

2021 Lake Champlain STATE of the LAKE and Ecosystem Indicators Report





Clean
Water



Clean water overview

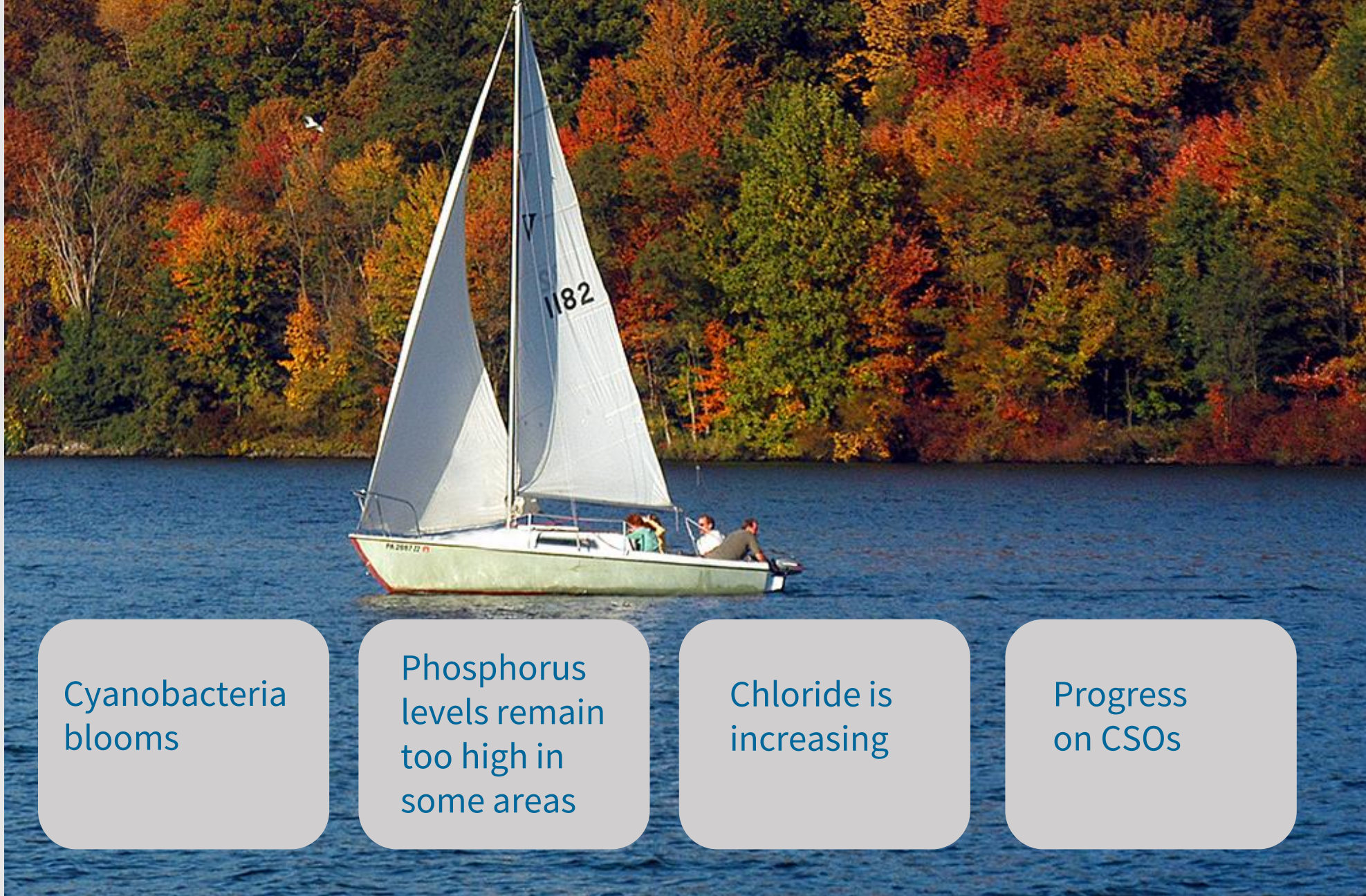
U.S Clean
Water Act

Cyanobacteria
blooms

Phosphorus
levels remain
too high in
some areas

Chloride is
increasing

Progress
on CSOs

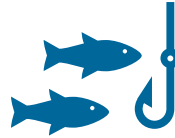




Drinkable, fishable, and swimmable water



High-quality
drinking water



Fish can be
safely enjoyed

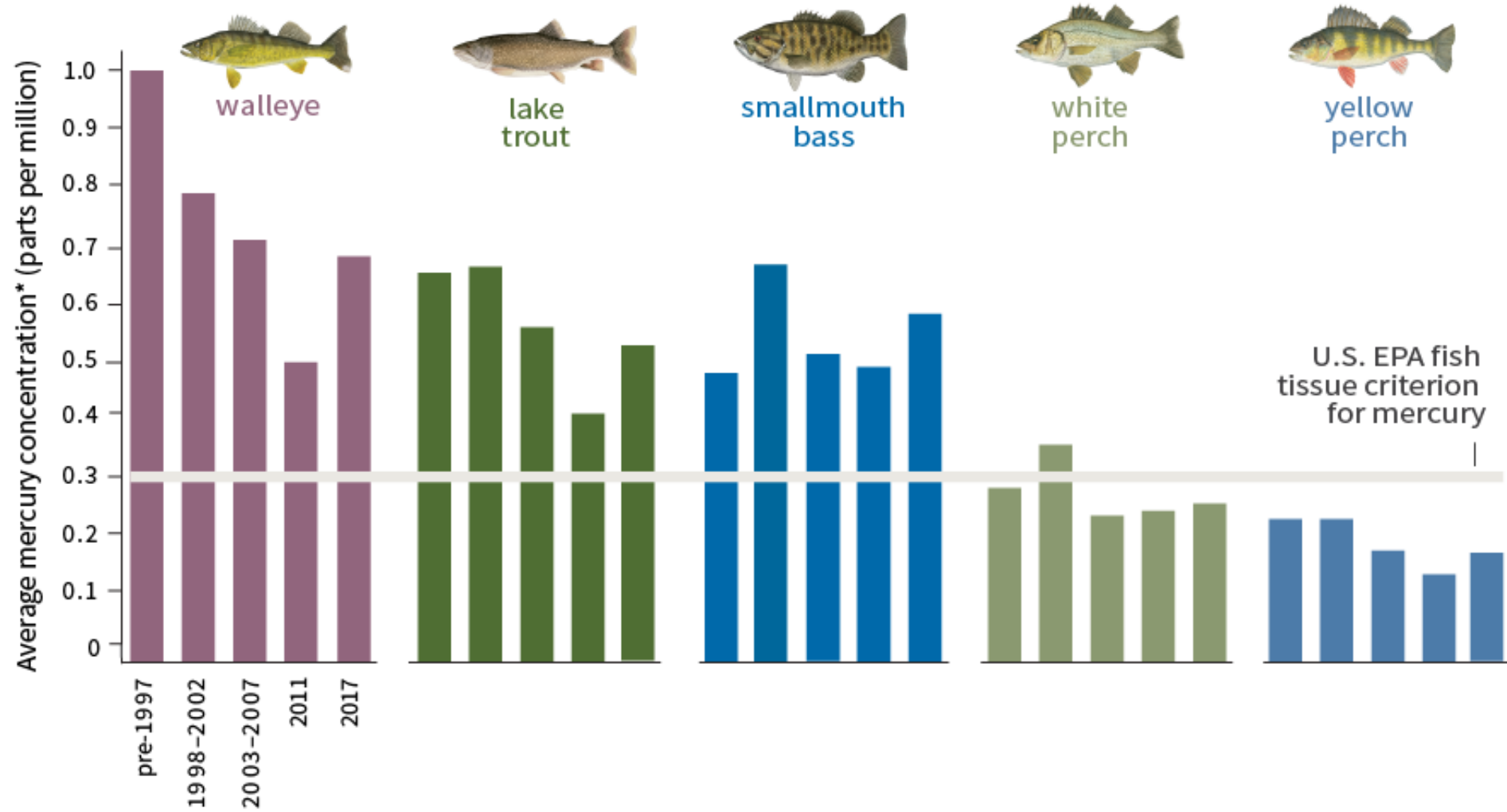


Rivers and lakes are
safe for swimming
at most times



Figure 1.

Mercury
concentration
in Lake Champlain
fish tissue
Page 7





Public Beaches





Figure 2.

