

Enclosure 9

Memorandum for Record, meeting with FWS on August 12, 2002

MEMORANDUM FOR RECORD

SUBJECT: Meeting with USFWS and FWCC to Discuss ACF Water Control Operations and Consideration of Apalachicola River and Bay Aquatic Resources, 12 August 2002

1. Members of the U.S. Army Corps of Engineers, Mobile District, met in Tallahassee, Florida with representatives of the U.S. Fish and Wildlife Service (USFWS), Panama City Office, and the Florida Fish and Wildlife Conservation Commission (FWCC) to discuss specific concerns regarding water control operations on the Apalachicola-Chattahoochee-Flint River (ACF) system and impacts on fishery resources in the Apalachicola River and Apalachicola Bay. This meeting was scheduled in response to correspondence received from USFWS and FWCC raising concerns that falling river levels and extremely low flows experienced this spring had impacted potential Gulf sturgeon spawning habitat below Jim Woodruff, and also had impacted important spawning beds used by game and sport fishes on the Apalachicola River. All parties understand that the ACF basin has been experiencing sustained drought conditions since 1998 and that low flows are the result of these sustained drought conditions. However, the intent of this forum was to explore ways of improving coordination and communications related to flow management decisions and possible opportunities to minimize impacts or enhance fish spawning activities within the basin. The following agency representatives participated in the meeting discussions:

| | |
|---|------------------------|
| Gail Carmody, USFWS, Project Leader | 850-769-0552, Ext. 225 |
| Jerry Ziewitz, USFWS | 850-769-0552, Ext. 223 |
| Vic Heller, FWCC, Asst. Exec. Dir. | 850-488-3084 |
| Ed Moyer, Div. Dir., FWCC | 850-488-0331 |
| Ted Hoehn, FWCC, Office of Environ Services | 850-488-6661 |
| Brian Barnett, FWCC, “ “ “ | 850-488-6661 |
| Charlie Mesing, FWCC | 850-487-1645 |
| Jim Estes, FWCC | 850-488-5460 |
| Steve Leitman, NFWFMD | 850-627-3527 |
| COL Bob Keyser, CESAM-DE | 251-690-2511 |
| LTC Joe Corrigan, CESAM-DC | 251-690-2511 |
| Curtis Flakes, Chief, CESAM-PD | 251-690-2777 |
| Joanne Brandt, CESAM-PD | 251-690-3260 |
| Memphis Vaughan, CESAM-EN-HW | 251-690-2730 |
| Gene Morisani, CESAM-EN-HW | 251-690-3385 |
| Bill Smallwood, CESAM-OP-TR | 251-694-3726 |

A copy of the meeting agenda is attached. Also attached are handouts summarizing each agency's specific concerns regarding water control operations on the ACF.

SUBJECT: Meeting with USFWS and FWCC to Discuss ACF Water Control Operations and Consideration of Apalachicola River and Bay Aquatic Resources, 12 August 2002

2. USFWS Concerns.

a. It is understood that there exist potential conflicts between current reservoir management operations to keep lake levels steady during reservoir fish spawning periods, and the desire by the State of Florida to keep river levels steady during riverine fish spawning periods, often occurring concurrent with reservoir spawning activities. USFWS indicated they would gladly facilitate dialogue between the three State fishery agencies (Alabama, Florida and Georgia) and the Corps regarding any conflicting fish management concerns and recommendations for water control operations on the ACF to accommodate fish management and conservation needs.

b. Another significant concern to USFWS is the requirements of Section 7 of the Endangered Species Act to consult regarding possible impacts to Federally protected species (i.e., the threatened Gulf sturgeon, the threatened Purple bankclimber mussel, and the endangered Fat three-ridge mussel). USFWS noted there was an excellent process in place to implement consultation procedures and protective measures for the Federally listed mussels associated with the navigation dredging project. Consultation has also routinely been conducted to avoid or minimize effects on the Gulf sturgeon due to navigation dredging. Once agreement is reached on an allocation formula for the ACF basin, Section 7 consultation would be initiated to address water management actions and/or revisions to the water control plans necessary to implement the allocation formula. However, USFWS advised that the Corps not wait before initiating consultation on the existing water control operations, especially in light of new information related to possible impacts to sturgeon spawning habitat.

c. USFWS recommends that Section 7 consultation for the existing water control operations should address impacts of low flows in spring months on Gulf sturgeon spawning activities and proposed critical habitat (e.g., exposure of limerock ledges below Jim Woodruff which are likely sturgeon spawning habitat). Jerry noted that his review of historic gage data shows the top of the primary limerock ledge below Jim Woodruff had been dewatered four times in April during the past 6 years, and had never been exposed in April in previous years. The top of the rock ledge was exposed only one time in March, which occurred in 2000. He is also conducting an analysis of historic ramping down rates for both pre- and post-dam construction. Jerry estimates that flows of approximately 20K cfs would be required to inundate the entire rock ledge to a depth of 4.6 feet, which is suspected to be the minimum depth necessary to assure successful spawning behavior over hard substrate (this is the lowest depth at which sturgeon eggs have been collected on other rivers). Consultation should also address possible low flows less than 5000 cfs as a drought contingency action, and the associated impacts of dewatering or isolating essential mussel habitat.

d. USFWS recommends the Corps initiate Section 7 consultation as soon as possible with preparation of a biological assessment based on the best available information. USFWS would then prepare a biological opinion. Over the longer term, additional information could be collected or developed to refine the biological assessment and biological opinion (e.g., study on locations of mussels relative to stage; location, depth and duration of sturgeon spawning; host

SUBJECT: Meeting with USFWS and FWCC to Discuss ACF Water Control Operations and Consideration of Apalachicola River and Bay Aquatic Resources, 12 August 2002

fish for mussel species; sturgeon nursery habitat requirements; etc.). USFWS noted that the biological opinion guidelines require them to compare the action to a baseline condition, which should take into account background drought conditions in the basin.

e. It was also recommended that the existing water control operations consultation be conducted separate from but parallel to the programmatic consultation on Gulf sturgeon to be conducted for dredging and disposal operations.

3. FWCC Concerns.

a. FWCC primary concern is to improve interagency communications. They are satisfied with the interagency communications regarding striped bass spawning in relation to dredging schedules, slough restoration projects, and current updates on reservoir levels and projected river stages. However, there is a need to improve coordination and communications with Florida fisheries staff regarding input into decisions on water control operations during spring spawning activities, and the ramping down of flows on the Apalachicola River in the spring and summer months.

b. FWCC would like to see conditions similar to natural flow regimes on the river. For instance, in most years they would like to see floods with stages in excess of a 15-foot Blountstown gage, which would typically occur in the February to March timeframe. Also of critical concern are durations of flows between 29K to 14K cfs since access to available adjacent floodplain habitat is reduced as river stages fall. Access to the floodplain is necessary to provide important spawning, nursery and feeding habitat for a number of sport and game species. Once the river stages fall to 14K cfs or less (approximate 6-foot Blountstown gage), then the river is essentially confined within the river banks and outside the adjacent floodplain. They also want steady river levels during fish spawn to prevent dewatering of spawning beds, and to prevent isolation or trapping of fish in pools or cutoff floodplain areas as river levels fall. FWCC noted that it was agreed during our meeting in September 2000 that the Corps would attempt to meet a goal to ramp down flows during fish spawning activities at a rate of 6 inches per day or less. FWCC concerns were that they were not consulted during fish spawn in 2002, and that ramping down of flows in April occurred at rates in excess of 1 foot per day.

c. FWCC has initiated a study of fish year classes, based on creel surveys and age distribution analyses, to document impacts due to the low flows experienced during spring of 2000, and in subsequent years. Surveys have shown the impact of reduced year classes during drought periods when low flow or other adverse conditions impact spawning success during the spring and summer months. Although fish populations can withstand occasional poor year classes due to impacts during a drought year, repeated failure to produce a healthy year class will ultimately result in significantly reduced populations.

d. Other water control concerns relating to freshwater needs for Apalachicola Bay include the need for spring flood flows important for nutrient production, followed by gradually reduced flows over the summer to fall months which result in a gradual increase in salinity in the

SUBJECT: Meeting with USFWS and FWCC to Discuss ACF Water Control Operations and Consideration of Apalachicola River and Bay Aquatic Resources, 12 August 2002

bay. Summer freshets are also important for primary production and predator control (oyster drill). FWCC would also like opportunity to continue discussions related to water control operations to improve aquatic plant management in Lake Seminole, flow requirements for thermal refuges on the river, and spillgate operations at Jim Woodruff Dam.

e. FWCC recommends the development of formal coordination procedures, either through a memorandum or SOP, to include FWCC in the decision-making process for water control operations during fish spawn and during critical low flow periods.

