

Attractiveness to baited traps by Diptera in forensic scenario: preliminary study

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Introduction

Forensic entomology, the science that studies insects and other arthropods as evidence in medical-legal investigations, is becoming increasingly important in Portugal. The creation of a national catalogue of forensically important Diptera is crucial to cover the gap in applied forensic entomology research in this country, providing, this way, valuable tools to crime scene technicians, homicide investigators, and medical examiners involved in the death investigation process [1,2].

The aim of this study was to study the effectiveness of several baits in catching sarcosarcophagous Diptera, identifying the first colonizers of carrion.

Methods

Four identical traps were set out during two periods, early spring and mid summer, in an urban environment in Lisbon. One trap was baited with pork beef, another with pork liver and a third one was baited with cat food, in order to study the effectiveness of each in attracting sarcosaprophagous Diptera. A fourth, unbaited, trap was used as a control. Each trap was rotated through four positions randomly selected. Four trials were made each lasting 24 hours after which the insects were collected and the baits replaced. Insects were identified to species level [3,4], whenever necessary. The differences in the quantity of specimens and in species diversity between baits and seasons were analyzed statistically.

References

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- [3] Szpila K (2009) Key for identification of European and Mediterranean blowflies (Diptera, Calliphoridae) of forensic importance, Nicolaus Copernicus University.
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Results

The control trap did not caught a single specimen. All other traps caught flies of forensic interest. Analyzing the factor bait, “pork beef” was, in all trials, the one that showed a higher number of specimens collected (Fig. 1). In the spring trial, “pork beef” was also the bait with the greatest diversity of species collected ($p \leq 0.05$) yet in the summer trial no significant differences were found in species diversity between baits ($p \leq 0.05$).

With regard to the season of the year, the greatest number in captures occurred in the summer. The Chi-squared test showed that the composition of the species caught in spring and in summer was significantly different ($p \leq 0.05$) (Fig. 2). *Calliphora vicina* was the predominant species in all trials and baits of the early spring period being *Musca domestica* and *Lucilia sericata* the predominant species in mid summer trials (Table 1).

