A herpetological contribution toward nature conservation in Lebanon

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INTRODUCTION

A roadside rubbish tip.

Photo: H.A.J. in den Bosch

It seems too early to make any definite statements on threats to, and conservation status of the Lebanese herpetofauna as major parts of the country are still recovering from years of hostilities, and are just beginning to reassess their priorities. Strange as it may seem, for some animals the war might have been a better period than the present revitalised Lebanon. The almost complete ruin of Beirut was paradise for *Lacerta laevis*, which once again seems destined to be restricted to the trees along the Corniche, the AUB campus, and some garden patches in the capital city. Similarly, the habitat of *Parvilacerta fraasii* in the Sannin Mts. above Faraïya was, on my first visit there in 1993, certainly not pristine with all the remnants of military equipment and rubbish heaps. With the soldiers gone, these martial artefacts actually enriched the lizards' habitat: in early spring car tires, old boots, cartons etc. were preferred basking spots as they are warmer than stones and more numerous than the odd piece of natural wood. Over time, the organic compounds in the rubbish attracted many insects and became favourite hunting grounds for the local lizards and skinks. In only two years, the same area, though hardly hospitable to man all year round, was occupied by squatters, a presence that might eventually lead to a permanent residence.

Debris left by picnickers are not a new phenomenon as illustrated aptly by IZZARD & IZZARD (1959) who when visiting Les Cèdres found "…cans by the hundreds, old bottles, cartons and containers of every description, rotting fruit, human faeces – every manifestation, in fact, of man's ability to turn a noble site into a rubbish dump". Nor is habitat devastation only a modern phenomenon as ZOHARY (1973) relates in a description of a students' excursion in 1934 from Tripoli to Hermel and often speaks of plant communities that are heavily destroyed.

Mt. Hermon, currently being disputed by three nations and still under (para)military control, might in a certain sense be considered a closely guarded nature reserve. This bellicose influence unquestionably puts a ban on unregulated building activities that – as seen everywhere else in the country, but most evident on the 220 km long coastline and other tourist spots like the ski slopes above Bcharré – permanently destroy habitats.

It is incomprehensible that in an effort to please themselves and the expected tourists, the Lebanese actually build on and over the exact spots worthy of veneration.

Lacerta laevis living among the rubble in Beirut (1993).

Photo: H.A.J. in den Bosch

The very source of the Orontes, Aïn ez-Zerqa, has been turned into a very mediocre restaurant where the wobbly tables and plastic chairs are actually placed ín the emerging water. A few kilometres downstream one could in 1998 still admire the Shillman and related waterfalls in their near original appearance, with only one enterprising Syrian brewing coffee on a single gas burner next to it. Only one year later enormous concrete surfaces covered with bright awning and literally hundreds of garishly coloured chairs (all of them empty), were found there, for a major part obliterating the actual falls, the wonderful view destroyed by a perverted notion of tourism. The few remnants of dunes are quickly disappearing either for hotels, private houses, road building, or banana plantations and greenhouses of plastic sheeting. Or, like the Khaldé dunes south of Beirut, are used as waste disposal sites.

Lacerta laevis living among the rubble in Beirut (1993).

Photo: H.A.J. in den Bosch

EDUCATION

As can be seen elsewhere in the world, only an edification of the general populace will help to prevent a major eradication of the exceptionally rich biological heritage of Lebanon. This does not mean that everybody needs a college degree in biology, but it simply refers to the innate sense of respect for life that needs to be instilled the Lebanese people, and tourists who will no doubt flock to this most diverse area in the Middle East in the near future. In my experience only two arguments convince the Lebanese to refrain from this wholesale destruction of their beautiful environment: an economic line of reasoning and a family related one. As a nation of avid traders for millennia it must be clear that these days tourism is big business, but at the same time the descendants of the Phoenicians seem to forget that modern tourists require pristine landscapes, untampered classical ruins and original architecture, not concrete building blocks dumped right on these resources. As well, in a region where family values are of the highest priority, I found that a simple phrase was invariably convincing within all socio-economic levels, from shepherd through to government official.

This expression 'So that in the future your children can treasure this country' was instantly recognisable to the Lebanese and, much to my surprise, the majority had never before realized this straightforward fact. Therefore the solution is really quite simple: conserve and expand what remains, and biologically speaking, don't soil your own nest.

Khaldé dunes, near Beirut (1999).

