Estimating the elimination feasibility in the 'end game' of control efforts for parasites subjected to regular mass drug administration: methods and their application to schistosomiasis

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This document sources files that contain functions and links to datasets produced by simulations to reproduce all figures presented in the main text of the paper

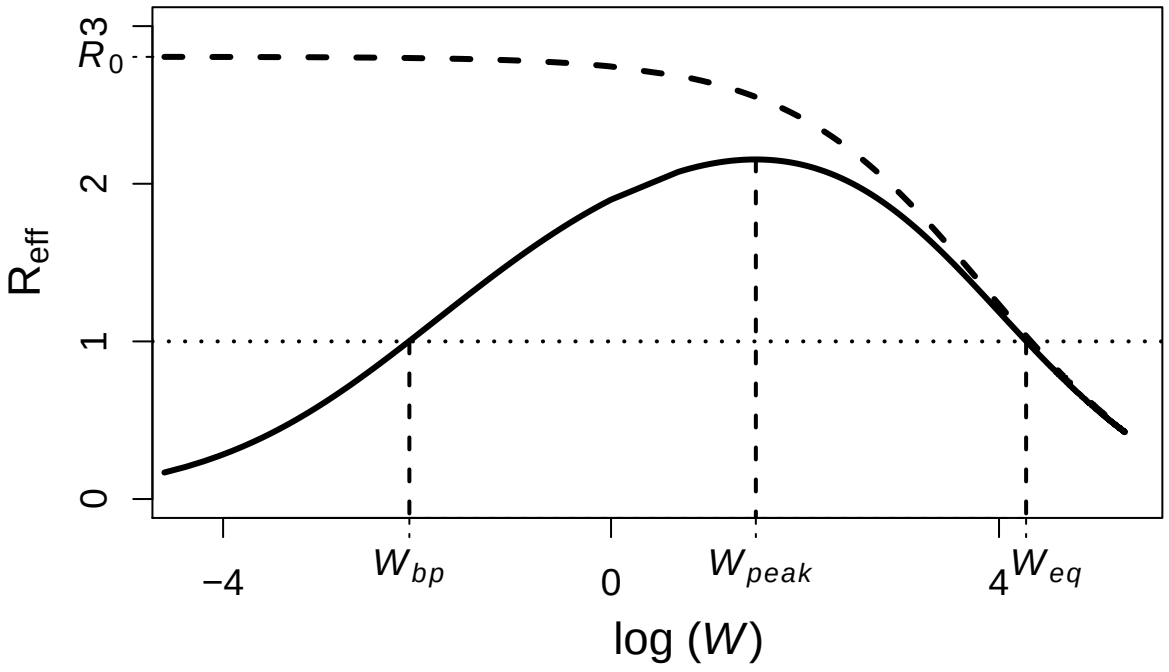
Figure 1: The R_{eff} Profile and Figure 2: BBR & $\frac{dW}{dt}$

```
#load functions and models
source("Reff_BBR_fns.R")
source("schisto_mods_pdd_nopdd.R")

#Load parameter sets and eqbm values from Get_eqbm_for_trans_parameter_sets.R script
load("Outputs_Refs/model_fit_profile_likelihood_parameters.Rdata")
load("Outputs_Refs/best_fit_params.Rdata")

source("Reff_addNDDs_BBR_plots.R")
```

```
## Loading required package: deSolve

## Loading required package: tidyverse

## Warning: package 'tidyverse' was built under R version 3.5.1

## -- Attaching packages ---------------------------------------------------------------------------

## v ggplot2 3.0.0     v purrr   0.2.4
## v tibble  1.4.2     v dplyr   0.7.6
## v tidyr   0.8.1     v stringr 1.3.1
## v readr   1.1.1     v forcats 0.3.0

## Warning: package 'ggplot2' was built under R version 3.5.1

## Warning: package 'tidyr' was built under R version 3.5.1

## Warning: package 'dplyr' was built under R version 3.5.1
```

```
## Warning: package 'stringr' was built under R version 3.5.1
```

```
## -- Conflicts -------------------------------------------------------------------------------------------------
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```