4. Corps of Engineers Considerations in Water Control Operations.

a. The Corps is responsible for implementing water control operations in a manner that balances impacts and benefits for a number of authorized project purposes. Fish and wildlife conservation is recognized as one of the authorized project purposes for the ACF projects. The Corps also noted that water control operations during spring spawning months are generally a critical time for operation of the ACF system. Spawning begins at a time when storage volumes are reduced for flood control purposes during the wetter part of the year. At this time of the year, water managers must also make decisions balancing operations for flood control purposes versus the need to refill the reservoirs for the upcoming drier months. Decisions made in the spring months may impact the ability to continue to augment flows later in the season when water is in short supply. Inflows for the ACF basin in the spring months for the 3 of the past 4 years have been less than 50 percent of normal, due to the extended drought conditions in the basin. This lack of inflows has limited our flexibility to meet competing demands on the system. Rapidly dropping inflows on the Flint basin in conjunction with uncertainties in adjusting flows through a combination of the turbines and spillgates resulted in the inability to ramp down flows this spring at a rate of 6 inches or less. (The average ramping rate was closer to 1 foot per day, with rates greater than 1 foot a couple of days.)

b. The Corps summarized various system constraints and limitations that may affect the ability to release increased and/or steady flows during spring spawning months, and which may also impact the ability to meet a goal of ramping down releases at a rate of 6 inches per day or less. Structural head limits dictate release rates from Jim Woodruff Dam whenever the tailwater elevation is at or below approximate +44.5 feet (approximately 15,000 cfs flow produces a tailwater elevation of +44.5 feet), and may require immediate increases in discharge to reduce the pool elevation, increase the tailwater elevation, and reduce the head differential. Other considerations include the amount of storage available within the system, routing times for water released from upstream storage reservoirs, and the inability to precisely control the amount of discharge through the turbines and spill gates. For instance, in order to achieve an approximate 6-inch reduction in stage at the Blountstown gage (equivalent to approximately 1000 cfs reduction of flow), a crane must suspend the spillgate open at approximately one-half step. Releases from this operation can only be roughly estimated. New turbines are being installed at Jim Woodruff powerhouse that may improve the flexibility for controlling discharges at certain flows, but ratings for these turbines are still being established. It was also emphasized that forecasts of flood events or extended dry conditions may also result in reasonable and prudent

SUBJECT: Meeting with USFWS and FWCC to Discuss ACF Water Control Operations and Consideratin of Apalachicola River and Bay Aquatic Resources, 12 August 2002

decisions on whether water should be stored or released to accommodate future needs. Although the Corps is still committed to attempt to meet a goal of ramping down stages on the river at a rate of 6 inches per day, the various system limitations will likely result in rates of up to one foot per day.

c. The Corps also looked at the proposal by USFWS to enhance sturgeon spawning success below Jim Woodruff Dam to see if it could have been accomplished in the spring of 2002.. The proposal would provide for a sustained increase in flows (to approximately 22K cfs) for a two to three week period during peak sturgeon spawning in April to May, with a gradual ramp down of flows at 6 inches or less. Increasing and sustaining flows for fish spawn support, in conjunction with the gradual ramping down of flows, may be possible depending upon the specific conditions experienced in a particular year. However, head limits, impacts on lake fish spawning and available storage must also be taken into consideration. The Corps agrees that improved planning and coordination would reduce the impacts on all parties, but must also take into account a balancing of all project purposes and the uncertainty of future conditions in the basin.

d. The Corps proposed that the appropriate coordination mechanism to address the Apalachicola River fish management concerns should be the existing Mobile District Standard Operation Procedures for "Project Operations for Lake Regulation and Coordination for Fish Management Purposes" (SAM SOP 1130-2-9). Mobile is initiating an update and revision of the SOP and proposes to incorporate requirements coordination with FWCC and USFWS to include consideration of Apalachicola River fish management actions.

5. Discussion.

a. Copies of the current SOP were distributed to the meeting attendees for reference. Update of SAM SOP 1130-2-9 should be accomplished in coordination with the USFWS and fish management agencies from all three States (Alabama, Florida and Georgia). USFWS suggested that they arrange for discussion of the SOP update during the upcoming fishery management technical meeting. The meeting is currently scheduled for 24 September 2002 at the Lake Seminole resource management office in Chattahoochee, Florida, and will include representatives from each of the three States. The Corps agreed to participate in this meeting discussion on the afternoon of 24 September. The goal will be to improve 2-way communications related to water management decisions during reservoir and river fish spawning periods, and to incorporate appropriate coordination protocol and recommended fish management measures into the updated SOP.

b. It was agreed that early consultation would be conducted with the FWCC prior to initiation of river spawning activities and would continue throughout the spawning period, similar to that conducted for reservoir spawning activities. Coordination would also be initiated during other critical periods or for specific water management actions likely to significantly affect river levels. Typically communications with the State fisheries staff are initiated by or through the local project office, and then relayed to Mobile District for consideration during the

SUBJECT: Meeting with USFWS and FWCC to Discuss ACF Water Control Operations and Consideration of Apalachicola River and Bay Aquatic Resources, 12 August 2002

weekly water management meeting (conducted on Wednesdays, at 10:30 a.m. Central Time). Feedback on water management decisions and forecasts for conditions in the basin would continue to be issued via email notices. In the event conflicts or problems are anticipated in being able to meet or maintain recommended reservoir or river levels, the weekly water meeting would include a teleconference with the state fishery POCs. Charlie Mesing was designated as the FWCC POC, with Ted Hoehn as the alternate. The Corps POC for communications with FWCC would be Don Morgan at the Lake Seminole project office.

c. USFWS suggested that the update of the SAM SOP may also represent an appropriate mechanism to initiate Section 7 consultation on impacts to Gulf sturgeon and listed mussels resulting from existing water control plan operations. It was also noted that the Corps has a certain amount of flexibility and discretion to operate under the current water control plan in order to accommodate needs for protected species and other environmental resources. Consultation could be initiated under current water control operations based upon new information regarding potential for impacts to protected species. It was suggested that we set a date in October 2002 to discuss the appropriate approach for accomplishing Section 7 consultation. It was stressed that these discussions should be conducted separately from ongoing water allocation discussions or any future discussions related to implementation of the water allocation formula. It should also be noted that additional future revisions to the SOP could be required for the future implementation of an allocation formula for the ACF basin.

d. Colonel Keyser requested technical assistance, in the form of a letter from FWCC, that would provide information on critical flows or other water management actions (minimum flows, flood pulses, etc.) determined necessary throughout the year to support Apalachicola River and Bay fish management and conservation activities. This information would assist the District in making daily water management decisions, and assure that impacts on all project purposes and uses are considered. FWCC agreed to provide their resource needs by letter prior to the 24 September technical meeting.

6. Action Items:

a. The Corps will initiate update/revision of the SAM SOP 1130-2-9 to include coordination with FWCC and consideration of Apalachicola River fish management actions. Initial discussions with the USFWS and the three state fishery agencies will begin at the 24 September technical meeting. OP, PD and EN technical staff will attend these discussions. OP-TR is responsible for updating the SOP, and staffing through District elements.

b. FWCC will identify specific water management actions requested in support of fish management activities in the Apalachicola River and Bay, and provide these to the Corps in writing prior to the 24 September meeting.

b. Corps and USFWS will meet in October 2002 to establish a strategy and approach for initiating Section 7 consultation on existing water control operations. Jerry Ziewitz and Joanne

SUBJECT: Meeting with USFWS and FWCC to Discuss ACF Water Control Operations and Consideratin of Apalachicola River and Bay Aquatic Resources, 12 August 2002

Brandt will coordinate to set the date and agenda for this meeting. PD will be responsible for accomplishing the Section 7 consultation with USFWS.

c. All parties will work to improve 2-way communications regarding Apalachicola River fish management needs and the water control operation decision-making process.

JOANNE BRANDT
Compliance Manager
Inland Environment Team

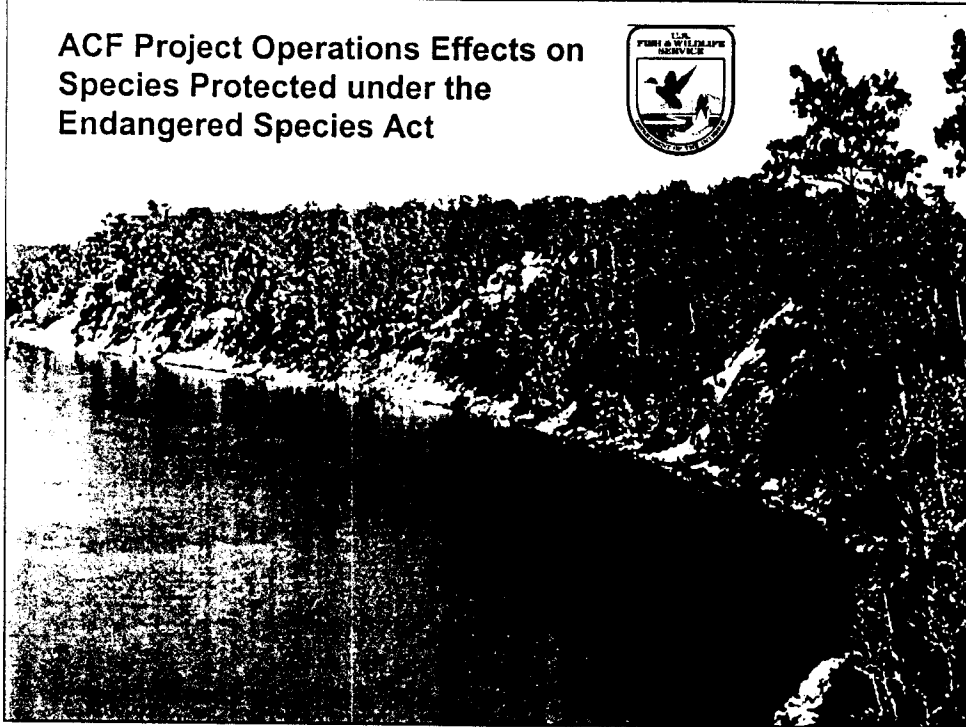
Attachments

1. Agenda
2. USFWS Presentation
3. FWCC Presentation
4. COE Presentation
5. SAM SOP 1130-2-9 (23 Feb 95)

AGENDA
ACF Water Control Operations and Consideration of Apalachicola River Aquatic Resources
12 August 2002, 1:00 p.m. EDT

- 1:00 – 1:10 Introductions and Opening Remarks
- 1:10 – 1:30 US Fish and Wildlife Service Specific Concerns
- Endangered Species Act, Section 7 Consultation Responsibilities
 - Gulf Sturgeon/Critical Habitat considerations
 - Protected Freshwater Mussels considerations
 - Recommended Actions
- 1:30 – 1:50 Florida Fish and Wildlife Conservation Commission Specific Concerns
- Need for improved coordination process for Apalachicola River
 - Effects of past water control operations
 - Flow management issues on the Apalachicola River
- 1:50 – 2:10 Corps Considerations in Water Control Operations
- Balancing of authorized project purposes
 - System operational limitations (physical constraints/low flow constraints)
 - Special operations for fish conservation management
 - Alternative operations for Gulf sturgeon spawning
- 2:10 – 3:30 BREAK
- 2:30 – 3:30 DISCUSSION
- 3:30 – 4:00 Follow-on Actions:
- Meeting with USFWS and State fishery staff (AL, FL & GA) to consider coordination process and fish management measures for update/revision to SAM SOP 1130-2-9
 - Team approach to consideration of alternative operations for avoiding impacts to Gulf sturgeon and listed mussels
 - Consider additional data needs and strategy for Section 7 consultation
 - Other actions?
- 4:00 ADJOURN

**ACF Project Operations Effects on
Species Protected under the
Endangered Species Act**



the apalach is a biological treasure, home to 91 species of fish, 27 species of freshwater mussels, and hundreds of species of other faunal groups. Of these, three are protected under the ESA. We want to talk with you today about the dams that influence the driving variable in this system, the flow regime, and how their operations may sometimes adversely affect these three species.



