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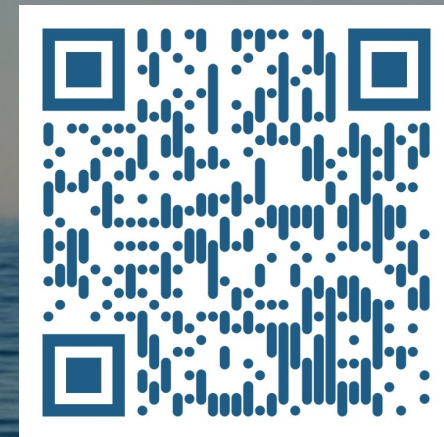
Developing Guidance for Pre- and Post-Construction Monitoring to Detect Changes in Marine Bird Distributions and Habitat Use Related to Offshore Wind Development

www.nyetwg.com/avian-displacement-guidance

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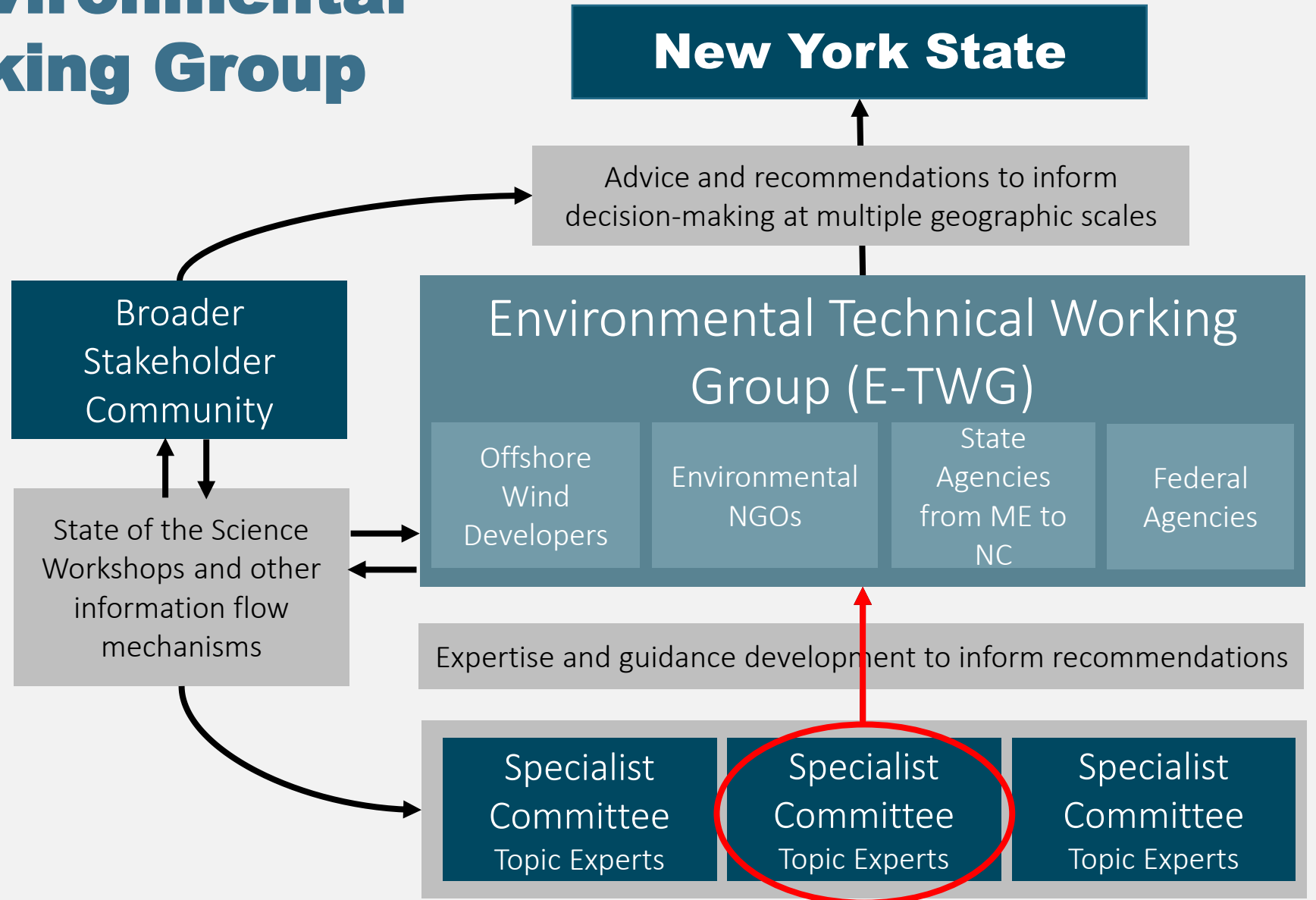
Kate McClellan Press - New York State Energy Research and Development Authority



