Monongahela National Forest Management Concludes that the Forest-Wide Stream Sedimentation Problem is Caused by Natural Processes, Not by Forest Management

By Rick Webb

On 1/3/22, the West Virginia Highlands Conservancy filed an objection to the pending approval of the Greenbrier Southeast (GSE) project, a Monongahela National Forest (MNF) project involving timber harvest and related roads in the East Fork of the Greenbrier River watershed (see The Highlands Voice, March 2022). On 3/18/22, the MNF published a final Decision Notice and Finding of No Significant Impact, authorizing the project.

A key issue raised in the Conservancy's objection to the GSE was the failure to describe and evaluate baseline environmental conditions, as required by both the National Environmental Policy Act and the Endangered Species Act. In particular, the MNF failed to meaningfully consider its own aquatic habitat monitoring data, which indicate that most of the streams in the Forest are degraded and trending negatively with respect to chronic sedimentation. This includes streams in the MNF that are designated critical habitat for the endangered candy darter and streams that support native brook trout populations.

Although an understanding of the existing sedimentation problem is needed for informed conclusions about the risk of additional degradation due to proposed timber projects, MNF managers have not conducted a rigorous analysis to determine the causes of the existing problem. Instead, they rely on mitigation measures to reduce additional sediment production and transport to acceptable, although unspecified, levels. As described in the Conservancy's objection to the GSE project, however, the available measures for controlling runoff from mountainside timber-harvest operations are unreliable, especially during periods of active road construction and road use for timber transport. The Conservancy thus called for meaningful analysis of the existing problem before proceeding with a new project that may add to the problem.

In the official response to the Conservancy's objection to the GSE project, the Forest Supervisor discounted concerns about sedimentation with the following statement:

> The Final EA has considered the potential for sediment production and delivery to streams documented in the Greenbrier Southeast Project Watershed Analysis Process (in the project record). This document shows monitoring data for forest-wide stream sediment changes that are not directly associated with management activities but instead are driven by natural processes. These data show streams in wilderness areas increasing in fine sediment and some streams in areas of management decreasing in fine sediment. Therefore, it appears that the project planning conducted by Monongahela National Forest staff is successful in protecting streams from any quantifiable changes in sediment delivery. (*Excerpt from response to WVHC objection to the GSE Project Final Environmental Assessment (EA) and Draft Decision Notice and Finding of No Significant Impact. Shawn Cochran, Supervisor, MNF, 2/22/22*)

The Conservancy obtained and reviewed the cited document, Greenbrier Southeast Project Watershed Analysis Process, dated 1/19/22. Note that this document was prepared and added to the project record after conclusion of the public comment and objection periods. After obtaining this document, the Conservancy submitted a request for data:

> We have obtained the cited document [Greenbrier Southeast Project Watershed Analysis Process]. It does not show or provide the data used in the analysis. Instead, it provides a qualitative summary of results for selected example sites. Because the findings reported in this document are central to your dismissal of our concerns about National Forest management and preservation and restoration of candy darter critical habitat, we request a listing of the specific data used in the analysis. We wish to obtain the actual data values that "show streams in wilderness areas increasing in fine sediment and some streams in areas of management decreasing in fine sediment." (*Excerpt from request to the Forest Supervisor, Larry Thomas, President, WVHC, 3/28/22.*)

The Forest Supervisor identified the Aquatic Ecological Unit Inventory (AEUI) program as the source of the data and identified the streams in question:

> The AEUI data contains the spatial location of the AEUI sample site; however, the attribute data does not quantify the sites by landscape characteristics. Thus, Chad Landress, Fisheries Biologist, has highlighted streams in wilderness areas increasing in fine sediment in the Stream Reach Master excel workbook in dark green. They include the following streams: Camp Five Run; Cranberry River – North Fork; Cranberry River – South Fork; Laurel Creek (Anthony Creek); Laurel Fork (Dry Fork), upper; and Williams River – Little Fork. Please note Cranberry River – South Fork is on the border of wilderness and Management Prescription 4.1 (Spruce and Spruce-Hardwood Ecosystem Management). Mr. Landress also identified streams with active timber management (some Forest Service; some non-Forest Service) during the sampling period. These streams are highlighted in orange and include: Glady Fork – East Fork; Hile Run; and Little River (EFGR). (*Excerpt from response to WVHC data request, Shawn Cochran, Supervisor, MNF, 4/25/22.*)

