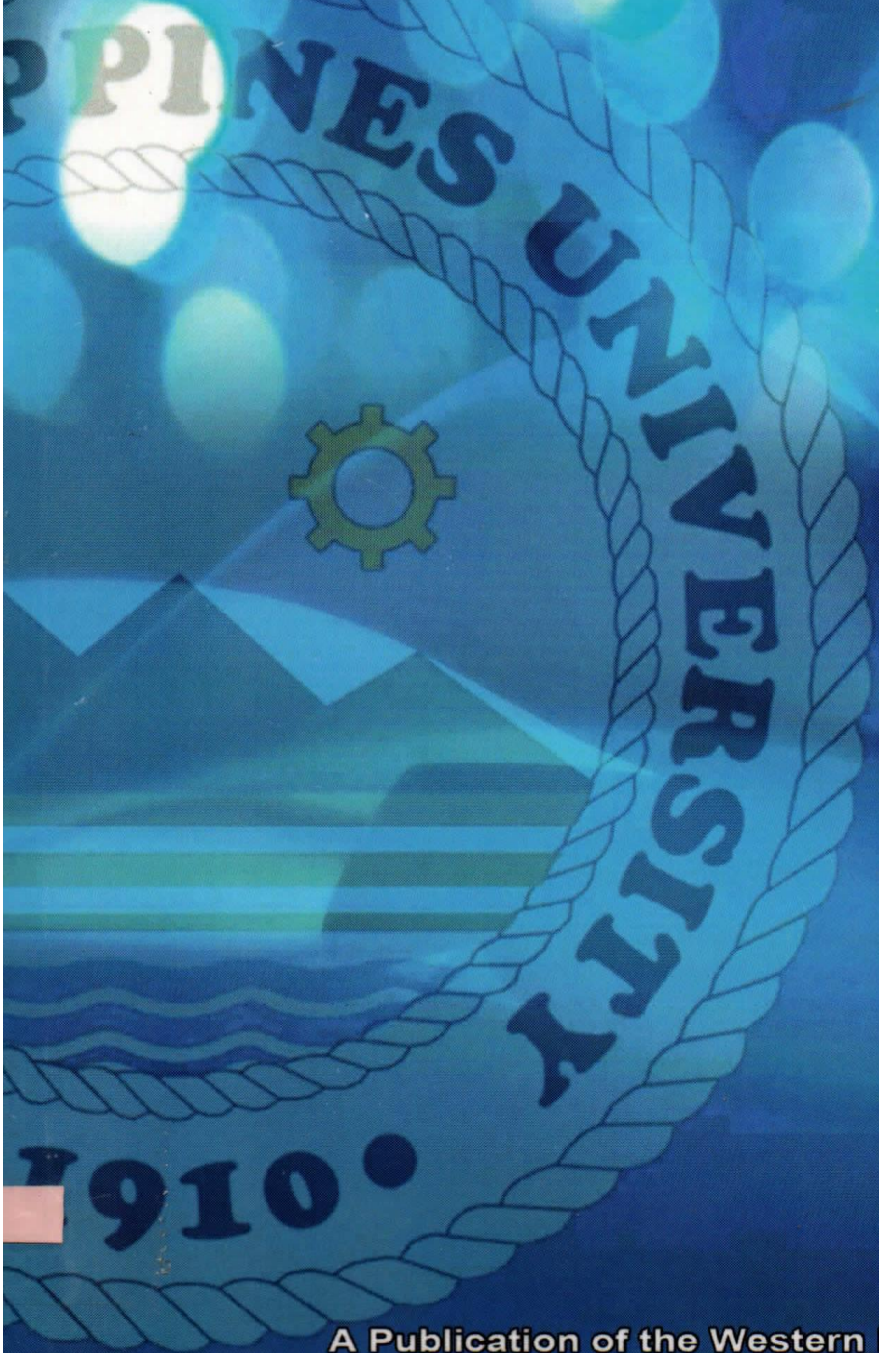
ISSN 1656-4707

The Palawan Scientist

Volume 5 Number 1

July 2011



A Publication of the Western Philippines University
Aborlan, Palawan

The Palawan Scientist

July 2011 Vol. 5, No. 1

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The Palawan Scientist
Vol.5, No. 1 pp. 32-39, 2011

