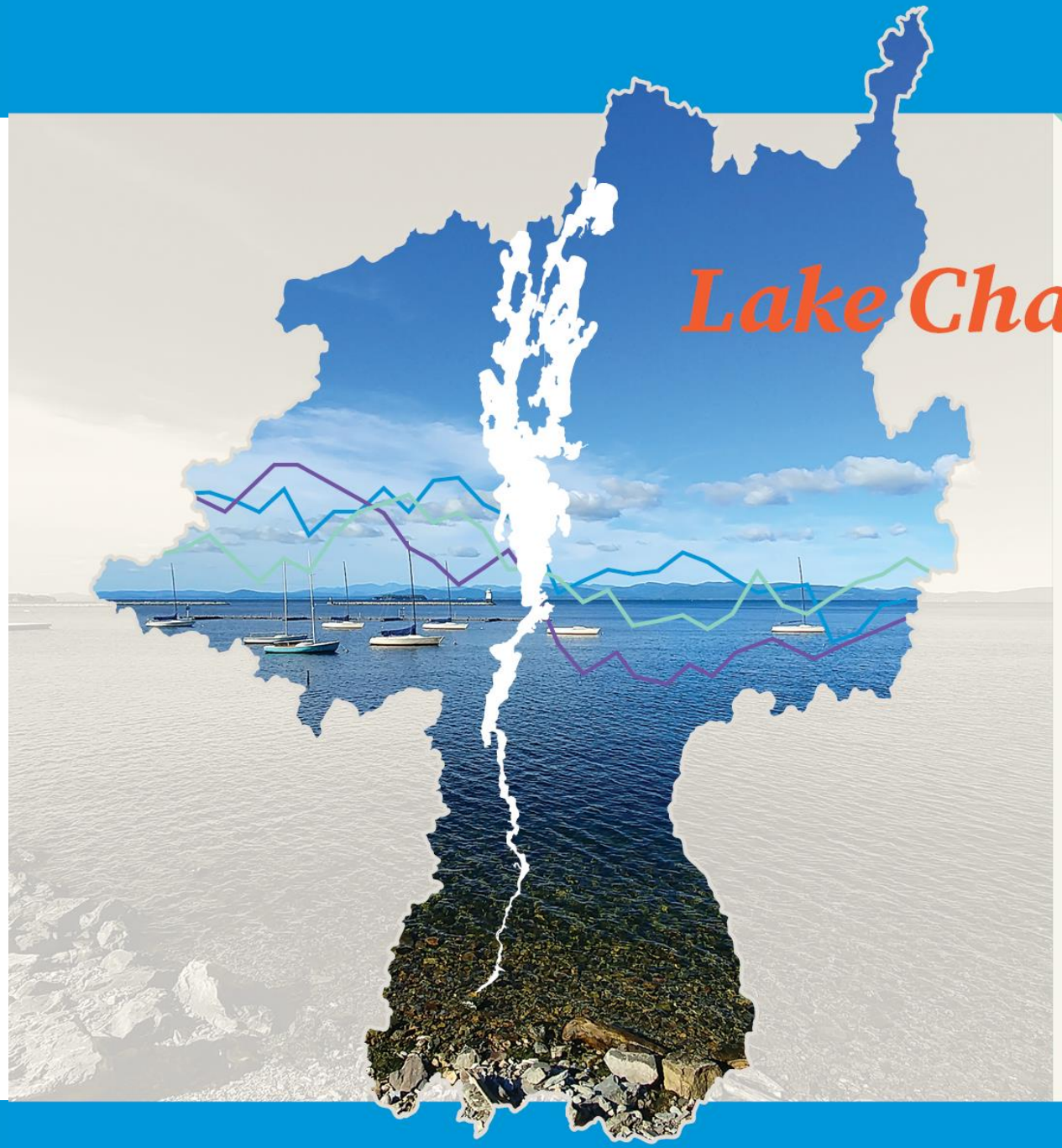


Lake Champlain

2024 STATE of the LAKE and Ecosystem Indicators Report

NEIWPCC

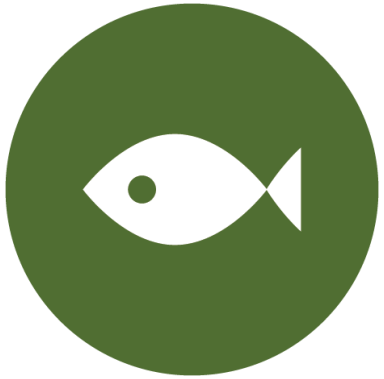
PATRICK LEAHY
Lake Champlain Basin Program

THE LAKE CHAMPLAIN BASIN

MANAGEMENT APPROACH

OPPORTUNITIES FOR ACTION

Clean Water



Healthy Ecosystems

Thriving Communities

Informed and Involved Public

ECOSYSTEMS INDICATOR SCORECARD

			MISSISQUOI BAY		NORTHEAST ARM*		MALLETTS BAY		MAIN LAKE		SOUTH LAKE	
		TREND START	STATUS	TREND	STATUS	TREND	STATUS	TREND	STATUS	TREND	STATUS	TREND
CLEAN WATER	Phosphorus in Lake (p. 13)	1990	Poor	No trend	Poor	Deteriorating	Fair	No trend	Fair	No trend	Fair	No trend
	Phosphorus from rivers (p. 14)	1991	Poor	Deteriorating	No status data	No trend data	Fair	Improving	Fair	No trend	No status data	No trend
	Phosphorus from WWTFs† § (p. 15)	1995	Good	Improving	Good	Improving	Good	Improving	Good	Improving	Good	Improving
	Cyanobacteria blooms (p. 10)	2013	Poor	No trend	Fair	Deteriorating	Fair	No trend	Fair	No trend	Good	No trend
	Fish consumption advisories† (p. 7)	2018	Fair	No trend	Fair	No trend	Fair	No trend	Fair	No trend	Fair	No trend
HEALTHY ECOSYSTEMS	Sea lamprey wounding† (p. 26)	2003	Good	Improving	Good	Improving	Good	Improving	Good	Improving	Good	Improving
	New aquatic invasive species (p. 25)	2021	Good	Improving	Good	Improving	Good	Improving	Good	Improving	Good	Improving
	Invasive water chestnut coverage (p. 28)	2021	Fair	Deteriorating	Fair	Deteriorating	Good	No trend	Fair	Deteriorating	Poor	No trend
CLIMATE IMPACTS	Lake Champlain freeze-over (p. 29)	1906	Trend: Lake surface freezing over less frequently.									

** Northeast Arm indicator statuses and trends for in-lake phosphorus concentrations, tributary phosphorus loading to the Lake, and cyanobacteria blooms do not include data from St. Albans Bay.*

† These lake-wide indicators are the same for all segments.

§ Wastewater treatment facilities

Some trends may be impacted by year-to-year differences in data collection and reporting. This is especially true for cyanobacteria bloom data, which is collected by a network of volunteer community scientists.

STATUS

- GOOD
- FAIR
- POOR
- NO STATUS DATA AVAILABLE

TREND

- IMPROVING
- NO TREND
- DETERIORATING
- NO TREND DATA AVAILABLE

Clean Water

Community Sailing Center

DRINKABLE, FISHABLE AND SWIMMABLE WATER

Rachel Hamm Vaughan

Clean Water

FIGURE 1 |
Drinking water intakes
(page 7)

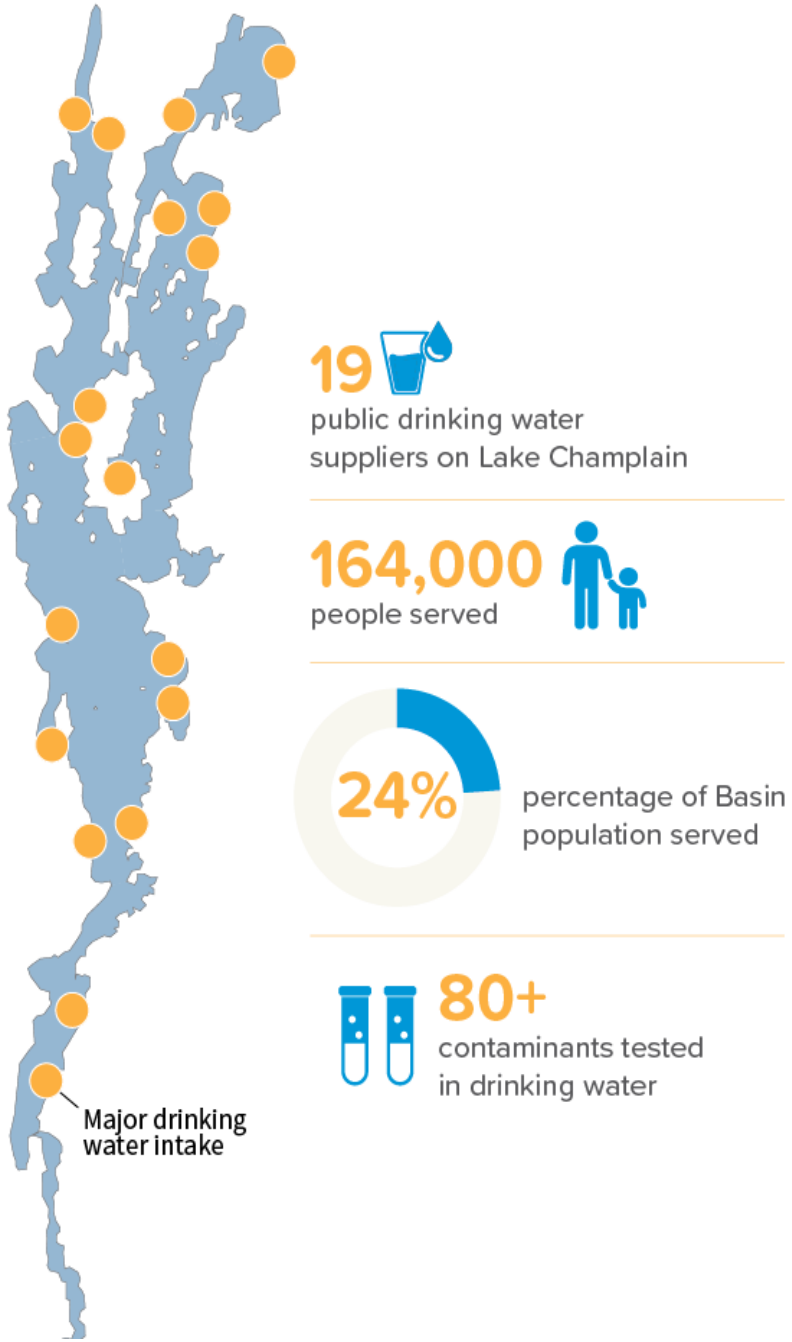


FIGURE 2 | Mercury concentration in Lake Champlain fish tissue

(page 7)

