# A contribution to the herpetofauna of Žirje Island (Dalmatia, Croatia)

PRISPEVEK K POZNAVANJU FAVNE PLAZILCEV IN DVOŽIVK OTOKA ŽIRJE (DALMACIJA, HRVAŠKA)

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Many islands of the Croatian part of the Adriatic remain poorly researched. This applies to the island of Žirje as well. No detailed research into the herpetofauna of this island has ever been carried out.

Between July 15th and 24th, 2010, a survey on the distribution of reptiles and amphibians was carried out at Žirje Island.

The island covers 15.43 km$^2$, or 15.78 km$^2$ with its surrounding islets and reefs (a total of 17) (Friganović 1994). The highest point on the island is the peak Kapić, 134 m a.s.l. The geological structure of Žirje and its surrounding archipelago is characterized by the domination of the Upper Cretaceous limestones extending in the NW-SE direction. The valley, which is located in the middle of the island, is covered with a thin layer of red soil overlaid with sediments and turned brown (Bognar & Saletto-Janković 1994).

Climate of the area is characterized by mild winters and warm summers. The amount of annual precipitation is 753 mm, with most of the rainfall recorded in winter. The island suffers severe droughts, which are additionally aggravated by the karst soil (limestone formations) (Šegota 1963).

The vegetation on the island consists of macchia of the alliance *Quercion ilicis* and the planted Aleppo pine forest, which propagates subspontaneously, thus superseding the natural vegetation. The arable land is in the valley, where vineyards, fig trees, olive trees, plum trees and vegetables are cultivated (Pandža 2003).

During this survey, a total of 9 reptilian and 1 amphibian species were found to occur on the island. Methods of general collecting were used (Heyer *et al*. 1994), and animals were caught by hand or loop, identified, then photographed and released, or simply identified through visual survey, if possible (Arnold & Overden 2004). Systematic list of the found species, with some additional data, is given in Tab. 1.

The only amphibian found was the European Green Toad (*Pseudepidalea viridis* (Laurenti, 1768)). There is one permanent pond in the valley, which is regularly utilized as a breeding pool for this amphibian.

Reptilians include 3 species of lizards: *Podarcis melisellensis* (Braun, 1877), *Hemidactylus turcicus* (Linnaeus, 1758) and *Pseudopus apodus* (Pallas, 1775).

Dalmatian Wall Lizard (*P. melisellensis*) is the commonest reptile species in this area, abundant through the entire island. Mediterranean Gecko (*H. turcicus*) is quite common around human settlements, whereas the data on its occurrence outside human habitats are scarce. Only two live specimens of European Glass Lizard (*P. apodus*) were encountered, one in the valley, the other one at Koromašna settlement. Additionally, a dead specimen was found in one of the valley's olive groves.

Furthermore, there are 5 species of snakes present on this island, i.e.: *Hierophis gemonensis* (Laurenti, 1768), *Malpolon insignitus* (Geoffroy Saint-Hilaire, 1827), *Telescopus fallax* (Fleischmann, 1831), *Elaphe quatuorlineata* (Lacépède, 1789) and *Zamenis situla* (Linnaeus, 1758). The commonest was the Eastern Montpellier Snake (*M. insignitus*), with the majority of observed specimens concentrated in the valley. It is interesting that nocturnal activity of this species was noticed – one adult specimen was found dead on the island road at 9:44 p.m., freshly run over. Balkan Whip Snake (*H. gemonensis*) was expected to be numerous on the island, but just three specimens were observed, two on the slopes of Kapić hill, and one at the Nozdra vela cove. It is uncertain whether this is due to the time of the survey (July – lower activity rate) or some other factor. European Cat Snake (*T. fallax*) is crepuscular and nocturnal species that is difficult to observe, however, three specimens were found during our night fieldwork. Two specimens were found next to our residence (below Kapić peak), the third at the archeological site of Gradina, all active after 10:00 p.m. The presence of Leopard Snake (*E. situla*) was confirmed during this survey

by two skin sheds, found at the NW part of the island. Determination was done by comparing their head scales (Janev Hutinec & Lupret-Obradović 2005), with the red pigment on visible spots of the shed skin clearly indicating this species. On May 2nd, 2009, during our earlier visit of the island, an adult female Leopard snake was also found, located in the valley of the island, next to the monastery ruins. An additional finding of this species came through personal communication. In the summer of 2008, Jadran Kale and his two sons found a dead adult on the island road and photographed it, while Berislav Horvatić did the determination.

No Four-lined Snake (*E. quatuorlineata*) was found during this survey. However, a photo from Žirje Island was received, featuring a local man killing a snake, believing it was venomous. The author of the photo asked for determination of the species, and as the picture clearly shows an adult Four-lined Snake, it can be assumed that this species inhabits the island as well.

There is also one tortoise species present to this island: *Testudo hermanni* (Gmelin, 1789). Only one Hermann's Tortoise was found (in an olive groove in the valley); the locals confirmed that tortoises were not indigenous to the island.