The Forest Supervisor has concluded that National Forest project planning is successful in protecting streams from quantifiable changes in sediment delivery to aquatic habitat. Rather than earth disturbance and hydrologic alteration associated with National Forest management, he attributes stream sedimentation in the MNF to natural processes. This conclusion has significant implications, as it provides a rationale for discounting concerns about impacts of proposed timber and road construction projects throughout the Forest.

The Forest Supervisor based his conclusion on a non-quantitative, selective, and very limited analysis of the available data. As indicated in the response to the Conservancy's data request, six wilderness area streams with increasing fine sediment were identified for comparison with three streams in areas of management. Examination of the watersheds and the data for the streams included in the analysis raises questions about both site classification and interpretation of the data.

The selection of the stream monitoring sites to represent wilderness and natural processes did not account for multiple non-wilderness influences or other significant factors in the upstream watersheds (see Figures 1-3). Among the factors that were evidently not considered:

1. The presence of private lands with non-wilderness management in the watersheds.
2. The presence of roads in the watersheds, including roads in active use and networks of old logging roads.
3. Wide variation in erosion potential due to differences in slope and differences in watershed soil and bedrock properties.

Similarly, the selection of stream monitoring sites to represent forest management includes sites with private land in the upstream watersheds, further complicating any finding about the contribution of National Forest management to the increasing stream sedimentation.

Examination of sediment data obtained for the selected AEUI stream monitoring sites raises further questions (see Figure 4). Fine-sediment levels, as measured in brook trout spawning gravel, exceed criteria for detrimental effects to aquatic life at all the selected sites, including all the designated “wilderness” and “managed” sites. There is no pattern of improving conditions at either set of sites. The data do not support a conclusion that stream sedimentation in MNF streams is driven by natural processes and that Forest Service management is not among the causes of the problem. Examination of both sediment data and watershed-attribute data for the selected sites instead highlights the need for a meaningful analysis of the problem.

In its objection to the GSE project, the Conservancy called for a description and evaluation of the environmental baseline, as required by key federal environmental laws. This has not happened, and the MNF is poised to proceed with multiple projects that may further harm legally protected aquatic habitat. The remedy is to put a hold on these timber harvest and road development projects until a scientifically credible analysis of the existing sedimentation problem is conducted.

Access to cited documents and additional information about the endangered candy darter and National Forest management projects, including the Greenbrier Southeast project, is available through the ABRA-Conservation Hub: https://conservation-abra.hub.arcgis.com.

