# Go With the Flow

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The purpose of this experiment is to see how different pitches of different wings affect backwash. By testing the backwash levels of different pitches on different wings, we can prove that pitch is more important than wing shape when measuring backwash. Our hypothesis is that If the angle of pitch is increased, then backwash will increase, regardless of wing shape. First we built the wind tunnel. We assembled the box, with frames on the outside for support. We cut plexiglass doors so we can see into the tunnel for the experiment. Then we cut PVC pipe to channel the smoke from the smoke machine on top to the inside of the tunnel. We made a wall of straws to go inside the tunnel to stabilize the air for the testing. Then we drilled a hole in the back of the tunnel to mount the wings through and mounted a Vex servo motion on the back to control the pitch of the mounted wings. We put tools inside the tunnel to be able to measure pitch and backwash. Finally we put a fan on the other end, facing backwards to pull air through the tunnel.Then we made the wings.  We tested each wing at the pitches in 10 degree intervals. We recorded the backwash levels and analyzed the results. We concluded that our hypothesis was mostly correct. Almost every wing's backwash increased and then plateaued significantly as the pitch was increased. The oval wing shape was the only exception.