0.1 Member State	IT
0.2.1 Species code	1341
0.2.2 Species name	Muscardinus avellanarius
0.2.3 Alternative species scientific name	N/A
0.2.4 Common name	N/A

# 1. National Level

### **1.1 Maps**

1.1.1 Distribution Map
Yes
1.1.1a Sensitive species
No
1.1.2 Method used - map
Estimate based on partial data with some extrapolation and/or modelling (2)
2001-2012
1.1.4 Additional map
Yes
No
1.1.5 Range map
Yes

# 2. Biogeographical Or Marine Level

2.1 Biogeographical Region

# 2.2 Published sources

# Mediterranean (MED)

The present species assessment (fields 0.1-2.9) has been compiled by Daniele Paoloni, Cristiano Spilinga (Associazione Teriologica Italiana - ATIt) and Anna Alonzi, Piero Genovesi, Francesca Ronchi (Institute for Environmental Protection and Research - ISPRA). Information, unpublished data and experts' judgments have been provided by Gaetano Aloise, Giovanni Amori, Sandro Bertolino, Francesco Bisi, Silvia Capasso, Dario Capizzi, Filomena Carpino, Emiliano Mori, Maurizio Sarà (ATIt).

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Capasso S. & Carpino F., 2008. Primi dati sulle comunità di micromammiferi del Parco Regionale del Partenio e valutazione della qualità ambientale. In: Prigioni et al. (eds). 2008. Atti VI Congr. It. Teriologia, Hystrix, It. J.Mamm., (N.S.) SUPP. 2008: 74 (abs).

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Capizzi D., Filippucci M.G., 2008. Muscardinus avellanarius (Linnaeus, 1758). In: Fauna d'Italia, Mammalia II - Erinaceomorpha, Soricomorpha, Lagomorpha, Rodentia . P. 395-405, MILANO:Calderini - Edizioni Calderini de II Sole 24 ORE S.p.A..

Carpino F. & Capasso S., 2008. I Vertebrati terrestri del Parco Regionale del Partenio. Monitoraggio e indirizzi per la gestione e conservazione. Ente Parco Regionale del Partenio, Edizioni Scientifiche Italiane, Napoli. 143 pp. ISBN 978-88-495-1708-8.

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Regione Liguria, 2008. Carta della Biodiversità, www.ambienteinliguria.it.

## 2.3 Range

2.3.1 Surface area - Range (km²)

2.3.2 Method - Range surface area

2.3.3 Short-term trend period

2.3.4 Short-term trend direction

2.3.5 Short-term trend magnitude

2.3.6 Long-term trend period

2.3.7 Long-term trend direction

2.3.8 Long-term trend magnitude

2.3.9 Favourable reference range

41100

Estimate based on partial data with some extrapolation and/or modelling (2)

2001-2012 stable (0)

min max

N/A

min max

area (km²)

operator approximately equal to  $(\approx)$ 

unkown No

method Expert judgement

Use of different method

# 2.4 Population

2.4.1 Population size

2.3.10 Reason for change

(individuals or agreed exception)

Unit N/A

Unit

min max

2.4.2 Population size (other than individuals)

min 336 max 336

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number of map 10x10 km grid cells (grids10x10)

2.4.3 Additional information	Definition of	of locality	
	Conversion	method	
	Problems	Impossible to	convert grids into individuals
<ul> <li>2.4.4 Year or period</li> <li>2.4.5 Method – population size</li> <li>2.4.6 Short-term trend period</li> <li>2.4.7 Short term trend direction</li> <li>2.4.8 Short-term trend magnitude</li> <li>2.4.9 Short-term trend method</li> </ul>	2001-2012 stable (0) min	ased on expert opinion with max	confidence interval me extrapolation and/or modelling (2)
2.4.10 Long-term trend period		·	, , , , , , , , , , , , , , , , , , , ,
<ul><li>2.4.11 Long term trend direction</li><li>2.4.12 Long-term trend magnitude</li><li>2.4.13 Long-term trend method</li></ul>	N/A min N/A	max	confidence interval
2.4.14 Favourable reference population	number operator unknown	approximately equal to (a	≈)
	method	Expert judgement	
2.4.15 Reason for change			
2.5 Habitat for the Species			
2.5.1 Surface area - Habitat (km²)			

