Data Set Citation

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Alsea Watershed Study 1959-1972
GuenPatty.5.1

General Information

Title:	**Alsea Watershed Study 1959-1972**
Identifier:	GuenPatty.5.1
Abstract:	To investigate the effects of logging, three small watersheds in the Alsea River basin on the west slope of the Oregon Coast Range were selected for study. This was an interdisciplinary investigation to evaluate the influence of specific logging methods on stream regimen and on aquatic resources. The study plan involved (1) clear-cut logging one watershed [Needle Branch Creek]; (2) a second watershed with smaller, more space clear cuts and a riparian stream buffer left intact [Deer Creek]; and (3) a third watershed left uncut as a control to evaluate changes in the logged watersheds [Flynn Creek]. Data were collected on all three watersheds for a period of 7 years to define the pre-logging calibration. Road building and logging occurred in 1966, with continued monitoring through 1972. The U.S. Geological Survey conducted streamflow, water temperature, and sediment studies from Water Year (WY) 1959 through WY197. Data in this project are the sediment sample results transfered from the original laboratory data sheets.
Keywords:	● Alsea ● Paired watershed study ● sediment ● logging effects

Involved Parties

Data Set Creators

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Data Set Characteristics

Geographic Region:

Geographic Description:	Flynn Creek Basin, hydrologic units (HUC14): 17100205030201
Bounding Coordinates:	West: -123.891211 degrees East: -123.734109033 degrees North: 44.559185 degrees South: 44.532827 degrees

Time Period:

Begin:	1958-10-01
End:	1972-09-30

Geographic Region:

Geographic Description:	Deer Creek Basin, HUC14: 1417100205030201
Bounding Coordinates:	West: -123.872247 degrees East: -123.842568 degrees North: 44.556961 degrees South: 44.525119 degrees

Geographic Region:

Geographic Description:	Needle Branch Creek Basin, HUC14: 17100205030202
Bounding Coordinates:	West: -123.863906 degrees East: -123.841675 degrees North: 44.52874 degrees South: 44.508146 degrees

Geographic Region:

Geographic Description:	Flynn Creek USGS Stream Gage
Bounding Coordinates:	West: -123.87831 degrees East: -123.75443169 degrees North: 44.535218 degrees South: 44.535218 degrees

Geographic Region:

Geographic Description:	Deer Creek USGS Stream Gage
Bounding Coordinates:	West: -123.853275 degrees East: -123.729421725 degrees North: 44.538629 degrees South: 44.538629 degrees

Geographic Region:

Geographic Description:	Needle Branch USGS Stream Gage
Bounding Coordinates:	West: -123.85647 degrees East: -123.73261353 degrees North: 44.509812 degrees South: 44.509812 degrees

Sampling, Processing and Quality Control Methods

Step by Step Procedures

Step 1: **Sediment Sampling and Laboratory Procedures**

Description: Suspended sediment concentration and load were measured in the field throughout water years 1959 - 1972. In the laboratory, the water samples were vacuum filtered, with the filters dried, and then weighed (the filter papers were weighed before use, and this weight is referred to as the “Tare” on the data sheets). The difference between the Gross Weight minus the Tare gives the Net Weight, which is then multiplied by the volume of the sample to convert to a Concentration (i.e., mg/l or p.p.m).

Instrument(s): U.S. Geological Survey DH-48 depth integrated sampler.

Step 2: **Digitization Procedures to Transfer Information from Laboratory Data Sheets to Excel**

Description: The Alsea watershed study collected over 20,000 samples from 1959 through about 1972. These samples provide an irreplaceable record of sediment concentrations (and loads) in old growth forest pre-logging (for the first 6 years of the study), and were used post-logging as justification for the first Forest Practices law in the nation. Water samples were collected with a “Depth Integrated” DH-48 sampler and returned to the laboratory for analysis. The laboratory data sheets have places to record 20 samples in two rows of 10 records. For each of the two rows of records, there are 16 lines where information on a specific sample could be recorded. Data from seven of these lines were digitized. In most cases, duplicate samples were taken, with a set of samples most days. On many of the lab records a single set of Date/Time/G.H./Station data is written across both the duplicate entries. During storm periods, samples were collected more frequently, again usually with duplicates for a specific date/time combination.

Procedure:

1) Collect the data sheets (or open the PDF file) for a single study site and water year
2) Open the Excel template "[Site]_WY__Template.xlsx" and "Save As" [Site]_WY[year]_[your initials].xlsx. For example: Stream:Deer_W. There are 10 columns in the Excel template:WY1959js.xlsx

