IMPLEMENTING SCIENCE SHOPS FOR BETTER COMMUNITY HEALTH IN AFRICA:

THE CASE OF SELINGA AND GBO CHIEFDOMS, SIERRA LEONE

PARES
Partnerships for Resilience

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blue ventures beyond conservation

The Science Shop (SShop)

- A Science Shop is an outlet for **a knowledge centre** (typically, **a university**)
- A Science Shop '**stocks**' **potential science-based solutions to community problems**
- **What did "customers" in post-Ebola Sierra Leone say they needed?**
  - They said they wanted to solve the problem of childhood malaria
- Our Science Shop looks for a science-based solution to childhood malaria

Shopping in Science Shops for a solution to childhood malaria

Customers have different priorities

Some think malaria is really important, others think it does not matter so much

Older people sometimes said ‘everybody gets malaria, you will never get rid of mosquitoes, but younger men said ‘let us work on malaria because that is most important to us as fathers of small children’

Young men and young women are the “customers” for our Science Shop

Local people in Gola Forest Court barrie in Lalehun (SL) for Science Shop meeting

Example of Mosquito traps in participant bed room in Lalehun Gola Forest (SL)

SShops offer another line of defence

- The standard answer to the malaria problem includes:
  - Insecticide-treated bed nets, offering tests, and supplying anti-malaria pills through a network of rural health posts.

  Potential problems with this solution:
  - Bed nets are less effective if mosquitoes develop resistance to insecticide, or the child has no bed
  - There is no guarantee current medication will remain effective over the long-term
  - Nurses cannot be on duty 24/7
- The SShop is a back-up

‘Buyer beware’ and ‘open all hours’

‘Buyer beware’- the SShop is not a ready made solution

- There is no guarantee Science Shops can deliver the desired results, a SShop must first generate new knowledge through discovery
- But… if the application does not work, the customer takes the item back to the SShop to ask for it to be fixed by application of more science

The SShop will be ‘open all hours’

- The SShop offers to stay ‘open’ until problems are solved
  - Through discovery, people have access to new or alternative approaches
- As with a tailor’s shop, the SShop helps ensure the solution fits the customer
  - Outcome: sustainable and effective ‘tailor-made’ answers

Expected benefits of the Science Shop solution

- People know how the solution works, and how to respond when it breaks down
  - Better local knowledge reduces reliance on sprays, expensive drugs and emergency ambulances

- A better, cost-effective, and locally driven solution
  - A knowledge base has been built for alternative solutions to be maintained

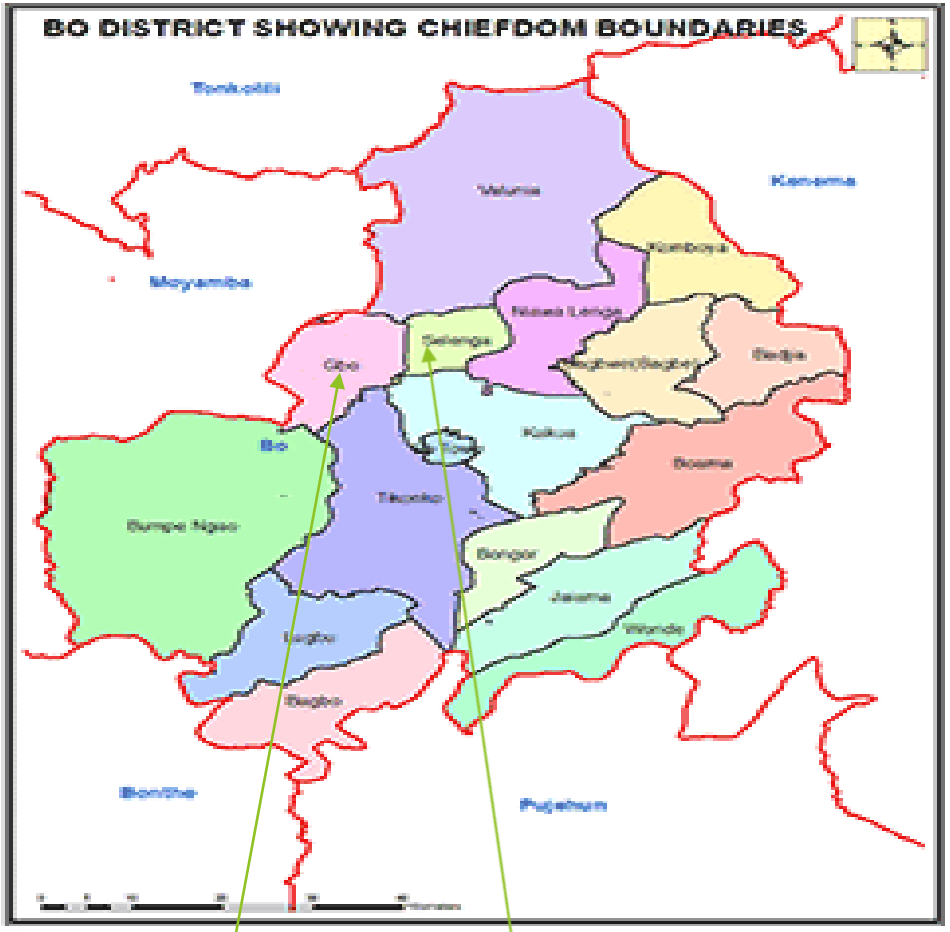
https://prismrecruitment.co.uk/guides/employee-benefits-value/