2.5 Habitat for the Species	
2.5.1 Surface area - Habitat (km²)	
2.5.2 Year or period	
2.5.3 Method used - habitat	Absent data (0)
2.5.4 a) Quality of habitat	Moderate
2.5.4 b) Quality of habitat - method	Expert based
2.5.5 Short term trend period	2001-2012
2.5.6 Short term trend direction	stable (0)
2.5.7 Long-term trend period	
2.5.8 Long term trend direction	N/A
2.5.9 Area of suitable habitat (km²)	52983
2.5.10 Reason for change	Use of different method

2.6 Main Pressures			
Pressure		ranking	pollution qualifier(s)
forestry clearance (B02.02)		high importance (H)	N/A
removal of forest undergrowth (B02.03	3)	high importance (H)	N/A
removal of dead and dying trees (B02.0	04)	medium importance (M)	N/A
grazing in forests/ woodland (B06)		medium importance (M)	N/A
Forestry activities not referred to above (B07)		medium importance (M)	N/A
reduction or loss of specific habitat features (J03.01)		medium importance (M)	N/A
anthropogenic reduction of habitat connectivity (J03.02)		high importance (H)	N/A
burning down (J01.01)		high importance (H)	N/A
2.6.1 Method used – pressures	based only on expe	rt judgements (1)	

2.7 Main Threats

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ranking	pollution qualifier(s)
high importance (H)	N/A
high importance (H)	N/A
medium importance (M)	N/A
high importance (H)	N/A
high importance (H)	N/A
	high importance (H) high importance (H) medium importance (M) medium importance (M) medium importance (M) medium importance (M) high importance (H)

2.7.1 Method used – threats

expert opinion (1)

### 2.8 Complementary Information

2.8.1 Justification of % thresholds for trends

2.8.2 Other relevant Information

2.8.3 Trans-boundary assessment

# 2.9 Conclusions (assessment of conservation status at end of reporting period)

2.9.1 Range assessment Favourable (FV) qualifiers N/A

2.9.2. Population assessment Favourable (FV)

qualifiers N/A

2.9.3. Habitat assessment Favourable (FV)

qualifiers N/A

2.9.4. Future prospects assessment Favourable (FV)

qualifiers N/A

Favourable (FV)

2.9.5 Overall assessment of

**Conservation Status** 

2.9.5 Overall trend in

**Conservation Status** 

N/A

# 3. Natura 2000 coverage and conservation measures - Annex II species

## 3.1 Population

3.1.1 Population Size Unit N/A

min max

3.1.2 Method used

N/A

3.1.3 Trend of population size within N/A

**3.2 Conversation Measures** 

# 2. Biogeographical Or Marine Level

2.1 Biogeographical Region

2.2 Published sources

# Continental (CON)

The present species assessment (fields 0.1-2.9) has been compiled by Daniele Paoloni, Cristiano Spilinga (Associazione Teriologica Italiana - ATIt) and Anna Alonzi, Piero Genovesi, Francesca Ronchi (Institute for Environmental Protection

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and Research - ISPRA). Information, unpublished data and experts' judgments have been provided by Gaetano Aloise, Giovanni Amori, Sandro Bertolino, Francesco Bisi, Silvia Capasso, Dario Capizzi, Filomena Carpino, Emiliano Mori, Maurizio Sarà (ATIt).

