

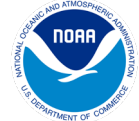
# *Winter Road Maintenance Strategies for Municipalities*

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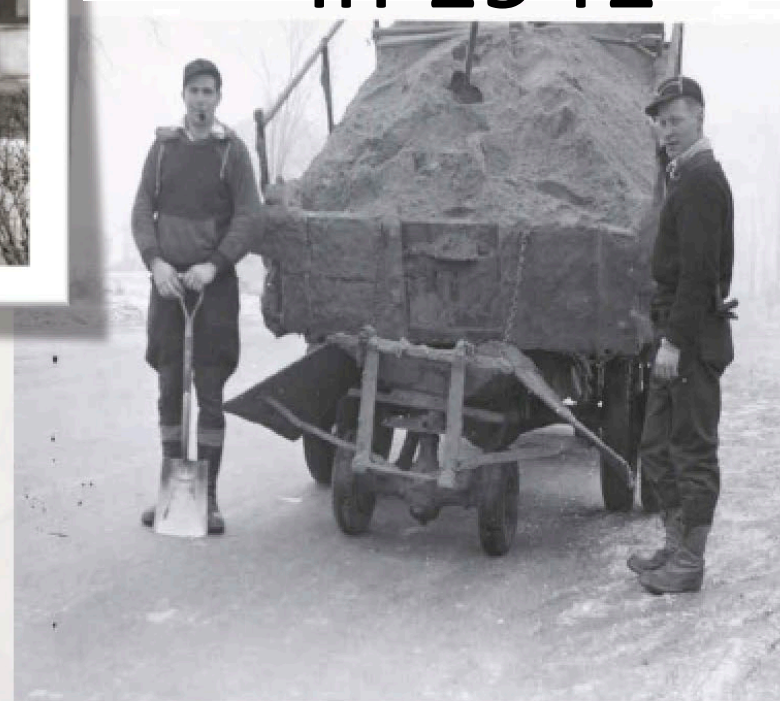
Central Vermont Regional Planning Commission (CVRPC), UVM Extension, Lake Champlain Sea Grant, and the Vermont Agency of Transportation

