REGIONAL WEBINAR on the Effective Implementation of the Ballast Water Management Convention

Regional BWM harmonised procedures – Port survey protocol

Dr. Romina Kraus

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Port Survey Protocol

The protocol purpose is exemption application, with focus on:
- Port information
- Environmental information
- Target species

The protocol provides guidance for:
- Identification of appropriate sites for sampling
- Establishment of sampling design
- Ensuring data collection in a consistent manner for storage in a central location (e.g. MAMIAS)

MAMIAS – Marine Mediterranean Invasive Alien Species Database

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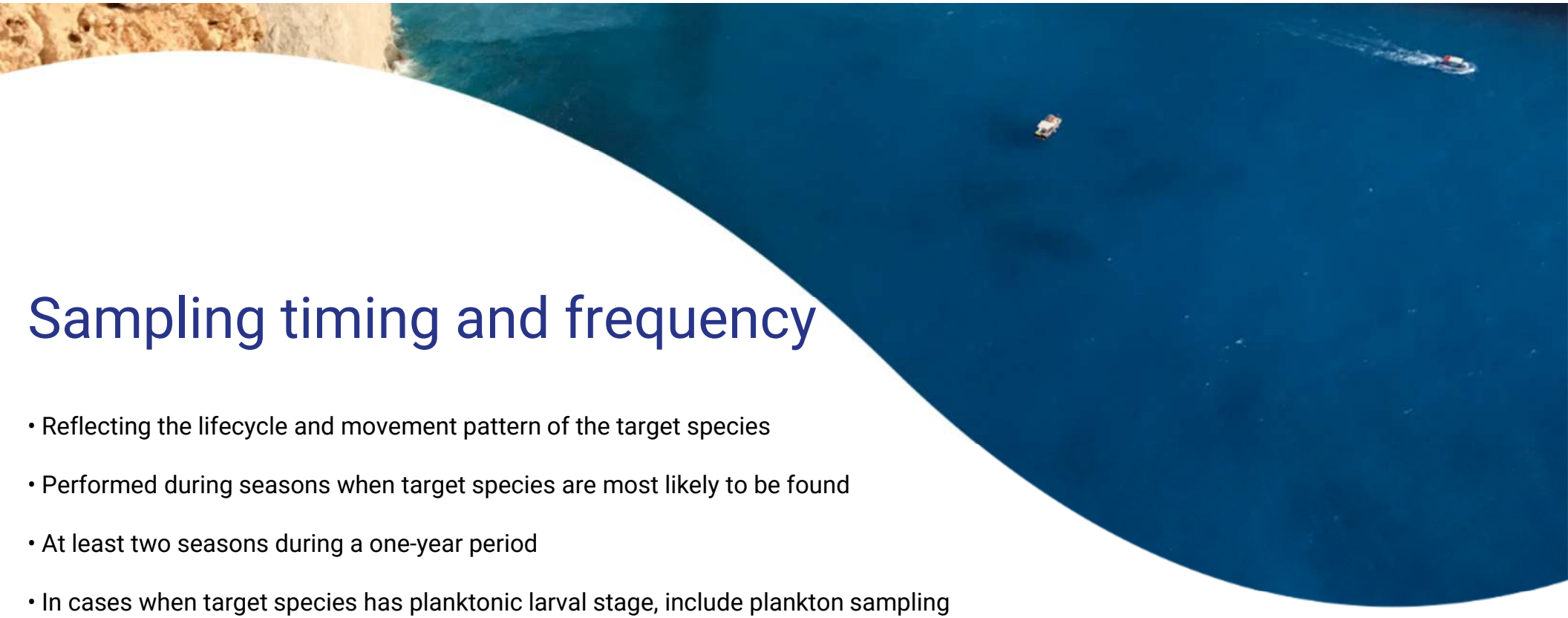
Sampling design



