

Short Communication

Burning to fish: local explanations for wetland burning in Lac Alaotra, Madagascar

Jamieson A. Copsey, Julia P.G. Jones, Herizo Andrianandrasana, Lala Hasina Rajaonarison and John E. Fa

Appendix 1 Profiles of the 27 people interviewed (see text for further details).

Sex	Age/age class (yr)	Occupation	Born in Anororo/immigrant
Female	50+	Artisan	Born in Anororo
Female	50+	Fish collector	Born in Anororo
Male	50+	Rice cultivator/fisher	Born in Anororo
Male	50+	Rice cultivator	Immigrant
Male	50+	Rice cultivator/shop keeper	Immigrant
Male	50+	Rice cultivator/processor/fish seller	Immigrant
Male	40–50	Rice cultivator/shop keeper	Unknown
Male	40–50	Rice cultivator	Immigrant
Male	30–40	Carpenter/fisher	Immigrant
Male	25	Butcher	Immigrant
Male	70+	Rice cultivator/fisher	Born in Anororo
Male	50+	Rice cultivator	Born in Anororo
Male	50+	Rice cultivator/fisher	Born in Anororo
Male	50+	Rice cultivator/fisher	Born in Anororo
Male	50+	Fisher	Born in Anororo
Male	50+	Rice cultivator	Born in Anororo
Male	50+	Rice cultivator/fisher	Born in Anororo
Male	40–50	Rice cultivator/fisher/fish trader	Born in Anororo
Male	40–50	Rice cultivator	Born in Anororo
Male	40–50	Fisher	Born in Anororo
Male	40–50	Rice cultivator	Born in Anororo
Male	30–40	Fisher	Born in Anororo
Male	30–40	Rice cultivator	Born in Anororo
Husband & wife	20–30	Shop keepers	Born in Anororo
Male	25	Fisher	Born in Anororo
Male	19	Fisher	Born in Anororo
Male	18	Fisher	Born in Anororo

Appendix 2 Questionnaire

Introduction

I am conducting a study to better understand the role of the marsh in meeting the needs of the people of Anororo. I am doing this investigation with University College London where I am studying at the moment. I would like to make clear that all personal information you are able to give me is completely confidential and no names will be recorded in the final piece of work.

Do I have your permission to interview you on this subject?

Yes No

Do I have your permission to record the interview?

Yes No

Section 1 Personal details

1. Could you tell me how old you are? ____

[If not possible then ask for age range (15–20, 21–25, 26–30, etc.) or if not this then whether or not they were alive during particular points in time (before independence/the first republic/the second republic)]

2. How much of the time do you live in this house?

< 1 month each yr 1–3 months each yr
4–6 months each yr 7–10 months each yr
> 11 months each yr All yr

[If 10 months or less each year ask for details of where they stay for the rest of the time]

3. Are you married?

Yes No

4. How many children have you had? ____ children

[If they have children ask for their ages]

5. How many children live with you now? ____ children

[If different to Q4 then ask for explanation. What happened to the other children?]

6. How many other people live in this house with you at the moment? ____

[If 0 then go to Section 2. If 1 or more ask them to explain how these people are related and their ages]

Section 2 Residency in village

7. What tribe do you belong to and what makes you part of this tribe?

8. Where you born in Anororo?

Yes No

[If yes go to Q9. If no ask for details on where they were born and when and why they came to Anororo. Then go to Section 3]

9. Were your parents born in Anororo?

Yes No

[If yes go to Q10. If no ask for details on where the parents came from and when and why they moved to Anororo. Then go to Section 3]

10. Were your grandparents born in Anororo?

Yes No

[If yes ask further details on number of generations that can be traced back in Anororo and then go to Section 3. If no ask for details on where the grandparents came from and then go to Section 3]

Section 3 Work details

11. Which of these occupations describes you the best:

I am a fisher I am a rice cultivator
I am an artisan I am a shop keeper
I work for other people on their fields
I work for other people as a fisher None of these

[If none of these then ask for explanation to establish how they describe how they make a living]

Section 4 This section is designed to establish the physical wealth status of the household

