Indicator calculations

10 April, 2019

Contents

```r
require(bombLepiSurv)
```

```
## Loading required package: bombLepiSurv
```

```r
humlesommerfConnect()
```

Indicator calculations

Get weights

```r
diffWeights <- getDiffWeights()
amountWeights <- getAmountWeights()
```

```r
runAll = F
nIter <- 9999
```

Calculate Indicators

```r
# hObs2009TrondGress <- getComplData(type = "bumblebees",
#                                    region_short = "trond",
#                                    habitat = "gressmark",
#                                    year = 2009)
#
# hInd2009TrondGress <- calcInd(type = "bumblebees",
#                               region_short = "trond",
#                               habitat = "gressmark",
#                               year = 2009,
#                               nIter = nIter
#                               )
#
```

```r
# hInd2009TrondSkog <- calcInd(type = "bumblebees",
#                                region_short = "trond",
#                                habitat = "skogsmark",
#                                year = 2009,
#                                nIter = nIter
#                                )

hInd2009OstGress <- calcInd(type = "bumblebees",
                            region_short = "ost",
                            habitat = "gressmark",
                            year = 2009,
                            nIter = nIter
                            )
hInd2009OstSkog <- calcInd(type = "bumblebees",
                           region_short = "ost",
                           habitat = "skogsmark",
                           year = 2009,
                           nIter = nIter
                           )
# hInd2009SorGress <- calcInd(type = "bumblebees",
#                              region_short = "sor",
#                              habitat = "gressmark",
#                              year = 2009,
#                              nIter = nIter
#                              )
# hInd2009SorSkog <- calcInd(type = "bumblebees",
#                             region_short = "sor",
#                             habitat = "skogsmark",
#                             year = 2009,
#                             nIter = nIter
#                             )

save(hInd2009OstGress, hInd2009OstSkog, file = "out/h2009Ind.Rdata")
```

```r
# hObs2010TrondGress <- getComplData(type = "bumblebees",
#                                     region_short = "trond",
#                                     habitat = "gressmark",
#                                     year = 2010)
#
# hInd2010TrondGress <- calcInd(type = "bumblebees",
#                                region_short = "trond",
#                                habitat = "gressmark",
#                                year = 2010,
#                                nIter = nIter
#                                )
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# hObs2010TrondSkog <- getComplData(type = "bumblebees",
#                                    region_short = "trond",
#                                    habitat = "skogsmark",
#                                    year = 2010)
# hInd2010TrondSkog <- calcInd(type = "bumblebees",
#                              region_short = "trond",
#                              habitat = "skogsmark",
#                              year = 2010,
#                              nIter = nIter
#                              )

hInd2010OstGress <- calcInd(type = "bumblebees",
                            region_short = "ost",
                            habitat = "gressmark",
                            year = 2010,
                            nIter = nIter
                            )
hInd2010OstSkog <- calcInd(type = "bumblebees",
                           region_short = "ost",
                           habitat = "skogsmark",
                           year = 2010,
                           nIter = nIter
                           )
# hInd2010SorGress <- calcInd(type = "bumblebees",
#                             region_short = "sor",
#                             habitat = "gressmark",
#                             year = 2010,
#                             nIter = nIter
#                             )
# hInd2010SorSkog <- calcInd(type = "bumblebees",
#                            region_short = "sor",
#                            habitat = "skogsmark",
#                            year = 2010,
#                            nIter = nIter
#                            )

save(hInd2010OstGress, hInd2010OstSkog, file = "out/h2010Ind.Rdata")
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```r
# hObs2011rondGress <- getComplData(type = "bumblebees",
#                                    region_short = "trond",
#                                    habitat = "gressmark",
#                                    year = 2011)
#
# hInd2011TrondGress <- calcInd(type = "bumblebees",
#                               region_short = "trond",
```

```r
#                                         habitat = "gressmark",
#                                         year = 2011,
#                                         nIter = nIter
#                                         )
#
# hInd2011TrondSkog <- calcInd(type = "bumblebees",
#                                         region_short = "trond",
#                                         habitat = "skogsmark",
#                                         year = 2011,
#                                         nIter = nIter
#                                         )

hInd2011OstGress <- calcInd(type = "bumblebees",
                                        region_short = "ost",
                                        habitat = "gressmark",
                                        year = 2011,
                                        nIter = nIter
                                        )
hInd2011OstSkog <- calcInd(type = "bumblebees",
                                        region_short = "ost",
                                        habitat = "skogsmark",
                                        year = 2011,
