IMCC CONFERENCE 2017

BALLAST WATER

JOHN POULSON - ATLANTIC MARINE ASSOCIATES

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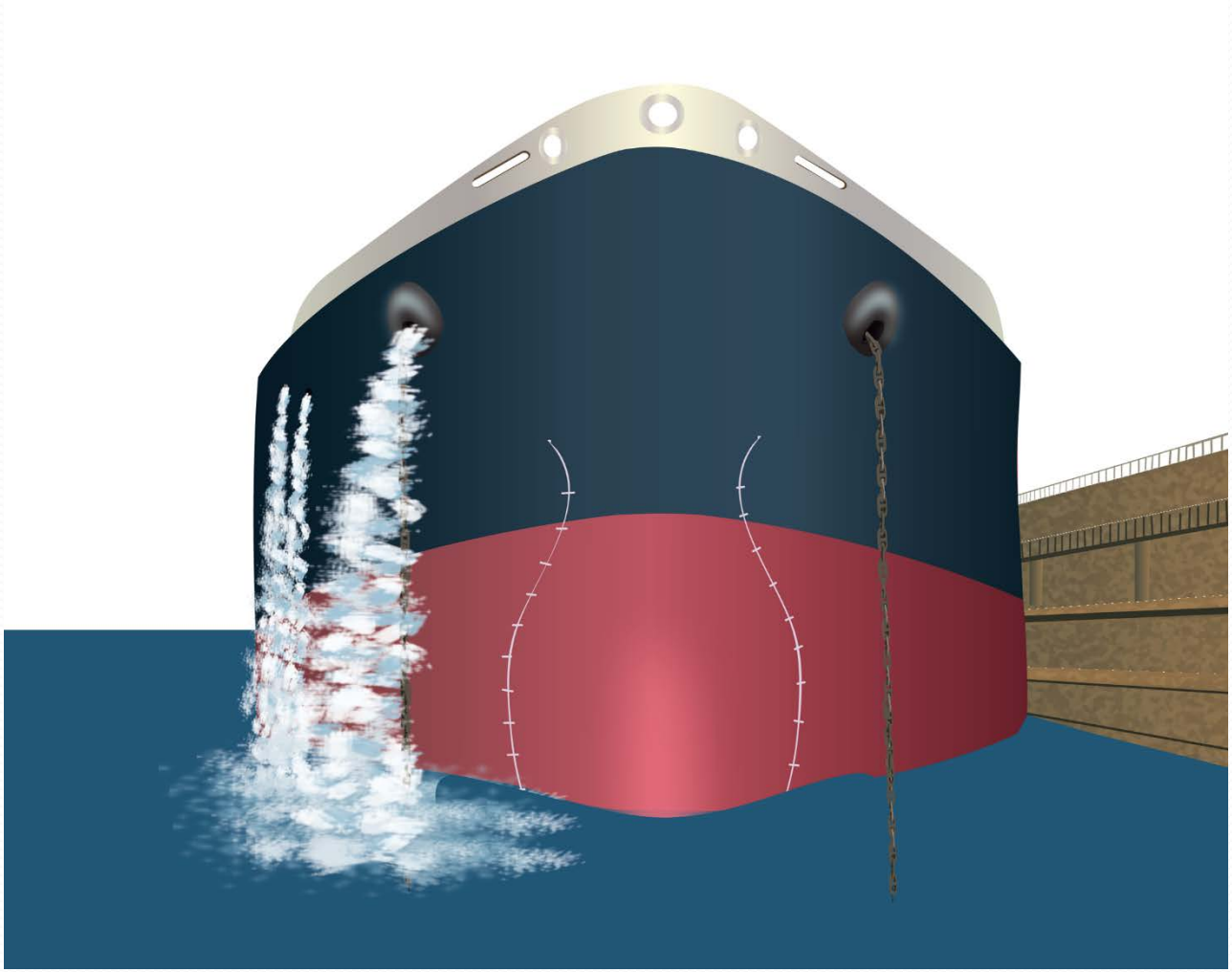
BALLAST WATER MANAGEMENT



WHAT'S IT ALL ABOUT?

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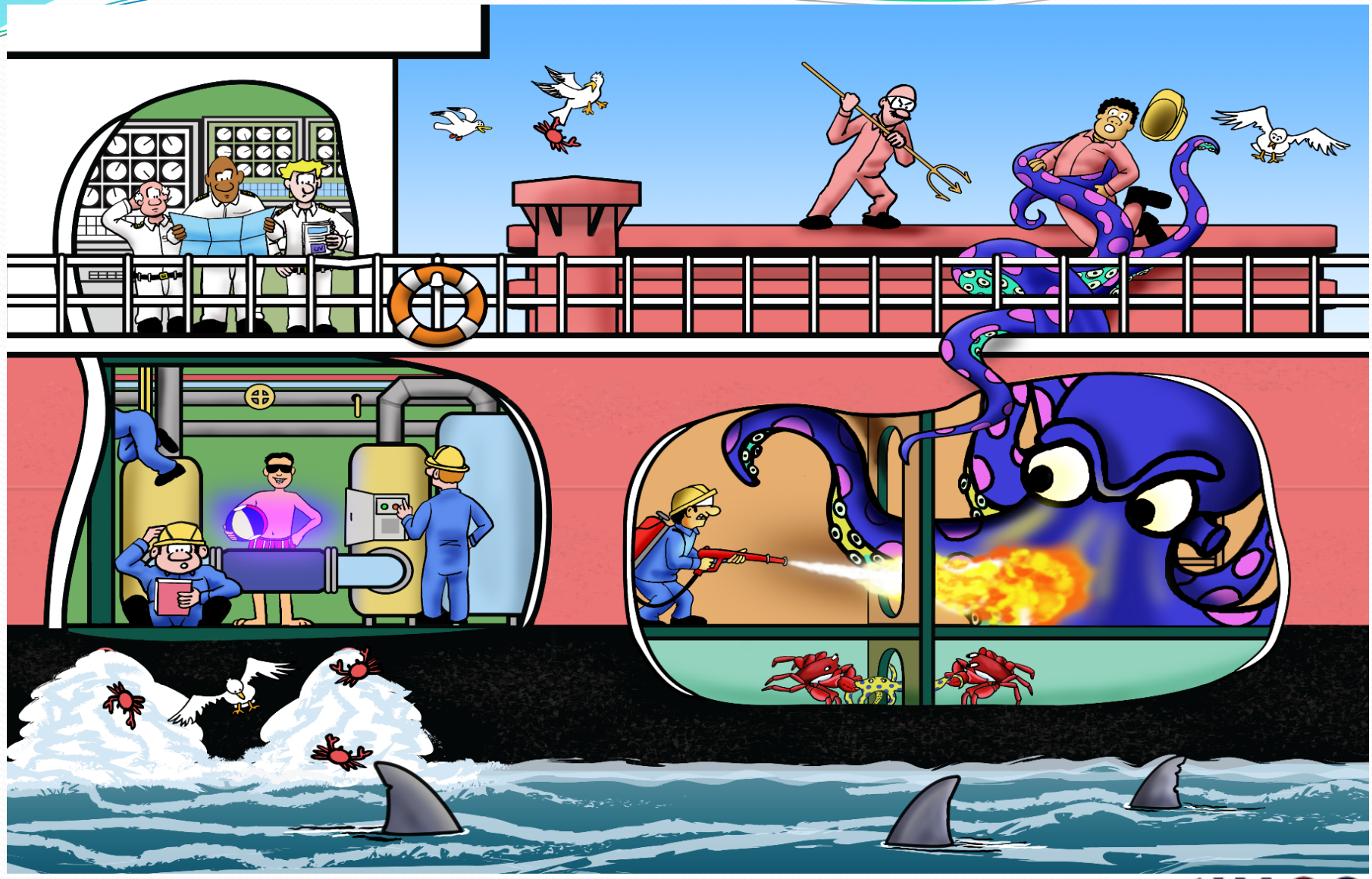
INVASIVE SPECIES



