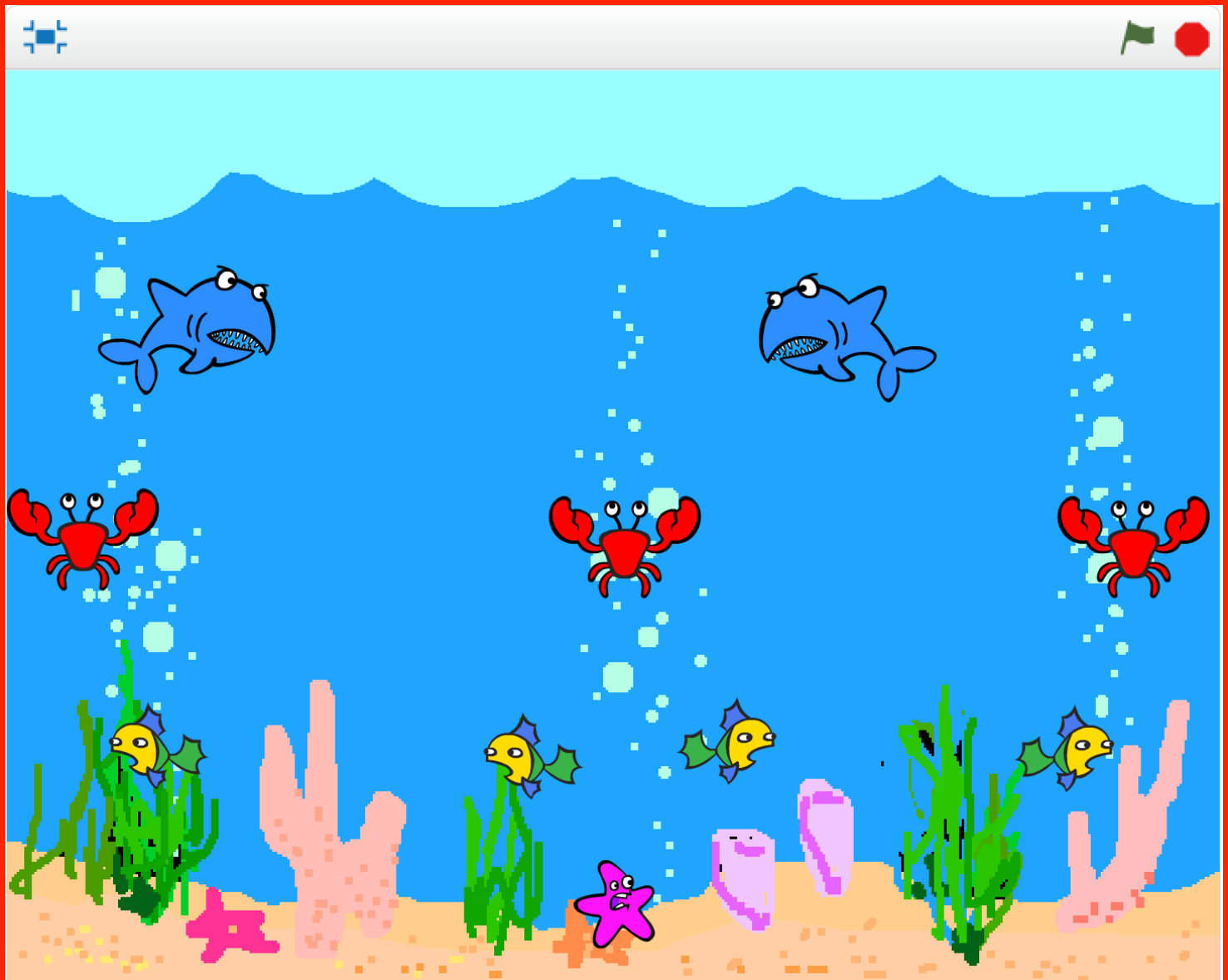


Project in Scratch Studio

<https://scratch.mit.edu/projects/88354162/>

Swim Shark Reef



Navigate a scared starfish through an ocean of perilous predators.

