ARTICLE

Substantiating freedom from parasitic infection by combining transmission model predictions with disease surveys

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A

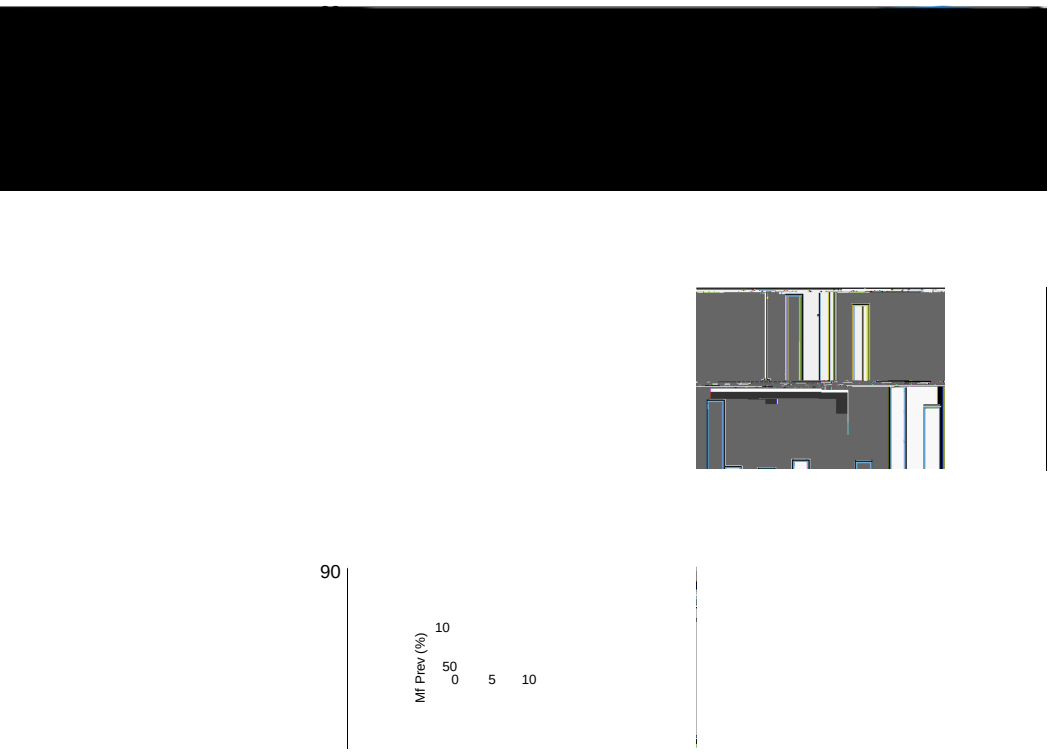
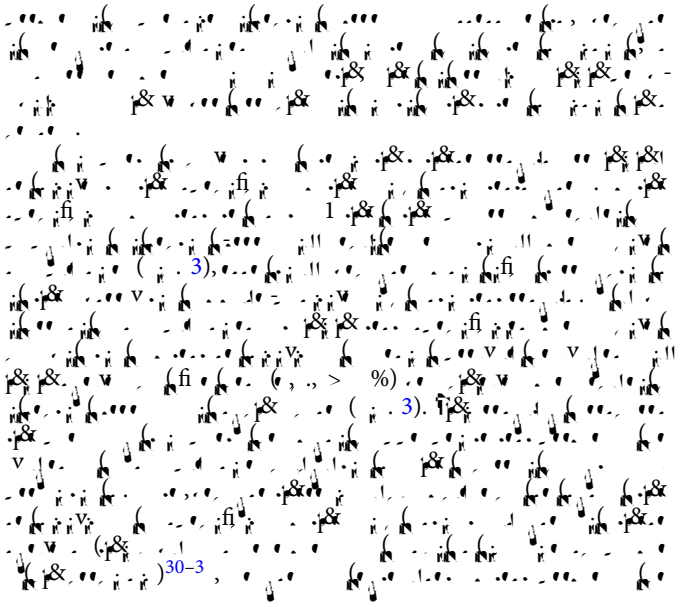
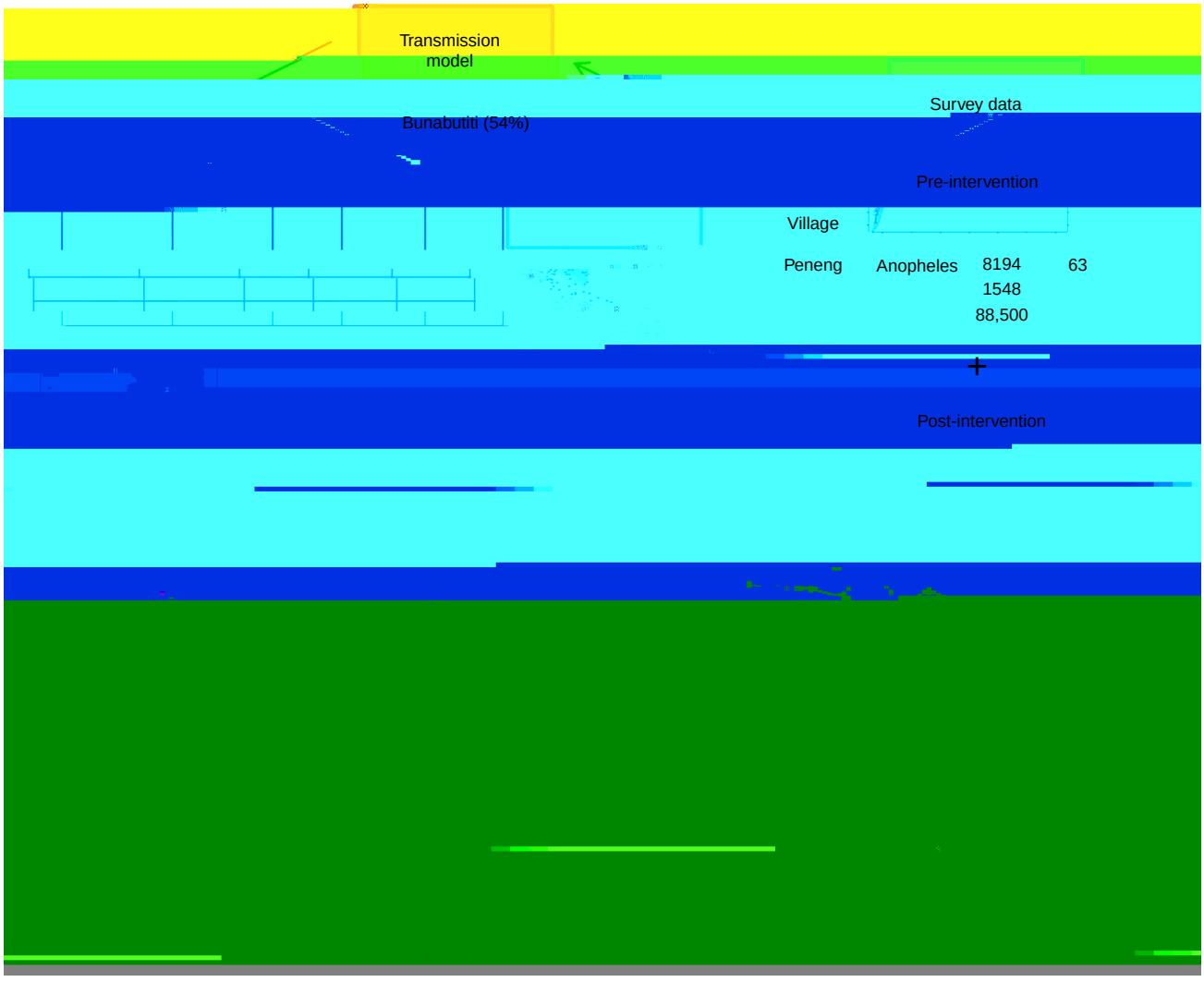