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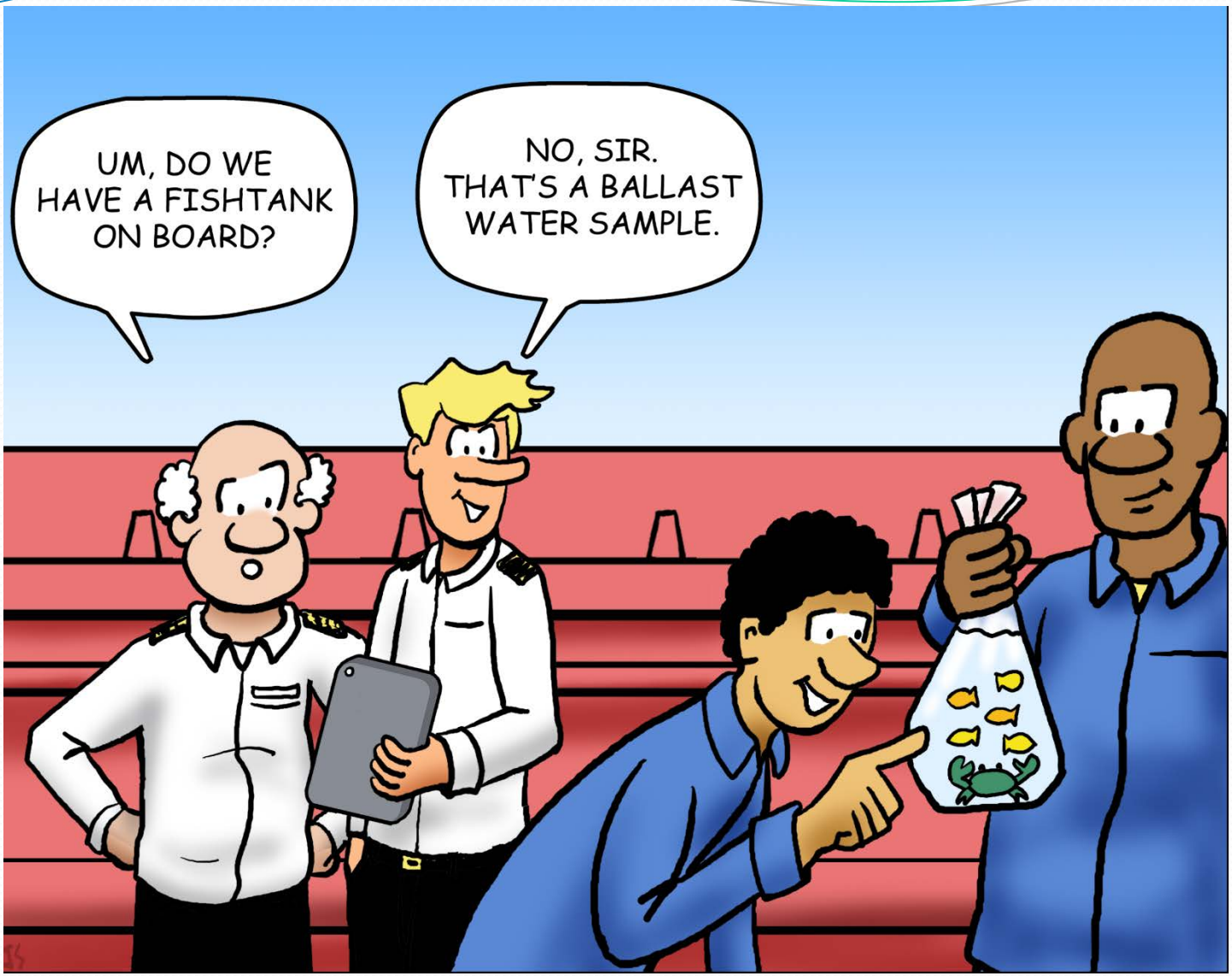

