# Package 'Rraven'

November 6, 2017

**Type** Package

**Title** connecting R and Raven for bioacoustic analysis

**Version** 1.0.0

**Date** 2017-04-28

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**Description** A tool to exchange data between R and Raven bioacoustic software. Functions work on data formats compatible with the R package warbleR.

**License** GPL (>= 2)

**Imports** pbapply, warbleR, utils

**Depends** R (>= 3.2.1)

**LazyData** TRUE

**URL** https://github.com/maRce10/Rraven

**BugReports** https://github.com/maRce10/Rraven/issues

**NeedsCompilation** no

**Suggests** knitr

**VignetteBuilder** knitr

**RoxygenNote** 5.0.1

**Repository** CRAN

**Date/Publication** 2017-11-10 08:12:11

## R topics documented:

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**exp_raven**                            *Export raven selections*

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### Description

exp_raven exports selection tables as Raven selection data in .txt format.

### Usage

```
exp_raven(X, path = NULL, file.name = NULL, khz.to.hz = TRUE,
sound.file.path = NULL, single.file = TRUE)
```

### Arguments

| | |
|---|---|
| X | Data frame with containing columns for sound file (sound.files), selection (selec), start and end time of signals ('start' and 'end') and low and high frequency ('low.freq' and 'high.freq', optional). See example data 'selec.table'. |
| path | A character string indicating the path of the directory in which to save the selection files. If not provided (default) the function saves the file into the current working directory. |
| file.name | Name of the output .txt file. If NULL then the sound file names are used instead. |
| khz.to.hz | Logical. Controls if frequency variables should be converted from kHz (the unit used by other bioacoustic analysis R packages like [warbleR](warbleR)) to Hz (the unit used by Raven). Default is TRUE. |
| sound.file.path | |
| | A character string indicating the path of the directory containing the sound file(s). Providing this information allows to open both sound file and selection table simultaneously. This can be done by using the 'File > Open selection table' option in Raven (or drag/drop the selection file into Raven). Default is NULL. This argument is required when exporting selections from multiple sound files. Note that sound files must be found in that directory. |
| single.file | Logical. Controls whether a single selection file (TRUE) or multiple selection files for each sound files (FALSE, hence, only applicable when several sound files are included in 'X'). Default is TRUE. Note that 'sound.file.path' must be provided when exporting several sound files into a single selection file. If FALSE then the sound file name is used as the selection file name. |

### Details

The function exports selection tables as the ones used by the bioacoustic analysis R package [warbleR](warbleR) to Raven selection files in '.txt' format. This can be useful to obtain additional Raven measurements on existing selections by adding new measurements to the selection table once in Raven. Note that selection labels must be numeric and unduplicated when exporting them to Raven. If that is not the case the function will relabeled the selections and the previous selection labels will be retained in a new ('old.selec') column.

## Value

The function saves a selection table in '.txt' format that can be directly opened in Raven. If several sound files are available users can either export them as a single selection file or as multiple selection files (one for each sound file). No objects are returned in the R environment.

## Author(s)

Marcelo Araya-Salas (<araya-salas@cornell.edu>)

## See Also

[imp_raven](#); [imp_syrinx](#)

## Examples

```
## Not run:
# First set temporary folder
setwd(tempdir())

# Load data
data("selec.table")

# Select data for a single sound file
st1 <- selec.table[selec.table$sound.files == "Phae.long1.wav",]

# Export data of a single sound file
exp_raven(st1, file.name = "Phaethornis Rraven examples")

## End(Not run)
```

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imp_raven *Import Raven selections*

---

## Description

`imp_raven` imports Raven selection files simultaneously from many files. Files must be in .txt format.