Reported public
beach closures on
Lake Champlain
Page 8

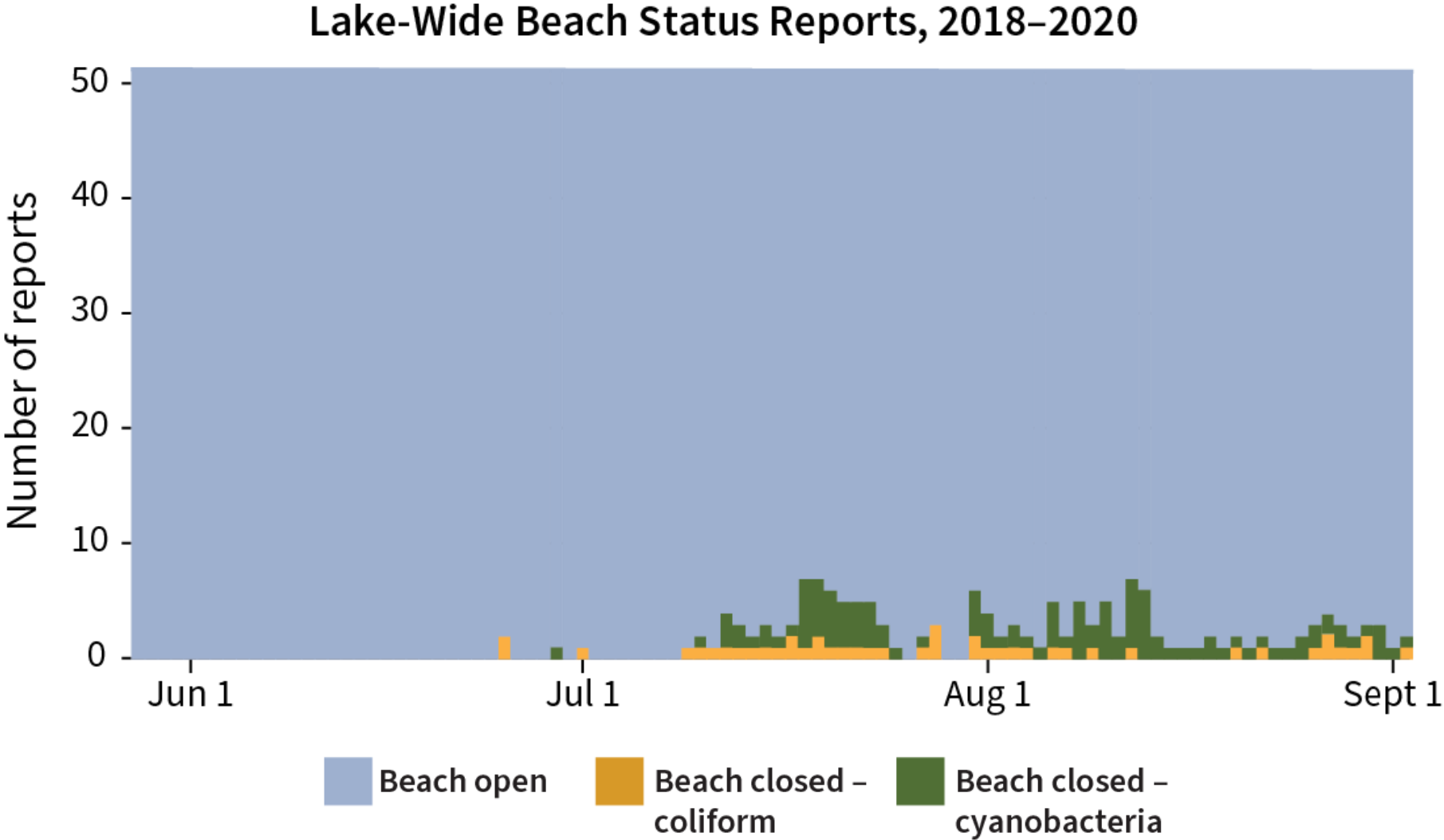
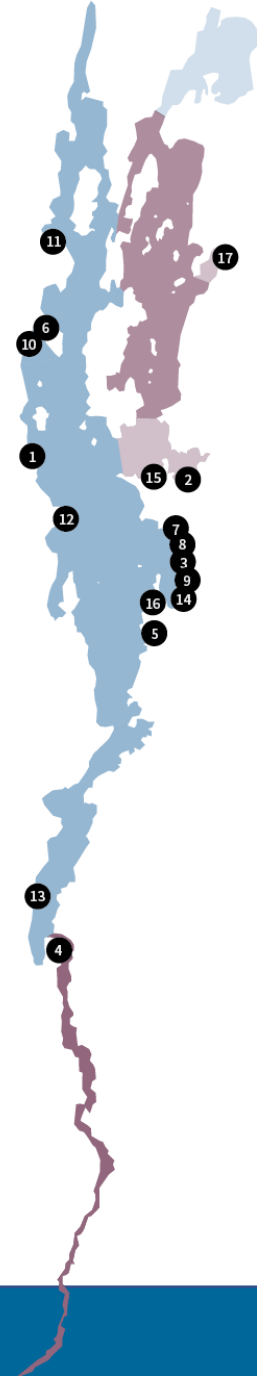
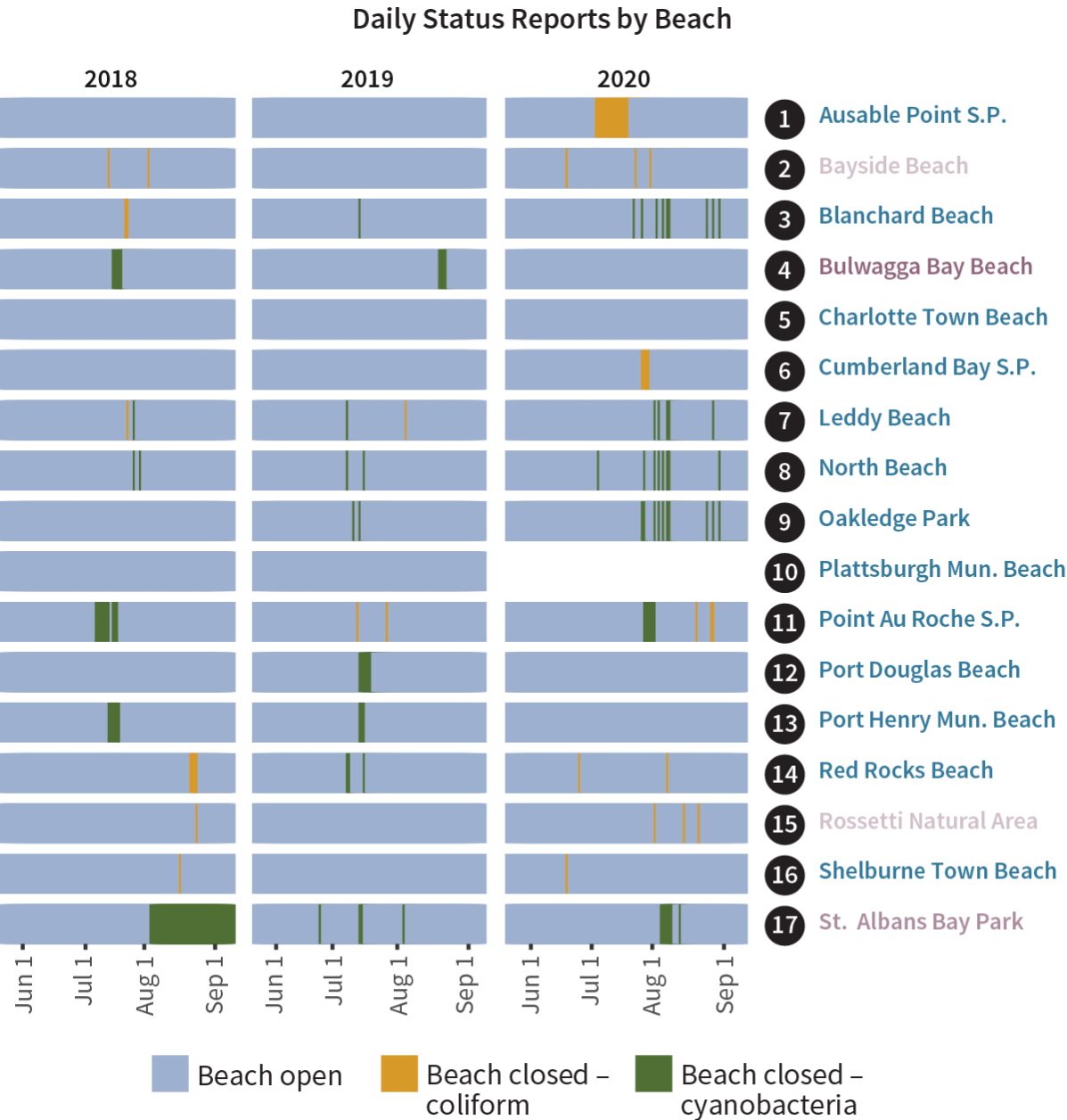




Figure 2.

Reported public
beach closures on
Lake Champlain





Cyanobacteria



University of Vermont Spatial Analysis Lab



Cyanobacteria bloom conditions

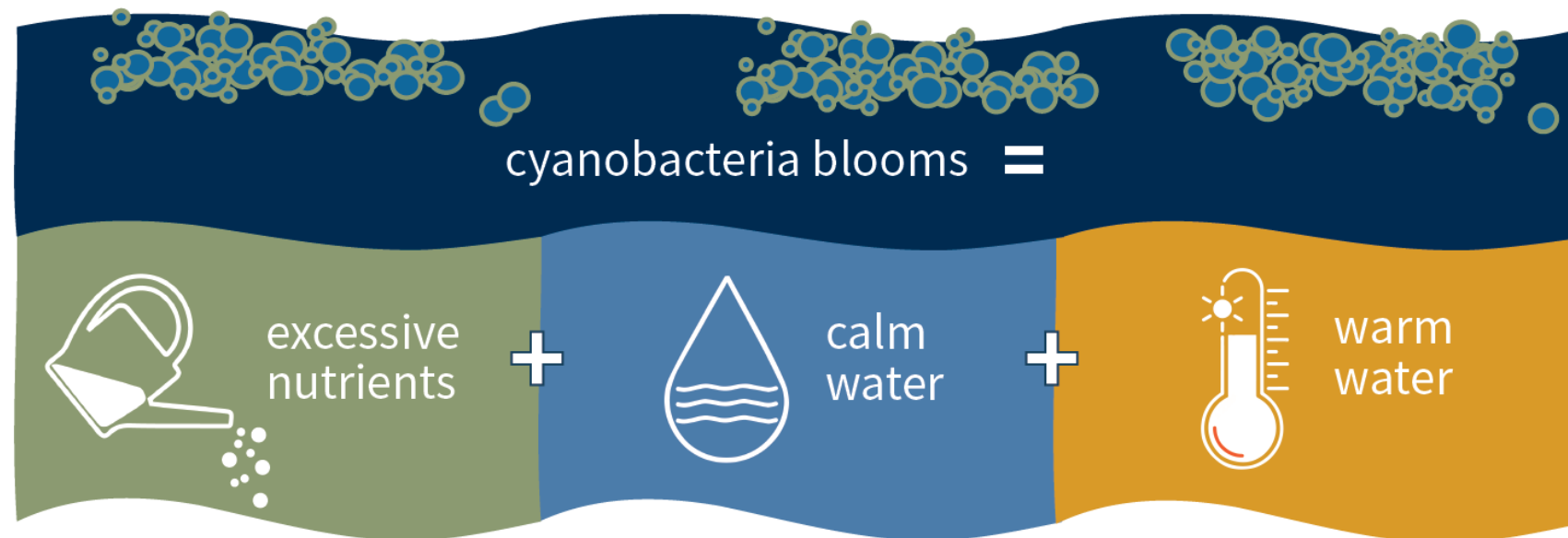




Figure 4.

