

A Community Consensus on Designating Vulnerable Marine Ecosystems from Imagery

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and the DOSI working subgroup on VMEs from Imagery

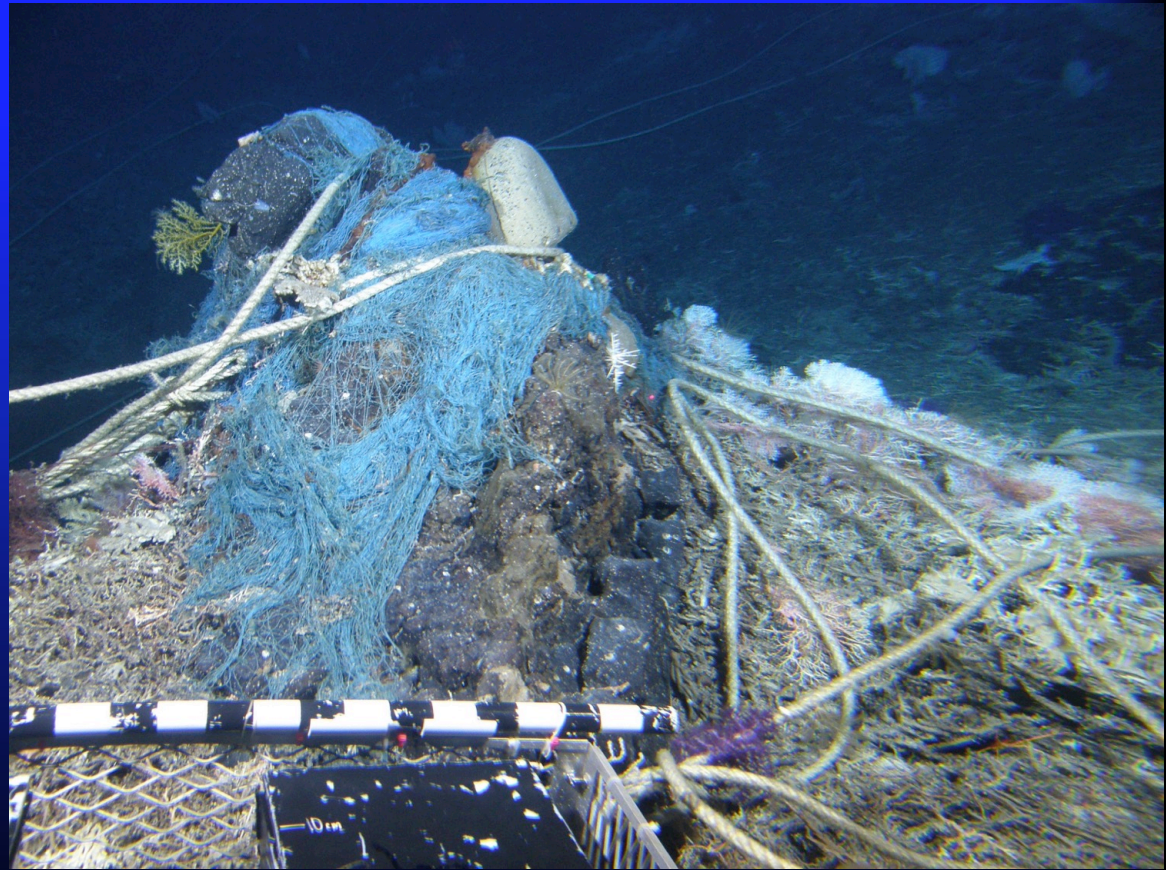


Challenges

1. Locate VMEs

2. Determine if SAIs are occurring

- Fisheries data



Fisheries data

- Thresholds
- Move on rules
- Caveats
- Destructive

<p>North Pacific</p> <p>NPFC CMM 2018-05 (Western)</p> <p>NPFC CMM 2017-06 (Eastern)</p>	<p>Para. 4G (Western), Para 3g (Eastern)</p> <p>cold water corals (Alcyonacea, Antipatharia, Gorgonacea, and Scleractinia)</p>	<p>Para. 4G (Western), Para 3j (Eastern)</p> <p>Cold water corals 50kg</p>	<p>Para. 4G (Western), Para 3j (Eastern)</p> <p>Report encounter. Move 2 nmiles.</p>
<p>South Pacific</p> <p>SPRFMO CMM 3-2019</p>	<p>Annex 5</p> <p>Sponges (Porifera: Demospongiae and Hexactinellidae)</p> <p>Stony corals (Scleractinia: Solenosmilia; Goniocorella; Oculina; Enallopsammia; Madrepora; Lophelia)</p> <p>Black corals (Antipatharia)</p> <p>True soft corals (Alcyonacea: all taxa excluding Gorgonacea)</p> <p>Sea fans octocorals (Informal group Gorgonacea: Holaxonia; Calaxonia; Scleraxonia)</p> <p>Sea pens (Pennatulacea)</p> <p>Anemones (Actiniaria)</p> <p>Hydrocorals (Stylasteridae)</p>	<p>Annex 6A</p> <p>one tow for a single VME indicator taxa</p> <p>Sponges 50kg</p> <p>Stony corals 250kg</p> <p>Black Corals 5kg</p> <p>True soft corals 60kg</p> <p>Seafan octocorals 15kg</p> <p>Anemones 40kg</p> <p>Annex 6B</p> <p>one tow for three or more different VME indicator taxa</p> <p>1-5 kg per VME indicator group (seem measure for details)</p>	<p>Paras 26-33</p> <p>Report encounter. Move 1 nmile. Temp closure. Review by SC</p>

