TESTIMONY OPPOSED TO LD 2003 – updated file

Dr. Allison A. Snow
Professor Emerita, Ohio State University, snow.1@osu.edu
Adjunct Professor, University of Massachusetts-Amherst
Blue Hill Peninsula Rockweed Forum
Brooksville, Maine

January 11, 2024

To: Senator Reny, Representative Hepler, and Members of the Committee on Marine Resources

I have learned that President Jackson has withdrawn his support for LD 2003, which I greatly appreciate. In case there is continued discussion about the bill's merits at the public hearing, my original concerns about this bill are included below. Thank you.

Allison A. Snow

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I am testifying as a retired university professor with a strong interest in Maine's coastal ecology.

I live in Northampton, Massachusetts, and I have spent summers in Brooksville, Maine, over the past 40 years. Previously, I taught courses in ecology and botany at Ohio State University, and I am now an adjunct professor of biology at UMass-Amherst. While teaching at Ohio State, I supervised graduate students, carried out research on plant ecology, and published scientific articles. I have always been interested in questions about how wild species are managed.

I am testifying here because I am concerned that rockweed (*Ascophyllum nodosum*) will be vulnerable to overharvesting if LD 2003 is passed. Currently, other than in Cobscook Bay and federally owned areas, there are no regulations to limit how much rockweed is taken each year, or to protect pristine rockweed beds on conservation properties. However, indirectly, some protection currently exists because the Maine Supreme Judicial Court ruled that rockweed is owned by upland property owners. LD 2003 would override the Court's ruling on this.

In 2021, I observed rockweed harvesting firsthand when workers from Acadian Seaplants machine-harvested more than 200 tons of rockweed (7 huge truckloads) from a small cove near my house in Brooksville. After learning more about the scale of rockweed harvesting in Nova Scotia, New Brunswick, and Maine, I joined a group of conservation-minded citizens to form the **Blue Hill Peninsula Rockweed Forum**. We advocate for conserving rockweed and its service to marine ecosystems whenever possible. You can read about our goals and activities at www.rockweedforest.org.

Here, I would like to focus on scientific research about rockweed. Unlike fish or clams or lobsters, rockweed provides a vital habitat for other species, which is why we like to use the

term “rockweed forest.” Removing this habitat or cutting it down to only 16 inches in height – the legal limit – takes away many of its ecological benefits.
Rockweed harvesters often seek out and cut the tallest rockweed plants that grow in sheltered coves. These plants can be 4-6 feet or taller at high tide. More than 100 species use rockweed as a habitat, including several commercially important fish. Fish like young pollock forage in the shelter of the rockweed canopy, which protects them from predators.
Scientific studies have shown that after a single harvest, rockweed can grow back in a shorter, shrubbier form and re-gain its previous **biomass** (**fresh weight per unit area)** within a few years, when it can be harvested again. With proper oversight, this pattern of harvesting can be sustainable for commercial companies. Unfortunately, it takes much longer for harvested rockweed to return to its former **height** because the shoots only grow at a rate of about 3-4 inches per year, which means one foot every 3-4 years. If a particular rockweed bed is harvested often, it will not be able to grow back to its original height, to the detriment of other marine species.

So – a recurring question is: how much rockweed habitat can be removed without harming other species? This is NOT the key question that commercial companies have asked with their research teams. Instead, the companies want to know how quickly harvested rockweed grows back just enough for it to be harvested again, over and over. In contrast, conservation biologists ask questions about how **other marine species** could be affected by harvesting, and how unwanted effects could be magnified by frequent, repeated harvesting **along the entire coastline**.

From a conservation standpoint, tall, pristine rockweed forests are the most critical types of rockweed habitat to preserve, but they are also most profitable as a target for rockweed harvesters. When you consider how the Gulf of Maine is getting warmer and so many species are in a state of flux, including lobsters, another conservation goal is to avoid adding extra stress to marine systems. **It is for these reasons that conservation biologists argue for having a carefully planned harvesting system that includes ecological preserves, instead of allowing the free-for-all situation that would be opened up by LD 2003.**

I would like to conclude with a few quotes from the Canadian Department of Fisheries and Oceans, whose scientists summarized assessments of rockweed harvesting in Nova Scotia in a 2013 report[1].

