SAC Annual Meeting WRHCP Afternoon Activity Notes 10.27.2010

The Water Resources HCP staff is planning to take a similar approach as the Northern Cumberland Forest Resources HCP staff by grouping covered species into communities and selecting umbrella species for each community. The conservation needs of these umbrella species will then drive the biological goals, objectives, and conservation measures. Umbrella species should be those that are the most sensitive to the environmental changes associated with the covered activities; therefore, protecting these species will indirectly protect the many other species that are in the same community.

The goal for today was to fill out the sensitivity to parameters table by choosing species within each community that are most sensitive to the listed habitat parameters. This was achieved by having each group member list 1-3 species for the parameters that they felt were most applicable to the community and the group discussing those species selections. Each group had at least one facilitator and was given: 1) a community watershed table to illustrate species distribution within the project area; 2) a species list to inform what species are included in the community; 3) a parameters definition sheet to help answer any questions about the parameters; and 4) a sensitivity to parameters table that was to be filled out and turned in at the end of the activity.

The following are the results from the group activity. These results will be reviewed and added to by species working groups before umbrella species are selected from the lists of sensitive species.

Perennial Headwater and Gravel Bar Group Participants:

Steve Bakaletz, Andrea Bishop, Robert Emmott, Jennifer Gihring, and Derek Street

Perennial Headwater

Parameter	Species
Average flows	Papershell
Bacterial contamination & disease	Endemic mussel, mussels (Cumberland + TN)
Channel stability	Endemic crayfish
Chemical pollutants	Species unknown, oil + gas impacts are key
Conductivity	Endemic crayfish + Blackside dace
Decreased corridors	Fish + endemic mussel
Decreased groundwater recharge	Crayfish (fish + mussels also, but lesser extent)
Disease	See bacterial contamination
Disturbance extent	See average flows
Disturbance frequency--extreme flood	fish
Embeddedness	Endemic mussels + fish that spawn in gravel beds.
Flood frequency & floodplain inundation	See extreme flows
Impervious surface area (total and effective)	See extreme flows
Instream cover	fish
Instream habitat connectivity	See corridors

Parameter	Species
Intensity of human use	See other parameters; pipelines-- plants
Invasive species	fish (hydrilla + Gambusia)
Low flows	See decreased groundwater
Nutrients	Fish + endemic crayfish
pH	Crayfish (?)
Pool/riffle habitat	See embeddedness
Riparian vegetation	See instream cover
Stormwater and surface runoff	See other flow + water qual. parameters
Substrate	See embeddedness
Suspended sediment	See embeddedness = chemical poll.
Temperature	fish

Gravelbar

Unable to get to this community.

Isolated Wetland and Intermittent Headwater Group Participants:

Sean Blomquist, Jeff Hughes, Nora Murdock, and Samantha Wyatt

Isolated Wetland

Parameter	Species
Bacterial contamination & disease	Four-toed salamander.
Chemical pollutants	Four-toed salamander.
Conductivity	Four-toed salamander.
Decreased corridors	Four-toed salamander, shrew?.
Decreased effective natural filters	Four-toed salamander, green pitcherplant.
Decreased groundwater recharge	Four-toed salamander, green pitcherplant, white fringeless orchid, tawny cottongrass, zigzag bladderwort, rose pogonia.
Decreased suitable terrestrial habitat	Four-toed salamander, masked shrew, bats.
Disease	E. small-footed bat, little brown bat, N. long-eared bat, four-toed salamander.
Disturbance extent	Four-toed salamander, black mountain salamander, white fringeless orchid.
Disturbance frequency	Green pitcherplant (fire), rose pogonia (fire).
Disturbance type	Green pitcherplant (fire), rose pogonia (fire), black mountain salamander.
Dominant vegetation type - % cover	Tawny cottongrass, rose pogonia, green pitcherplant.
Dominant vegetation type - species	Bats.
Embeddedness	Black mountain dusky salamander, Cumberland dusky salamander.
Flood frequency & floodplain inundation	Four-toed salamander, Black mountain dusky salamander.

Parameter	Species
Forest land cover type and %	Four-toed salamander.
Intensity of human use	All species, all wetland plants, especially related to ATV use.
Invasive species	White fringeless orchid.
Landscape configuration	Four-toed salamander.
Landscape fragmentation	Four-toed salamander.
Light penetration	Green pitcherplant, rose pogonia, tawny cottongrass, four-toed salamander.
Nutrients	Green pitcherplant.
pH	Four-toed salamander, plants.
Pool/riffle habitat	Black mountain salamander.
Riparian vegetation	Fetterbush, zigzag bladderwort.
Soil health	Four-toed salamander, plants.
Stormwater and surface runoff	White fringeless orchid, green pitcherplant.
Substrate	Four-toed salamander, plants.
Temperature	Four-toed salamander.
Trophic processes	Four-toed salamander.
Vegetation seral stage	Green pitcherplant, four-toed salamander.
Vernal pools	Four-toed salamander, white fringeless orchid.