<http://www.fao.org/in-action/vulnerable-marine-ecosystems/vme-indicators/fr/>

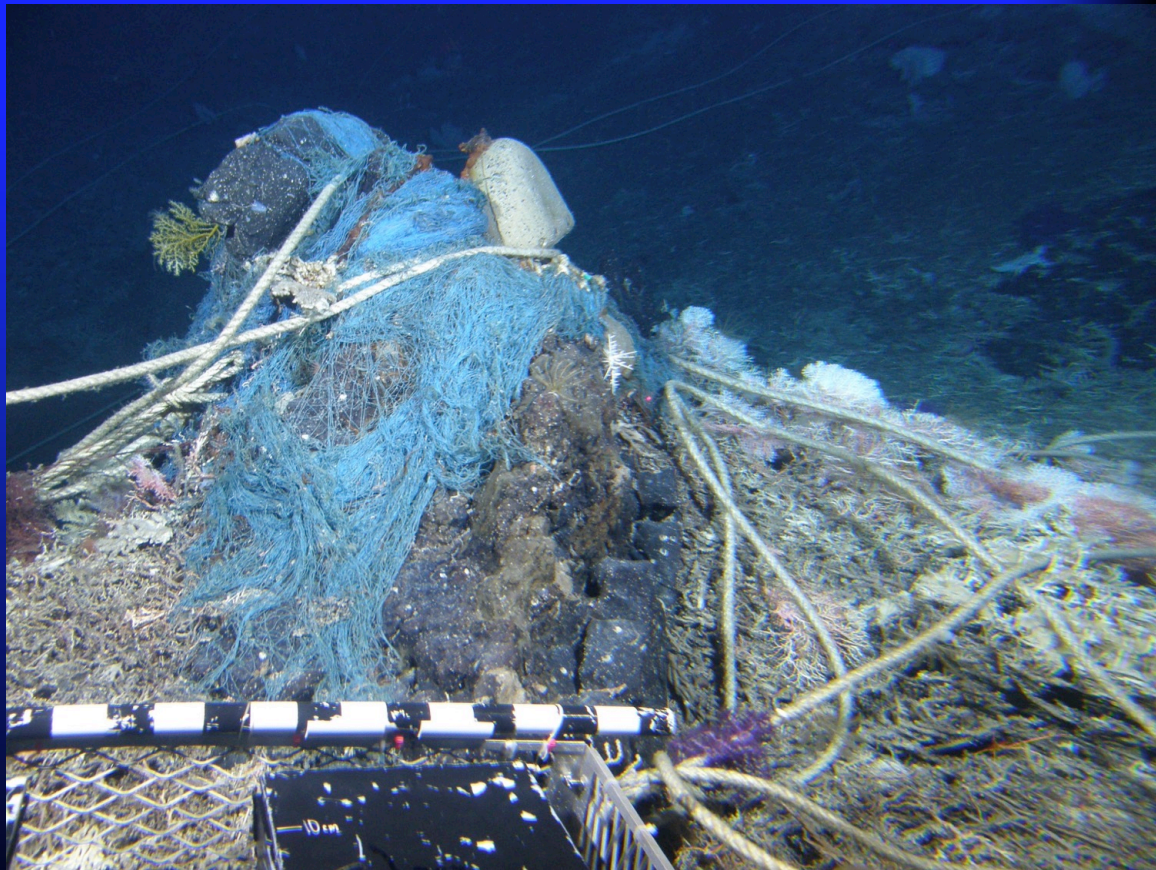
Challenges

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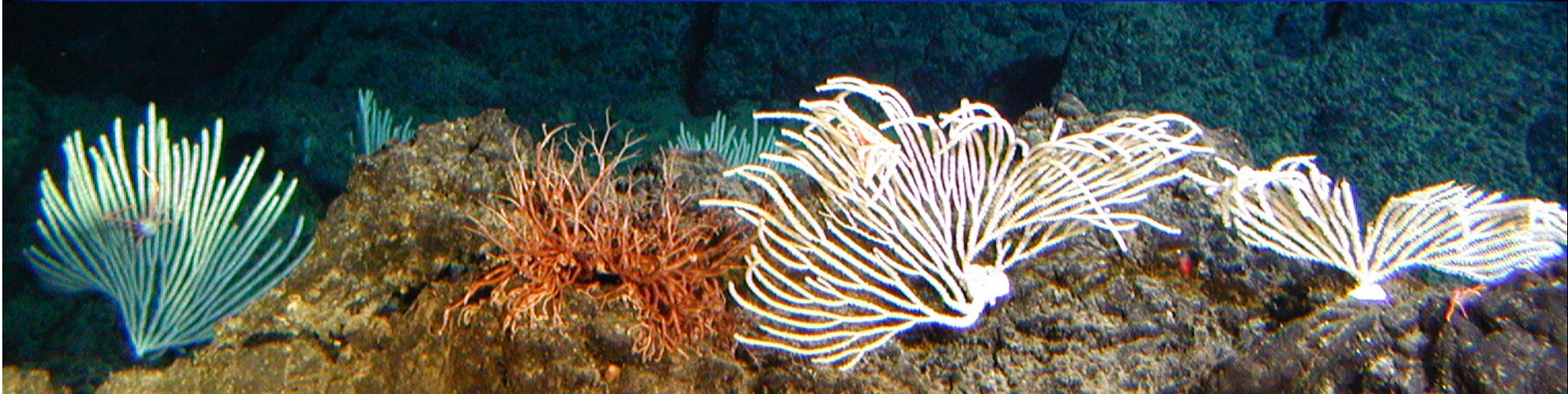
- Fisheries data
- Imagery data

3. Just starting to designate VMEs from images



Goal

- To establish first pass consensus guidelines across geographic regions for designating VMEs from images



Questions

1. Which taxa are considered VME indicator species?
2. Can a VME be identified from a single image?
3. What criteria can we use to designate a VME from a single image?
4. What are the thresholds (density or diversity) that need to be met to make a single image a VME?

