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Amphibians of the "Cilento e Vallo di Diano" National Park (Campania, Southern Italy): updated check list, distribution and conservation notes

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Abstract. In this study, we present the results of our field and bibliographic survey on the amphibians of the "Cilento and Vallo di Diano" National Park (Southern Italy). Two hundred and thirty three spawning sites (167 original and 66 derived from literature), and 11 amphibian species were found. Reproductive activity was recorded for *Salamandra salamandra, Salamandrina terdigitata, Triturus carnifex, Lissotriton italicus*, *Bufo bufo, Hyla intermedia*, *Rana italica, Rana dalmatina* and *Pelophylax* synkl. *hispanicus*. The distribution record of many species is widely improved with respect to bibliographic data. Our results also suggested that preservation and restoration of small aquatic sites, in particular of the artificial ones, such as stony wells and drinking-troughs, are fundamental for an appropriate conservation management of amphibians in the "Cilento and Vallo di Diano" National Park.

Keywords. Amphibian distribution, Cilento, Vallo di Diano, artificial aquatic site.

INTRODUCTION

The "Cilento e Vallo di Diano" National Park (CVDNP) is situated in the province of Salerno, Campania region, Southern Italy (Fig. 1). It lies between 40°00' and 40°30'N and 14°50' and 15°40'E making up for a total area of 181.048 ha, being the second widest Italian National Park and including 80 municipalities. The Park falls in 36 UTM 10x10 km squares (in 10 of them just marginally). The altitude ranges from sea level to the top of the Cervati Mountains (1898 m asl). The park's first aim is preserving the traditional

combination of cultural and natural landscapes as well as the unique plant diversity, characteristic for the region. On 1998, UNESCO inserted the CVDNP in the list of Humanity Heritage World Sites.

With the exception of some scattered information, previous organic studies on the herpetofauna of areas corresponding to CVDNP were provided by Caputo et al. (1985) for the northernmost portion of the Park, i.e. the Alburni massif, and by Talenti (1988) and by Caputo and Guarino (1992) for the remaining areas. In 2007, the CVDNP financially supported an updated checklist and a breeding sites' census of amphibians' species. The results of these surveys are hereby reported.

MATERIAL AND METHODS

Study Area. In the Park two main domains can be distinguished (Fig. 1): the Cilento and Vallo di Diano area (CVD) and the northern part of the Park that is the Alburni massif (ALB). These two parts are divided by Sele, Ripiti, Tammaro and Calore rivers. Two main litologies are the Mesozoic and Cenozoic flysch, referred to as the "Cilento Flysch", and the Triassic-Miocenic carbonate units, in the mountainous internal complex (Alburno-Cervati) (Critelli, 1999). CVD is characterised by running waters and still waters (natural or artificial). Conversely, due to karstic phenomena, natural small still freshwater ecosystems highly outnumber running waters on the ALB. The Park includes coastal areas, with a Mediterranean climate and Mediterranean bush vegetation, and inner areas, with mountainous climate influences, presenting extensive forests and a cooler and more humid climate. Olive and chestnut are largely cultivated in the region.

Methods. Field surveys were carried out systematically from March 2008 to June 2009 (230 hours of field research) and included (*i*) the inspection of some sites reported in literature, (*ii*) cartographic recognition of further potential aquatic habitats suitable for amphibian populations and the

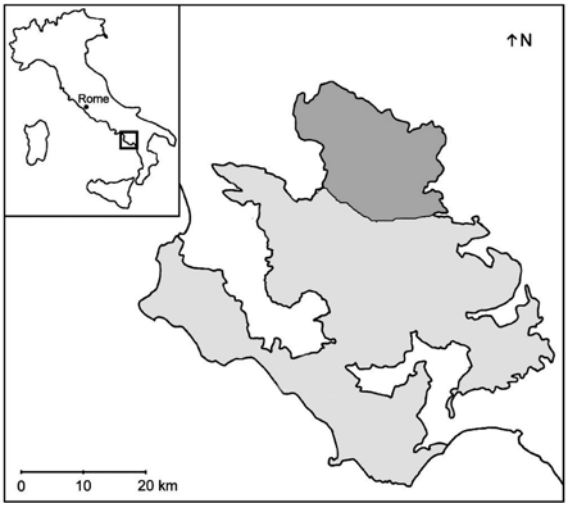

Fig. 1. Location of the study area, the "Cilento e Vallo di Diano" National Park (grey area). In the Park, two main domains can be distinguished: the Cilento area (light grey) and the Alburni massif (dark grey), which are divided by hydrographic boundaries.

inspection of these sites, (*iii*) collection of information from local peoples (mainly from shepherds). Furthermore some of us (NV and CP), who collected data since many years in this area, provided further information. To evaluate the presence of amphibians, aquatic sites were both visually screened and sampled by performing about twenty dip-nettings, including blind ones (i.e., without previous visual detection of amphibians), although sampling effort was proportional to the complexity of habitats. Audio strip transects (after dark) and checking under stones, which could be used as terrestrial shelters around the aquatic sites, were also performed. Field researches were focused on the UTM squares where data were scanty.

