

19. A taxonomic study of the Eivissa wall lizard, *Podarcis pityusensis* Boscá 1883

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### Introduction

One of the most interesting aspects of the Eivissa wall lizard is the enormous variation in its populations. At the beginning of the century various herpetologists (Eisentraut, 1928a, 1928b, 1929, 1930; Mertens, 1921, 1927; Müller, 1927a, 1927b, 1928a, 1928b, 1928c, 1928d, 1929; Wetstein, 1937) described numerous subspecies. In most cases these studies were based on a very small number of specimens which did not necessarily reflect exactly the characteristics of the entire population. The collectors of this material were not generally the same people as those who later studied it, and they sometimes produced errors through having confused some of the islands with others.

Another problem stems from the study of the colouration of specimens preserved in alcohol for a long period of time. It is precisely the colouration that is one of the most important variables in this species and necessitates the examination of living specimens, preferably ones which have been recently captured. Studies such as that of Buchholz (1954), which emphasize this feature, are based on specimens collected in the thirties and suffer from the aforementioned defect. More recent studies, albeit restricted to a small number of islands and not covering all the species, are those of Lilge (1975) and Rodríguez Ruiz (1977).

Cirer (1981) has recently published a work in which, using an analysis of principal components and a canonical analysis, she concluded that there are seven large groups of subspecies within the species and that they, approximately, comprise the majority of the island populations. Measurements were taken of the following: the snout to vent length (SVL), the relative length of the pileus (LRP) expressed as a percentage of the SVL, the relative length of the hindlegs (LRMP), also as a percentage of the SVL and the relative width of the pileus (ARP) as a percentage of its length. For the squamation, the following were counted: the number of dorsal scales in a transverse row at mid-body, the number of gular scales in a straight line from symphysis to the mid-line of the collar, the number of collar scales, the number of transverse series of ventrals,

the number of femoral pores and the number of lamellae beneath the fourth toe. The tables show the mean ( $\bar{X}$ ), the range (Int.), the standard deviation (SD), the standard error (SE) and the sample size (n).

On a number of islands the number of specimens captured was very small, either because their populations are so reduced or almost extinct, or because of the difficulties involved in catching them. In order to complement our material, we have examined the important collection of *P. pityusensis* in the Zoologisches Forschungsinstitut und Museum Alexander Koenig (ZFMK, Bonn), collected in the thirties by J. Jokisch and H. Grün. This collection is of even greater importance, since Buchholz (1954) based his work on it. Recently, Cirer (1980) described *P. p. canaretensis* from Illot des Canaret and *P. p. martinezi* from Sal Rossa. I have not studied the first of these forms due to the lack of material.

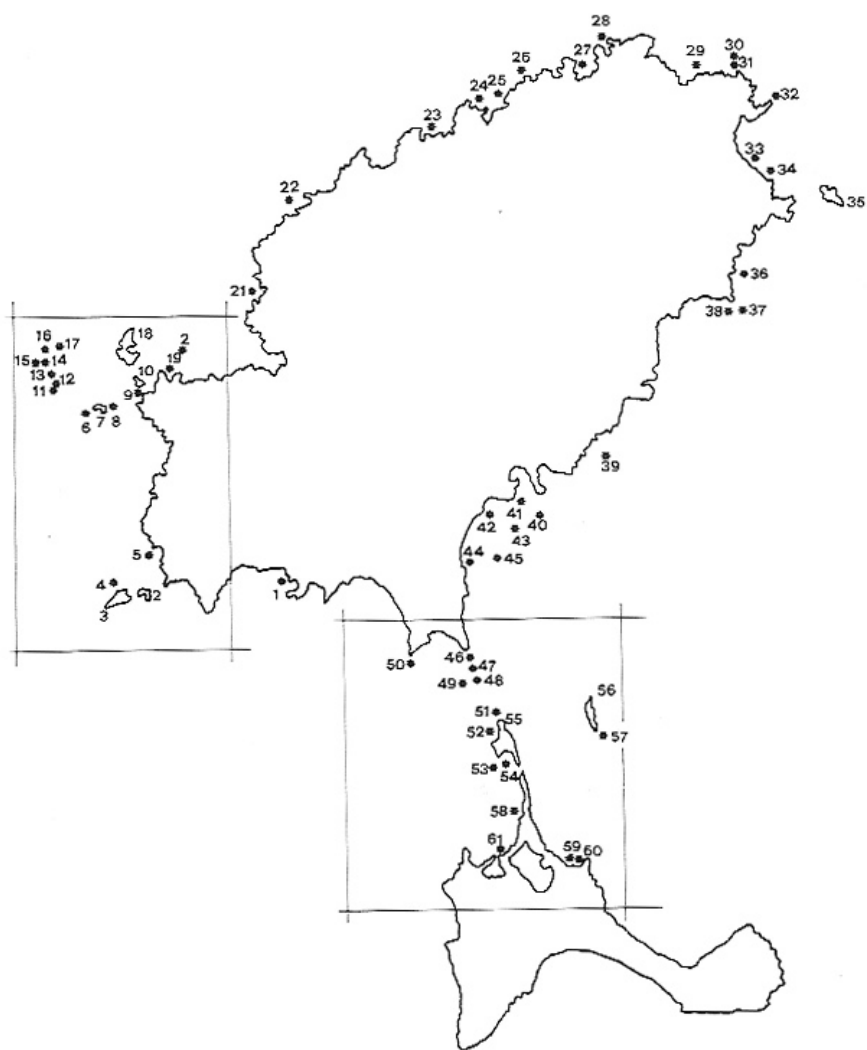


Figure 1. Map of Eivissa, Formentera and small islands and islets.

- |                               |   |
|-------------------------------|---|
| 1. Ses Illetes de Porroig     | 32. Punta Grossa                            |
| 2. Es Vedranell               | 33. Es Figueral                             |
| 3. Es Vedrà                   | 34. Illot de s'Hort                         |
| 4. Sa Galera                  | 35. Tagomago                                |
| 5. Escull de Cala d'Hort      | 36. Illa des Canar                          |
| 6. S'Espardell de s'Espartar  | 37. Illa de Santa Eulària                   |
| 7. S'Espartar                 | 38. Illa Redona                             |
| 8. Escull de s'Espartar       | 39. Es Lladons                              |
| 9. Esculls de ses Punxes      | 40. Es Daus                                 |
| 10. Illa des Bosc             | 41. Illa Negra, sa Corbeta                  |
| 11. Na Gorra                  | 42. Illa de ses Rates                       |
| 12. Es Vaixell                | 43. Es Malvins (Malvi Pla, Malvi Gros)      |
| 13. Na Bosc                   | 44. Illeta de sa Sal Rossa                  |
| 14. Bleda Plana               | 45. L'Esponja                               |
| 15. Escull d'En Ramon         | 46. Escull de ses Portes (Escull d'Enterra) |
| 16. Escull Vermell            | 47. En Caragoler                            |
| 17. Escull de Tramuntana      | 48. Es Penjats                              |
| 18. Sa Conillera              | 49. Ses Illetes Negres                      |
| 19. Es Farallons              | 50. Esculls de sa Punta de la Rama          |
| 20. Es Palleret               | 51. Illa des Porcs                          |
| 21. S'Illeta (de Cala Salada) | 52. Sa Torreta                              |
| 22. Ses Margalides            | 53. Illa de Castavi                         |
| 23. Entrepenyes               | 54. Illa de s'Alga                          |
| 24. Illa Murada               | 55. S'Espalmador                            |
| 25. Cap Bernat                | 56. S'Espardell                             |
| 26. Illa d'En Calders         | 57. S'Espardelló                            |
| 27. Illot de sa Mesquida      | 58. Illa d'En Forn i illa Redona            |
| 28. Punta de sa Galera        | 59. Illa des Pujols                         |
| 29. Escull des Pas            | 60. S'Aigua Dolça                           |
| 30. Ses Formigues             | 61. La Savina                               |
| 31. S'Escullet                |   |

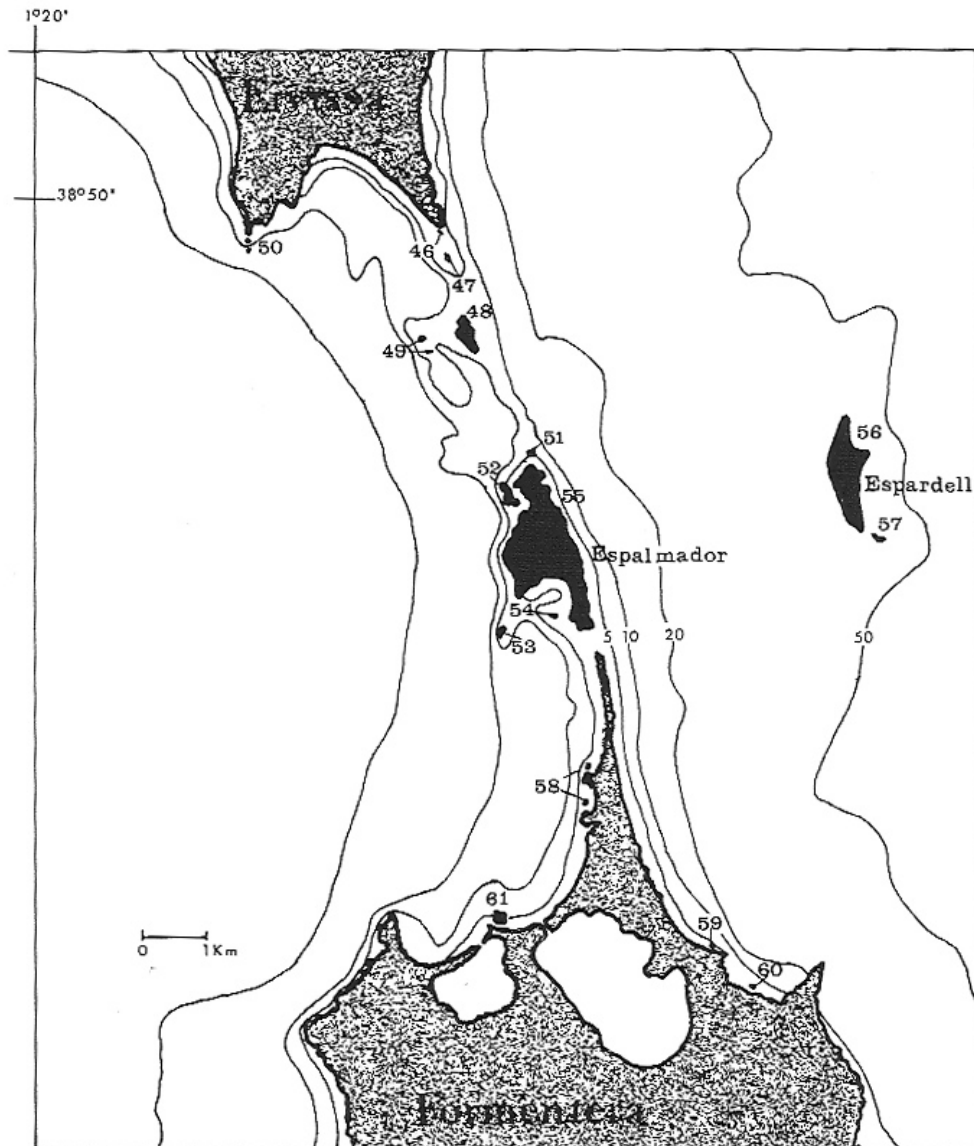


Figure 2. Area between Eivissa and Formentera.



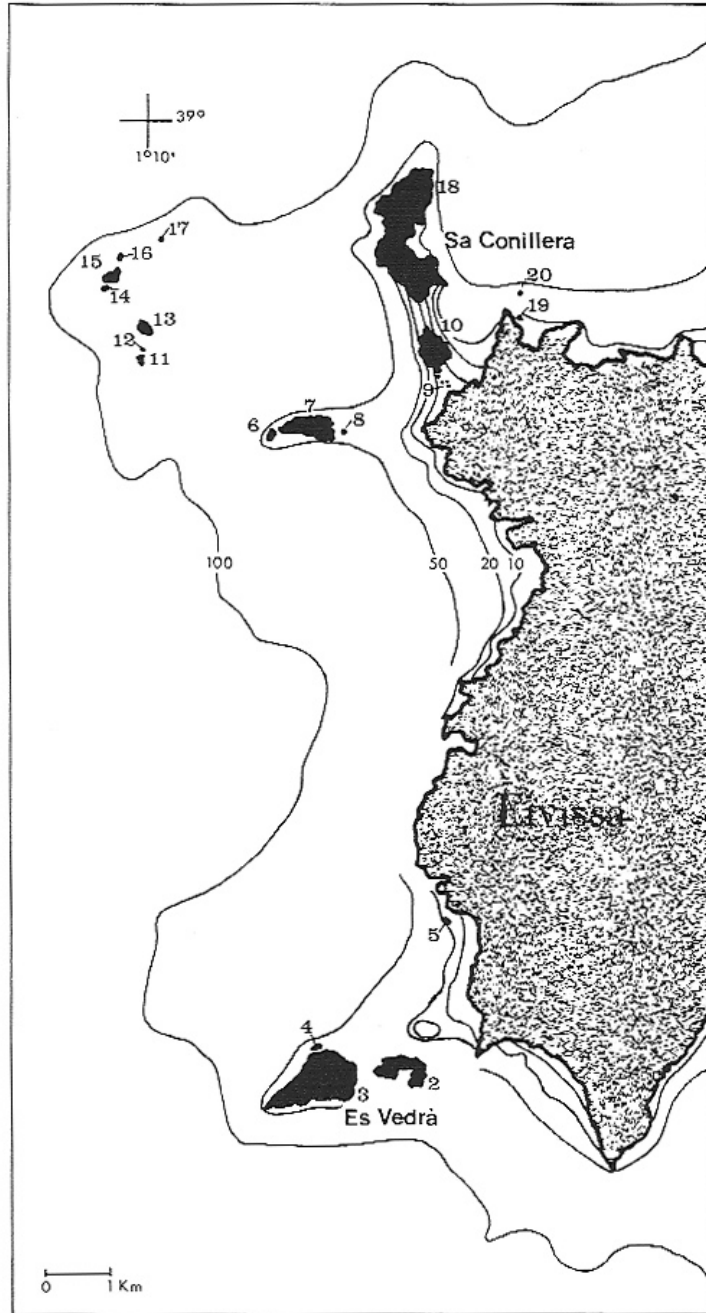


Figure 3. Area west of Eivissa.