Sampling timing and frequency

- Reflecting the lifecycle and movement pattern of the target species
- Performed during seasons when target species are most likely to be found
- At least two seasons during a one-year period
- In cases when target species has planktonic larval stage, include plankton sampling
- Settlement plates deployment during first seasonal sampling and retrieval during the second

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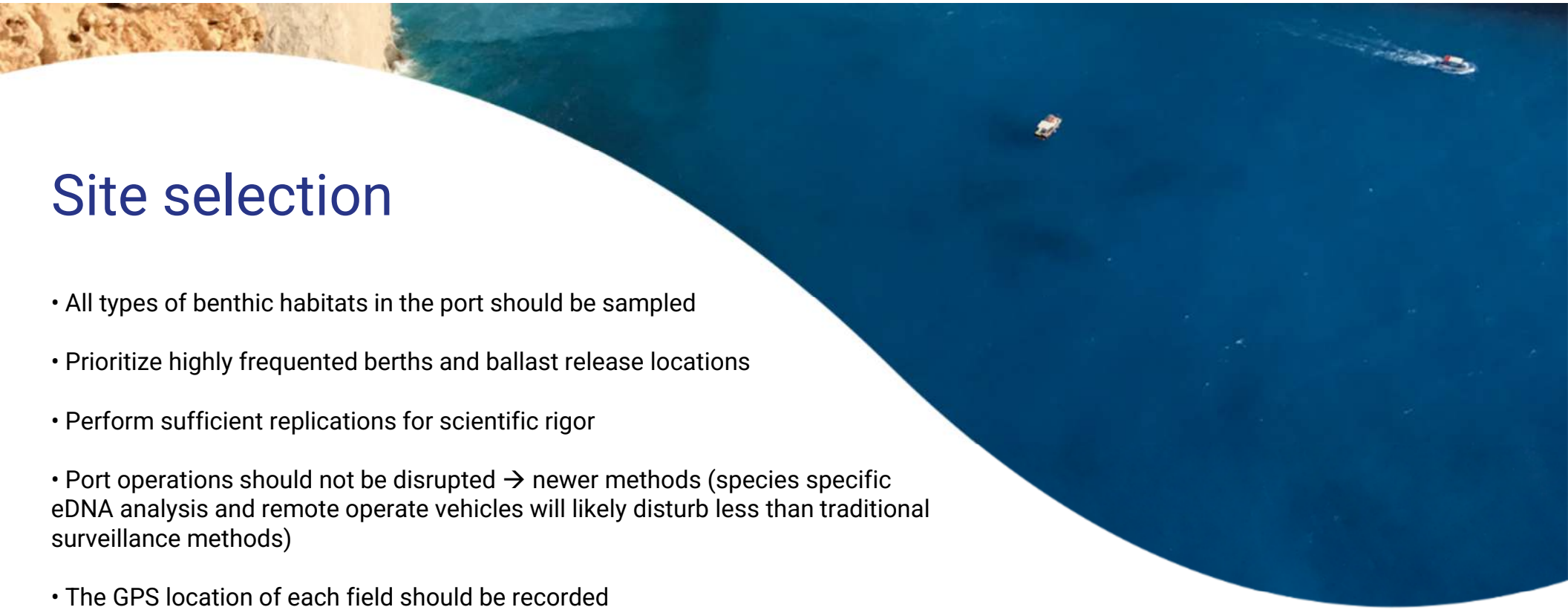


