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Salish Sea Ecosystem Conference

2018 Salish Sea Ecosystem Conference  
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## **Citizen science demonstrates need and importance at Whatcom County beaches**

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Lord, Natalie; Latimer, Olivia; and Hines, Eleanor, "Citizen science demonstrates need and importance at Whatcom County beaches" (2018). *Salish Sea Ecosystem Conference*. 204.  
<https://cedar.wwu.edu/ssec/2018ssec/allsessions/204>

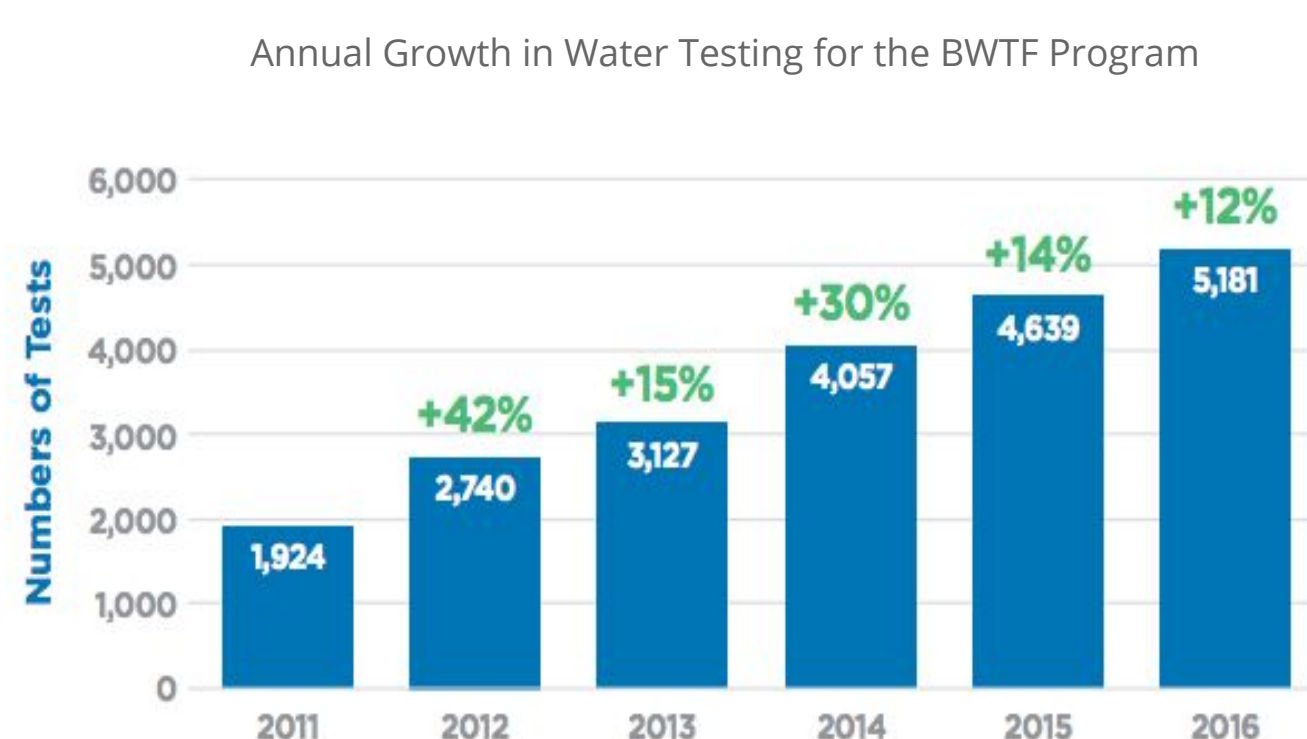
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### WHAT IS THE SURFRIDER FOUNDATION?

The Surfrider Foundation is a grassroots non-profit environmental organization that works to protect and preserve the world's oceans, waves, and beaches. Through a network of chapter activists, Surfrider has several programs to support their mission, including the Blue Water Task Force (BWTF).

