

ARTICLE

**PRELIMINARY CHARACTERIZATION OF VOLATILE ORGANIC COMPOUNDS IN AFRICAN CLAWLESS OTTER *Aonyx capensis* SPRRAINT**

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**Abstract:** Chemical communication plays an important role in mate selection, territoriality, resource guarding, parental care and disease transmission in many taxa. Studies investigating olfactory communication and scent communication in wild animal populations are rare. To date there has been no analysis of the odours encoded in African clawless otter anal gland secretions. The volatile organic compound profiles of 14 wild African clawless otter anal gland secretion and faecal samples were investigated to determine the composition of odour profiles and infer on the potential role of particular compounds. Faecal and anal gland secretions were analysed through gas chromatography mass spectrometry. Across all samples a total of 73 compounds were found of which a total of 34 were provisionally identified. Nine of the identified compounds function as sex pheromones and/or reproductive status signals in other vertebrates, suggesting that African clawless otter latrines likely also play an important role in reproductive communication between individuals of the species. Further studies matching the identities of known individual African clawless otters and their reproductive status with the olfactory characteristics of their spraint are required to further validate the interpretations reported here.

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## INTRODUCTION

Coding of information in animal chemical communication is believed to occur through a combination of behavioural and chemical means (Sun and Müller-Schwarze, 1998). Olfactory signals persist in the environment for prolonged periods of time (compared to visual and auditory signals) such that communication can occur over longer time frames where senders and receivers of signals do not necessarily need to be in close proximity (Vitale et al., 2020). The use of olfactory communication through scent marking is a common feature in mammals (Bradbury and Vehrencamp, 1998) and is employed for a variety of reasons including individual recognition (Brennan and Kendrick, 2006; Kulahci et al., 2014), group identity (Vaglio et al., 2016), territorial marking (Black-Decima and Santana, 2011; Marneweck 2013), and reproduction (Scordato and Drea, 2007; Melo and González-Mariscal, 2010). Mammals produce complex chemical signals with multiple intricate components. Consequently, the

desirable initial method in deciphering these signals is to begin with a chemical analysis approach (Sun and Müller-Schwarze, 1998).

Otters belong to the family Mustelidae and all species in this family have well developed anal scent glands (Hutchings and White, 2000). Scent marking and the malodorous nature of secretions is an integral part of intraspecific communication in mustelids and as such they have been the focus of chemical and olfactory research (Burger, 2005). The anal gland volatiles of the following Mustelid species have been chemically analysed: the American mink, *Mustela vison* (Brinck et al., 1978); the stoat (*Mustela erminea*); the ferret, *Mustela putorius furo* (Crump and Moors, 1985); the European polecat, *Mustela putorius* (Brinck et al., 1983); the steppe polecat, *Mustela eversmanni* (Zhang et al., 2002a); the Siberian weasel, *Mustela sibirica* (Zhang et al., 2002b); European badgers, *Meles meles* (Noonan et al., 2019); and the Eurasian otter, *Lutra lutra* (Kean et al., 2011). The chemical information of these species has made them valuable model systems in the broad category of mammal chemical communication research (Zhang et al., 2002a). Otters represent 13 of the 58 extant species in the family Mustelidae, yet to date there has been little research to ascertain the composition of scent marking and olfactory communication (Kean et al., 2011).

African clawless otters (*Aonyx capensis*) are elusive, secretive and nocturnal, and are therefore challenging to study. The behaviour of African clawless otters at latrine sites have been previously described (Jordaan et al., 2017) and, more recently also the characteristics of latrine locations and associated otter behaviours (Nicolaidis et al., 2024). These results suggest that otters may select latrine site locations to maximize their conspicuousness to conspecifics and that scent marking at these latrine sites likely play an important role in intra-specific communication. Despite these investigations, the role of scent marking in terms of olfactory communication and its role in the social behaviours of African clawless otters remain poorly understood. This study investigated the composition of odour profiles of African clawless otter anal gland secretions. By comparing the composition of odour profiles with published accounts for other species we further aimed to make inferences on the types of information conveyed through African otter anal gland secretions.

