UVic Sustainability Scholars Program

Understanding Cortes Island Beliefs, Knowledge, and Preferences to Inform Local Climate Action

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Disclaimer

This report is a product of the UVic Sustainability Scholars Program, a partnership between UVic and various on- and off-campus organizations offering internship opportunities to graduate students working on sustainability-focused research projects that advance sustainability in the region. This project was conducted under the mentorship of Maureen Williams and Max Thaysen from the Cortes Island Community Foundation – Cortes Climate Action Network.

Territorial Acknowledgement

I acknowledge with respect the toq qaymɪxʷ, ɬəʔamɛn qaymɪxʷ and χʷɛmałkʷu peoples who have inhabited the lands where this research took place for thousands of years and whose historical relationships with the land continue to this day.

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1. Introduction

Climate change has direct and indirect effects on all ecosystems on the planet, with mostly negative impacts on human societies. In the last century, we have witnessed an increase in extreme weather events worldwide, including droughts, floods, and heat waves, which have caused immeasurable economic losses and social crises (Newman and Noy, 2023). While developed countries are the main greenhouse gas producers, the impacts of climate change will disproportionately affect developing countries (Althor et al., 2016). The severity of the impacts will increase with rising temperatures, and current projections estimate an increase of more than 1.5 °C, which will permanently alter ecosystem dynamics on the planet. Even in the best-case scenario, essential ecosystems for planetary health will reach a tipping point where they will not be able to recover from changing environmental conditions (Lenton,. et al., 2025).

Climate change predictions indicate altered seasonal trends in British Columbia, with warmer temperatures and increased rainfall in some areas, and a general decrease in marine biomass (Ainsworth et al., 2011; Haughian et al., 2012). The impacts of climate change are already felt by those who have interacted and depended on natural resources for millennia, with Indigenous groups highlighting ecological changes in the area (Turner and Clifton, 2009). Small islands are especially vulnerable to external stressors due to their unique social and ecological context. They can lack infrastructure and be at higher risk of coastal erosion, sea level rise, and constant worries about water availability (Lane et al., 2013).

Cortes Island is a small island part of the Discovery Islands Archipelago in the Salish Sea. It has approximately 1,000 residents and is part of the unceded traditional territories of the toq qaymɪxʷ (Klahoose), ləʔamɛn qaymɪxʷ (Tla'amin), and χʷɛmałkʷu (Homalco) First Nations (Kennedy et al., 2024). This island has historically faced challenges in implementing effective climate action initiatives and will have to endure the impacts of climate change with limited communication with the mainland, relying primarily on its inhabitants. Therefore, we will use participatory research methods to record local people's perceptions of immediate climate risks affecting the island as well as their preferences for collective action. This project will serve as a first step to determine future actions.

2. Methods

2.1 Survey

Cortes Island has a long history of climate research and collective action; these include the Climate Café, an event hosted by the Cortes Climate Action Network. I used the comments provided by the attendees to conduct a thematic analysis of the general public interest in collective actions (S1) (Ahmed et al., 2025). This was followed by a literature review that covered reports published by local organizations, gray literature and scientific papers. The main recommendations and the actions taken on these subjects were summarized (Table 1) and integrated into a survey that was sent to local key actors. We defined key actors as individuals with a deep knowledge of local ecosystems, threats and social complexities of the island. This survey (S2) was developed and refined in collaboration with my supervisors and consisted of 18 questions that included

demographic information and perception of climate-related risks. We also asked people to rank: the urgency of climate-related risks, the general public interest in participating in collective action activities, and the impacts of individual activities to mitigate climate change on Cortes Island.

Decades of climate research have led to numerous recommendations and the identification of more than 15 climate-related risks for the island. Using the key actors' expertise, we developed a shorter survey for the general public that focused on the most critical risks and on the most threatened ecosystems on the island. We also included questions about activities people may be interested in for collective action and what is limiting their participation. The survey was distributed through a mailing list, personal communication and a QR code, so it was not possible to estimate a response rate.

2.2 Cortes timeline

I conducted four open-ended interviews with knowledge keepers from the island to develop the Cortes Island baseline, using purposeful sampling (Palinkas et al., 2015). These interviews aimed to elicit descriptions of the changes the island has undergone from the interviewees' perspectives. The main themes were ecosystem changes, including shifts in species abundance over time and the presence of invasive species, economic activities on the island, and alterations in the island's infrastructure and transportation. To ensure participants' anonymity, access to the interview transcriptions is restricted.

There was also a short session during a climate change workshop that focused on the historical changes on the island, using the person with the longest history on the island as a reference. We discussed fisheries, farming techniques and logging. The information collected during the interviews and workshop was used to create an illustrated timeline and a brief summary of the history of the island from settlers' perspectives. Due to time and logistical constraints, it was not possible to interview Klahoose, Tla'amin or Homalco community members, resulting in a biased description of the island's history.

2.3 Community event and Participatory mapping

Cortes Climate Action Network organized a community event on September 26, 2025, where we presented the results of our survey and the illustrated timeline to local people so they could provide feedback. We wanted to ensure that the timeline reflected the lived experiences of the interviewees and aimed to promote it as a living tool for community members to add their experiences and memories to it.

We developed a participatory mapping tool where participants were asked to place a smiley face sticker on the place they loved the most and a colour-coded star sticker to represent the major climate risk they perceived for this area. Each of the colours represented different risks: orange=extreme heat events, yellow=drought, green=biodiversity loss, blue=sea level rise, purple=wildfire.

3. Results

3.1 Local research and participation

The literature review covered 12 different documents, which focused on climate change impacts, local effects of climate change and coping strategies, drafts of local projects' proposals, as well as academic reports and scientific papers. The information was summarized in Table 1, which includes local experts' knowledge about the advancement of some of the proposed projects over time.