### WHAT IS THE BLUE WATER TASK FORCE?

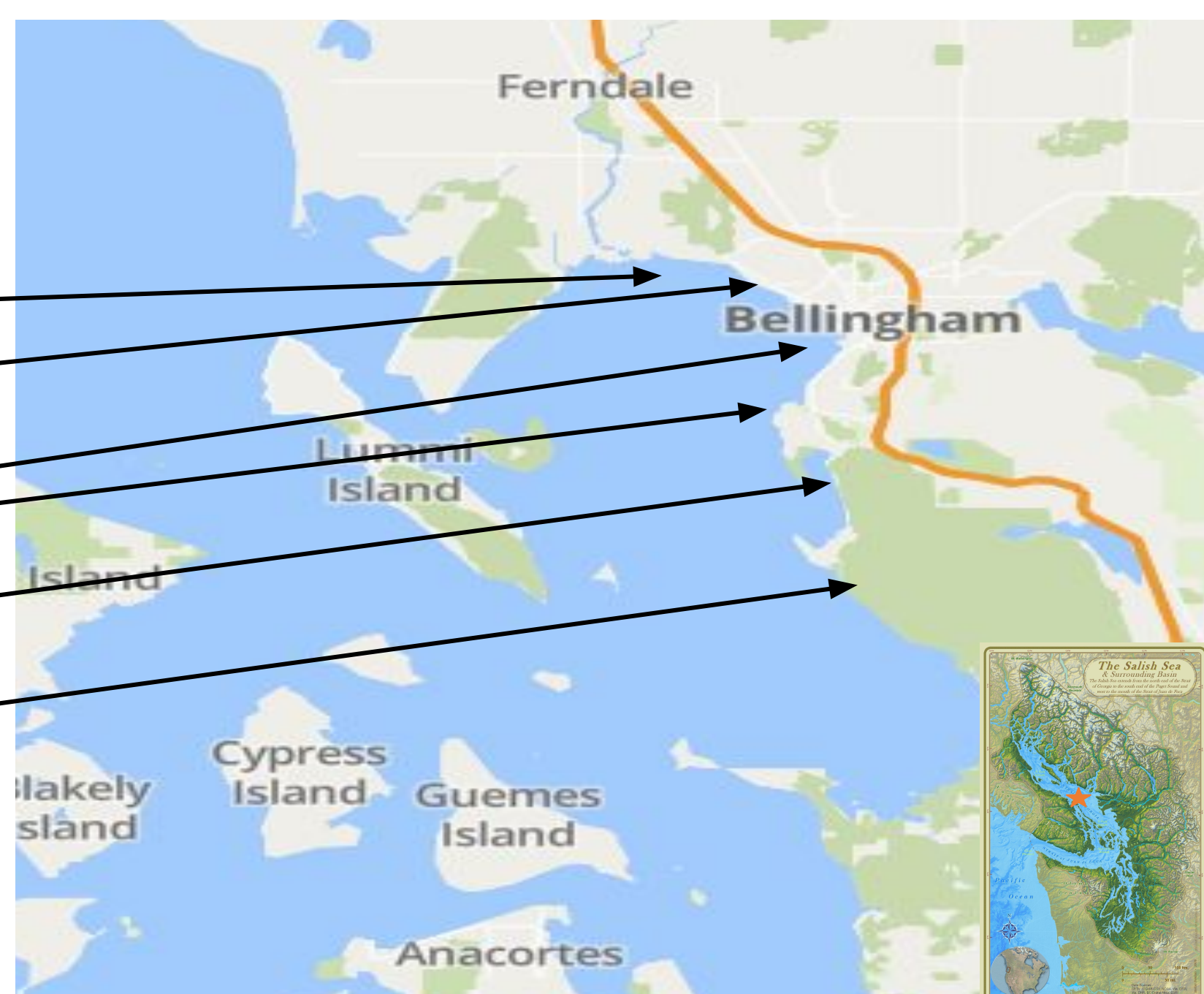
BWTF is a volunteer run water quality monitoring and education program that has over 35 chapters operating to protect public health across the nation. The program has grown significantly over the past several years, with over 5,000 samples taken in 2016. Our local chapter has been monitoring Bellingham's most popular beaches for over 10 years.



Number of fecal coliform tests conducted from 2011-2016 nationwide.

