



Host Preference and Feeding Patterns of Primary Malaria Vectors, *Anopheles arabiensis* and *Anopheles gambiae* s.s. in Sites with or without Indoor Residual Spraying in Rwanda

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Presentation Outline

- Introduction
- Materials and methods
- Results
- Discussion and conclusions



Introduction

- In order to transmit malaria, parasites between human malaria vectors have to feed on human blood at least two times (Ndenga et al., 2016).
- Blood-meal source analysis provides insight into host preference of disease-transmitting insects and their efficiency in pathogen transmission (Ngom et al., 2013).
- Current malaria vector interventions are indoor, insecticide-based tools targeting endophagic, endophilic malaria vectors.
- In this study, blood meal source of *Anopheles gambiae* s.l. mosquitoes was investigated, and the potential impact of indoor residual spraying (IRS) on species composition described.



Materials and Methods

- Mosquitoes resting inside the houses were collected using Pyrethrum Spray Catch (PSC) methods from IRS and non-IRS sites from July to December 2018.
- Collected mosquitoes were identified on site using standard morphological identification keys.
- ELISA test on abdomen of fed *Anopheles gambiae* s.l. was done to determine the sources of blood meal.
- Molecular characterization was performed for all mosquitoes tested on ELISA using conventional PCR.

Of the 225
fed-female
Anopheles gambiae
s.l. collected

- 55.1% was *Anopheles gambiae* s.s.
- 39.1% *Anopheles arabiensis*
- 5.8% of samples failed to amplify.

Species composition
in IRS sites

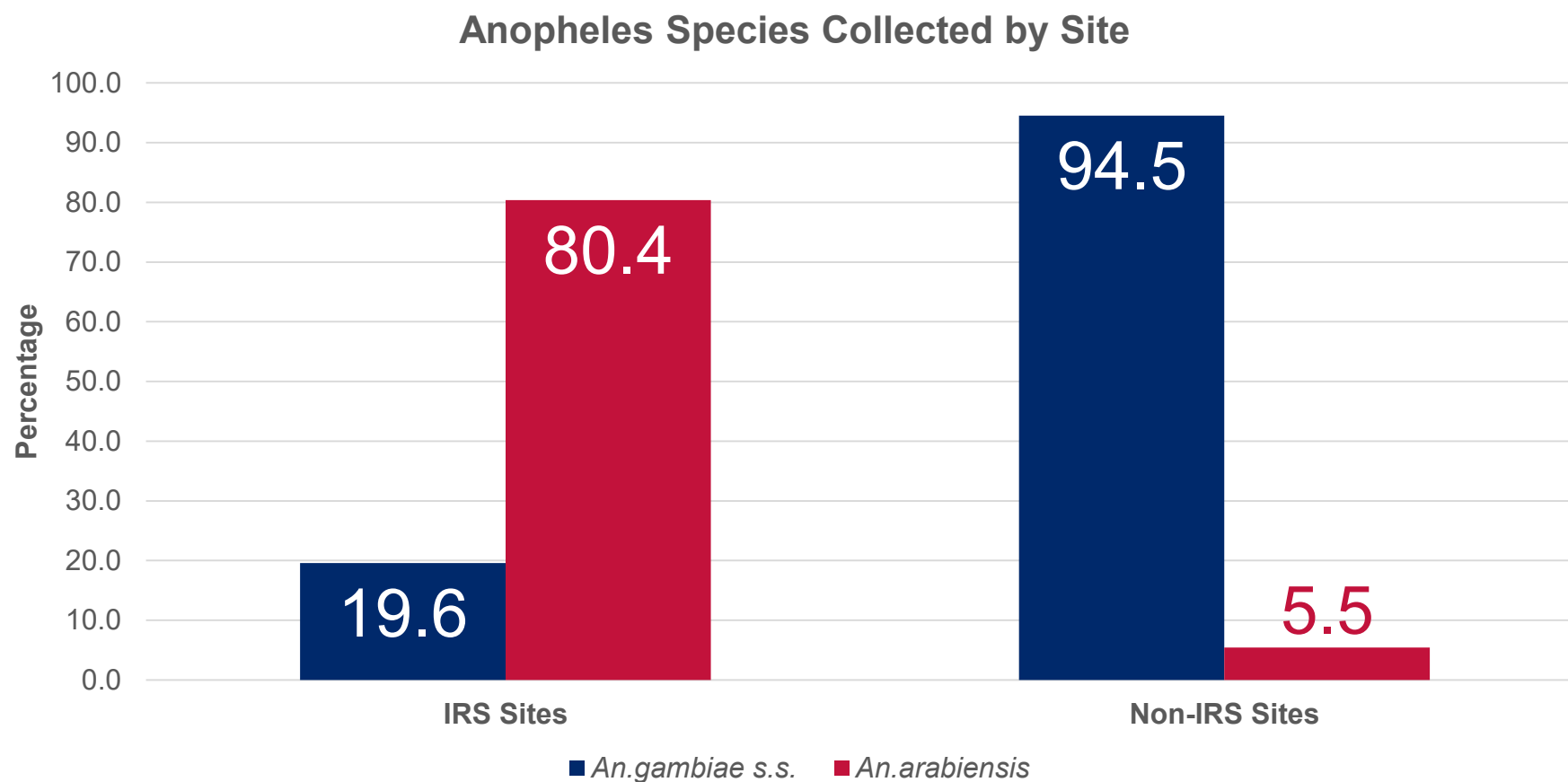
- 16.1% was *Anopheles gambiae* s.s.
- 83.9% was *Anopheles arabiensis*