Site selection

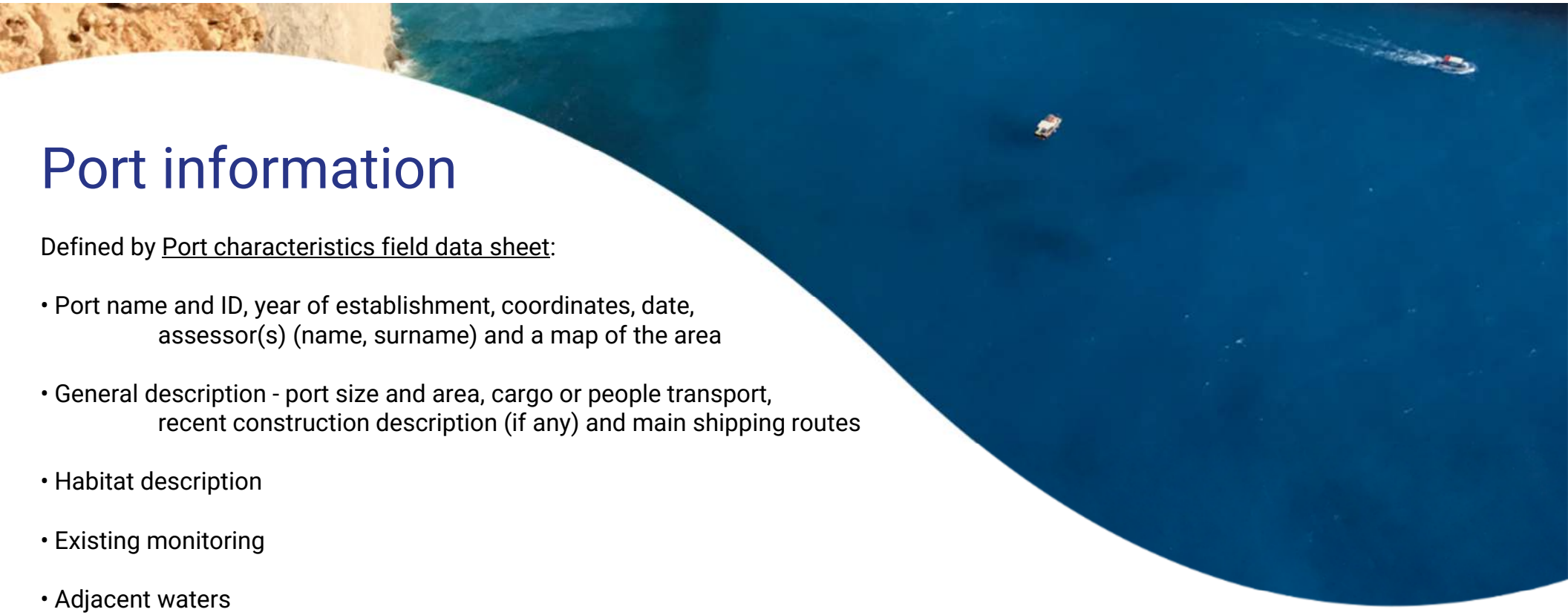
• All types of benthic habitats in the port should be sampled

• Prioritize highly frequented berths and ballast release locations

• Perform sufficient replications for scientific rigor

• Port operations should not be disrupted → newer methods (species specific eDNA analysis and remote operate vehicles will likely disturb less than traditional surveillance methods)

• The GPS location of each field should be recorded



Port information

Defined by Port characteristics field data sheet:

- Port name and ID, year of establishment, coordinates, date, assessor(s) (name, surname) and a map of the area
- General description - port size and area, cargo or people transport, recent construction description (if any) and main shipping routes
- Habitat description
- Existing monitoring
- Adjacent waters
- Minimal and maximal salinity, sea surface and sea floor temperature, and tidal range
- Other comments

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Environmental information

Defined by Sampling site and environmental field data sheet:

- Port name and ID, site ID, coordinates, date, time, field surveyor (sur/name)
- Air temperature, cloud cover, wind direction and speed, sea state
- Water temperature and salinity at surface, 1m, 3m, 5m, 7m and at bottom, water transparency and dissolved oxygen at bottom
- Sediment data – method of collection, organic content, % dry weight of sediment fractions (>1mm, <1-0.5mm, <0.5-0.25mm, <0.25-0.125mm, <0.125-0.063mm, <0.063mm)

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Species information

Species information 1

Aim of the survey is to determine presence or absence of each target species

Defined by Species information field data sheet:

• Port name and ID, site ID, coordinates, water depth, date, time and field surveyor (sur/name)