### WHERE WE MONITOR:

- Nooksack River Delta
- Locust Beach
- Little Squalicum Beach
- Padden Creek
- Mud Bay
- Larrabee State Park



Map of Bellingham Bay monitoring sites for BWTF and location within the Salish Sea (Freelan, 2009).

### WHY DO WE MONITOR?

To engage our local citizen scientists on the current status of water quality at our most popular beaches in Bellingham, help prevent illness, find local sources of pollution, and increase public awareness on water quality issues in Whatcom County. Clean water is a crucial component to our region's economy. In 2015, water recreation in Whatcom County had the highest expenditure, with approximately \$132 million in annual spending (Earth Economics, 2015).

### SURFRIDER BEYOND BWTF:

- Ocean Friendly Restaurants
- Beach Cleanups at Locust Beach
- Fundraising events
- Beach Trash Art Gallery
- Kayaking and surf trips
- Storm drain marking



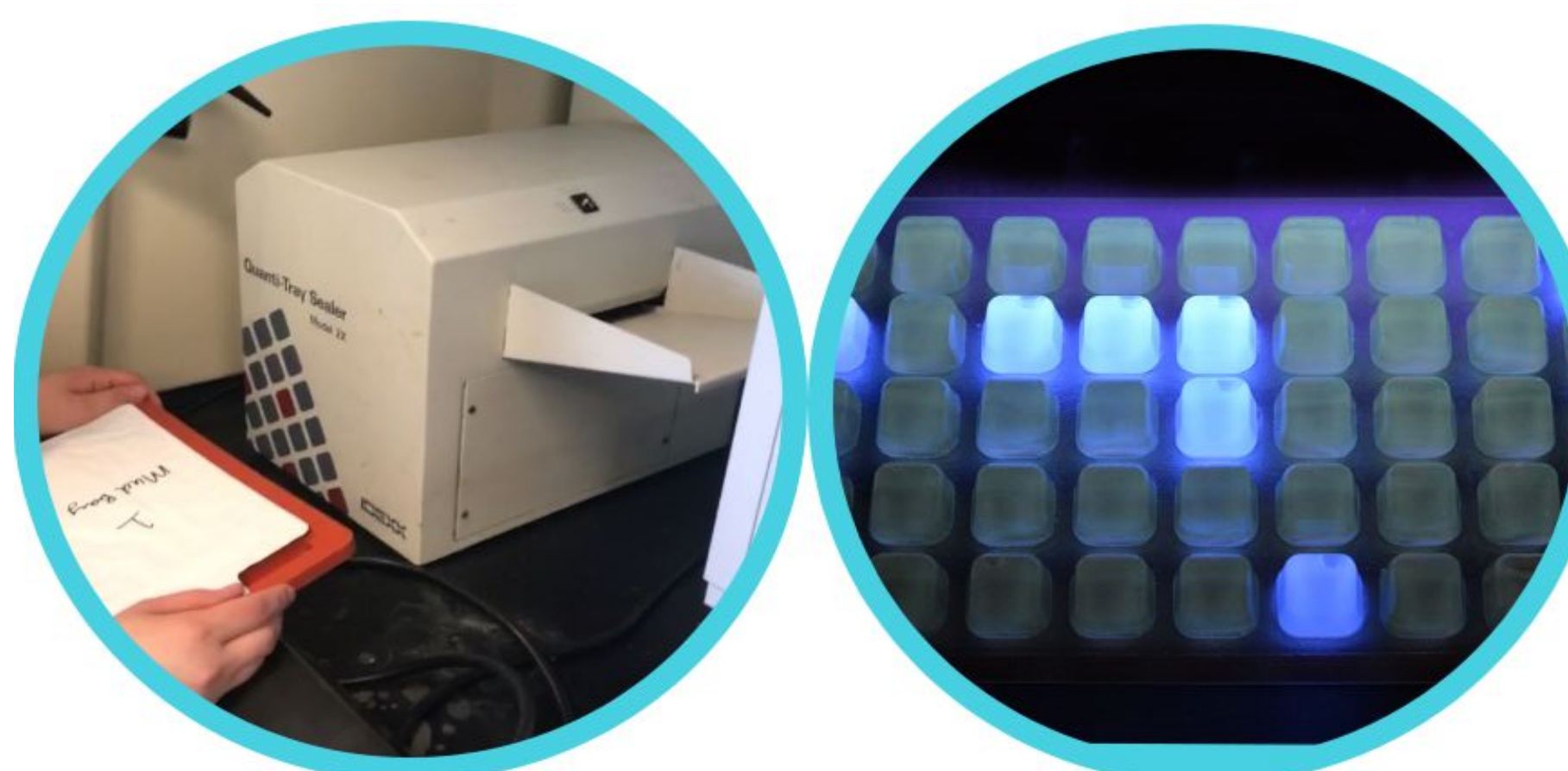
## A BRIEF HISTORY OF BWTF AT LARRABEE STATE PARK

After several years of failing proper water quality standards by the Environmental Protection Agency's (EPA) swimming criteria, a permanent swimming advisory was placed at Wildcat Cove, Larrabee State Park in 2011. The park receives millions of visitors each year and is one of the most popular water recreation sites in Whatcom County. Demonstrated in the timeline, the Northwest Straits Chapter used a framework of stakeholder collaboration, park visitor education and consistent sampling to find the source of high indicator bacteria counts of enterococcus to be caused by an overpopulation of raccoons thriving on the abundant food supply from the park's campground. The park's water quality was monitoring weekly during the summer swim season by Surfrider volunteers and the Department of Ecology Beach Environmental Assessment, Communication and Health Program (BEACH). The Larrabee Water Quality Stewards internship program was pivotal to the success of this process by educating the visitors on the importance of proper food storage at campsites and how to be stewards of the nearshore marine environment.

