An aerial photograph of a mountainous landscape in the Cape Verde Islands. The terrain is rugged and arid, with brown and tan hues. A prominent mountain peak is visible in the center, surrounded by smaller hills and valleys. In the distance, a small town or village is nestled in a valley, with buildings and roads visible. The sky is a clear, pale blue with some light clouds. The overall scene is a vast, open landscape with significant elevation changes.

Fasciolosis epidemiology and prospects for its control at Cape Verde Islands

F. Rosa, M.V. Crespo, M. Simões, I.C. Évora, E. Moreira, M.L. Ferreira

An aerial photograph of a valley with a river winding through it. The valley floor is covered with green vegetation, while the surrounding hillsides are mostly brown and rocky. In the distance, there are blue mountains under a clear sky. The word 'OBJECTIVES' is written in large, green, serif font across the top of the image.

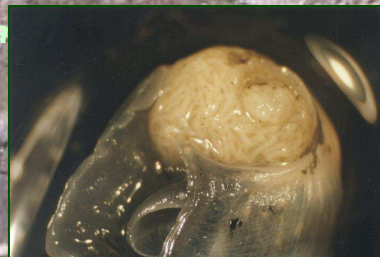
OBJECTIVES

UPDATE DATA ON THE EPIDEMIOLOGY OF FASCIOLIASIS AND PROPOSE SOME CONTROL MEASURES IN CAPE VERDE ISLANDS

ISSUES



- Identification of *Lymnaea natalensis* habitats;
- Snail density;
- Habitats characteristics.



- Intramollusc *Fasciola gigantica* prevalence;



Abattoir of Praia.

- Pathological findings in natural infected cattle



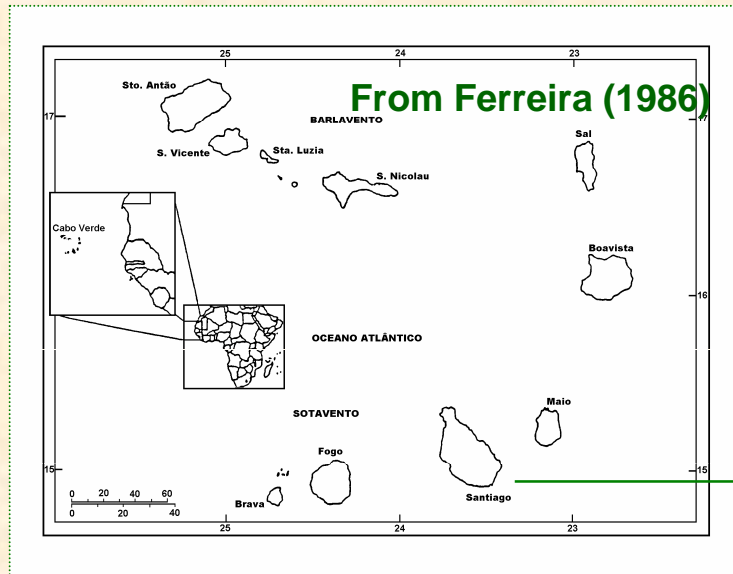
- *Fasciola gigantica* prevalence in cattle slaughtered and in faeces from domestic animals.



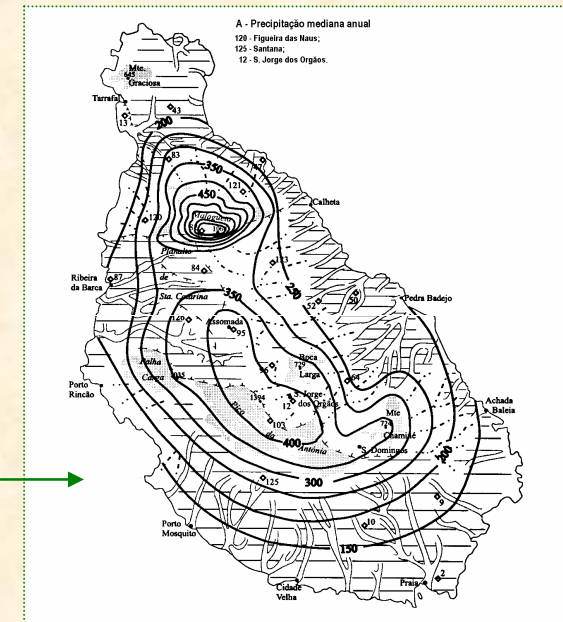
- Manmade structures.