Fig. 1
Distribution of captures using bait traps

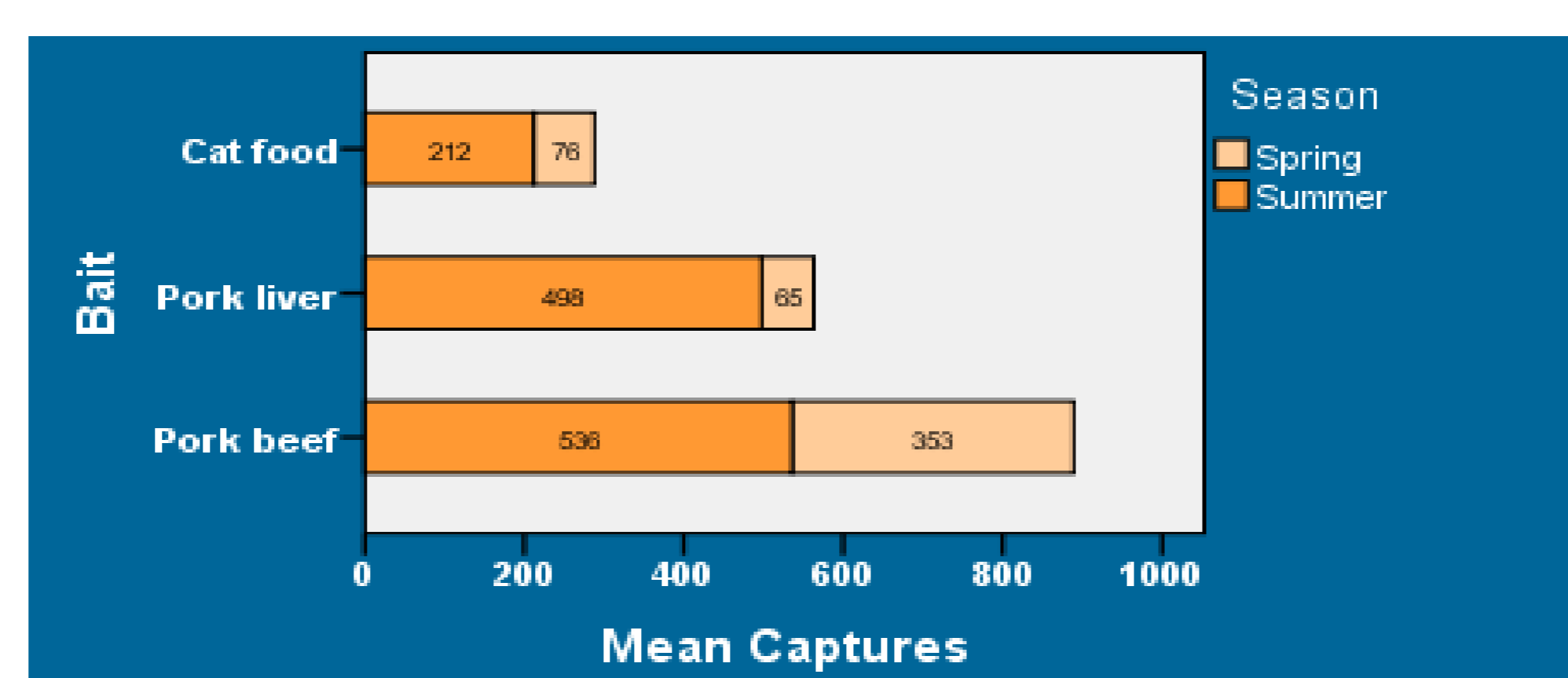
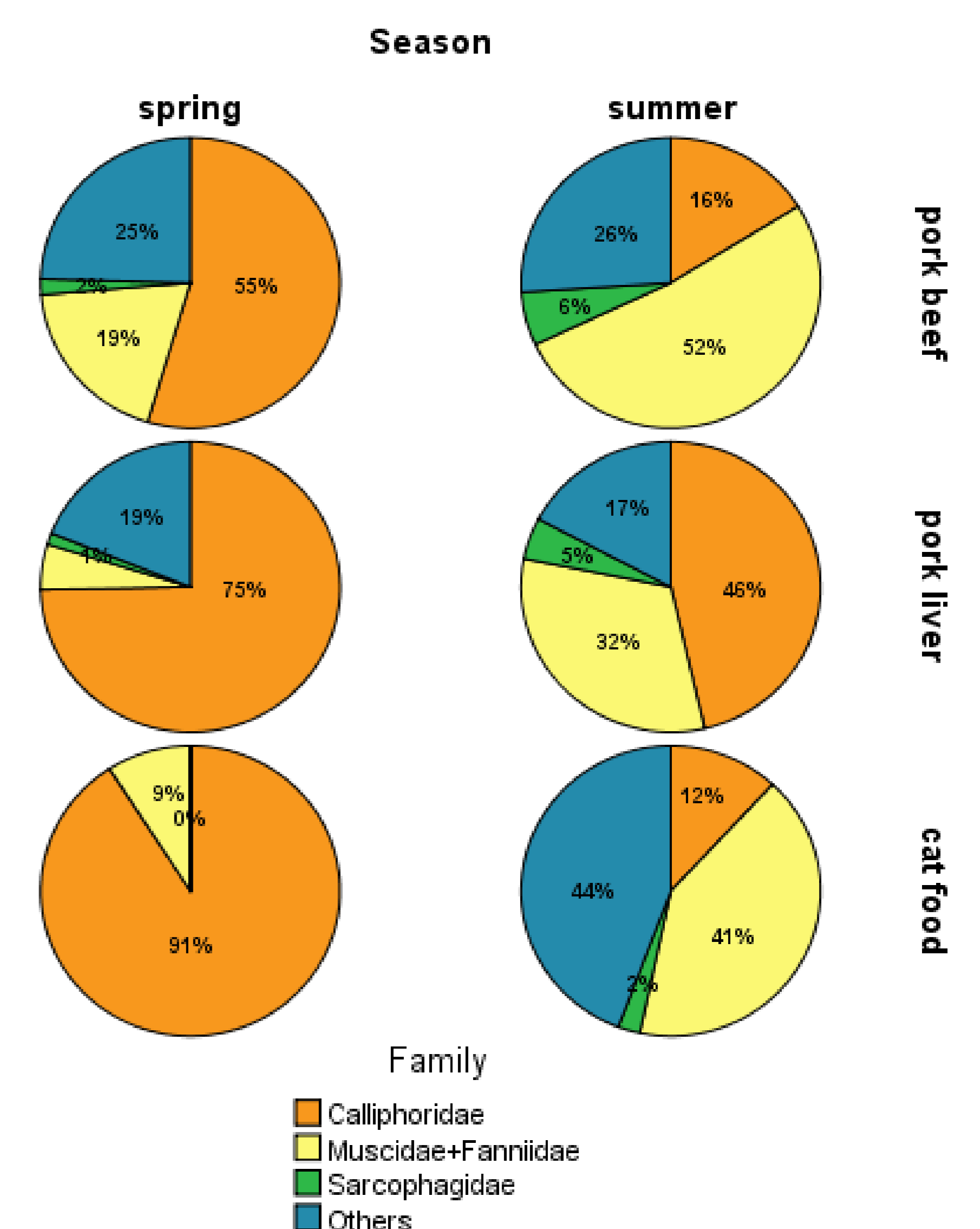


Table 1
Seasonal capture distributions of the most representative species.

Species	Spring		Summer	
	N	%	N	%
<i>Calliphora vicina</i>	244	88.4%	11	1.6%
<i>Chrysomya albiceps</i>	0		78	11.3%
<i>Lucilia sericata</i>	8	2.9%	197	28.6%
<i>Lucilia ampullacea</i>	3	1.1%	36	5.2%
<i>Musca domestica</i>	0		267	38.8%
<i>Hydrotaea ignava</i>	21	7.6%	99	14.4%
Total number	276		688	

Fig. 2
Relative abundance of Dipteran families collected in each season and bait.



Conclusions

There is a positive relationship between temperature increase and a high number of specimens and species collected since it was in the summer trial, when the temperatures are higher that we collected the greatest number of specimens and species.

The lure of pork beef, showed a greater attractiveness efficiency of forensic interest Diptera. There was a seasonal distribution of the most predominant species collected. *Calliphora vicina* showed a preference for lower temperatures and *Lucilia sericata* and *Musca domestica* for high temperatures.

This study has also expanded the catalogue of sarcosaprophagous dipteran species in Portugal with the first record of *Melinda veridicyanea*.