### MONITORING PROCESS:



3 samples are collected monthly at each field site during high tide

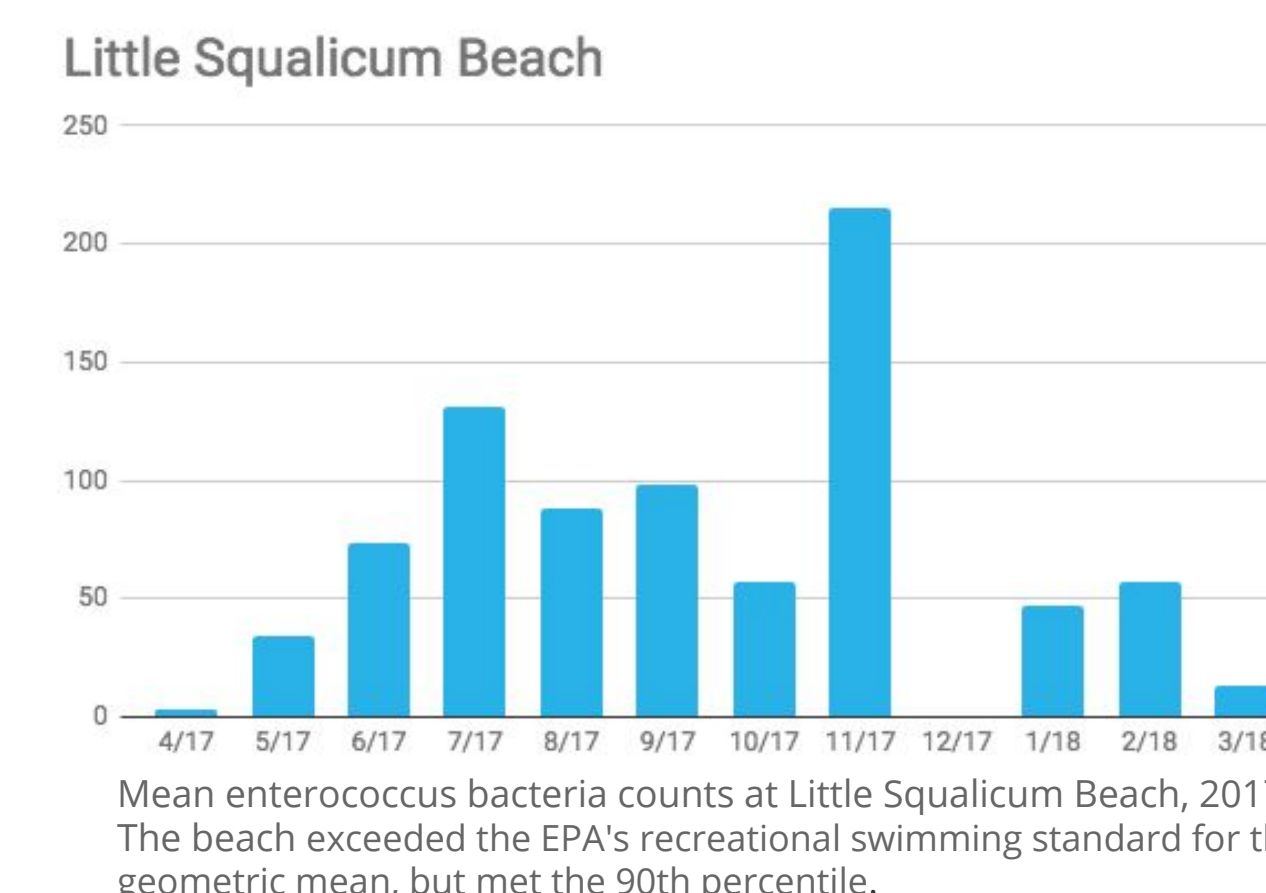


Samples are processed in the lab at the Post Point Wastewater Treatment Plant

24 hours later the samples are analyzed for the fecal coliform bacteria, Enterococcus

### FUTURE BWTF GOALS:

Due to the success at Larrabee State Park of new partnerships, consistent sampling and increased public awareness, our chapter would like to implement these methods to achieve EPA's swimming standard at Little Squalicum Beach and remove the permanent swimming advisory. The graph below portrays monthly enterococcus indicator bacteria levels at Little Squalicum in 2017 for the BWTF Program. The Ecology BEACH program also found that four of the fifteen sampling events during the 2017 swim season were above the safe swimming standards ([www.ecology.wa.gov](http://www.ecology.wa.gov)). The improvement project can be done by empowering citizen scientists to take action on water quality issues, collaboration with local stakeholders, government agencies, and concerned citizens, and a partnership with RE Sources for Sustainable Communities to assist with their Poop Patrol program which educates the public on fecal coliform pollution. Whatcom County currently has a population of 40,000 dogs that generate 30,000 pounds of poop daily ([www.re-sources.org/pooppledge](http://www.re-sources.org/pooppledge)). Joining the Squalicum Clean Water Project and working upstream of Little Squalicum Beach with Poop Patrols at the dog park will help to stop the contamination at its source.



