

NOAA
FISHERIES

Science Quality: National Standard 2, Peer Review, and the Center for Independent Experts

Office of Science & Technology

Stock Assessment Science Program Review

September 9-12, 2014 – Silver Spring, MD

Stephen K. Brown, Ph.D. and William Michaels

Assessment and Monitoring Division (ST4)

Outline

- **Federal Peer Review Standards**
- **S&T's Role in Peer Review**
- **National Standard 2: Best Scientific Information Available**
- **Center for Independent Experts**
- **Strengths, challenges, solutions**

Federal Peer Review Standards

Information Quality Act

- Highly influential/controversial scientific assessments (>\$500M impact)
 - E.g., US Climate Change Science Program synthesis and assessment reports, NE Multi-species FMP Amendment 13)
- Influential scientific information (<\$500M impact, e.g., assessments)

OMB Peer Review Bulletin Guidelines

- Implement the Information Quality Act
- Apply to information disseminated by the Federal Government that may affect public policy or private sector decisions
 - Establish minimum peer-review standards
 - Define Conflict of Interest criteria
 - Provide transparent process for public disclosure
 - Post schedule of peer reviews subject to PRB Guidelines
 - Provide opportunity for public input

S&T's Role in Peer Review

Goal: Strengthen the integrity, reliability, and credibility of the agency's science enterprise, including the influential scientific information used for policy decisions pursuant to the Information Quality Act.

- **Develop national standards: National Standard 2**
- **Run national peer review program: Center for Independent Experts**

Magnuson-Stevens Act (2007) National Standards

- Maintains regional fishery management council system and federal fishery management plans
- Establishes ten national standards for fishery conservation and management for federal fishery management plans
 - Examples include:
 - Optimum Yield
 - Best Scientific Information Available
 - Promote Efficiency
 - Minimize Costs
 - Etc.
- The Secretary of Commerce (i.e., NMFS) establishes these standards as guidelines, which do not have the force of law.

National Standard 2

- MSA/NS2: “...Conservation and management measures shall be based upon the best scientific information available.”
- S&T led a work group to develop NS2 Guidelines.
 - Based on IQA, OMB PRB Guidelines, NRC 2004
 - Final Rule published in Federal Register in July 2013
(<http://www.gpo.gov/fdsys/pkg/FR-2013-07-19/pdf/2013-17422.pdf>)

Contents

- Description of Best Scientific Information Available (BSIA)
- Scientific peer-review standards
- Role of Science and Statistical Committees (SSCs) in the review of scientific information
- Purpose, contents, availability of Stock Assessment and Fishery Evaluation (SAFE) reports

NS2: BSIA and Peer-review Standards

Best Available Scientific Information is:

- Relevant - representative of the fish stock being managed
- Inclusive - contains advice from all relevant disciplines
- Objective - data and analyses obtained from unbiased, credible sources
- Transparent - all data and analyses publicly available
- Timely - applicable to current situation; sufficient time for analysis
- Peer reviewed - to assure confidence in the quality of the data and analysis

Scientific Peer-review Standards

- Affirms NMFS and councils may establish peer-review processes
- Are consistent with IQA and OMB PRB Guidelines
 - Reviewer selection
 - Conflict of Interest – no financial or other interest that could impair objectivity
 - Reviewers cannot have contributed to the information being reviewed

NS2: SSC's and SAFE Reports

- Affirms that SSC's evaluate scientific information and provide recommendations to their councils
 - Includes peer review
 - Must meet NS2 peer reviewer guidelines
- Emphasizes importance of Stock Assessment and Fishery Evaluation (SAFE) reports as source of information for councils on managed stocks
 - SAFE reports must be published on council or NMFS website