• Details of sample collection for all investigated groups includes:

- sampling start and finish (date or time)
- total water volume filtered (only for plankton and benthic epifauna)
- total number of samples
- sampling method (including dimensions of sampling device)
- storage method

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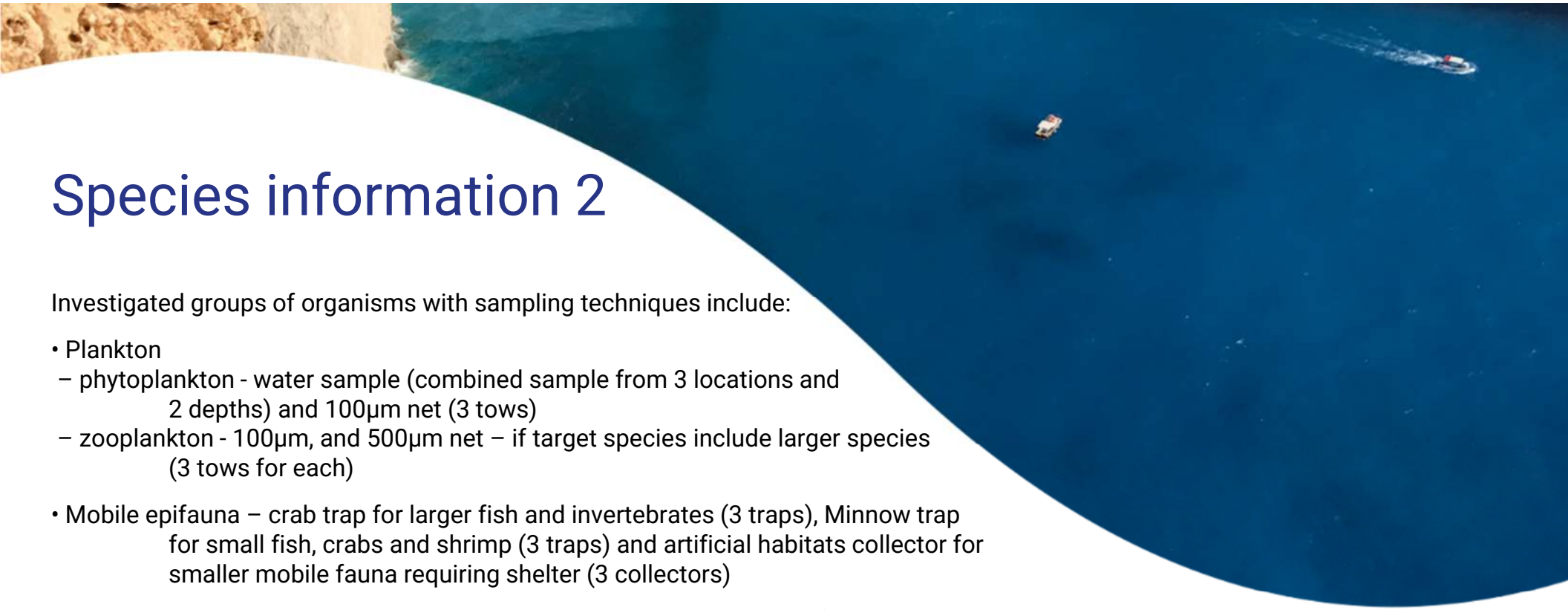

Species information 2

Investigated groups of organisms with sampling techniques include:

- Plankton
  - phytoplankton - water sample (combined sample from 3 locations and 2 depths) and 100µm net (3 tows)
  - zooplankton - 100µm, and 500µm net – if target species include larger species (3 tows for each)
- Mobile epifauna – crab trap for larger fish and invertebrates (3 traps), Minnow trap for small fish, crabs and shrimp (3 traps) and artificial habitats collector for smaller mobile fauna requiring shelter (3 collectors)
- Fouling organisms - settlement plates (at 1m, 3m and 7m, 3 replicates) and fouling scraping (3 scrapings per site)
- Benthic infauna – benthic grab (3 samples per site)