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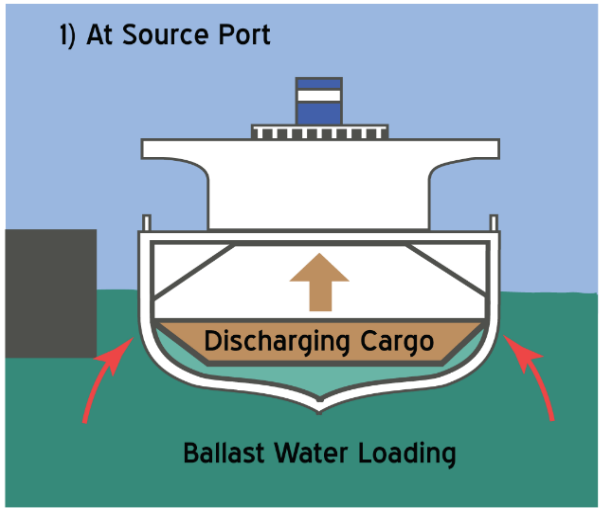
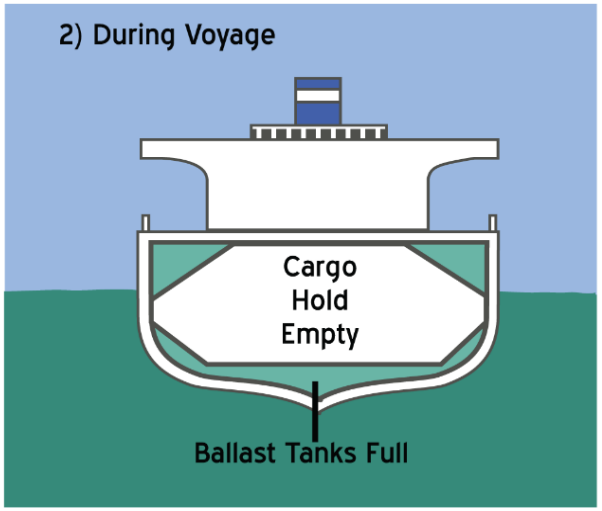
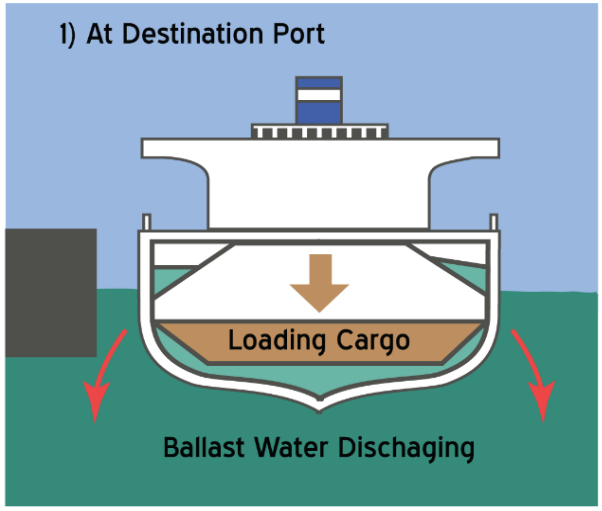
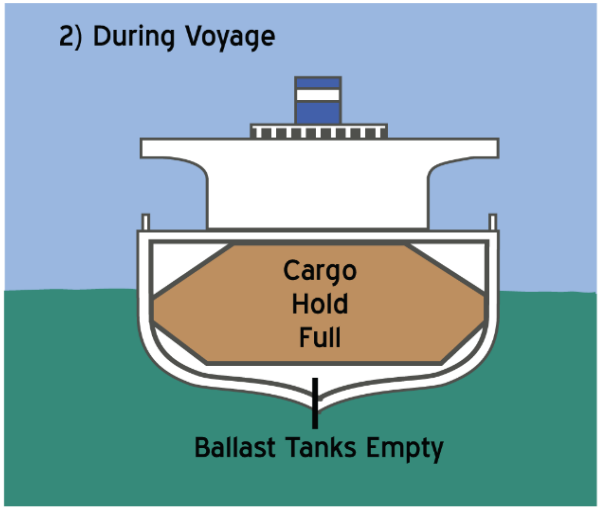
BALLAST WATER CYCLE









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1960's TECHNOLOGY

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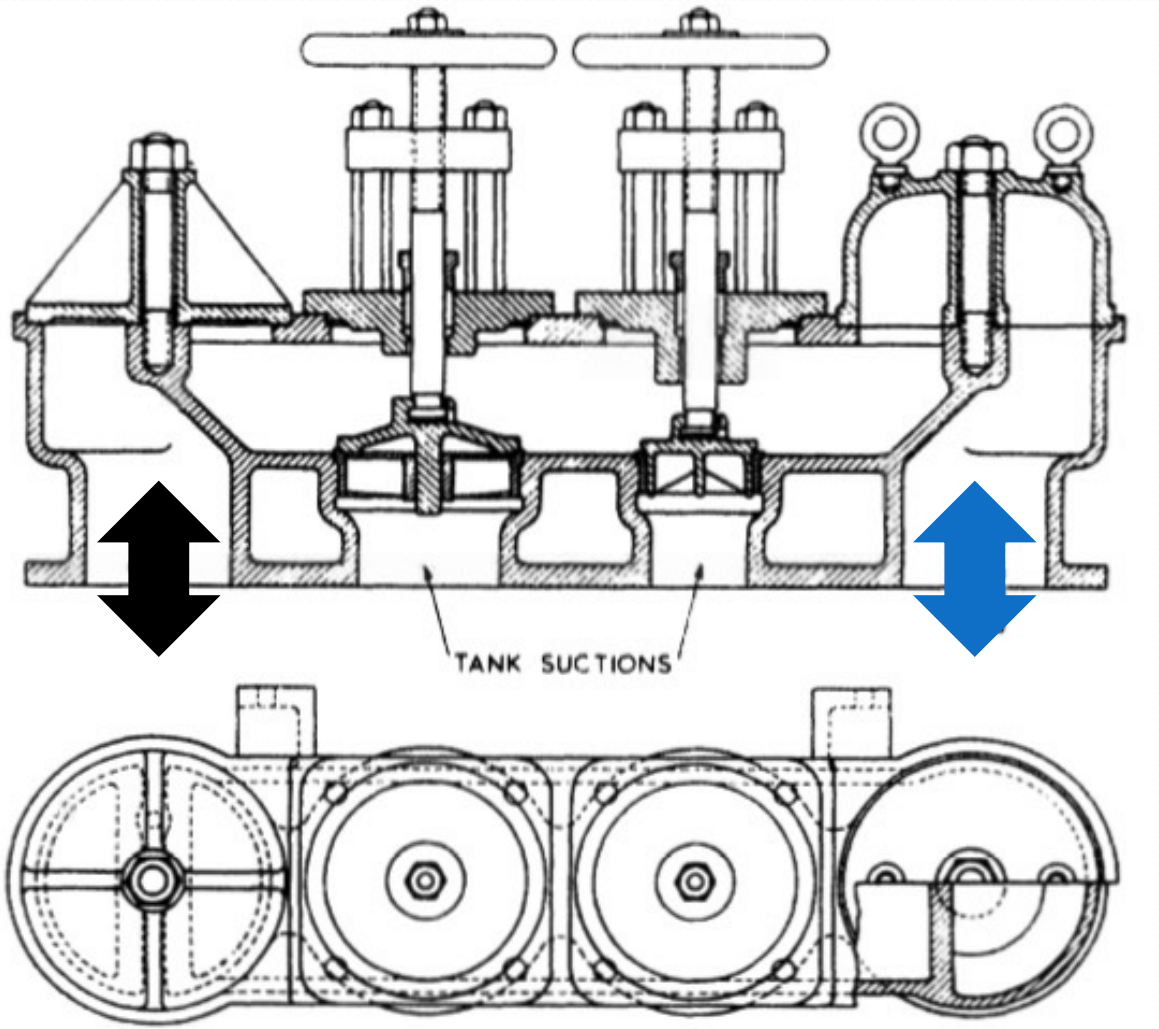
CHANGE OVER CHEST



INVASIVE SPECIES

An **invasive species** is a plant, fungus, or animal **species** that is not native to a specific location (an introduced **species**), and which has a tendency to spread to a degree believed to cause damage to the environment, human economy or human health.

An **invasive species** can be any kind of living organism—an amphibian, plant, insect, fish, fungus, bacteria, or even an organism's seeds or eggs—that is not native to an ecosystem and which **causes** harm. They can harm the environment, the economy or even, human health.