                                        nIter = nIter
                                        )
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#                                         region_short = "sor",
#                                         habitat = "gressmark",
#                                         year = 2011,
#                                         nIter = nIter
#                                         )
# hInd2011SorSkog <- calcInd(type = "bumblebees",
#                                         region_short = "sor",
#                                         habitat = "skogsmark",
#                                         year = 2011,
#                                         nIter = nIter
#                                         )

save(hInd2011OstGress, hInd2011OstSkog, file = "out/h2011Ind.Rdata")

hInd2012TrondGress <- calcInd(type = "bumblebees",
                                        region_short = "trond",
                                        habitat = "gressmark",
                                        year = 2012,
                                        nIter = nIter
                                        )
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hInd2012TrondSkog <- calcInd(type = "bumblebees",
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#                            region_short = "sor",
#                            habitat = "skogsmark",
#                            year = 2012,
#                            nIter = nIter
#                            )

save(hInd2012TrondGress, hInd2012TrondSkog, hInd2012OstGress, hInd2012OstSkog, file = "out/h

hInd2013TrondGress <- calcInd(type = "bumblebees",
                              region_short = "trond",
                              habitat = "gressmark",
                              year = 2013,
                              nIter = nIter
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hInd2013TrondSkog <- calcInd(type = "bumblebees",
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                                )
hInd2013OstGress <- calcInd(type = "bumblebees",
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                                year = 2013,
                                nIter = nIter
                                )
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                                region_short = "sor",
                                habitat = "skogsmark",
                                year = 2013,
                                nIter = nIter
                                )

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hInd2014TrondGress <- calcInd(type = "bumblebees",
                                region_short = "trond",
                                habitat = "gressmark",
                                year = 2014,
                                nIter = nIter
                                )

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                                year = 2014,
                                nIter = nIter
                                )
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                                region_short = "ost",
                                habitat = "gressmark",
                                year = 2014,
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                                  nIter = nIter
                                  )
hInd2014OstSkog <- calcInd(type = "bumblebees",
                                  region_short = "ost",
                                  habitat = "skogsmark",
                                  year = 2014,
                                  nIter = nIter
                                  )
hInd2014SorGress <- calcInd(type = "bumblebees",
                                  region_short = "sor",
                                  habitat = "gressmark",
                                  year = 2014,
                                  nIter = nIter
                                  )
hInd2014SorSkog <- calcInd(type = "bumblebees",
                                  region_short = "sor",
                                  habitat = "skogsmark",
                                  year = 2014,
                                  nIter = nIter
                                  )

save(hInd2014TrondGress, hInd2014TrondSkog, hInd2014OstGress, hInd2014OstSkog, hInd2014SorGr

hInd2015TrondGress <- calcInd(type = "bumblebees",
                                  region_short = "trond",
                                  habitat = "gressmark",
                                  year = 2015,
                                  nIter = nIter
                                  )

hInd2015TrondSkog <- calcInd(type = "bumblebees",
                                  region_short = "trond",
                                  habitat = "skogsmark",
                                  year = 2015,
                                  nIter = nIter
                                  )
hInd2015OstGress <- calcInd(type = "bumblebees",
                                  region_short = "ost",
                                  habitat = "gressmark",
                                  year = 2015,
                                  nIter = nIter
                                  )
hInd2015OstSkog <- calcInd(type = "bumblebees",
                                  region_short = "ost",
                                  habitat = "skogsmark",
```

```
                                   year = 2015,
                                   nIter = nIter
                                   )
hInd2015SorGress <- calcInd(type = "bumblebees",
                                   region_short = "sor",
                                   habitat = "gressmark",
                                   year = 2015,
                                   nIter = nIter
                                   )
hInd2015SorSkog <- calcInd(type = "bumblebees",
                                   region_short = "sor",
