Jonah Senzel Drawing, Moving, Seeing Code

Insects: A Musical Landscape

live at https://github.com/jsenzel1/insects

This project is a musical landscape created by the interaction between 2 different species of artificial musical life. The system uses emergent properties of music, color, and behavior to simulate the interaction between two codependent species.

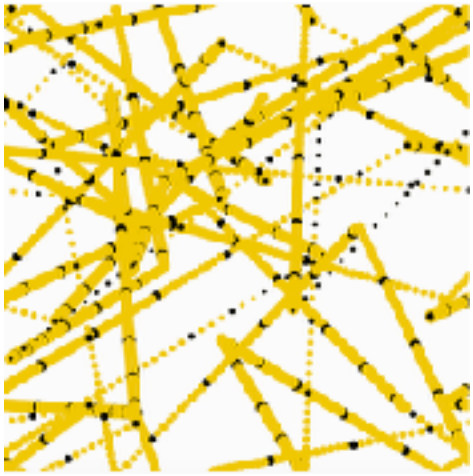
-The small “fireflies” play piano notes, jumping incrementally (the timing of the repeated piano notes reflects their relative speed while jumping). Fireflies spawn in a variety of randomized colors. Upon collision, fireflies will mate and produce an offspring, with a color that is similar to one of the mates. Fireflies die as their population grows to a cap, reflecting the sinusoidal shape of actual overpopulation graphs. This life cycle and mating system will generally result in the emergence of one dominant color group or “sub-species”.

Note: you can also press any key to spawn new fireflies

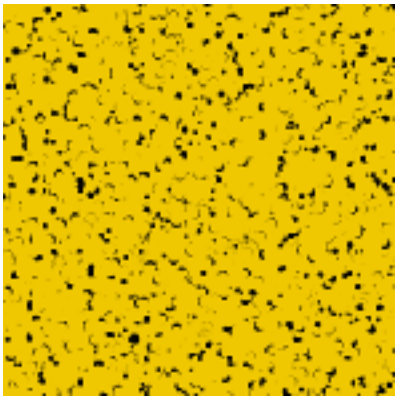
-The larger square “bugs” lie dormant until interacted with but the fireflies. Whenever a firefly inhabits the same space as a bug, the bug becomes increasingly saturated and their continuous note grows in volume. Reproduction occurs once a peak volume and saturation is reached, at which point a new bug is produced from an existing one. Depending on the speed and drag of newly created bugs, clumps of bugs can form that create rapid population growth. Like the fireflies, bug death occurs when their population reaches a cap, starting with the oldest member.

This project created a fair amount of challenges and surprises. One big technical challenge I faced was trying to work with web audio, which I still have yet to get to a pint where crackling from low buffer speed is at a manageable level. The main design challenge I ran into was balancing the system so that enough events were happening, but not too many. I had to work to tweak the collision system since for a long time newly spawned fireflies would themselves spawn more fireflies, creating a recursive loop that crashed p5. The next iteration was better, but still had hundreds of fireflies spawning at each collision. After that I got the spawning down but it was too slow so you might never see two fireflies reproduce. The current rate isn’t perfect but if you watch for a minute or two you’ll probably see reproduction. Similar balancing was a challenges with the bug class as well.

A history in pictures

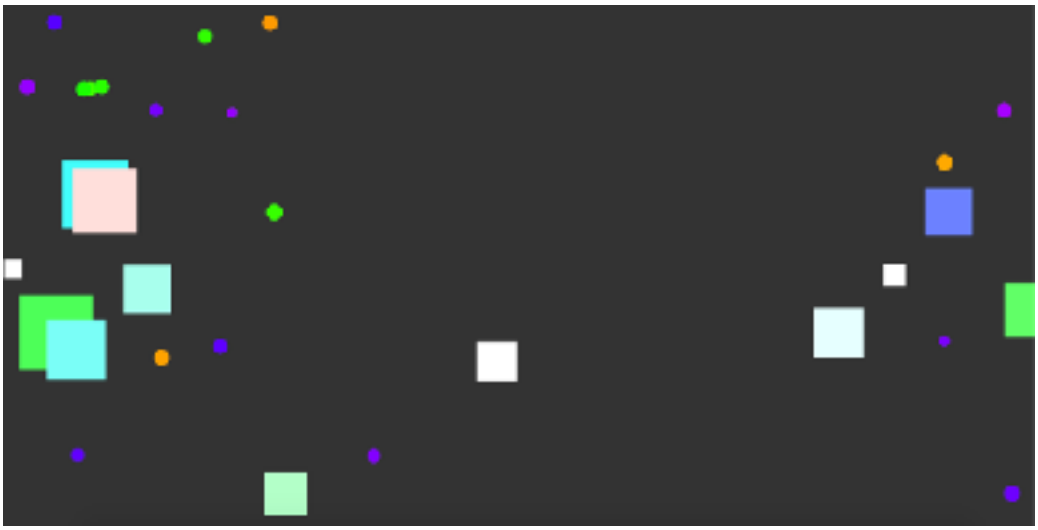


An early design of the firefly with persistent trails. at this point the audio was a generated sine wave

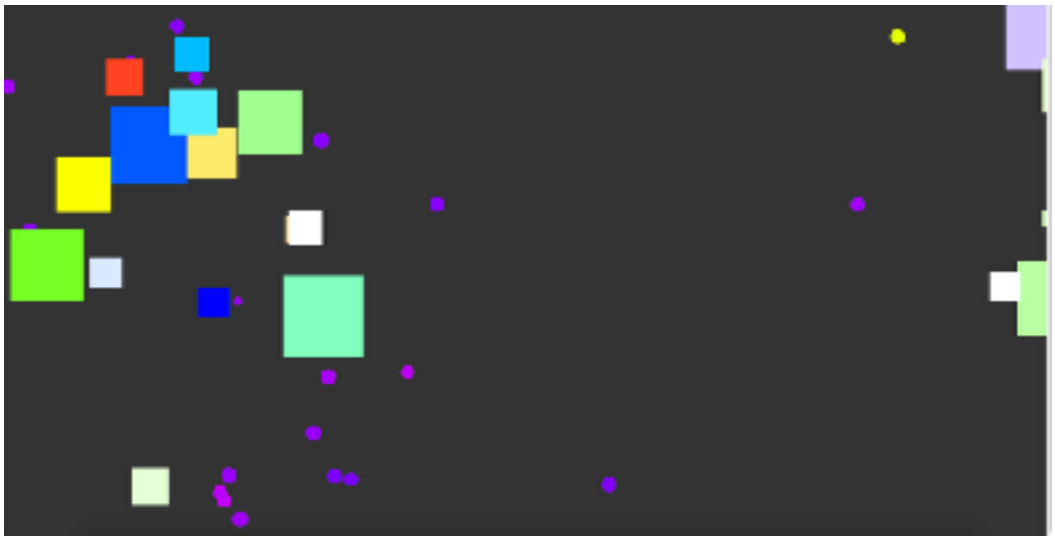


(this was the end result of persistent trails and why I decided to remove that feature)

The start of multiple fireflies - also switched over to recorded audio at this point



completed ecosystem



The same ecosystem after several reproduction cycles - purple emerging as the dominant species