```
## Warning in par(opar): graphical parameter "cin" cannot be set
```

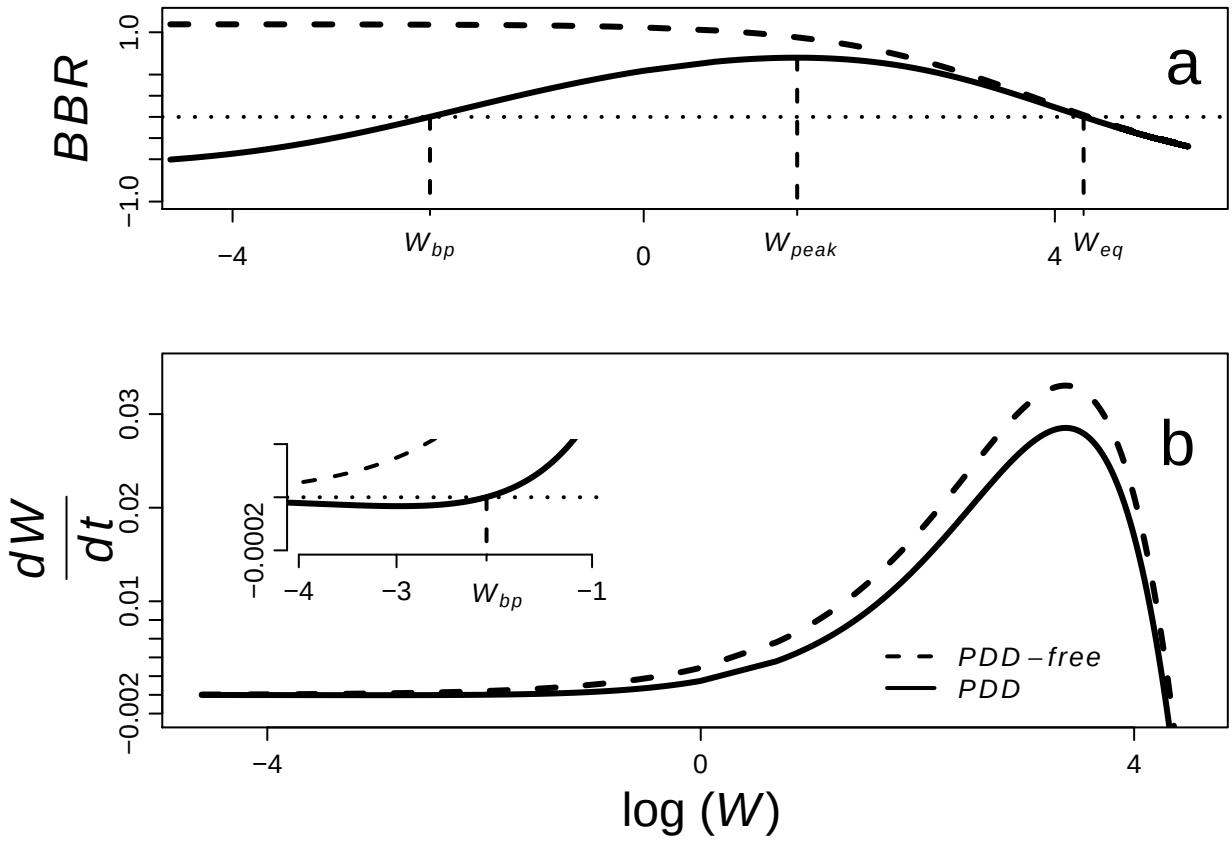
```
## Warning in par(opar): graphical parameter "cra" cannot be set
```

```
## Warning in par(opar): graphical parameter "csi" cannot be set
```

```
## Warning in par(opar): graphical parameter "cxy" cannot be set
```

```
## Warning in par(opar): graphical parameter "din" cannot be set
```

```
## Warning in par(opar): graphical parameter "page" cannot be set
```



Figures 3 and 4: Estimation of BBR from worm burden and prevalence data

