

EVALUATION OF PUBLICLY ACCESSIBLE NATURE-BASED SOLUTIONS DATABASES AS SOURCES FOR EVIDENCE OF EFFECTIVENESS

Duke



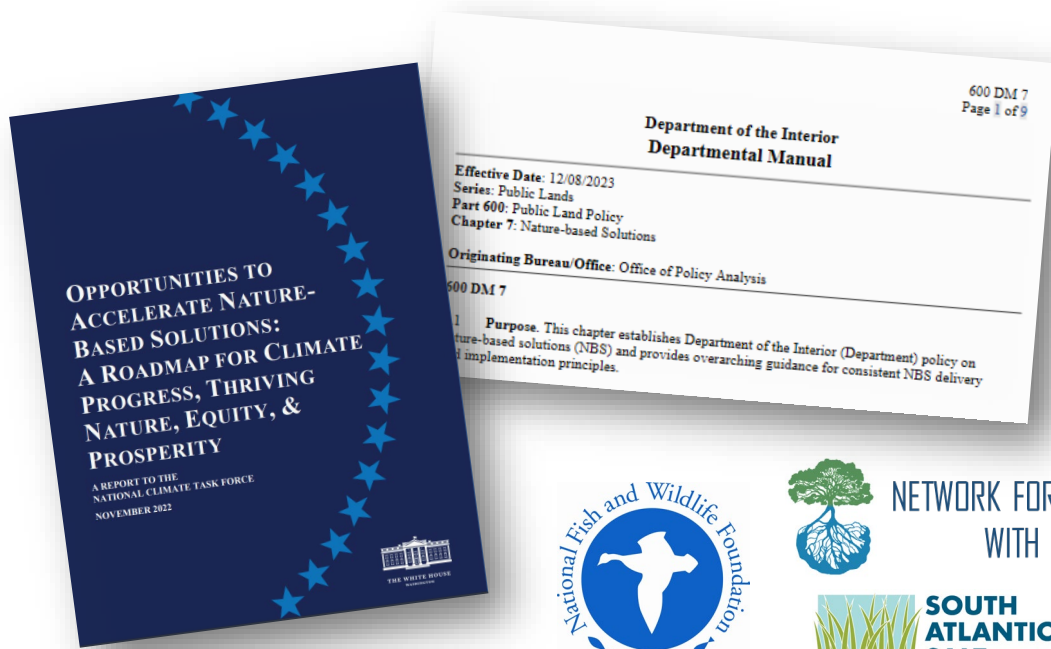
NICHOLAS INSTITUTE
for ENERGY, ENVIRONMENT
& SUSTAINABILITY



SOUTHEAST
Climate Adaptation Science Center

Katie Warnell & Lydia Olander
ACES, 12/12/2024

GROWING INTEREST IN NATURE-BASED SOLUTIONS & EFFECTIVENESS INFORMATION

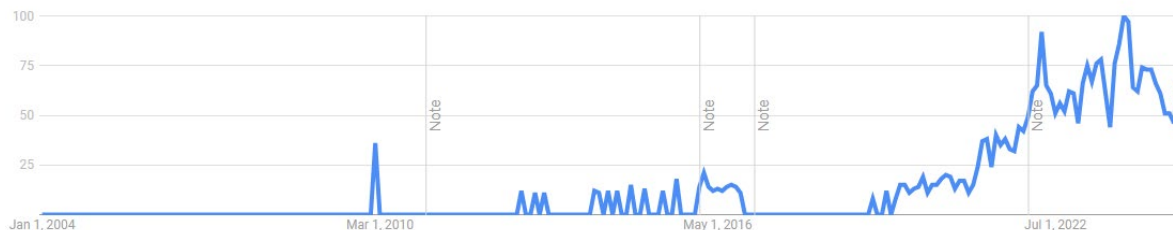


Information needed for:

- Project evaluation & reporting
- Storytelling and awareness building
- Design and engineering standards
- Project planning and siting
- Adaptive management
- Valuing project benefits (BCA) or making the business case (ROI)