Peer Review of Stock Assessments

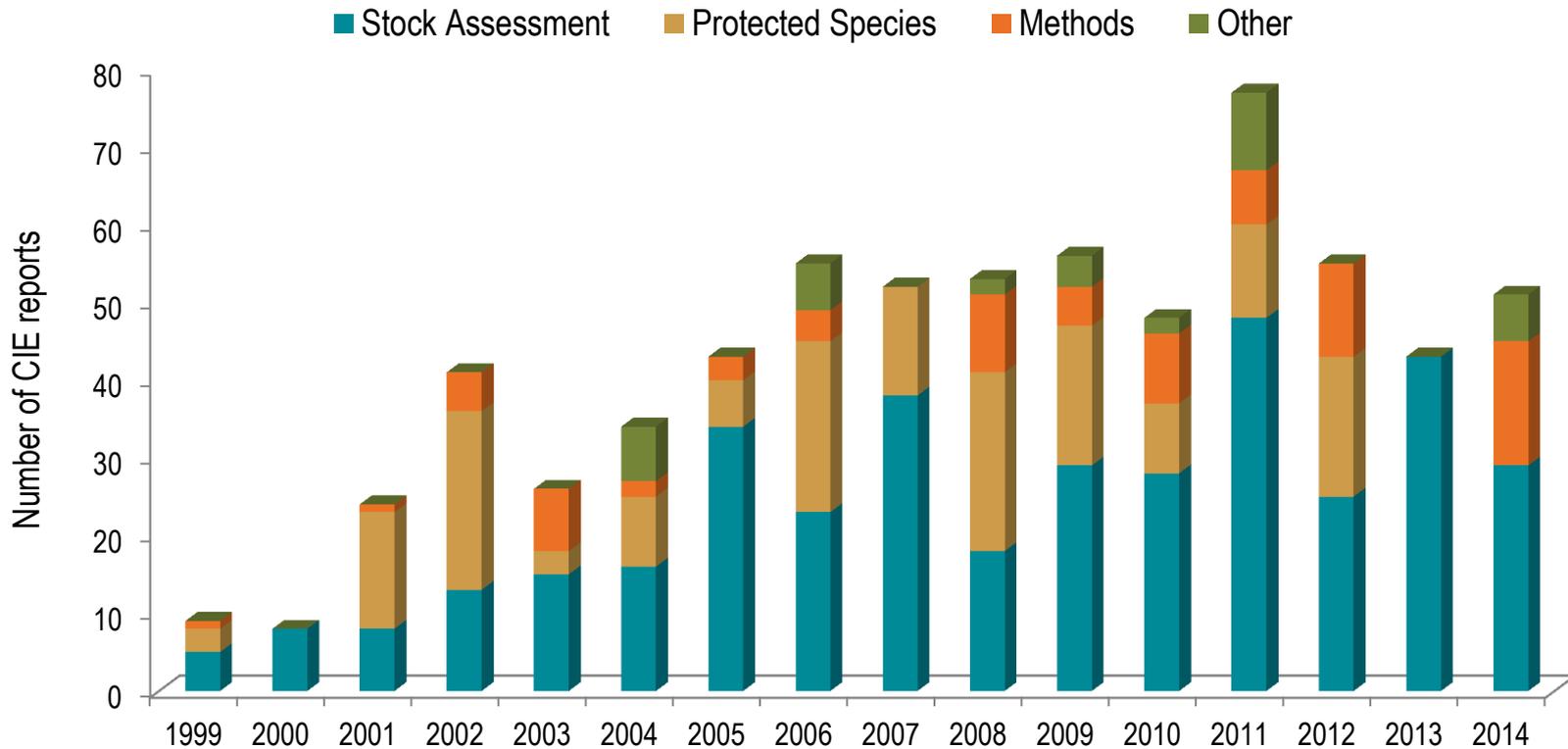
- Each regional fishery management council has ~unique stock assessment process, including SSC operations and peer reviews (Draft Federal Register Notice)
 - New England/Mid-Atlantic/ASMFC – SAW/SARC
 - South Atlantic/Caribbean/Gulf of Mexico – SEDAR
 - Pacific – STAR
 - North Pacific – NPSAR
 - Western Pacific – WPSAR
- Each region may also have other specialized processes
 - E.g., international stocks (ICCAT, IATTC, Pacific Hake)
- Benchmark vs update assessments

S&T's Role: Center for Independent Experts (CIE)

ST manages the CIE, coordinates with NMFS clients

- Independent, “arms-length” peer review of NMFS’ science products used for management decision making
 - Fish stock assessments, Protected resources assessments, Survey and program design, many other topics as needed
- Established 1998 at University of Miami
- Currently run under contract with NTVI (Consistent team and processes)
- Incorporated into council stock assessment peer review processes
 - Focus on “benchmark” assessments (BSIA statement is typical)
- Paper: Fisheries 31(12): 590-600 (December 2006)
- Website: <http://www.st.nmfs.noaa.gov/science-quality-assurance/cie-peer-reviews/index>

Profile of CIE Reviews



Over 639 reports are available on the ST website.

