

Summary -- Columbia Project
Items and Issues Associated with
Compliance with the Endangered Species Act

Chronology

Year	Action
1964	Upper Duck River Development Association (UDRDA) formed.
1965	Tennessee legislature forms an agency--UDRDA
1972	TVA issues Duck River Project FEIS (Normandy & Columbia)
1973	Work begins on Columbia
	Endangered Species Act (ESA) passed; U.S. Fish & Wildlife Service (FWS) begins listing endangered and threatened species.
1976	Normandy completed
1976- 1977	FWS lists several freshwater mussels, including 5 known to occur in the Duck River.
1977	ESA section 7 consultation, FWS-TVA. FWS Biological Opinion concludes that 2 species: birdwing pearly mussel (<i>Conradilla caelata</i>) and Cumberland monkeyface pearly mussel (<i>Quadrula intermedia</i>) would be jeopardized by completion of Columbia Dam.
1979	OMB asks TVA to examine alternatives. TVA concludes that alternatives (river development; low-pool-600 ft) are unacceptable; proposes mussel conservation plan and completion of project at 630 ft.
	FWS revises Biological Opinion, accepting conservation program---requires its success before closing dam.
	Mussel surveys conducted on Duck, Powell, and Clinch Rivers. distribution and quantitative benchmarks established on all three streams.
1980	Cumberlandian Mollusk Conservation Program (CMCP) implemented; Columbia Dam Coordinating Committee (CDCC) formed: TVA, FWS, EPA, state F&W agencies in TN, AL, VA. Dam construction halted.
	Relevant mussel surveys conducted on Elk, Buffalo, and several other streams. Only qualitative data collected.

- 1982 CDCC develops criteria for CMCP; these include "likely success" and "proven success" criteria for transplants, plus habitat improvement for both species. TVA drafts reports on research phase, proposes transplants to upper Duck, Buffalo, Nolichucky, and North Fork Holston. FWS issues endangered species permit; 1,000 individuals moved to each site in October.
- 1983 Mussel dieoff observed in Powell River. Previous quantitative sites resampled and some declines observed.
- 1984 FWS: "likely success" criteria not met--now what? TVA: no money for anything except monitoring.
- 1985 Revised success criteria prepared.
- 1986 Responding to OMB, TVA submits revised benefit/cost analysis (b/c ratio now approximately 0.5), project 45% complete.
- 1987 Responding to continued UDRDA pressure, including letters from Sasser and Gore, TVA requests reinitiation of section 7 consultation. FWS agrees, requests that TVA prepare a comprehensive biological assessment.
- 1988 As part of biological assessment studies, TVA resamples quantitative sites on Powell and Clinch rivers. TVA also resurveys mussel-rich section of Duck River, taking both qualitative and quantitative data. Statistical analyses indicate that some mussel populations in the Duck River have increased while populations in the Powell and Clinch rivers have declined.
- Epioblasma walkeri* (also federally listed) found in project area. This species had been thought in 1979 to be extirpated. FWS notified.
- TVA proposes to amend contract with UDRDA, delegating certain resource management functions to them.
- Biological assessment completed, submitted to FWS 28 Nov.
- 1989 Following their review of the biological assessment, UDRDA, through Baker, Worthington, et al., asks TVA to withdraw from consultation (14 Apr). TVA agrees, letter from Willis gives UDRDA twelve months to complete their investigations, emphasizes this is not to be an open-ended effort (2 May).
- TVA formally withdraws 21 Apr. Requests (9 Jun) copy of the FWS draft opinion; draft received 12 Jul.

- 1989 FWS requests TVA review of UDRDA (Young-Morgan) investigation plans, TVA replies 9 Jun.
- UDRDA (Parks) accuses TVA of foot-dragging and underground opposition to project, refuses to share recent mussel data collected by Young-Morgan (23 Aug).
- YMA completes about 25% of planned work, cites problems obtaining permits, high water.
- 1990 YMA proposes more work. UDRDA establishes aquatic resource center, Ralph Brinkhurst to head it.
- Leafy prairie-clover (*Dalea foliosa*) proposed for endangered status; largest known Tenn. population occurs on project land. TVA resurveys population (50% would be inundated at 630). FWS holds hearing in Columbia.
- 1990 Fourth endangered mussel, pale lilliput (*Toxolasma cylindrellus*) confirmed. Amateur collector Don Manning found it in Rock Creek, a tributary to the Lillard Mill impoundment. Collection site is within the 630 impoundment zone. This species is not included in any TVA or FWS assessment or draft opinion, because it had been considered in 1979 to be extirpated.
- TVA develops project alternative, based largely on FWS reasonable and prudent alternatives from aborted 1989 consultation. Board supports opening discussions with UDRDA on alternatives; initial discussions held (Davis-Parks).
- 1991 In a project-area tour with Nature Conservancy staff, Parks mentions the Fountain Creek - river corridor as the leading alternative.
- Discussions begin with UDRDA and Baker-Worthington regarding NEPA requirements and TVA procedures related to a new EIS.
- Dalea foliosa* listed as endangered, effective 31 May.
- TVA requests and receives a 5-year extension on the existing 404 permit.
- 1992 Discussions with UDRDA continue regarding NEPA considerations, possible alternatives, funding and contracting of the EIS process.
- UDRDA indicates an interest in being a cooperating agency under NEPA.
- In informal conversations, FWS indicates that the relative value of the Duck River mussel community has increased, owing to declines elsewhere; several additional species which occur in the Duck River are likely to warrant listing.

1993

UDRDA Board approves use of trust fund "A" monies for EIS preparation.

In a response to Rep. Gordon, TVA indicates a target date for a final EIS as autumn, 1994.

Informal conversations with FWS staff indicate that another listing package, which will include some species that occur in the Duck River, may appear early in FY 94.

Facts and Observations

- Dam is at DRM 136.9; elevation 630 plan (full pool) impounds to DRM 191. Area of concern re: endangered mussels is 147-179 and affected tributaries, e.g., Rock Creek.
- Elevation 600 would impound to 172; 585 to 165; 571 to 155.
- Mussel habitat in the river apparently has improved owing to cessation of construction activities, reduction of NPS (owing to lack of activity on TVA-owned land); mussels have responded positively.
- Other systems: Both Clinch and Powell populations are declining; Powell populations are worse off than those in the Clinch.
- At 630, project would remove 95% of mussels. Reductions for alternatives:
 - 600 40% of *Conradilla*, remainder would be within 7 miles of impoundment; 50% of *Quadrula*, all of *Epioblasma*.
 - 585 29% of *Conradilla*, all of *Epioblasma*.
 - 571 13% of *Conradilla*, all of *Epioblasma*.
 - Tributary reservoir (for water supply) 0 reduction.
 - Areas of the various impoundment alternatives inhabited by the pale lilliput are presently unknown.
- Draft FWS biological opinion concludes that any project alternative involving impoundment will result in jeopardy situation for at least 1 of the 3 species of listed mussels; identifies alternative water-supply development and river-recreation development as the 'reasonable and prudent alternatives.' The draft biological opinion does not include any information on the pale lilliput, nor any discussion of potential jeopardy relative to the various alternatives.