

Cape Fear River Basin - Habitat Action Plan 2016

**Goal 2:** Improve Habitat conditions for Migratory Fish within the Cape Fear River basin

Action	Target	Timeframe	Notes	Most Recent Action Progress - Jan 2016 Action Progress
<b>Action 5:</b> Protect high quality spawning habitat				
<p><b>5.1</b> Continue enforcement compliance with North Carolina state rules and permit conditions for projects impacting migratory fish habitat in the Cape Fear River</p>	<p>Existing riparian wetlands are maintained and restored/enhanced in areas with evidence of buffer loss and/or water quality issues.</p>	<p>Short (and ongoing) : NCDWR (Fred Tarver) : Continuous</p>	<p>Additional personnel not feasible. However, all major and minor municipalities have 100% inspection of compliance on all waste water discharges. DWR also follows up all non-compliance with additional inspections and/or technical assistance to get in compliance. DMF suggests asking DCM.</p>	
<p><b>5.2</b> Model historic current and future flows using the WaterFALL modeling study and other available data to model flows on the Cape Fear River and its main tributaries</p>	<p>Existing riparian wetlands are maintained and restored/enhanced in areas with evidence of buffer loss and/or water quality issues.</p>	<p>Long : New Hanover County, City of Wilmington, TNC (Dan Ryan), CLT, SALT : Continuous</p>	<p>Local governments should be involved in this action if it stays in the planned '14: Switched out agencies as leads and inserted partners already vested in land conservation along these waterways</p>	<p>Nov 15: August 2015 Habitat Committee meeting &amp; subsequent workshops have identified viable tracts of land for purchase. Jan 2016 Action Progress: Conservation Easement closed on RMS property at the headwaters of Town Creek. Next Steps: Follow-up with New Hanover County on their Smith Creek tracts; determine whether there are restoration needs</p>
<p><b>5.3</b> Produce outreach materials on the value of vegetated shorelines for migratory fish habitat protection and importance of reducing non-point runoff associated with agriculture, forestry, and development land-use activities</p>	<p>Existing riparian wetlands are maintained and restored/enhanced in areas with evidence of buffer loss and/or water quality issues.</p>	<p>Short : DWR (Fred Tarver) : Continuous</p>	<p>DWR houses Project WET (Water Education for Teachers), It's Our Water, and Stream Water programs which try to heighten awareness of protecting NC's water resources (Holly Denham is POC)[see <a href="http://www.ncwater.org/Education_and_Technical_Assistance/">www.ncwater.org/Education_and_Technical_Assistance/</a>]. DWR available to meet with other resource agencies to discuss issue. Transferability of existing materials to the Cape Fear Basin should be high. DCM already planning to do something along this line but not specific to diadromous fish. WRC may be able to be included in this action. From Anne Deaton: DWR would be better as lead. DMF is involved with a DENR interagency group to encourage living shorelines. Also can put information on our website which we are re-doing right now.</p>	<p>June 2013: Focused on Project Wet, whose funding is currently up in the air with the state budget. Jan 2016 Action Progress: Project WET continues for teachers; DCM (Whitney Jenkins) is doing a citizen science workshop on Feb 3; NC Coastal Fed's Smart Yards guide-could be a goal to get outreach materials on line; NRCS went through a re-organization where teams are working regionally as opposed to county level. Next Steps: Brena Jones to keep Habitat Committee up to date on Deep River riparian corridor work (Chatham City Working Group) Project Examples: Methodist College riparian restoration; Sisters Canyon Restoration: NCDMS;</p>

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<b>Action 6:</b> Protect river herring spawning and nursery grounds in flooded hardwood habitats				
6.1 Create Geographic Information Systems (GIS) map of remaining inland freshwater wetlands and flooded hardwoods in the complete Cape Fear watershed (amount, location, size of stands), and provide data to the NC Coastal Land Trust, TNC, and other land trust focused NGOs	Existing riparian wetlands are maintained and restored/enhanced in areas with evidence of buffer loss and/or water quality issues.	Medium : Matt Hayes : Continuous	TNC or CFRW may have some existing data. Also look at NWI data. Could be some overlap with buffer mapping/assessment actions proposed to be completed by TNC and Jennifer Alford. Natural Heritage Program natural area inventory results include assessments of freshwater wetlands and bottomland hardwoods, etc. NOAA means NMFS OHC HQ here. Nov '14: changed lead from "NOAA with help from NC Natural Heritage Program" to Matt Hayes who has shown interest in managing this project, funding dependent	Data acquired from Matt Hayes. Needs field verification when used to site projects or reference specific areas. Distribute data to groups interested in its use. Jan 2016 Action Progress: data is available; used in online map; proposals continue to be developed to further improve dataset
