

Reviewer Report on Fish Passage Program Review

Reviewer #8

May 24, 2018

Background:

The National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) is responsible for the stewardship of the nation's ocean resources and their habitat. Fish passage is important for the protection and restoration of diadromous fish and their habitats. Dams, roads and other barriers fragment a river system to impede or block fish movement, to spawning, rearing and migratory habitats. The sustainability of fish species populations is reduced or imperiled by these barriers. For this reason, NOAA works to maintain unimpeded access to habitat where barriers do not yet exist, open access to habitat where fish are prevented from passing, and ensure that the passage for fish is safe, timely, and effective.

Through authority granted by legislation, including the [Federal Power Act](#) (FPA), the [Magnuson-Stevens Fishery Conservation and Management Act](#) (MSA), [Endangered Species Act](#) (ESA), and the [Fish and Wildlife Coordination Act](#) (FWCA), NOAA Fisheries applies multiple strategies to conserve, protect and restore fish and their habitats, and ensure safe and effective fish passage.

This review is being coordinated by the Office of Habitat Conservation (OHC), with support from the Habitat Enterprise¹. For the purpose of this review, the NOAA Fisheries fish passage program consists of activities managed by various national and regional offices within NOAA Fisheries whose purpose is to maintain or improve access for migrating fish that need to reach riverine habitats for various life stages.

NOAA programs included within this review are the Restoration Center's Community-Based Restoration Program, which funds dam removals and other fish passage projects; and the Hydropower Program, which is coordinated by OHC's Habitat Protection Division and is executed by the NMFS Regional Offices through review of and comment on FERC licenses under the Federal Power Act.

General Observations and Recommendations:

¹ The Habitat Enterprise includes the Office of Habitat Conservation, the Assistant Regional Administrators for Habitat Conservation and their staff, and habitat management-related components for the West Coast Region and their staff.

“Change looks impossible when you start, inevitable when you finish” – Bob Hunter

1. First I must commend NMFS leadership for the foresight and fortitude to undertake such a review. Examination of how an agency executes their mission, especially by a variety of outside reviewers, is an excellent route to effective retuning. In addition, the NMFS staff prepared well for this review and that showed in the recent overview presentations on this effort.
2. As was said better at the close of the presentations, NMFS can be proud of having achieved as much as they have in these two programs over the past decade given the resources they have been allotted.
3. There is a shift in framing of fish passage and habitat work underway that was presented in the Western Region’s Eel river report and elsewhere that is worth pointing out: In the past “fish passage” was usually framed as adult passage to existing, in-channel habitat that was blocked by a man-made obstacle, e.g. dam or ford. The results of reopening habitat were often immediate and apparent: quick recolonization of the existing channel beyond the site of the former obstacle. Now, with an analysis of key limiting habitat factors, often the goal is to “open access to a variety of these complex habitats and restore natural riverine processes, improving habitat quality upstream and downstream of the barriers.” Thus the line between “fish passage” and other habitat work is not as distinct as formally characterized. Of particular note is “restoring natural river processes” in the sentence above. This is beyond simply removing a barrier and involves setting/allowing conditions so that natural riverine and tidal processes can take over not only to provide access to areas such as floodplains and estuaries but also to recreate that habitat which was lost to previous human activity. Hence NMFS may want to revise how they define fish passage solely in terms of access.
4. I have struggled with the limitation in scope of this exam of Fish Passage at NMFS to these two programs (Hydropower and CRP) as did some of the presenters. The answer is obvious: while there are several other aspects of NMFS that also touch on fish passage, not including PRD activities along with the two other programs misses some of the greatest, though most difficult to execute, opportunities to improve achievement of the agency’s goals and synergy of their programs. Therefore, I will be including PRD in some ad hoc recommendations below but I wish to speak on one outlying, general recommendation for PRD at this time:

Impacts to habitats that have, and continue to occur, to listed fish every year that they cannot access their full historic habitat. With minute exceptions, these limitations were not caused by NMFS yet NMFS is charged with bringing about timely remedy. Under the ESA, PRD actions are mostly limited to the Federal Government but even with that limitation there are a wide array of new and ongoing Federal activities and actions that PRD is not addressing.

