
MEETINGS

SYMPOSIUM ON VERTEBRATE BIOGEOGRAPHY AND SYSTEMATICS

The Zoologisches Forschungsinstitut and Museum Alexander Koenig will host the International Symposium on Vertebrate Biogeography and Systematics in the Tropics. The meeting will take place 5-8 June 1989. A substantial proportion of the presented papers will relate to amphibians and reptiles. For further information, contact: Dr. Gustav Peters, Vertebrate Symposium '89, Zoologisches Forschungsinstitut und Museum Alexander Koenig, Adenauerallee 150-164, D-5300 Bonn 1, West Germany. ●

WILDLIFE REHABILITATION SYMPOSIUM

The National Wildlife Rehabilitators' Association will hold its 8th annual symposium on 22-26 March 1989 at the Grand Hotel in Anaheim, California. Topics will include: veterinary advances in wild species; rescue, restraint and handling techniques; avian, reptile and mammal treatment and biology; captive breeding; wildlife urbanization; post programs; administration and project fundraising. Concurrent presentations will be offered for beginning, advanced and professional levels of expertise. Professional sessions will be limited to veterinarians and medical professionals. Those interested in submitting manuscripts contact: Richard H. Evans DVM.MS., NWRA Program Chair, P.O. Box 7673, Laguna Niguel, CA 92677, (714) 831-1178. For other information or registration materials contact the NWRA Host Committee at the above address. ●

FEATURES

CONSERVATION OF HERPETOFAUNA IN BRITAIN AND IN RELATION TO MAINLAND EUROPE

With His Royal Highness the Duke of Edinburgh, President of the World Wide Fund for Nature International (WWF) and Vice-President of the International Union for the Conservation of Nature and Natural Resources (IUCN) as Patron, the first World Congress of Herpetology is to be held in the UK at Canterbury in 1989. Conservation of amphibians and reptiles will be a strong underlying theme.

Three of the societies co-hosting the World Congress are involved with practical conservation of herpetofauna and their habitats in Europe. They are (alphabetically) the British Herpetological Society (BHS), Fauna & Flora

Preservation Society (FFPS) and Societas Europaea Herpetologica (SEH). Like the American Society of Ichthyologists and Herpetologists in the USA, they are, as non-governmental organizations (NGOs), members of IUCN (Headquarters: Gland, Switzerland). The BHS is a national member of IUCN and the FFPS and SEH are international members. The Jersey Wildlife Preservation Trust, the Zoological Society of London (another Co-host of the World Congress) and the British Ecological Society are also members.

IUCN's Conservation Monitoring Centre is situated in the UK at Cambridge, where Dr B. Groombridge (Compiler of the *Amphibia-Reptilia Red Data Book*) is based, and at Kew Gardens in London. A co-chairman of the IUCN Species Survival Commission (SSC) Tortoise and Freshwater Turtle Group (also director of the first World Congress of Herpetology), Dr I.R. Swingland (chairman of the Ecology Research Group at the University of Kent at Canterbury), is also based in the UK. The IUCN SSC Group, amongst other interests, is involved with the conservation of Mediterranean tortoises (initiated by Lambert, 1984) which in southern Europe is being coordinated by David Stubbs, under Ian Swingland's direction.

René Honegger, a vice-chairman of IUCN/SSC, is based in Switzerland (Zürich). He is well known in European conservation circles and has a long established involvement with the conservation of herpetofauna (e.g. Honegger 1968).

With BHS Conservation Committee, FFPS and SEH Conservation Committee acting in a concerted way, the conservation of amphibians and reptiles and their habitats in Europe is thus approached from a broad front (Lambert 1986), together with the initiatives of other voluntary organizations such as RANA (Group for the Protection and Study of Reptiles and Amphibians in Nature) — with branches in Belgium and Italy (D. Ballasina, *in litt.*; Langton 1987b) — e.g. Project CARAPAX, and SOPTOM (Station d'Observation et de Protection des Tortues des Maures) in southern France (e.g. Devaux, Pouvreau, Stubbs and members of SOPTOM, 1986; Langton 1986c). There are in addition many other, often more local, voluntary and national bodies involved with wildlife protection generally which include species of herpetofauna and their habitats.

