

Fiscal Year 2019
Panel Outcome Report
Aquaculture (NP 106)

David Shapiro-Ilan, Ph.D., Scientific Quality Review Officer
(January 2018-December 2019)

Date

Marquea D. King, Ph.D., Director/Program Coordinator

Date



Office of Scientific Quality Review
Agricultural Research Service
United States Department of Agriculture

**Panel Outcome Report FY 2019
Aquaculture (NP 106)**

This Panel Outcome Report is a summary of the Aquaculture (NP 106) Office of Scientific Quality Review (OSQR) Project Plan Peer Review (PPPR) process held from May 2019 – October 2019.

The project plans reviewed by these panels were applicable to the mission of the National Program 106 (NP 106) to conduct research and deliver technologies that improve domestic aquaculture production efficiency and product quality while minimizing impacts on natural resources.

This panel outcome report is intended to inform the Office of National Programs (ONP) and each Area of their research (research scientist or SY) progress as it relates to the NP 106. Data tables display outcome of scoring by Areas, Panels and overall program.

Selected chairs (Table 1) were mainly recommended by National Program Leaders (NPLs) from NP 106 and/or previous OSQR service; others were sought based on their nationally recognized expertise by the OSQR Director. They were examined for suitability to lead a panel review, screened for conflicts of interest (COI) and finally concurred upon by the current Scientific Quality Review Officer (SQRO), Dr. David Shapiro-Ilan.

Table 1.
Panels reviewed for the Aquaculture, National Program (106) FY19.

Panel	Panel Chair	Panel Meeting (Re-Review)	Number of Panelists	Number of Projects
NP 106 Panel 1 Improving the Efficiency and Sustainability of Catfish Aquaculture	Dr. Yoram Avnimelech	Wednesday, October 23, 2019	3	3
NP 106 Panel 2 Improving Aquatic Animal Health	Luke R. Iwanowicz	Tuesday, Tuesday October 22, 2019	3	3
NP 106 Panel 3 Improving the Efficiency and Sustainability of Salmonid Aquaculture	Dr. Michael L. Brown	Wednesday, October 16, 2019	4	4
NP 106 Panel 4 Improving the Efficiency and Sustainability of Hybrid Striped Bass Aquaculture and Enhancing Shellfish Aquaculture	Dr. Paul B. Brown	Thursday, October 10, 2019	3	3

Review Process

Following panel review for each plan, OSQR Director, with SQRO concurrence, sends each Area Director a panel consensus recommendation document. This may include recommendations for revision of the plan to which researchers are required to respond in writing and, as appropriate, revise their written plans in accordance with guidelines as detailed in the OSQR Handbook (see www.ars.usda.gov/osqr).

In addition, as part of the panel deliberation, a scoring of the overall quality of the plan, is judged based on the degree of revision the panel deems is required. This scoring is termed an “Action Class.” Each reviewer is asked to anonymously provide an Action Class rating for each plan. OSQR assigns a *numerical*

equivalent to each Action Class rating and then averages these to arrive at an overall Action Class score for the plan.

The Action Class is defined as follows:

No Revision Required. An excellent plan; no revision is required, but minor changes to the project plan may be suggested.¹

Minor Revision Required. The project plan is feasible as written, requires only minor clarification or revision to increase quality to a higher level.

Moderate Revision Required. The project plan is basically feasible but requires changes or revision to the work on one or more objectives, perhaps involving alterations of the experimental approaches in order to increase quality to a higher level and may need some rewriting for greater clarity.

Passed Review:

For plans receiving one of the above three Action Class scores (No Revision, Minor Revision or Moderate Revision), scientists are required to respond in writing to address all panel comments in the consensus recommendation document; revise their project plan as appropriate; and submit the revised plan and responses to the OSQR through their Area Office. Both the updated plan and the recommendations' form are reviewed by the SQRO and, once they are satisfied that all review concerns have been satisfactorily addressed, the project plan is certified, the Area Office is notified, and the project plan may be implemented.