Natural Characteristics

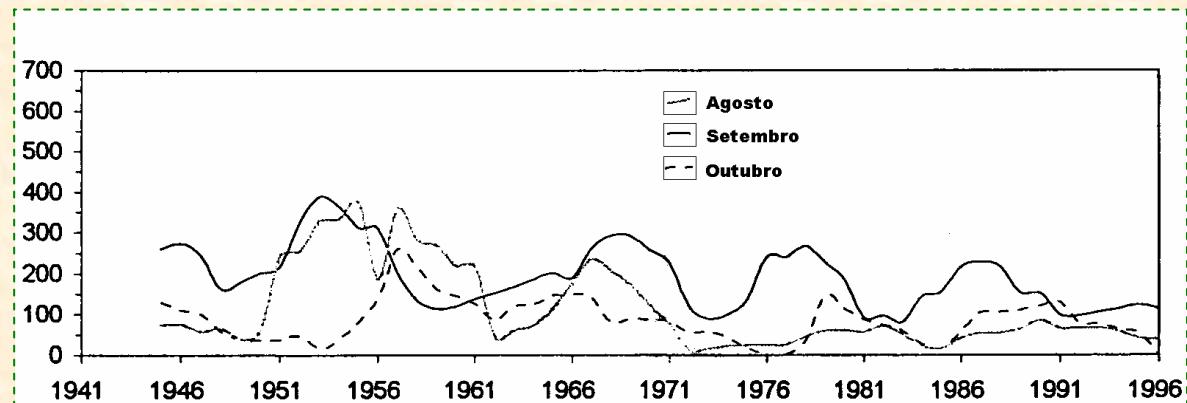
Geographic localization



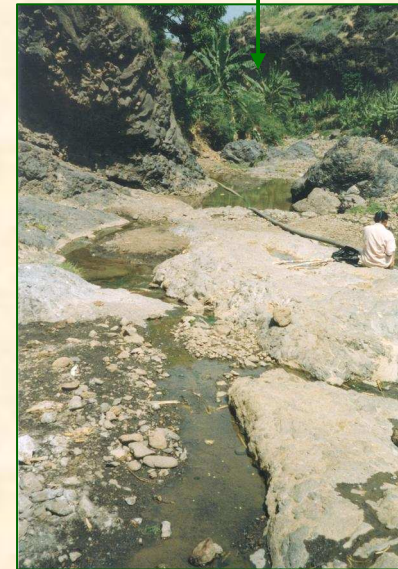
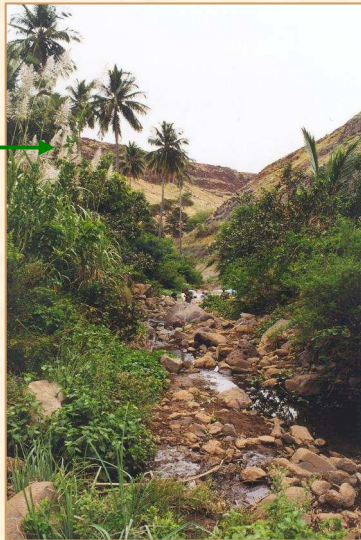
Climate



Rainfall Decrease



Geomorphology and hydrogeology (Santiago Island)



Lymnaea natalensis

and Fasciola gigantica distribution in Santiago Island



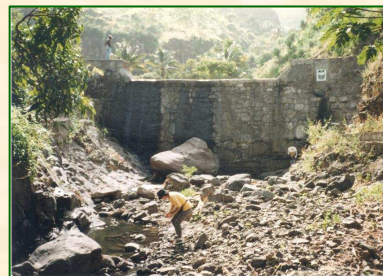
Natural

12 (60,00%)



