CHALLENGES FROM THE FIELD:
WORKING WITH CASE-STUDIES IN RESEARCH
AND EDUCATION

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Malaria control among small-scale gold miners in the Suriname Amazon region

Since the late 1990’s, small-scale gold mining has boomed in the Suriname Amazon region. At present an estimated 20,000 persons may be mining for gold and a similar number of people are providing auxiliary services such as cooking, sex work, transportation etc. Most gold miners and mining service providers are Brazilian migrants. Many of them do not have legal residency in Suriname, and gold mining activities mostly occur without having the proper papers; that is, they are illegal by law – though not actively persecuted by the national government.
Where is Suriname?

Small-scale gold mining takes places in the eastern part of Suriname (incl. the border region with French Guiana) and around the lake.
Small-scale gold mining (SSGM) promotes the spread of malaria in the Amazon region because SSGM typically occurs in isolated regions with poor access to health services. Because of the poor access to health services, people use Over The Counter (OTC) medication. Gold miners who are clandestinely in the country may not visit a health post out of fear to be arrested.

SSGM creates large puddles with standing water that are excellent breeding places for mal. mosquitoes. Gold miners are mobile populations.

Favorable climate (hot and humid)
In recent years, Ministry of Health efforts have succeeded in the virtual elimination of malaria from interior Indigenous and tribal communities by:

- Distribution of free insecticide treated bed nets
- Spraying of houses
- Education and awareness
- Introduction of the rapid-test

However, as long as malaria proliferates in small-scale gold mining areas, these areas continue to be point sources of malaria transmission and malaria will not be eradicated in Suriname.
Malaria control in small-scale gold mining areas is particularly challenging because:

- Professional health workers do not want to be stationed in gold mining areas because of the rough and basic living conditions (no drinking water, no electricity).
- Also, because gold miners are mobile populations, establishing fixed health posts does not make sense.
- Gold miners travel in and between countries.
- There are no roads leading into the Suriname interior. Travel to and in the mining areas is extremely expensive; by plane, boat and ATV. Rental of an ATV may cost about 400 USD/day.
- Most gold miners are Brazilians; they do not speak Suriname’s national language.
- National media (radio, TV) cannot be received in the interior; but many gold miners have satellite dishes to receive Brazilian channels.
- Most gold miners have a low level of formal education and may be poorly informed about malaria causes, symptoms, and treatment.
YOUR JOB DESCRIPTION:

• You are hired as a consultant by the Government of Suriname Ministry of Health to design a malaria control program specifically designed for small-scale gold mining areas.

• Design a malaria control program that takes into account the specific conditions in small scale gold mining areas (see previous slide).

• Involve and engage small-scale gold mining communities in the design and implementation of a malaria control strategy.

• Generate reliable baseline data that can be used to monitor program impact.

• You have 6 months to implement a pilot program and another 18 months to have a malaria program in place, starting March of 2014.

• You have (limited) financial and technical conditions to implement the program, including two health workers, a malaria lab in the capital city, boats and other needed equipment.
PARTICIPATORY MONITORING OF FISHERIES BY INDIGENOUS PEOPLES IMPACTED BY THE BELO MONTE DAM IN BRAZIL

BACKGROUND:
Belo Monte Dam
• Third biggest dam in the world, under construction in the Xingu River in the Brazilian Amazon (Altamira-Pará State).
• Private-public partnership (Norte Energia Consortium).
• Controversial, social conflicts, several social and environmental impacts, poor consultation with indigenous communities, 12 indigenous lands impacted.
• Conditionings for the dam operation license include establishment of compensation and mitigation procedures among impacted communities, among other actions (Basic Environmental Plan).
Muratu village
THE JURUNA OF THE XINGU BIG BEND

• TI Paquiçamba in the “Xingu Big Bend”: Juruna indigenous people, three villages, to be directly impacted by the dam (downriver).
• Villages: Paquiçamba – 80 people; Furo Seco 29 people— and Muratu 64 people.
• Juruna indigenous people: mixed with other indigenous and non-indigenous, loss of indigenous language, adopted non-indigenous cultural practices and schools. Half of the population is adept of Evangelic religion. Young people are literate.
• Historically, main income source has been fishing – both commercial and ornamental fishing. Fish is also very important for subsistence and diet.
• There are already signs of overfishing in the region: sharp increase in the number of commercial fishermen in the area, with poor control of the governmental agencies.

