input type="checkbox" id="bioone-complete" name="collection" value="bioone-complete">
    <label for="bioone-complete">Bio one complete (10,700)</label>
  </div>
  <div class="facet-item">
    <input type="checkbox" id="csiro" name="collection" value="csiro">
```

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

```
    <label for="csiro">CSIRO publishing (3)</label>
  </div>
</div>
```

3. Missing Submenu State Information (4.1.2 Name, Role, Value)

Current problematic implementation:

```
html
<ul class="navigation">
  <li><a href="/browse">Browse</a>
    <ul class="submenu">
      <li><a href="/journals">Journals</a></li>
      <li><a href="/ebooks">eBooks</a></li>
    </ul>
  </li>
</ul>
```

Recommended fix:

```
html
<ul class="navigation">
  <li>
    <button aria-expanded="false" aria-controls="browse-submenu" class="nav-button">
      Browse
    </button>
    <ul id="browse-submenu" class="submenu" hidden>
```

```
      <li><a href="/journals">Journals</a></li>
      <li><a href="/ebooks">eBooks</a></li>
    </ul>
  </li>
</ul>
```

4. Advanced Search Dialog (4.1.3 Status Messages)

Current problematic implementation:

```
html
<div class="search-modal">
  <div class="search-form">
    <input type="text" placeholder="Enter keyword/phrases/author name/publication title">
    <select>
      <option>All Fields</option>
      <option>Abstract</option>
    </select>
    <!-- More form elements -->
  </div>
</div>
```

Recommended fix:

```
html
<div role="dialog" aria-labelledby="search-modal-title" class="search-modal">
  <h2 id="search-modal-title">Advanced Search</h2>
```

```
  <div class="search-form">
    <label for="keyword-input">Enter keyword, phrases, author name, or publication title</label>
    <input id="keyword-input" type="text">

    <label for="field-select">Select field to search in</label>
    <select id="field-select">
      <option>All Fields</option>
      <option>Abstract</option>
    </select>
    <!-- More properly labeled form elements -->
    <button type="button" aria-label="Close advanced search" class="close-button">Close</button>
  </div>
</div>
```

5. Insufficient Link Text (2.4.4 Link Purpose)

Current problematic implementation:

```
html
<div class="article">
  <h3>A New Generic Classification of Bignoniaceae</h3>
  <a href="/abstract/10.3417/2003187">Read Abstract</a>
  <a href="/pdf/10.3417/2003187">Download Paper</a>
</div>
```

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

Recommended fix:

```
html
<div class="article">
  <h3 id="article-title-2003187">A New Generic Classification of Bignoniaceae</h3>
  <a href="/abstract/10.3417/2003187" aria-labelledby="article-title-2003187 abstract-action-2003187">
    <span id="abstract-action-2003187">Read Abstract</span>
  </a>
  <a href="/pdf/10.3417/2003187" aria-labelledby="article-title-2003187 download-action-2003187">
    <span id="download-action-2003187">Download Paper</span>
  </a>
</div>
```

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

Final Thoughts and Recommendations

The BioOne platform presents significant accessibility challenges for users with disabilities. While some elements show attention to accessibility, such as certain heading structures and alternative text for some images, the platform fails to meet several critical WCAG 2.2 AA success criteria.

The most severe issue is the inaccessibility of the core content—the journal articles themselves—due to the use of image-based PDFs. This fundamental barrier prevents blind and low-vision users from accessing the platform's primary content. Additionally, the inability to use filtering options, combined with keyboard navigation challenges and form labeling issues, creates a frustrating and often impossible experience for users with disabilities.

Some positive aspects of the platform include the presence of headings (though their structure needs improvement), some alternative text for images, and the ability to navigate through basic site sections. However, these positive elements are overshadowed by the critical barriers identified.

Addressing these accessibility concerns would significantly improve the platform's usability for all users, including those with disabilities, and would help ensure compliance with accessibility standards.

Recommended Fixes

- **Provide accessible PDF content:** Convert image-based PDFs to text-based, properly tagged PDFs. Consider offering alternative formats such as HTML or plain text.
- **Fix form controls and filters:** Ensure all checkboxes, radio buttons, and other form controls are properly labeled and programmatically accessible to assistive technology.
- **Implement proper ARIA for interactive elements:** Add appropriate ARIA attributes to indicate states (expanded/collapsed) for dropdown menus, filters, and other interactive elements.
- **Improve focus management:** Ensure keyboard focus is maintained in a logical order and returned to a predictable location after user interactions.
- **Fix navigation submenus:** Make dropdown menu content accessible via keyboard and properly announced by screen readers.
- **Provide context for generic links:** Ensure links like "Read Abstract" and "Download Paper" include the title of the associated article in their accessible name.

882 Pompton Ave. STE A-2
Cedar Grove NJ, 07009

- **Add appropriate labels to all form fields:** Ensure every input field has a clear, programmatically associated label.
- **Properly implement modal dialogs:** Ensure dialogs are properly announced, receive focus when opened, and manage focus appropriately.

Disclaimer

Accessiblü prepared this report as a high-level accessibility evaluation of the BioOne platform. The evaluation utilized industry-standard testing methodologies, including screen reader testing (JAWS 2025), keyboard-only navigation, and manual inspection for select WCAG 2.2 AA success criteria.

This report does not represent a comprehensive WCAG compliance audit and should not be seen as a certification of accessibility compliance. While we have identified significant accessibility concerns and usability barriers, this evaluation was limited in scope and may not encompass all accessibility issues on the platform.

No Legal Liability:

Accessiblü offers this report for informational purposes only. It assumes no legal responsibility for accessibility violations or compliance failures resulting from its use. Organizations seeking formal certification should conduct a comprehensive audit and user testing disabilities.

Limitations of Testing:

This evaluation was conducted at a specific time, and platform updates may have occurred after testing was completed. Additionally, while automated tools and expert reviews were utilized, real-world users with disabilities determine the true measure of accessibility.