Listed as threatened in 1991. This is an anadromous fish, spends spring and summer in river. The Apalach pop was probably once among the largest and supported a commercial fishery. With overharvest and the dam, which blocks passage to historic spawning and summer resting areas, that population now numbers about 300. Under court order, we have recently issued a proposed rule designating critical habitat. The Apalach River is included in that proposal.

Fat threeridge

- **Endangered**
- **ACF endemic - only occurs on the Apalachicola River**
- **Rare to find juveniles**



Listed in 1998. Occurs only on the apalach. This is one of the thicker-shelled species, and long-lived. The surveys the corps has been doing ass w nav channel maintenance has found several new locations, but it is still very rare to find juveniles. Females are gravid in the late May-Early June time frame. Several fish species may serve as hosts for the parasitic larval life stage, incl. some of the game species, a shiner, and a darter.

Purple bankclimber:

- Threatened
- Largest mussel in basin

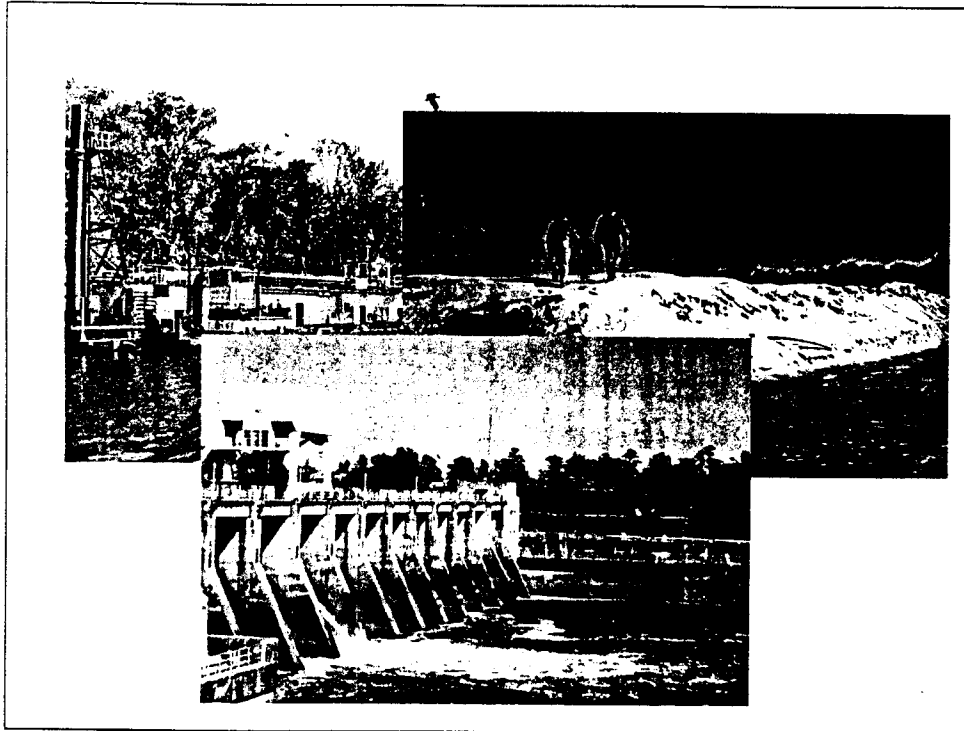


Purple Bankclimber

Mytilus saxatilis

- Occurs in other basins, but is less common on the Apalachicola than the threeridge

Also listed in 1998. the biggest clam in the system, also long-lived like the 3-ridge. Occurs also in other systems, but seems more rare in the apalach than the 3-ridge. Females gravid earlier than 3-ridge, Feb-Apr time frame. Host fish is still unknown.



We have worked closely with Mobile District staff over the years on effects of maintaining the nav channel on these species. Our coordination with Mobile on use of disposal sites that avoid impacts to the mussels has been excellent. but have not yet dealt directly under the ESA with effects of dam operations.

ACF Reservoirs

ACF Compact

PUBLIC LAW 104-201, NOV. 2, 1997

115 STAT. 2219

Public Law 104-201
109th Congress

Joint Resolution

TO AMEND THE COMPACT BETWEEN THE STATES OF ALABAMA, FLORIDA, AND GEORGIA, RELATIVE TO THE OPERATION OF THE SUWANNEE RIVER SYSTEM, AND FOR OTHER PURPOSES

SECTION 1. CONGRESSIONAL CONSENT

The President is authorized to execute the Compact between Florida and Georgia, and to take all such actions as may be necessary to carry out the Compact.

SEC. 2. RIVER BASIN COMPACT

The Compact between the United States and the State of Florida, and the Compact between the United States and the State of Georgia, shall be referred to as the "Compact" and shall be referred to as the "ACF Compact".

SEC. 3. PURPOSES

The purposes of the Compact are to provide for the efficient and equitable operation of the Suwannee River System, to provide for the protection of the environment, and to provide for the protection of the public health and safety.

SEC. 4. OPERATION OF THE COMPACT

The Compact shall be operated in accordance with the following provisions:

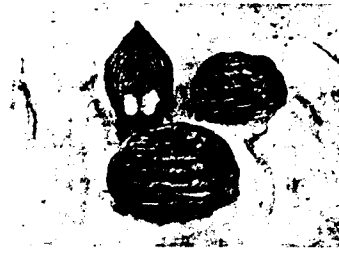
OR

We must address operations effects on ESA-protected species

That's because in normal and wet years, it hasn't been an issue. In dry years, however, it appears to be. Reservoir ops is a much more complex issue than channel maintenance, because it involves the whole system. We've been preparing to deal comprehensively with operations as part of our role in the ACF compact. But as we noted in our letter to you of June 11, the current drought is necessitating action with or without an allocation agreement. We must act.

Endangered Species Act Section 7 Federal Agencies shall:

- use their authorities for the conservation of listed species
- consult with the Service before undertaking actions that may affect listed species or designated critical habitat
- insure their actions do not jeopardize listed species or adversely modify designated critical habitat



Section 7 of the ESA gives federal agencies 3 principle responsibilities. 1) Agencies have the 7a1 mandate. 2) Agencies are required to consult with the Service on actions that may affect listed species or desig hab, and 3) Agencies are prohibited from doing things that jeopardize or adversely modify. Our job at the Service is to advise agencies on all three counts: what you can do to help get species off the list, what you should do when your actions may affect, and what you must do avoid jeopardy and adverse mod.

Jeopardy and Adverse Modification

Jeopardize the continued existence:

To engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.

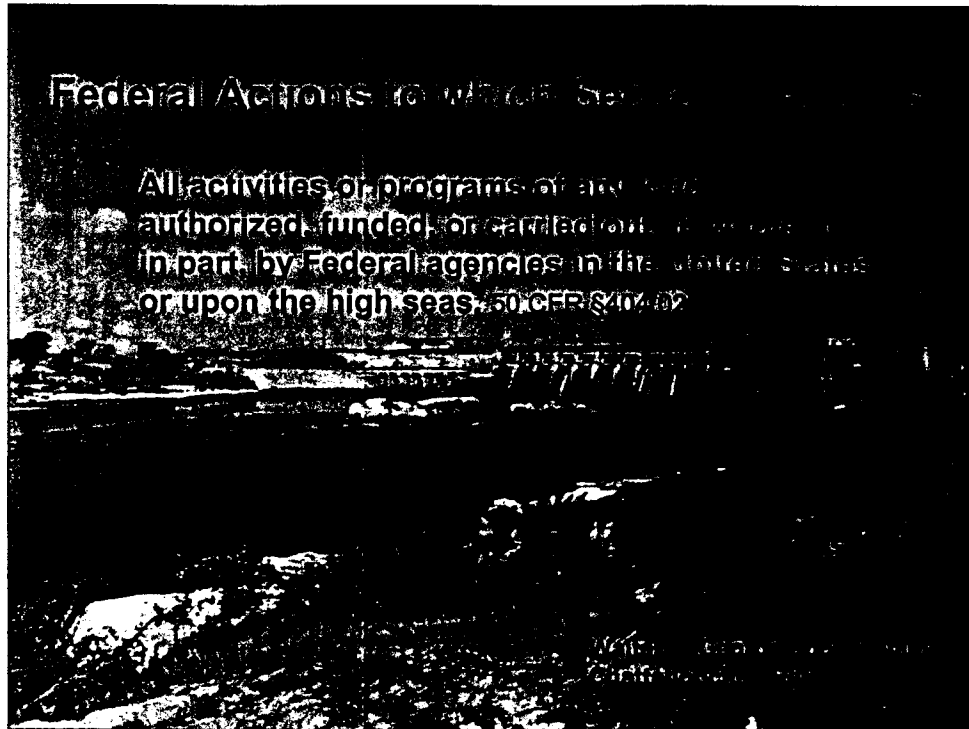
50 CFR §404.02

Destruction or adverse modification of critical habitat:

A direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical.

50 CFR §404.02

On this third count, what does it mean to insure that actions don't jeopardize the continued existence or adversely modify critical habitat? These terms are defined in regulation... Basically agency actions that cause extinction or preclude recovery through impacts to individuals or impacts to their habitat are prohibited, without special exemption by a Secretary-level committee.



Do these requirements of the law apply to federal dam operations? Most definitely yes. Section 7 applies even to emergency actions, although when life and property are threatened, the consultation process necessarily occurs after-the-fact, but is still required.

ESA Section 9 Unauthorized Take Prohibited

“Take” - to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in such conduct

“Harm” - significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR 17.3)

Another section of the Act applies to everyone, not just federal agencies, and that is sect 9, which prohibits take. The Act defines take as.... Regulations further define harm to include... Take that results from otherwise lawful activities, such as dam operations, but doesn't result in jeopardy or adverse mod, can be authorized through section 7.

Should their actions result in take without section 7 compliance, federal agency officials are criminally liable like anyone else under section 9. Our job is to help you comply with section 7, so that section 9 dosen't ever apply.