Certification:

Certification is contingent upon making a good faith effort to satisfactorily address panel comments and recommendations. A plan has not "passed" the OSQR PPR process until the SQRO's certification is delivered to the Area.

Major Revision Required. There are significant flaws in the experimental design and/or approach or lack of clarity which hampers understanding. Significant revision is needed.

Not Feasible. The project plan, as presented, has major scientific or technical flaws. Deficiencies exist in experimental design, methods, presentation, or expertise which make it unlikely to succeed.

Failed Review:

For plans receiving one of the above two Action Class scores (Major Revision or Not Feasible), scientists are required to address, in writing, all panel comments in the consensus recommendation document; revise their project plan as appropriate; and submit the revised plan and responses to the OSQR through their Area Office *AND* then must undergo a Re-Review by the initial deliberating panel, at which time a second set of consensus recommendations and second Action Class score are obtained.

Per the Re-Review, if the plan receives an Action Class score of a No Revision, Minor Revision or Moderate Revision the project plan may be implemented after following the **Passed Review** section above. Plans receiving a second Major Revision, or Not Feasible score are considered failed reviews. The

¹ While a No Revision action class would imply that change to the plan is not required, where the panel requests specific additions to the plan, if accepted, these should be incorporated into the updated plan.

Action Class and Consensus Recommendations from the Re-Review are provided to the Area with NO further option for revision or review on that particular project plan as it has been submitted.

Such plans may be terminated, reassigned, or restructured at the discretion of the Area Office and ONP. For plans receiving Major Revision, it may be elected not to further revise them and to end review with the plan not receiving certification (plan fails review). For those receiving a score of Not Feasible, Area and National Program Leader (NPL) approval are needed for the plan to be revised for re-review. Otherwise the plan will be considered to have failed review. Subsequent action with regard to the research and researchers is left to Area and ONP-NPL leadership.

At the finale of each PPPR deliberation, the chair and panel reviewers are asked to provide general statements or recommendations on the overall process as well as the general quality of the plans which underwent review. The Chair is specifically asked to provide a Panel Chair Statement which they feel focuses on the overall conduct of the review or any broad areas with regard to the research they feel would be of benefit to future researchers or the Agency as a whole. Copies of such statements for NP 106 are found in the following this report.

Review Outcomes

Reviews can vary, but ultimately, depends on a combination of the panelists selected and the scientific writing capabilities of the team who wrote the project plan. The OSQR is responsible for assuring that each panel contains subject matter experts who provide knowledgeable, clear, rigorous, and fair assessments. Therefore, PPPR panels vary in their overall outcomes.

Uniquely, the ability of an ARS research team to respond to panel recommendations/comments in order to *revise and improve project plans is, perhaps, the greatest strength of the ARS PPPR process.*

ARS uses the National Program Panel Outcome Report as a measure of scientific progress and as a demonstration of overall program quality, how well researchers understand and address the needs of the expert panel reviewers. Initial review scores that are moderate or higher are recorded as such and will not be certified as having completed the PPPR until the SQRO has deemed that all reviewer concerns have been satisfactorily addressed. For lower scores/failed reviews, the panel provides a re-review score, which is considered along with the initial review score.

Table 2.
Initial and Re-review Scores for Aquaculture, National Program (106) FY19.

	No revision	Minor	Moderate	Major	Not Feasible	Re-Review
Panel 1:			2	1		1 Minor
Panel 2		3				
Panel 3		4				
Panel 4		2		1		1 Moderate
Total		9	2	2		1 Minor 1 Moderate

*Review conducted by no less than two (or greater) expert panel reviewers providing independent written reviews and scores without group panel deliberation. Scores reflect the average of no less than two expert reviewers and written reviews are compiled and screened by OSQR Director.

Table 3.
Area Scores for Aquaculture, National Program (106) FY19.

	No revision	Minor	Moderate	Major	Not Feasible
MWA		1			
NEA		4			
PA					
PWA		2			
SEA		2	2	2	

Table 4.
Overall Scores for Aquaculture, National Program (106) FY19.

