



MPA  
SINGAPORE

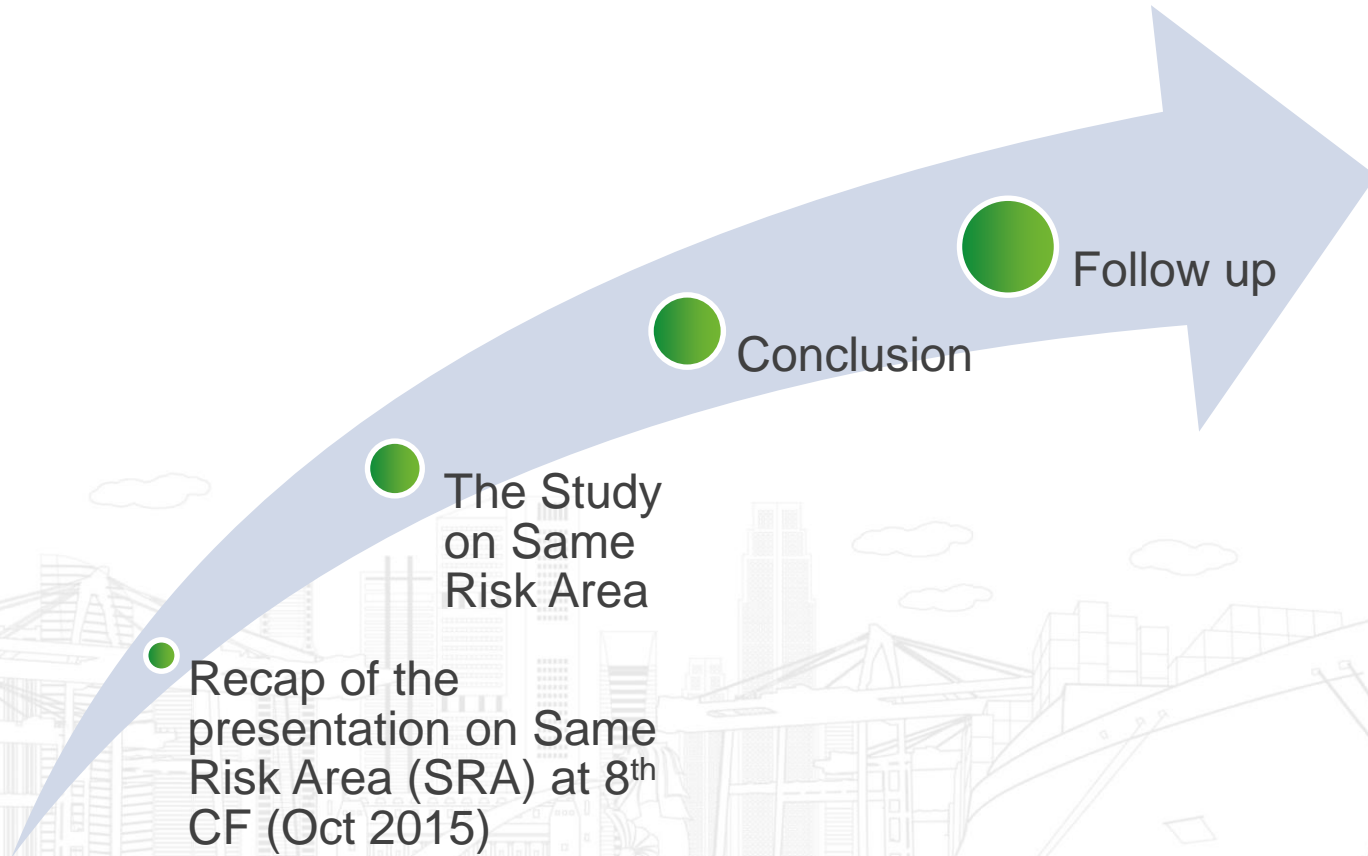
# Ballast Water Management Convention – A Study on the “Same Risk Area” Concept

Maritime and Port Authority of Singapore  
9<sup>th</sup> Co-operation Forum  
26-27 September 2016