Boitani L., Corsi F., Falcucci A., Maiorano L., Marzetti I., Masi M., Montemaggiori A., Ottaviani D., Reggiani G., Rondinini C., 2002. Rete Ecologica Nazionale. Un approccio alla conservazione dei vertebrati italiani. Università di Roma "La Sapienza", Dipartimento di Biologia Animale e dell'Uomo; Ministero dell'Ambiente, Direzione per la Conservazione della Natura; Istituto di Ecologia Applicata. Http://www.gisbau.uniroma1.it/REN

Capizzi D., Santini L., 2007. I Roditori italiani - ecologia, impatto sulle attività umane e sugli ecosistemi, gestione delle popolazioni. p. 1-555, ROMA:Antonio Delfino Editore.

Capizzi D., Filippucci M.G., 2008. Muscardinus avellanarius (Linnaeus, 1758). In: Fauna d'Italia, Mammalia II - Erinaceomorpha, Soricomorpha, Lagomorpha, Rodentia . P. 395-405, MILANO:Calderini - Edizioni Calderini de II Sole 24 ORE S.p.A..

Dublo L., 1993-1994. Micromammiferi da borre di rapaci nel Friuli-Venezia Giulia: riconoscimento, distribuzione ed ecologia di predatori e prede. Tesi di Laurea in Scienze Naturali, Fac. di Scienze MM. FF. NN. dell'Università degli Studi di Trieste, Relatori G. A. Amirante & L. Lapini.

Lapini L., Dall'Asta A., Dublo L., Spoto M., Venier E., 1996. Materiali per una teriofauna dell'Italia Nord - Orientale (Mammalia, Friuli-Venezia Giulia). Gortania 17: 149-248.

Ragni B., 2002. Atlante dei mammiferi dell'Umbria. Petruzzi Editore.

Regione Piemonte. Banche dati Naturalistiche + Banca dati IPLA.

### 2.3 Range

2.3.1 Surface area - Range (km²)

2.3.2 Method - Range surface area

2.3.3 Short-term trend period

2.3.4 Short-term trend direction

2.3.5 Short-term trend magnitude

2.3.6 Long-term trend period

2.3.7 Long-term trend direction

2.3.8 Long-term trend magnitude

2.3.9 Favourable reference range

48400

Estimate based on partial data with some extrapolation and/or modelling (2)

2001-2012

stable (0)

min max

N/A

min max

area (km²)

operator approximately equal to  $(\approx)$ 

unkown No

method Expert judgement

Use of different method

# 2.4 Population

2.4.1 Population size

2.3.10 Reason for change

(individuals or agreed exception)

Unit N/A

min max

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Unit numl	per of map 10x max	10 km grid 372	cells (grids10x10)
	ethod	ossible to c	convert grids into individuals
2001-2012 stable (0)	·	a with som	
Estimate base		a with som	confidence interval ne extrapolation and/or modelling (2)
min N/A number	max pproximately e	equal to (≈)	confidence interval
	min 372  Definition of local Conversion medians 2001-2012 Estimate bases 2001-2012 stable (0) min Estimate bases N/A min N/A number operator a	min 372 max  Definition of locality Conversion method Problems Imp 2001-2012 Estimate based on partial dat 2001-2012 stable (0) min max Estimate based on partial dat  N/A min max N/A number operator approximately e	min 372 max 372  Definition of locality  Conversion method  Problems Impossible to 6  2001-2012  Estimate based on partial data with som 2001-2012  stable (0)  min max  Estimate based on partial data with som N/A  min max  N/A  number  operator approximately equal to (≈)

Expert judgement

Improved knowledge/more accurate data

method

2.4.15 Reason for change

2.5 Habitat for the Species	
2.5.1 Surface area - Habitat (km²)	
2.5.2 Year or period	
2.5.3 Method used - habitat	Absent data (0)
2.5.4 a) Quality of habitat	Moderate
2.5.4 b) Quality of habitat - method	Expert based
2.5.5 Short term trend period	2001-2012
2.5.6 Short term trend direction	stable (0)
2.5.7 Long-term trend period	
2.5.8 Long term trend direction	N/A
2.5.9 Area of suitable habitat (km²)	26657
2.5.10 Reason for change	Use of different method

