Proposal: Salish Sea Conservation & Education Centre

The UBC Open Water Research Station (OWRS) opened in 2003 at Reed Point Marina to undertake groundbreaking research with Steller sea lions trained to work unrestrained in the waters of Burrard Inlet and Indian Arm. It was highly successful and resulted in dozens of scientific papers that directly contributed to plans for recovery of this endangered species. The research was funded through research grants, support from the Vancouver Aquarium (Ocean Wise), and financial contributions from a small number of external entities. Unfortunately, insufficient funds led to the Station suspending operations in 2020. However, this event presented a unique opportunity to re-invigorate and re-imagine the role of a local marine conservation science and education centre that serves a wider community and national mandate.

We propose to build on the core success of the OWRS to create the Salish Sea Conservation & Education Centre (SSCEC) to fulfill three broader mandates:

- Research & Conservation: Serve as an operational base for an expanded research program on local aquatic ecosystems and marine mammals, realized through dynamic university partnerships.
- Education: Provide place-based education of school-aged children, as well as a training facility for undergraduate and graduate university and college students.
- Community Outreach: Become an integral part of the local and wider community, including residents of Port Moody, the Tri-Cities, the Tsleil-Waututh Nation and beyond.

This new role will be achieved through:

- Funding: Strategically broaden funding sources and partnerships to provide long-term financial stability.
- Infrastructure: Revitalize infrastructure to provide a world-class facility for research and conservation, education, outreach and animal care.
- Partnerships: Forge dynamic partnerships with communities, educational institutions and organizations, governments, businesses, and industry.

Objectives/Activities:

In expanding beyond its historical role, and to truly fulfill its potential as a world-class facility, the SSCEC will fulfill three main objectives: research and conservation, education, and community outreach.

1. Research and Conservation

The Centre will act as a local base to undertake ground-breaking science. For most researchers, work in the aquatic ecosystem entails either travelling far afield or setting up temporary study sites that do not provide the support for cutting-edge research. The SSCEC will provide a central and accessible location, adaptable infrastructure, and state-of-the-art facilities required for
ground-breaking science. Its location makes it a convenient base for local researchers from UBC, SFU, and Douglas College, with the ability to attract researchers from across Canada and abroad.

In addition to the advantages of its central location, the setting provides unique scientific features – it is a relatively undeveloped area but with localized sites of intense commercial activity. It also contains Canada’s most southern deep-water fjord. Home to several salmon-bearing streams, diverse seabird species, and both resident and transient populations of marine mammals, the local waterways – Burrard Inlet and Indian Arm – can serve to address both local ecological or developmental concerns, and as a case study to address global conservation issues. The vast flora and fauna found in the local waterways provide innumerable opportunities for field studies. The area can also essentially serve as a giant living laboratory within which various experiments can be performed under controlled conditions. For example, in recent years, the OWRS assisted scientists and graduate students to set up experiments that examined the effects of climate change and ocean acidification. Future projects could also examine the effects of different kinds of industrial development (e.g., dredging, pile-driving, increased boat traffic). Such studies can serve specifically to monitor and mitigate local effects, as well as provide information to aid managers for planning projects in other locations. The presence of past industrial activity also provides researchers with the opportunity to conduct studies in the areas of habitat restoration, providing both scientific knowledge and an improved local environment. These studies will become financially and logistically feasible with a dedicated research station (including laboratory space, workshops, and boats) to support an expanded scope of research activities.

In addition to essential oceanographic and ecological research, the SSCEC will offer several unique opportunities. Marine mammal research was part of the original mission statement of the OWRS, employing a completely unique paradigm of conducting studies with trained Steller sea lions operating freely in the open ocean environment. The SSCEC plans to reinstate the Steller sea lions after appropriate upgrades to their facilities. In addition to their role as charismatic ambassadors for the Centre, these animals also serve to answer fundamental ecological questions. Past research has focussed on the dramatic decline of Steller sea lions in the western Pacific, and this work will likely continue. However, sea lions are increasing rapidly within the Salish Sea, and science is now required to discern their potential role in the alarming decline of southern resident killer whales.