Sites were assigned to six different freshwater typologies: (*i*) lakes and marshes (*ii*) ponds (*iii*) running waters (rivers, streams and creeks); (i*v*) drinking-trough for livestock grazing; (*v*) circular wells, (*vi*) cement quadrangular tanks (i.e., "peschiere"). Since several sites were very close to each other, two or more aquatic habitats less than 50 meters apart, inhabited by the same species, and belonging to the same category (e.g., well, pond) have been considered as a single breeding site. We adopted, therefore, the same criterion used by Romano et al. (2007) and Corsetti and Romano (2007).

Among species and sites, the Sørensen's coefficient of similarity (Hayek et al., 1994), which ranges between 0 (two given species never inhabit the same site) and 1 (two species are always syntopic), was calculated to detect affinities among species in their reproductive habitats.

We compared the available bibliographic data (Costa, 1874; Caputo et al., 1985; Talenti, 1988; Caputo and Guarino, 1992) and the data available in the CKmap 5.3.8 software (Stoch, 2000-2005) to avoid sites overestimation.

Because CVD and ALB are geomorphologically well separated (see above), they were commonly treated as separate unit in naturalistic contributes, in particular before the founding of the Park (e.g., Caputo et al., 1985; De Filippo et al., 1985; Caputo and Guarino, 1992; Nazzaro et al., 1996). In the Discussion section we often considered, to allow comparisons with previous studies, the traditional subdivision in these two main domains

RESULTS

We found 11 species in the CVDNP: *Salamandra salamandra* (Linnaeus, 1758), *Salamandrina terdigitata* (Bonnaterre, 1789), *Triturus carnifex* (Laurenti, 1768), *Lissotriton italicus* (Peracca, 1898), *Bombina pachypus* (Bonaparte, 1838), *Bufo bufo* (Linnaeus, 1758), *Hyla intermedia* Boulenger, 1882, *Rana dalmatina* Fitzinger in Bonaparte, 1838, *Rana italica* Dubois, 1987*, Pelophylax* synkl. *hispanicus* (Bonaparte, 1839). The synklpeton is formed by two entities which are considered both at species rank: the parental species, *P. bergeri* (Gunther, 1985) and its hemiclonal hybrid, the kpleton *P.* kl. *hispanicus*. Two hundred and thirteen seven records of amphibians were collected, and breeding activity was recorded in 167 sites, corresponding to 75% of the surveyed potential spawning sites (Table 1).

A lot of sites included in the Ckmap (Stoch, 2000-2005) were previously reported in Caputo et al. (1985) and in Caputo and Guarino (1992). About 30% of selected bibliographic sites were not localisable because they were reported without necessary details. In the whole, literature data reported 12 species in the CVDNP (66 sites with a total of 156 records, Table 1) because also the occurrence of *Bufo balearicus* Boettger, 1880 (as *Bufo viridis*) was recorded (but this datum should be considered erroneous, see discussion).

Species were recorded in 24 UTM squares (VE95, *WE04, WE05*, WE14, *WE15*, WE16, *WE17, WE23*, WE24, WE25, WE26, WE27, WE28, *WE32*, WE33, *WE34*, WE35, WE36, WE37, WE38, WE44, WE45, WE46, *WE54*; in italic are reported squares where amphibians were recorded for the first time).

Table 1. Number of records of amphibian species in the Parco Nazionale del Cilento e Vallo di Diano (Southern Italy) as reported in the literature and as resulting from this work. Comparison between old data and new records of species in the two main domains of the Park (ALB = Alburni massif; CVD= Cilento and Vallo di Diano) is also shown. X = erroneous and doubtful data.