Species composition
in non-IRS sites

- 93.2% was *Anopheles gambiae* s.s.
- 6.8% was *Anopheles Arabiensis*



Anopheles Species Collected





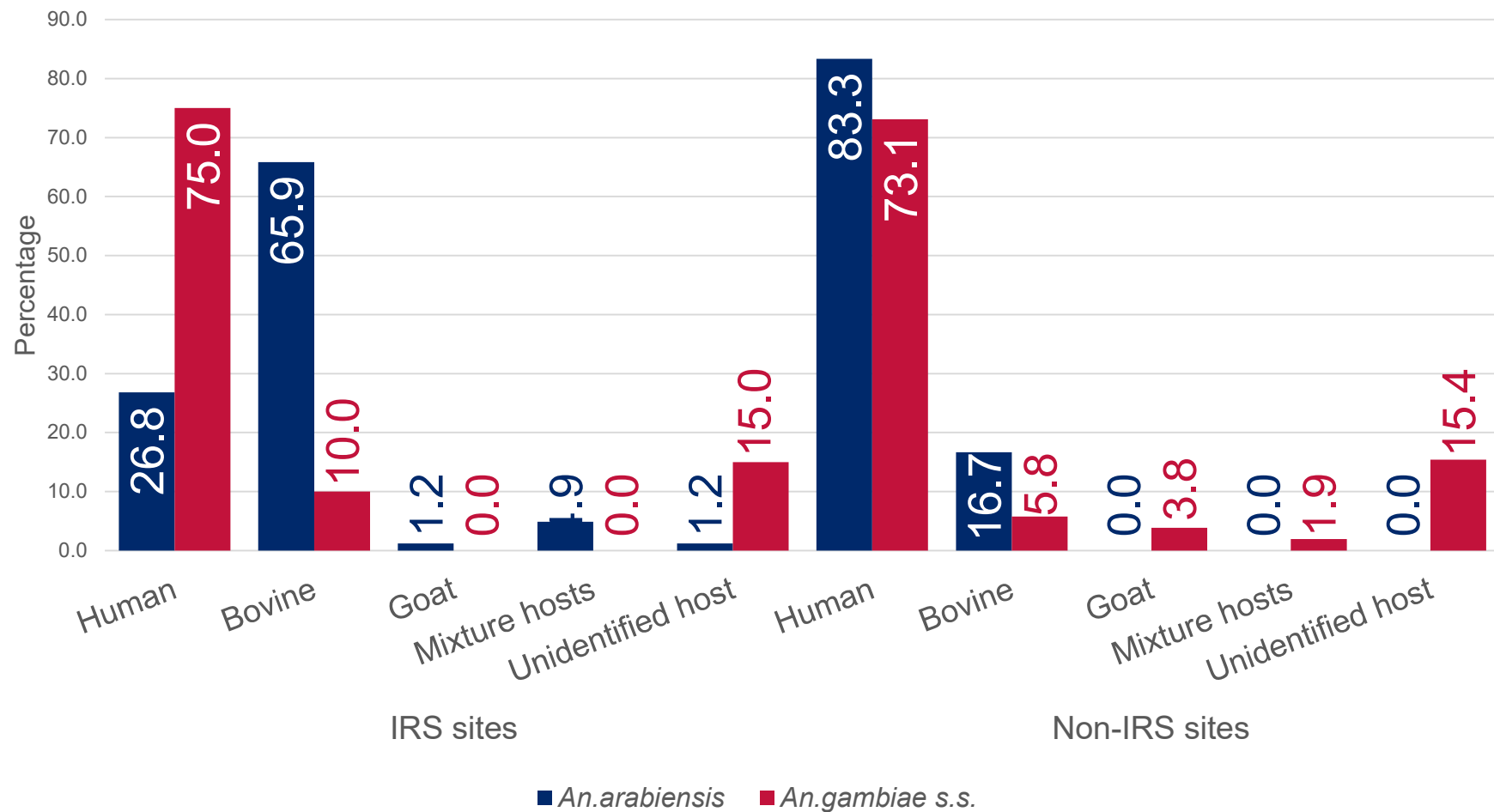
Results (cont'd)

- In IRS sites *An.gambiae* s.s. fed on humans at a rate of 75% and at 10% on bovines.
- Whereas 26.8% and 65.9% of blood meals taken by *An. arabiensis* were from humans and bovines, respectively.
- In non-IRS sites *An.gambiae* s.s. fed on humans and bovines at 73.1% and 5.8%, respectively, and 15.4% blood meals were taken from unidentified hosts.
- For *An.arabiensis*, 83.3% and 16.7% blood meals were taken from humans and bovines, respectively.



Host Preference of Malaria Vectors

Host Preference of *An.arabiensis* and *An.gambiae* s.s. in sites with/out IRS





Findings and Discussion

- The dominant malaria vector in IRS sites was *An.arabiensis* while in non-IRS sites, *An. gambiae* s.s. was found to be the primary vector.
- In IRS sites, *An. arabiensis* showed greater preference for feeding on cattle than on humans but in non-IRS sites, they preferred to feed on humans.
- In both IRS and non-IRS sites, *An.gambiae* s.s. had a greater preference for feeding on humans.
- The findings are similar to other studies conducted elsewhere, such as Senegal where *An.arabiensis* was dominant in IRS sites and mainly fed on cattle (Sy Ousmane et al., 2018).



Conclusions

- The dominance of *An.arabiensis* in IRS sites is likely related to its zoophagic and exophagic behaviors.



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Thank You for Your Attention !



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