

44th Rencontres Internationales d'Archéologie et d'Histoire de Nice Côte d'Azur

Dung, manure and guano: garbage or brown gold?

*Status, use and management of animal dung since prehistoric times;
archaeological and paleoenvironmental potential*

15-17 October 2024 – Nice

- 1st circular and call for proposals -

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Manure, slurry, droppings, dung... In modern, urbanized societies, these words conjure up disgusting and rather unpleasant waste whose presence is considered incongruous, except during occasional stays in the countryside...

Yet, many people live in contact with these products of the pastoral economy, and dung was still part of city dwellers' daily lives before the advent of motor vehicles! What's more, animal dung is not simply a by-product of livestock farming, but often a product in its own right, which can be transformed, valorized, recycled and marketed.

At a time when petrochemical inputs must be limited, animal dung is regaining its place as an essential component of agropastoral systems, but it also has other uses. While manure heaps and slurry pits are often hidden away in places little frequented by our hygienic societies, other populations find in dung and manure a raw material

whose plastic, insulating, combustible and even aesthetic properties can be put to good use. The excrement of domestic animals, but also of certain wild species, is even a precious ingredient in certain pharmacopoeias.

In the field of bioarchaeology, fossil dung or coprolites - of which macro- and microscopic traces remain - are a mine of information on past environments and lifestyles. As objects of study, coprogenic sediments benefit from the constant refinement of analytical methods derived from the natural and physical-chemical sciences, enabling us to better define their composition, nature, origin and use. More generally, the analysis of animal dejection provides environmental and climatic data of underestimated value.

Between nuisance and resource, health hazard and remedy, pollution and fertilizer, garbage and brown gold, animal dung has given rise to paradoxical representations, rich symbolism and frequent conflicts.

The 44th *Rencontres Internationales d'Archéologie et d'Histoire de Nice Côte d'Azur* will explore different aspects of the use and management of these materials, the risks and inconveniences they generate, but also the fertility they engender, through six themes:

1/ From the sheepfold to the field: dung and slurry in agropastoral systems

Keywords: farming, domestication, agriculture, manuring, fodder, grazing, landuse, trade

Animal dejecta is the corollary of any livestock-raising system, and recent data (notably isotope data) show that agropastoral populations very early on took advantage of what is much more than a by-product to improve or maintain the productivity of their fields.

Controlling the flow of matter (carbon, nitrogen) and energy is a key aspect of agropastoral systems. If the fields can provide fodder or supplementary rations to complement - or even replace - grazing, the animals in turn produce the manure that guarantees abundant, long-lasting harvests. Since the 1980s, archaeological material from "off site" surveys, interpreted as the remains of manure spreading, has made it possible to reconstruct the extent and spatio-temporal variations of amended areas. Bioarchaeological data and the use of increasingly sophisticated analytical methods enable us to reconstitute the links between fields and sheepfolds, stables or barns, and thus to better understand the organization and complexity of the agropastoral system as a whole: territorial management, resource exploitation, seasonality of activities, specialization of production...

Animal manure is a highly coveted raw material, not only for its ability to amend poor or infertile soils, but also for its capacity to increase and maintain crop productivity and quality, thus helping to improve animal and human nutrition and generate surpluses. In some societies, these advantages have elevated organic fertilizers to the status of a commercial product, on a par with fodder and other animal products such as milk, meat and wool.

2/ Manure heaps and slurry pits: technical aspects of collecting, treating and recycling animal waste

Keywords: structures, storage, *chaînes opératoires*

The exploitation of dung and other animal excrements, from their acquisition to their use, generates a whole series of activities and practices whose material traces are generally tenuous, often neglected and little studied by archaeologists. Textual and ethnographic testimonies provide valuable information on these practices, but they only apply to recent periods and specific cultural contexts. However, approaches developed in bioarchaeology and sedimentary micromorphology over the last few decades have enabled us to better characterize the function of certain sites (caves, rock shelters) or structures (enclosures, dedicated areas, pits) suspected of having been used for stabling or manure storage. These methodological advances open up new prospects for understanding how animal dung was collected, stored, disposed of or used in past societies.

3/ Human and animal health

Keywords: hygiene, prophylaxis, parasites, epidemics, zoonosis

Proximity to animals - domestic, commensal or wild - and their droppings poses a health risk to human populations. Nor is it without danger for the animals themselves. This session will look at the history of epidemics transmitted through contact with animal excrement, as well as the history of understanding their mechanisms and the strategies developed to avoid or contain them. The focus will be on epizootics and the impact of non-contagious pathologies contracted through contact with feces (parasitoses, infections) on the health status of human and animal populations, as well as their consequences on the socio-economic system over time.

