

Cape Fear River Basin - Fish Passage Action Plan 2016

Goal 1: Restore Access to Historic Migratory Fish Habitat in the Cape Fear River Basin

Action	Target	Timeframe : Lead	Notes
Action 1: Restore fish passage in main stem river past Lock and Dam #3			
Action 1.1 Pursue opportunities to get material to fill scour hole below Lock and Dam #2 from the North Carolina Department of Transportation projects and other sources.	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Short/Medium USACE	Potential fill (~3000 cubic yards) to be available from DOT from demolition of Highway 11 bridge and Tar Heel Bridge. Filling scour hole will reduce cost of building fish passage. Not economical to transport fill from Harbor dredging.
Action 1.2 Continue discussions with Duke Energy and the regulatory agencies about mitigation for proposed Shearon Harris nuclear plant expansion	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Medium : State agencies, USFWS, and NOAA	Monte Matthews is Corps lead. FWS, NOAA, DMF, and WRC submitted a white paper to Progress Energy and the Corps earlier in 2012, which is under consideration, laying out potential mitigation options. DWR is DENR lead for instream flow issues and participated in field studies for CFR below Buckhorn Dam and Buckhorn Creek below Harris Dam (with FWS and WRC) in conjunction with EA for expansion. NOAA means NMFS SER HCD.
Action 1.3 Identify mechanism to provide funding for fish passage at Lock and Dams #2 and #3. Then approach potential funding sources for support (e.g., agency fish passage funding, non-governmental organizations, municipal)	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Medium : USFWS	Mechanism could be escrow account to hold pieces of funding. Coastal America provided this kind of mechanism for the Quaker Neck project and NC Coastal Federation had account. Passage could serve as mitigation for municipal utilities for increased water withdrawal needs. Municipal utilities would benefit because the rock arch ramp would strengthen the structure of Lock and Dam #2, preserving the ability to continue to have the pool for withdrawals behind the dam. Estimated cost is ~\$5M for full rock rapids structure at LD#3.
Action 1.4 Examine funding options via Sections 216 and 1135 of the Water Resources Development Act of 1986 for fish passage at Locks and Dams #2 and #3	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Long : USACE	Currently (early 2013) a moratorium on use of these funds, especially ecosystem restoration authority. Provides authority for Corps to use up to \$5M towards fish passage improvement projects. Need a non-federal partner.
Action 1.5 Investigate mitigation opportunities raised by potential additional Wilmington dredging work (e.g., in PNAs) as a way to further incentivize installing fish passage at Lock and Dam #2	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Long : NOAA, USFWS, NCDMF, and NCWRC	
Action 1.6 Construct rock arch ramp or other fish passage at Lock and Dam #2, pending appropriate authority and non-federal match	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Long : USACE, Fayetteville PWC	Estimated cost is ~\$13M due to scour hole. Rock arch ramp as final design (and whether need partial or full) is pending monitoring results of rock arch ramp at Lock and Dam #1. Corps would need authority to construct fish passage.

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Action 1: Restore fish passage in mainstem river past Lock and Dam #3			
Action 1.7 Construct rock arch ramp or other fish passage at Lock and Dam #3, pending appropriate authority and non-federal match	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Long : USACE, Fayetteville PWC	Estimated cost is ~\$5M for full rock rapids structure at LD#3. A partial ramp at LD#3 is roughly estimated at about 2/3 the cost of a full ramp, but an accurate estimate cannot be determined until a detailed design is completed. That design cannot be performed until funds are available. Rock arch ramp as final design (and whether need partial or full) is pending monitoring results of rock arch ramp at Lock and Dam #1. Corps would need authority to construct fish passage.
Action 1.8 Engage in discussions with Progress Energy about fish passage at Buckhorn Dam once successful fish passage achieved past Lock and Dams #2 and #3	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Long : NOAA, USFWS, NCDMF, and NCWRC	Sequential action after fish passage successful past Lock and Dams #2 and #3.
Action 1.9 Work with industry to identify potential location of impingement/entrainment issues and reduction technologies associated with power plant National Pollutant Discharge Elimination System (NPDES) permits.	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Short : NCDWQ and NCDMF	DWQ, as the NPDES permitter, would have to initiate. To reduce 'take' of the listed species. Note from Tom Thompson 3/14/13: "USEPA will be publishing its' final Phase II 316(b) rule dealing with entrainment and impingement issues this coming June (2013) so those issues will be addressed Nationwide beginning late this year and early next year. There is a compliance schedule presented in the draft rule but this may have changed with publication of the final in June
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Action 2: Restore fish passage and habitat condition in Cape Fear River tributaries via targeted dam removals, coordinating with other aquatic species interests			
Comments from American Rivers (11-20-12) AR can play a lead role in the dam removals, with ideal continued support and partnership from FWS and support and engagement from NC WRC and NC DENR as well. It would also be nice for TNC and CFRW to consider managing dam removal projects if they have the capacity to do so. AR has been talking more about how to direct stream mitigation funds to dam removal projects as appropriate. The Corps had a draft guidance for doing dam removal as compensatory stream mitigation in 2008, which they recently rescinded. They may plan to revise and reissue it, but this is unclear. Perhaps this could be included as an action, but would require buy-in from the Corps. A more general action could also say to use compensatory stream mitigation funds for dam removals as appropriate; the lead could be the Corps and NC IRT (note: this suggestion did not make it into the plan. For follow up a contact at the Corps could be Todd Tugwell).			
Action 2.1 Pursue priority dam removal projects on the Little River, including an evaluation of the breached, unnamed dam on Fort Bragg property	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Short : AR and DC&A with help from NOAA	First barrier upstream from confluence with Cape Fear River.