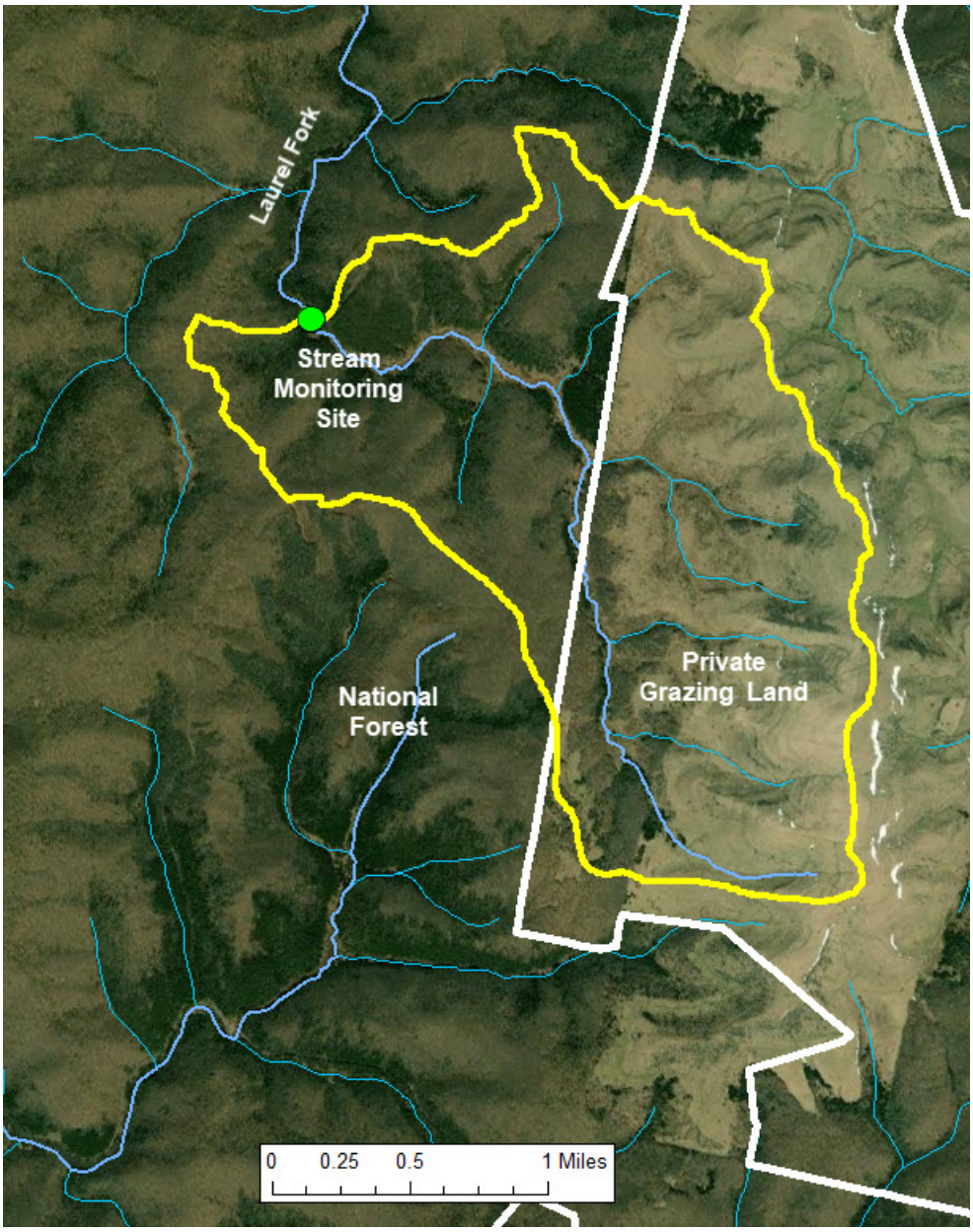

Figure 1 - The Aquatic Ecological Unit Inventory (AEUI) site on upper Laurel Fork in the Laurel Fork South Wilderness is one of the monitoring sites selected by the Forest Service to show streams in wilderness areas increasing in fine sediment. Among all the streams included in the Forest Service analysis, Laurel Fork had the highest maximum fine-sediment levels for both <1 mm and <4 mm size sediment. The Laurel Fork monitoring site, however, does not represent wilderness conditions. Although the monitoring site is in the Laurel Fork South Wilderness, more than half of the watershed area above the monitoring site is open private land used for grazing cattle. This illustrates a critical problem with the Forest Service analysis. The selection of the stream monitoring sites to represent wilderness and natural processes did not account for multiple non-wilderness influences and other significant factors in the upstream watersheds