Cyanobacteria
monitoring on
Lake Champlain
Page 11

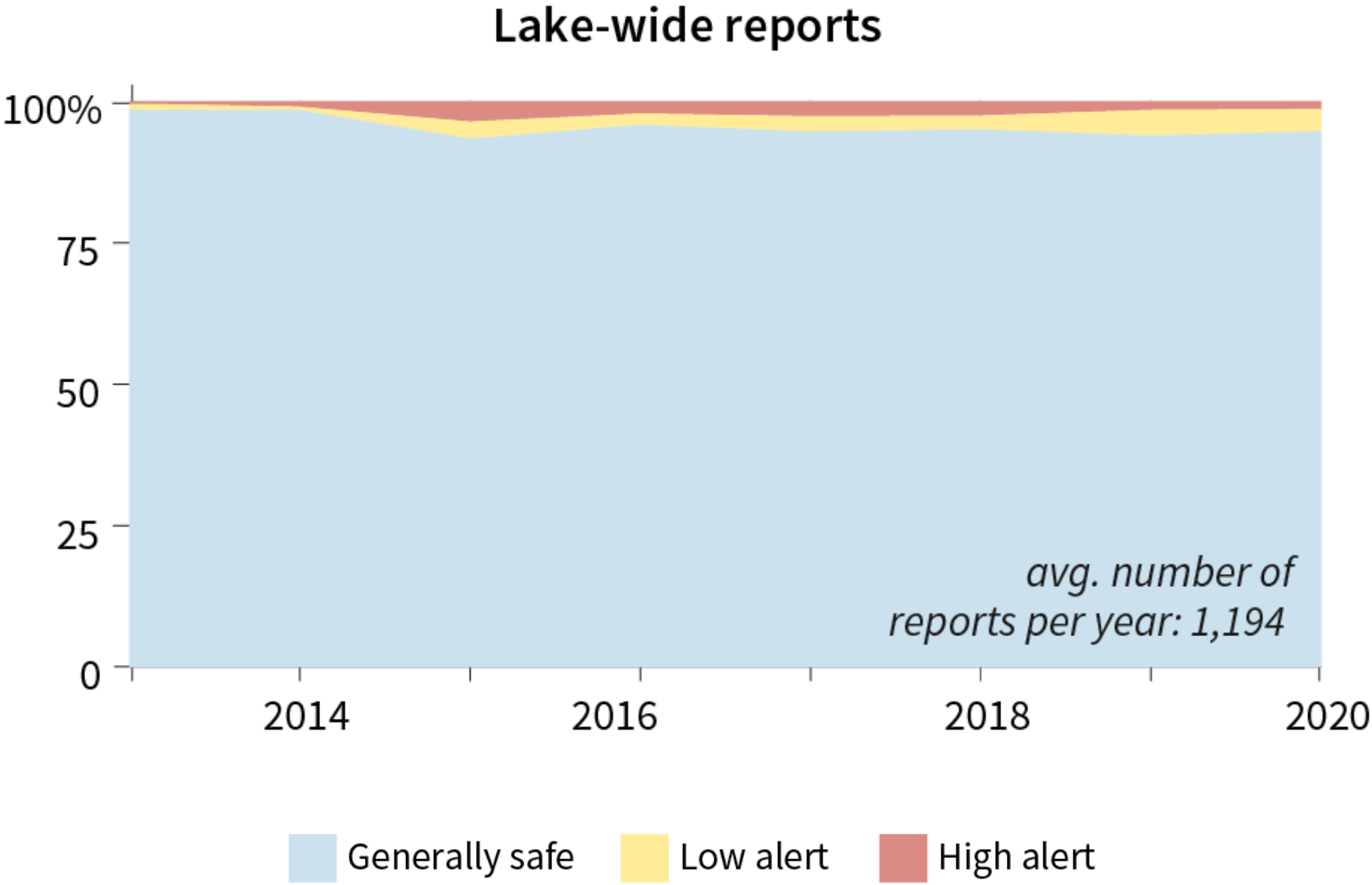




Figure 4.
Cyanobacteria
monitoring on
Lake Champlain
Page 11

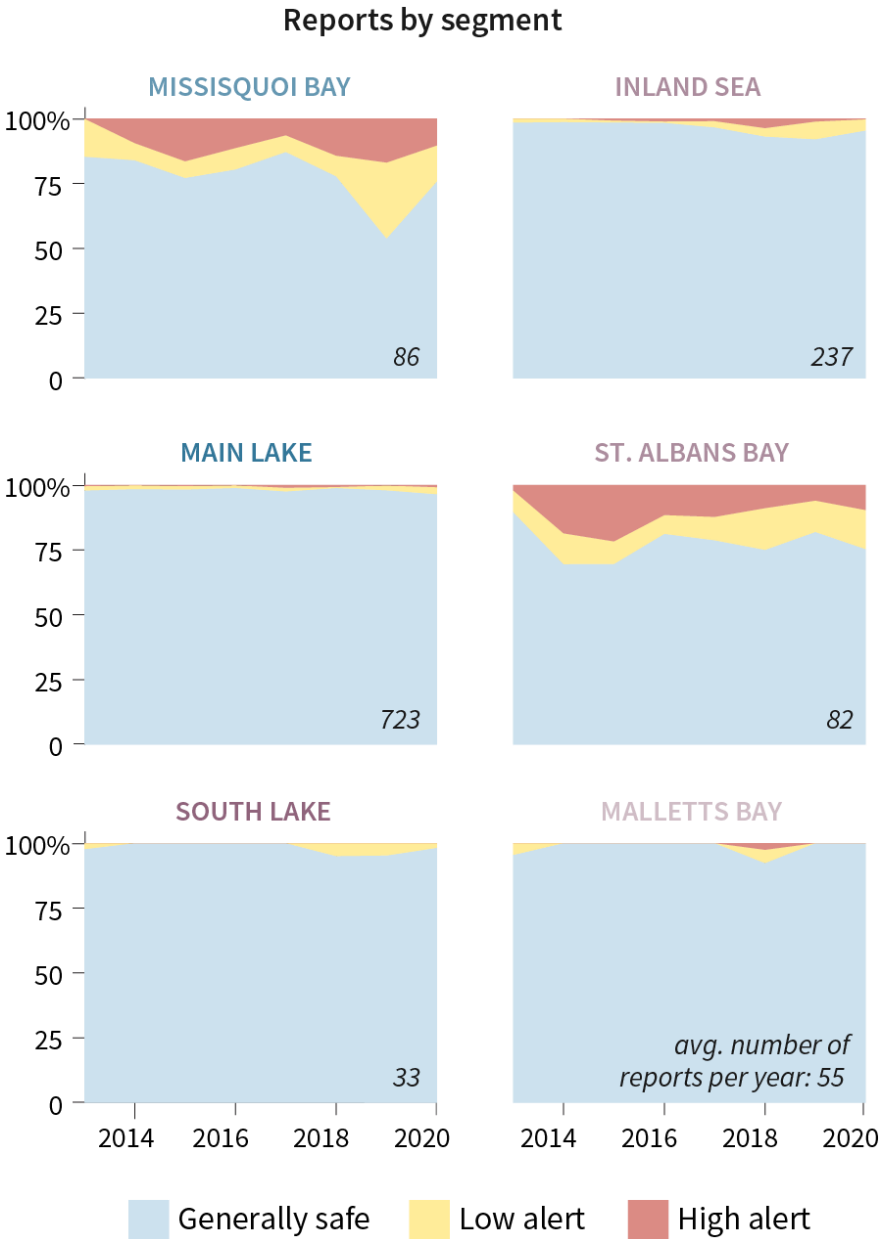
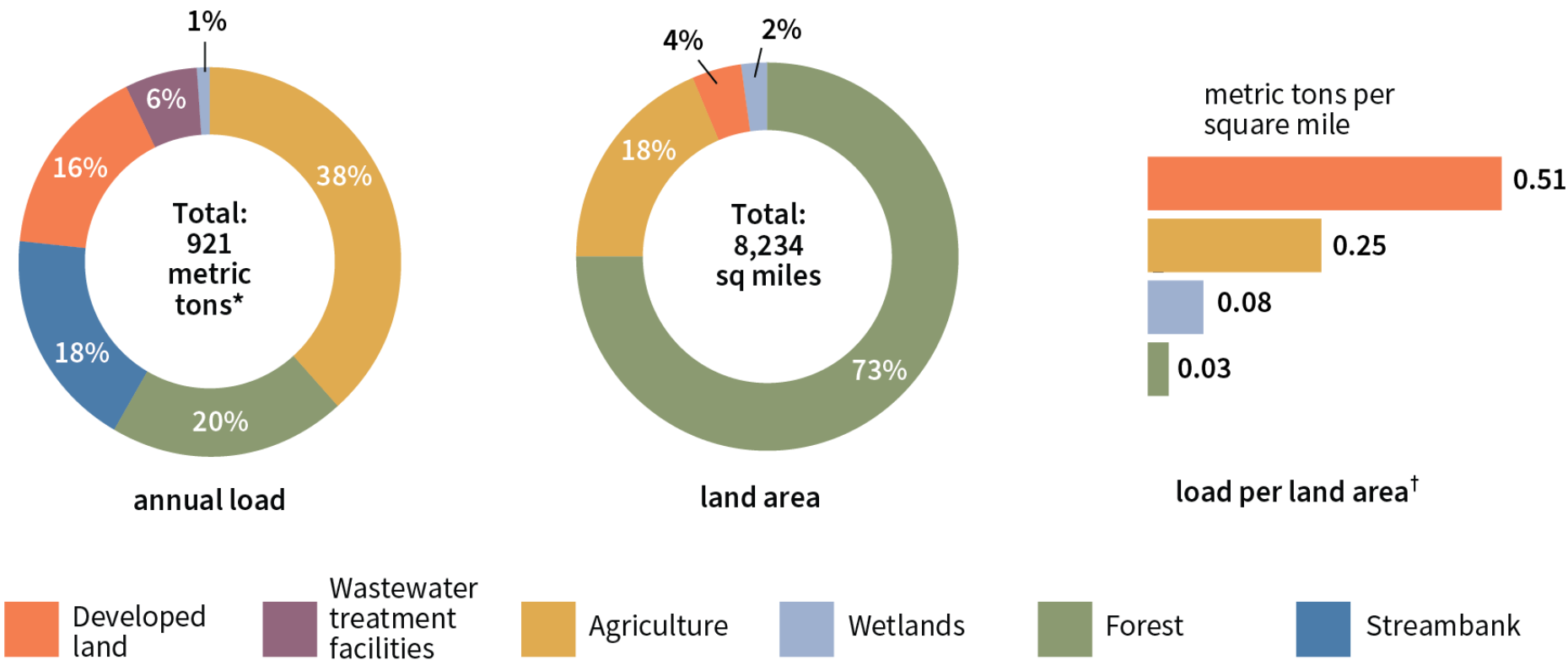




Figure 5.

Annual phosphorus loading and land cover

Page 12



* Estimated 2001–2010

[†] Does not include load from streambanks and wastewater treatment facilities

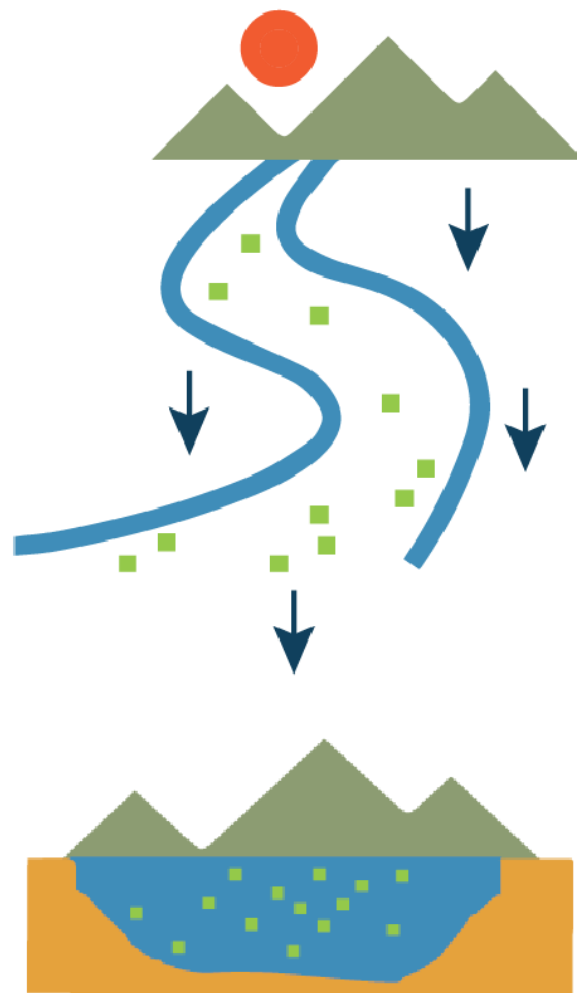


Phosphorus





Concentration and Load



LOAD

Total amount delivered to the Lake in a period of time, typically reported as metric tons* per year (mt/yr).

CONCENTRATION

The amount measured in a unit volume of water, typically reported as micrograms per liter ($\mu\text{g/L}$).

*One metric ton = 2,205 lbs.



Figure 6.