                                   habitat = "skogsmark",
                                   year = 2015,
                                   nIter = nIter
                                   )

save(hInd2015TrondGress, hInd2015TrondSkog, hInd2015OstGress, hInd2015OstSkog, hInd2015SorG

hInd2016TrondGress <- calcInd(type = "bumblebees",
                                   region_short = "trond",
                                   habitat = "gressmark",
                                   year = 2016,
                                   nIter = nIter
                                   )

hInd2016TrondSkog <- calcInd(type = "bumblebees",
                                   region_short = "trond",
                                   habitat = "skogsmark",
                                   year = 2016,
                                   nIter = nIter
                                   )
hInd2016OstGress <- calcInd(type = "bumblebees",
                                   region_short = "ost",
                                   habitat = "gressmark",
                                   year = 2016,
                                   nIter = nIter
                                   )
hInd2016OstSkog <- calcInd(type = "bumblebees",
                                   region_short = "ost",
                                   habitat = "skogsmark",
                                   year = 2016,
                                   nIter = nIter
                                   )
hInd2016SorGress <- calcInd(type = "bumblebees",
                                   region_short = "sor",
```

```
                                    habitat = "gressmark",
                                    year = 2016,
                                    nIter = nIter
                                    )
hInd2016SorSkog <- calcInd(type = "bumblebees",
                                    region_short = "sor",
                                    habitat = "skogsmark",
                                    year = 2016,
                                    nIter = nIter
                                    )

save(hInd2016TrondGress, hInd2016TrondSkog, hInd2016OstGress, hInd2016OstSkog, hInd2016SorG

hInd2017TrondGress <- calcInd(type = "bumblebees",
                                    region_short = "trond",
                                    habitat = "gressmark",
                                    year = 2017,
                                    nIter = nIter
                                    )

hInd2017TrondSkog <- calcInd(type = "bumblebees",
                                    region_short = "trond",
                                    habitat = "skogsmark",
                                    year = 2017,
                                    nIter = nIter
                                    )
hInd2017OstGress <- calcInd(type = "bumblebees",
                                    region_short = "ost",
                                    habitat = "gressmark",
                                    year = 2017,
                                    nIter = nIter
                                    )
hInd2017OstSkog <- calcInd(type = "bumblebees",
                                    region_short = "ost",
                                    habitat = "skogsmark",
                                    year = 2017,
                                    nIter = nIter
                                    )
hInd2017SorGress <- calcInd(type = "bumblebees",
                                    region_short = "sor",
                                    habitat = "gressmark",
                                    year = 2017,
                                    nIter = nIter
                                    )
hInd2017SorSkog <- calcInd(type = "bumblebees",
```

```
                                    region_short = "sor",
                                    habitat = "skogsmark",
                                    year = 2017,
                                    nIter = nIter
                                    )

save(hInd2017TrondGress, hInd2017TrondSkog, hInd2017OstGress, hInd2017OstSkog, hInd2017SorGr

hInd2018TrondGress <- calcInd(type = "bumblebees",
                                    region_short = "trond",
                                    habitat = "gressmark",
                                    year = 2018,
                                    nIter = nIter
                                    )

hInd2018TrondSkog <- calcInd(type = "bumblebees",
                                    region_short = "trond",
                                    habitat = "skogsmark",
                                    year = 2018,
                                    nIter = nIter
                                    )
hInd2018OstGress <- calcInd(type = "bumblebees",
                                    region_short = "ost",
                                    habitat = "gressmark",
                                    year = 2018,
                                    nIter = nIter
                                    )
hInd2018OstSkog <- calcInd(type = "bumblebees",
                                    region_short = "ost",
                                    habitat = "skogsmark",
                                    year = 2018,
                                    nIter = nIter
                                    )
hInd2018SorGress <- calcInd(type = "bumblebees",
                                    region_short = "sor",
                                    habitat = "gressmark",
                                    year = 2018,
                                    nIter = nIter
                                    )
hInd2018SorSkog <- calcInd(type = "bumblebees",
                                    region_short = "sor",
                                    habitat = "skogsmark",
                                    year = 2018,
                                    nIter = nIter
                                    )
```

```
save(hInd2018TrondGress, hInd2018TrondSkog, hInd2018OstGress, hInd2018OstSkog, hInd2018SorG
```

