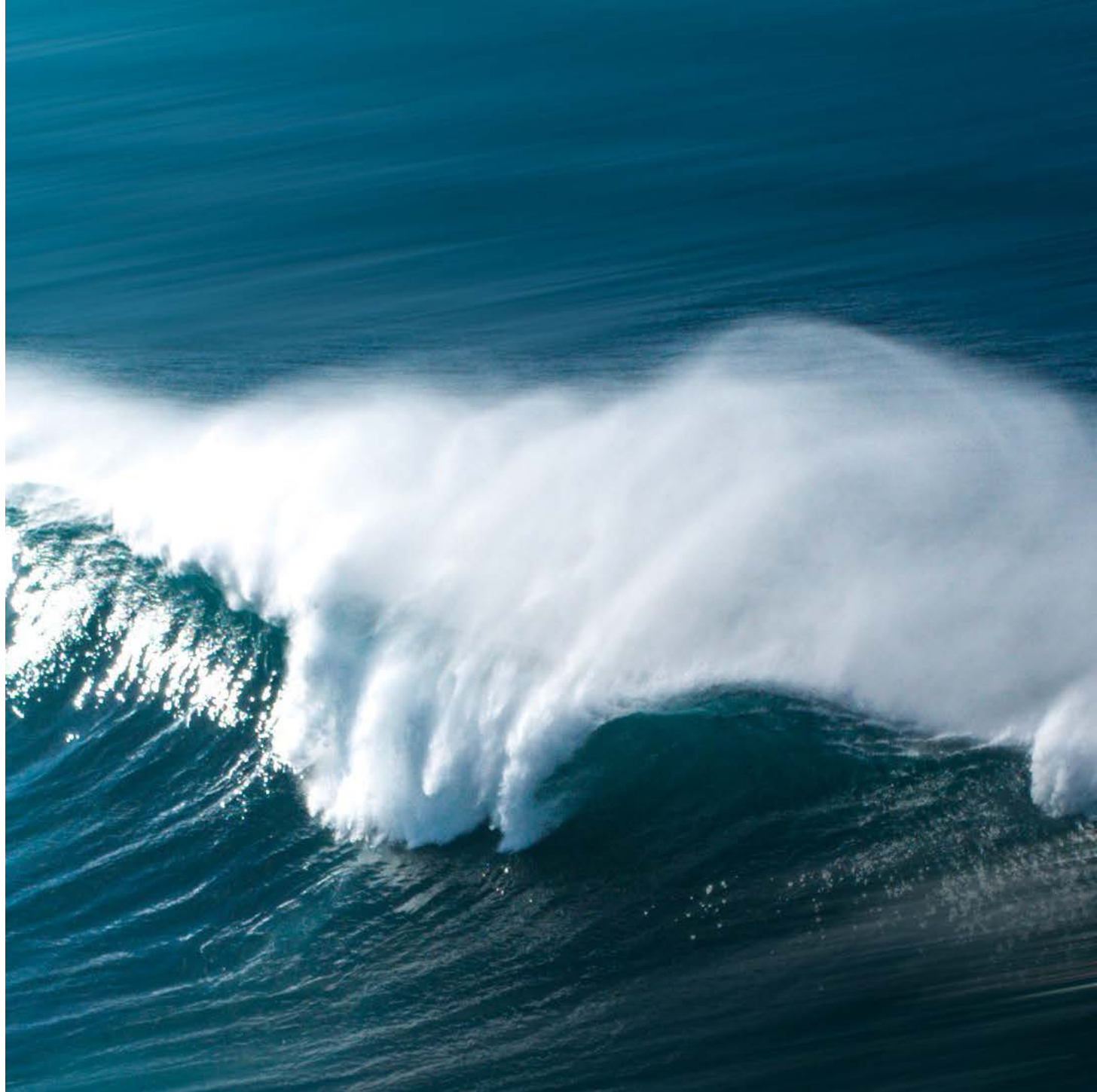
Pacific Northwest NATIONAL LABORATORY

OES the task formerly known as Annex IV ENVIRONMENTAL

OES-Environmental Meeting of Country Analysts

October 1 and 8, 2019

Online Meetings



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Today…

- Updates from:
  - Japan
- Updates:
  - State of the Science 2020
  - Retiring Risk
  - OES-Environmental Phase 4
- OES-Environmental Activities
  - Enhancing Outreach Activities
  - Social Media
  - Upcoming Activities
- Roundtable