Annual average phosphorus concentration by Lake segment

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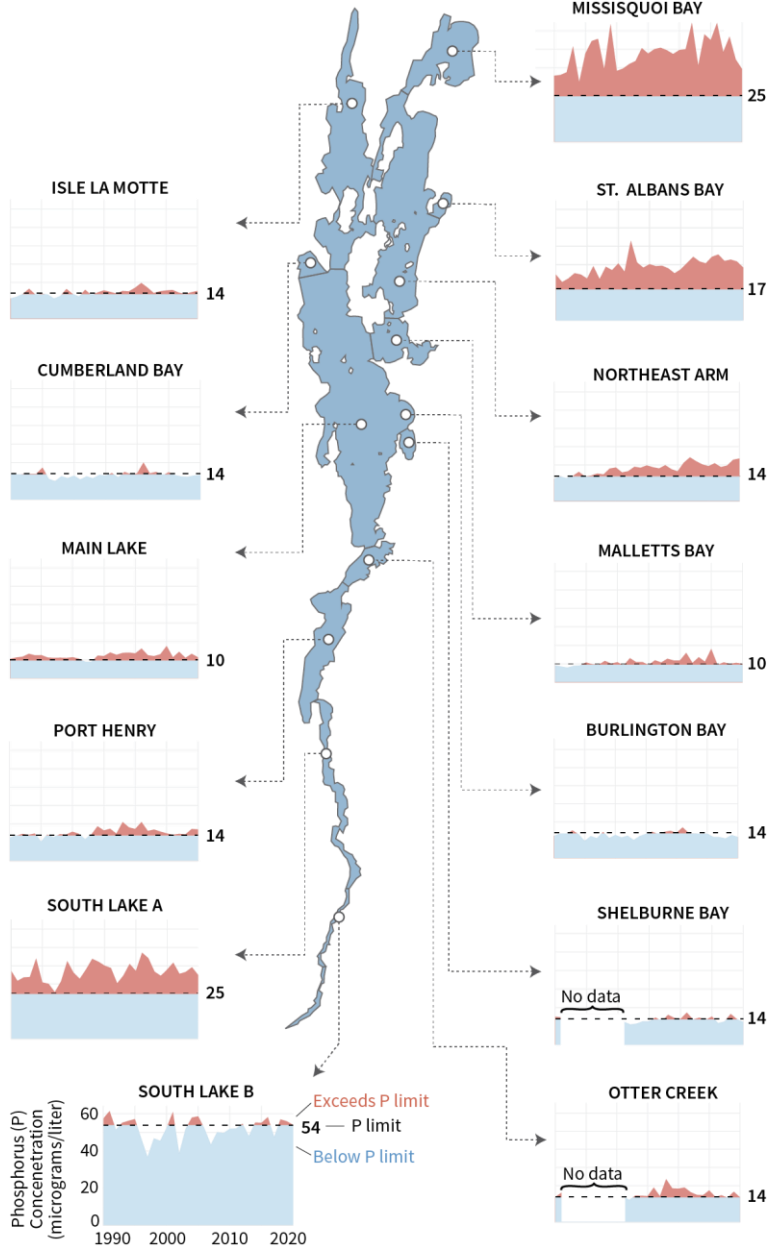
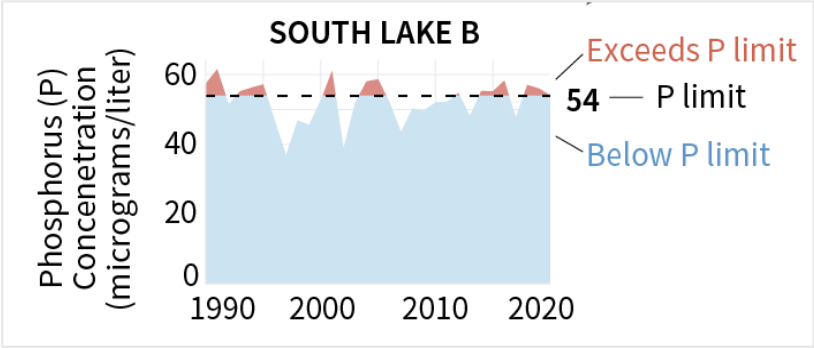




Figure 7.

Phosphorus loading to lake segments compared to TMDL limits

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Estimated loading compared to limit:

5 times greater

3 times greater

on track

half

Main Lake

Cumberland Bay

Missisquoi Bay

1990

2000

2010

2020

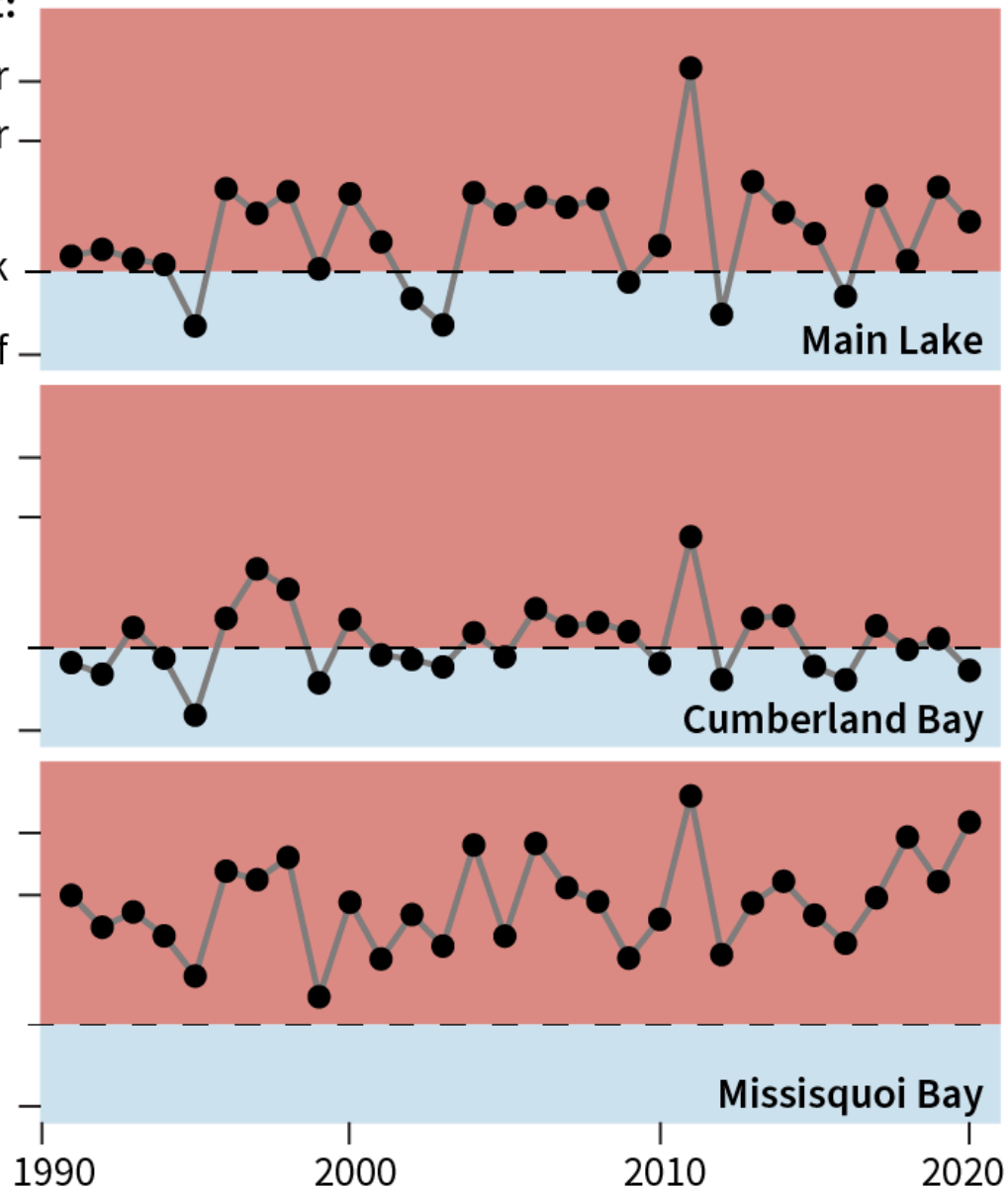
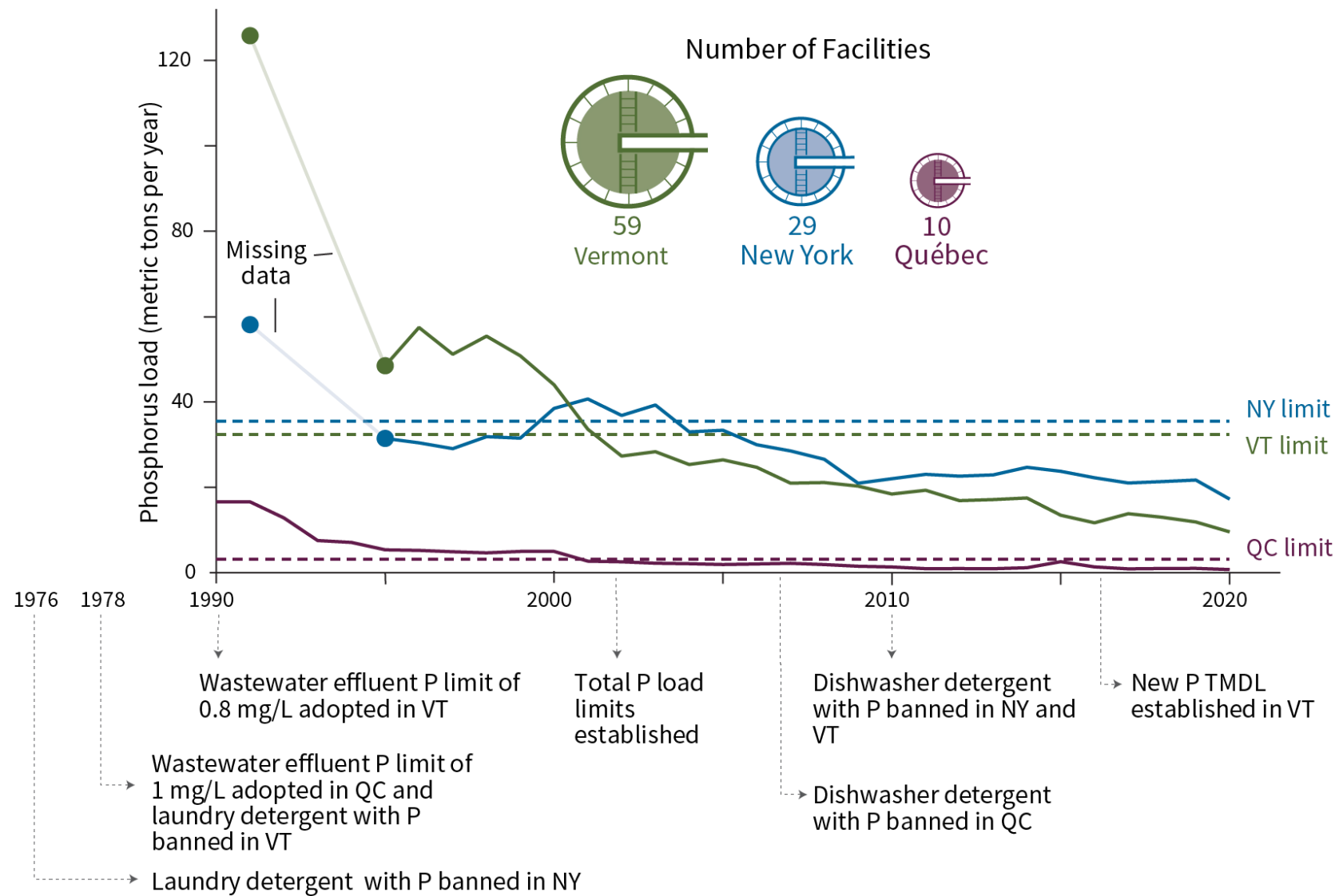




Figure 8.