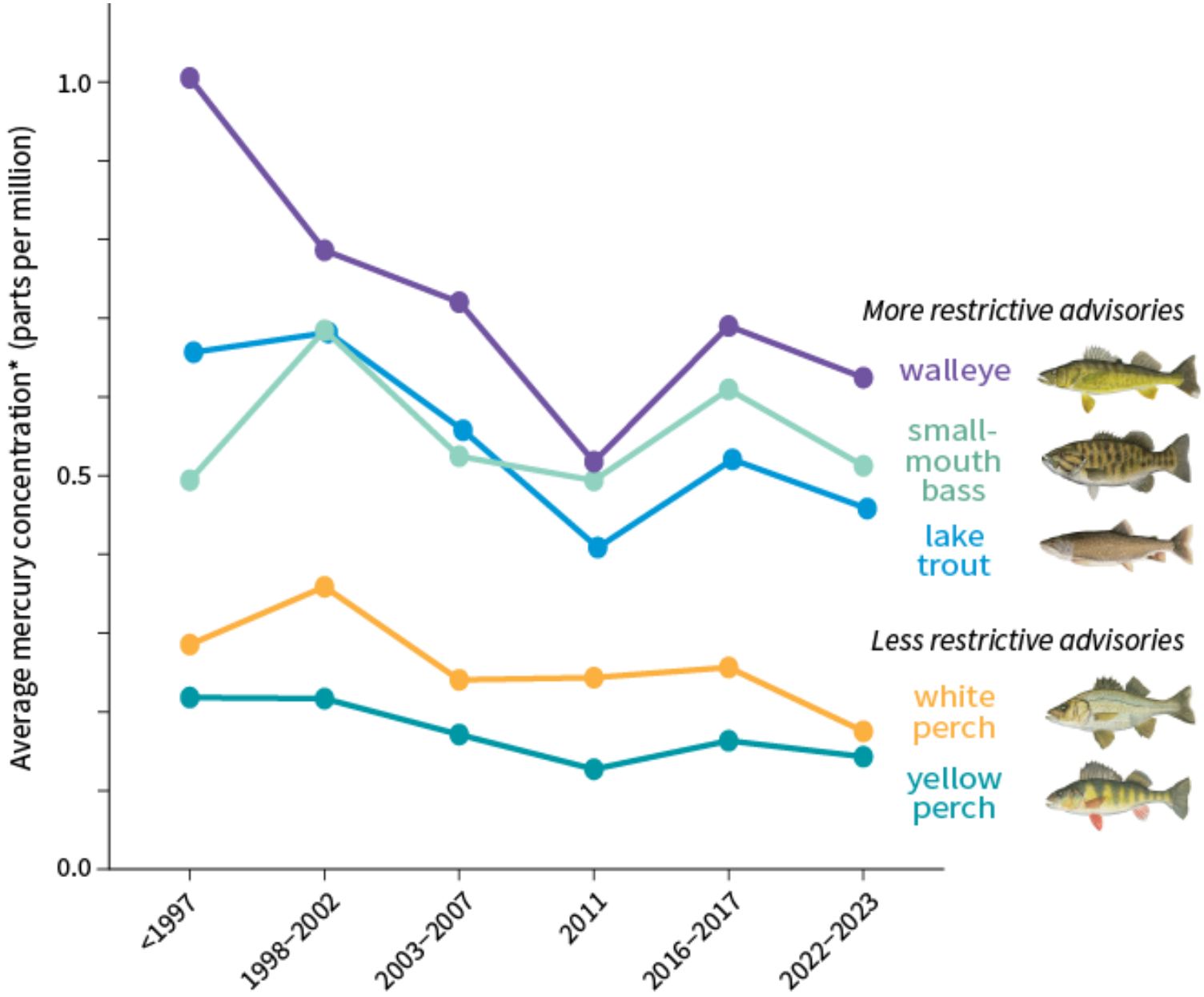
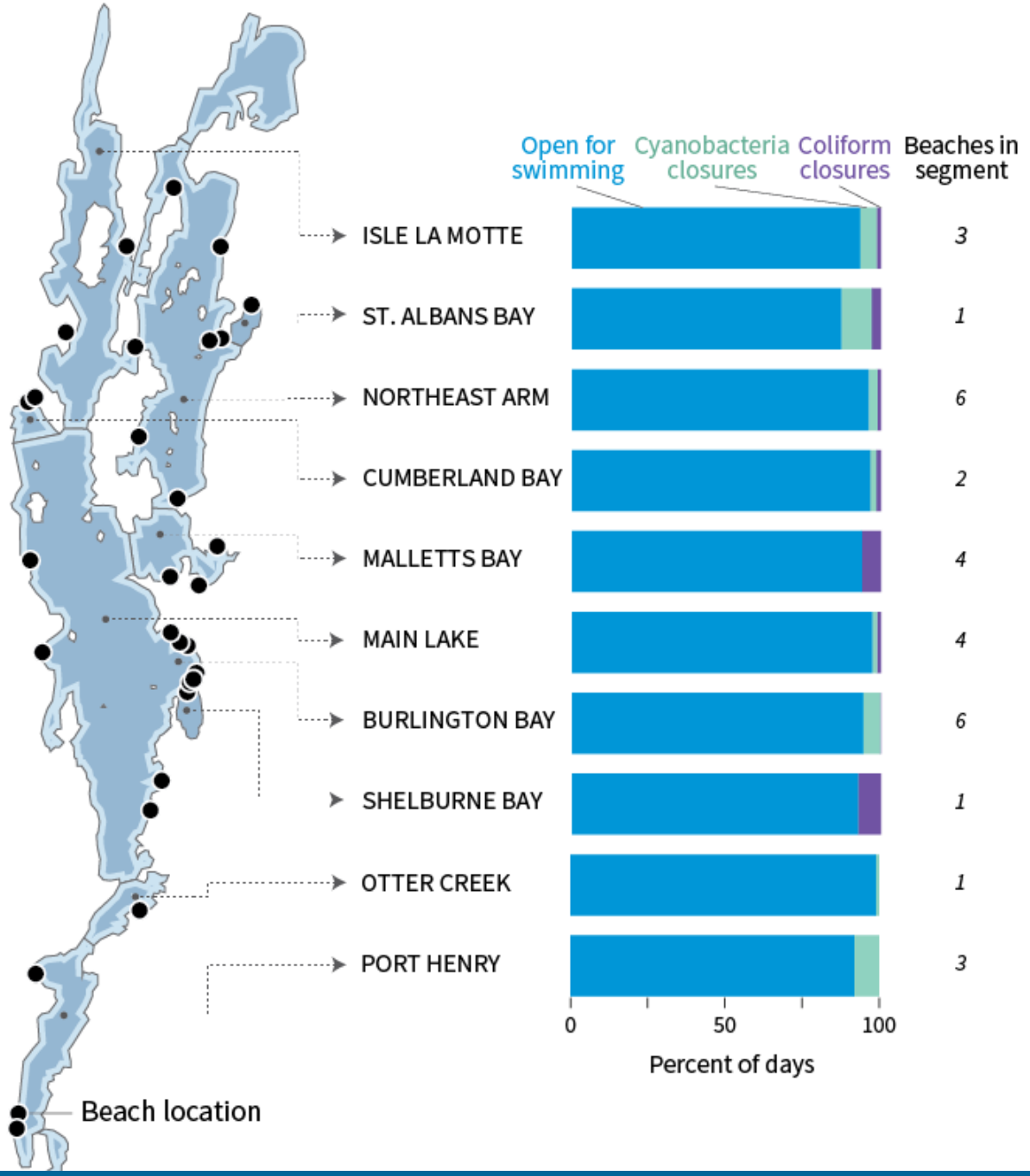


FIGURE 3 | Public Beach Statuses by lake segment, Memorial Day to Labor Day, 2021-2023 (page 8)



CYANOBACTERIA

Clean Water

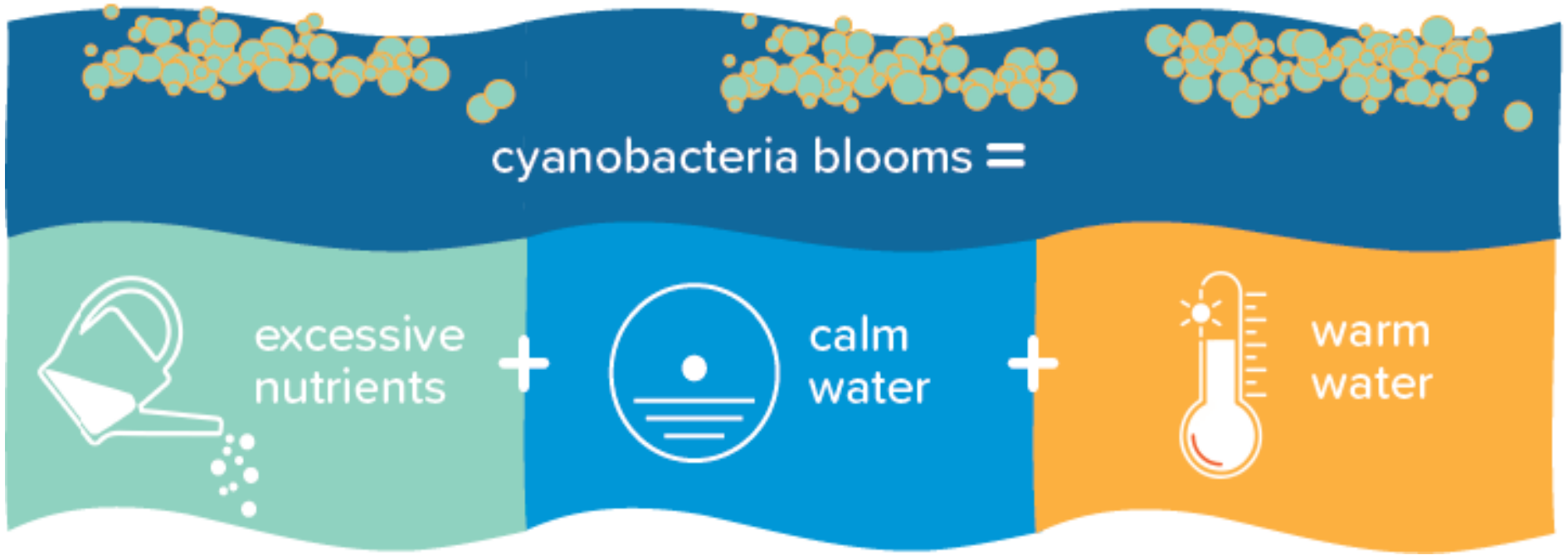
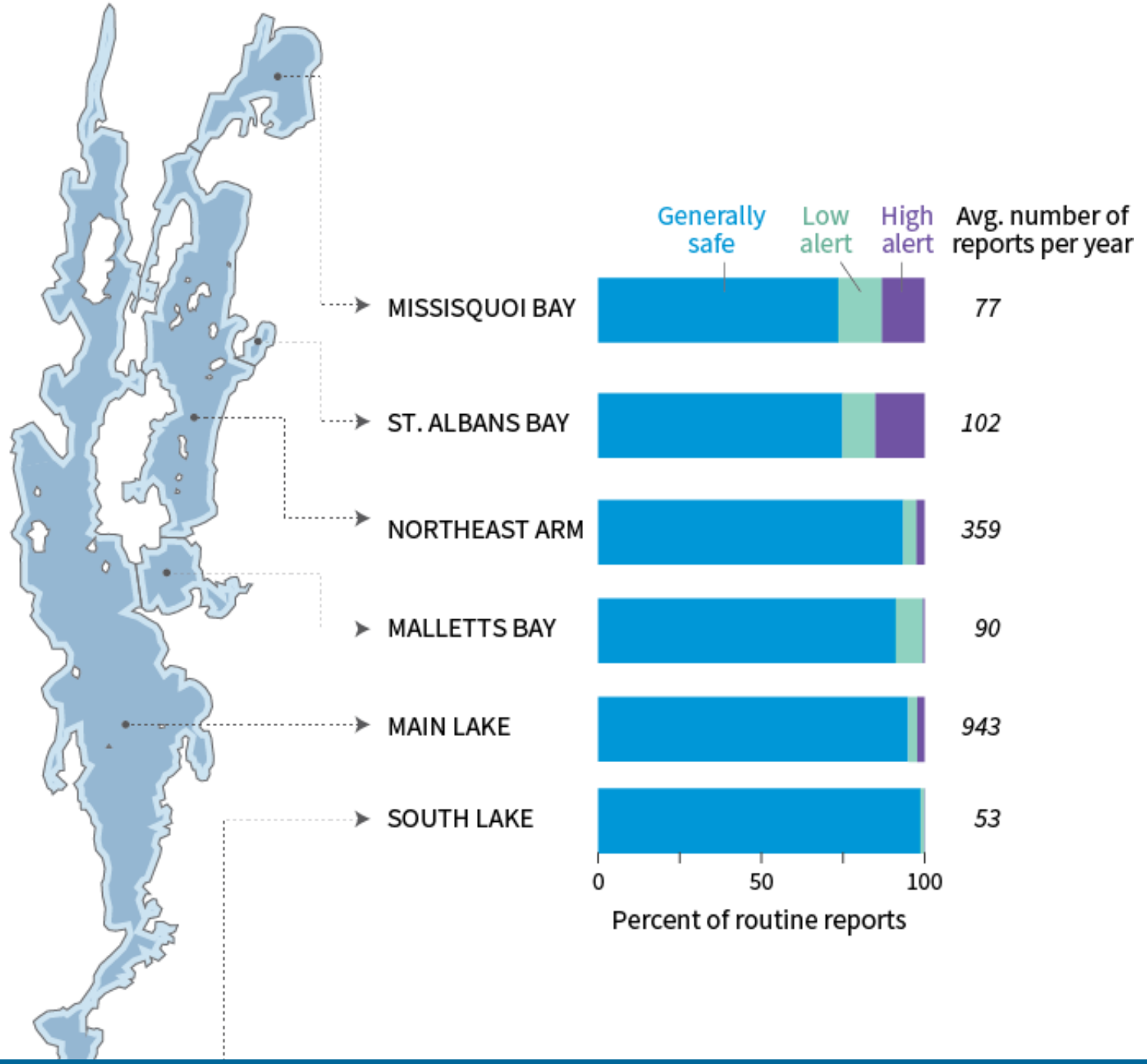

cyanobacteria blooms =
excessive nutrients
+
calm water
+
warm water

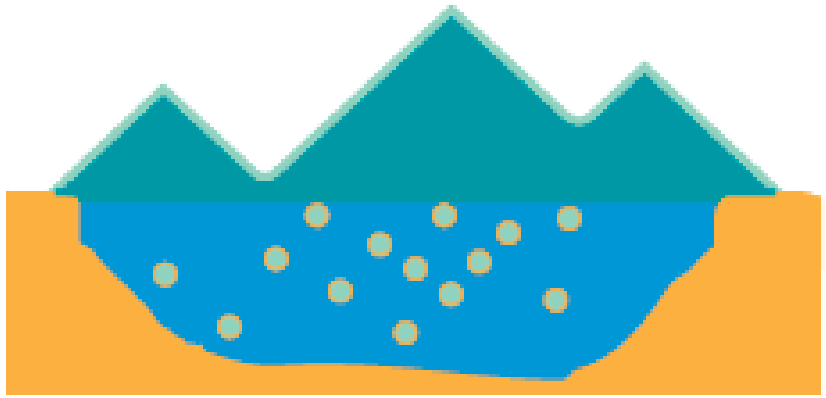
FIGURE 5 | Routine cyanobacteria monitoring by Lake region, 2021 -2023

(page 10)



NUTRIENTS

Clean Water



CONCENTRATION

The amount measured in a unit volume of water, typically reported as micrograms per liter (µg/L).