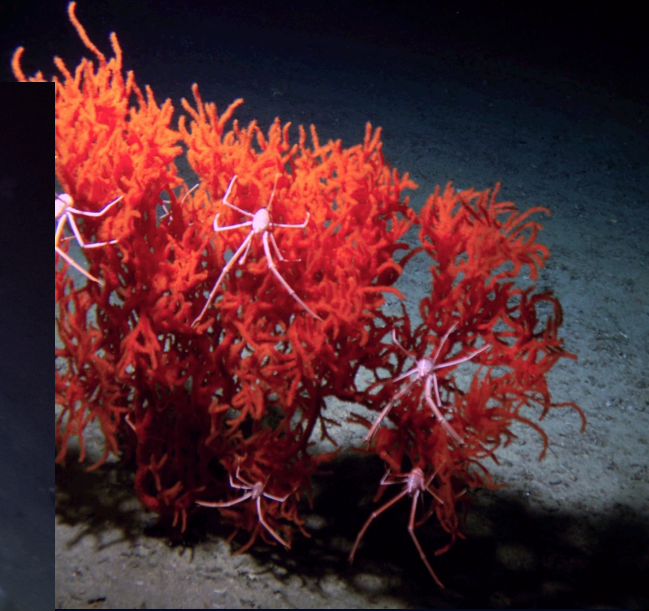
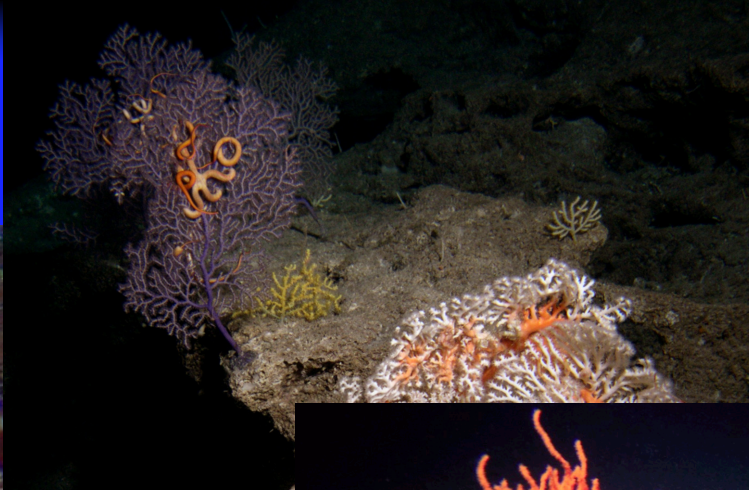
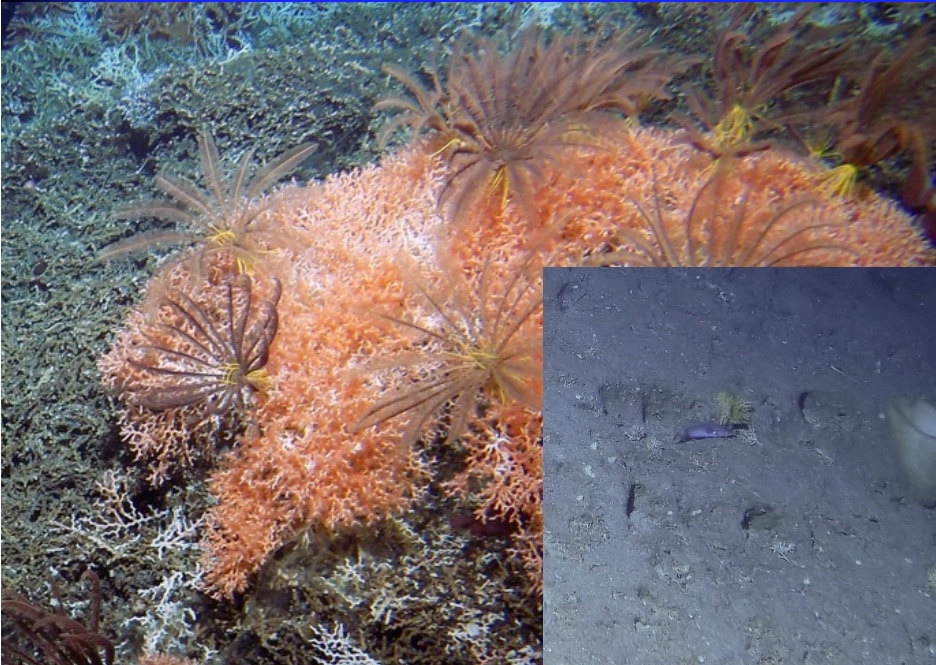
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FAO VME Designation Criteria

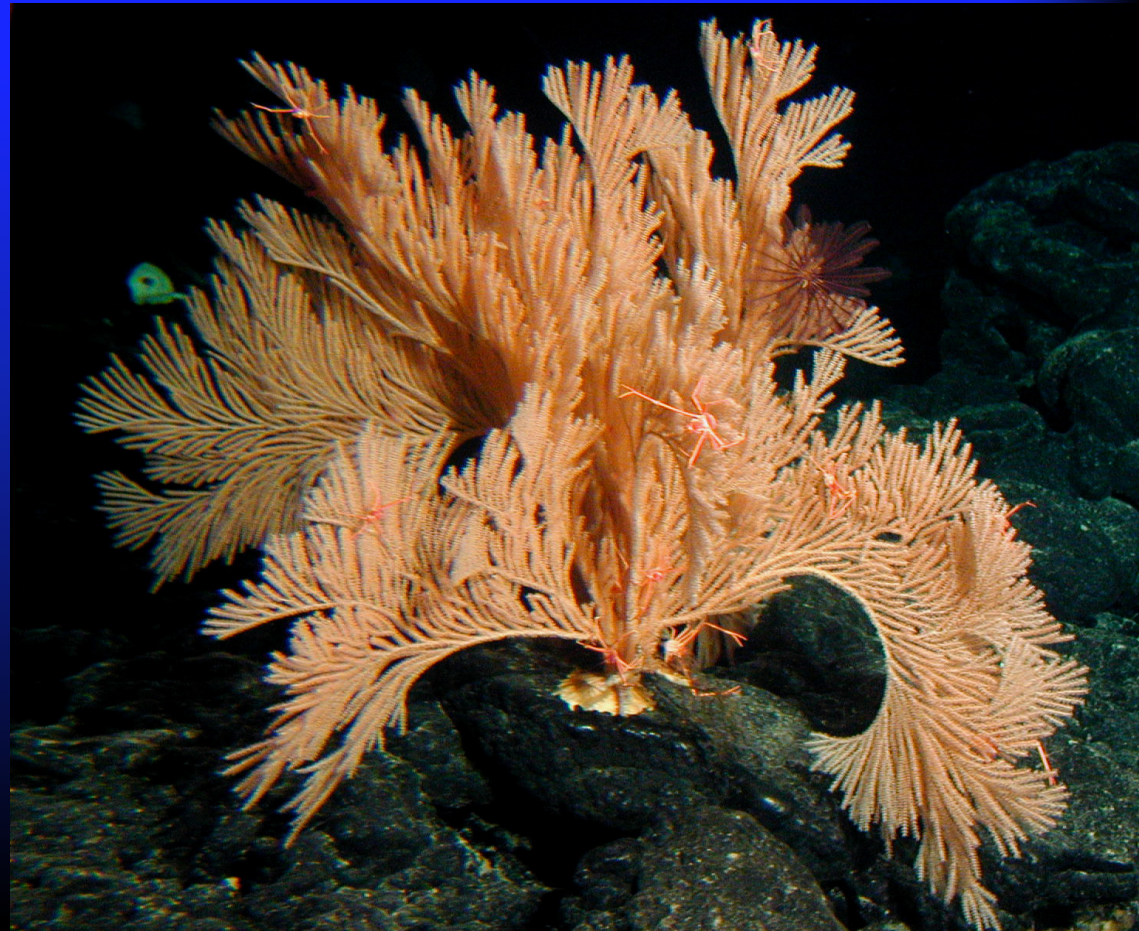
Characteristic	Definition
Uniqueness or rarity	<p>An area or ecosystem that is unique or that contains rare species whose loss could not be compensated for by similar areas or ecosystems. These include:</p> <ul style="list-style-type: none">• habitats that contain endemic species;• habitats of rare, threatened or endangered species that occur only in discrete areas; or• nurseries or discrete feeding, breeding, or spawning areas.
Functional significance of the habitat	<p>Discrete areas or habitats that are necessary for the survival, function, spawning/reproduction or recovery of fish stocks, particular life-history stages (e.g. nursery grounds or rearing areas), or of rare, threatened or endangered marine species.</p>
Fragility	<p>An ecosystem that is highly susceptible to degradation by anthropogenic activities.</p>
Life-history traits of component species that make recovery difficult	<p>Ecosystems that are characterized by populations or assemblages of species with one or more of the following characteristics:</p> <ul style="list-style-type: none">• slow growth rates;• late age of maturity;• low or unpredictable recruitment; or• long-lived.
Structural complexity	<p>An ecosystem that is characterized by complex physical structures created by significant concentrations of biotic and abiotic features. In these ecosystems, ecological processes are usually highly dependent on these structured systems. Further, such ecosystems often have high diversity, which is dependent on the structuring organisms.</p>