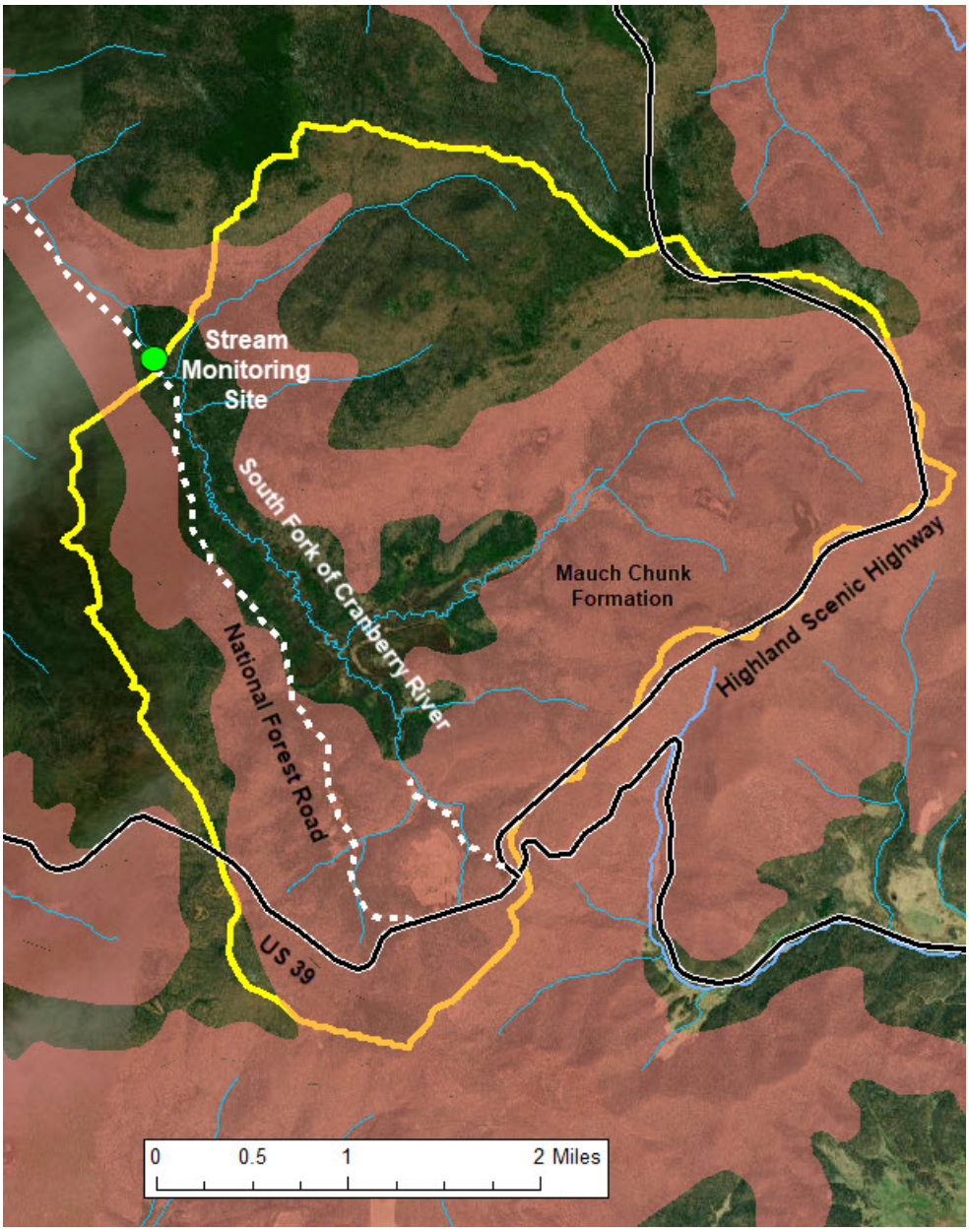

Figure 2 - The AEUI site on the South Fork of Cranberry River is among the monitoring sites selected by the Forest Service to show streams in wilderness areas increasing in fine sediment. It is also among the selected “wilderness” sites with significant non-wilderness conditions in the upstream watersheds. In this case, the watershed includes a gravel road along the entire length of the stream course. Moreover, most of the watershed is underlain by the highly erodible and unstable soils associated with the Mauch Chunk geologic formation.

