

FUTUREFIT YOUR CATALOG

Kathleen Ann Heil

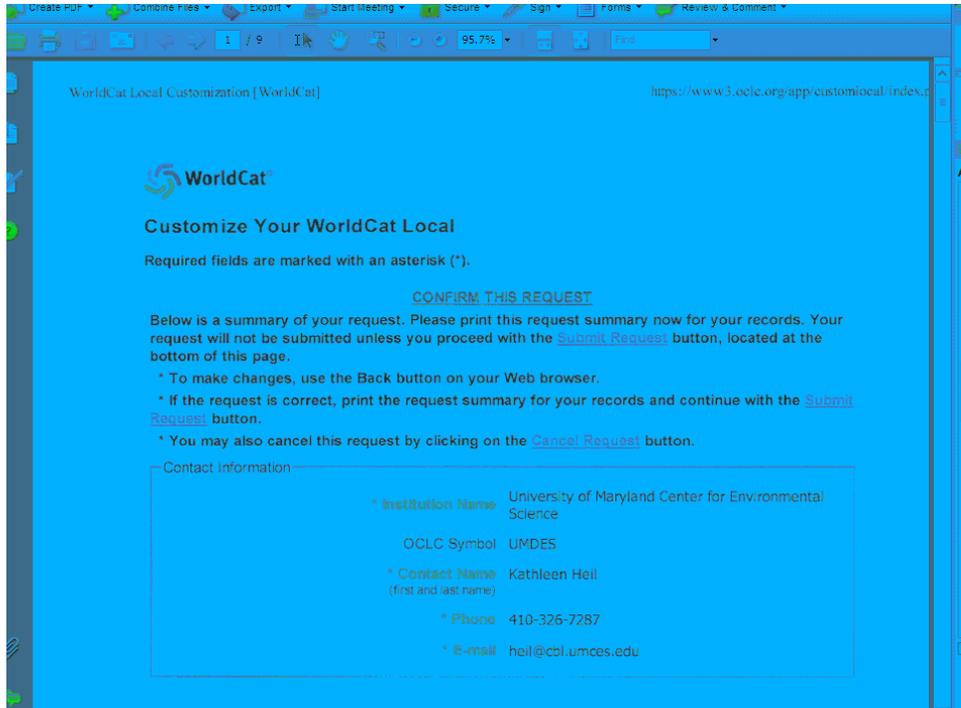
University of Maryland Center for Environmental Science
Chesapeake Biological Laboratory
Solomons, MD 20688

Abstract:

Keywords:

The University of Maryland Center for Environmental Science is the only non-degree granting Campus in the University System of Maryland. Most of the students are enrolled in the Marine and Environmental Science program at University of Maryland College Park. All of our students are M.S. and PhD. Candidates.

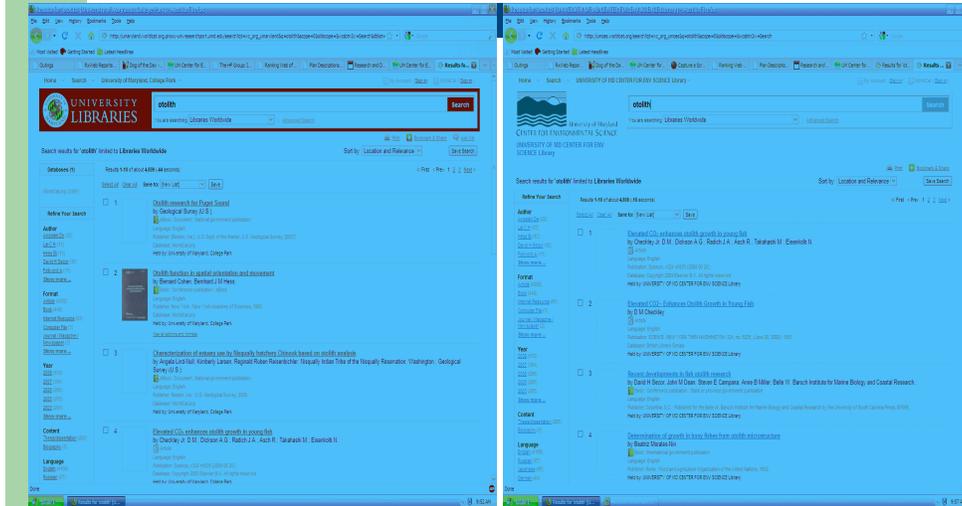
The University System Libraries started looking into next generation interfaces/ discovery tools nearly two years ago. After looking at a few products we decided to start a rolling implementation of World Cat Local. The campus libraries that have internal information technology divisions or staffing were the first to implement. This was a big bonus for the smaller libraries, because the larger libraries provided excellent documentation on their choices and why they implemented what they did and did the initial testing for implementation. We were also fortunate that the Information Technology Division that supports our Library Information Management System provided OCLC with basic set-up information for each campus. OCLC set-up our provisional site and notified us of our specific site address and the information we needed to make changes in our implementation. The “early implementers” especially UMCP distributed to the rest of us a 10 page cheat sheet document on what choices they made and why they chose what they did.