6.2 Land protection organizations and agencies, including TNC, the Coastal Land Trust, other land trusts, and select local soil and water conservation districts, use results of GIS analysis listed in action 6.1 to focus outreach and education activities with landowners and/or developers in promoting conservation easements, conserving hardwood habitats, and overall protection of riparian habitats	Existing riparian wetlands are maintained and restored/enhanced in areas with evidence of buffer loss and/or water quality issues.	Medium : Cape Fear Arch (Dan Ryan) : Continuous	Nov '14: changed lead from TNC to Cape Fear Arch as this is a more appropriate venue to distribute data	Nov 15: Matt Hayes data should be passed along to conservation organizations for inclusion in prioritization. Will announce at both next Cape Fear Arch meeting & SWCD Regional Meeting. Jan 2016 Progress: Healthy Watersheds Consortium Grant program holds promise for additional planning leading towards land protection. Next Steps: Look into competitiveness for a Cape Fear based project. <a href="#">Project examples Kerr-McGee: Land Mgmt. Group: Indian Creek Acquisition;</a> <a href="#">Town of Leland-Sturgeon Creek Park;</a> <a href="#">Town of Navassa-Eagles Island Acquisition;</a> <a href="#">Acquisition NC, LLC: Navassa Town Park;</a> <a href="#">North Bank Mill Creek Project: Navassa;</a> <a href="#">Black River Acquisition (Squires &amp; Canetuck):TNC;</a> <a href="#">Deep River restoration/protection: WRC;</a>
6.4 Provide educational program for landowners on river herring's need for flooded hardwood habitat	Existing riparian wetlands are maintained and restored/enhanced in areas with evidence of buffer loss and/or water quality issues.	Short : CFRW Kemp Burdette : In progress	Could include seminar and field trip to a relevant Land Trust holding. NC Coastal Land Trust prefers to not co-lead, deferring to CFRW; not much background on river herring. Most Recent: Nov '15: use Hayes' work to identify landowners for both CFRW's effort but also SWCD. Nov '15: CFRW needs to be engaged and informed on expectations and/or outcomes for this objective; introduce to SWCD as well. Problems Identified: Is CFRW the right entity for this action item? DMF has river herring plan - has good language for outreach	

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<b>Action 7:</b> Protect and restore the health of the Cape Fear River Estuary for migratory fish				
7.1 Determine the underlying causes of wetland loss in the coastal watershed of the Cape Fear River estuary and implement policies, programs, and /or projects to address the underlying causes identified.	Existing riparian wetlands are maintained and restored/enhanced in areas with evidence of buffer loss and/or water quality issues.	Medium : NOAA (Janine Russ), with the Interagency Coastal Wetlands Work Group. : Continuous	NOAA means NMFS OHC HQ here. This is the work that the interagency wetlands group is doing as part of the National Ocean Policy. Janine Harris can be contacted about this action	Feb 15: The Coastal Wetlands Cape Fear analysis report is almost done and was reviewed by those in the basin who participated in the calls but it won't be out publicly for a while. Jan 2016 Action Progress: Still out for review; the end product may not be as beneficial to local Cape Fear efforts
<b>Action 8:</b> Restore stream and wetland habitat in or influencing AFSAs and PNAs				
8.1 Seek funding and partnership opportunities to restore aquatic connectivity to streams and wetlands in or influencing AFSAs and/or nursery areas, and encourage non-partner agencies to prioritize restoration actions in these habitats as well.	Existing riparian wetlands are maintained and restored/enhanced in areas with evidence of buffer loss and/or water quality issues.	Medium : Cape Fear River Watch (Kemp Burdette) : Continuous	New Hanover County owns some Clean Water Trust Fund and hazard mitigation riparian properties that could be restored. DWR grant program could help fund: ( <a href="http://www.ncwater.org/Financial_Assistance/">http://www.ncwater.org/Financial_Assistance/</a> ). Nov '14: From Anne Deaton: Cape Fear River Watch has taken the lead on this. DMF manages CRFL grant that would support applications for restoring , if meeting grant criteria. Most Recent: Nov 15: August Habitat Committee meeting identified partners and projects to complete work, including fish passage at L&D#2 & potential ACOE-funded projects for Eagles Island land acquisition & stream restoration & oyster reef/living shoreline work at Carolina Beach SP & Ft Anderson. Problems Identified: CFRW is not working on this. <a href="#">Project examples:</a> <a href="#">Oyster Reef restoration</a> , <a href="#">shoreline stabilization: Audubon; Snows Cut</a> ; <a href="#">Coastal Fed: Carolina Beach State Park</a> ; <a href="#">CFRW: Restoration of Alligator Creek on Eagle Island</a> ; <a href="#">Town of Leland: wetland restoration of Sturgeon Creek</a> ; <a href="#">LCFR freshwater wetland restoration</a> ; <a href="#">oyster reef restoration : BHIC</a> ;	