We can also consider new options for holding and conducting research with marine mammals at the facility. These could include the temporary housing of local wild harbour seals that can be outfitted with data tags and used to study aspects of local ecology (such as interactions with hatcheries and other fisheries) as well as platforms of opportunity to measure local water conditions (biological, chemical, and sound characteristics). The facility could also serve as a temporary or permanent facility for holding marine mammals rescued through the Vancouver Aquarium’s Marine Mammal Rescue Centre that are deemed non-releasable and would have to be otherwise euthanized. This would be an invaluable opportunity to create a variety of mega fauna with which students and the community could interact. We tend to only care about what we know, and this will be an effective opportunity to diversify learning of other marine mammal species as well as to develop and continue incorporating fieldwork into the scope of expanding...
research. This would continue the strong foundation established by the OWRS to address questions around animals in the wild with the trained (not tamed) marine mammals at the facility. Expanding research opportunities could be designed by cycling in other marine mammal species from the rescue centre.

2. Education

Place-based education will be a primary objective of the SSCEC. Numerous studies have conclusively shown that nature education in children results in physical (lower stress levels) and mental wellness (higher grades, better behaviour, enhanced communication skills and motivation, increased self-reliance and memory). They also develop better attitudes towards the environment, which translates into a more aware and scientifically fluent voting population when they are older. The education goals can be broadly grouped into “science education” and “technical training”.

Currently, most outdoor education experiences are only available to select classes and gifted programs. The goal of the SSCEC is to make such programs available to all school children – public and private (including Montessori). A floating classroom will host education programs, with activities aimed at understanding local biodiversity, learning basic scientific techniques (working with microscopes, identifying local species), and gaining an appreciation of global environmental issues. This will be complemented with exposure to the on-going research at the SSCEC and trips by boat into the local waterways to gain first-hand experience.

In addition, the SSCEC will provide practical experience in scientific techniques. This includes lessons in biological surveys, use of specialized equipment, and experience with laboratory analysis techniques.

The education mandate also extends beyond elementary grades. The Centre will also provide opportunities for training of undergraduates, graduate students, and veterinarians. This will be through directed studies projects that make use of the unique scientific opportunities at the facility.

3. Community Outreach

It is critical that the SSCEC become an integral part of the local and wider community. There will be an impetus for hosting events at the Centre (Open House) as well as partaking in community events. These activities will cultivate both social and financial support from a much broader community base.
Partnerships:

To be successful in its goals, the SSCEC must form strong partnerships with a number of key stakeholders:

- Universities and colleges – actively advertise the Centre’s resources to increase the scientific scope of research carried out at the new Centre. Currently, there is no other facility for conducting aquatic research in the Lower Mainland.
- City of Port Moody, Tri-Cities and the Tsleil-Waututh Nation (TWN) – engage with local governments and First Nations (e.g., TWN’s Burrard Inlet Action Plan), community members, and businesses is essential to ensure the SSCEC is well-known and supported within the community.
- School Districts – the proposed education program will be open to all schools, necessitating strong relationships with local schools and trustees, both public and private (e.g., SD43, SD42, Vancouver School Board, etc.).
- Ocean Wise – the Vancouver Aquarium was a long-term partner of the OWRS, providing support through training and veterinary staff and food for the animals. Changing financial priorities led to a suspension of this support but it will be important to re-engage Ocean Wise as a partner in animal care, education, and public engagement.
- Province of BC – engage with MLA Rick Glumac and others to demonstrate the growing technological potential of the SSCEC.
- First Nations of the Lower Mainland – create strategic partnerships with the Tsleil-Waututh Nation, as well as the Squamish Nation and the Musqueam Indian Band. Ideally, the SSCEC would hire a full-time First Nations representative to teach and facilitate the school tours.

Financial Plan:

1. Operating Costs

The costs have been divided into fixed and scalable categories. Fixed costs include those that are incurred as a direct result of operating the facility, while scalable costs are those that increase or decrease with the level of activity at the Centre.

The nature of fixed costs means that many are shared across programs and not readily associated with specific goals or activities of the Centre. Scalable costs are important to identify as it is critical that the individual activities undertaken at the SSCEC are largely self-funded in order to ensure long-term financial viability.

2. Fixed Costs:

- Facility improvements: initial start-up costs associated with upgrades to the buildings, equipment, and animal-holding facilities.
- Animal care: training staff (minimum 2), food, veterinary care
Facility infrastructure: moorage, electrical and water, building maintenance,
Equipment infrastructure: boat maintenance and essential operations, scientific and education equipment maintenance and upgrades
  o Core staff – detailed under “Organizational Structure”

3. Variable Costs:

  ▪ Research projects: “Overhead” cannot be charged but costs will be offset through calculation of facility costs in order to be at minimum revenue-neutral. These costs will be calculated based on required physical (e.g., boats, equipment, lab and office space) and personnel (animal husbandry, research assistants) demands.
  ▪ Education: Actual incurred costs will be calculated for school programs. This will include use of physical facilities (including classroom and boats), as well as the hiring of additional education staff as required.