Species	Bibliographic sites			Original sites			TOT
	N	CVD	ALB	N	CVD	ALB	
Urodela							
Salamandra salamandra (Linnaeus, 1758)	7	+		9	+	+	16
Salamandrina terdigitata (Bonnaterre, 1789)	5	+		13	+	+	18
Triturus carnifex (Laurenti, 1768)	15	+	+	12	+	+	27
Lissotriton italicus (Peracca, 1898)	36	+	+	69	+	+	105
Anura							
Bombina pachypus (Bonaparte, 1838)	18	+	+	9	+	+	28
Bufo bufo (Linnaeus, 1758)	26	+	+	19	+	+	45
Hyla intermedia Boulanger, 1882	3	+		23	+	+	26
Rana dalmatina Fitzinger in Bonaparte, 1838	7	+	+	5	+	+	12
Rana italica Dubois, 1987	26	+	+	60	+	+	86
Pelophylax. synkl. *hispanicus* Bonaparte, 1839	12	+	+	18	+	+	30
Bufo balearicus			X				
TOT	155			237			393

Species distributions in the CVDNP are shown in Fig. 2 and Fig. 3. Compared to published data (Table 1), new records for *Hyla intermedia*, *Salamandrina terdigitata* and *Rana italica*, outnumber significantly the bibliographic records (767%, 260% and 250% respectively) while the lowest increments are for *Bombina pachypus* (50%) and *Rana dalmatina* (71%). In Fig. 4 is shown the altitudinal range for each species. Fig. 5 shows the aquatic site preferences of amphibians. Sørensen's coefficients of similarity among amphibian populations of the Park are shown in Table 2.

DISCUSSION

Check list and distribution

Our survey, although did not improve the species check list obtained pooling the data of Caputo et al. (1985) and Caputo and Guarino (1992), greatly improved the knowledge of amphibian distribution in a wide territory (about 181,000 Ha) of Southern Italy, which is among the less investigated areas of Italy (cf. Sindaco et al., 2006). Furthermore our work revealed that some errors were included in the Atlas of Italian herpetofauna (Sindaco et al., 2006) and in the herpetological section of CKmap (Stoch, 2000-2005), because they were built on the same data matrix which contained the original errors (R. Sindaco in litt.).

Salamandra salamandra and *Salamandrina terdigitata* were considered absent from the Alburni massif by Caputo et al. (1985), because suitable habitats were not available in the area. However, *S. salamandra* was reported for a site in the ALB by Bruno (1973). We found both species on the Alburni Mountains (Fig. 2). Furthermore, *Salamandrina* cannot be considered as rare in the area as it is widespread in the whole Park. Both species breed often in streams, but occasionally also in drinking-troughs (Fig. 5). We observed individuals of *Salamandra* breeding from May and July, while *Salamandrina* was observed to breed from April to June.

Triturus carnifex is dishomogeneously distributed in the Park, where the species is strictly associated to old stony well on the Alburni massif. It may be considered the rarest specie for the CVD (where it breed also in a drinking-trough, see Fig. 5), being relegated to the peripheral north-eastern areas (Fig. 2). This high habitat selectivity causes the lowest number of syntopies (4 syntopies, Tab. 2), which are the half in comparison with the ones for other amphibian species (that reached 8 or 9 syntopies). All breeding habitats were found to be permanent and moderately deep (one site was 1 m in depth) or deep water bodies (depth > 3 m). This datum agrees with the preferred habitat for the species as described by Andreone and Marconi (2006). Conversely, the elevation of the breeding sites we found in the Park (the lowest sites is at about 550 m a.s.l., see Fig. 4) disagrees