### *Podarcis pityusensis pityusensis* Boscá 1883

The typical form of the island of Eivissa has been described by various authors (Eisentraut 1950; Buchholz 1954; Lilge 1975), and is perhaps the best known.

#### *Distribution*

Eivissa, Illeta de Sa Sal Rossa, Illa Negra, Illa d'En Calders, Punta de Sa Ferradura, Na Bosc and Ses Illetes de Porroig.

#### *Definition*

According to Eisentraut (1950), it is a medium-sized form (SVL ♂♂, 63.9 mm, SVL ♀♀, 61.2 mm); in the opinion of Buchholz, however, it is somewhat bigger (SVL ♂♂, 66.3 mm, SVL ♀♀, 59.8 mm (1954). Lilge (1975) gives intermediate values (SVL ♂♂, 64.4 mm, SVL ♀♀, 56.7 mm). The number of dorsal scales is 59 in ♂♂ and 55.7 in ♀♀, according to Eisentraut (1950), and 57.7 in ♂♂ and 55.5 in ♀♀ according to Buchholz (1954). The ♂♂ have 21.9 femoral pores and the ♀♀ 21.3 (Eisentraut, 1928), or 21.7 in the ♂♂ and 20.7 in the ♀♀ (Buchholz, 1954). The ♂♂ have 11.8 collar scales (Eisentraut, 1950) and the ♀♀ 11. The number of lamellae is 27.4 in the ♂♂ and 27.7 in the ♀♀.

The colouration of the Eivissa population is very variable, verifying the findings of the authors who have studied them (Eisentraut, 1950). Lilge (1975) mentions that there are colour variations between different localities, although we have not been able to verify this. I have examined numerous live specimens in all the localities visited on the island (more than 40) and have not found any definite geographical trends in the colouration.

#### *Discussion*

As early as 1954, Eisentraut included *isletasi* Hartmann 1953 in the synonymy of *P. p. pityusensis*. An examination of the two specimens collected in the islet of Sa Sal Rossa did not reveal any appreciable differences in pattern, colouration and squamation. The significantly greater size must be emphasized, however. The shallow depth of the water separating this island from Eivissa indicates that we are dealing with a very young population. For the reasons mentioned previously, I include *P. p. martinezi* Cirer 1980 in the synonymy of the typical subspecies.

The population of Illa Negra (41) is relatively young and differs only slightly from that of Eivissa. Its noteworthy features are the slightly greater SVL, the

Table 1. Variation in snout-vent length.

|                            | X    | SE   | $\overset{\sigma}{\sigma}$<br>S | Int.  | n  | X    | SE   | $\overset{\sigma}{\sigma}$<br>S | Int.  | n  |
|----------------------------|------|------|---------------------------------|-------|----|------|------|---------------------------------|-------|----|
| Illa de sa Sal Rossa       | 76   |      |                                 |       | 1  |      |      |                                 |       |    |
| Illa de ses Rates          | 78.1 | 0.69 | 2.07                            | 74-82 | 10 | 70.8 | 0.86 | 2.11                            | 67-74 | 7  |
| Es Malví Pla (N.)          | 79.1 | 0.75 | 2.4                             | 73-82 | 11 | 70.5 | 1.54 | 3.77                            | 65-76 | 7  |
| Es Malví Gros (S.)         | 78.2 | 2.38 | 4.76                            | 72-84 | 5  | 72   | 2.78 | 5.56                            | 63-77 | 5  |
| Es Daus                    | 83.6 |      | 2.3                             | 81-85 | 3  | 68   |      | 5.19                            | 62-71 | 3  |
| Illa Negra                 | 71   | 1.91 | 4.28                            | 67-78 | 6  | 64.3 |      | 2.88                            | 61-66 | 3  |
| Illa Redona                | 76.4 | 1.29 | 3.15                            | 72-80 | 7  | 68   | 1.45 | 2.91                            | 65-72 | 5  |
| Illa de Santa Eulària      | 77.7 | 1.18 | 3.93                            | 70-84 | 12 | 71.2 | 1.04 | 2.94                            | 67-74 | 9  |
| Illa des Canar             | 73.6 | 0.79 | 2.75                            | 68-78 | 13 | 67.3 | 0.82 | 3.2                             | 62-72 | 16 |
| Tagomago                   | 74.6 | 0.81 | 2.45                            | 70-80 | 10 | 69.8 | 0.89 | 2.69                            | 66-74 | 10 |
| Illot de s'Hort            | 70.6 | 1.73 | 3.88                            | 63-74 | 6  | 61   | 1.32 | 4.37                            | 54-67 | 12 |
| Illa d'En Calders          | 67.5 | 1.11 | 3.53                            | 61-71 | 11 | 58.2 | 1.19 | 2.06                            | 56-60 | 4  |
| Illot de sa Mesquida       | 68.8 | 1.71 | 3.42                            | 63-72 | 5  | 67   |      | 2.64                            | 64-69 | 3  |
| Sa Ferradura               | 67.6 |      | 2.51                            | 65-70 | 3  | 60.3 |      | 0.57                            | 60-61 | 3  |
| Illa Murada                | 76.8 | 0.6  | 2.33                            | 73-80 | 16 | 67   | 1.82 | 3.16                            | 64-71 | 4  |
| Ses Margalides             | 69   |      |                                 |       | 1  | 67.4 | 1.49 | 3.64                            | 63-74 | 7  |
| S'Illeta (de Cala Salada)  | 70.6 | 1.43 | 4.29                            | 64-77 | 10 | 62.8 | 1.63 | 3.27                            | 59-66 | 5  |
| Sa Bleda Plana             | 79.5 | 0.69 | 3.24                            | 75-84 | 23 | 68.5 | 0.94 | 3.91                            | 58-76 | 18 |
| S'Escull Vermell           | 80   |      |                                 |       | 1  | 72   |      |                                 | 71-73 | 2  |
| Na Bosc                    | 85.4 | 1.01 | 4.06                            | 80-96 | 17 | 77   | 1.65 | 4.04                            | 71-83 | 7  |
| Na Gorra                   | 82.5 | 1.6  | 5.3                             | 74-89 | 12 | 73.2 | 0.91 | 3.16                            | 67-80 | 13 |
| Sa Conillera               | 74.7 | 1.12 | 4.04                            | 68-80 | 14 | 68.1 | 0.58 | 2.1                             | 65-72 | 14 |
| Illa des Bosc              | 68.8 | 0.72 | 2.7                             | 65-73 | 15 | 64.1 | 0.55 | 1.66                            | 60-65 | 10 |
| S'Espartar                 | 74.9 | 0.92 | 4.02                            | 65-80 | 20 | 64.9 | 1.26 | 3.78                            | 60-70 | 10 |
| S'Escull de s'Espartar     | 74.5 |      |                                 | 71-78 | 2  | 64.2 |      | 3.2                             | 61-67 | 4  |
| S'Espardell de s'Espartar  | 76   | 1.15 | 2.82                            | 72-80 | 7  | 66   | 0.93 | 2.09                            | 62-68 | 6  |
| Es Vedrà                   | 73.5 | 1.02 | 3.23                            | 69-80 | 11 | 65.8 | 1.24 | 2.48                            | 62-69 | 5  |
| Es Vedranell               | 75.1 | 1.13 | 2.99                            | 69-78 | 8  | 67.3 | 1.01 | 2.87                            | 64-73 | 9  |
| Ses Illetes de Porroig     | 64.6 | 1.21 | 3.42                            | 61-71 | 9  | 61   |      |                                 |       | 1  |
| En Caragoler               | 66.8 | 0.91 | 2.41                            | 65-70 | 8  | 59.5 |      |                                 | 59-60 | 2  |
| Es Penjats                 | 74.9 | 0.53 | 2.31                            | 68-78 | 20 | 65.4 | 0.4  | 1.5                             | 63-69 | 15 |
| Ses Illetes Negres         | 74.5 | 0.67 | 2.6                             | 70-80 | 16 | 65.7 | 1.44 | 2.5                             | 63-69 | 4  |
| Illa des Pouet o d'En Forn | 62   | 1.79 | 4                               | 57-69 | 6  |      |      |                                 |       |    |
| Illa Redona                | 58   |      |                                 |       | 1  | 61   |      |                                 |       | 1  |
| Sa Torreta                 | 69   | 1.39 | 5.02                            | 62-78 | 14 | 60.1 | 1.27 | 2.85                            | 57-65 | 6  |
| Illa des Porcs             | 70.6 | 0.88 | 3.06                            | 65-74 | 13 | 60   | 1.9  | 3.8                             | 56-64 | 5  |
| S'Espalmador               | 73.1 | 1.09 | 1.89                            | 71-75 | 4  | 69   |      |                                 | 68-70 | 2  |
| Illa de s'Alga             | 66.6 | 1.88 | 4.2                             | 60-72 | 6  | 59   |      | 3                               | 58-60 | 3  |
| S'Espardell                | 73   | 0.61 | 2.21                            | 69-76 | 14 | 64.7 | 1.26 | 3.56                            | 58-69 | 9  |
| Illa de Castavi            | 63.3 | 1.15 | 3.64                            | 59-70 | 11 | 61.6 | 1.59 | 4.2                             | 53-68 | 8  |
| Es Trucadors               | 64.3 | 1.22 | 2.73                            | 60-68 | 6  | 57.3 |      | 3.51                            | 54-61 | 3  |
| Conill de Formentera       | 68.8 | 1.98 | 3.97                            | 66-75 | 5  | 62   |      |                                 | 59-65 | 2  |
| la Savina                  | 70.7 |      | 5.05                            | 65-75 | 4  |      |      |                                 |       |    |

X: mean                      SE: standard error  
 Int: range                    n: sample size  
 SD: standard deviation

Table 2. Variation in relative hindlegs length.

|                           | ♂♂   |      |      | ♀♀        |    |      |      |      |           |    |
|---------------------------|------|------|------|-----------|----|------|------|------|-----------|----|
|                           | X    | SE   | S    | Int.      | n  | X    | SE   | S    | Int.      | n  |
| Illa de sa Sal Rossa      | 47.6 |      |      |           | 1  | 43.2 | 0.68 | 1.66 | 40-45     | 7  |
| Illa de ses Rates         | 47.9 | 0.89 | 2.36 | 45-51.2   | 8  | 43.9 | 0.72 | 1.77 | 41.4-46.1 | 7  |
| Es Malví Pla (N.)         | 48.5 | 0.86 | 2.29 | 44.3-51.2 | 8  | 45.2 |      | 3.65 | 42.9-50.7 | 4  |
| Es Malví Gros (S.)        | 50.9 |      | 4.29 | 46.8-56.9 | 4  | 49.5 |      | 3.2  | 46.7-53   | 3  |
| Es Daus                   | 47.1 |      | 1.46 | 45.6-48.5 | 3  | 41.9 |      | 1.41 | 40.9-42.9 | 2  |
| Illa Negra                | 46.7 | 0.87 | 1.96 | 43.3-48.9 | 6  | 46.3 | 1.38 | 2.76 | 43-50.3   | 5  |
| Illa Redona               | 51.1 | 1.12 | 2.75 | 48.7-55.5 | 7  | 46.3 | 1.21 | 3.42 | 41.8-51.4 | 9  |
| Illa de Santa Eulària     | 51.9 | 0.74 | 2.48 | 46.8-55.2 | 12 | 46.6 | 0.69 | 2.59 | 42.8-50.4 | 15 |
| Illa des Canar            | 49.8 | 0.49 | 1.72 | 47.9-53.4 | 13 | 47.7 | 1.34 | 3.8  | 44.2-54.4 | 9  |
| Tagomago                  | 49.5 | 0.51 | 1.44 | 47.2-51.7 | 9  | 49.4 | 1.22 | 4.06 | 41.2-55.1 | 12 |
| Illot de s'Hort           | 50.2 | 1.04 | 2.33 | 47.2-54.1 | 6  | 50.9 | 1.48 | 2.57 | 47.3-53.3 | 4  |
| Illa d'En Calders         | 52.9 | 0.82 | 2.6  | 49.2-59   | 11 | 47.2 |      | 1.06 | 46.3-48.4 | 3  |
| Illot de sa Mesquida      | 51.5 | 1.29 | 2.59 | 48.6-55.5 | 5  | 49.1 |      | 2.17 | 47.5-51.6 | 3  |
| Sa Ferradura              | 53.6 |      | 3.11 | 51.4-55.8 | 2  | 46   |      | 0.49 | 45.3-46.4 | 4  |
| Illa Murada               | 48.6 | 0.57 | 2.23 | 44.9-51.7 | 16 | 50.8 | 0.64 | 1.58 | 49.2-53.9 | 7  |
| Ses Margalides            | 52.1 |      |      |           | 1  | 48.6 | 1.72 | 3.44 | 45.4-54.5 | 5  |
| S'Illeta (de Cala Salada) | 53.3 | 1.02 | 2.88 | 50.6-58.5 | 9  | 46.3 | 0.56 | 2.33 | 42-51.3   | 18 |
| Sa Bleda Plana            | 50.2 | 0.38 | 1.68 | 47.5-52.6 | 20 | 46.7 |      | 2.01 | 44.7-48.7 | 2  |
| S'Escull Vermell          | 51.6 |      |      |           | 1  | 45.8 | 0.82 | 2.01 | 43.7-49.2 | 7  |
| Na Bosc                   | 49.2 | 0.77 | 3.1  | 40.6-53.7 | 17 | 45.9 | 0.53 | 1.68 | 42.8-48.6 | 11 |
| Na Gorra                  | 50.1 | 1.06 | 3.51 | 44-56.4   | 12 | 50.2 | 1.03 | 3.73 | 45.7-56.5 | 14 |
| Sa Comillera              | 52.6 | 0.68 | 2.37 | 49.3-58.5 | 13 | 47.8 | 0.6  | 1.8  | 45.4-51.6 | 10 |
| Illa des Bosc             | 52.2 | 0.6  | 2.27 | 49.2-55.3 | 15 | 49.7 | 0.72 | 2.05 | 47.1-52.8 | 9  |
| S'Espartac                | 50.7 | 0.96 | 3.75 | 44.3-56.9 | 16 |      |      |      |           |    |