The problem of frog collection, especially in France, in relation to the well-known French culinary delicacy of frog-legs has been considered by Dubois (1983). Drs A. Dubois and J.-J. Morère, based in Paris, co-founded the Société Batrachologique de France (Société pour l'Etude et la Protection des Amphibiens) with conservation as a major aim (Morère 1982). A Europe-aimed frog-leg trade, from India, Bangladesh and Indonesia, has also developed and FFPS in the UK has taken an interest in this (Langton 1986b; Honegger 1981, 1984). The Royal Society for the Prevention of Cruelty to Animals (RSPCA), Horsham, has called for an indefinite ban on welfare grounds and the World Society for the Protection of Animals (WSPA), London, is also campaigning strongly against the trade because there are in addition links

with pesticide problems and the association of collecting with human diseases in the tropical developing countries involved (Langton 1986d).

A report on herpetological activities in Europe 1983, which included much on conservation, was given earlier in *Herpetological Review* (Lambert 1985). The European Year of the Environment (21 March 1987 to 20 March 1988) has recently ended and it seems opportune that further information should be provided in this same publication on some of the herpetofaunal conservation work that is continuing to be carried out in Europe by NGO members associated with IUCN. Hopefully, this will keep members of SSAR and other herpetologists based in North America and elsewhere apprised of developments. It is important that such publicity should engender a wider appreciation of what so far has been achieved for it is a pertinent point that neither amphibians nor reptiles were considered at two recent significant meetings on a conservation/environmental theme in the UK. One meeting was the Bicentenary Joint Meeting of the Linnean Society of London and Royal Society for Nature Conservation (at the start of its 75th Anniversary Celebration), held in London on 19 March 1987 (only two days before the start of the European Year of the Environment). The other meeting was the British Crop Protection Council Symposium on Field Methods for the Study of Environmental Effects of Pesticides held in Cambridge, 28-30 March 1988 (only eight days after the European Year of the Environment).

Like SSAR in the USA, the BHS and SEH have Conservation Committees; FFPS, a conservation organization by definition, has employed a staff herpetologist. Since 1986, through the aegis of its Conservation Committee, the BHS has also employed a Conservation Officer to work alongside the Conservation Committee. He is also the Chairman of SEH's Conservation Committee. The FFPS staff herpetologist is secretary both of the SEH Conservation Committee and of a joint FFPS/SEH UK Herpetofauna Working Group. René Honegger and Brian Groombridge are also members of the SEH Conservation Committee. Amongst other functions, the FFPS staff herpetologist edits *Herpetofauna News*, which is published by FFPS (a member of IUCN since its inception) and circulated to FFPS members upon request and also with publications of UK-based ASRA (Association for the Study of Reptiles and Amphibians), the Asociación Herpetologica Española and SEH. Within the context of the main society, the BHS conservation officer's main terms of reference are:

- preparation of site dossiers with the UK Government's statutory body, the Nature Conservancy Council (NCC), for the National Key-Sites of sand lizards (*Lacerta agilis*), smooth snakes (*Coronella austriaca*) and natterjacks (*Bufo calamita*), all of which are rare species in Britain, and to advise on habitat management needs where these are still lacking
- coordination of the BHS monitoring programme for these species, site protection, rescues from doomed sites, captive breeding and subsequent release

- organization of field surveys and restoration management of breeding sites of the great crested newt (*Triturus cristatus*), another rare species, involving liaison with a project funded by NCC, at Leicester Polytechnic.