Google Trends nature-based solutions



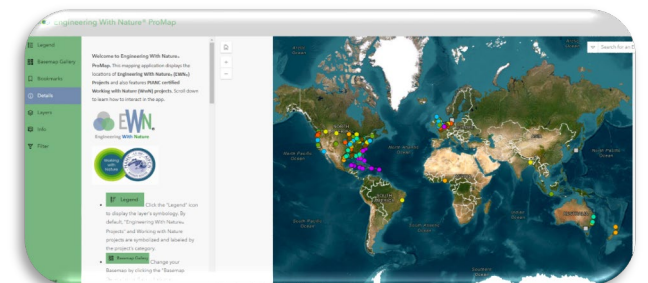
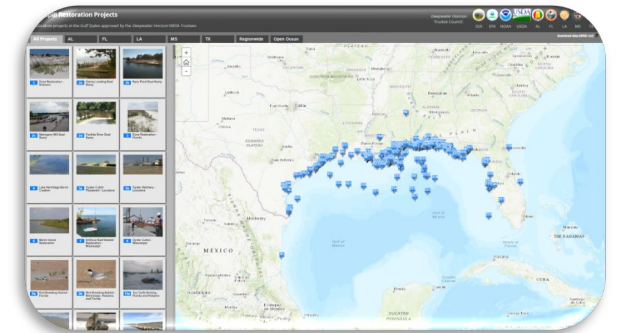
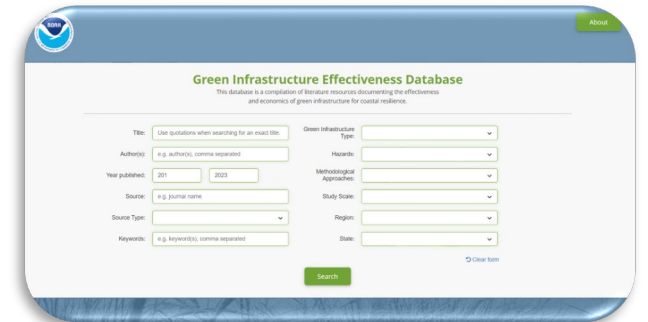
ASSESSMENT OF EXISTING NBS DATABASES

Methods: Evaluated 6 literature databases and 21 project databases

Objectives:

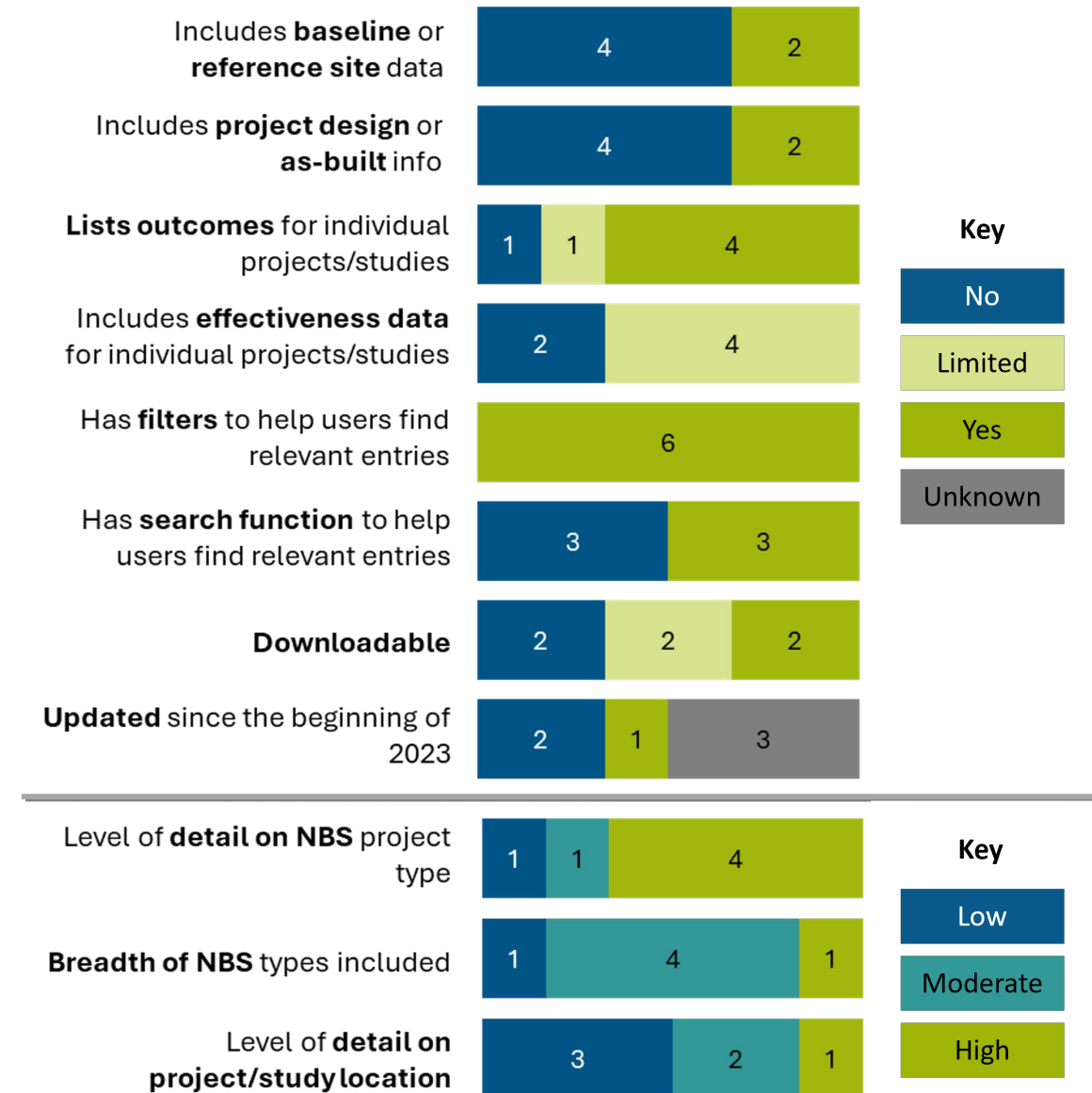
- Evaluate whether available information could be used to analyze NBS effectiveness
- Identify gaps in coverage of NBS information - geography and NBS type