## MATERIALS AND METHODS

### Sample Collection

Otter faecal and anal gland secretions were identified based on their shape, size and characteristic odour (Stuart and Stuart, 2019). African clawless otter faeces are typically sausage shaped (one end pointed) and anal gland secretions typically accompany faeces as dark jelly like deposits (Stuart and Stuart, 2019). The faeces typically range from 25 to 35 mm and are full of fish scales, fish bones and shell fragments. African clawless otters have a characteristic odour that is described as being very musky and fishy, combined with a sweet taint (Estes, 1991; Stuart and Stuart, 2019). Upon discovery of otter spraint, coordinates were recorded using a hand-held GPS device. Individual fresh and unbroken spraint samples were collected, placed into individually labelled, sterile plastic sealable vials, and stored at -20 °C.

### Chemical Analysis

Volatile organic compounds (VOCs) emitted by the faecal and anal gland secretion samples were sampled and analysed using solid-phase microextraction (SPME) and gas chromatography mass coupled to spectrometry (GC-MS). Approximately 0.2 g of frozen samples were transferred to 1.5 ml analytical glass vials (Machery Nagel, Separations, South Africa). Sample vials were then placed in a heating

block at 40 °C to ensure a consistent temperature during sampling. A 65µm polydimethylsiloxane/divinylbenzene SPME fibre (Supelco, Merck South Africa) was exposed to the headspace above each sample for 15 min. Preliminary testing of exposure times of up to 30 min indicated that 15 min was sufficient to reach equilibrium. Fibres were conditioned according to manufacturer's recommendations and reconditioned for 6 min in the GC injection port at 300 °C if the fibre had not been used for several hours. An analysis of the fibre not exposed to a sample was conducted to detect non-sample compounds and any contamination or deterioration of the fibre.

Following exposure to headspace volatiles, the fibre was immediately manually injected into the GC-MS (Agilent 7890B gas chromatograph coupled to a 7977MSD quadrupole mass spectrometer). Samples were analysed on a 30 m, 0.25 mm inner diameter, 0.25µm film thickness, HP5 column (J&W, Agilent, South Africa), with helium as the carrier gas at constant flow rate of 1.2 L/min. Separation was achieved with a 2-min hold at 50 °C, followed by a linear temperature increase of 10°C/min to 300 °C and held at 300 °C for 2 min, resulting in a total programme time of 29 min. An external alkane hydrocarbon standard (1 µl) was injected using an automatic liquid injector for calculation of retention indices, in turn allowing for the calculation and standardisation of retention times.

The mass spectrometer (MS) operated in electron impact ionization EI+ mode, scanning from ion mass fragments 50 to 300 m/z. The mass spectra were deconvoluted using MassHunter 1.2 (Agilent) in conjunction with the NIST mass spectral library and the R-based statistics suite, Metaboboanalyst. Data analysis and peak integration were performed using the program MassHunter. Compounds were identified based on comparison of mass spectra and retention times to the National Institute of Standards mass spectral library (NIST, 2017) and by calculating their retention indices. Peaks with a short retention time below 4 min were not included in the analysis because signals with retention times were not measurable with sufficient accuracy. The faecal matter samples from which the volatiles were extracted were air-dried to determine their dry weight.

The retention time, Kovat's retention index (KI), mean relative abundance, standard deviations, match factor to compounds in the NIST library and occurrence of each sample were determined. The retention index of each peak on the GC chromatogram was compared to experimentally determined KIs in the NIST library (Zang et al., 2021) (see Table 1). Peak areas were normalized by sample dry weight to obtain relative quantities of volatiles.

