

Lochsa Research Natural Area¹

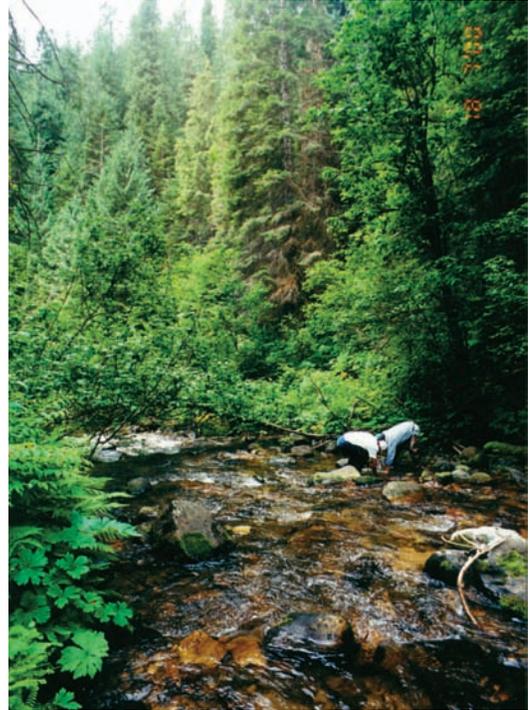
Three permanent streams exist in the RNA. Deadman and Glade Creeks were sampled July 17, 2000 by Dave Baker, Felix McGowan and Fred Rabe. Apgar and Glade Creeks were sampled on June 30, 2001 by Marilyn Nielson and Fred Rabe.

The drainages are steep, entrenched, cascading, step/pool streams. They consist of high energy/debris transport systems associated with depositional soils. Much of these steep slopes dissected by deep stream cuts were burned by the Pete King Creek fire of 1934. The area is underlain by thick metasedimentary rock layers exposed along the river. Apgar and Glade Creeks are second order streams with pinnate drainage patterns. Deadman Creek is a fifth order tributary with a dendritic pattern and an average gradient of 8 percent. The catchment basin length in km is 3.6 for Apgar, 7.9 for Glade and 10 for Deadman Creek.

The RNA was established primarily to preserve examples of Pacific coast vegetation types that occur over very limited areas in the state.



Riffle habitat in Apgar Creek. Some riparian vegetation seen here is lady fern (*Athyrium filix-femina*), maidenhair fern (*Adiantum pedatum*), cow parsnip (*Heracleum lanatum*), Rocky Mountain maple (*Acer glabrum*) and western redcedar (*Thuja plicata*).



Deadman Creek. Location: Upstream from Lochsa River about 200 m near gauging station. N46°15' W116°34'. Elevation: 492 m. Channel type: B2. Dominant habitat: Runs, riffles and rapids. Av. Width: 7.9 m. Av depth: 9 cm. Canopy cover: 62 percent. Collection of macroinvertebrates made amongst boulders in fast moving water.



Rapids in Deadman Creek. Note large boulder in channel (power of moving water) and lateral scour pool at side of channel. Stability of channel is enhanced by large rocks along the edge.

¹Most of this article was taken from Rabe, F. W., Lichthardt, J. and M. K. Nielson 2002. *Established and proposed Research Natural Area streams in the Clearwater National Forest*. USDA. Clearwater National Forest, 105 p.

Plants

Mougeotia sp., a filamentous green algae was noted on the rocks in Deadman Creek. An aquatic moss (*Fontinalis neomexicanus*) is present in Apgar and Glade Creeks.

Apgar Creek is confined to a steep valley with boulders and large woody debris stabilizing the banks. The stream is shaded by a coniferous canopy that includes western redcedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*) and grand fir (*Abies grandis*). The forest climax type is western hemlock/ladyfern, maidenhair fern (*Tsuga heterophylla* / *Athyrium filix-femina*, *Adiantum pedatum* phase) indicating a warm, nutrient rich site (Cooper et al. 1991). This canopy opens to allow a well developed tall shrub layer (3-5 m) along the creek dominated by red alder (*Alnus rubra*), buckthorn (*Rhamnus purshiana*) and Pacific dogwood (*Cornus nuttallii*) with Rocky Mountain maple (*Acer glabrum*) present. Mid level shrubs such as thimbleberry (*Rubus parviflorus*) and snowberry (*Symphoricarpos albus*) are also present. Where the shrub layer is open, ladyfern (*Athyrium filix-femina*) and cow parsnip (*Heraclium lanatum*) grow in patches with mountain boykinia (*Boykinia major*) also present. Lower growing forbs cover areas beneath the shrub canopy and include coolwort foam-flower (*Tiarella trifoliata*), dwarf enchanters nightshade (*Circaea alpina*) and verticillate-umbel licorice-root (*Ligusticum verticillatum*).