# Scope of Presentation

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# Recap



## Recap

### Ballast Water Management Convention (BWMC)

- BWMC was developed by the IMO to minimise the transfer of harmful aquatic organisms and pathogens by ships ballast water from one sea area to another
- The BWMC will enter into force on 8<sup>th</sup> September 2017
  - Ratification by Finland triggered the Convention entry into force criteria
  - Currently - 52 countries with a total tonnage of 35.14% have ratified
- Most ships will be required to treat their ballast water using on-board type approved Ballast Water Management Systems (BWMSs) to meet the D2 discharge standards – by the 1<sup>st</sup> IOPP certificate renewal survey after 8<sup>th</sup> September 2017

IOPP certificate – International Oil Pollution Prevention certificate

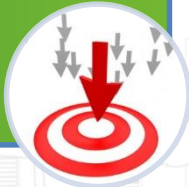


## Recap

### Regulation A4 – Exemptions from installing Ballast Water Management Systems (BWMS)

- Between specific ports or locations not mixing waters from other ports and locations

#### SITUATIONAL REQUIREMENT



- Risk assessment based on IMO guidelines G7 must show low risk of transfer of invasive species

#### DOCUMENTATION



- Vessel is limited to navigate the specific ports for which the exemption is granted. Valid for a max. of 5 years

#### CONDITIONS



# Recap

## The Problem

- Regulation A4 and G7 guidelines require individual risk assessment over multiple routes (ports and locations)
- The cost of risk assessments for every port-to-port route of every relevant ship would be prohibitive to the shipping industry: ranging between US\$110,000 – US\$150,000 per application
- Loss of flexibility in the routes - exemption only given for specific ports and locations for each ship
- Uncertainty whether an exemption would ever be granted or not due to the precautionary approach
- G7 guidelines does not take into account the natural ability of species to be transferred across the region with short-sea shipping





## Recap

### The Solution – The “Same Risk Area” (SRA) concept

PPR (Feb 2014)

Croatia, Denmark, Singapore, ICS and InterFerry submitted a paper proposing exemptions be granted based on a new SRA concept

PPR supported the concept

MEPC 68 (May 2015)

Based on PPR recommendations accepted the SRA concept

Instructed the review group to develop a guidance document

To be discussed at MEPC 70 (Oct 2016)

Regional Workshop (Aug 2015)

Hosted by MPA

Participants were supportive of the SRA concept

Participants also supported the inclusion of hydrological studies to confirm connectivity and natural dispersal within the SRA based on available data and studies

PPR – Sub Committee on Pollution Prevention and Response



# The Study





## The Study

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### Following up from 8<sup>th</sup> CF (Oct 2015)

Singapore has submitted a SRA study to MEPC 70 (Oct 2016) on proposed ways forward in implementing the SRA for short sea shipping (MEPC70/INF.21)

Indonesia, Malaysia, Thailand and Vietnam have been informed

# The Study

## Key Points

- The study includes:
  - Examples to show that the SRA is applicable to the Southeast Asian region
  - A theoretical comparison of different risk assessment methods
  - Methodical approach and guidelines for the implementation of the SRA
- Sets the risk assessment in the context of the natural dispersal
- Compliant with G7 guidelines using the species-specific approach
- Supports consistency, transparency and efficiency in the regulatory process while still providing the same level of environmental protection relevant to the degree of risk



# The Study

## Proposed Methodology

Step 1

- A hydrodynamic (HD) modeling exercise would be undertaken to define the preliminary zone of study for the SRA by two or more states

Step 2

- States agree on the species of concern, i.e. the target species. Each state collates a list of target species which can be compared

Step 3

- Given the target species a refined multi-scale HD modeling is undertaken to assess their dispersal potential. The outcomes from these modeling exercises are then used to determine the boundaries for the SRA

Step 4

- Following the outcomes of the modeling, the extent of the SRA is agreed among SRA States along with mitigation measures

Step 5

- Vessels trading in the SRA may apply for exemption under the terms of Regulation A4