```
#Takes outputs from PDD_noPDD_sims that are saved in outputs_refs folder
# and uses them to produce Figs 3 and 4
source("PDD_noPDD_plots_analyze.R")
```

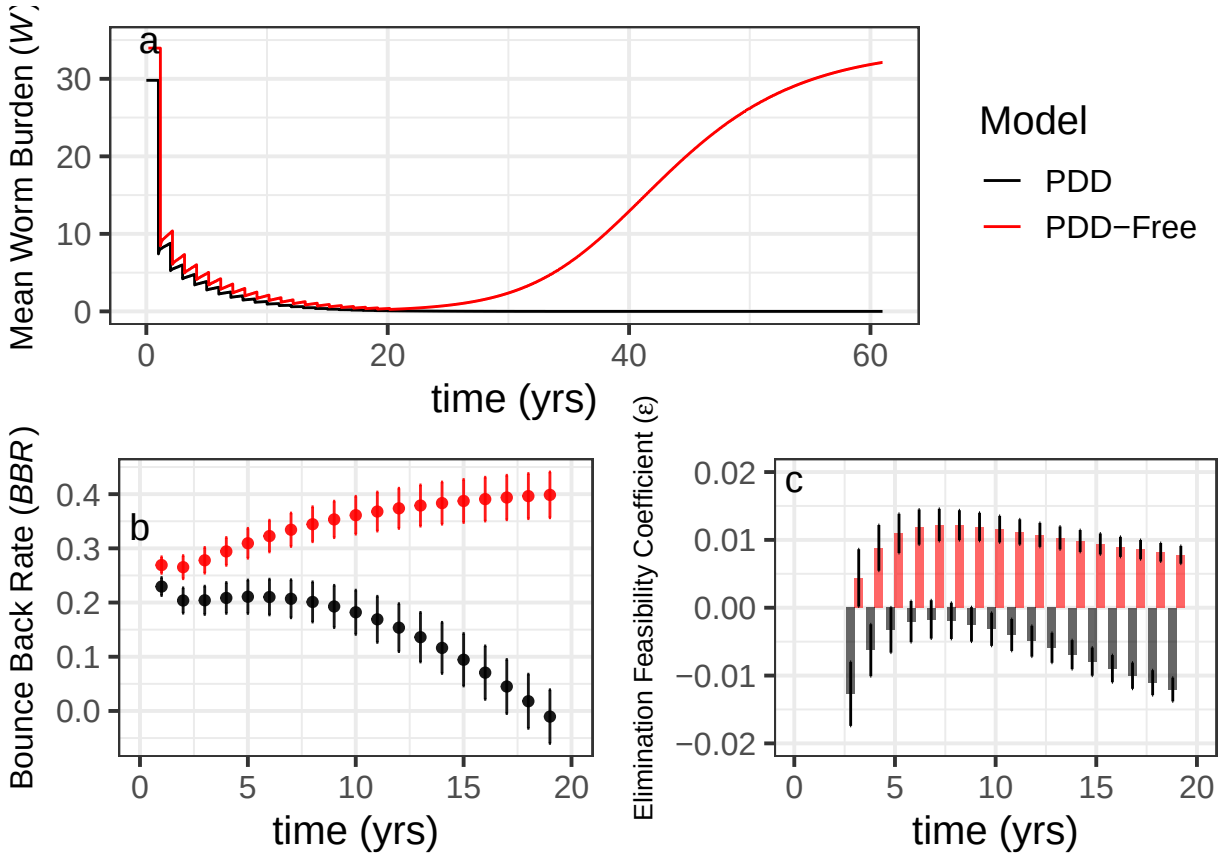
```
## Loading required package: Rmisc

## Loading required package: lattice

## Loading required package: plyr

## ------------------------------------------------------------------------

## You have loaded plyr after dplyr - this is likely to cause problems.
## If you need functions from both plyr and dplyr, please load plyr first, then dplyr:
## library(plyr); library(dplyr)

## ------------------------------------------------------------------------

##
## Attaching package: 'plyr'

## The following objects are masked from 'package:dplyr':
##
##     arrange, count, desc, failwith, id, mutate, rename, summarise,
##     summarize
```

```
## The following object is masked from 'package:purrr':
##
##     compact
```