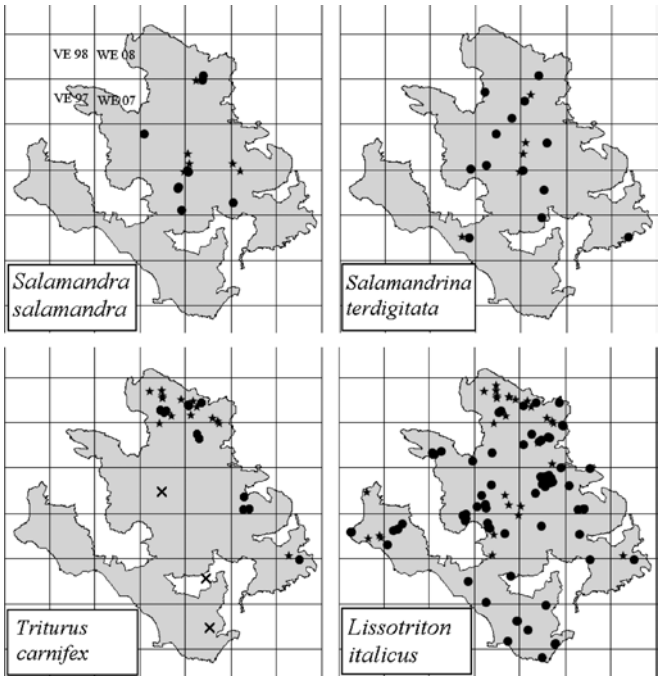

Fig. 2. Distribution of caudate in the "Cilento e Vallo di Diano" National Park (Southern Italy). Stars = sites from literature; dots = new records; crosses: erroneous data from literature (see text for additional information). UTM grid (10x10 Km) is also shown and representative codes of UTM map are reported on the map in the up left corner.

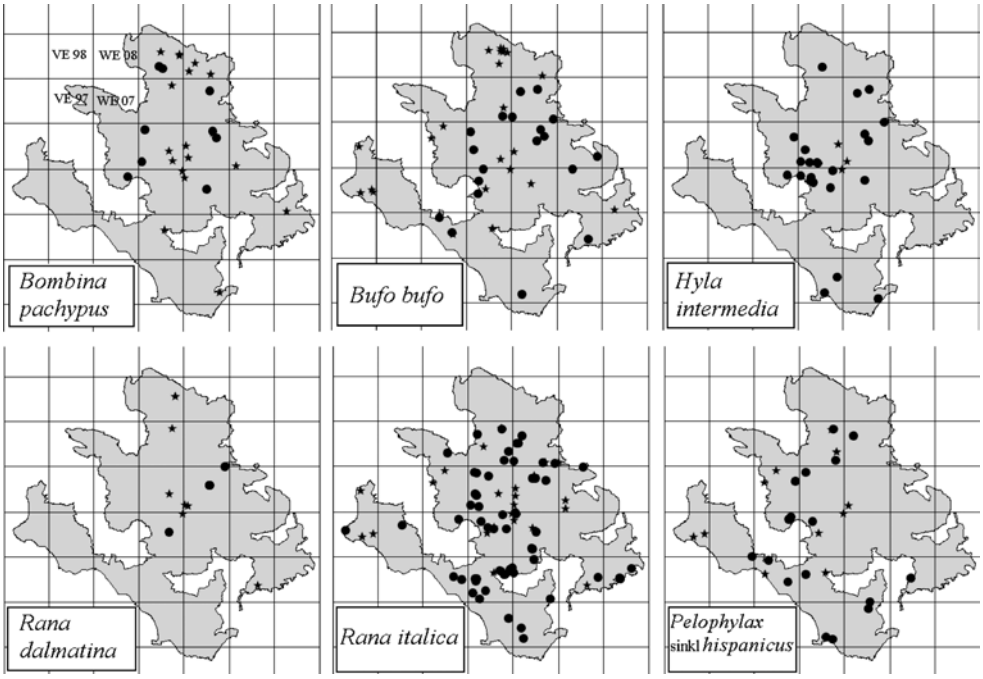

Fig. 3. Distribution of anurans in the "Cilento e Vallo di Diano" National Park (Southern Italy). Stars = sites from literature; dots = new records. UTM grid (10x10 Km) is also shown and representative codes of UTM map are reported on the map in the up left corner.

with the data presented by Andreone and Marconi (2006), who considered as favourite habitats the plains and the moderately elevated areas. Bruno (1973) reported the species also for a site which falls in the centre of the CVD (Alento river, near Cicerale town), but our research did not confirm this finding.

Lissotriton italicus is the commonest amphibian in the Park, where presents a uniform distribution and breeds in all aquatic site typologies (Fig. 5). Our observation confirms the high plasticity of the species, which is adaptable to very different climatic and hydrobiological conditions (Scillitani et al., 2004). Reproductive activity of Italian newt in drinking-troughs on the ALB is more frequent than as considered by Caputo et al. (1985). Larval overwintering and neoteny was also recorded and adult newts may be found in water in every months with a peak of presence between February and November. The highest Sørensen's coefficient showed between *T. carnifex* and *L. italicus* agrees to that reported for other Italian areas where both species occur (Romano et al., 2007).