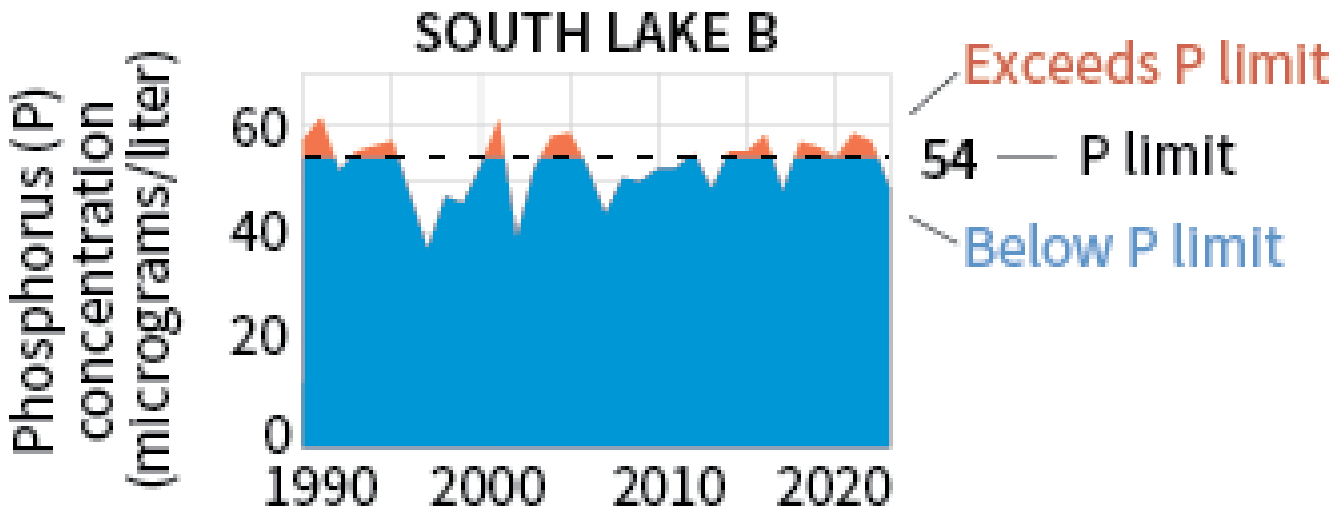
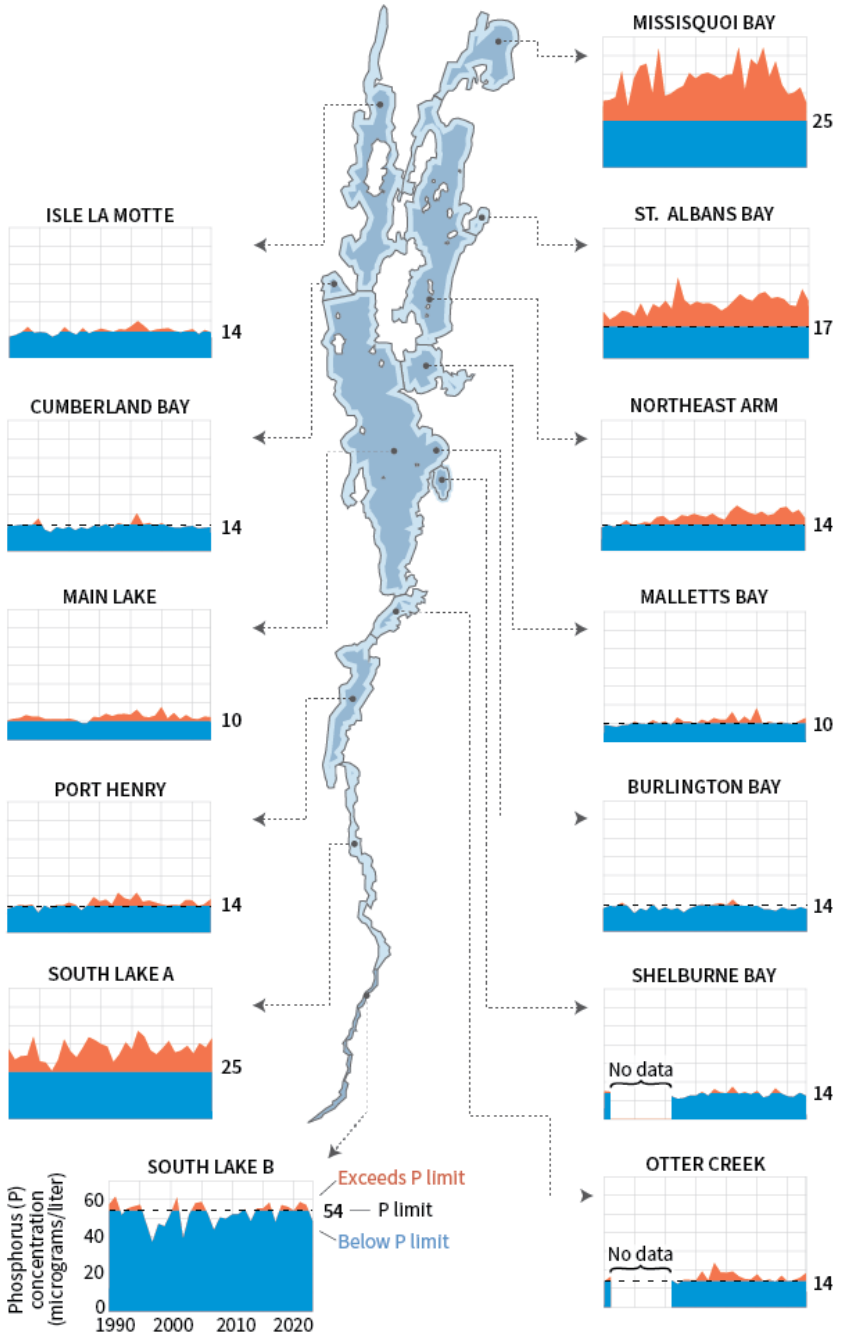
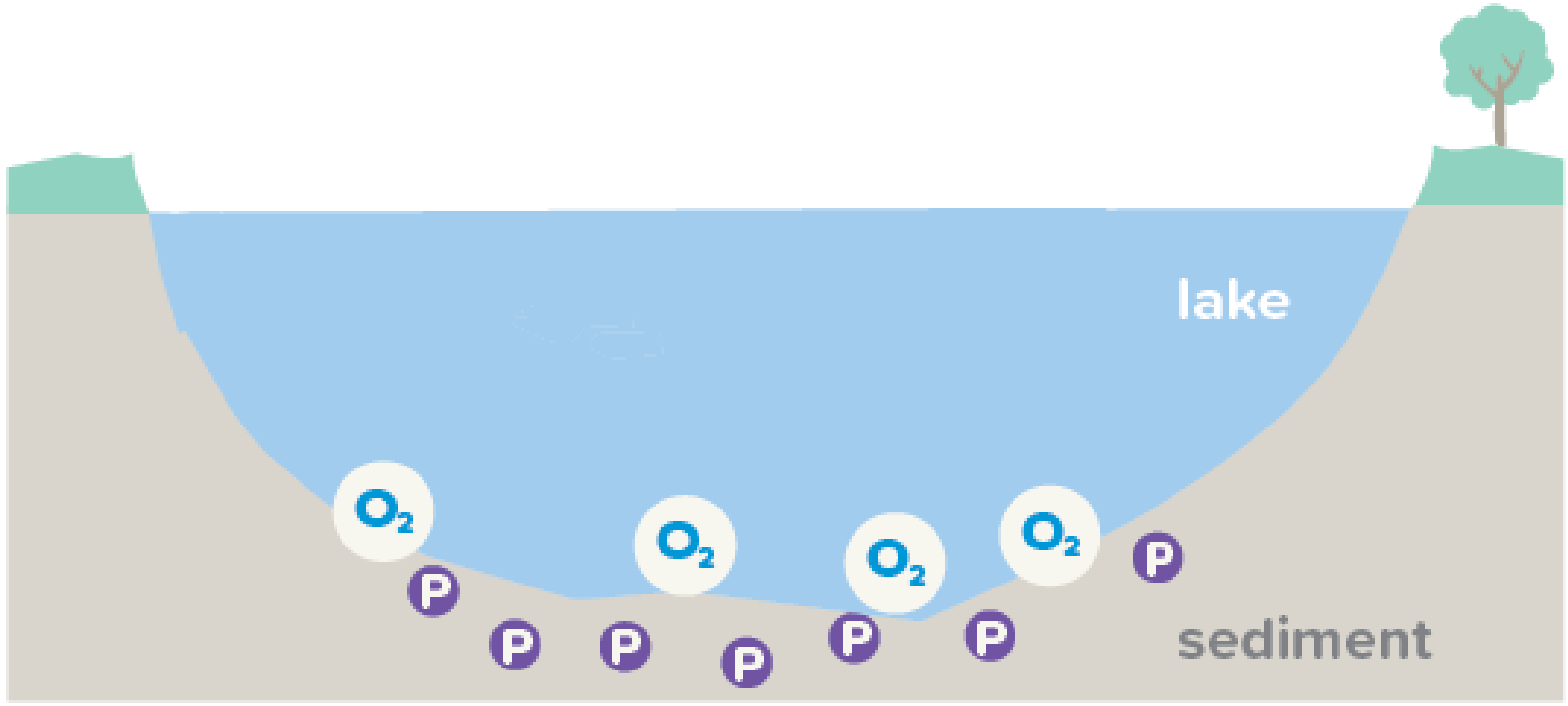

SOUTH LAKE B
Phosphorus (P) concentration (micrograms/liter)
60
40
20
0
1990
2000
2010
2020
Exceeds P limit
54
P limit
Below P limit

FIGURE 7 | Annual average phosphorus concentration by Lake segment (page 13)

