

Obtaining an lx mx schedule from a matrix

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It is possible to obtain **lx** and **mx** schedules from matrix population models using methods described by Caswell (2001). There is a function **makeLifeTable** in our **Mage** package, that implements this.

Here is an example.

Load the data:

```
load("COMADRE_v.2.0.0.RData")
```

Next, query the **metadata** part of **comadre** to identify the location of the desired data using the command **which** in a conditional search:

```
id <- which(comadre$metadata$SpeciesAccepted == "Lepus_americanus")
id
```

```
> [1] 1164 1165 1166 1167 1168 1169
```

Let's pick the first matrix of the list obtained above:

```
lt1 <- Rage::makeLifeTable(matU = comadre$mat[[id[1]]]$matU, matF = comadre$mat[[id[1]]]$matF,
                           startLife = 1, nSteps=10)
```

```
lt1
```

```
> $x
```

```
> [1] 0 1 2 3 4 5 6 7 8 9
```

```
>
```

```
> $lx
```

```
> [1] 1.000000e+00 1.971520e-02 3.982470e-03 8.044590e-04 1.625007e-04
> [6] 3.282515e-05 6.630679e-06 1.339397e-06 2.705582e-07 5.465277e-08
```

```
>
```

```
> $dx
```

```
> [1] 9.802848e-01 1.573273e-02 3.178011e-03 6.419583e-04 1.296756e-04
> [6] 2.619447e-05 5.291282e-06 1.068839e-06 2.159055e-07 NA
```

```
>
```

```
> $qx
```

```
> [1] 0.9802848 0.7980000 0.7980000 0.7980000 0.7980000 0.7980000 0.7980000
> [8] 0.7980000 0.7980000 NA
```

```
>
```

```
> $Lx
```

```
> [1] 4.901424e-01 7.866365e-03 1.589006e-03 3.209791e-04 6.483779e-05
> [6] 1.309723e-05 2.645641e-06 5.344195e-07 1.079527e-07 NA
```

```
>
```

```
> $Tx
```

```
> [1] 0.4901424 0.4980088 0.4995978 0.4999187 0.4999836 0.4999967 0.4999993
> [8] 0.4999999 0.5000000 NA
```

```
>
```

```
> $ex
```

```
> [1] 4.901424e-01 2.526014e+01 1.254492e+02 6.214347e+02 3.076808e+03
> [6] 1.523212e+04 7.540695e+04 3.733021e+05 1.848031e+06 NA
```

```
>
```

```
> $mx
```

```
> [1] 0.0000 10.3402 10.3402 10.3402 10.3402 10.3402 10.3402 10.3402
> [9] 10.3402 10.3402
```

```
>
```

```
> $lxmx
```

```
> [1] 0.000000e+00 2.038591e-01 4.117954e-02 8.318267e-03 1.680290e-03
> [6] 3.394186e-04 6.856255e-05 1.384964e-05 2.797626e-06 5.651205e-07
```

```
>  
> $R0Fec  
> [1] 0.2554624  
>  
> $TcFec  
> [1] 1.253128
```