Accelerating river blindness elimination by supplementing MDA with a vegetation "slash and clear" vector control strategy: a data-driven modeling analysis

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goals for neglected tropical diseases (NTDs). For river blindness, a major NTD targeted for elimination, there is a long history of using vector control to suppress transmission, but traditional larvicide-based approaches are limited in their utility. One innovative and sustainable approach, "slash and clear",

Large-scale initiatives aiming to control and eliminat
cant progress in treating at-risk populations and reduc
diseases

[1]. As NTD programmes achieve disease-speci c targets set by the World Health Organization (WHO) Roadmap and enter the endgame phase of elimination, priorities will need to shi to adapt to changing transmission dynamics[2,3]. Novel approaches will be required to sustain elimination in the long term in the face of new infection patterns, emerging drug resistance, and socio-political challenges that are associated with the endgame[3–5]. Identifying the best course of action is not trivial, as complex socio-ecological systems are characterized by signi cant uncertainties, trade-o s between human action and ecological responses, and nonlinear e ects that make elimination unpredictable and di cult to achieve[6]. Furthermore, attention is also increasingly focused on how best to accelerate progress toward meeting the WHO goals of eradication, elimination, or control of the major NTDs by 2030[1]. Recent work highlights that the development of intensi ed and diversi ed strategies are needed to accelerate the achievement of these targets[1,5,6].

Vector-borne diseases are responsible for a large proportion of the global communicable disease burden[1]. Vector control (VC) is recognized by the WHO as a major tool to prevent the transmission of vector-borne NTDs, but is generally underused. ere is, however, a long history of using VC in control and elimination

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e orts, particularly for onchocerciasis[7]. VC through the application of larvicides was the primary strategy of the Onchocerciasis Control Programme in West Africa[8–10]. e Ugandan experience with VC, when used in conjunc-

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the observed 2017–2018 rainfall. e model was tted to the observed rainfall data for May 2017 - April 2018 in Gulu, Uganda[24], and the t is shown in Supplementary Fig. S1.

Our Bayesian Melding (BM) modelling framework relies on data assimilation to discover local transmission models. Supplementary Fig. S2 shows the BM ts of our *O. volvulus* transmission model to the age micro lariae (mf) prevalence data in each of the four study sites (see Methods for a description of the model and study sites). Because age-strati ed mf prevalence data

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