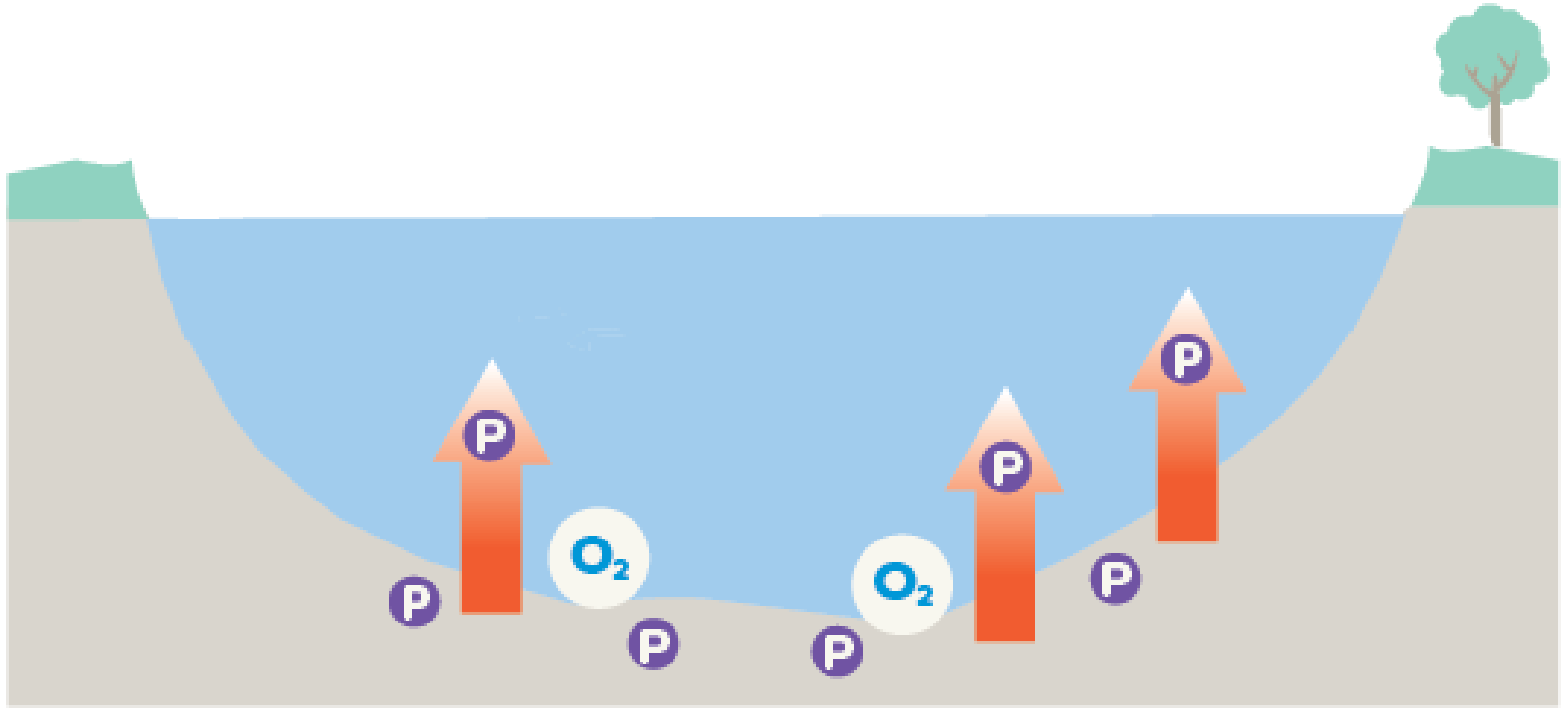


Release of legacy phosphorus in lakes



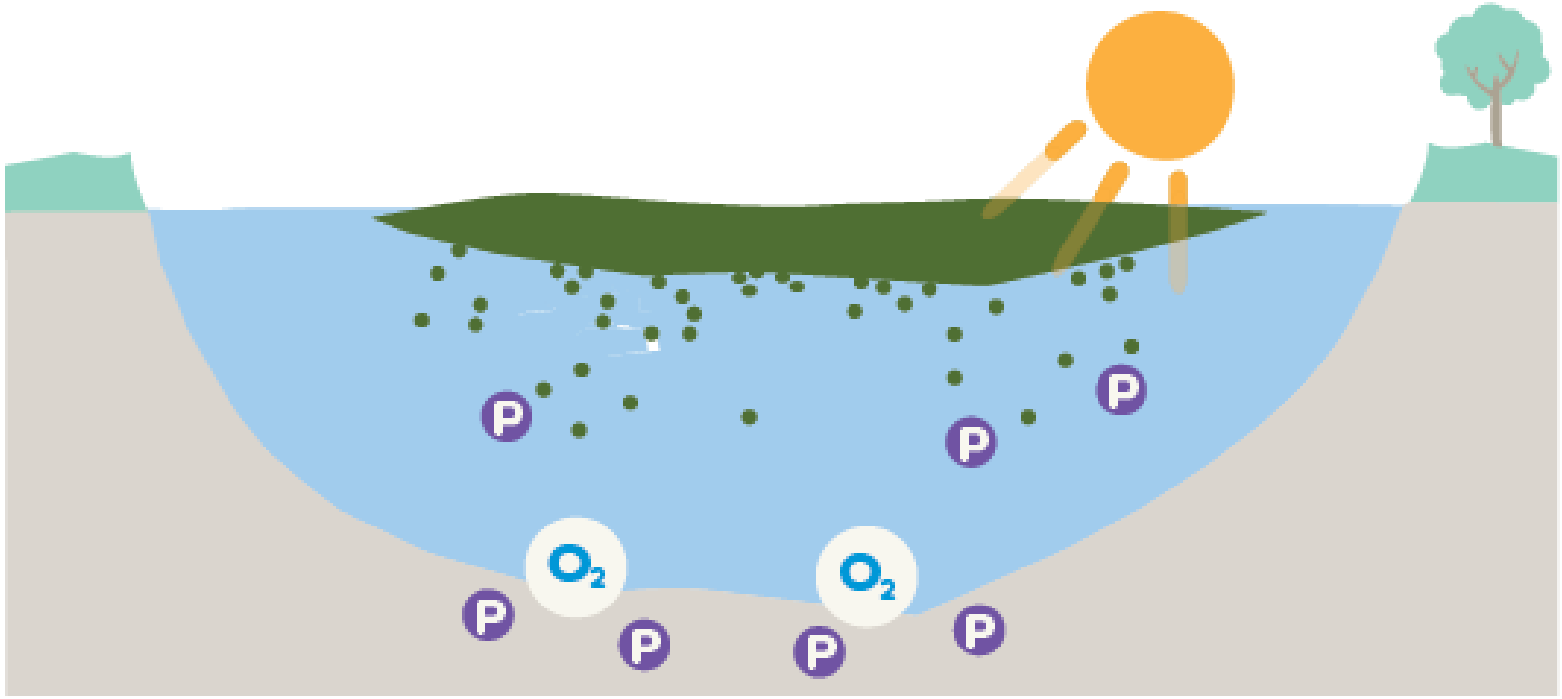
Clean Water

Release of legacy phosphorus in lakes

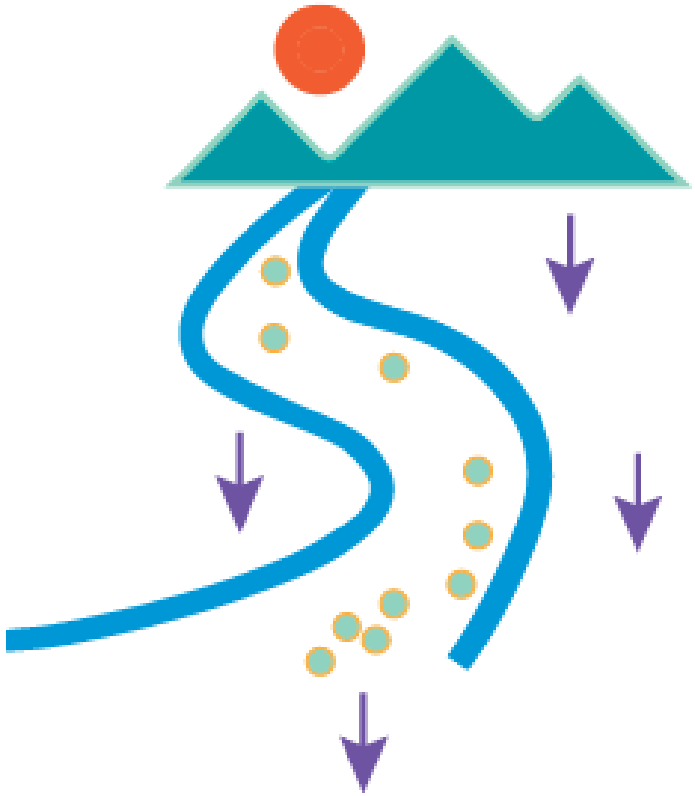


Clean Water

Release of legacy phosphorus in lakes



Clean Water



LOAD

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

FIGURE 8 | River phosphorus loading to Lake segments compared to targeted limits

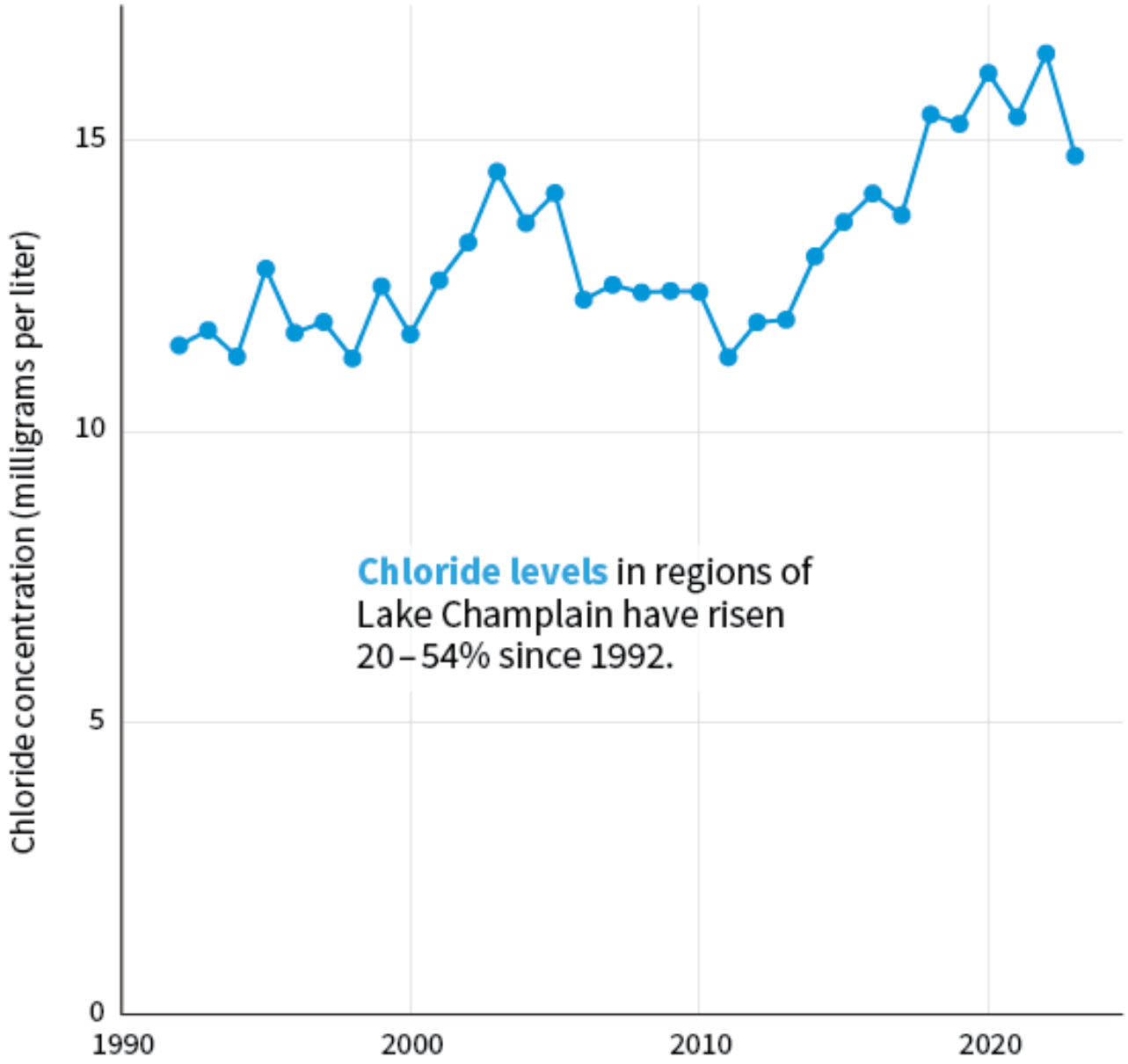
(page 14)

CONTAMINANTS

Clean Water

FIGURE 10 | Annual average chloride concentration in Lake Champlain

(page 17)



FLOODING

NASA

Clean Water

July 2023 Flooding by the Numbers

3–9”
of rainfall in a 48-hour period from July 10 to July 11

10x increase in river flow to Lake Champlain from July 9 to July 11

more than **100** metric tons of phosphorus entered Lake Champlain from rivers on July 11

roughly **90 billion** gallons of water delivered to Lake Champlain by rivers on July 11

roughly **1/2** of the recommended annual phosphorus load delivered to Lake Champlain from rivers from July 10 to July 16

300 billion gallons of water delivered to Lake Champlain by rivers from July 10 to July 16

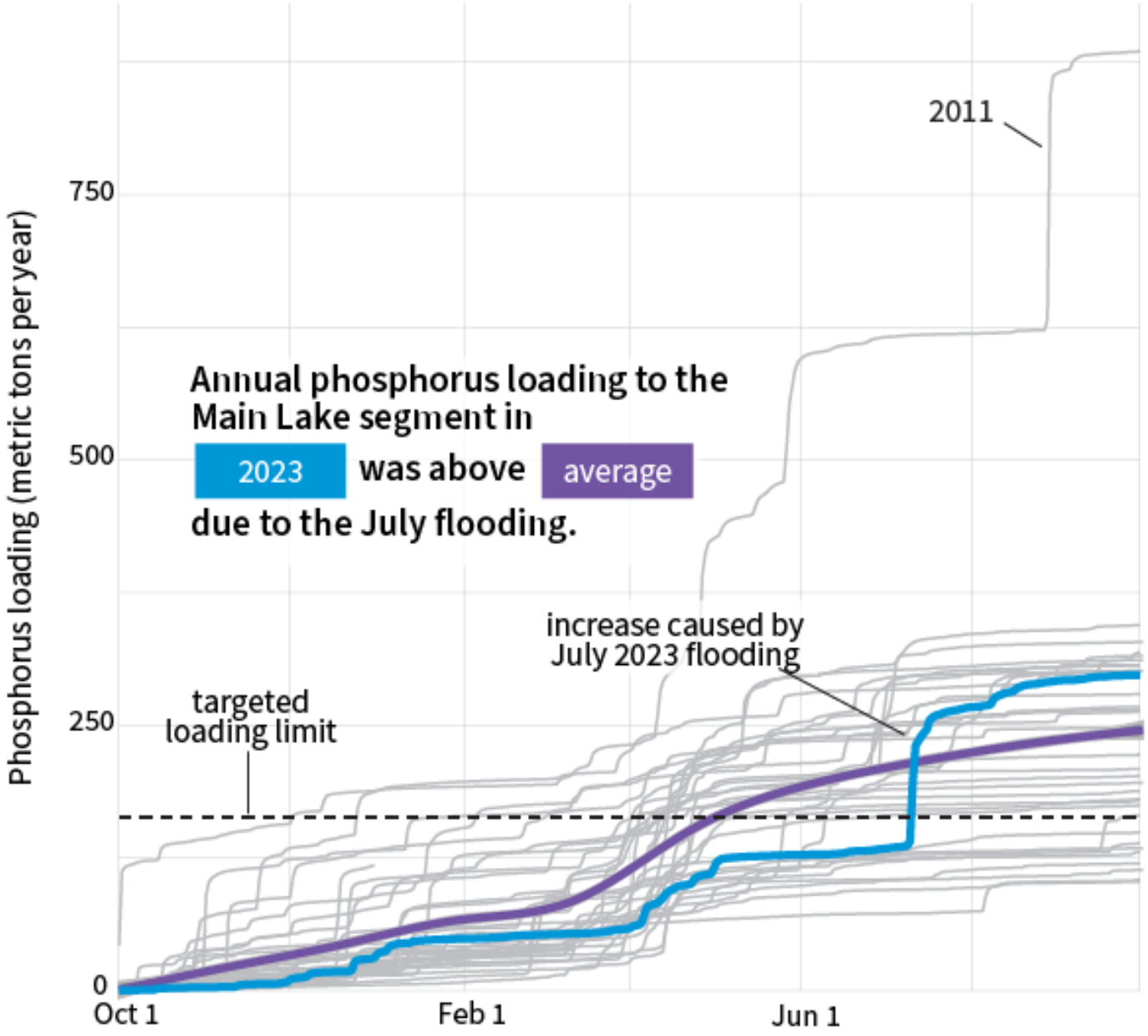
more than **300** metric tons of phosphorus delivered to Lake Champlain from rivers July 10 to July 16

3 foot increase in water level over roughly 1-2 weeks in Lake Champlain

Clean Water

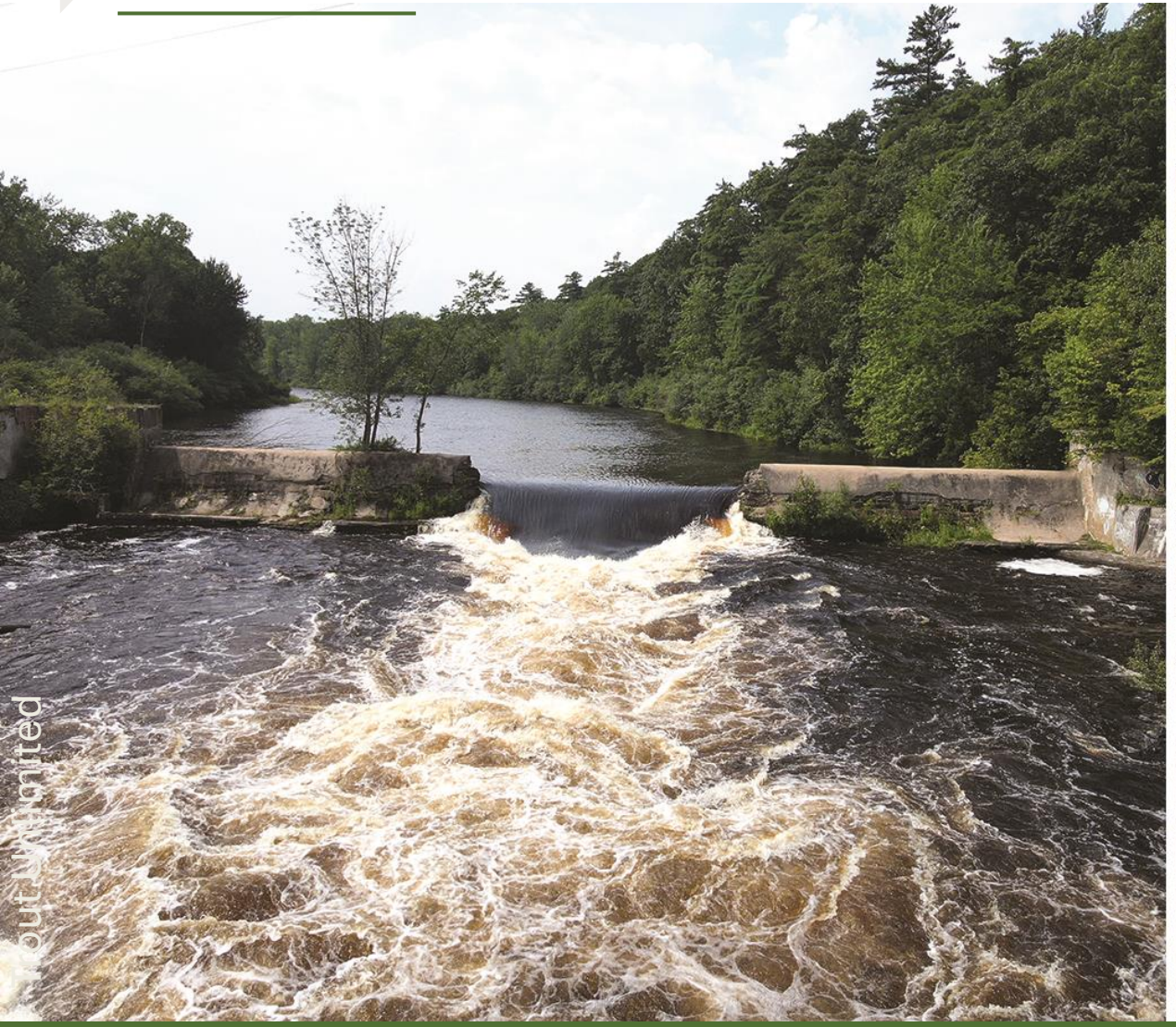
FIGURE 12 | Cumulative river phosphorus loading to Main Lake segment, each year since 1991