Photos: Lalo de Almeida
THE JURUNA OF THE XINGU BIG BEND

• The Juruna are engaged in a process of cultural revitalization, through contact with the Juruna that migrated to Mato Grosso (Xingu Park) in the beginning of 20th century – who they have recently visited and established contact.
• They are overwhelmed with meetings, promises, programs, agents and activities. They have a “full schedule”.
• They are getting used to get paid to participate in activities.
• They are unfamiliar with the team responsible for implementing the PBA and the program for participatory monitoring of fishing and hunting.
THE JURUNA OF THE XINGU BIG BEND

• **Time is tight**: no good baseline data exist from the Environmental Impact Assessment, and the dam might be closed by April-May of 2015.

• **One of the villages (Muratu)** has been developing a paid monitoring system through an NGO and graduate student from UFPA since 2013, whose advisor don’t want to be involved in the official PBA monitoring program.

• Monitoring might allow them to understand and quantify changes in their subsistence and commercial fishing, and might be used to negotiate further compensation and mitigation actions with the dam consortium.

• People fish different fish species along the year: subsistence, commercial and ornamental fishing should be monitored.

• There are two main seasons important to fish and fishing: dry season or summer - May to September and rainy season or “winter” – October to April.
YOUR JOB DESCRIPTION:

- You are hired as a consultant by the company working for Norte Energia to train technicians and help to implement mitigation procedures among indigenous communities directly affected by the dam.

- Your main job is to design a participatory monitoring program of subsistence, commercial and ornamental fishing involving the three villages of the TI Paquiçamba.

- Involve and engage technicians and communities in the process.

- Generate reliable data that can be used for negotiating mitigation and compensation procedures with Norte Energia consortium.

- You have 16 months to implement the process, starting March of 2014.

- You have financial and technical conditions to implement the program, including two field technicians, boats and other needed equipment.
GROUP WORK
Malaria control among small-scale gold miners in the Suriname Amazon region
HOW IT IS HAPPENING IN THE “REAL WORLD”?  

Inhabitants of mining areas with a relatively stable post (e.g. shop and brothel owners) were trained in malaria testing and distribution of correct medication. These ‘Malaria Service Deliverers’ are both migrants and locals, and offer services without requesting an ID or other documents. The MSD also take blood samples on slides, which are sent to the capital city lab.

Information and awareness campaign, based on the results of the baseline study (see below), using:

- Posters (mostly images and little text), strategically placed in the mining areas
- Awareness DVD in Portuguese and Sranantongo (local Creole language), which has been shown in central locations (e.g. Brazilian churches, bars).
- Discussion sessions with groups of gold miners after showing the video.
- One on one distribution of information, e.g. during ACD campaigns.
HOW IT IS HAPPENING IN THE “REAL WORLD”?

Active Case Detection trips: malaria testing with 100% of miners and mining service providers in specific areas, in order to detect hidden cases of malaria. Portuguese speaking staff from the malaria lab in Paramaribo test and –if necessary-treat people, and give information about malaria.

Distribution of free insecticide treated bed nets to gold miners, regardless of their nationality or legal status. The bed nets are suitable for both hammocks and beds.

Some miners use the bed nets to protect plants against animals and the sun.
HOW IT IS HAPPENING IN THE “REAL WORLD”?

A baseline study and two follow-up monitoring studies have been conducted at initiation of the project, and at 2-3 year intervals. Data collection combined survey interviews with inhabitants of mining areas, qualitative interviews with health professionals and malaria service deliverers, focus groups and observations (e.g. of medication sold in stores). Malaria tests were also offered. Gold miners in different mining regions were interviewed, ensuring that both migrant miners and local miners were part of the sample.

Data of subsequent years suggests that knowledge of malaria has improved, but this has not translated in ‘more responsible’ malaria behavior. People continue to sleep without bed nets and self-medicate.
PARTICIPATORY MONITORING OF FISHERIES BY INDIGENOUS PEOPLES IMPACTED BY THE BELO MONTE DAM IN BRAZIL
HOW IT IS HAPPENING IN THE “REAL WORLD”:

• Participatory monitoring should be considered “a process” that does not necessarily start or stop within the lifetime of this project.

• Participatory monitoring should be part of a broader plan for territorial management among the impacted indigenous populations.

• Program has involved:

1) Training of consultancy firm technicians and team on participatory research and participatory monitoring (on-line learning modules).

2) Conduction of semi-structured interviews in each household – separately with the man and the woman – to establish rapport, produce socio-economic profile, and understand the diversity of peoples knowledge, opinions and activities related to fishing. Already carried out, to be repeated in dry season.

2) Meeting with communities to explain what is participatory monitoring and how they might participate (use of visual tools).
3) Establishment of an accompanied and non-supervised process of monitoring based on each household.

