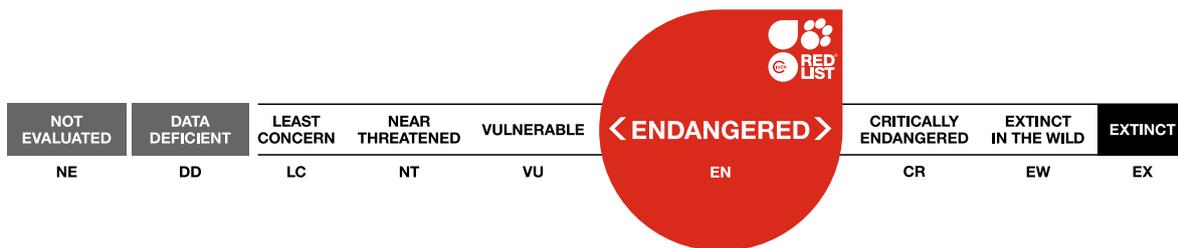


Podarcis pityusensis, Ibiza Wall Lizard

Assessment by: Bowles, P.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Reptilia	Squamata	Lacertidae

Scientific Name: *Podarcis pityusensis* (Boscá, 1883)

Synonym(s):

- *Lacerta muralis* var. *pityusensis* Boscá, 1883

Common Name(s):

- English: Ibiza Wall Lizard
- French: Lézard Des Pityuses
- Spanish; Castilian: Lagartija de las Pitiusas
- German: Pityusen-eidechse

Taxonomic Source(s):

Uetz, P. (ed). 2022. The Reptile Database. Available at: <http://www.reptile-database.org>. (Accessed: 5 May 2022).

Taxonomic Notes:

Individual islet subpopulations are likely to represent Evolutionarily Significant Units (despite shallow genetic divergence - Rodriguez *et al.* 2013), and as many as 28 morphological subspecies have been proposed (Rodriguez *et al.* 2013, Salvador *et al.* 2015).

Assessment Information

Red List Category & Criteria: Endangered A2bce+3bce+4ce [ver 3.1](#)

Year Published: 2024

Date Assessed: October 8, 2022

Justification:

The Ibiza Wall Lizard is endemic to Europe, where it is restricted to the Balearic Islands, Spain. The species is assessed as Endangered globally and for the EU 27 Member States on the basis that it is projected to lose most of its remaining range, and suffer a comparable decline in the number of mature individuals within the next 10 years (i.e. the period 2023–2033), following an estimated 50% decline on Ibiza since 2010 resulting from the expansion of the invasive Horseshoe Whip Snake. The snake is projected to spread across the entirety of the main island of Ibiza by 2028, with the likely consequence that the Ibiza Wall Lizard may be entirely lost from Ibiza very soon afterwards, corresponding to the loss of up to 75% of the global population in the 10-year period from 2023. It is also likely to be lost from many of the offshore islets, where one extinction has already been recorded within months of the invasive snake's arrival, with an ongoing population decline of 50% inferred.

Previously Published Red List Assessments

[2009 – Near Threatened \(NT\)](#)

2006 – Near Threatened (NT)

1996 – Vulnerable (VU)

1994 – Rare (R)

1990 – Rare (R)

Geographic Range

Range Description:

This species is endemic to the islands of Ibiza and Formentera, and nearby rocky islets, in the Balearic Islands of Spain. It is known from a total of 38 offshore islets although it is now believed to have become extinct on at least one of these, apparently between August 2017 and June 2018, following the introduction of the invasive snake *Hemorrhois hippocrepis* (Montes *et al.* 2021a). It ranges from sea level up to 475 m asl.