Quite early on in the movement to conserve herpetofauna in Europe (although 66 years after FFPS was founded) and more particularly in the UK, the BHS Conservation Committee was founded in 1969. Its aim is to promote the conservation of all twelve native amphibians and reptiles in Britain, especially (as a priority) the four most endangered forms. Because amphibians and reptiles have very limited powers of movement and dispersal, they are particularly vulnerable to rapid changes in their habitats. Unlike other groups (e.g. seed plants, insects and even birds), they do not readily recolonise habitats over great distances. Even quite temporary disruption of an area can lead to irreversible loss of species (BHS Conservation Committee 1970). Amphibians and reptiles are also valuable indicators of the health of natural environments (Lambert 1987) and it has now become established that the Amphibia and Reptilia include the highest proportion of endangered species of any of the vertebrate groups. The BHS became an NGO member of IUCN in 1980 (SEH joined in 1984).

In Britain, it was clear by the late 1960s that many of the species of amphibians and reptiles were in marked decline. In addition, because of the widespread fear of snakes, the persecution of the adder (*Vipera berus*), Britain's only venomous species, was coupled with the destruction of creatures bearing any resemblance to it. These included two harmless snakes, the grass snake (*Natrix natrix*) and the rare and endangered smooth snake, and also the slow worm (*Anguis fragilis*), a legless lizard.

In consultation with the NCC, research into the detailed distribution initially of the natterjack, sand lizard and smooth snake indicated that these three species were more or less confined to two habitat types: lowland dry heath and coastal sand dunes. The loss of lowland heath, itself an endangered habitat, in southern England has been caused by vast afforestation programmes, agricultural reclamation, mineral extraction, building development and a number of (man-made) fires. This has resulted in an enormous decrease in the populations of the sand lizard and the smooth snake, while the natterjack is now virtually extinct on heathland for the same basic reasons, and also because so few non-acid breeding ponds remain. Conversely, natterjacks in their stronghold in NW England breed successfully in the slacks of coastal sand dunes, whose well vegetated frontal ridges and fixed dune habitats still support a few small remnant outlying populations of sand lizards. The coastal sand dunes in NW England have survived better than lowland dry heaths, but the despoliations of the holiday industry (holiday camps, trippers' motorcars) have taken their toll. Dune slacks tend to dry up more often than in former times, partly due to local drainage 'improvements' for building and human recreational (golf course) purposes, causing breeding failure (see also Tamarind 1975).

Habitat management to improve the prospects of the three rare species in Britain has been carried out by BHS members and other volunteers. Heathland has been restored by brashing and the removal of encroaching birch and self-sown pine trees, and the herbicidal treatment with asulam of bracken (a fern, *Pteridium aquilinum*), often growing in the wake of fires and with which heathers (*Erica* spp. and *Calluna vulgaris*) are unable to compete. Small sand patches have been created, often by using rotivators, for egg-laying by sand lizards. On coastal dunes and inland heaths, ponds have been excavated using mechanical scrapers. Increases as a result of breeding have occurred in sand lizard (Corbett & Tamarind 1979) and probably smooth snake populations. Other heathland rarities like the Dartford warbler and nightjar, spiders and many other invertebrates have also increased.

With the agreement of NCC, BHS Conservation Committee members breed sand lizards in captivity and release progeny on suitable protected and managed heathland and dune sites. Due attention is paid to separation of genetically different races by means of an agreed translocation policy, to which argument the BHS Conservation Committee (1984) has contributed. A programme for the reintroduction of natterjacks to a series of heathland sites has also begun. Pond construction has enabled thousands of young natterjacks to metamorphose and successfully leave the water each year.

The success of this work has depended on funding and liaison with many other organizations, including WWF (UK), NCC, Vincent Wildlife Trust Fund, H.J. Heinz Ltd. and the Carnegie (UK) Trust Fund. Assistance has also been received from the British Petroleum Company plc. The full-time conservation officer of the BHS was employed as a result of grant aid to extend and consolidate the protection of the endangered British herpeto-

fauna and their habitats.