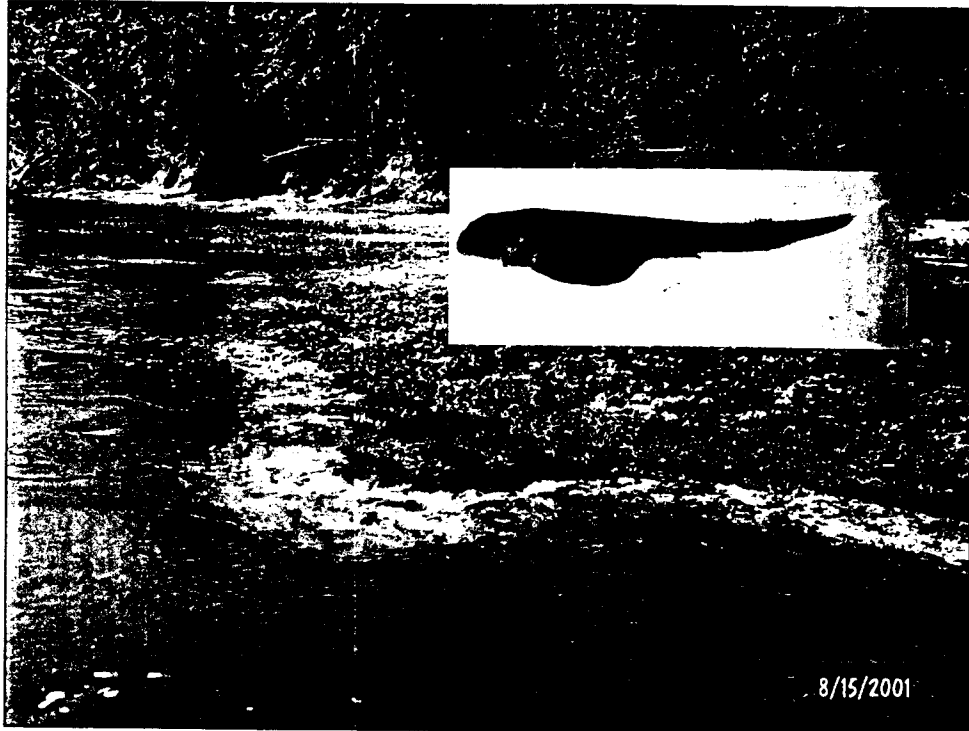


We're here today because operations under the present drought appear to us to have the potential for take. In the summer of 2000, we informed the Mobile District that lowering the system minimum flow to something less than 5000 cfs would adversely affect the listed mussels. With the drought continuing, it is still prudent to prepare for a consultation on low flows operations, which takes time, should the need arise to again consider lowering the WCP minimum flow.

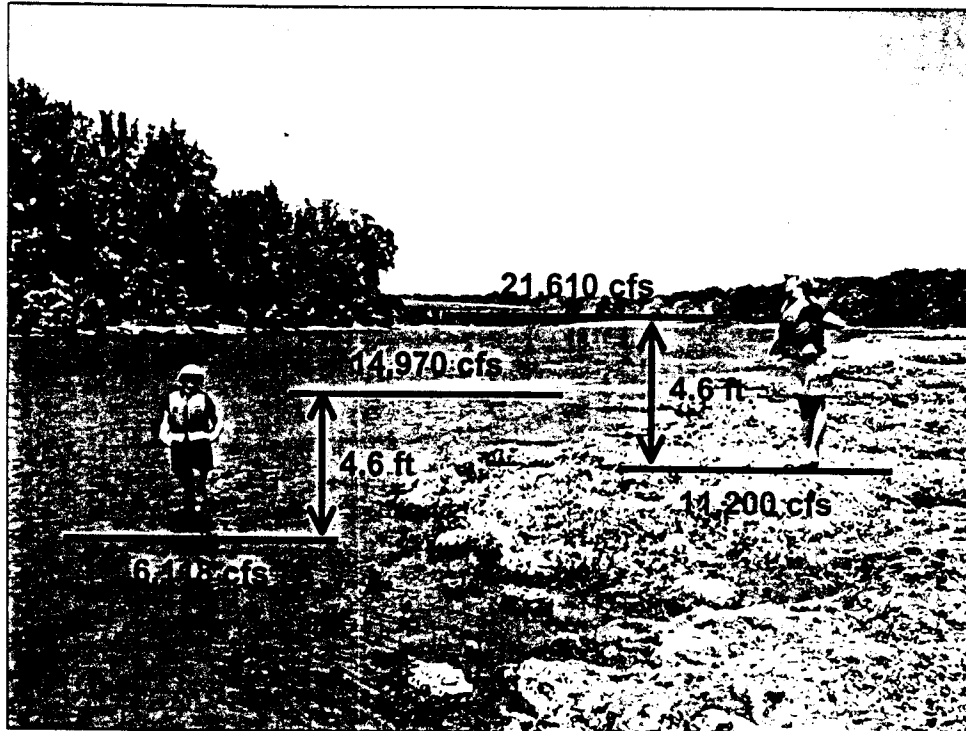
Spring Cre
Flint River
Summer 20



We have seen already considerable mussel mortality during this drought, especially upstream in the Flint Basin. We should explore reasonable means by which federal actions may avoid similar impacts in the regulated reaches of the basin.



This spring, we let you know about the possible dewatering of spawning sites for sturgeon, such as this location, which is a short distance downstream of JWLD. Sturg eggs sink and stick, and need sufficient flow over them during incubation to aerate them and prevent sediment smothering. Operations that change the stage over these rocks and possibly several other sites during spawning could adversely affect the sturgeon in several ways. The most extreme case would be exposing and destroying eggs or larvae following spawning, but perhaps a more likely case is regulating the stage in a way that interrupts or precludes spawning, such as if the fish need a minimum depth of water over these rocks for their courtship behaviors.

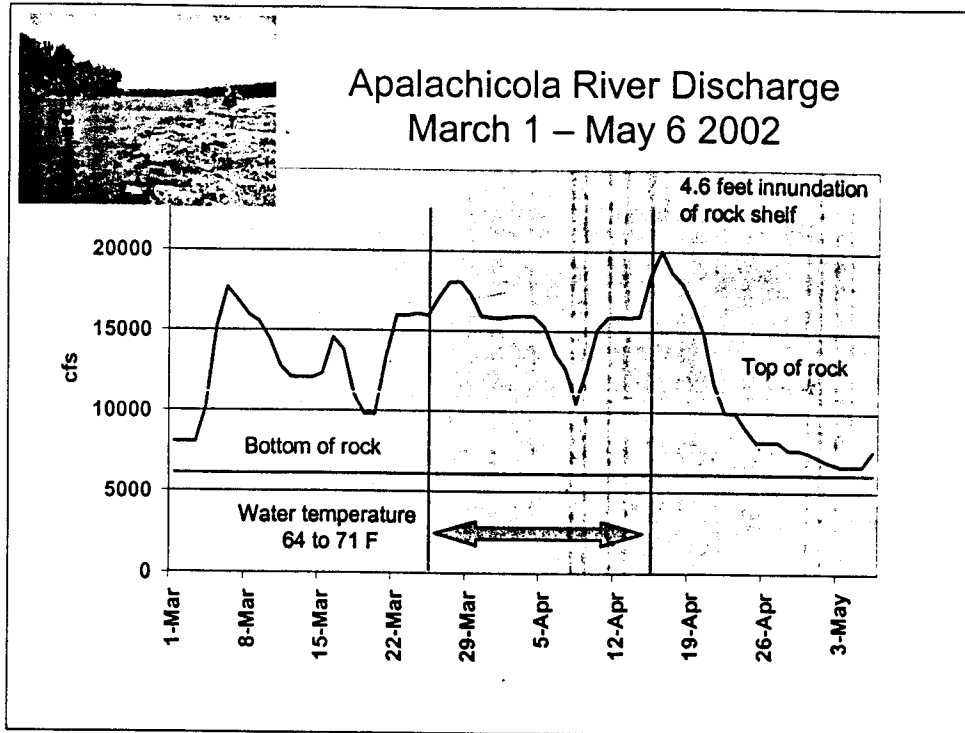


At all of the sites that may support spawning, including this one that is the most likely site, the rock doesn't span the entire stream bed. It's a shelf along one or both banks, which at this site ranges vertically from a stage of about 6 to 11 thousand cfs.

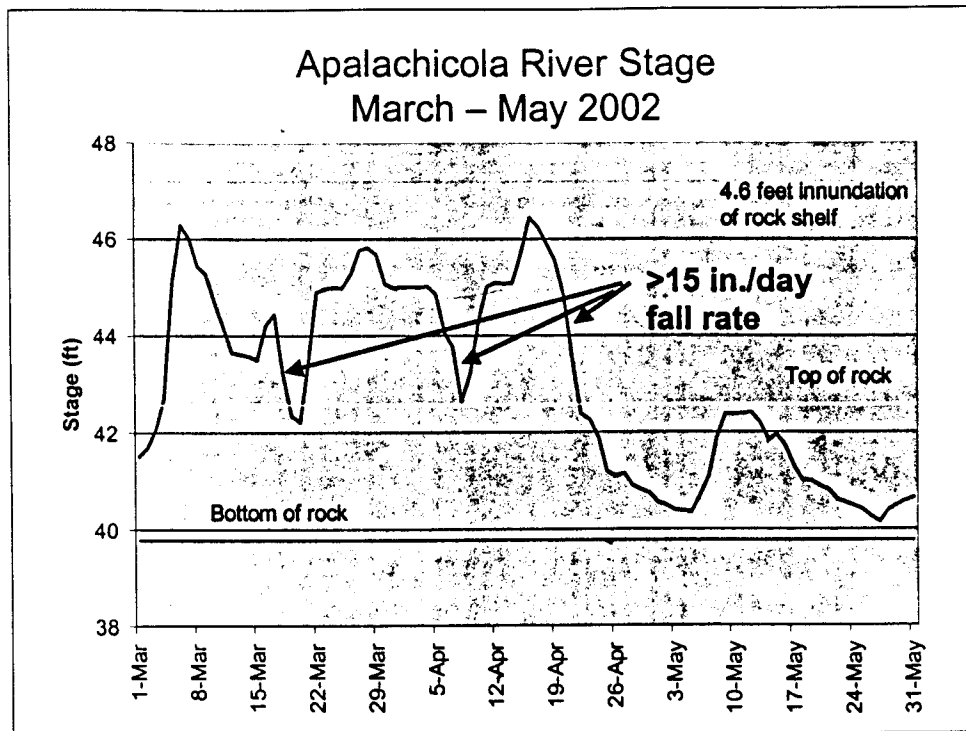
The shallowest depth at which eggs have been collected was 4.6 ft., which translates to

This past March and April, the flows were up and down over these stages, which is most unusual. In the 75 years of record at the gage, the tops of the rocks have been exposed only once before this year in the month of March, and that was during the current drought, spring 2000. The upper extent of rock has been exposed only 4 times previously in the month of April, all in the past 6 six years.