VME indicator taxa



Recommendation #1

- Establish a consensus designation of VME taxa across regions.



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Can a VME be called a VME from a single image?

YES!



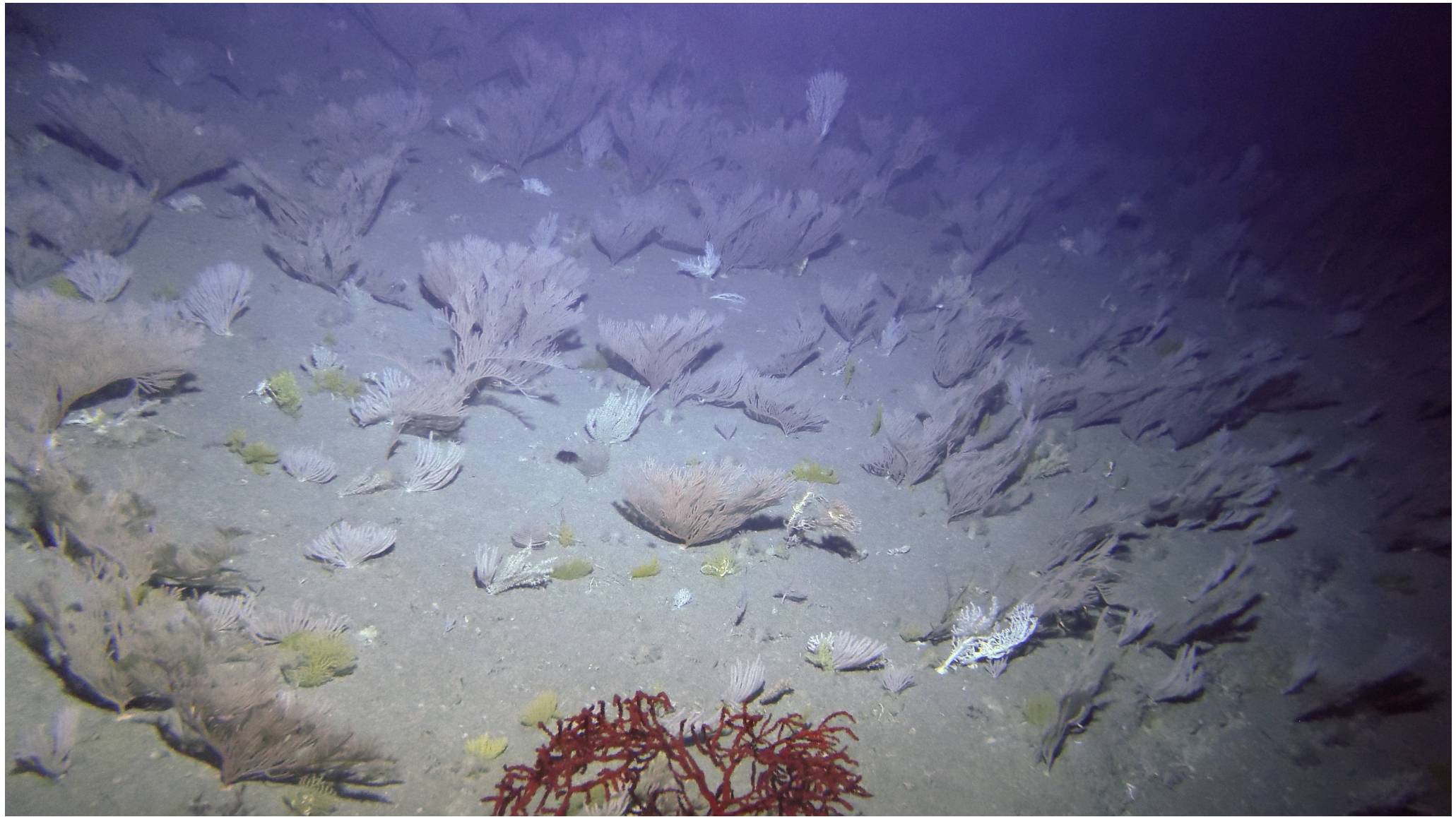
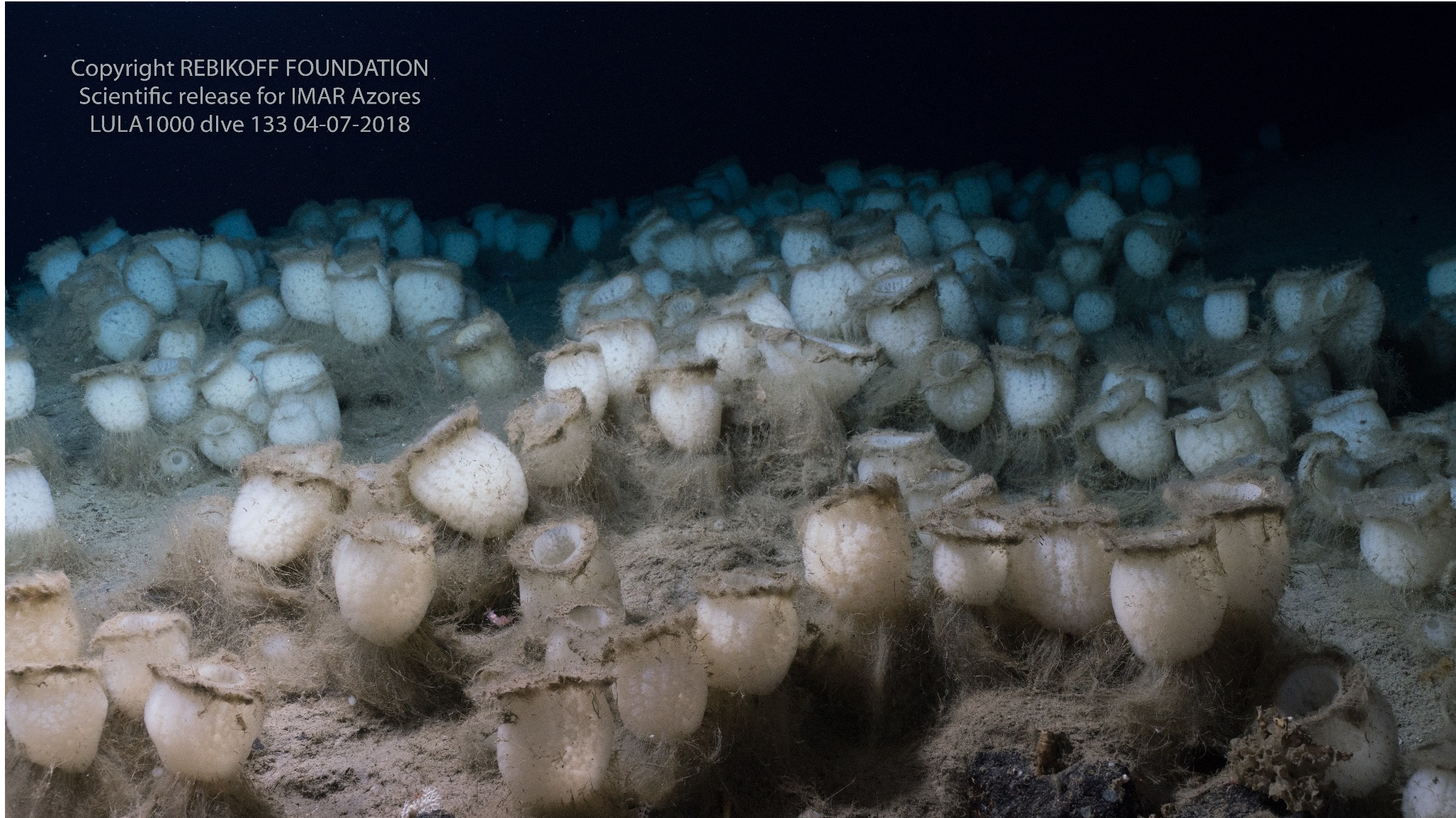
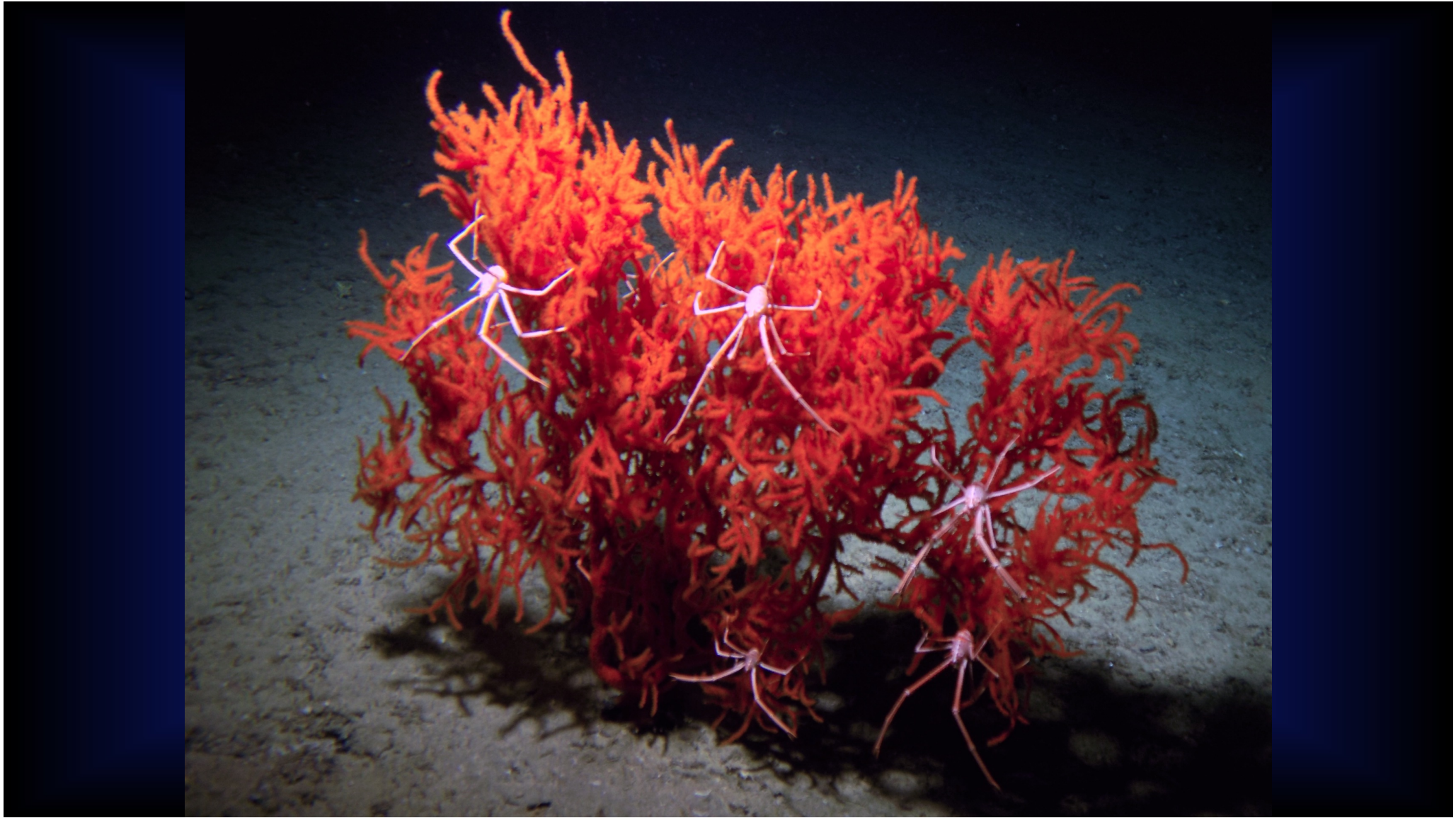