4/ Waste as a raw material

Keywords: fuel, material, ingredients, construction, crafts, industry, pharmacopoeia

In regions with insufficient wood resources, herbivore dung is an abundant and easy-to-collect fuel, which is sometimes systematically recovered. In less constrained contexts, dung is often used as an auxiliary fuel or for specific technical functions. As well as being a source of energy, dung can enter the composition of various building materials (adobe, cob) or be used in the manufacture of objects (ceramics, paper). Dejections can also be used to improve or decorate objects (engobe, decoration), in technical processes where their chemical properties are used (tanning), or in cosmetic or medicinal recipes (Dreckapotheke). Waste thus becomes a raw material, sometimes highly sought-after.

5/ Perception and representation of animal feces

Keywords: texts, images, towns and countryside, odour, resource, waste, nuisance, pollution, conflicts, symbolism

Symbolizing Job's humility or promising wealth, incubating the eggs of the Basilisk or fermenting spontaneous generation, manure and, more broadly, animal dejections

have nurtured paradoxical representations depending on time, place, culture and context. Between putrefaction and resurrection, pride and modesty, the perception of these materials is often dual and rarely nuanced. All the senses are mobilized to describe their appearance, consistency and smell, far from the odor of sanctity... While they are found in sacred texts and images, dung and manure also populate the imagination of everyday life, often symbolizing the farming and rural life in a mocking or devaluing way. And yet, "the rooster is king over his own manure heap", which represents the peasant's kingdom, the legitimacy of the land and territorial anchorage. These questions will be addressed through the representations of animal dejections in texts and images, in relation to the various protagonists of the rural world (domestic and wild animals, peasants, merchants, elites, natural elements, etc.), as well as mythical and legendary characters and the religious sphere. The urban view of these subjects, and what it tells us about the relationship between town and country right up to the present day, can also be addressed.

6/ Fossil fecal matter: a valuable paleoenvironmental archive

Keywords: pollen, phytoliths, geochemistry, omics, paleoparasitology, coprolites, phosphates, predators, diet, climate, environment

Fecal matter can be a palaeoenvironmental archive: resulting from the interaction between living animals and their environment - including, but not limited to, their diet - it contains a wealth of information about the environments traversed by the animals and about the animals themselves.

In the form of molecules, pollen grains, phytoliths and plant or animal fragments, coprolites captured a snapshot of environmental conditions at a specific period in the past. In spaces, often sheltered, where animals are penned or gather spontaneously, accumulations of dung or guano constitute a type of sediment of great interest to paleoenvironmentalists or archaeologists of pastoral practices. Rich in organic matter, these deposits are well-suited to the preservation of macro- and micro-biological remains, both those they originally contained and those that have been buried in them. In caves and rock shelters, raptors and/or carnivores were often the source - throughout the Pleistocene and Holocene - of large accumulations of dental and bone remains of small vertebrates (coprocœnoses), on which numerous paleoecological studies are based. Finally, the signature of fecal matter can also be found in natural sedimentary records such as lakes and peat bogs. This is an invaluable source of information about the presence of animals in the catchment basin. For example, by studying the spores of coprophilous fungi present in these sediments, we can identify pastoral activities, and sometimes even estimate their intensity.

Scientific committee

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Practical information

Date: 15-17 October 2024

Venue: auditorium of Parc Phoenix, Nice (<https://www.parc-phoenix.org/>)

Registration: Registration will open in March 2024. Registration fees will be kept as low as possible, and students and non-permanents will be exempt.

Call for proposal: Proposals must include an abstract in French and English (not exceeding 4800 characters each, including spaces) and follow the model below. They should be sent as a text file to rencontresdenice2024@cepam.cnrs.fr by February 15, indicating a correspondence email and a choice (or two) of session.

Proposal for communication / to be sent (odt, rtf, doc, docx format) before February 15, 2024, to rencontresdenice2024@cepam.cnrs.fr

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Résumé en français, maximum 4800 signes espaces compris.

Title (English)

English abstract, 4800 characters maximum, including spaces.

Correspondence email: email of the corresponding author

Preferred session (mandatory) / cross out unnecessary proposals

- 1/ From the sheepfold to the field : dung and slurry in agropastoral systems
- 2/ Manure heaps and slurry pits: technical aspects of collecting, treating and recycling animal waste
- 3/ Human and animal health
- 4/ Waste as a raw material
- 5/ Perception and representation of animal feces
- 6/ Fossil fecal matter: a valuable paleoenvironmental archive

Alternative session (optional) / cross out unnecessary proposals

- 1/ From the sheepfold to the field : dung and slurry in agropastoral systems
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