## RESULTS

The VOCs of 14 anal gland secretion and faecal samples of African clawless otters were identified. The number of compounds per sample ranged between 24 and 51 (mean  $32 \pm 7.83$ ). Across all samples a total of 73 compounds were recorded, of which 34 were provisionally identified using the NIST library and KI values (Table 1). The compounds identified comprised of a complex mixture of alcohols (40.54%), esters (10.81%), ketones (5.41%), benzenes (5.41%), phenols (5.41%), aldehyde (5.41%), aromatics (5.41%), alkanes (5.41%), diterpene (5.41%), monoterpenoids (2.7%) organic disulfide (2.7%), alkenes (2.7%) and long-chain fatty acid (2.7%) (Table 1). One compound provisionally identified as an amide was common across all 14 samples.

**Table 1.** Volatile organic compounds (VOCs) in the anal gland secretion and faeces (n=14) of African clawless otters, *Aonyx capensis*. RT min = Retention Times; KI = Kovat's Retention Index; MRA = mean relative abundance; SD = standard deviation.

Compound Identified	RT (min)	KI	MRA	SD	Sample	Occurrence
<i>Phenol derivative 1</i>	5.182	978.02	6.21	0.007	7,8	2
<i>Phenol derivative 2</i>	5.194	978.89	6.86	1.27	6,10	2
<i>1-Pyrrol[tert-butyl(dimethyl)silyl]oxymorphopropan-2-ol</i>	5.205	979.96	3.95	0.76	1,10	2
<i>Methanol</i>	5.211	980.54	6.73	2.64	4,11,12	3
<i>Phenol</i>	5.223	981.71	14.01	2.04	9,13	2
<i>2-Cyclopenten-1-one, 3-ethyl-2-hydroxy-</i>	6.366	1105.98	2.1	3.61	9,12,13	3
<i>UNKNOWN 1</i>	6.493	1121.46	26.68	5.06	10,11	2
<i>UNKNOWN 2</i>	6.499	1122.20	33.68	2.28	4,7,9	3
<i>Ethyl n-butyl disulphide</i>	6.476	1119.39	15.23	5.98	8,12	2
<i>1-Nonanol</i>	6.77	1155.24	0.0098	0.0048	2,3, 11	3
<i>UNKNOWN 3</i>	6.793	1158.05	8.22	0.43	8,9,12,14	4
<i>UNKNOWN 4</i>	7.313	1223.78	6.94	8.31	1,3,7,13	4
<i>2-Cyclohexen-1-one, 2-methyl-5-(1-methylethyl)-, (S)-</i>	7.319	1224.59	4.8	5.01	4,5,6	3
<i>Benzyl isothiocyanate 1</i>	8.001	1318.05	3.64	0.53	7,8,9	3
<i>Benzyl isothiocyanate 2</i>	8.006	1318.78	6.58	7.24	1,4,5,10,11,12,13	7
<i>1-Undecanol 1</i>	8.301	1361.72	1.52	0.77	1,11	2
<i>1-Undecanol 2</i>	8.307	1362.59	1.11	0.042	6,8	2
<i>1-Tetradecene</i>	8.486	1388.65	0.83	0.43	3,8	2
<i>Dodecanal</i>	8.491	1389.37	0.47	0.38	4,6,10,11	4
<i>UNKNOWN 5</i>	8.595	1404.79	0.7	0.29	4,5,6,7,9,12,13	7
<i>UNKNOWN 6</i>	8.971	1462.91	0.12	0.04	10,13	2
<i>UNKNOWN 7</i>	9.248	1506.06	3.06	1.74	1,4,5,6,8,9,11,12	8
<i>Methyl salicylate</i>	9.254	1507.03	1.69	1.54	2,7,10	3
<i>1-Tridecanol 1</i>	9.496	1546.57	4.45	2.69	5,7,8,11	4
<i>1-Tridecanol 2</i>	9.502	1547.55	7.29	6.8	1,4,6,10,13	5
<i>2-Tridecenal, (E)-</i>	9.641	1570.26	34.83	49.25	3,4	2