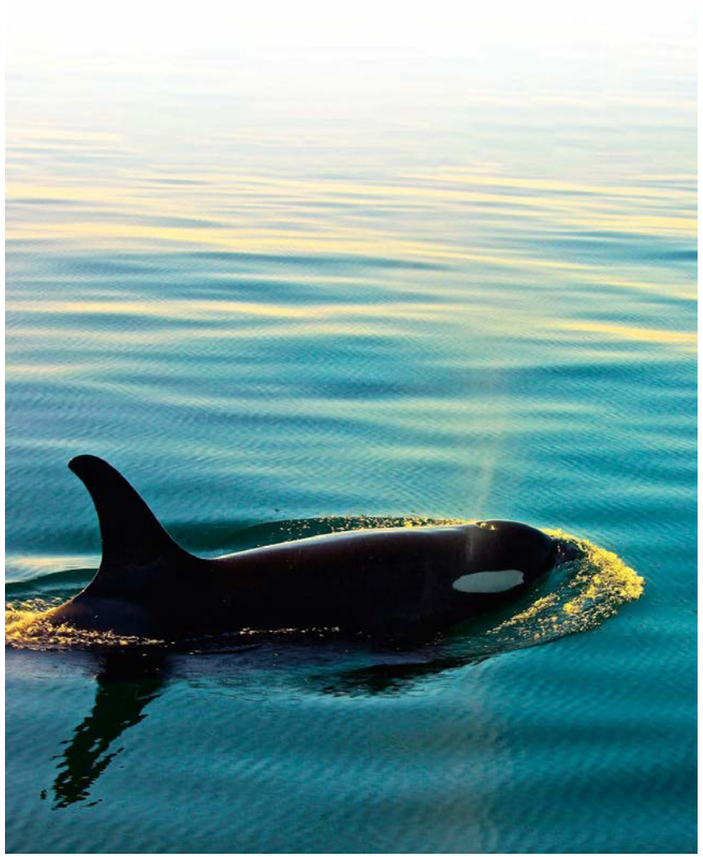
Country Updates

Daisuke Kiazawa (Japan) presented a country update during the October 8th Analyst Meeting

- You can view his presentation on the *Tethys* OES-Environmental Members page (https://tethys.pnnl.gov/annex-iv-members-page)

(Photo by Annu Nishioka)

