**North Cascades Collapsed Stratal Mountains**

**Terrain Class: Mountains -** No one process responsible for construction of mountains. They can be uplifted, tectonic, subduction of plates, folding, uplift, up and down warping of the mantle, inflation of molten lower crustal (batholiths), etc. Erosion of mountain systems occurs over time. The rate of erosion is dependent on the geomorphic process, the underlying rock structure, and the climate, including both freeze thaw and the amount and intensity of precipitation and runoff. Mountains are further defined and distinguished based on morphology, including the pattern and density of drainages, depth of drainages, overall morphology of the area between the drainages, evidence of a strong imprint of a surficial process such as glaciation, and presence of visible underlying rock structure.

Mountains have simple to very complex forms that have arisen due to inherited rock structure, rock history, and are the net result of local to regional spatial scales of competing rates of upbuilding/uplift and downgrading/erosion. Mountains will have an inherited history from weathering and degradation of the underlying stack of earth materials that forms them. Vegetation, habitat, water interception, collection and transport will share a similar history in the same type of uplift and rock.

**Landform Association: Collapsed Stratal Mountains**



**Collapsed Stratal Mountains** are mountainous areas that have morphologies reflecting a mass-wasting obviously occurring along exhumed rock structure. Stratigraphy is present and visible in areas less or unaffected by landslides. Erosional exhumation reveals layering of the underlying rock structure, including dip and anti-dip slopes. Anti-dip slopes are benchy, rocky and relatively steep slopes. Transecting down an anti-dip slope one finds a repeating pattern of topographical benches with bedrock outcrops followed by intervening areas of accumulated slope sediment. Habitat and vegetation distribution corresponds to this pattern. In some map units, large rotational landslides are present along anti-dip slopes. Dip slopes, on the other hand, are typically shallower slopes underlain by extensive translational slides. Some of the well-formed slide areas have been identified in published geological maps, but the size and apparent morphological consistency of translational slides with surrounding stratigraphic morphology makes them cryptic. In this map unit, drainages are poorly integrated, leading to variable routing of surface and subsurface water through this type of landscape. Water routing through this landscape is irregular due to recent and on-going slope failure with its accompanying drainage diversions and impoundments. These areas are considered as sources of cool water to streams. Sediment recruitment by streams is significant along the margins of these collapsed mountains. The slide areas can hold deep soils, retain moisture and provide micro-climates that offer a variety of excellent resources for numerous floral and faunal communities.

This Landform Association has a limited spatial extent on National Forest System Lands.

**Landtype Associations:** Landtype Associations are formed by intersecting vegetation series or groups of vegetation series with Landform Associations.

**Topography**:

The following tables represent the average conditions for the Landform Association. Only lands within and adjacent to National Forest System Lands were mapped by this project. The entire EPA Level III Ecoregion is not covered by this mapping.

The percent of Landform Association (% of LfA) in bold in the table below refers to the percent of the Ecoregion represented by that Landform Association. The (% of LfA) numbers not in bold in the table below refer to the percent of each Landtype Association within the Landform Association.



**Climate:**



The ratio of Actual Evapotranspiration to Potential Evapotranspiration (AET/PET) is used as a broad-scale indicator of potential drought stress. We obtained modeled actual and potential evapotranspiration datasets from the Numerical Terradynamic Simulation Group at the University of Montana (<http://www.ntsg.umt.edu/project/mod16>) for a 30 year climate average. AET/PET ratio in the table above is based on a scale of zero to one. A value closer to 1 means the vegetation is transpiring close to its potential. A value farther from 1means that the Actual Evapotranspiration is below potential based on this climatic zone (Ringo, et. al. 2016 in draft).