<i>Zingiberenol</i>	9.86	1606.41	0.44	0.35	3,5,6	3
<i>UNKNOWN 8</i>	9.8739	1608.82	0.006	0.001	6,8,9,12,13	5
<i>UNKNOWN 9</i>	10.322	1686.48	0.86	1.21	6,8,11,12,13	4
<i>UNKNOWN 10</i>	10.328	1687.52	1.07	0.34	1,4,7,11	3
<i>2,6,10,14-tetramethyl-pentadecane</i>	10.449	1708.93	1.14	0.76	2,7,10	2
<i>UNKNOWN 11</i>	10.576	1732.06	0.15	0.086	1,6,7,8,11,13	6
<i>7-Methylheptadecane</i>	10.646	1744.81	0.94	0.79	1,6,8,11,13	5
<i>Benzyl benzoate</i>	10.651	1745.72	0.54	0.32	5,7,9,10,11,12	5
<i>Tetradecanoic acid</i>	10.767	1766.85	0.44	0.22	6,7,10,11,13	5
<i>Ethyl tetradecanoate</i>	10.825	1777.41	0.26	0.16	12,14	2
<i>(Z)-9-Tetradecenyl acetate</i>	10.859	1783.61	0.19	0.035	4,7,13	3
<i>UNKNOWN 12</i>	10.963	1802.69	0.26	0.026	5,7,13	3
<i>Phytane</i>	11.021	1813.85	2.62	3.32	1,2,6	3
<i>UNKNOWN 13</i>	11.131	1835	0.69	0.34	4,6,8,9	4
<i>UNKNOWN 14</i>	11.217	1851.54	0.68	0.73	4,6,8,9	4
<i>9-Heptadecanone</i>	11.223	1852.69	2.48	2.76	4,7,10,11,12,13	6
<i>UNKNOWN 15</i>	11.35	1877.12	18.92	11.36	4,7,10,11,12,13	6
<i>1-Hexadecanol 1</i>	11.345	1876.15	5.05	2.04	1,3,9	3
<i>1-Hexadecanol 2</i>	11.344	1875.96	3.96	1.34	6,8,9	3
<i>1-Hexadecanol 3</i>	11.443	1895	13.2	9.43	2,14	2
<i>UNKNOWN 16</i>	11.495	1905.23	0.25	0.28	1,2,14	3
<i>UNKNOWN 17</i>	11.714	1949.30	1.39	0.83	1,3,4,5,6,7,8,9,10,11,12,13	12
<i>Abietatriene</i>	12.13	2034.24	4.07	4.33	3,4,6,7,10,11,13	7
<i>UNKNOWN 18</i>	11.939	1994.57	0.16	0.03	11,14	2
<i>UNKNOWN 19</i>	12.176	2043.84	0.47	0.66	1,14	2
<i>UNKNOWN 20</i>	12.222	2053.44	0.84	0.11	2,12	2
<i>9,12-Octadecadien-1-ol, (Z,Z)-</i>	12.205	2049.90	5.25	4.15	4,10,11	3
<i>UNKNOWN 21</i>	12.274	2064.30	1.35	1.34	3,5,7,10,11,13	6
<i>UNKNOWN 22</i>	12.199	2048.64	3.08	2.02	7,13	2

<i>UNKNOWN 23</i>	12.442	2099.37	1.9	1.02	1,5,6,7,8,9,10,11,12,13	10
<i>UNKNOWN 24</i>	12.211	2051.15	0.16	0.01	3,5	2
<i>Pyrene</i>	12.338	2077.66	0.39	0.32	1,3,5,11	4
<i>Phytol</i>	12.448	2100.66	0.29	0.01	2,3	2
<i>UNKNOWN 25</i>	12.569	2127.19	0.15	0.07	1,4,6,7,8,9,11,12,13	9
<i>UNKNOWN 26</i>	12.748	2166.45	0.34	0.13	6,7,8,9,10,11,12,13	8
<i>UNKNOWN 27</i>	12.938	2208.55	0.09	0.03	6,12	2
<i>1-Octadecanol, TMS derivative</i>	12.742	2165.13	0.31	0.01	4,14	2
<i>UNKNOWN 28</i>	13.406	2317.06	0.63	0.59	1,5,6	3
<i>UNKNOWN 29</i>	12.944	2209.93	0.13	0.09	8,9	2
<i>UNKNOWN 30</i>	13.62	2367.7	0.19	0.14	1,2,5,13,14	5
<i>UNKNOWN 31</i>	13.943	2446.29	0.8	0.43	4,7,8,9,10,11,12,13,14	9
<i>UNKNOWN 32</i>	13.891	2433.42	0.13	0.02	6,13	2
<i>cis-13-docosenol, tBDMS</i>	14.561	2603.47	1.46	0.85	2,3,4,5,6,7,8,9,10,11,12,13	12
<i>UNKNOWN 33</i>	13.949	2447.77	0.5	0.37	1,5,6	3
<i>Unknown amide</i>	14.752				1,2,3,4,5,6,7,8,9,10,11,12,13,14	14
<i>1-(2-Hydroxyethyl)-2-imidazolidinone</i>	15.705				9,13,14	3
<i>n-Hexadecanoic acid</i>	18.974				9,13	2