Photo: H.A.J. in den Bosch

Undoubtedly Lebanese cooking is among the best in the world, but try to refrain from delicacies, such as frog legs and small birds. If you feel you must have them, take care to not exterminate an entire population and to slaughter your prey in a humane manner. Would you want to be left crawling around with your legs cut off? Irksome children of any age who relieve their boredom by wanton killing of animals should be spoken to and corrected. Recent research has shown that if unamended, these small acts of violence in children and adolescents lead to major problems later in life.

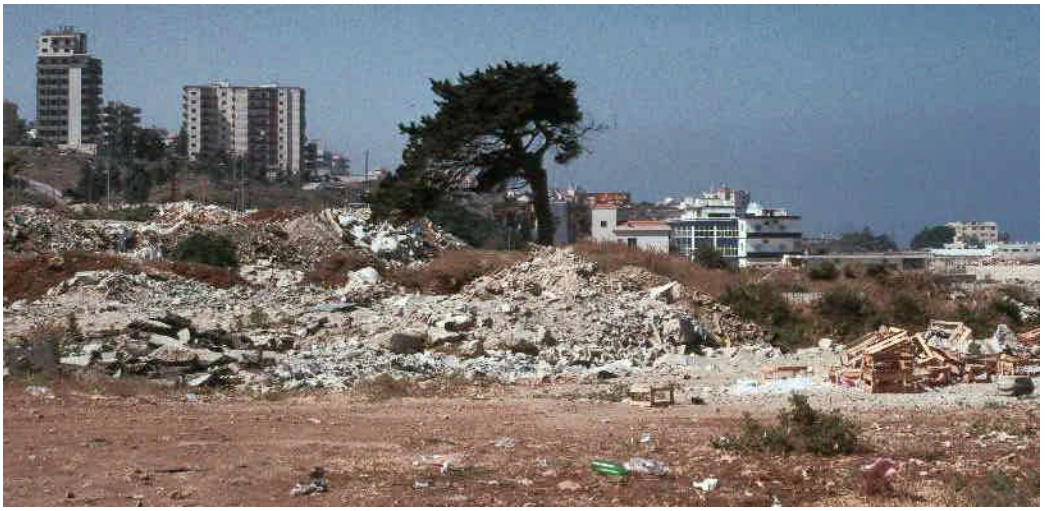
Water pollution is one of the greatest dangers, not only to herpetological diversity, but also to human health. Lebanon is blessed with more water than most areas in the Middle East, but this is no reason to be careless: some pools in the Aammiq swamps are even shunned by the local Bedouin children who normally show little, if any, fear because of the human excrement and agricultural chemicals. Herpetologically speaking the marsh contains a remarkable population of black and normally coloured *Natrix tessellata* (IN DEN BOSCH et al., 1998), possibly the most southern-living *Natrix natrix* (IN DEN BOSCH in: MARTENS, 1996), and perhaps other as yet undiscovered life forms. One is reminded of the tragic injudicious drainage of Lake Huleh in the 1950-60 by Jewish settlers in northern Israel which resulted in wiping out a unique ecosystem – already fearfully anticipated by BODENHEIMER (1935) – and the herpetological loss of *Discoglossus nigriventer* (MENDELSSOHN & STEINITZ, 1943). Most rivers are far from clear. Some even get polluted with garbage less than hundred meters from their source; I found numerous examples in e.g. the Sannin mountains. As well, they hardly deserve the name river anymore as they arrive at sea after their short flow through the country, the Nahr Beyrouth being a very sad case in point, evident to even the most casual observer. Luckily in many areas garbage collection has resumed, which unfortunately habitually leads to a refuse dump just outside the city or village limits, and yet more disastrously almost always along the local stream, possibly in the fallacious belief that the trickle of water will wash away tons of litter. The local fauna and flora would profit from proper sewage treatment, which is lacking everywhere, as would the human population.

Beside education, proper scientific herpetological research is obviously needed, but conservation-oriented projects are as yet wanting.

HERPETOLOGICAL DIVERSITY

The following section (adapted from IN DEN BOSCH, 1998), based on easily recognisable groups like frogs and toads, lizards, etc. is meant to give a general indication of conservation status of the Lebanese amphibians and reptiles.