	No revision	Minor	Moderate	Major	Not Feasible
# Plans with each score	0	9	2	2	0

Overall Panel Characteristics:

Panel Characteristics

The OSQR PPPR relies heavily on expert panel member selection by the OSQR Director and SQRO selected Panel Chairs. ARS scientists, research leaders, and ONP are encouraged to recommend panelists they understand to be free of any COIs. While the selected/seated Panel Chair is under no obligation to use Agency recommended panelists, the SQRO must review and approve the Chair’s panelist selections and may ask for substitutions or provide additional experts for consideration.

Factors and qualifications considered in PPPR panel selection (chair and panelist) are those such as: being a qualified expert overall in the field being reviewed, research tenure, publication record, award history, geographic location, overall diversity and availability to participate fully in the process all play an integral role in who is invited to serve an ARS/OSQR PPPR panel. Many of the reviews are composed with a balance of nationally and internationally recognized experts. Tables 5-6 display various characteristics of the panel composition, all affiliations were accurate at the time of the panel review.

Affiliations

Peer reviewers are affiliated with several types of institutions, primarily those in academia, but also special interest groups and industry. In some cases, peer reviewers have recently retired but are still active as consultants, scientific editorial board members, and members of professional societies.

Table 5.

Panelist Faculty Rank and Affiliations for Aquaculture, National Program (106) FY19.

.Panel	Professor	Associate Professor	Assistant Professor	Government	Industry & Industry Organizations	Other
Panel 1:	1			1		1 Extension Aquaculture Specialist 1 Extension Specialist
Panel 2	1			3		
Panel 3		2		1		1 Program Coordinator
Panel 4	1	1	2			

Research Impact, Gender, Geographic Location

The OSQR PPPR process is lauded as a rigorous and objective ARS function striving for the highest possible scientific credibility. In general, panelists shall hold a doctoral degree unless the discipline in question is one which does not subscribe to a doctorate level education to achieve the highest recognition and qualification (e.g., engineers and modeling specialists). Panelists are also judged by their most recent professional accomplishments (e.g. awards and publications completed in the last five years). Finally, the panelists who are currently performing or leading research to address a problem similar to those being researched in the National Program under review are preferred. The following table depicts their average Scopus H-index, gender, and geographic location as it relates to either one of the 5 Areas in the ARS North American continent or other foreign locations as applicable.

Table 6.

Panel Additional Information for Aquaculture, National Program (106) FY19.

Panel	H-Index	Gender	Geographic Locations
Panel 1:	Average 16	3 Males 1 Female	3 SEA 1 Israel
Panel 2	Average 26	3 Males 1 Female	3 NEA 1 Brazil
Panel 3	Average 26	5 Males	2 SEA 1 MA 1 PA 1 United Kingdom
Panel 4	Average 18	3 Males 1 Female	1 SEA 2 NEA 1 MA

Current and Previous ARS Employment

The Research Title of the 1995 Farm Bill 105-585, mandated ARS’s requirements for the peer review of ARS research projects: 1) panel peer reviews of each research project were mandated at least every five years, and 2) the majority of peer reviewers must be external (non-ARS) scientists.

Table 7. Panelist ARS Affiliations for Aquaculture, National Program (106) FY19.

Panel	Currently Employed by ARS	Formerly Employed by ARS
Panel 1:	None	None
Panel 2:	None	None
Panel 3:	None	None
Panel 4:	None	None

List of Panel Chairs

NP 106 Panel 1 Improving the Efficiency and Sustainability of Catfish Aquaculture

Yoram Avnimelech, Panel Chair, Professor Emeritus

Ept of Civil & Environmental Eng.
Technion, Israel Inst. Of Technology
Haifa, Israel

Education:

M. Sc. Studies & Thesis - Soil Microbiology (1960, Hebrew Univ. Jerusalem)
Ph. D. Studies & Thesis - Soil Physical Chemistry (Weizmann Inst. & Hebrew Univ.1964)