Code It

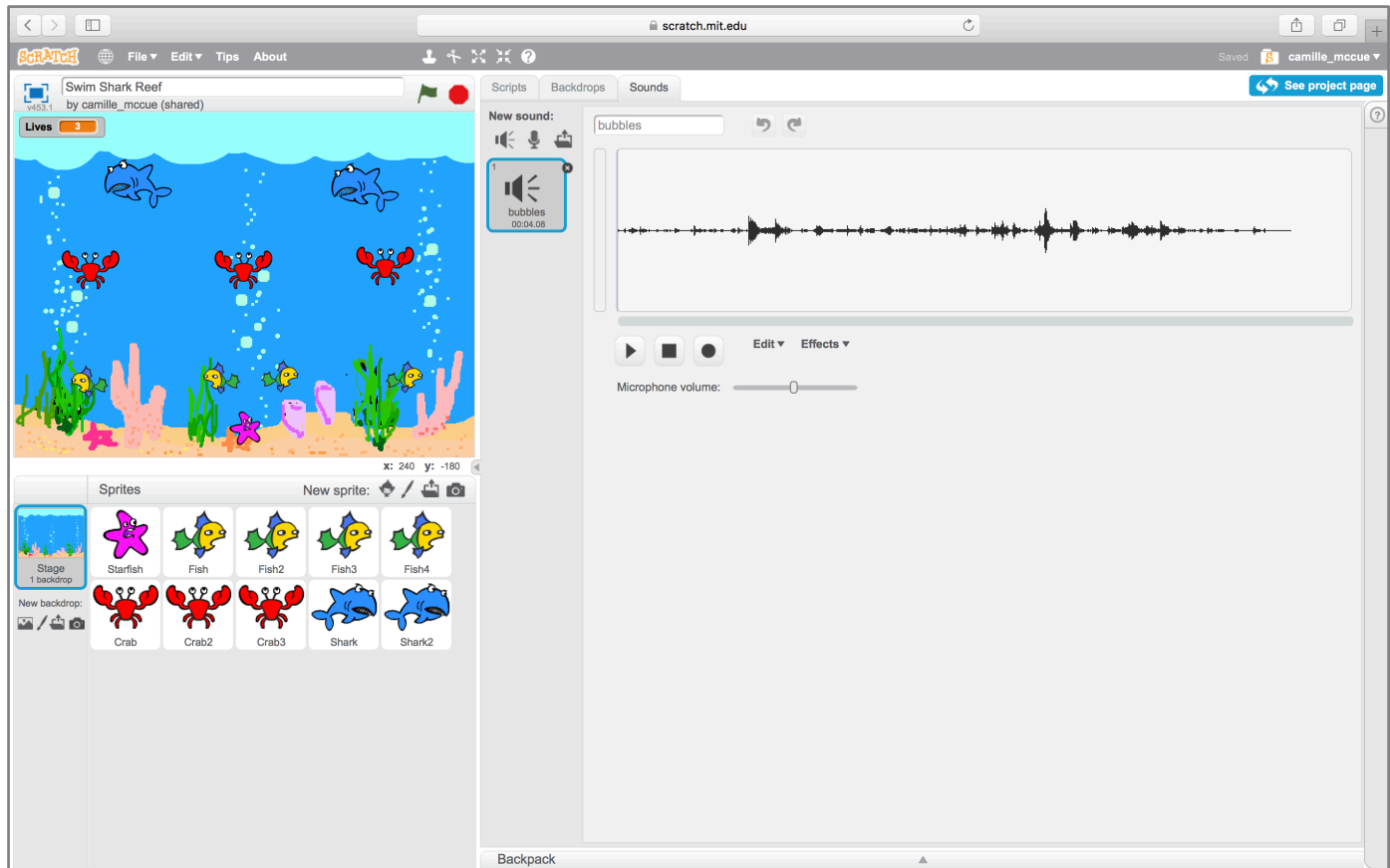
Add an ocean background, painting a target color at the top. Add a **Lives** variable (to the background) for the starfish, set to zero at game start. In a forever loop, add a bubbles sound; in a separate forever loop, add an if-then conditional to check whether **Lives = 0**; if it does, end the game. Add a starfish sprite and write scripts to control its motion with the up, right, down, and left arrow keys. Add lanes of predators that swim side-to-side, bouncing off the edges; add an if-then conditional to each predator to determine if it touches the starfish (the two have *coordinate convergence*). – if it does, broadcast a **goteaten** message. If the starfish receives **goteaten**, decrement **Lives** and reset the starfish position to game start. Add an if-then touching color conditional to the starfish – if it touches the target color, the player wins.

