CHONe
CANADIAN HEALTHY OCEANS NETWORK

Canada's Oceans Benefit from Training Future Generations of Scientists

SEC 01

WHY THIS SCIENCE BRIEF?

CHONe has trained over 100 undergraduate, MSc, and Ph.D. students and postdoctoral fellows working in universities and federal research labs across Canada. Students represent the engine of CHONe by carrying out fieldwork, experiments, sample collection and data analyses, publication of manuscripts, and presentation of findings to managers and diverse stakeholder groups. CHONe students capitalized on opportunities to partake in valuable training workshops and national and international conferences to present their achievements to multiple audiences

SEC 02

OUR RECOMMENDATIONS

These suggestions emerge from the collective work across CHONe:

- Engage science trainees in policy and management discussions.
- Support internships in government departments.
- Create networking opportunities for trainees that can advance their research.
- Offer communication training.
- Encourage co-supervisory arrangements between academic and government researchers.

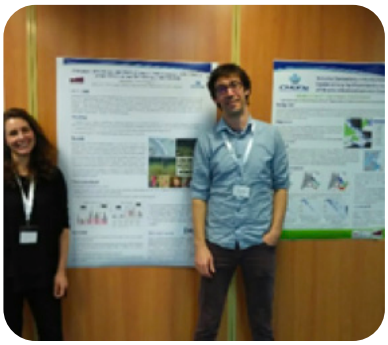
SEC 03

THE CHALLENGE, NEED, AND OPPORTUNITY

High-quality research that can advance science, ocean management, and applications represents a significant challenge that CHONe addressed through the power of collaboration. CHONe articulated the need to train the next generation of ocean scientists with a deeper understanding of how science supports ocean management. CHONe research projects emphasized opportunity through collaborative teams of several leaders and trainees, with each trainee focusing on one or more aspects of a specific research question. Team members were encouraged to share tools, approaches, sampling opportunities, and data and finally merge their findings to gain a complete understanding of processes and broaden the scope of investigations.

SEC 03

THE CHALLENGE, NEED, AND OPPORTUNITY



Collaborations among universities and government agencies, as well as with industry, created opportunities to share the cost and maximize access to cutting-edge tools and instruments (e.g., remotely operated vehicles). The network facilitated collaborations with other Principal Investigators and trainees to share expertise, facilities, and tools to advance their research even beyond project collaborations. For example, CHONe emphasized collaborative syntheses as an important output that involved several students and multidisciplinary approaches (e.g., World Conference on Marine Biodiversity review papers, see below). Moreover, CHONe researchers collaborated with government scientists, managers, and local authorities (e.g. INREST) to inform, evaluate, and improve conservation efforts and outputs across Canada's oceans.

Network meetings also provided an excellent opportunity for trainees to connect with peers, university and government scientists, share their own and learn about other's research and start collaborative relationships. Meetings also contributed to creating a familiar and positive atmosphere that facilitated learning, collaborations, and communication. CHONe also extended collaborations outside Canada (e.g., with European organizations such as ATLAS or MERCES) through trainee participation in workshops and conferences, giving opportunities to make an impact at international scales.

SEC 04

OUR APPROACH: SCIENCE SUPPORTING POLICY

CHONe trainees had many opportunities to apply their scientific findings to improve decision-making in marine conservation and influencing the health of Canada's three oceans. Valuable knowledge exchanges between CHONe trainees and decision-makers were part of everyday collaborative CHONe projects, but trainees also provided formal science advice to DFO decision-makers via numerous Canadian Science Advisory Secretariat (CSAS) meetings. CSAS provides the flagship mechanism by which DFO synthesizes, summarizes, and translates scientific evidence for decision-makers to improve policies and encourage science-based decision-making. These meetings led to improved policies for planning Marine Protected Area networks and evaluating cumulative effects to inform ecosystem-based management.

Trainees not only had the opportunity to send their knowledge across the science-policy interface, but some crossed that interface themselves as part of a CHONe-DFO internship program. Several students were embedded as part of decision-making teams in DFO and thus directly influenced DFO-Science funding, developed sustainable marine conservation policies and helped to guide the selection of topics selected for CSAS meetings. Finally, many trainees now work at DFO as researchers, decision-makers, or both. This significant cohort of CHONe trainees continues to bridge the science-policy gap and promote the values instilled by their CHONe training.

SEC 05

OUR APPROACH: THE IMPORTANCE OF COMMUNICATION

As little-fish-in-a-big-ocean, young research scientists must learn the importance of communicating science effectively. As a trainee, feelings of inadequacy and "impostor syndrome" compound the intrinsic uncertainties of working at the edge of the unknown. However, science communication offers numerous benefits, including informing public opinion and policy. CHONe focused on this science-policy interface, and mentors challenged the next generation to communicate their science while mastering it effectively. To this end, CHONe gave their trainees the invaluable opportunity to practice, practice, practice. Working on a research project within the larger CHONe themes required regular open communication and sharing thoughts, ideas, and feelings with the diverse CHONe membership. Trainees built their confidence in science communication by presenting at annual meetings, workshops, and conferences that focused on delivering science findings by trainees rather than by established scientists. CHONe enabled communication training events (e.g., COMPASS science communication events) and outside courses (e.g., Bamfield Marine Science Center communication courses).

CHONe trainees have contributed significantly to the scientific literature through publications in a diverse collection of high-standard journals demonstrating the network's high research quality and multidisciplinary nature. CHONe students and alumni have reached audiences well beyond scientists in their field, actively engaging Canadians and people worldwide in ocean science and policy. Many CHONe trainees can boast national and international awards for their excellence in science communication.

SEC 06

OUR APPROACH: THE PRACTICE OF MENTORING

By training and inspiring the next generation of ocean scientists at the science-policy interface, CHONe has launched individual careers that inform ocean management. CHONe exemplified a remarkable willingness to dedicate time and resources to mentoring by providing students rare access to a blend of graduate students, early-career scientists and academic and governmental scientists working towards shared sustainable ocean goals. CHONe created invaluable opportunities to develop mentoring relationships, facilitated by "speed dating" greetings and meets and other informal social activities during CHONe meetings. They also offered multiple workshops (e.g., data management, spatial analysis) to students, including some suggested and built by CHONe students themselves.

As part of the 4th World Conference on Marine Biodiversity, CHONe organized a mentoring program that brought early-career and senior scientists together to evaluate progress towards the Aichi Biodiversity Targets. Three CHONe trainees mentored by CHONe researchers organized discussions by 19 senior researchers, 20 early-career scientists and 43 graduate students, including many CHONe members, that led to the publication of 4 peer-reviewed papers.

This effective mentoring practice enabled a new generation of researchers and practitioners, many of whom now hold DFO and academic positions where they train students of their own. The cross-generational ocean scientist community it fostered endures beyond the network.

SEC 07

CONCLUSION: THE CHONE LEGACY

By training the next generation of ocean scientists to work at the interface between science, policy and management, and narrowing the communication gaps between them, CHONe contributed to shaping many early careers and improving the future of Canada's oceans. Indeed, a subgroup of those early-career scientists prepared this Science Brief:

SEC 08

GET IN TOUCH

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