NP 106 Panel 2 Improving Aquatic Animal Health

Luke R. Iwanowicz, Panel Chair, Research Biologist

United States Geological Survey
LSC Fish Health Laboratory
11649 Leetown Road
Kearneysville, WV 25430

Education:

M.S. Aquaculture, University of Arkansas at Pine Bluff
Ph.D. Fisheries Conservation, University of Massachusetts, Amherst

NP 106 Panel 3 Improving the Efficiency and Sustainability of Salmonid Aquaculture

Michael L. Brown, Panel Chair, Program Coordinator

South Dakota State University
McFadden Biostress Laboratory 142D
Box 2140B
University Station
Brookings, SD 57007

Education:

M.S. Texas A&M University, College Station, TX. August 1989; Wildlife and Fisheries Sciences
Ph.D. December 1993; Wildlife and Fisheries Sciences; Dissertation: Temporal genetic structure and energy dynamics of an intergrade largemouth bass population

NP 106 Panel 4 Improving the Efficiency and Sustainability of Hybrid Striped Bass Aquaculture and Enhancing Shellfish Aquaculture

Paul B. Brown, Panel Chair, Professor of Aquaculture

Purdue University
Department of Forestry and Natural Resources
715 West State Street
West Lafayette, IN 47907-2061

Education:

M.S. University of Tennessee 1983
Ph.D. Texas A&M University 1987

Aquaculture, National Program (106) FY19 Panel Chairs Statements

Panel Chair responsibilities include providing the OSQR with a statement that describes their overall panel experience, how the panel was conducted, and general quality of the plans reviewed, it does not lend itself to discussing details of specific research project plan reviews nor attribution to individual panelists. Panel Chairs are given a format to follow for writing their statements, however, are free to discuss what they believe is important for broader audiences.



YORAM AVNIMELECH
Professor EM

יורם אבנימלך
פרופ' (אמ')

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8/12/2019

USDA NP 106 Panel 1: Improving Efficiency and Sustainability of

Catfish Aquaculture

Panel Chair Statement

Personal Introduction

I had the honor of being nominated as the panel chair.

I had quite a bit of experience in such positions, in my service as the Chief Scientist Of the Israeli Ministry of the Environment Protection and as chair, or member of many research evaluation committees, However, I had a draw back by not being an expert in catfish production and by not being acquainted with the USA systems of research proposals committees. In the same time, my nomination might have an added value of being able to look on things from outside of the box.

The present statement should be judged considering both potential draw backs and virtues.

Statement and Comments

Our panel dealt with three research proposals. All three proposals dealt with a variety of factors affecting production and product quality of catfish, mostly in the South Eastern states. Each of the proposals dealt with a wide spectrum of factors, from genetics to technology, in contrast to researches on very specific issues. This may be justified by the desire of all groups to advance the U.S.A. catfish industry in all important fronts. I certainly compliment this attitude.

However reading the plans of work I found a lot of overlap on one hand, and possibilities of cooperation among the three research team so as to improve quality and raise probability of success.

As an outsider and the chair of the panel, I recommend that the three groups will have a working conference, say every 6 months, report achievements and difficulties and jointly plan the work to be done during the next 6 months. Each of the three groups have its strong expertise and facilities (e.g. ponds in Stoneville are planned to be used by 2 groups, economy and marketing, important for all groups may be jointly used, etc.). I am convinced that such joint work will be more effective as compared to separate work of each group. There are some attributes that may ease such cooperation: All 3 groups work and reside in a relatively near-by locations. The all belong to the USDA, thus institutional cooperation exists, and they all have the same general goal.

In this report I am not getting into specific comments on the research proposal. Excellent work on this was done by the three panel members. I appreciate their professional and detailed review of the research proposal.

Yet, I would like to add one technical comment, related with the ability of isolating and quantifying the effects of different individual factors in the multi-factorial system dealt with by all the teams. It is obvious that production, product quality or marketing of catfish are affected by a combination of many environment or management factors. All teams plan to collect data and imply control of factor(s) that can positively affect production functions.