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Action 2: Restore fish passage and habitat condition in Cape Fear River tributaries via targeted dam removals, coordinating with other aquatic species interests			
Action 2.2 Apply prioritization tool for North Carolina to Cape Fear and identify barrier removal projects that will benefit migratory fish	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Medium : SARP, NOAA and USFWS co-lead, with help from NCDMF and NCWRC	Within the dam removal subgroup, partners will continue to explore top ranked dams via the new USFWS Fish Barrier Inventory ArcGIS online map. Partners will make contact with landowners, working closely with Piedmont Conservation Council to identify shared priorities within overlapping geographic areas. Field assessmeng of top priority culvert replacement projects will occur in the near future following the completion of the USFWS Fish Barrier Inventory, culvert dataset.
Action 2.3 Continue discussions with owner of Lockville Dam about possible opportunities for fish passage	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Medium : AR with help from NOAA	FWS, AR, DWR have been engaged to date. Owner is not interested in removal but has expressed interest in fish passage. Lockville is an active hydro project
Action 2.4 Pursue priority dam removal projects on the Haw and Deep Rivers	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Medium : AR with help from NOAA, SARP	The Deep River is a higher priority right now because the Jordan Dam blocks the Haw River but there could be opportunities on the Haw. Dams on these rivers will be explored using inventory and prioritization resources mentioned above.
Action 2.5 Advance priority barrier removal projects identified through NC Barrier Prioritization Tool and on-the-ground investigation through available grant processes	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Medium : NOAA, AR, DC&A , SARP and USFWS	High priority projects identified using the tools available will move through the project management process of design, engineering and construction.

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Action 3: Protect and restore fish access to habitat in tributaries via efforts to prevent and remove lateral blockages, or if blockage removal is not feasible to otherwise provide fish passage			
Action 3.1 Assess impairments to floodplain connectivity using NHD Plus hydrography and identify priority sites where improvements are needed	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Medium : TNC lead with help from USFWS and NOAA	NOAA Coastal Services Center (Chrissa Waite) can provide technical assistance on how to use Habitat Priority Planner tool and provide existing data, such as 30m land cover data. Need data layers to represent criteria as inputs to HPP tool (e.g., AFSAs and PNAs layer, remote sensing data or field data to identify impairments, hydrologic modeling?). Action originally suggested by Wilson Laney (FWS) to address horizontal connections needed in watershed (e.g., blockages by dikes/levees, culverts, small dams, water control structures) in addition to passage at dams. TNC will be including Cape Fear watershed as part of scope of their Southeast Aquatic Connectivity Project (kickoff Jan. 2013 and should be done by Dec. 2014). Difficult to get at to what degree culverts are actual blockages so will look at density of road crossings as proxy for likelihood of fragmentation (TNC did for NE project). Erik Martin is TNC POC. Rebecca Benner also involved. NHD Plus hydrography is 1:100,000 scale. A follow-up analysis may be warranted to look at the Cape Fear watershed on a 1:24,000 scale (TNC did for The NOAA Restoration Center for Ches. Bay). TNC lead (Erik Martin as part of TNC's Southeast Aquatic Connectivity Project) with help from FWS (from Wilson: FWS-ENC/SEVA SHC Team) and NOAA (GIS assistance if needed from OHC HQ and technical tool assistance if needed from NOAA CSC).
Action 3.2 Seek funding for removing priority obstructions or providing passage from above analysis (action 3.1)	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Long : AR, NCDMF, NCWRC, NOAA, USFWS	Added at 5/23/12 Working Group meeting.