Although *Hyla intermedia* was recorded previously (just for one site) in the western foothill sector of ALB (Caputo et al., 1985), the site was outside of the Park boundary. Our surveys showed that the species is widely distributed both in the ALB and in the CVD (Fig. 3). We also observed that the Italian tree frog breeds in all aquatic typologies, but prefers residual ponds near running waters and artificial habitats such as "peschiere" and wells (Fig. 5). Tree frog calls have been recorded from March to October. It is interesting to point

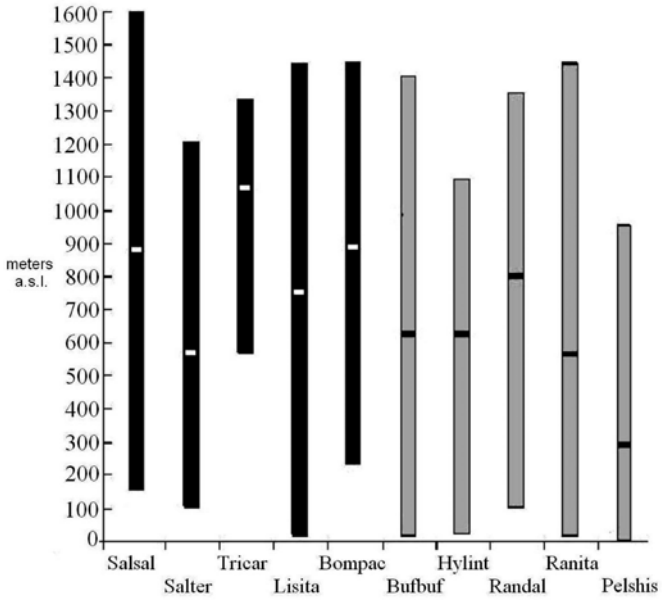

Fig. 4. Altitudinal ranges of amphibian species in the "Cilento e Vallo di Diano" National Park (Southern Italy). Black bars = Caudata; grey bars = Anura**.** Codes of species as reported in Tab. 2. The mean altitude of distribution for each species is indicated by a horizontal segment within the bar. Histogram was built pooling original and bibliographic records.

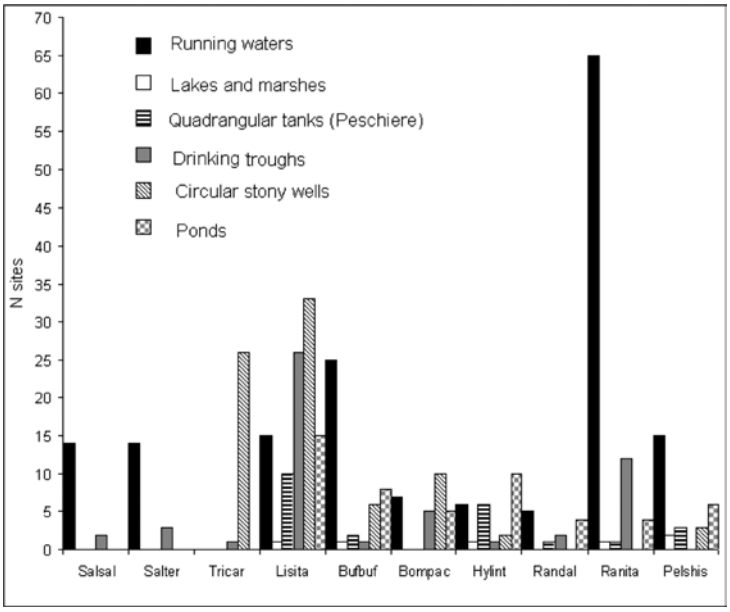

Fig. 5. Habitat partitioning among amphibian species in the "Cilento e Vallo di Diano" National Park (Southern Italy). Codes of species are as reported in Tab. 2. Histogram was built pooling original and bibliographic records.

Table 2. Sørensen's coefficients among amphibian species in the "Cilento e Vallo di Diano" National Park (Southern Italy). Salsal=*Salamandra salamandra;* Salter= *Salamandrina terdigitata;* Tricar= *Triturus carnifex;* Lisita= *Lissotriton italicus;* Bompac=*Bombina pachypus;* Bufbuf=*Bufo bufo;* Hylint= *Hyla intermedia;* Randal=*Rana dalmatina;* Ranita=*Rana italica;* Pelshsp= *Pelophylax* synkl. *hispanicus*. Coefficients were calculated pooling original and bibliographic records.

