

# Package ‘mRc’

May 8, 2026

**Type** Package

**Title** Multi-Visit Closed Population Mark-Recapture Estimates

**Version** 0.1.2

**Date** 2026-04-25

**Description** Compute bootstrap confidence intervals for the adjusted Schnabel and Schumacher-Eschmeyer multi-visit mark-recapture estimators based on Dettloff (2023) <[doi:10.1016/j.fishres.2023.106756](https://doi.org/10.1016/j.fishres.2023.106756)>.

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**Encoding** UTF-8

**RoxygenNote** 7.3.3

**Imports** stats

**URL** <https://github.com/k-dettloff/mRc>

**BugReports** <https://github.com/k-dettloff/mRc/issues>

**NeedsCompilation** no

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**Repository** CRAN

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`closedCI`*Multi-visit closed population mark-recapture estimates*

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**Description**

Calculate adjusted Schnabel and Schumacher-Eschmeyer estimates with confidence intervals.

**Usage**

```
closedCI(  
  marked,  
  caught,  
  recaptured,  
  newmarks = NULL,  
  alpha = 0.05,  
  ndraws = 1e+05  
)
```

**Arguments**

<code>marked</code>	number of animals marked on first visit (M2)
<code>caught</code>	vector of catch on subsequent visits (nk)
<code>recaptured</code>	vector of recaptures on subsequent visits (mk)
<code>newmarks</code>	vector of newly marked animals on subsequent visits (default: nk - mk)
<code>alpha</code>	type I error rate for confidence intervals (default: 0.05)
<code>ndraws</code>	number of bootstrap draws (default: 100,000)

**Details**

Bias adjusted estimators are based on Dettloff (2023). Bootstrap confidence intervals are computed using a beta-binomial distribution with  $n = nk$ ,  $\alpha = mk$ , and  $\beta = nk - mk$ .

**Value**

Matrix containing population size estimates with confidence intervals for each method.

**References**

Dettloff, K. (2023). Assessment of bias and precision among simple closed population mark-recapture estimators. *Fisheries Research*, 265, 106756. doi:10.1016/j.fishres.2023.106756

**Examples**

```
M2 <- 2  
n <- c(232, 524, 152, 98, 353)  
m <- c(0, 5, 8, 6, 13)  
set.seed(123)  
closedCI(M2, n, m, ndraws = 10000)
```

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