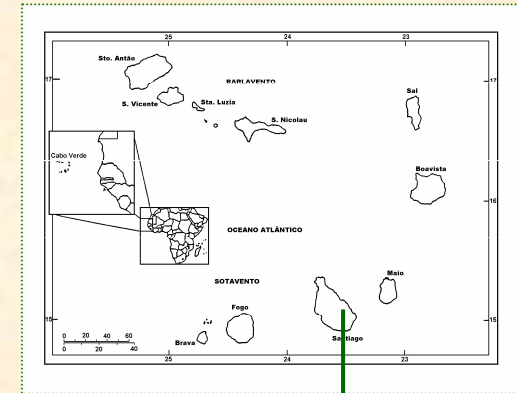
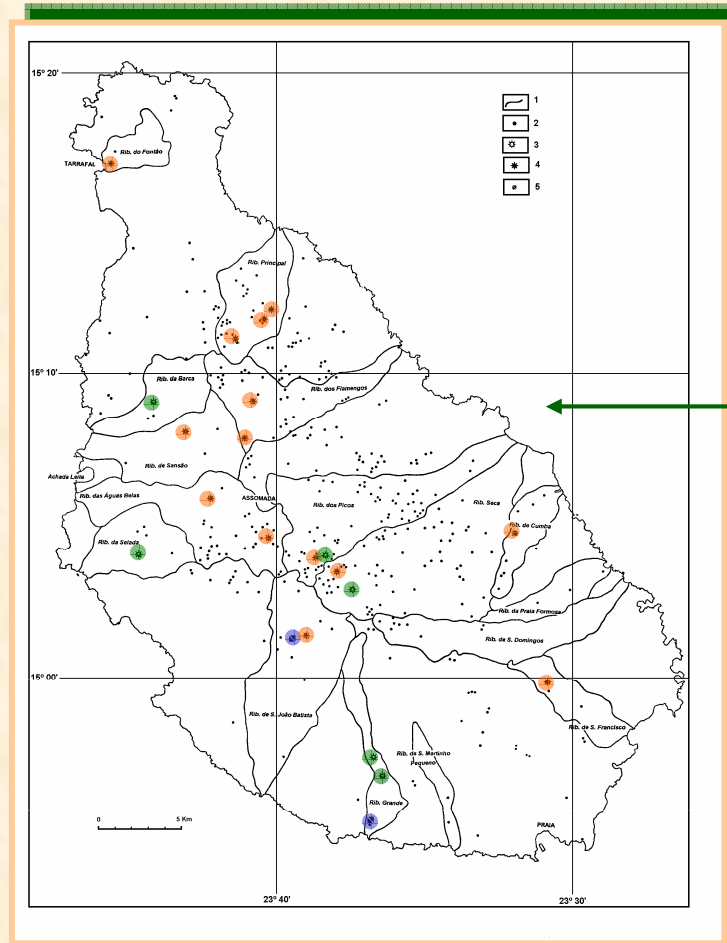
Anthropic

4 (20,00%)



Natural/Anthropic

4 (20,00%)



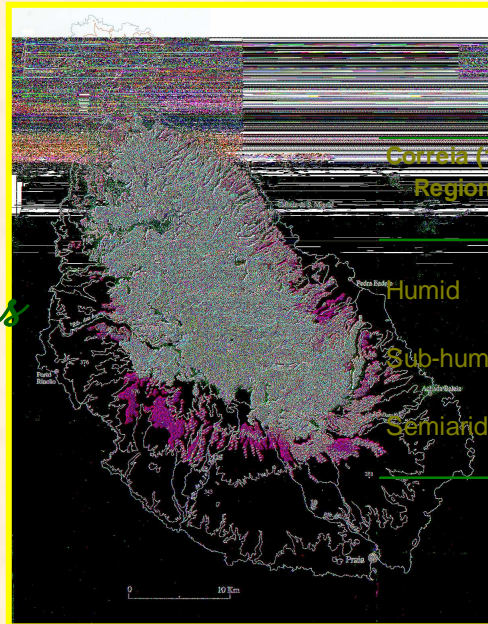
- *Lymnaea natalensis* habitats
- *L. natalensis*/*Fasciola gigantica*
- Extinct habitats