Full report available here →

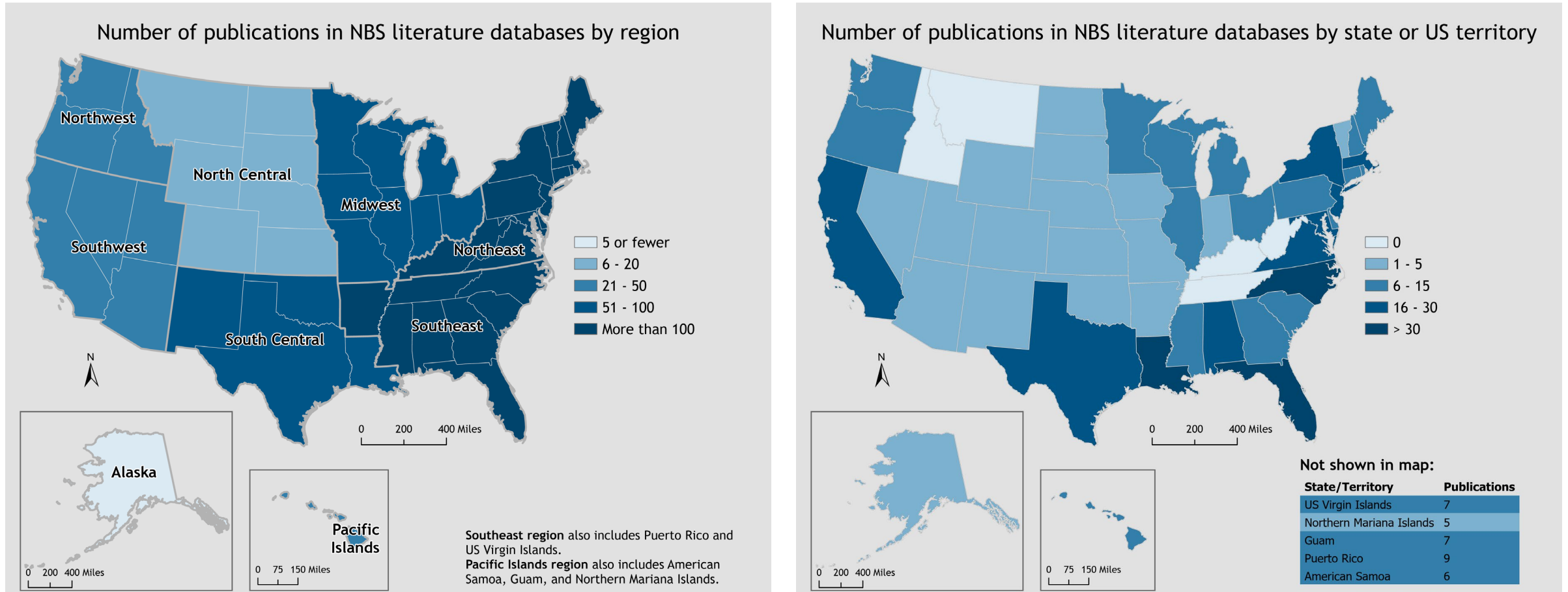


LITERATURE DATABASES: CONTENT & FUNCTIONALITY

- ✓ List publications about effectiveness or benefits of NBS
- ✓ Search & filter functions to identify relevant publications
- ✗ Users generally need to access individual publications for details
- ✗ Varying levels of specificity on location, habitat, and NBS type
- ✗ Not easy to tell when databases were last updated