January 8, 2026

Kris Stepenuck

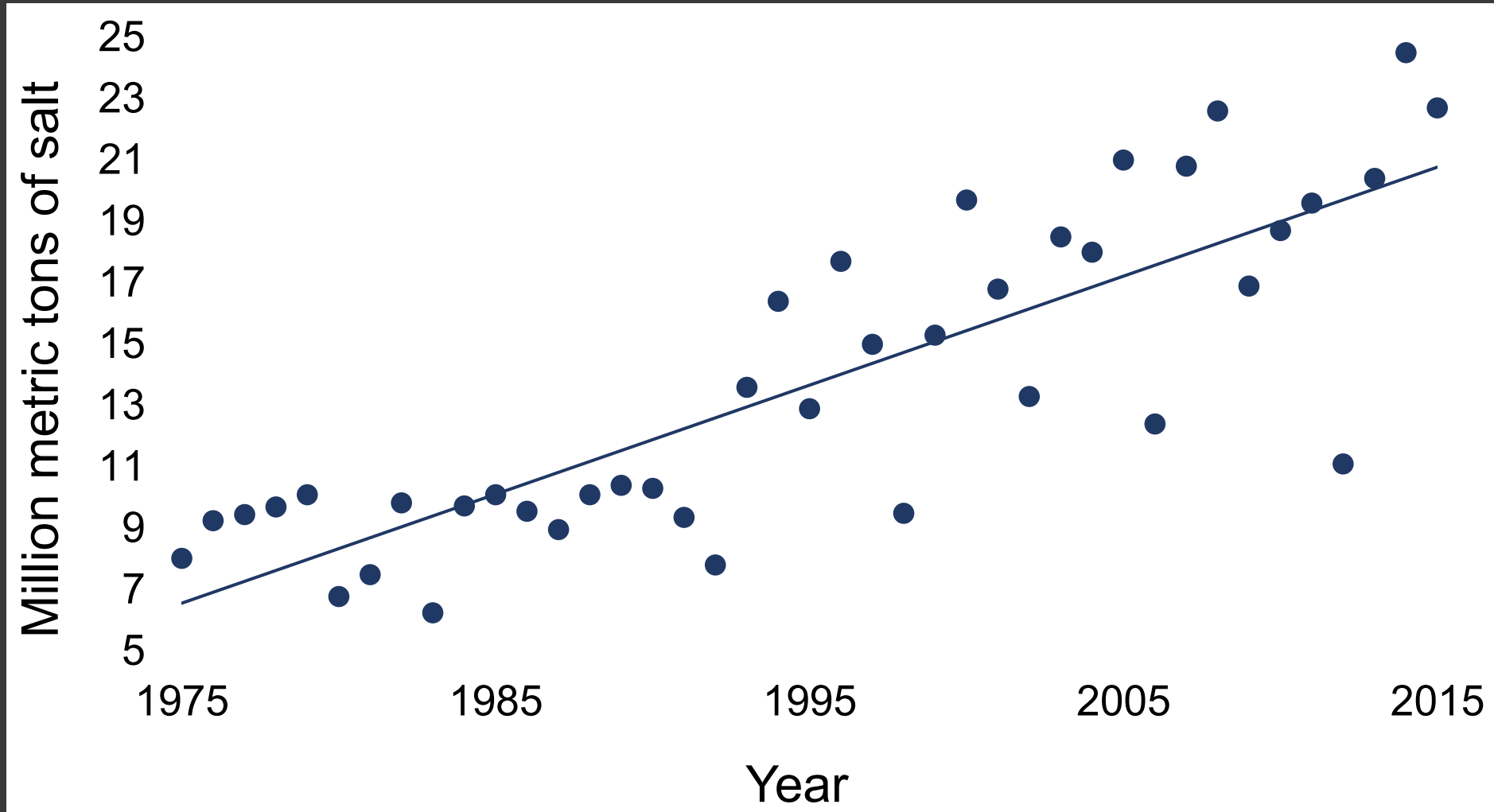


# Salt was first used on roads in 1941



5,000 tons of salt used  
on roads that year

# Road salt use in the United States has increased over time



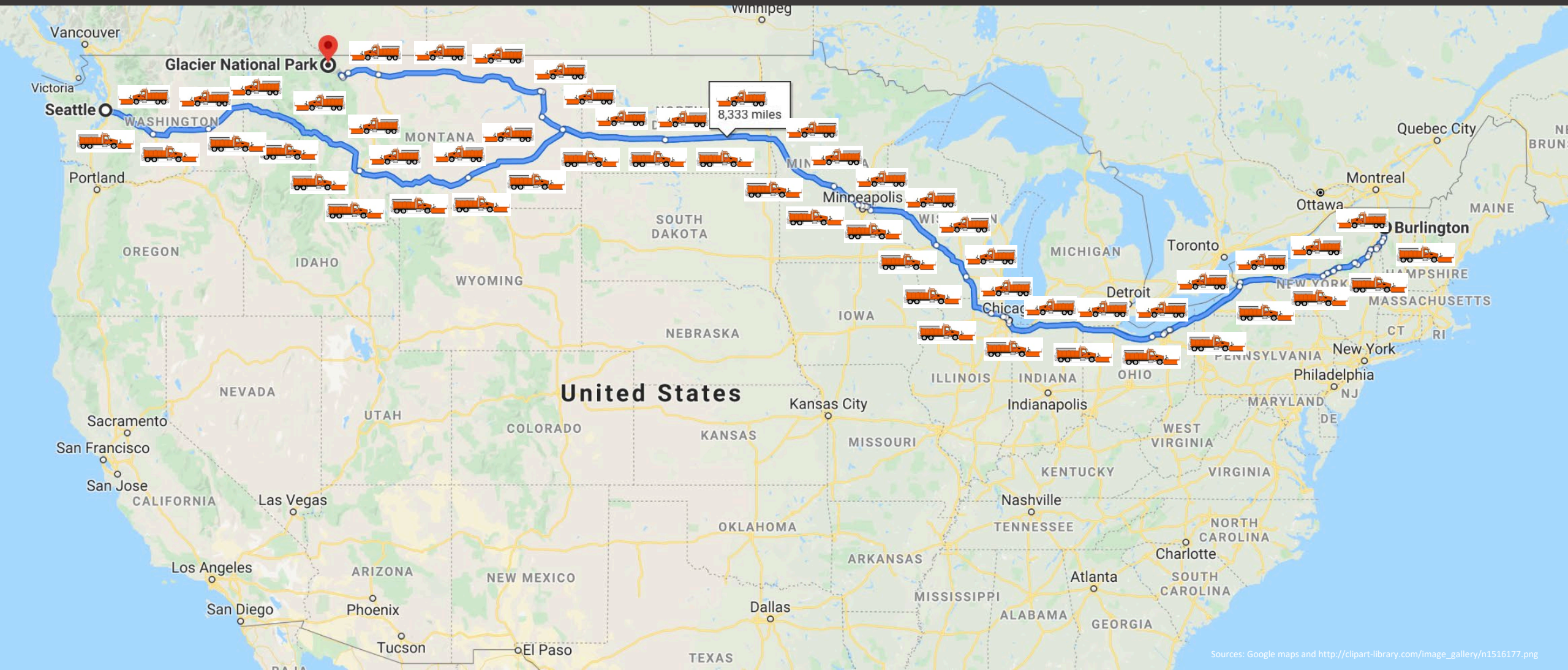
1975-2003

- US road surface increased 6%
- Salt use increased 43%

2,200 lbs/metric ton

USGS

# More than 25 million tons of salt are spread each year in the U.S.





Road salt can kill  
fish in streams

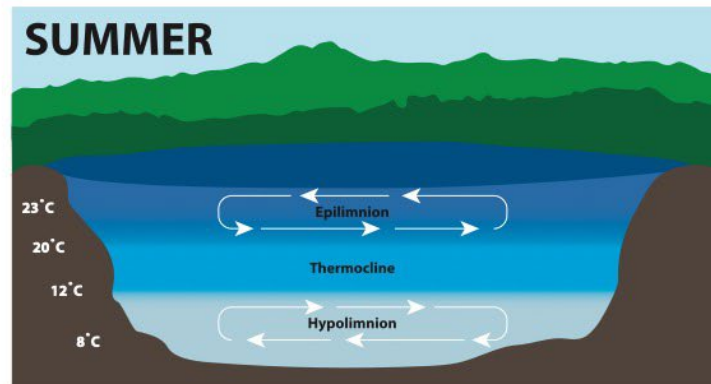
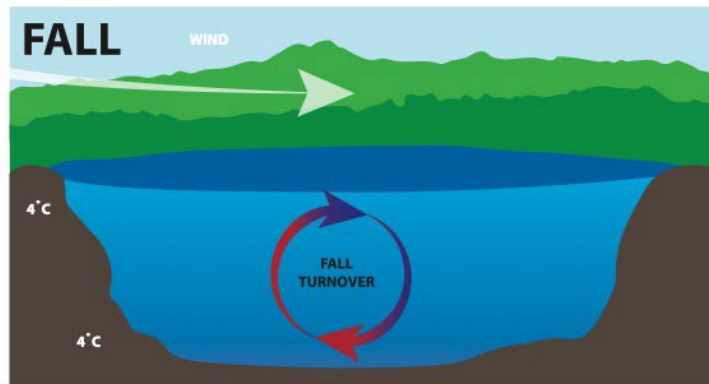
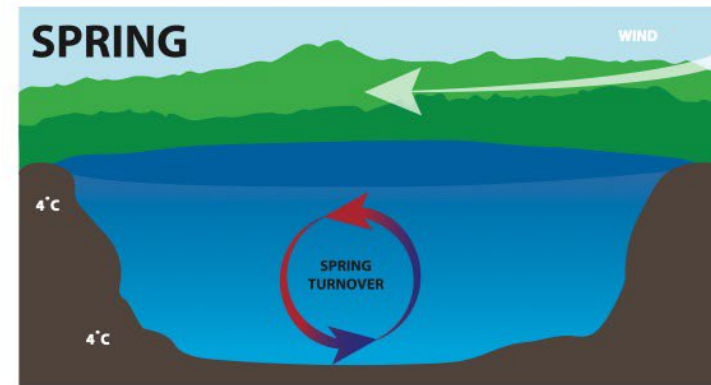
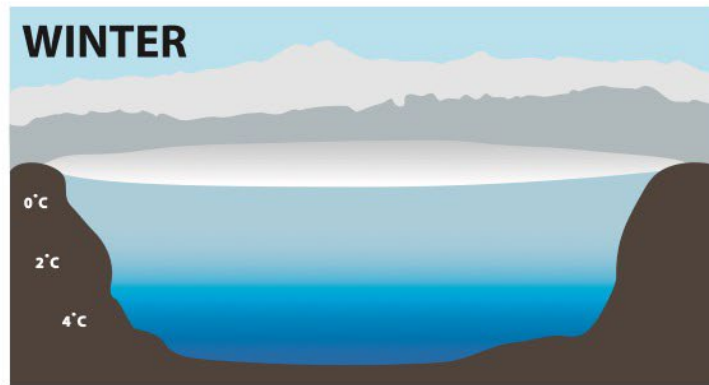




