

Community Mobilization, Spatial Mapping and Malaria Control

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Community-Based Young Citizen Program

East Africa-Tanzania

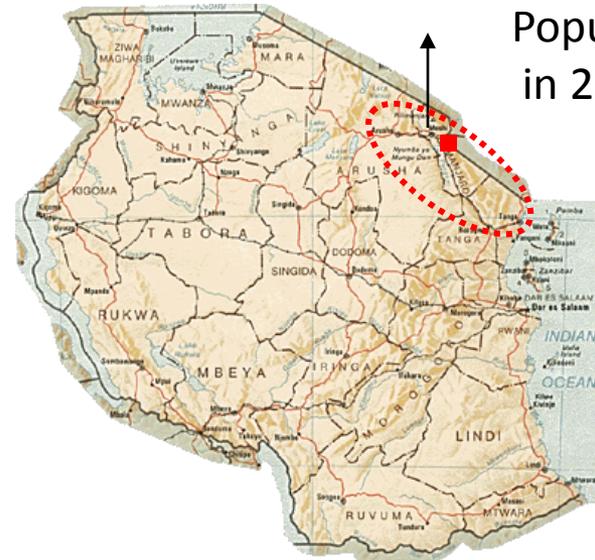


Kilimanjaro District



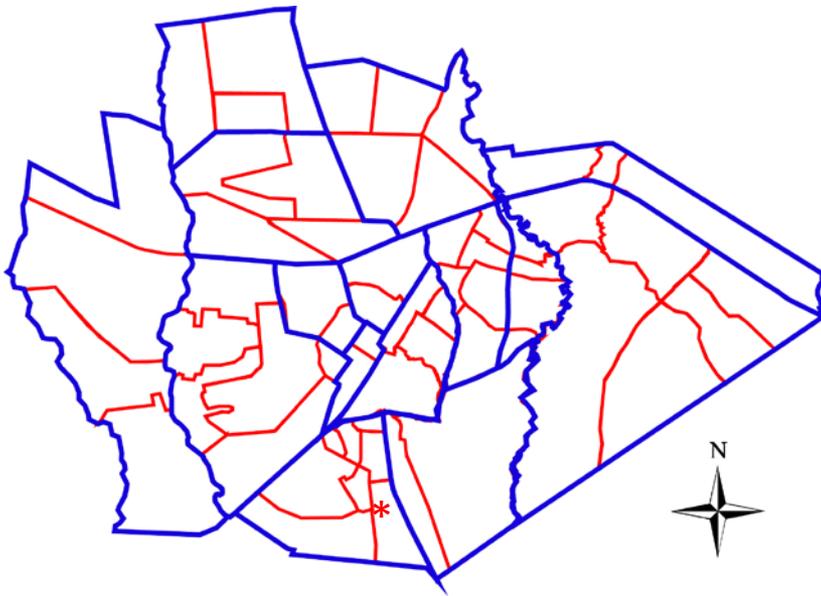
Moshi Municipality

Population 143,000
in 2002

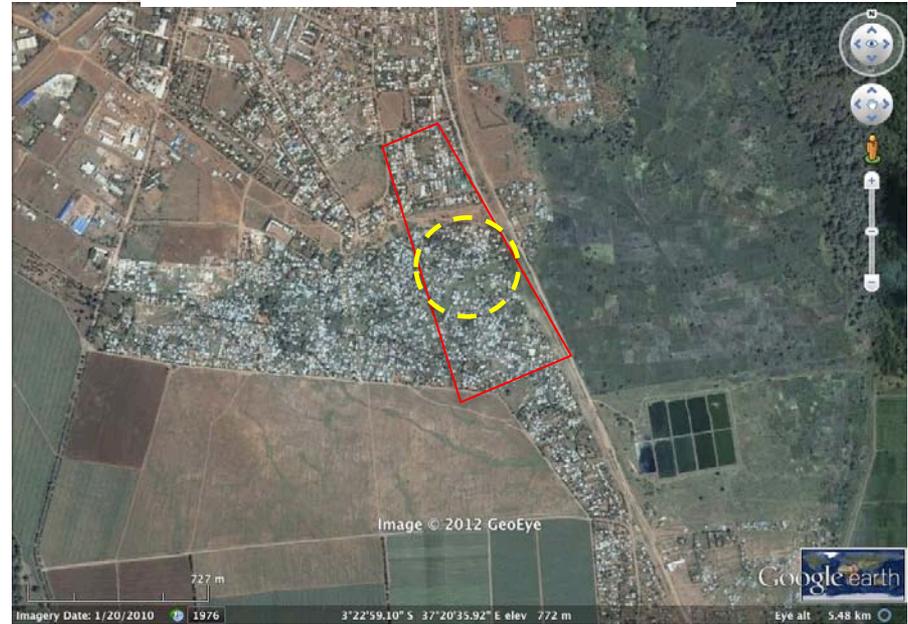


Decentralized Administrative Units of Moshi Municipality

Moshi Municipality



Pasua relini-PR



The 15 ward (blue lines) and 61 subwards (red lines, 60 of which are residential) boundaries are outlined. Each of the 15 wards and 61 subwards has democratically elected leaders and committee members for health, education and social welfare. Malaria survey was conducted in entire subward (*Pasua relini*, red rectangle with asterisk) but only the center region (yellow dashed circle) was targeted in the community education and mobilization intervention.

CHASE-Child Health and Social Ecology

The Young Citizens (YC) Program in the Kilimanjaro Region of Tanzania engages young adolescents to work as health agents to build HIV and malaria competence in their communities.

The initial YC HIV Program was based on a curriculum, which provided activities to build citizenship, public deliberation skills and HIV knowledge. It was evaluated in a cluster randomized controlled trial. Both the YCs and their communities were significantly impacted by the 7- month intervention.

More recently, the YC Program has been building malaria competence through community education and mobilization in controlling endemic malaria.

The malaria work has allowed for household level intervention and data mapping not possible with HIV as a highly stigmatized disease.

Moshi Young Citizens as Health Agents

Participants: Random selection of adolescents residents, age 10 to 14, living in geopolitically defined communities with democratically elected leadership

Curriculum: Activities and deliberation around citizenship skills and microbiology of malaria, while working with elected local and municipal health facilities in community

Intervention: Participatory community drama and household visits were used to educate and mobilize community about malaria transmission, prevention, testing and treatment

Survey Results on Malaria Attitudes and Knowledge across *Pasua relini* (n=200)

- 81% said malaria is VERY serious
- 61% had episode of malaria in home in last 3 month
- 74% knew mosquito bite causes malaria
- 78% know mosquitoes breed in stagnant water
- 27% knew that *plasmodium* parasite caused malaria
- 20% knew mosquito who has bitten infected person causes malaria
- 23% had heard of biocontrol or environmental control of malaria