Play It

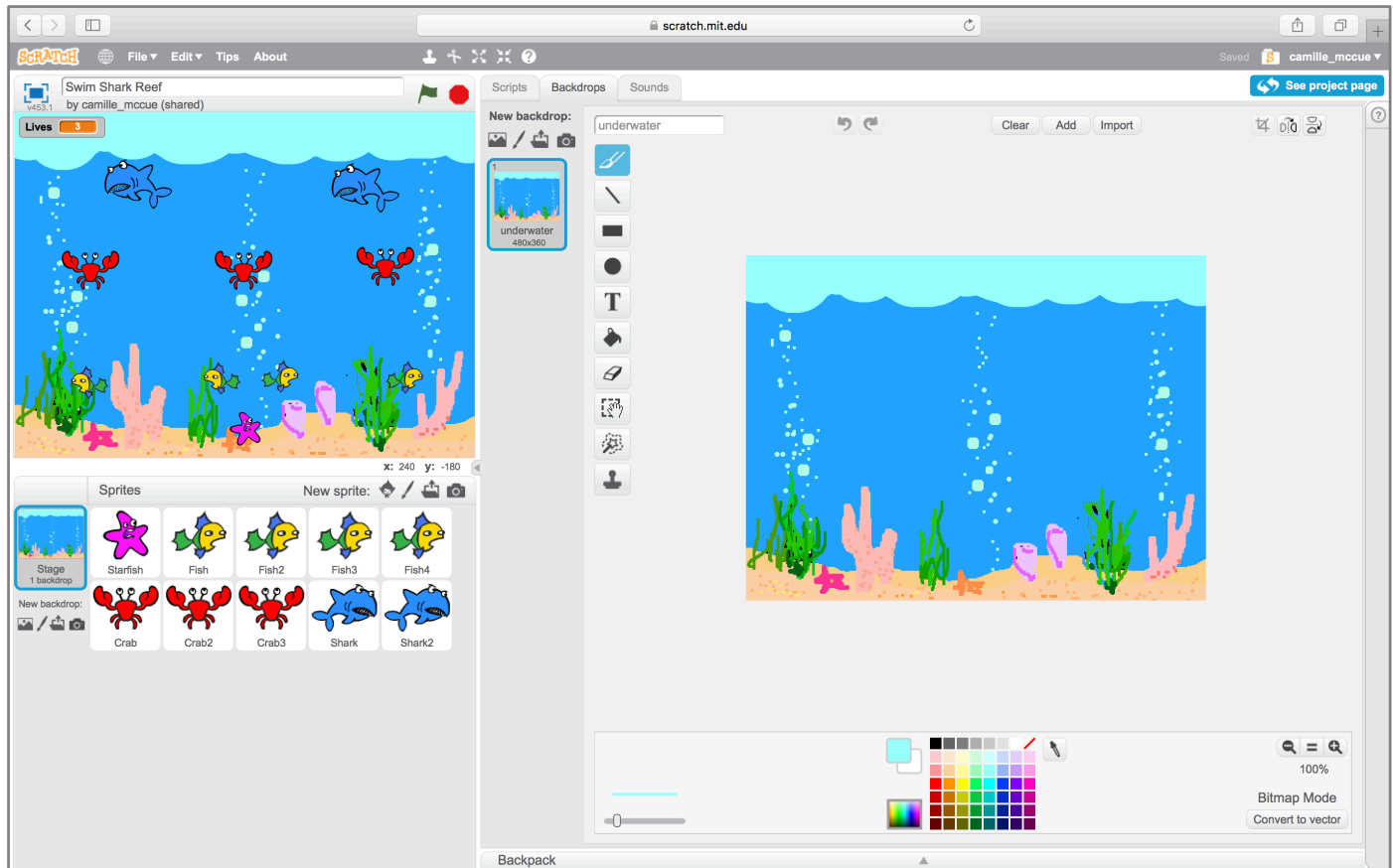
Start the action by clicking the green flag.

Swim Shark Reef

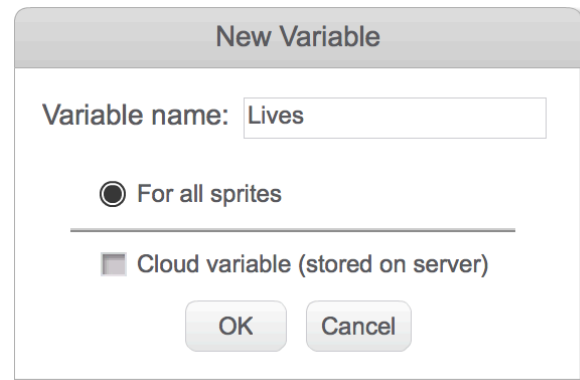
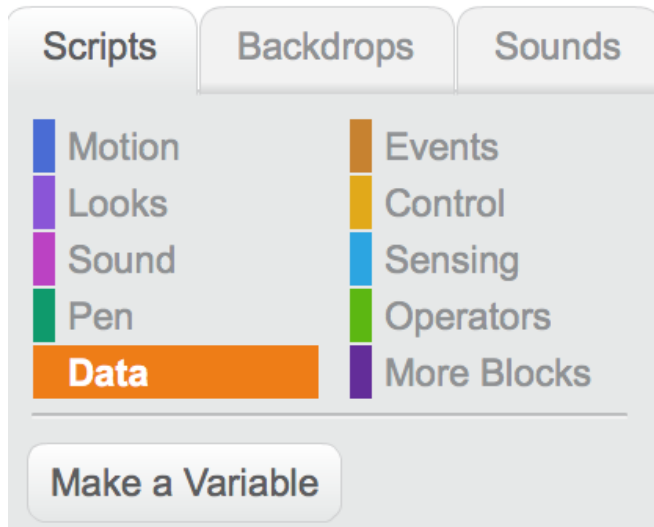
Stage – Sounds