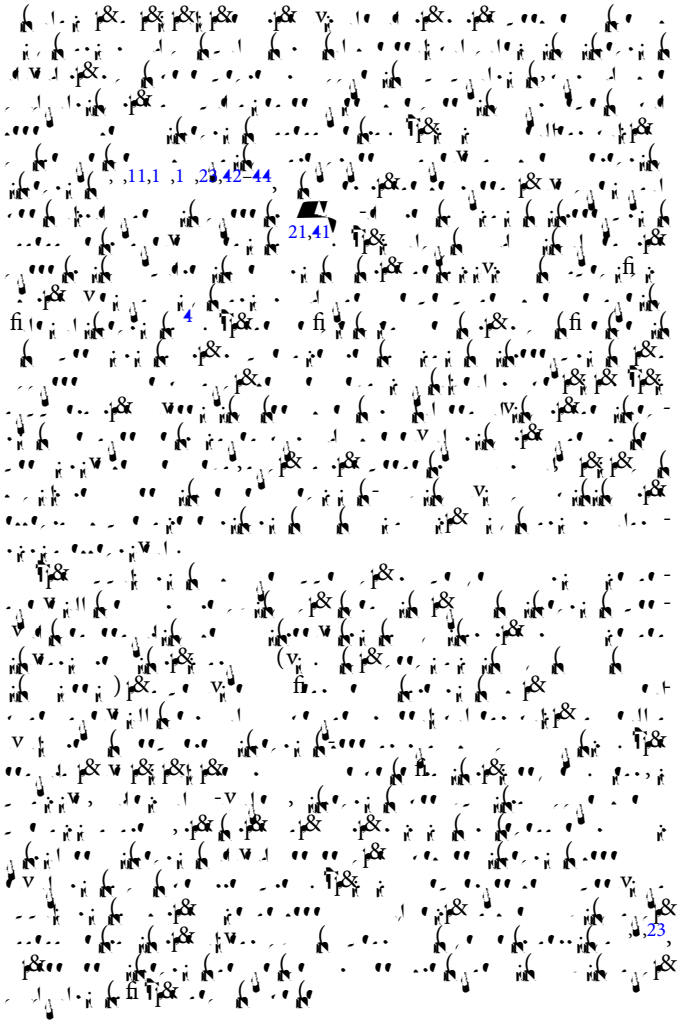
Fig. 1 Model fits and estimated transmission breakpoints. The model fits (grey curves) to baseline microfilariae prevalence from two onchocerciasis endemic sites, **a** Buriri, Uganda and **b** Masaloa, Uganda, and one LF endemic site **c** Gbuwhen, Nigeria, are shown. For Buriri and Masaloa, age-stratified Mf prevalence patterns (shown in the figure as red squares for estimated plateau-type patterns with error bars representing the 95% binomial confidence intervals) used for fitting were constructed according to the reported community-level Mf prevalence (Tables 1, 2). For Gbuwhen, the model was fit to post-intervention data (sho