HABITATS CHARACTERISTICS

Calcium and bicarbonate concentrations in water

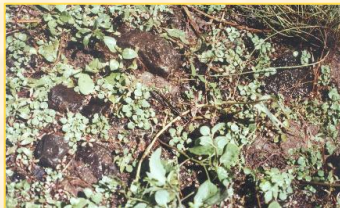
Habitats	Water Hardness					TOTAL	%
	Soft	Medium	%	Hard	%		
<i>Bulinus forskalii</i>	0	3	16,67	3	16,67	6	33,33
<i>Lymnaea natalensis</i>	0	9	50,00	6	33,33	15	83,33
TOTAL	0	10	55,56	8	44,44	21	

Climatic conditions



Correia (1998b), from SCET AGRI (1981)

Regions	Alise Exposition	Altitude (average, m)	Freshwater snail habitats in Santiago			Habitats	
			average	maximum	minimum	nº	%
Humid	Favourable	500-900; 200-500	327,88	450,00	165,00	8	33,33
Sub-humid	Favourable	900-1800; 500-1200	268,00	370,00	190,00	5	20,83
Semi-arid	Favourable	150-300; 500-1200	134,55	490,00	10,00	11	45,83



Nasturtium aquaticum



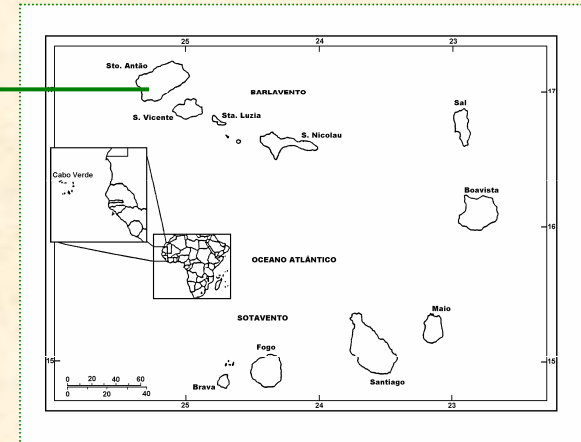
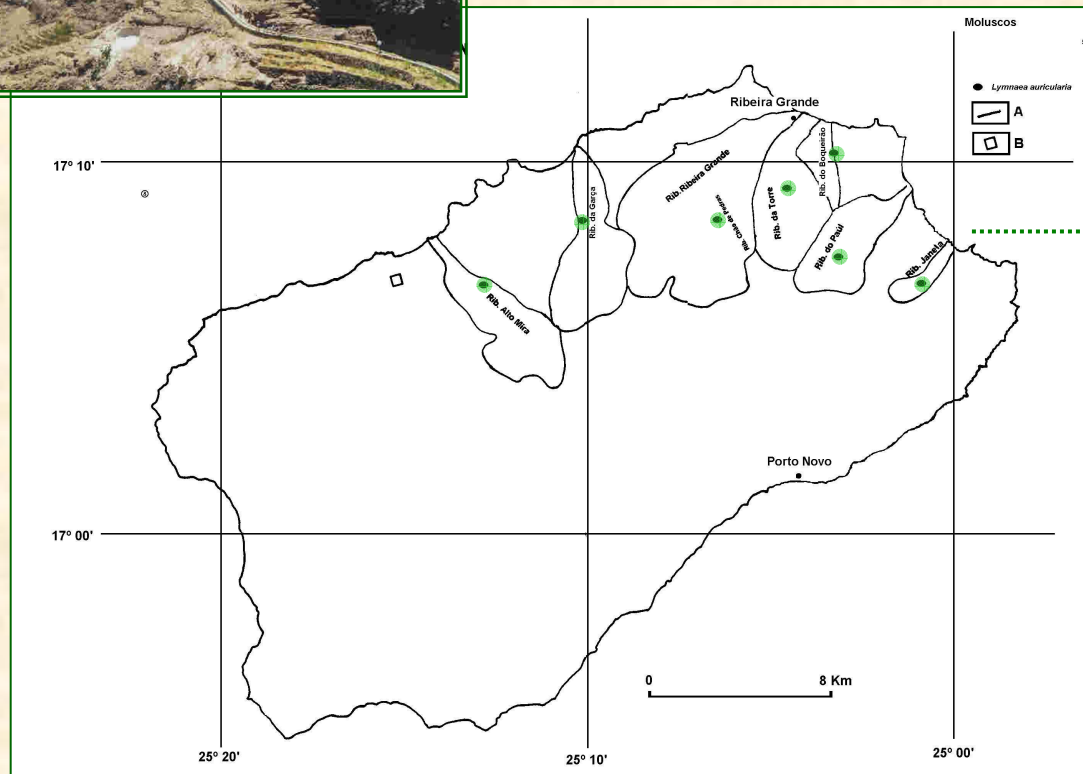
Lemna minor