## DISCUSSION

Olfactory communication plays an important role in the ecology of otters and their socio-spatial organisation (Johnson et al., 2000; Berzins and Helder, 2008; Kean et al., 2015; Mumm and Knörnschild, 2018). The precise mechanistic knowledge of how scent communication at latrine sites is conveyed between individuals remains an under-investigated topic. Many carnivores advertise their territory and resource ownership as a pre-emptive measure to avoid conflict and potentially costly agonistic encounters with conspecifics (Buesching and Stankowich, 2017). This is effectively achieved with low-maintenance long term signals that do not require the continued physical presence of the owner, but that can be matched to the individual who marked the site through individually identifiable scent. Given that a scent remains in the environment for some time it allows for the owner of the scent to be identified by rivals, even in the owner's absence, reducing the costs of physical conflicts (Gosling, 1982; Leuchtenberger, 2018).

Of the thirty-four compounds provisionally identified in African clawless otters, eleven were identified in the literature as having been documented to play a role in the behaviour of several animal species (Table 2). The only other otter species where faecal VOC analyses were conducted to date is the Eurasian otter (Kean et al., 2015). Two compounds identified in African clawless otters here have also been identified in the Eurasian otter, namely Phenol and 1-Tridecanol.

**Table 2.** Eleven of the thirty-four volatile organic compounds identified in African clawless otter's spraint and the published report of their biological role in other animals.

No	Compound Name	Cited Relevance to Behaviour	
		Behaviour	Species
1	Phenol	oestrus, sexuality, differentiating female reproductive states, age differentiation	<i>Idea leuconoe</i> (Nishida et al. 1996); <i>Bos Taurus</i> (Sankar et al. 2007); <i>Mamestra brassicae</i> (Jacquin et al. 1991); <i>Bubalus bubalis</i> (Brahmachary and Poddar-Sarkar 2015); <i>Meles meles</i> (Noonan et al. 2019); <i>Lutra lutra</i> (Kean et al. 2015); <i>Panthera leo</i> (Soso and Koziel 2017); <i>Canis lupus signatus</i> (Martín et al. 2010)
2	1-Nonanol	sex pheromone	<i>Achroia innotata</i> (Francke and Schulz 1999); <i>Raphicerus campestris</i> (Burger et al. 1999)
3	Dodecanal	sexual attraction	<i>Lemur catta</i> (Shirasu et al. 2020) <i>Tachyglossus aculeatus setosus</i> (Harris et al. 2012)
4	1-Tridecanol	sex pheromone	<i>Junco hyemalis</i> (Whittaker et al. 2013); <i>Lutra lutra</i> (Kean et al. 2015)
5	Zingiberenol	sex pheromone	<i>Tibraca limbativentris</i> (Blassioli-Moraes et al. 2020)
6	7-Methylheptadecane	sex pheromone	<i>Lambdina athasaria</i> (Duff et al. 2001); <i>Lambdina pellucidaria</i> (Duff et al. 2001)
7	Tetradecanoic acid	possible sex differentiation	<i>Caracal caracal</i> (Goitom 2017); <i>Suricata suricatta</i> (Leclaire et al. 2017)
8	(Z)-9-Tetradecenyl acetate	sex pheromone	Lepidoptera (Byers 2005); <i>Ostrinia zealis</i> (Huang et al. 1998); <i>Ostrinia zaguliaevi</i> (Ishikawa et al. 1999); <i>Agrotis segetum</i> (Löfstedt et al. 2014); <i>Spodoptera frugiperda</i> (Malo et al. 2015)
9	Phytane	reproduction	<i>Vipera ammodytes</i> (Shafi et al. 2021)
10	9-Heptadecanone	trail following behavior	<i>Pachycondyla tarsata</i> (Janssen et al. 1999)
11	1-Hexadecanol	sex pheromone, oestrus, kin recognition, stimulating parental care	<i>Caracal caracal</i> (Goitom et al. 2017); Bovidae (Shafi et al. 2021); <i>Junco hyemalis carolinensis</i> (Whittaker et al. 2016; Mas and Kolliker 2008), <i>Raphicerus campestris</i> (Burger et al. 1999), <i>Suricata suricatta</i> (Leclaire et al. 2017), <i>Mungos mungo</i> (Jordan et al. 2010)