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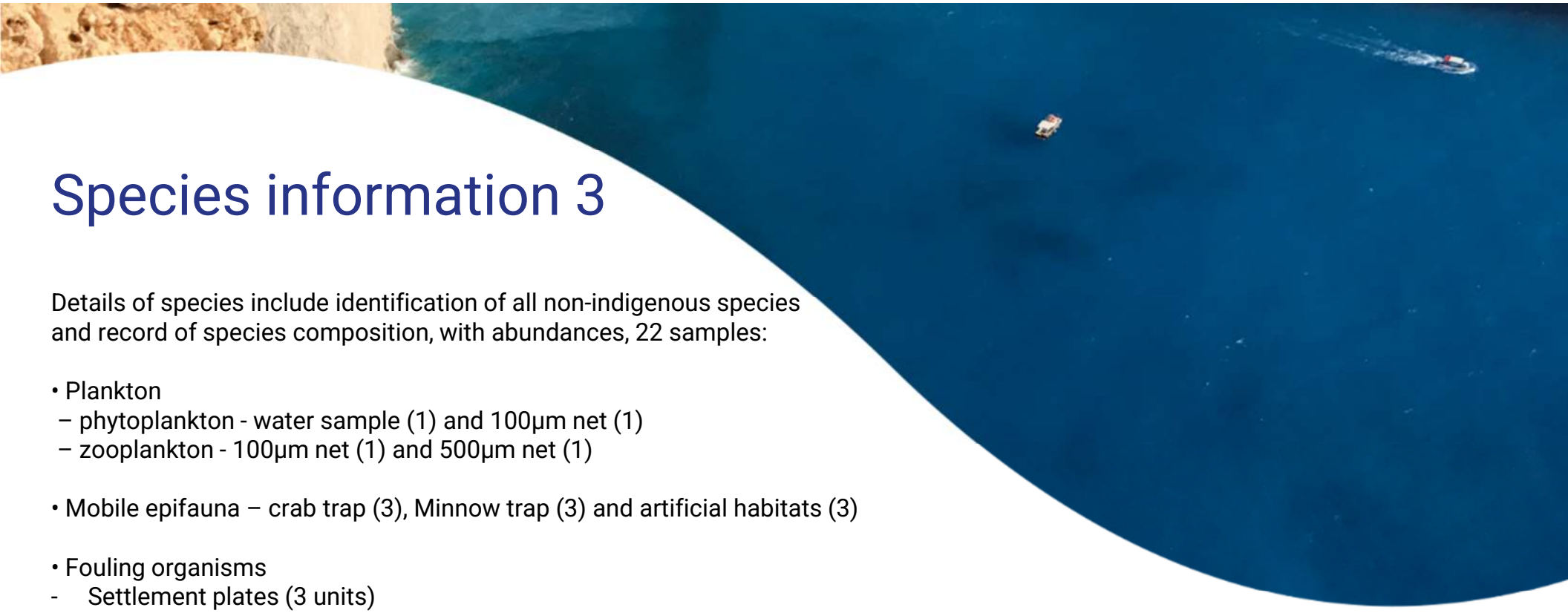

Species information 3

Details of species include identification of all non-indigenous species and record of species composition, with abundances, 22 samples:

• Plankton
– phytoplankton - water sample (1) and 100µm net (1)
– zooplankton - 100µm net (1) and 500µm net (1)

• Mobile epifauna – crab trap (3), Minnow trap (3) and artificial habitats (3)

• Fouling organisms
- Settlement plates (3 units)
- Fouling scraping (3 scrapings)

• Benthic infauna – benthic grab (3 samples)

