

The Brown Rat *Rattus norvegicus* Berkenhout, 1769 (Mammalia Rodentia) in Fourni Island (North Aegean, Greece)

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ABSTRACT The presence of the brown rat *Rattus norvegicus* Berkenhout, 1769 (Mammalia Rodentia) in the North Aegean island of Fourni is reported here for the first time.

KEY WORDS Alien species; rattus; *Rattus norvegicus*; Aegean fauna.

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INTRODUCTION

The brown rat *Rattus norvegicus* Berkenhout, 1769 (Mammalia Rodentia) is one of the most common and widely distributed mammals around the world, since it is found in almost all areas inhabited by humans and on all continents except for Antarctica. Native in northern China and Mongolia, this rat did not appear in Europe until the 1500s. (Puckett et al., 2016). Originally, when the brown rat lived only in Asia, it used to occupy forests and bushy areas. Nowadays, it is able to live in a wide variety of environments such as open fields, woodlands, basements, garbage dumps and sewers. In the Mediterranean islands, *R. norvegicus* is not as widespread as its relative *R. rattus*, since it is presumably unable to successfully colonize the dry environments, due to its dependence on water (Masseti, 2012). In the Ionian and Aegean islands, as far as is currently known, brown rat has been found on Corfu, Cephalonia, Zakynthos, Kythera, Euboea, Atalandi (north Euboean Gulf), Crete, Karpathos, Rhodes, Kos, Ikaria, Chios, Skiathos, Lemnos (Masseti, 2012), Symi (Castiglia et al., 2019) and Tsougrias (Grano, 2021).

MATERIAL AND METHODS

Study area

Fourni, the largest island in the Fourni Korseon complex (Aegean Islands, Greece), with a population of approximately 1300 inhabitants and a total area of approximately 31 km² within a municipal area of 45.247 km², is situated in the Aegean Sea between Ikaria, Samos, and Patmos islands. It features a Mediterranean climate, characterized by mild winters and hot, dry summers (Köppen climate classification: Csa), with an estimated total annual rainfall of around 500 mm/year (HCA, 2024). All islands and islets of Fourni Archipelago have a low altitude; the highest hill-top is 430 m on Fourni Island. The whole island group consists of marbles and schists (Christodoulakis et al., 2001). The artificial surfaces of Fourni are estimated to make up around 4% of the total area, while the main use is sclerophyllous vegetation, followed by natural pastures, sparse vegetation, and agricultural land (Feloni & Nastos, 2024).

Samples

A specimen of *Rattus norvegicus* was found dead in May 2024, near the port of Fourni by Cristina Cattaneo during a botanical research (Fig. 1). The head was removed from the carcass for cor-

rect identification, cleaned and prepared by the author, and included in his private collection with the number COMGR 318 (Fig. 2). The morphometric measurements are reported on Table 1.

DISCUSSION AND CONCLUSIONS

Human activities have resulted in the intentional or unintentional introduction of numerous species outside of their natural ranges. In situations where these species become established in new habitats, they have the potential to alter ecosystems through increased competition with and predation on native taxa. Such invasive species are considered by the International Union for the Conservation of Nature (IUCN) a threat to multiple taxa around the world (Hilton-Taylor et al., 2009; Weber, 2014). Rats (*Rattus* sp.) are believed to be one of the most widespread exotic mammals. The spread of rats across new habitats, especially isolated islands, dates back at least 3000 years and has often been the outcome of shipping activities (Atkinson, 1985). Today, rats are found on over 80% of the world's major islands and island groups (Atkinson, 1985). Furthermore, rats in Greece are dangerous carriers of diseases such as *Leishmania* infection (Schnur et al., 1989; Tsakmadikis et al., 2017), *Bartonella* (Papadogiannakis et al., 2017), *Lectospira* (Burriel et al., 2008), *Rickettsia* (Tselentis et al., 1996), and *Salmonella* (Badi et al., 1992a; Badi et al., 1992b). Both *R. rattus* and *R. norvegicus* transmit the plague bacterium *Yersinia pestis* through fleas in some areas of the world. Despite these serious problems, rodents on islands are usually regarded by conservationists mainly as invasive pest species, which have caused considerable ecological damage to islands around the world (Grano, 2021). However, almost one in five of the world's nearly 2300 rodent species is an island endemic, and insular rodents suffer from high rates of extinction and endangerment (Amori et al., 2008). The presence of the brown rat in Fourni Island - as well as in other small islands characterized by a dry and barren environment, apparently completely unsuitable for the species - demonstrates the great adaptive capabilities of this species which normally depends on water to establish stable populations (Castiglia et al., 2019). Its presence on other islands of the Aegean Sea is therefore probable, especially in port areas.



Figure 1. *Rattus norvegicus* from Fourni Island (Aegean Islands, Greece). Fig. 1: head of dead specimen. Fig. 2: skull of this specimen.

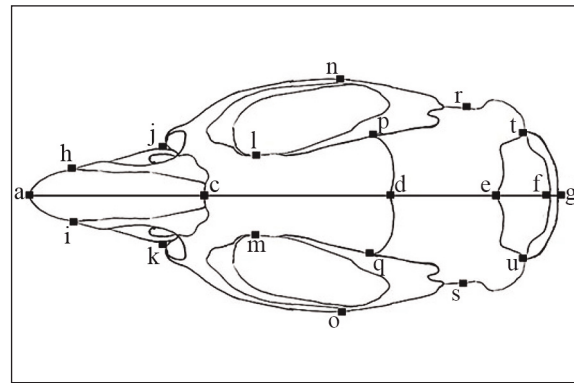


Figure 3. Dorsal view of a rat skull with linear measurements and identification marks. Breadth of nasal bones (h to i), greatest rostrum breath (j to k), smallest intraorbital breath (l to m), zygomatic breath (n to o), frontal bone width (p to q), breath of brain cage (r to s), interparietal bone width (t to u), occipital bone length (f to g), interparietal bone length (e to f), parietal bone length (q to u), frontal bone length (c to d), nasal bone length (a to c), total length (a to g); "b" cannot be seen from this view.

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This modest contribution is dedicated to the memory of Longino Contoli Amante (Rome, Italy), a

Breath of nasal bones	h to i	6
Greatest rostrum breath	j to k	8.5
Smallest intraorbital breath	l to m	6.5
Zygomatic breath	n to o	21
Frontal bone width	p to q	12
Breath of brain cage	r to s	17
Interparietal bone width	t to u	9.5
Occipital bone length	f to g	1.5
Interparietal bone length	e to f	3
Parietal bone length	q to u	11.5
Frontal bone length	c to d	17
Nasal bone length	a to c	12.5
Total length	a to g	44

Table 1. Cranial morphometric linear measurements (mm) of sample of *Rattus norvegicus* from Fourni Island.

great expert and lover of rodents, who recently passed away. Also, the author gives a special thanks to Cristina Cattaneo (Rome, Italy) for collecting the specimen in Fourni Island and for her constant presence in his life and research.

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