Butterflies

```
# hObs2009TrondGress <- getComplData(type = "butterflies",
#                                    region_short = "trond",
#                                    habitat = "gressmark",
#                                    year = 2009)
#
# sInd2009TrondGress <- calcInd(type = "butterflies",
#                               region_short = "trond",
#                               habitat = "gressmark",
#                               year = 2009,
#                               nIter = nIter
#                               )
#
# sInd2009TrondSkog <- calcInd(type = "butterflies",
#                              region_short = "trond",
#                              habitat = "skogsmark",
#                              year = 2009,
#                              nIter = nIter
#                              )

sInd2009OstGress <- calcInd(type = "butterflies",
                            region_short = "ost",
                            habitat = "gressmark",
                            year = 2009,
                            nIter = nIter
                            )
sInd2009OstSkog <- calcInd(type = "butterflies",
                           region_short = "ost",
                           habitat = "skogsmark",
                           year = 2009,
                           nIter = nIter
                           )
# sInd2009SorGress <- calcInd(type = "butterflies",
#                             region_short = "sor",
#                             habitat = "gressmark",
#                             year = 2009,
#                             nIter = nIter
#                             )
# sInd2009SorSkog <- calcInd(type = "butterflies",
#                            region_short = "sor",
```

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```
#                                   habitat = "skogsmark",
#                                   year = 2009,
#                                   nIter = nIter
#                                   )

save(sInd2009OstGress, sInd2009OstSkog, file = "out/s2009Ind.Rdata")

# sObs2010TrondGress <- getComplData(type = "butterflies",
#                                   region_short = "trond",
#                                   habitat = "gressmark",
#                                   year = 2010)
#
# sInd2010TrondGress <- calcInd(type = "butterflies",
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                                   year = 2010,
                                   nIter = nIter
                                   )
# sInd2010SorGress <- calcInd(type = "butterflies",
#                                   region_short = "sor",
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```r
#                                 habitat = "gressmark",
#                                 year = 2010,
#                                 nIter = nIter
#                                 )
# sInd2010SorSkog <- calcInd(type = "butterflies",
#                                 region_short = "sor",
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#                                 year = 2010,
#                                 nIter = nIter
#                                 )

save(sInd2010OstGress, sInd2010OstSkog, file = "out/s2010Ind.Rdata")

# hObs2011rondGress <- getComplData(type = "butterflies",
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#                                 habitat = "gressmark",
#                                 year = 2011)
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#                                 habitat = "gressmark",
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#                                 year = 2011,
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#                                   region_short = "sor",
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#                                   nIter = nIter
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#                                   region_short = "sor",
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#                                   year = 2011,
#                                   nIter = nIter
#                                   )

save(sInd2011OstGress, sInd2011OstSkog, file = "out/s2011Ind.Rdata")

sInd2012TrondGress <- calcInd(type = "butterflies",
                              region_short = "trond",
                              habitat = "gressmark",
                              year = 2012,
                              nIter = nIter
                              )

sInd2012TrondSkog <- calcInd(type = "butterflies",
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                              habitat = "skogsmark",
                              year = 2012,
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# sInd2012SorSkog <- calcInd(type = "butterflies",
#                            region_short = "sor",
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#                            year = 2012,
#                            nIter = nIter
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save(sInd2012TrondGress, sInd2012TrondSkog, sInd2012OstGress, sInd2012OstSkog, file = "out/s

sInd2013TrondGress <- calcInd(type = "butterflies",
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                           region_short = "sor",
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                           nIter = nIter
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```
                              )

save(sInd2013TrondGress, sInd2013TrondSkog, sInd2013OstGress, sInd2013OstSkog, sInd2013SorG