These low-flow events in recent springs may or may not have been a problem for the sturgeon, depending on the weather and some unknowns about the species' behavior. Water temps observed where eggs have been collected have ranged from about 64 to 71 degrees F.



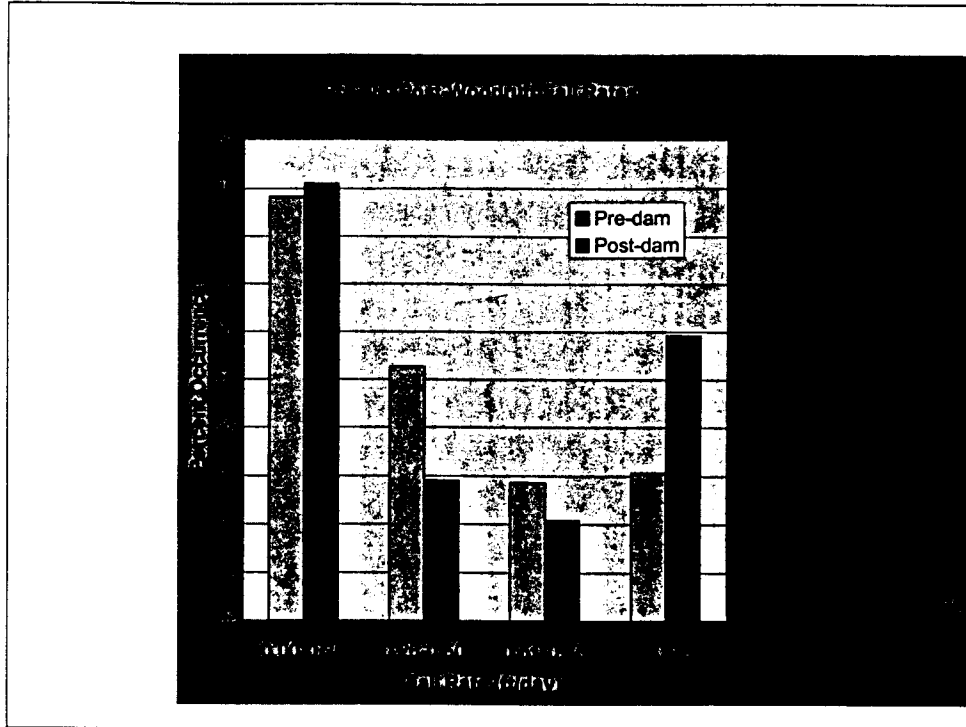
This spring, we believe the river warmed up to this range in this time frame: Mar. 25 to April 15. Was spawning affected? Possibly. We don't know how long it takes a particular male or female to choose a site and ready themselves for spawning, or how long it takes the entire group of reproductive individuals to complete spawning during the spring given suitable habitat conditions. We have egg collections on various systems spanning 9 days to over a month.



This being an unknown, we are concerned about the rate of change of flow. Many fish species have been shown to initiate spawning behavior in response to rising water levels, suspend spawning in response to falling water levels, and of course, falling water levels can expose or strand eggs and larvae. If sturgeon spawning started this year on about Mar 22, there may have been enough time and enough water depth for spawning to occur and eggs to develop to the motile larvae stage. If it started later, we may have lost a year class.

Since its hard to know exactly when, and likely spawning occurs in the pop as a whole over a period of several days if not weeks, we believe the most protective operational practice for the sturgeon would be to maintain fairly steady river stages once temperatures are in the range for spawning, and if necessary, ramp down as gradually as is practicable.

Fall rates as extreme as these (click) run the risk of spawning failure, not only for sturgeon, but other species as well, especially if occurring later in the season, when many more species are reproductively active.



Breaking it down by frequency, you get this (histogram). I believe FWC will speak to this issue relative to game fish, but it affects the T&E as well. Sturgeon are likely less vulnerable than the game fish to impacts of rapid drawdowns because their eggs have a very brief incubation time, about 2 days depending on temperature, but their eggs and larvae can be destroyed just the same if their spawning areas are exposed at the wrong time. The same goes for the mussels. Mussels are not very mobile, but they can move short distances and burrow into the substrate in response to rising or falling water levels if given enough time.

Recommended Actions:

Short Term

Section 7 Biological Assessment
and Biological Opinion for operations effects
on listed species as part of a revised
water control plan

Long Term

Collect data on:

- locations, depths, and duration of sturgeon spawning
- mussel distribution relative to stage,
- extent of mussel use of off-main channel areas
and

Revisit any operational decisions reached
in the short term.

So, what do we think needs to be done. We need to evaluate the effects of current operational practices on the listed species. The official mechanism for this is the BA/BO in the section 7 process. We'd like to work with you to scope it out beginning as soon as possible.

And in the longer term, we need to know more. I mentioned earlier the duration of spawning. This will make a huge difference operationally if certain flows should be sustained for a couple weeks vs. a month or more in order to prevent loss of a year class. Likewise, we need more information about the mussels. It may be that a very small portion of the population is vulnerable, or a majority. When we know the answers to some of these questions, we'll need to come back to the decisions we made in the short term based on the best information available now.

OBJECTIVES

- **Improve interagency communications.**
- **Review impacts to fish spawning during falling river levels (0.5 ft to 1.0 ft/day).**
- **Develop new coordination agreement and/or modify SAM SOP 1130-2-9 (project operations) for “sharing” impacts to fish during low flow periods.**

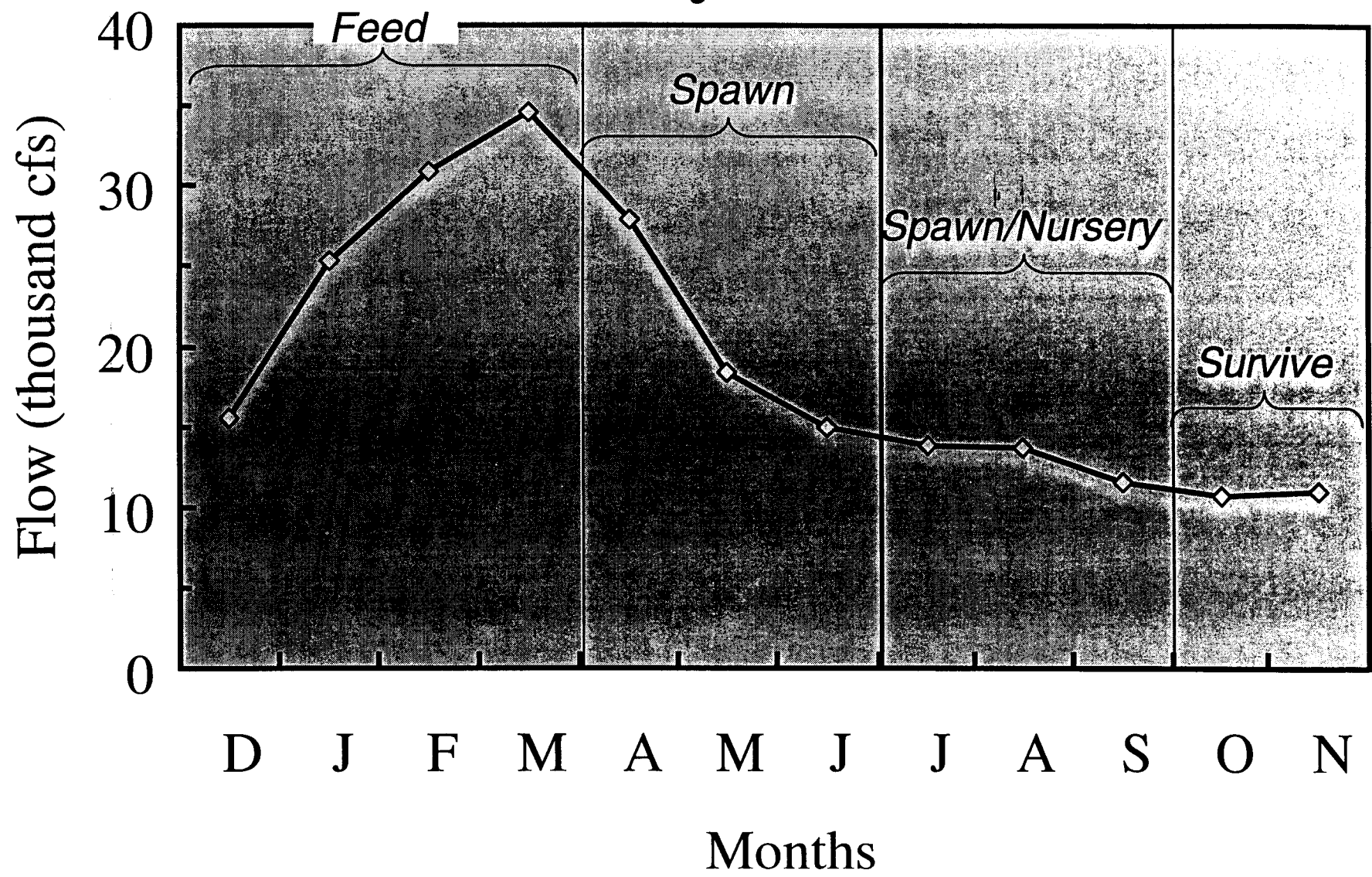
Communications Working

- **FWC is called if dredging is necessary before the May 15th Striped Bass spawning window.**
- **COE and interagency team coordinate well with slough enhancement projects.**
- **FWC receives updates on reservoir levels and projected river stages.**