Road salt can kill  
fish in streams



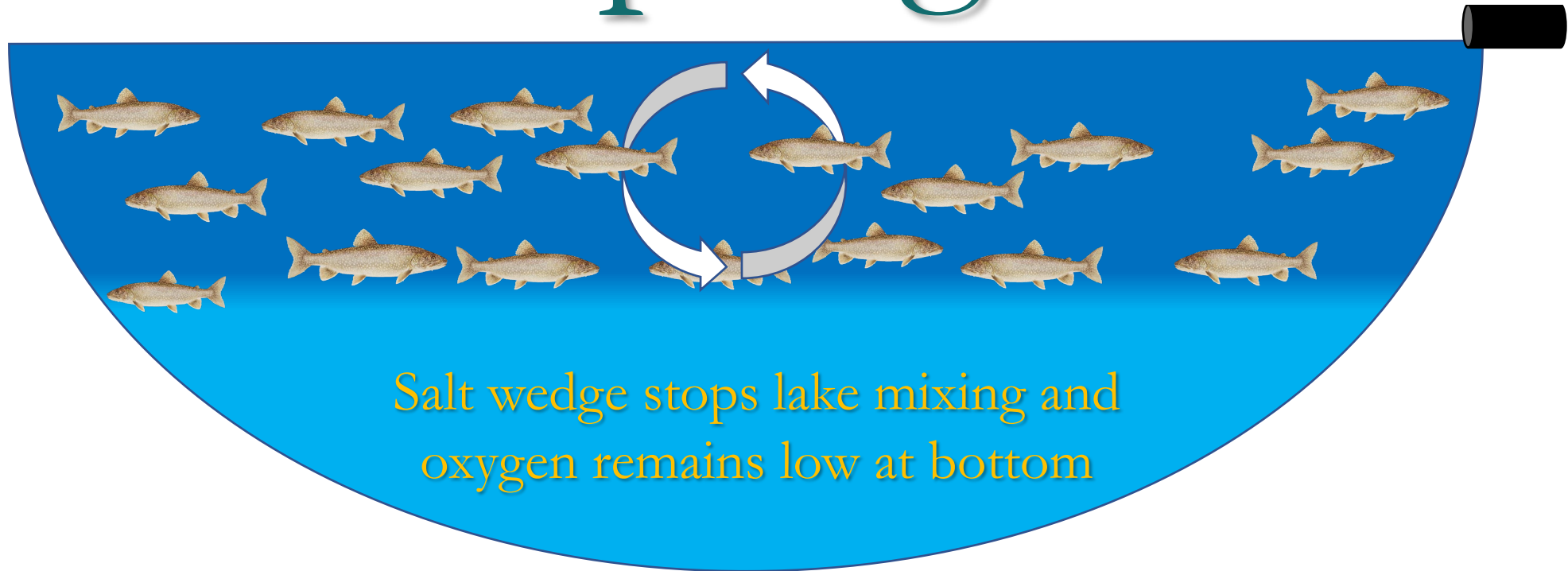
# Once in lakes road salt can affect natural lake cycles and available habitat