Only one land-living salamander occurs in Lebanon (*Salamandra i. infraimmaculata*). It prefers clear mountain brooks to deposit its larvae and needs the surrounding shady humid forest for survival of the adults. The newt *Triturus v. vittatus* requires small pools as living quarters in early Spring and for oviposition. Dump a car in the local pond, clean insecticide containers in ditches or streams only once, and gone are the two salamander species, as well as four frog and toad species (*Pelobates s. syriacus*, *Bufo viridis*, *Hyla savignyi*, *Rana bedriagae*) which require the water for their larvae, or one species of frog that lives there year round (*Rana bedriagae*).



Khaldé dunes, near Beirut (1999).

Photo: H.A.J. in den Bosch

To be candid: none of the amphibians seem under an imminent countrywide threat and the low number of known localities for the two tailed amphibians and the lack of any locality information for *P. s. syriacus* is, almost undoubtedly, more related to their secretive habits.

The three sea turtles (*Caretta caretta*, *Chelonia m. mydas*, *Dermochelys c. coriacea*) on the other hand, face certain peril as virtually all the beaches are intensively enjoyed by the human population and undisturbed nesting (except possibly for the Palm Islands, and in the extreme south, there again because of military presence) seems inconceivable. I have not been able to find any *Trionyx triunguis*, former inhabitants of many of the rivers in the Middle East that flow into the Mediterranean. Chemical and organic (sewage) waste, and frequent disturbance probably account for this loss, though the turtle is known to be able to survive in extremely polluted rivers in Israel. The much smaller turtle *Mauremys rivulata* is not unusually abundant, but seems to be able to survive nicely in agricultural areas that in Lebanon show diverse and small-scale use. It is still unsure if the European Pond Turtle *Emys orbicularis* should be counted as among the Lebanese fauna since the old records could also refer to *M. rivulata*. *E. orbicularis* prefers much clearer water than *M. rivulata* and would have more difficulty surviving in disturbed habitats. The only species of tortoise, *Testudo graeca terrestris*, appears to do fairly well, though road kills take their toll, and the first shipments of "locally bred" animals for the domestic animal trade reached Europe again in 1998. It is the only local reptile that is sometimes kept as a pet in Lebanon. Earlier uses as human food and for medicinal purposes seem to have disappeared.

All four species of gecko (*Cyrtopodion kotschyi syriacus/orientalis*, *Cyrtopodion amictopholis*, *Hemidactylus t. turcicus*, *Ptyodactylus puiseuxi*) suffer somewhat because of the mistaken belief that they are poisonous which "thus" calls for them to be killed, a fate sometimes shared by the chameleon (*Chamaeleo chamaeleon recticrista*). *C. amictopholis* is the rarest gecko in Lebanon, but its occurrence on Mt. Hermon greatly enhances its chances of survival.

Neither of the two agamas (*Trapelus lessonae* and *Laudakia stellio*) is endangered, and the latter is one of the most conspicuous reptiles in the country.
Among the lizards, *Lacerta l. laevis*, *Ophisops elegans*, and *Laudakia stellio* compete for the title of most abundant reptile in Lebanon. The former disappears during the hottest hours, but even the most cursory observer is guaranteed to encounter the latter two. *Acanthodactylus tristrami* at the moment seems rare, but I suspect this is merely because its territory has attracted little attention. The congener *Acanthodactylus schreiberi syriacus* is endangered because the dunes in which they live are being sacrificed to urban and tourist developments. It is uncertain if *Acanthodactylus grandis* lives in Lebanon. *Mesalina brevirostris* is a species I only recently (1999) found in Lebanon, living in the hamada around Hermel (IN DEN BOSCH, 2001). This habitat seems unattractive to humans and is quickly being turned into large melon patches with the aid of irrigation. The consequent advance of *O. elegans* could pose a threat to *M. brevirostris* in the situation of direct competition.

As the higher mountain areas in Makmel and Sannin shall no doubt again be ski resorts, where squatting will not be tolerated, the outlook for *Parvilacerta fraasii* is a moderately safe one. Most *Lacerta kulzeri* s.l. live on rocky outcrops in higher elevations which are in little danger of being permanently encroached on by human activity. The exception form populations in the Barouk Mountains where the lizards are mainly ground dwelling and tourist intrusion could be a negative factor. However, this area seems to be one of the few cedar stands with a management aware of conservation issues so the outlook is secure. Despite occasional predation by feral cats on the large green lizards, *Lacerta media israelica* and *Lacerta media wolterstorffi*, and though they lack high population densities, neither are in any particular danger of extinction.