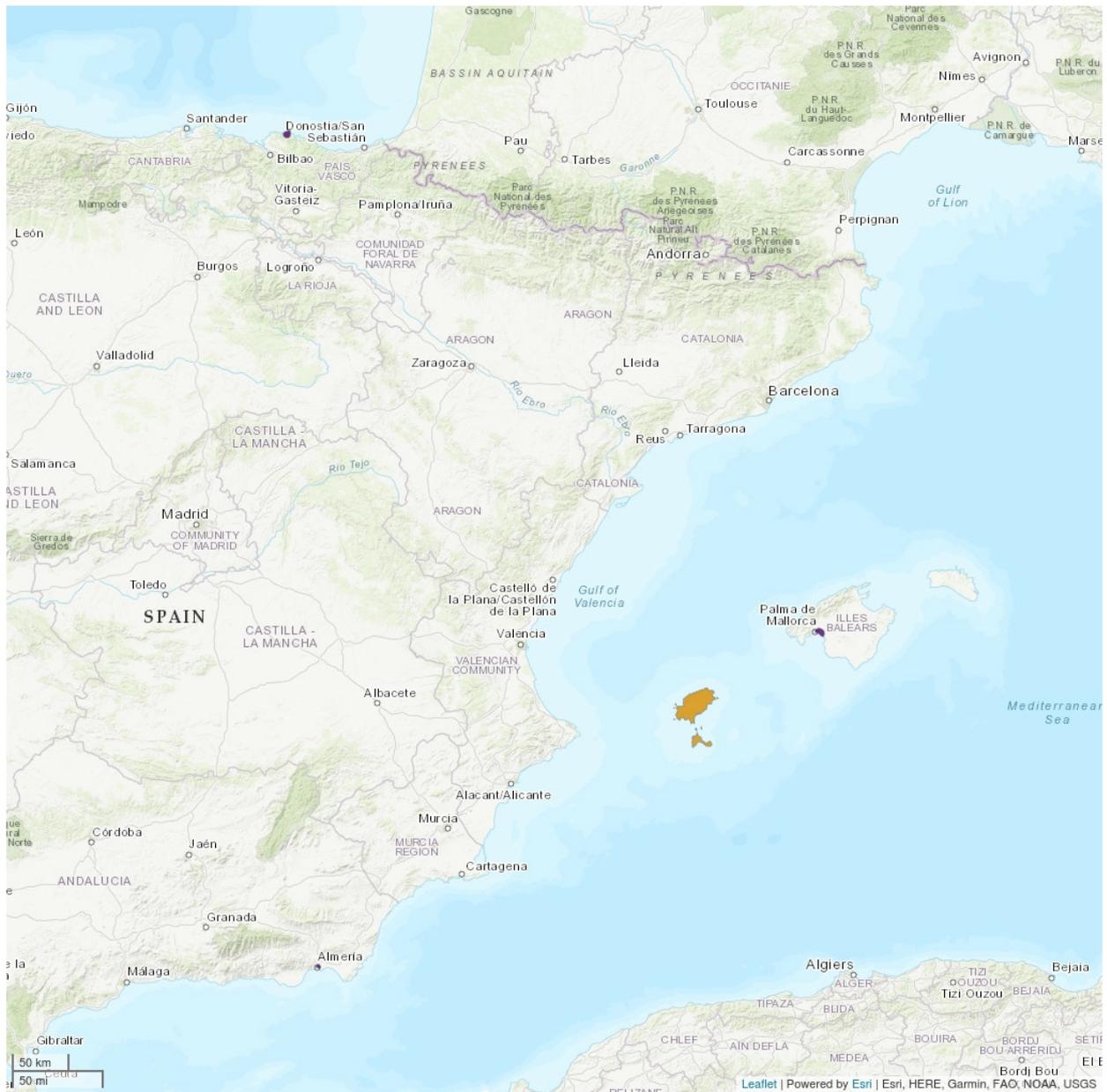
The Ibiza Wall Lizard has been introduced to several areas on Mallorca (Speybroeck *et al.* 2016), Barcelona (where it is now extinct), Denia town (southern Spain) and San Juan de Gaztelugatxe and Monte Urgull (northern Spain). Subpopulations on Mallorca and Denia resulted from passive transport, but the others may have been deliberate since they are not associated with harbours or other transport infrastructure (M.A. Carretero pers. comm. October 2022).

Country Occurrence:

Native, Extant (resident): Spain (Balearics)

Extant & Introduced (resident): Spain (Spain (mainland))

Distribution Map



Legend

- EXTANT (RESIDENT)
- EXTANT & INTRODUCED (RESIDENT)

Compiled by:

European Red List, EC and IUCN 2023



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.



