

**OBSERVATION ON THE ENDANGERED POPULATION OF  
THE MALTESE WALL LIZARD OF SELMUNETT ISLAND  
KNOWN AS *PODARCIS FILFOLENSIS KIESELBACHI*.**



**Arnold Sciberras (2005)**

# **OBSERVATION ON THE ENDANGERED POPULATION OF THE MALTESE WALL LIZARD OF SELMUNETT ISLAND KNOWN AS *PODARCIS FILFOLENSIS KIESELBACHI*.**

*Arnold Sciberras*

## **Abstract:**

The Maltese Wall Lizard, *Podarcis filfolensis*, exists in a number of isolated populations, some of which have been given formal scientific names as subspecies. Special attention was given to the population of *P.filfolensis kieselbachi*, which is endemic to Selmunett Island due to the fact of its rapid decrease. The prime suspect for this matter is *Rattus* sp. Through the literature read it was noted that between the late 80's to early 90's, the population of *P.filfolensis kieselbachi* was very dense all over the island. Since the present author started visiting the island in late 1997, there was still quite a good stable population that scarcely could be found in all over the island. During these studies since 1999 the author divided the island in several sections in order to organise my observations. Today, lizards inhabit approximately only 1/10 of the island and they are all located in one particular section of the smaller islet that the author have designated as Area C. Here the maximum population is of the order of 30 to 35 lizards. This very small population is a matter of concern and some kind of action has to be taken to reverse this decline.

## **Introduction:**

The herpetofauna of the Maltese islands consist only of 16 species, of which 5 are marine turtles. Two of the later have been surly recorded once. The terrestrial reptile species consists of four species from the family Colubridae (snakes)(two probably introduced in the first world war with cargo ships), two species from the family Gekkonidae (geckos), one species from the family Chamaeleontidae (chameleon)(introduced between the dates of 1846-1865 and has subsequently become established and has spread), one species from the family Scincidae(skinks) and one species from the family Lacertidae(lizard)(4 known subspecies here separated into a number of populations and endemic).Also two species from the class Amphibia are known to occur here, a native frog from the family of Discoglossidae and an introduced species from the family of Ranidae(introduced in early 1990's. localised in some areas).

The Maltese Wall Lizard, *P. filfolensis*, belongs to the genus *Podarcis* that consists of at least 18 species with over 195 subspecies. *P. filfolensis* is endemic to the Maltese islands and the pelagic islands (Lampione & Linosa) where a fifth known subspecies occurs.

*P. filfolensis* was found by the present author on the following islands & islets.

Malta's Archipelago i.e. Filfla Island or filfla Rock (Filfla), Fungus Rock or General's Islet (Gebla tal-General) Selmunett Island or St Paul's island (Il Gzira Ta San Pawl) Malta, Manuel Island (il-Gzira Ta Manuel), Qawra Point or Ta' Fraben Island, Gozo (Ghawdex), Comino (Kemmuna), Kemmunett (Comminotto), Large blue lagoon rock (Il-Hagra Ta Bejn Il-Kmiemen Il-Kbira), Small blue lagoon rock (Il-Hagra Ta Bejn Il-Kmiemen iz-Zghira), Ras il-Fenek peninsula Halfa Rock (il-Gebla tal-Halfa) Tac Cawl rock (il-Gebla Tac Cawl). Italy, Pelagian Islands i.e. Lampedusa, Linosa and Lampione.

Until further study, 5 subspecies of *P. filfolensis* are known to occur and these were separated only from morphological grounds. These are as listed below.

*Podarcis filfolensis filfolensis* (BEDRIAGA, 1876)

*Podarcis filfolensis generalensis* (GULIA, 1914)

*Podarcis filfolensis kieselbachi* (FEJERVARY, 1924)

*Podarcis filfolensis laurentiimuelleri* (FEJERVARY, 1924)

*Podarcis filfolensis maltensis* (MERTENS, 1921)

*P. filfolensis filfolensis* is confined on Filfla Island & is the largest of the subspecies (males can reach up to 30 cm). *P. filfolensis generalensis* is confined on Fungus Rock. *P. filfolensis kieselbachi* is confined on Selmunett Island and is the aim of this study due to its critical situation. *P. filfolensis laurentiimuelleri* is situated on the Pelagic islands Lampione and Linosa. *P. filfolensis maltensis* is the most widespread being found on the three main islands, Malta, Gozo & Comino and the rest mentioned. A total of 17 populations are recorded by the author.

