

## Best Available Science

### 1. Restore Act, <https://restorethegulf.gov/best-available-science>

“The RESTORE Act established the Gulf Coast Ecosystem Restoration Council (Council). The Council includes the Governors of the States of Alabama, Florida, Louisiana, Mississippi and Texas, the Secretaries of the U.S. Departments of Agriculture, the Army, Commerce, Homeland Security, and the Interior, and the Administrator of the U.S. Environmental Protection Agency.

The RESTORE Act requires the Gulf Coast Ecosystem Restoration Council (Council) to “undertake projects and programs, using the best available science that would restore and protect the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, coastal wetlands, and economy of the Gulf Coast.”

The RESTORE Act defines “best available science” as science that:

- Maximizes the quality, objectivity, and integrity of information, including statistical information;
- Uses peer-reviewed and publicly available data; and
- Clearly documents and communicates risks and uncertainties in the scientific basis for such projects.”

### 2. REPORT: BEST SCIENCE COMMITTEE Defining and Implementing Best Available Science for Fisheries and Environmental Science, Policy, and Management, <https://www.fws.gov/wafwo/fisheries/Publications/Fisheries3109.pdf>

“In the United States, many of the laws governing environmental conservation and management stipulate that the best available science be used as the basis for policy and decision making.”

“Determining what constitutes the best available science, however, is not straightforward, and scientists, policymakers, and stakeholders often have disparate ideas on how the concept should be defined and interpreted.”

#### WHAT IS BEST SCIENCE?

“Science and the Scientific Process To achieve high-quality science, scientists conduct their studies using what is known as the scientific process, which typically includes the following elements:

- A clear statement of objectives;
- A conceptual model, which is a framework for characterizing systems, making predictions, and testing hypotheses;
- A good experimental design and a standardized method for collecting data;
- Statistical rigor and sound logic for analysis and interpretation;
- Clear documentation of methods, results, and conclusions; and
- Peer review.”

## WHAT IS PEER REVIEW

“The peer reviewed literature is what scientists have traditionally considered the best scientific information, and until recently this form of information was also the most accessible. Changes in communication technology have increased the availability of other forms of information, such as gray literature and professional and public opinion. As these other forms of information become more available, it will be harder for nonscientists to distinguish high quality information from low-quality information.”

- The validity of the methods used,
- Whether the methods and study design adequately address the objectives,
- Whether the results that are reported are adequate for interpretation,
- Whether the results support the conclusions, and
- Whether the findings represent a significant advance in scientific knowledge.

Typically, several knowledgeable scientists conduct the review independently and anonymously.”

## WHAT IS BEST AVAILABLE SCIENCE?

“Information is now available to scientists and the public through a wide variety of sources, including the World Wide Web and popular media. The conventionally accepted sources for scientific information are the peer-reviewed literature, the gray literature, expert opinion, and anecdotal experience. These sources are commonly viewed as reflecting different levels of innovation, quality, respectability, and accessibility depending on the source and the uses to which they have been put. However, it may not be possible to conclude that a single source of information—conventional or new—is the best under all circumstances. Recognizing what knowledge is available per se is not especially contentious. It is the quality of that information that must be critically addressed. This concern should cause us to recall the criteria for best science: that is, that the questions be clearly stated, the investigation well designed, and the results analyzed logically, documented clearly, and subjected to peer review. Therefore, to have the best available science, scientists, policy makers, and the public should seek to have good science made more available so that the available science is of higher quality.”

“Effective policymaking requires participants to recognize who is responsible for what and to apply precautionary (i.e., risk-averse) approaches when uncertainty is great and/or risks are onerous.”

### 3. What is Meant By The 'Best Available' Evidence?

<https://www.cebma.org/faq/meant-best-available-evidence/>

“Decision-making processes are enhanced through the use of valid and reliable evidence. For this reason, we use evidence quite automatically and unconsciously for even the smallest of decisions, whether it’s buying someone a birthday present or wondering where to go out for dinner. In most cases we actively seek out to obtain information to support our decision, such as the opinion of our partner, the experiences of friends, or the comments of a local newspaper’s critic. Sometimes this information is so weak that it is hardly convincing at all, in other times the information is so strong that no one doubts its correctness.