4. Funding Opportunities:

Current funding is provided through research grants, support from the North Coast Brewing Company, and Disney Corporation (filming licenses). In order to be viable, there must be a reasonable 3-year financial plan that accounts for essential operating costs. To accomplish this, funding will be pursued through:

  ▪ Working closely with the UBC Development Office to target donors
  ▪ Greater emphasis on national businesses with a local footprint: Pacific Coast Terminals, Suncor Energy, CP Rail, Imperial Oil Foundation, Port of Vancouver
  ▪ Partnerships with local businesses (e.g., marine technology, breweries)
  ▪ Expanded research that will contribute financially through facilities costs
  ▪ Regular school field trips (cost recovery basis)
  ▪ Engaging with Ocean Wise to re-instate partial support in line with their Ocean Conservation goals

Organizational Structure:

  ▪ Board of Directors – consisting of representatives from local (Port Moody, Tsleil-Waututh Nation) and scientific communities, as well as school district representatives.
  ▪ Core staff: the following are minimal staffing levels required for basic operations. The positions can be combined and expanded as required.
    o Executive director (1.0); concentration funding and overall operations
    o Science director (0.5): designs scientific program, oversees, coordinates, and expands scientific activities; lead on science-focussed university and community outreach and communication projects
o Education director (0.5): designs education program, oversees, coordinates, and expands on-site and off-site education activities; lead on school and education-focused community outreach programs.

o Facilities manager (0.5): maintains physical operation of the Centre and all its equipment

o Research technician (0.5): facilitates data collection for external and internal projects, assists in operation of the Centre supports animal husbandry staff

o Animal husbandry staff (2.0): Responsible for all aspects of animal training and health; assist in designing and implementing animal-related research projects.

o Educators: both science and First Nations teachers who will weave stories from the past with the current questions (challenges) of today.

**Facilities:**

The immediate plan is to re-establish the SSREC within the long-term location of Reed Point Marina occupied by the OWRS. This footprint includes the floating laboratory, workshop, boat moorage, and marine mammal holding facilities.

For the education component, the SSREC would use the Reed Point Marine Education Centre (RPMEC), also located within the marina property. For the past two decades, the Education Centre, with its heated classroom, laboratory and outdoor ‘touch tanks,’ has been providing place-based hands-on education for school-age children, thanks to co-founders and Pacific Wildlife Foundation directors, Rod MacVicar and Ruth Foster. The new SSCEC would see revitalization of this facility as a key part of Version 2.0 and would feature both regular programming for Metro Vancouver schools, as well as providing a launchpad for university students to pursue self-directed studies in marine science and research.

Mindful that Reed Point Marina is a non-public facility, educational programs and tours will be thoughtfully designed to minimize disruption of marina users and services.

A new not-for-profit, the Salish Sea Conservation & Education Society, is being formed and will be hosting events to continue building awareness and support for Version 2.0. Plans include “outings” with the sea lions at accessible locations like Rocky Point Park to showcase their charismatic talents and science-based applications of the trained (not tamed) marine mammals away from their holding facility. Additionally, fundraising events will be planned in partnership with local businesses (e.g., marine technology outfits, breweries) to garner genuine interest and support. These efforts will work towards securing stable funding for the new SSCEC, cultivating education plans and programs, and connecting post-secondary institutions with one another to create a Bamfield-inspired community collaborative.
Longer-term plans are also being developed for future facility expansion. Possibilities include:

- Partner with Simon Fraser University in their plans to create a marine innovation centre. Discussions are pending with the City but we would advocate for a model, similar to that of the Bamfield Marine Sciences Centre, where the five largest western universities have formalized a partnership of support.

- Refurbish a 400-foot floating barge to be the new SSCEC’s floating classroom. This facility would be able to explore Indian Arm and surrounding waterways, providing a unique and ever-changing experience for students, teachers and researchers. The floating classroom would be modelled after the University of Virginia’s solar-powered Learning Barge that launched in September 2009 and is operated by the Elizabeth River Project.

- Office space in the new St. Johns Street development. A local realtor has expressed interest in providing classroom facilities in the proposed James Street development, depending upon City approval and overall timing of construction.

These are plans with potential and feasibility. An experienced team is already in place with a breadth and depth of skills and connections that will make the new SSCEC a reality.