> “One of the guiding principles of the assessment was the preservation of the habitat value of the seaweeds on bay-wide scales in the face of harvest pressure.“
>
> “This is an important perspective which has not been stressed in earlier assessments of the *Ascophyllum* harvest in Nova Scotia.”
>
> “*Ascophyllum* populations are important as habitat and primary producers on bay wide scales.”

> "It is clear from the above observations [in the text of the report] that bed destruction or an overharvest of *Ascophyllum* at any one particular site may take years to recover back to a commercially viable standing stock. In the meantime, the original fish habitat value of the *Ascophyllum* bed has been reduced or lost altogether . . ."
>
> "As a result, an overharvest of *Ascophyllum* could lead to an undesirable level of habitat loss at a landscape scale."

This is a helpful report and I have included a link to it below. We don't want to repeat the environmental damage that has occurred in Canada by ignoring the value of wild rockweed as an important habitat for fish and other marine life.

In closing, thank you for considering my comments and for all of your work on behalf of the public and the marine environment.

Allison A. Snow

January 11, 2024

[1]Vandermeulen, H. 2013. **Information to Support Assessment of Stock Status of Commercially Harvested Species of Marine Plants in Nova Scotia: Irish Moss, Rockweed and Kelp**. DFO Can. Sci. Advis. Sec. Res. Doc. 2013/042. vi + 50 p.

https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/349705.pdf

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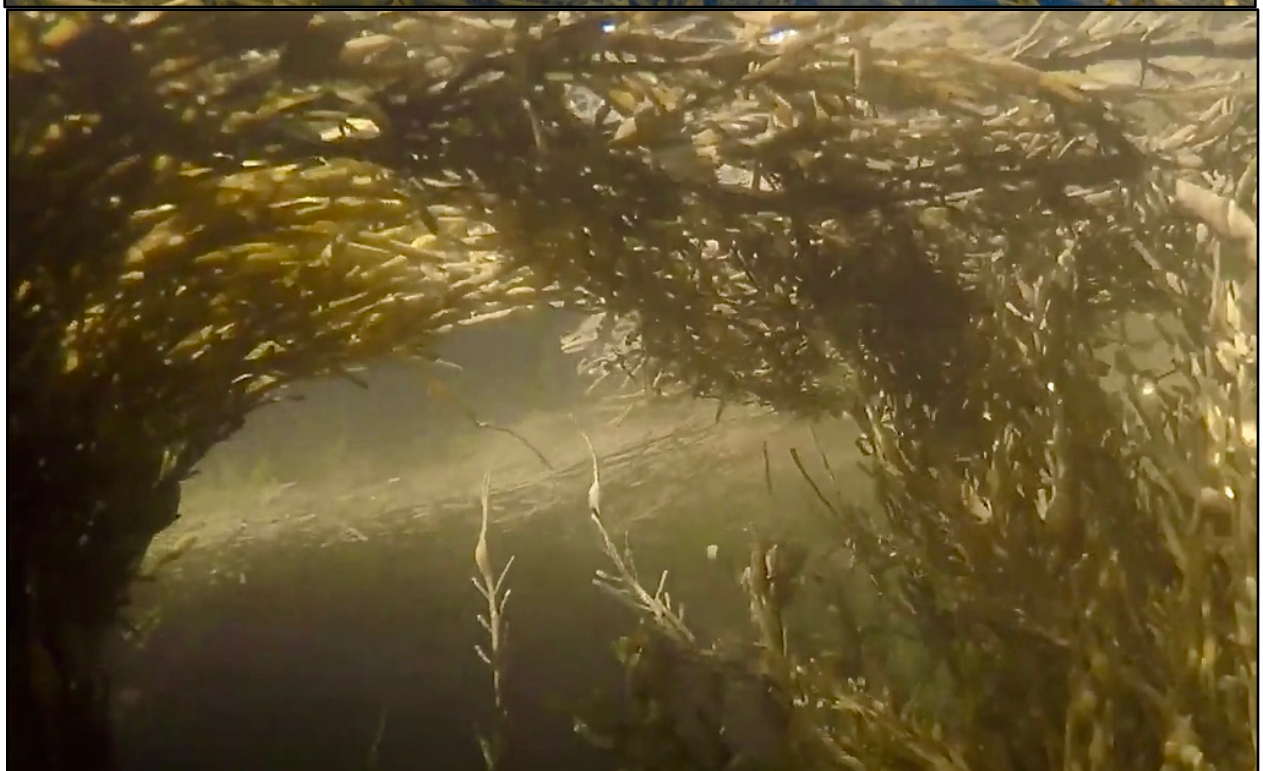
Photos of rockweed and two appendices are inserted below.

