
The presence of *Chamaleo chamaleon* (Reptilia) on the Maltese islands, with a note on the occurrence of this species on Cominotto Island and its possible effects on the endemic local lizard

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ABSTRACT – The Mediterranean chameleon *Chamaleo chamaleon* is one of nine terrestrial reptile species that occur in the Maltese islands. Because it is an introduced species very few studies have been conducted in Malta and much of the available knowledge is derived from research made abroad in a different environment. This study tackles some of data in circulation and the discovery of this reptile on the islet of Cominotto, and endeavours to investigate its potential impact on the local population of *Podarcis filfolensis*.

CHAMALEO *chamaleon* is not indigenous to Malta, having probably been introduced between the dates of 1846–1865, but has subsequently become established, spreading to practically every corner of the Maltese Islands. This species has few predators locally and is generally difficult to spot. Also it is generally found in shrub and tree habitats where it encounters few other reptiles. With juveniles it is almost impossible to distinguish between the sexes but adults can be more readily distinguished from the structure of the skull and especially from the coloration during the mating season. Moreover, males tend to grow much larger than females. The cloaca tends to differ as females have a wider opening when compared to the size of the specimen than males while the later especially in mating season have an almost inflamed section in the rear of the cloaca where the hemipenis is contained. The animal is oviparous, the female laying about 12–22 eggs in April to June which hatch in the following August to November. Coloration is very variable depending on a number of factors, example: a tensed specimen is usually black while a relaxed specimen tends to be green. Sick or dying specimens tend to be pale. Remarkably, even females in heat or pregnant, can be distinguished by colour. Females on heat are black covered systematically with orange spots. When they become pregnant, purple spots usually follow, tending to repel off males accompanied also by the aggressive behaviour from the females. Whatever colour the specimen changes to, it always has a white stripe on its belly (based on examples observed by the author at Mellihha region, especially in Ghadira nature reserve from 1997–present).

Literature, distribution and possible effects

Chameleo chamaleon was first recorded in the Maltese literature by Giovanni Gulia in 1890. It was reportedly introduced by Jesuit priests at St. Julians (Gulia, 1890) possibly from North Africa. While Gulia considered it to have become naturalised, Despott (1915) could not obtain any specimens and did not include it in his list of Maltese herpetofauna. There is now no doubt that the animal has established itself and spread. It is likely, however, that this spread has occurred from more than one locality. Recent records include numerous specimens from all over Malta especially in the north. This species was also found at various localities in Gozo. In Comino it has more established itself in the hotel and valley area but can also be found sparsely scattered all over the island.

Through the past years the author has been visiting various islands and islets to study the behaviour of the different populations of *Podarcis filfolensis*. One island, which enjoys easy access and scant human interference, is Comino, and therefore, due to this factor, it was the island most frequently visited. The monitoring of all populations found is also continued but usually preference is given to the smaller islands, which need more monitoring for conservation such as Selmunett Island and Cominotto. Besides the target, while on the field, notes of its prey and predators and the flora and fauna are taken. The earliest records from Cominotto date back to the summer of 1996, and since that time the following herpetofauna on this island have been recorded. These are *Tarentola mauritanica*, *Hemidactylus turcicus*, *Chalcides ocellatus* and the endemic yet

unnamed population of *Podarcis filfolensis*. This lizard differs from the mainland and other population stocks in size, behaviour and also the level of degree in melanism. The latter is quite common on the island but prey is scarce when comparing the area and the population to other islands such as Comino and Selmunett. (These two are the opposite because there is an abundance of prey and much less lizards). This is why a large number of *P. filfolensis* are found at point A. (Figure 1) this is because in the summer time, it is an ideal location because they feed on any left over left by humans.

On 20th August 2000 three faecal pellets were taken from Cominotto at point B and one of them resulted to belong to a small specimen of *C. chameleon*. This was the first indication that this species might thrive on this island. On 6th July 2001 a complete skull and the first 7 neck bones were found under a *Lamiaceae sp.* shrub in a 2-5cm deep soil at point C. On 17th June 2002 a female specimen was observed at point D with a total length of 16 cm, and on the same day at point E a male with a total length of 14 cm was also noted. On 16th April 2004 a shed skin of 5.2 cm long x 3.2 cm wide was taken from point F. After careful examination, it was found that this also belonged to a *C. chameleon*.