The number of barriers is so great that it would be pointless to expand discussions and consultations indiscriminately as there would be no capacity for follow-up. However, a deliberate and strategic expansion would send large

classes of barrier owners (and other habitat degraders) to the CRP program to get out ahead of forthcoming mitigation requirements. (Once a remedy became mitigation, the barrier owner would not be eligible for CRP technical and fiscal assistance.) In addition, an expansion of barrier owners applying would drive up improvements and drive down costs for CPR and similar restoration granting programs due to competition. As it now stands, there is no consequence for barrier owners (or other agents of habitat degradation) and so the status quo (ongoing impacts) continues.

Let me give an example: scattered among many watersheds within the corridors of listed species are hundreds of railroad barriers. Often these are low in the watershed, including right along the coast (and thus present keystone barriers) and have been in place for decades to a century. Railroad operators, which get a variety of federal inspections, right-of-ways, permits and funding, continue to operate and have ongoing impacts every migration season. If one of the railroad companies, or perhaps even a select subset of crossings by one company, was approached by PRD, that could ignite all the railroads to engage the assistance that the CRP can offer. As it is now, field staff has trouble even getting a timely reply from railroad owners when planning barrier removal.

Perhaps PRD is slowly expanding their impact, just as I propose. Sharing intent of new efforts and coordinating planned expansion with CRP and other Federal and State aquatic granting programs could reap substantial benefits.

Key Findings and Recommendations

- **Question 1: Our goal is to, “conserve habitat for managed fisheries and protected resources,” and one of the strategies for achieving this goal is expanding available habitat type by “increasing access to historic riverine rearing and spawning habitat for targeted diadromous fish species.” Where do you see us excelling in achieving this goal? What kinds of things could we be doing or doing more of to help us achieve this goal?**
 - **Observations**
 - **Strengths** (notable actions from the presentations where NMFS is executing well):
 - Accounting for hours put into a given FERC project
 - GAR inclusion of PRD in their presentation and WR actions being driven by Recovery plans (see general observation 4 above)
 - CRP involved in all phases of a project, providing technical support at key stages
 - CRP having a competitive grant program with clear solicitations and ranking process
 - Tapping into local partners and knowledge in both programs

- Contracting with experts to leverage authority and workload given the limitation that you “can’t hire yourself”
- Regions that use science centers, academe (e.g. Dam Impact Analysis), barrier assessment by students
- Working with COE priorities on Cape Fear watershed, Puget

Sound

- Partnerships with NGOs
- WR – working on floodplain and estuary issues, not just upstream passage, in locations where scientific studies or recovery plans have identified those habitats to be the/a weak link in the life cycle – see general observation 3 above

- USGS study on Lewis site in NWR
- GAR use of PRD as well as Hydro, CRP in case study
- Developing and publishing guidelines on Natural-like fish ladders
 - * Cape Fear Case Study: This included- 4 goals and a “big tent” approach to reconcile riparian natural resources: 1)Fish passage. 2)Socio-economic impacts 3)habitat and 4)water quality – all under one coordinator. The need to have socio-economic and water quality factors included in some projects, not only to build synergy but as an outreach tool (see question 7 – cross-cutting priorities) cannot be overstated. The West, especially California, is going through rapidly changing human demographics. The scale and geography of human population shift is the biggest driver of salmonid population declines (see Salmon 2100 (AFS 2006) report). Two other aspects of demographics are concurrent: 1) Human populations do not have the same tie or history with the land – hence the role of resource agencies to speak to long-term legacy/hazards over short-term gain, and 2) human populations may have a cultural shift away from fisheries as a core value but will retain socio-economic and water-quality benefits as inherent human needs and values. Therefore, fisheries needs must be linked with more apparent and immediate human needs.

- Leadership of group for Fish Passage on Potter Valley

■ Challenges

- Reopener in FERC not used
- FERC hours are accounted but remitted to Treasury Department – thus NMFS is not commensurately compensated for its efforts
- Lack of SMART goals in adaptive management
- Limited ability of redress when grantee/permittee does not follow-through
- Lack of widespread integration of PRD (also see general observation 4 above)
 - Lack of use of agreement process in California hydro. We have been told that hydro program is going through a capacity building phase in CA so maybe this should be revisited later if not shifting.