8.2 Effectively manage or restore wetland areas currently conserved by TNC which are identified as priority buffers for migratory fish species	Existing riparian wetlands are maintained and restored/enhanced in areas with evidence of buffer loss and/or water quality issues.	Long/ongoing : TNC Dan Ryan : Continuous	Provided by Dan/TNC	
<b>Action 9:</b> Target funding opportunities to priority habitat research and restoration projects				
9.1 Federal agencies (NOAA and NRCS) develop a better cooperative exchange of information in order to better understand any similar land based programs with funding for conservation	Existing riparian wetlands are maintained and restored/enhanced in areas with evidence of buffer loss and/or water quality issues.	Medium : NOAA (Janine Russ) and NRCS : In progress	NOAA means NMFS OHC HQ, SER PRD, and SER RC. SER PRD and RC have begun a similar discussion with NRCS in the SER and are interested in being engaged. Josh (NRCS) in March 2013: NRCS supports the idea of coordination with potential partners. They think the most likely way to meet that Action Item is to invite NOAA (Fritz) to future State Technical Committee meetings where conservation partners can receive updates and provide input to NRCS on future conservation and program priorities. This will allow NRCS and NOAA to make a connection where now there is none that NRCS is aware. Once we can make a connection with NOAA, we would be glad to meet with them to discuss how their programs may be able to complement NRCS Farm Bill program funding. Sept 2013: Fritz Rohde is the local NMFS POC and has connected with local NRCS staff on this action.	
9.2 Identify specific areas within the Cape Fear watershed for the Conservation Reserve Enhancement Program (CREP) to focus on for marketing, including the impairments to flood plain connectivity sites that are identified in 3.1	Existing riparian wetlands are maintained and restored/enhanced in areas with evidence of buffer loss and/or water quality issues.	Short/Medium : NCDSWC (Kristina Fischer) : N/A	The NCDA&CS SWCD has a position for a new employee to do this work to update a priority data layer. They will hire for the position soon to prioritize watersheds this years, and identify priority areas in the state. The Conservation Reserve Enhancement Program (CREP) objective is to install riparian buffers by providing financial incentives for 30 yr. permanent easements. All are eligible for the CREP funding, but funds are focused in priority areas. Sept 2013: There is a new CREP coordinator and will also benefit from the data associated with 10.2	

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<b>Action 10:</b> Enhance knowledge of fish habitat use and identify high quality habitat areas in the Cape Fear River basin				
<b>10.1</b> Complete a basin-wide analysis to determine location of existing wetlands, aquatic habitats, and vegetated uplands, and determine change in land use over time that could be used by agencies for resource protection efforts.	Existing riparian wetlands are maintained and restored/enhanced in areas with evidence of buffer loss and/or water quality issues.	Short : Matt Hayes : In progress	NOAA (means NMFS OHC HQ) may be able to look at available data to determine % tree cover within a certain distance of river / streams/tributaries (300 and 500 feet). New Hanover County can help contribute data to inventory. From Rebecca Benner: TNC will have a number of analyses that could feed into this action including assessments of land cover change and rates of change as well as a more in-depth analysis of how land use configuration and land use patterns impact water quality as it flows across the landscape and into the river. Analie Barnett at TNC is doing the latter analysis for the state and is happy to scale down her analyses for the Cape Fear to whatever scale might make sense. We can of course talk more about this at a future date when we have the results but I just wanted to let you know that there are a variety of ways TNC can contribute to this particular action. Nov'14: Removed NOAA, NCWRC as leads per Janine; removed Jennifer Alford as lead as her dissertation did not cover this in detail; from Anne Deaton: DMF can assist by providing data; possibly some GIS analysis in future. Dec 2013: Note that NOAA's GIS capacity at OHC HQ will be back as of January 2014 and any needs can be revisited.	