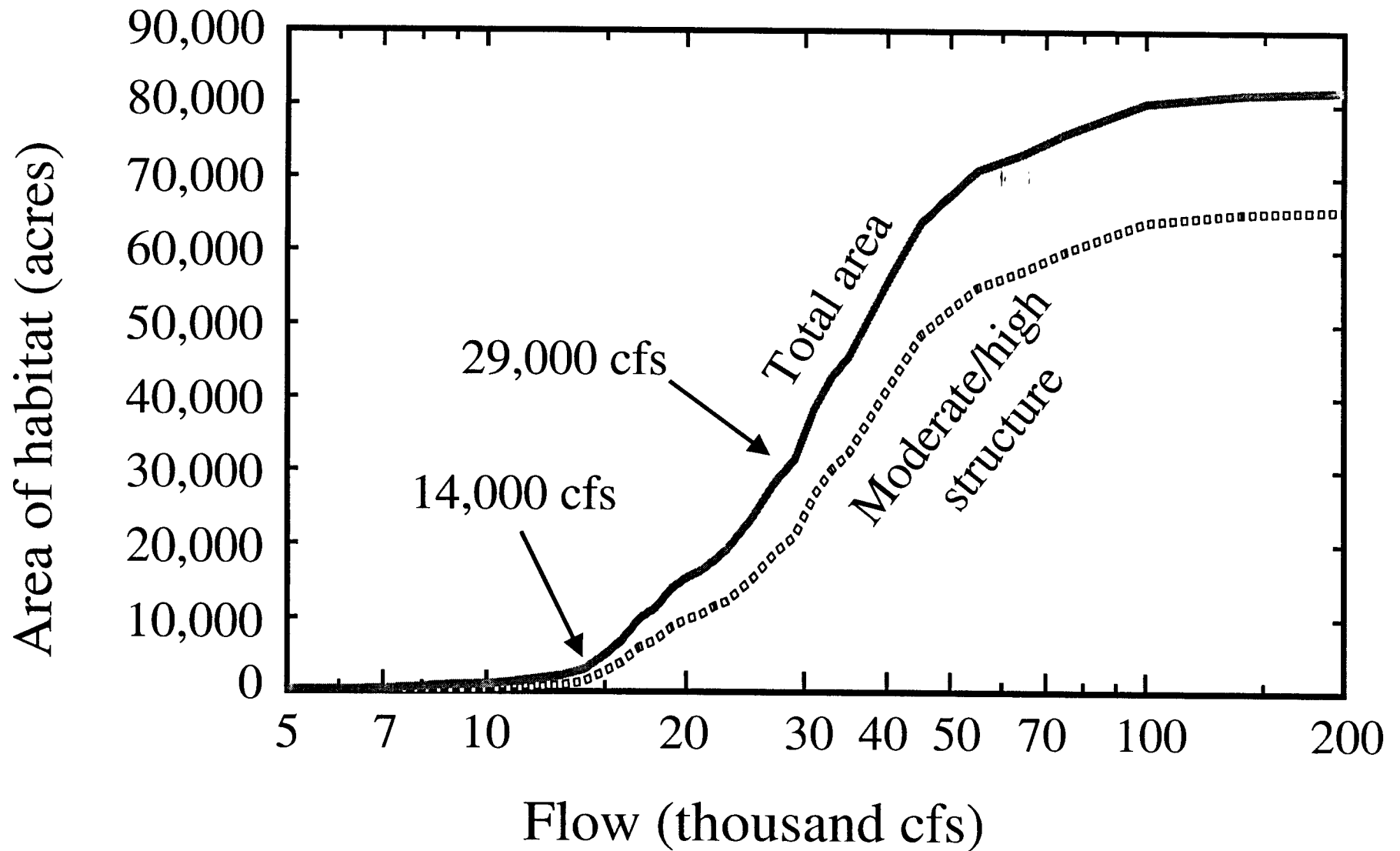
Communications Not Working

- **Limited FWC input to reduce natural resource impacts on the Apalachicola river from COE water management operations.**
 - **Initiation of spring spawning activities for Apalachicola river sport fish.**
 - **Rapidly falling Apalachicola river water levels during spring/summer.**

Median monthly flow 1922-95



Connected aquatic habitat in relation to flow



Impacts to Fish Spawning

Apalachicola River, 2000 & 2002.

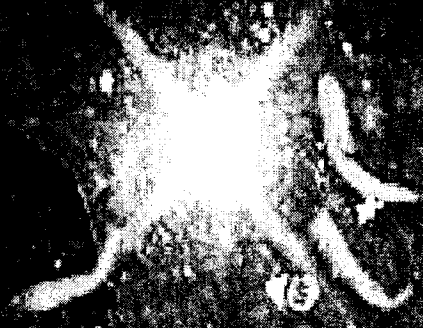
- **Thousands of active fish nests with newly hatched fry were left high and dry for 75 miles of river in 2000 and 2002.**
- **Thousands of adult sportfish were stranded by rapidly falling water levels.**
- **Preliminary age analysis indicate largemouth bass, redbreast sunfish and bluegill have weak cohorts for 2000.**



Stranded fish during spring 2000 and
2001 resulting from ramp down rates,

Species Observed:

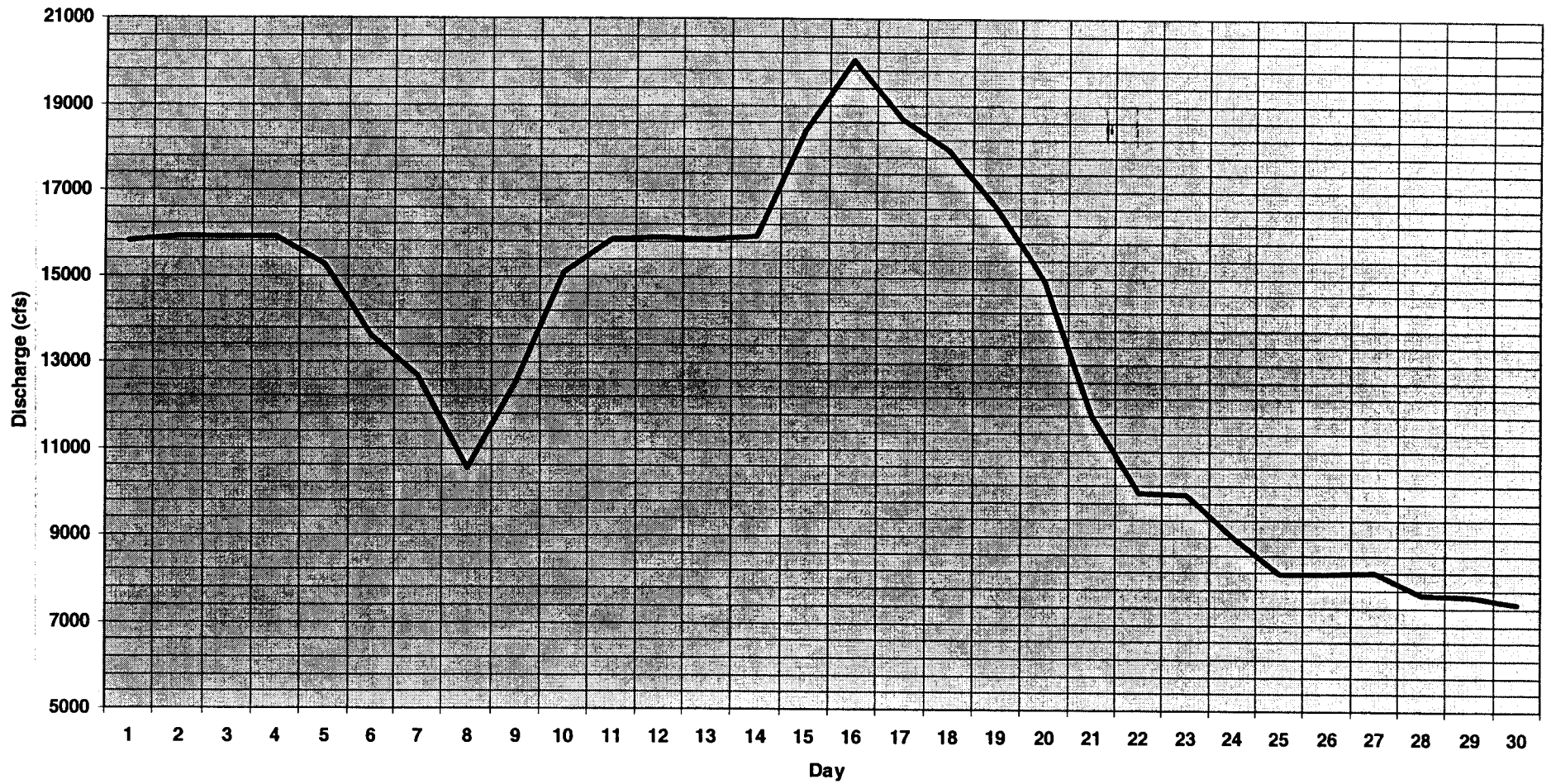
sunfishes, Lepomis spp., Redbreast &
smallmouth bass, Suckers,
Darters and Darters