Two Types of CIE Reviews

Panel Reviews

- The reviewers:
 - attend and participate in review panel meeting, sometimes as Chair
 - prepare individual review reports
 - sometimes contribute to Chair's summary report
 - Cost for 3 reviewers, 42 reviewer days, ~\$98K

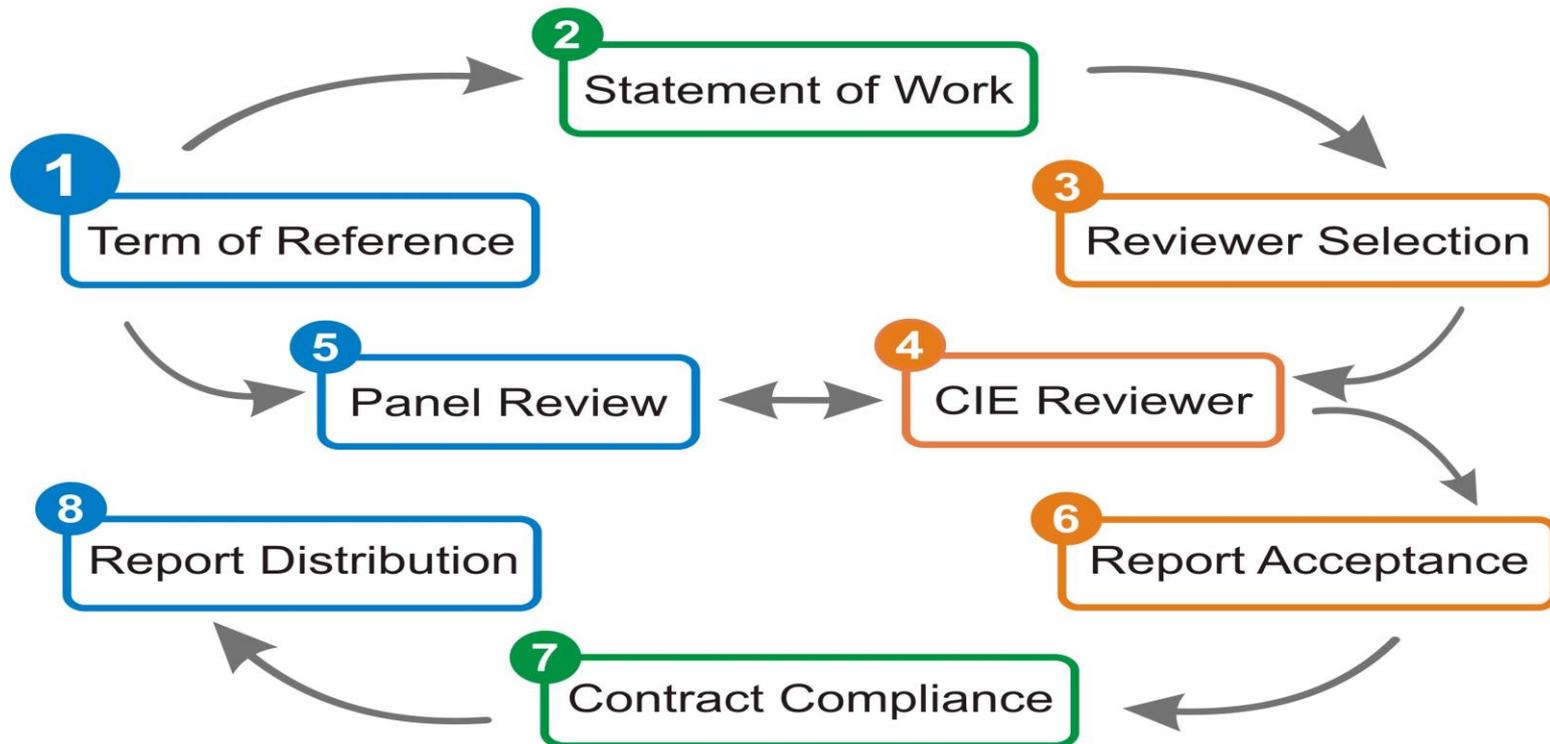
Desk Reviews

- The reviewers:
 - remain at home institution
 - sometimes participate in conference call(s)
 - prepare individual reports
 - Cost for 3 reviewers, 30 reviewer days, ~\$48K

CIE Review Process

Division of responsibilities to ensure the right science is reviewed the right way, while following NS2 guidelines.