It would be advisable to continue herpetofauna studies on the island. The results are much better if surveys are carried out in spring time, during the increased animal activity. This survey was conducted in July, when most of the reptilian species have lover activity rate. The obtained results may therefore not show an authentic picture of the island's herpetofauna.

**Literature**

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**Table 1.** List of reptile and amphibian species observed on the island of Žirje.
**Tabela 1.** Seznam vrst plazilcev in dvoživk, opaženih na otoku Žirje.

| Species | | Latitude | Longitude | Date | Time | Leg. |
|---|---|---|---|---|---|---|
| 1. | *Pseudepidalea viridis* (Laurenti, 1768) | 5554693 | 4833612 | 16.07.2010 | 22:42 | Boris Lauš |
| | | 5555063 | 4832615 | 21.07.2010 | 22:47 | Boris Lauš |
| 2. | *Podarcis melisellensis* (Braun, 1877) | 5555323 | 4832648 | 15.07.2010 | 16:58 | Boris Lauš |
| | | 5553095 | 4834467 | 16.07.2010 | 7:35 | Boris Lauš |
| | | 5553054 | 4834626 | 16.07.2010 | 8:27 | Boris Lauš |
| | | 5554813 | 4833924 | 17.07.2010 | 8:57 | Boris Lauš |
| | | 5553840 | 4833286 | 18.07.2010 | 8:44 | Boris Lauš |
| | | 5553656 | 4833202 | 18.07.2010 | 9:01 | Boris Lauš |
| | | 5549906 | 4835901 | 18.07.2010 | 19:49 | Boris Lauš |
| | | 5549906 | 4835901 | 19.07.2010 | 8:21 | Boris Lauš |
| | | 5553926 | 4834943 | 21.07.2010 | 17:48 | Boris Lauš |
| | | 5553351 | 4835310 | 24.07.2010 | 12:11 | Boris Lauš |
| 3. | *Hemidactylus turcicus* (Linnaeus, 1758) | 5554693 | 4833612 | 15.07.2010 | 22:03 | Boris Lauš |
| | | 5552921 | 4834994 | 16.07.2010 | 21:59 | Boris Lauš |
| | | 5553971 | 4833254 | 18.07.2010 | 8:54 | Boris Lauš |
| | | 5549943 | 4835931 | 19.07.2010 | 8:06 | Boris Lauš |
| | | 5553132 | 4834206 | 20.07.2010 | 8:37 | Boris Lauš |
| | | 5553876 | 4835076 | 21.07.2010 | 20:18 | Boris Lauš |
| | | 5555078 | 4832624 | 21.07.2010 | 22:31 | Boris Lauš |
| 4. | *Pseudopus apodus* (Pallas, 1775) | 5552438 | 4834929 | 17.07.2010 | 20:12 | Boris Lauš |
| | | 5553032 | 4834369 | 20.07.2010 | 8:53 | Boris Lauš |
| | | 5553781 | 4835041 | 21.07.2010 | 18:07 | Boris Lauš |
| 5. | *Hierophis gemonensis* (Laurenti, 1768) | 5554813 | 4833924 | 17.07.2010 | 9:17 | Boris Lauš |
| | | 5549328 | 4836608 | 19.07.2010 | 8:42 | Boris Lauš |
| 6. | *Malpolon insignitus* (Geoffroy Saint-Hilaire, 1827) | 5552096 | 4835591 | 16.07.2010 | 21:44 | Boris Lauš |
| | | 5552671 | 4834816 | 17.07.2010 | 19:27 | Boris Lauš |
| | | 5553772 | 4833212 | 18.07.2010 | 9:01 | Boris Lauš |
| | | 5553180 | 4834328 | 20.07.2010 | 8:45 | Boris Lauš |
| | | 5551987 | 4835405 | 20.07.2010 | 9:22 | Boris Lauš |
| 7. | *Telescopus fallax* (Fleischmann, 1831) | 5554693 | 4833612 | 15.07.2010 | 22:13 | Boris Lauš |
| | | 5554693 | 4833612 | 19.07.2010 | 22:47 | Boris Lauš |
| | | 5555120 | 4832603 | 21.07.2010 | 22:35 | Boris Lauš |
| 8. | *Zamenis situla* (Linnaeus, 1758) | 5553031 | 4834685 | 27.08.2008 | | Jadran Kale (det. Berislav Horvatić) |
| | | 5553304 | 4834259 | 02.05.2009 | 12:55 | Boris Lauš |
| | | 5550084 | 4835922 | 18.07.2010 | 20:11 | Boris Lauš |
| | | 5549553 | 4836243 | 20.07.2010 | 16:13 | Boris Lauš |
| 9. | *Elaphe quatuorlineata* (Lacépède, 1789) | 5550631 | 4836409 | June/2008 | | Mikula Jajac (det. Boris Lauš) |
| 10. | *Testudo hermanni* (Gmelin, 1789) | 5553908 | 4833550 | 16.07.2010 | 9:24 | Boris Lauš |