THE ALPINE LONG-EARED BAT (PLECOTUS ALPINUS) KIEFER AND VEITH, 2001) IS PRESENT ALSO IN PIEDMONT REGION: FIRST RECORD REVEALED BY DNA ANALYSIS

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RIASSUNTO - L’orecchione alpino (Plecotus alpinus Kiefer e Veith, 2001) è presente anche in Piemonte: prima segnalazione accertata mediante analisi del DNA. Viene riportata la prima segnalazione per il Piemonte della specie Plecotus alpinus (Kiefer e Veith, 2001) recentemente descritta. Per l’esatta determinazione specifica si è fatto ricorso a tecniche genetiche, in quanto non sono state ancora messe a punto tecniche discriminanti basate su parametri biometrici. La presenza di questa nuova specie anche in Piemonte dovrebbe indurre ad un monitoraggio su larga scala, per definirne in dettaglio la distribuzione e le preferenze di habitat, finalizzate anche alla determinazione dello status delle popolazioni presenti.

Parole chiave: Chiroptera, Plecotus alpinus, distribuzione, conservazione, Piemonte.

European bat species belonging to the genus Plecotus can be considered sibling species, a phenomenon well known among other European bat genera: e.g. Myotis mystacinus and M. brandti, M. myotis and M. blythii. (e.g. Arlettaz, 1996; Arlettaz et al., 1997). In general, sibling species are difficult to discriminate based on traditional body measurements or analysis of echolocation calls, and this also holds for the genus Plecotus (Kiefer and Veith, 2001; Spitzenberger et al., 2002). Thanks to the recent developments in molecular biology, in particular using mitochondrial DNA sequencing, some new species have been described or proposed in the genus Plecotus: Plecotus kolombatovic, P. alpinus and P. sardus (Kiefer and Veith, 2001; Mucedda et al., 2002). In Italy P. alpinus is presently recorded only in Trentino Alto Adige (Kiefer and Veith, 2001; Chirichella et al., present issue) and Lombardy region (Trizio et al., in press). Here, we present the first record of the occurrence of alpine long-eared bat (Plecotus alpinus) in Piedmont region, NW Italy. In September 2001, a field survey of bats, promoted by Ente Parchi e Riserve Naturali Lago Maggiore as part of an Italian - Swiss Interreg Project, was carried out, using mist-nets placed at intensively used foraging sites (Agnelli et al. in press). Bats were captured while in nocturnal flight at Premeno.
(Verbano-Cusio-Ossola province), a vil-
lage located at 800 m a.s.l. and surrou-
ded by meadows and hardwoods, about
2.5 km away from Maggiore Lake.
Trapped individuals were removed
immediately and held in cotton sacks
until the nets were closed. Animals were
measured and patagium tissue samples
were taken, releasing each animal at the
point of capture. A calliper (±0.1 mm)
was used to measure: (1) forearm
length, from wrist joint to elbow joint;
(2) thumb (1st finger) length, from nail
insertion to posterior thumb articula-
tion; (3) thumb claw length, from nail
insertion to nail tip. Each bat was classi-
fied as juvenile, sub-adult or adult by
observing the closure of epiphyseal
growth plates in the metacarpal-phalan-
geal joint of the fourth finger (Kunz,
1988) against a bright light source; body
size and development of genitals were
also taken into account. Preliminary
species determination in the field was
carried out according to the existing lite-
rature (Lanza, 1959; Schober and
Grimmberger, 1997) and specific identi-
fication keys (Roesli and Moretti,
2000).
Mitochondrial DNA for genetic analy-
sis was extracted from patagium tissue
samples as described elsewhere (Trizio
et al., in press). Mt-DNA was amplified
and analysed following methods propo-
sed by Kiefer and Veith (2001). The
obtained sequences were aligned to pre-
viously published sequences of all
European Plecotus species (GenBank
Accession Nos. AY134012-134026,
AF529229-529230 – Kiefer and Veith,
2001; Kiefer et al., 2002) using Clustal
X software (Thomson et al., 1997). The
phylogenetic relationships were infer-
red both by distance methods, applying
the neighbor-joining algorithm (Saitou
and Nei, 1987) and by maximum parsi-
mony (MP). Other methods did not pro-
duce significant different tree topolo-
gies. All calculations were carried using
software package (Felsenstein, 1989).
Three individuals of the genus
Plecotus, two adult females and an
adul male, were captured. According
to the discriminant function suggested
by Maddalena and Moretti (1994) and
based on the three body measurements
taken, the two females were determined
as P. auritus and the male as P. austri-
cus. However, the penis shape of the
latter did not allow to identify it as
belonging to any of these two species,
looking intermediate between the mor-
phological types described (Maddalena
and Moretti, 1994; Roesli and Moretti,
2000). In effect, the sequence of the 550
bp mt-DNA that was analysed (Kiefer
and Veith, 2001), showed that all three
individuals belonged to the recently
described species Plecotus alpinus. We
therefore suggest that the discriminant
function proposed by Maddalena and
Moretti (1994) needs to be revised,
since considered the presence of only
two species in the Alps.
The classification on genetic basis of
Plecotus species is presently essential,
in order to undertake studies on distri-
bution, ecological preferences and
population status of the various sibling
species.
We hope that these aspects will be
expanded in a near future, in order to
increase the knowledge needed to
implement effective conservation
action plans.
REFERENCES