It is therefore important to be able to determine which evidence is the 'best' – that is, the most valid and reliable – evidence. For instance, the most valid and reliable information on which holiday destination has the least chance of rain in Ireland in early August will obviously come from statistics on the average rainfall per month, not from the personal experience of a colleague who visited the country only once. The same counts for managerial decisions. When making a decision whether or not to use Six Sigma to reduce medical errors in a British university hospital, information such as the outcome of a controlled, longitudinal study with a sample of 150 European university hospitals is more valid and reliable than the personal experience of a colleague who works at small private hospital in Singapore.

#### 4. Industry, Activists Diverge on 'Best Science' Under Toxics Law

<https://www.bna.com/industry-activists-diverge-n57982086885/>

"Section 26 of the 2016 Toxic substances Control Act (TSCA) amendments requires the EPA to:

- "use scientific information, technical procedures, measures, methods, protocols, methodologies, or models, employed in a manner consistent with the best available science;"
- decide whether toxicity or other chemical tests are needed and evaluate the risks of both new and existing chemicals "based on the weight of the scientific evidence;" and
- make its determinations and scientific information available to the public.

The EPA did not define the terms "best available science" or "weight of evidence" in its proposed rule—phrases that have drawn controversy in past debates about toxic risks.

"Codifying a specific definition can inhibit the flexibility of the agency to quickly adopt and implement changing science," the EPA said in its proposed rule."

#### 5. Challenges to Implementing "Best Available Science"

[https://www.firescience.gov/projects/briefs/04-4-2-01\\_FSBrief124.pdf](https://www.firescience.gov/projects/briefs/04-4-2-01_FSBrief124.pdf)

"However, with the exception of the 2004 interpretation of the Forest Service planning rule (36 CFR Part 219, reinstated December 19, 2009), and the National Park Service (NPS) Wildland Fire Reference Manual, fire managers have little formal guidance on what it means to apply "best available science." And despite policy mandates, an ever-increasing warehouse of potentially beneficial research and good intentions, such ambiguity makes it difficult for managers to know when they've effectively located and applied the best available science to fire management plans and projects.

Vita Wright, principal investigator, said, "I was surprised to see the high level of disagreement and uncertainty when managers were asked whether they agree they are mandated by policy to use science. I was especially surprised to see any uncertainty among line and staff officers."

#### 6. "Best Available Science" Defined in Proposed Endangered Species Act Legislation. By Jessica Ferrell, Marten Law, December 21, 2005

The new definition proposed by H.R. 3824 provides that the term "means scientific data, regardless of source, that are available to the Secretary at the time of a decision or action for

which such data are required by this Act and that the Secretary determines are the most accurate, reliable, and relevant for use in that decision or action.” H.R. 3824

**7. A Court Affirms Best Available Climate Science as Basis for Emissions Reduction Goals, Climate Law Blog, Posted on July 13th, 2015 by Jennifer Klein, Sabin Center for Climate Change Law**

**Washington State Petition by 8 young climate activists:** “First, the petitioners’ recommended targets would be in line with Washington State’s proportional contribution towards a global goal of returning atmospheric carbon dioxide levels to 350 ppm by 2100, which correlates with 1°C of warming.”

“Second, the petitioners acknowledge that the Department cannot change the statutory limits for overall GHG emissions for 2020, 2035, and 2050, because only the legislature has the authority to do so. Instead, the petition argues that the statutory limits provide a “ceiling” for maximum GHG emissions and contends that the Department has the right and obligation to enact stricter restrictions, through rulemaking, that would keep emissions below the defined ceiling.”

“If we delay action by even a few years, the rate of reduction needed to stabilize the global climate would be beyond anything achieved historically and would be more costly.”