|                            |      |      |      |  |           |    |      |      |  |      |           |    |
|----------------------------|------|------|------|--|-----------|----|------|------|--|------|-----------|----|
| S'Escull de s'Espartar     | 48.9 |      |      |  | 47.8-50   | 2  | 49   |      |  | 2.55 | 46.2-51.6 | 4  |
| S'Espardell de s'Espartar  | 52   | 0.67 | 1.5  |  | 50.6-54.4 | 6  | 49.5 | 1.22 |  | 2.74 | 46.2-53.2 | 6  |
| Es Vedrà                   | 53.7 | 0.49 | 1.49 |  | 52-56.5   | 10 | 49.2 | 0.4  |  | 0.8  | 48.4-50   | 5  |
| Es Vedranell               | 52.4 | 0.8  | 1.96 |  | 48.7-54.7 | 7  | 50.9 | 0.99 |  | 2.8  | 47.6-56.1 | 9  |
| Ses Illetes de Porroig     | 53.9 | 0.61 | 1.73 |  | 50.7-55.7 | 9  | 47.5 |      |  |      |           | 1  |
| En Caragoler               | 48.3 | 0.53 | 1.41 |  | 45.7-50   | 8  | 45.3 |      |  |      | 43.3-47.4 | 2  |
| Es Penjats                 | 49.2 | 0.39 | 1.66 |  | 45.4-52   | 19 | 45   | 0.44 |  | 1.66 | 41.7-49.2 | 15 |
| Ses Illetes Negres         | 49.5 | 0.68 | 2.48 |  | 44.5-52.7 | 14 | 44.4 |      |  | 1.81 | 42.8-46.9 | 4  |
| Illa des Pouet o d'En Forn | 54.6 | 0.84 | 1.69 |  | 52.3-56.6 | 5  |      |      |  |      |           |    |
| Illa Redona                | 55.1 |      |      |  |           | 1  | 45.9 |      |  |      |           | 1  |
| Sa Torreta                 | 52.5 | 0.95 | 3.43 |  | 45.9-58.3 | 14 | 48.7 | 0.89 |  | 2    | 47.4-52   | 6  |
| Illa des Porcs             | 50.4 | 0.49 | 1.71 |  | 47.2-53.6 | 13 | 50.8 | 2.44 |  | 4.89 | 46.8-58.9 | 5  |
| S'Espalmador               | 50.8 |      | 1.6  |  | 48.6-52   | 4  | 44.8 |      |  |      | 44.2-45.5 | 2  |
| Illa de s'Alga             | 53.3 | 1.25 | 2.79 |  | 50-56.9   | 6  | 48.5 |      |  | 2.15 | 46.5-50.8 | 3  |
| S'Espardell                | 50.6 | 0.82 | 2.97 |  | 44-55     | 14 | 46.3 | 0.93 |  | 2.65 | 42.6-50   | 9  |
| Illa de Castavi            | 52   | 0.4  | 1.21 |  | 50-54     | 10 | 45.3 | 1.08 |  | 2.87 | 42.6-50.9 | 8  |
| Es Trucadors               | 53.7 | 1.93 | 3.87 |  | 48.5-58.4 | 5  | 48.2 |      |  | 1.5  | 47.3-50   | 3  |
| Conjill de Formentera      | 49.8 | 1.23 | 2.47 |  | 46.9-53   | 5  | 48.4 |      |  |      | 46.1-50.8 | 2  |
| Sabina                     | 52   |      | 2.38 |  | 49.3-53.8 | 3  |      |      |  |      |           |    |

X: mean SE: standard error

Int: range n: sample size

SD: standard deviation

Table 3. Variation in the relative width of the pileus.

|                           | $\bar{x}$ |      |      | $\bar{s}$ |    |      | $\bar{v}$ |      |           |    |
|---------------------------|-----------|------|------|-----------|----|------|-----------|------|-----------|----|
|                           | X         | SE   | S    | Int.      | n  | X    | SE        | S    | Int.      | n  |
| Illa de sa Sul Rossa      | 52.6      |      |      |           | 1  |      |           |      |           |    |
| Illa de ses Rates         | 50.8      | 0.67 | 2.03 | 46.9-53.9 | 10 | 51.7 | 1.01      | 2.48 | 48.7-55.5 | 7  |
| Es Malví Pla (N.)         | 51.7      | 0.77 | 2.46 | 49.7-57.4 | 11 | 51.1 | 0.48      | 1.18 | 50-53.1   | 7  |
| Es Malví Gros (S.)        | 49.5      | 0.83 | 1.66 | 47.7-52.2 | 5  | 50.5 | 0.85      | 1.71 | 47.7-52.2 | 3  |
| Es Daus                   | 49.6      |      | 0.28 | 49.5-50   | 3  | 49   |           | 1.43 | 48-50.7   | 3  |
| Illa Negra                | 52.5      | 0.51 | 1.15 | 51.1-54   | 6  | 50.8 |           | 1.04 | 49.6-51.5 | 3  |
| Illa Redona               | 52.3      | 1.07 | 2.62 | 48-56.4   | 7  | 50.8 | 0.98      | 1.97 | 48-53.3   | 5  |
| Illa de Santa Eulària     | 49        | 0.49 | 1.64 | 46.8-51.9 | 12 | 49.7 | 0.41      | 1.18 | 48.4-51.9 | 9  |
| Illa des Canar            | 51.4      | 0.53 | 1.86 | 49.1-54.8 | 13 | 50.9 | 0.38      | 1.48 | 48.7-53.5 | 16 |
| Tagomago                  | 50.6      | 0.46 | 1.38 | 48.4-52.9 | 10 | 50   | 0.78      | 2.34 | 46.9-54.9 | 10 |
| Illot de s'Hort           | 49.7      | 0.68 | 1.52 | 48.1-51.6 | 6  | 50   | 0.26      | 0.87 | 48.8-51.4 | 12 |
| Illa d'En Calders         | 49.5      | 0.39 | 1.24 | 47.4-51.1 | 11 | 50.7 |           | 1.33 | 48.9-52.1 | 4  |
| Illot de sa Mesquida      | 49.9      | 0.99 | 1.99 | 47.1-52.2 | 5  | 50   |           | 1.4  | 48.6-51.4 | 3  |
| Sa Ferradura              | 48.2      |      | 1.08 | 47-49.1   | 3  | 47.6 |           | 1.2  | 46.4-48.8 | 3  |
| Illa Murada               | 50.7      | 0.46 | 1.79 | 48.3-55.2 | 16 | 51.2 | 0.63      | 1.09 | 49.6-51.7 | 4  |
| Ses Margalides            | 48.2      |      |      |           | 1  | 47.9 | 0.79      | 1.93 | 45.3-51.3 | 7  |
| S'Illeta (de Cala Salada) | 49.6      | 0.39 | 1.18 | 47.5-51.7 | 10 | 49.2 | 0.71      | 1.43 | 47.5-51.4 | 5  |
| Sa Bleda Plana            | 48.1      | 0.36 | 1.71 | 45.5-51.6 | 23 | 47.8 | 0.26      | 1.11 | 46-50     | 18 |
| S'Escull Vermell          | 48.7      |      |      |           | 1  | 48.2 |           |      | 48.1-48.3 | 2  |
| Na Bosc                   | 48.2      | 0.43 | 1.74 | 45.4-51.7 | 17 | 47.6 | 0.71      | 1.75 | 45.4-50   | 7  |
| Na Gorra                  | 48        | 0.56 | 1.86 | 44.8-50.9 | 12 | 47.7 | 0.61      | 2.13 | 44.8-52   | 13 |
| Sa Conillera              | 49.1      | 0.42 | 1.52 | 46.7-51.5 | 14 | 48.3 | 0.5       | 1.81 | 46-50.6   | 14 |
| Illa des Bosc             | 48.2      | 0.44 | 1.65 | 45.8-50.5 | 15 | 48.6 | 0.48      | 1.45 | 46.2-50.3 | 10 |
| S'Espartar                | 47.6      | 0.37 | 1.61 | 43.2-50   | 20 | 48.4 | 0.53      | 1.61 | 45.6-51.1 | 10 |

|                            |      |  |  |  |  |           |    |      |      |           |    |
|----------------------------|------|--|--|--|--|-----------|----|------|------|-----------|----|
| S'Escull de s'Espartar     | 50.8 |  |  |  |  | 49.6-52.1 | 2  | 50.1 | 0.64 | 49.2-50.7 | 4  |
| S'Espardell de s'Espartar  | 47.1 |  |  |  |  | 44.6-48.9 | 7  | 48.1 | 1.34 | 46.6-50   | 6  |
| Es Vedrà                   | 47.7 |  |  |  |  | 45.2-50.5 | 11 | 48.3 | 0.7  | 47.2-48.9 | 5  |
| Es Vedranell               | 48.8 |  |  |  |  | 46.4-50.5 | 8  | 47.3 | 1.26 | 45.8-50   | 9  |
| Ses Illetes de Porroig     | 48.9 |  |  |  |  | 45.8-52.7 | 9  | 49.2 |      |           | 1  |
| En Caragoler               | 48.2 |  |  |  |  | 46.1-50   | 8  | 50.9 |      | 49.2-52.6 | 2  |
| Es Penjats                 | 52.6 |  |  |  |  | 48.6-58.4 | 20 | 50.6 | 1.89 | 47.5-54   | 15 |
| Ses Illetes Negres         | 52.5 |  |  |  |  | 46.3-55.6 | 16 | 52.3 | 1.32 | 51-53.7   | 4  |
| Illa des Pouet o d'En Forn | 50.2 |  |  |  |  | 47.9-52.3 | 6  |      |      |           |    |
| Illa Redona                | 48.2 |  |  |  |  |           | 1  | 49.6 |      |           | 1  |
| Sa Torreia                 | 49.3 |  |  |  |  | 46-53.5   | 14 | 51.5 | 1.97 | 48.4-53.9 | 6  |
| Illa des Porcs             | 49.7 |  |  |  |  | 48-52     | 13 | 47.8 | 2.01 | 45.6-50.8 | 5  |
| S'Espalmador               | 49.8 |  |  |  |  | 49.1-51.3 | 4  | 51.7 |      | 51-52.4   | 2  |
| Illa de s'Alga             | 49   |  |  |  |  | 47.3-51.5 | 6  | 48.9 | 1.19 | 48.1-50.3 | 3  |
| S'Espardell                | 50.7 |  |  |  |  | 45.9-59.6 | 14 | 50.1 | 1.76 | 47.6-52.5 | 9  |
| Illa de Castavi            | 47   |  |  |  |  | 45-49.7   | 11 | 49.6 | 1.63 | 47.7-52.7 | 8  |
| Es Trucadors               | 49.1 |  |  |  |  | 46.7-52.9 | 6  | 52.7 | 0.95 | 51.7-53.6 | 3  |
| Conill de Formentera       | 49.3 |  |  |  |  | 47.8-50   | 5  | 49   |      | 48.8-49.2 | 2  |
| la Savina                  | 48.6 |  |  |  |  | 45.8-51   | 4  |      |      |           |    |

X: mean SE: standard error

Int: range n: sample size

SD: standard deviation

Table 4. Variation in the relative length of the pileus.