Annual phosphorus load from wastewater treatment facilities by jurisdiction





Chloride

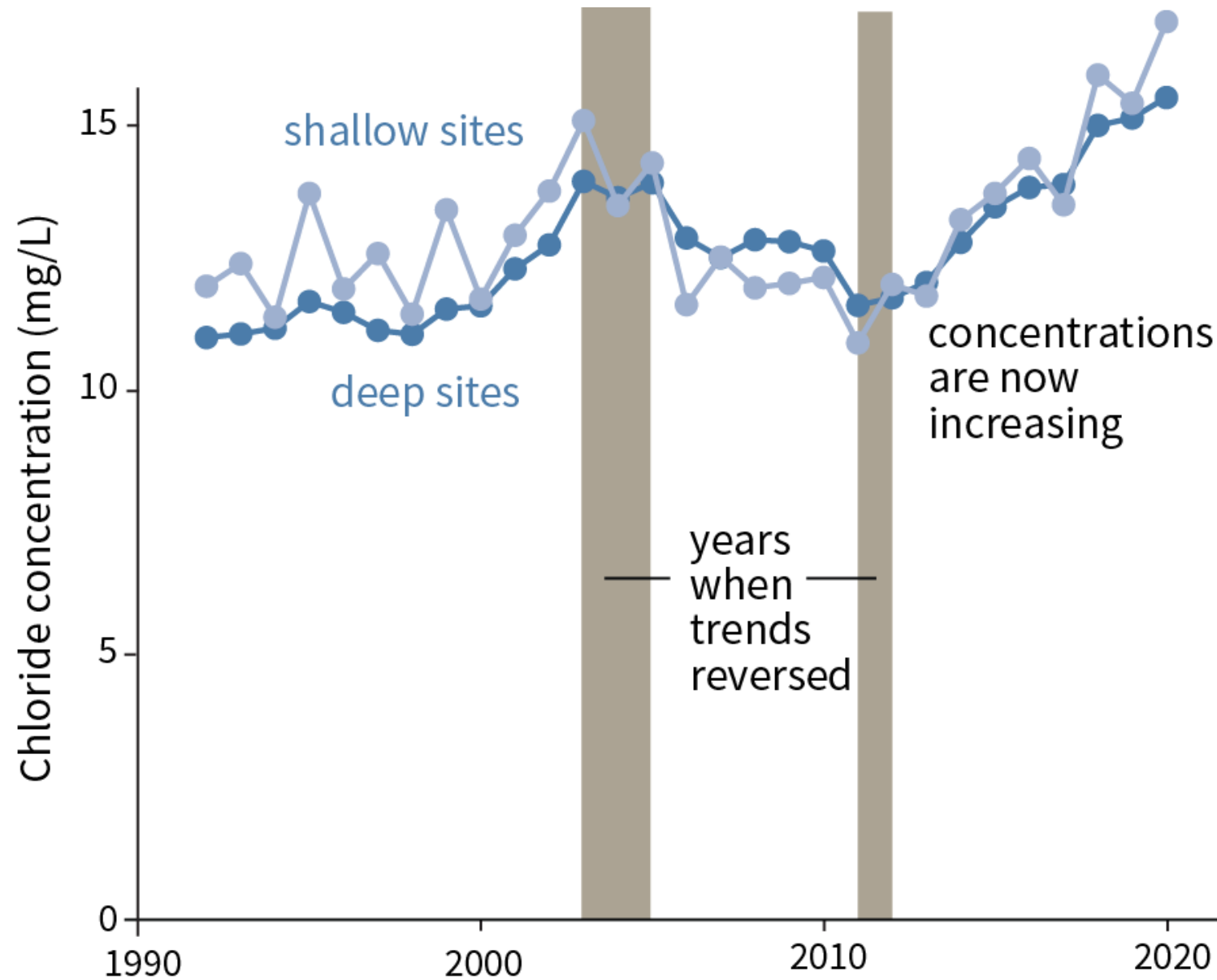


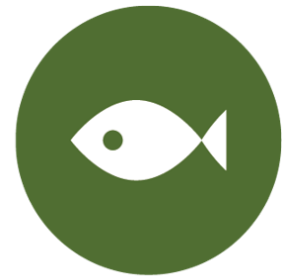


Figure 10.

Annual average
chloride concentration
in Lake Champlain

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Healthy Ecosystems



Healthy Ecosystems Overview

Landlocked
Atlantic
Salmon

Lake surface
freeze-over
and climate
impacts

Non-native
and invasive
species

Water
chestnut





Landlocked Atlantic salmon



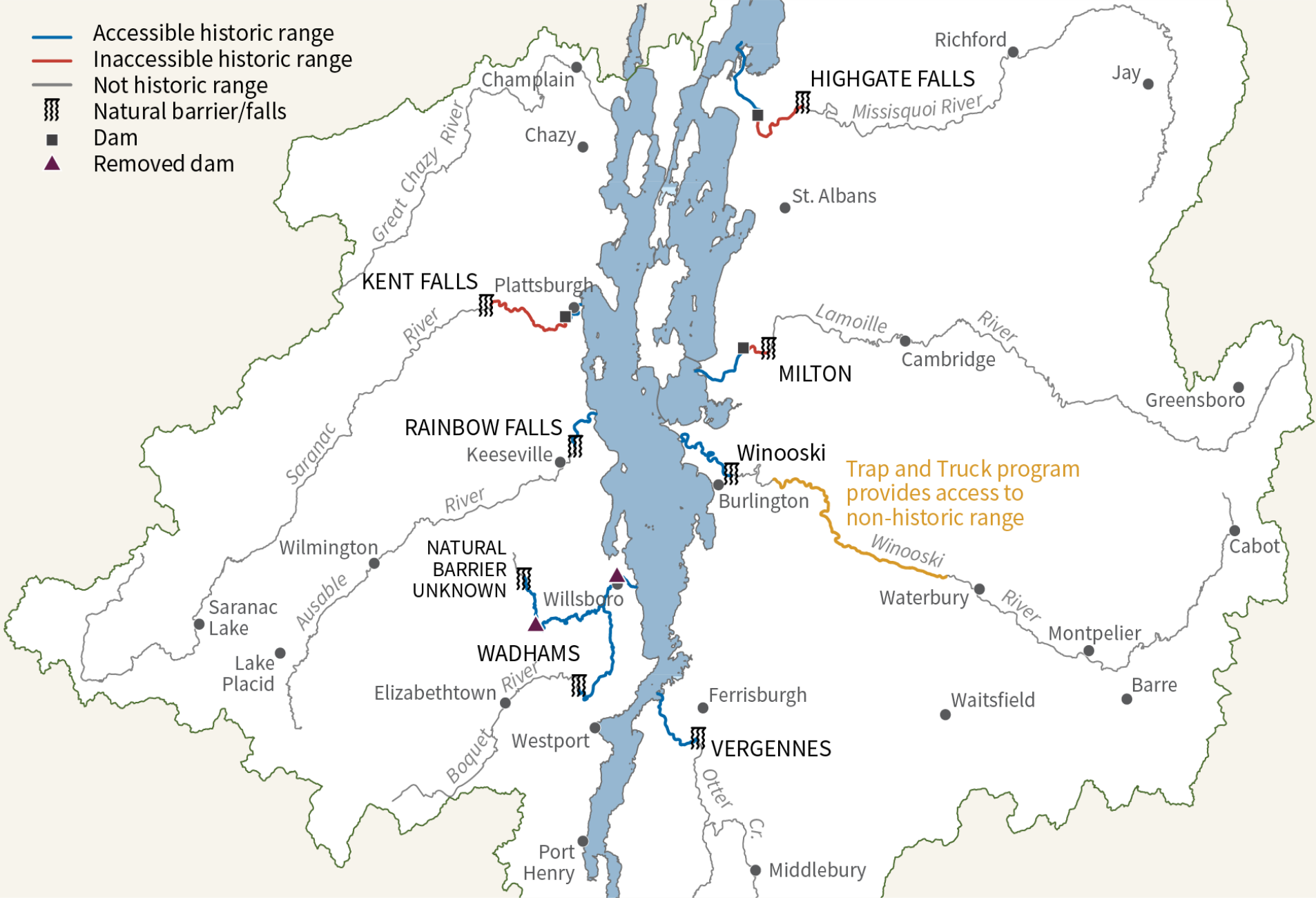


- Accessible historic range
- Inaccessible historic range
- Not historic range
- Natural barrier/falls
- Dam
- Removed dam

Figure 11.

Landlocked Atlantic salmon habitat access in Lake Champlain tributaries

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Lake surface freeze-over





Figure 13.