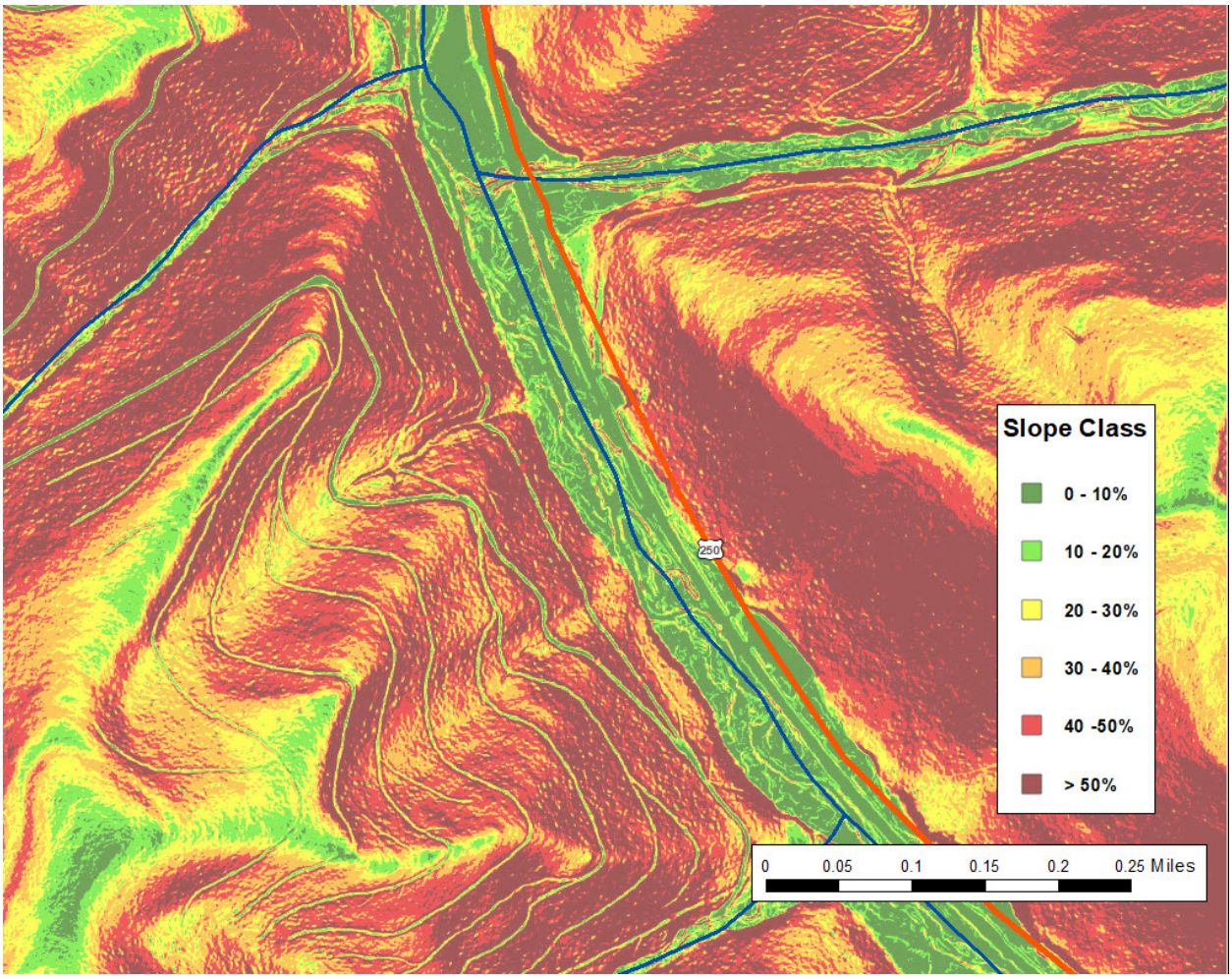

Figure 3 - The presence and effect of roads, including roads in current use and old logging roads, is among the factors that need to be considered when assessing the causes of elevated and increasing stream sedimentation in MNF streams. This map of slopes in the Greenbrier Southeast project area shows a network of old logging roads cut into the steep mountainside above Little River, which is designated critical habitat for the candy darter. These “legacy linear features” are found throughout the Forest.