Table 1. Summary of climate change-related recommendations over time, and some of the actions taken over time

Source	Year	Recommendations	Outcome
Addressing Climate Change on Cortes Island	2010	**Transportation:** lower carbon infrastructure emissions (*Complete transportation demand management strategy (TDM), implement TDM strategy*).	TDM was completed Hybrid ferry (2022)
		Building and energy: Improving the uptake of existing energy efficiency programs and grants currently available for homeowners (*Maintain an online list of grants and financial incentives, Mansons Hall energy assessment and upgrade, Renewable energy for homes*).	Heat pumps Manson's Hall (2024) and Gorge Hall. Increased use of solar panels. List of existing rebate programs
		Food security: Reduce dependence on imported goods (*Root cellar construction, Community garden expansion, Greenhouse pilot*).	Cortes Natural Food Co-op supports local farmers. Seniors' support program buys from local farmers**.** Manson's farmers market during summer. Fewer farms. Linnea does not sell their products to the public anymore. School garden and greenhouse.
		Forestry: Develop a forest carbon pilot project on Cortes to demonstrate the feasibility of carbon credits to support and finance improved forest management practices throughout the region (*Pilot program for improved-land use and forest management*).	Community Forest Agreement (2013).

FOCI Climate Adaptation and Mitigation Project 1 Recommendations for Revisions to the Cortes Island Official Community Plan	2023	**Change language:** Acknowledge governmental impacts on fundamental Aboriginal rights and titles. Recognize climate change as the greatest threat to a sustainable future.	OCP needs to be updated
		Declare a climate emergency: Join global movement.	OCP needs to be updated
		A principle of climate responsibility: To current islanders and people impacted from the Global South	OCP needs to be updated
		Recognize the rights of nature: Consulting Klahoose, Homolco and Tla'amin nations for wording.	OCP needs to be updated
		Zero-emission goal by 2030	OCP needs to be updated
		Climate adaptation and mitigation plan	Pending
		Energy transition for Cortes: Assist islanders in accessing green home retrofit rebates, and help bring contractors with the appropriate qualifications to the island to assist islanders in improving home insulation and the installation of heat pumps.	Friends of Cortes Island - Cortes Climate Plan for Resilience (Cortes CPR)
		Transportation: Public transport, ride sharing, electric bicycles and charging infrastructure for EVs. Electric ferry	No change
		Threats: Identify wildfires as the most important extreme and dangerous climate threat. Get a structural protection unit, build high-volume water tanks and mitigate fire risk, removing wildfire fuel. Recognize the increased risk of extreme heat events and create a call list.	Community wildfire evacuation plan and wildfire training. Cortes Island Aquifer Health Assessment (2025) Cortes Community Housing maps (2025)

		Support and encourage rainwater catchment systems Developments of maps for land use and identify culturally and ecologically important areas. Establish a coastal planning framework that considers the impacts of sea level rise. Use nature-based solutions. Consider a 1 m rise by 2100 for planning purposes.	
		Agriculture: Creation of a fund to purchase agricultural land and lease it to farmers for low rates.	No change
		Aquaculture: Support local aquaculture operations, promote a local testing facility, and protect shellfish habitat.	Cortes Island Zoning Bylaw No. 598 (2025)
		Forests and wetlands: Funds to buy land to manage forests and promote wetland restoration on private land.	Dillon Creek restoration project (2021) Cortes Island School Wetland Restoration Project (2025)
		Natural assets: Identify natural assets such as watersheds and old growth	Asset-Based Resilience Mapping and Place-Based knowledge on Cortes Island (2023)
Asset-Based Resilience Mapping and Place-Based knowledge on Cortes Island	2023	**Housing crisis:** Lack of affordable housing	Cortes Community Land Trust (2024)
		First Nations: Meaningful consultations	New chief elected in 2025
		Old growth: Conserve pockets of old growth on the island	Collaboration with Mother Tree Network
		Salmon spawning streams: Recognize as a natural asset	Ongoing monitoring
Distributive, Recognitional and Procedural Justice: Climate Adaptation Planning for Cortes Island	2023	**Community engagement:** Work with existing community networks and knowledge	Academic paper 2024
Climate Change and Salmon	2024	**Salmon:** Provide cool water, increase water availability,	Updated freshwater fishing regulations (2025)

		increase fry and smolt survival, salmon creeks restoration projects	
Promoting community health and climate justice co-benefits: insights from a rural and remote island climate planning process	2024	**Engage in community-based climate planning processes**	Participation of Cortes Island in the Motivating Net Zero Action in Rural and Remote Communities (MNZA) research project by Quest Canada (2025)

The initial survey we developed was answered by 12 different key actors of the community. In this, 67% of respondents were already part of an organization, and within this group 83% focused on the environment and youth.

The main climate-related concerns for our interviewees from among 15 options were: water scarcity, ecosystem disruption, increased risk of wildfires, extreme weather events and biodiversity loss. They perceived that the risks that would generate the most interest in the public to participate in collective action were: water scarcity, increased risk of wildfires, food security, increased health risks and social and economic disruption (Fig.1). Regarding community-scale options to mitigate climate change, respondents mentioned workshops on how to organize and mobilize for collective action, making news and contacting media to shift public perceptions, organizing to improve democratic processes and working with youth to help them prepare for the future. When talking about individual actions and their effectiveness in fighting climate change, respondents chose mainly: limiting the number of flights per year, growing your own food, composting, using energy-efficient products and switching home heat to electricity (Fig.2).

The final survey was open for almost three months, from July 11 to September 30 of 2025. There were 33 respondents with a completion rate of 94%. The mean age of the participants was 52 years, with ages that ranged from 23 to 79. The results covered perceptions of main risks for Cortes Island, ecosystems at risk, interest in participating in collective action and engaging in community-scale actions (Fig.3). The answers also covered the skills they would like to share with the community and the ones they would like to develop, and what is limiting their participation in climate action (Fig. 4).