	Salsal	Salter	Tricar	Lisita	Bompac	Bufbuf	Hylint	Randal	Ranita
Salsal	-								
Salter	0.133	-							
Tricar	0	0	-						
Lisita	0.017	0.033	0.33	-					
Bompac	0.045	0.043	0.29	0.18	-				
Bufbuf	0.098	0.127	0.06	0.2	0.219	-			
Hylint	0.095	0.045	0.08	0.122	0.055	0.113	-		
Randal	0.143	0.133	0	0.103	0.15	0.105	0.211	-	
Ranita	0.098	0.192	0	0.178	0.158	0.29	0.054	0.102	-
Pelshis	0.087	0.083	0	0.119	0.103	0.267	0.179	0.095	0.189

out that also this species, which traditionally considered a typical for marsh and ponds, according to our data often uses artificial water bodies as breeding habitat

Rana italica is the commonest anuran in the Park, with a rather uniform distribution, and it is consistently more spread in the ALB than previously supposed (Fig. 3). The typical breeding sites in CVDNP are running waters but the Apennine frog spawns also in drinking-troughs and, occasionally, in oxygenated ponds and wells (Fig. 5). Spawning activity was recorded from late February to June.

Bufo bufo presents rather uniform distribution and shows a great habitat typology differentiation (Fig. 5). Spawning was recorded from February to May.

Rana dalmatina and *Bombina pachypus* showed the lowest increment of new records in comparison to the other species. The low number of new records of Agile frog could be interpreted as confirmation that this species is not very common in the Park (cf. bibliographic sites and new records in Fig. 3). Instead, Apennine yellow-bellied toad was greatly widespread in the past (cf. bibliographic sites and new records in Fig. 3). Twenty five years ago this species was considered the commonest anurans on ALB (Caputo et al., 1985), and to be very common in the inner areas of CVD (Talenti, 1988). Long term observations by two of us (CP and NV) confirmed that the species disappeared from many sites in the last two decades and also that the number of observable individuals, of each population, decreased dramatically. The low increment of new records and long term observations, both on the distribution and on the size populations, agree with the negative trend reported for the species which has declined in almost all of its range (cf. Andreone et al., 2008).

Finally, the occurrence of the Green toad in the Park has to be corroborated by further observations. Suitable habitat for the species can be found, in particular, on the sandy coastal zones and near estuarine areas of CVD, although our research, also in those areas, did not produce any finding.

Erroneous data

There are two main errors in the literature that should be discussed to avoid further propagation of errors. The occurrence of the Green Toad, *Bufo balearicus* (as *B. viridis*), in the CVDNP was reported near Sicignano town, on the ALB, by Caputo et al. (1985) not as a direct observation. This datum was reported also in Ckmap (Stoch, 2000-2005) and in the Italian atlas (Sindaco et al., 2006) where in addition another record was reported for the ALB area (in Corleto Monforte town). The latter record was attributed to one of the authors of this paper (CP) who, however, observed, in Corleto Monforte, only the Common toad and not the Green toad. Thus the datum reported in CKmap and in the Italian atlas should be considered erroneous, while the datum from Sicignano should be considered doubtful. In fact, this datum is generic (only the municipality is reported but not the locality), Sicignano is exactly on the border of the Park (the record could falls outside of the Park) and, finally, because the species was not recorded in our systematic field research and in that of Caputo et al. (1985).

Other problematic data are the ones concerning *Triturus carnifex*. Once again, in Stoch (2000-2005) and in Sindaco et al. (2006) the same an erroneous datum was reported. Italian crested newt was reported in CKmap and in the Italian atlas, for the CVD area, in four UTM meshes (WE26, WE33, WE34, and WE54) and it seems to be relatively widespread both in ALB and in CVD (Fig. 2). However, the sites of the four meshes are the same site (i.e., Pozzi Monaci, near Casalletto Spartano town) and, moreover, this site falls in another mesh (WE55).

Conservation notes

Undoubtedly, the "Cilento e Vallo di Diano" National Park represents a protected area of notable importance for the protection of amphibians. More than 50% of the species we found in the Park are Italian endemics. Out of the 11 species, three (*S. terdigitata*, *T. carnifex* and *B. pachypus*) are included in the annex II and IV of "Habitat" directive 92/43/CEE and the other species (excluding *B. bufo* and *S. salamandra*), in the annex IV. Furthermore, the Park is a wide area where many breeding sites of a species considered as Endangered by the IUCN, i.e. *B. pachypus,* occur.