4) Implementation of a training/capacity building program for indigenous monitoring agents. This will involve classes in the school and practical experience conducting the accompanied monitoring process. Participants will be trained on:

- Technical aspects of monitoring
- Indigenous knowledge on fish species biology and ecology
- Scientific knowledge on fish species biology and ecology
- GPS and mapping
- Computer classes
- Math, tables and graphs
- Technical writing and reporting

5) Monitoring agents will be from different households and chosen by the community. They will receive a scholarship to participate in the program.

6) Accompanied monitoring activities will happen every month during 5 days in each village, totaling 15 days every month for the whole indigenous land (240 days).
7) In addition to the accompanied monitoring, households are encouraged to develop their daily monitoring and are receiving a booklet to register their fishing and hunting activities.

Information/data to be collected:

**Quantity and quality**

- Timetable activity for the household
- Fishing: who went fishing? Commercial, ornamental, food?
- Where (map)?
- For how long?
- Equipment used
- Number of fish caught
- Species/local names
- Size and weight
- Price sold
- Photo
- Other info
Monitoring “Kit” – communities are interested in producing field guides and educational books about their fish and game.
What are the main characteristics of a case-study?

- Focus on contemporary phenomenon within “real-life context”.
- Investigator has little/limited control over events.
- Exploratory, descriptive or explanatory (cause-effect).
There are two main applications of Case-studies in academia:

1) **Use of Case-studies for teaching and education**—e.g. National Center for Case Study Teaching in Science. Use of real life “stories” to teach critical thinking and problem solving. The purpose is to establish a framework for discussion, debate and for working on concepts with students.

2) **Case-studies as a research strategy**—popularized in social sciences, concerned with rigorous methods and fair presentation of evidence or empirical data.
Case-studies in Education:

...“Case studies show the messy, get-the-hands-dirty approach that is “real” science. They demand flexibility, skepticism and the ability to see alternative approaches (Herreid, 2012:24).”

They enable learning from concrete facts and experience. They enable “experiential learning” and discovery.

Start with a story or background of the context, or with an experience (field based).

Present a problem to be solved by students.

Students work to reflect and devise solutions.

You present real world solutions and theoretical and methodological background.

Students learn complex concepts through stories and real life facts, enhancing problem-solving and learning skills.

Kolb, 1984
Case-studies in Research:

- Might be used in exploratory and/or explanatory research.
- Might be used in inductive OR deductive reasoning – i.e. theory is developed from case-studies and/or theory is tested through case-studies.
- One might use a single or multiple case-studies (comparative methods) to analyze.
- Multiple case-studies may be preferred over single-case designs. Expands generalizability of findings, contrasts, produces more robust argumentation (Yin 2003).
- They do not always need to include direct observations as source of evidence.
- Case-studies might include quantitative and/or qualitative evidence and methods. E.g. historical research can include great amounts of quantitative evidence.
Five components of research design in case-studies. Adapted from Yin (2003).
## Judging the Quality of Case-study Research Design

### Table II: Case study tactics for four design tests

<table>
<thead>
<tr>
<th>Tests</th>
<th>Case study tactic</th>
<th>Phase of research in which tactic occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construct validity</td>
<td>Use multiple sources of evidence</td>
<td>Data collection</td>
</tr>
<tr>
<td></td>
<td>Establish chain of evidence</td>
<td>Data collection</td>
</tr>
<tr>
<td></td>
<td>Have key informant review draft case study report</td>
<td>Composition</td>
</tr>
<tr>
<td>Internal validity</td>
<td>Do pattern-matching</td>
<td>Data analysis</td>
</tr>
<tr>
<td></td>
<td>Do explanation building</td>
<td>Data analysis</td>
</tr>
<tr>
<td></td>
<td>Do time-series analysis</td>
<td>Data analysis</td>
</tr>
<tr>
<td>External validity</td>
<td>Use replication logic in multiple case studies</td>
<td>Research design</td>
</tr>
<tr>
<td>Reliability</td>
<td>Use case study protocol</td>
<td>Data collection</td>
</tr>
<tr>
<td></td>
<td>Develop case study database</td>
<td>Data collection</td>
</tr>
</tbody>
</table>

Source: Yin (1994)
Construct validity: establishing adequate operational measures for the concepts being studied.

Internal validity (for explanatory or causal studies): establishing a causal relationship.

External validity: establishing the domain to which a study’s finding can be generalized.

Reliability: demonstrating that the operations of a study – e.g. data collection procedures – might be repeated, with the same results.
REFERENCES AND RESOURCES

Books and papers:


Websites:

National Center for Case Study Teaching in Science: [http://sciencecases.lib.buffalo.edu/cs/](http://sciencecases.lib.buffalo.edu/cs/)

Cases Online: [http://www.cse.emory.edu/cases/](http://www.cse.emory.edu/cases/)
THANK YOU!