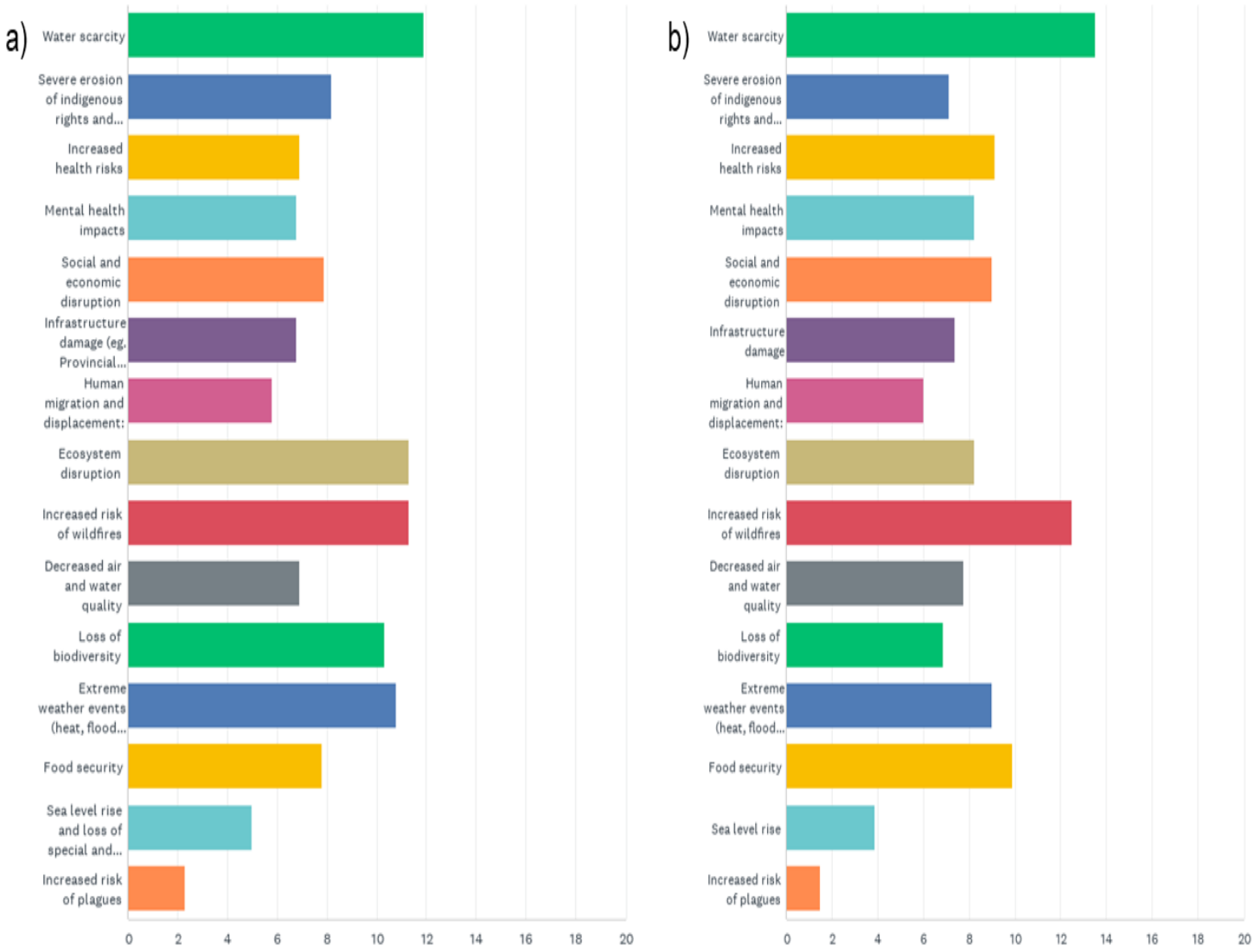

Fig. 1. Survey results on a) perception of the most important risks for Cortes Island, b) perceptions of the general public in participating in collective action in relation to climate risks.