Population

It can be common in parts of Ibiza where invasive snakes are absent, especially on small islets. Speybroeck *et al.* (2016) state that it can reach densities of up to 30,000 per ha. This figure is however considered an overestimate probably extrapolated from observations in localities where the species remains locally abundant, and the density reported by Salvador (2015) - 1,428 ind. / ha - is considered more realistic (E. Montes and J.M. Pleguezuelos pers. comm. 2023). Surveys of 29 line transects in 2018 (following a methodology described in detail by Montes *et al.* 2021a) in areas both with and without established whipsnakes found that the lizard was no longer present in all but one of 15 transects with snakes, but that subpopulations along snake-free transects appeared "healthy" (Montes *et al.* 2021a). Repeated surveys in 2018 and 2019 on nine of the offshore islets, including those considered most likely to be colonised by snakes based on the direction of marine currents, found high densities on five and "very low" densities on three (Montes *et al.* 2021a). Neither the lizard nor any sign of a surviving population was found in three surveys of the 0.4 ha islet S'Ora during this period, although it had been common here as late as August 2017, and the suggestion that the species is now extinct here is supported by an observation of a snake swimming as close as 20 m to the islet shortly before this survey (Montes *et al.* 2021a).

The precise rate of decline over the next 10 years is uncertain, and data from Formentera are limited, however, modelling suggests that the invasive snake may colonise the entire island of Ibiza by 2028 (Montes *et al.* 2021b). These authors suggest that the lizard may be "totally lost" from this island (which represents approximately 83% of the species' original range, and about 75% of its range as of 2018) by 2028, although the discovery of one snake-invaded locality where a lizard subpopulation survived suggests it may have a very limited ability to persist alongside the invasive snake (J.M. Pleguezuelos pers. comm. 2023). Projecting rates of decline between 2018 and 2028 Montes *et al.* (2021b) hypothesised that these were likely to be between 50 and 80%, justifying their proposed Red List Category of Endangered as the 10 year period is expected to exceed three generations. Although more recent data are unavailable, the rate of decline is expected to be comparable over the 10 years between 2023 and 2033 and a decline in excess of 80% is regarded as unlikely (J.M. Pleguezuelos pers. comm. 2023).

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

This species is largely found in vegetated areas, such as cultivated land and gardens, close to and around human habitation. It is reported to be less abundant in closed wooded areas (Speybroeck *et al.* 2016), although Montes *et al.* (2021a) found that among their transects its density was positively correlated with tree density. It may act as a pollinator for certain plants, although it largely preys on invertebrates (Speybroeck *et al.* 2016). It also occurs in rocky areas, especially in coastal regions. The females lay between one and four eggs. A maximum age of 18 years has been recorded in captivity, but its longevity in the wild is unknown (Bannert 1998, Jesus 2012).

Systems: Terrestrial

Use and Trade

The species is still illegally collected from the wild as live animals, particularly those with spectacular

colours, which frequently appear in meetings of terrarium keepers (M.A. Carretero pers. comm. October 2022). Some of these may have been the origin of some introduced populations (M.A. Carretero pers. comm. October 2022).

Threats (see Appendix for additional information)

A number of islet populations are threatened by disturbance by visitors and the introduction of cats and rats to the islands. The species however remains highly abundant on many offshore islets (J.M. Pleguezuelos pers. comm. 2022). Accidental poisoning with bait left for seagulls has previously been proposed as a possible threat (Pérez-Mellado *et al.* 2009), however, this type of bait is no longer used on Ibiza (E. Montes pers. comm. 2023).

The invasive Horseshoe Whip Snake *Hemmorhois hippocrepis* was first reported from Ibiza in 2003 and was probably first detected shortly after its introduction (Montes *et al.* 2021b). It remained confined to an area of around 1,080 ha until 2010, after which it expanded rapidly (Montes *et al.* 2021a,b). This snake feeds preferentially on lizards, with the wall lizard making up 56% of prey items in samples studied by Hinckley *et al.* (2017). Modelling by Montes *et al.* (2021) suggested that the snake's geographic range on the island had expanded linearly since 2010, producing a conservative estimate that it was present across 50% of the island by 2018 and that it will occur island-wide by 2027-2028 (Montes *et al.* 2021b). As their surveys suggested the lizard is rapidly excluded from areas where the snake has become established, this implies that it had been lost from at least half of Ibiza by the end of 2020 and that its complete extinction on the island is likely "in the next several years" unless conservation measures are immediately implemented to control the invasive snake. Transport is continuous between Ibiza and Formentera, and an eventual invasion of this island is likely (Montes *et al.* 2021b).