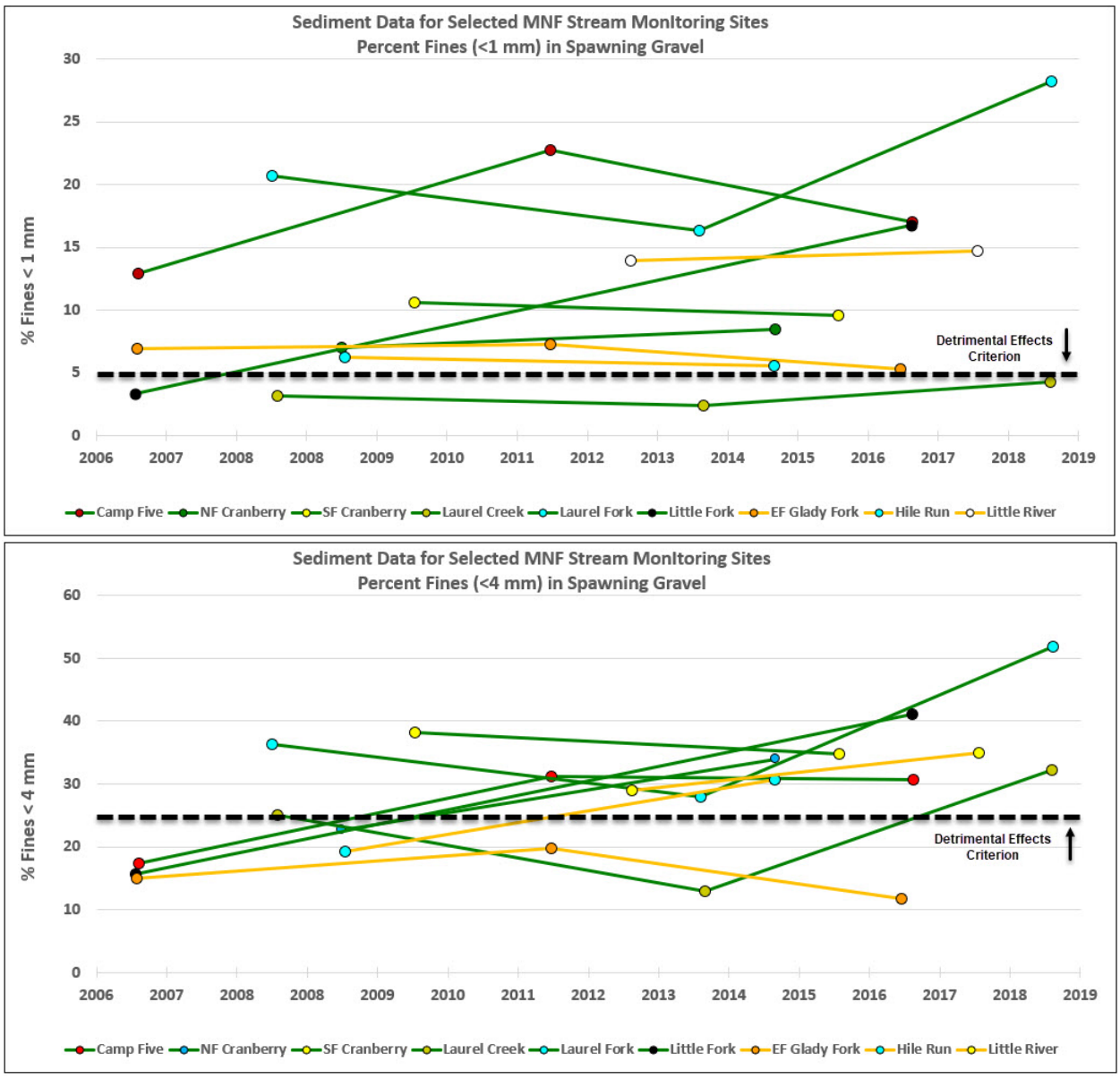

Figure 4 - Percent fine sediment values for AEUI monitoring program sites selected by the Forest Service to show streams in wilderness areas (green lines) increasing in fine sediment and streams in management areas (orange lines) decreasing in fine sediment. The values for both <1 mm and <4 mm size sediment are shown in relation to criteria for detrimental effects to native coldwater fish. The fine-sediment levels at all the sites exceed one or both criteria, and there is no clear pattern of increase or decrease for either set of sites.