# Winter

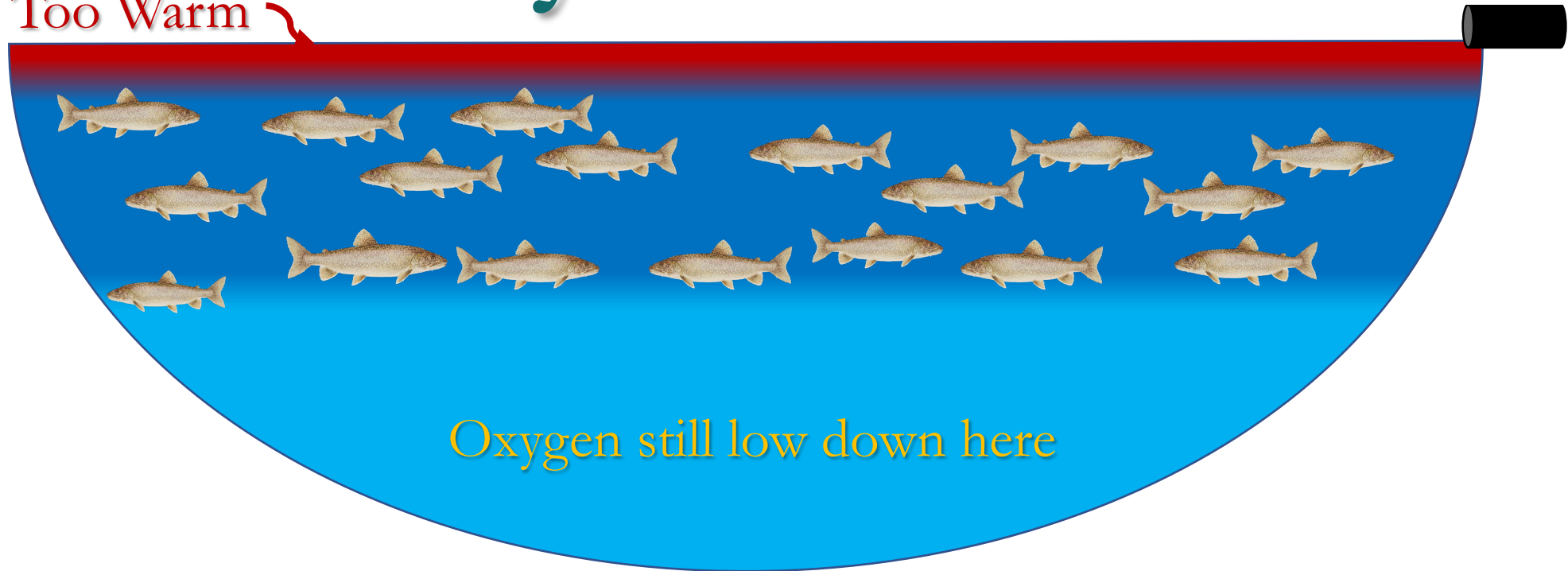


# Spring



# Early Summer

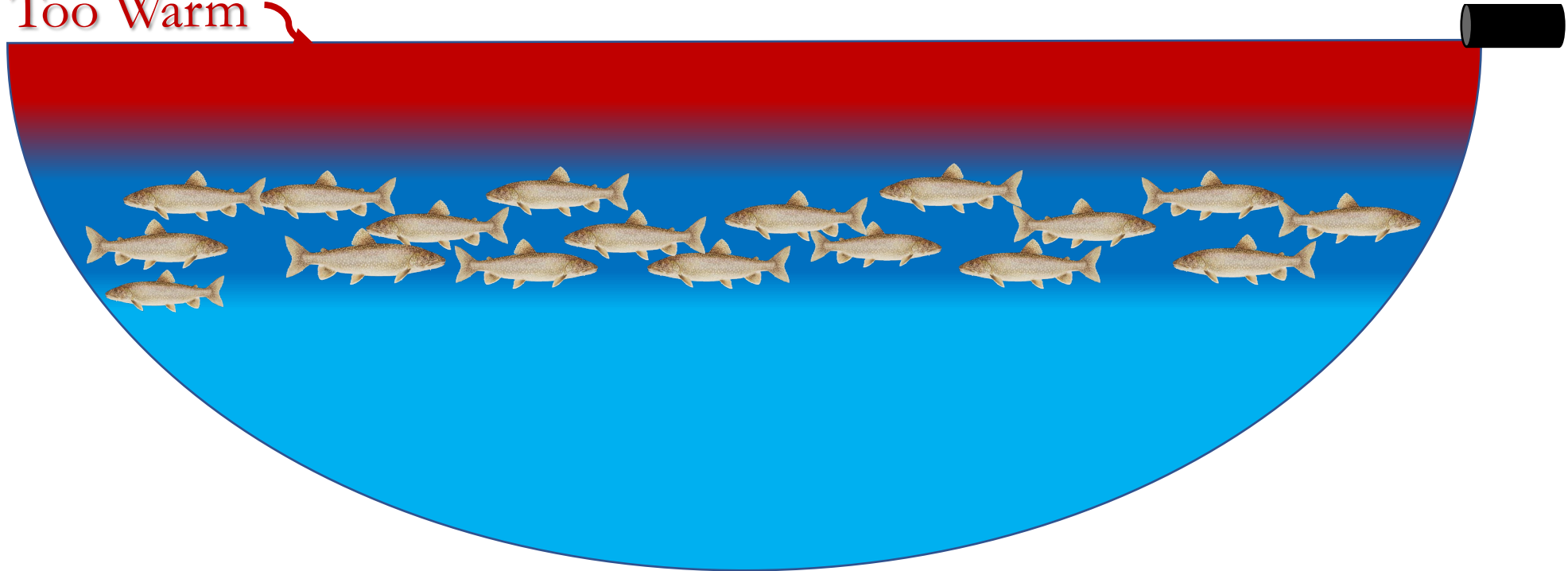
Too Warm



Oxygen levels drop at the surface and fish have less space to live.