## **The study:**

Interest in lizard observation started in 1995 in Malta and on 1997 the author started visiting some of the smaller islands such as that of Selmunett. The latter have always had an interest in their morphological differences but these could have only been to the kind of environment they are exposed to and their less genetic differentiation due to interbreeding since the populations are isolated. The more genetic differentiation there is, the less a population from another will change. An example is when comparing the Maltese with the Gozo stock, but when comparing Malta with that of Selmunett one easily finds the difference. Also the longer the islands were separated from the main lands the more the lizards tend to be heavily pigmented. An answer to this may be that the darker the melanistic colour on their skin, the quicker they can absorb heat from the sun since these are poikilothermic organisms and this helps them since there is less surface area. From 1999 the author started to visit the islands more frequently to study if there is some kind of differentiation also in the behaviour of these populations. From studying and comparing the islands, the latter started to note some rapid decline in the Selmunett's population *P. filfolensis kieselbachi* and I took more interest on this subspecies.

As mentioned above *P. filfolensis kieselbachi* is confined to Selmunett island. The latter is a small island is approx. 0.5 km long and 0.2 km wide and about 0.1 km away from the main Island (Malta). When seen from Malta Selmunett gives the impression of being two small Islands but these are attached to each other by a natural bridge which is nearly at sea level. The habitat is mainly abounded fields and guarige on the coast of the "large Island". "The small Island" is composed of guarige and a rocky shore. During my studies since 1999 the author divided the island in several sections in order to organise my observations. From literature written by Moravec.J.(1993) it is stated that *P. filfolensis kieselbachi* between the late 80's to early 90's, was very densely populated all over the island. Since the present author started visiting the Island in late 1997, there was still quite a good stable population that scarcely could

be found in all the sections of the island. From 1999 to the present day a major decline has been observed and recorded on very frequent visits.

Today, lizards inhabit approximately only 1/10 of the island and they are all located in one particular section of the smaller islet that the author have designated as Area C. Here the maximum population is of the order of 30 to 35 lizards. Personal data show 327 lizards in all the Island in 15/8/1998 were recorded and a decline in population to 127 lizards on 17/8/2001. Specific data is given below on AS and PJS work (a report presented to MEPA two years ago). From observation the decline could not be identified as lack of food. The Island is densely populated with insects especially with their favourite prey, the Blue Wing Grasshoppers *S.coerulans* and few species of ants. From recent studies it is shown that more than 20% of their diet is ants. There is much food to go around in one area that it can hold 16 times the population it exists today only on the "small Island". Temperature changes through time may also had its effects, but not to cause this decline in such a low period of time. Predation was one of the few questions left and according to recent collected data, the latter was the problem.

Although *P. filfolensis kieselbachi* have natural predators such as birds of prey and sea birds, these tend to be so low in number that their effect is minimum. Terrestrial animals such as geckos (stealing eggs) and snakes do have their impact but again they are very low in number. However the rats, an alien species to the island have been recorded to increase in number since 1999, and besides effecting all native fauna it had a great deal of effect on *P. filfolensis kieselbachi* since multitudes of attacks were recorded from many parts on the island (excluding similar observations from the main land). After the observations on 29/viii/01, It was found that the population was on a rapid increase of decline. About 6 months after this date, it was clear that the population was unbalancing in sex ratio since the males where surviving the attacks while females and juveniles were caught and killed. Also many carcasses were found with a missing head to the diaphragm. The rest is not eaten as if "they dislike the intestines" They attack at the head because lizards quickly release their tail and the *Rattus sp* must have learnt this trick. Males are much agile and are less caught. The only reason that there are a few specimens left is because Area C has natural refuge that can sustain *P. filfolensis kieselbachi* in entering cracks and holes that cannot be

reached by their predators. Since area C is also very close to sea level one natural heavy storm can also easily wipe out the entire population.