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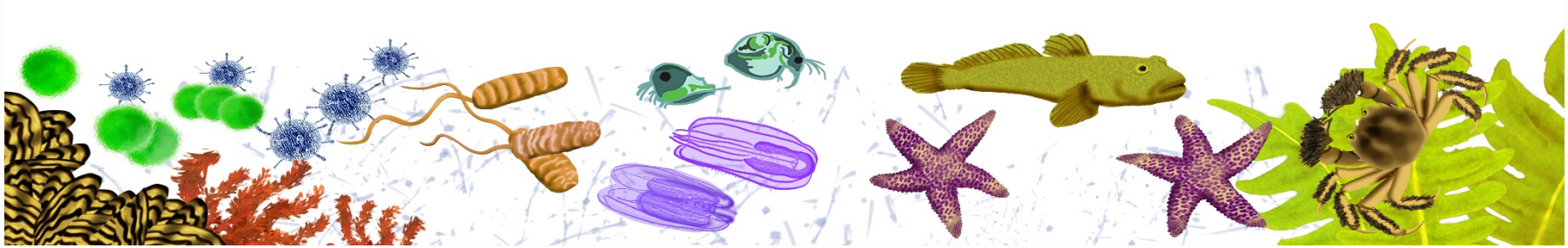
INVASIVE SPECIES

According to the World Conservation Union, **invasive** alien **species** are the second most significant threat to biodiversity, after habitat loss. In their new ecosystems, **invasive** alien **species** become predators, competitors, parasites, hybridizers, and diseases of our native and domesticated plants and animals.



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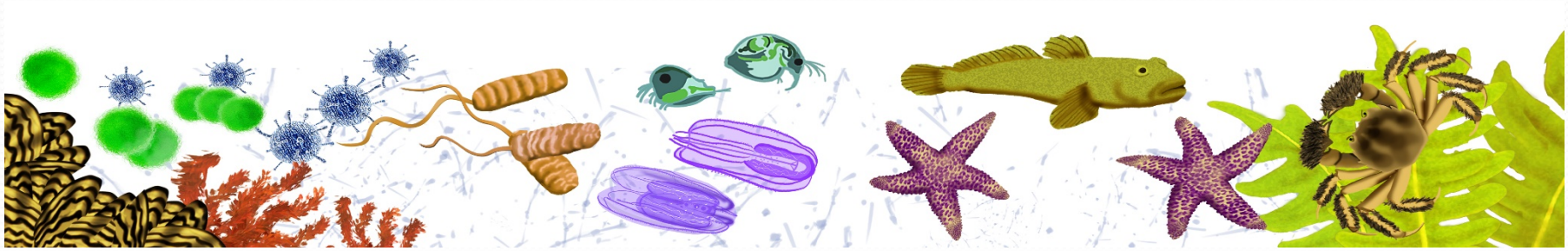
INVASIVE SPECIES

Invasive species rank second only to habitat destruction, such as deforestation, as a **threat to biodiversity**. Almost half of the **species** in the United States that are at risk of extinction are endangered because of the effects **introduced species** alone or because of their impacts combined with other processes.



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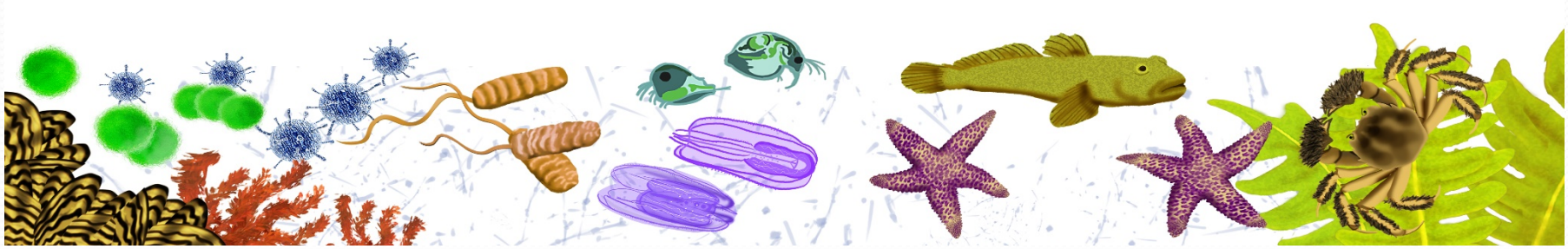
IMO “The spread of invasive species is now recognized as one of the greatest threats to the ecological and the economic well being of the planet. These species are causing enormous damage to biodiversity and the valuable natural riches of the earth upon which we depend. Direct and indirect health effects are becoming increasingly serious and the damage to the environment is often irreversible.”



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INVASIVE SPECIES

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AUDIENCE QUESTION

When was the transference of species first recognized by Scientists?

1. 1903
2. 1940
3. 1962
4. 1976
5. 2004

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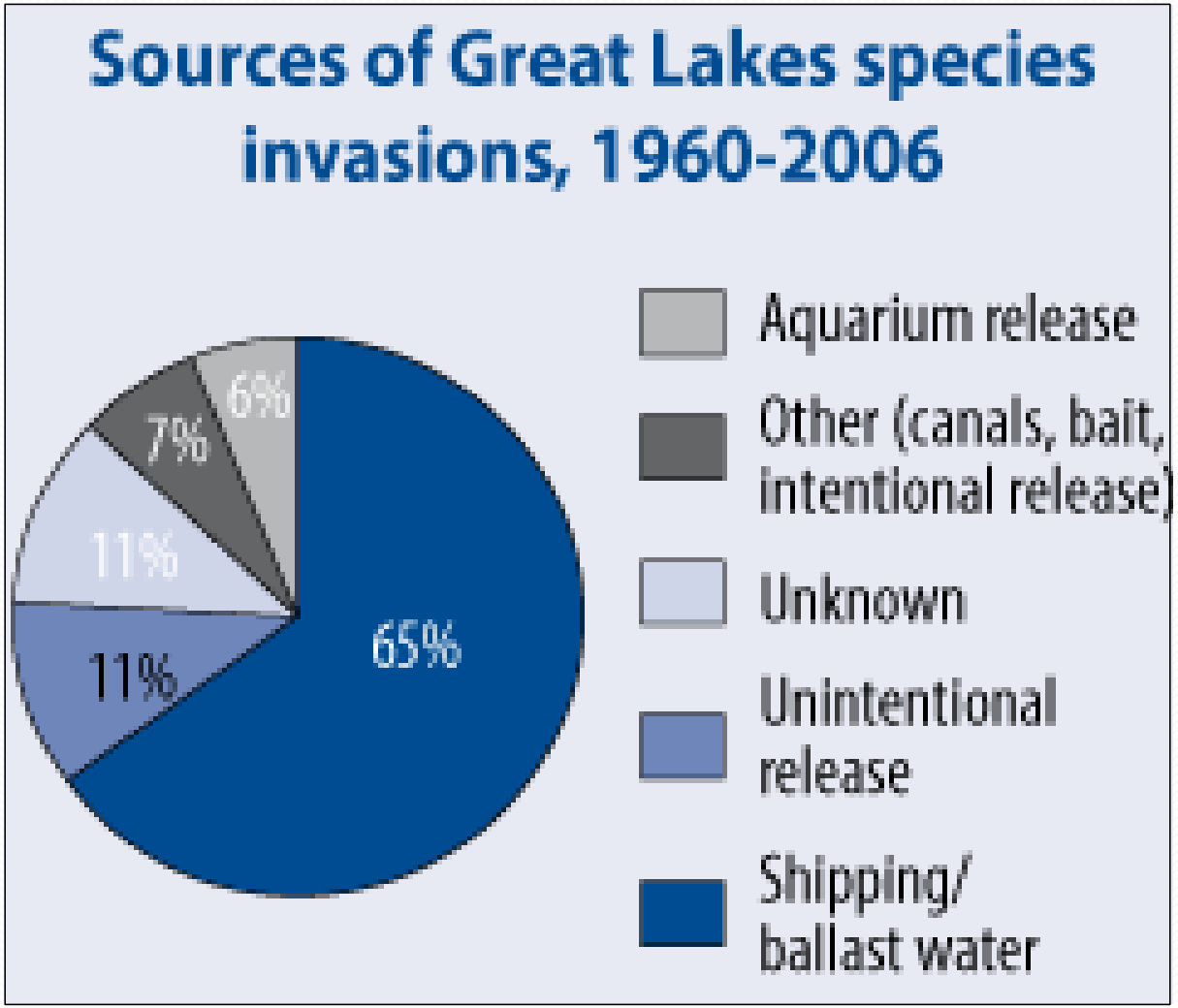
INVASIVE SOURCES