2020 State of the Science

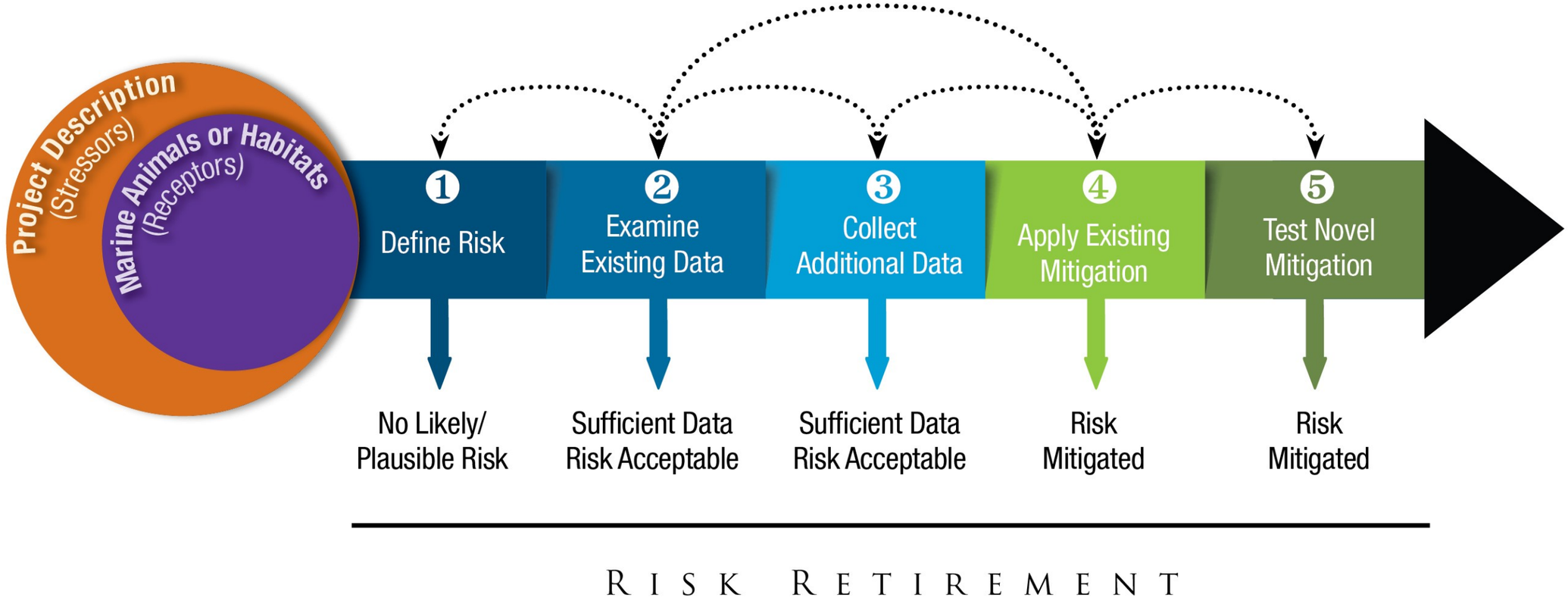


- Timeline
  - Full outline in January 2019, a few changes since
  - Chapter authors are drafting chapters, to be completed by June/July 2019
  - Draft chapters by September-November 2019 for OES-Environmental review (all of you!)
    - ✓ Please review *Effects of Underwater Noise; Habitat Changes*; and *Effects of Mooring Lines* **by October 18th**
    - ✓ More chapters to be sent shortly
  - January 2020 review by OES, peer reviewers
  - Finalize in April 2020
  - To be released as draft at ICOE in May 2020

State of Science Report Outline

Section	Chapter	Chapter Title
Executive Summary		
Introduction	1	Introduction
Section A – Current Knowledge of Key Device Interactions in the Marine Environment	2	Collision Risk for Animals around Turbines
	3	Risks to Marine Animals from Underwater Sound Generated by MRE Devices
	4	Effects of EMF on Marine Animals from Electrical Cables and MRE devices
	5	Changes in Habitats caused by MRE devices: benthic and pelagic habitats, reefing patterns
	6	Changes in Physical Systems: Energy Removal and Changes in Flow
	7	Encounters with MRE Device Mooring Lines by Marine Animals
	8	Social and Economic Data for Consenting/Permitting
Section B – Environmental Monitoring	9	Environmental Monitoring Approaches and Technologies
Section C – Strategies for Accelerating Permitting/Consenting	10	Marine Spatial Planning and Marine Renewable Energy
	11	Adaptive Management
	12	Retiring Risk
Section D – Summary and Path Forward	13	Path Forward

Risk Retirement – updated figure



Risk Retirement (RR) - Workshops

- EWTEC Workshop (Sept 5th)
  - Co-sponsored with ORJIP
  - 32 participants from 6 countries
  - Discussed risk retirement for underwater noise and EMF using existing data from research and existing deployments and hypothetical case studies based on real data
  - From perspective of wave devices/projects
  - Output to SoS, also ORJIP position papers

- OREC Workshop (Sept 11th)
  - 51 participants from 3 countries
  - Similar workshop as EWTEC, with a focus on discussing risk retirement for underwater noise
  - Discussed for wave and for tidal applications
  - Output to SoS

RR Workshop feedback on Underwater Noise

- Consensus that we have a way forward for risk retirement of one/two devices:
  - Discussed wave devices but similar thoughts for tidal
  - Need to have good sound graph of output from each type of wave or tidal device, may be needed in each different environment (to show it is under threshold levels)
  - Should generate similar sound graph as larger arrays are deployed
  - Need to collect sound data using TC114 Level B recommendations (non-impulsive sound)
  - Sound data collection and documentation needs to have common methods

- Still need to understand:
  - Noise propagation modeling for arrays
  - Varying requirements for different countries (e.g., Scotland and Sweden do not require baseline recordings, while Ireland does)

- Different countries have different requirements:
  - In France and Portugal, a proposed development requires new environmental impact assessments. If a proposed development is not significantly different than a previous development, data can be transferred or the same EIA can be used. If a single device project changes to a multi-device project data can be transferred, but a new EIA is needed.
  - In Sweden, increasing a development from one device to an array would require monitoring, and regulators would not accept measurements from the one device only.