Mean enterococcus bacteria counts at Little Squalicum Beach, 2017. The beach exceeded the EPA's recreational swimming standard for the geometric mean, but met the 90th percentile.

### 2011

Permanent Swimming Advisory is Placed at Wildcat Cove, Larrabee State Park



Surfrider Larrabee Water Quality Stewards Internship Program Begins

### 2012

Stream segment sampling

Collaboration begins:



### 2014

Raccoon latrine access is blocked



Internship program ends

### 2014-2016

Continued Surfrider BWTF and Ecology BEACH sampling

#### EPA's AMBIENT WATER QUALITY CRITERIA FOR BACTERIA (1986):

The geometric mean\* should not exceed 35 enterococcus/100 mL

The enterococcus maximum\* should not exceed 276 enterococcus/100 mL

### 2017

Permanent Swimming Advisory is lifted



Aerial photograph of Squalicum Beach and the Lower Squalicum Watershed ([www.ecology.wa.gov](http://www.ecology.wa.gov))

### REFERENCES:

- Earth Economics, 2015. Economic Contribution of Outdoor Recreation to Whatcom County.
- Dias, M. & Herzog, P. Clean Water Report 2016. The Surfrider Foundation.
- WA State Department of Ecology. BEACH Program. <https://ecology.wa.gov/Water-Shorelines/Water-quality/Saltwater/BEACH-program>
- RE Sources for Sustainable Communities. Poop Patrols. [www.re-sources.org](http://www.re-sources.org)