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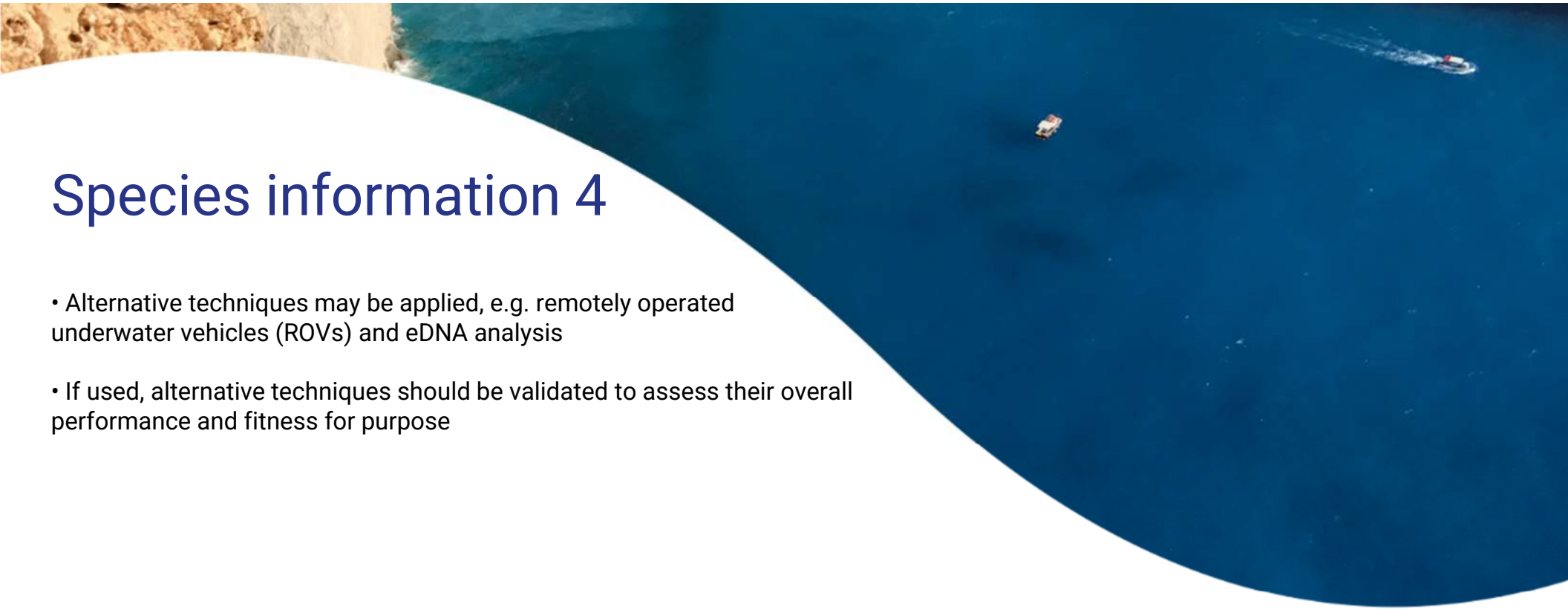
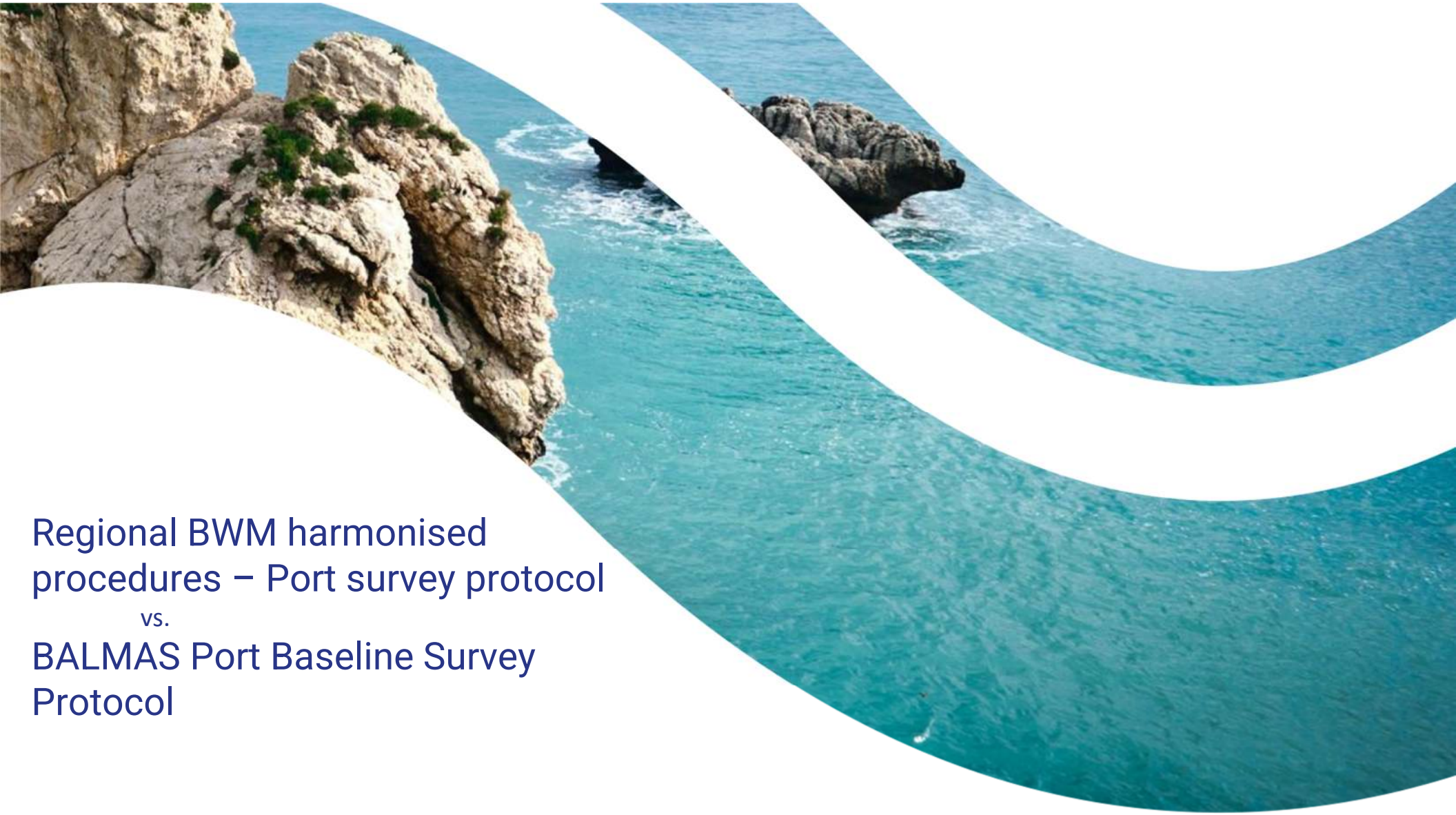


Species information 4

• Alternative techniques may be applied, e.g. remotely operated underwater vehicles (ROVs) and eDNA analysis

• If used, alternative techniques should be validated to assess their overall performance and fitness for purpose



Regional BWM harmonised procedures – Port survey protocol

vs.

BALMAS Port Baseline Survey Protocol

BALMAS Port Baseline Survey Protocol

(based on CRIMP protocol (Hewitt and Martin, 2001)

• The aim of BALMAS PBS:

- to develop a baseline list of species including both native and non-indigenous (NIS) species present in ports
- to develop the list of Harmful Aquatic Organisms and Pathogens (HAOP)
- to ensure qualitative base for tracking new species introductions

• Sampling design:

- plankton - seasonally
- human pathogens - at least four times per year in water and two times per year in sediments (simultaneously to the water sampling)
- chemical analyses - biocides (organotins) and disinfection by-products from Active Substances treatment (trihalomethanes, haloacetonitriles and haloacetic acids)
- physical analyses - analyses of hydrographic and dynamic conditions to investigate species spreading patterns

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THANK YOU

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