## Usage

```
imp_raven(path = NULL, sound.file.col = NULL, all.data = FALSE, recursive = FALSE,
 name.from.file = FALSE, ext.case = NULL, freq.cols = TRUE, waveform = FALSE)
```

**Arguments**

| | |
|---|---|
| path | A character string indicating the path of the directory in which to look for the Raven selection (text) files. If not provided (default) the function searches into the current working directory. Default is NULL). |
| sound.file.col | A character string with the name of the column listing the sound files in the selection text files. Default is NULL. If provided, the output data frame will contained all columns needed for subsequent analysis in the acoustic analysis package [warbleR](#). Duplicated rows, as when "waveform" and "spectrogram" information are included for the same selection, will be removed. All selection files must contain "Selection", "Begin.Time" and "End.Time" columns. |
| all.data | Logical. If TRUE all columns in the selection files are returned, keeping the name columns as in the raven files (not in a format that can be read in [warbleR](#)). Default is FALSE. Columns absent in some selection files will be filled with NA's. |
| recursive | Logical. If TRUE) the listing recurse into sub-directories. |
| name.from.file | Logical. If TRUE) the sound file names are extracted from the selection text file name. It asssumes that selections files contained the suffix "Table.1.selections.txt" or "selections.txt". Note that by default it will assume that the extension file name is ".wav". This can be control using the argumet 'ext.wav'. Default is FALSE). Ignored if sound.file.col' is provided and/or all.data is TRUE). |
| ext.case | Character string of length 1 to specify whether sound file extensions are in upper or lower case. This should match the extension of the of the .wav files from which the selection were made. It must be either 'upper' or 'lower'. Only needed when 'name.from.file' is TRUE). Ignored if 'sound.file.col' is provided and/or all.data is TRUE). |
| freq.cols | Logical. If TRUE) 'Low Freq' and 'High Freq' columns are also imported. Ignored if all.data is TRUE. |
| waveform | Logical to control if 'waveform' related data should be included (this data is typically duplicated in 'spectrogram' data). Default is FALSE (not to include it). |

**Details**

The function import raven selection data from many files simultaneously. Files must be in .txt format. Note that selection files including data from mulitple recordings cannot be imported. Make sure that NO OTHER TEXT FILES are found in the working directory, only raven generated selections files.

**Value**

A single data frame with information of the selection files. If all.data argument is set to FALSE) the data frame contains the following columns: selec, start, end, and selec.file. If sound.file.col is provided the data frame will also contain a 'sound.files' column. In addition, all rows with duplicated data are removed. This is useful when both spectrogram and waveform views are included in the Raven selection files. If all.data is set to TRUE then all columns in selection files are returned.

**Author(s)**

Marcelo Araya-Salas (<araya-salas@cornell.edu>)

## See Also

[imp_syrinx](imp_syrinx)

## Examples

```
## Not run:
# First set temporary folder
setwd(tempdir())

data(selection.files)

write.table(selection.files[[1]],file = "100889-Garrulax monileger.selections.txt",
row.names = FALSE, sep= '\t')

write.table(selection.files[[2]],file = "1023-Arremonops rufivirgatus.selections.txt",
row.names = FALSE, sep= '\t')

## MAKE SURE THERE ARE NO OTHER .txt FILES IN THE WORKING DIRECTORY
 #providing the name of the column with the sound file names
rav.dat<-imp_raven(sound.file.col = "End.File", all.data = FALSE)

View(rav.dat)

#getting all the data
rav.dat<-imp_raven(all.data = TRUE)
View(rav.dat)

## End(Not run)
```

---

imp_syrinx                    *Import Syrinx selections*

---

## Description

imp_syrinx imports Syrinx selection data from many files simultaneously. All files must be have the same columns.

## Usage

```
imp_syrinx(path = NULL, all.data = FALSE, recursive = FALSE,
exclude = FALSE, hz.to.khz = TRUE)
```

## Arguments

path          A character string indicating the path of the directory in which to look for the
              text files. If not provided (default) the function searches into the current working
              directory. Default is NULL).

| all.data | Logical. If TRUE) all columns in text files are returned. Default is FALSE). Note that all files should contain exactly the same columns in the same order. |
| recursive | Logical. If TRUE) the listing recurse into sub-directories. |
| exclude | Logical. Controls whether files that cannot be read are ignored (TRUE). Default is FALSE. |
| hz.to.khz | Logical. Controls if frequency variables should be converted from Hz (the unit used by Syrinx) to kHz (the unit used by warbleR and other bioacoustic analyssis packages in R). Default if TRUE. Ignored if all.data is TRUE. |

### Value

A single data frame with information of the selection files. If all.data argument is set to FALSE) the data frame contains the following columns: selec, start, end, and selec.file. If sound.file.col is provided the data frame will also contain a 'sound.files' column. In addition, all rows with duplicated data are removed. This is useful when both spectrogram and waveform views are included in the Syrinx selection files. If all.data is set to TRUE then all columns in selection files are returned.

