

# beta diversity demonstration

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load mobr and example data

```
library(mobr)
data(inv_comm)
```

Calculate whittaker's beta

```
calc_comm_div(inv_comm[1:2, ], 'S')
```

##	scale	index	sample_size	effort	gamma_coverage	value
## 1	alpha	S	1	NA	NA	12.000000
## 2	alpha	S	1	NA	NA	7.000000
## 3	gamma	S	2	NA	NA	14.000000
## 4	beta	beta_S	2	NA	NA	1.473684

Calculate beta for ENS of PIE (beta S\_PIE)

```
calc_comm_div(inv_comm[1:2, ], 'S_PIE')
```

##	scale	index	sample_size	effort	gamma_coverage	value
## 1	alpha	S_PIE	1	NA	NA	6.680108
## 2	alpha	S_PIE	1	NA	NA	3.512354
## 3	gamma	S_PIE	2	NA	NA	5.996554
## 4	beta	beta_S_PIE	2	NA	NA	1.176665

Calculate beta for S given a specific coverage (beta C)

```
calc_comm_div(inv_comm[1:2, ], 'S_C')
```

##	scale	index	sample_size	effort	gamma_coverage	value
## 1	alpha	S_C	1	142	0.9787356	15.128899
## 2	alpha	S_C	1	142	0.9787356	8.786157
## 3	gamma	S_C	2	142	0.9787356	13.937069
## 4	beta	beta_S_C	2	142	0.9787356	1.165548

Calculate beta for rarefied fiechness (S\_n) for 20 individuals

```
calc_comm_div(inv_comm[1:2, ], 'S_n', effort = 20)
```

```
##  scale      index sample_size effort gamma_coverage  value
## 1 alpha      S_n           1     20              NA 7.859347
## 2 alpha      S_n           1     20              NA 4.708249
## 3 gamma      S_n           2     20              NA 7.431042
## 4 beta beta_S_n           2     20              NA 1.182572
```

More than two sites can be used at a time

```
calc_comm_div(inv_comm[1:10, ], 'S')
```

```
##  scale index sample_size effort gamma_coverage  value
## 1 alpha  S           1     NA              NA 12.000000
## 2 alpha  S           1     NA              NA  7.000000
## 3 alpha  S           1     NA              NA 11.000000
## 4 alpha  S           1     NA              NA 11.000000
## 5 alpha  S           1     NA              NA  5.000000
## 6 alpha  S           1     NA              NA  5.000000
## 7 alpha  S           1     NA              NA  4.000000
## 8 alpha  S           1     NA              NA 11.000000
## 9 alpha  S           1     NA              NA  7.000000
## 10 alpha S           1     NA              NA  9.000000
## 11 gamma S          10     NA              NA 38.000000
## 12 beta beta_S       10     NA              NA  4.634146
```

It is also possible to just calculate beta diversity but it is generally not recommended to examine beta without reference to alpha and gamma diversity

```
calc_beta_div(inv_comm[1:10, ], 'S')
```

```
##  scale index sample_size effort gamma_coverage  value
## 1 beta beta_S       10     NA              NA  4.634146
```