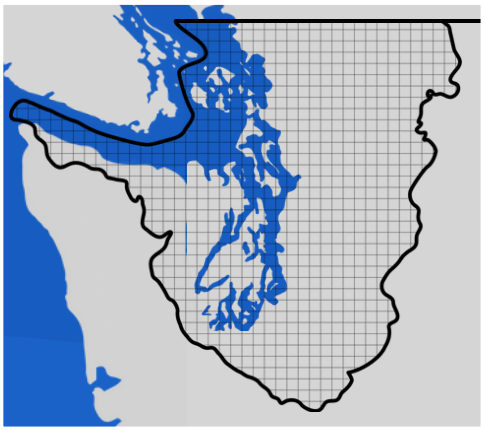
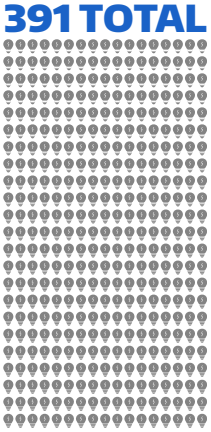
PUGET SOUND'S GRAND UNCERTAINTIES MATRIX

Research Agenda Co-Development

The Grand Uncertainties Matrix (GUM) is a compilation of scientific uncertainties, questions, and knowledge gaps that impede the recovery of Puget Sound's ecosystem. It was developed by regional experts to support EPA-funded recovery planning and activities, with the overall goal to organize, prioritize, scope, and resolve these uncertainties in a systematic way.

Within the Puget Sound region (grid area outlined in black), there are 391 regionally-relevant uncertainties in the GUM focusing on Implementation Strategies.





GOAL OF THE GUM

- By clearly describing a focused research agenda that has been co-developed based on input from practitioners, managers, and scientists, the GUM provides guidance to the Puget Sound Program for funding, research, and recovery activities.

WHAT IS THE GUM?

- The GUM contains research and monitoring needs ("uncertainties") that impede recovery planning and implementation, and therefore overall ecosystem recovery of Puget Sound.
- Uncertainties in the GUM are identified and vetted by experts and practitioners in the region.
- The GUM is a repository for the National Estuary Program and Puget Sound Geographic Program (together, the "Puget Sound Program") and focuses on topic areas found in Puget Sound recovery plans called Implementation Strategies.
- The GUM is a public, living resource which is updated periodically to include new uncertainties as well as updates on research which help resolve uncertainties.

IMPLEMENTATION STRATEGIES

- BENTHIC INDEX OF BIOTIC INTEGRITY
- SHORELINE ARMORING
- MARINE VEGETATION
- MARINE WATER QUALITY
- FLOODPLAINS & ESTUARIES
- TOXICS IN FISH/ AQUATIC LIFE
- LAND DEVELOPMENT & COVER
- SHELLFISH BEDS

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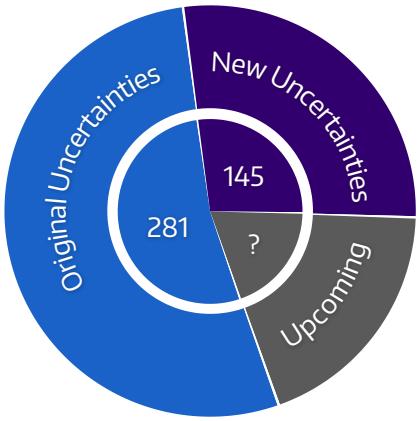
HOW DOES THE GUM WORK?

STEP 1

GENERATE, REFINE AND SCREEN UNCERTAINTIES

- Knowledge gaps for a given topic area are compiled from various regional sources. Experts and practitioners refine and/or screen uncertainties to improve quality and focus on critical gaps.



Status of Uncertainties in the GUM

- Original Uncertainties
- New Uncertainties (2024 - on)
- Upcoming updates:
  - Marine Vegetation
  - Land Development and Cover
  - Floodplains and Estuaries
  - Shoreline Armoring

STEP 2

PRIORITIZE RESEARCH NEEDS

- Regional experts and practitioners prioritize uncertainties within a topic area, often via a voting exercise.

Note, the steps in this process are * iterative and may be repeated periodically for a given topic area in the GUM.

STEP 3

SCOPE RESEARCH PROJECTS

- Individual priority uncertainties are refined by interested scientists and partners to develop focused questions and research projects to address them.

STEP 4

RESEARCH TO RESOLVE UNCERTAINTIES

- Research priorities inform funding decisions made by Strategic Initiative Leads to support the Puget Sound Program.
- Other agencies and organizations also use GUM priorities for their own research prioritization, work planning, and funding decisions.
- Scientists in Puget Sound conduct research projects to address priority uncertainties.

Uncertainty Impact: A study addressing one uncertainty spurred WDFW to hire a Shoreline Restoration Loan Program Coordinator to develop a new program.

Uncertainty Impact: A study that evaluated data on stormwater utility fees clarified misperceptions about their prevalence to guide future funding strategies.

STEP 5

UTILIZE RESEARCH TO ADVANCE RECOVERY

- New information from scientific research is synthesized and communicated to managers and practitioners to improve recovery planning and implementation.
- Individuals are encouraged to share relevant research with University of Washington Puget Sound Institute for improved synthesis of regional progress.

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LEARN MORE

Scan to find out more about the Grand Uncertainties Matrix