# Mid Summer

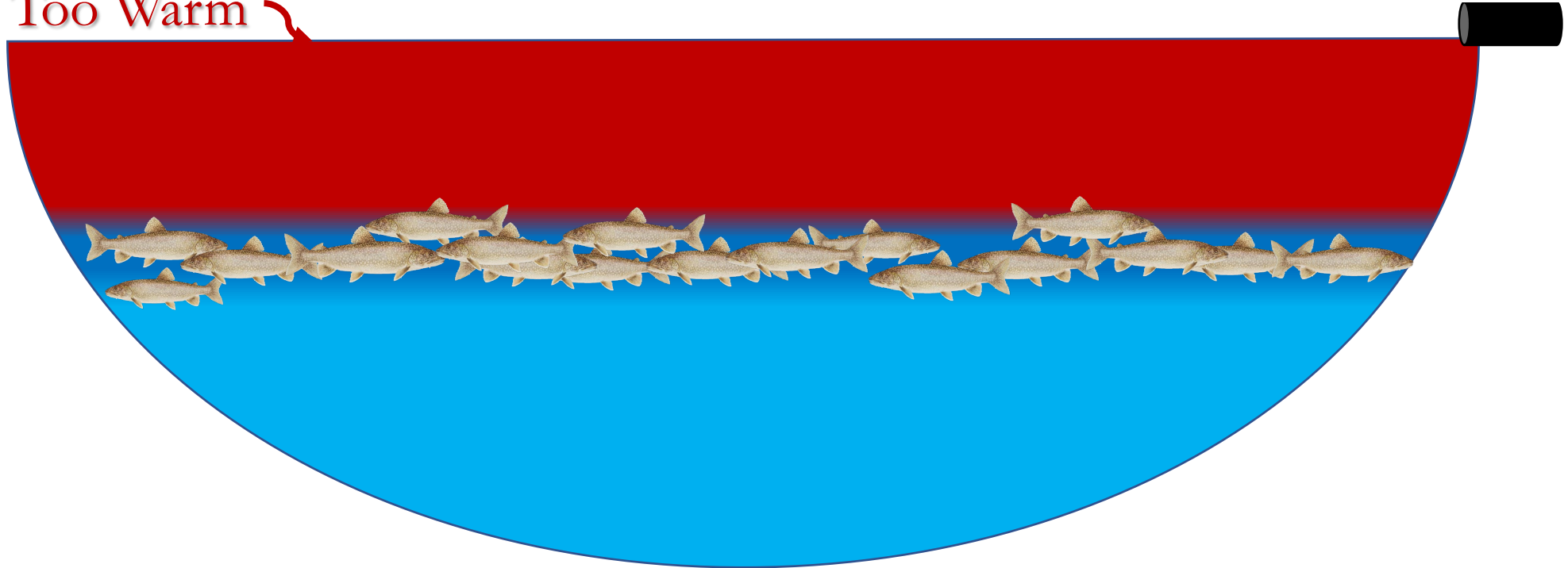
Too Warm



And fish are squeezed into a small area with enough oxygen

# Late Summer

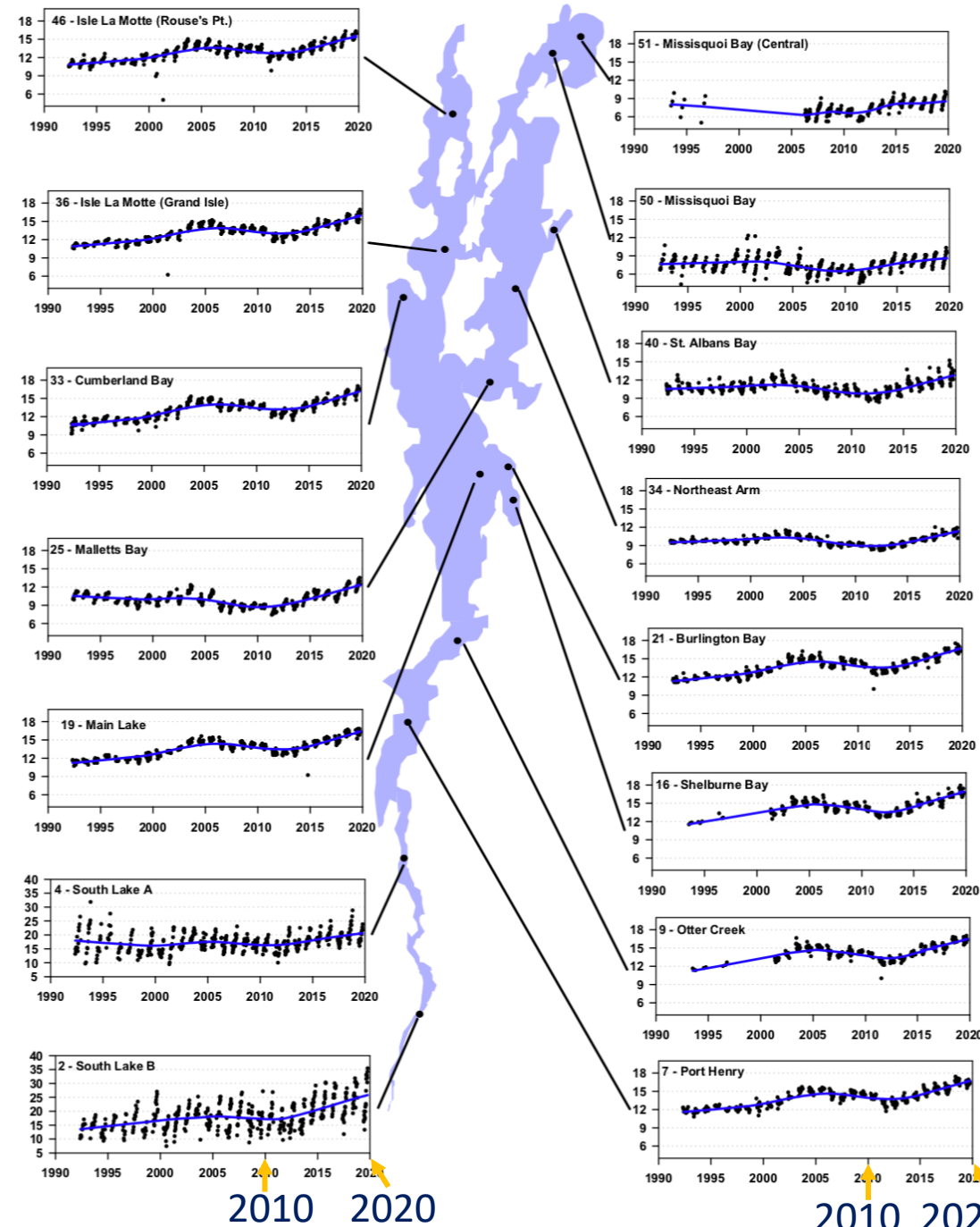
Too Warm ↘



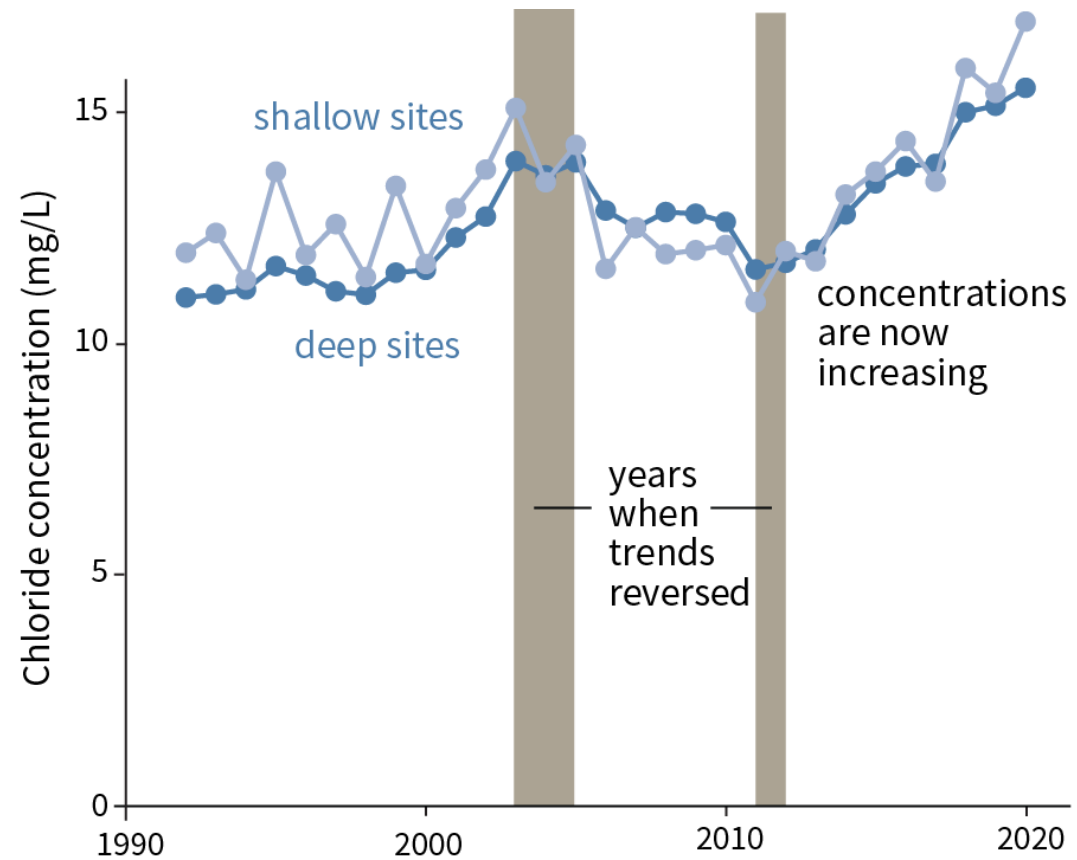
Fish have very little space with enough oxygen by late summer.

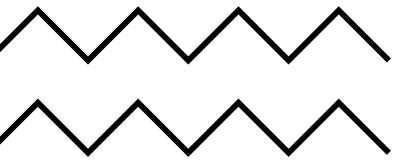
The rivers and streams that empty to Lake Champlain are getting saltier.

Chloride concentration (mg/L)

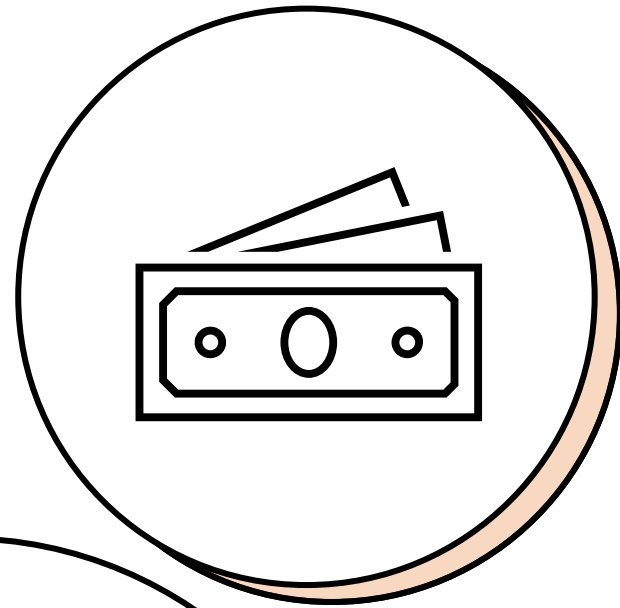


Lake Champlain's chloride levels are increasing





Sustainable salting  
**practices** can  
reduce use of salt,  
save communities  
money, AND keep  
people safe