This is a copy of our initial screen.

World Cat Local (WCL) allows you to choose 3 catalog level options you want available to your patrons and in what order. Some Campuses have chosen for their Campus to initially show in the search box with the drop down options to be all USMAI (University System of Maryland and Affiliated Institutions) and World Cat. At this point WCL searches the catalog of your choice as well as OCLC First Search hosted databases such as: PapersFirst, Medline, Dissertation Abstracts Online, etc. then linking using your open link resolver so that articles can be pulled up by the patron without exiting the system. WCL will soon be adding additional searching in EBSCO databases, and ProQuest databases.

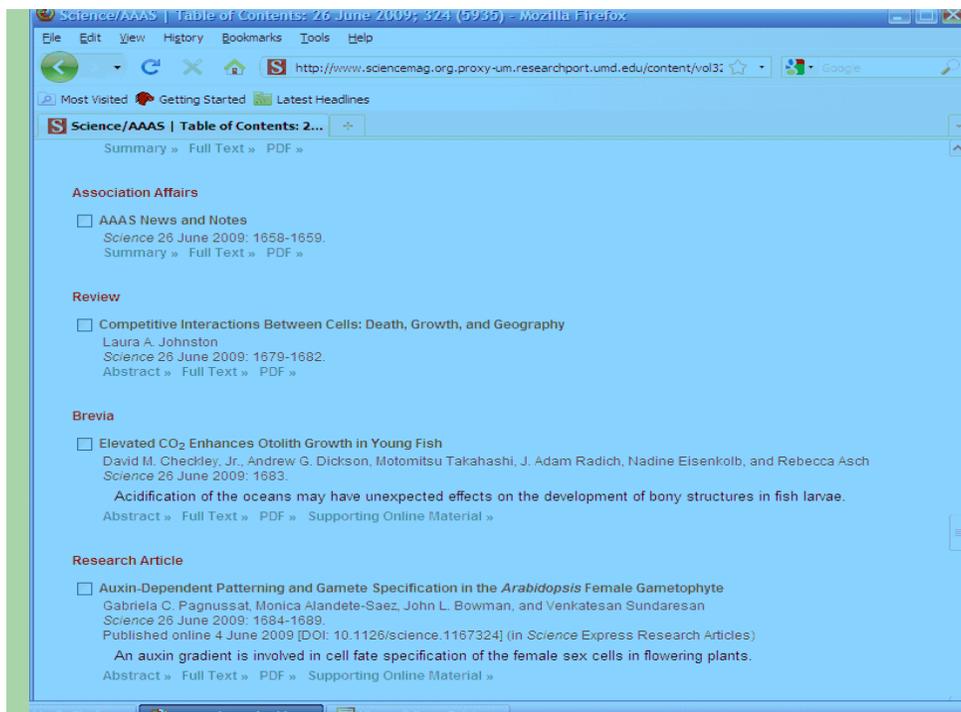
Comparison of two sites College Park UMCS



This is a snap shot comparing results from searching WCL through UMCS site and UMCP. The overall results are the same, but the ordering is different, showing how it ranks items from locally available to needing to do Interlibrary Loans.

The screenshot shows a library website interface. At the top, there is a navigation bar with 'Home' and 'Search' links, and the text 'UNIVERSITY OF MD CENTER FOR ENV SCIENCE Library'. On the right side of the top bar, there are links for 'My Account', 'Log in', 'WorldCat', and 'Log in'. Below the navigation bar is a search bar with the text 'You are searching Libraries Worldwide' and a 'Search' button. The main content area features the article title 'Elevated CO2 enhances otolith growth in young fish'. Below the title, there is a list of authors: 'Checkley, Jr., D.M.; Dickson, A.G.; Radich, J.A.; Asch, R.; Takahashi, M.; All authors'. To the right of the authors, there are links for 'More like this' and 'Similar Items'. Below the authors, there is a 'Borrow or obtain a copy' section with a message: 'We were unable to get availability information for this item. Please check at the circulation desk for assistance.' Below this message, there is a 'Get it online' section with a 'Find It' button. Below the 'Get it online' section, there is a 'WorldCat' section with a 'Find it in libraries globally' button and a 'Request Item through Interlibrary Loan' button. At the bottom of the page, there is a Windows taskbar with a 'start' button and several open windows.