The approach presented is basically import data (production systems, water quality, etc.) from many commercial and experimental ponds., correlate those with production or with inferior quality. This approach seems basically to be a statistical factor analysis. In this case adding measurable parameters (such as DO, algal and microbial community factors, seasonality, sediment characteristics and other, especially parameters that were mentioned as affecting quality of the fish) may add to the ability of getting more significant results. Proper such statistical analyses (again, obtained from all 3 groups), can help identifying the more important factors in the multi-factorial system studied.

A few last words:

I want to thank the panel members doing such good, professional and timely work.

In addition, many thanks to the team of the OSQR (ARS < USDA) for helping me with the work.

Yoram Avnimelech

Professor (Emeritus)





United States Department of the Interior

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Date June 3, 2020

David I. Shapiro-Ilan, Ph.D.
Scientific Quality Review Officer
Office of Scientific Quality Review
Agricultural Research Service, USDA
5601 Sunnyside Avenue, MS 5142
Beltsville, MD 20705

Dear Dr. Shapiro-Ilan

I had the pleasure of chairing the USDA NP 106 Panel 2 Improving Aquatic Animal Health review on October 22, 2019. The review panel had the responsibility of reviewing three projects. The review panel included three active senior research scientists from the United States and overseas.

All three reviewers were well prepared for the discussions. In general reviewers focused on the methodological approaches and experimental design(s). In most instances the reviewers strongly commended the thoroughness of the planned research and stated that some of this research was competitive NSF-esque quality science. Critical reviewer comments typically only requested further clarification. Written reviews were succinct, clear and fair. Written reviews were further augmented via verbal comments during the conference call review.

Establishing a qualified review panel for this review was difficult. The most appropriate reviewers for these reviews were already committed to other obligations during the summer of 2019. Many were involved with the European Association of Fish Pathologists meeting held in September. Identifying such possible scheduling conflicts may be of use in the future when scheduling the timing of these review panels. In addition, other qualified reviewers either had a conflict of interest or the Office of Scientific Quality Review considered them to be junior in their career. Setting an h-index floor of 20 may be a bit high. Addressing conflict of interest (COI) with reviewers was complicated as well. This was particularly the case for one of the cultured species. Research scientists that work that particular species are highly collaborative, and there was generally a conflict of interest with the best reviewer options. The reviewer selected to be the lead for this particular project had significant experience with species specific research but was not a fish health expert. Improvements to this process include enhancing the database of qualified reviewers, considering qualified early/ mid-career scientists, and perhaps assessing the trade-offs between potential COI and impartial rigorous review.

In general, the quality of this research review process is excellent. As a federal employee myself, it was refreshing to see such a process. Other federal agencies should be encouraged adopt such a process.

Regards,

Luke Iwanowicz



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October 25, 2019

David I. Shapiro-Ilan, Ph.D.
Scientific Quality Review Officer
Office of Scientific Quality Review
Agricultural Research Service, USDA
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Beltsville, MD 20705

Dear Dr. Shapiro-Ilan:

This letter provides a statement of completion for the initial panel 3 review of National Program 106: *Improving the Efficiency and Sustainability of Salmonid Aquaculture (2019)*, as a component of the USDA ARS Aquaculture Action Plan 2020-2024. The panel was formed to evaluate the technical merits and scientific quality of intramural project plans stemming from a National Program Action Plan research directive. Panel formation was completed and members received their peer review guidelines on August 21, 2019. Panel participants were drawn from academia and their collective areas of expertise included fish nutrition, genetics, disease, immunology and physiology, and recirculating systems and feed technology.

Project plans were received by panel members on 29 August 2019. Online panelist orientation and Q/A sessions were held on September 11th and 12th, 2019. The panel reviewed four ARS 5-year research plans with each member providing a primary and secondary written review based on the structure of the guidelines (#231 form). All written reviews were completed by October 11th, 2019 and distributed to the full panel. An online panel meeting was convened on October 16th, 2019, during which primary and secondary reviewers provided overviews of the projects followed by full panel discussions that included recommendations on technical aspects of sub-objective experiments.