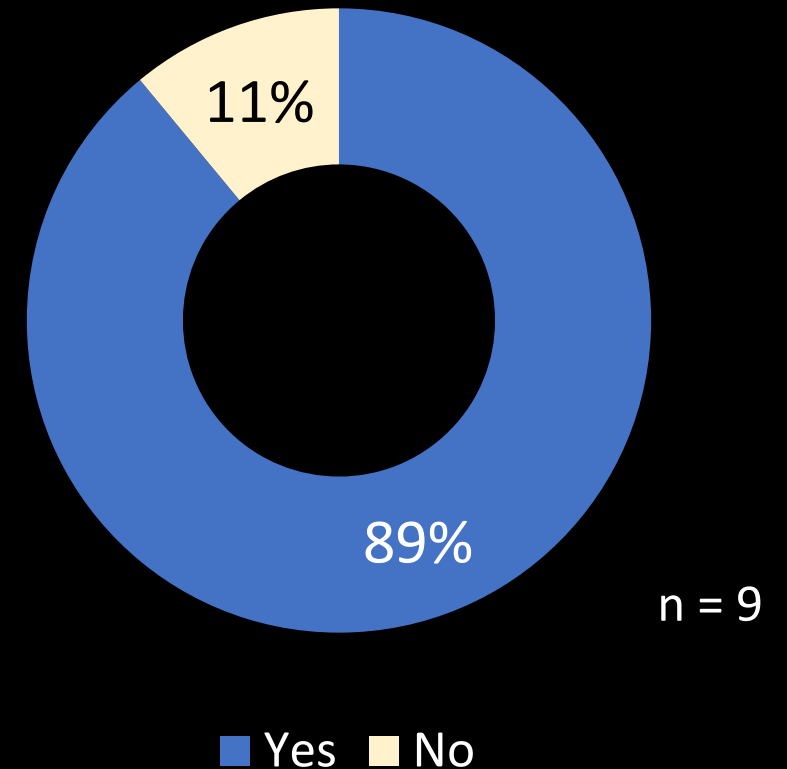




[go.uvm.edu/salttools](https://go.uvm.edu/salttools)