- **Recommendations to address issue**
 - Adaptive management goals should be tracked, have trigger points for further action and specificity (e.g. SMART goals). This would not only improve NMFS's process but provide clear consequences to all involved for not achieving goals.
 - Reopener clause should be tested, with DOJ back-up if needed
 - See question 3 for PRD integration example

- **Question 2: How do we better integrate Hydropower regulatory requirements and timelines with voluntary habitat restoration opportunities into a strategy for addressing highest priority barriers?**
 - **Observations**
 - **Strengths** (notable actions from the presentations where NMFS is executing well):
 - Partners led-prioritization – best approach in some cases
 - Seize opportunities to engage non-traditional partners
 - Establishing priorities can demonstrate a science-based approach to conservation
 - “Not all stream miles are equal “ analysis brought about by cross-regional detail
 - Gateway, G+1, G+2 analysis was good exercise but some lessons/analysis from it are unrealized
 - Use of GIS and viable habitat, quality as well as quantity of habitat in prioritization (also useful for post project evaluation and monitoring). This moves away from “stream miles” as the sole metric
 - Collaborate with stakeholders – better product and good buy-in
 - In PNW/CA tying priorities to Strategic Plans and Recovery Plans
 - **Challenges**
 - Partners getting entrenched and having a sense of entitlement vs. proper use of a pilot project: CPR and fellow funders have often ventured into priority/new geographic areas or types of barrier upgrades. The ford to bridge conversions in Carpenteria Creek can serve as an example of this. In these ventures, there is sometime outsized expenditure for habitat gained (e.g. bridges benefits fisheries but up to code bridges greatly benefits transportation for the bridge owner.) However, these initial projects are thought to serve a greater demonstration value and augment outreach and thus the costs are justified. There is danger, however, of a mismatch in message: recipients can misinterpret that “government” will be taking care of their problem, if allowed permission. The real message should be that this is limited offer at a high priority site for early adopters.
 - Lack of consideration of small (under 20 ft) dams in SWR fish routing analysis for hydro
 - Delay in action while waiting for prioritization

- Lack of ground truthing
 - Realistic goal sorting – do you save the best or save what is about to change (like NW example). How many resources to sink into “nearly hopeless” case? When is a population “functionally extinct” What are the triggers for conservation hatchery action (Condor, winter run examples)? Answering these would influence methods, grouping and timelines for habitat restoration work
 - How to be nimble enough to reprioritize based on sudden shifts brought on by climate change/extreme events (e.g. 97% kelp die-off in one year’s time recently on the CA coast) While this kelp die off had less of an effect on anadromous fish, we can expect to see similar sudden and extremely detrimental, but spotty and unpredictable impacts to target migratory fisheries
- **Recommendations to address issue**
 - RE: Pilot Program/Demonstration effort challenge above: The program should not inspire a sense of entitlement for government grants and steer CRP and other granting partners steadily back to “right-sized” investment for fisheries value gained. Messaging from initiation should be aligned with this course of action. When funding a pilot project, CRP could help recipient and others with similar needs explore how to ramp to more appropriate funding sources. For example, when helping fund a county culvert upgrade, the program should make clear that outsized funding is not likely on future projects and the county, as the owner of multiple barriers, needs to draft and commit to plan to bring all their barriers into standard in a reasonable timeframe. Such commitment could even be made a condition of the grant. In addition, a review of projects done under a pilot program justification should be carried out to see if anticipated benefits were realized.
 - Prioritizing is great but lots of big actors/issues/barriers are already known; don’t hold off on action because a priority/strategically plan, or update is coming later.
 - Inventories and prioritization should include all barriers of significant size, not just hydropower projects
 - Tying to Strategic/recovery plans works best where these plans have articulated SMART goals.
 - Set goals based on realistic “reaching” beyond past performance. Don’t tell an overly rosy story for an underfunded program. Reassess urgency of adding large resources to streams where fish are functionally extinct. Rely on partners to point out shortfalls to achieving sustainability goals
 - Provide mechanism to reappropriate NOAA level funding in response to extreme events. Consult from (PRD) on a programmatic basis for FEMA to do same.