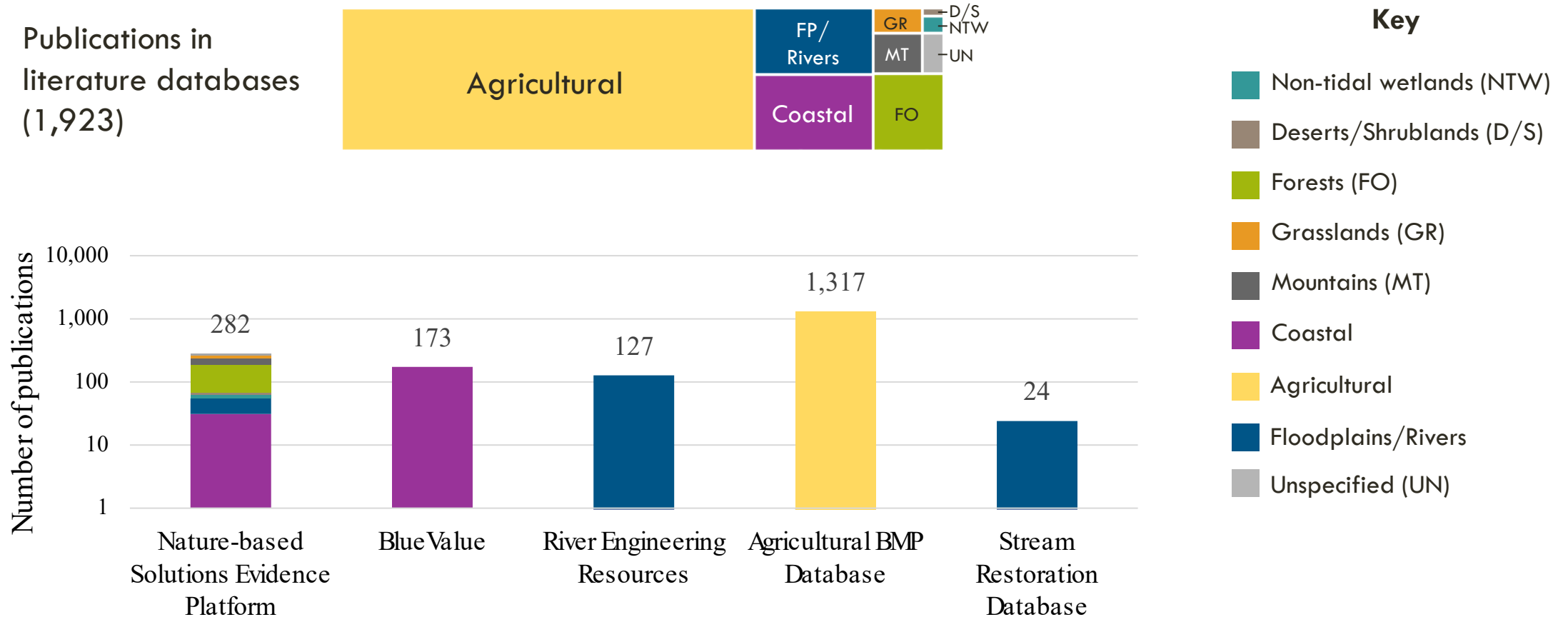


LITERATURE DATABASES: COVERAGE



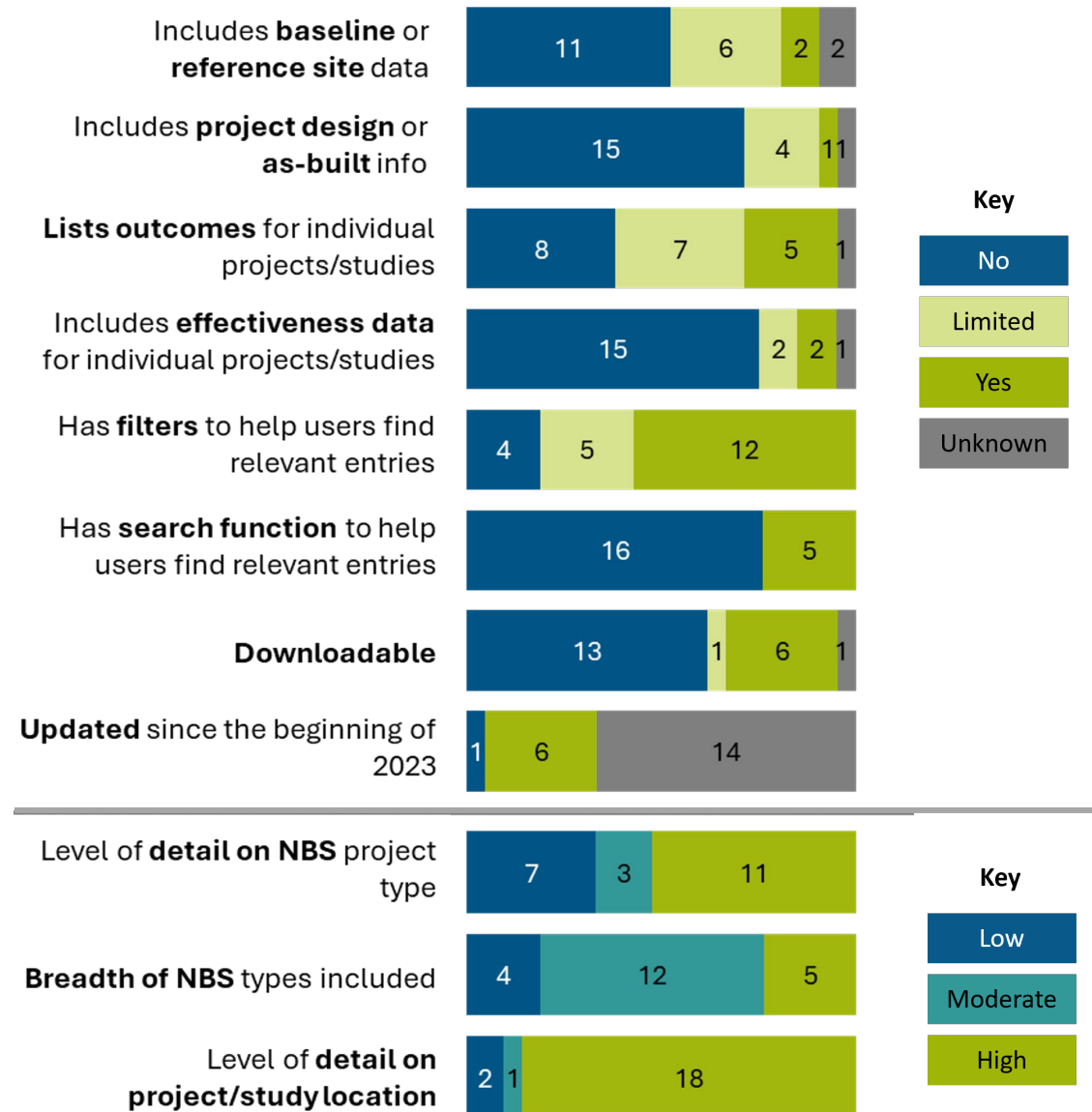
Publication counts are from the *Green Infrastructure Effectiveness Database*, *Stream Restoration Database*, and *BlueValue* – other literature databases do not provide location information more specific than the country level.

