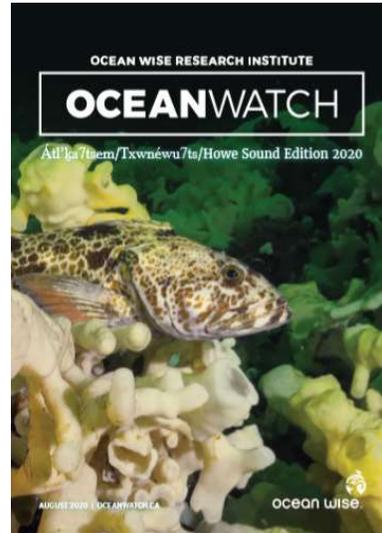
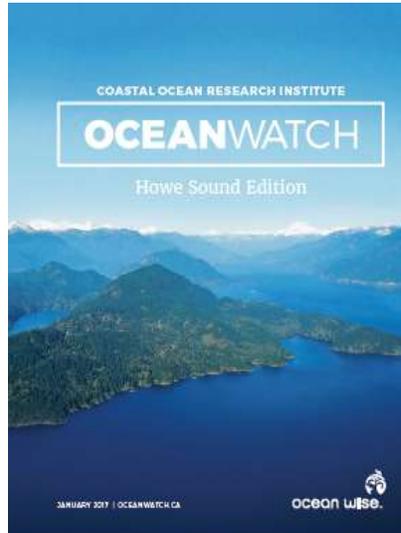




What is Ocean Watch – program that provides reports on the state of coastal ocean health.

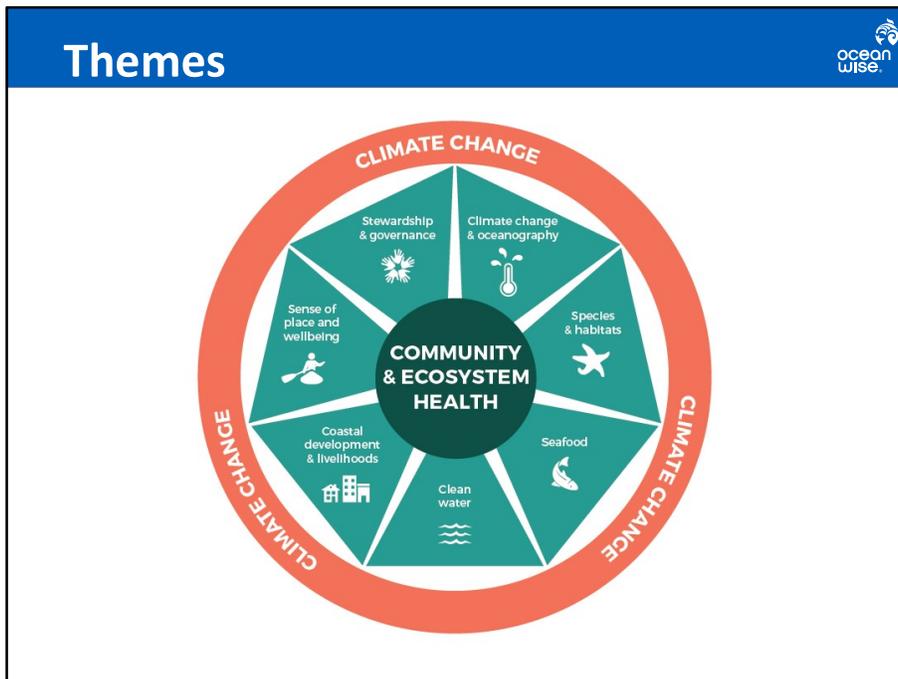
## Large reports



2017 OW Howe Sound  
2020 updated OW Howe Sound

Both reports were near 400 pages, and took about 18 months to pull together, involving multiple authors and reviewers, at least 40 of each – so, a lot of time and effort. They are written in non-technical language so you don't need a science degree to understand them, accompanied by simplified graphics and lots of photos – because no one wants to see page after page of text.

We used knowledge from local citizens, First Nations; data was provided by researchers from universities and our own Ocean Wise institute, as well as government scientists. This gave us the holistic overview that is often lacking in such work – we could look at many parts of the puzzle and see what was going on.



We use these 7 themes to arrange all articles under – holistic approach.  
 All themes touched on by climate change. All connect to community and ecosystem health

Within each theme, we produce a number of articles that are relevant to that theme.  
 e.g. in the 2020 Howe Sound report, the theme Climate Change and Oceanography contained seven articles ranging from an introduction on impacts of CC to that area, ocean warming, ocean acidification, to flood planning.



Another key piece in these reports is the provision of health ratings. These are simplified health ratings, traffic light system, red bad, green good. Details for each contained in the figure.

Because this is a community-driven report, we want the community to have ownership so we look for places where we can involve the community in the creative process (not just knowledge gathering), and this – health ratings – was one of them.