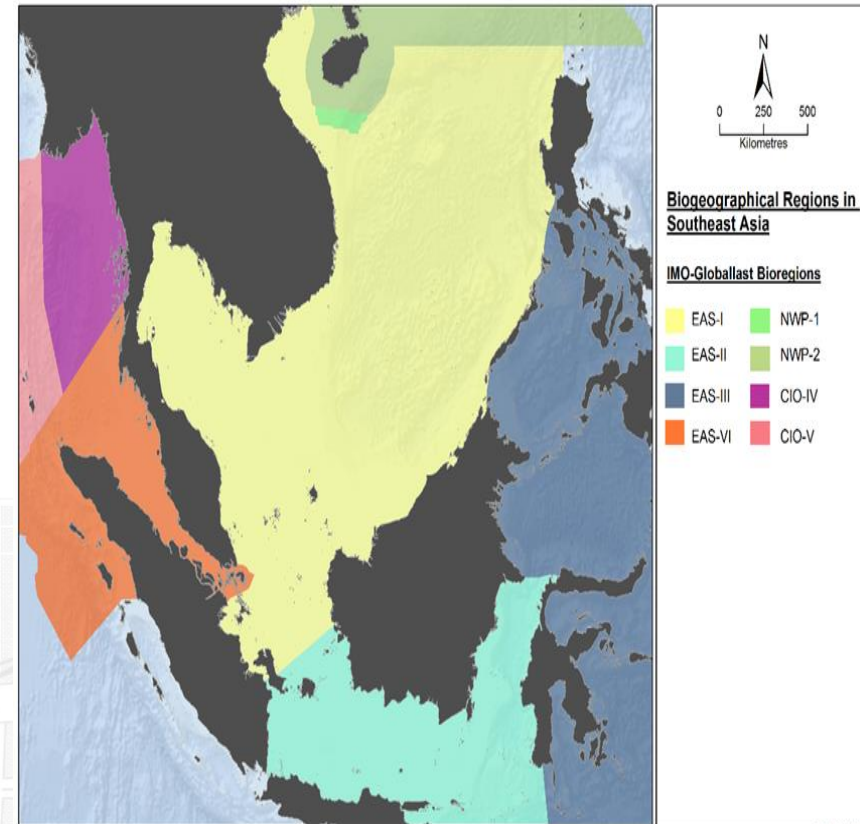
Step  
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- The outcome of the application (granted or rejected) is communicated to the other SRA States and to the IMO. Each vessel is issued the exemption which is to be recorded in the ballast water record book

# The Study

## Important Concepts – Bio-Geographic Regions

- “A large natural region defined by physiographic and biologic characteristics within which the animal and plant species show a high degree of similarity”
- IMO Globallast
  - 204 bio regions from 18 seas
  - Based on species bio geography
- The East Asia Seas (EAS) contains 8 bio regions - the most relevant to South East Asia are EAS-I to EAS-II and EAS-VI
- Since IMO Globallast bio geographical regions are accepted by the IMO it was chosen for the study