Intermittent Headwater

Parameter	Species
Average flows	Black mountain dusky salamander.
Bacterial contamination & disease	Four-toed salamander, Cumberland dusky salamander..
Channel stability	Black mountain dusky salamander, Cumberland dusky salamander.
Chemical pollutants	Four-toed salamander, Black mountain dusky salamander, Cumberland dusky salamander, Valley flame crayfish.
Conductivity	Valley flame crayfish.
Decreased corridors	Four-toed salamander, black mountain salamander.
Decreased effective natural filters	Four-toed salamander, green pitcherplant, black mountain salamander.
Decreased groundwater recharge	Four-toed salamander, black mountain salamander, green pitcherplant, bog buttons.
Decreased suitable terrestrial habitat	Four-toed salamander, black mountain salamander.
Disease	Four-toed salamander, Cumberland dusky salamander.
Disturbance extent	Four-toed salamander, black mountain salamander.
Disturbance frequency	Green pitcherplant (fire), rose pogonia (fire), Four-toed salamander, black mountain salamander.
Disturbance type	Green pitcherplant (fire), rose pogonia (fire), black mountain salamander.
Dominant vegetation type - % cover	Tawny cottongrass, rose pogonia, green pitcherplant.
Embeddedness	Black mountain dusky salamander, Cumberland dusky salamander.

Parameter	Species
Flood frequency & floodplain inundation	Four-toed salamander, Black mountain dusky salamander.
Forest land cover type and %	Black mountain dusky salamander, Cumberland dusky salamander.
Impervious surface area (total and effective)	All bog species, Black mountain dusky salamander .
Instream cover	Black mountain dusky salamander, Cumberland dusky salamander, Valley flame crayfish.
Instream habitat connectivity	Black mountain dusky salamander, Cumberland dusky salamander, Valley flame crayfish.
Intensity of human use	All species, all wetland plants, especially related to ATV use, Black mountain dusky salamander, Cumberland dusky salamander, Valley flame crayfish.
Invasive species	Green pitcherplant, Valley flame crayfish..
Landscape configuration	Black mountain dusky salamander, Cumberland dusky salamander, Four-toed salamander.
Landscape fragmentation	Four-toed salamander, Black mountain dusky salamander.
Light penetration	Green pitcherplant, rose pogonia, bog buttons, black mountain salamander, Cumberland dusky salamander, four-toed salamander.
Low flows	Black mountain dusky salamander, Cumberland dusky salamander.
Nutrients	Valley flame crayfish, salamanders.
Peak flows	Black mountain dusky salamander, Cumberland dusky salamander, Valley flame crayfish.
pH	Four-toed salamander, Black mountain dusky salamander, Cumberland dusky salamander, Valley flame crayfish.
Pool/riffle habitat	Black mountain salamander.
Riparian vegetation	Black mountain dusky salamander, Cumberland dusky salamander.
Soil health	Cumberland dusky salamander, black mountain salamander.
Stormwater and surface runoff	Plants, Cumberland dusky salamander, black mountain salamander.
Substrate	Black mountain salamander, Valley flame crayfish.
Suspended sediment	Cumberland dusky salamander, black mountain salamander.
Temperature	Cumberland dusky salamander, black mountain salamander, Valley flame crayfish.
Trophic processes	Cumberland dusky salamander, black mountain salamander.
Vegetation seral stage	Green pitcherplant, bog buttons.
Vernal pools	Four-toed salamander.

Floodplain Riparian Group Participants:

Mark Cantrell, Evan Hart, Sally Palmer, Rebecca Schapansky, and Chuck Sutherland

Parameter	Species
Channel stability	Virginia spiraea, Marshalls grandifola.
Disease	Indiana bat, gray bat, N. long-eared bat.

Parameter	Species
Disturbance extent	Virginia spirea, Cumberland rosemary (cobble bars), barbara's buttons (cobble bars).
Disturbance frequency	Virginia spirea, Cumberland rosemary (cobble bars), barbara's buttons (cobble bars).
Disturbance type	Virginia spirea, Cumberland rosemary (cobble bars), barbara's buttons (cobble bars).
Dominant vegetation type - species	Swainson's warbler.
Invasive species	Valley flame crayfish.
Peak flows	Virginia spiraea.
Riparian vegetation	Loss of rhododendron could eliminate Swainson's warbler nesting.
Soil health	Butternut.
Substrate	On cobble bars Cumberland rosemary could indicate sandy, xeric conditions.
Vernal pools	Least bittern.