NMFS/FMC - **NMFS HQ** - **CIE**

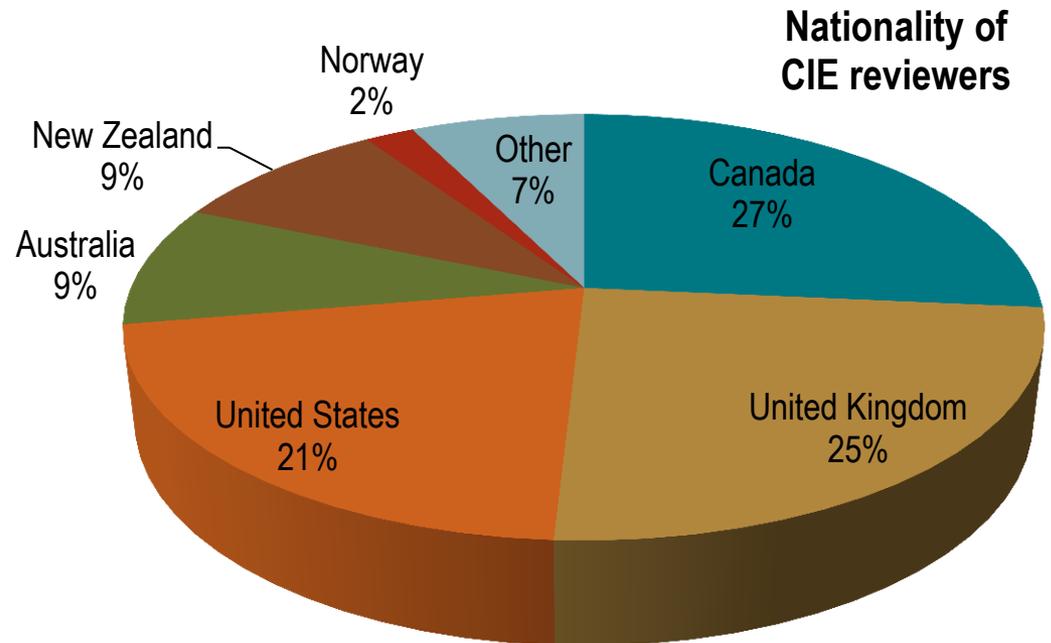


ST Process for Selecting CIE Reviews

- Annual call for reviews: February-March
 - From ST Director to center and office directors, regional administrators
- Review list updated in mid-year, and as needed
- Prioritization
 - Economic impact, controversy, precedent-setting
 - Benchmark assessments
 - Innovation - applicable to NMFS' mission
 - Time since previous review

CIE Reviewer Selection

- Need (topic, expertise) defined by NMFS
- Selection done by CIE
 - Technical expertise
 - Independence
 - Conflict of Interest
 - Availability



CIE: Conflict of Interest

NMFS COI policy adheres to NS2

- Consistent with IQA, OMB PRB Guidelines
- The CIE contractor carries out the policy for CIE reviews.
 - Each reviewer signs a COI form for each review
 - CIE evaluates CV, published articles, and opinions
 - CIE selects reviewers (NMFS can provide additional information)
- COI criteria for reviewer and family members
 - 3-year timeframe: Financial, Employment
 - Participation in developing the product under review
 - History of advocacy, involvement with the fishery, etc.