Another invasive snake, the Ladder Snake (*Zamenis scalaris*), is presently found on Formentera, and as a small population on Ibiza (J.M. Pleguezuelos pers. comm. 2023). Unexpectedly this species, which typically preys on mammals, has been found to prey on the lizard on Formentera (J.M. Pleguezuelos and M. Carretero pers. comm. 2023). Any population-level impacts are unclear, but the snake co-occurs with the lizard and while it is considered a threat its predation capacity is probably not "outstanding" (J.M. Pleguezuelos and M. Carretero pers. comm. 2023). Whether it includes lizards in its diet in Ibiza is presently unknown, and it is understood to feed mainly on birds and mammals on this island (J.M. Pleguezuelos and M. Carretero pers. comm. 2023). Although complete eradication of the ladder snake is unlikely in the short term, efforts at control appear to have limited both its expansion and numbers (M. Carretero pers. comm. 2023).

During their surveys, Montes *et al.* (2021a) observed snakes swimming far from shore and on several offshore islets. A recognised subspecies from the islet S'Ora, *Podarcis pityusensis hortae*, is believed to have become extinct within 10 months (Montes *et al.* 2021a). This suggests that the snake will inevitably reach Formentera and other offshore islands, in which case it will rapidly drive the species to global extinction (Montes *et al.* 2021b). Evidence of the presence of individual snakes has been found (the presence of shed skins or sighting records) on two further islets: S'Espaerter, where the species was still abundant as recently as the 2019 survey, and Grossa; near the islet of Murada; and on Pou de Lleó, a beach on mainland Ibiza close to the islet of Tagomago (Montes *et al.* 2021a). The latter exhibited the lowest lizard density of any offshore islet, which Montes *et al.* (2021) suggest is likely to be attributable to predation by the single observed snake on this islet. The subspecies *P. pityusensis muradae* may be at particularly imminent risk of extinction as a snake was observed close to Sa Murada, the islet to which it

is endemic (Montes *et al.* 2021a). The presence of at least one snake on S'Esparter may be especially notable, as this islet is not close to the area of Ibiza that had been invaded by the time of this survey (Montes *et al.* 2021a). These authors suggest that the species may be lost from more of Ibiza's offshore islets within the next decade.

Conservation Actions (see Appendix for additional information)

This species is listed in Annex II of the Bern Convention and on Appendix II of CITES.

It occurs in some protected areas, which at present evidently do not provide sufficient protection against the impacts of invasive snakes. Trapping and removal efforts have been implemented by the Balearic and the Ibizan Governments, but are clearly insufficient to protect this lizard at present (Montes *et al.* 2021b). Montes *et al.* (2021b) propose six key conservation actions that need to be implemented with extreme urgency in order to prevent the extinction of this lizard: to establish captive assurance colonies either *in situ* or *ex situ*; to control the introduction of trees with which the snake is thought to have been introduced at least during the times of the year when the snakes use them as hibernacula; reinforce existing eradication campaigns for invasive species; develop rapid response protocols to permit action to be taken when snakes are detected in novel areas; and to develop scientific research and public education in support of these initiatives. Further research is needed to obtain more data on the species' ecology and to clarify the precise impacts of the invasive snakes (J.M. Pleguezuelos pers. comm. 2023).

Credits

Assessor(s): Bowles, P.

Reviewer(s): Carretero, M., Montes, E., Pleguezuelos, J.M., Cogălniceanu, D., Corti, C., Crnobrnja-Isailović, J., Crochet, P.-A., Doronin, I.V., Halpern, B., Jablonski, D., Jelić, D., Joger, U., Kirschey, T., Lymberakis, P., Maletzky, A., Martínez-Freiría, F., Mebert, K., Mizsei, E., Razzetti, E., Romano, A., Salvi, D., Speybroeck, J. & Stănescu, F.