Flora



Polygonum salicifolium

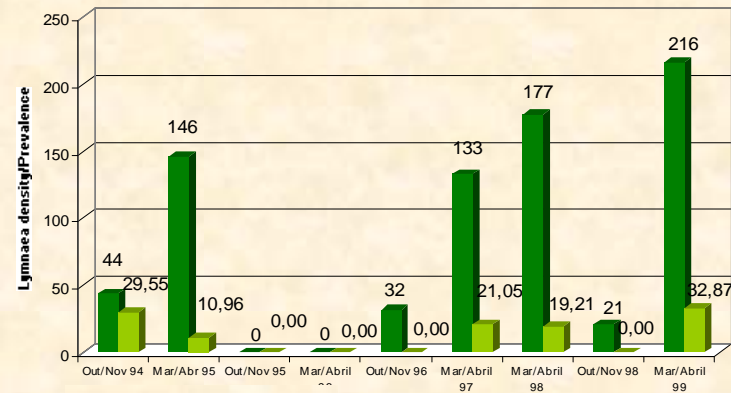
Others Islands



Lymnaea auricularia habitats in Sto. Antão Island (1999)

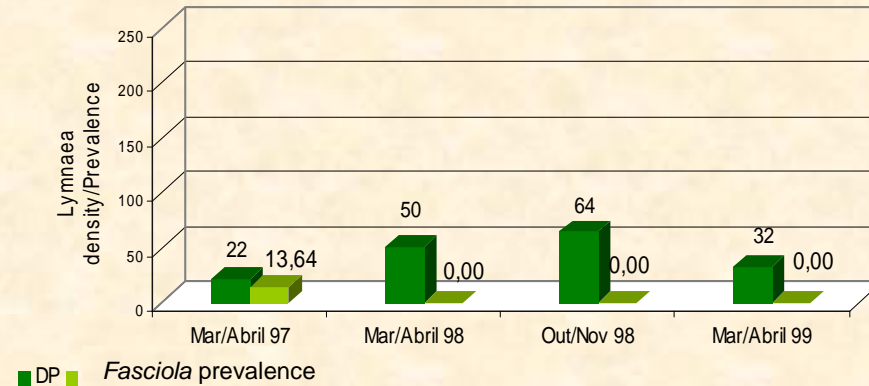
Lymnaea natalensis infection

Lymnaea natalensis density/Fasciola gigantica prevalence in the intermediate host



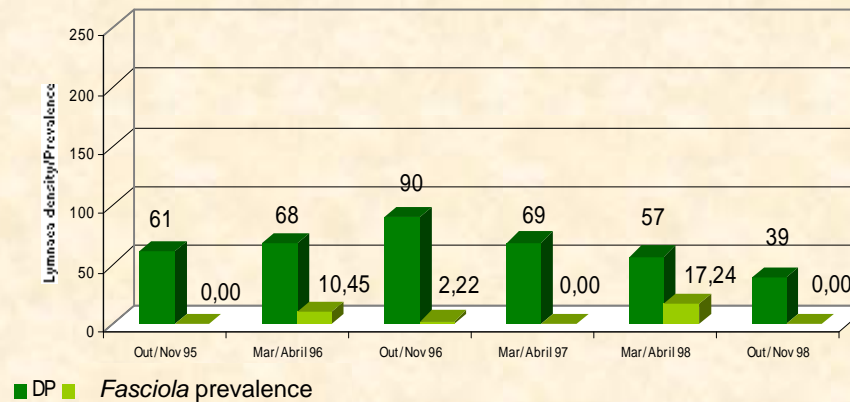
■ DP ■ Fasciola prevalence

Natural (Ribeira de Vale Cachopo)