We convened a committee of researchers and community members who each read a certain number of the articles and had to reach consensus on what the health rating should be based on the data presented in each article. Sometimes additional information was presented that we didn't have (local knowledge) so we adjusted the articles and had to re-assess the health ratings accordingly (in one case we re-wrote the entire article). Each reviewer had to write a short rationale for why they gave the rating they did.

Also, the health ratings are something that help you to monitor progress over time and see where things are going well or not so well, and maybe even why it's going that way.

Ocean Watch Health Rating		
Clean Water	2017	2020
<b>BRITANNIA MINE</b> Some improvements have been seen following wastewater treatment; however, exceedances of water quality guidelines are still occurring.	⚠️	⚠️
<b>PULP MILL MARINE EFFLUENT</b> Dioxin and furan contamination in sediment and benthic life is decreasing following regulations but is still detected.	⚠️	⚠️ ↑
<b>WRECKED, ABANDONED, AND PROBLEM VESSELS</b> The passage of Bill C-64, has increased resources available for removal of vessels; however, this is a complex issue and further refining of legislation is necessary.	⚠️	⚠️ ↑
<b>POLLUTIONTRACKER <small>NEW</small></b> Dioxin and furan concentrations are high, especially in mussels, when compared with other areas along the B.C. Coast. Metals continue to be detected in sediments.		⚠️
<b>PLASTICS <small>NEW</small></b> Plastics are ubiquitous in our oceans. However, within the Sound data for plastics and microplastics is lacking.		⚠️ ❌

As an example, these are the health ratings from the Clean Water theme for the 2020 Howe Sound report.

First you see the (compiled) rationale presented by those who read the articles, and the accompanying rating. You can see the 2017 rating and the 2020 rating, where applicable (the last 2 articles were new for 2020 so there was no 2017 rating). Mostly what you see here is caution, and in 2020 we added an upward arrow to indicate positive forward movement had happened with the recommended actions, that is, recommended actions had been taken, but not enough time had passed to really see if it warranted an improvement to a healthy rating.

This was done for 2 reasons: 1) to show movement was happening but not enough time had passed to give a higher rating and 2) so the community could see their hard work and effort was recognized. We wanted to keep encouraging this positive action taking.

# Action Plan



## What can you do?

A detailed overview of recommended actions relating to climate change is included in *The path to zero carbon municipalities* (OWHS 2020). In some cases, no progress was identified on previous recommended actions; these remain listed below. Additional actions marked as **NEW** also follow.

### Individual and Organization Actions:

- Sources of metals in wastewater are not all industrial. Be aware that what goes down your household drain or into the street gutter almost always ends up the ocean. Water treatment facilities can remove many contaminants, but plenty of dangerous chemicals that go down your drain will still end up in rivers, lakes, and oceans. Phosphates from detergents, chlorine from bleach, and the toxins in pesticides will all wreak havoc on fragile ecosystems once they leave your local sewage treatment plant.
- Do not put paint, solvents, pesticides or other chemicals down your drain.
- Help reduce the environmental impacts of mining by:
  - Reducing your consumption of minerals; reducing consumption of consumer goods in general.
  - Taking transit rather than buying a new car.
- Using recycled materials instead of mined materials and recycling all your metals (e.g., tin cans).

### Government Actions and Policy:

- Increase support of research focuses to assess levels of metal contamination in waterways.
- Protect salmon stocks against the negative health effects of copper to the salmon's olfactory system similar to that established in Washington State (<http://www.seadocsociety.org/scientists-who-showed-how-copper-damages-salmons-sense-of-smell-receive-prestigious-award/>), which will benefit salmon recovery by reducing the amount of toxic metals entering the Salish Sea by hundreds of thousands of pounds each year.
- Legislate against the use of phosphates in household products.
- **NEW** Fund studies examining relationships between contaminant concentrations and temperature.
- **NEW** Potential for increased sensitivity of species to contaminants at higher temperatures will need to be considered in water quality guidelines.

Each article in the report ends with a list of recommended actions that can be taken by individuals through to government level to help fix the issues.

This example comes from the Britannia Mine 2020 article.

We try to make it easy for everyone to take action, and if someone has a particular interest in one aspect, they can focus on that.

# Action Plan



## Action 1. Research

INCREASE KNOWLEDGE OF THE LOCAL AREA AND SPECIES THROUGH RESEARCH.

1. Conduct baseline studies and ongoing monitoring of key indicator species and habitats to guide conservation actions.
2. Conduct ongoing monitoring of the impacts of climate change and ocean acidification to support adaptation and action.
3. Address key knowledge gaps that develop as knowledge increases.
4. Improve availability and sharing of data.
5. Increase participation and engagement of First Nations knowledge holders in Western science.

## Action 2. Protect and Restore

PROTECT AND RESTORE MARINE SPECIES, HABITATS AND ECOSYSTEM SERVICES.