a) **Location**: on the first row of the data sheet, and should be standardized as Deer, Flynn, or NeedleBr. This entry can be copied down since it won't change (usually, there may be some exceptions).
b) **Data Sheet:** On some of the Laboratory Data Sheets there is a number on the bottom left called "Lab No. _____", sometimes there's only a number, and sometimes there's nothing. If there's a number, it should be the same for the entire data sheet, and can be "cut-and-pasted" in the spreadsheet.
c) **Date:** should be in the mm/dd/yy format, i.e. 9/11/01
d) **Time:** Time should be entered in the 24-hour military format (hhmm) with hours and minutes. If the data sheet does not reference AM or PM in the 12-hour format, or if there is a note on Standard versus Daylight Savings Time, include this in the "Flag" column on the far right column of the Excel spreadsheet.
e) **G.H.(ft):** This is the third row in the data sheet records, and stands for "Gage Height". It is not present in many of the records, but is important information when provided.
f) **Station:** This indicates where the sample was collected, and is called "Samp.Sta. on the laboratory data sheets. There is little standardization, just include what's noted if an entry is made.
g) **Container:** This is the sample bottle number. These numbers are not necessarily consecutive by date/time, but are useful in tracking and QA/QC.
h) **Conc. (ppm):** This is the key piece of data for each sample. It should be an integer (i.e., no decimal places). It is critical to recognize and enter the "0" values. DO NOT put zero as a concentration unless it is on the sample sheet; leave blank if there is not recorded concentration.
i) **Remarks:** This is the 6th line on the sample data form. It is usually blank, but any entries on the laboratory sheet should be noted. There may be * asterisks in an entry with values at the bottom of the data record. Put these information in this box.
j) **Flag:** This is the place to note any inconsistencies in the data, or missing values, or values that seem out of range. Use this instead of writing notes on the paper copies of the data sheets. You can also use ??? in a specific entry location as well. This will trigger a review of the data sheets during the QA/QC process.
k) **Note:** In some cases there will be samples collected for particle size analyzes. These are usually noted in the Remarks line as "Size". If there are bottle numbers and concentrations for the samples that data should be entered. Make sure the Remarks column in the Excel spreadsheet has "Size" and if there are any other comments or missing data (such as time) note that in the Flag column.

Step 3:	**Laboratory Analysis Data Sheet Scanning & Conversion Procedure**
Description:	1) The following settings were used for scanning: a) Scan Type: Full Color: Text/Photo. b) Resolution: 400 dpi. c) Scan Size: Auto Detect d) Press "OK" button on upper right of LCD to accept.
Instrument(s):	The scanner used was Ricoh Model Aficio MP 5001
Step 4:	**Procedure for Converting Scanned Laboratory Data Sheets into Archival PDFs**
Description:	1) The raw scans in Adobe Acrobat Portable Document Format (PDF) were opened to determine the site and water year (WY) of the sample data. 2) They were saved with the file name convention: [Site]_WY[year]_raw.pdf 3) They were then "Save As Other" and converted to "Archival PDF (PDF/A)" as the file type with the naming convention [Site]_WY[year]_A.pdf.
Step 5:	**Digitization Quality Assurance and Control Process**
Description:	The entries were reviewed after completing each sample sheet to ensure the Excel entries matched the original form. Two people transferred the information from each laboratory data sheet, denoted by their initials in the filename. Once both people entered the data, a Microsoft Office Tool called "Spreadsheet Compare"was used to identify inconsistencies between the two Excel spreadsheets. It was important to standardize the data entry to expedite the QA/QC process. It was assumed two different people would not make the same data entry error. If someone was uncertain about the value for an entry, "???" was input, a note in the Flag column, and the entry was reviewed
Sampling Area And Frequency:	For water years 1959 - 1961, the suspended sediment load was sampled at footbridges several hundred feet upstream from the gaging stations. Beginning with the 1962 water year, sampling was done on the concrete control wires at the stream gaging stations. Generally, duplicate suspended sediment samples were taken approximately daily over the water year (Oct. 1 - Sept. 30). Sampling was less frequent during the summer low flows; during storm events when there was likely to be more than a 5% difference in temporal samples due to high flows, additional sample events (with duplicates) were made throughout the high flow period. Hydrologic units for these areas are as follows: Alsea River, HUC8: 17100205 Drift Creek, HUC10: 1710020503 Middle Drift Creek, HUC12: 171002050302 Flynn Creek, HUC14: 17100205030201 Deer Creek, HUC14: 17100205030201 Needle Branch, Creek HUC 14: 17100205030202