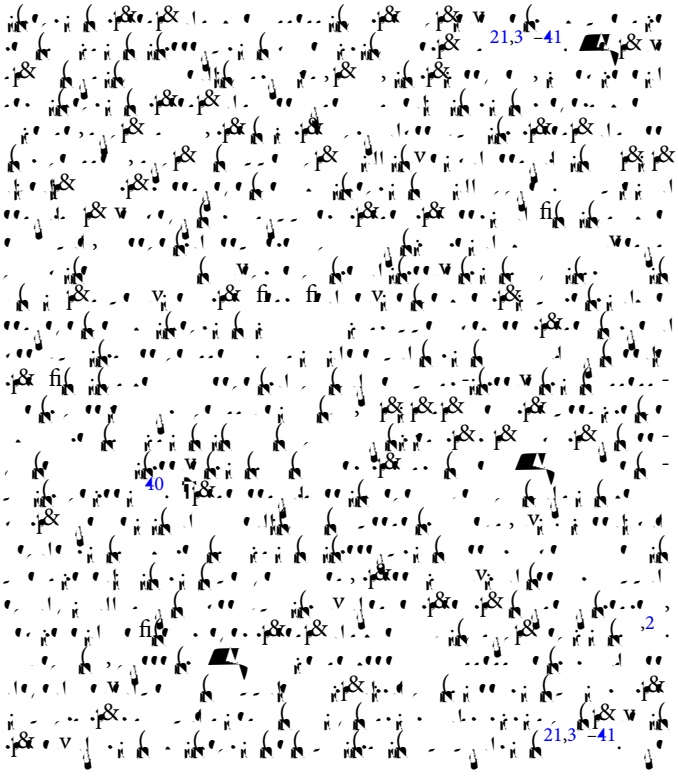
0.15

Nasarwa	Gbuwhen[b]					