|                           | $\delta\delta$ |      |      | $\text{♀♀}$ |    |      |      |      |           |    |
|---------------------------|----------------|------|------|-------------|----|------|------|------|-----------|----|
|                           | X              | SE   | S    | Int.        | n  | X    | SE   | S    | Int.      | n  |
| Illa de sa Sal Kossa      | 25             |      |      |             | 1  |      |      |      |           |    |
| Illa de ses Rates         | 25             | 0.18 | 0.56 | 24.3-26.2   | 10 | 21.9 | 0.29 | 0.72 | 21.1-23   | 7  |
| Es Malvi Pla (N.)         | 24.3           | 0.19 | 0.62 | 23.5-25.3   | 11 | 21.4 | 0.32 | 0.8  | 20-22.1   | 7  |
| Es Malvi Gros (S.)        | 24.8           | 0.31 | 0.62 | 23.8-25.3   | 5  | 21.4 | 0.37 | 0.74 | 20.7-22.6 | 5  |
| Es Daus                   | 24.3           |      | 0.3  | 24-24.6     | 3  | 22.5 |      | 1.62 | 21.1-24.3 | 3  |
| Illa Negra                | 24.5           | 0.3  | 0.68 | 23.3-25.2   | 6  | 21.6 |      | 0.4  | 21.3-22.1 | 3  |
| Illa Redona               | 24.9           | 0.3  | 0.74 | 24.3-26.4   | 7  | 22.4 | 0.35 | 0.7  | 21.5-23.3 | 5  |
| Illa de Santa Eulària     | 24.5           | 0.17 | 0.57 | 23.6-25.4   | 12 | 22.8 | 0.52 | 1.49 | 21.6-25.5 | 9  |
| Illa des Canar            | 25             | 0.19 | 0.68 | 24.1-26.1   | 13 | 22.8 | 0.31 | 1.2  | 21.2-25.6 | 16 |
| Tagomago                  | 24.6           | 0.18 | 0.56 | 24-25.7     | 10 | 22.4 | 0.46 | 1.39 | 21-24.5   | 10 |
| Illot de s'Hort           | 25.2           | 0.16 | 0.37 | 25-26       | 6  | 23.4 | 0.28 | 0.95 | 21.6-24.6 | 12 |
| Illa d'En Calders         | 25.2           | 0.21 | 0.69 | 24.3-26.7   | 11 | 23.4 |      | 0.33 | 23-23.8   | 4  |
| Illot de sa Mesquida      | 25.3           | 0.19 | 0.38 | 24.9-25.8   | 5  | 21.8 |      | 0.37 | 21.4-22.1 | 3  |
| Sa Ferradura              | 24.9           |      | 1.15 | 23.8-26.1   | 3  | 22.4 |      | 0.76 | 21.8-23.3 | 3  |
| Illa Murada               | 24.5           | 0.13 | 0.53 | 23.8-25.6   | 16 | 22.4 |      | 0.44 | 22-23     | 4  |
| Ses Margalides            | 24.3           |      |      |             | 1  | 22   | 0.32 | 0.8  | 21.4-23.8 | 7  |
| S'Illeta (de Cala Salada) | 24.7           | 0.23 | 0.71 | 23.1-25.5   | 10 | 22.7 | 0.51 | 1.03 | 21.8-24.5 | 5  |
| Sa Bleda Plana            | 23.8           | 0.1  | 0.51 | 22.8-24.7   | 23 | 21.5 | 0.18 | 0.77 | 20.2-23.4 | 18 |
| S'Escull Vermell          | 24.1           |      |      |             | 1  | 21.7 |      |      | 21.5-21.9 | 2  |
| Na Bosc                   | 23.7           | 0.19 | 0.78 | 22.3-25     | 17 | 21.2 | 0.25 | 0.63 | 20.1-22.2 | 7  |
| Na Gorra                  | 23.9           | 0.29 | 0.97 | 22.5-25.7   | 12 | 21.7 | 0.18 | 0.64 | 20.6-22.7 | 13 |
| Sa Conillera              | 24.8           | 0.3  | 1.1  | 21.9-26.2   | 14 | 23.1 | 0.38 | 1.38 | 21.3-25.2 | 14 |
| Illa des Bosc             | 24.7           | 0.12 | 0.47 | 23.8-25.4   | 15 | 22   | 0.2  | 0.6  | 20.9-22.9 | 10 |
| S'Espartar                | 24.1           | 0.14 | 0.61 | 23-25       | 20 | 22.5 | 0.3  | 0.91 | 23-25     | 10 |



|                            |      |      |      |           |    |      |      |           |    |
|----------------------------|------|------|------|-----------|----|------|------|-----------|----|
| S'Escull de s'Espartar     | 23.1 | 0.08 | 0.21 | 22.9-23.3 | 2  | 21.5 | 0.46 | 21.1-22.2 | 4  |
| S'Espardell de s'Espartar  | 23.3 | 0.08 | 0.21 | 23-23.6   | 7  | 21.7 | 0.55 | 21.1-22.4 | 6  |
| Es Vedrà                   | 24.4 | 0.15 | 0.5  | 23.8-25.3 | 11 | 22.3 | 0.45 | 21.9-23   | 5  |
| Es Vedranell               | 24   | 0.24 | 0.64 | 23.2-25   | 8  | 22   | 0.79 | 20.8-23.8 | 9  |
| Ses Illetes de Porroig     | 24.8 | 0.16 | 0.47 | 24.2-25.5 | 9  | 22.2 |      |           | 1  |
| En Caragoler               | 25.1 | 0.19 | 0.51 | 24.2-25.9 | 8  | 24.9 |      | 24.2-25.9 | 2  |
| Es Penjats                 | 24.4 | 0.15 | 0.68 | 23.3-25.4 | 20 | 21.5 | 0.51 | 20.4-22.3 | 15 |
| Ses Illetes Negres         | 24.1 | 0.25 | 0.97 | 22.4-25.7 | 16 | 21.3 | 0.47 | 21-22     | 4  |
| Illa des Povei o d'En Forn | 24.8 | 0.23 | 0.53 | 24.3-25.6 | 6  |      |      |           |    |
| Illa Redona                | 24.6 |      |      |           | 1  | 21.8 |      |           | 1  |
| Sa Torreta                 | 24.5 | 0.17 | 0.64 | 23.8-25.8 | 14 | 21.7 | 0.68 | 20.8-22.8 | 6  |
| Illa des Pores             | 24.3 | 0.15 | 0.55 | 23.1-25   | 13 | 22.6 | 1.53 | 21.1-25.1 | 5  |
| S'Espalmador               | 24.3 |      | 0.37 | 23.8-24.7 | 4  | 21   |      |           | 2  |
| Illa de s'Alga             | 24.3 | 0.27 | 0.61 | 23.3-25.2 | 6  | 22.3 | 0.43 | 22-22.8   | 3  |
| S'Espardell                | 24   | 0.13 | 0.47 | 23.2-24.8 | 14 | 21.4 | 0.77 | 20.2-22.5 | 9  |
| Illa de Castavi            | 25.1 | 0.27 | 0.87 | 24.1-27.3 | 11 | 21.6 | 0.73 | 20.7-23.2 | 8  |
| Es Trucadors               | 25.6 | 0.21 | 0.48 | 24.8-26.1 | 6  | 22.5 | 0.61 | 21.9-23.1 | 3  |
| Conill de Formentera       | 24.6 | 0.32 | 0.65 | 24-25.7   | 5  | 21.7 |      | 21.2-22.2 | 2  |
| la Savina                  | 25.3 |      | 0.69 | 24.5-26.1 | 4  |      |      |           |    |

X: mean SE: standard error

Int: range n: sample size

SD: standard deviation

Table 5. Variation in the weight.

|                           | ♂♂   |      |      |           | ♀♀ |      |      |      |        |    |
|---------------------------|------|------|------|-----------|----|------|------|------|--------|----|
|                           | X    | SE   | S    | Int.      | n  | X    | SE   | S    | Int.   | n  |
| Illa de sa Sal Rossa      | 12.5 |      |      |           | 1  |      |      |      |        |    |
| Illa de ses Rates         | 13.1 | 0.41 | 1.02 | 12-14.5   | 7  | 8    | 0.3  | 0.61 | 7.5-9  | 5  |
| Es Malvi Pla (N.)         | 14.1 | 0.46 | 1.32 | 12.5-16   | 9  | 7.25 | 0.56 | 1.25 | 6-9    | 6  |
| Es Malvi Gros (S.)        | 13   |      |      |           | 1  | 7.3  | 0.98 | 1.7  | 5-9    | 4  |
| Es Daus                   |      |      |      |           |    |      |      |      |        |    |
| Illa Negra                | 9.9  | 0.79 | 1.59 | 8-12      | 5  | 5.5  |      |      |        | 1  |
| Illa Redona               | 13.7 | 0.82 | 2.01 | 11.5-16   | 6  | 7.4  | 0.81 | 1.63 | 5.5-10 | 5  |
| Illa de Sant Eulària      | 11.7 |      |      | 9-14.5    | 2  | 8.8  | 0.41 | 1.09 | 7.5-11 | 8  |
| Illa des Canar            | 11.5 | 0.55 | 1.92 | 8-15      | 13 | 7.6  | 0.36 | 1.41 | 6-10   | 16 |
| Tagomago                  | 11.3 | 0.3  | 0.91 | 10-13     | 10 | 8.3  | 0.32 | 0.87 | 7-10   | 8  |
| Illot de s'Hort           | 12.2 |      |      | 11.5-13   | 2  | 5.3  | 0.47 | 1.34 | 4-7    | 9  |
| Illa d'En Calders         |      |      |      |           |    |      |      |      |        |    |
| Illot de sa Mesquida      |      |      |      |           |    |      |      |      |        |    |
| Sa Ferradura              |      |      |      |           |    |      |      |      |        |    |
| Illa Murada               | 11.8 | 0.35 | 1.36 | 9-14      | 16 | 6.1  |      | 0.62 | 5.5-7  | 4  |
| Ses Margalides            |      |      |      |           |    |      |      |      |        |    |
| S'Illeta (de Cala Salada) | 10.7 |      |      | 10.5-11   | 2  | 7    |      |      |        | 2  |
| Sa Bleda Plana            | 14   | 0.38 | 1.77 | 10.5-17   | 22 | 7    | 0.34 | 1.36 | 5-11.5 | 17 |
| S'Escull Vermell          | 15.5 |      |      |           | 1  | 8.5  |      |      | 8-9    | 2  |
| Na Bosc                   | 18.1 | 0.87 | 3.27 | 11-23     | 15 | 10   | 0.5  | 1.23 | 8.5-12 | 7  |
| Na Gorra                  | 14.6 | 0.82 | 2.6  | 11.5-18.5 | 11 | 8.7  | 0.23 | 0.75 | 7.5-10 | 11 |
| Sa Conillera              | 12.7 | 0.56 | 1.86 | 8.5-15    | 12 | 7.9  | 0.31 | 1.09 | 6.5-10 | 13 |
| Illa des Bosc             | 8.6  | 0.25 | 0.96 | 6.5-10    | 15 | 5.7  | 0.26 | 0.79 | 5-7    | 10 |
| S'Espartar                | 10.6 | 0.55 | 2.15 | 7.5-14    | 16 | 6.7  | 0.73 | 2.07 | 5.5-12 | 9  |

|                            |      |      |      |         |    |     |      |      |         |    |
|----------------------------|------|------|------|---------|----|-----|------|------|---------|----|
| S'Escull de s'Espartar     | 12.2 |      |      | 10-14.5 | 2  | 5.6 | 0.35 | 0.62 | 5-6.5   | 4  |
| S'Espardell de s'Espartar  | 11   | 0.62 | 1.08 | 9.5-12  | 4  | 5.8 | 0.17 | 0.4  | 5-6     | 6  |
| Es Vedrà                   | 10.4 | 0.68 | 1.92 | 8-14    | 9  | 6.3 | 0.41 | 0.83 | 5-7     | 5  |
| Es Vedranell               | 10.1 |      |      | 9-12.5  | 3  | 6.8 | 0.4  | 0.98 | 5.5-8.5 | 7  |
| Ses Illetes de Porroig     |      |      |      |         |    |     | 3.5  |      |         | 1  |
| En Caragoler               |      |      |      |         |    |     |      |      |         |    |
| Es Penjats                 | 11.6 | 0.29 | 1.1  | 10-13.5 | 15 | 5.8 | 0.1  | 0.38 | 5-6     | 13 |
| Ses Illetes Negres         | 12.4 | 0.4  | 1.45 | 10-14.5 | 14 | 5.7 |      |      | 5.5-6   | 2  |
| Illa des Pouet o d'En Forn | 5.5  |      |      |         | 1  |     |      |      |         |    |
| Illa Redona                | 4.5  |      |      |         | 1  | 4   |      |      |         | 1  |
| Sa Torreta                 | 7.8  |      |      | 7-8.5   | 3  | 5.5 |      |      | 5-6     | 2  |
| Illa des Pores             | 9.5  | 0.46 | 1.04 | 8-11    | 6  | 4.7 |      |      | 4-5.5   | 2  |
| S'Espalmador               | 9    |      |      |         | 1  |     |      |      |         |    |
| Illa de s'Alga             | 6.5  |      |      | 5-8     | 2  |     |      |      |         |    |
| S'Espardell                | 10.5 | 0.47 | 1.56 | 9-14    | 12 | 5.5 | 0.28 | 0.63 | 4.5-6   | 6  |
| Illa de Castavi            | 8.5  |      |      | 8-9     | 2  | 4.7 | 0.25 | 0.63 | 3.5-5.5 | 7  |
| Es Trucadors               |      |      |      |         |    |     |      |      |         |    |
| Conill de Formentera       |      |      |      |         |    |     |      |      |         |    |
| la Savina                  |      |      |      |         |    |     |      |      |         |    |

X: mean SE: standard error

Int: range n: sample size

SD: standard deviation

Table 6. Variation in the number of dorsal scales.