ISSN No. 1656-4707

Occurence of Liverfluke (*Fasciola spp.*) Infestation on Slaughtered Cattle of Brooke's Point, Puerto Princesa City, Rio Tuba, and Sofronio Española, Palawan Abattoirs

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ABSTRACT

Cattle slaughtered at the different abattoirs of Palawan were sampled and examined for presence of liverflukes. The percentage of slaughtered cattle infested with liverflukes and the degree of infestation were also determined. The abattoirs that served as source of slaughtered cattle were the following: Brooke's Point (from September to October 2006); Puerto Princesa City (from February to March 2006), Rio Tuba (from November to December 2006) and Sofronio Española (from January to March 2008).

All cattle at the holding pens of various abattoirs were subjected to ante-mortem inspection while their livers were subjected to post-mortem examinations.

Results showed that of the 211 cattle examined, 6.64 % were infested with the worms. 93.36 % are free from liverflukes. Nine out of 14 (64.3%) and 5 (35.7%) cattle infected with liverflukes came from Sofronio Española and Brooke's Point, respectively.

Keywords: liverfluke, ante-mortem inspection, post-mortem examination

INTRODUCTION

Ruminant health is greatly affected by internal parasites. Parasitic disease is usually treacherous, oftentimes with a combination of several parasites such as liverflukes and stomach round worms. Infestations of these parasites coupled with a lack of nutrition of its host aggravates the disease. Even a mild infection is enough to trigger off a disease manifestation (The Philippine Recommends for Beef Cattle Production, 1999).

Liverflukes are flatworms of the genus *Fasciola*. They live in the bile ducts of ruminants and cause extensive damage to the liver. They appear worldwide and can produce serious and often fatal problems to their ruminant hosts. These problems include anemia, abdominal dropsy, unthriftiness, reduction in milk production among dairy animals, emaciation and jaundice.

To complicate this matter, the common liverfluke of cattle, *Fasciola hepatica* has a bizzare life cycle (Muirson, 1990). The cattle ingests grass with an encysted stage of the fluke present. After the cattle eats this contaminated grass, the juvenile flukes "burrow" through the lining of the intestine, escape into the peritoneal cavity (the inside of the abdomen) and migrate to the liver. The flukes bore their way into the liver and over the next six weeks or more, make their way to the interior of the liver and finally to the bile ducts where they begin to lay eggs. The fluke eggs are shed into the manure of the cattle. These eggs hatch and make their way to fresh water snail, which they infect and undergo additional development. They eventually emerge from the snail as young flukes and encyst on blades of grass. When cattle ingest them, their life cycle is completed. It will be possible to conclude then, that liverflukes can be easily contracted. Liverfluke is a very common disease of cattle. In the Philippines, this disease occurs chiefly in cattle, carabaos, sheep and goats. It also affects man (Diaz and Dagoon, 1994).

Because of the possible occurrence of liverflukes in our locality, updated information about parasitism is necessary. A study on the occurrence of liverfluke will bring awareness to livestock raisers, market sector, even teachers and students of a locality, and the local government units (LGUs), which will definitely result to necessary action in addressing this problem and to prevention of possible widespread infestations to ruminants, including humans.

This study determined: 1) the presence of liverflukes in slaughtered cattle of the various mentioned abattoirs of Palawan; 2) the species of liverflukes that might have infested these slaughtered cattle; 3) the degree of infestation of the affected cattle; 4) the percentage of slaughtered cattle infested with liverflukes; and 5) the areas or possible areas in Palawan infested with liverflukes.