Glade Creek flows through a less confined valley than Apgar Creek with an open conifer canopy shading the stream. The forest climax type is western hemlock/ladyfern, maidenhair fern phase although western redcedar is also abundant. Tall shrubs (5-7 m) which include cascara (*Rhamnus purshiana*), red alder and Pacific dogwood grow along the stream margins often arching over the channel. Mid-level shrubs such as thimbleberry, oceanspray (*Holodiscus discolor*) and snowberry are abundant. Occasional openings in the thick shrub canopy are filled with tall (1-2 m) arrow-leaf groundsel (*Senecio triangularis*) cowparsnip, false bugbane (*Trautvetteria caroliniensis*), and mountain boykinia. Common lower-growing forbs include queen cup beadlily (*Clintonia uniflora*), western goldthread (*Coptis occidentalis*), and twisted stalk (*Streptopus amplexifolius*). Western swordfern (*Polystichum munitum*) is abundant in shaded areas and patches of giant horsetail (*Equisetum telmateia*) grow thick in places on the stream margins. Ladyfern and maidenhead fern are also common.

No plants information was collected at Deadman Creek. It is recommended that riparian vegetation be recorded there in the near future.

Two species located in the Lochsa RNA that botanists would most quickly recognize as having unique distributions are the red alder and Pacific dogwood. In addition to the above disjunct species (taxa common to the Pacific coast but rare or unique in inland areas), there are 12 additional disjunct species in the Lochsa RNA (Pfister, 1977).

Warmer temperatures along the river indicate a moderate climate and possibly a major reason for the occurrence of disjunct coastal species.



Cornus nuttallii (Pacific dogwood)



Glade Creek (2001). Location: 50 m above confluence with Lochsa River. N46° 13' W116° 32'. Elevation 512 m. Channel type: A3. Dominant habitat: Cascades and plunge pools. Av. Width: 3.7 m. Av. depth: 18 cm. Canopy cover: 75 percent.

Macroinvertebrates

Macroinvertebrates were collected and identified from Apgar Creek in 2001, Deadman Creek in 2000 and Glade Creek in 2000 and 2001.

Apgar Creek: Thirty-four taxa were identified from the three samples, 30 of which were from the mineral sample. Twenty-four of these were EPT species (mayflies, stoneflies, caddisflies). The dominant species was a mayfly (*Baetis tricaudatus*). An unidentified freshwater isopod and planaria were found only in the moss sample. *Lepidostoma* sp., a caddisfly was dominant in the moss and CPOM samples. *Tropisternus* sp., a water scavenger beetle, was unique to RNA stream samples in the Clearwater Forest.

Glade Creek: Twenty-four taxa were identified from the rocky substrate in 2000 and 27 identified in 2001. The dominant form both years was *Baetis bicaudatus*. The dominant species in the moss and CPOM samples was a Lumbriculidae (aquatic earthworm). There was a 60 percent similarity of Glade Creek mineral samples to Apgar Creek mineral sample in 2001. *Doroneuria theodora*, a stonefly, was present in both streams. In 2000, Glade Creek macroinvertebrate samples showed the highest biointegrity scores of four streams in the area (Rabe and Catts 2001). Dense canopy and deep pools were thought to contribute to the high production in this drainage.

Deadman Creek: Only 10 taxa were collected from the rocky substrate. The dominant form was *Baetis bicaudatus*. The boulder size rock and rapid flow of water were thought to be responsible for the low species richness. In comparison, a site sampled downstream in Deadman Creek with slower moving water and smaller rock substrate had twice as many species and twice the number of individuals comprising the community. This may have been due to the type sampler used in the relatively deep, fast water upstream.



Lepidostoma sp. is a caddisfly found in the moss and rocky substrate from Apgar Creek. It was absent from the other two streams. This form is common in head-water streams and springs. Its case is a "rough log cabin" type of leaf and bark fragments (Merritt and Cummins 1996).

	Taxa richness	EPT richness	Comments
Apgar mineral 01	30	24	High # of EPT species <i>Baetis tricaudatus</i> dominant
Apgar moss 01	14	9	Terrestrial isopod and planarian only in moss
Apgar CPOM 01	14	10	<i>Tropisternus</i> sp. unique to Clearwater RNA streams
Glade mineral 00	24	18	
Glade mineral 01	27	20	Index of similarity 60 % between Apgar mineral
Glade moss 01	17 (6)	6	
Glade CPOM 01	13 (4)	4	
Deadman mineral 00	10	9	Low number of taxa for third order stream

() number of chironomid species



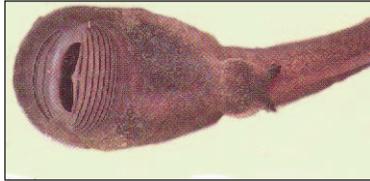
Tropisternus sp. is a water scavenger beetle that uses chirping calls to locate mates (McCafferty 1983). It was found in the CPOM sample from Apgar Creek. It was absent from the other streams in the RNA.



Doroneuria theodora, a stonefly.

Aquatic vertebrates

Two different age classes of immature *Ascaphus truei* (tailed frog) were noted in Glade Creek. The frog lives three years. Its large mouth on the underside is surrounded by a cup-shaped band used for suction to rocks in fast water (Corkran and Thoms 1996).



Ascaphus montanus (tailed frog) Photo credit: Corkran and Thoms 1996).

Summary

The survey covered three different size entrenched streams on steep slopes dissected by deep cut channels. Fourteen coastal disjunct species to include *Cornus nuttallii* and *Alnus rubra* were present. Many of these species are riparian. Apgar Creek contained an aquatic beetle not yet found in any stream in the Clearwater National Forest. Surprisingly, 30 species of macroinvertebrates (not counting chironomids) were identified from this small second order stream with a cascades / pool habitat.

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