Biocontrol of *Anopheles* Larvae using Larvivorous fish

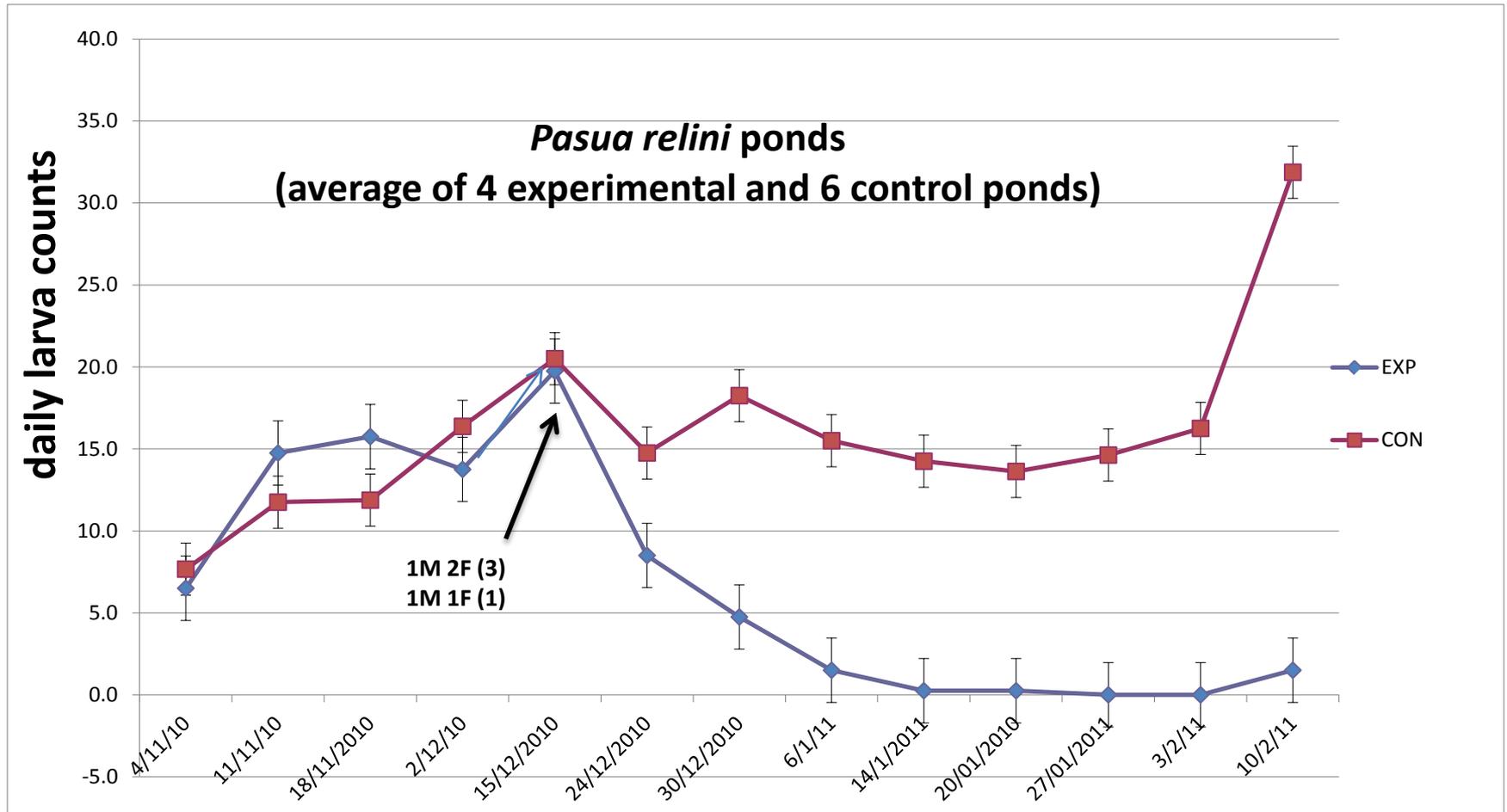
The Young Citizens worked with CHASE staff to dig experimental ponds in a restricted region of the community, to create maps of ponds and to take weekly larval counts before and after introducing a Tanzanian larval-eating fish to experimental ponds in their neighborhood.

Biocontrol with Larvivorous Fish

- The Tanzanian fish species *Nothobranchius guentheri* is an annual species;
- adults die off yearly, leaving their embryos in a state of suspended animation in dry dirt when the water recedes.
- The embryos hatch when the rainy season begins and feed on the *Anopheles* mosquito larvae, which hatch around the same time.



Daily Larval Counts in Experimental and Control Ponds



10 PASUA MARKET

PASUA RELINI



LOCATION OF PONDS
PASUA RELINI

PASUA BUS STAND

ZARA HOTEL

BAOBAB

(17/8/2010)
1A

2A (17/8/2010)

(17/8/2010)
3A

1A (10/8/2010)