METHODOLOGY

Slaughtered cattle information

Physical examination of the cattle prior to slaughter was conducted. The animals waiting for the procedure at holding pens were also checked for signs of stress and physical disorder while in motion. The area of origin of the animals was also determined through the cattle owners.

Liverfluke infestation analysis procedure

Infestation of liverflukes was determined by post-mortem examination of the cattle liver: One, was by ocular inspection, particularly taking into consideration *the weight, color, texture and the presence of abnormalities or spots called milk* spots; and, two, was by a procedure enumerated herein: 1) the liver was placed in a chopping board, and was cut into fine slices with a sharp knife; 2) after a cut was made, pressure was applied to the liver to squeeze out the flukes. Then, each piece of the liver was wiped off gently to collect the displaced flukes before making the next cut; 3) when the whole liver organ was sliced, all flesh were placed in a tray and submerged in water; 4) the pieces of liver were removed from the water and were squeezed again; 5) the water with the flukes was poured into a sieve and the collected parasites were washed until cleaned; 6) flukes collected were poured into a petri dish and were counted; 7) when a large number of immature flukes were *present, the dilution technique was implemented in counting the parasites; and 8)* collected liverflukes were preserved in a vial with preservative.

Identification of liverfluke species

The morphology of the shoulders of liverflukes is a distinguishing characteristic to determine the two common fluke species: *Fasciola hepatica* have shoulders that vary up to 12mm in width (mature) and are pale brown in color, while *Fasciola gigantica* have shoulders that vary up to 8mm in width (mature) and are grayish in color.

Degree of liverfluke infestation

The degree of infestation was determined using the criteria set and approved by the Research Committee of the College of Agriculture (SY:2005-2006) as a parameter for data analysis by the student researcher.

Number of liverfluke collected	Degree of infestation	Equivalent rate
1-3	Slightly infested	+
4-6	Moderately infested	++
7 and above	Highly infested	+++

Data analysis and interpretation

Data gathered were tabulated and analyzed. Percentage and frequency counts were employed in data analysis.

Data Gathered

The data gathered were: 1) age, weight and place of origin of the cattle; 2) health status of the cattle (physical conditions, whether healthy or emaciated); 3) weight, texture and color (including the absence or the presence of milkspots) of the cattle livers; 4) presence of liverfluke; and 5) degree of liverfluke infestation and the percent of animals affected with liverflukes.

Permission Protocol

Formal written requests for permit were facilitated from the concerned personnel prior to the conduct of the study.

RESULTS AND DISCUSSION

Slaughtered cattle information

Table 1 presents the physical cattle information, seventy-seven and seventy-five percent (77.25 %) of the slaughtered cattle fall under the age range of 0-3 years old. A smaller percentage (18.01%) fall under 6 year-old range; 2.84 % fall under the 7-9 year-old range; and 1.9 % under the 10-12 year-old range.

Most of the slaughtered cattle fall under the first two weight categories: 38.86 % and 36.97 %, under the 50-100 kg. and 101-150 kg. weight range, respectively. A considerable portion of 17.54 % fall under the 151-200 kg. weight range, and small percentages of 5.21 and 1.42 were under the 201-250 and 251-300 kg. weight range, respectively.

The biggest percentage of slaughtered cattle came from the municipality of Brooke's Point (41.23%), followed by Sofronio Española (23.22%) and lastly from Puerto Princesa City (19.43%). The rest of the municipal origins of the slaughtered cattle came in small percentages of 6.64 (Dumaran), 3.79 (Bataraza), 3.32 (Roxas), 0.95 (both from Aborlan and Araceli) and 0.47 (Rizal).