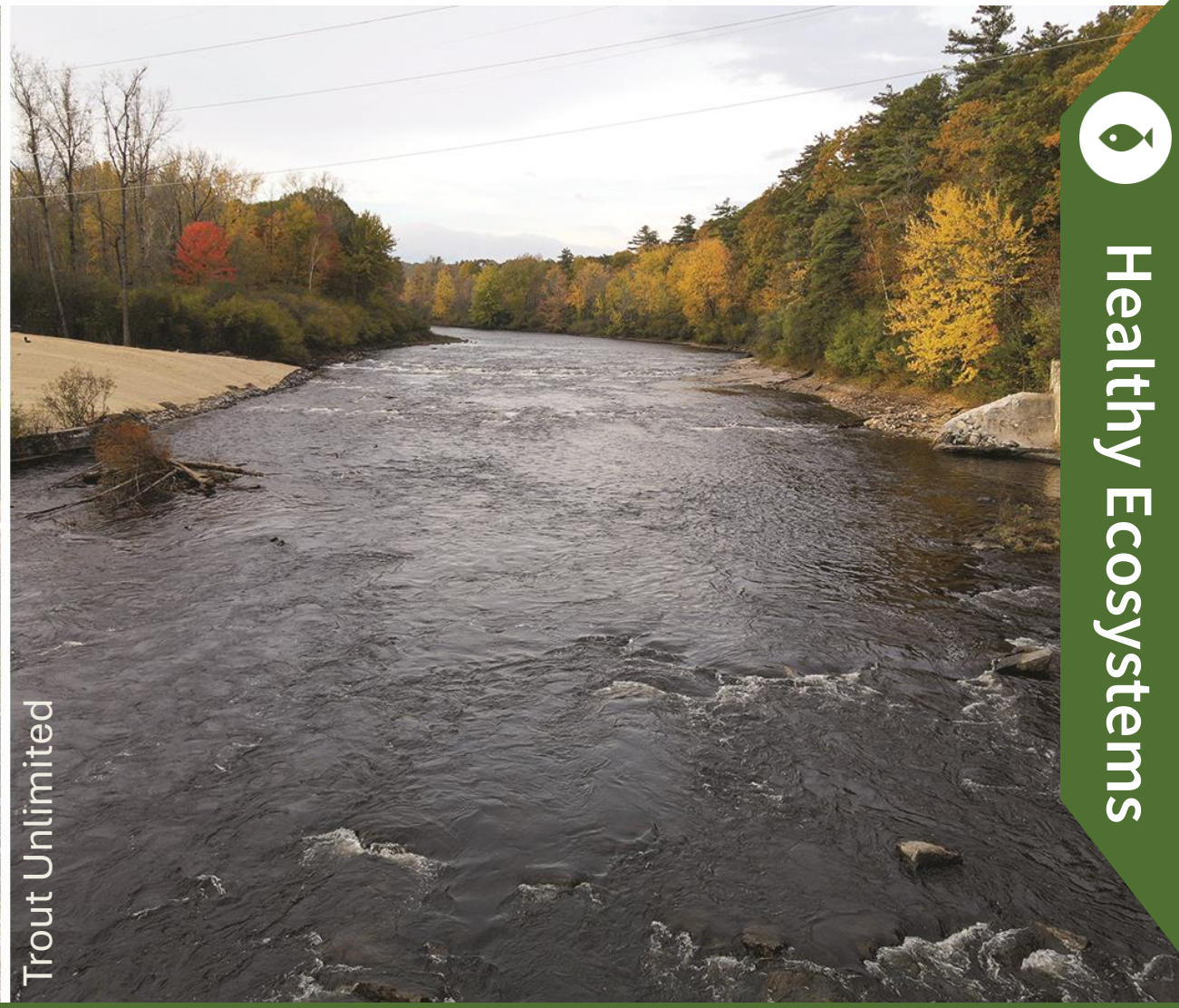
(page 19)



Healthy Ecosystems

AQUATIC ORGANISM PASSAGE





Healthy Ecosystems

FIGURE 13 |
(page 22)

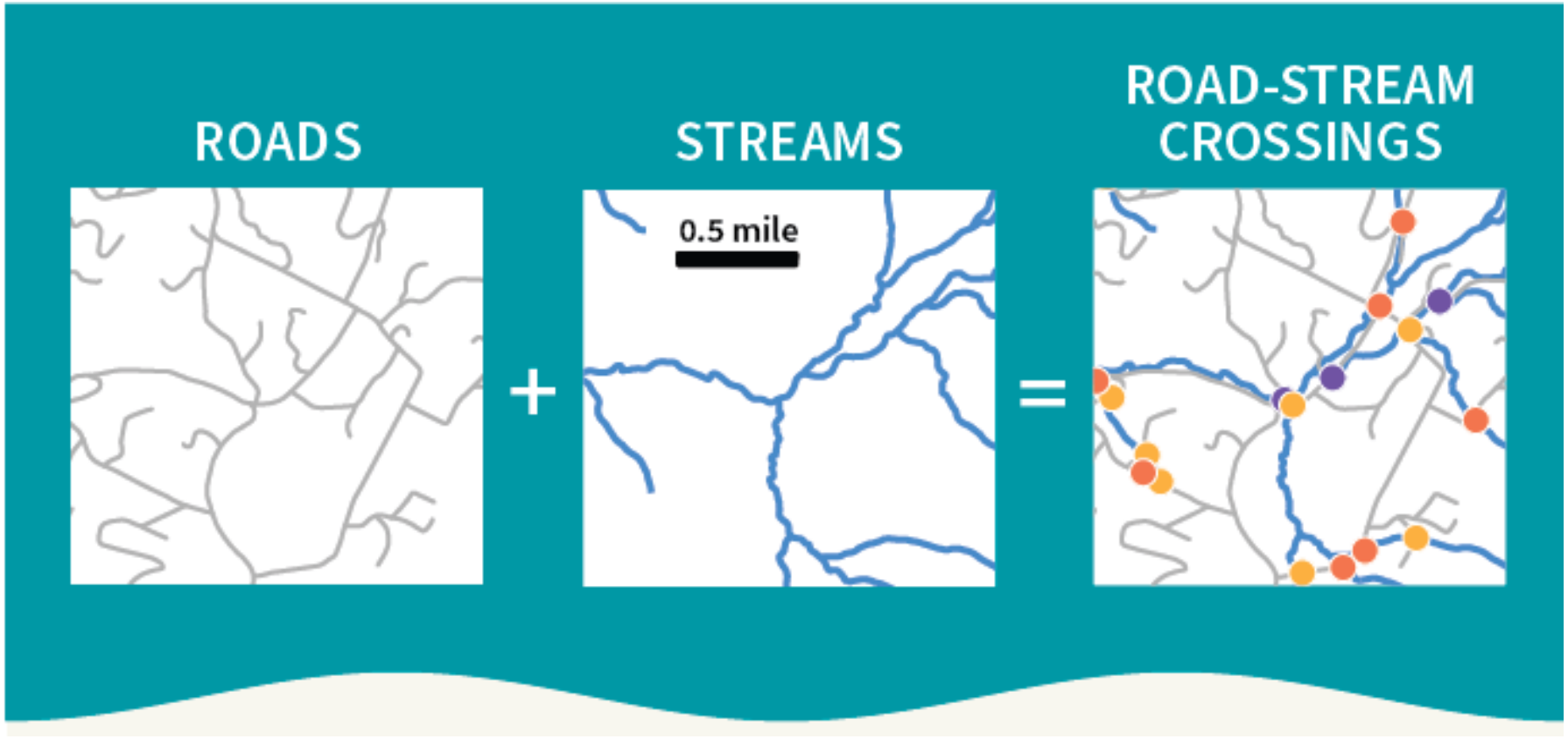


FIGURE 13 |
(page 22)

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(page 22)

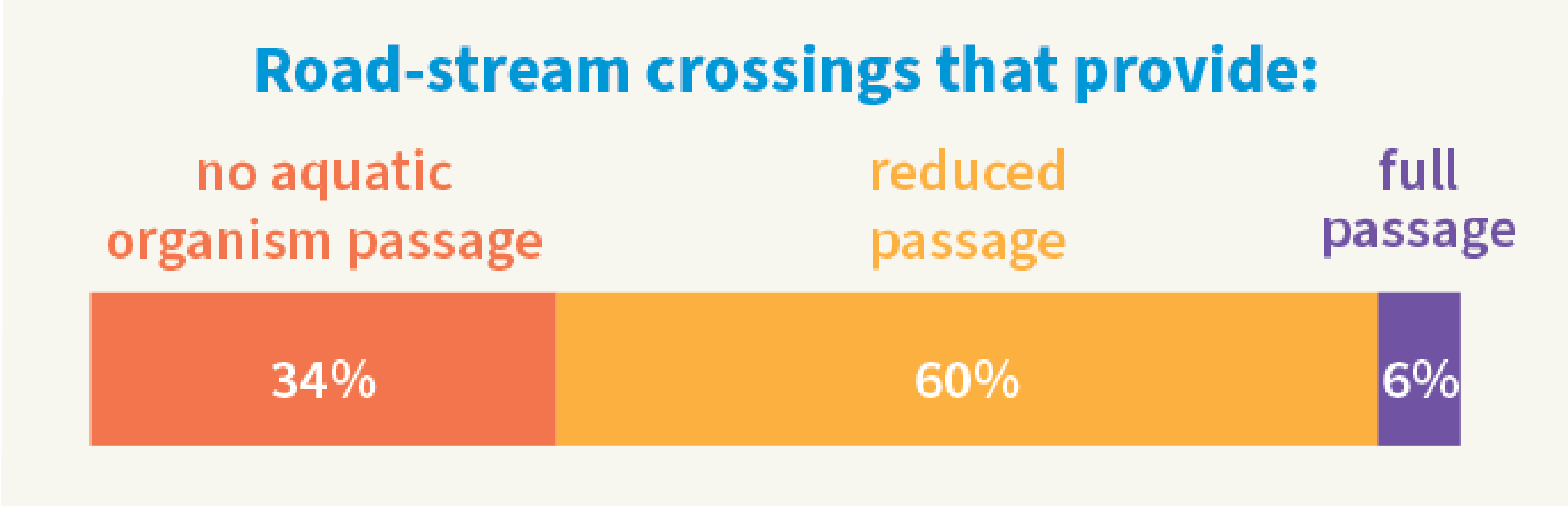


FIGURE 14 | Historic and current Landlocked Atlantic salmon habitat connectivity in U.S. Lake Champlain tributaries

(page 23)