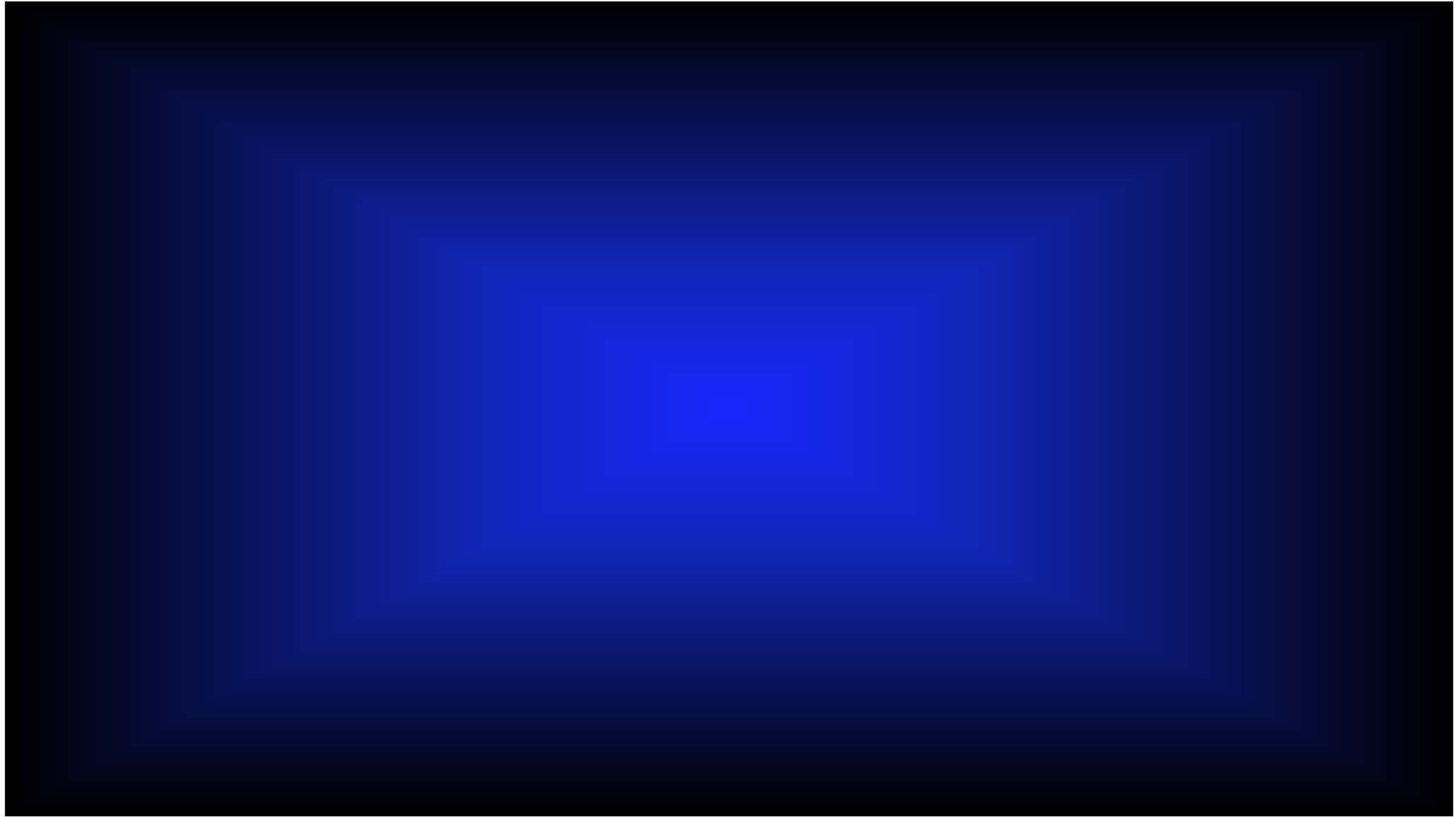


Image credit: Fisheries and Oceans Canada

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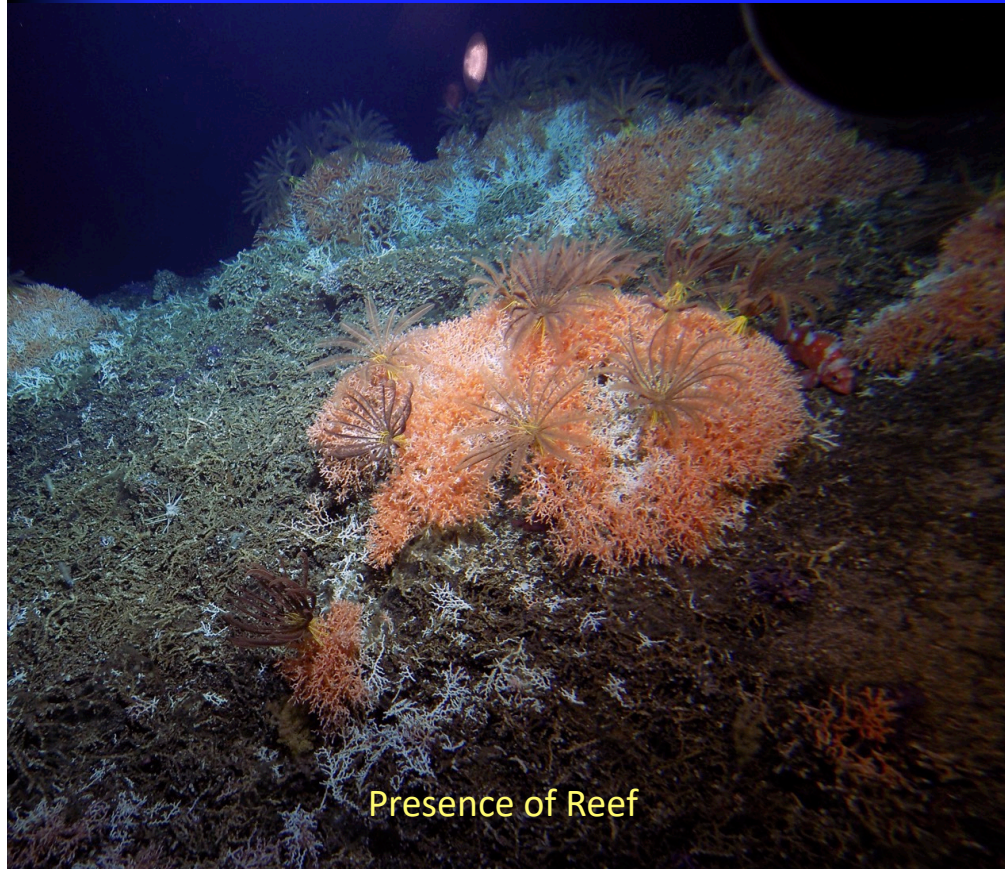




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Consensus