Surface freeze-over
of Lake Champlain
Page 21

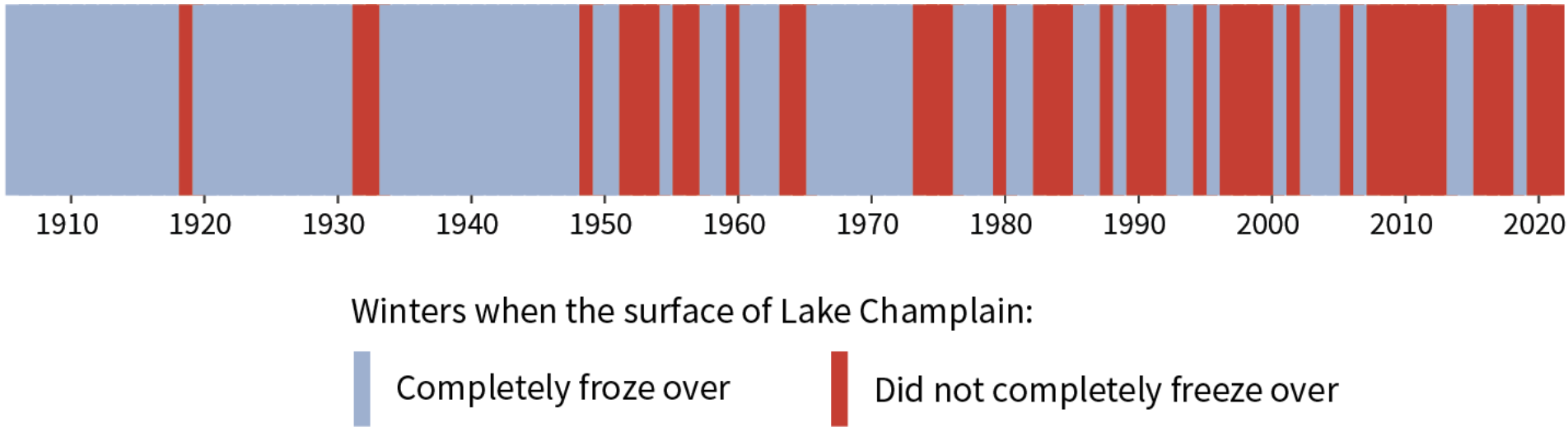
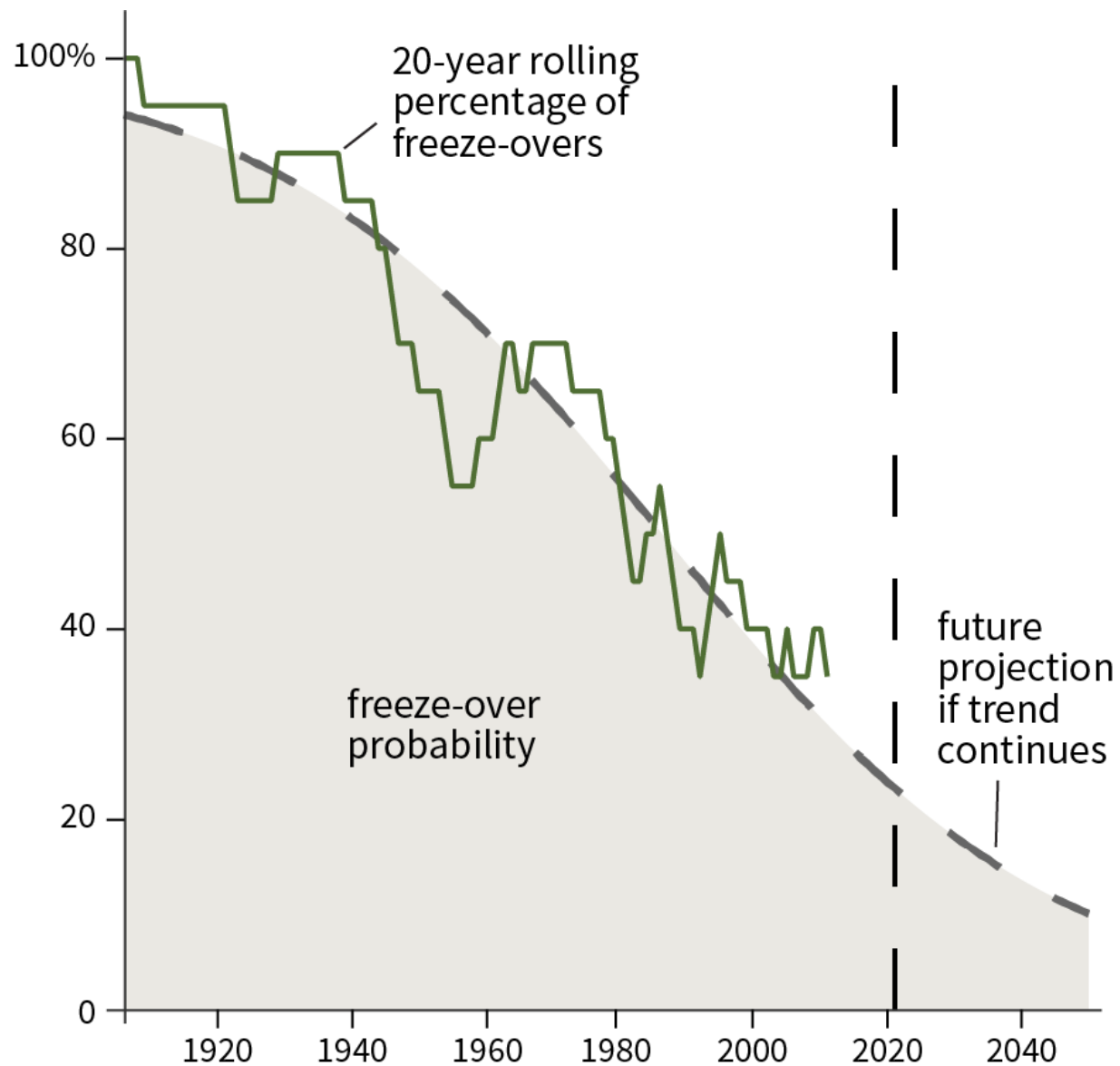




Figure 14.

Probability of
Lake Champlain
surface freeze-over
Page 21





Non-native and invasive species

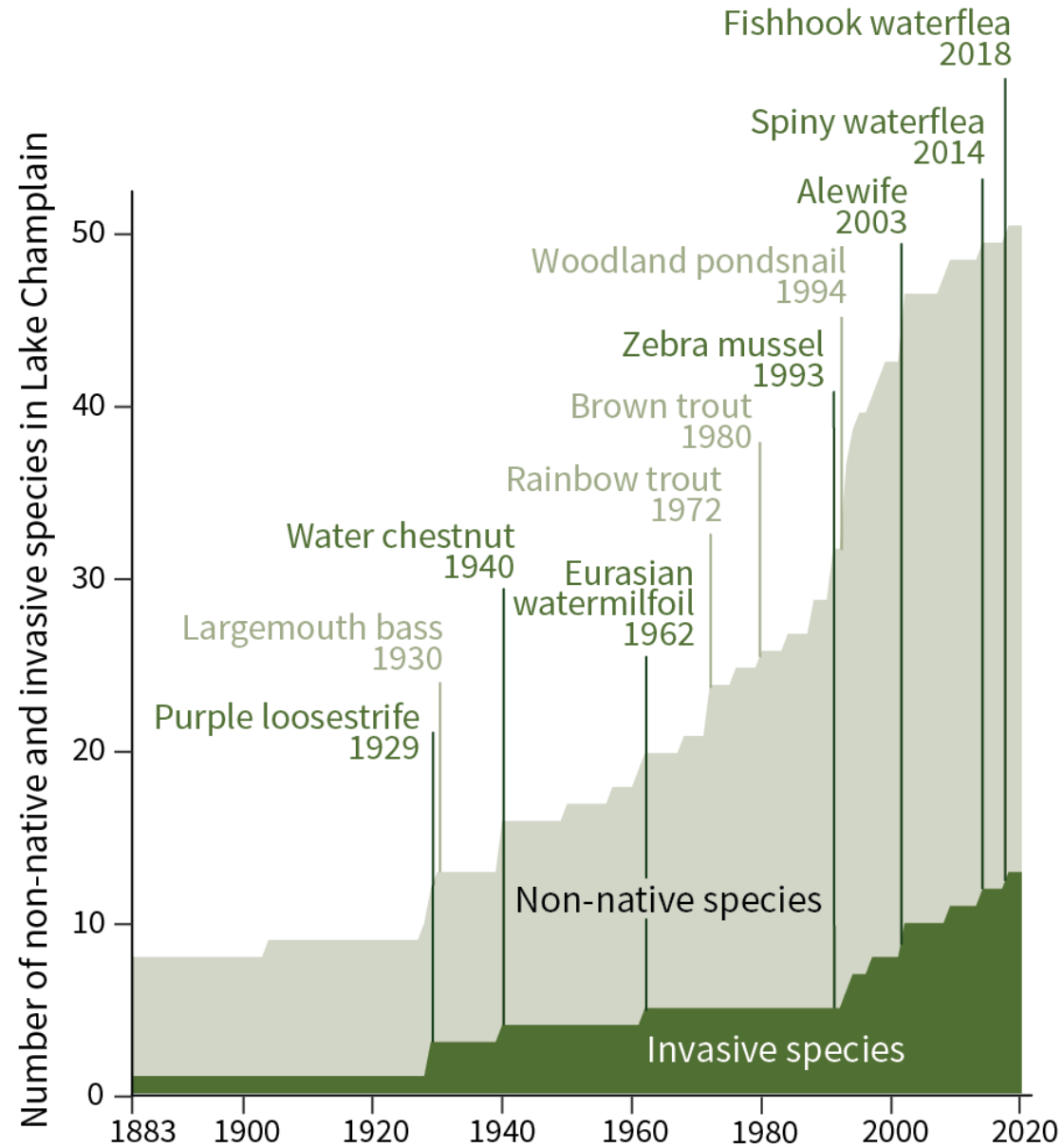




Figure 15.

First detection of
aquatic non-native
and invasive species
in Lake Champlain

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Fishhook waterflea



NOAA, Great Lakes Environmental Research Lab



Figure 16.