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External Resources

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Appendix

Habitats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Habitat	Season	Suitability	Major Importance?
3. Shrubland -> 3.8. Shrubland - Mediterranean-type Shrubby Vegetation	Resident	Suitable	Yes
6. Rocky areas (eg. inland cliffs, mountain peaks)	-	-	-
12. Marine Intertidal -> 12.1. Marine Intertidal - Rocky Shoreline	Resident	Suitable	-
13. Marine Coastal/Supratidal -> 13.1. Marine Coastal/Supratidal - Sea Cliffs and Rocky Offshore Islands	Resident	Suitable	Yes
14. Artificial/Terrestrial -> 14.1. Artificial/Terrestrial - Arable Land	Resident	Marginal	-
14. Artificial/Terrestrial -> 14.2. Artificial/Terrestrial - Pastureland	Resident	Marginal	-
14. Artificial/Terrestrial -> 14.3. Artificial/Terrestrial - Plantations	Resident	Marginal	-
14. Artificial/Terrestrial -> 14.4. Artificial/Terrestrial - Rural Gardens	Resident	Suitable	-
14. Artificial/Terrestrial -> 14.5. Artificial/Terrestrial - Urban Areas	Resident	Marginal	-

Use and Trade

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

End Use	Local	National	International
13. Pets/display animals, horticulture	No	No	Yes

Threats

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Threat	Timing	Scope	Severity
5. Biological resource use -> 5.1. Hunting & trapping terrestrial animals -> 5.1.2. Unintentional effects (species is not the target)	Ongoing	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.1. Species mortality	
6. Human intrusions & disturbance -> 6.1. Recreational activities	Ongoing	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.2. Species disturbance	
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.1. Unspecified species	Ongoing	Majority (50-90%)	Slow, significant declines
	Stresses:	2. Species Stresses -> 2.1. Species mortality	

8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Felis catus)	Ongoing	Majority (50-90%)	Slow, significant declines
Stresses: 2. Species Stresses -> 2.1. Species mortality			
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Hemorrhhois hippocrepis)	Ongoing	Majority (50-90%)	Very rapid declines
Stresses: 2. Species Stresses -> 2.1. Species mortality			
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Zamenis scalaris)	Ongoing	Minority (<50%)	Unknown
Stresses: 2. Species Stresses -> 2.1. Species mortality			

Conservation Actions in Place

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Action in Place
In-place land/water protection
Occurs in at least one protected area: Yes
Invasive species control or prevention: Yes
In-place species management
Successfully reintroduced or introduced benignly: No
Subject to ex-situ conservation: No
In-place education
Subject to recent education and awareness programmes: Yes
Included in international legislation: No

Conservation Actions Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Conservation Action Needed	Notes
1. Land/water protection -> 1.1. Site/area protection	None
2. Land/water management -> 2.1. Site/area management	None
2. Land/water management -> 2.2. Invasive/problematic species control	-
3. Species management -> 3.4. Ex-situ conservation -> 3.4.1. Captive breeding/artificial propagation	-
4. Education & awareness -> 4.3. Awareness & communications	-

Research Needed

(<http://www.iucnredlist.org/technical-documents/classification-schemes>)

Research Needed	Notes
1. Research -> 1.3. Life history & ecology	-
1. Research -> 1.6. Actions	None
3. Monitoring -> 3.1. Population trends	None

Additional Data Fields

Distribution
Continuing decline in area of occupancy (AOO): Yes
Extreme fluctuations in area of occupancy (AOO): No
Estimated extent of occurrence (EOO) (km ²): 350
Continuing decline in extent of occurrence (EOO): Yes
Extreme fluctuations in extent of occurrence (EOO): No
Continuing decline in number of locations: Unknown
Extreme fluctuations in the number of locations: No
Lower elevation limit (m): 0
Upper elevation limit (m): 475
Population
Continuing decline of mature individuals: Yes
Extreme fluctuations: No
Continuing decline in subpopulations: Yes
All individuals in one subpopulation: No
Habitats and Ecology
Generation Length (years): 1-2

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