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A contribution to the knowledge of helminth communities of insular lizards

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The knowledge of the helminth communities of reptiles and their ecological relationships with their hosts are until the present not well known. Some general researches have been made only on American herps (AHO 1990). Recently, ROCA & HORNERO (1991a, 1991b) attempted similar kind of researches from Mediterranean insular lizards.

Material and methods

The habitat

We sampled several populations of lizards living in Eivissa, Formentera and Menorca Islands (Balearic Islands, Spain) (Figs 1-2). The investigated localities were: 1. Eivissa; 2. Es. Vedra; 3. Vedranell; 4. Murada; 5. Calders; 6. Illa de s' Hort; 7. Tagomago; 8. Es Canar; 9. Santa Eulalia; 10. Rodona; 11. Ses Rates; 12. Es Malvins; 13. Ses Illetes Negres; 14. Es Penjats; 15. Sa Torreta; 16. S'Espalmador; 17. S'Espardell; 18. Illa den Pou; 19. Punta de Trocadors; 20. La Savina; 21. Formentera; 22. Aire; 23. Rey; 24. Colom; 25. Addaidas; 26. Sargantana; 27. Rovells; 28. Nitge; 29. Bleda.

The hosts

Two species of lizards. *Podarcis pityusensis* (BOSCA, 1883) and *Podarcis lilfordi* (GÜNTHER, 1874) live in the Balearic Islands, the former living in Eivissa and Formentera islands and islets around them, and the second living in islets surrounding Mallorca and Menorca islands. Several subspecies of both species have been described (BARBADILLO 1987, SALVADOR 1985).

Results

The helminths

The survey of 564 specimens of *P. pityusensis* and 386 specimens of *P. lilfordi* resulted in 17 parasitic species:

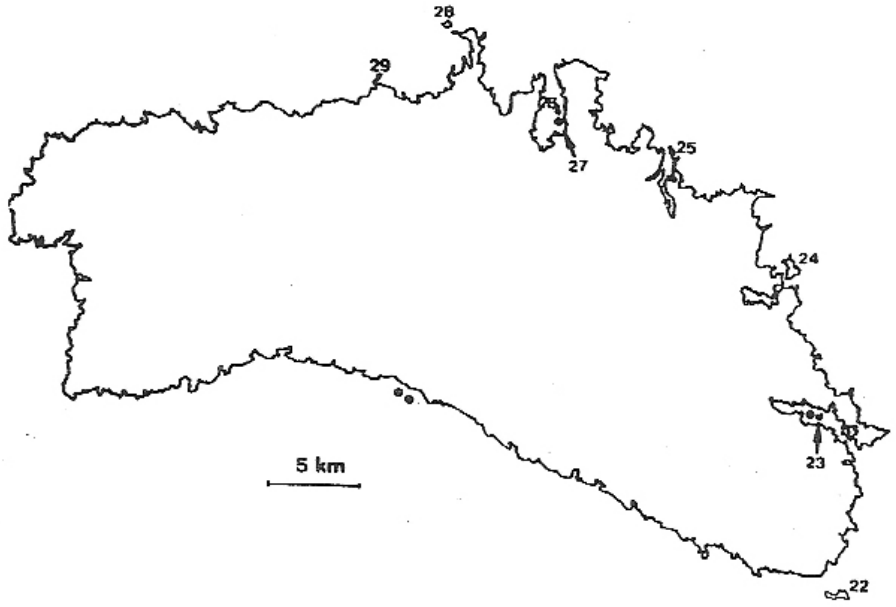

Fig. 1. Menorca island and sampled islets around it

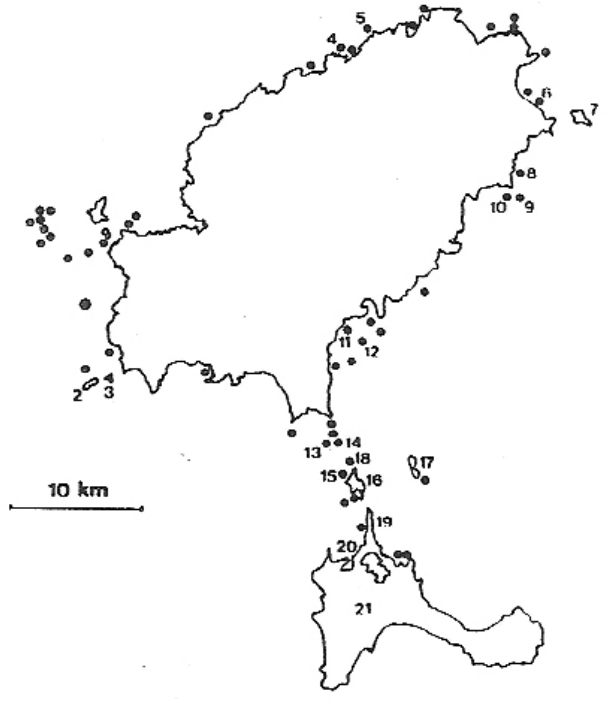

Fig. 2. Eivissa and Formentera islands and sampled islets around it

Digenea

Paradistomum mutabile MOLIN, 1859
Brachylaima sp. (metacercariae)

Cestoda

Oochoristica gallica DOLLFUS, 1954
Nematotaenia tarentolae LÓPEZ-NEYRA, 1944
Mesocestoides sp. (larvae)
Diplopylidium acanthotetra (PARONA, 1886) (larvae)

Nematoda

Skrjabinodon medinae (GARCIA CALVENTE,1948)
Spauligodon cabrerae (CASTAÑO et al., 1988)
Parapharyngodon echinatus (RUDOLPHI, 1819)
Parapharyngodon micipsae (SEURAT, 1917)
Parapharyngodon bulbosus (LINSTOWW, 1899)
Skrjabinelazia hoffmanni LI., 1934
Abbreviata sp.
Strongyloides ophiusensis ROCA et HORNERO, 1992
Acuaria sp. (larvae)
Spirurida gen. sp. (larvae)

Acanthocephala

Centrorhynchus sp. (larvae)

The helminth communities

Table 1 and Figs 3-4 show the helminth communities of the two lizard species.

Discussion

CASWELL (1978) and HANSKI (1982) introduced the notion of core and satellite species at the component community level. Core species are those which occur with relatively high prevalences and intensities of infestation, while satellite species occur with less prevalence than their core counterparts and also are relatively less numerous.

HOLMES & PRICE (1986) defined isolationist and interactive communities, the former being characterized, among other characteristics, by the absence or scarcity of core species. Some authors (BUSH & HOLMES 1986, STOCK & HOLMES 1987, KENNEDY & BAKKE 1989) consider as core species those prevalences of which are

Table 1. Helminth communities of *P. pityusensis* and *P. lilfordi*. n= number of sampled hosts; np= number of parasitized hosts; p= prevalence (= np/n %)

	P. pityusensis			*P. lilfordi*		
Parasitic species	n	np	p (%)	n	np	p (%)
DIGENEA						
Paradistomum mutabile	564	130	23	386	42	11
Brachylaima sp.	564	1	0.2	386	3	0.8
CESTODA						
Oochoristica gallica	564	25	4.4	–	–	–
Nematotaenia tarentolae	564	19	3.4	–	–	–
Diplopylidium acanthotetra	564	16	2.8	–	–	–
Mesocestoides sp.	564	9	1.6	–	–	–
NEMATODA						
Skrjabinodon medinae	564	67	11.9	386	96	24.9
Spauligodon cabreare	564	193	34.2	386	161	41.7
Parapharyngodon bulbosus	564	104	18.4	386	14	3.6
Parapharyngodon echinatus	564	9	1.6	–	–	–
Parapharyngodon micipsae	564	123	21.8	386	25	6.5
Skrjabinelazia hoffmanni	–	–	–	386	4	1
Strongyloides ophiusensis	564	7	1.2	–	–	–
Acuaria sp.	564	5	0.9	386	4	1
Spirurida gen. sp.	564	6	1.1	386	4	1
ACANTHOCEPHALA						
Centrorhynchus sp.	564	4	0.7	386	4	1

