Soil Database Interface
The `soilDB` package

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1 Introduction

This package provides methods for extracting soils information from local PedonPC and AK Site databases (MS Access format), local NASIS databases (MS SQL Server), and the SDA webservice. Currently USDA-NCSS data sources are supported, however, there are plans to develop interfaces to outside systems such as the Global Soil Mapping project.

It can be difficult to locate all of the dependencies required for sending/processing SOAP requests, especially on UNIX-like operating systems. Windows binary packages for the dependencies can be found here `http://www.stats.ox.ac.uk/pub/RWin/bin/windows/contrib/2.14/`.

1.1 Design

1.2 High-Level Functions

1.3 Low-Level Functions

1.4 Possible Applications

2 Linkages to the 'aqp' Package

2.1 The 'SoilProfileCollection' Class and Methods

3 Sample Dataset: 'loafercreek'

4 Examples

```
suppressMessages(library(soilDB))
data(loafercreek)

##
## aggregate major horizon types over 1cm intervals
##

# categorize major horizon types
hz.tab <- rev(sort(table(loafercreek$hzname)))
hz.tab[hz.tab > 5]

##
##    A Bt1 Bt2  Cr Bt3  Oi   R Crt
##   47  45  44  25  22  21  15  13
```
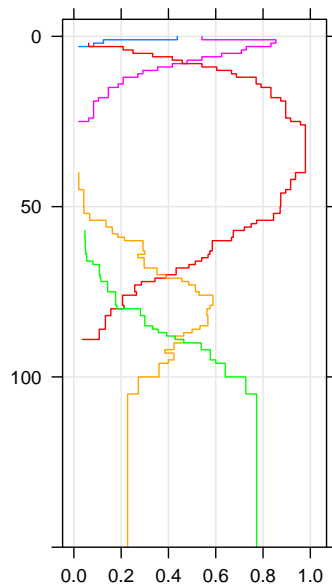
Figure 1: horizon proportions

```r
# add generalized hz name
loafercreek$hz <- rep("other", times = nrow(loafercreek))

# generalize horizons
loafercreek$hz[grep("O", loafercreek@horizons$hzname)] <- "O"
loafercreek$hz[grep("A", loafercreek@horizons$hzname)] <- "A"
loafercreek$hz[grep("Bt", loafercreek@horizons$hzname)] <- "Bt"
loafercreek$hz[grep("Cr", loafercreek@horizons$hzname)] <- "Cr"
loafercreek$hz[grep("R", loafercreek@horizons$hzname)] <- "R"

# convert generalized hz to factor
loafercreek$hz <- factor(loafercreek$hz)
loafercreek.hz.agg <- slab(loafercreek, fm = ~hz)

# wide->long format
loafercreek.hz.agg.long <- melt(loafercreek.hz.agg,
    id.var = c("top", "bottom", "contributing_fraction",
        "all.profiles", "variable"), variable_name = "horizon")

# plot horizon type proportions
p1 <- xyplot(top ~ value, groups = horizon, data = loafercreek.hz.agg.long,
    ylim = c(150, -5), type = c("S", "g"), horizontal = TRUE,
    subset = value > 0 & horizon != "other", asp = 2, ylab = "",
    xlab = "")
```