Bridging the gap:
IR Mapper updated to visualize modelled Insecticide resistance layers

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IR Mapper and Geospatial Modelling of Insect Vectors (GMIV), Big Data Institute, University of Oxford launch modelled insecticide resistance maps on www.irmapper.com that predict localised variation in resistance and the probability that malaria vector populations exceed resistance thresholds. The layers bridge insecticide resistance data gaps from surveillance data in sub-Saharan Africa.

The global community experienced a reduction in malaria cases between 2000 and 2015 primarily due to LLINs and IRS. The World Malaria Report 2019 indicated these gains have stalled. Widespread insecticide resistance in malaria vectors has led to decreased ability of vector control tools to kill malaria mosquitoes.

IR Mapper was conceptualized in 2012 in response to a call by malaria and vector borne disease control experts and stakeholders for a user-friendly approach to consolidating and visualizing up-to-date information on insecticide resistance. IR Mapper is a tool that interactively displays results from standardized insecticide resistance tests on *Anopheles* (and *Aedes*) species generated using WHO or CDC standard test protocols (Figure 1).

Hancock *et al.* 2020 used a geostatistical ensemble model to develop *Anopheles gambiae s.l* layers that predict the mean mortality to alphacypermethrin, lambda-cyhalothrin, deltamethrin, permethrin, and DDT for the years 2005 to 2017. **Moyes *et al.* 2020** generated the probability that malaria vector populations exceed WHO thresholds for susceptibility, confirmed resistance, or the 10-80% mortality criteria for deployment of piperonyl butoxide-pyrethroid nets that mitigate against the effects of metabolic resistance to pyrethroids in Sub-Saharan Africa.

Both modelled insecticide resistance and probability layers are incorporated in the *Anopheles* platform of IR Mapper. The layers can be visualized alongside IR Mapper point data (Figure 2).

An. funestus s.l. is also an important malaria vector in Africa. However, data on *An. funestus s.l.* were insufficient to produce modelled pyrethroid resistance estimates. In areas where *An. funestus s.l.* are present, users are recommended to consider visualizing the modelled layers alongside data on resistance in *An. funestus s.l.*

IR Mapper additionally includes an option for visualizing insecticide resistance intensity point data.

Visit **www.irmapper.com** to learn more.

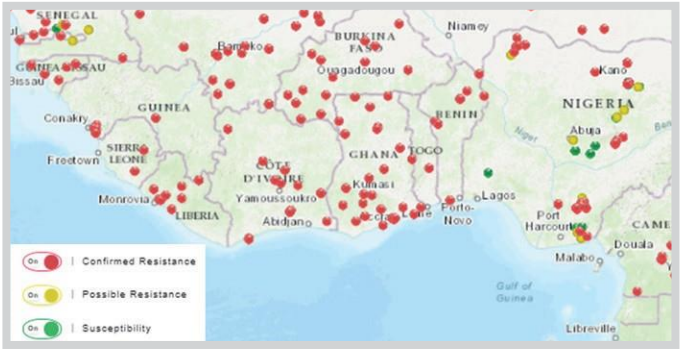

Figure 1 Deltamethrin resistance data in *Anopheles gambiae s.l.* in West Africa (2016 to 2019).

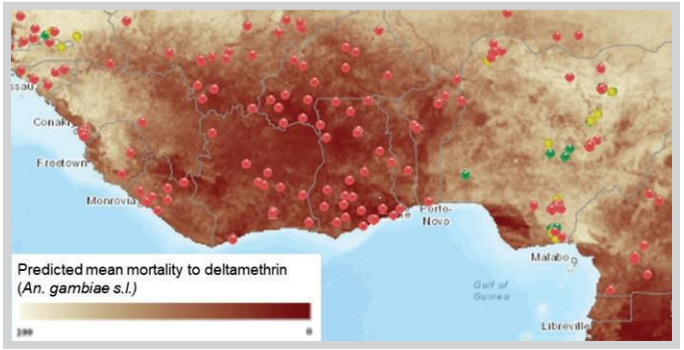

Figure 2 Deltamethrin resistance data in *Anopheles gambiae s.l.* in West Africa (2016 to 2019) alongside predicted mean mortality to deltamethrin layer (2017).

IR Mapper

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