sInd2014TrondGress <- calcInd(type = "butterflies",
                              region_short = "trond",
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save(sInd2014TrondGress, sInd2014TrondSkog, sInd2014OstGress, sInd2014OstSkog, sInd2014SorG
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sInd2015TrondGress <- calcInd(type = "butterflies",
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                            year = 2015,
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sInd2015OstSkog <- calcInd(type = "butterflies",
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                           habitat = "skogsmark",
                           year = 2015,
                           nIter = nIter
                           )
sInd2015SorGress <- calcInd(type = "butterflies",
                            region_short = "sor",
                            habitat = "gressmark",
                            year = 2015,
                            nIter = nIter
                            )
sInd2015SorSkog <- calcInd(type = "butterflies",
                           region_short = "sor",
                           habitat = "skogsmark",
                           year = 2015,
                           nIter = nIter
                           )

save(sInd2015TrondGress, sInd2015TrondSkog, sInd2015OstGress, sInd2015OstSkog, sInd2015SorG

sInd2016TrondGress <- calcInd(type = "butterflies",
                              region_short = "trond",
                              habitat = "gressmark",
                              year = 2016,
                              nIter = nIter
```

```
                                )

sInd2016TrondSkog <- calcInd(type = "butterflies",
                             region_short = "trond",
                             habitat = "skogsmark",
                             year = 2016,
                             nIter = nIter
                             )
sInd2016OstGress <- calcInd(type = "butterflies",
                            region_short = "ost",
                            habitat = "gressmark",
                            year = 2016,
                            nIter = nIter
                            )
sInd2016OstSkog <- calcInd(type = "butterflies",
                           region_short = "ost",
                           habitat = "skogsmark",
                           year = 2016,
                           nIter = nIter
                           )
sInd2016SorGress <- calcInd(type = "butterflies",
                            region_short = "sor",
                            habitat = "gressmark",
                            year = 2016,
                            nIter = nIter
                            )
sInd2016SorSkog <- calcInd(type = "butterflies",
                           region_short = "sor",
                           habitat = "skogsmark",
                           year = 2016,
                           nIter = nIter
                           )

save(sInd2016TrondGress, sInd2016TrondSkog, sInd2016OstGress, sInd2016OstSkog, sInd2016SorGr

sInd2017TrondGress <- calcInd(type = "butterflies",
                              region_short = "trond",
                              habitat = "gressmark",
                              year = 2017,
                              nIter = nIter
                              )

sInd2017TrondSkog <- calcInd(type = "butterflies",
                             region_short = "trond",
                             habitat = "skogsmark",
```

```r
                                year = 2017,
                                nIter = nIter
                                )
sInd2017OstGress <- calcInd(type = "butterflies",
                                region_short = "ost",
                                habitat = "gressmark",
                                year = 2017,
                                nIter = nIter
                                )
sInd2017OstSkog <- calcInd(type = "butterflies",
                                region_short = "ost",
                                habitat = "skogsmark",
                                year = 2017,
                                nIter = nIter
                                )
sInd2017SorGress <- calcInd(type = "butterflies",
                                region_short = "sor",
                                habitat = "gressmark",
                                year = 2017,
                                nIter = nIter
                                )
sInd2017SorSkog <- calcInd(type = "butterflies",
                                region_short = "sor",
                                habitat = "skogsmark",
                                year = 2017,
                                nIter = nIter
                                )

save(sInd2017TrondGress, sInd2017TrondSkog, sInd2017OstGress, sInd2017OstSkog, sInd2017SorGr

sInd2018TrondGress <- calcInd(type = "butterflies",
                                region_short = "trond",
                                habitat = "gressmark",
                                year = 2018,
                                nIter = nIter
                                )