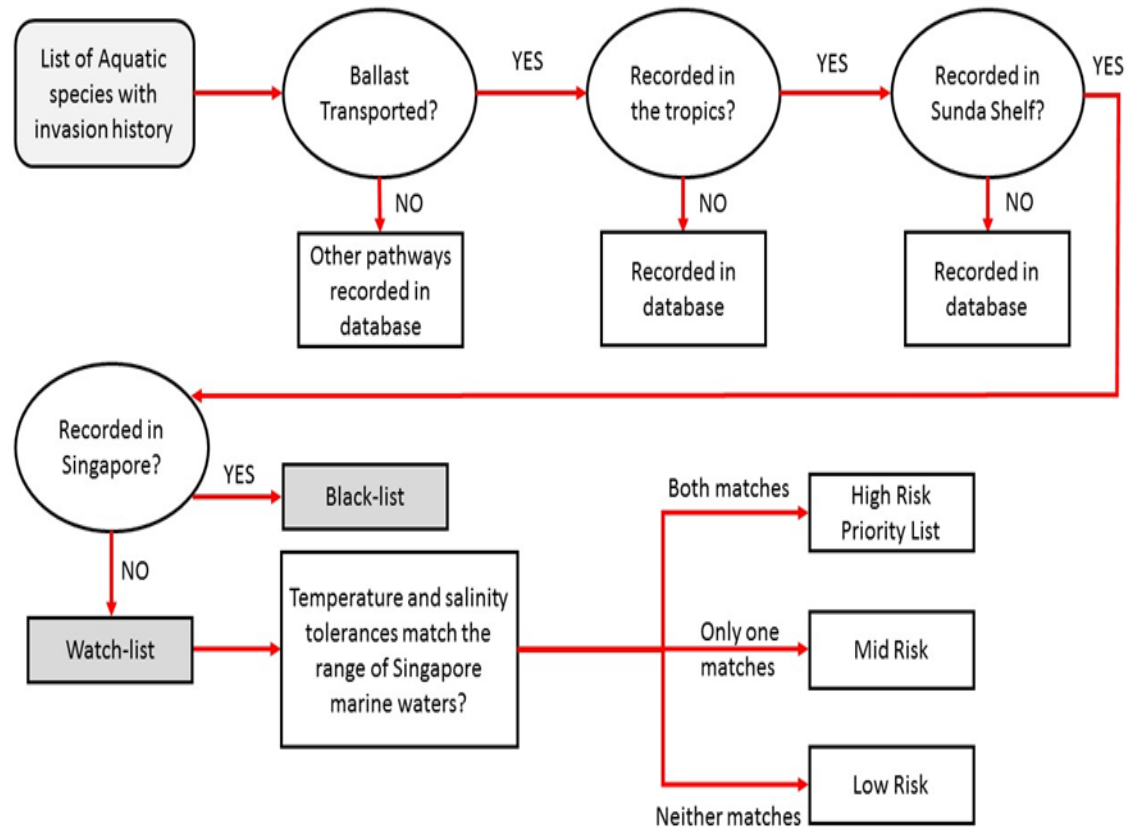


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# The Study

## Important Concepts – Target Species

- One of the best predictors of the likelihood of a species becoming invasive is a previous history of successful introduction in other habitats
- A step by step process flowchart to define target species



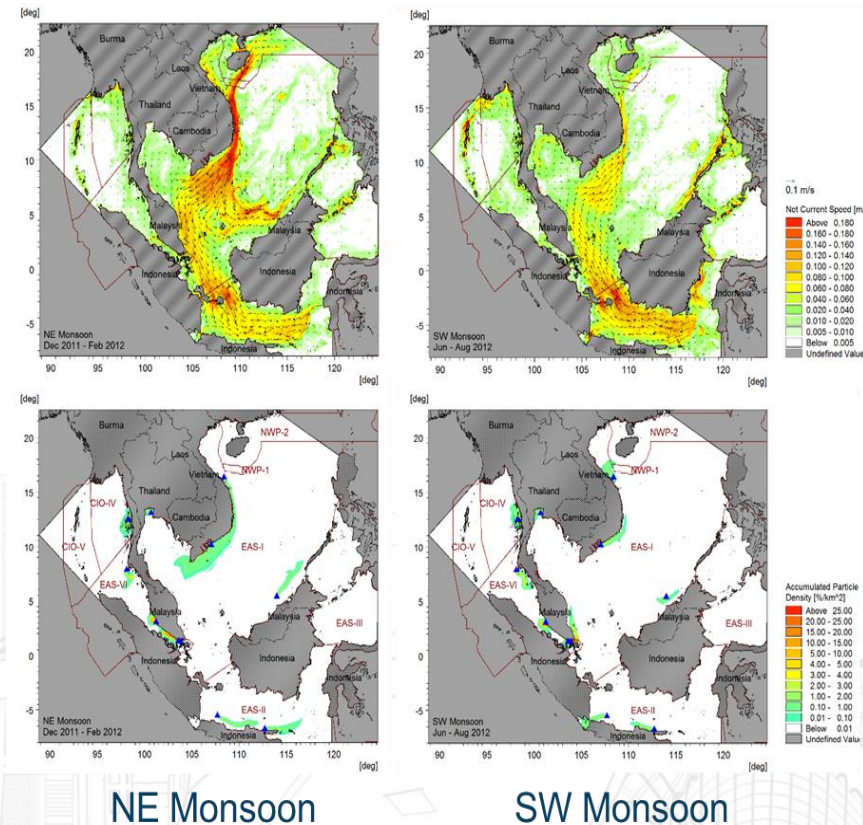


# The Study

## Important Concepts – Evidence of Connectivity in the EAS region

### Regional scale DHI particle tracking model

- 11 release points representing major ports
- 3 month monsoon simulation time
- Future developments:
  - Further calibration
  - 3D modeling
  - Different temporal scales
  - Stepping stones