Staffing the SShop

- Rural medical staff need to be part of a Science Shop
  - To avoid over-reliance on ready-made answers staff and community work together
  - This, in turn, improves confidence of medical staff in finding locally-specific, discovery-based, sustainable solutions
- This encourages local responsibility for good health
  - Responsibility for health is shared by community and medical staff

PART 2

A mosquito SShop for Sierra Leone: Partnerships for Resilience 2020+



https://sldevelopmentencyclopaedia.org/2_gov/2_6bo.html

- Aim: To pilot a SShop on mosquito control in Gbo and Selenga Chiefdoms (Bo District)
- Work to be done in two medium sized and isolated villages: Gbandi and Gbangba
- Health personnel will participate in the SShop with permission from the Ministry of Health

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Testing an instrument

Data have been collected in a pilot village 20 km from proposed study site to test identification of 1) biting flies, 2) mosquitoes

Tasks:

- How well could villagers recognize photos of 3 biting flies (Task 1)?
- How well could villagers recognise a photo of a malaria mosquito (Task 2)?

Protocol:

- Photos presented in random order per task
- Name biting fly shown in local languages (Mende or Krio)
- State which flies carried diseases & which disease

Preparatory entomology work for a SShop

- Preparatory work confirmed that village people may have a problem of identifying biting (blood sucking) insects
  - One person (Blackfly causes River Blindness)
  - Two people (Tsetse fly causes = 0 disease)
- Mosquitoes: 12 people (mosquitoes = Mosquitoes).
  - But only one third (7/22) recognised the malaria mosquito as a mosquito.

How we are organised:

Entomology team, social science, links to medical staff

Entomology team:

- Four people (two from Wageningen and two from Njala Mosquitoes mapping_to supervise mosquitoes breeding sites and for household mosquitoes surveys

Medical staff/Social Science:

- Two people (from Sierra Leone) to inter-connect with Peripheral Health Units nursing staff and to provide community linkage.

https://www.neomind.com.br/en/blog/6-tips-for-organizing-your-tasks-and-your-team/

Field work tasks planned for 2025

1. Identifying breeding sites

Local volunteers supervised by the entomology team will identify *Anopheles* breeding sites:

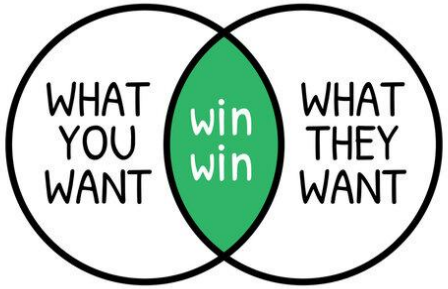
- To bring larvae samples in communities for malaria mosquito larvae identification

2. Testing effectiveness of traps

Testing of State-of-art mosquito traps using a Latin Square sample design.

Explain to communities Research design

Mosquito SShops – a win-win?



- Village volunteers will know the mosquito hazard better
  - WIN 1: control based on community involvement in collecting data and discussing results
  - WIN 2: mosquito entomology advances through shared knowledge gathering

- There will also be additional benefits
  - E.g. field preparation was done by school children volunteers and they began to assess how to better make their sleeping places mosquito-proof

Towards control strategies

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- Display data on sites where malaria mosquitoes have been found
  - Communities will examine sites where malaria mosquito larvae are breeding
  - They will also know frequency of malaria mosquitoes among bedroom populations
- What to do about household hotspots and bush breeding site?
  - Different treatments will be compared against controls so that local decisions will be based on the evidence of what works
  - Community will decide on days for doing mosquito clearance

CONCLUSION

SShops strengthen community survival skills

- In the **civil war (1991-2002)** Government stopped paying salaries to health professionals
  - Health services collapsed BUT rural people survived through their own skill and effort
- The SShop approach reinforces survival in harsh conditions

SShops provide future protection

- Young mothers and young children have the most to lose from uncontrolled malaria,
  - but are often silent in debate on health.
- Through a SShop women, and children have an alternative if-and-when nets and pills fail

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Appendices

1. A brief history of SShops in Sierra Leone

Began work in 2016 by contacting groups in Jawei Chiefdom (Kailahun District) formed for the 2014 Ebola epidemic.

- These Ebola task forces were formed, supported by their Paramount Chief and won national praise for their role in reducing Ebola infection in their communities
- Dutch Government funds: to learn lessons of these kinds of groups and what further work they might do after the Ebola crisis was overcome.
- We asked the groups what they could do to continue to improve health in their communities and group mem bers thought it was time to focus on malaria.
- A successful workshop on mosquito identification in which important misunderstandings and knowledge gaps were identified: malaria mosquitoes are found in latrines, confirming a similar misconception apparent from earlier work in Daru.
- RESULT: People agreed it would be good to have some further learning about their mosquitoes
  - This is the current stage

2. Insect recognition at village level

Flies	Correct	Incorrect
Butterfly	1	21
Tsetse fly	3	19
House mosquito	12	10
Total	16	50
	Mosquito	Others
Culex	10	22
*Anopheles	7	15
Aedes	10	12
Total	27	39

*Anopheles = 3/6 no ed. 4/16 with ed.

APPENDIX cont.

Insects	Correct name	Incorrect name	Comments
Tsetse	2	20	
Blackfly	1	21	
House mosquito	12	10	

	Identified as mosquito	Not identified as a mosquito	
Culex	10	12	
Anopheles	7	15	3/6 no schooling
Aedes	10	12	4/16 no schooling