### **Conclusion:**

This very small population is a matter of concern and the present author intends to continue monitoring the population during the coming years. This project was chosen for this matter because it is of scientific interest and to expose the situation that it occurring. This is not a natural process and extinction of this population is a not a loss of the Maltese natural heritage only, but global because due to this endemism it can be found nowhere else in the world and if lost from this place it will be lost forever.

Upcoming is a report on the observations held from 1999 to 2003.

### **Report on statistic data:**

#### **OBSERVATIONS ON THE POPULATION OF THE MALTESE WALL LIZARD ON IL-GZEJJER TA' SELMUNETT (*PODARCIS FILFOLENSIS KIESELBACHI*).**

**Arnold Sciberras<sup>1</sup> & Patrick J. Schembri<sup>2</sup>**

During the course of fieldwork on Il-Gzejjer ta' Selmunett (St. Paul's Islands) made during August 2003 in connection with a research project on genetic differentiation in the Maltese Wall Lizard, *Podarcis filfolensis*, the authors noted a remarkable decline in the population of lizards on the islets compared to the situation in previous years. This confirmed anecdotal reports that one of us (PJS) had been receiving from persons who visited Selmunett islets for the specific purpose of photographing lizards and either did not see a single specimen or else saw very few (less than five).

As one of us (AS) had been visiting the islets since 1999 in order to observe the lizards there, we are in a position to state that the population of the Selmunett lizards has indeed declined. The population size as assessed by a standardized line-survey method and expressed as 'numbers observed per hour' to enable direct comparison, is given in the Table 1.

**Table 1**

**Variation in the population of lizards (*Podarcis filfolensis kieselbachi*) on Selmunett islets from 1999 to 2003.**

Year	Month	Number observed per hour
1999	August	18.0
2000	April	11.0
2001	August	12.0
2002	August	8.5
2003	August	5.4

While these are only estimates of relative abundance, nonetheless they are indicative of a decline in the lizard population over the past two years relative to that for the period 1999-2001. The average population size is 13.7 for the period 1999-2001 but only 7.0 for 2002-2003, which is a 48.9% reduction. If the estimate for 2003 alone is compared to the 1999-2001 average, then the reduction in population size is a staggering 60.6%. Even with all the errors involved in estimating population size in an animal as mobile as *Podarcis*, this reduction is too large to be explained away as an artefact of sampling.

Concurrently with the decline in the population of lizards, there seems to have been an increase in the population of Black Rat, *Rattus rattus*, on the islets. During his census of the lizard population, AS also kept a tally of the number of rats observed. Although these estimates are less accurate than those for the lizards, since the line-survey method used was designed for lizards not rats, yet the results are indicative. The average rat sightings for the period 1999-2001 were 6.52 per hour, while the figures for 2002 and 2003 were 4.5 and 10.6 per hour, respectively. While it is not possible to establish a causal link between the decline in the lizard population and the slight increase in the rat population during the same period, neither can such a link be excluded, especially since rats were observed eating lizards (although whether the lizard were already dead when found by the rat or were killed by the rats themselves, could not be established). However, a single case of a rat carrying a live lizard in its mouth was also observed.

In turn, the increase in the population of *Rattus rattus* may be related to the large increase in the amount of refuse on the islets, particularly organic material, including

food remains from picnics or barbeques. Apparently the foreshore of the islets is popular for such activities during the summer months.

The population of the Maltese Wall Lizard on Selmunett islets has been formally named as a distinct subspecies: *Podarcis filfolensis kieselbachi* (Fejérváry, 1924), differing from the mainland form (ssp. *maltensis*) in having a whitish gular region and black spots on the underside. However there is a wide variability in coloration and spotting patterns within each insular population even if on average the majority of individuals or a particular sex and maturity show characteristic colorations and patterns distinctive of their population, the most clear-cut example of which is the Filfla race (*Podarcis filfolensis filfolensis*). The sub specific status of all the named populations is still uncertain, whereas there are micro insular populations that using the same criteria as have been applied to name island populations of *Podarcis filfolensis* as distinct subspecies, should also be recognised as subspecies. Application of modern molecular techniques of genetic analysis should provide information on the degree of genetic differentiation between the various populations as well as the degree of genetic exchange between them and such studies are in progress by a group from the Department of Biology of the University of Malta and the Institut für Biochemie, Justus-Liebig-Universität, Giessen, Germany.