Stage – Backdrop



Stage-Variable



The variable Lives shows how many starfish lives remain

Stage – Scripts

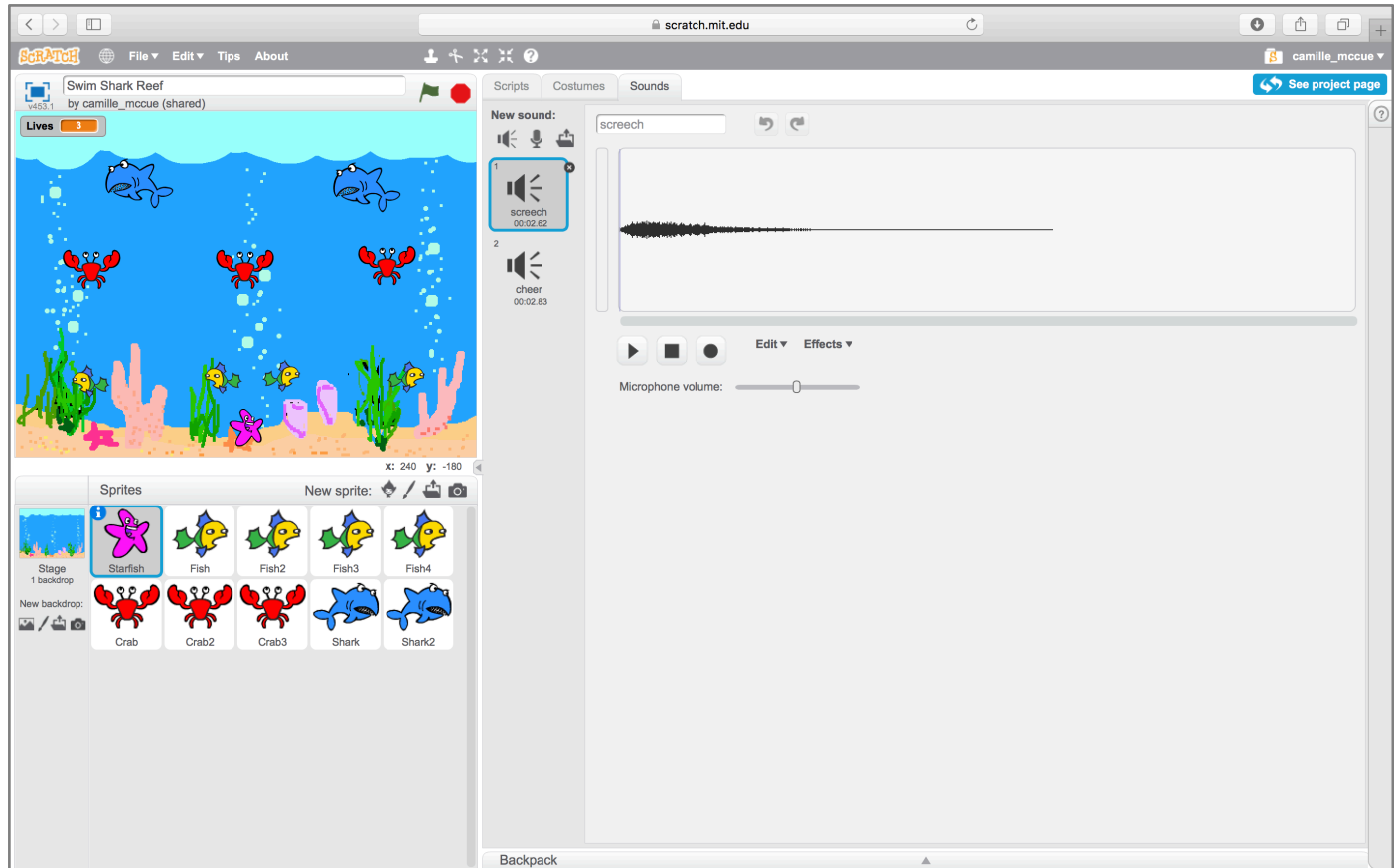
The screenshot displays the Scratch IDE interface for a project titled "Swim Shark Reef" by camille_mccue. The stage shows an underwater scene with a "Lives" counter set to 3. The script editor on the right contains two scripts:

```
when green flag clicked
  wait 1 secs
  set Lives to 3
  forever loop
    play sound bubbles until done

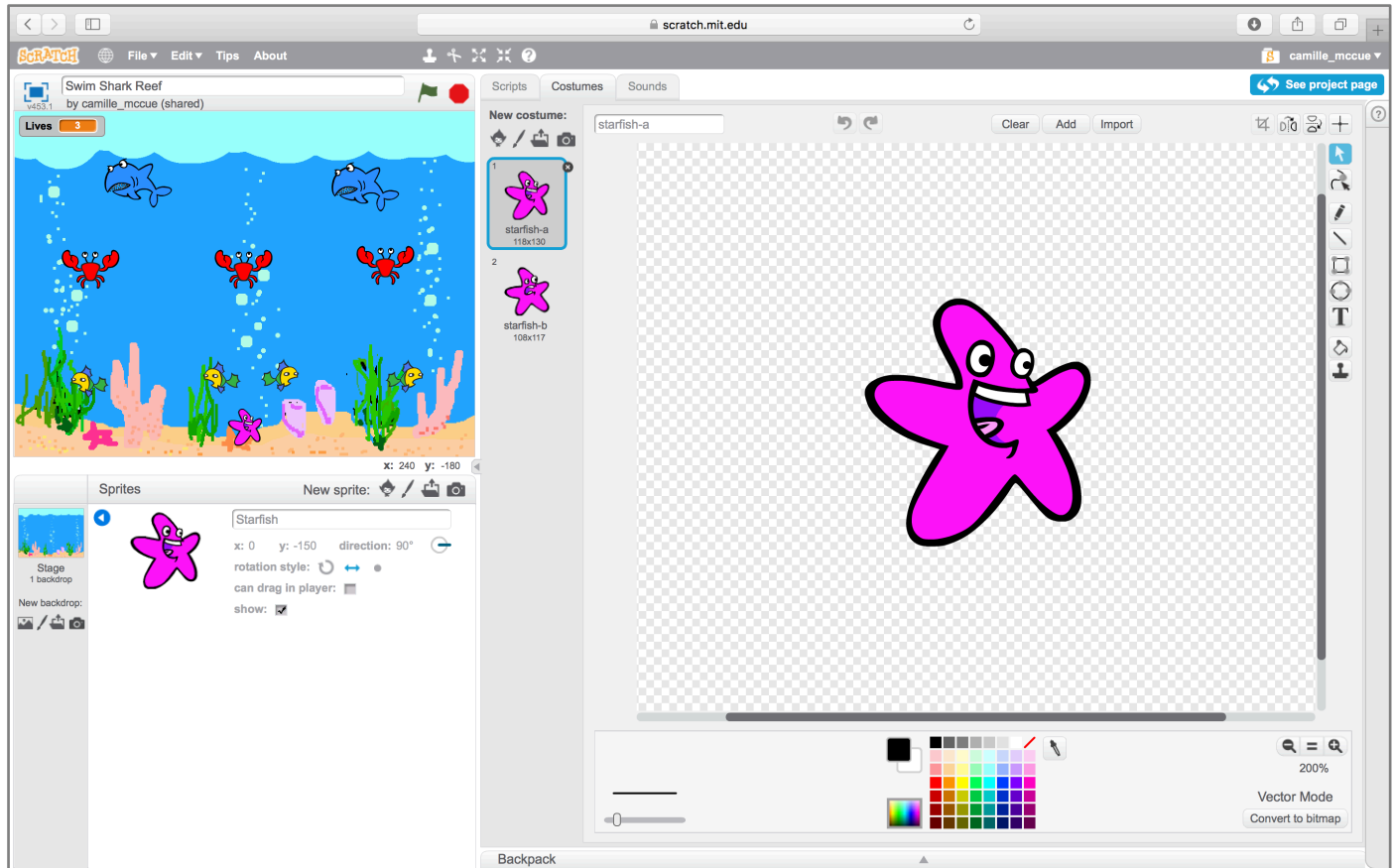
when green flag clicked
  forever loop
    if Lives = 0 then
      stop all
```