MILING MACHINE

ORPHANAGE CENTRE

(17/8/2010)
5A

3/8/2010
1A

SUGAR FARM

17/8
5A+5B

BARBER SHOP

19/8/2010
2A+2A+18+15

BURNT BRICKS

KEHEMA HOUSE

19/8/2010
38

Yc16

Yc03

Yc21

Yc10

Yc11

Yc15

Yc17

Yc18

Yc19

Yc20

Yc22

Yc23

Yc24

Yc25

Yc26

Yc27

Pasua-Relini

- KEY**
-  ROAD
 -  GPS
 -  IMPORTANT
 -  HOUSES
 -  RAIL WAY
 -  Yc's Houses
 -  PONDS

- 1  6 Ponds - Yc5
- 2  2 Ponds
- 3  2 Ponds
- 4  2 Ponds - Yc1

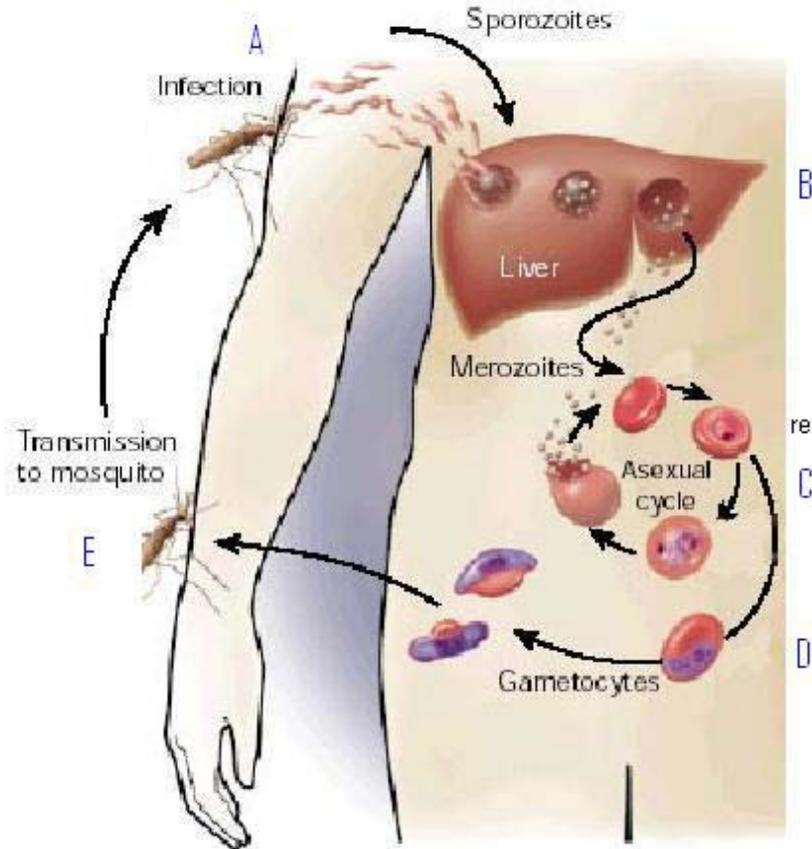
Location of Experimental Ponds with Larvivorous Fish



Topics in Community Skits Addressing Issues for which Community needs Information and Education

- 20% knew mosquito who has bitten infected person causes malaria
- 27% knew that *plasmodium* parasite causes malaria
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Plasmodium Life Cycle



Life cycle of the malaria parasite

A. Female *Anopheles* mosquito bites through skin, transmits *plasmodium* to blood stream,
B. which infects the liver,
C. then returns to blood stream, infects red blood cells,
D. and new mosquito is infected when she bites infected person