Sampling Description:	Reference: Harris, D.D. and R.C. Williams. 1971. Streamflow, Sediment-Transport, and Water-Temperature Characteristics of Three Small Watersheds in the Alsea River Basin, Oregon. U.S. Geological Survey Circular 642. 30pp.
Data Derived Publications	Beschta, R. L. (1978). Long-term patterns of sediment production following road construction and logging in the Oregon Coast Range. Water Resources Research, 14(6), 1011–1016. https://doi.org/10.1029/WR014i006p01011 Brown, G. W., Gahler, A. R., & Marston, R. B. (1973). Nutrient losses after clear-cut logging and slash burning in the Oregon Coast Range. Water Resources Research, 9(5), 1450–1453. https://doi.org/10.1029/WR009i005p01450 Brown, G. W., & Krygier, J. T. (1971). Clear-Cut Logging and Sediment Production in the Oregon Coast Range. Water Resources Research, 7(5), 1189–1198. https://doi.org/10.1029/WR007i005p01189 Brown, G. W., & Krygier, J. T. (1970). Effects of Clear-Cutting on Stream Temperature. Water Resources Research, 6(4), 1133–1139. https://doi.org/10.1029/WR006i004p01133 Chapman, D. W., Corliss, J. F., Phillips, R. W., & Demory, R. L. (1961). Alsea Watershed Study. Corvallis, Oregon. Harr, R. D., Harper, W. C., Krygier, J. T., & Hsieh, F. S. (1975). Changes in storm hydrographs after road building and clear-cutting in the Oregon Coast Range. Water Resources Research, 11(3), 436–444. https://doi.org/10.1029/WR011i003p00436 Harris, D. D. (1977). Hydrologic changes after logging in two small Oregon coastal watersheds. Geological Survey Water-Supply Paper 2037, 31. Harris, D. D. (1973). Hydrologic changes after clear-cut logging in a small Oregon coastal watershed. Journal of Research of the U.S. Geological Survey, 1(4), 487–491. Retrieved from https://pubs.er.usgs.gov/publication/70160798 Harris, D. D., & Williams, R. C. (1971). Streamflow, sediment-transport, and water-temperature characteristics of three small watersheds in the Alsea River Basin, Oregon. Geological Survey Circular, 642, 1–21. Moring, J. R. (1975). The Alsea Watershed Study: Effects of Logging on the Aquatic Resources of Three Headwatr Streams of the Alsea River, Oregon, Part III- Discussion and Recommendations. Corvallis, Oregon. Moring, J. R. (1975). The Alsea Watershed Study: Effects of Logging on the Aquatic Resources of Three Headwater Streams of the Alsea River, Oregon, Part II- Changes in Environmental Conditions. Corvallis, Oregon. Moring, J. R., & Lantz, R. L. (1975). The Alsea Watershed Study: Effects of Logging on the Aquatic Resources of Three Headwater Streams of the Alsea River, Oregon, Part I- Biological Studies. Corvallis, Oregon. Stednick, J. D. (Ed.). (2008). Hydrological and Biological Responses to Forest Practices: The Alsea Watershed Study. Fort Collins, CO: Springer. Williams, R. C. (1964). Sedimentation in Three Small 5 Forested Drainage Basins in the Alsea River Basin, Oregon.
USGS Water Supply Reports	Geological Survey Water-Supply Paper 1638. (1960). Surface Water Supply of the United States 1959, Part 14. Pacific Slope Basins in Oregon and Lower Columbia River Basin. Geological Survey Water-Supply Paper 1645. (1966). Quality of Surface Waters of the United States 1959, Parts 9-14. Colorado River Basin to Pacific Slope Basin in Oregon and Lower Columbia River Basin. Geological Survey Water-Supply Paper 1718. (1961). Surface Water Supply of the United States 1960, Part 14. Pacific Slope Basins in Oregon and Lower Columbia River Basin. Geological Survey Water-Supply Paper 1745. (1968). Quality of Surface Waters of the United States 1960, Parts 9-14. Colorado River Basin to Pacific Slope Basins in Oregon and Lower Columbia River Basin. Geological Survey Water-Supply Paper 1885. (1967). Quality of Surface Waters of the United States 1961, Parts 9-14. Colorado River Basin to Pacific Slope Basins in Oregon and Lower Columbia River Basin. Geological Survey Water-Supply Paper 1935. (1971). Surface water supply of the United States 1961-65, Part 14. Pacific Slope Basins in Oregon and Lower Columbia River Basin. Geological Survey Water-Supply Paper 1945. (1964). Quality of Surface Waters of the United States 1962, Parts 9-14. Colorado River Basin to Pacific Slope Basins in Oregon and Lower Columbia River Basin. Geological Survey Water-Supply Paper 1951. (1966). Quality of Surface Waters of the United States 1963, Parts 9-14. Colorado River Basin to Pacific Slope Basins in Oregon and Lower Columbia River Basin. Geological Survey Water-Supply Paper 2135. (1966). Surface Water Supply of the United States 1966-70, Part 14. Pacific Slope Basins in Oregon and Lower Columbia River Basin.

Data Dictionary:

Stream: Name of Stream

DataSheet(#): numeric ordering of data sheets, but for years prior to the numbering system implementation the entry will be "N/A"

Date(mm/dd/yy): Dates between 10/01/1958 to 09/30/1972

Time24(hhmm): 24-hour time reads

G.H.(ft): Gauge height in feet

Station: Sample Station location in stream

Container: numeric order of sediment containers

Conc.(ppm): sediment in water measured in parts per million

Remarks: comments about data collection process

Flag: marked for resolution of discrepancies

Blanks are used in the "Remarks" and "Flag" Sections to illustrate no entries, whereas "N/A" is used everywhere else.

Access Control:

Auth System:	knb
Order:	allowFirst
Allow:	[read]public

Data Set Usage Rights

Data may be used freely with attribution.