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ENVS 183B: Analytical Paper

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Field Guide to Birds of the UC Santa Cruz Arboretum

The UC Santa Cruz Arboretum is a landscape of high floristic biodiversity, hosting rare and endangered plants found around the world. With high floristic biodiversity comes high avian biodiversity, and many of the birds that inhabit the Arboretum thrive in its protected and conserved environment. Last Spring, I pursued an internship with the Native Plant Program at the Arboretum, which focuses on the stewardship of California's natives. Through this interactive ecology internship, I looked at how different bird species interacted with various native and non-native plants within the gardens. A significant takeaway from this project was the notion that proper botanical stewardship allows the surrounding wildlife to flourish. I was fascinated with the amount of birds that rely on the Arboretum as critical habitat so I decided to embark on a journey to create a field guide to birds of the Arboretum.

The Field Guide to Birds of the UC Santa Cruz Arboretum is a natural history based project focusing on birds that are frequently seen in this biodiverse, 135-acre plot of land. The folding, waterproof field guide presents visitors with fifty-eight self-illustrated birds that are commonly seen in the gardens. The Arboretum has been a large component of my success as an undergraduate student and my hope is that the guide will inspire others to identify many unique birds while also learning about the importance of conservation.

Stewardship

Over the course of my undergraduate career, stewardship over land has become increasingly apparent and important. I first learned the term in my environmental justice course

as the notion that humans are intrinsically dependent upon natural systems and therefore have a duty to coexist with and protect surrounding lifeforms. I feel that working at the Arboretum has allowed me to fully grasp the term actively and consciously. Every day when I go to work, there is always something different going on. Some days I work in the gardens and weed, prune, water, or plant various types of native species. Other days, my work consists of participating in the seed bank that the Native Plant Program is involved with. Regardless of what I am working on, I feel that my efforts are working to better the natural systems around me, and that perhaps I could be considered a steward. Through these efforts at the Arboretum, I have begun to understand that many valuable species -- both plants and animals -- are declining in front of my very eyes, and that my efforts could perhaps make a difference in a species' success. To me, whether one is caring for a species of bird or plant, proper stewardship of land is instrumental in maintaining biodiversity of native habitats and fighting our current climate crisis. With proper stewardship and conservation of land comes a variety of birds, and it has been documented that stewarded sites host far more birds than areas without known stewardship, which further demonstrates the importance of spaces such as the Arboretum. Creating a field guide to this stewarded environment will emphasize the importance of continual stewardship, as it will guide visitors into an ecosystem that hosts over one hundred different species of native birds.

The Importance of a Field Guide

It can often be challenging to connect with ecologies that seem hard to fully understand, and I personally have had difficulties in the past as I don't feel myself to be a scientific person, but I have found that small interactions with natural entities around me ignite larger passions. Furthermore, I feel that learning by *doing* and *seeing* is a critical way to learn about the natural world around us. During my freshman year at UC Santa Cruz, I was walking around upper

campus with a pair of binoculars and a field guide to birds that I had acquired not far prior. I started to notice the amount of birds that use the forests and I was eager – and also slightly intimidated – to start identifying birds. That day, I identified my first less commonly seen forest-dwelling bird. It was a Townsend's warbler, and I remember it moving through a well wooded area as I tried to get a good look at it. I strongly feel that identifying this warbler was a spark for the work that followed, and that larger bodies of work can often come down to a single connection. If I hadn't had a field guide on hand that day, I would not have been able to identify the warbler, and though there is beauty to seeing without knowing, it's the knowing that allows us to get involved with the larger ecological work being done to support and conserve a plethora of species. With bird identification, we are able to learn about behaviors, track conservation status, and ultimately develop bodies of research to understand larger ecological and species health. My work with birds of the Arboretum has given me the privilege to connect with and love what I'm studying, and it is this connection that makes conservation and stewardship a natural component of my life. As researching birds at the Arboretum has been a turning point for me as a student, it's my hope that a field guide acts as a tool for inspiration to get people involved with birding and hopefully larger conservation efforts. Lastly, the birds in the Arboretum represent much of the Pacific Coast, so when one is comfortable identifying birds featured on the guide, they will feel comfortable identifying fifty eight birds along the Pacific Northwest.