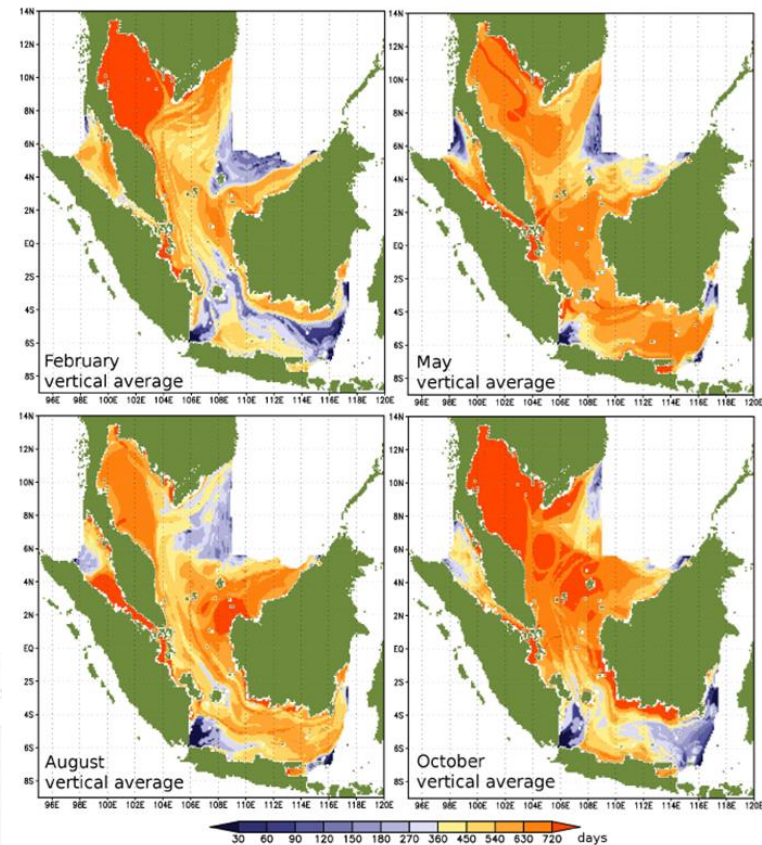


# The Study

## Important Concepts – Evidence of Connectivity in the EAS region

Flushing rates and residence times of water bodies in the Sunda Shelf (Mayer et al, 2015)

- The Max Planck Institute Ocean Model (MPI-OM)
- The regional ocean circulation model HAMSOM (Hamburg Shelf Ocean Model)
- The MPI-HM (Max Planck Institute Hydrology Model)
- A Lagrangian tracer model



# The Study

## Important Concepts – Comparison with G7 on protection level

- Four scenarios explored:

Ports with:	High ecological connectivity	Low ecological connectivity
Same target species	Scenario 1: Exemption granted under both approaches. Same level of protection	Scenario 2: Exemption may be granted under G7 but not SRA. SRA potentially more precautionous
Different target species	Scenario 3: Exemption may be granted under SRA but not G7. Protection still high as SRA must show that the species would disperse naturally over time	Scenario 4: Exemption fails under both approaches. Same level of protection

- Risk assessment - neither the current G7 guidelines nor the SRA concept is about zero risk but calls for manageable risk

# Conclusion



# Conclusion

## SRA

- The preliminary study indicates that the SRA approach is applicable to the South East Asian region
- Pragmatic approach to environmental sustainability based on science and research
- Regional shipping only contributes to secondary transfers
- Exemptions cover a same bio-geographical area – all vessels exclusively within the area need not apply for port to port exemption
- Vessel has flexibility of routes, ease of compliance
- Reduced burden, time and cost for stakeholders



# Follow Up



## Follow Up

### SRA

- MEPC 70 (Oct 2016) will deliberate on the SRA to develop a guidance document:
  - Singapore's study submission will be considered
- Seek countries support for the SRA concept and the proposed methodology at MEPC
- Thereafter, work closely with a view to developing a “Same Risk Area” regionally based on scientific study and research







**For Information**