- **Question 3: How do we better incorporate a “watershed” approach into high priority fish passage habitat restoration?**
 - **Observations**
 - **Strengths** (notable actions from the presentations where NMFS is executing well):
 - Watershed framing usually but not always the appropriate approach
 - Establishment of momentum in Klamath and Yuba by providing catalytic leadership vs. dictatorial authority
 - Reworking “partners” membership when some parties are only present for sabotage
 - Ability to act when low-hanging fruit trumps the general watershed approach
 - Bringing in consultants for a large, multiyear or specific tasks
 - **Challenges**
 - Key barrier owners in watershed may resist cooperation
 - **Recommendations to address issue**
 - Most large civil works (road, dams) are multi-year staged processes. Need to have at least a NMFS staff (or state counterpart) in project team to monitor development so that NMFS can engage early/appropriately. In this manner, agency expertise and interests can be brought to bear in a timely fashion. This is both more effective and less disruptive.
 - Bringing in of project-dedicated temporary staff on FERC project (paid for by licensee) can benefit both licensee and NMFS by expedience, providing an “honest broker” and by focusing resources.
 - PRD may have avenues to help engage reluctant barrier owners allowing for the synergy that a watershed approach provides to government expenditure of resources
-
- **Question 4: How can we better coordinate our Hydropower and Community-based Restoration projects to build momentum within a watershed to open and create more opportunities for accessible habitat?**
 - **Observations**
 - **Strengths** (notable actions from the presentations where NMFS is executing well):
 - Cross-division watershed teams/watershed workplans by GAR (slide 7)

- Peer to peer outreach and coordination. “Efficiencies resulting from sharing and leveraging each other’s resources (e.g., hydrology, engineering, field knowledge)”
- In some regions, CRP scope is and should be far greater than hydropower. CRP is NOT just passage, neither is Hydro.
 - Good response to 3rd party: coordination as unified voice
 - COE and NMFS sharing Puget Sound as key watershed
 - Ability for Regions to tailor programs to suit own needs/circumstances. Transference of ideas can be suggested or encouraged but not forced.

■ **Challenges**

- CRP is restricted to limited timeframe in projects (due to grant funding time limits) – developers who are reluctant and are satisfied by status quo can capitalize on this – NO consequence of waiting
 - Different drivers, triggers, timescales, scope and (some) players
 - Dependence on personalities not principle-driven organization
 - “there is no formal Habitat Enterprise “Fish Passage Program””
 - When sorting BETWEEN watersheds for priorities, science (and not license timing) needs to be added as a filter (in some cases, like Capenteria, this was done but not stated).
- **Recommendations to address issue**
 - PRD may have avenues to help engage reluctant barrier owners allowing for the synergy that a watershed approach provides to government expenditure of resources
 - Establishment of a Fish Passage Liaison to work across all programs in NMFS that touch on fish passage. This might be more efficiently combined with a liaison position for another issue- such as optimal fish flows (another area where the three programs should overlap) or an information technology specialist
 - More frequent Regional briefing reports (at least quarterly) between Hydro, CPR AND PR with ground level staff, collated by watershed (and finer grained in basins like the Chesapeake, Columbia, Sacramento, Klamath) that are redistributed in a timely manner back to staff in all Fish Passage activities with a minimum of redaction by management.
 - Internal listserv/intranet home to archive past briefings (see above) and timely additional bulletins when appropriate
 - These quarterly briefings should also have a “lessons learned “ call out/section that is shared between regional management who should be encouraged to share on to appropriate staff across regions.
 - Semi-annual? Web conference of fish passage related staff (with agenda and facilitation).

