

IBIZA WALL LIZARD and LILFORD'S WALL LIZARD
Podarcis pityusensis and *Podarcis lilfordi*

Biology

Both *Podarcis pityusensis* (Plate 8) and *P. lilfordi* are medium-sized lacertid lizards ranging from 6-9cm head and body length, with *P. lilfordi* tending to the smaller range and having noticeably smaller scales. They are both noted for exhibiting a high degree of colour and pattern variation between populations, with the most pronounced differences being associated with the amount of isolation between the islands or islets where they occur (Plate 9). Their morphology is complex and illustrates the process of micro-evolution on small islands.

The adaptability of these lizards is reflected by the variety of habitats they occupy. The small islands or islets which support them present a wide spectrum of aspect, shape, size, vegetation cover and type (Figures 19 and 20), and in the degree of separation from each other and from their "mainlands" of Ibiza, Formentera, Mallorca and Menorca. The substrate may be rocky, or rock overlain with sand,



Figure 19: Example of rocky habitat occupied by Podarcis lilfordi (photo: K. Corbett).

Key Species in the CoE Area



Figure 20: An example of hummocky turf occupied by *Podarcis lilfordi* (photo: K. Corbett).

and the terrain ranging from cliff-like (rising a sheer 400m on Vedra), to flat areas near to high tide levels. Plant cover varies from bare rock through to mattoral and to woodland patches. The natural vegetation falls within the associations of *Crithmo-limonietum*, *Arthrocnemetum fruticosii*, or *Oleo-ceratonion*.

Their food choice appears to be catholic: besides taking most available invertebrates they will take their own young and those of the sympatric geckos (*Hemidactylus turcicus* and *Tarentola mauritanica*). They also scavenge (often along the sea shore), and may sometimes take a significant proportion of plant material, including nectar, in their diet.

Both species are egg-laying, with *P. lilfordi* laying smaller clutches. Both species bask and are diurnal in habit. Rock fissures may be important refuges against their many potential mammal and bird predators and this may also account for locally high population densities in sparsely vegetated areas.

Past and Present Distribution

The world distributions of the two lizards are contained within the

area of the Balearic Islands, with *P. pityusensis* confined to the western "Pitiusas", including the two main islands of Ibiza and Formentera. *P. lilfordi* is confined to the eastern "Gimnesias", excluding the two main islands of Mallorca and Menorca. Within this range, *P. pityusensis* occupies 47 islands or islets, while *P. lilfordi* is found on 29. With the exception of Formentera and possibly of Ibiza, their populations tend to be low, from tens to low hundreds.

Until 1,500 years ago, *P. lilfordi* also lived on the main islands within its range, but the sub-fossil records show that it disappeared soon after the arrival of snakes in the Balearics. *P. pityusensis* still survives on its main islands, albeit in declining numbers and range, because the snakes do not include *Macroprotodon cucullatus*, a snake that feeds on lizards and which, significantly, inhabits both Mallorca and Menorca where *P. lilfordi* once occurred.

Reasons for Decline and Current Threats

Recent declines include the loss of the subspecies *P. l. rodriguez* because of the dynamiting of its island to improve navigation, the levelling of an Ibizan islet for the building of a hotel (to the detriment of *P. p. ratae*), several instances of causeway construction to connect islands to the mainland and the subsequent dilution and loss of subspecies by hybridisation, deliberate poisoning of populations, the use of islets (especially around the *P. lilfordi* stronghold of Cabrera) for naval target practice, tourism and visitor pressure, predation from domestic animals and collection. A question mark hangs over the future of the island of Espalmador inhabited by *P. pityusensis*, where tourist development is a continual threat and where nature reserve status has been proposed but not yet granted.

After the physical loss of habitat for tourism, the most significant threat is commercial collecting. For example, although illegal under Spanish national law and strictly controllable under the Berne Convention, the 1980s have seen the regular sale of wild-caught *P. pityusensis* in Germany, and the unlicensed collection for "research" of two subspecies of *P. lilfordi*. Random customs searches in the UK resulted in one suitcase found in 1986 that contained 500 *P. pityusensis* (420 died and 80 were returned to the Balearics) and another found in 1988 that contained 400 *P. pityusensis* (all returned). Another 2,000 *P. pityusensis* were impounded at Schiphol airport in

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Holland in 1988. While any collection of the lizards can only have adverse effects on populations, the principal method adopted of sinking plastic buckets into the ground to act as pitfall traps is particularly destructive since these may be infrequently attended, or abandoned, and lizard mortality is predictably high. Measures are required to stamp out this practice.

Some hybridisation of otherwise discrete subspecies has recently become evident and has apparently occurred as fishermen have stocked islands nearer to their base with more attractive specimens collected from further out to sea. This allows greater ease of collection when demand dictates.

Conservation Measures Achieved

Both species are strictly protected under Spanish law. Excellent research work has been done by the Balearic government to locate, assess and type all their populations. However, actual site and habitat protection measures have been limited to:

- local controls against urban and tourist development (particularly on the Es Freus group, inhabited by *P. pityusensis*);
- the Cabrera group (supporting *P. lilfordi*) has been accepted for National Park status by the local Balearic government. However, its designation by the national government has been held up by objections from the army who had recently enlarged the garrison and who continue to shell the area;
- development and a possible causeway to join Murada (with *P. pityusensis*) to the mainland appears to have been averted.