Appendix A. Additional excerpts from the 2013 report by Canada's Department of Fisheries and Oceans.

Appendix B. My academic background.



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<u>Appendix A</u>. Additional excerpts from the 2013 report by Canada's Department of Fisheries and Oceans.

Vandermeulen, H. 2013. Information to Support Assessment of Stock Status of Commercially Harvested Species of Marine Plants in Nova Scotia: Irish Moss, Rockweed and Kelp. DFO Can. Sci. Advis. Sec. Res. Doc. 2013/042. vi + 50 p.

https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/349705.pdf

Additional conclusions in the 2013 report –

"Upon application of the habitat protection objective described at the beginning of this report, the Nova Scotian harvest of *Ascophyllum* has been found to have the potential for undesirable habitat impacts at a landscape scale. Moreover, in some years in some bays the gear type and intensity of harvest may have been harmful to the resource itself. There is a pressing need to overhaul the harvest of *Ascophyllum* in Nova Scotia, particularly if these populations may be sensitive to climate change as indicated in the literature."

Additional findings in the 2013 report – (bold font added for key points)

"There is strong evidence indicating that *Ascophyllum* has been routinely heavily harvested in southwest Nova Scotia at bay wide scales, even well before the purported beginning of the harvest in 1959. As early as 1952, MacFarlane (1952) noted that *Fucus vesiculosus* would invade overharvested areas in Nova Scotia, and that "under present harvesting conditions it requires at least three years before full recovery of a harvested *Ascophyllum* area". In other words, from the very beginning of the *Ascophyllum* harvest in Nova Scotia, harvesters were employing the old European style of harvest for *Ascophyllum* – completely denuding an area and then waiting three years (or more) for it to grow back (Canadian Atlantic Fisheries Scientific Advisory Committee 1993). Chopin (1998) states that a triennial harvest pattern, 50% removal and then a three year fallow period, was firmly established in Nova Scotia in the 1990s. All of this evidence indicates an undesirable level of habitat loss at a landscape scale.

In a consultant's report to the then Nova Scotia Department of Fisheries Cunningham (1990) describes the results of field observations in southwest Nova Scotia in the summer of 1990. **He describes numerous instances of overharvesting *Ascophyllum* at a bay wide scale – all indicating an undesirable level of habitat loss at a landscape scale**. Here are some examples:

- Goat Island and Vicinity – "...recently harvested and there was no weed left."
- Thornes Cove – "The beds at this cove and nearby were completely depleted."
- Bear Island – "Examining several beds in the Deep Brook area we found them all harvested with the exception of a few small patches. Very little biomass is left behind, perhaps less than 2%".
- Pinkney's Point – "At present it would be very difficult to harvest any Asco in an economical manner."
- Inner Spectacle Island – "...has been really overharvested."
- Murder Island – "...has been severely harvested..."
- East side of Goose Bay – "...very heavily harvested..."
- Tusket River, western shore – "The whole area has been heavily harvested during the past several years..."
- The Tittle – "Most of the usual places were so harvested that the weed was too short to bother with."
- Rocko Point and Abram's River – "There is little of value to count as available weed at this point."
- Etoile Island – "The island has been heavily harvested..."
- Pubnico Harbour western shore – "Very little Asco available."
- Goodwins Island, Solomons Island, Egg Island, Vigneau Island – "The harvest has been heavy and complete..."
- Port Latour – "...heavily harvested..."