New York's Environmental Technical Working Group (E-TWG)

Goals

- Improve the state of knowledge
- Reduce risk to natural resources
- Reduce risk for offshore wind developers



Avian Displacement Guidance Committee

Chaired by USFWS and made up of subject
matter experts



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Goal: Inform pre- and post-construction monitoring and research approaches for detecting and characterizing displacement, attraction, and macro- to meso-avoidance of marine birds at OSW facilities in U.S. waters

Use of guidance:

- Supplement existing BOEM guidance for site characterization at OSW farms
- Referenced and/or incorporated into future national OSW-wildlife guidance developed by regulatory agencies
- Used by OSW developers for site-specific monitoring plans



Committee Members

Caleb Spiegel, USFWS (Chair)

Evan Adams, BRI

Aonghais Cook, The Biodiversity Consultancy

Shilo Felton, REWI

Carina Gjerdrum, Environment and Climate Change Canada

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Juliet Lamb, TNC

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Ally Sullivan, TotalEnergies

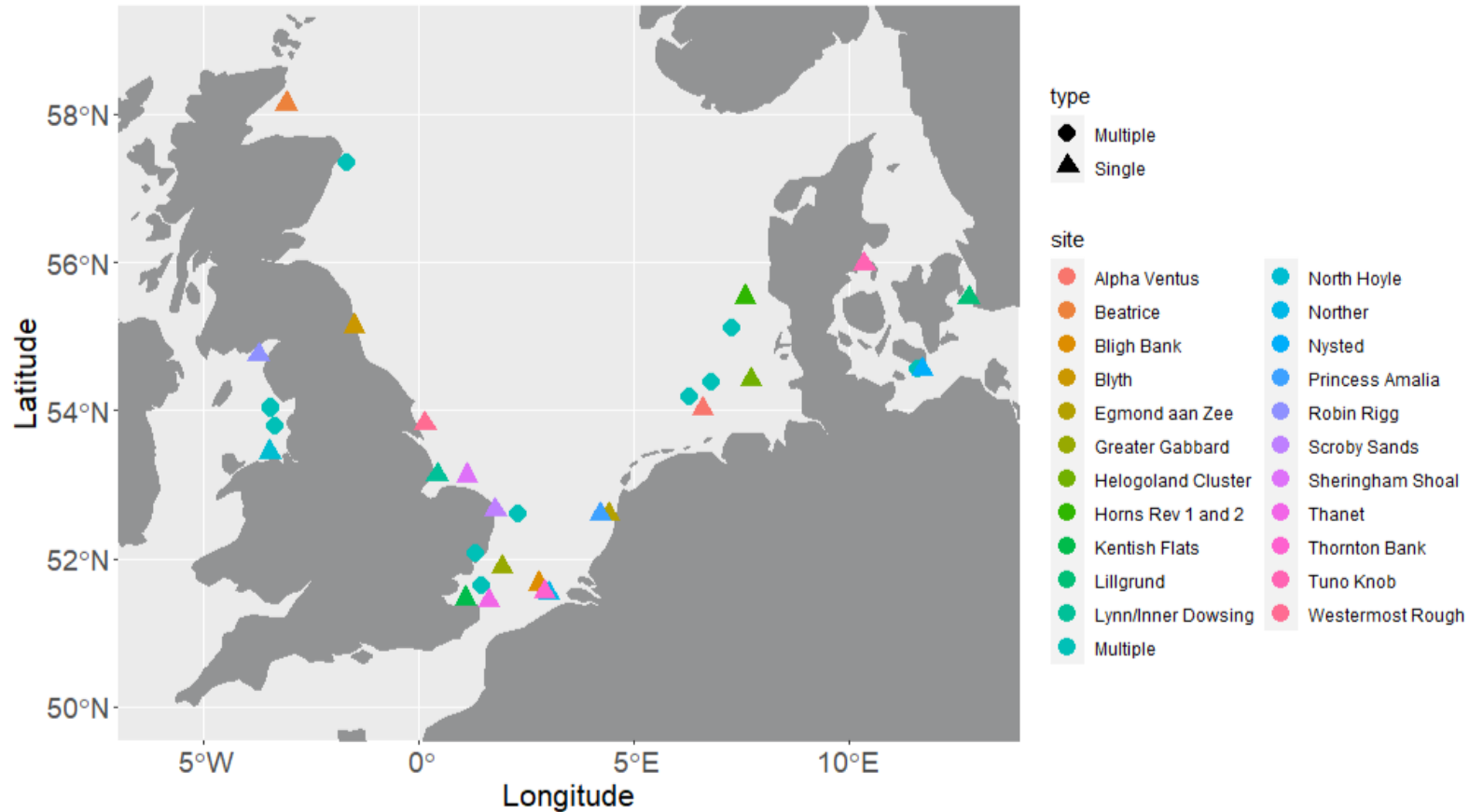
Julia Wilmott, Normandeau

Arliss Winship/Jeff Leirness, CSS Inc under contract to NOAA NCCOS



Literature Review to Inform Recommendations

- Displacement/avoidance/attraction at European wind farms
- Potential sources of variation in bird responses
- Aspects of study design that may influence statistical power
- Results summarized in appendix to guidance document (as well as analyzed in meta-analytical framework; *Lamb et al. in revisions*)



Guidance for Pre- and Post-Construction Monitoring to Detect Changes in Marine Bird Distributions and Habitat Use Related to Offshore Wind Development