Nine of the compounds identified in the African clawless otter spraint are associated with reproduction and/or as sex pheromones in other animals (Table 2). This suggests that latrines may be primarily used for individual-level sexual communication in African clawless otters, and not, as previously speculated (Jordaan et al., 2017) for maintaining territories and to facilitate inter-clan communication. Of course, such functions are not necessarily exclusive to one another, and we cannot exclude at this stage the possibility that latrines are important for both inter-individual, as well as inter-clan communication. The functions of specific VOCs may furthermore differ between different species. For example, 1-hexadecanol is a common compound in the excrement of several mammals. In the steenbok (*Raphicerus campestris*) (Burger et al., 1999) and meerkat (*Suricata suricatta*) (Leclaire et al., 2017) it functions as a sex pheromone, and in the caracal (*Caracal caracal*) (Goitom et al., 2009) and Bovidae (Shafi et al., 2021) it plays a role in oestrus signalling. The compound 1-hexadecanol has also been identified in an avian species, the dark-eyed Junco (*Junco hyemalis carolinensis*), where it functions in kin recognition (C  lerier et al., 2011) and in stimulating parental care (Mas and Kolliker, 2008). Phenol has also been identified to play different functions across different species. In water buffalo (*Bubalus bubalis*) (Brahmachary and Poddar-Sarkar, 2015) phenol plays a role in signalling sexuality. Phenol plays different roles in other species too. For example, in cattle (*Bos taurus*) (Sankar et al., 2007) it indicates oestrus, in the European badger (Noonan et al., 2019) it differentiates female reproductive state and in the African lion (*Panthera leo*) (Soso and Koziel, 2017) and Iberian Wolf (*Canis lupus signatus*) (Mart  n et al., 2010) it communicates age differentiation. Phenol has also been identified as an insect pheromone in the large tree nymph butterfly (*Idea leuconoe*) (Nishida et al., 1996) and cabbage moth (*Mamestra brassicae*) (Jacquin et al., 1991).

In addition to suggesting a likely role in reproductive communication, our results illustrate that African clawless otter scent profiles are complex and diverse, with substantial variation in profiles between samples analysed both in terms of the number of VOCs present, as well as their composition. The variation across the 14 scent profiles may be associated with variables like sex, age, reproductive status, dominance and health (Kean et al., 2015; Leclaire et al., 2017; Noonan et al., 2019). Unfortunately, these variables are unknown for the samples in our study though and we can only speculate at this stage on their potential roles in explaining the reported variability. Moreover, the substrate type, time difference between deposition and collection and between the scats collection and analysis are all factors that contribute to the differences between the samples (Kean et al., 2015).