Non-native species threats to Lake Champlain Basin from connected waterways

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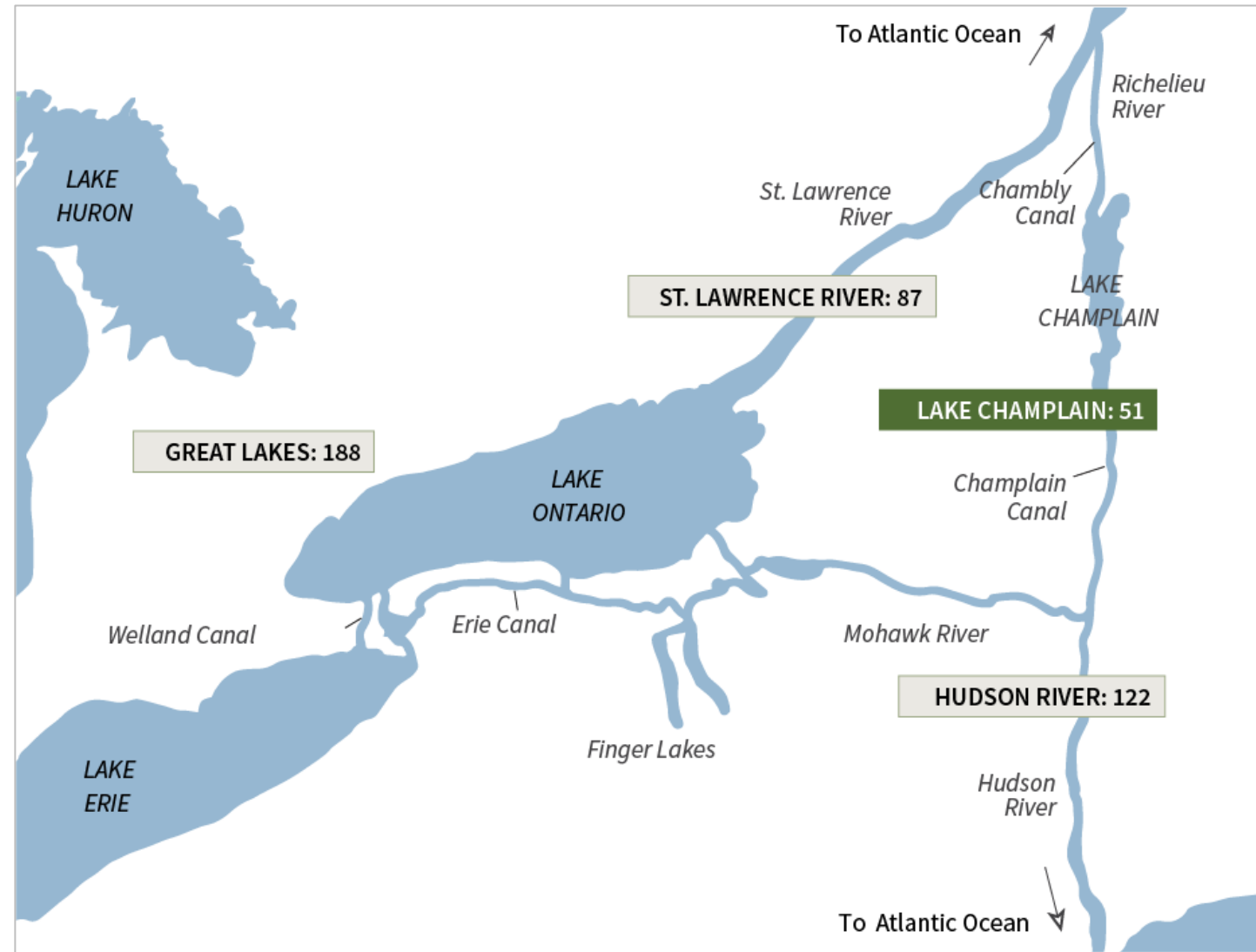
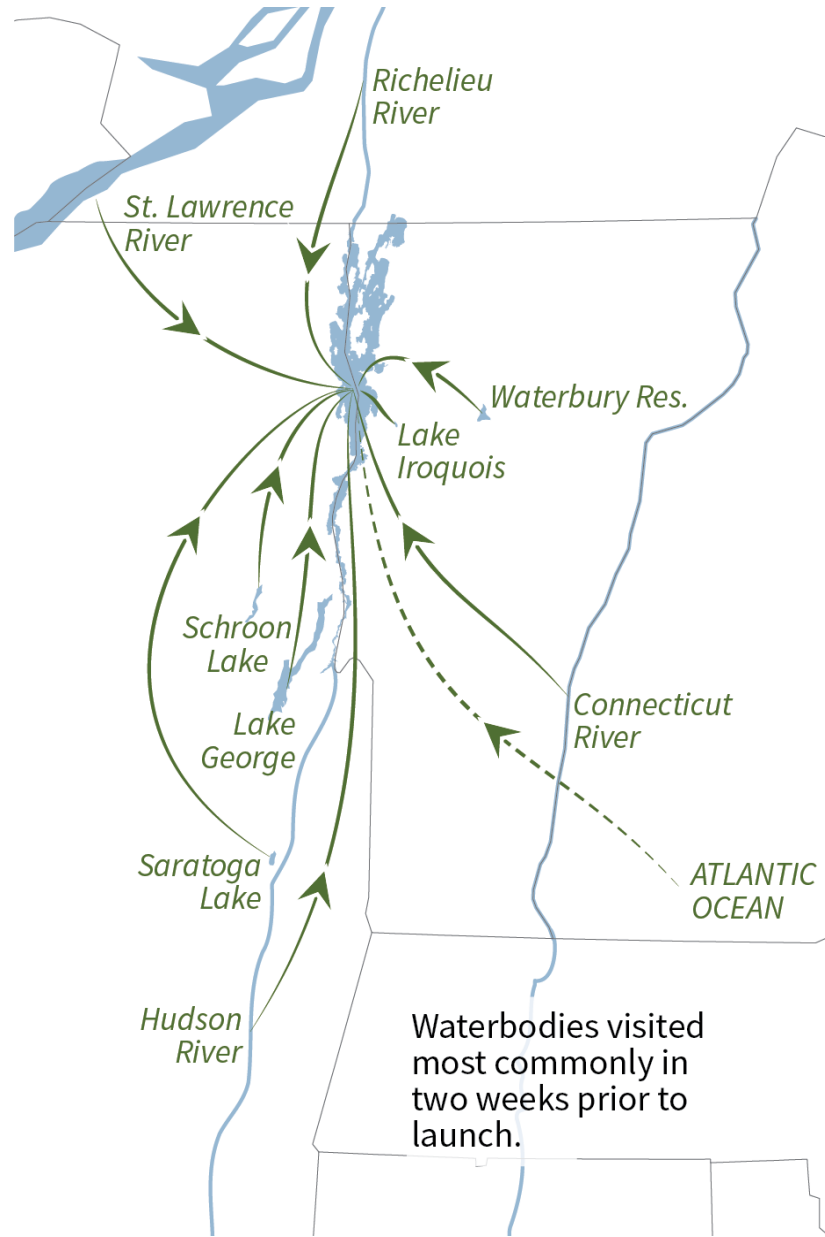




Figure 18.

Waterbodies with
aquatic invasive
species visited prior
to launch into
Lake Champlain
Page 25





Boat launch steward inspection



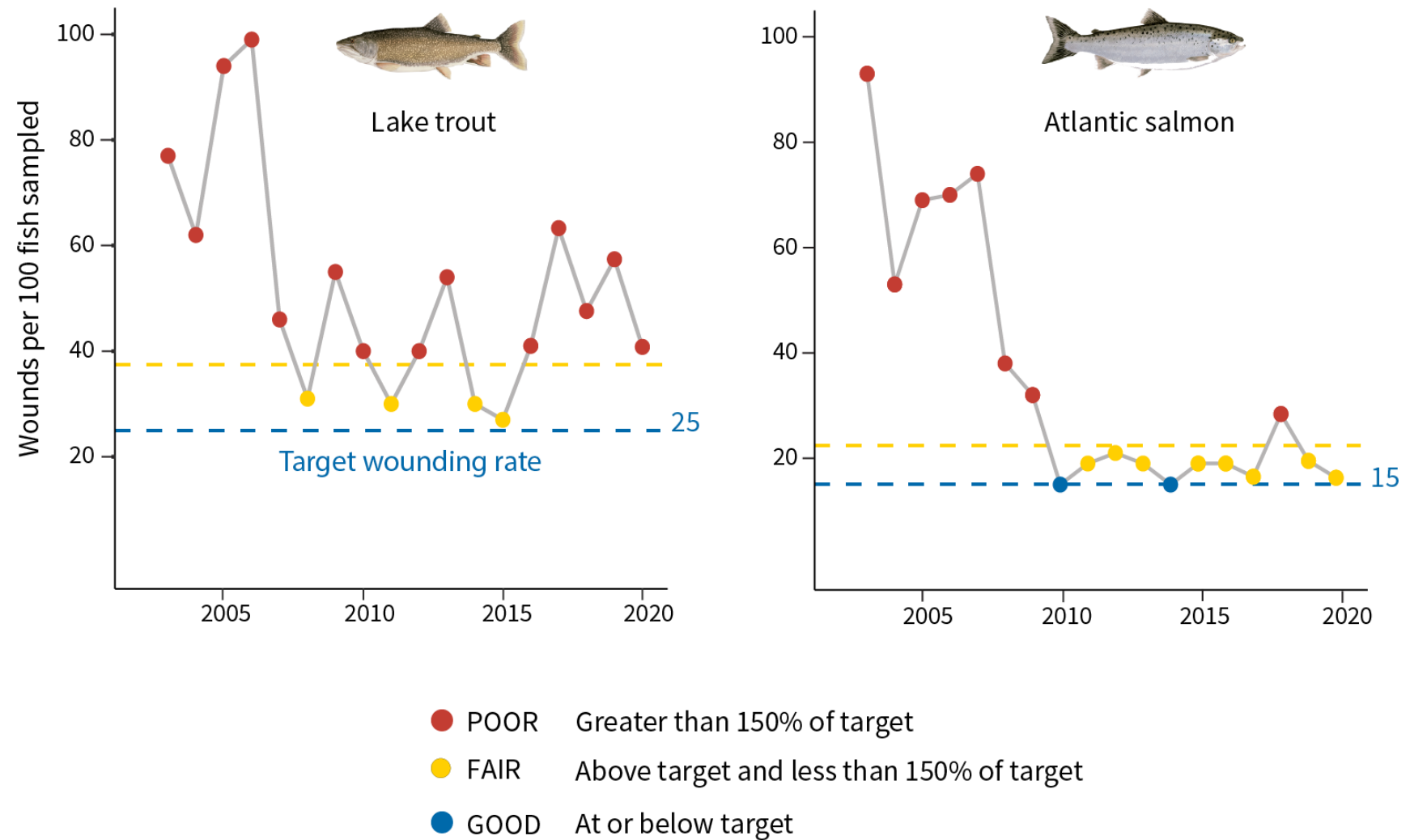


Sea lamprey





Figure 17.
Annual sea lamprey
wounding rate in
Lake Champlain
Page 24





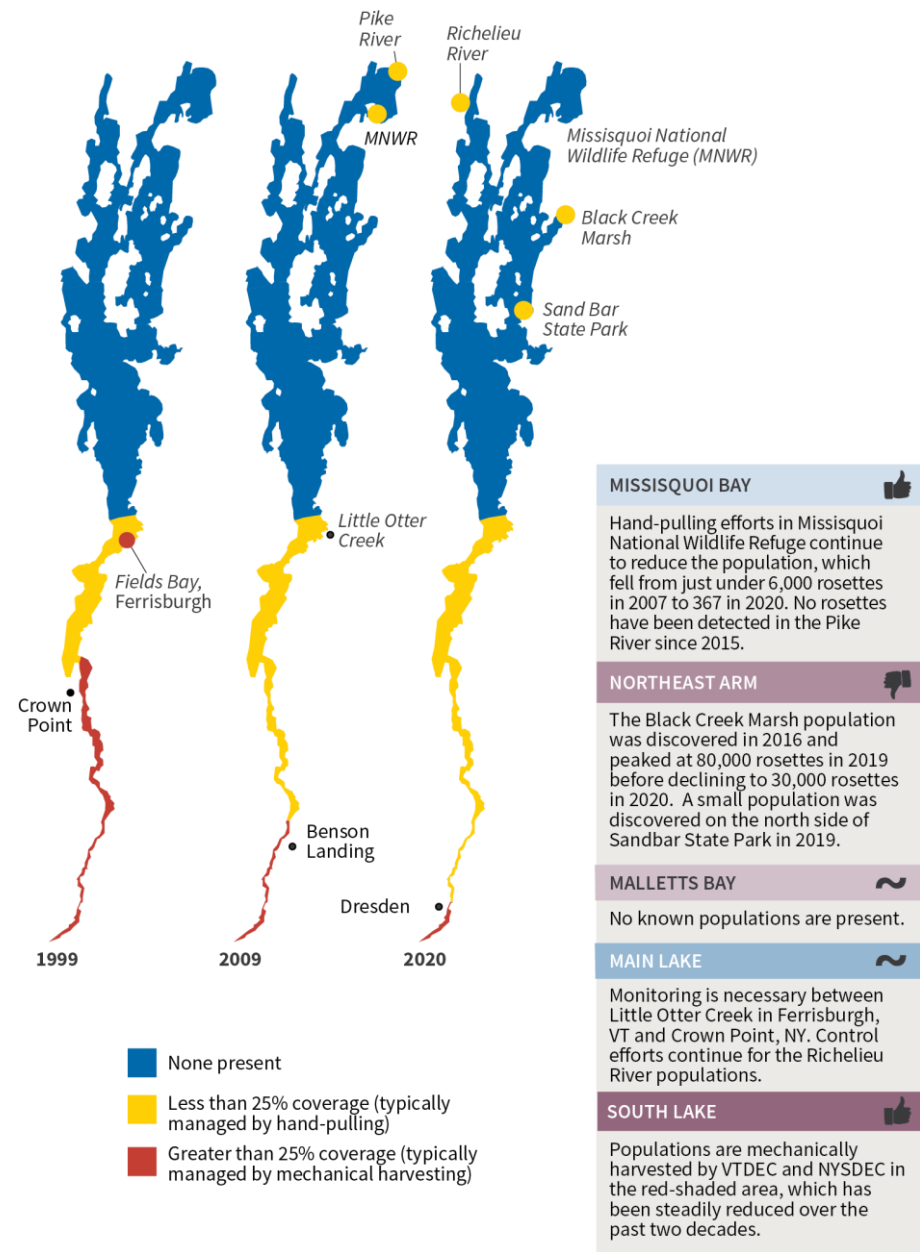
Water chestnut





Figure 19.