higher than 70 %. So in the helminth communities of *P. lilfordi and P. pityusensis* no core species exists. Both communities correspond to the pattern of isolationist community proposed by HOLMES & PRICE (1986) and observed by AHO (1990) in several helminth communities of reptiles in America. Taking into account that helminth communities of reptiles are generally depauperate communities (AHO 1990) with low levels of prevalences and intensities of infestation (ROCA, unpublished data) we can only give, in our case, an arbitrary value and consider as core species for these helminth communities, those with prevalence higher than 30 %. As a result, only one core species exists in the helminth communities of *P. lilfordi* and *P. pityusensis*: the nematode *Spauligodon cabrare*. Our results confirm that the

helminth communities of both lizards are depauperate and conform with the pattern of isolationist communities (HOLMES & PRICE, loc. cit.). In the case of *P. lilfordi*, the absence of intestinal cestodes (*O. gallica* and *N. tarentolae*) implies the existence of an empty niche characteristic for non-interactive communities.

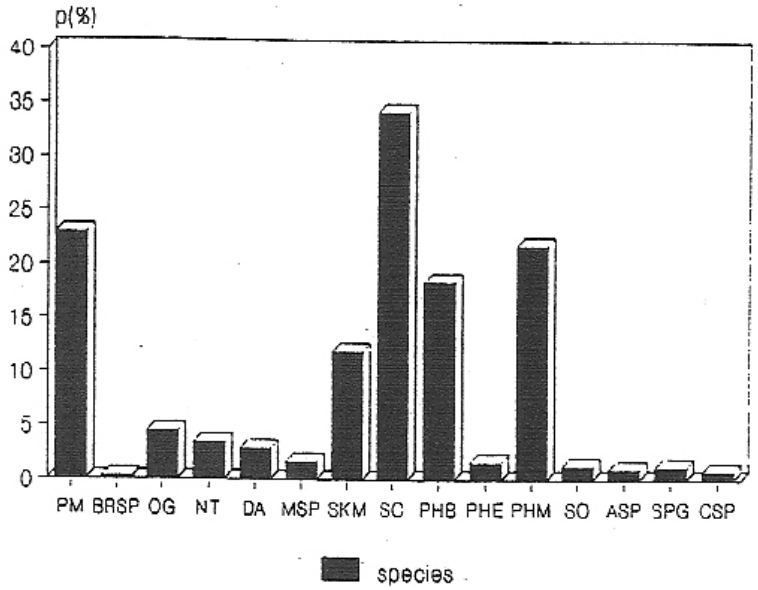

Fig. 3. Prevalences of helminth infestation in the community of *P. pityusensis*

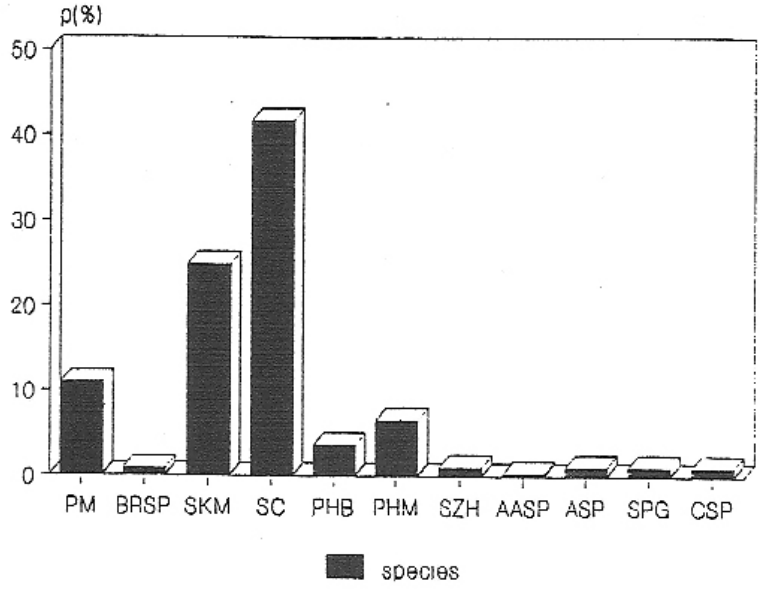

Fig. 4. Prevalences of helminth infestation in the community of *P. lilfordi*

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