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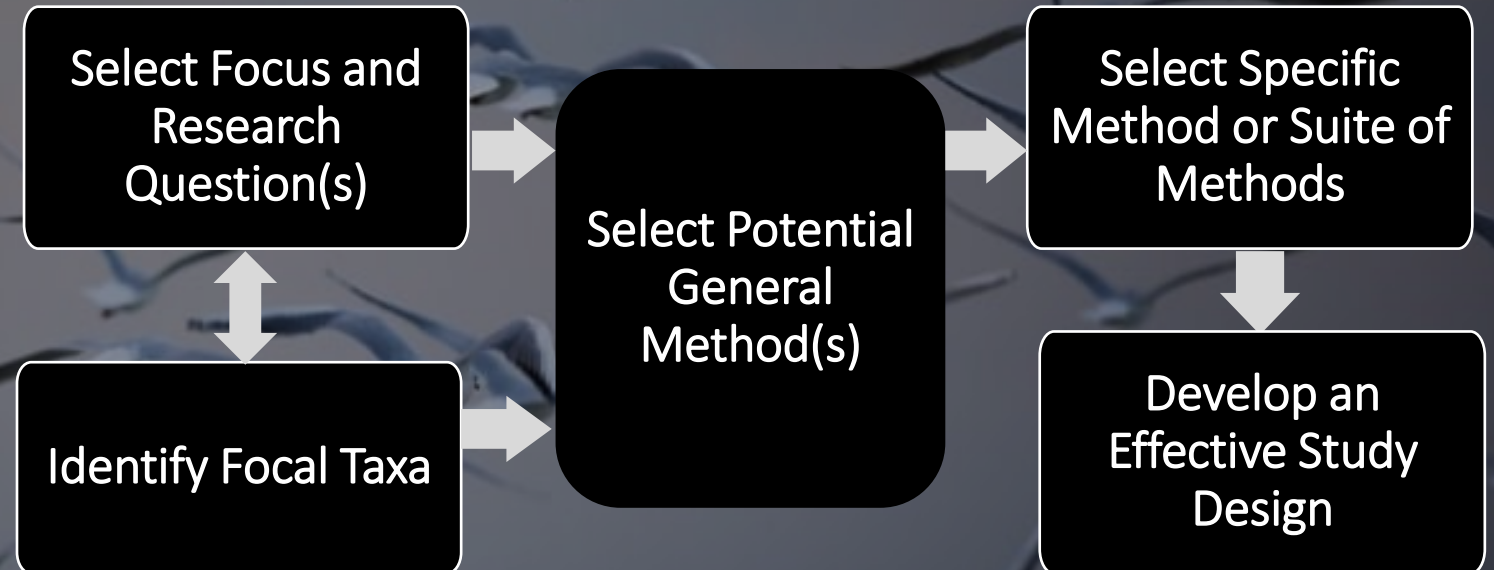