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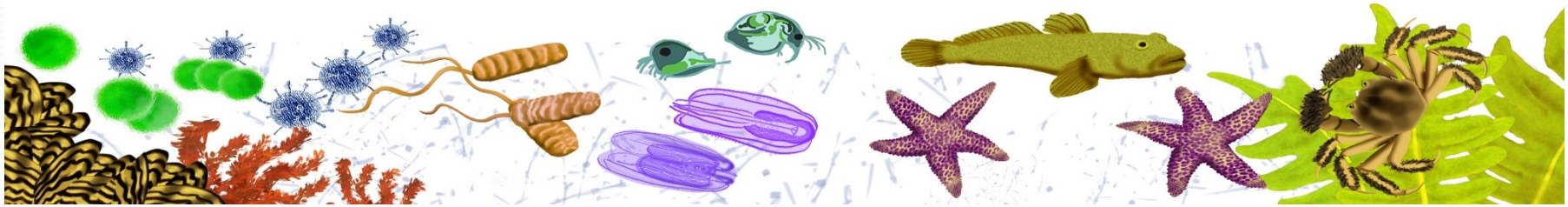
ECOLOGICAL IMPACTS

- Ecological impacts may include:
  - Competing with native species for space and food
  - Preying upon native species
  - Altering habitat
  - Altering environmental conditions (e.g. decreased water clarity)
  - Altering the food web and the overall ecosystem
  - Displacing native species, reducing native biodiversity and even causing local extinctions

ECONOMIC IMPACTS

- Economic impacts may include:
  - Reduction in fishery production
  - Negative impacts on biodiversity in aquaculture
  - Impact on coastal infrastructure
  - Possibilities of pathogens (e.g. cholera)
  - Costs of response– monitoring, education, control, compliance, etc.



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INVASIVE SPECIES

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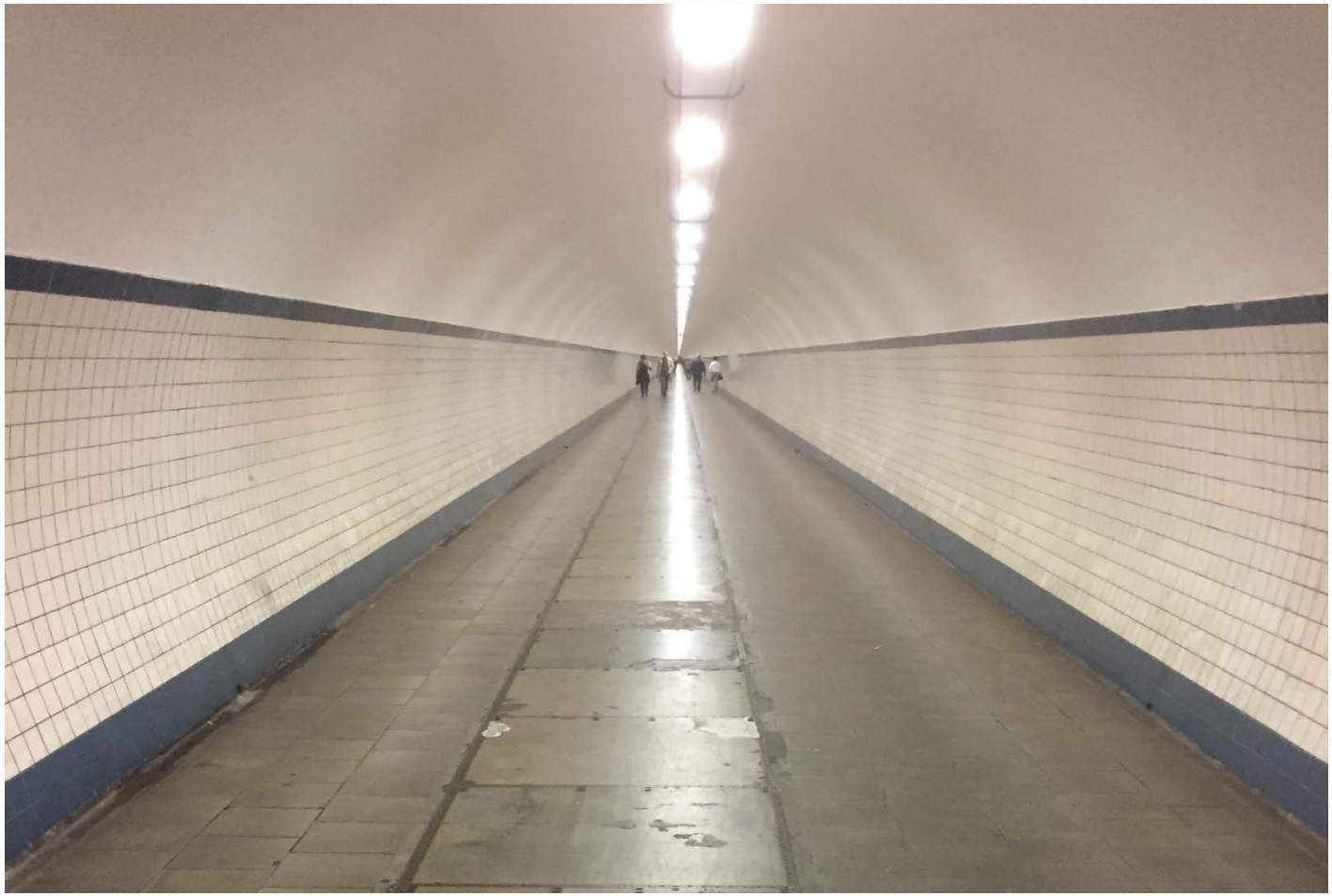