12. Do you own any land yourself?

Yes I used to own land No never

[If Yes then go to Table A1 for more details. If 'used to...' then ask why they don't have land any more]

13. Does your family own any more land?

Yes They used to own land No never

[If Yes then go to Table A1 for more details. If 'they used to own land' ask why they don't any more]

14. Do you rent any land from someone else?

Yes I used to rent land No never

[If Yes then go to Table A1 for more details. If 'used to rent land' ask why they don't any more]

15. Do you use someone else's land and give them some of the harvested crop?

Yes I used to do this No never

[If Yes then go to Table A1 for more details. If 'used to do this' then ask why they don't any more]

Section 5 Material wealth

16. Do you own any of the following equipment?

Number owned

Tractor _____
 Motorised rotavator _____
 Plough _____
 Spade _____

17. Do you own any of the following equipment?

No. owned

Size

Fishing net _____ (longest in m)
Types
 Pour jette _____ (largest in m)
 Pour deux personne _____ (longest in m)
 Pour laisse dormir dans le lac _____ (longest in m)
 Fish traps _____ (biggest in m)
Types of trap
 Vovo _____ (biggest in m)
 Tandroho _____ (biggest in m)
 Other _____ (biggest in m)
 Fishing cane _____ (longest in m)
 Pirogue _____ (longest in m)

18. Do you use any other techniques for catching fish in the marsh? Give details

19. Do you know of any other techniques that other people use to catch fish in the marsh? Give details

19. How many livestock do you own?

Number

Cows (male + female) _____
 Pigs _____
 Sheep _____
 Geese _____
 Chickens _____
 Other _____

20. How many of these animals did you sell last year?

Number

Cows (female) _____
 Cows (male) _____
 Pigs _____
 Sheep _____
 Goats _____
 Geese _____
 Chickens _____
 Other _____

21. Do you own any of the following?

	Number owned
Car	___
Truck	___
Bicycle	___
Television	___
Radio	___

Section 6 Economic wealth

[ONLY ASK QUESTION 22 IF PERSON IS WILLING TO TALK ABOUT THEIR INCOME]

22. How much money did you make from selling the following last year?

	Amount (MFG/Ar)
Sale of rice	___
Sale of maize	___
Sale of other crops	___
Sale of fish	___
Sale of cows (male & female)	___
Sale of pigs	___
Sale of goats	___
Sale of geese	___
Sale of textiles (from reeds)	___
Other _____	___

23. How much fish did you sell in the last 7 days?

___ kg/bucket

24. How much did you sell this fish for?

___ Ar/MFG

25. Is this amount a normal amount of fish for you to catch for this month?

Yes No

[If No then ask why. What would the normal amount be per day for this month of the year?]

26. How much money did you make from working for other people last year?

___ Ar/ MFG

27. How much money has your household spent on buying the following items in the last month?

[CHECK FIRST THAT THE PERSON CAN ANSWER THIS QUESTION. IS THERE SOMEONE WHO COULD ANSWER THE QUESTION BETTER? E.G. THE WIFE?]

Amount spent (Ar/MFG)	
Rice	___
Sugar	___
Salt	___
Coffee	___
Candles	___
Beef	___
Pork	___
Chicken	___
Vegetables	___
Batteries	___
Alcohol	___
Tobacco	___
Medicines	___
Other _____	___

28. How much money did you spend on the following occasions last year

	Amount (Ar/MFG)
Famadihana	___
Circumcision	___
Marriage	___

Section 7 Human wealth

29. How many years did you spend at school? ___

30. What was your highest level of education?
 Primary Secondary University None
31. What level of schooling are your children getting at the moment?
 Number of children Level
 _____ Not at school (ages ____)
 _____ Primary school
 _____ Secondary school
 _____ University
32. Do you employ other people to work for you?
 Yes Sometimes No
[If Yes or Sometimes then ask the following]
 Number of domestic staff _____
 Number of farm workers (full-time) _____
 Number of farm workers (part-time) _____
 Other _____ _____