## Calibrate equipment

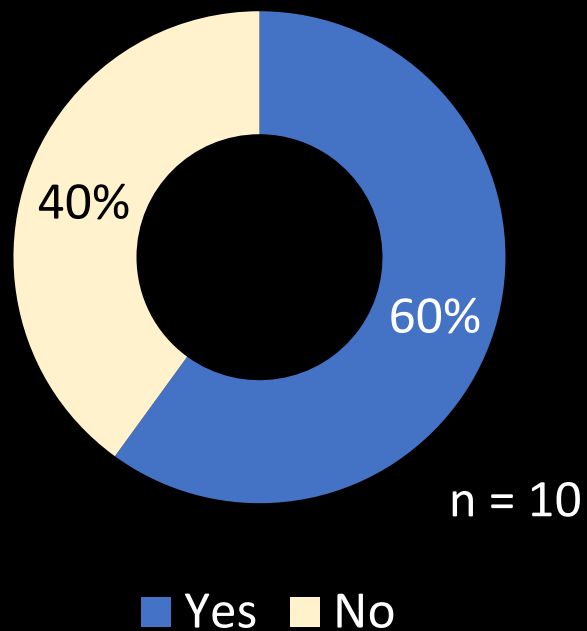
Chittenden County Communities



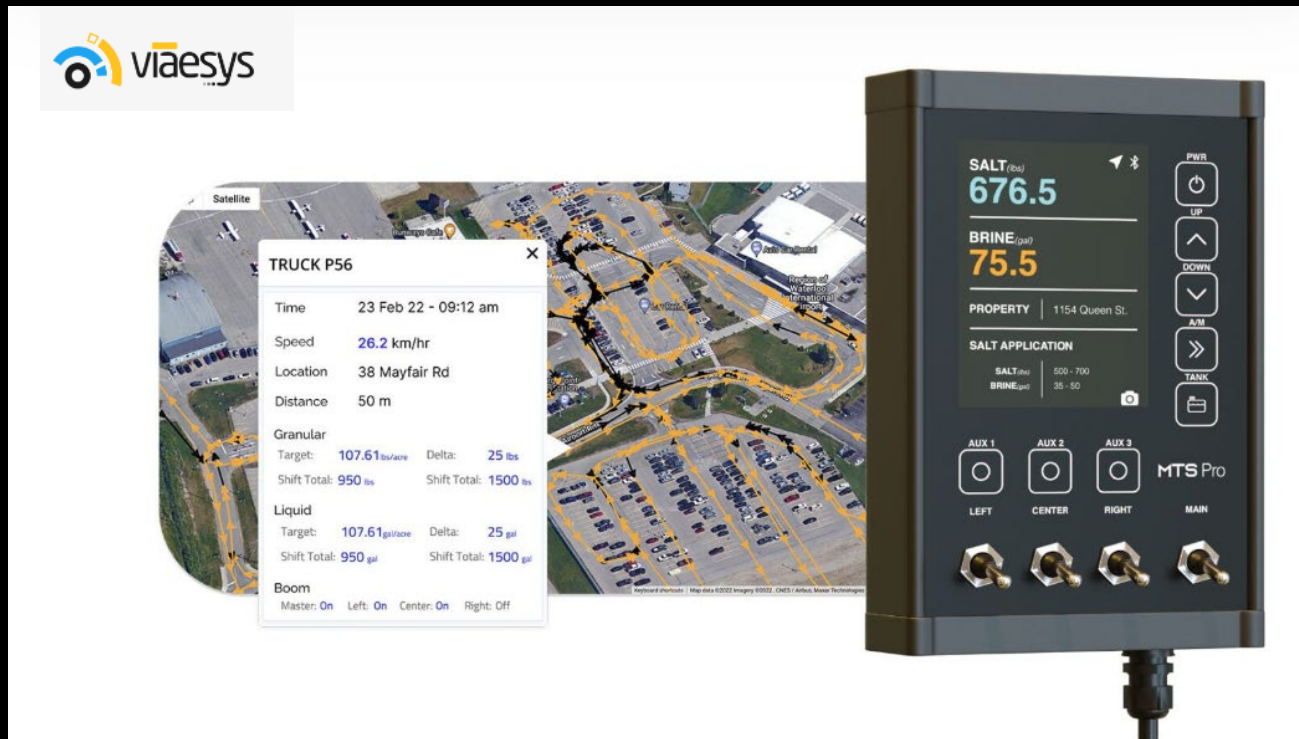
# Use alternative plow blades

- Segmented blades
- Secondary blades

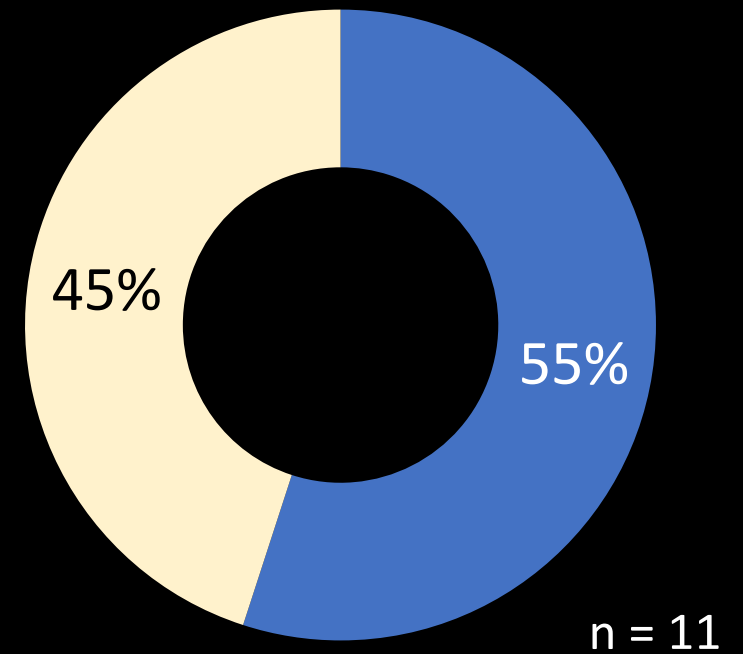
Chittenden County communities



## Track salt use (e.g., by location, vehicle)



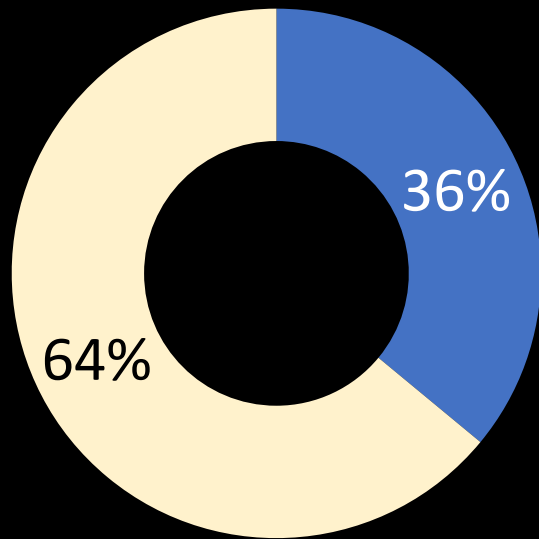
Chittenden County communities



■ Yes ■ No

# Pre-wet salt with brine at the spinner

Chittenden County communities



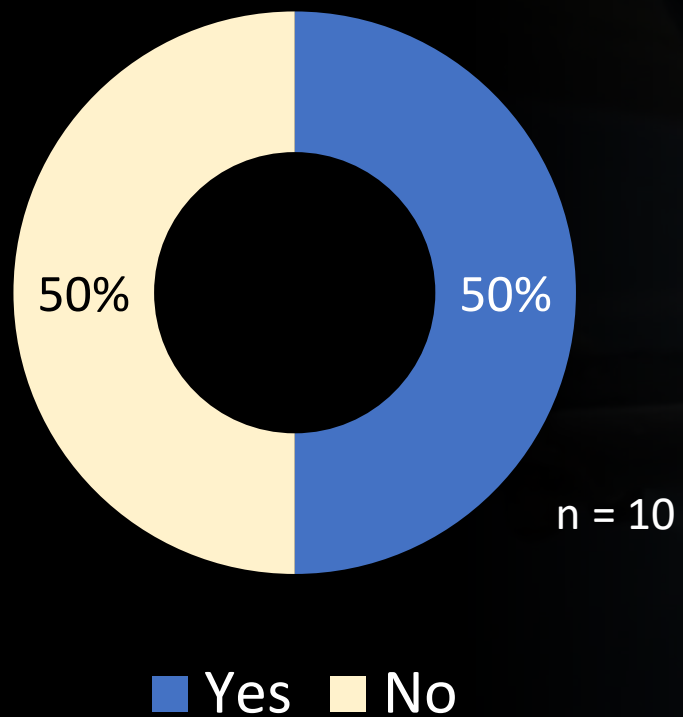
n = 11

■ Yes ■ No



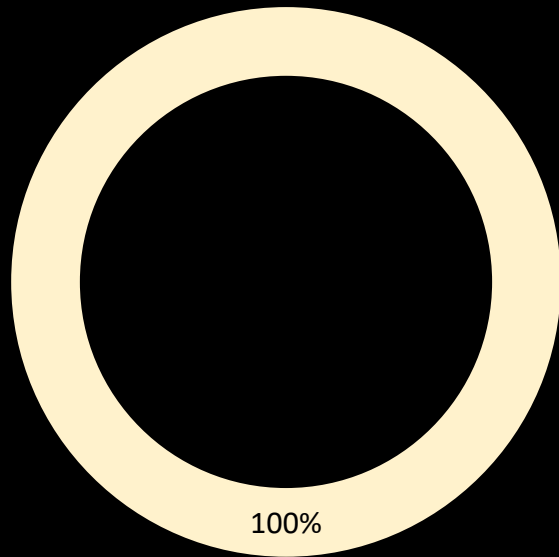