With the passing of the UK's 1981 Wildlife and Countryside Act, partly ratifying the 1979 Berne Convention on the Conservation of European Wildlife and Natural Habitats, the great crested newt also became listed as a rare and endangered species. NCC are seeking information on this species and have appointed national survey coordinators on its distribution and status in Britain, especially since many ponds have become infilled, polluted or overgrown. In line with the much publicized 1983 European Year of the Water's Edge, a campaign was begun to manage and restore ponds for the continued survival of the great crested newt in Britain. Of the commoner species, there has been the widely publicized Toads-on-Roads Campaign (e.g. Clines 1987; Young 1988) following the precedent set in continental Europe. In 1984, over 20,000 toads (*Bufo bufo*) were rescued at reported sites; the figure for 1985 was 50,000, with many hundreds of people taking part. By 1987, over 100,000 toads were rescued at over 300 officially recognized toad migration routes.

In 1985, FFPS started a specifically herpetological programme; and, following a working group set up in the 1970s, the conservation of Britain's herpetofauna and their habitats received a further input when the UK Herpetofauna Working Group was established, under the aegis of FFPS (Langton, 1985a). The Group is affiliated (Langton 1985c) with the 1979-founded SEH, which became an IUCN NGO member in 1984. The reasoning behind the affiliation was:

- A. to help raise funds for conservation projects of high priority in mainland Europe, especially involving expatriate British and nationals of other European countries, and also to increase SEH membership in the UK;
- b. to select the UK for the formation of a semi-national group of this kind in recog-

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nitition of the influence that such statutory UK bodies as the NCC and the Department of the Environment (DoE) have in official European conservation circles.

Organised by the staff herpetologist as part of FFPS's herpetofauna programme, which has a major educational and advisory function in the UK, the Working Group's objectives are to help coordinate herpetofauna conservation in Europe and overseas, and to liaise extensively with government and non-government representatives over policy and new initiatives. Five areas were identified as requiring special attention:

1. integrating the UK with the rest of Europe in terms of conservation policy and practice, and investigating the functioning of the European Community (EC), particularly in relation to nature conservation;
2. co-ordinating objectives for conserving amphibians and reptiles in the UK;
3. co-ordinating objectives for monitoring and influencing policies in matters relating to national and international trade in herpetofauna;
4. acting as a focus for liaison with NCC on important, especially international, issues and policies; and
5. assisting with the dissemination of ideas on conservation matters and the conclusions of the Working Group through such outlets as *Herpetofauna News*.

FFPS have instigated several projects and activities in the UK. These include:

- Toads-on-Roads (*Bufo bufo*) Campaign (Langton 1985b, 1985d, 1986a, 1987a). The installation of the first toad tunnel in the UK, opened by the Lord Skelmersdale in March 1987 (Clines 1987);
- Snakes Campaign, to establish the true incidence and effects of adder bites (leading to an education programme to counteract the unnecessary fear instilled in the general public). The use by grass snakes of various egg-laying substrates has been investigated;
- Pet shop enquiry (some sell native British and exotic species illegally, without a proper license from the UK Government's DoE) (Langton, 1986e); and
- County recording of amphibians and reptiles. The Annual Herpetofauna Recorders' Seminars instigated by FFPS in conjunction with the Biological Records Centre (e.g. Arnold 1986); 150 people attended in 1987.

The Zoological Society of London has undertaken several new herpetological projects (Langton 1986f), some in conjunction with FFPS. These are designed to complement the educational value of the collection in London Zoo's Reptile House and to improve public awareness and understanding of reptiles and amphibians. An exhibition on many aspects of snake venom was prepared, and a smaller exhibition shows examples of reptile skins and other products controlled by such international regulations as CITES (the Washington Convention 1973); another exhibit discourages the casual keeping of exotic species by the general public.

Britain and Ireland are offshore islands of NW Europe. The hard experience, not least the political experience, gained by BHS Con-

servation Committee members in conserving the rare herpetofauna in Britain is being complemented with initiatives for similar work in some parts of the continental mainland of Europe (Corbett 1981). One of the founding members of the BHS Conservation Committee has become Chairman of the 1981-founded Conservation Committee of SEH. Through the aegis of this Society (Corbett and Podlousky 1982), field investigations and conservation assessments have been initiated on the status of the rarest species of European amphibians and reptiles as the result of successfully presenting a strategy for the establishment of 'biogenetic reserves' (Corbett 1986) to the Council of Europe (CoE) in Strasbourg.