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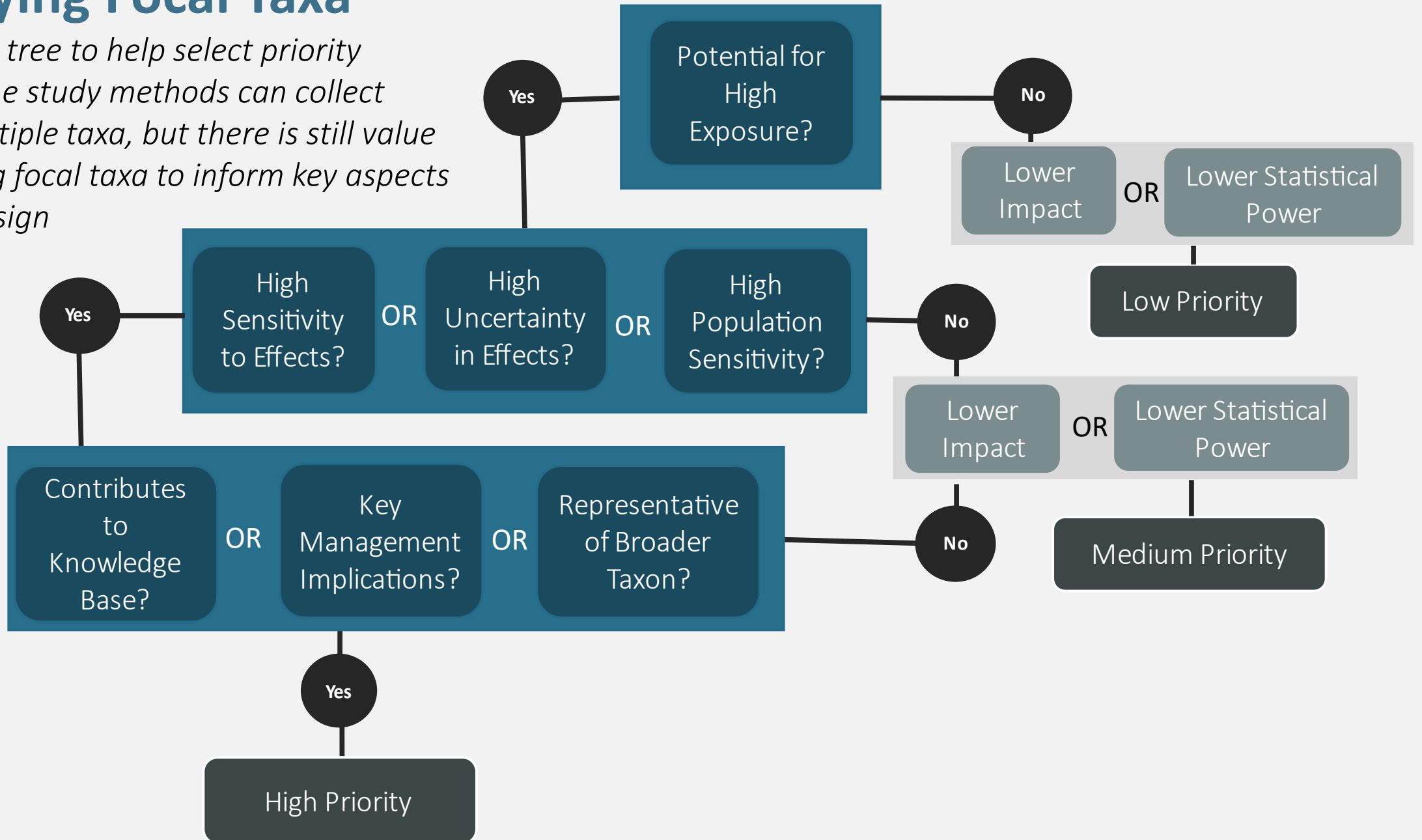
Addressing Key Research Questions