The interface includes a menu bar (File, Edit, Tips, About), a toolbar, and a sidebar with categories: Motion, Looks, Sound, Pen, Data, Events, Control, Sensing, Operators, and More Blocks. The sprite area shows various assets like Starfish, Fish, Crab, and Shark. The script editor also features a "Backpack" section at the bottom.

Starfish – Sounds



Starfish – Costumes



Starfish – Scripts

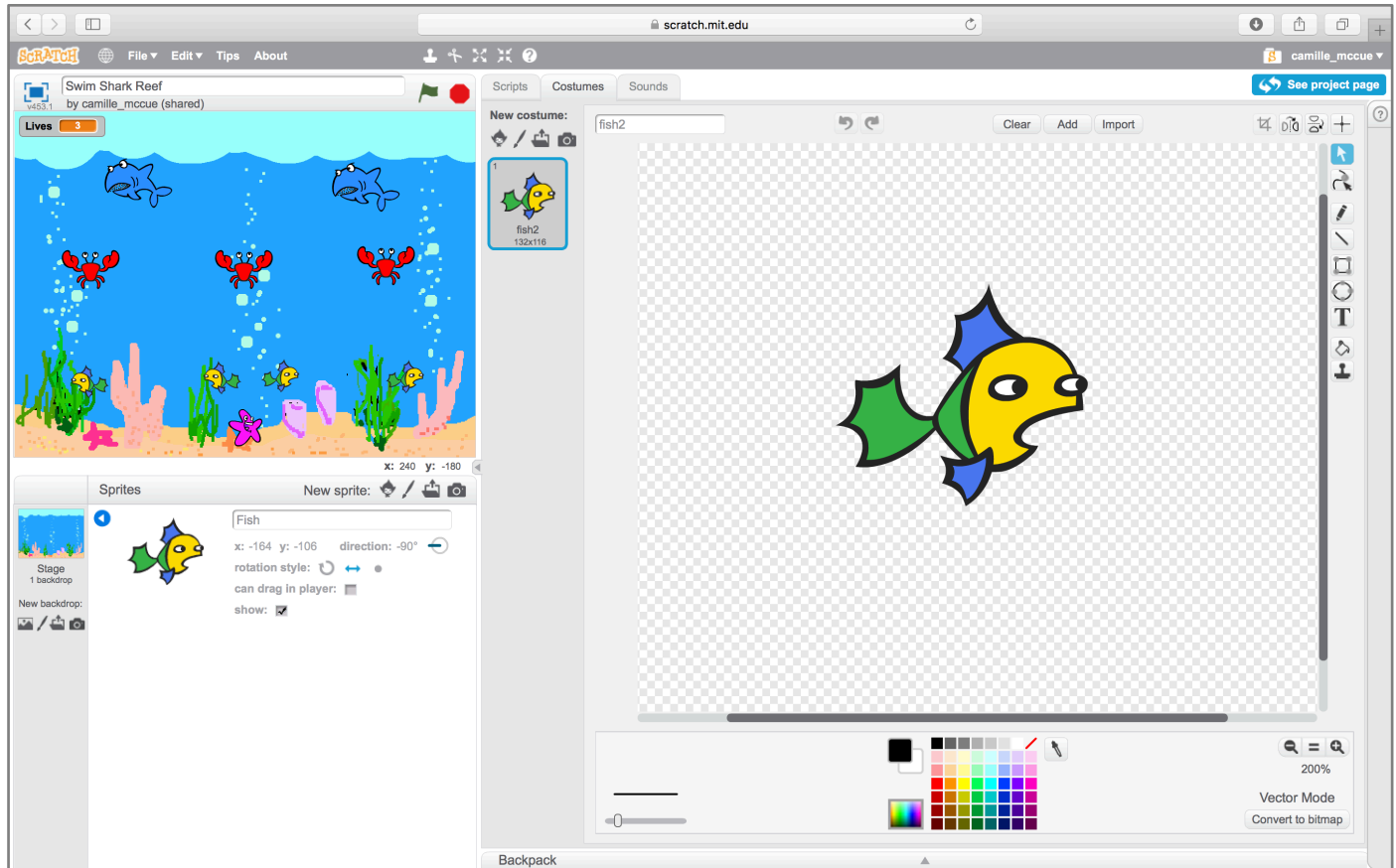
The screenshot shows the Scratch IDE interface for a project titled "Swim Shark Reef". The "Scripts" tab is selected, displaying the following code for the starfish sprite:

- when green flag clicked
- go to x: 0 y: -150
- forever loop:
 - if touching color? then
 - play sound cheer
 - think SAFE AT LAST!! for 3 secs
 - stop all
- when up arrow key pressed
 - change y by 5
- when left arrow key pressed
 - change x by -5
- when right arrow key pressed
 - change x by 5
- when down arrow key pressed
 - change y by -5
- when I receive goteaten
 - change Lives by -1
 - go to x: 0 y: -150
 - play sound screech until done

The "Motion" block palette on the left includes various movement and rotation blocks. The "Scripts" block palette on the right includes event, control, and sensing blocks. The "Sprites" area at the bottom shows the starfish sprite selected, along with other sprites like Fish, Crab, and Shark.