Clicking on the author information in the screen above provides link out to AAAS Science, where it is then necessary to scroll down to the article to retrieve the desired article.



These are screen shots that demonstrate the linking out through link resolver to article that came up in the results from a search.

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Elevated CO₂ Enhances Otolith Growth in Young Fish

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A large fraction (0.3 to 0.5) of the carbon dioxide (CO₂) added to the atmosphere by human burning of fossil fuels enters the ocean (1). This causes ocean acidification by increasing the concentrations of oceanic CO₂, bicarbonate (HCO₃⁻) and hydrogen (H⁺) ions and decreasing the concentration of carbonate (CO₃²⁻) ion and hence the saturation state of calcium carbonate (Ω) (1). Addition of CO₂ to the atmosphere and ocean may thus influence the rates of formation and dissolution of aragonite and calcite, biominerals that are critical to diverse marine taxa. Although some recent studies have shown that elevated CO₂ enhances structural calcification in coccolithophores and invertebrates, most studies have shown a slowing of structural calcification (2). Otoliths are bony structures used by fish to sense orientation and acceleration and consist of aragonite-protein bilayers, which document fish age and growth. We hypothesized that otoliths in eggs and larvae reared

and 4 used 993 μatm of CO₂, an atmospheric concentration ~2.5 times the present concentration that may occur by 2100 (4). Contrary to expectations, the otoliths of fish grown in seawater with high CO₂ and hence lower pH and Ω_{aragonite} were significantly larger than those of fish grown under simulations of present-day conditions (Fig. 1D and table S1). For 7- to 8-day-old fish grown under 993 and 2558 μatm of CO₂, the areas of the otoliths were 7 to 9% and 15 to 17% larger, respectively, than those of control fish grown under 380 μatm of CO₂. Assuming otolith density is constant and that volume is proportional to area³ (3), we estimate otolith masses were 10 to 14% and 24 to 26% greater, respectively, for fish under 993 and 2558 μatm of

CO₂. The dry mass of fish did not vary with CO₂ (3), and thus fish of the same size had larger otoliths when grown under elevated CO₂.

Our results are consistent with young fish being able to control the concentration of ions (H⁺ and Ca²⁺), but not the neutral molecule CO₂, in the endolymph surrounding the otolith. Gases in tissues of fish eggs and larvae equilibrate rapidly with seawater by cutaneous exchange (5) but may also be affected by acid-base regulation (6). In the endolymph, with constant pH, elevated CO₂ increases CO₃²⁻ concentration and thus the Ω_{aragonite}, accelerating formation of otolith aragonite. This is a fundamentally different effect of elevated CO₂ on marine biomineralization than those in previous reports on acidification (1, 2).

We do not know whether our results apply to other taxa with aragonite sensory organs, such as squid and mysids (otoliths) or other fish species. Nor do we know whether larger otoliths have a deleterious effect, although we do know that asymmetry between otoliths can be harmful (7).

Our results indicate the need to understand the diverse effects of elevated CO₂ on biomineralization over taxa and developmental stages. The specific effects of elevated CO₂ not simply acidification, should be considered. Calcification and dissolution of calcium carbonate occur sequentially and often at different locations and under different conditions. Whatever the organisms, to predict the effects of elevated CO₂, we need to know the mechanisms of production and dissolution and their relationships to changing seawater chemistry.

References and Notes

1. J. C. Orr et al., *Nature* 437, 681 (2005).
2. S. C. Doney et al., *Annu. Rev. Mar. Sci.* 1, 169 (2009).

Figure 1 shows four panels (A, B, C, D) illustrating otoliths. Panels A, B, and C are photographs of otoliths from fish grown under 380, 993, and 2558 μatm of CO₂, respectively. Panel D is a schematic diagram of an otolith showing its internal structure. Scale bars are provided for each panel.

OCLC did work with us to get our rather unique system-wide hold/recall system to work within WCL, which was a major requirement for our implementation. After having this service available for nearly twenty years, we all strongly felt that whatever federated searching tool we implemented, this feature had to be functional.

So far about half of the USMAI campuses have implemented WCL, either as an option or as the only access point. Overall reaction has been positive.

I have loaded a copy of the full PowerPoint presentation on the Aquatic Commons - <http://aquacomm.fcla.edu/2838>.