PREVENTION

- How to stop invasive species in ballast water?
- Ballast water exchange while at (deep) sea
- Loading and discharging potable ballast water at terminals
- Treatment of ballast water onboard ship prior to discharge overboard
  - Electrolysis
  - Ultra violet light
  - Ozonating
  - Chemical injection

CONTROL

	Micro organism category	Control limit
1	Viable/living organisms, size > 50 µm	< 10 viable/living cells/m3
2	Viable/living organisms, size 10-50 µm	< 10 viable/living cells/ml
3	Toxicogenic Vibrio Cholerae	< 1 Colony Forming Unit/100ml
4	Escherichia Coli	< 250 Colony Forming Unit/100ml
5	Intestinal Enterococci	< 100 Colony Forming Unit/100ml

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AUDIENCE QUESTION

In 2016, which country's ratification triggered implementation of the ballast water convention?

1. Albania
2. USA
3. Greece
4. Sweden
5. Finland

IMO COMPLIANCE REQUIREMENTS

The MEPC, at its 71st meeting, in July 2017, finally reached a compromise on compliance dates for ballast water discharge.

- Ships constructed after 8th September 2017 must comply on delivery.

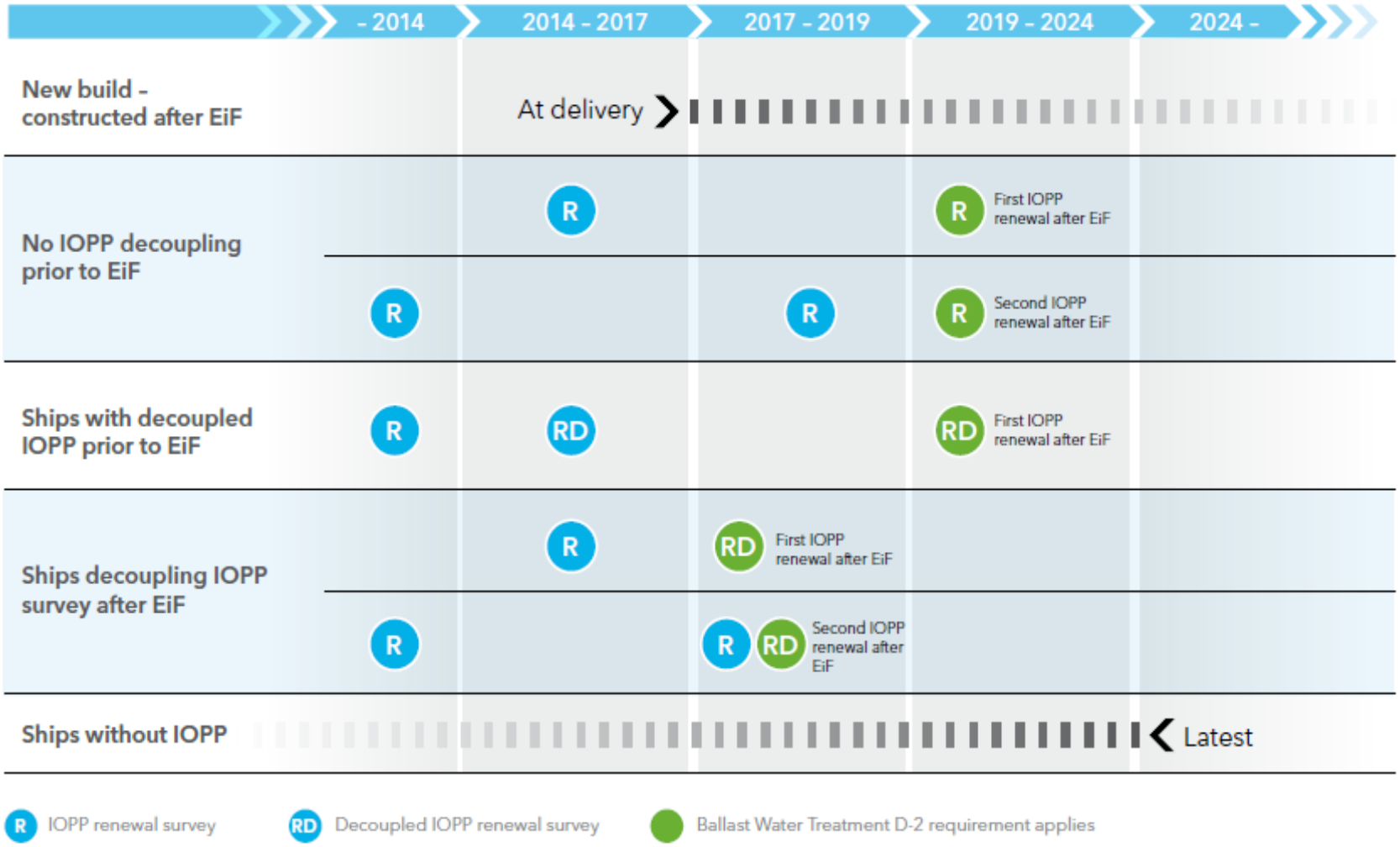
- Existing ships in general must comply by the first IOPP renewal after 8th September 2019.

IMO COMPLIANCE REQUIREMENTS

- All vessels for which the convention is applicable, shall conduct ballast water exchange in accordance with an approved BW management plan until compliance with the D-2 regulation becomes mandatory.

- US legislation is not affected by this. Vessels trading, or planning to trade, in the US should make sure they are compliant with the US BW management requirements.