|                            | X    | SE   | ♂♂<br>S | Int.  | n  | X    | SE   | ♀♀<br>S | Int.  | n  |
|----------------------------|------|------|---------|-------|----|------|------|---------|-------|----|
| Illa de sa Sal Rossa       | 59   |      |         |       | 1  |      |      |         |       |    |
| Illa de ses Rates          | 63   | 0.62 | 1.88    | 61–66 | 10 | 60.5 | 1.47 | 3.59    | 55–67 | 7  |
| Es Malví Pla (N.)          | 61.2 | 0.76 | 2.41    | 57–64 | 11 | 58.5 | 1.15 | 2.81    | 55–63 | 7  |
| Es Malví Gros (S.)         | 61.4 | 2.53 | 5.07    | 55–68 | 5  | 58.8 | 1.51 | 3.03    | 55–63 | 5  |
| Es Daus                    | 64.3 |      | 3.05    | 61–67 | 3  | 61.3 |      | 3.21    | 59–65 | 3  |
| Illa Negra                 | 59.5 | 1.46 | 3.27    | 56–64 | 6  | 57.6 |      | 2.3     | 55–59 | 3  |
| Illa Redona                | 64.4 | 1.07 | 2.63    | 61–69 | 7  | 59.4 | 0.44 | 0.89    | 58–60 | 5  |
| Illa de Santa Eulària      | 63.5 | 0.9  | 2.99    | 59–70 | 12 | 60.5 | 1.1  | 3.12    | 58–68 | 9  |
| Illa des Canar             | 61.9 | 0.62 | 2.17    | 58–64 | 13 | 59.6 | 0.78 | 3.02    | 53–66 | 16 |
| Tagomago                   | 63.3 | 0.94 | 2.83    | 59–68 | 10 | 61.6 | 1    | 3.02    | 58–67 | 10 |
| Illot de s'Hort            | 63.5 | 0.83 | 1.87    | 61–66 | 6  | 61.3 | 1.1  | 3.65    | 57–68 | 12 |
| Illa d'En Calders          | 59.8 | 0.96 | 3.06    | 56–66 | 11 | 57.2 |      | 3.77    | 53–62 | 4  |
| Illot de sa Mesquida       | 58.8 | 0.89 | 1.78    | 56–60 | 5  | 57   |      | 2.64    | 55–60 | 3  |
| Sa Ferradura               | 56   |      | 1       | 55–57 | 3  | 59.6 |      | 2.08    | 59–62 | 3  |
| Illa Murada                | 63.1 | 0.31 | 1.22    | 61–66 | 16 | 60   |      | 4.08    | 54–63 | 4  |
| Ses Margalides             | 66   |      |         |       | 1  | 63   | 0.97 | 2.38    | 59–66 | 7  |
| S'Illeta (de Cala Salada)  | 63   | 0.68 | 2.05    | 58–65 | 10 | 61.2 | 1.85 | 3.7     | 56–66 | 5  |
| Sa Bleda Plana             | 67.5 | 0.64 | 3.04    | 62–72 | 23 | 63.9 | 0.82 | 3.4     | 59–72 | 18 |
| Escull Vermell             | 67   |      |         |       | 1  | 60.5 |      |         | 59–62 | 2  |
| Na Bosc                    | 64.1 | 0.45 | 1.81    | 60–66 | 17 | 61.2 | 0.77 | 1.88    | 59–65 | 7  |
| Na Gorra                   | 63.5 | 0.61 | 2.02    | 60–67 | 12 | 62   | 0.42 | 1.47    | 60–64 | 13 |
| Sa Conillera               | 62.5 | 0.82 | 2.97    | 58–69 | 14 | 61.2 | 0.79 | 2.86    | 57–65 | 14 |
| Illa des Bosc              | 59.1 | 0.42 | 1.59    | 57–62 | 15 | 57   | 0.8  | 2.4     | 54–62 | 10 |
| S'Espartar                 | 61.7 | 0.7  | 3.05    | 56–67 | 20 | 59.6 | 0.65 | 1.95    | 56–62 | 10 |
| S'Escull de s'Espartar     | 59.5 |      |         | 59–60 | 2  | 60.5 |      | 1.91    | 59–63 | 4  |
| S'Espardell de s'Espartar  | 62.7 | 0.99 | 2.42    | 60–67 | 7  | 60.3 | 1.15 | 2.58    | 58–64 | 6  |
| Es Vedrà                   | 64.1 | 0.83 | 2.63    | 59–69 | 11 | 60   | 1.93 | 3.87    | 56–65 | 5  |
| Es Vedranell               | 60.3 | 0.66 | 1.76    | 59–64 | 8  | 57.3 | 0.86 | 2.44    | 54–62 | 9  |
| Ses Illetes de Porroig     | 61.1 | 1.03 | 2.93    | 56–65 | 9  | 57   |      |         |       | 1  |
| En Caragoler               | 59.7 | 0.82 | 2.18    | 57–64 | 8  | 56.5 |      |         | 56–57 | 2  |
| Es Penjats                 | 57.8 | 0.68 | 2.98    | 53–65 | 20 | 55   | 0.86 | 3.25    | 51–62 | 15 |
| Ses Illetes Negres         | 62.5 | 0.78 | 3.05    | 58–70 | 16 | 56.5 | 1.45 | 2.51    | 54–60 | 4  |
| Illa des Pouet o d'En Forn | 58.1 | 0.95 | 2.13    | 56–61 | 6  |      |      |         |       |    |
| Illa Redona                | 57   |      |         |       | 1  | 55   |      |         |       | 1  |
| Sa Torreta                 | 57.2 | 0.67 | 2.43    | 53–61 | 14 | 55.5 | 1.46 | 3.27    | 51–61 | 6  |
| Illa des Porcs             | 57.9 | 0.46 | 1.6     | 55–62 | 13 | 59.4 | 2.25 | 4.5     | 55–64 | 5  |
| S'Espalmador               | 58.5 |      | 3.51    | 55–62 | 4  | 57   |      |         | 54–60 | 2  |
| Illa de s'Alga             | 59.6 | 2.46 | 5.5     | 51–67 | 6  | 54.3 |      | 3.78    | 50–57 | 3  |
| S'Espardell                | 59.9 | 0.75 | 2.7     | 56–64 | 14 | 57.3 | 1.32 | 3.74    | 52–62 | 9  |
| Illa de Castaví            | 61   | 0.44 | 1.41    | 58–63 | 11 | 59.3 | 0.85 | 2.26    | 57–63 | 8  |
| Es Trucadors               | 57.8 | 1.58 | 3.54    | 53–63 | 6  | 55.6 |      | 1.52    | 54–57 | 3  |
| Conill de Formentera       | 57   | 1.62 | 3.24    | 52–61 | 5  | 56   |      |         | 55–57 | 2  |
| la Savina                  | 57.7 |      | 2.21    | 55–60 | 4  |      |      |         |       |    |

X: mean                      SE: standard error  
 Int: range                 n: sample size  
 SD: standard deviation

Table 7. Variation in the number of femoral pores.

|                            | X    | SE   | $\frac{\sigma}{S}$ | Int.  | n  | X    | SE   | $\frac{\sigma}{S}$ | Int.  | n  |
|----------------------------|------|------|--------------------|-------|----|------|------|--------------------|-------|----|
| Illa de sa Sal Rossa       | 19.5 |      |                    |       |    |      |      |                    |       |    |
| Illa de ses Rates          | 23.4 | 0.63 | 1.89               | 20–26 | 10 | 21.7 | 0.56 | 1.38               | 20–23 | 7  |
| Es Malví Pla (N.)          | 22.4 | 0.58 | 1.86               | 19–25 | 11 | 20.8 | 0.59 | 1.46               | 18–22 | 7  |
| Es Malví Gros (S.)         | 22.6 | 0.44 | 0.89               | 22–24 | 5  | 19.4 | 0.83 | 1.67               | 17–21 | 5  |
| Es Daus                    | 19.6 |      | 1.15               | 19–21 | 3  | 21.3 |      | 1.52               | 20–23 | 3  |
| Illa Negra                 | 20.5 | 0.67 | 1.51               | 18–22 | 6  | 19.6 |      | 1.15               | 19–21 | 3  |
| Illa Redona                | 22.4 | 0.74 | 1.81               | 21–25 | 7  | 23.2 | 0.54 | 1.09               | 22–25 | 5  |
| Illa de Santa Eulària      | 22.9 | 0.43 | 1.44               | 20–26 | 12 | 21.8 | 0.32 | 0.92               | 21–23 | 9  |
| Illa des Canar             | 23   | 0.59 | 2.05               | 20–26 | 13 | 21.9 | 0.36 | 1.43               | 19–24 | 16 |
| Tagomago                   | 23.2 | 0.49 | 1.47               | 22–26 | 10 | 21.8 | 0.51 | 1.54               | 19–24 | 10 |
| Illot de s'Hort            | 23,1 | 0.33 | 0.75               | 22–24 | 6  | 21.6 | 0.32 | 1.07               | 20–24 | 12 |
| Illa d'En Calders          | 21.7 | 0.42 | 1.34               | 20–24 | 11 | 19.5 |      | 0.57               | 19–20 | 4  |
| Illot de sa Mesquida       | 21.2 | 0.65 | 1.3                | 20–23 | 5  | 21   |      | 1.73               | 19–22 | 3  |
| Sa Ferradura               | 24   |      | 1.73               | 21–24 | 3  | 24   |      | 1.73               | 23–26 | 3  |
| Illa Murada                | 23.7 | 0.33 | 1.29               | 21–27 | 16 | 23.7 |      | 0.95               | 23–25 | 4  |
| Ses Margalides             | 24   |      |                    |       | 1  | 22.4 | 0.39 | 0.97               | 21–24 | 7  |
| S'Illeta (de Cala Salada)  | 22.7 | 0.49 | 1.49               | 21–25 | 10 | 21.4 | 0.27 | 0.54               | 21–22 | 5  |
| Sa Bleda Plana             | 21.6 | 0.33 | 1.37               | 20–24 | 18 | 21.1 | 0.34 | 1.42               | 19–24 | 18 |
| S'Escull Vermell           | 22   |      |                    |       | 1  | 20.5 |      |                    | 20–21 | 2  |
| Na Bosc                    | 20.3 | 0.4  | 1.61               | 18–23 | 17 | 20.7 | 0.77 | 1.88               | 18–24 | 7  |
| Na Gorra                   | 21.4 | 0.32 | 1.08               | 20–23 | 12 | 21.2 | 0.56 | 1.96               | 19–25 | 13 |
| Sa Conillera               | 22   | 0.32 | 1.17               | 20–24 | 14 | 22.1 | 0.48 | 1.74               | 20–26 | 14 |
| Illa des Bosc              | 21.6 | 0.37 | 1.39               | 20–24 | 15 | 20.8 | 0.4  | 1.22               | 19–23 | 10 |
| S'Espartar                 | 21   | 0.3  | 1.18               | 26–30 | 16 | 20.8 | 0.43 | 1.31               | 19–23 | 10 |
| S'Escull de s'Espartar     | 20   |      |                    | 18–22 | 2  | 19.7 |      | 0.95               | 19–21 | 4  |
| S'Espardell de s'Espartar  | 21   | 0.33 | 0.81               | 20–22 | 7  | 19.3 | 0.6  | 1.36               | 17–21 | 6  |
| Es Vedrà                   | 23   | 0.54 | 1.73               | 21–26 | 11 | 22.8 | 0.54 | 1.09               | 21–24 | 5  |
| Es Vedranell               | 21.5 | 0.64 | 1.69               | 19–24 | 8  | 21.5 | 0.35 | 1.01               | 20–23 | 9  |
| Ses Illetes de Porroig     | 22.8 | 0.44 | 1.26               | 20–24 | 9  | 24   |      |                    |       | 1  |
| En Caragoler               | 23.8 | 0.31 | 0.83               | 23–25 | 8  | 23   |      |                    |       | 2  |
| Es Penjats                 | 22.6 | 0.31 | 1.35               | 21–26 | 20 | 20.2 | 0.48 | 1.81               | 23–29 | 15 |
| Ses Illetes Negres         | 21.6 | 0.47 | 1.82               | 19–25 | 16 | 20   |      | 0.81               | 19–21 | 4  |
| Illa des Pouet o d'En Forn | 20.4 | 0.57 | 1.14               | 19–22 | 5  |      |      |                    |       |    |
| Illa Redona                | 22   |      |                    |       | 1  | 20   |      |                    |       | 1  |
| Sa Torreta                 | 21.5 | 0.38 | 1.4                | 19–23 | 14 | 21   | 0.63 | 1.41               | 19–23 | 6  |
| Illa des Porcs             | 21.9 | 0.39 | 1.38               | 20–24 | 13 | 21.4 | 0.74 | 1.48               | 25–29 | 5  |
| S'Espalmador               | 21   |      | 1.41               | 20–23 | 4  |      |      |                    |       |    |
| Illa de s'Alga             | 19.6 | 0.36 | 0.81               | 19–21 | 6  | 20.3 |      | 0.57               | 20–21 | 3  |
| S'Espardell                | 21.7 | 0.31 | 1.12               | 20–24 | 14 | 21.1 | 0.32 | 0.92               | 20–23 | 9  |
| Illa de Castavi            | 23.4 | 0.4  | 1.29               | 22–26 | 11 | 22.3 | 0.34 | 0.91               | 21–24 | 8  |
| Es Trocadors               | 22.1 | 0.77 | 1.72               | 21–25 | 6  | 20.6 |      | 0.57               | 20–21 | 3  |
| Conill de Formentera       | 21.2 | 0.54 | 1.09               | 20–22 | 5  | 20   |      |                    |       | 2  |
| la Savina                  | 22   |      |                    |       | 4  |      |      |                    |       |    |

X: mean                      SE: standard error  
 Int: range                      n: sample size  
 SD: standard deviation

Table 8. Variation in the number of lamellae beneath the fourth toe.