### Author(s)

Marcelo Araya-Salas (<araya-salas@cornell.edu>)

### See Also

[imp_raven](imp_raven)

### Examples

```
## Not run:
# First set temporary folder
setwd(tempdir())

#load data
data(selection.files)

write.table(selection.files[[3]],file = "harpyeagle.wav.txt",row.names = FALSE,
 col.names = FALSE, sep= "\t")

write.table(selection.files[[4]],file = "Phae.long4.wav.txt",row.names = FALSE,
col.names = FALSE, sep= "\t")

syr.dat<-imp_syrinx(all.data = FALSE)

View(syr.dat)

#getting all the data
syr.dat<-imp_syrinx(all.data = TRUE)

View(syr.dat)

## End(Not run)
```

---

run_raven                    *Open sound files in Raven sound analysis software*

---

### Description

run_raven opens several sound files in Raven sound analysis software

### Usage

```
run_raven(raven.path = NULL, sound.files = NULL, path = NULL, at.the.time = 10,
import = FALSE, redo = FALSE, ...)
```

### Arguments

| | |
|---|---|
| raven.path | A character string indicating the path of the directory in which to look for the raven executable file (where Raven was installed). |
| sound.files | character vector indicating the files that will be analyzed. If NULL (default) then Raven will be run without opening any file. |
| path | A character string indicating the path of the directory in which to look for the sound files. If not provided (default) the function searches into the current working directory. Default is NULL. |
| at.the.time | Numeric vector of length 1 controling how many files will be open in Raven at the same time. Note that opening too many files at once could make Raven run out of memory. You need to close Raven every time the batch of files is analyzed, so the next batch is opened. Default is 10. |
| import | Logical. Controls if the selection tables generated should be returned as a data frame into the R environment. This only works if the selections are saved in the "Selections" folder in the Raven directory. This argument calls the imp_raven internally. Additional arguments can be passed to imp_raven to control the way the data is imported. |
| redo | Logical. Controls whether only the subset of files with no Raven selections (.txt file) in the Raven 'selections' folder are analyzed. Useful when resuming the analysis. Default is FALSE. |
| ... | Additional arguments to be passed to imp_raven for customizing how selections are imported (ignored if import = FALSE). |

### Details

The function runs Raven interactive analysis software (Cornell Lab of Ornithology), opening many files simultaneously. Raven will still run if no sound files are provided (i.e. sound.files = NULL). At the end of the analysis the data can be automatically imported back into R using the 'import' argument.

### Value

If import = TRUE a data frame with the selections produced during the analysis will be return as an data frame. See imp_raven for more details on how selections are imported.

**Author(s)**

Marcelo Araya-Salas (<araya-salas@cornell.edu>)

**See Also**

[imp_raven](imp_raven) [imp_syrinx](imp_syrinx)

**Examples**

```
## Not run:
# First set temporary folder
setwd(tempdir())

# save sound files
data(list = c("Phae.long1", "Phae.long2"))
writeWave(Phae.long1, "Phae.long1.wav", extensible = FALSE)
writeWave(Phae.long2, "Phae.long2.wav", extensible = FALSE)

raven.path <- "PATH_TO_RAVEN_DIRECTORY_HERE"

# run function
run_raven(raven.path = raven.path, sound.files = c("Phae.long1.wav", "Phae.long2.wav"),
 at.the.time = 2, import = T, name.from.file = T, ext.case = "upper", all.data = T)

#getting all the data
rav.dat<-run_raven(all.data = TRUE)
View(rav.dat)

# run function on all the wav files in the working directory
run_raven(raven.path = raven.path, sound.files = list.files(pattern = "\.wav$",
ignore.case = TRUE), at.the.time = 4, import = FALSE)


## End(Not run)
```

# Index