```
## Warning: Removed 60 rows containing missing values (geom_path).
```

```
## Warning: Removed 4 rows containing missing values (geom_bar).
```

```
## Warning: Removed 4 rows containing missing values (geom_errorbar).
```




```
## Warning: Removed 60 rows containing missing values (geom_path).
```

```
## Warning: Removed 4 rows containing missing values (geom_bar).
```

```
## Warning: Removed 4 rows containing missing values (geom_errorbar).
```

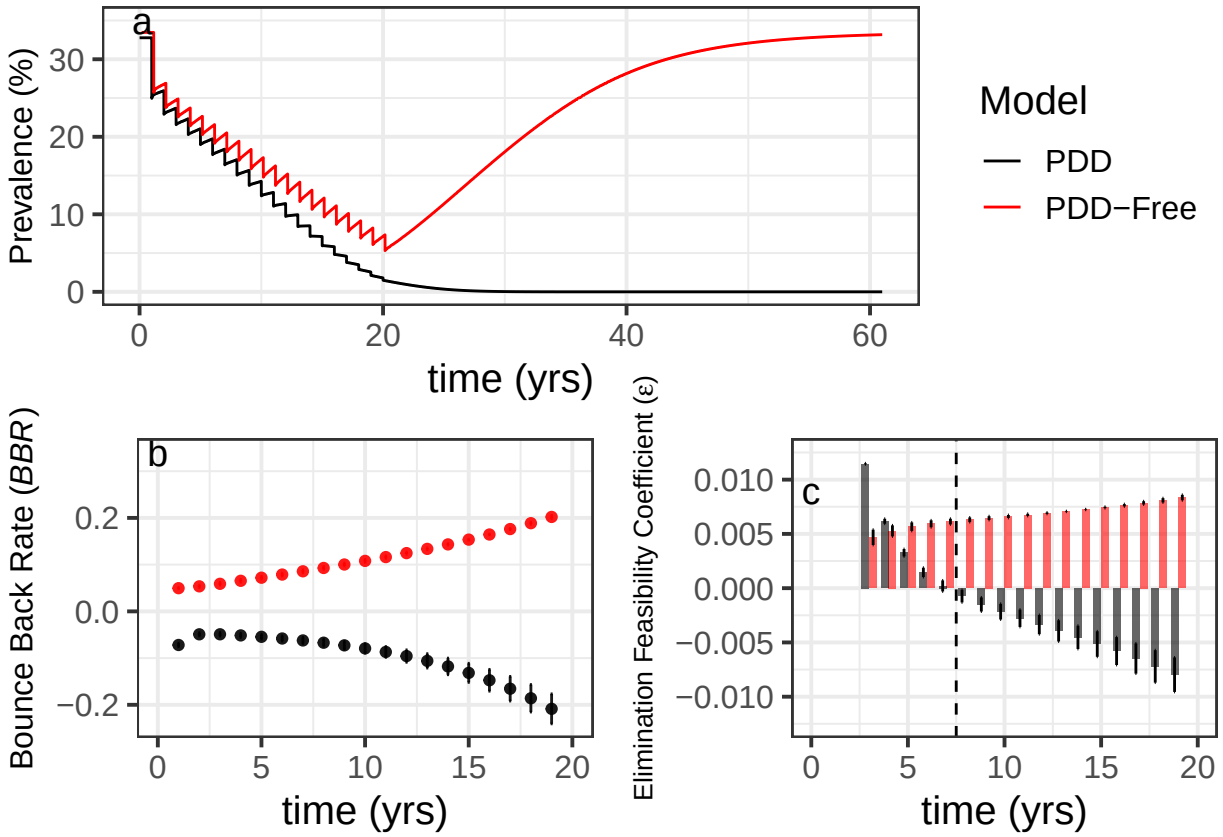


Figure 5:Scatter plot from stochastic model