Timeline: Construction of a Field Guide

During Fall quarter, my work consisted primarily of birding, research, and lots of drawing. I birded for a few hours per week at different spots within the Arboretum, familiarizing myself with all of the birds and which garden they prefer to inhabit. I also made and edited an extensive list of all the birds that utilize the Arboretum in some way or another, narrowing down

which birds would be included in the guide. For this I relied on both my own sightings as well as eBird, which is a collaborative resource that feeds on bird sightings. I researched what text typically goes into field guides, as well as how to go about creating the folding, waterproof field guide. I met with various faculty both within the Environmental Studies department and the Art department to set in motion the construction of the guide. Most importantly, I drew all of the birds that would be included in the guide. As a recipient of the Irwin Grant through the art department, I was able to purchase a really incredible set of colored pencils – Caran d’Ache, Pablo set of 80 specifically – which really allowed me to get proper color accuracy with its wide range of tones. Each bird took me two to five hours to draw, so this comprised most of the work for the first quarter of the project. With the drawings out of the way, I was able to focus all of my efforts on the design and creation of the field guide during Winter quarter for the second half of the internship.

During Winter quarter, I finalized the text component to the guide and designed its entirety in Photoshop, while also applying for grants through the Norris Center and printing proofs/test copies in the campus cellar. I began by scanning all of the physical drawings, and then digitizing them into vectors, which helped me move them freely in Photoshop around the text blocks. In deciding which text would accompany each bird, I narrowed it down to some key components that I find useful when identifying a bird. The information one will see when looking at the field guide is the birds’ common name, scientific name, length, wingspan, local habitat, field ID, migratory status, and where one might encounter each bird within the Arboretum. After finalizing the text and organizing all of the moving parts in Photoshop, I was left with a very rough draft of the guide, which I sent to everyone affiliated with my project for some feedback. While receiving critical feedback from my colleagues and peers, I applied to a

few different grants through the Norris Center to facilitate the physical manifestation of the guide. Around week 7, after incorporating the feedback I received, I began to print drafts of the guide in the campus cellar – the digital imaging lab in the Art department. I printed thirty guides that became the basis for how I wanted the five-fold, laminated guide to appear when for sale. Lastly, around week 9, I was awarded both the art-science residency as well as the student award through Norris Center to fund 250 copies of the guide to be sold at the Arboretum's very own gift shop.

Another achievement during Winter quarter was getting to speak at the Norris Center Natural History Symposium, which was held on March 6th at the Arboretum. At the talk, I spoke about my project to an audience of over fifty people. Not only was this the first time I had spoken in front of this number of people, but it really brought to life a project that has felt somewhat hidden away over the course of the last few months.

Problems Encountered

The biggest challenge I encountered during the span of the internship was in the printing process. My original goal was to create a folding, laminated guide in the campus cellar; however, this process proved to be immensely difficult to do on my own, and each copy I made took about twenty minutes to complete, from printing to laminating. Knowing that I would need help from a professional printing service, I began to contact various companies to receive quotes, but started to realize that what I was asking for either wasn't doable, or would be very costly. As of now, I still don't know what direction I will take, but have started to realize that the spread of knowledge is the most important component of a field guide, and that I might need to lower my expectations a little.

Future Plans

The making of this field guide, from drawing the birds to getting in touch with more birders, has opened up a lot of opportunities and connections for the future. I never thought I would be in the market of making field guides after I graduate, but I have recently gotten an inquiry from the “Bird School Project” – a local organization that connects younger students to birds in different environments – about the making of a field guide that could be an accessible resource for their program. I feel that this connection is exemplary of the many possibilities that are out there, and I am very grateful that the making of this guide has exposed me to a wonderful community of individuals that share a collective passion for birding and conservation in general. Furthermore, graduating with a double major in environmental studies and fine art, and with extensive experience with photography, drawing, and printmaking, I feel inclined to continue pursuing work that intertwines my two passions. I have been able to orient my senior internship around both drawing and bird conservation, and hope that my career will incorporate both of these things in unique ways. Whether I continue to make field guides in the future for more environments, or continue to be a steward of land, I don’t plan to lose sight of either of these important parts of myself.

Conclusion

The Field Guide to Birds of the UCSC Arboretum allows those walking through the gardens to identify and learn about fifty-eight birds that are common to the space and benefit from its collection of diverse plants. The guide is not only a valuable educational tool, but emphasizes the importance of continual stewardship and conservation so that both the biodiversity of plants and animals remains intact. The process of creating a field guide consisted of various components, from weekly birding and lots of illustration, to organizing text with

images in Photoshop, and ultimately figuring out the best way to print and disperse the guide. Through the course of the internship, I also learned a lot about my own perseverance and strengths while taking on a solo project that was out of my comfort zone. I have also made so many great connections with those involved in different areas of expertise, such as gardeners, printmakers, and illustrators. With the release of the guide, I hope to spark a passion in others to learn about birds and conservation and I feel that the UC Santa Cruz Arboretum is just the right place for new discoveries, passions, and projects.