<b>10.2</b> Compare information from 10.1 with existing anadromous fish habitat data (action 4.8) to identify important anadromous fish habitat areas in need of better protection or watershed restoration.	Existing riparian wetlands are maintained and restored/enhanced in areas with evidence of buffer loss and/or water quality issues.	Medium : TNC, NCWRC, NCDMF, NOAA (Fritz Rhode), NCCFWRU, and USFWS : Action needed	Need primary fish areas identified. NOAA means NMFS SER HCD and PRD; Nov'14: Removed Jennifer Alford as a lead; From Anne Deaton: DMF can provide anadromous fish data that is available, particularly the tagging data. GIS layers for the Atlantic Coast HUC12 diadromous fish prioritization obtained. Bennet Wynn may be working on similar work with Fritz. Next Steps: Where are the fish going? Compiling DMF's tracking data would be a good research project	
<b>10.3</b> Look at climate change and sea- level rise impacts on migratory fish habitat	Existing riparian wetlands are maintained and restored/enhanced in areas with evidence of buffer loss and/or water quality issues.	Long : Cape Fear Arch (Dan Ryan), North Carolina Natural Heritage Program : In progress	Cape Fear Arch has been working on this issue already, along with TNC and DENR Natural Heritage Program (Scott Pohlman); Nov '14: DMF removed as a lead; from Anne Deaton: DMF can review product to interpret for migratory fish. Most Recent: June 2013: plan is to crosswalk climate change database spatially to Cape Fear and have DMF interpret it specific to migratory fish. Problems identified: The river channel will be deepened for port in near future. Port will also be completing a Feasibility Study, then an EIS/EA for widening turning basin. Next steps: Could be a role for TNC's coastal resiliency toolbox, which would require funding to implement	
<b>10.4</b> Incorporate river specific threats when developing the new Endangered Species Act recovery plans for shortnose and Atlantic sturgeon	Existing riparian wetlands are maintained and restored/enhanced in areas with evidence of buffer loss and/or water quality issues.	Long : NOAA (Fritz Rhode) : Continuous	NOAA means NMFS SER PRD here. From Steph Bolden (SER PRD): 'River specific threats' means anything that could be limiting recovery- e.g., poor water quality, dredging, gillnet fishery....	
<b>10.5</b> Research possibilities and seek funding to conduct benthic surveys using side-scan sonar to assess potential Atlantic and shortnose sturgeon spawning habitat above and below existing barriers in Cape Fear River.	Existing riparian wetlands are maintained and restored/enhanced in areas with evidence of buffer loss and/or water quality issues.	Medium : Lead: USFWS (Mike Wicker) and NCWRC co-lead, with help from NOAA and NCDMF : Continuous		

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<b>Action 11: Protect instream fish habitat from in-stream impacts</b>				
<b>11.1</b> Develop NCDMF guidelines for best practices in design and siting of energy development and infrastructure projects to minimize negative impacts to fish habitat, avoid new obstructions to fish passage, and, where possible, provide positive impacts	Reduced or eliminated future damage to instream habitat.	Medium : NCDCM (Greg Dredge) with help from NCWRC, NOAA, and USFWS : Continuous	Provided by Jessi/DMF. State lead, NOAA and FWS would participate and review. NOAA means NMFS SER HCD here. Nov '14: from Anne Deaton: DMF can do part of this now. Regarding infrastructure (road crossings), an interagency group of folks were planning on doing this (coastwide) but waiting on culvert study results, which ran into problems.	