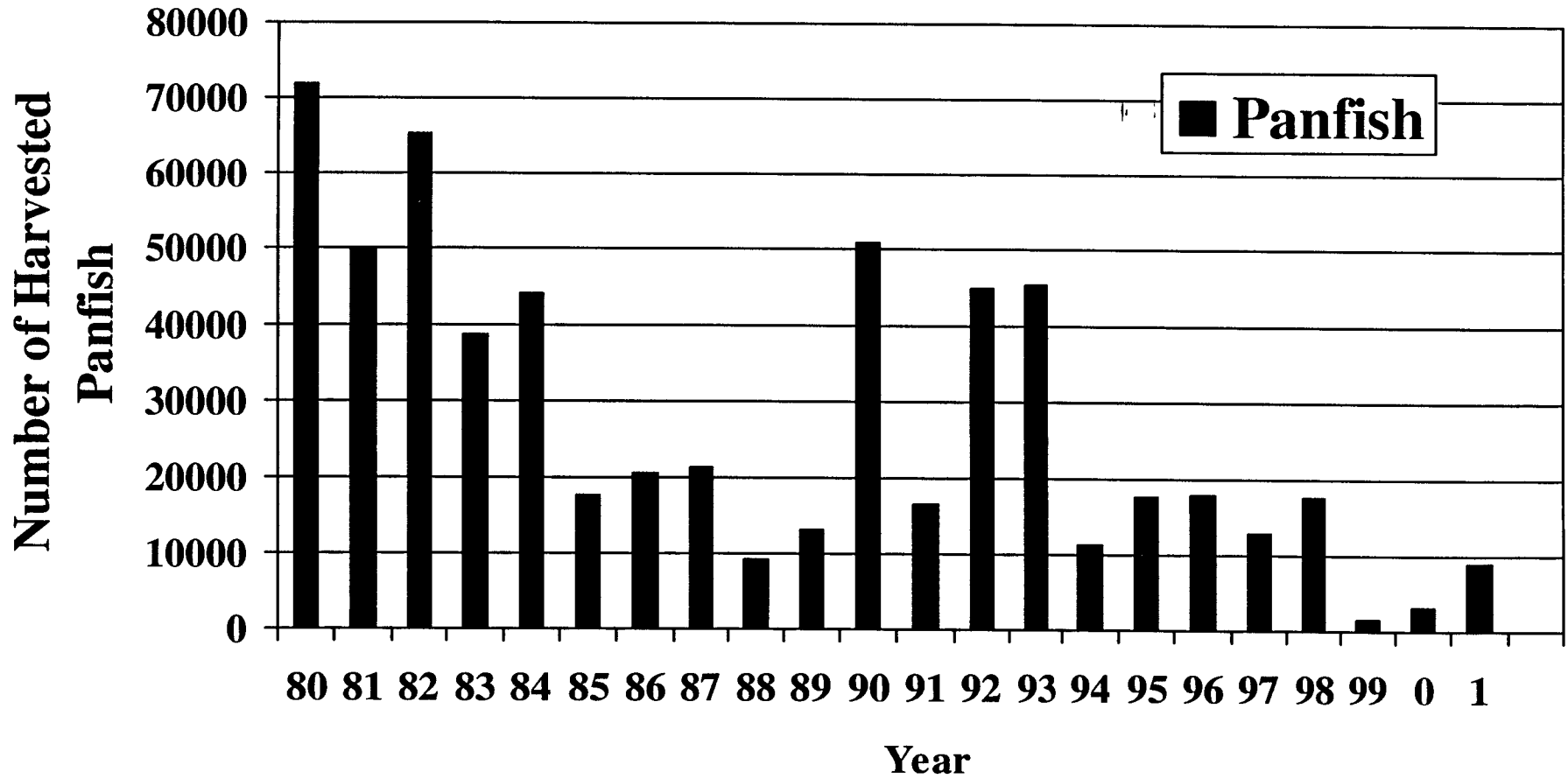
Stranded sportfish May, 2000.



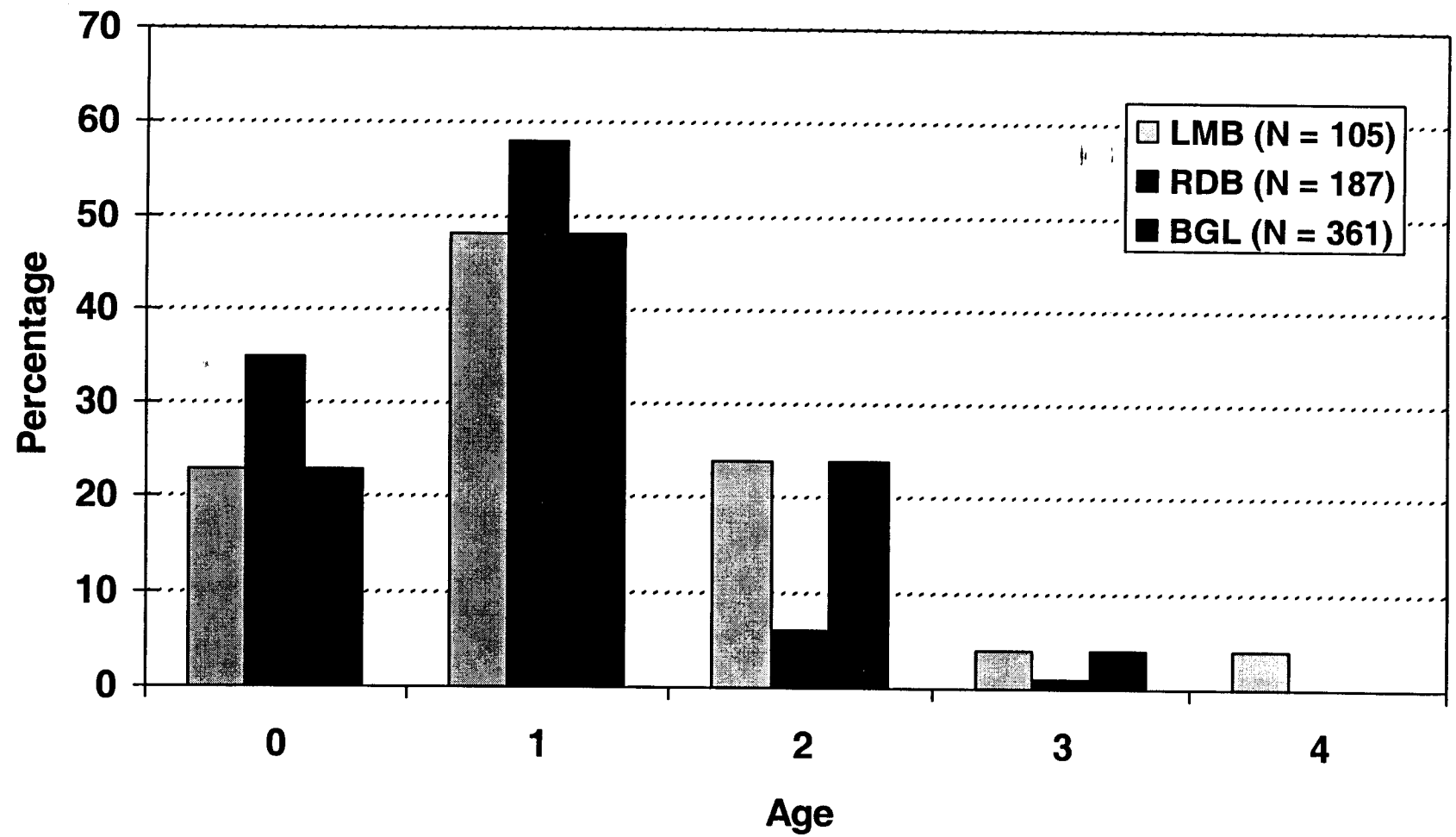
Woodruff Discharge April 2002



Upper Apalachicola River Spring Creel Survey, Panfish Harvest 1980 - 2001



Age Distribution for Largemouth Bass, Redbreast Sunfish and Bluegill collected in Apalachicola River (Nov. 2000)



Apalachicola Bay Issues

- **Spring flows important for nursery production with a gradual increase in salinity due to reduced flows.**
- **Summer freshets important for primary production and decrease in salinity (decreased oyster predation).**

Recommendations

- **Develop a formal agreement to minimize & share natural resource impacts on the ACF system.**
- **Revise SAM SOP 1130-2-9 to include stable water levels in the Apalachicola river during spawning season.**
- **Reduce ramp down rates during spawning periods, flow levels between 29,000 and 14,000 cfs, and critical flows (<14,000) in the Apalachicola river.**
- **Develop joint FWC/COE fish monitoring sops to aid in future decision making(ramp down rates - reservoirs vs. Rivers) during low flow periods.**

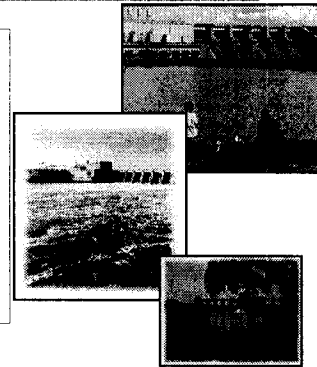
Other Important Issues

- **Improve coordination and review of lake Seminole aquatic plant management.**
- **Consider striped bass thermal refugia (cool water sloughs) flow requirements during summer and potential modification requirements of future enhancement - restoration projects.**
- **Adjust JWLD gate & turbine operations to aid anglers during peak spring fishing.**

ACF Fish Spawn Operation and the Apalachicola River

Water Management Issues

- System Limitations
- Ramp Down
- “Spawn Window”
- Alternative Operations for Spawn
- Summary



System Limitations

System Limitations - Storage and Timing

- Spawn season – critical time for system
- Seasonal flood control - 25-50% less available storage
- System manager decision - Prudent system discharge?
- Balance flood control and refill - Consider the outlook

System Limitations - Discharge and Refill

- Discharge from Storage
 - 5,000 cfs a day = 9,900 ac-ft
 - 20,000 cfs a day = 39,600 ac-ft
- System Inflows 2002
 - March 40% - (16950 cfs)
 - April 45% - (14300 cfs)
 - May 40% - (8070 cfs)
- Occurred 3 of the last 4 springs

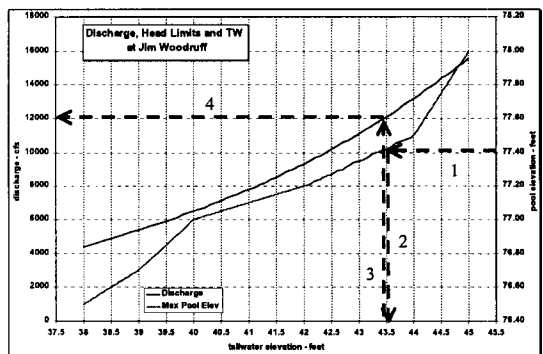
System Limitations – Spillway Gates at Woodruff Dam

- Up to 15,000 cfs Turbines
- Over 15,000 cfs Spillway
- Spillway Gates – crane operated
- One Gate Step – approx. 2000 cfs
- Fine Tuning – Hang a gate 1000 cfs range
- Transition from Gates to Turbines - Increased uncertainty

System Limitations - Head Limits at Woodruff Dam

- Variable maximum HW / TW difference
- TW below 44.5 - Head Limits often control
- TW 44.5 = 15,000 cfs range
- Maximum Pool controlled by TW
- TW controlled by Discharge

Head Limits – Highly Restricted Operation



System Limitations Current Operation for Lake Spawn

- +/- 6 inch pool elevation for spawn
- Typically 3 to 4 weeks (flexible)
- Rise over 6 inches - shift range up (negotiable)
- If deviation foreseen – notification and contingency
- Typically coincides with river spawn

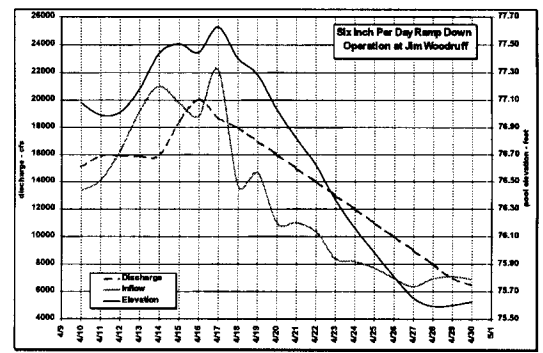
Ramp Down

Ramp Down – FWC Requested Operation

Discharge should be decreased at a rate that ensures the river stage will not drop more than 6 inches per day.