We considered two areas particularly worth of consideration for their herpetofaunal biodiversity. They were proposed as "Area di Rilevanza Erpetologica Nazionale" (AREN, i.e., Area of Herpetological Importance at National level) and approved, on 2009, by the Council Directive and Conservation Commission of *Societas Herpetologica Italica*. In the first AREN (code ITA063CAM002), in the CVD, *S. terdigitata, L. italicus, B. pachypus, B. bufo, H. intermedia, R. dalmatina and R. italica* breed. In the second AREN (ITA-064CAM003), on the Alburni massif, *T. carnifex, L. italicus, B. pachypus, H. intermedia* and *P.* synkl. *hispanicus* spawn. The second AREN, interesting also on the historical point of view, was mentioned, with a list of amphibian species that could be found, by Achille Costa (1874). In both AREN many reptiles also occur (see the official web site http://www-3.unipv.it/webshi/conserv/areeril.htm for further details on these AREN).

In the CVDNP all amphibian species use traditional artificial aquatic habitats as breeding sites (Fig. 5). For some of them, which deserve particular attention due to their

endemicity and/or to their habitat fragmentation (Andreone and Luiselli, 2000; Sindaco, 2000), artificial water bodies represent the exclusive breeding sites (for *T. carnifex*, see Fig. 5), the preferred breeding sites (for *L. italicus* and *B. pachypus*, Fig. 5) or a significant portion of the spawning sites (for *S. terdigitata*, and *H. intermedia*). The abandonment of agricultural land, traditional silvo-pastoral and cultivation practices is a common and widespread phenomenon in the mountainous regions of Italy, which is linked to the large-scale socio-economic transformations that affected the whole country in the last century (see Torta et al., 2004 and references therein). Traditional artificial water bodies are also affected by this phenomenon. The main problems related to the conservation of these amphibian habitats, as emerged in our study, are (*i*) fill-in phenomena of the aquatic sites, (*ii*) their disrepair and consequent permeability loss, (*iii*) aggressive mechanical and chemical cleaning, in particular of drinking-troughs, (*iv*) tapping of wells for safety measures (in particular of abandoned or less used wells), (*v*) unsuitability of many artificial water bodies to act as amphibian breeding site because they have some "architectural fences" that obstruct the entry in and/or the exit from the water (*vi*) introduction of alien species (mainly goldfishes, *Carassius auratus*) to "adorn" the aquatic sites. The importance of traditional artificial water bodies for amphibians is highlighted by several studies in different countries (e.g., Contreras et al., 2009; Knutson et al., 2004; Romano et al., 2007) and, in particular, in the Mediterranean, as stressed in the updated IUCN European Red List of Amphibians (Temple and Cox, 2009). For this reason the Park supported the draft of a guideline for the appropriate management of artificial water bodies (Romano, 2009), which is a fundamental prerequisite for appropriate conservation strategies and for preservation of amphibian biodiversity. Furthermore, the Park is also the leading exponent of a regional-European project, which aims is to restore or to build small artificial water bodies (i.e. drinking-throughs and wells), using the methods of the rural architecture, for the landscape valorisation and biodiversity conservation (Rural Development Programmes, second pillar, art. 36-51, axis 2, measure code: 216)

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REFERENCES

Andreone, F., Corti, C., Sindaco, R., Romano, A., Giachi, F., Vanni, S., Delfino, G. (2008): *Bombina pachypus*. In: IUCN 2009. IUCN Red List of Threatened Species. Version 2009.2. www.iucnredlist.org. Downloaded on 10 December 2009.

Andreone, F., Luiselli, L. (2000): The Italian batrachofauna and its conservation status: a statistical assessment. Biol. Cons. **96**: 197-208

Andreone, F., Marconi, M. (2006): *Triturus carnifex* (Laurenti, 1768). In: Atlante degli anfibi e dei rettili d'Italia / Atlas of Italian amphibians and reptiles, p. 220-225. Sindaco, R., Doria, G., Razzetti, E., Bernini, F., Eds, Societas Herpetologica Italica, Edizioni Polistampa, Firenze.

Bruno, S. (1973): Anfibi d'Italia: Caudata. Studi sulla fauna erpetologia italiana – XVII. Natura, Soc. It., Sc. Nat., Museo Civ. St. Nat. e Acquario Civ., Milano **64**: 209-450.

Caputo, V., Kalby, M., De Filippo, G. (1985): Gli Anfibi e i Rettili del Massiccio degli Alburni (Appennino Campano-Lucano). Natura, Soc. Ital. Sci. nat., Museo civ. Stor. nat. e Acquario civ., Milano **76**: 94-104.

