

## Reflective Essay

Every so often a friend or a classmate will tell me that they've never checked a book out from Shields, never used its online databases, never read a book on reserve. This makes me chuckle a bit as I remember that I used to stand exactly in their shoes. Not long ago, the library was simply a space: a space to study. Its hard, wooden chairs curbed procrastination and its hushed sounds lulled me into a steady pace of progress. The long rows of books provided an agreeable set of decorative scenery.

The transition, for me, of the UC Davis library from a looming study space to a dynamic, resource-filled physical and virtual space occurred last spring in the University's Writing Program's *Writing in the Disciplines: Biological Sciences* class. I emerged from that class, which met in the underbelly of the library itself, at the end of the quarter with a research paper in hand and a budding relationship with the library.

The class's primary assignment, although broad, was quite clear: write a scientific review on a topic of choice. It was my task to capture a fleeting moment in the sciences, to take a snapshot, of sorts, of current research. This would involve pulling information from vast and perhaps disconnected sources to weave a cohesive synthesis of the current state of affairs of a scientific topic. Doing so would create an assessment that identified the trends as well as gaps in the field. Such a task seemed arduous. Could it really be done? Could a topic within the sciences, a field so expansive and in constant motion, be summarized at a given instant?

The process, from start to finish, that culminated in my review paper was lengthy, rigorous, and different from any other process I had attempted while writing previous research papers. With an expert professor within reach, guidance from the library's biological research specialist, and a seemingly endless wealth of resources provided by the UC Davis library, my research and writing process transformed from a haphazard scramble to a more thorough and strategic perusal of information.

Beginning the project, I knew little more than that I wanted to research cetaceans. I sat before the library computers, cetaceans on my mind and my cursor blinking in the search box of *Biosis Previews*. I chose the database in order to keep the types of resources I could reach with my preliminary searches broad. I chose search terms that would ensure this as well. Through open-ended searches governed by nothing but free association, I learned of current topics. Finally, I choose to narrow my research on the use of the killer whale's genetic data to make biogeographic inference and to assess the relatedness of different killer whale populations. At this point, the heavy-duty work began.

It became evident that the type of information I would need fell into three categories. First, and central to my paper, I would need resources that detailed genetic work undertaken on killer whales. The analysis of these resources would become the bulk of my review paper. Second, I would have to find resources that provided historical background. I wanted to get a strong sense of how genetic studies built on, or related back to, earlier work in the field. Ecological studies and descriptive studies would be the essential in this regard. Third, it would be necessary to compile resources that filled in the gaps in my knowledge and that related to my chosen topic only in a general sense. These resources would address questions like: how do mitochondrial DNA analyses differ from nuclear DNA analyses? What is the marine speciation paradox? How did the paleoclimate affect ocean connectivity? This category of resources, though seemingly tangential, would be critical in developing my ability to evaluate the resources of the first two categories.

I knew that in order to acquire all three types of resources, I couldn't rely on a single search method. I would have to tailor my strategies depending on the type of resource I was looking for.

To acquire resources regarding the genetics and phylogenetics of the killer whale, I relied heavily on the library's online databases. The two most important databases I utilized were *Biosis Previews* and *Zoological Records*. Thanks to the help of Ruth Gustafson, the librarian subject specialist for biology, and thanks to my professor Dr. Brenda Rinard, who instructed the class on proper search techniques, my searches were generally fruitful. If I hit an obstacle I could confidently navigate around it.

The keywords I employed to find resources within this first category were, among others, "killer whale," "ecotype," "speci\*," "gene\*," "evolut\*," "population\*," "clan," "biogeograph\*" "bottleneck," "founder," and "stochastic." When possible, I included "cetaceans" as a taxa note. In order to capture the most relevant and useful snapshot of science's understanding of the killer whale, I chose to limit the genetic studies I would consider to only genetic studies published in the past fifteen years. I figured that by doing this, I could consider the most recent killer whale genetic research and the most recent phylogenetic reconstructions without neglecting foundational yet slightly more aged genetic studies. As my research progressed, I identified several prominent authors and used their names in database searches as well.

Beyond database searching, using a citation maps proved to be particularly key in gathering resources. A citation map allowed me to view the references of a particular article as well as view how and where the article had itself been used a reference. Using such a method was crucial in finding dissonance within the field. I did not shy away from the differing viewpoints that different researchers promoted. In fact, I sought it out as I believed that including the field's controversies would create a richer review. The citation maps gave me access to the studies that had been directly refuted by a particular article. I felt like a sleuth following a chain of clues, swimming into deeper and deeper waters of research and jumping from one study to the next.

Of course, to find resources that gave a more historical perspective on the topic, resources falling into my second defined category, I had to modify my search methods. When using library databases, I relaxed my time span constraints so that I could access articles that had been published in the last eighty years. I also actively searched the reference sections of comprehensive reviews that have already been published on a similar topic to my chosen topic. These reviews were rich with primary research articles that provided general information upon which the field had been built. Studies that detailed the discovery of different killer whale ecotypes as well as the killer whale's mating and social structures were found in this manner. At one point in this process, I encountered an article that the UC Davis library did not have but that other UC libraries did. Through my desperate attempts to get a hold of this resource, I learned of the Interlibrary Loan service. Though I ultimately did not request the desired article, I now know how to navigate the Interlibrary Loan system and I keep it mind for future use.

Lastly, to find resources that filled in gaps in my knowledge or resources that had important tangential bearing on my more narrowly defined topic, I had to, once again, shift my search tactics. Because I couldn't anticipate what these resources were going concern at the start of my research, I first began collecting and perusing the resources of the first two categories. As I did this, I kept an evolving list of topics that I thought had promising potential or that I found myself lacking important knowledge on. I took this list back to the library's online databases and

printed resources and then was able to accumulate a useful, albeit at times unrelated, body of knowledge to integrate into my review.

These long hours of research eventually culminated in a review paper. However, it is not the completed review paper that has made a lasting impact in my career as a student. For the most part, the final draft of the review paper is out of touch with my daily life. Instead, it is the research process itself that has changed the way I approach academic matters. I frequent the library daily and now know how to use its online and printed resources for academic and personal inquiries. I feel that I can walk confidently into the library and, more importantly, walk out of the library with questions answered. The skills I learned even helped me to secure an internship in a fire ecology lab. (My duties were primarily to help review literature for a paper the lab was publishing). In my remaining two years as a student of UC Davis, I look forward to continue practicing the library-based research skills I have developed.