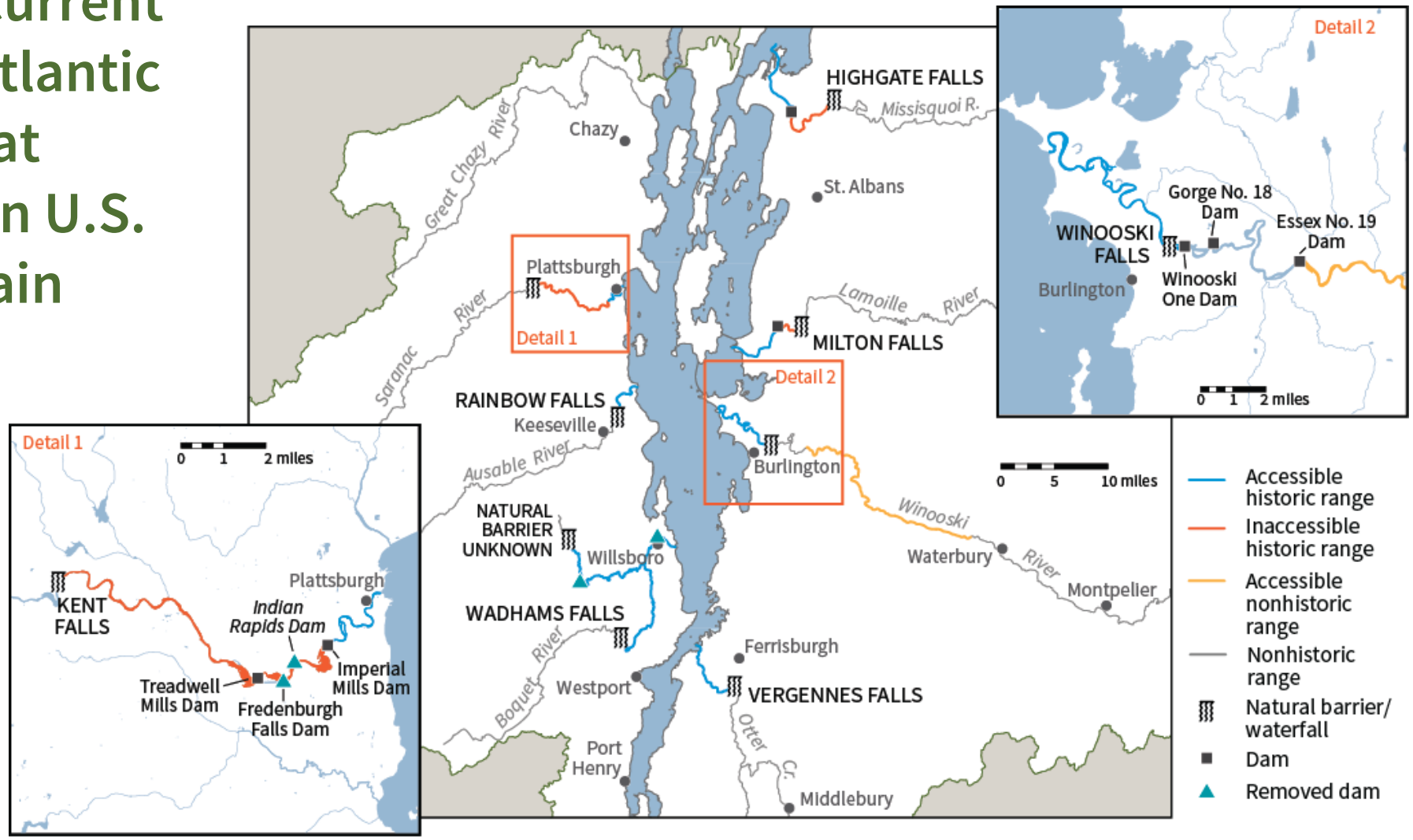
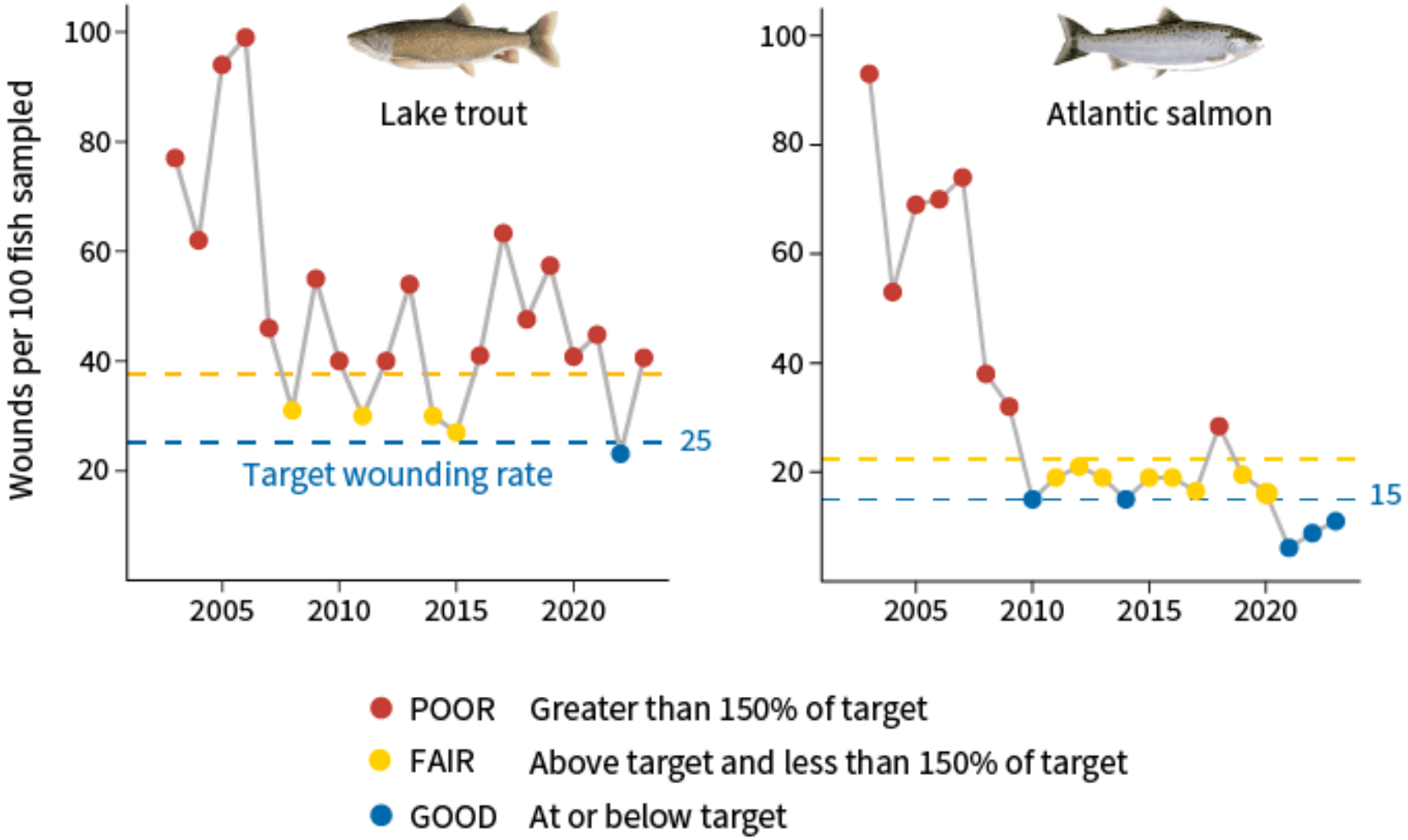


FIGURE 17 | Sea lamprey wounding rates in Lake Champlain

(page 26)



AQUATIC INVASIVE SPECIES

USFWS

Healthy Ecosystems

FIGURE 15 |
Number of introduced aquatic non-native and invasive species in Lake Champlain
(page 25)

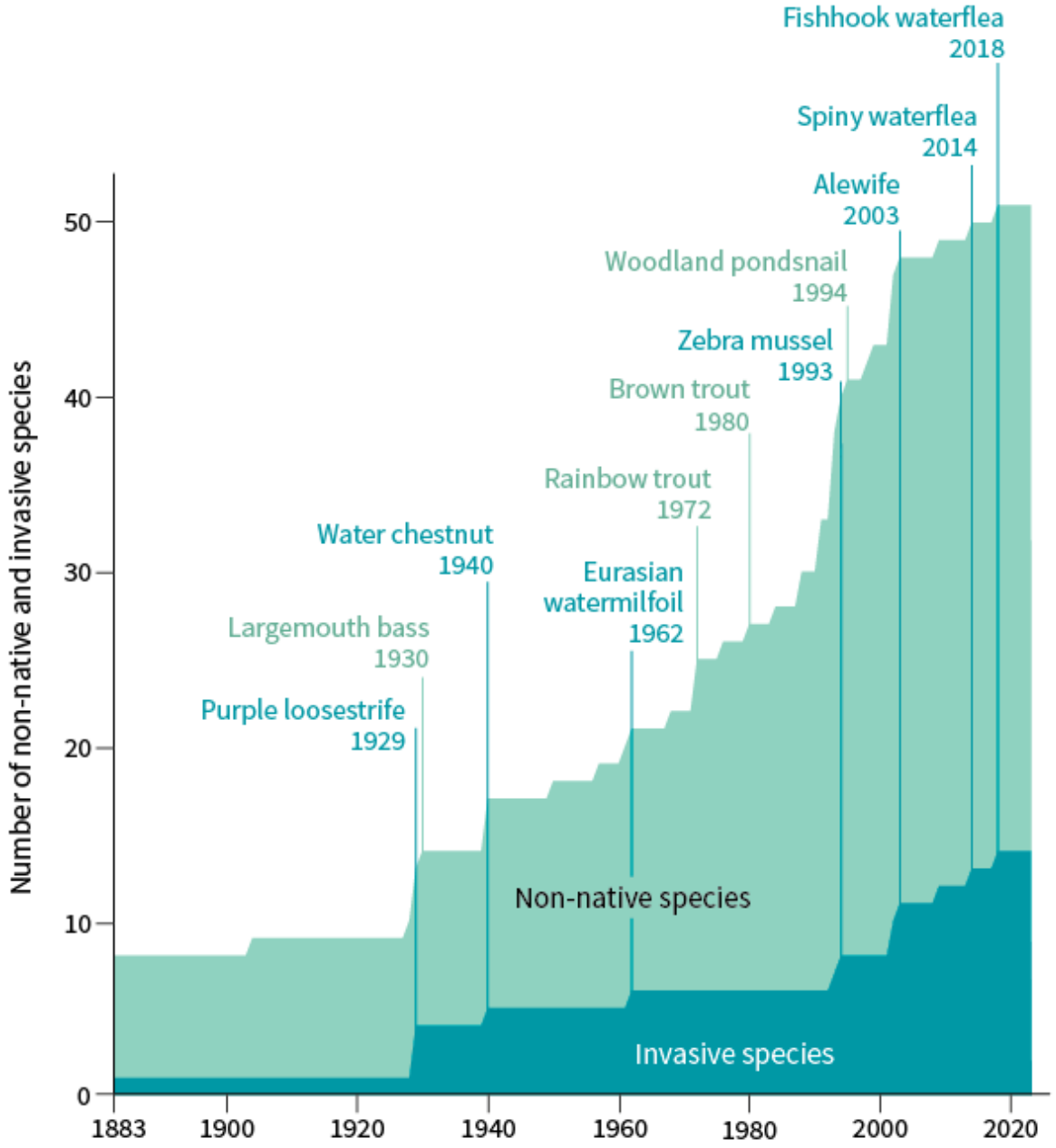
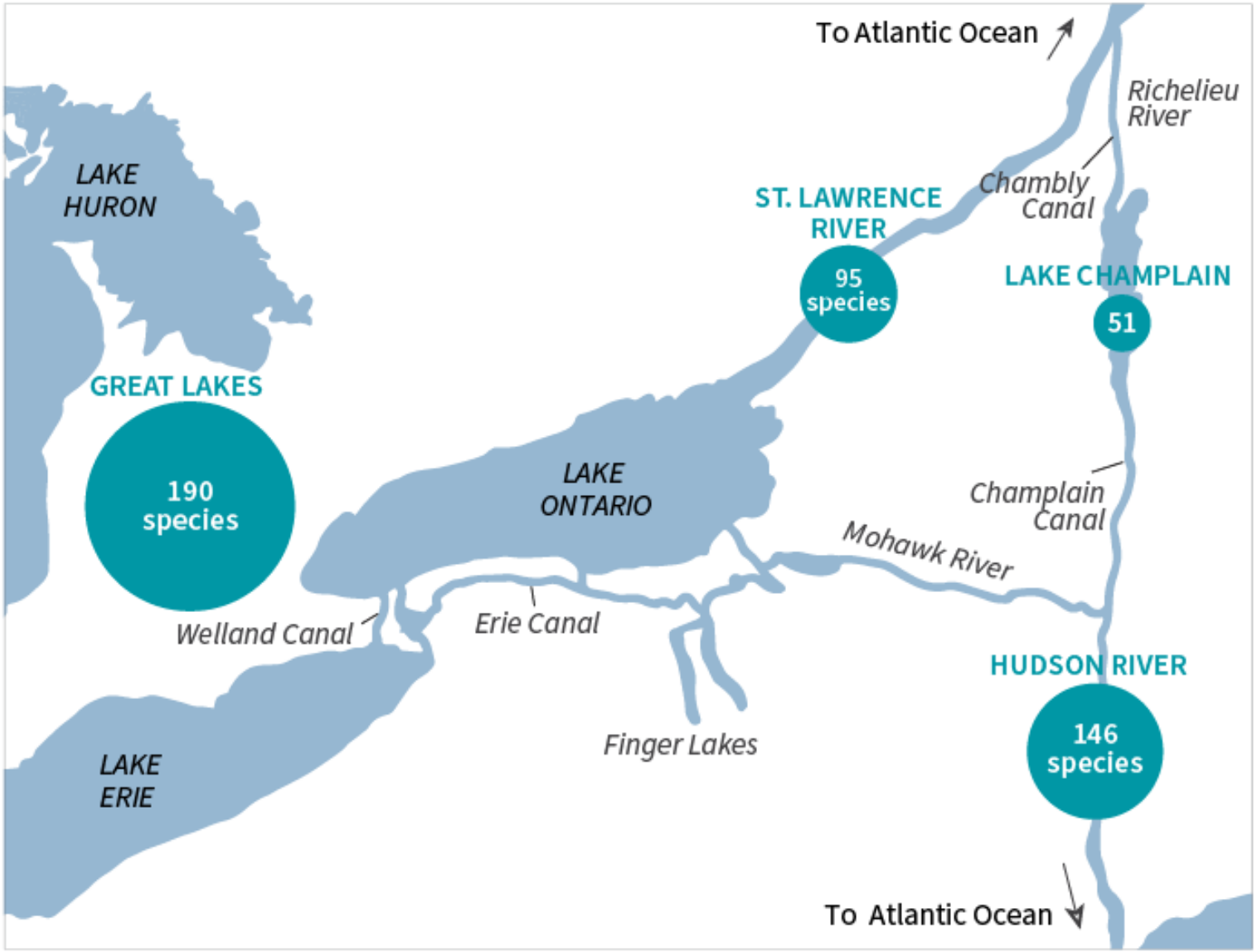


FIGURE 16 |
Non-native species in Lake Champlain and connected waterways
(page 25)