<b>11.3</b> Verify current in-stream work moratorium window is adequate for protecting Atlantic sturgeon during spawning periods and recommend changes as necessary	Reduced or eliminated future damage to instream habitat.	Short : NOAA (Fritz Rhode) : Continuous	NOAA means NMFS SER PRD here. In-water work moratorium includes activities like dredging and pile driving. SER PRD lead would be Kelly Shotts. NOAA's protective measures usually adopted and published by NC DCM (CZM program).	
<b>11.4</b> Review existing guidelines on snag removals	Reduced or eliminated future damage to instream habitat.	Short : NCWRC (Maria Dunn) and USACE co-lead : Continuous	Corps Section 10 permits are required for snag removals in navigable waters. DWR grant program funds snag-removal projects [see <a href="http://www.ncwater.org/Financial_Assistance/">http://www.ncwater.org/Financial_Assistance/</a> ]. DWR doesn't think Corps guidelines need to be reviewed/updated. Existing guidelines are what they are at this point; reference materials were provided by WRC & posted on partnership's community benefits website.	
<b>11.5</b> Create outreach materials on snag removals and provide to relevant state agencies, soil and water conservation districts, and county extension agents to educate landowners	Reduced or eliminated future damage to instream habitat.	Short : CFRW (lead-Kemp Burdette) with help from NOAA, NCDWR, and NCSU Cooperative Extension : Continuous	DWR grant program funds snag-removal projects (Jeff Bruton is POC)[see <a href="http://www.ncwater.org/Financial_Assistance/">http://www.ncwater.org/Financial_Assistance/</a> ]. DWR available to meet with other resource agencies to discuss outreach materials on snag removal and the need to produce these materials. The first discussion, however, would be what is currently available and the transferability of these materials to the Cape Fear Basin. Transferability should be high. There is an abundance of literature on its importance < <a href="http://www.americanwhitewater.org/content/Wiki/stewardship:woody_debris">http://www.americanwhitewater.org/content/Wiki/stewardship:woody_debris</a> >, including the field of stream restoration < <a href="http://www.bae.ncsu.edu/programs/extension/wqg/srp/sr_guidebook.pdf">http://www.bae.ncsu.edu/programs/extension/wqg/srp/sr_guidebook.pdf</a> >. WRC says: KA notes that AFS has already published a document on this we should probably check out. BW agrees there should be some existing guideline that can be used here, rather than develop new ones, if this is indeed still viewed as a substantial threat. NOAA means NMFS SER HCD here. ACOE publication ( <a href="http://www.dtic.mil/dtic/tr/fulltext/u2/a259103.pdf">http://www.dtic.mil/dtic/tr/fulltext/u2/a259103.pdf</a> ) used to develop debris removal guidelines for contractors in Onslow. June 2013: all reference Project Wet, whose funding is tenuous. Problems Identified: Snag removal or education thereof not in CFRW's wheelhouse.	