In following the work of Honegger (1978) and the precedent set by the inclusion of all species of herpetofauna on the Appendices of the Berne Convention, CoE have recognised the particular vulnerability of the amphibians and reptiles. A priority rating has been given to all species in CoE countries based on the detailed results of a Europe-wide conservation mapping exercise carried out beforehand, combined with a review of available literature and existing field records. Species were given categories of rarity from 1-10, and most of 1 and some of 2 were selected. The work was funded by CoE and IUCN, with contributions from WWF (UK and Netherlands). Recommendations for biogenetic reserves were based on:

1. a selection of priority species for which sufficient information allowed meaningful reporting;
2. the identification of potential sites within particular areas resulting from field assessments carried out by SEH Conservation Committee members; and
3. a definition of key areas which contained an assemblage of herpetofaunal species, notably those of rarity categories 2, 3 and 4.

The **species** that have been covered by the recommendations are: *Proteus anguinus*, *Alytes muletensis*, *Bombina bombina*, *Pelobates (fuscus) insubricus*, *Rana latastei*, *Podarcis lilfordi/pityusensis* island complexes, *P. milesensis*, *P. hispanica atrata*, *Galotia (aff.) simonyi*, *Vipera (ursinii) rakosienensis*, *V. (ursinii) ursinii*, *V. lebetina schweizeri* and the marine turtles, *Caretta caretta* and *Chelonia mydas*.

The **key areas** that have been identified which contain assemblages of species of high rarity category have so far been NE Greece and SE Sardinia (Italy). It is hoped that further areas will also be included. Interestingly, the selected sites and areas for certain species overlapped with those of other fauna and flora, e.g. the riverine forests of the Po Valley (Italy) and the endemic flora of the Balearic islands. The overlap also includes such species as the black vulture (*Coragyps atratus*), the osprey (*Pandion haliaetus*) and the monk seal (*Monachus monachus*).

The Council of Europe has recognised the problems facing the European herpetofauna and applied funding for the Biogenetic Reserve initiative. Hopefully, their action in funding such conservation work will set a precedent and be followed by the Commission of the European Communities in Brussels.

There is a strong possibility that the SEH Conservation Committee will become IUCH's first regional SSC group, namely the European Herpetofaunal Group, and the Committee is already engaged in preparing an Action Plan.

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NOMENCLATURAL NOTES ON REPTILES OF THE UNITED STATES

We have discovered a number of nomenclatural anomalies that were perpetuated in "Standard Common and Current Scientific Names for North American Amphibians and Reptiles" (Collins et al. 1982). The corrections to scientific names presented here are required under the provisions of the third edition of the "International Code of Zoological Nomenclature" (1985).

The most common nomenclatural error involves the failure of an adjectival species-group name to agree in gender with the generic name as required under Articles 31(b) and 32(d) of the Code. These changes are:

1. *Elgaria panamintinus*. *Elgaria* (etymology unknown) is a feminine generic name that requires *panamintinus* (NL: belonging to the Panamint Mountains) to change from the masculine to the feminine form. The proper combination is *Elgaria panamintina*.
2. *Gambelia silus*, *G. wislizenii maculosus*, and *G. w. punctatus*. *Gambelia* (NL: commemorating W. Gambel) is a feminine generic name that requires *silus* (L: pug-nosed), *maculosus* (L: spotted), and *punctatus* (L: dotted) to change to feminine forms. The correct combinations are *Gambelia sila*, *G. wislizenii maculosa*, and *G. w. punctata*.

3. *Gyalopion quadrangularis*. *Gyalopion* (Gr: small hollow) is neuter; *quadrangularis* (L: having dorsal quadrangular blotches) must change to the neuter form. *Gyalopion quadrangulare* is the proper formation.