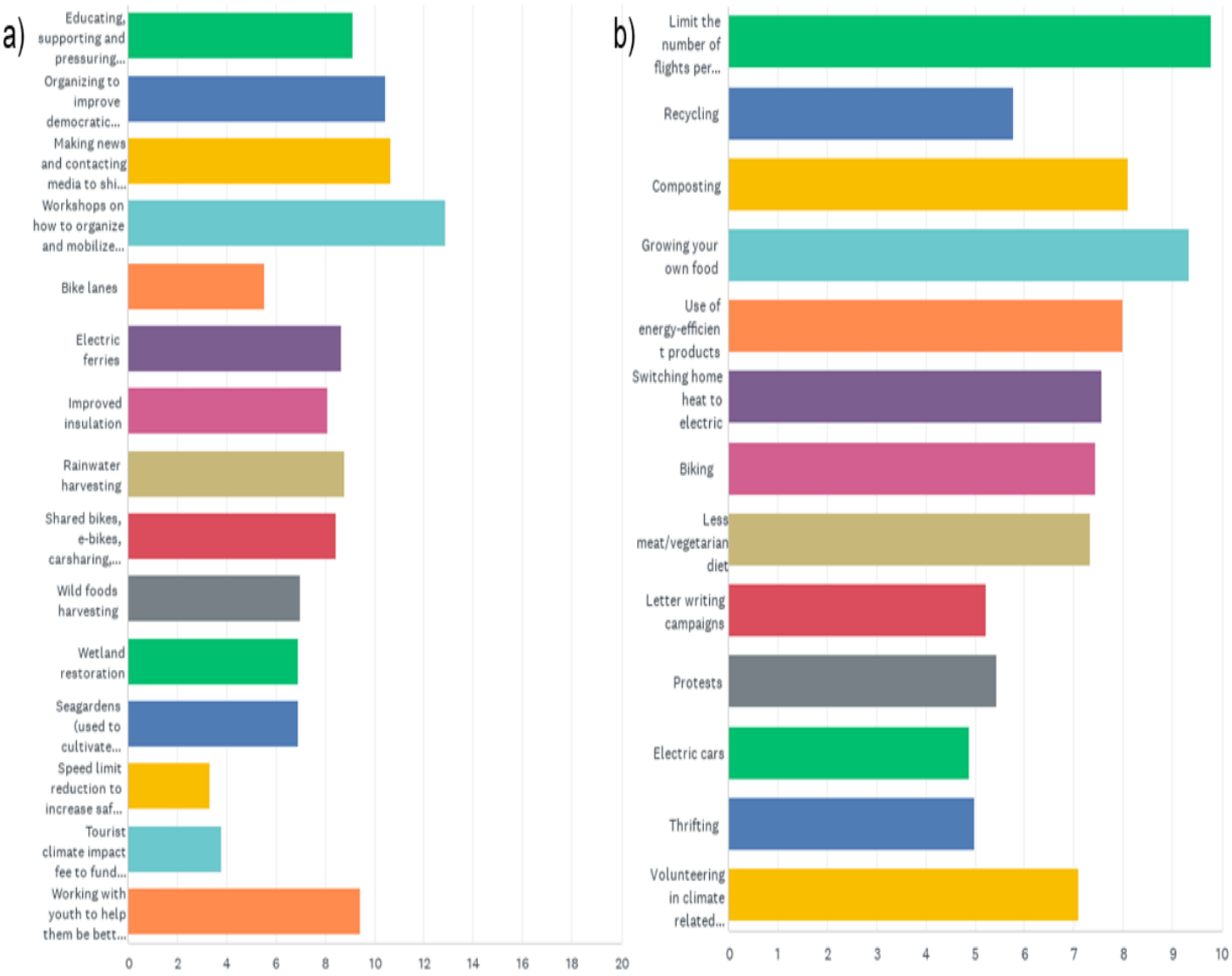

Fig. 2. Public perceptions regarding a) collective action impacts to mitigate climate change at a community scale and b) individually.

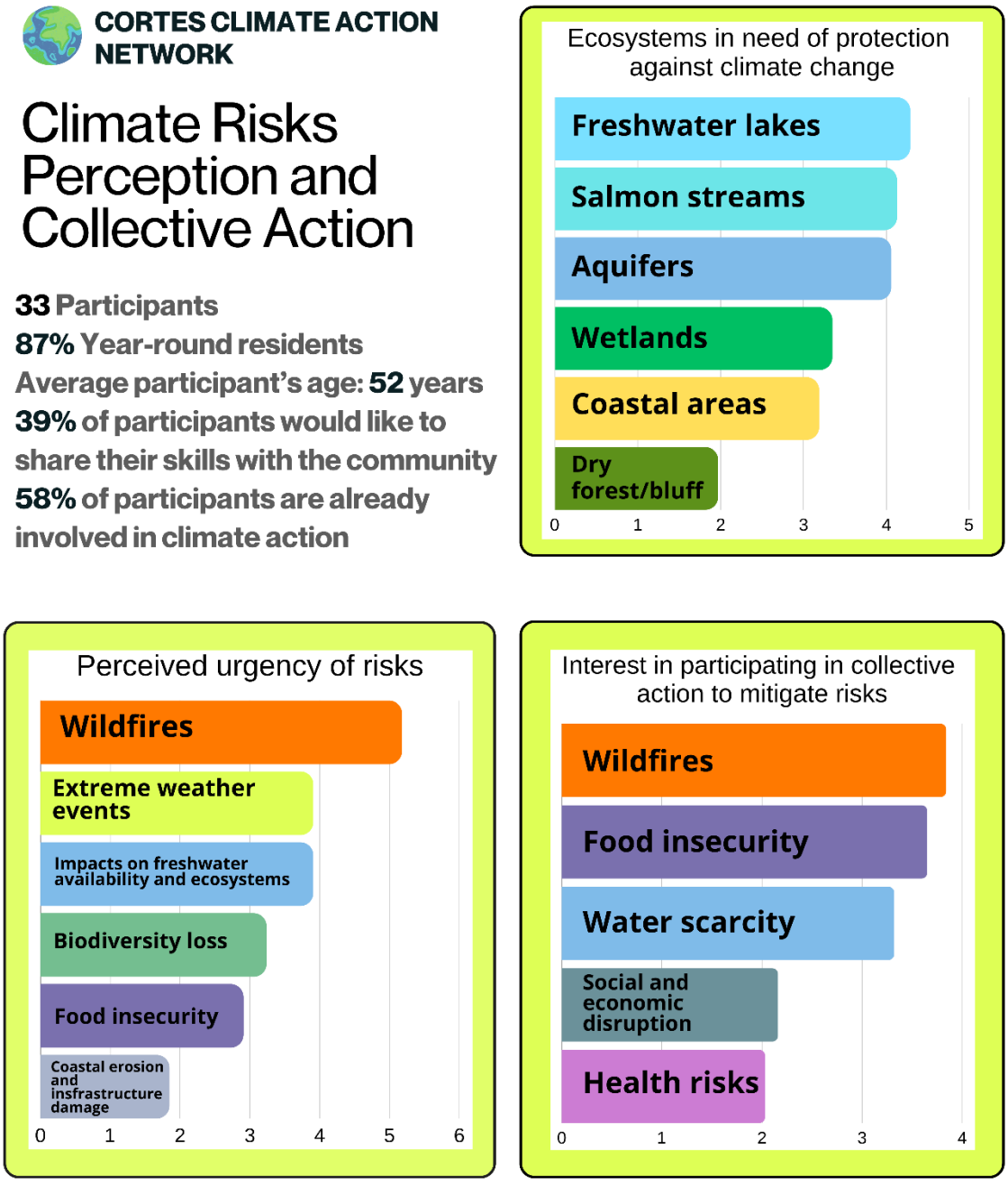

Fig. 3. Demographic information of participants and perceptions of different risks, ecosystems and interest in participation in collective action.

