SEA VOMIT

A Sticky Situation: Can We Stop Sea Vomit?

Kirsti Thelin, Nora Rørheim Nilsen, Tora Aleksandersen, Torbjørn Arbo, Zebediah Napier

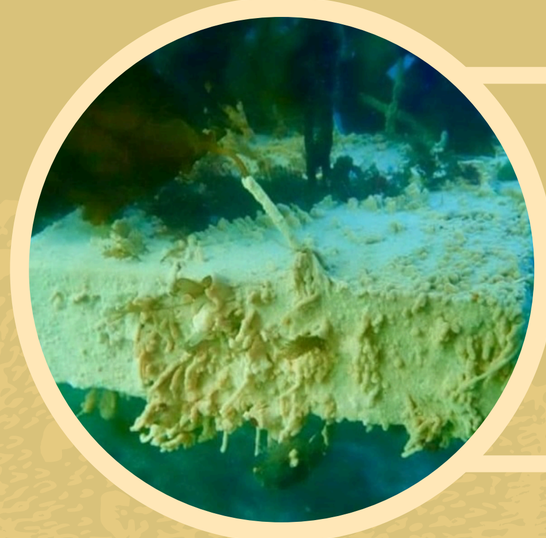
TARGET 14.A — INCREASE SCIENTIFIC KNOWLEDGE, RESEARCH AND TECHNOLOGY FOR OCEAN HEALTH

TARGET 14.2 — PROTECT AND RESTORE ECOSYSTEMS

14 LIFE BELOW WATER

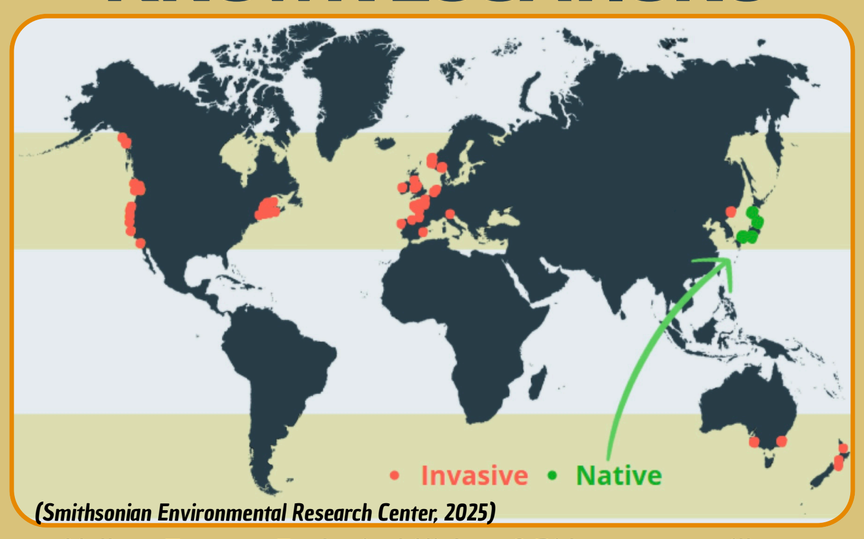
13 CLIMATE ACTION

WHAT IS SEA VOMIT ?



- Aggressive and rapidly spreading colonial tunicate species
  Valentine et al., 2007; Herborg et al., 2008
- Hermaphroditic, suspension feeder
  Valentine et al. 2009, Bullard et al. 2007
- Tolerates extreme temp and salinity fluctuations
  Bullard et al. 2007

SPATIAL DISTRIBUTION OF KNOWN LOCATIONS



(Smithsonian Environmental Research Center, 2025)

Yellow Zones = Ecological Niche of *Didemnum vexillum*
(Could spread to these areas and become a larger issue!)