Perennial Mainstem Group Participants:

Margot Carter, Patrick Flaherty, Jim Hughes, Jim Layzer, Katherine Medlock, and Pat Rakes

Parameter	Species
Average flows	Spotfin chub, spawning, Olive darters, need steady flows, Tippecanoe darters, all mussels.
Bacterial contamination & disease	Hellbender, all mussels, depends on the disease, any species, all fish.
Channel stability	All mussels, fish would be poor indicators.
Chemical pollutants	Anything on the list. May depend on type and amount of chemical. Most don't have toxicity studies, all mussels, all fish.
Conductivity	Blackside dace, Emerald darters, Spotfin chub, crayfish, all mussels.
Decreased effective natural filters	All mussels, None seem more effective than others.
Decreased groundwater recharge	All mussels.
Decreased suitable terrestrial habitat	Pondweed.
Disease	Hellbender, all mussels, depends on the disease.
Disturbance extent	All mussels, all fish, Hellbenders, Spotfin chub.
Disturbance frequency	All mussels, all fish, Hellbenders, Spotfin chub.
Disturbance type	All mussels (floods), fish. Coal mine vs. development?
Dominant vegetation type - % cover	All mussels, fish, hellbenders, mussels, pondweed.
Dominant vegetation type - species	All mussels, fish, pondweed.
Embeddedness	Spotfin chub, Tuxedo darter, purple bean, most mussels, Bluemask darter, Sickle darter,

Parameter	Species
Flood frequency & floodplain inundation	Cumberland rosemary, both aquatic plants, all mussels.
Forest land cover type and %	Any.
Impervious surface area (total and effective)	Cumberland rosemary, both aquatic plants, all mussels, most fish, Spotfin chub, Tuxedo darter.
Instream cover	Tuxedo darter, Ashy darter, Hellbender, Cumberland darter.
Instream habitat connectivity	Any migratory species, especially fish, Tangerine darters, Olive darters, Sickle darters.
Intensity of human use	Hellbender.
Invasive species	Pondweed, Tangerine darter.
Landscape configuration	Pondweed.
Landscape fragmentation	Pondweed.
Low flows	Spotfin chub, spawning, Olive darters, need steady flows, Tippecanoe darters, all mussels.
Nutrients	Tangerine darters, all mussels, Ashy darters, Sickle darters.
Peak flows	All mussels, Cumberland rosemary.
pH	All mussels, all species.
Pool/riffle habitat	Ashy darters, Sickle darters, Cumberland darters, Tuxedo darters, Spotfin chub.
Riparian vegetation	All, pondweed.
Soil health	Crayfish.
Stormwater and surface runoff	All mussels.
Substrate	Spotfin chub, all mussels, Tuxedo darters, Cumberland darters, Tippecanoe darters, Ashy darters.
Suspended sediment	Spotfin chub, Sickle darter, all mussels, Tippecanoe darters, Tangerine darters.
Temperature	All mussels.
Vernal pools	Pondweed.
Vertical structure	Spotfin chub (boulder/bedrock faces with crevices)

Grassland and Shrub/Scrub Group Participants:

Geoff Call, Sterling Daniels, and Trisha Johnson

Parameter	Species
Decreased groundwater recharge	Shallow groundwater, wetlands on plateau are runoff and seasonal locations, White fringeless orchid, Pink sundew.
Decreased suitable terrestrial habitat	White fringeless orchid, golden-winged warbler.
Disease	WNS, Tri-colored, N. Long eared, E. small-footed (most important) bats.
Disturbance extent	golden-winged warbler
Disturbance frequency	golden-winged warbler
Disturbance type	golden-winged warbler

Parameter	Species
Dominant vegetation type - % cover	S. bog lemming, tied to rushes, sedges, golden-winged warbler.
Dominant vegetation type - species	S. bog lemming, tied to rushes, sedges.
Invasive species	Fesque invasive, golden-winged warbler, White fringeless orchid (most information available), probably all plants.
Landscape configuration	Not enough known about any plants to show this.
Soil health	Hairy-tailed mole, N. Pinesnake, E. slender glass lizard.
Vegetation seral stage	golden-winged warbler
Vertical structure	golden-winged warbler

Forest and Woodland Group Participants:

Karina Bynum, Dave Pelren, Chris Simpson, and Joey Wisby

Parameter	Species
Bacterial contamination & disease	Four-toed salamander.
Chemical pollutants	Four-toed salamander, widespread plants.
Decreased corridors	Gray bat, timber rattlesnake, N. Long-eared bat.
Disease	Tri-colored, N. Long-eared, Indiana bats, butternut, all bats.
Disturbance extent	Indiana bat, Cerulean warbler.
Disturbance frequency	Fire, drought? Golden-winged warbler, plants.
Disturbance type	Cerulean warbler, Golden-winged warbler.
Dominant vegetation type - % cover	Cerulean warbler, green salamander.
Dominant vegetation type - species	Indiana bat, Cerulean warbler, green salamander.
Forest land cover type and %	Cerulean warbler, Indiana bat.
Intensity of human use	E. small-footed bat, Cumberland sandwort.
Landscape configuration	Cerulean warbler, Indiana bat, green salamander, peregrine falcon, Allegheny woodrat.
Landscape fragmentation	Cerulean warbler, Allegheny woodrat, Timber rattlesnake.
Light penetration	Green salamander.
Riparian vegetation	Swainson's warbler.
Soil health	Shrews; masked, smoky, S.E.
Vegetation seral stage	Indiana bat, Golden-winged warbler.
Vernal pools	Four-toed salamander.
Vertical structure	Cerulean warbler, red-cockaded woodpecker, Indiana bat.