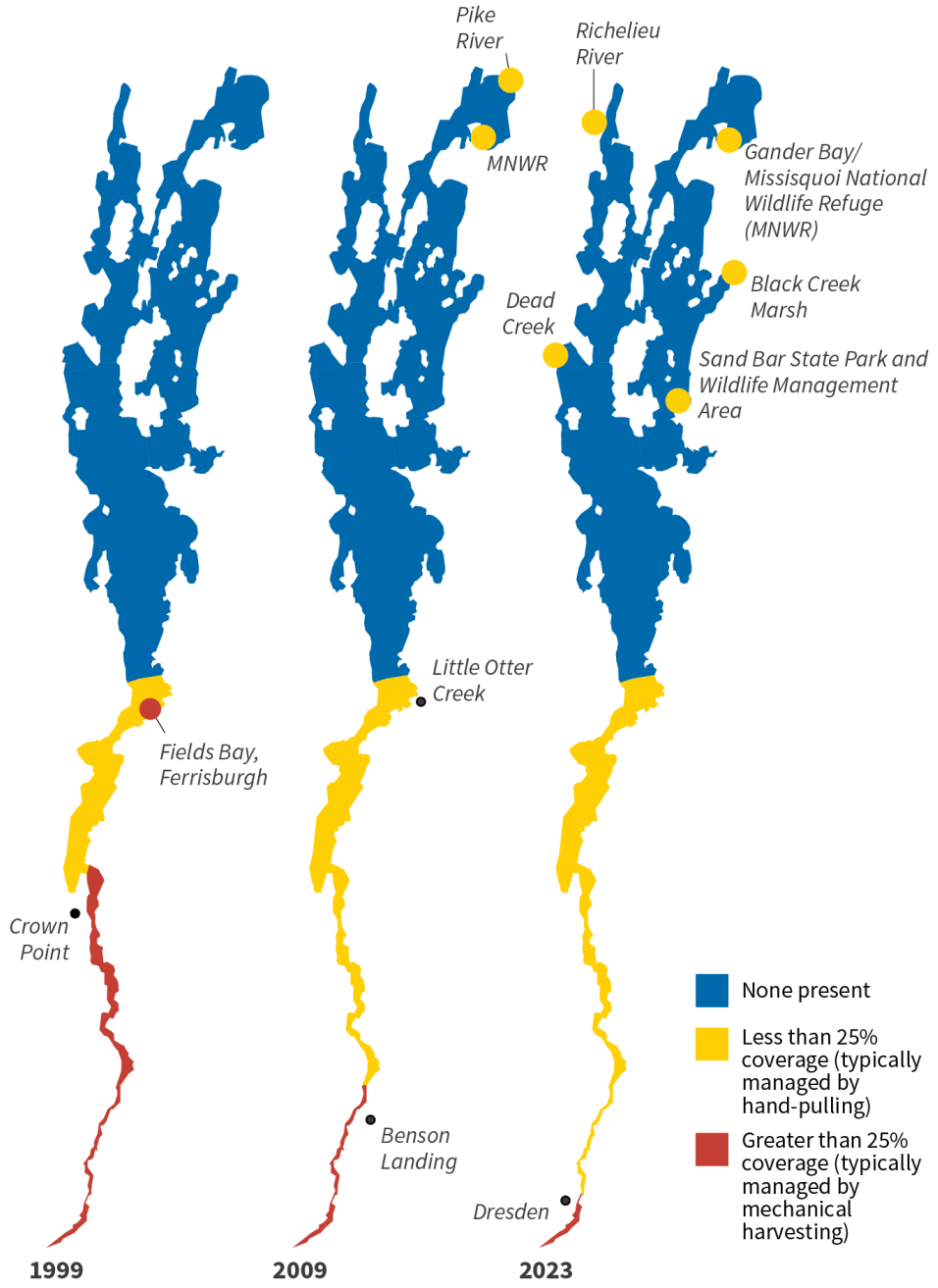

University of Florida


Ellen Marsden

LCBP

Healthy Ecosystems

FIGURE 19 | Invasive water chestnut coverage in Lake Champlain (page 28)

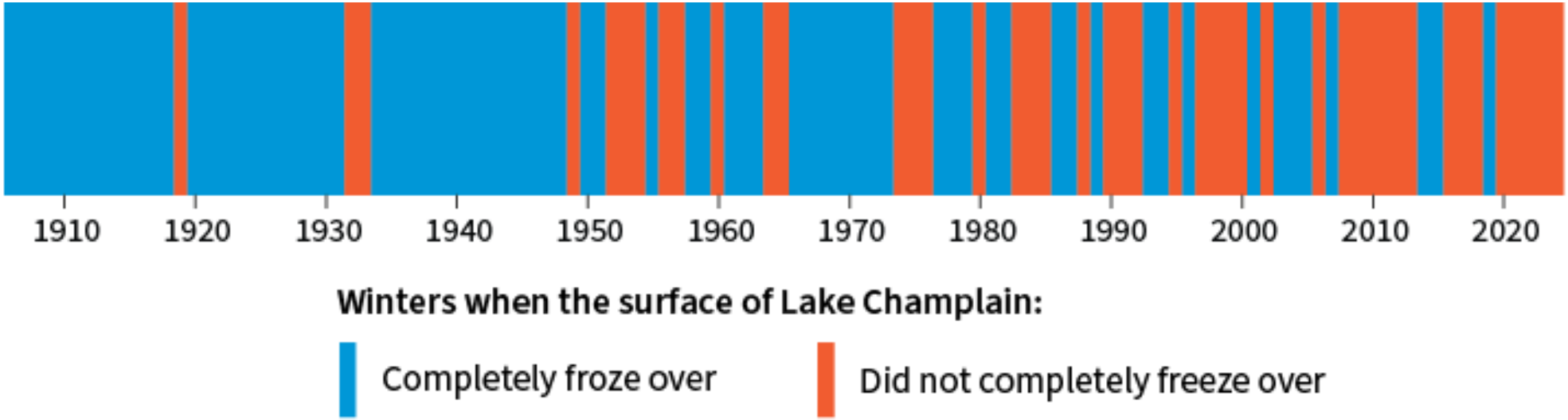


A CHANGING CLIMATE

William Stevenson

Healthy Ecosystems

FIGURE 20 |
Surface freeze-over of Lake Champlain
(page 29)



Informed & Involved Public

UNDERSTANDING AND ENGAGEMENT

Informed & Involved Public

Public awareness survey data, 2021

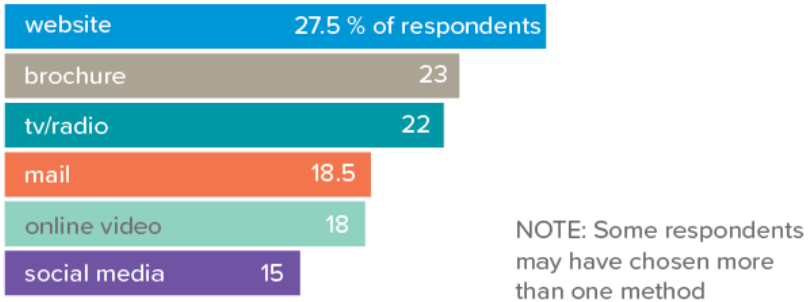
1,675 survey respondents
from QC, NY, & VT

97% believe that healthy waterways are a critical part of thriving communities

92% believe their actions affect water quality

66% know how to find information about protecting water quality

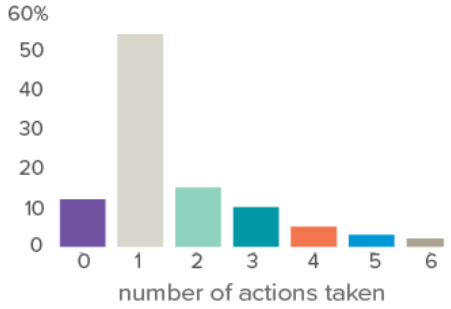
Most preferred methods of receiving information:



NOTE: Some respondents may have chosen more than one method

49% know about efforts in their community to protect or improve water quality

10% engaged in four or more stewardship actions



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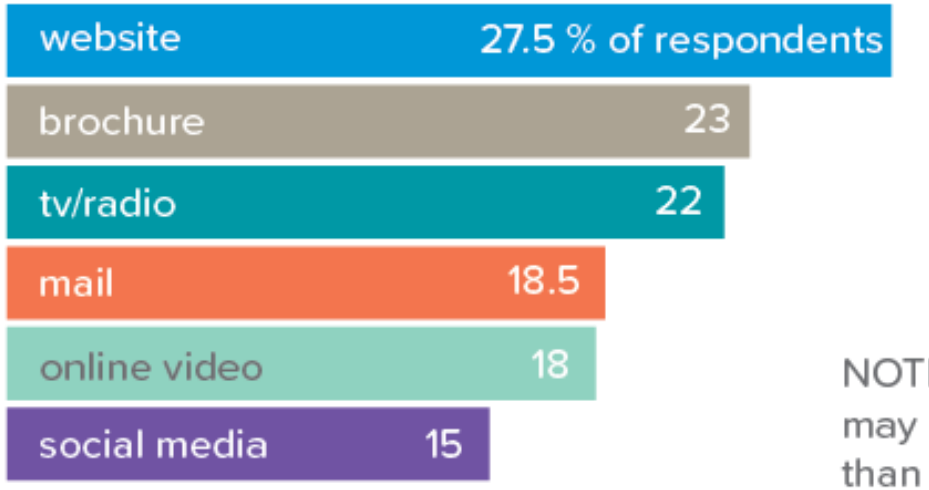

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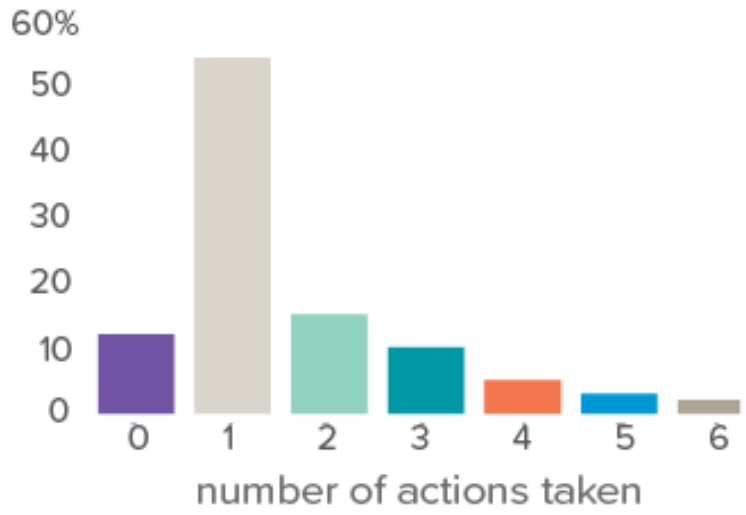
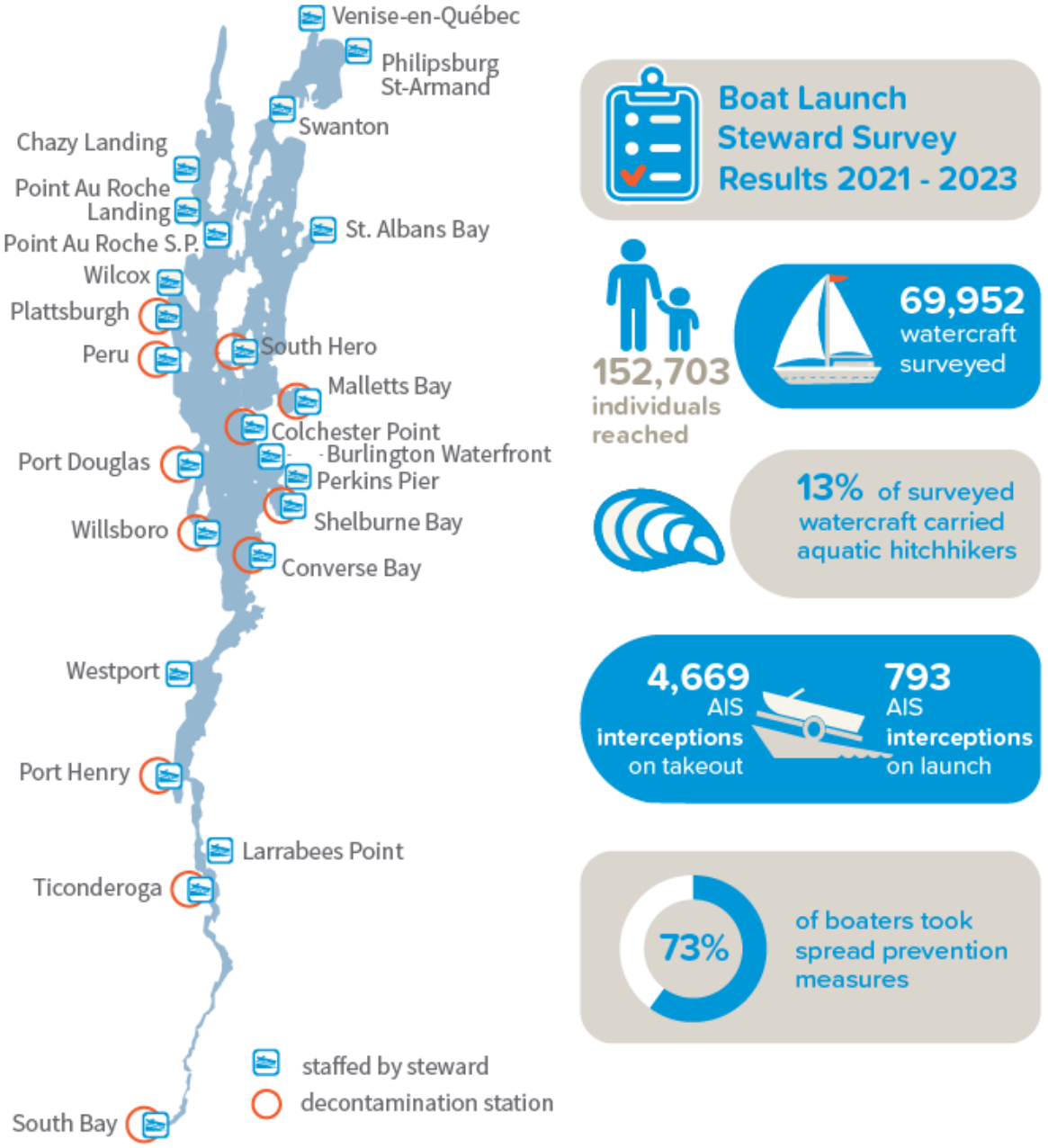