RR Workshop Feedback on EMF

- Power from single devices or small arrays are very small compared to other sources, not likely to be a risk (OSW regulations are not appropriate for MRE)
  - ✓ Potential cumulative effects of EMF might be an issue, might need to collect additional data
- Potential gaps in knowledge (for future arrays):
  - ✓ Extent of magnetic and electric fields for particular cables and variability of power;
  - ✓ Additional EMF measurements in the field needed to improve and validate models; and
  - ✓ Potential risks of subsurface substations and draped cables
- Public opinion may be an issue for regulators who say there is no need to do anything further on EMF
- Developing thresholds may be useful but would be difficult since so much knowledge is needed for individual species (which would likely require a series of studies)

RR Workshops – some general thoughts

- Test centers can play an important role as developers to deploy devices:
  - ✓ Ability to assess potential environmental impacts,
  - ✓ Increase industry understanding,
  - ✓ Add data/information to inform risk retirement,
  - ✓ But they need funding

- Need to determine at what point to revisit a risk (after retiring the risk for one device)

- Need broad inventory of all animals and habitats potentially at risk from MRE to better understand:
  - ✓ Which animals might be at risk from underwater noise, behavior changes
  - ✓ Potential behavioral, physiological, and developmental impacts of EMF, largely from laboratory work

- Important to have strategic environmental assessments so that we understand what is going in the area and the potential cumulative impacts of EMF

OES-Environmental Phase 4

- Full proposal for Phase 4 submitted to OES Executive Committee and presented Oct 1st
  - Executive Committee will take action on the proposal at their next meeting in spring 2020

- Phase 4 activities
  - Need to continue work as more MRE devices are deployed, monitoring datasets becoming available
  - Understand environmental effects:
    - ✓ Collect, curate, and make available documents and metadata on *Tethys*
    - ✓ Expand community for researchers, industry, regulators to address environmental effects questions
    - ✓ Active outreach: webinars, expert forums, *Tethys* Blasts, and access to *Tethys*
  - Risk Retirement:
    - ✓ Continue risk retirement work, with specific stressors
    - ✓ Develop guidance documents for regulators to apply process in each nation
    - ✓ Focus on retiring underwater noise, EMF, habitat changes, and changes in physical systems
  - Other important issues:
    - ✓ Examples might include: cumulative impacts, array effects, etc.
  - Culminating with the State of the Science report in 2024

Enhancing Outreach Activities

- Country presentations during Analyst meetings
  - 1-2 Analysts present at each meeting
    - ✓ Projects or studies
    - ✓ New MRE projects in your country
- Webinar or *Tethys* Stories ideas
- Metadata Updates: emails from Cailene Gunn (cailene.gunn@pnnl.gov)
- Regulatory Framework Updates: emails from Debbie Rose (deborah.rose@pnnl.gov)
- Continue to fill out Google Drive Analyst Activities spread sheet

Call for OES-Environmental country input

OES-Activities – Social Media

@tethys_enviro

@tethys.pnnl.gov

- Posting several times a week to each platform to increase engagement
  - *Tethys* Blasts
  - New environmental effects journal articles
  - MRE and Wind industry news

- If you have any content, news, etc. to highlight please send to Dori Overhus (dorian.overhus@pnnl.gov)

Call for OES-Environmental country input

OES-Environmental Activities - Upcoming

- Upcoming Webinar
  - OES-Environmental/ETIP Ocean webinar – MSP and MRE: challenges and opportunities

- Upcoming Conferences
  - Oceans 2019 Seattle (Seattle, WA – October 2019)
  - PAMEC 2020 (San Jose, Costa Rica – January 2020)
  - Ocean Sciences 2020 (San Diego, CA – February 2020)
  - EIMR (2020)
  - AWTEC (Tasmania November 2020)

- OES-Environmental Workshop
  - Sydney, Australia – December 4th 2019
  - PAMEC – Costa Rica, January 25th 2020

- ICOE 2020
  - Washington, D.C. – May 19th-21st 2020
  - Abstracts due Nov 15th
  - Release full draft of 2020 State of the Science report

Pacific Northwest
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Round Table

Future Meetings

- December 12th, 2019
- March 2020 (date TBD)

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