- Details (temp assignments) between regions and between regions and HQ
- Availability of cross-regional staff for consultation. This often does not work due to home pride or comfort zone resistance but a mechanism should be there to encourage this cross-region option (e.g. “bonus points” or recognition award in annual evaluation of senior technical staff for out-of-Region consultations)
-
- **Question 5: How can we improve our strategy and structure for evaluating agency-wide fish passage program outcomes?**
- **Observations**
 - **Strengths** (notable actions from the presentations where NMFS is executing well):
 - Pre-project (Battle Creek) baseline study
 - Predictive study (Leah M. on road crossings) with cognizance of limiting assumptions
 - Tier II monitoring
 - **Challenges**
 - Lack of accounting for reservoir delays and mortalities in many cases
 - Poor metrics for reporting achievement
- **Recommendations to address issue**
 - Optional metrics were suggested in 2008 – do a “thought experiment” hindcasting with alternate metrics and see what the difference in outcome would be
 - Emphasize different metrics with different audiences. Explore what questions the metric should answer for each audience: e.g. in-house scientists, in-house manager, public, Congress, OBM to derive more appropriate metrics
 - FishXing (for road crossings) already has a percentage passable output (flawed because it is based on the hydrograph not hydrograph combined with consequence of delay); could be used to demonstrate incremental improvements.
 - Ability to tolerate ambiguity and work towards resolving priority data gaps
 - More evaluation of new restoration techniques, partnering for evaluation, critical mass evaluation
 - Peer review of studies/evaluations to strengthen scientific rigor (in some cases this is already being done, sometime informally)
 - Testing of new field data collection technology (e.g. remote sensing fish counters, drones) and national sharing of promising applications

- **Question 6: Within our program activities, what is the most effective balance for investing in implementation and monitoring and evaluation?**
 - **Observations**
 - **Strengths** (notable actions from the presentations where NMFS is executing well):
 - Always evaluating a subset
 - Relying on scientifically sound evaluations by partners
 - **Challenges**
 - Funders may need greater assurance than management of tried and true solutions dictates
 - Often visionary or large-scale efforts, which will make a meaningful difference, will take several lifecycles to prove their worth, especially if they require longer-term geomorphic responses. Evaluation programs are not oriented to long-term monitoring and future actions often cannot wait on results of such studies.
 - **Recommendations to address issue**
 - Select projects for monitoring that are going to make a difference going forward
 - Reduce monitoring on project types that have an established track record unless first level monitoring shows unexpected malfunction
 - Use of citizen-science both to collect dispersed and on-site data and to engage the public (see Question 7)
-
- **Question 7: What are steps we can take to improve our outreach to ensure we are effectively communicating the importance of fish passage?**
 - **Observations**
 - **Strengths** (notable actions from the presentations where NMFS is executing well):
 - Extensive use of partnerships
 - Identifying cross-cutting priorities
 - **Challenges**
 - Engaging non-traditional partners, widening the circle
 - **Recommendations to address issue**
 - World Fish Passage Day, USFS road example (see attached), congressional outreach
 - Using other agencies and NGOs to network to the non-traditional partners (the Linked-In method- extension by association)
 - Use of professional society meetings (e.g. AFS, ASCE) for cross-cutting, face-to-face meetings

- Network with Foundations, private and public grant sources in marine and estuary science for collaborative funding and outreach
- Local Funders Forum (federal, state, local, NGO granting programs to exchange, collaborate on upcoming projects/proposals
- Survey partners to find what tool/resources they most need from NMFS
- Every funded field project with public access should have signage providing the list/logo of funding partners, a physical address, website and QR code that public can access for further information or to report a dysfunction. Website can provide details like problems statement, before/after photos, etc. NMFS or partners/grantee can provide these signs.

Conclusions:

These NMFS programs, especially in the field offices, have a dedicated staff with a great deal of experience and an eclectic talent pool that has made significant accomplishments with the resources allotted. However, most fisheries stocks continue their downward trends. The preponderance of impacts causing these declines are human activities and demographics acting at various timescales. The price we are paying for the pace of our environmental education is stupendous. The vast majority of these activities in near-shore and freshwater environments are being encouraged and/or aided by branches of the federal government. Since increased resources were not part of the scope of this review, NMFS, in cooperation with their partners, needs to engage more effectively with these federal activities, on a meaningful timescale, if these downward fisheries population trends are to be halted and possibly reversed. At the very least, NMFS needs to position themselves so that restoration and reconciliation of fisheries resources can be expeditiously accomplished when societal values shift to a recognition of this irreplaceable resource. Fish passage alone cannot accomplish this though it is an integral and more publicly comprehensible part of the solution.

Hydropower and the CPR program alone cannot accomplish improved fish access and populations; PRD and other parts of NOAA are essential players. However these programs, as indicated in this review and above recommendations, can initiate more effective action and outreach with both internal and external partners.