LITERATURE DATABASES: COVERAGE

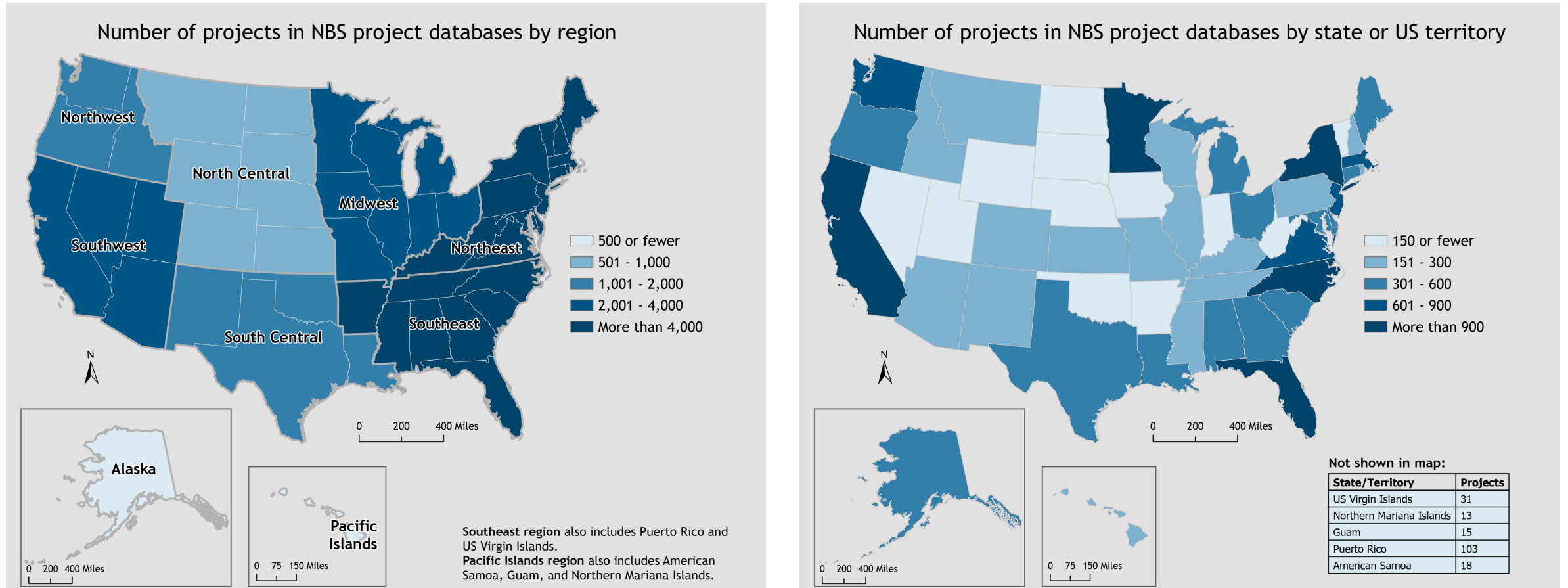


PROJECT DATABASES: CONTENT & FUNCTIONALITY

- ✓ Maps of project locations
- ✓ Filters to identify relevant projects
- ✗ Lack of effectiveness information
- ✗ Varying levels of specificity & inconsistent terminology for NBS type