<p>Action 3.3 Review/revise North Carolina Department of Transportation road crossing guidelines to protect migratory fish habitat from existing and future problems</p>	<p>Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams</p>	<p>Medium : NCWRC, NCDMF, NOAA,USFWS, and North Carolina Department of Transportation</p>	<p>Added at 5/23/12 Working Group meeting. Could address existing problematic road crossings when replaced.</p>
Action	Target	Timeframe : Lead	Notes
<p>Action 4: Gather information about population dynamics to inform future necessary management and restoration actions</p>			
<p>Action 4.1 Compile history of migratory fish and their fisheries in the Northeast Cape Fear River by examining landings and other historic fisheries data, gathering existing data from state records, and speaking with fishermen</p>	<p>Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams</p>	<p>Short : NOAA</p>	<p>Note: Wilson is compiling list of existing relevant data and reports for whole Cape Fear River; could include as Plan appendix. This action would contribute data to Wilson's list.</p>
<p>Action 4.2 Assist NCDMF and NCWRC with future tagging and field sampling efforts for anadromous fish</p>	<p>Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams</p>	<p>Short (and ongoing) : NOAA and USFWS with help from CFRW</p>	
<p>Action 4.3 Compile existing survey data for American eels to determine distribution within the Cape Fear River basin, with the goal of determining where eel passage efforts are needed</p>	<p>Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams</p>	<p>Short : NOAA and USFWS</p>	<p>The DWQ stream fish database may be helpful for mapping the current distribution of eels (http://h2o.enr.state.nc.us/esb/NCIBI.htm). Also, Bryn Tracy from DWQ and North Carolina Museum of Natural Sciences. Fishes Database (http://collections.naturalsciences.org/resultsFishes.aspx) have eel data and maps. NOAA means NMFS SER HCD here.</p>
<p>Action 4.4 Examine archived Native American middens and archeological records for sturgeon scutes to determine historical habitat usage</p>	<p>Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams</p>	<p>Medium USFWS</p>	<p>FWS POC is Wilson Laney. FWS funded similar study in Roanoke River via UNC Chapel Hill. Steps would be to contact UNC archeology institute to see if archived Cape Fear materials. Then, examine samples (Wilson could do this).</p>
<p>Action 4.5 Monitor fish passage past Lock and Dam #1 (striped bass, sturgeons, shad, flathead catfish) to determine effectiveness of full rock ramp structure</p>	<p>Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams</p>	<p>Short/Medium (2013-2015) : NCDMF, USACE, and NCCFWRU with help from CFRW</p>	<p>Tagging American shad, striped bass and flathead catfish in fall 2012 through spring 2014. Fish passage will be complete by early spring 2013 at Lock and Dam #1. 2 year monitoring will begin in spring 2013 including sturgeon monitoring to determine fish passage success. Receivers will be placed at all three locks and dams. DMF is lead for sturgeon data, NCSU/USGS is lead for other fish data.</p>

Action	Target	Timeframe : Lead	Notes
Action 4: Gather information about population dynamics to inform future necessary management and restoration actions			
Action 4.6 Include Cape Fear fish passage and barrier removal needs (priority locations and methodology) for shad in NC's habitat plan under ASMFC Amendment 3 for shad and river herring management plan (as per the sustainable fishing plan required for shad)	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Medium (due 2014): NCDMF and NCWRC	
Action 4.7 Monitor movement of fish through the potential natural barriers between Lock and Dam #3 and Buckhorn Dam	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Long : NCWRC, NCCFWRU, USFWS, and Duke Energy	Monitor species and sizes and habitat usage on shoals and drops between these dams to see if these features act as natural fish passage barriers. Purpose is to establish baseline before fish passage past Lock and Dam #3. This needs to be a cooperative effort to develop a monitoring plan. Some evidence of fish getting to Buckhorn Dam to date: Joe Smith's tagging work has shown that striped bass get to Buckhorn Dam, and WRC has observed shad at Lillington.
Action 4.8 Compile existing data on spawning and nursery areas for shad, striped bass, and Atlantic and shortnose sturgeon in the Cape Fear River	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Short : NCDMF, NCWRC, and NOAA	Joe Hightower's grad students (e.g. Joe Smith and Josh Raabe) have done research on current shad and striped bass spawning areas in mainstem river. Other data exists (e.g., WRC and DMF surveys). NOAA means NMFS SER HCD and PRD here.
Action 4.9 Seek funding via Endangered Species Act Section 6 grant from NOAA or other mechanism to assess young-of-the-year Atlantic and shortnose sturgeon in the Cape Fear River.	Anadromous fish access is restored to the approximately 40% of their remaining historic habitat that is currently disrupted or blocked by dams	Long : NCDMF and NCWRC	Could be done via trawling, gill netting, drift netting, or other mechanism. An ESA Section 10 permit would be required from NOAA for any netting work with sturgeon.