The presence of this species on the island is not a worrying situation at present but if the population of this reptile increases exponentially, it maybe however be a treat to the local population of *P. filfolensis*. The latter are already challenged by natural predators and other problems. Of all the other populations observed, these lizards are the ones that suffer most from a type of red mite (unknown species) often found under the neck, behind the ear pore or close to the hind legs. From observation this population is also the one most often found with disabilities such as missing toes due to severe combat in mating seasons and for territory. Also, *C. ocellatus* was recorded on 28 separate occasions feeding on *P. filfolensis* juveniles from this island. Since prey is scarce and *C. chameleon* has to share the same habitat with *P. filfolensis* – unlike the situation on the main islands

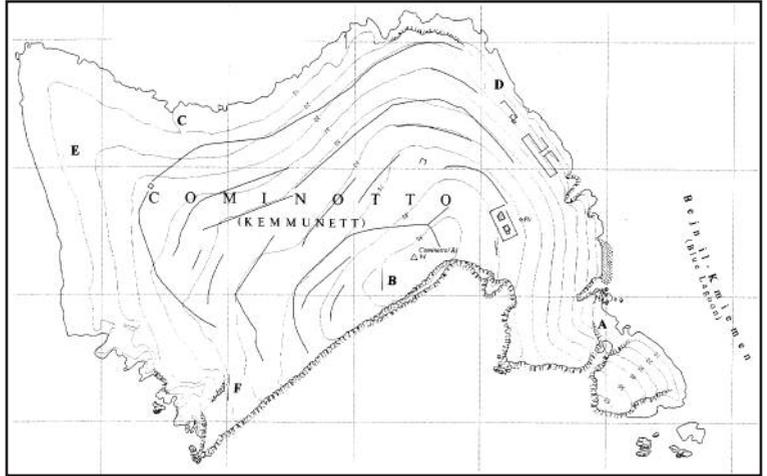


Figure 1. Cominotto. Points as indicated in text.

where *C. chameleon* is more likely to be found in trees – there is a higher possibility of encounters between the two species which will result in further predation on *P. filfolensis*.

Chamaleo chameleon feeds on a variety of arthropods including Arachnida, Diptera, Blatodea, Orthoptera and Lepidoptera. It catches its prey by shooting its extendable tongue towards prey. In adults, this can be twice their body length. In captivity one specimen also took lizards. (Savona-Ventura, 1983). The author recorded this behaviour from the main island on juveniles on 32 separate occasions.

The yet unnamed population of *P. filfolensis* present on Cominotto Island is of extreme ecological and scientific importance due to its endemism, and the introduction of an alien species such as *C. chameleon* will certainly not improve its chances of survival and conservation.

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NATURAL HISTORY NOTES

LERISTA BOUGAINVILLII (Bougainville's skink): **PREDATION, DIURNAL ACTIVITY.** There are few published records of predators of Australian lizards identified to species level, or of predation by invertebrates, and little on times of activity in the genus of small semi-fossorial lygosomine scincids *Lerista*, the most speciose terrestrial vertebrate genus in Australia. This note documents an instance of diurnal activity and invertebrate predation on *Lerista bougainvillii*. At 15:50 h (Australian Eastern Standard Time), 2nd October 1990, the first author was searching through leaf litter and loose grey sandy soil at the base of a low dome granite rock outcrop in remnant dry sclerophyll forest dominated by *Eucalyptus caliginosa* with a mixed heath/grassland understorey on top of a small hill at Lot 10 Kirby Road, Armidale, New South Wales, at 30°28'.397S 151°38'.561E, 1073m elevation (GARMIN GPSII, WGS84 grid), and disturbed an adult *Lerista bougainvillii* with a complete original tail; the *L. bougainvillii* was apparently active in the litter when detected, rather than inactive in a refugium, hence demonstrating diurnal activity. The lizard ran under the loose litter along the base of the rock for ca. 0.5 m and was then seized by a large (ca. 100 mm) adult scolopendrid centipede *Erythmostigma rubripes* situated under the litter adjacent to the rock; this predatory action was noticed due to the violence of the disturbance in the litter and partial emergence of the protagonists to view. Removal of some of the leaf-litter and closer examination revealed that the lizard had been seized by the centipede with its jaws and anterior three pairs of legs in such a manner as to grip the lizard ventrolaterally over

the anterior body and neck region, with more posterior pairs of legs apparently being used to hold and subdue the body and tail of the writhing lizard and maintain a grip on the substrate, although there was no continuous grip maintained with these posterior legs such as that of the anterior three pairs; the lizard had been deeply bitten at least twice in the ventral neck and left ventrolateral axillary region, with a considerable amount of blood-loss evident; tail autotomy did not occur. The lizard was beyond aid and was left with its predator.

This predatory interaction was induced by disturbance of the lizard by the observer, but there can be no doubt as to the predatory response of the centipede, which on this account would appear to be a 'lie-in-wait' rather than an 'active-search' type of predator, at least of small scincids active in litter by day. It is probable that large scolopendrid centipedes are a significant predator of *Lerista* spp. wherever they coincide; they themselves occasionally fall prey to large *Urodacus manicatus* scorpions at the above site (eg., pers obs., earlier the same day at 14:00 h, 2nd October 1990, a large adult *U. manicatus* was observed consuming a ca. 80 mm *E. rubripes* in a short chamber excavated beneath a 20 cm diameter stone at ca. 70 m south of the above locality).

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