Use an expert-derived ruleset to estimate potential climate-change effects on river and stream assessment results for benthic invertebrates and fish.

```
#--------------- Set path and read data ---------------
path <- "..."
setwd(path)
data <- read.csv("example_taxa_list.csv", header=TRUE)
```

```
#--------------- Define variables ---------------
# Set number of individuals of various species found at various sites and scenarios
# describing how the potential abundances might change.

# Set variables:
# ID_ART: taxa ID
# S1, S2, ..., S10 - scenarios: list of abundance multipliers for each taxa
# abundance_site_1, abundance_site_2, ...: taxa abundances found at each site

nScenarios <- 10
nSites <- 2
nSpecies <- nrow(data)
abundances <- subset(data, select=c(abundance_site_1, abundance_site_2))
```

```
#--------------- Define scenario function ---------------
implementScenario<-function(scenario, scenario_name) {
    newSample <- array(NA, dim=c(nSpecies,nSites+1)) # create empty array
    newSample[,1] <- ID_ART # copy taxon ID
    # Loop over number of taxa and number of sites
    for (i in 1:nSpecies)
        for (j in 1:nSites)
        {
            lambda <- scenario[i]*abundances[i,j] # multiply abundance by scenario value
            newSample[i,j+1] <- rpois(1,lambda) # simulate stochasticity
        }
    # Add column names and save results to disk
    colnames(newSample) <- c("ID_ART", "new_abundance_site_1", "new_abundance_site_2")
    write.csv(newSample,file=paste(scenario_name,"sample.csv"), row.names=FALSE)
}
```

```
#--------------- Run scenarios ---------------
implementScenario(S1,"S1")
implementScenario(S2,"S2")
implementScenario(S3,"S3")
implementScenario(S4,"S4")
implementScenario(S5,"S5")
implementScenario(S6,"S6")
implementScenario(S7,"S7")
implementScenario(S8,"S8")
implementScenario(S9,"S9")
implementScenario(S10,"S10")
```

```r
#---------------- End & clean up ----------------
cat("end \n")
detach(data)
```