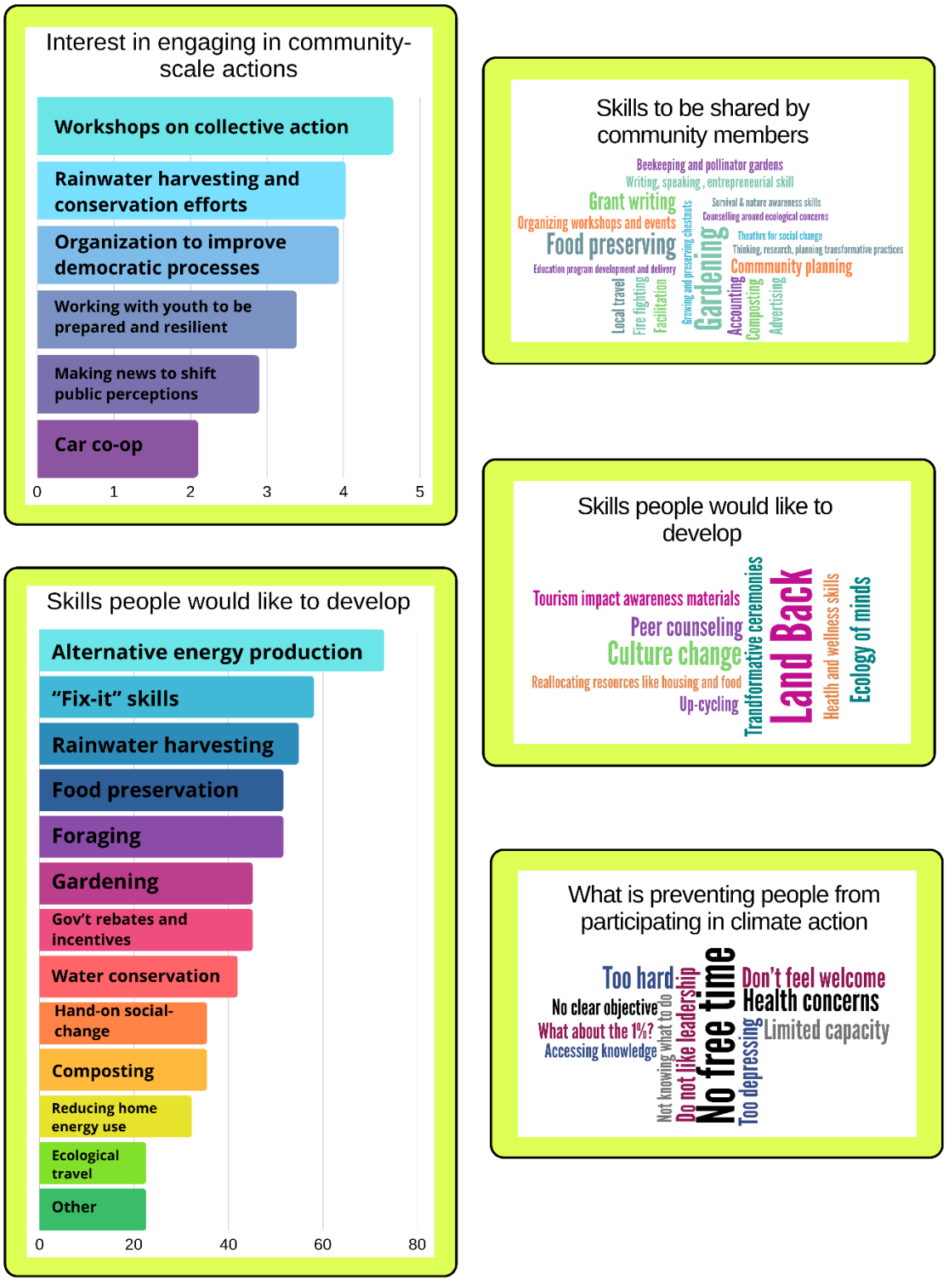

Fig 4. Participants' perspectives on skills they would like to share, develop and limitations for their involvement in collective action.

3.2 Ecosystems' risk perception

There were 10 participants in the participatory mapping exercise, who were mostly students of the Cortes Island Academy. There were five possible risks, but participants only chose two: drought and biodiversity loss. The drought areas were mostly situated near Easter Bluff and Mary Point, while the biodiversity loss areas were located in the southern part of the island, close to Smelt Bay and Hague Lake (Fig.5).