Transmission model
Bunabutiti (54%)
Survey data
Pre-intervention
Village
Peneng
Anopheles
8194
1548
88,500
63
Post-intervention





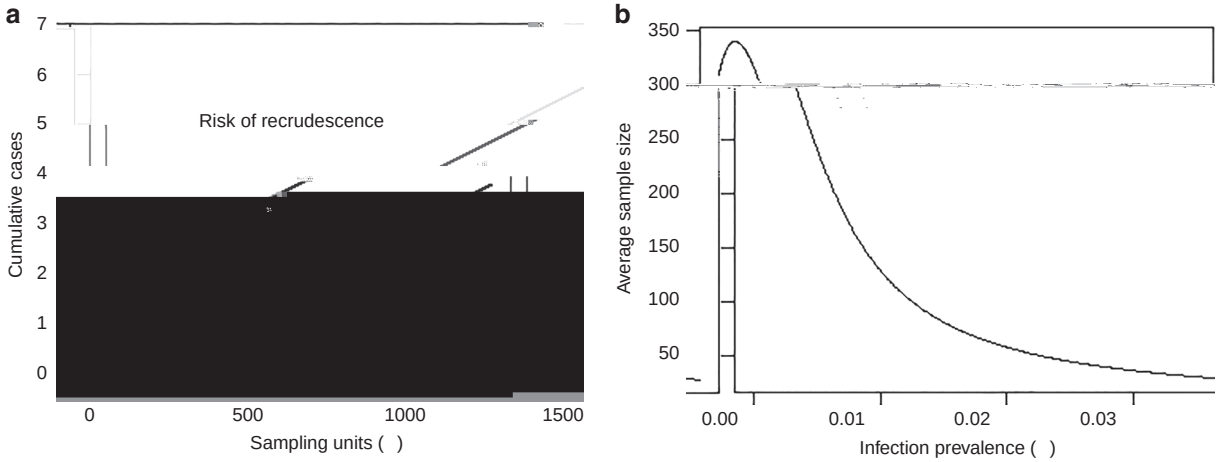
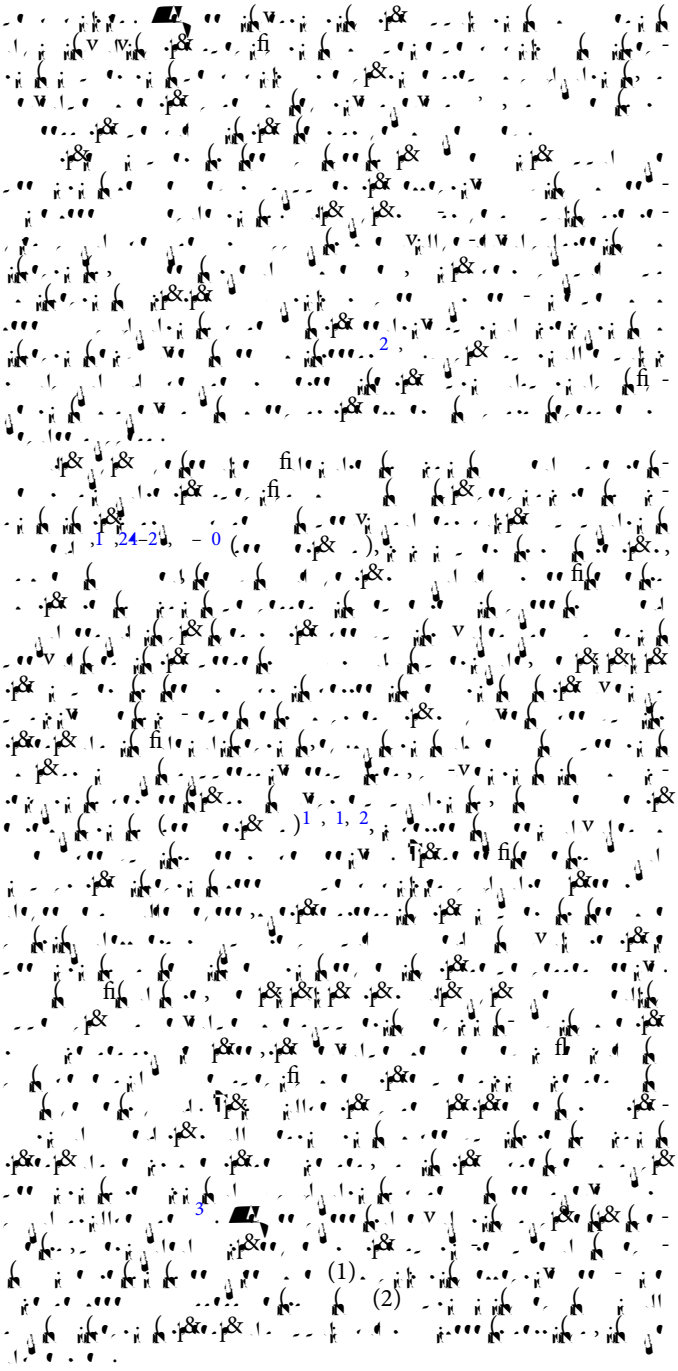