# 2.6 Main Pressures

Pressure	ranking	pollution qualifier(s)
forestry clearance (B02.02)	medium importance (M)	N/A
removal of forest undergrowth (B02.03)	medium importance (M)	N/A
removal of dead and dying trees (B02.04)	medium importance (M)	N/A
grazing in forests/ woodland (B06)	medium importance (M)	N/A
Forestry activities not referred to above (B07)	medium importance (M)	N/A
reduction or loss of specific habitat features (J03.01)	medium importance (M)	N/A
anthropogenic reduction of habitat connectivity (J03.02)	high importance (H)	N/A
burning down (J01.01)	low importance (L)	N/A

2.6.1 Method used – pressures based only on expert judgements (1)

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2.7 Main Threats		
Threat	ranking	pollution qualifier(s)
forestry clearance (B02.02)	medium importance (M)	N/A
removal of forest undergrowth (B02.03)	medium importance (M)	N/A
removal of dead and dying trees (B02.04)	medium importance (M)	N/A
grazing in forests/ woodland (B06)	medium importance (M)	N/A
Forestry activities not referred to above (B07)	medium importance (M)	N/A
reduction or loss of specific habitat features (J03.01)	medium importance (M)	N/A
anthropogenic reduction of habitat connectivity (J03.02)	high importance (H)	N/A
burning down (J01.01)	low importance (L)	N/A

2.7.1 Method used – threats

expert opinion (1)

### 2.8 Complementary Information

2.8.1 Justification of % thresholds for trends

2.8.2 Other relevant Information

2.8.3 Trans-boundary assessment

# 2.9 Conclusions (assessment of conservation status at end of reporting period)

2.9.1 Range assessment Favourable (FV) qualifiers N/A

2.9.2. Population assessment Favourable (FV)

qualifiers N/A

2.9.3. Habitat assessment Favourable (FV)

qualifiers N/A

2.9.4. Future prospects assessment Favourable (FV)

qualifiers N/A

Favourable (FV)

2.9.5 Overall assessment of

**Conservation Status** 

2.9.5 Overall trend in

Conservation Status

N/A

# 3. Natura 2000 coverage and conservation measures - Annex II species

# 3.1 Population

3.1.1 Population Size Unit N/A

min max

3.1.2 Method used N/A

3.1.3 Trend of population size within N/A

### **3.2 Conversation Measures**

# 2. Biogeographical Or Marine Level

2.1 Biogeographical Region

2.2 Published sources

# Alpine (ALP)

The present species assessment (fields 0.1-2.9) has been compiled by Daniele Paoloni, Cristiano Spilinga (Associazione Teriologica Italiana - ATIt) and Anna

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Alonzi, Piero Genovesi, Francesca Ronchi (Institute for Environmental Protection and Research - ISPRA). Information, unpublished data and experts' judgments have been provided by Gaetano Aloise, Giovanni Amori, Sandro Bertolino, Francesco Bisi, Silvia Capasso, Dario Capizzi, Filomena Carpino, Emiliano Mori, Maurizio Sarà (ATIt).

Boitani L., Corsi F., Falcucci A., Maiorano L., Marzetti I., Masi M., Montemaggiori A., Ottaviani D., Reggiani G., Rondinini C., 2002. Rete Ecologica Nazionale. Un approccio alla conservazione dei vertebrati italiani. Università di Roma "La Sapienza", Dipartimento di Biologia Animale e dell'Uomo; Ministero dell'Ambiente, Direzione per la Conservazione della Natura; Istituto di Ecologia Applicata. http://www.gisbau.uniroma1.it/REN

Cantini M., Davini G., Fadda V., 1988. Sulla presenza del Moscardino Muscardinus avellanarius L. in Valle d'Aosta (Mammalia, Gliridae), Rivista piemontese di Storia naturale, IX: 203-206.

Capizzi D., Santini L., 2007. I Roditori italiani - ecologia, impatto sulle attività umane e sugli ecosistemi, gestione delle popolazioni. P. 1-555, ROMA:Antonio Delfino Editore.