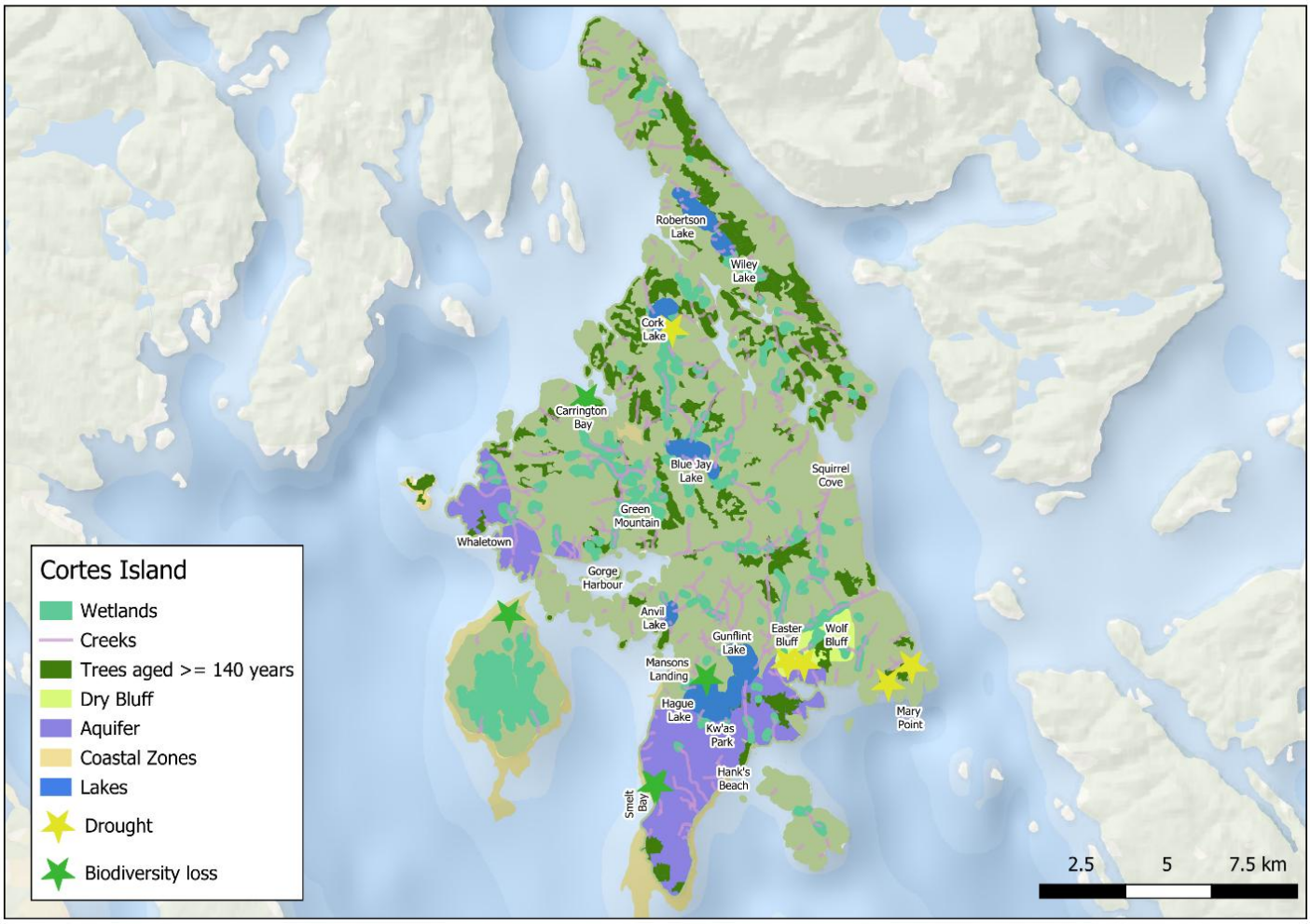

Fig. 5. Perceived risk map of Cortes Island according to community event participants.

3.3 Baselines for Cortes Island

We summarised the information provided by the interviewees in a timeline that reflects the most important ecological and social changes they witnessed on Cortes Island during their time living on the island or visiting continuously (Table 2). These data were also used to generate an illustrated timeline that reflected their lived experiences and how these historical changes correspond to increased greenhouse gas emissions in Canada (Fig. 6). We had no Indigenous interviewees, so the timeline is based on white settlers' perspectives.

Table 2. Timeline of Cortes Island from a white settler perspective.

PERIOD	EVENTS
Pre-colonization	• Well-established Indigenous Nations**: toq qaymɪxʷ** (Klahoose**), ləʔamɛn qaymɪxʷ** (Tla'amin), **χʷɛmałkʷu** (Homalco). • **Clam gardens** across Cortes Island • Subterranean **fortified settlement** • **Cedar** cultural keystone species
Late 1800s – Early settlements	• **1888:** First white settlers arrive on Cortes Island. • Logging begins; **old-growth forests dominate** the landscape. • Early homesteaders get **160-acre free land** grants if they build houses and orchards. • Early cooking fires occasionally cause wildfires
Early 1900s-1920s – Homesteading Boom	• Free land attracts many families; population grows to **600–800 people**. • Timber harvested for building and income; **limited fishing and logging** opportunities. • Frequent uncontrolled wildfires; summer smoke often obscured Vancouver Island until November. • **Pacific Oysters** were introduced from Japan. • **Herring** populations were abundant enough that 8 to 10 schools could be seen at once in Baker Pass, pursued by sea birds and diving birds.
Mid-20th century (1930s–1940s) – Natural resources exploitation era	• Population declines to **375 residents** as homesteading becomes difficult. • **Logging intensifies**; massive old-growth trees cut and floated in log booms. • **Historical trenches and tunnels** were demolished. • Starfish were noted as "vigorous" and commonly used as **garden fertilizer**. • Large herring spawning and opening of the **commercial fishery**. • Large-scale **salmon runs** close to shore; easy fishing within minutes.
1950s–1960s – Homesteading decline and technological changes	• **Seals were hunted heavily,** often with a government bounty, leading to a massive decline; they were considered a threat to salmon. • BC government **policy shifted**, favoring large timber companies with big processing facilities, which pushed smaller, independent loggers out of business. • **Early 1960s:** Sediment-trapping groin built unintentionally while creating log booms; alters beach formation. • Many creeks damaged by logging, leading to **declines in coho salmon habitat**. • **Radical change in herring populations** began after the DFO opened the Gulf of Georgia/Salish Sea to industrial