In another example of intense harvest, Sharp (1987a) described the practice of mechanically harvesting a population at a site, and then returning one to three years later and re-harvesting if the population had appeared to recover from the first harvest. Environment Canada (1973)

indicate that full recovery after a harvest with the Aqua Marine mechanical harvester took four years.

Historically then, from the first rake harvests through to mechanization, the management regime routinely allowed an intense harvest of *Ascophyllum* on many shores in southwest Nova Scotia which took years to recover. **The evidence strongly indicates that this took place at bay-wide scales, suggesting that an undesirable level of habitat loss had occurred at a landscape scale.**

Ugarte et al. (2006) attempted to address the potential habitat impacts of a local 50% patch harvest by emulating this removal rate in the field with a standard cutter rake. They found the rake gear rarely impacted *Ascophyllum* clumps below 50 g or 60 cm in length. Clumps larger than 300 g and 130 cm were reduced by up to 55% of their length and 78% of their biomass. The loss of the upper portions of the tallest plants is significant, as most of the biomass is found in the distal portions of the plants (clumps). They state that these structural (habitat) canopy changes were short lived, as biomass recovered one year after the harvest.

However, their conclusion of short term canopy changes is flawed as the new biomass they refer to came mainly from growth and branching of shorter shoots near the base of the main portions of the plant. Only one of their harvested plots regained its average pre–harvest clump length after one year. The other two harvested plots did not regain their pre-harvest length even two years later (Ugarte et al. 2006). **In other words, the regrowth to pre-harvest biomass after one year was simply a production of shorter bushy plants, rather than a recovery of the original elongated canopy with most of its biomass in the upper portions of the canopy."**

Appendix B. My academic background

My research website and a complete CV are available at: https://u.osu.edu/snowlab/

I am a professor emerita in the Department of Evolution, Ecology, & Organismal Biology at Ohio State University (OSU) and an adjunct professor of Biology at the University of Massachusetts, Amherst.

I am honored to be a Distinguished Fellow of the Botanical Society of America and a Distinguished Professor Emerita of the OSU College of Arts and Sciences. Trained as a plant ecologist at Hampshire College (B.A., 1975) and the University of Massachusetts (Ph.D., 1982), I received postdoctoral fellowships from the National Science Foundation and the Smithsonian Institution before joining the OSU faculty in 1988. My early work focused on understanding links between pollination ecology, gene flow, and natural selection in wild plants. I then studied emerging issues in biotechnology, including the ecological impacts of genetically engineered crops on natural and agricultural systems. My research has combined molecular

and ecological approaches to investigate hybridization between crops and their wild relatives, invasive traits in hybrids, and rapid evolution of herbicide resistance in weeds. My current work focuses on the ecology of Lyme and other tick-borne diseases in New England. I have authored and co-authored more than 100 peer-reviewed publications, often in collaboration with graduate students and colleagues.

Leadership activities - I was elected as a Fellow of the American Association for the Advancement of Science and a Fellow of the Aldo Leopold Leadership Program, and I have served on the editorial boards of several journals - Ecology, Ecological Monographs, Evolution, Frontiers in Ecology, and Environmental Biosafety Research. I also served as President of the Botanical Society of America. I have advised the US National Academies of Science and Engineering as a coauthor on three reports, the US Department of Agriculture, the US Agency for International Development, and the World Trade Organization, and have served on the US National Genetic Resources Advisory Board, which focuses on maintaining genetic diversity for crop breeding. In 2006-2015, I founded and led the OSU campus-wide Office of Undergraduate Research and Creative Inquiry.