Adding a **next costume** command into the motion commands animates the starfish

Fish – Costumes



Fish – Scripts

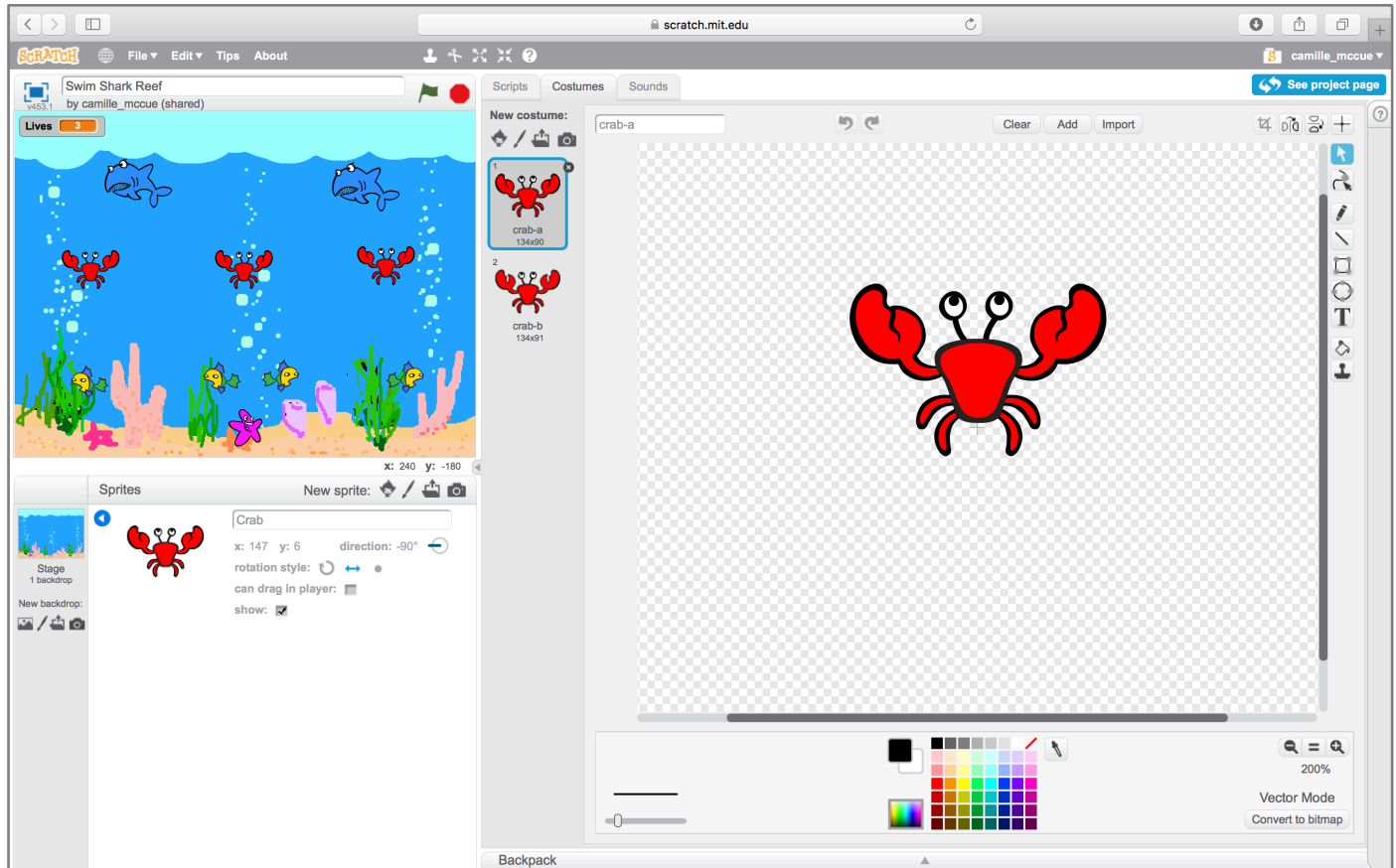
The screenshot displays the Scratch IDE interface for a project titled "Swim Shark Reef" by camille_mccue. The main stage shows an underwater scene with a shark, crabs, starfish, and various fish. The "Scripts" panel for the selected "Fish" sprite contains the following code:

- when green flag clicked
- forever loop:
 - move 2 steps
 - if on edge, bounce
 - if touching Starfish? then:
 - broadcast goteaten

The "Sprites" panel shows a collection of sprites: Starfish, Fish, Fish2, Fish3, Fish4, Crab, Crab2, Crab3, Shark, and Shark2. A line connects the "Fish" sprite in the palette to the script editor.

After completing the first fish, duplicate it to make additional fish to serve as predators