In any case, whether the various populations warrant recognition as formal subspecies or are simply island ecotypes with some distinctive and genetically inherited characters, these isolated or semi-isolated populations are nonetheless of conservation interest as ‘evolutionary significant units’ (Amato, 1991)<sup>1</sup> distinguished by a unique mix of morphological, ecological, bio geographical and possibly genetic characters.

*Podarcis filfolensis* is an internationally protected species (Berne Convention, Habitats Directive) and also by national legislation (Flora, Fauna and Natural Habitats Protection Regulations, 2003). The Selmunett Islands race of *Podarcis filfolensis* (*P.f.kieselbachi*) is specifically listed in Schedule II of the Flora, Fauna and Natural Habitats Protection Regulations, 2003, as an animal “whose conservation requires the designation of special areas of conservation”, and in Schedule V of the same regulations as “protected fauna”. Given the level of international and national interest in the conservation of the Maltese Wall Lizard and its various population, it is of

---



concern that the population of *Podarcis filfolensis kieselbachi* appears to be declining. In this regard we make the following recommendations:

1. The population of *P.f.kieselbachi* on Selmunett Island needs to be monitored over the long term to establish trends in such important demographic parameters as: number, sex-ratio, age-class distribution and possibly natality and mortality in order to assess the 'performance' of the population.
2. In view of the potential causal link between the decline in the *P.f.kieselbachi* population and the increase in the population of *Rattus rattus*, the number of the latter species on Selmunett Island also needs to be monitored.
3. Even if rats are not the direct cause of the decline in the population of *P.f.kieselbachi* they may be a contributing factor (interaction between rats and lizards was observed) and in any case they are a threat to other species on these protected islets and so efforts at their removal or at least their control should be implemented with urgency.
4. In turn, the bludgeoning rat population seem to be related to the amount of organic refuse left by visitors. In this regard, the islets need to be cleared of such refuse also with urgency, and a maintenance programme for the regular cleaning of the islets need to be instituted.

Report to be cited as:

SCIBERRAS, A & SCHEMBRI,P.J. (2003) OBSERVATIONS ON THE POPULATION OF THE MALTESE WALL LIZARD ON IL-GZEJZER TA' SELMUNETT (*PODARCIS FILFOLENSIS KIESELBACHI*). UNPUBLISHED MEPA REPORT.

### **Acknowledgments**

The author would like to thank Esther Schembri and Jeffery Sciberras for their continuous support and help in field and during my studies on the heptero fauna. The author would like also to thank Prof.Patrick.J.Schembri for his scientific consultancy and research opportunities he has provided.

## References

Moravec.J.(1993)Captive breeding of *Podarcis filfolensis* in Valakos,E.D. ,Bohme,W. ,Perez Mellado,V, Maragou,P.[Eds]*International symposium of lacertid of the Mediterranean basin no 1*

Savona-Ventura C. (1983) Fauna of the Maltese Islands: Maltese Wall Lizards. *Heritage*; 51:1006-1007 .

Schembri SP (ed)(1983) Natural history of St Pauls` s Island. *Potamon* 11.pg.1-34.

Schembri PJ (1982) Origins of Some Endemic Maltese Animals. *Potamon* 9 pg 113-115.

Sciberras A. (2004) The Contribution of Maltese Reptiles to Agriculture. *Mcast link issue 9* pg.6

Sciberras A. (2005) Aliens in Malta. *MCAST link issue 13* pg.5.

All this work is to be sited as:

SCIBERRAS, A. (2005) Observation on the endangered population of the Maltese wall lizard of Selmunett island (*Podarcis filfolensis kieselbachi*). Unpublished work, presented to the chamber of young scientists of Malta at 4- 10<sup>th</sup> April ,winning the contest 1st place and leading to the Belgian Science expo on 26 April to 1May.

Images representing pattern differentiation through age differences & sex in non breeding specimens of *P. filfolensis kieselbachi*.



1  
2



3



4



5

1) 1.5yr Male dorsal. 3) 2.5-3yr Male dorsal. 5) Female adult ventral.  
2) 2.5-3yr Male ventral. 4) Female adult dorsal. (Photo credit- A.Sciberras).