Criteria for Designating a Site as a VME from a Single Image



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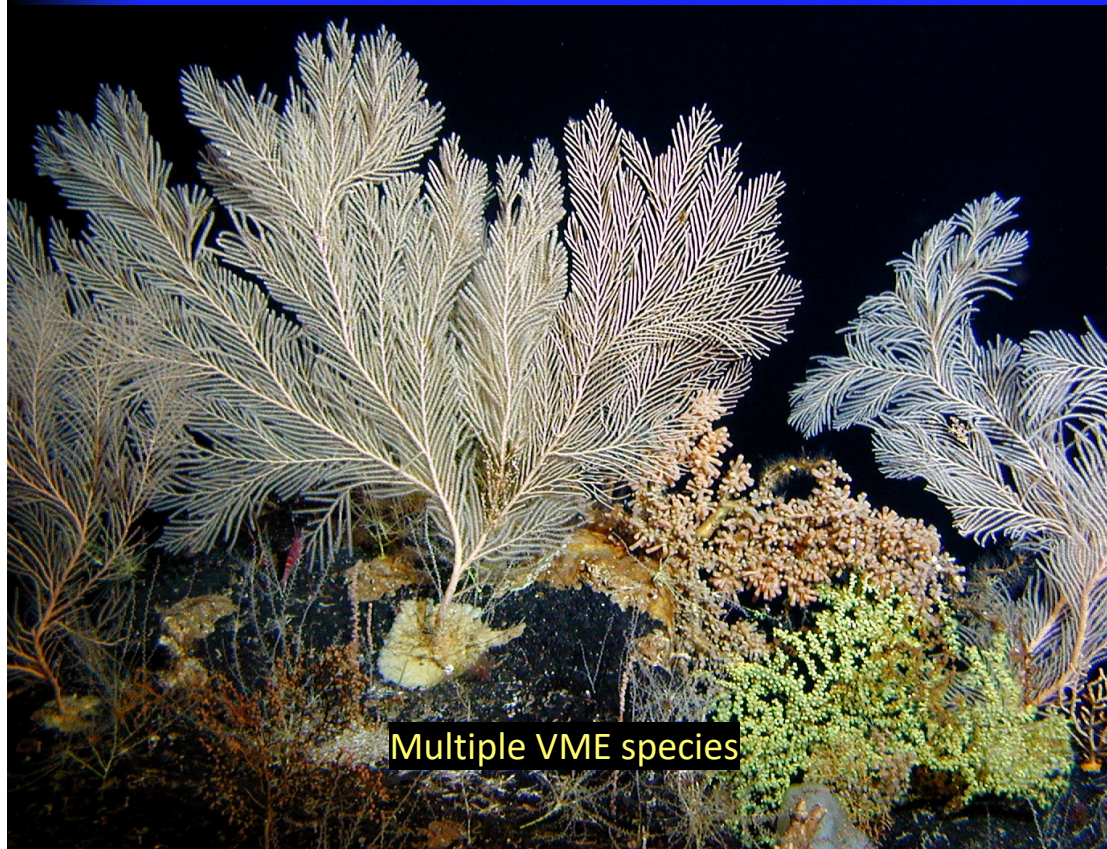
VME indicator chemosynthetic ecosystem taxa