All monitoring and research should be hypothesis-driven

Research Question	Project Phase
Are changes in distributions and habitat use (e.g., displacement/attraction) of marine birds occurring, and if so, what is the magnitude and distance from the offshore wind facility at which they occur?	Pre-construction, Operations
Do the occurrence, magnitude, and distance of changes in habitat use vary temporally (e.g., does habituation occur)?	Pre-construction, Construction, Operations
Are there changes in foraging or roosting activities of marine birds in relation to the wind facility?	Pre-construction, Operations
Is there nocturnal attraction of marine birds (e.g., to offshore wind-related lighting)?	Pre-construction, Construction, Operations
Are macro-scale changes in movement behavior of marine birds occurring, and if so, at what magnitude and distance from the offshore wind facility does this behavior extend?	Pre-construction, Operations
Are meso-scale changes in movement behavior of marine birds occurring, and if so, at what magnitude and distance from the turbines does this behavior extend?	Operations

Identifying Focal Taxa

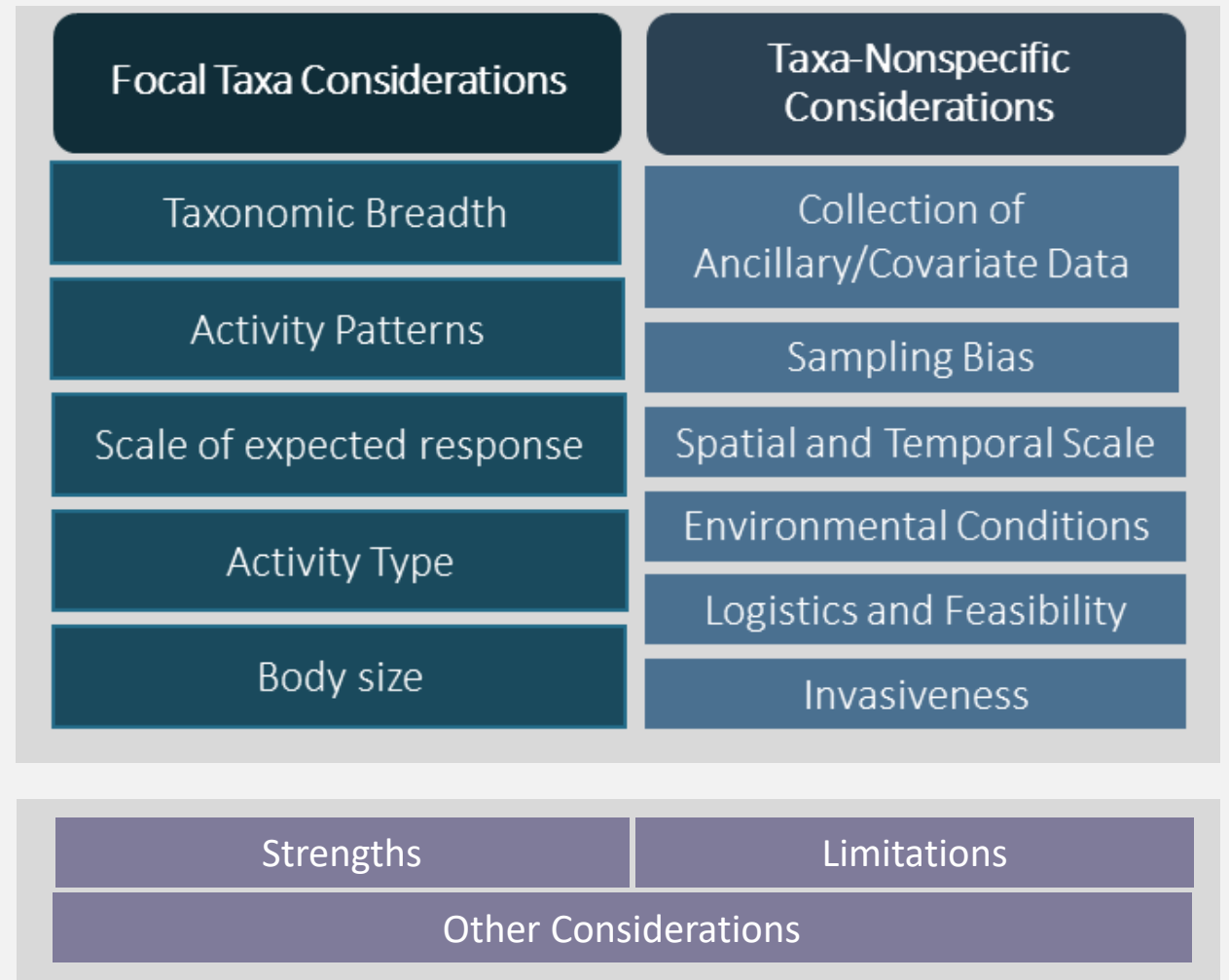
Use decision tree to help select priority species. Some study methods can collect data for multiple taxa, but there is still value in identifying focal taxa to inform key aspects of survey design