- ✗ No geographic attribute information (e.g., state), can't select projects within an area of interest
- ✗ Lacking information on update frequency
- ✗ Can't download project information



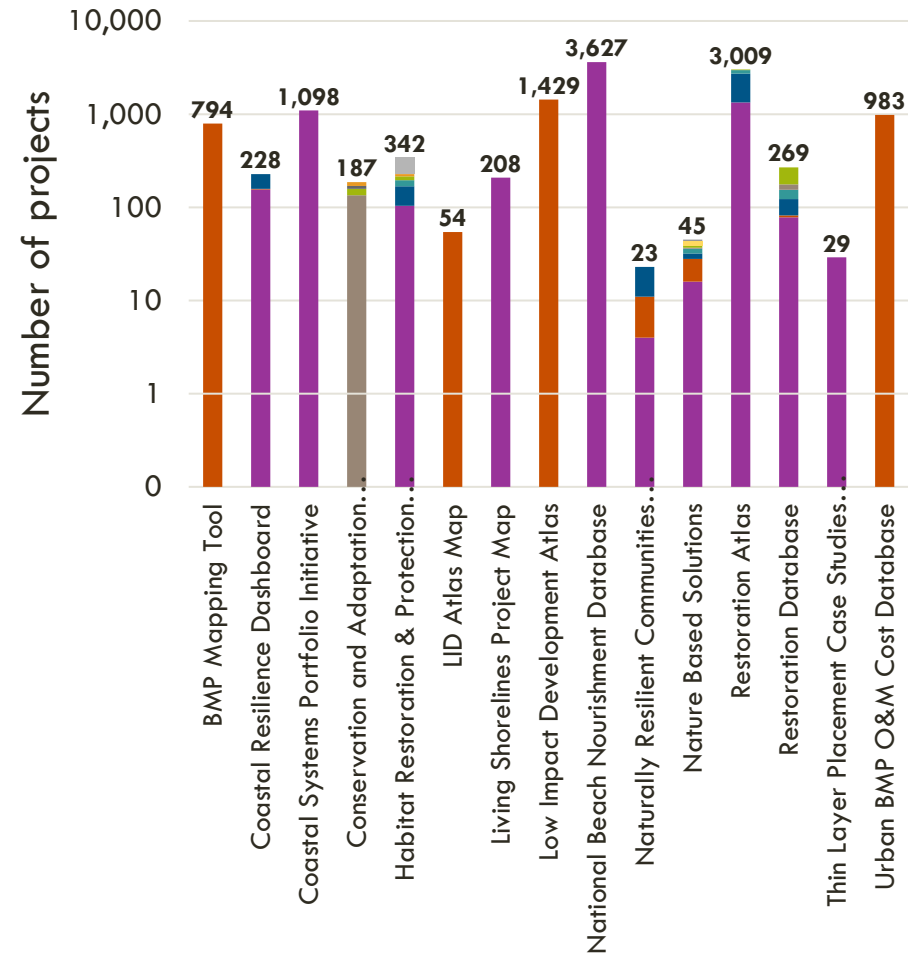
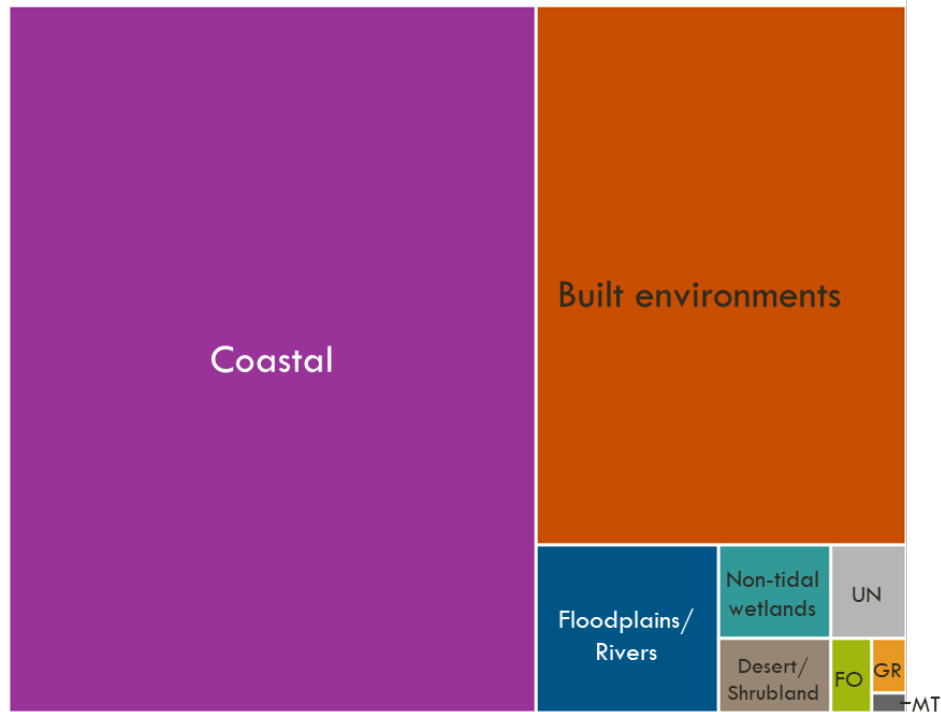
PROJECT DATABASES: COVERAGE