FIGURE 21 | Lake Champlain boat launch steward program summary, 2021-2023 (page 29)



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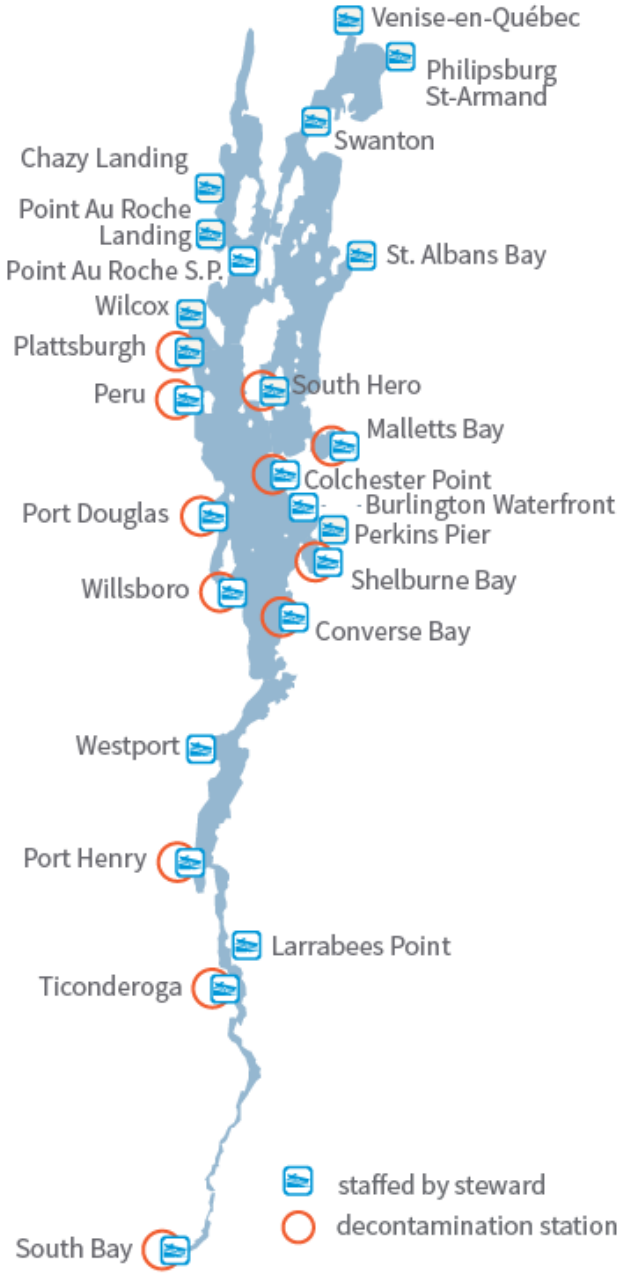
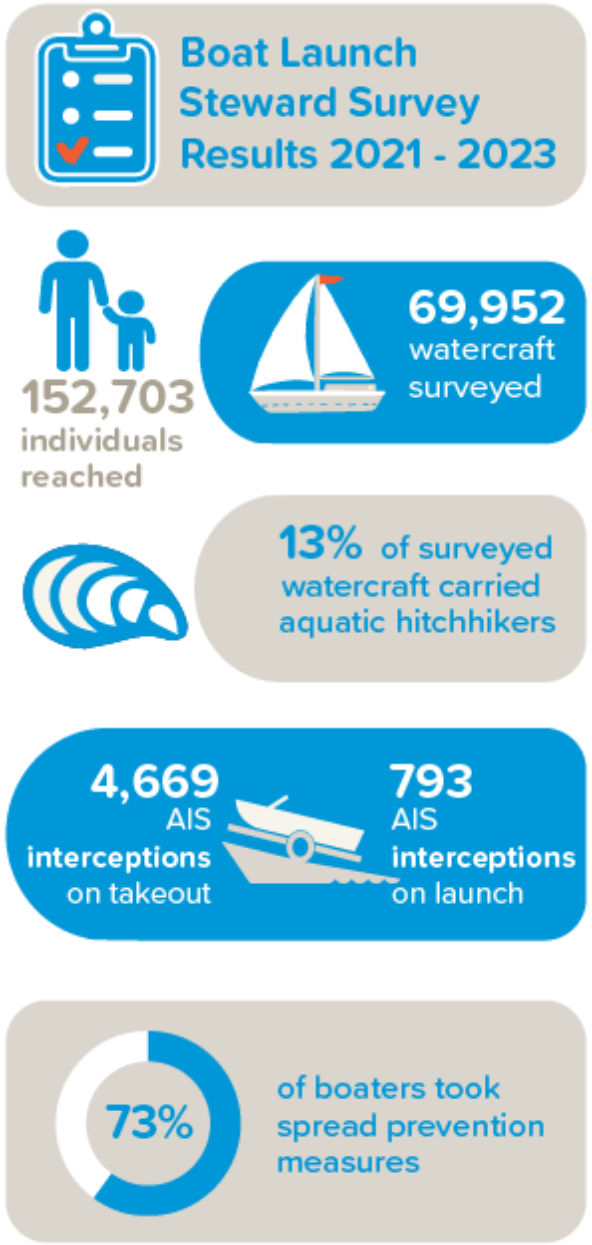


FIGURE 21 |
Lake Champlain boat launch steward program summary, 2021-2023
(page 29)



INDIVIDUAL ACTION

Informed & Involved Public


DON'T
"P"
ON YOUR LAWN


RAISE
THE
BLADE
FOR HEALTHY SOIL


LAKE CHAMPLAIN
COMMITTEE


Dive deeper

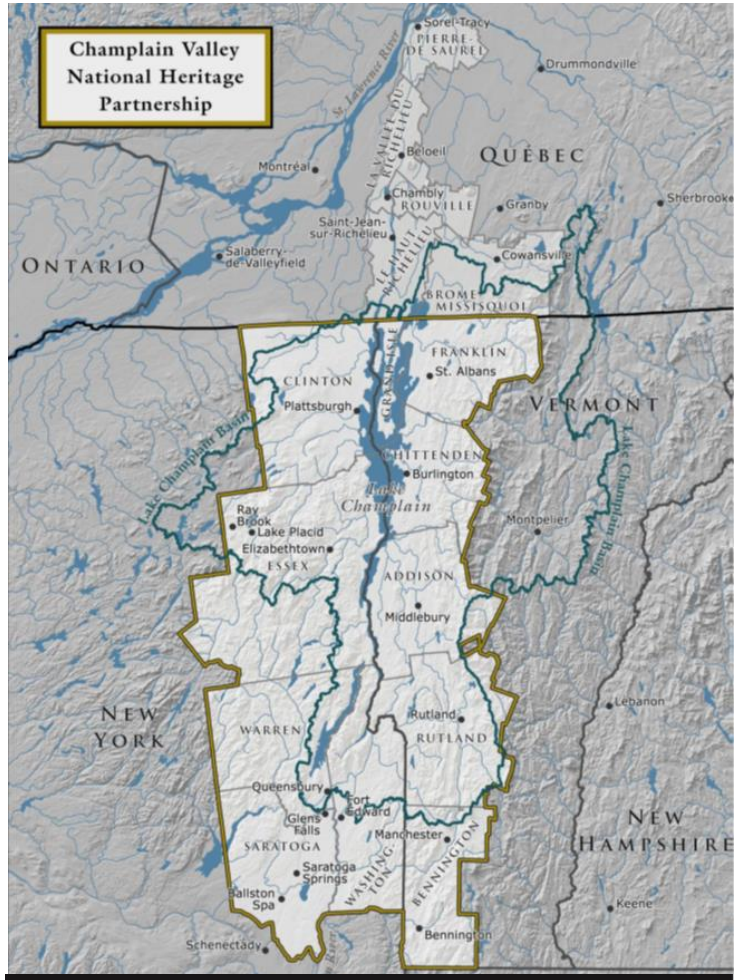

STREAM WISE
RIVES ACTIVES

WHAT YOU CAN DO

Informed & Involved Public

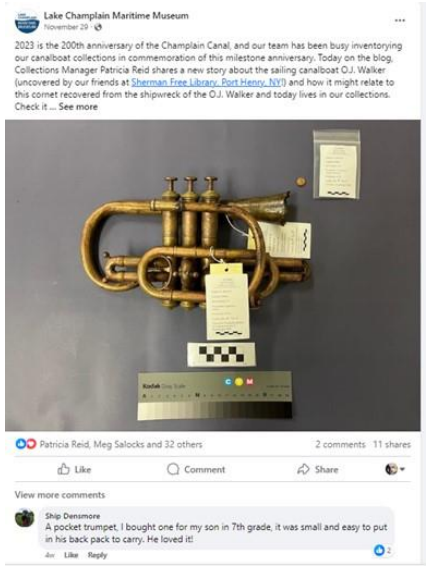
Thriving Communities

HERITAGE and RECREATION



Champlain Valley National Heritage Partnership

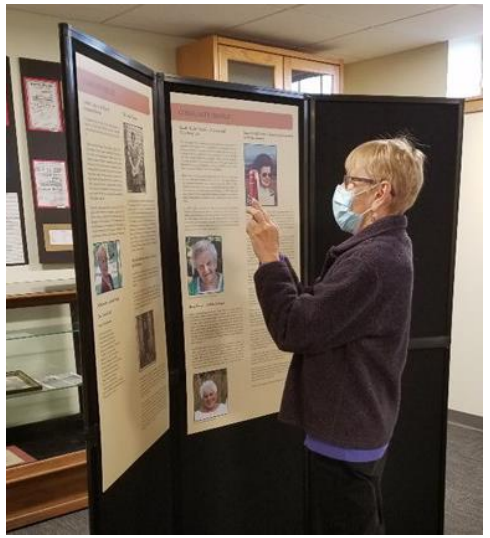
Internships



Collections

Local Heritage

Interpretive Theme

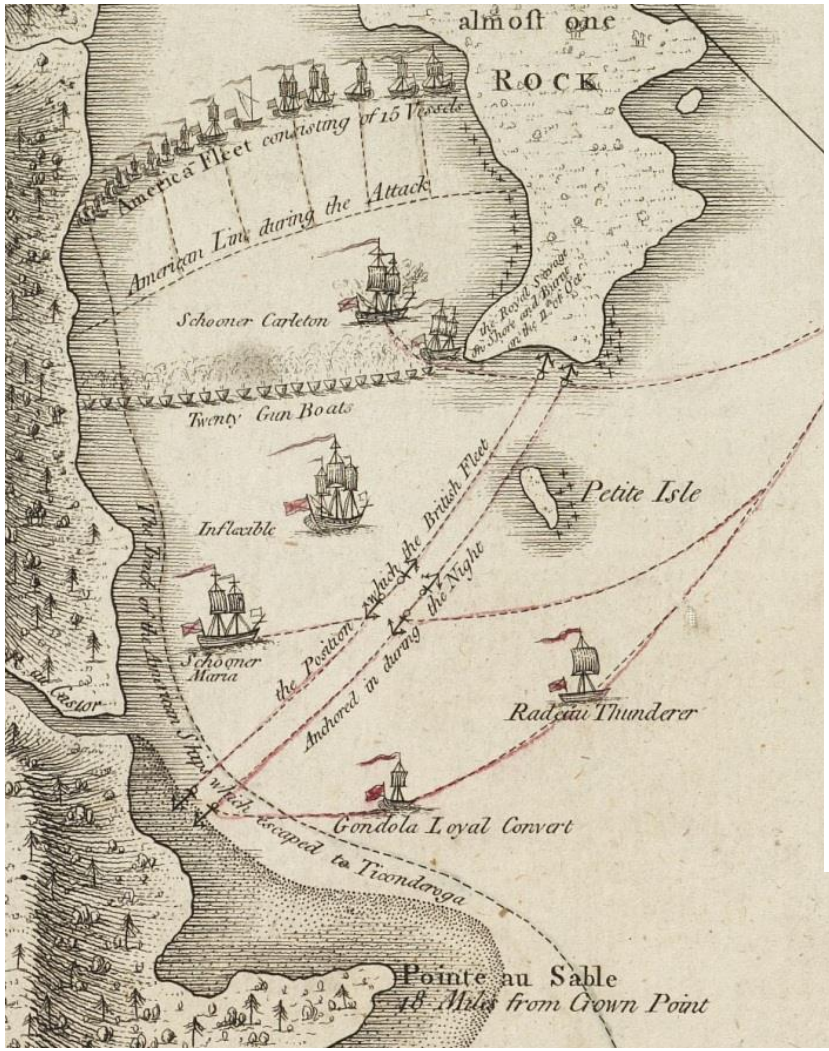


VERMONT 250TH ANNIVERSARY

Biosphere IN YOUR BACKYARD

Thriving Communities

HERITAGE and RECREATION



Special Program Grants

Thriving Communities

HERITAGE and RECREATION

Lake Champlain Bikeways
Voies Cyclables Du Lac Champlain

Western New England Greenway

Thriving Communities

COMMUNITY ENGAGEMENT

Since 2021:

50 CVNHP Projects
Total: $590,197
Match: $1,406,864

Events:	257
Attendance:	17,304
Students:	2,042
Teachers:	327
Classes/Trips:	62
Volunteers:	539
Vol. Hours:	10,191
Value of Vols:	$1,151,777

Fishing Workshops for New Americans and Underserved Communities

Thriving Communities

LCBP Artist-in-Residence Program

Clemmons Family Farm: UnderWATER, UnderGROUND: Black/Indigenous Creatives Historize Charlotte, Vermont's Sea Change

Thriving Communities

Thriving Communities