

Nitrogen Cycling in Forested Watersheds Table of Field Variables

Measureable Variable:	Measure with:	Method:	Useful for:
Nitrogen in stream water	Lab analysis of water grab sample (Protocol 7)	Collect stream water in bottles provided, submit to lab for analysis	Determining nitrogen release from the watershed
Water temperature (discrete)	Alcohol thermometer	Measure water temperature at water sampling site	Determining relationships between water temperature and other factors
Water temperature (continuous)	Data loggers	Deploy for a predetermined amount of time	Looking at water temperature changes over time
Stream flow (discrete)	Stopwatch, tape measure, orange or tennis ball OR flow meter	Time for object to travel a known distance OR per manufacturer's instruction	The speed of water movement at the site (and for comparison between sampling events)
Stream flow (continuous)	Stream flow logger	Deploy for a predetermined amount of time	Looking at stream flow changes over time
Canopy cover	Densimeter (Protocol 4)	Measure canopy cover directly over the stream or in area around sampling site.	Amount of cover may affect the amount of precipitation that reaches the ground
Vegetation type	ID, field sheets, compass, tape measure (both large and small) (Protocol 5)	Collect data about the trees and shrubs a.) along transects that are perpendicular to the stream (at the sampling site), or b.) in 1/20 th acre plots.	Vegetation may change what comes into the streams
Stand density	ID, tape measure (Protocol 5)	Determine how many of any particular tree species are in the area around the sampling location.	May affect water chemistry
Elevation	Topo map	Locate sampling location on map, find elevation from contour lines	May affect temperature, amount of runoff, other factors
Aspect	Topo map, compass	Record whether the sampling site is N, S, E or W-facing	May affect temperature, effects of prevailing winds, amount of fog, other factors
Stream stage	Meter stick or stadia rod (Protocol 8)	Place stick/rod vertically into stream. Determine stream water height.	Determining differences in stream height from one sample collection to another.
Snowpack depth	Meter stick (Protocol 9)	Measure and record snow depth at regular intervals, using a meter stick (or permanently install a stake marked with cm in the ground) Read at each sampling event.	Determine whether snowpack depth and any stream water conditions are related
New snowfall depth	Snowfall board and meter stick (Protocol 9)	Measure and record snowfall from an snow event, use to calculate snow water equivalent	Determine whether new snowfall and any stream water conditions are related
Snow water equivalent	Clear cylinder, spatula, zipper bag (Protocol 10)	Collect snow sample for melting and determining how much water is in the snow	Determine how much water is stored as snow
Basic soil characterization	Shovel, meter stick, golf tees, camera (Protocol 11)	Dig soil pit, measure the depth of the different soil layers	Depth of different layers may affect the amount of N available to be washed into stream