IMO COMPLIANCE REQUIREMENTS



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BWM CONVENTION ANNEXES

- SECTION A - General Provisions
- A-2 Discharge of Ballast Water shall only be conducted through BWM
- SECTION B - Management and Control Requirements for Ships
- B-1 Ships are required to have on board and implement a BWMP
- B-2 Ships must have a Ballast Water Record Book
- B-3 The specific requirements for BWM
- B-4 Ballast Water Exchange
- SECTION C Additional measures

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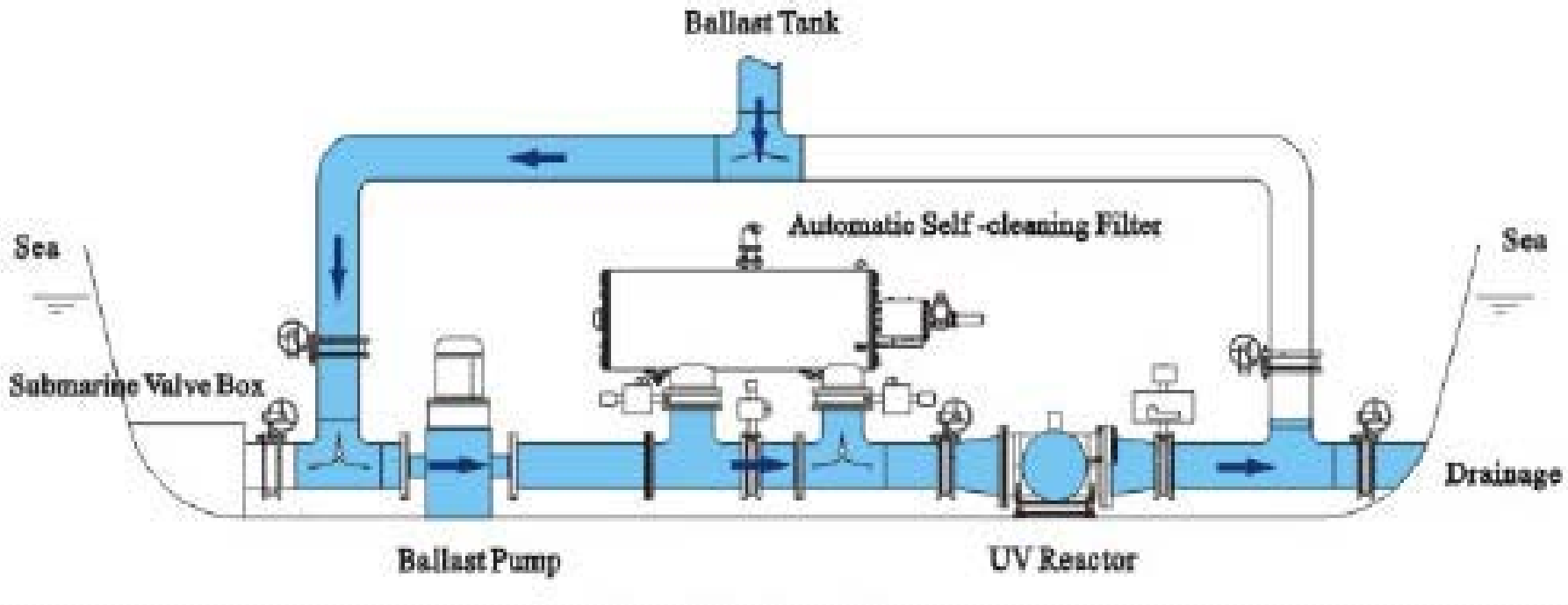
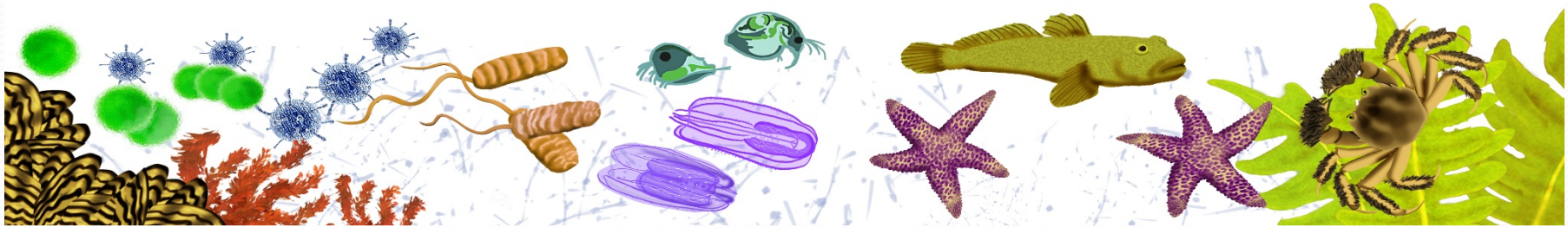
BWM CONVENTION ANNEXES

- SECTION D - Standards for Ballast Water Management
- D-1 Ballast Water Exchange Standard
- D-2 Ballast Water Performance Standard
- D-3 Approval requirements for BWM systems
- D-4 Prototype Ballast Water Treatment Technologies
- D-5 Review of Standards by the IMO

- SECTION E Survey and Certification Requirements for BWM

EQUIPMENT





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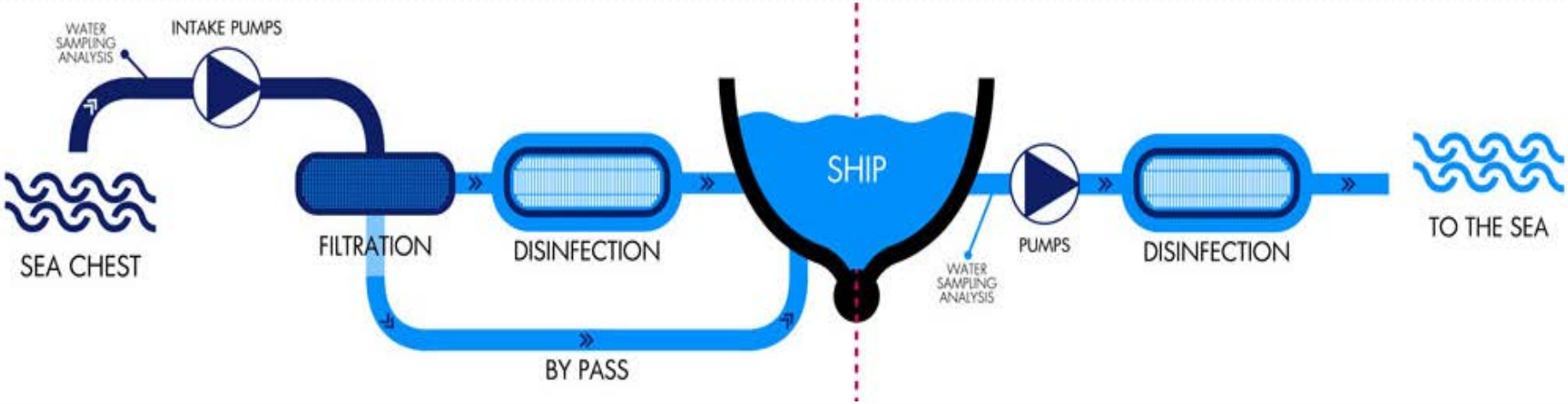
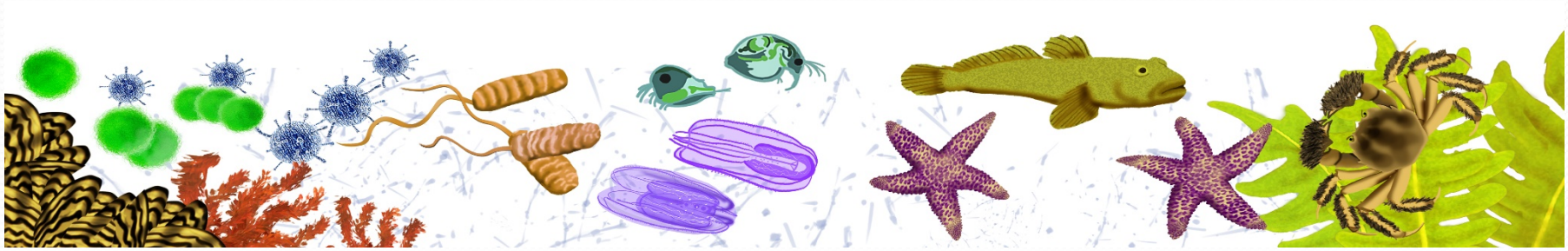
EQUIPMENT