# Measure pavement temperatures

Chittenden County communities

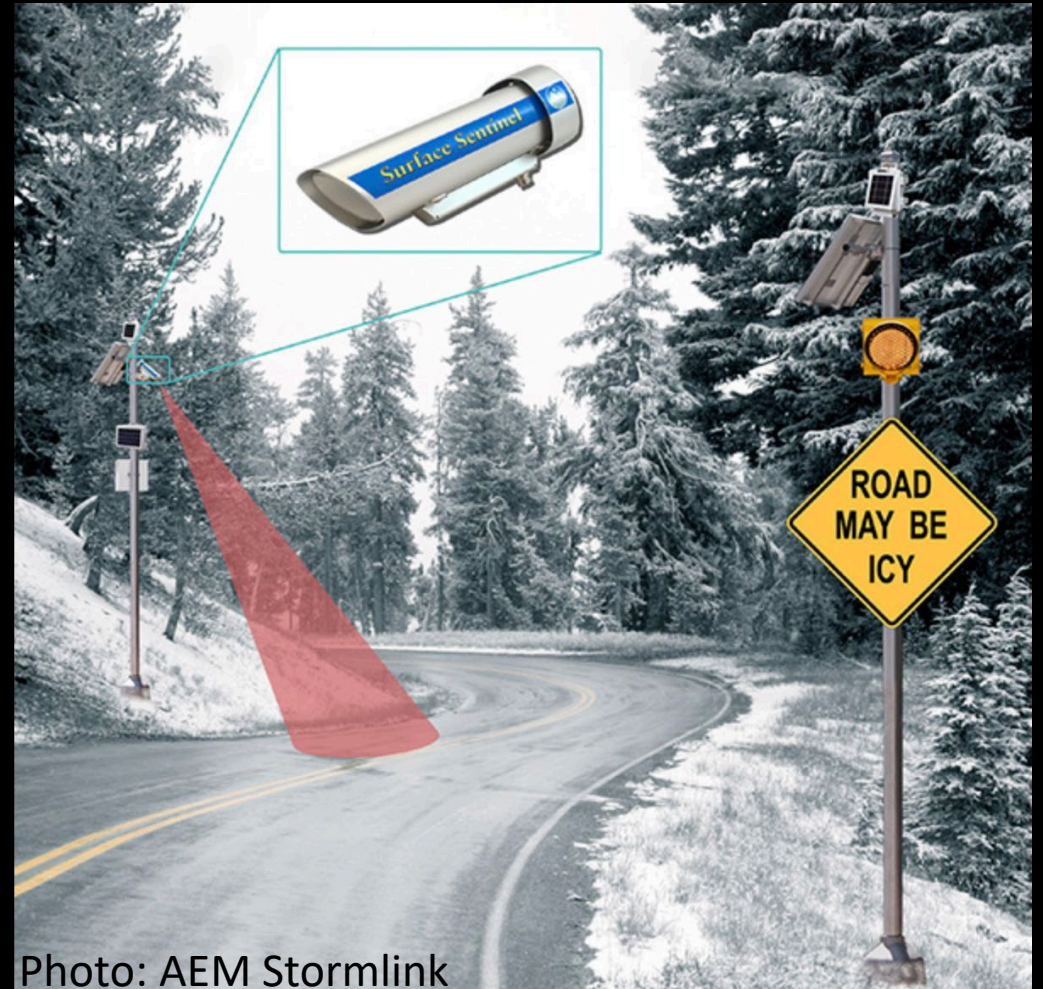


# Use a Road Weather Information Station (RWIS)

Chittenden County communities



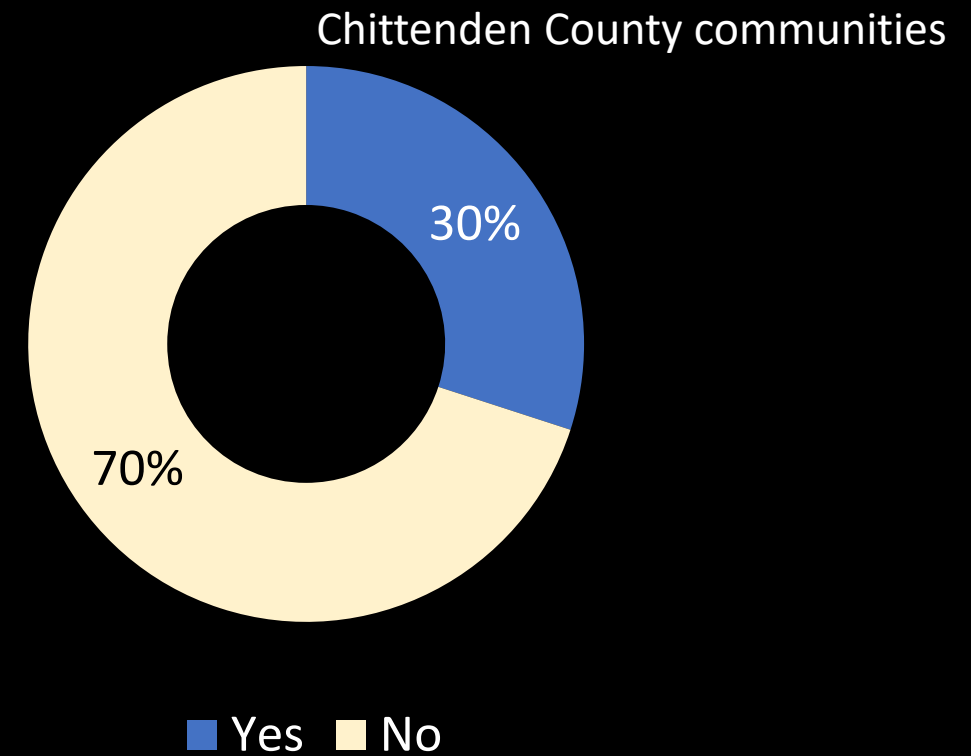
■ Yes ■ No





## Anti-icing

- Treating ahead of a storm to prevent bond between ice and pavement

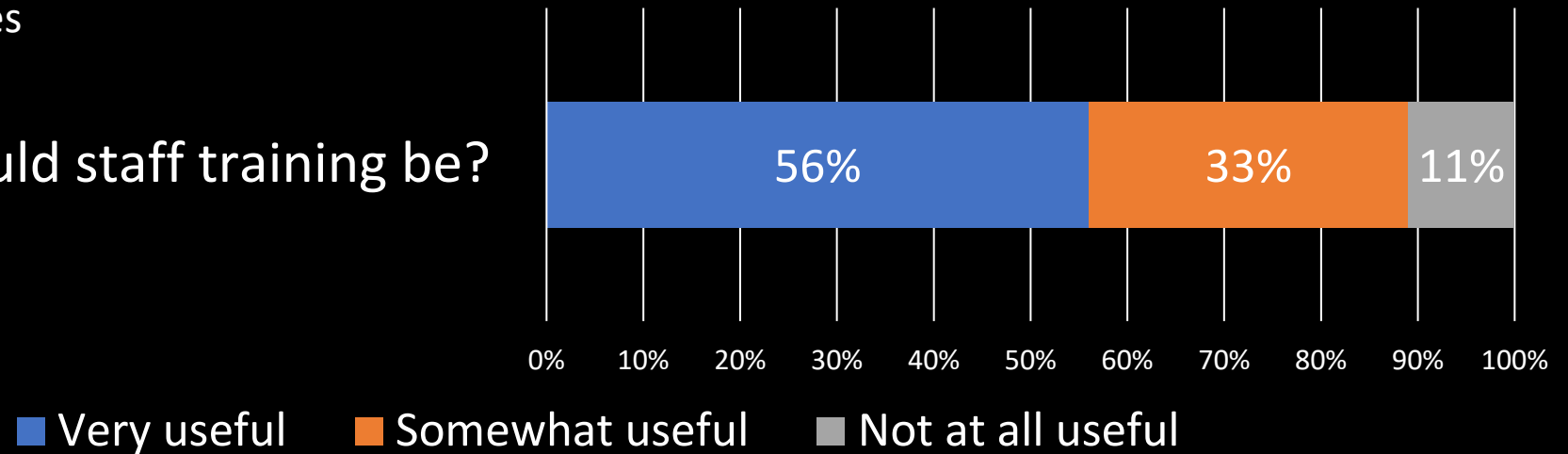


# Train staff in use of sustainable salting practices



Chittenden County communities

How useful would staff training be?



Use of a combination of sustainable practices can  
reduce salt use by 40% or more

To learn more and for resources, visit: <https://go.uvm.edu/chittendenco>