In general, the consensus of the panel was that the project plans were technically well-conceived and the associated scientists were well qualified to execute plans to successful endpoints. Sub-objectives were appropriately organized within primary objectives and proposed experiments should address critical and emerging issues for support and expansion of land-based, domestic salmonid culture. The panel recommendations made on the technical aspects of individual plans that should further aid the researchers in achieving their sub-objectives. Milestones in all plans were properly identified and achievable within allotted timeframes. Further, all plans

demonstrated collaborations and support from academic, agency and industry communities. These linkages will facilitate rapid adoption of significant outcomes into commercial production.

From inception to completion the review process went fairly smooth and was of high standards. There were initial difficulties in securing panelists having identified areas of expertise, but additional efforts were successful in filling out the panel. Members indicated that they appreciated the service opportunity in supporting the USDA ARS peer review process and would welcome involvement in future reviews.

Best regards,

A handwritten signature in black ink that reads "M L Brown". The signature is written in a cursive, flowing style.

Michael L. Brown, Ph.D.
Program Leader, Wildlife & Fisheries Sciences

Fellow, American Institute of Fishery Research Biologists
Certified Fisheries Professional, American Fisheries Society

28 January 2020

David I. Shapiro-Ilan, Ph.D.
Scientific Quality Review Officer
Office of Scientific Quality Review
Agricultural Research Service, USDA
5601 Sunnyside Avenue, MS 5142
Beltsville, MD 20705

Re: Panel Chair Statement, NP 106 Panel 4 Improving the Efficiency and Sustainability of Hybrid Striped Bass Aquaculture and Enhancing Shellfish

Dear Dr. Shapiro

Reviews of these proposals proceeded smoothly. Reviewers submitted written reviews in a timely manner, reviews were carefully considered and worded within areas of expertise and reviewers were prepared for panel discussions. The list of potential reviewers has expanded when compared to prior years, providing more expertise in disciplinary topics and fewer conflicts of interest. Early in the review process, one reviewer was slow to respond, but persistence on the part of ARS staff ultimately led to a smooth process. ARS staff, at all levels, orchestrated this review in a most professional manner.

More broadly and perhaps relevant to other ARS Program Plans, aquaculture proposals can be challenging to review. Aquaculture is a relatively new animal production industry and the research community can be broadly divided into generalists and disciplinary specialists. Again, over time, the list of potential reviewers has expanded beyond those generalists that are heavily involved, and therefore invested, in aquaculture, providing more thoughtful and considered reviews. Multi-disciplinary proposals require expertise in the various disciplines proposed. ARS staff did an excellent job identifying disciplinary scientists to address a multi-disciplinary proposal. However, the current structure of panels reviewing a multi-disciplinary proposal results in one thorough review and two more cursory reviews. The potential for reviewer bias increases in this case. The flow of objectives from stakeholders to ARS scientists is a reasonable approach, but ARS Program Leaders may want to consider the final scope of Project Plans. These are referred to as individual Plans developed and submitted by an ARS scientist. Plans encompassing a high percentage of scientists in an individual facility deviate from a Project Plan submitted by an ARS scientist and may result in limited expert reviews. Rational for this approach was submitted in the ARS Response, but is not a strong argument.

Sincerely,



Paul B. Brown, Professor

Office of Scientific Quality Review

The Office of Scientific Quality Review manages and implements the ARS project plan peer review (PPPR) functions for all intramural research projects including administering the peer review policies, processes and procedures. OSQR centrally coordinates and conducts the PPPR for project plans within the Office of National Programs during a 5-year cycle.

The OSQR staff is responsible for:

- setting the schedule of Project Plan Peer Review sessions
- Panel organization and composition (number of panels and the scientific disciplines needed)
- Distribution of project plans
- Reviewer instruction and panel orientation
- The distribution of review results to Areas, ONP, and other interested parties
- Notification to panelists of the Agency response to review recommendations
- *Ad hoc* or re-review of project plans
- Final certification of each Area project plan

Contact

Send all questions or comments about this Report to:

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