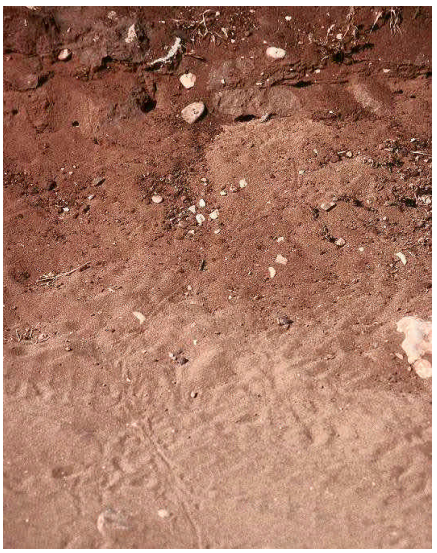
A very common sight in Lebanon: *Laudakia stellio*.

Photo: H.A.J. in den Bosch

The same goes for the skinks though, except for *Mabuya vittata*, none are very abundant. For *Mabuya aurata* there are only a few records that are over a century old. However, to the untrained observer *M. aurata* can be quite similar to *M. vittata* so I suspect sightings to be hidden under that name. The tiny *Ablepharus b. budaki* and *Ablepharus rueppellii festae* spent most of their time sub-surface and consequently are rarely seen or troubled, but can be found readily by turning rocks. *Chalcides guentheri*, *Chalcides ocellatus*, and *Eumeces schneiderii pavimentatus* are day-active above ground, but quite shy and alert and difficult to spot. Records of *Chalcides ocellatus* in Lebanon are only known from dune areas. If this reflects the actual distribution, the picture for this form could be bleak. But then again, the species covers an enormous range from Algeria to Pakistan. *Ophiomorus latastei*, with its occurrence on Mt. Hermon, seems as safe as the gecko *C. amictopholis* and the southern population of *Vipera bornmuelleri*.

Some skinks, as well as *Pseudopus apodus* and *Blanus strauchi aporus* can be mistaken for snakes and are thus, as in many parts of the world, in serious danger of being slain on sight. This is all the more strange since of the 27 snake species living in Lebanon, only four or five are poisonous (in casu *Coluber ravergieri* (at least to some humans), *Macrovipera lebetina obtusa*, *Micrelaps muelleri*, *Vipera bornmuelleri*, *Vipera palaestinae*) and none of these are very aggressive. It might be that *Leptotyphlops macrorhynchus*, *Typhlops vermicularis*, and *Rhinotyphlops simoni* escape doom, because they look worm-like and spend virtually all their time underground. To ensure the survival of snakes, it will definitely help when the people are told that snakes actually assist the farmers since many serpents destroy vermin (rats, mice, insects), which attack their crops.

In fact, only two large venomous species, *Macrovipera lebetina obtusa* and *Vipera palaestinae*, are likely to come into direct contact with man, and accordingly represent the most liable reptile casualties, even though these snakes are the best helpers the farmer could ask for in decimating the rodents in his field. *Vipera palaestinae* might be the least endangered of the two in this respect, since it tends to be nocturnal in the warmer season. Being one of the most common snakes, the durnal *Coluber jugularis* suffers also from direct contact. I noticed that its black colour makes it especially unpopular. Ploughing sometimes turns up *Eryx jaculus*, which might harm the animal in more than one way. Excluding *Coluber jugularis*, *Coluber ravergieri*, *Malpolon monspessulanus insignitus*, and *Psammophis s. schokari*, snakes which may react assertively when encountered, and *Natrix natrix* and *Natrix tessellata* which can be clearly seen foraging at daytime, none are very conspicuous in the field and hence not in direct danger of being actively pursued and exterminated. Nevertheless, I saw a large dead and putrefying *Malpolon monspessulanus* tied to a telegraph pole near Hermel as a warning of its presence in the area. Other snakes will defensively bite when provoked (*Coluber nummifer*, *Coluber ravergieri*, and *Coluber rubriceps*) and consequently will be at a greater risk than those which flee, sometimes slowly, (i.e. *Coluber najadum dahlii*, *Eirenis coronella*, *Eirenis decemlineata*, *Eirenis levantina*, *Eirenis lineomaculata*, *Eirenis rothi* and *Elaphe hohenackeri taurica*), or trust their camouflage (*Elaphe quatuorlineata sauromates*). Snakes which mainly live hidden or subterraneously (*Rhynchocalamus m. melanocephalus* and *Micrelaps muelleri*), or are night-active (*Telescopus fallax syriacus*, and *Telescopus nigriceps*) are in even less danger from man. *Vipera bornmuelleri* lives high up in the mountains and is cryptically coloured and thus quite immune to human persecution. In fact, none of the snake species are endangered except by the actions of narrow-minded fools. *Coluber jugularis*, *Eirenis levantina*, and *Malpolon monspessulanus* are probably the most common serpents in both numbers and distribution.