■ DP ■ Fasciola prevalence

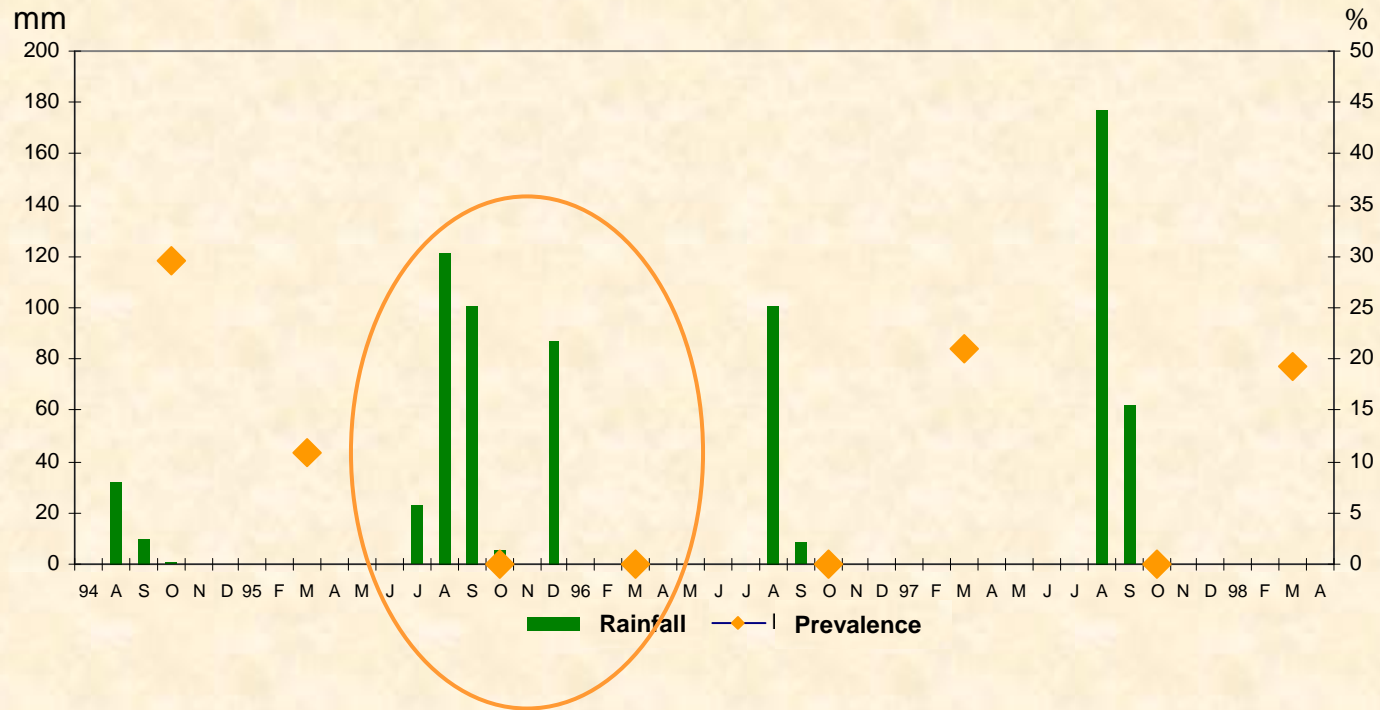
Anthropic (Chão Bom)



■ DP ■ Fasciola prevalence

Natural/Anthropic (Ribeira do Tabugal)