|                            | X    | SE   | ♂♂<br>S | Int.  | n  | X    | SE   | ♀♀<br>S | Int.  | n  |
|----------------------------|------|------|---------|-------|----|------|------|---------|-------|----|
| Illa de sa Sal Rossa       | 29   |      |         |       | 1  |      |      |         |       |    |
| Illa de ses Rates          | 28   | 0.6  | 1.6     | 26-30 | 8  | 28.1 | 0.54 | 1.34    | 27-30 | 7  |
| Es Malvi Pla (N.)          | 28.7 | 0.39 | 1.03    | 27-30 | 8  | 28.4 | 0.81 | 1.98    | 26-31 | 7  |
| Es Malvi Gros (S.)         | 29.5 |      | 1       | 28-30 | 4  | 26.5 |      | 1.29    | 25-28 | 4  |
| Es Daus                    | 29.6 |      | 1.15    | 29-31 | 3  | 30   |      |         |       | 3  |
| Illa Negra                 | 25.8 | 0.52 | 1.16    | 24-27 | 6  | 24.5 |      | 0.7     | 24-25 | 2  |
| Illa Redona                | 27.8 | 0.28 | 0.69    | 27-29 | 7  | 27   | 0.61 | 1.22    | 26-29 | 5  |
| Illa de Santa Eulària      | 28.5 | 0.82 | 2.74    | 22-32 | 12 | 28.2 | 0.55 | 1.56    | 26-30 | 9  |
| Illa des Canar             | 27.8 | 0.42 | 1.46    | 25-30 | 13 | 27.4 | 0.38 | 1.39    | 25-30 | 14 |
| Tagomago                   | 29.7 | 0.23 | 0.66    | 29-31 | 9  | 29.2 | 0.58 | 1.64    | 27-31 | 9  |
| Illot de s'Hort            | 28.6 | 0.83 | 1.86    | 26-31 | 6  | 27.3 | 0.65 | 2.18    | 25-32 | 12 |
| Illa d'En Calders          | 27.9 | 0.26 | 0.83    | 27-29 | 11 | 29.5 |      | 2.08    | 27-32 | 4  |
| Illot de sa Mesquida       | 28.6 | 0.57 | 1.14    | 27-30 | 5  | 27.3 |      | 0.57    | 27-28 | 3  |
| Sa Ferradura               | 26.5 |      |         | 26-27 | 2  | 28.6 |      | 0.57    | 28-29 | 3  |
| Illa Murada                | 28.1 | 0.34 | 1.32    | 25-30 | 16 | 28   |      | 1.82    | 26-30 | 4  |
| Ses Margalides             | 29   |      |         |       | 1  | 29.2 | 0.3  | 0.75    | 28-30 | 7  |
| S'Illeta (de Cala Salada)  | 28.4 | 0.61 | 1.74    | 27-32 | 9  | 28.4 | 0.75 | 1.51    | 27-31 | 5  |
| Sa Bleda Plana             | 28.8 | 0.29 | 1.32    | 27-31 | 21 | 27.7 | 0.31 | 1.25    | 26-31 | 17 |
| S'Escull Vermell           | 27   |      |         |       | 1  | 27.5 |      |         | 27-28 | 2  |
| Na Bosc                    | 29.7 | 0.43 | 1.75    | 26-33 | 17 | 29.5 | 0.52 | 1.27    | 28-31 | 7  |
| Na Gorra                   | 29.1 | 0.33 | 1.11    | 27-31 | 12 | 28.1 | 0.49 | 1.72    | 25-30 | 13 |
| Sa Conillera               | 28.5 | 0.32 | 1.12    | 27-30 | 13 | 28.7 | 0.27 | 0.99    | 27-30 | 14 |
| Illa des Bosc              | 28.2 | 0.31 | 1.16    | 26-30 | 15 | 28.6 | 0.61 | 1.83    | 26-31 | 10 |
| S'Espartar                 | 27.9 | 0.3  | 1.18    | 26-30 | 16 | 27.7 | 0.42 | 1.2     | 26-30 | 9  |
| S'Escull de s'Espartar     | 26.5 |      |         | 26-27 | 2  | 26.5 |      | 0.57    | 26-27 | 4  |
| S'Espardell de s'Espartar  | 28.8 | 1.3  | 2.92    | 26-34 | 6  | 27.1 | 0.71 | 1.6     | 25-29 | 6  |
| Es Vedrà                   | 29.6 | 0.42 | 1.26    | 28-32 | 10 | 27.6 | 0.57 | 1.14    | 26-29 | 5  |
| Es Vedranell               | 28.7 | 0.56 | 1.38    | 27-31 | 7  | 27.6 | 0.66 | 1.87    | 25-31 | 9  |
| Ses Illetes de Porroig     | 28.4 | 0.47 | 1.33    | 26-30 | 9  | 30   |      |         |       | 1  |
| En Caragoler               | 27.5 | 0.49 | 1.3     | 26-30 | 8  | 28   |      |         |       | 2  |
| Es Penjats                 | 27.5 | 0.37 | 1.57    | 25-30 | 19 | 27   | 0.48 | 1.81    | 23-29 | 15 |
| Ses Illetes Negres         | 26.5 | 0.31 | 1.15    | 25-29 | 14 | 26.5 |      | 2.08    | 24-29 | 4  |
| Illa des Pouet o d'En Forn | 26.6 | 0.44 | 0.89    | 25-27 | 5  |      |      |         |       |    |
| Illa Redona                | 26   |      |         |       | 1  | 27   |      |         |       | 1  |
| Sa Torreta                 | 27.8 | 0.34 | 1.23    | 26-31 | 14 | 26.3 | 0.6  | 1.36    | 24-28 | 6  |
| Illa des Porcs             | 27.6 | 0.36 | 1.25    | 25-29 | 13 | 26.8 | 0.74 | 1.48    | 25-29 | 5  |
| S'Espalmador               | 26.5 |      | 1       | 25-27 | 4  | 26.5 |      |         | 25-28 | 2  |
| Illa de s'Alga             | 27.3 | 0.36 | 0.81    | 26-28 | 6  | 26.6 |      | 1.15    | 26-28 | 3  |
| S'Espardell                | 27.2 | 0.36 | 1.31    | 25-29 | 14 | 27.1 | 0.44 | 1.26    | 25-29 | 9  |
| Illa de Castaví            | 27.7 | 0.41 | 1.25    | 26-30 | 10 | 27.1 | 0.42 | 1.12    | 25-29 | 8  |
| Es Trucadors               | 27   | 1    | 2       | 24-29 | 5  | 26.3 |      | 1.15    | 25-27 | 3  |
| Conill de Formentera       | 26.4 |      | 1.14    | 25-28 | 5  | 27.5 |      |         | 27-28 | 2  |
| la Savina                  | 29.3 |      | 0.57    | 29-30 | 3  |      |      |         |       |    |

X: mean                      SE: Standard error  
 Int: range                      n: sample size  
 SD: standard deviation

Table 9. Variation in the number of gular scales.

|                            | X    | SE   | ♂♂<br>S | Int.  | n  | X    | SE   | ♀♀<br>S | Int.  | n  |
|----------------------------|------|------|---------|-------|----|------|------|---------|-------|----|
| Illa de sa Sal Rossa       | 30   |      |         |       | 1  |      |      |         |       |    |
| Illa de ses Rates          | 29.2 | 0.75 | 2.25    | 24-32 | 10 | 29   | 0.94 | 2.3     | 26-33 | 7  |
| Es Malví Pla (N.)          | 31   | 0.81 | 2.56    | 27-35 | 11 | 29.7 | 0.45 | 1.11    | 28-31 | 7  |
| Es Malví Gros (S.)         | 33.2 | 2.07 | 4.14    | 28-39 | 5  | 30.4 | 1.2  | 2.4     | 27-33 | 5  |
| Es Daus                    | 30.3 |      | 1.15    | 29-31 | 3  | 31.3 |      | 0.57    | 31-32 | 3  |
| Illa Negra                 | 29.1 | 0.65 | 1.47    | 28-31 | 6  | 30   |      | 2       | 28-32 | 3  |
| Illa Redona                | 32.5 | 0.39 | 0.97    | 31-34 | 7  | 32.4 | 0.44 | 0.89    | 31-33 | 5  |
| Illa de Santa Eulària      | 31.2 | 0.61 | 2.05    | 29-35 | 12 | 30   | 0.43 | 1.22    | 27-31 | 9  |
| Illa des Canar             | 30.6 | 0.7  | 2.43    | 26-34 | 13 | 30.3 | 0.52 | 2.02    | 26-34 | 16 |
| Tagomago                   | 32.7 | 0.7  | 2.11    | 29-35 | 10 | 31   | 0.66 | 2       | 27-34 | 10 |
| Illot de s'Hort            | 31.6 | 1.22 | 2.73    | 29-36 | 6  | 31.2 | 0.57 | 1.91    | 28-35 | 12 |
| Illa d'En Calders          | 29.6 | 0.58 | 1.85    | 25-32 | 11 | 27.5 |      | 1.73    | 26-30 | 4  |
| Illot de sa Mesquida       | 29.8 | 1.19 | 2.38    | 28-34 | 5  | 28.6 |      | 0.57    | 28-29 | 3  |
| Sa Ferradura               | 32   |      | 1       | 31-33 | 3  | 33.3 |      | 0.57    | 33-34 | 3  |
| Illa Murada                | 33.1 | 0.52 | 2.02    | 30-37 | 16 | 31.2 |      | 2.87    | 28-35 | 4  |
| Ses Margalides             | 34   |      |         |       | 1  | 31.8 | 1.14 | 2.79    | 27-35 | 7  |
| S'Illeta (de Cala Salada)  | 32.9 | 0.55 | 1.66    | 30-36 | 10 | 31.2 | 0.82 | 1.64    | 30-33 | 5  |
| Sa Bleda Plana             | 30.2 | 0.3  | 1.41    | 28-33 | 23 | 29.8 | 0.44 | 1.77    | 27-33 | 17 |
| S'Escull Vermell           | 28   |      |         |       | 1  | 30   |      |         |       | 2  |
| Na Bosc                    | 31.5 | 0.53 | 2.12    | 28-36 | 17 | 30.5 | 1.05 | 2.57    | 27-33 | 7  |
| Na Gorra                   | 30.9 | 0.68 | 2.27    | 27-35 | 12 | 30   | 0.76 | 2.64    | 24-31 | 13 |
| Sa Conillera               | 31.8 | 0.66 | 2.38    | 28-35 | 14 | 31.5 | 0.51 | 1.86    | 29-36 | 14 |
| Illa des Bosc              | 30.1 | 0.44 | 1.68    | 27-34 | 15 | 30.7 | 0.62 | 1.88    | 27-34 | 10 |
| S'Espartar                 | 31.8 | 0.6  | 2.64    | 28-38 | 20 | 30.9 | 1.02 | 3.07    | 24-34 | 10 |
| S'Escull de s'Espartar     | 30.5 |      |         | 30-31 | 2  | 29   |      | 1.41    | 27-30 | 4  |
| S'Espardell de s'Espartar  | 29.5 | 0.56 | 1.39    | 28-31 | 7  | 29.6 | 1.08 | 2.42    | 27-34 | 6  |
| Es Vedrà                   | 32   | 0.42 | 1.34    | 29-34 | 11 | 29.6 | 0.75 | 1.51    | 28-32 | 5  |
| Es Vedranell               | 30.5 | 0.85 | 2.26    | 28-35 | 8  | 30.8 | 0.92 | 2.61    | 27-34 | 9  |
| Ses Illetes de Porroig     | 31.2 | 0.49 | 1.39    | 30-34 | 9  | 33   |      |         |       | 1  |
| En Caragoler               | 28.5 | 0.28 | 0.75    | 27-29 | 8  | 28   |      |         | 27-29 | 2  |
| Es Penjats                 | 30.8 | 0.43 | 1.9     | 27-35 | 20 | 29.1 | 0.51 | 1.92    | 25-33 | 15 |
| Ses Illetes Negres         | 29.6 | 0.69 | 2.7     | 27-35 | 16 | 30.5 | 0.57 | 1       | 30-32 | 4  |
| Illa des Pouet o d'En Forn | 29.1 | 0.33 | 0.75    | 28-30 | 6  |      |      |         |       |    |
| Illa Redona                | 31   |      |         |       | 1  | 30   |      |         |       | 1  |
| Sa Torreta                 | 30.3 | 0.48 | 1.73    | 28-33 | 14 | 30   | 0.93 | 2.09    | 27-33 | 6  |
| Illa des Porcs             | 31   | 0.55 | 1.91    | 29-34 | 13 | 31.4 | 0.75 | 1.51    | 29-33 | 5  |
| S'Espalmador               | 33.3 |      | 2.51    | 31-36 | 4  | 33.5 |      |         | 31-34 | 2  |
| Illa de s'Alga             | 32.3 | 0.73 | 1.63    | 30-35 | 6  | 31.6 |      | 1.15    | 31-33 | 3  |
| S'Espardell                | 31.1 | 0.6  | 2.17    | 27-35 | 14 | 30   | 0.66 | 1.87    | 28-34 | 9  |
| Illa de Castavi            | 30.7 | 0.7  | 2.24    | 27-34 | 11 | 32.1 | 0.65 | 1.72    | 29-34 | 8  |
| Es Trucadors               | 32   | 0.74 | 1.67    | 30-34 | 6  | 32.3 |      | 1.52    | 31-34 | 3  |
| Conill de Formentera       | 28.8 | 0.82 | 1.64    | 26-30 | 5  | 32.5 |      |         | 32-33 | 2  |
| la Savina                  | 31   |      | 3.16    | 27-34 | 4  |      |      |         |       |    |

X: mean                      SE: standard error  
 Int: range                    n: sample size  
 SD: standard deviation

relatively short hindlegs and the broad pileus. The colouration patterns are very similar to those of the Eivissan population. We are also including in the typical subspecies the population of Illa d'En Calders (26) — described as *P. p. caldesiana* L. Müller 1928 — since it has similar biometrical and meristic features. The size is slightly greater and the hindlegs are somewhat shorter. The number of dorsal scales is also comparable. The pattern is slightly reduced and markedly reticulated. The dorsum is olive-green and the sides are light-brown. The Illa d'En Calders was isolated from Eivissa relatively recently, apparently due to erosion.