Table 1. Age, weight and origin of the slaughtered cattle

	Frequency (n=211)	Percentage (%)
Age (yr.)		
0 to 3	163	77.25
4 to 6	38	*18.01*
7 to 9	6	2.84
10 to 12	4	1.90
Weight (kg.)	--	--
50 to 100	82	38.86
101 to 150	78	36.97
151 to 200	37	17.54
201 to 250	11	5.21
251 to 300	3	1.42
Place of Origin	--	--
Aborlan	2	0.95
Araceli	2	0.95
Bataraza	8	3.79
Brooke's Point	87	41.23
Dumaran	14	6.64
Puerto Princesa City	41	19.43
Rizal	1	0.47
Roxas	7	3.32
Sofronio Española	49	23.22

Appearance of the liver

The weight and appearance of livers are presented in Table 2. Almost half of the livers of the slaughtered cattle weighed 2.0-2.9 kgs. About one-fourth of those fall under the 3.0-3.9 kg. weight range. A little above one sixth of those livers fall under the 4.0-4.9 kg. weight range, while smaller percentages of sample livers fall under the 1.0-1.9, 5.0-5.9, and 6.0 and above kg. weight range, with 8.06 %, 4.74 % and 0.95 %, respectively.

A huge percentage of this sample liver (94.31 %) was smooth while the remaining 5.69 % was rough.

More than 90 % of the sample liver appeared normal, with pinkish color and without liver milkspots, while only 9 % appeared pale and with milkspots. Milkspots are distinguishing characteristics of liverfluke infestations.

Table 2. Weight and appearance of the liver

Weight/Appearance	Frequency (n=211)	Percentage (%)
Weight (in kg.)		
1.0-1.9	17	8.06
2.0-2.9	90	42.65
3.0-3.9	56	26.54
4.0-4.9	36	17.06
5.0-5.9	10	4.74
6.0 and above	2	0.95
Texture		
Smooth	199	94.31
Rough	12	5.69
Color		
Pinkish (Without milkspots=normal)	192	91.0
Pale (With milkspots=infested liver)	19	9.0

Presence of Liverflukes in Slaughtered Cattle

Table 3 summarizes the presence of liverflukes in the slaughtered cattle. A small percentage of the cattle (6.64) were infested with flukes, while 93.36 % of the cattle were free from flukes.

Table 3. Frequency and percentage of cattle infested with liverflukes

	Frequency (n=211)	Percentage (%)
Positive	14	6.64
Negative	197	93.36
Total		100.00

Presence and Degree of Liverfluke Infestation

Table 4 shows the frequency and percentage of liverflukes collected from the livers and the corresponding degree of infestation calculated in the process. A large percentage of the liver sampled were free from liverflukes (93.36 %) while 0.47 %, 0.95 % and 5 % were slightly, moderately and highly infested, respectively. Identification procedures also revealed the prevalence of *Fasciola hepatica* and a few number of *Fasciola gigantica*.

Table 4. Presence of liverfluke and degree of infestation

Number of Liverfluke Collected	Frequency (n=211)	Percentage (%)
0	197	93.36
1-3	1	0.47
4-6	2	0.95
7 and above	11	5.21

Place of Origin of Liverfluke-infested Cattle

Table 5 shows the frequency and percentage of cattle infested with liverflukes and their place of municipal origin in Palawan.

Nine out of 14 (64.3%) cattle came from Sofronio Española. Five cattle (35.7%) came from Brooke's Point.

Table 5. Frequency and percentage of liverfluke-infested cattle and their places of origin

Place of Origin	Frequency (n=14)	Percentage (%)
Sofronio Española	9	64.3
Brooke's Point	5	35.7

CONCLUSION

The study showed that about 93 percent of all the slaughtered cattle at the different abattoirs of Brooke's Point (from September to October 2006), Puerto Princesa City (from February to March 2006), Rio Tuba (from November to December 2006), and Sofronio Española (from January to March 2008) are free from liverflukes and only 6.64 percent are infested with liverflukes.

Results also showed that the municipal places of origin of liverfluke-infested cattle were Sofronio Española and Brooke's Point, with 9 (64.3%) and 5 (35.7%), respectively.

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