Crab – Costumes



Crab – Scripts

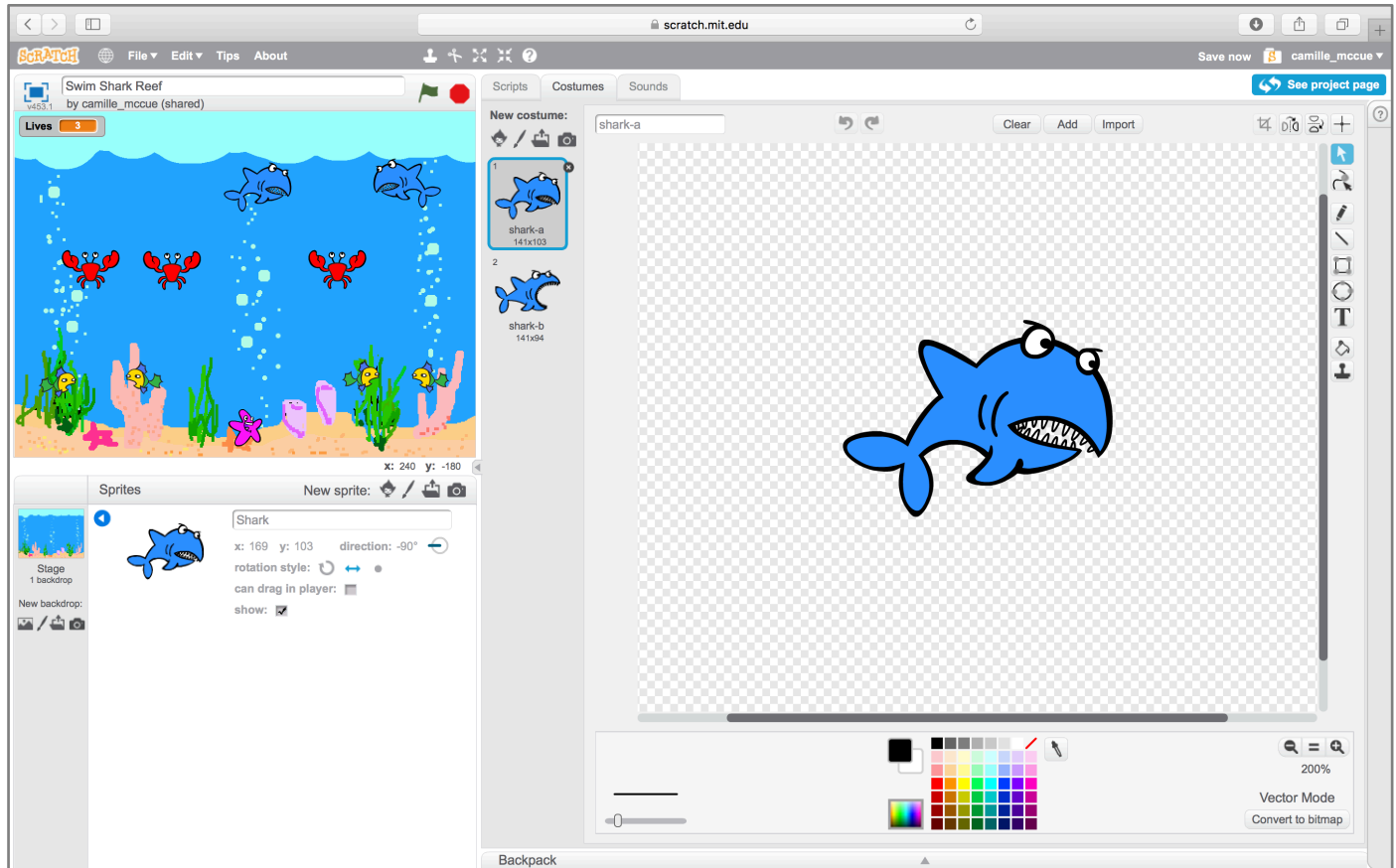
The screenshot displays the Scratch IDE interface for a project titled "Swim Shark Reef". The main stage shows an underwater scene with a blue background, a sandy bottom, and various sea creatures including crabs, fish, and sharks. The "Scripts" panel on the right shows the following code for the selected "Crab" sprite:

```
when green flag clicked
  forever loop
    move 2 steps
    if on edge, bounce
    if touching Starfish? then
      broadcast goteaten
```

The "Sprites" panel on the left shows a grid of available sprites, including "Starfish", "Fish", "Shark", and multiple instances of "Crab" (Crab, Crab2, Crab3). A red arrow points from the text below to the "Crab" sprite in the "New sprite" section.

After completing the first crab, duplicate it to make additional crabs to serve as predators

Shark – Costumes



Shark – Scripts

The screenshot displays the Scratch IDE interface. The main stage shows an underwater scene with a shark, crabs, and fish. The 'Scripts' tab is selected, showing a script for the shark sprite. The script begins with a 'when green flag clicked' event, followed by a 'say Hello! for 2 secs' block, a 'say Hello!' block, a 'think Hmm... for 2 secs' block, and a 'think Hmm...' block. Below these are 'show' and 'hide' blocks. The script then switches to a 'shark-b' costume and sets the backdrop to 'underwater'. It then changes the color effect by 25 and sets the color effect to 0. The script then changes the size by 10 and sets the size to 50%. Finally, it goes to the front and goes back 1 layer. The 'Scripts' panel also shows a 'broadcast goteaten' block. The 'Sprites' panel shows the 'Shark' sprite selected, with a duplicate 'Shark2' sprite also visible. The 'Backpack' panel is empty.

After completing the first shark, duplicate it to make additional sharks to serve as predators

Extensions

Animate predators by including **next costume** commands in their motion – it's challenging to get the animated motion just right!

Instead of having predators bounce off screen left and screen right, create continuous predator motion: when the predator reaches the edge of the screen, hide it; then reposition it on the opposite edge of the screen, and finally show the predator.

You can create also a Game Over screen or levels by adding additional backgrounds and predators, and then hiding or showing these following the completion of a level (or the loss of all starfish lives!)