Although I only examined six specimens from Punta de Sa Ferradura ('Bosque de San Miguel'), their metric and squamation features were very similar to those of Eivissa. The colouration and pattern are also similar, although generally darker. For these reasons, we are including *P. p. miguelensis* Eisentraut 1928 in the synonymy of the typical subspecies.

The population of Illa des Bosc (10) was previously considered to be closely related to that of Sa Conillera (18) and both were included in the subspecies *P. p. carlkochi* Mertens and Müller 1940. However, the lizards of Illa des Bosc are more closely related to *P. p. pityusensis*. Their dorsum is yellowish-green and their sides are brown or greenish-grey. They have ultramarine and emerald green spots on the outer ventrals. The underside is bluish-white or bluish. It is a medium-sized form with slight build. The pileus is relatively short. It has a low number of dorsals.

Lilge (1975) included *P. p. purroigensis* Buchholz 1954 in the synonymy of *P. p. pityusensis* without explaining why. From the tables it can be seen that there are no appreciable differences in the metrics or in the squamation between the lizards of Ses Illetes de Porroig (1) and those of Eivissa. Buchholz (1954) showed that this form is not uniform in pattern and colouration. He stated that it is distinguished by its cyanism and by the violet-blue underside. I have examined a live young which had whitish underparts, white superciliar and subocular stripes and brown back and sides. Various adult specimens seen on the island also lacked any cyanism.

### ***Podarcis pityusensis ratae* Eisentraut 1928**

#### *Distribution*

Illa de ses Rates (42).

#### *Discussion*

Only two ♂♂ and two ♀♀ have so far been studied by Eisentraut (1928, 1950). Our findings do not agree with that of this author as the larger ♂ measured by



him had an SVL of 72 mm. The males have reduced parietal and occipital stripes. The pileus is greenish-brown with fairly conspicuous reticulation. In the females there is an even more pronounced tendency for the pattern to disappear. It was hardly visible in the two specimens examined. The underside of the males examined was white, except in the case of two which were slightly red. The dorsum is pale olive and the sides whitish with brown patterning.

On the outer ventrals there are light blue, brown and black spots. Half of the females had a reddish underside, the others were white. the dorsum is olive-green, but less conspicuous than in the males. The sides are light brown and grey. This population is similar in size, build, proportions and meristic variation to the population of the es Malvins islands (43), but differ in their pale colouring and reduced pattern.

It is a large stout form, with relatively short hindlegs, a large number of dorsal scales and few gular scales. The dorsum is olive with a greatly reduced pattern.

### ***Podarcis pityusensis schreitmuelleri* L. Müller 1927**

#### *Distribution*

*Es Malvins (43).*

#### *Discussion*

L. Müller (1927) described two subspecies for these islands. One of them is *P. p. schreitmuelleri* of es Malví Gros and the other is *P. p. affinis* of Es Malví Pla. He characterizes the latter by the lack of bright red on its sides, which the other possesses. Eisentraut (1950) studied the scarce material available on both forms, and although he mentions their similarity, still considers them as subspecies.

After having studied the material from both islands, I have arrived at the conclusion that the differences between the two populations are minor and do not justify a distinction as separate subspecies. The differences which exist are in pattern and colouration. The males in es Malví Gros have a highly blotched pileus. Their pattern varies, but it is always very conspicuous. There are prominent black patches on the underparts, especially at the edges. The males of es Malví Pla only have black patches on the first row of ventrals. The stripes are wide and conspicuous, but somewhat reticulated, while the pileus exhibits a very conspicuous black pattern, with green and yellow patches. The colouration is very similar on both islands. The dorsum is yellowish-green and the sides are brown, grey or yellowish. the underside is reddish in half of the specimens and white in the other half.

The pattern of the females is similar to that of the males, but is more conspicuous. In both populations the dorsum and flanks are yellowish-green. The underside is also variable. Half of the individuals were reddish and the rest were white.

It is a large, robust form, with a short head and a large number of gular and dorsal scales. The pattern is highly conspicuous and unbroken. The dorsum is an intense yellowish-green, the underparts vary between white and reddish.

***Podarcis pityusensis maluquerorum* × *Podarcis pityusensis pityusensis***

*Distribution*

Es Daus (40).

*Discussion*

Eisentraut (1950) mentions that on the island of es Dau Gros there are no lizards and in order to carry out a long-term experiment he introduced eight ♂♂ from Escull Vermell and 20 ♀♀ from Eivissa. In the ZFMK which I examined three ♂♂ and three ♀♀ which were collected by J. Jokisch on October 2, 1935 and which presumably were descended from the group introduced by Eisentraut. The population is probably extinct because I did not see a single specimen during my visit to the islet on August 18, 1979.

It is apparent from the study of the specimens that they have features of the two populations from which they are derived. On the one hand the size, build, proportions and meristic variation of *P. p. maluquerorum* are predominant and, on the other, there are intermediate features of pattern and colouration. The melanism is partial, being more apparent in the larger males. See Böhme & Eisentraut (1981) for more details.

***Podarcis pityusensis redonae* Eisentraut 1928**

*Distribution*

Illa de Sta. Eulària (37), Illa Redona (38).

*Discussion*

Eisentraut (1928) diagnosed *P. p. redonae* by its large size and robustness, its orange underparts and pileus with very conspicuous pattern on a green or yellow base. L. Müller (1929) described the subspecies *P. p. grossae* of the

neighbouring island of S. Eulària, defining it as a large form with green back and red sides. Lilge (1975) studied material on both islands and still maintains the distinction between two subspecies. This author mentions that *redonae* is closely related to *grossae* and that the females of Illa Redona are more slender and graceful. He also indicates differences in colour and pattern. It is apparent from the study of our material that the differences between the two populations are minor.

The greater sexual dimorphism of the Illa Redona population and the greater relative width of its pileus is noticeable. The parietal and occipital stripes of the Illa Redona males are slightly reticulated and reduced in size, while their temporal and submaxilar stripes are very fragmented. The pileus exhibits a conspicuous black pattern, although less so on the dorsum. There are small black spots dispersed over the throat and the belly. The colouration of the belly of the Illa Redona subspecies is brick-red, except in the case of one which was white. The throat is slightly reticulated with brown. It is a large stocky form with long hindlegs, a relatively short head, and a large number of dorsal and gular scales.

### ***Podarcis pityusensis canensis* Eisentraut 1928**

#### *Distribution*

Illa des Canar (36).

#### *Discussion*

Lilge (1975) accepts this as a subspecies, indicating, however, that some females resemble the males of Eivissa in pattern and colouration, but are slimmer. This population is significantly different from the Eivissan form and is distinguished by its large size, moderate stoutness and greater number of dorsal scales. The males have a continuous thick occipital stripe, but the parietals are broken. The pileus pattern is very conspicuous.

The lateral stripes are reticulated. The females have a thick unbroken parietal stripe. On the sides there is brown reticulation over the rest of the stripes. There is conspicuous black pigmentation on the outer ventrals and throat. The majority of the males have a light-blue belly, though some of these have a white or greenish hue. The dorsum is yellowish-green. The outer ventrals are spotted with green, cobalt, brown and black. The sides are very variable in colour: some are greenish, some are yellowish, while others are dark green, brownish-green or yellowish-green.

The females, like the males, have a yellowish-green dorsum. Most of them

have a sky-blue belly. Occasionally, specimens with light greenish creme, bluish-white or bluish-green and white are encountered. The supraciliar stripes are conspicuous. The sides are just as variable as those of the males, with shades of brown, greenish, greenish-brown, grey brown or a mixture of brown, green and grey.

It is a large, modestly sturdy form with a broad pileus. It has a relatively high number of dorsal scales. The belly is conspicuously coloured yellow-green. The pattern is not reduced.

***Podarcis pityusensis tagomagensis* L. Müller 1927**

*Distribution*

Tagomago (35).

*Discussion*

The material which we have collected agrees with that previously studied by L. Müller (1927) and Eisentraut (1950). The pattern of the males is greatly reduced, except in the pileus. The stripes are absent in some males and are very reduced in others. They are also reduced in the females, though still visible. The supraciliar stripes are conspicuous. The throat and outer ventrals are spotted black. The colours of both sexes are dull or dark. The back of the males varies from light green to dark bluish-green. The sides are similar but lighter. In contrast to this, the cheeks are light in colour. The belly of all the specimens is white. In the females the back and sides are olive-brown. The belly is also white in all specimens.

This form is large and of average stockiness with a relatively short pileus, and a high number of dorsal scales. The pattern is reduced, the belly is white. The colouration is dark and dull.

***Podarcis pityusensis hortae* Buchholz 1954**

*Distribution*

Illot de s'Hort (34).

*Discussion*

This subspecies is relatively young since the minimum depth of the water between Eivissa and the Illot de s'Hort is only 5 m. In recent descriptions, only the 5 ♂♂ and 3 ♀♀ studied by Buchholz have so far been mentioned. It, too, is a

relatively large, strong race, with a high number of dorsal scales. The males have a continuous or slightly reticulated vertebral stripe. The pileus is olive-brown and the sides are completely reticulated. The throat is lightly dotted with black. It has conspicuous yellow superciliar lines.

The females have superciliar lines and the vertebral stripe is continuous and the parietals are reticulated. The temporal stripes are less reticulated than in the males. The pileus is dark olive brown with slight patterning. The males have white or bluish-white bellies. The back is yellowish-green or light green, the sides brown with greenish-white spots. In the females the dorsum varies and although light green in most of them, there are specimens with dark green and a yellowish tint. The throat and the belly are light blue in most cases and bluish in a few. The sides are greyish-brown with very faint spots.

This form is closely related to the typical subspecies, having slightly greater SVL and RLP and relative stockiness. The stripes are distinctive but reticulated, especially on the sides. The back is greenish, the sides are grey and the belly is light blue.

### ***Podarcis pityusensis* ssp.**

#### *Distribution*

Punta de sa Galera ('Portinatx de San Juan', Eisentraut 1950).

#### *Discussion*

Eisentraut (1950) studied 4 ♂♂ from this islet. He did not assign subspecific status to them, though he stated that they were very closely related to those of Eivissa, but were somewhat larger. I have not studied any material on this population.

### ***Podarcis pityusensis characae* Buchholz 1954**

#### *Distribution*

Illot de Sa Mesquida (27) ('Characa').

#### *Discussion*

The population of Illot de sa Mesquida is fairly closely related to the typical form of Eivissa in biometry and squamation. The size is slightly greater and the hindlegs somewhat shorter. It differs fundamentally from *P. p. pityusensis* in its

colouration. The dorsum is deep bluish-green and the sides are reddish-brown. The centre of the belly of the males is deep reddish-grey, the outer edges light bluish-green. The females differ from the males in that the foremost part of the back is not bluish-green but reddish-brown.

***Podarcis pityusensis muradae* Eisentraut 1928**

*Distribution*

Illa Murada (24).

*Discussion*

The population of Illa Murada is significantly different from the Eivissan subspecies. It is a strongly melanistic form with an ultramarine and turquoise belly. The pattern is strongly reticulated. Our material does not agree with that studied by Eisentraut (1950) with regard to its biometry. The SVL of his largest specimen only measures 75 mm, which is below the average of those examined here. Presumably, Eisentraut studied subadult specimens.

It is a large subspecies with a relatively short pileus, short hindlegs, of moderate strength and a large number of dorsal scales. The melanism is fairly conspicuous, but the pattern is noticeably reticulated. The ventral colouration is ultramarine and turquoise.

***Podarcis pityusensis hedwigkammerae* L. Müller 1927**

*Distribution*

Ses Margalides (22).

*Discussion*

I have only examined 1 ♂ and 7 ♀♀, deposited in the ZFMK, from this island. I have only collected one young specimen due to the critical state of the population. The SVL is very great, as L. Müller mentions a male of 85 mm and Eisentraut (1950) a female of 81 mm.

It is a melanistic race, whose dorsum varies between graphite-black and dark green. The reticulated pattern is difficult to see in living specimens. It is a very large form with short pileus and relatively long hindlegs. It is also distinguished

by its high number of dorsals. The melanism is more acute than in the population of Illa Murada.

***Podarcis pityusensis calaesaladae* L. Müller 1928**

*Distribution*

S'Illeta (de Cala Salada) (21)

*Discussion*

This form is closely related to the typical subspecies. It was previously known from only a few specimens. Eisentraut (1950) studied one male and one female and mentioned that they differ little from those of Eivissa.

The belly is brick-red in colour. the outer ventrals are spotted yellowish-green. The dorsum is greenish and the sides are brick-red with a yellowish shade. The pattern is similar to that of the Eivissan form. The size is greater than in *P. p. pityusensis*, but the relative length of the hindlegs is similar.

This form is of medium-large size, has long hindlegs, a short head and average strength. The number of dorsal scales is high. The pattern and colouration are similar to those of Eivissa, the main difference being the reddish shade of the belly and sides.

***Podarcis pityusensis maluquerorum* Mertens 1921**

*Distribution*

Bleda Plana (14), Escull Vermell (16).

