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YEI Tech Bootcamp Final Project: Visualizing the Soundscape

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**What is your vision for this project?**

As I described in my application for the YEI Tech Bootcamp, I am interested in the public understanding of science and technology, and in conveying environmental research to broad audiences. One project of particular interest is an online, interactive map to explain the work of soundscape ecologist Bernie Krause. Krause has spent his life traveling the world, recording some of the world’s most endangered ecosystems. His recordings show the planet’s diversity and that, while remote sensing or ground photographs may not show change in an ecosystem, a recording from [before](file:///C:\Users\Joseph%20Calamia\Dropbox\756%20GIS\FinalProject\Calamia%20CA%20audio%20data\LincolnMeadowBefore_Aft\LiMe88.mp3) and [after](file:///C:\Users\Joseph%20Calamia\Dropbox\756%20GIS\FinalProject\Calamia%20CA%20audio%20data\LincolnMeadowBefore_Aft\LiMe89+.mp3) can tell a different story. His recordings sometimes make painfully clear the planet’s reduction in biodiversity. For more information on the Wild Sanctuary project, please follow the links at the bottom of my project landing page to go to the Sanctuary’s [site](http://www.wildsanctuary.com/) as well as Krause’s recent [Global TED talk](http://www.ted.com/talks/bernie_krause_the_voice_of_the_natural_world.html).

This summer I would like to take Krause’s over 4,500 hours of wild soundscape recordings, which have associated metadata including GPS coordinates, and geo-locate them. I also would create a user interface to allow site visitors to “listen in” on some of the locations of Krause’s recordings. The site I have created currently only has four links, demarcating different species, but this is just the start. I could imagine a more detailed interface, allowing users to specify certain regions and species. The last link, for “spectral diversity,” would take users to a map of the globe, showing diversity as measured by spectral density—perhaps comparing to other indices for habitat diversity, such as species counts.

**Why did you personally choose to create it?**

I started envisioning this concept after reading Bernie Krause’s book *The Great Animal Orchestra*. Fascinated by Krause’s work, I contacted him while in Professor Dana Tomlin’s GIS (Geographic Information Systems) vector class last semester. For my final project in that class, I took Krause’s recordings and placed them on a map of California, comparing diversity as measured by spectral density in Krause’s recordings with species counts as provided by habitat maps of amphibians and birds from the California Fish and Wildlife Department. The menu images are taken from that project. The “trailer” link at the bottom of my page will take you to a video that I created--it highlights locations on the map and plays a selection of Krause’s recordings from that area. The map has a layer that I created using GIS, which shows areas of high diversity (as peaks) and low diversity (as valleys), allowing viewers a way to visualize the diversity that they are hearing.

I would like to think bigger. I want to incorporate all of Krause’s data, going from 21 locations in California to placing 15,000 identified life forms throughout the world. I would also like to create an interactive system so users can choose on which locations they will eavesdrop. This has the benefits of raising awareness of endangered species and habitats, creating a platform for soundscape ecologists to share data, and might even be used for amateur soundscape explorers to add to the collection or analyze data. It might even be a project to pitch to the [Zooniverse](https://www.zooniverse.org/projects) collection. How great would it be for users to record and upload to a global site using their smartphones?

This semester I am taking another course on raster GIS as well as remote sensing course. The opportunity to amplify these skills with serious programming learned at the YEI Tech Bootcamp could help me to accomplish this goal.