4. *Lampropeltis getulus* and *L. g. niger*. *Lampropeltis* (Gr: shiny shield) is a feminine generic name and requires the masculine adjectival species-group names *getulus* (L: Getulian) and *niger* (L: black) to change to the feminine form. Although the change from *niger* to *nigra* is clear, the change from *getulus* to *getula* is less so. One could argue, under Article 31 (b) of the Code, that *getulus* should be considered a noun (L: a resident of Getulians). This position is analogous, however, to noting that "Kansan" could be used as a noun in the phrase "the Kansan," then using this as justification for saying it should be considered a noun in the phrase "the Kansan Glossy Snake." We do not accept this interpretation and regard *getulus* to be an adjective. The correct combinations are *Lampropeltis getula* and *L. g. nigra*.

Cope (1860) was the first to use *Lampropeltis* in combination with species names and was consistent in his treatment of the genus and species as feminine. However, subsequent authors (including Cope) have been remarkably inconsistent, frequently treating *Lampropeltis* as both masculine and feminine within one publication.

5. *Thamnophis sirtalis pallidula*. *Thamnophis* (Gr: bush snake) is a masculine genus that

requires *pallidula* (L: somewhat pale) to change from the feminine to the masculine form. The correct combination is *Thamnophis sirtalis pallidulus*.

According to Articles 11(h)i of the 1985 Code [as well as Article 11(g)i of the 1961 Code], a Latin species-group name must be, or be treated as, an adjective or a noun. If necessary, names should be changed to conform with correct terminations as specified by Articles 31(c) and 32(d)ii. One example of this error was retained in the Common and Scientific Names checklist:

1. *Micrurus fulvius tener*. *Tener* (L: delicately) is an adverb and must be modified to the masculine adjectival form, *tener*, to agree with *Micrurus* (L: small tail). The correct combination, first made by Cope (1875), but ignored subsequently, is *Micrurus fulvius tener*.

Occasionally, authors have misinterpreted nouns to be adjectives. Nouns used as species-group names do not modify their spellings with changes in gender of generic names associated with them [Article 31(b)ii]. Two cases of this error were perpetuated in the checklist:

1. *Hypsiglena torquata ochrorhyncha*. As originally named by Cope (1860), the combination was *Hypsiglena ochrorhynchus*. It is clear that Cope intended *ochrorhynchus* (Gr: yellow nose) as a noun used in association with the feminine generic name *Hypsiglena* (Gr: high eye). Thus, the treatment of *ochrorhynchus* as an adjective is incorrect. The correct combination is *Hypsiglena torquata ochrorhynchus*.
2. *Nerodia rhombifera*. As originally formed by Hallowell (1852), the combination was *Tropidonotus rhombifer*. *Rhombifer* (NL: rhomb bearer or rhomb bearing) either can be considered a masculine adjective or a noun. In cases such as this, Article 31(b)i specifies that the species-group name must be considered as a noun. Regardless of its current placement in a genus with feminine gender, *rhombifer* does not change its spelling. The correct combination is *Nerodia rhombifer* (first used by Johnson 1987), an arrangement analogous to that in the combination *Pseudacris crucifer*.

In another case an unjustified emendation was retained in the checklist. [Note: the unjustified emendation of *platyrhinos* in *Heterodon platyrhinos* to *platyrhinos* has already been noted by Platt (1985)].

1. *Lampropeltis triangulum multistrata*. In the original description (Kennicott 1861) the name was formed as *Lampropeltis multistriata*. Although this was subsequently emended to *multistrata* (Cope 1861), this emendation was unjustified under the provisions of Art. 33. The correct formation of the name is *Lampropeltis triangulum multistriata*.

In another case a species-group name had inexplicably been emended from a correct to an incorrect form, and perpetuated in the checklist:

1. *Trionyx spiniferus asperus*. Originally, *Asper* (L: rough) was correctly formed (*Aspidonectes asper* Agassiz 1857). Its subsequent