Malaria Transmission is Social

*infected father to uninfected child
not to mother and child under bed net*

HUMAN



HUMAN reservoir

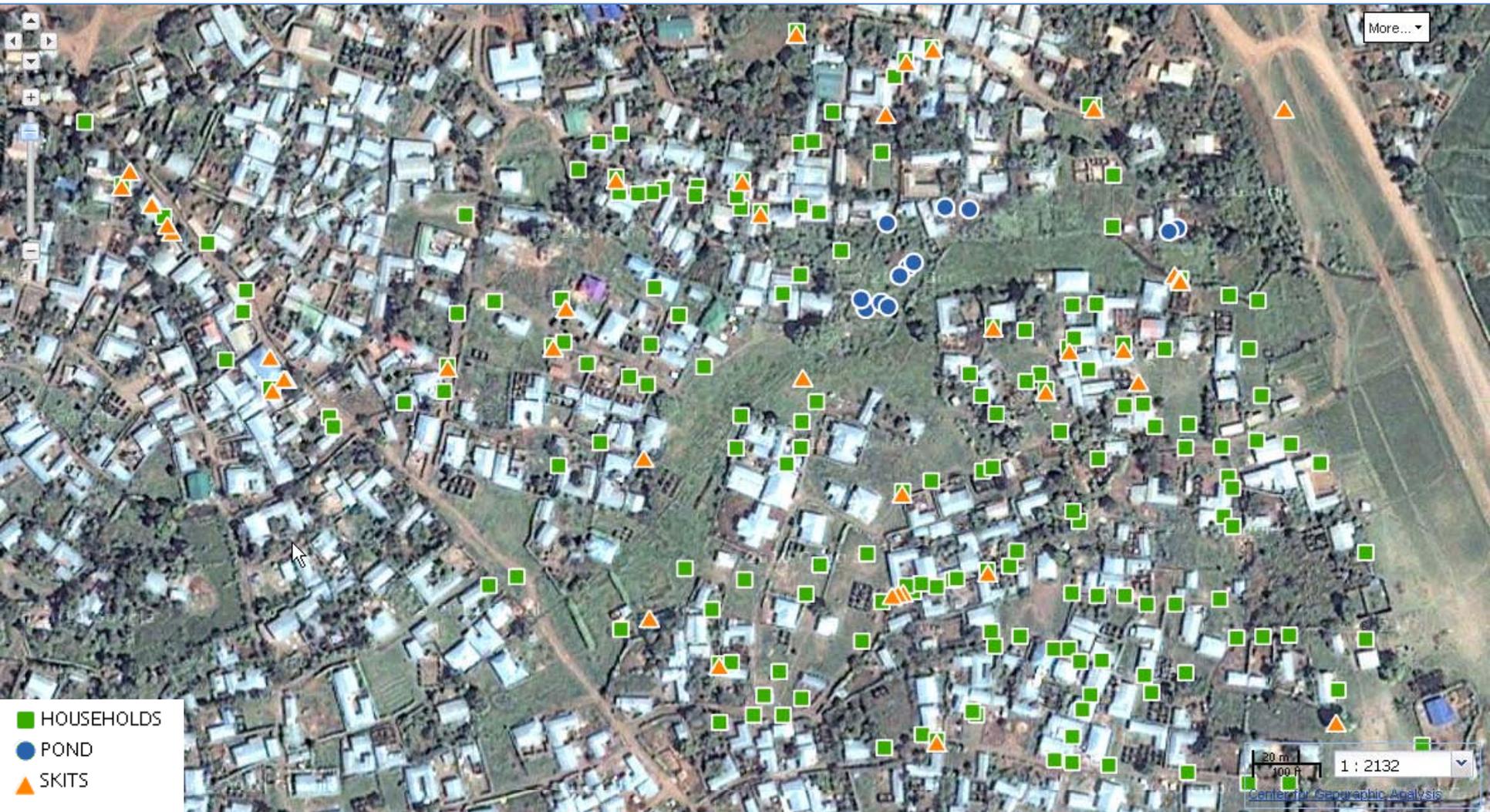
Young Citizens do public education and mobilization through skits of malaria microbiology and transmission



Household Visits for Education on Malaria Transmission and Environmental Management

Their skill in collecting GPS data, in combination with the GIS capacities of Africa Map, enables them to develop maps of the **households** where they provide scientific explanations and demonstrations of environmental management practices.