- Attempt to mimic “natural flows”
- Minimize impacts on downstream habitat
- Minimize trapping of fish in out-of-bank pools after high flows
- Reduce bank sloughing

Ramp Down – Effect on Woodruff



Ramp Down - Analysis of Options

- Support from Walter F. George
- Support from Walter F. George and West Point
- 6-inch to 1-foot reduction

In any case consider both the recent trends and current situation of the system

Ramp Down - Conclusions

- Jim Woodruff or Walter George - Unable to support
- System storage - limited support dependent on current situation
- Other Impacts
 - forecasting
 - discharge controls
 - routing time
 - state of system
- 6 inches per day as a goal, but 6 inches to 1 foot per day likely

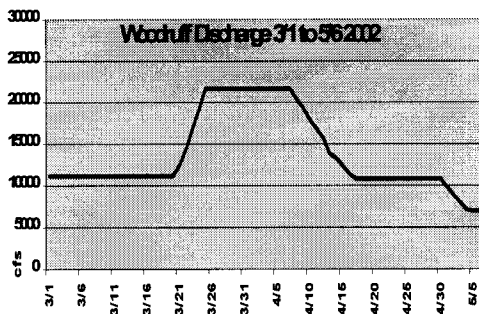
“Spawn Window”

“Spawn Window” – Requested Operation

USFWS has proposed a sustained increase in discharge during the spawn of the Gulf Sturgeon with ramping limits at the end of the “window” similar to those proposed by FWC

- It is assumed that this would aid other species
- Based on goal of inundating suspected prime habitat at peak spawn
- Request for an operational scheme of “sharing the pain”

Requested “Spawn Window”



Spawn Season Challenges

- Head Limits at Woodruff
- Spawn in upstream lakes
- Available storage

Alternative Operation for River and Lake Spawn

- If water is available - increasing, sustaining and ramping down flows may be possible
- How much depends on conditions of year
- Improved planning and coordination will minimize impacts to all parties

.....
• In any given year decisions would have to be made based on balancing authorized project purposes and uncertainty of future conditions
.....

Summary

- System managers have many authorized project purposes to balance
- Drought contingency operations alter the priorities of project purposes
- Head Limits often control discharge at Woodruff – difficult to maintain from storage
- Moving water in the system – lag time, attenuation and other uncertainties
- Using storage in spring is a risk in dry years
- Forecasts often unreliable
- Quick decisions on limited data made daily
- Decisions will not make everyone happy
- We are always looking for ways to improve and are open to suggestion

Questions?

DEPARTMENT OF THE ARMY
Mobile District, Corps of Engineers
P. O. Box 2288
Mobile, Alabama 36628-0001

Project Operations
LAKE REGULATION AND COORDINATION FOR FISH
MANAGEMENT PURPOSES

1. Purpose. To provide a standing operating procedure (SOP) to be followed by OP-TR, PD-EI, EN-EW, PA and selected Mobile District (MDO) Operations Division field offices to implement South Atlantic Division DR 1130-2-16, dated 1 April 1993. While this SOP targets largemouth and spotted bass, other fish species with similar spawning habits should also benefit from increased successful spawns.

During the reproduction period, the lake water level should not be lowered more than six inches in elevation, if doing so does not conflict with authorized project purposes, to prevent stranding or exposing fish eggs.

2. Applicability. This SOP applies to the operation of Allatoona Lake, Lake Seminole, Okatibbee Lake, Lake Sidney Lanier, Walter F. George Lake and West Point Lake. MDO staff in OP, PD-EI, EN-EW and PA are involved in the successful implementation of this SOP.

3. References.

a. Required. ER 1130-2-400, Management of Natural Resources and Outdoor Recreation.

b. Required. SADVR 1130-2-16, Lake Regulation and Coordination for Fish Management Purposes.

c. Related. SADVR 1130-2-18, Preparation of Operational Management Plans at Civil Works Water Resources Projects.

4. Procedures.

a. OP-TR will forward a memorandum to appropriate field offices during February each year to inform project staffs of any changes in reporting procedures and to alert them to the upcoming spawning season.

b. Each spring, project personnel will begin monitoring water surface temperature (WST) from two designated monitoring station locations (see Appendix A) in each lake as the water reaches 60 to 65 degrees Fahrenheit.

* This SOP supersedes SAM SOP 1130-2-9, 1 February 1989.

Historically, these temperatures are reached in February-March at Lake Seminole, Ocatibbee Lake and Walter F. George Lake, while they are reached in March-April at Allatoona Lake, Lake Sidney Lanier and West Point Lake.

WST should be taken each work day and continued for a period of three weeks after the water temperature reaches 70 degrees Fahrenheit (F). If the water temperature falls back into the 60's for a period of two days or longer, the timeframe for temperature monitoring should be extended until three weeks of data is collected with no more than two consecutive days where the temperature is below 70 degrees F.

The temperature readings should be taken between 1000 and 1630 hours at the designated monitoring locations where the water is approximately three to five feet deep. The temperature should be obtained by submersing a thermometer to a depth of six inches from the surface and holding it for 120 seconds before reading.

This monitoring regime should provide sufficient WST data to identify both the spotted and largemouth bass spawning periods. These spawning periods are considered in water management decisions with the objective of minimizing downward water level fluctuations until the spawn is complete. The spawning period for the spotted bass (Allatoona and Lanier) typically begins at a WST of approximately 63 degrees F. Largemouth bass spawn in the temperature range of 65 to 70 degrees F.

c. The WST information should be furnished daily by project personnel to the Powerhouse Shift Operator for insertion into the data collection system and will be transmitted daily by the Operator to EN-HW. At Ocatibbee Lake, where hydropower is not a project purpose, the information should be furnished directly to EN-HW by telephone. The weekly WST Data Sheet (Appendix B) should be faxed to OP-TR on Tuesday of each week after the WST has been taken on that day.

d. Project personnel should contact local state fisheries management personnel when water temperature monitoring is initiated and keep in close contact with them throughout the spawning period. Information regarding the actual progress of the spawn (i.e., has started, is in progress, has ended) should be relayed to MDO through OP-TR and noted on the WST Data Sheet.

e. EN-HW personnel will notify FD-EI when field personnel begin monitoring WST. FD-EI will be responsible for obtaining the daily data from EN-HW. EN-HW will also notify the PA Office when the fish spawning season begins and will invite PA to specific weekly water management meetings when important decisions having public impact are likely to be made. EN-HW will conduct other actions and procedures specified in SADvR 1130-2-16.

f. FD-EI will maintain an updated list of state fisheries biologists

for the lake projects. PD-EI personnel will attend weekly water management meetings during the spawning season upon notification by EN-HW that field personnel have initiated WST monitoring. PD-EI will relay pertinent information to OP, EN, and PA at the weekly water management meetings and will send weekly, either by mail or telephone, temperature and water elevation data to appropriate state fisheries personnel. Significant decisions based on the weekly meetings will also be relayed to state fisheries personnel by PD-EI. At the conclusion of spawning season PD-EI will forward a summary of all data collected to state fisheries management agencies.

g. OP-TR will review the data sheets forwarded from the field offices and will present pertinent information at the weekly water management meetings. Significant decisions made at these meetings will be related to project personnel by OP-TR. OP-TR will furnish WST information to SAD-CO-R following the bass spawning season each year.

h. OP-TR, EN-HW, PD-EI and PA will coordinate directly with each other or call additional meetings as the need arises.

FOR THE COMMANDER:



Richard F. Davis
Major, Corps of Engineers
Deputy District Engineer

2 Appendices:

Appendix A - WST Station Locations

Appendix B - CESAM Form 1148, WST Data Sheet

APPENDIX A

WATER SURFACE TEMPERATURE STATION LOCATIONS

ALLATOONA LAKE

- Station 1 - Cooper Branch #1 (Corps boathouse)
- Station 2 - Bartow County Park

LAKE SEMINOLE

- Station 1 - Operations Area (Corps boathouse - east end of dam)
- Station 2 - Chattahoochee Park (boat ramp)

OKATIBBEH LAKE

- Station 1 - Operations Area (Corps boathouse)
- Station 2 - Gin Creek Park

LAKE SIDNEY LANIER

- Station 1 - Buford Dam (cove between RMD and Lower Overlook)
- Station 2 - Gainesville Marina (boat ramp)

WALTER F. GEORGE LAKE

- Station 1 - Operations Area (fueling dock)
- Station 2 - East Bank Park (courtesy dock)

WEST POINT LAKE

- Station 1 - Long Cane Park (courtesy dock)
- Station 2 - West Overlook II (courtesy dock at ramp)

APPENDIX B

WATER SURFACE TEMPERATURE DATA SHEET

LAKE: _____

YEAR: _____

| Month/Day | WATER SURFACE TEMP Station #1 | Station #2 | Lake Elevation | Comments |
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CBSAM FORM 1148
23 Feb 95