```
#Takes output from stochastic model simulations found in Savio/Runs
# which simulate the stochastic model over a range of transmission intensities and clumping parameters
#Plots some additional
source("stochModSims_postProcess.R")
```

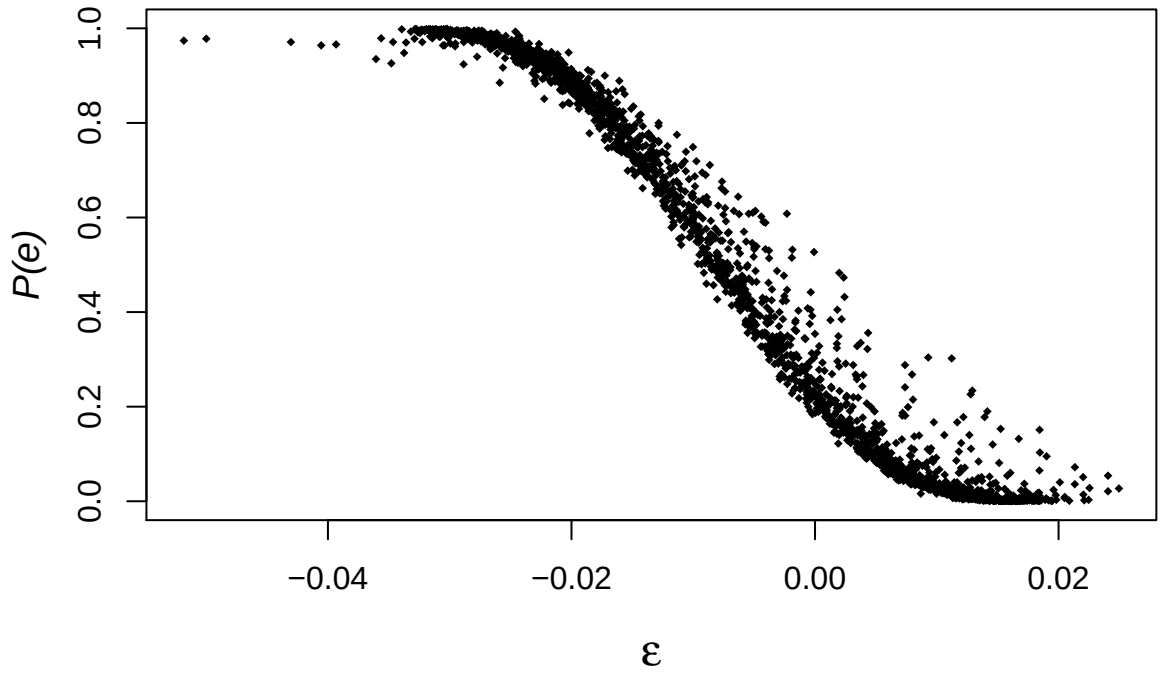
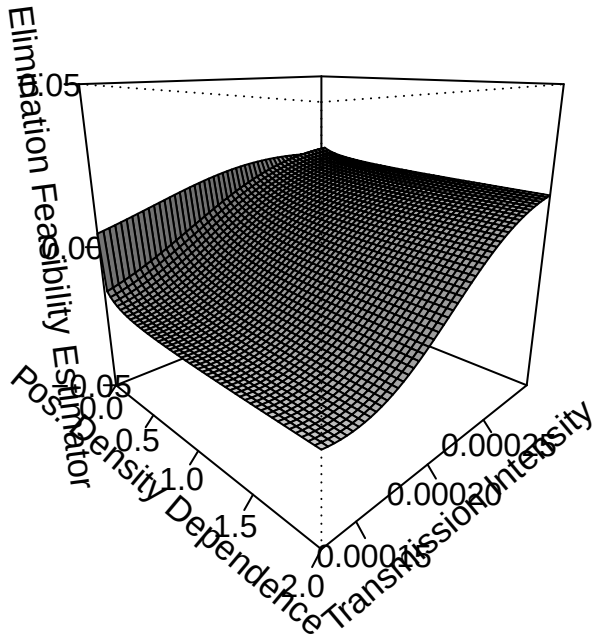


Figure 6: Sensitivity of Epsilon to transmission intensity and clumping parameter

```
source("eps_surface_kap_lam_plots.R")
```


Elimination Feasibility Estimator
1.05
1.00
0.95
0.0
0.5
1.0
1.5
2.0
Density Dependence
0.00010
0.00015
0.00020
Transmission Intensity