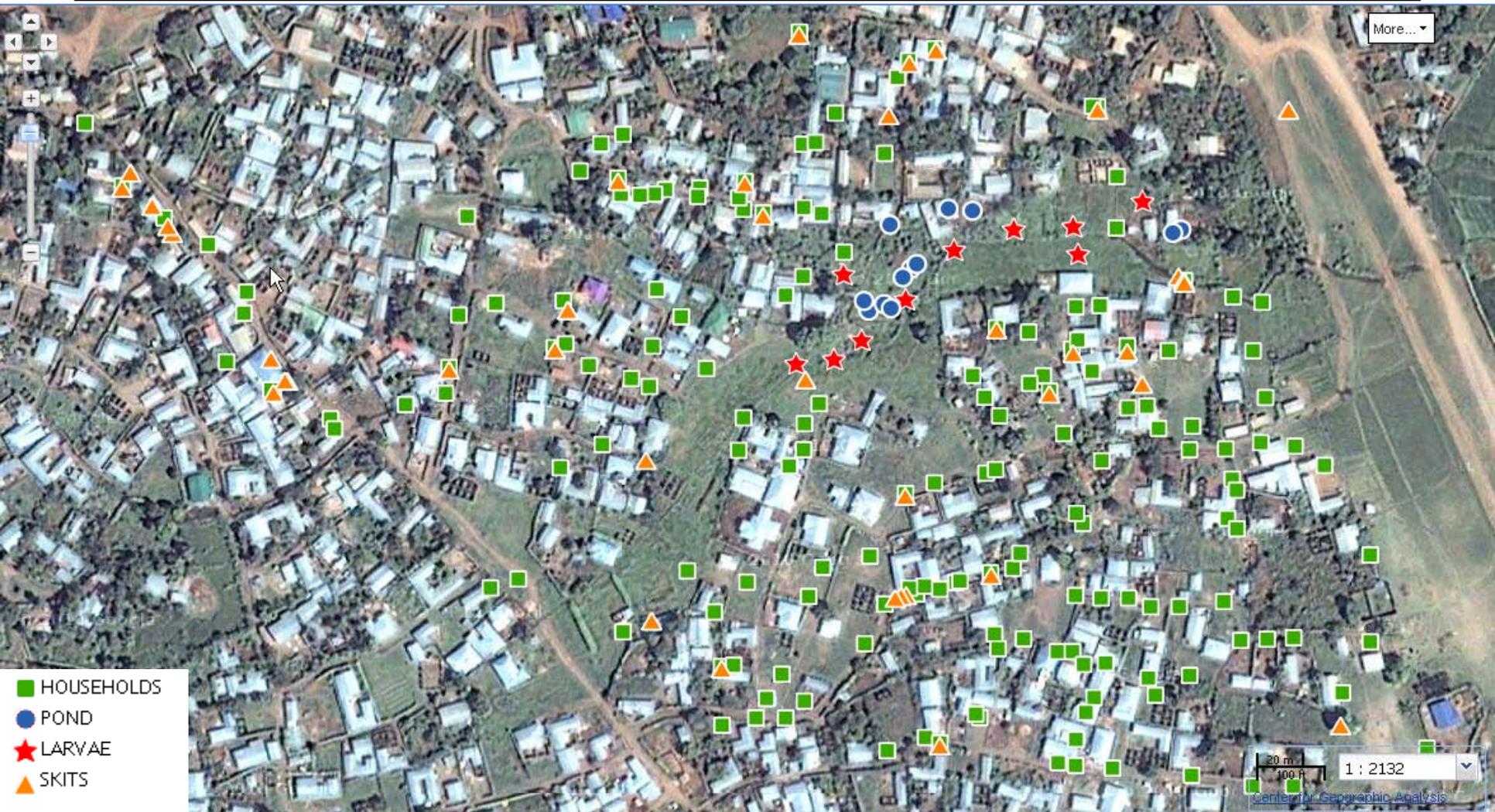
Young Citizens visit 100s of Households with Malaria Information and Larvae Demonstrations



Malaria Control

Spatial data is key to the next phase of this work on the effectiveness of the community education and mobilization around transmission and environmental management of malaria in urban and rural areas of Northern Tanzania

Summary of biocontrol ponds, community skits, household visits and *Anopheles* larvae located



Moshi Team

**CHASE Staff--Juma Tety, John Mmbando,
Benward Joseph, Hendry Mhando
and *Pasua relini* Young Citizens**

Special Thanks

Rohan Lewis

Ben Lewis