Studies assessing odour and olfaction are often able to equate certain behaviours with scent (Soso and Koziel, 2017), such that the role of individual compounds can be identified and linked to specific behaviour. For example, the ability of elephants to detect the compound cyclohexanone has led researchers to suspect that some must signals may be single compounds (Rasmussen et al., 1996). Further research on individual chemical compounds and their role in scent-marking and olfactory communication are required to gain an understanding of the influence of particular VOCs on elucidating the behaviour of African clawless otters (Soso and Koziel, 2017).

**Conflict of Interest:** *The authors declare that they have no conflicts of interest.*

**Author Contributions:** *SGN contributed to design of the study, reviewed literature, collected and analyzed the data, applied statistical analyses and wrote the manuscript; AH contributed to the design and development of the study, secured funding for the research and reviewed and edited the manuscript;*



TM contributed to the design and development of the study, secured funding for the research, and reviewed and edited the manuscript.

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**RÉSUMÉ: CARACTÉRISATION PRÉLIMINAIRE DES COMPOSÉS ORGANIQUES VOLATILS DANS L'ÉPREINTE DE LOUTRE A JOUES BLANCHES, *Aonyx capensis***

La communication chimique joue un rôle important dans la sélection du partenaire, la territorialité, la protection des ressources, les soins parentaux et la transmission des maladies chez de nombreux taxons. Les études examinant la communication olfactive et la communication fécale dans les populations d'animaux sauvages sont rares. À ce jour, aucune analyse des odeurs codées dans les sécrétions des glandes anales de la loutre à joues blanches n'a été réalisée. Les profils des composés organiques volatils de 14 échantillons de sécrétions des glandes anales et de matières fécales de loutres à joues blanches sauvages ont été étudiés pour déterminer la composition des profils olfactifs et en déduire le rôle potentiel des composés spécifiques. Les sécrétions des glandes anales et fécales ont été analysées par chromatographie en phase gazeuse et spectrométrie de masse. Sur l'ensemble des échantillons analysés, 73 composés ont été trouvés dont 34 provisoirement identifiés. Neuf des composés identifiés fonctionnent comme des phéromones sexuelles et/ou des signaux d'état de reproduction chez d'autres vertébrés, ce qui suggère que les latrines de la loutre à joues blanches jouent probablement aussi un rôle important dans la communication de reproduction entre les individus de l'espèce. Des études complémentaires, permettant de corréler les identités des loutres à joues blanches connues et leur période de reproduction avec les caractéristiques olfactives de leur épreinte, sont nécessaires afin de mieux valider les interprétations.

**RESUMEN: CARACTERIZACIÓN PRELIMINAR DE LOS COMPUESTOS ORGÁNICOS VOLÁTILES EN FECAS DE LA NUTRIA SIN UÑAS AFRICANA, *Aonyx capensis***

La comunicación química juega un rol importante en la selección de pareja, la territorialidad, la guarda de los recursos, el cuidado parental y la transmisión de enfermedades en muchos taxones. Los estudios que investigan la comunicación olfativa y la comunicación por marcas olorosas en poblaciones de animales silvestres, son raros. Hasta la fecha, no ha habido análisis de los olores codificados en las secreciones anales de la nutria sin uñas Africana. Investigamos los perfiles de compuestos orgánicos volátiles de 14 muestras de secreciones de glándulas anales y de fecas de nutria sin uñas Africana, para determinar la composición de los perfiles de olores e inferir el rol potencial de los compuestos particulares. Las secreciones fecales y de glándulas anales fueron analizadas por medio de cromatografía de gases acoplada a espectrometría de masas. En el conjunto de muestras, encontramos un total de 73 compuestos, de los cuales 34 fueron identificados provisoriamente. Nueve de los compuestos identificados funcionan como feromonas sexuales y/o señales de status reproductivo en otros vertebrados, sugiriendo que las letrinas de la nutria sin uñas Africana también juegan un rol importante en la comunicación reproductiva entre individuos de la especie. Para validar las interpretaciones aquí informadas, se requieren más estudios que asocien las identidades de individuos conocidos de nutria sin uñas Africana y sus status reproductivo, con las características olfatorias de sus fecas.