Fig. 4 Sequential entomological sampling for classification. **a** Stop lines corresponding to a Wald's sequence probability ratio test (SPRT)[71] sampling plan for classification based on entomological infection thresholds, as measured by simple random sampling of vectors. Results for a scenario with $p_0 =$ 0.00005 (= 95% EPT L3 prevalence threshold) and p_1



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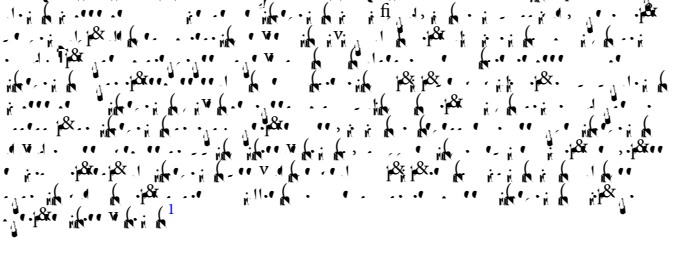
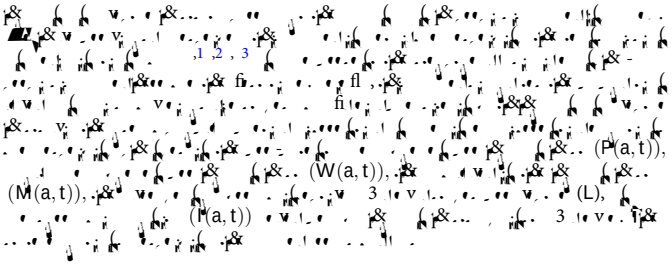
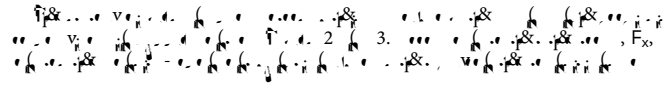




$$
\begin{aligned}
&\frac{\partial P}{\partial t}+\frac{\partial P}{\partial a}=\Phi L^{*}F_{1}(I(a,t))F_{2}(W_{\hat{f}}(a,t))\\
&-\mu_{w}P(a,t)-\Phi L^{*}F_{1}(I(a,t-\tau))F_{2}(W_{\hat{f}}(a,t-\tau))\zeta\\
&\frac{\partial W}{\partial t}+\frac{\partial W}{\partial a}=\Phi L^{*}F_{1}(I(a,t-\tau))F_{2}(W_{\hat{f}}(a,t-\tau))\zeta-\mu_{w}W(a,t)\\
&\frac{\partial M}{\partial t}+\frac{\partial M}{\partial a}=F_{3}(W_{\hat{f}}(a,t))-\quad M(a,t)\\
&\frac{\partial I}{\partial t}+\frac{\partial I}{\partial a}=W_{\hat{f}}(a,t)-\quad I(a,t)\\
&L^{*}=F_{4}(W_{\hat{f}}(a,t))
\end{aligned}
\qquad (\quad)
$$



43. [illegible]. Post-border surveillance techniques: review, synthesis and deployment. Australian Centre of Excellence for Risk Analysis (ACERA) Report 1004 ([illegible], 2012).