Conservation Measures Proposed

Maintaining the scientific value of these lizard populations for their zoo-geographical and evolutionary features requires preservation of the total genetic integrity of the two species. This implies adequate local measures under Balearic and Spanish national law to protect populations, sites, and their habitats. But, how many of these populations of localised endemics merit international measures such as Biogenetic Reserves? It would be logical and sensible to include the rarer, the more distinct, the most isolated (temporally

Conservation of European Reptiles and Amphibians

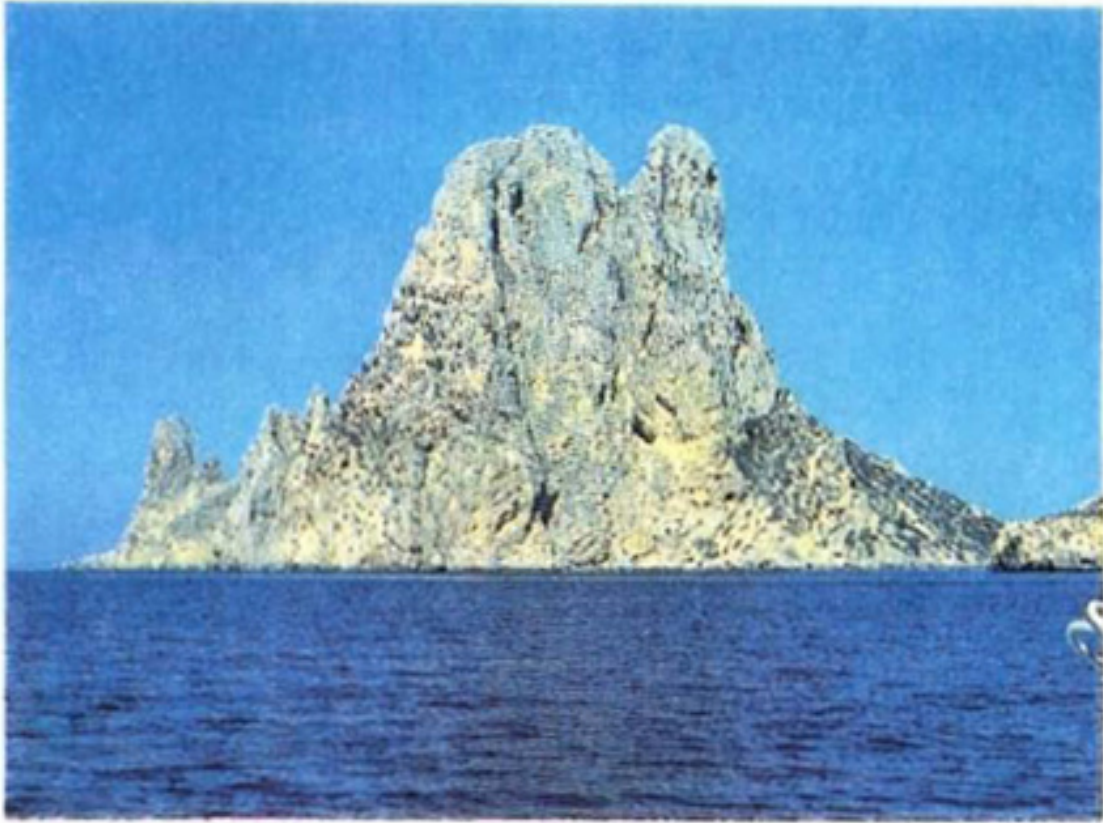
and spatially) populations exhibiting a range of distinct subspecific characters. Fortunately the data do exist to guide this compromise and they have been used to recommend Biogenetic Reserves.

For *P. lilfordi*, all populations are eligible, in deference to their comparative rarity, lower total numbers and absence from the main islands. Aire Island, Colomer (proposed for inclusion within a Biogenetic Reserve for *Alytes muletensis*), and the Cabrera complex already justify Biogenetic Reserve status, and undoubtedly most if not all of the remaining ten islands and islets will merit similar status, following analysis of recent field and laboratory investigations by the Balearic government wildlife authority.

The situation is more problematical for the 41 or so subspecies of *P. pityusensis*, described from 47 island locations and including the comparatively large and widespread populations of *P. p. pityusensis* and *P. p. formentera*, found respectively on Ibiza and Formentera. However, a classification by Cirer of these many populations into seven main groups based on sea depth, post-glacial separations and detailed morphometrics is most valuable for Biogenetic Reserve assessment purposes, not least since five of her seven groups contain the most distinct and longest separated forms. Using this information, the following islands or groups of islands are justified for Biogenetic Reserve designation: Bledas, Espartas, Es Freus, Vedras, Margalida, Murada, Conileras and Cana.

Many of these islands support seabird colonies, notably of Audouin's gull (*Larus audouinii*) and some have Eleonora's falcon (*Falco eleonora*). The management of the reserves must include precautions against collection, and must especially control landings by tourists or fishermen. Other potential conservation gains could be the local re-establishment of monk seals (*Monachus monachus*) and the protection of feeding areas for the endangered loggerhead turtle (*Caretta caretta*) from a modest degree of marine reserve buffer zones (including controls over fishing) around certain islands.

Rare and endemic plants are also found in these proposed reserves, including *Helichrysum lamarcki*, *Astragalus balearicus*, *Diplotaxis catholica ibicensis*, *Withania frutescens*, *Rhamnus ludovici-salvatoris*, *Medicago arborea citrina*, *Euphorbia margalidensis*, *Silene italica ifacensis* and *Carduncellus dianeus*.



8. Vedra, a striking islet lying off the south-west tip of Ibiza (Spain), supports a handsome subspecies of the Ibizan wall lizard *Podarcis pityusensis vedrae* as well as the rare Eleonora's falcon *Falco eleonora* and Audouin's gull *Larus audouinii*. It has been proposed as a Biogenetic Reserve. (R. Podloucky)



9. The Vedran subspecies of Ibizan wall lizard *Podarcis pityusensis vedrae* is most beautiful and highly sought after by collectors. (I.C.O.N.A.)