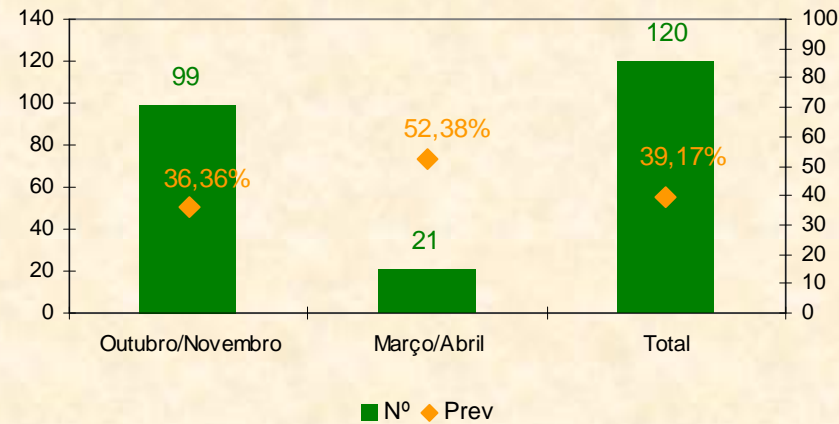
Rainfall/Prevalence



Rainfall and prevalence in Ribeira de Vale Cachopo

Fasciola gigantica infection in the vertebrate host

Fasciola gigantica prevalence in cattle slaughtered



Helminths egg output in faeces collected in the habitats of snails

	Nº	<i>Fasciola</i> sp	%	<i>Schistosoma</i> sp.	%	GIN	%
Cattle	174	31	17,82	48	27,59	43	24,71
Goat	24	0	0,00	2	8,33	4	16,67
Donkey	14	2	14,29	1	7,14	9	64,29
TOTAL	212	33	15,57	51	24,06	56	26,42

DH and IH Prevalence

Habitats

Animals in risk and prevalence in Santiago Island (1994-1999)

Region	Habitats Dominant type	Animals in risk					Prevalence (%)	
		swine	goats	sheep	cattle	horses/donkeys	HI	HD
Tarrafal	Anthropic	1562	2461	936	789	140	1,8	28,77
Sta. Catarina	Natural	1813	1922	416	1018	391	3,08	11,2
Sta Cruz	Natural	2679	3388	156	1405	37	13,56	5,05
Praia	Natural/Anthropic	465	669	55	109	78	0,8	21,28
TOTAL Animals in risk		6519	8440	1563	3321	996	6,15	20,17
%		14,81	15,13	19,46	20,01	12,61	Total Prev (average)	

IH – Intermediate host, *Lymnaea natalensis*; DH– Definitive host

DH and IH Prevalence

Studied years

Relationship between *Fasciola gigantica* prevalence in cattle¹ and in *Lymnaea natalensis*² during 1994 and 1998 (%)

Year	DH Prev	IH Prev
1994	19,28	?
1995	28,6	7,61
1996	18,82	2,23
1997	15,74	8,63
1998	16,91	? 5,76

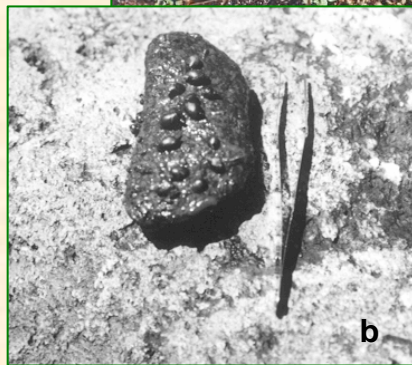
1- Data from official services (DGASP, 1994-1998);

2 - Data from present study

Transmission



Drinking behaviour



Nasturtium sp. and
Lymnaea natalensis



Floating metacercariae

Control measures

Artificial drinking areas



Ribeira de Cumba

Changes in the superficial water flow



Ribeira do Mangue



Ribeira do Pico da Antónia



Ribeira de Pico Leão



Ribeira das Furnas

Final Remarks

Animals in risk: 3,73% cattle;

3,93% goat;

1,20% sheep;

Infection prevalence:

IH – 18,23%;

DH – 6,67%/ 47,67%;

Pathological findings in cattle.

Decrease in animal production

Man ??

Increase the relevance of Schistosomiasis

In Santiago Island

Ribeira de Cumba, 1997