1. Create and implement a coordinated strategy for managing growth (population, tourism, development growth) sustainably throughout the Sound, to reduce impacts on the marine environment.
2. Increase the proportion of area protected within the Sound, with a particular focus on beach spawning habitat and critical habitats.
3. Work with the Federal, Provincial, First Nations and local governments to refine Bill C-64, to clarify the laws applied to abandoned, wrecked or problem vessels so location (on land or at sea), marine debris and waste management issues arising are covered.
4. Reduce entry of pollutants into the marine environment (e.g., plastics and microplastics, harmful chemicals and wastewater).

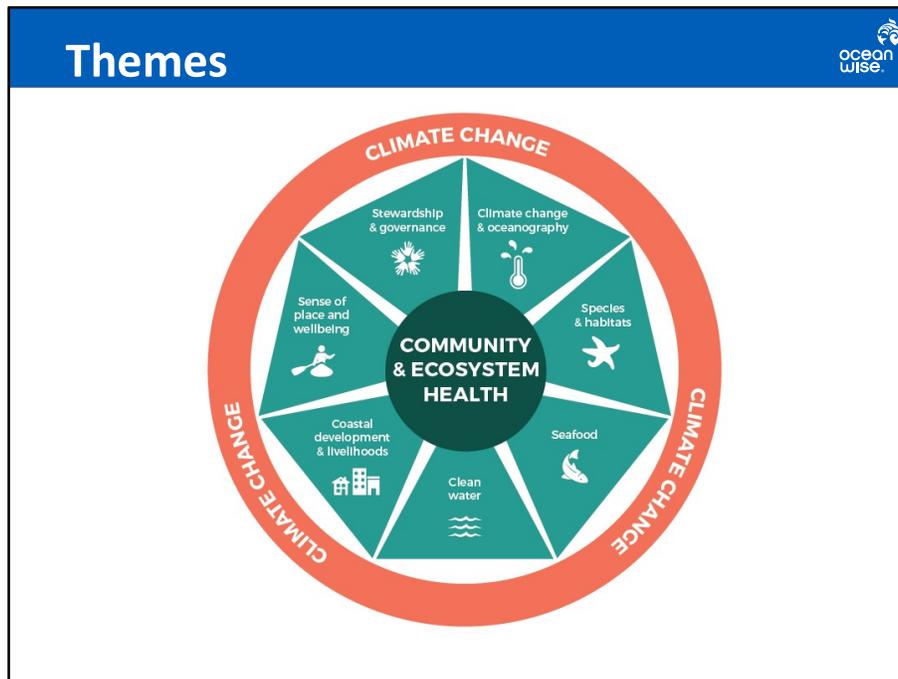
Upon completion of the articles, my team and I took a higher-level look at the recommended actions and classified them into themes (many of these themes arose from a workshop held in mid-2019 with the communities) – a number of actions were repeating across the different articles – and we produced an action plan that the community could use as a guide to help improve the overall health of their local coastal marine environment.

A quick look at the first 2 of 7 actions within the 2020 Howe Sound action plan. Action 1 falls under the heading of Research, with 5 sub-actions bulleted, action 2 is on Protect and Restore, with 4 sub-actions bulleted. (More actions can be seen in the Executive Summary – downloadable at [www.oceanwatch.ca/howesound](http://www.oceanwatch.ca/howesound))



A little more about what Ocean Watch does, so you know we are flexible and adaptable in our approach,

we also produce short reports looking at particular issues in the marine environment, for example pollution impacts on southern resident killer whales, COVID 19 impacts on marine mammals and another report looking at COVID 19 impacts on the wider ocean. These reports are online and are a maximum of about 20-30 pages length. They still require considerable research and work, but they are not as involved as a 400-page report! We also have a report on underwater noise impacts on cetaceans coming out very soon and another one on climate change impacts on oceans in the pipeline. These reports are aimed at the general public and we work hard to keep it non-technical and interesting to read, while ensuring we cast a wide net to look at as much relevant information as we can.



**What might be useful for this group?**

(Option 1): We could select one theme such as that used in the big reports, and produce ~3 articles within that theme

(Option 2): We could focus on a single topic, akin to a spotlight report here.

But to even get to this point, we would first need to hold one or some workshops (in-person is best, but virtual can be done too) – where I get to listen to you and we work through some exercises so I can hear what you identify as the key issues. Then together we work on prioritizing these issues, and that will guide us to what sort of report would be most helpful for your unique situation.

If there are multiple large issues, then we are looking at a larger report, if there is 1 very focused issue, we can do a smaller report, if there are 3 or 4 mid-sized issues etc...

We always provide recommended actions, and depending on the final report size/structure, we can offer an action plan too if that is appropriate.

## Thank you – Questions?



This project was undertaken with financial support from:



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[www.oceanwatch.ca](http://www.oceanwatch.ca)

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