Section 8 Perceptions of conservation

33. We would like to understand how important the marsh is to people living in Anororo. In your view what is the most important value of the marsh? Why?
34. Could you put the following list of what the marsh provides in order of importance to you and your family?
 Order (1= most imp)
- | | |
|-------------------------------------|-------|
| New land for farming | _____ |
| Fish for feeding the family | _____ |
| Fish to sell | _____ |
| Home for wildlife | _____ |
| Building material | _____ |
| Material for making artisanal items | _____ |
| Stops lake drying up | _____ |
35. In your view why do you think that the marsh continues to be burnt?
36. In your opinion what do you think are the most important reasons for burning the marsh? Could you put the following list in order of most likely reasons, in your opinion?
 Order (1= most likely)
- | | |
|---|-------|
| To make new fishing areas | _____ |
| To make new farming land | _____ |
| To make new grazing land | _____ |
| To control problem plants | _____ |
| To hunt gentle lemurs | _____ |
| Accidental fires | _____ |
| To catch snakeheads | _____ |
| To demonstrate against national political decisions | _____ |
| To demonstrate against local political decisions | _____ |

Thank you very much for helping us with this study. Is there anything else you would like to say?

Thank you again. It is very kind of you to help us. We hope that this study will also be able to help you in some way in the future.

Table A1 Agricultural land use

Question	Land area owned	Land area rented from someone else	Land area rented to someone else or provided for a crop share	Land area farmed with proportion of harvested crop given to owner
Area in 2007	___ ha/acre	___ ha/acre	___ ha/acre	___ ha/acre
Proximity of closest land to village	___ km/min from house	___ km/min from house	___ km/min from house	___ km/min from house
Proximity of furthest land from village	___ km/min from house	___ km/min from house	___ km/min from house	___ km/min from house
Amount of change in 2006	___ ha/acre bought ___ ha/acre sold	___ ha/acre increase ___ ha/acre decrease	___ ha/acre increase ___ ha/acre decrease	___ ha/acre increase ___ ha/acre decrease
Amount of change in 2005	___ ha/acre bought ___ ha/acre sold	___ ha/acre increase ___ ha/acre decrease	___ ha/acre increase ___ ha/acre decrease	___ ha/acre increase ___ ha/acre decrease
Amount of change in 2004	___ ha/acre bought ___ ha/acre sold	___ ha/acre increase ___ ha/acre decrease	___ ha/acre increase ___ ha/acre decrease	___ ha/acre increase ___ ha/acre decrease
Amount of change in 2003	___ ha/acre bought ___ ha/acre sold	___ ha/acre increase ___ ha/acre decrease	___ ha/acre increase ___ ha/acre decrease	___ ha/acre increase ___ ha/acre decrease
Amount of change in 2002	___ ha/acre bought ___ ha/acre sold	___ ha/acre increase ___ ha/acre decrease	___ ha/acre increase ___ ha/acre decrease	___ ha/acre increase ___ ha/acre decrease
Total rice harvest (in t or kg) in 2006 and amount sold	___ t/kg total ___ t/kg for sale	___ t/kg total ___ t/kg for sale	___ t/kg total ___ t/kg for sale	___ t/kg total ___ t/kg to land owner ___ t/kg for sale

Appendix 3 Sample quotes from semi-structured interview transcripts.

Explanations given for the wetland burning (each quote from different informant)

So next to the *zetra* it is more humid during the dry season so the *fibata* look for holes and there is a small house of *fibata* in the *zetra*.

So the people light a fire to reveal the fish resting underneath, the *fibata*, that live in the *zetra*.

They make the *doro zetra* to facilitate fishing, because the *fibata* hides in the marsh. They burn the *zetra* to make a space to fish with their hands.

They burn the *zetra* and the next day they return to catch the fish.

So it's during the dry season when the *zetra* is dry and the fire can travel quickly that they do that [the *doro zetra*] for hunting and for catching *fibata*...

There wasn't a political reason for the *doro zetra* at the end of 2006...they continued to do the *doro zetra* because the rain didn't arrive, so the lake was dry and they could continue to burn the *zetra* to catch the *fibata*.

Translations

<i>Zetra</i>	Malagasy for the wetland vegetation
<i>Fibata</i>	Malagasy for Asian snakehead <i>Channa maculata</i>
<i>Doro zetra</i>	Malagasy for wetland burning