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POTENTIAL H&M CLAIMS

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POTENTIAL H&M CLAIMS

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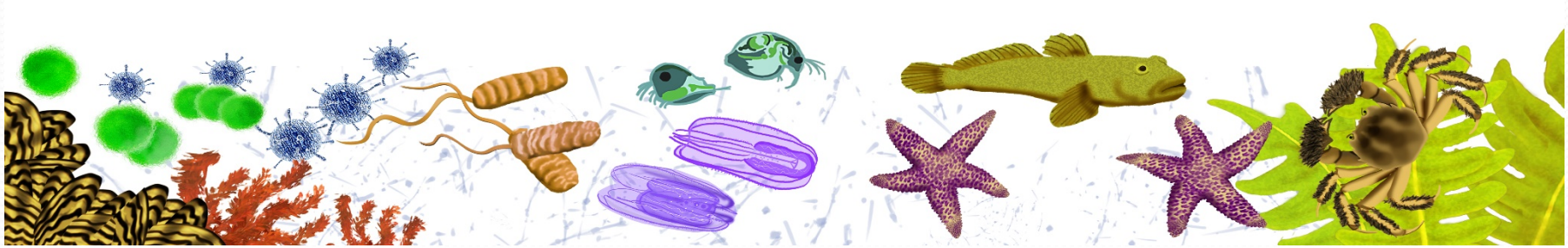
POTENTIAL P&I CLAIMS

- Malfunction or inability to use ballast water treatment system
- Fines and penalties
- Petitions to Club for discretionary cover (Omnibus clause)
- C/Ps usually require vessels to be compliant with all applicable laws and regulations
- C/P disputes due to vessel's inability to load cargo due to BWM treatment system breakdown



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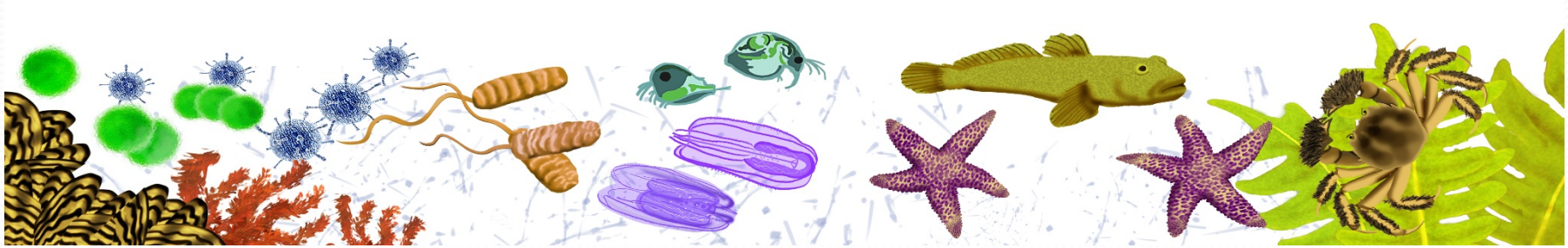
POTENTIAL P&I CLAIMS

- Oil majors and vetting requirements – currently unclear
- Fuel consumption, off-hire and deviation disputes
- Possible requests for general discretionary FD&D cover



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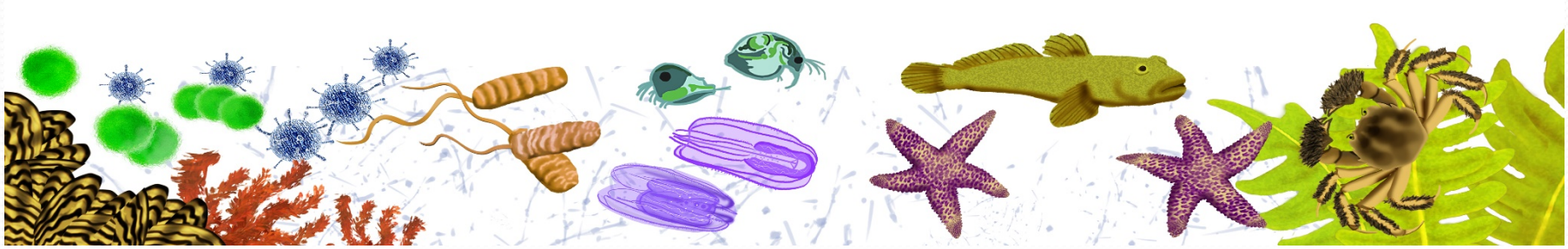
CONCLUSIONS?

- The time frame for compliance with IMO is now in place
- Inconsistencies between jurisdictions exist
- The efficacy of the equipment being sold to deal with the issue has yet to be demonstrated in practice
- In practice, the installation cost and operating cost to shipowners is an unknown



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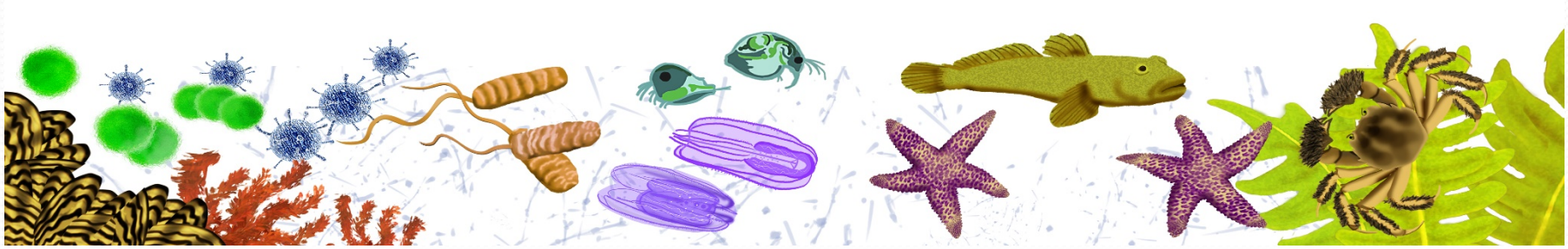
COMMENTS?
QUESTIONS?
OBSERVATIONS?
SUGGESTIONS?



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