Choosing Appropriate Methodologies

Identify best methodological approaches based on research question(s), focal taxa, and strengths/limitations of different study methods

- **Observational Surveys**
Digital aerial, boat-based
- **Individual Tracking**
GPS, satellite telemetry, automated radio telemetry
- **Remote & Behavioral Observations**
Human observers, visual photo/video, thermal photo/video, satellite imagery
- **Radar**
Marine, 3D, weather surveillance



Developing an Effective Study Design

Design study with statistical power to detect effects

- **Study design** – evaluate if data types and sample sizes are sufficient to detect effects and ensure that data collection addressed research questions
 - Choice of focal species
 - Sources of variation
 - Spatial and temporal scale
- **Data collection methods** – best practices, existing guidelines, consistency, QA/QC
- **Data analysis** –biases, modeling framework, autocorrelation, model complexity, covariates, model performance



Data Consistency and Transparency

Standardized, public reporting of methods and results to inform future regional analyses and decision making

- Communication and coordination across groups conducting similar research
- Standardized reporting including study design, results, sources of variation
- Public availability of data
- Contributing derived products to data portals
- Publishing study results
- Implementing formal data sharing agreements



Recommendations for Conducting Surveys to Detect Effects

Conduct well-designed surveys to detect distributional change

- Before-After Gradient (BAG) study design
- Power analysis using existing data to inform further study design choices
- Coordination among adjacent lease areas
- Spatial and temporal scale: 4-20 km buffer area around wind farm footprint; 20%+ coverage; ≥ 12 surveys/yr, distributed across seasons of interest, for 2 years pre-construction and 3 yrs post-construction; ≤ 5 -year gap pre-post
- Line transects with distance-sampling methods (boat-based) and strip-transect or grid sampling (digital aerial); ideally same vessel or plane used pre-post; adequate field of view and platform height, operated in designated speed ranges
- Surveyor qualifications and training – at least 50-100 hrs of training, demonstrated ability
- Conditions - sea state of Beaufort 4 or less; Survey angle and location should be designed to minimize glare
- Data collection – standardized, including collection of effort data and covariates. ≤ 2 cm GSR for digital aerial surveys
- Data review and data analysis recommendations for standardization and quality
- Standardized reporting: methods, spatial/temporal coverage, density estimates & variance by taxon, site characteristics
- Public availability of data within 2 years; include effort and covariate data, metadata, reports, analytical code



Recommendations for Future Guidance & Research

- **Next Step:** initiate a working group of the RWSC bird and bat subcommittee to continue expanding on the guidance
- **Possible foci of this committee (TBD):**
 - Develop standardized approaches and recommendations for conducting power analyses and analytical approaches to inform study design and reporting
 - Provide study design guidance and review study plans
 - Develop approaches for conducting surveys at multi-project scales (e.g., adjacent projects)
 - Develop detailed recommendations for non-survey methods discussed in the guidance document (e.g., tracking, radar, remote visual imagery)
- **Other recommendations include:**
 - Additional analysis to address unresolved study design questions
 - Conduct studies to better understand the mechanisms of behavioral change, as well as the potential for population-level impacts from resulting attraction and avoidance

Accessing the Guidance

Draft guidance available on committee website:

www.nyetwg.com/avian-displacement-guidance

Sign up for the E-TWG mailing list for notification when the final guidance is released this summer



Thanks!

We would like to thank the members of the specialist committee, including:

Evan Adams, Aonghais Cook,
Shilo Felton, Carina Gjerdrum,
Chris Haney, Juliet Lamb, Kim Peters,
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Emily Silverman, Jennifer Stucker,
Ally Sullivan, Julia Wilmott,
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Jeff Leirness, and Brita Woeck

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