

# SALINITY TOLERANCE OF CULEX LARVA

PENELOPE SMELSER

ENVIRONMENTAL HEALTH SPECIALIST

NORFOLK DEPARTMENT OF PUBLIC HEALTH

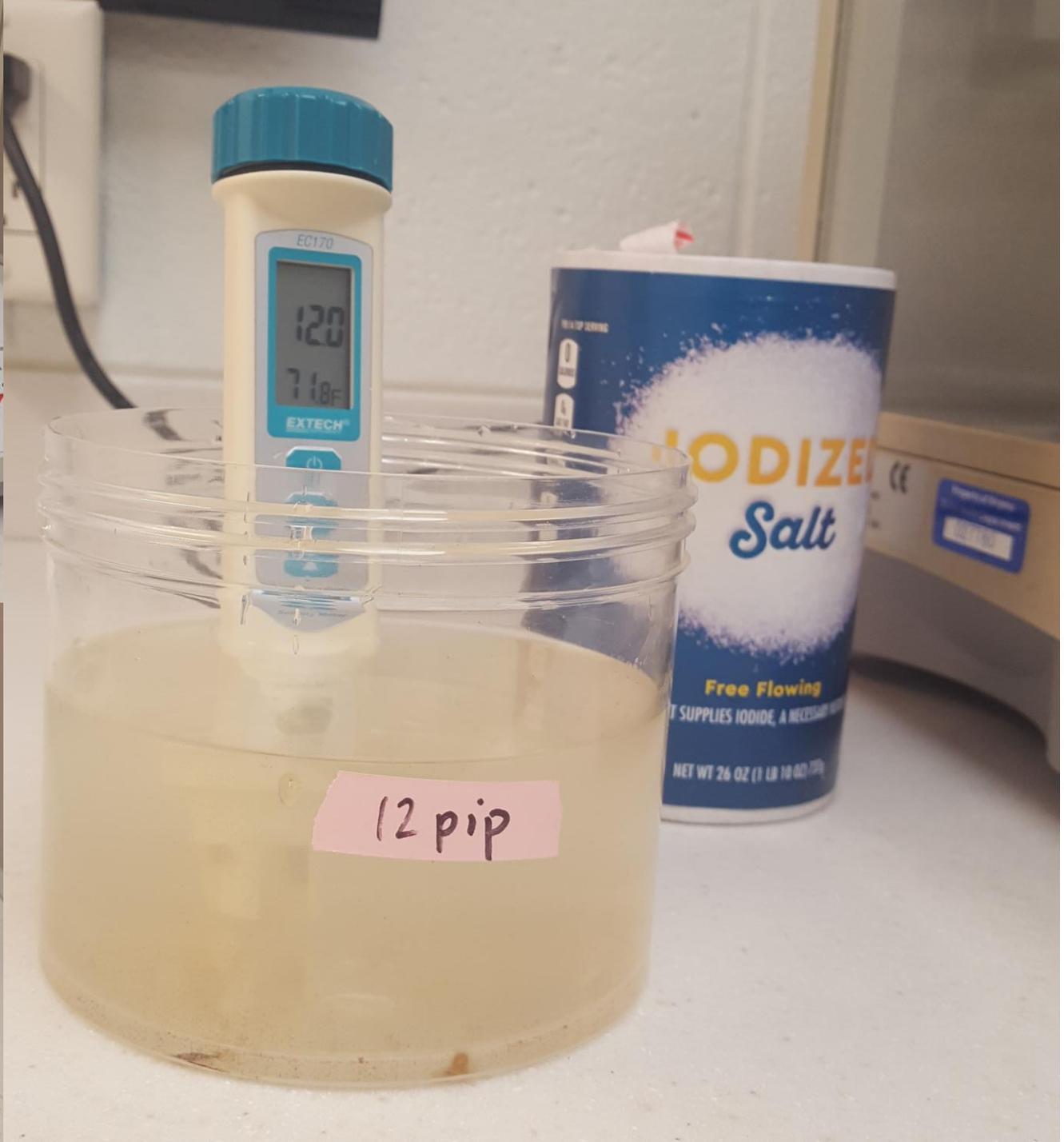
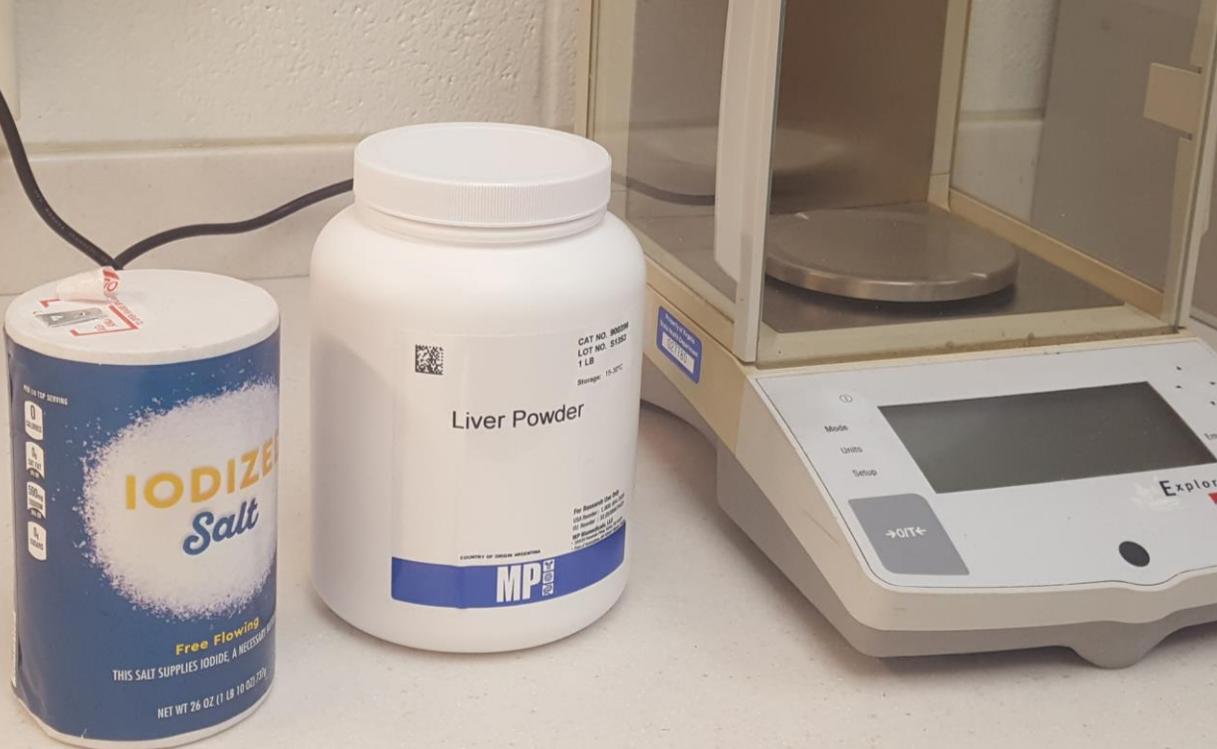
# PURPOSE