Water chestnut coverage in Lake Champlain
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Thriving Communities



Thriving Communities overview

Community
Health

Champlain
Valley National
Heritage
Partnership

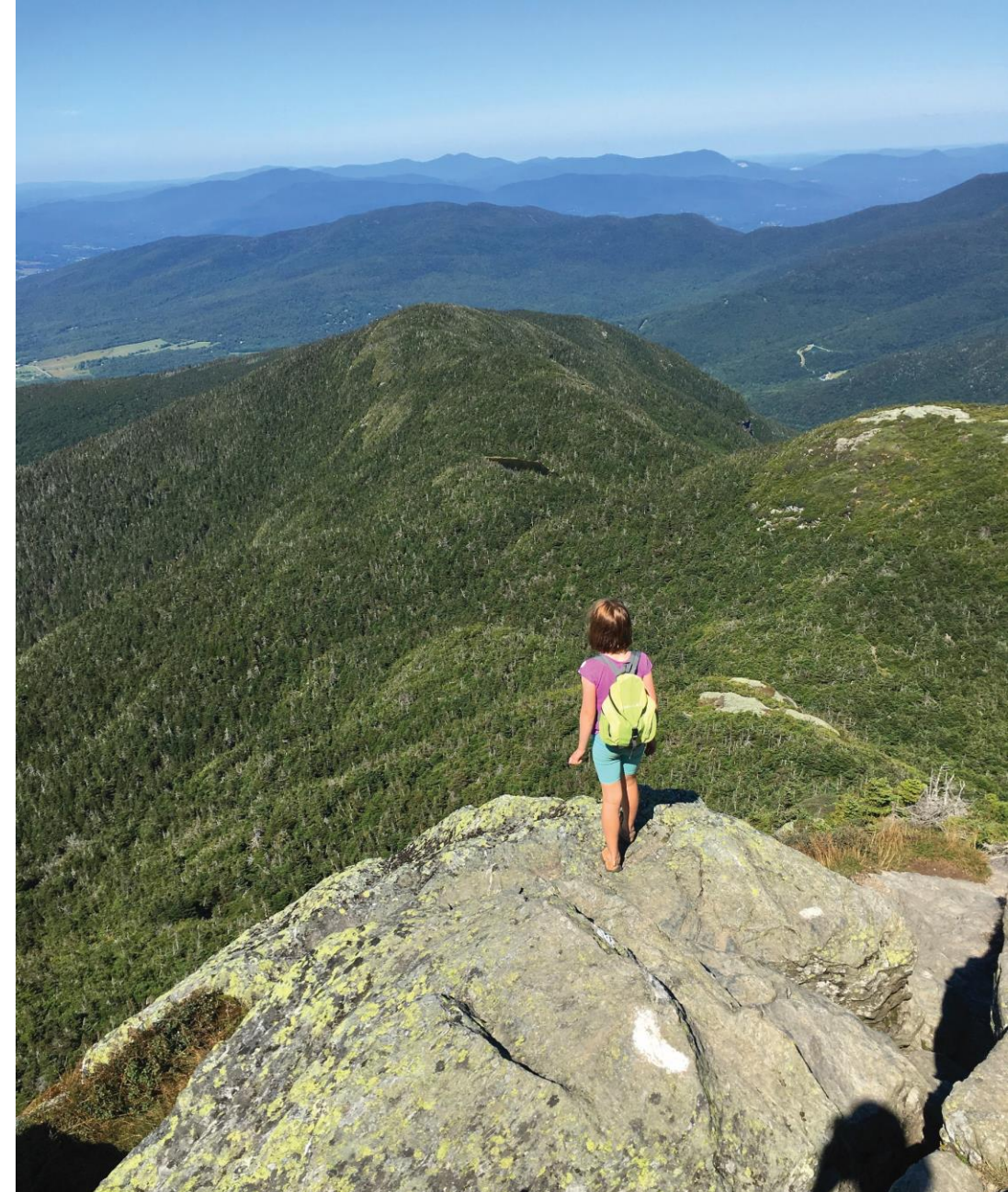




Figure 20.

Public beaches on
Lake Champlain
and conserved lands
in its watershed

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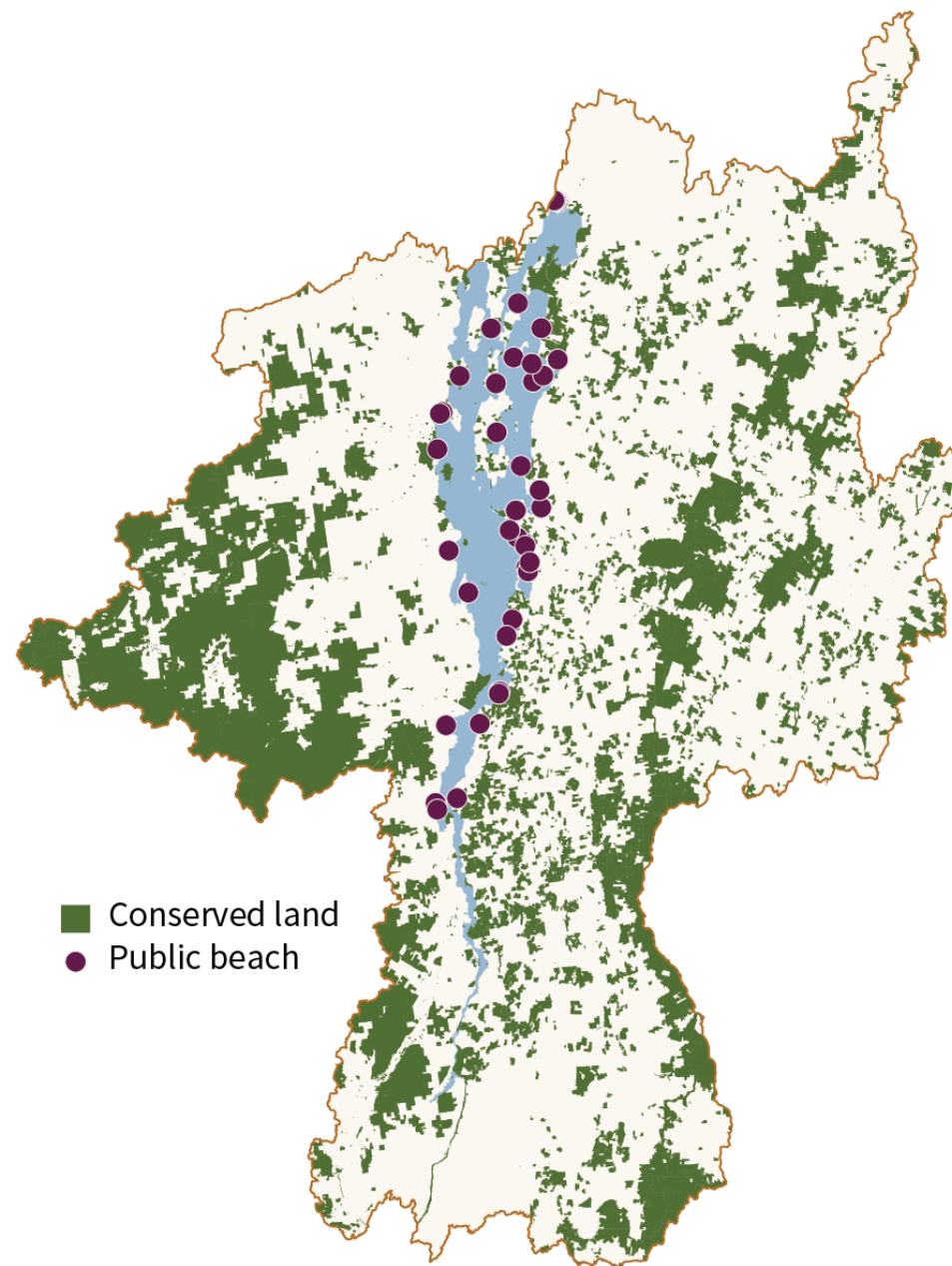
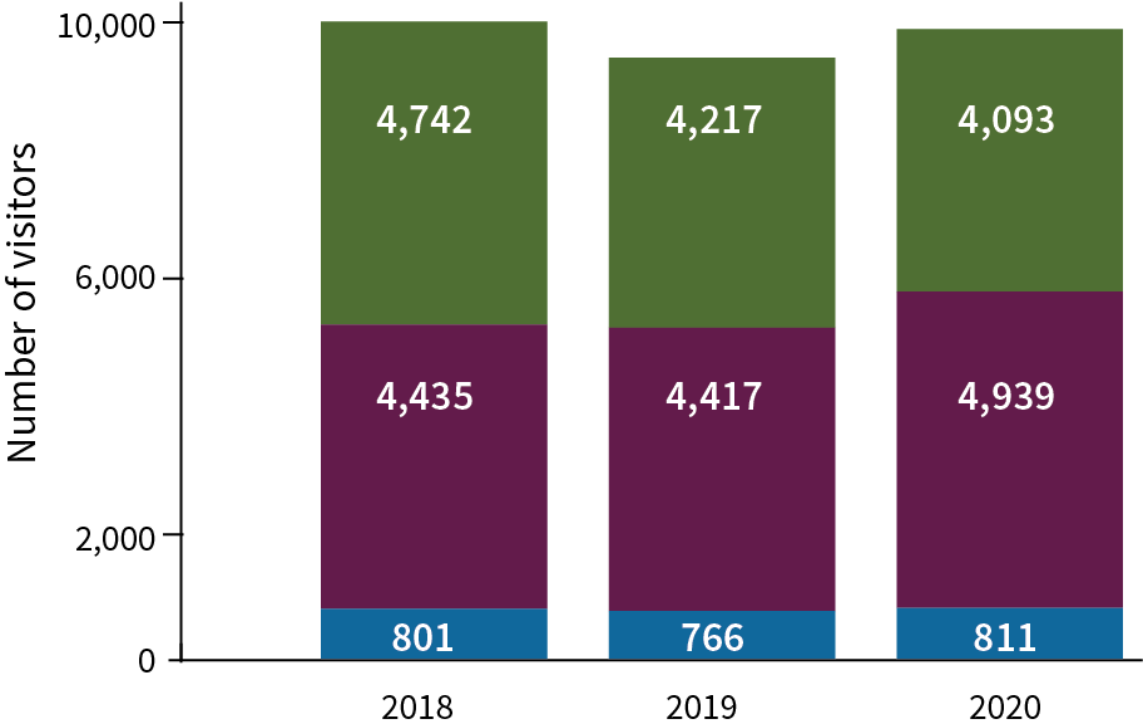




Figure 21.

State park
and campground
visitation in the Lake
Champlain Basin
Page 28



- VT 24 State Parks
- NYDEC 18 Campgrounds
- NY 7 State Parks



Champlain Valley National Heritage Partnership





Informed and Involved Public



Informed and Involved Public Overview

Education &
outreach

Community
Action





Figure 22.

Lake Champlain
boat launch steward
program summary,
2018-2020

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