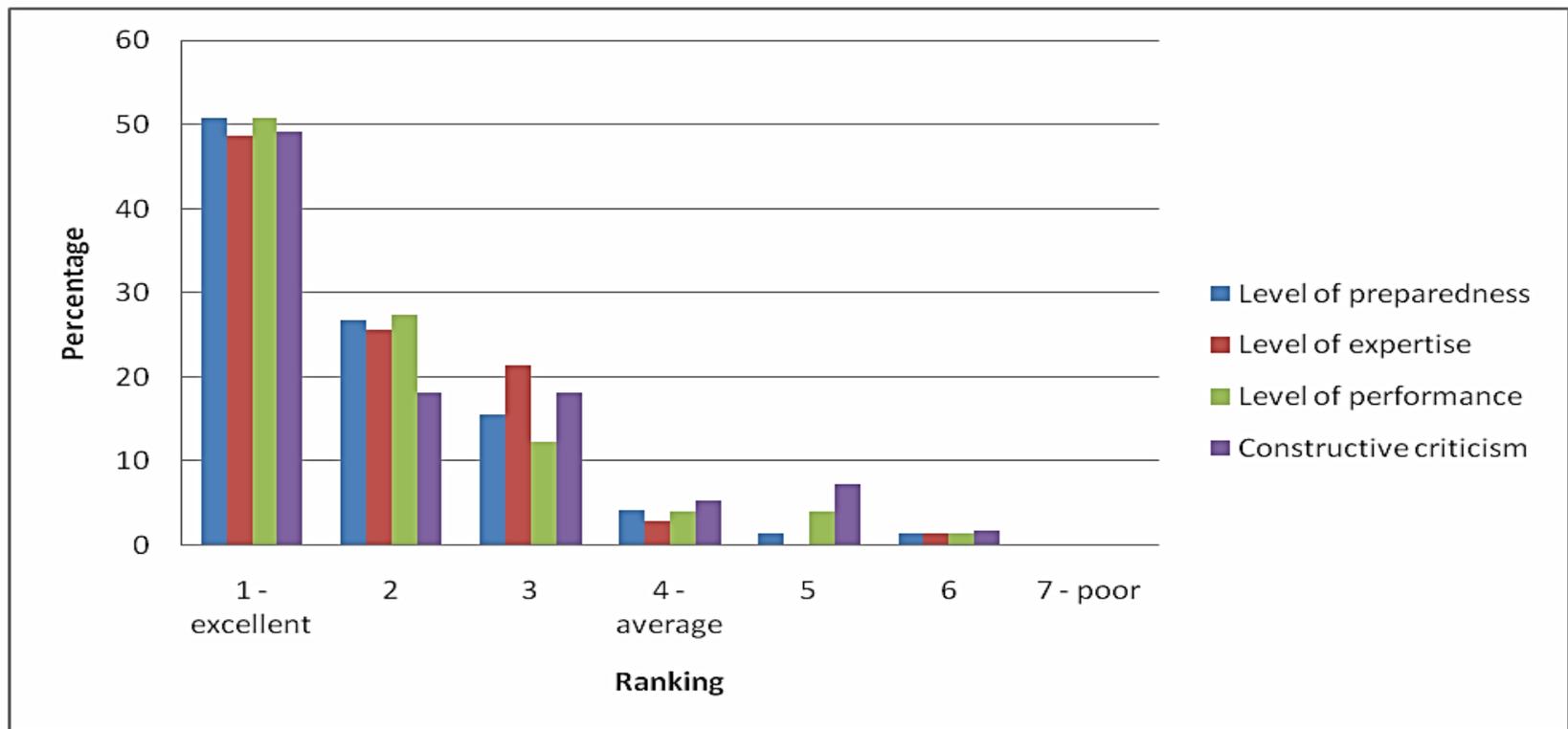
What Does the CIE Review for Stock Assessments?

Differs among regional review processes

- SAW/SARC
 - Review is of 1-3 individual stock assessments (benchmarks)
 - Examine data, models, interpretation, etc. in great detail
 - Two panels per year
 - Stock assessment and review reports provided to SSC for developing ABC recommendations to council
- NPSAR
 - Review is of methods, models, data sources for many (~20) assessments (updates)
 - CIE does not review the assessment results
 - Plan Teams and/or SSC review the assessment results

CIE: NMFS Client Satisfaction

CIE poll of NMFS review coordinators for all panel reviews on reviewer performance (83 reviews, 2005-2013)



Peer Review Strengths

CIE

- Is the gold standard of peer review programs
 - Internally
 - Externally
- Meets NS2 requirements
- Is a well-oiled machine
- Is well funded for current demands

Peer Review Challenges

- CIE reviews are costly and lengthy
- Tensions among the four T's: Timeliness, Throughput, Thoroughness, Transparency
- Tensions between the need for independent reviewers and reviewers who understand the local system
- Lack of less intensive alternatives at national level
- Limited reviewer pool
 - Marine Stewardship Council setting up review process
- Demands may outstrip resources over time
- Lack of standard assessment methods and review procedures mean that many reviews are one-offs

Peer Review Solutions

- Adapt review processes to importance, complexity, sensitivity of the assessment
 - Prioritize: not all reviews merit the same trade-offs among the four T's
 - Use CIE reviewers sparingly
 - Develop a CIE Lite
 - Rely on regional review processes
- Use review panels that include CIE reviewers that are highly independent, but less knowledgeable of local systems, and other reviewers that have local knowledge, but might not be as independent
- To expand reviewer pool: educate more stock assessment scientists; adopt more flexible eligibility requirements
- For long-term financial stability: get more funding; adapt as above
- For improved efficiency: adopt more standardized assessment methods and review procedures



Thank You!