Tracks and characteristic burrows of *Acanthodactylus schreiberi syriacus* in the Khaldé dunes.

Foto: H.A.J. in den Bosch

One of the few poisonous snakes in Lebanon: *Vipera palaestinae*.

Photo: H.A.J. in den Bosch

The for Lebanon rare desert habitat near Hermel turned into irrigated melon fields.

Photo: H.A.J. in den Bosch

ENDEMISM

Reptile species only found in Lebanon are *Parvilacerta fraasii* and *Lacerta kulzeri* s.s., to which could be added the "almost" endemics on Mt. Hermon – partly under Syrian and Israeli control – *Vipera bornmuelleri* and *Cyrtopodion amictopholis*. All of these live in cooler habitats at higher altitudes that for the moment seem to suffer rather little from human intrusion.
On the subspecies level *Acanthodactylus schreiberi syriacus* is exclusive to Lebanon and northern Israel. It lives in the dunes, a much-threatened habitat, and its isolated populations have a small range so it is in need of protection.

CONCLUSION

The situation described above appears to be a relatively favourable one. Under direct risk are only the reptile species which depend on the beach and dunes (three sea turtles, the lizard *Acanthodactylus schreiberi syriacus*, and the skink *Chalcides ocellatus*). The turtle *Trionyx triunguis* was last recorded in the 60s and now probably lost from the Lebanese herpetofauna. The rampant fresh water pollution will turn out to be a major problem in the middle to long term, like overzealous building activity, because of the destruction of habitats.

The hamada near Hermel yields melons as a consequence of irrigation.

Photo: H.A.J. in den Bosch

Unless practised very expertly, irrigation of the hamada around Hermel will lead to long-term salination and possible loss of local populations of *M. brevirostris* and perhaps also of *E. schneiderii*.
Luckily Lebanon presently suffers less than others in the region do from logging – most deforestation was already done in the past centuries as recorded in the Bible and proven by archaeological digs – and the short-sighted denuding activities of shepherds and crofters. Still, reforestation of the steeper hill sides, an expansion of the cedar woods, conscientious water management, and above all education should help to preserve and enhance the natural beauty of the Pearl of the Middle East for future generations. To obtain these ends a much more active nature management is required.

A form unique to the dunes of the southern Levant: *Acanthodactylus schreiberi syriacus*.

Photo: H.A.J. in den Bosch

LITERATURE

BODENHEIMER, F.S., 1935. Animal life in Palestine. L. Mayer, Jerusalem.

BOSCH, H.A.J. IN DEN, 1998. Prodromus Amphibiorum et Reptiliorum Phoeniciae. Faun. Abh. staatl. Mus. Tierk. Dresden 21/Suppl.(2): 9-17.

BOSCH, H.A.J. IN DEN, 2001. *Mesalina brevirostris* Blanford, 1874 (Reptilia: Lacertidae) in Lebanon, with data on reproduction. Zool. Middle East 23: 31-46.

BOSCH, H.A.J. IN DEN, W. BISCHOFF & J.F. SCHMIDTLER, 1998. Bemerkenswerte Reptilienfunde im Libanon. herpetofauna 20(117): 19-32.

IZZARD, R. & M. IZZARD, 1959. Smelling the Breezes. Hodder & Stoughton, London.

MARTENS, H., 1996. The rediscovery of the Grass Snake *Natrix natrix* (L.) in the Levant. Zool. Middle East 12: 59-64.

MENDELSSOHN, H. & H. STEINITZ, 1943. A new frog from Palestine. Copeia 1943(4): 230-233.

ZOHARY, M., 1973. Geobotanical foundations of the Middle East. Gustav Fischer Verlag, Stuttgart.