*Discussion*

Various authors (Eisentraut, 1950; Buchholz, 1954; Lilge, 1975) have studied the four populations of the Bledes islands (Na Gorra, Na Bosc, Bleda Plana, Escull Vermell). Two of these authors (Eisentraut, Buchholz) consider that there are two groups of populations: that of Bleda Plana and E. Vermell, and that of Na Bosc and Na Gorra.

Lilge, on the other hand, only admits one subspecies for the four populations. The study of my material reveals similarities to the material of the first two, although it differs on the average size of the specimens. The melanism is

more marked in both populations of *maluquerorum*. The belly is lead coloured or ultramarine, with emerald spots on the outer ventrals. In general, the belly is darker than on Na Bosc, as are the dorsum and the sides. The size and stockiness are less than on Na Bosc and Na Gorra. The number of dorsal scales is smaller.

It is a large form with short hindlegs and a very short head. It has a large number of dorsal scales and the melanism is very intense.

***Podarcis pityusensis gorrae* Eisentraut 1928**

*Distribution*

Na Bosc (13), Na Gorra (11).

*Discussion*

On Na Bosc there are specimens with a yellowish-green dorsum and dark metallic-green hindlegs. The sides are bluish. In some specimens, the throat is a mixture of blue, green, brown and white. On Na Gorra the shades are similar and the belly varies from cobalt to dark ultramarine in colour. It is strange, however, that the intermediate population — that of Na Bosc — should, geographically speaking, be the most differentiated, whereas the most distant — that of Na Gorra — only differs in minor features. Both have a smaller number of dorsal scales than in Bleda Plana and E. Vermell.

This is a very large stocky form with short hindlegs and a short narrow head. The melanism is noticeable, although less so than in *maluquerorum*.

***Podarcis pityusensis carlkochi* Mertens and L. Müller 1940**

*Distribution*

Sa Conillera (18).

*Discussion*

So far only Eisentraut (1950) has discussed the variability of this form regarding the populations of sa Conillera and Na Bosc as similar and including them under the same name. However, the study of the material collected for the present work has shown that the population of Na Bosc has sufficient features in common with that of Eivissa, while that of sa Conillera has distinct features.



The belly is light sand-coloured, or bluish or light-greenish in some specimens. It has green, ultramarine, brown and black spots. The dorsum is greenish and the sides are greyish-brown. The throat is bluish.

It is a large stocky form with long hindlegs and a large number of dorsal scales. It is not melanistic and has a white or light blue belly.

***Podarcis pityusensis kameriana* Mertens 1927**

*Distribution*

S'Espartar (7), Escull de s'Espartar (8).

*Discussion*

The form of s'Espartar has a strong tendency to cyanism, giving it a very pretty appearance. The dorsum is yellowish-green and the sides bluish-green. The tail is emerald green. The belly is light bluish-green with ultramarine, green, brown and black spots.

I have included the population of E. de s'Espartar, described as *P. p. zenonis* L. Müller 1928, in this subspecies in agreement with Lilge (1975) and contrary to the opinion of Eisentraut (1950). The live specimens which I examined from the islet have greenish-brown dorsum and sides, a light blue belly and an emerald tail. The throat is ultramarine blue. Comparing the biometry and squamation, it can be seen that the differences are very small and are perhaps the result of the scanty material available from Escull de s'Espartar.

This is a large form of medium stockiness with short hindlegs and a short narrow head. There is an average number of dorsal scales. The cyanism is very pronounced.

***Podarcis pityusensis frailensis* Eisentraut 1928**

*Distribution*

S'Espardell de S'Espartar (6) ('Fraile').

*Discussion*

I agree with Eisentraut (1950) and Lilge (1975) in that *frailensis* may justifiably be considered a separate subspecies. The tendency towards melanism is pronounced. The dorsum is olive-green or dark yellow. The sides are dark

ultramarine. The hindlegs are brown with green or metallic yellowish-green spots. It also differs from *kameriana* in that it has longer hindlegs and a shorter narrower head.

It is a large form with medium long hindlegs and a short narrow head. It has an average number of dorsal scales and average stockiness. It is distinctly melanistic.

***Podarcis pityusensis vedrae* L. Müller 1927**

*Distribution*

Es Vedrà (3), es Vedranell (2).

*Discussion*

The populations of the two islands have fairly similar features. There is a marked cyanism in both. The belly is sky blue in the centre and ultramarine at the edges. The sides are light cobalt. The dorsum is yellowish-green. In es Vedranell the colouration is the same, but somewhat darker than in es Vedrà. A comparison of the biometry and the squamation reveals small differences, mainly in the number of dorsal scales, but this does not justify the separation of the form of es Vedranell, described as *P. p. vedranellensis* L. Müller 1929.

It is a large form of moderate stockiness with long hindlegs and a short narrow head. It is a cyanistic form with a yellowish-green dorsum. The sides and belly are bluish.

***Podarcis pityusensis caragolensis* Buchholz 1954**

*Distribution*

En Caragoler (47).

*Discussion*

This is a young form hardly distinct from the Eivissan form except in its colouration (preserved specimens). It was not possible to collect specimens from this islet and so we had to limit our study to the material of Buchholz in ZFMK. The pileus in the males is light brown. The dorsum varies from bright bluish-green to olive-green, contrasting with the light grey supraciliar stripes.

The sides are brown with dark reticulation on a reddish-brown base. The belly is yellowish. There are green patches on the temporals, chest the lower edges of the sides and on the tail. There are light blue blotches on the outer ventrals. The females are brown with a reddish back and dark stripes. The supraciliars are ochre, the sides are greyish-brown with dark brown reticulation. The belly is a dirty yellow.

***Podarcis pityusensis ahorcadosi* Eisentraut 1930**

*Distribution*

Es Penjats (48) ('Ahorcados').

*Discussion*

Buchholz (1954) compares *ahorcadosi* with *pityusensis*, distinguishing it by its greater size and stockiness and larger number of dorsals. In my opinion, *ahorcadosi* is more closely related to the population of s'Espalmador. The lizards of es Penjats are larger than those of s'Espalmador and have fewer dorsal scales. The specimens of es Penjats have a white belly, a greenish-dorsum and light grey brown sides. The pattern is reduced, only slightly reticulated on the sides. There are cobalt spots on the outer ventrals. It is a large, moderately stocky form with short hindlegs, a very short wide head and a low number of dorsal scales.

***Podarcis pityusensis negrae* Eisentraut 1928**

*Distribution*

Ses Illetes Negres (49).

*Discussion*

The subspecies *P. p. negrae* closely resembles *ahorcadosi*, differing only in its stockiness and higher number of dorsal scales. The lizards of ses Illetes Negres are redder than those of es Penjats and have a more reticulated pattern. The dorsum is also greenish and the sides are pale brown-grey.

## *Podarcis pityusensis formenterae* Eisentraut 1928

### *Distribution*

Formentera, la Savina (61), Illa de s'Alga (54), Illa d'En Forn (58), Conill de Formentera, s'Espalmador (55), s'Espardell (56) and Illa des Porcs (51).

### *Discussion*

Before stating our opinion let us first examine chronologically the opinions of previous authors. Eisentraut (1950) distinguished between the following subspecies: *formenterae* Eisentraut 1928 on Formentera, *algae* Wettstein 1937 on the islet of Pouet (= Illa d'En Forn), *grueni* L. Müller 1928 on Trucadors, and *gastabiensis* Eisentraut 1928 on es Penjats, En Caragoler, ses Illetes Negres, s'Espalmador sa Torreta, Castaví, s'Alga, and s'Espardell. Eisentraut based his reasoning mainly on the similarity between populations of the islands lying between Eivissa and Formentera. Buchholz (1954) distinguished between *espardellensis* Eisentraut 1928 on s'Espardell, *puercosensis* Buchholz 1954 on Illa des Porcs, *espalmadoris* L. Müller 1928 on s'Espalmador, *torretensis* Buchholz 1954 on sa Torreta, *gastabiensis* on Illa de Castaví, *grueni* on Trucadors, *subformenterae* Buchholz 1954 on Conill de Formentera, *algae* on Illa d'En Forn, *sabinae* Buchholz 1954 on Savina, and *formenterae* of Formentera. Lilge (1975), for his part, included the *algae*, *sabinae* and *subformenterae* forms in the Eivissan subspecies. He included the same forms in the synonymy of *formenterae* regarding them as intermediate races. He also recognizes the subspecies *grueni* of Trucadors. Rodríguez Ruiz (1977) studied abundant material available from Trucadors, s'Espalmador, Illa d'En Forn, la Savina, s'Alga, Illa Redona, and various zones of Formentera, recognizing three subspecies in the group. Firstly, *espalmadoris* distributed on s'Espalmador and s'Alga, secondly *formenterae* (with *algae*, *sabinae* and *subformenterae* as synonyms) on Formentera, la Savina, Conill, Illa d'En Forn, and Illa Redona and, thirdly, *grueni* on Trucadors.

After studying the material available for this zone, we have arrived at the conclusion that the populations of the larger islands (Formentera, s'Espalmador and s'Espardell) are very similar to each other and should be included in the same subspecies. First, let us look at the populations of Formentera. The existence of a geographical variation has been demonstrated by Rodríguez Ruiz (1977). The size becomes smaller and the colouration loses its greenish shades, becoming more sandy, the closer s'Espalmador is approached. In addition, the pattern disappears.

The lizards of the islands of d'En Forn, Savina and Redona hardly differ from the nearby populations of Formentera. As Rodríguez Ruiz (1977) has

shown, the Savina population does not differ from that of Formentera. Furthermore, a light-house was built, physically joining la Savina to Formentera. I have examined Buchholz's types and was able to confirm this opinion. Comparing the tables with the data of Rodríguez Ruiz for Illa d'En Forn and Illa Redona, I have come to the same conclusions.

I have also compared material from Trucadors with the types of *subformenterae*, verifying that it is a population intermediate with that of *formenterae*. The population of *grueni* is therefore situated at the beginning of a cline which diminishes towards the south in *formenterae*. As far as s'Espalmador is concerned, previous authors (Eisentraut, 1950; Buchholz, 1954; Lilge, 1975; Rodríguez Ruiz, 1977) have shown its similarity to *formenterae*, but without including it in the synonymy of the latter. A comparison of the two forms did not reveal any differences between them.

There are also slight differences between s'Espardell and s'Espalmador. The lizards of s'Espardell are perhaps a little stockier with a brown dorsum. Another population close to s'Espalmador is that of s'Alga island which was included in *espalmadoris* by Rodríguez Ruiz (1977). The population of s'Alga is characterized by its slightly smaller size, long hindlegs and short head. The colouration is very pale, but these small differences do not justify its separation.

I also include the population of Illa des Porcs in the synonymy of *formenterae*. Buchholz (1954), in his description of *puercosensis*, mentions that its meristic features coincide with those of *formenterae*. The population of Illa des Porcs does not differ in pattern and colouration, nor in size and proportions from that of s'Espalmador.

#### ***Podarcis pityusensis torretensis* Buchholz 1954**

##### *Distribution*

Sa Torreta (52).

##### *Discussion*

The islet of sa Torreta is relatively young as the minimum depth between it and s'Espalmador is half a meter. The only differences are in pattern and colouration. The pattern is reduced. The females are light grey brown with distinct whitish, almost patternless lines. The males have a green dorsum and grey sides and are also almost patternless.

## *Podarcis pityusensis gastabiensis* Eisentraut 1928

### *Distribution*

Illa de Gastaví (53).

### *Discussion*

The island of Gastaví was one of the first to be isolated when the entire group of islands between Eivissa and Formentera was formed, which helps to explain why this is one of the most distinctive forms of the area. It is small in size and the pattern has almost disappeared completely. It is a small race with long hindlegs and a very long broad head. It is slimly built. It has a relatively large number of dorsal scales and the pattern is very reduced. The back and sides are brownish with faint green shades on the dorsum.

### **Acknowledgements**

This study was supported by Fundació Juan March. I am indebted to B. Arroyo, A. Luque, J. M. Varela, E. de Juana, V. Pérez Mellado and F. J. Salvador for assistance in the field.

### **Resumen**

Estudio taxonómico de la Lagartija de las Pitiusas, *Podarcis pityusensis* Boscá, 1883.

Este trabajo está dedicado al estudio de la variación entre las poblaciones de la Lagartija de las Pitiusas, para la que hay descrita numerosas subespecies. Además de la isla de Eivissa, también se incluyen en la subespecie típica varias poblaciones escasamente diferenciadas: Illa de sa Sal Rossa, Illa Negra, Illa d'En Calders, Sa Ferradura, Illa des Bosc y ses Illetes de Porroig. Se consideran sinónimos de *P. p. pityusensis* a los siguientes: *martinezi*, *miguelensis*, *caldesiana*, *carlkochi* y *purroigensis*.

También se considera que no hay diferencias importantes entre las poblaciones de las islas Malvins, incluyéndose *affinis* en la sinonimia de *P. p. schreitmuelleri*. A la misma conclusión se llega en el caso de Santa Eulària y Redona, incluyéndose *grossae* en la sinonimia de *P. p. redonae*. En el grupo de las islas Bledas se separan dos subespecies. Una, *P. p. maluquerorum* en Bleda Plana y Escull Vermell. La otra, *P. p. gorrae* en Na Bosc y Na Gorra.

Con respecto a los islotes situados entre Eivissa y Formentera, se consideran similares las poblaciones de Formentera, s'Espalmador y s'Espardell, agrupán-

dolas bajo el nombre *P. p. formenterae*. En esta subespecie se incluyen también las poblaciones de Sabina, Illa de s'Alga, Illa des Pouet y Illa des Porcs. Finalmente, se mantienen las subespecies *caragolensis*, *ahorcadosi*, *negrae*, *tòrretensis* y *gastabiensis*.

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