	fishing (for fertilizer reduction). Local populations in small bays disappeared within two to three years. ● **Packs of dogfish** were commonly seen swimming lazily in Smelt Bay, they were considered "scrap fish". ● Loggers created a permanent rocky groin on a beach, which unintentionally trapped fine sediment, leading to the c**reation of a sandy beach** where only small rocks existed before.
1969–1970 – Policy shifts and power	● Introduction of ferries improves accessibility, slowly attracting **tourism**. ● BC government halts small-lot subdivisions to **control overdevelopment.** ● Regional District governance and local land-use **bylaws established.** ● **Arrival of power lines** (hydro system) changes land clearing and infrastructure.
1970s–1980s – Cultural shift	● Timber i**ndustry technology changed**: chip and saw mills allowed for the harvesting of much smaller trees (down to four-inch tops), fundamentally altering forest management practices. ● Vietnam War draft dodgers **move to Cortes**, bringing new skills and values. ● Transition to **second-growth forests**; fewer large old trees (only "kids" trees remain). ● **Seals** hunted extensively; few sightings during this period. ● Salmon runs continue to **decline.** ● Community celebrations shifted from late May (May 24th weekend) to mid-July because **the weather was no longer predictably** good in May. ● Deer population began to surge as residents switched to **buying meat in stores** (using refrigerators enabled by electricity) rather than relying on heavy subsistence hunting. ● In some places, **increased tourism and pollution.** ● Establishment of new farms in **clear-cut areas**.
1990s–2000s – Climate and biodiversity changes	● The **commercial dogfish fishery opened**, causing the dogfish population to decline. ● Concerns about the **lack of sustainability** in the logging practices. ● Local **resistance** to logging. ● The log sorting facility, which contributed logs to local beaches, **shut down.** ● **Rising sea levels** and stronger winter storms erode beaches and affect farm edges. ● **Invasive** clam species (varnish clam) appeared ~20 years ago. ● **Starfish wasting disease** emerges, reducing healthy populations. ● **Wildlife changes**: otters lose habitat to development, wolves arrive preying on deer. ● **Eagles increase** in numbers but lose nesting sites as old snags fall.

	• Sedge grass begins colonizing new beach areas, indicating **shifting land formation**. • Arbutus trees began **blooming regularly** every year, which they reportedly had not done previously. • **Winters became warmer**, with freezing weather and ice skating on lakes diminishing. • Algal growth and **algae blooms** became an off-and-on problem in the lakes (observed for the last 15–20 years).
2010s–present – Marine revival and heat impacts	• Seal and humpback whale **populations rebound**, whales now breaching offshore. • Record-breaking **herring spawn** covers beaches in billions of eggs (unprecedented). • 2022–2023: **Marine heatwaves** cause mass die-offs of shellfish, barnacles, and young crabs during extreme low tides. • Volunteer firefighter organizations have become **more bureaucratic** (e.g., mandated truck changes, insurance requirements). • Community remains small (~1,000 permanent residents), with **strong environmental stewardship** and 50+ volunteer organizations. • Overall **community feeling remains strong**, characterized by active, engaged, and interdependent residents.