Project counts are from 18 of the 21 project databases which had state-level geographic information. Excluded databases are the BMP Mapping Tool, Engineering with Nature ProMap, and Great Lakes Regional Habitat Restoration Database.

PROJECT DATABASES: COVERAGE

Projects in project databases (12,330)



GAPS & RECOMMENDATIONS

GAPS

- Missing information on project design, baseline conditions, and quantified project outcomes
- Lack of coverage: non-coastal states, Alaska, Pacific Northwest, and Pacific Islands
- Project databases have <50 projects on NBS in agricultural lands, grasslands, and mountains.
- Literature databases have <5 publications on NBS in deserts and shrublands, and <50 publications on NBS in grasslands, mountains, and non-tidal wetlands.

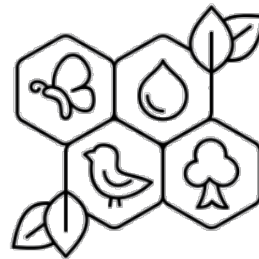
RECOMMENDATIONS

- Make the full database downloadable as a csv file
- Include key project outcomes as a separate attribute
- Add project type and habitat type attributes using a consistent typology across databases
- Include project performance/effectiveness data
- Include categorical geographic information (e.g., county, state, country) in addition to project coordinates

NEW PROJECT: LAYING THE GROUNDWORK FOR NBS EFFECTIVENESS EVALUATION



effectiveness for...



Biodiversity



Hazard
attenuation

Goals for phase 1

Recommended metrics & measurement protocols

Data collection template to facilitate alignment & sharing

Prioritized research & knowledge gaps

Network to collaborate on data collection & research



WE NEED YOUR INPUT!



Virtual workshops on metrics for coastal hazard attenuation and biodiversity/habitat benefits are being planned for early 2025.



Interested in participating or just staying in the loop? Want to suggest someone else we should reach out to?

→ Send an email to katie.warnell@duke.edu



Want to chat this week about your information needs related to NBS projects, experience monitoring NBS or evaluating project effectiveness?

→ Visit us at the USDA table in the Exhibit Hall

THANK YOU!