Image from Oceana.org

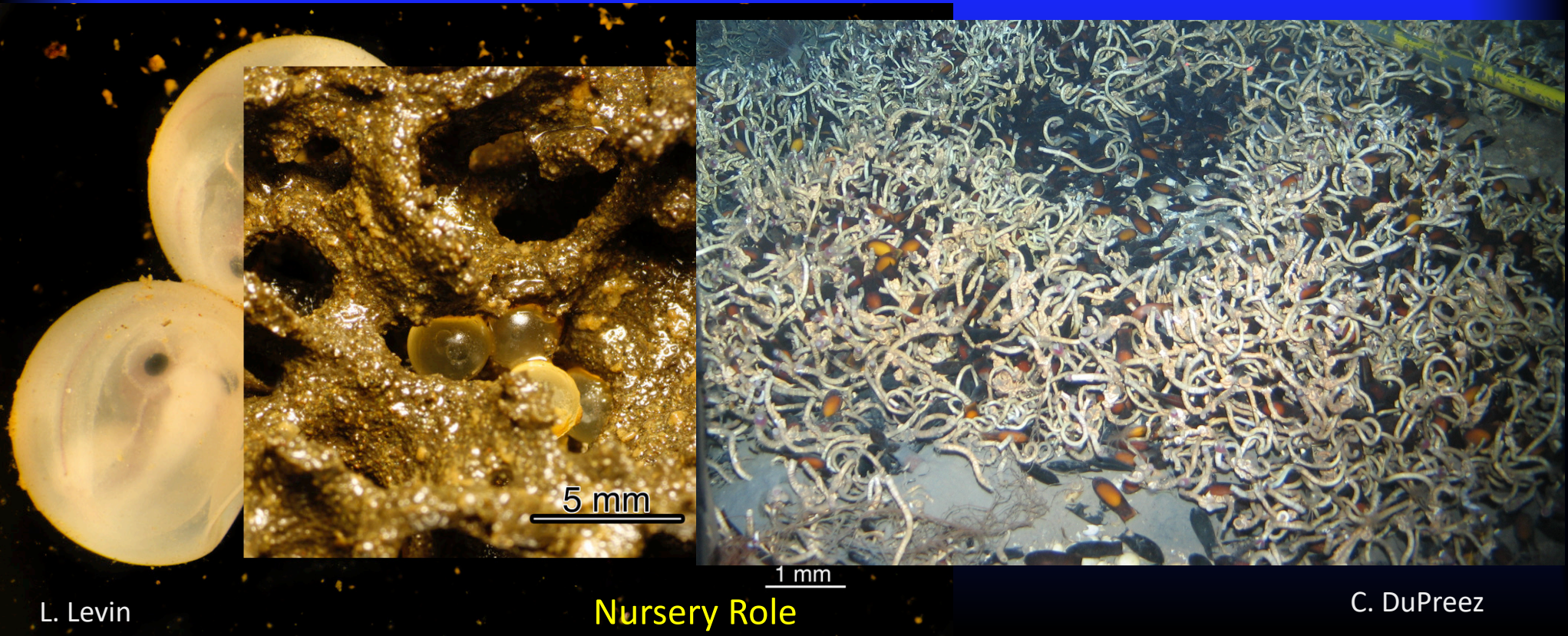


High density of a VME species

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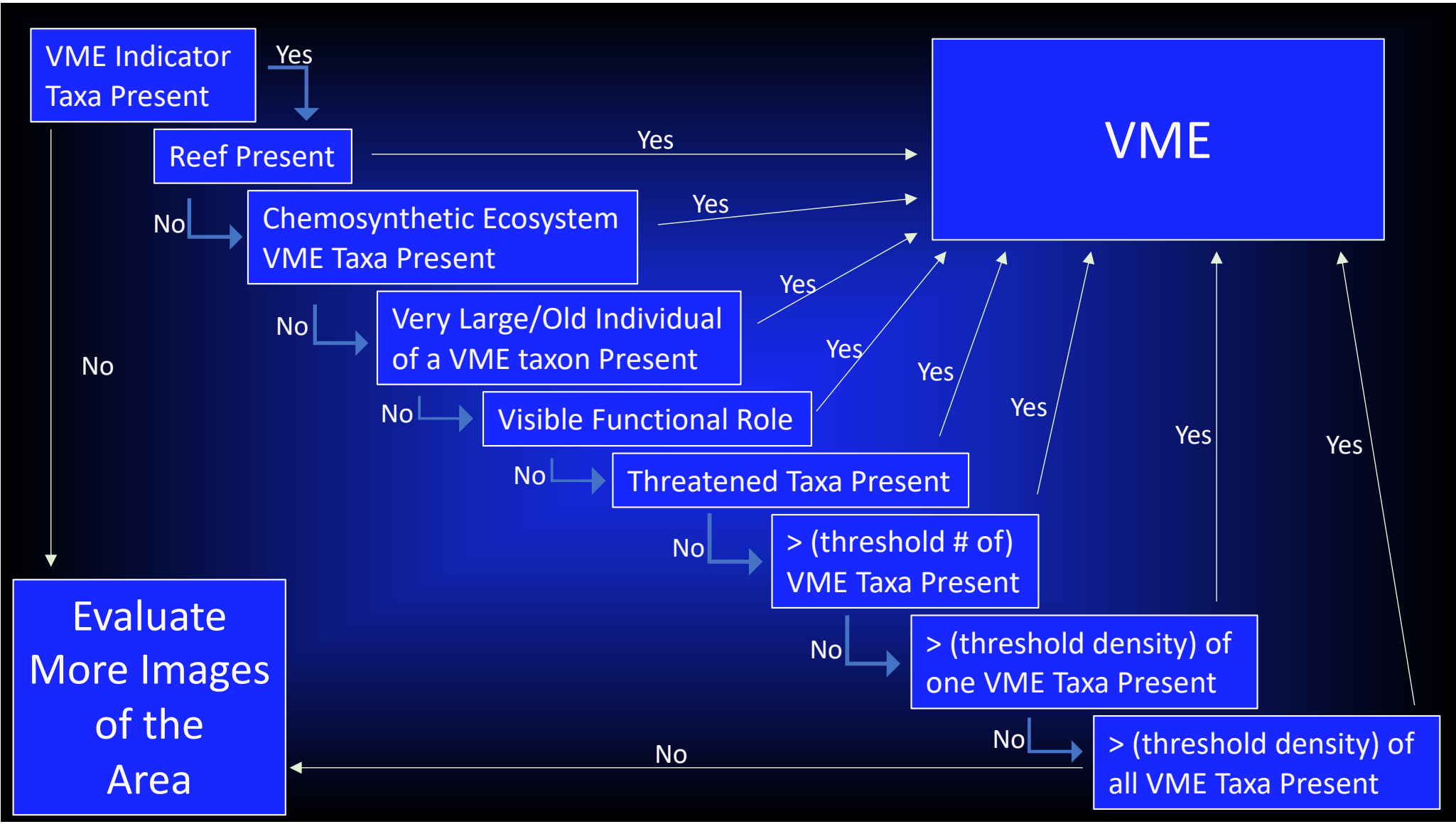
Consensus Criteria for Designating a Site as a VME from a Single Image



L. Levin

Nursery Role

C. DuPreez



Summary

- Inconsistencies in VME taxa lists
- Can call a VME from single image
- Observed range of natural densities is wide
- Have a range of values for building thresholds