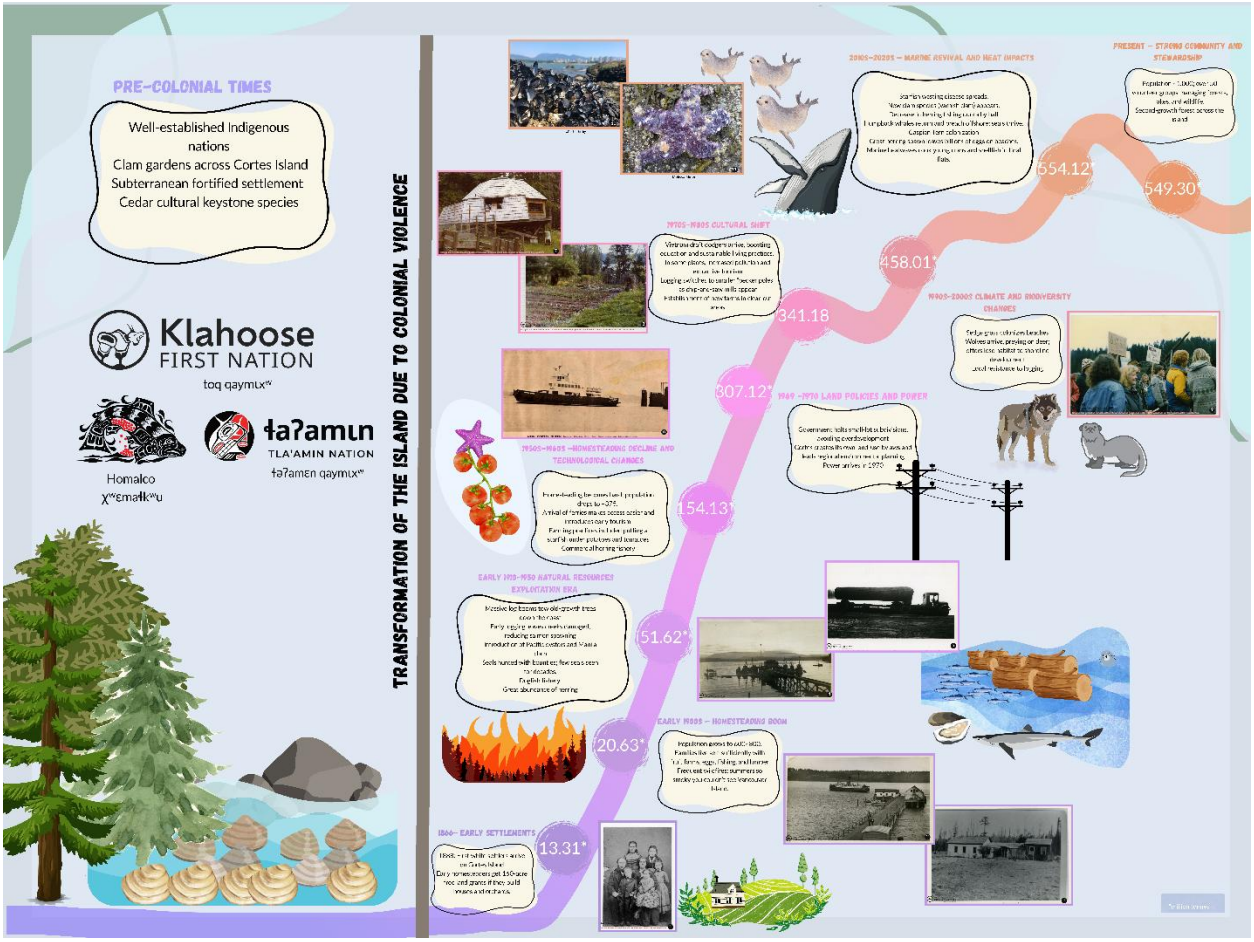

Fig. 6. Cortes Island timeline based on the interviews and workshop session. All pictures from before 2010 were taken from the Cortes Island Museum & Archives.

4. Recommendations

Cortes Island has a rich social capital, with active participation from its community members, and a number of individuals and groups already involved in environmentally focused activities. The existence of several groups working on similar issues may divide people's attention, making it hard to engage the public in collective action.

There is interest in sharing and developing new abilities that can help local people face future challenges that will arise with climate change, as well as reducing pollution to keep challenges, hopefully, manageable.

More research is needed to assess the threats to life on Cortes for humans and non-humans and compare these to the risks identified as the greatest threats by the participants of the projects. It could be that the things that are most concerning to residents are not the things that will prove to be most disruptive.

The results described in this report can serve as a first step to develop new projects or refine the participatory instruments that were developed for this internship. The information gathered on climate change threat risk hierarchies can be used to prioritize actions and messages that would

get the most engagement. The illustrated timeline could be used as a living document where local people can add their experiences to it, enriching its contents and serving as a starting point for community engagement.

Given that climate change requires a major transformation of society within a short amount of time, the limited amount of public participation in events and surveys is itself illuminating. More work will likely need to be done to elevate the urgency and salience of the issue, which would likely be reflected in greater attention and participation, which could then be translated into energy and resources.

One of the aims of the project was to use participatory methods to ensure the inclusion of different perspectives throughout the research. However, we found significant barriers to participation, including the duration of the internship and the season during which the research was conducted. Summer is the busiest season on the island with increased tourism and a large number of community events, making it hard to coordinate with key actors and knowledge keepers to ensure their participation. We used digital tools to collect answers, requiring some technological literacy, which could have excluded some age groups. The lack of a defined space to share the timeline and the participatory map limited participation to only a few community members who attended our final event.

Due to time and logistical constraints, it was not possible to include Indigenous perspectives in this report; their participation in the construction of a Cortes timeline is essential to understand the long-term changes of colonization on the island ecosystems and the impacts of climate change.

References

Ahmed, S.K., Mohammed, R.A., Nashwan, A.J., Ibrahim, R.H., Abdalla, A.Q., M. Ameen, B.M., Khdhir, R.M., 2025. Using thematic analysis in qualitative research. Journal of Medicine, Surgery, and Public Health 6, 100198. https://doi.org/10.1016/j.glmedi.2025.100198

Ainsworth, C.H., Samhouri, J.F., Busch, D.S., Cheung, W.W.L., Dunne, J., Okey, T.A., 2011. Potential impacts of climate change on Northeast Pacific marine foodwebs and fisheries. ICES J Mar Sci 68, 1217–1229. https://doi.org/10.1093/icesjms/fsr043

Althor, G., Watson, J.E.M., Fuller, R.A., 2016. Global mismatch between greenhouse gas emissions and the burden of climate change. Sci Rep 6, 20281. https://doi.org/10.1038/srep20281

Haughian, S.R., Burton, P.J., Taylor, S.W., Curry, C., 2012. Expected Effects of Climate Change on Forest Disturbance Regimes in British Columbia. Journal of Ecosystems and Management 13. https://doi.org/10.22230/jem.2012v13n1a152

Kennedy, A.M., Tsakonas, K., Berman-Hatch, F., Conradi, S., Thaysen, M., Gillespie, M.A., Gislason, M.K., 2024. Promoting community health and climate justice co-benefits: insights from a rural and remote island climate planning process. Front Public Health 12, 1309186. https://doi.org/10.3389/fpubh.2024.1309186

Lane, D., Mercer Clarke, C., Forbes, D.L., Watson, P., 2013. The Gathering Storm: managing adaptation to environmental change in coastal communities and small islands. Sustain Sci 8, 469–489. https://doi.org/10.1007/s11625-013-0213-9

Lenton,., T.M., Milkoreit, M., Wilcock, S., Abrams, J.F., Armstrong McKay, D.I., Buxton, J.E., Donges, J.F., Loriani, S., Wunderling, N., Barrett, M., Constantino, S., Powell, T., Smith, S.R., Boulton, C.A., Pinho, P., Dijkstra, H.A., Pearce-Kelly, P., Roman-Cuesta, R.M., Dennis, D., 2025. The Global Tipping Points Report 2025. University of Exeter, Exeter, UK.

Newman, R., Noy, I., 2023. The global costs of extreme weather that are attributable to climate change. Nat Commun 14, 6103. https://doi.org/10.1038/s41467-023-41888-1

Palinkas, L.A., Horwitz, S.M., Green, C.A., Wisdom, J.P., Duan, N., Hoagwood, K., 2015. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. Adm Policy Ment Health 42, 533–544. https://doi.org/10.1007/s10488-013-0528-y

Turner, N.J., Clifton, H., 2009. "It's so different today": Climate change and indigenous lifeways in British Columbia, Canada. Global Environmental Change, Traditional Peoples and Climate Change 19, 180–190. https://doi.org/10.1016/j.gloenvcha.2009.01.005