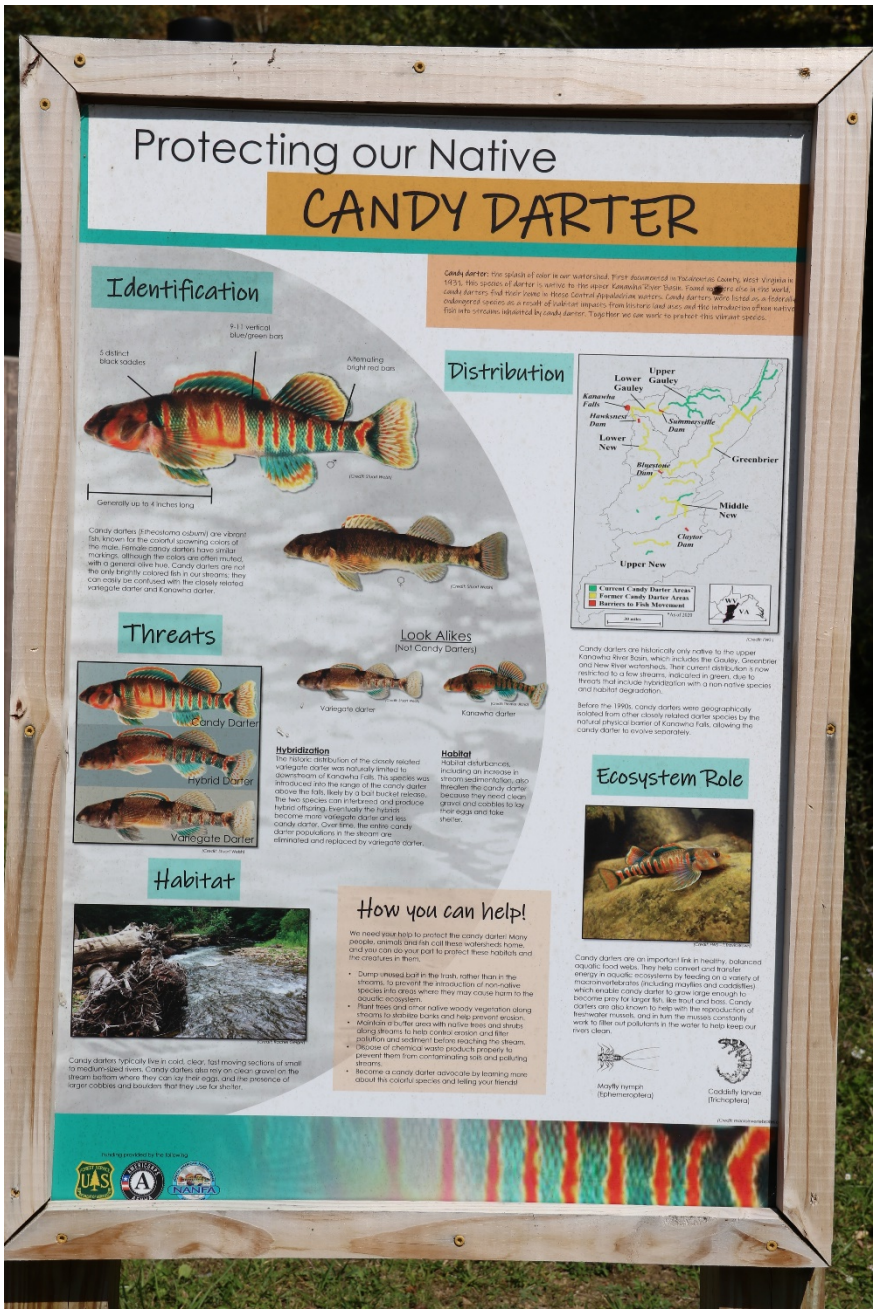

Figure 5 - The Forest Service has posted signs describing the plight of the endangered candy darter at various locations in watersheds that support the candy darter. Threats to the candy darter are identified as hybridization with the introduced variegate darter and habitat disturbance, including an increase in stream sedimentation, which threatens the candy darter because “they need clean gravel and cobbles to lay their eggs and take shelter.” In fact, about half of the historic range of the candy darter has been lost due to sedimentation. Elevated and increasing stream sedimentation, documented throughout the MNF, coupled with an insufficiently precautionary approach adopted by National Forest management, suggests that further habitat loss is in store for the candy darter and other coldwater species such as the brook trout.