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<b>Action 12:</b> Define existing and optimal ecological flows for the river basin for migratory fish				
<p><b>12.1</b> Model historic current and future flows using the WaterFALL modeling study and other available data to model flows on the Cape Fear River and its main tributaries</p>	<p>Seasonality and magnitude of flows support migratory fish needs at all life cycle stages.</p>	<p>Short : TNC lead (Dan Ryan) (with the Research Triangle Institute) : Completed 2013</p>	<p>The study is focused on the main stem of the Cape Fear and some small streams and tributaries. TNC is conducting a freshwater resilience assessment for all NC systems.</p>	
<p><b>12.2</b> Environmental Flows Science Advisory Board determine species environmental flow needs on the Cape Fear and incorporate environmental flows into existing Neuse and Cape Fear joint River model</p>	<p>Seasonality and magnitude of flows support migratory fish needs at all life cycle stages</p>	<p>Medium : NCDWR (Fred Tarver) and TNC, North Carolina Natural Heritage Program : Completed 2013 (though currently on hold)</p>	<p>Fred Tarver (DWR lead) and TNC (used to be Cat Burns, now Rebecca Benner?) sit on the Science Advisory Board. Use the Oasis Model from DWR and Roanoke River data and the Roanoke striped bass plan and inter jurisdictional shad plan data to estimate ecological flow needs. Eco-flows and joint model will probably be in about 3-4 years.</p>	<p>Dec 13: The NC Environmental Flow Science Advisory Board's (EFSAB) submitted report containing recommendations to DWR November 1, 2013. Report available at: <a href="http://www.ncwater.org/files/eflows/sab/EFSAB_Final_Report_to_NCDENR.pdf">http://www.ncwater.org/files/eflows/sab/EFSAB_Final_Report_to_NCDENR.pdf</a>  Dec 13: A training sessions for the new combined Neuse-Cape Fear model was held on 11-12-13. The combined model has not yet been approved by the EMC. The model is accessible by contacting Charles Theobald (charles.theobald@ncdenr.gov) or Neelufa Sarwar (neelufa.sarwar@ncdenr.gov). DWR will begin testing, finalizing and implementing a post-OASIS R-script that reflects the EFSAB's recommendations. Next Steps: Incorporating modeling efforts still on hold. HB186, passed into law this year will require the Environmental Review Commission to conduct a study of water resources availability in the Cape Fear Basin-could they include ecological flows?</p>
<p><b>12.3</b> Identify flow requirements for Cape Fear River that are necessary for successful spawning, egg development, and larval transport to nursery grounds</p>	<p>Seasonality and magnitude of flows support migratory fish needs at all life cycle stages</p>	<p>Medium : TNC, NCDMF, NCWRC, and NOAA (Fritz Rhode) : Completed 2013</p>	<p>From the NC estuarine striped bass FMP OK-As far as STB goes, instream flow doesn't appear to be limiting factor in the CFR, water withdrawal is a bigger threat. (2009 STB FMP). The FMP also give min. flow requirement for other rivers. NOAA means NMFS SER HD here.</p>	

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<b>Action 12:</b> Define existing and optimal ecological flows for the river basin for migratory fish				
<p><b>12.5</b> Identify, map and quantify all current withdrawals as a baseline to create a map format that can be easily shared with other agencies and organizations.</p>	<p>Seasonality and magnitude of flows support migratory fish needs at all life cycle stages</p>	<p>Short : NCDWR (Fred Tarver) : In progress</p>	<p>From the NC estuarine striped bass FMP (See page 263 (table 10.2) for current water usage in the CFR. DWR has information, and physical location data should be available for all withdrawals. Permitted withdrawals are all Ag withdrawals more than 1 million gallons/water per day and all non-ag withdrawals that are more than 100,000 gallons water per day. Need to check with Tom Fransen (via Fred Tarver) that this action is not already complete.</p>	<p>Sept 2013: As for the relationship of #12.2 to #12.5, the model does include existing flow requirements; DWR is awaiting the EFSAB's recommendations for consideration; DWR has been doing some in-house, post-processing runs associated with OASIS models using some EFlow scenarios as test cases and for presentations to the EFSAB. Sept 2013: Determine the availability of all current withdrawals in the basin in a GIS layer or the availability of centralized information on these withdrawals that's suitable for georeferencing. Dec 13: One of the recommendations of the EFSAB is to geo-reference all of the nodes in each model. This task continues to be investigated with expectation to associate with OASIS model in 2014. Next steps: Tied in with basin Oasis model that incorporates larger municipal withdrawals.</p>
<b>Action 16:</b> Improve voluntary strategies to reduce non-point source pollution and protect fish habitat from impacts of land-based activities				
<p><b>16.8</b> Work with private landowners to protect and restore forestry buffers through best management practices on their land</p>	<p>Nutrient input decreased</p>	<p>Medium : Select soil and water conservation districts (Kristina Fischer) : N/A</p>	<p>Sept 2013: PY 2012 - through ACSP, districts in CFRB planned &amp; installed 3.8 acres riparian buffer. PY 2012 - through CREP, districts in CFRB planned &amp; installed 33.1 acres riparian buffer. Nov 15: will reinforce concept at SWCD Regional Meeting</p>	