- DETERMINE THE SALINITY AT WHICH CULEX PIPIENS AND CULEX RESTUANS WILL NOT SURVIVE.
- USE THIS KNOWLEDGE TO ELIMINATE WATER SOURCES AS POTENTIAL CULEX BREEDING SOURCES
  - CATCH BASINS IN CLOSE PROXIMITY TO SALTY BRACKISH WATER
  - TIDAL DITCHES

# PROCESS

- COLLECT EGG RAFTS FROM GRAVID PANS AND PLACE IN WELL PLATE
- ALLOW EGG RAFTS TO HATCH
- IDENTIFY LARVA AND SEPARATE CX. RESTUANS AND CX. PIPIENS
- PLACE LARVA IN MOSQUITO BREEDER WITH A SOLUTION OF:
  - 50ML FEEDING SOLUTION (WATER + LIVER POWDER)
  - 450 ML WATER
  - SALT
- PLACE IN INCUBATOR







0ppt

1ppt

3ppt

10ppt

7ppt

6ppt

5ppt

3ppt

10ppt

1ppt

0ppt

7ppt

5ppt

# RESULTS

- CULEX RESTUANS
  - MAXIMUM SALINITY TOLERANCE: 7ppt
  - ZERO SURVIVAL TO ADULTHOOD AT 8ppt

Culex restuans larva exhibited a clear demarcation between tolerable and lethal levels of salinity

- CULEX PIPIENS
  - MAXIMUM SALINITY TOLERANCE: 10ppt
  - ZERO SURVIVAL TO ADULTHOOD AT 11ppt

Only small numbers of Cx. pipiens larva survived to adulthood at 10ppt

# NOTES

- USE A SALINITY METER TO VERIFY CORRECT SALT MEASUREMENTS
- COVER MOSQUITO BREEDERS WITH PLASTIC WRAP TO AVOID EVAPORATION
  - EVAPORATION INCREASES SALINITY
- NEXT STEPS WILL BE TO SURVEY AND RECORD SALINITIES
  - CATCH BASINS IN OCEANVIEW-WILLOUGHBY: AVG SALINITY IS  $>14$  PPT