FAST SPREADING

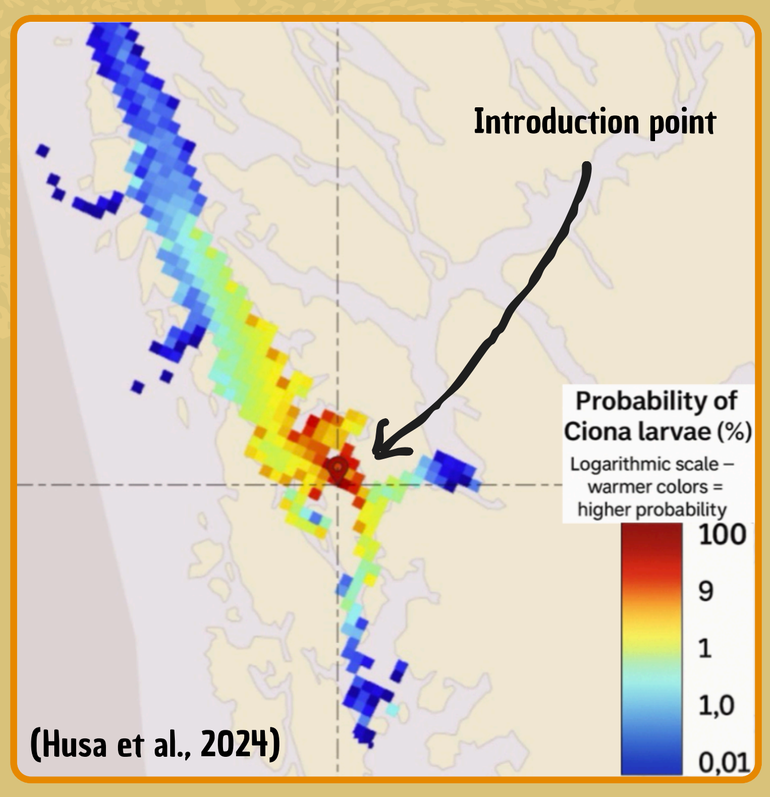


Figure above shows modeled 24-hour surface drift of sea vomit larvae from Lille Sotra. Potential to spread to Bergen

- Red areas show high recruitment rates
- Blue areas show low recruitment rates

METHODS TRIED

Physical Removal

- Suction and filtration methods reduce fragmentation risk.
- Effective mainly on artificial structures (e.g., piers).

(VKM, 2023)

Chemical Treatments

- Lime ($Ca(OH)_2$): 95–100% mortality in 12 hrs, but harmful to other marine life

(*Husa and Alfstad, 2023*)

- Ozone: Ineffective in lab trials; impractical due to cost and equipment needs.

(Piola et al., 2009)

Biological Control

- Few natural predators (e.g., crabs, sea stars).
- Mature colonies resist predation due to tunic and chemical defences.

(VKM, 2023)

Preventive Measures

- Vessel inspections, hull cleaning, and "clean hull" certifications help limit spread.

(IMO, 2011)

CALL TO ACTION!

Invasive Species

- Highly resilient
- Urgent need to develop more effective and environmentally sustainable methods to control the spread
- New research is essential!

214.3

REFERENCES

Bullard, S. G., Lambert, G., Carman, M. R., Byrnes., J., Whitlatch, R. B. et. al. (2007) The colonial- ascidian Didemnum sp. A: Current distribution, basic biology, and potential threat to marine
communities of the northeast and west coasts of North America. Journal of Experimental
Marine Biology and Ecology 342: 99–108, https://doi.org/10.1016/j.jembe.2006.10.020.

Havforskningsinstituttet. Strømkatalogen: Modellert spredning av havnespylarver i overflatelaget fra nord på Lille Sotra i løpet av en 24 timers periode. Hentet 4. mai 2025 fra https://stromkatalogen.hi.no/apps/ncis/v1/nb/

Herborg, L., O'Hara, P., & Therriault, T. W. (2008). Forecasting the potential distribution of the invasive tunicate Didemnum vexillum. Journal of Applied Ecology, 46(1), 64–72. https://doi.org/10.1111/j.1365-2664.2008.01568.x.

Husa, V., Fosså, F., Aaserud Olsen, S., Alfstad, B., & Husby, E. (2024). Kartlegging av havnespy (Didemnum vexillum) i Bergen kommune: ROV og miljø-DNA undersøkelser (Rapport fra havforskningen 2024-3). Havforskningsinstituttet. Hentet 4. mai 2025 fra https://www.hi.no/hi/nettrapporter/rapport-fra-havforskningen-2024-3Havforskningsinstituttet+1Havforskningsinstituttet+1; https://stromkatalogen.hi.no/apps/ncis/v1/nb/

Smithsonian Environmental Research Center. (n.d.). Species summary: Hemigrapsus sanguineus. National Exotic Marine and Estuarine Species Information System (NEMESIS). Retrieved May 4, 2025, from https://invasions.si.edu/nemesis/species_summary/-334

Valentine, Page & Carman, Mary & Blackwood, Dann & Heffron, Erin. (2007). Ecological observations on the colonial ascidian Didemnum sp. in a New England tide pool habitat. Journal of Experimental Marine Biology and Ecology. 342. 109-121.https://www.sciencedirect.com/science/article/abs/pii/S0022098106005806.

VKM (2023). Assessment of risk and risk-reducing measures related to the introduction and dispersal of the invasive alien carpet tunicate Didemnum vexillum in Norway. VKM Report 2023:7, ISBN: 978-82-8259-416-5, ISSN: 2535-4019. Norwegian Scientific Committee for Food and Environment (VKM), Oslo, Norway.

International Maritime Organization (IMO) (2011). Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species. IMO MEPC.207(62).

Piola, R.F., Dunmore, R.A., & Forrest, B.M. (2009). Assessing the efficacy of spray-delivered 'eco-friendly' chemicals for controlling marine biofouling. Biofouling, 25(3), 187-203.