sInd2018TrondSkog <- calcInd(type = "butterflies",
                                region_short = "trond",
                                habitat = "skogsmark",
                                year = 2018,
                                nIter = nIter
                                )
sInd2018OstGress <- calcInd(type = "butterflies",
                                region_short = "ost",
```

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```
                                   habitat = "gressmark",
                                   year = 2018,
                                   nIter = nIter
                                   )
sInd2018OstSkog <- calcInd(type = "butterflies",
                                   region_short = "ost",
                                   habitat = "skogsmark",
                                   year = 2018,
                                   nIter = nIter
                                   )
sInd2018SorGress <- calcInd(type = "butterflies",
                                   region_short = "sor",
                                   habitat = "gressmark",
                                   year = 2018,
                                   nIter = nIter
                                   )
sInd2018SorSkog <- calcInd(type = "butterflies",
                                   region_short = "sor",
                                   habitat = "skogsmark",
                                   year = 2018,
                                   nIter = nIter
                                   )
```

```
save(sInd2018TrondGress, sInd2018TrondSkog, sInd2018OstGress, sInd2018OstSkog, sInd2018SorGr
```

```
sInd2017TrondGress <- calcInd(type = "butterflies",
                                   region_short = "trond",
                                   habitat = "gressmark",
                                   year = 2017,
                                   nIter = nIter
                                   )

sInd2017TrondSkog <- calcInd(type = "butterflies",
                                   region_short = "trond",
                                   habitat = "skogsmark",
                                   year = 2017,
                                   nIter = nIter
                                   )
sInd2017OstGress <- calcInd(type = "butterflies",
                                   region_short = "ost",
                                   habitat = "gressmark",
                                   year = 2017,
                                   nIter = nIter
                                   )
sInd2017OstSkog <- calcInd(type = "butterflies",
```

```
                                 region_short = "ost",
                                 habitat = "skogsmark",
                                 year = 2017,
                                 nIter = nIter
                                 )
sInd2017SorGress <- calcInd(type = "butterflies",
                                 region_short = "sor",
                                 habitat = "gressmark",
                                 year = 2017,
                                 nIter = nIter
                                 )
sInd2017SorSkog <- calcInd(type = "butterflies",
                                 region_short = "sor",
                                 habitat = "skogsmark",
                                 year = 2017,
                                 nIter = nIter
                                 )
```

```
save(sInd2017TrondGress, sInd2017TrondSkog, sInd2017OstGress, sInd2017OstSkog, sInd2017SorG
```

```
use_data(sInd2018TrondGress, sInd2018TrondSkog, sInd2018OstGress, sInd2018OstSkog, sInd2018S
         sInd2017TrondGress, sInd2017TrondSkog, sInd2017OstGress, sInd2017OstSkog, sInd2017SorGress,
         sInd2016TrondGress, sInd2016TrondSkog, sInd2016OstGress, sInd2016OstSkog, sInd2016SorGress,
         sInd2015TrondGress, sInd2015TrondSkog, sInd2015OstGress, sInd2015OstSkog, sInd2015SorGress,
         sInd2014TrondGress, sInd2014TrondSkog, sInd2014OstGress, sInd2014OstSkog, sInd2014SorGress,
         sInd2013TrondGress, sInd2013TrondSkog, sInd2013OstGress, sInd2013OstSkog, sInd2013SorGress,
         sInd2012TrondGress, sInd2012TrondSkog, sInd2012OstGress, sInd2012OstSkog,
         sInd2011OstGress, sInd2011OstSkog,
         sInd2010OstGress, sInd2010OstSkog,
         sInd2009OstGress, sInd2009OstSkog)
```

```
use_data(hInd2018TrondGress, hInd2018TrondSkog, hInd2018OstGress, hInd2018OstSkog, hInd2018S
         hInd2017TrondGress, hInd2017TrondSkog, hInd2017OstGress, hInd2017OstSkog, hInd2017SorGress,
         hInd2016TrondGress, hInd2016TrondSkog, hInd2016OstGress, hInd2016OstSkog, hInd2016SorGress,
         hInd2015TrondGress, hInd2015TrondSkog, hInd2015OstGress, hInd2015OstSkog, hInd2015SorGress,
         hInd2014TrondGress, hInd2014TrondSkog, hInd2014OstGress, hInd2014OstSkog, hInd2014SorGress,
         hInd2013TrondGress, hInd2013TrondSkog, hInd2013OstGress, hInd2013OstSkog, hInd2013SorGress,
         hInd2012TrondGress, hInd2012TrondSkog, hInd2012OstGress, hInd2012OstSkog,
         hInd2011OstGress, hInd2011OstSkog,
         hInd2010OstGress, hInd2010OstSkog,
         hInd2009OstGress, hInd2009OstSkog)
```