Caputo V., Guarino, F.M. (1992): L'erpetofauna del Cilento (Italia Meridionale). Atti Soc. ital. Sci. nat. Museo civ. Stor. nat. Milano **132**: 273-292.

Contreras, V., Martínez-Meyera, E., Valiente, E., Zambrano, L. (2009): Recent decline and potential distribution in the last remnant area of the microendemic Mexican axolotl (*Ambystoma mexicanum*). Biol. Cons. **142**: 2881-2885.

Corsetti, L., Romano, A. (2007): Amphibians of the Ausoni Mountains (Latium, Central Italy). Acta Herpetologica **2**: 129-137.

Costa, A. (1874): Una peregrinazione zoologica su' monti dell'Alburno.- Rend. Acc. Sc. Fis. Mat. (Sez. Soc. R. Napoli) **23**: 129-135.

Critelli, S. (1999): The interplay of lithospheric flexure and thrust accomodation in forming stratigraphic sequences in the southern Apennines foreland basin system, Italy. Rend. Fis. Acc. Lincei, s. 9, **10**: 257-326.

De Filippo, G., Caputo, V., Kalby, M. (1985): La comunità di Uccelli in una fustaia di faggio sui monti Alburni (Sud-Italia). Boll. Soc. Natur. Napoli **94**: 221-227.

Hayek, L.A.C. (1994): Analysis of amphibian biodiversity data. In: Measuring and Monitoring Biological Diversity, Standard Methods for Amphibians, p. 207-269. Heyer, R.W., Donnelly, M.A., McDiarmid, R.W., Hayek, L.A.C., Foster, M.S., Eds, Smithsonian Institution, USA.

Knutson, M.G., Richardson, W.B., Reineke, D.M., Gray, BR., Parmelee, J.R., Weick, S.E. (2004): Agricultural ponds support amphibian populations. Ecol. Appl. **14**: 669–684.

Nazzaro, R., Menale, B., Di Novella, N., La Valva, V., Caputo, G. (1996): Le Orchidaceae delle aree interne del Cilento e del Vallo di Diano (Salerno). Delpinoa **33-34**: 31-57.

Romano, A. (2009). Linee guida per la gestione compatibile di abbeveratoi, peschiere, pozzi in pietra e la salvaguardia degli Anfibi nel Parco Nazionale del Cilento e Vallo di Diano. (Internal Report for the "Cilento e Vallo di Diano" National Park).

Romano, A., Montinaro, G., Mattoccia, M., Sbordoni, V. (2007): Amphibians of the Aurunci Mountains (Latium, Central Italy). Checklist and conservation guidelines. Acta Herpetol. **2**: 17-25.

Scillitani, G., Scalera, R. Carafa, M., Tripepi, S. (2004): Conservation and biology of Triturus italicus in Italy (Amphibia, Salamandridae). In: The conservation status of threatened amphibian and reptile species of Italian fauna, p. 45-54. Bologna, M.A., La Posta, S. (Eds). Ital. J. Zool., 71 (Suppl. 1).

Sindaco, R. (2000): Priorità di conservazione dell'erpetofauna italiana in base ai dati della distribuzione geografica. In: Atti 1° Congr. Naz. Societas Herpetologica Italica, p. 677-690, Giacoma, C., Ed,, Mus. Reg. Sci. Nat. Torino.

Sindaco, R., Doria, G., Razzetti, E., Bernini, F. (2006): Atlante degli anfibi e dei rettili d'Italia / Atlas of Italian amphibians and reptiles. Societas Herpetologica Italica, Edizioni Polistampa, Firenze.

Stoch, F. (2000–2005). CKmap 5.3.8. Ministero dell'Ambiente e della Tutela del Territorio, Direzione Protezione della Natura. http://www.minambiente.it/index.php?id_sezione=1930.

Talenti, E. (1988): Note sull'erpetofauna del Cilento (Salerno). Boll. Gruppo R.A.NA. **1**: 32-35.

Temple, H.J., Cox, N.A. (2009): European Red List of Amphibians. Luxembourg: Office for Official Publications of the European Communities. Available on http://data.iucn.org/dbtw-wpd/edocs/2009-006.pdf

Torta, G. (2004): Consequences of rural abandonment in a Northern Apennines landscape (Tuscany, Italy). In: Recent dynamics of the Mediterranean vegetation and landscape, p. 157-165. Mazzoleni, S., Di Pasquale, G., Mulligan, M., Di Martino, P., Rego, F., Eds, Wiley, London.