Capizzi D., Filippucci M.G., 2008. Muscardinus avellanarius (Linnaeus, 1758). In: Fauna d'Italia, Mammalia II - Erinaceomorpha, Soricomorpha, Lagomorpha, Rodentia . P. 395-405, MILANO:Calderini - Edizioni Calderini de II Sole 24 ORE S.p.A..

Dublo L., 1993-1994. Micromammiferi da borre di rapaci nel Friuli-Venezia Giulia: riconoscimento, distribuzione ed ecologia di predatori e prede. Tesi di Laurea in Scienze Naturali, Fac. Di Scienze MM. FF. NN. Dell'Università degli Studi di Trieste, Relatori G. A. Amirante & L. Lapini.

Lapini L., Dall'Asta A., Dublo L., Spoto M., Venier E., 1996. Materiali per una teriofauna dell'Italia Nord - Orientale (Mammalia, Friuli-Venezia Giulia). Gortania 17: 149-248

Regione Liguria, 2008. Carta della Biodiversità, http://www.ambienteinliguria.it.

Regione Piemonte. Banche dati Naturalistiche + Banca dati IPLA.

# 2.3 Range

2.3.1 Surface area - Range (km²)

2.3.2 Method - Range surface area

2.3.3 Short-term trend period

2.3.4 Short-term trend direction

2.3.5 Short-term trend magnitude

2.3.6 Long-term trend period

2.3.7 Long-term trend direction

2.3.8 Long-term trend magnitude

2.3.9 Favourable reference range

23000

Estimate based on partial data with some extrapolation and/or modelling (2)

2001-2012 stable (0)

min max

N/A

min max

area (km²)

operator approximately equal to (≈)

unkown No

method Expert judgement

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2.3.10 Reason for change	Use of different method
2.4 Population	
2.4.1 Population size (individuals or agreed exception)	Unit N/A min max
2.4.2 Population size (other than individuals)	Unit number of map 10x10 km grid cells (grids10x10) min 185 max 185
2.4.3 Additional information	Definition of locality
	Conversion method
	Problems Impossible to convert grids into individuals
<ul><li>2.4.4 Year or period</li><li>2.4.5 Method – population size</li></ul>	2001-2012 Estimate based on expert opinion with no or minimal sampling (1)
2.4.6 Short-term trend period	2001-2012
2.4.7 Short term trend direction	unknown (x)
2.4.8 Short-term trend magnitude	min max confidence interval
<ul><li>2.4.9 Short-term trend method</li><li>2.4.10 Long-term trend period</li></ul>	Absent data (0)
2.4.11 Long term trend direction	N/A
2.4.12 Long-term trend magnitude	min max confidence interval
2.4.13 Long-term trend method	N/A
2.4.14 Favourable reference	number
population	operator approximately equal to (≈) unknown No
	method Expert judgment
2.4.15 Reason for change	Improved knowledge/more accurate data
2.5 Habitat for the Species	
2.5.1 Surface area - Habitat (km²)	
2.5.2 Year or period	About data (O)
<ul><li>2.5.3 Method used - habitat</li><li>2.5.4 a) Quality of habitat</li></ul>	Absent data (0) Good
2.5.4 b) Quality of habitat - method	Expert based
2.5.5 Short term trend period	2001-2012
2.5.6 Short term trend direction	unknown (x)
2.5.7 Long-term trend period	
2.5.8 Long term trend direction	N/A
2.5.9 Area of suitable habitat (km²)	23324
2.5.10 Reason for change	Use of different method

2.0 Main Pressures		
Pressure	ranking	pollution qualifier(s)
forestry clearance (B02.02)	low importance (L)	N/A
removal of dead and dying trees (B02.04)	medium importance (M)	N/A
grazing in forests/ woodland (B06)	low importance (L)	N/A
reduction or loss of specific habitat features (J03.01)	low importance (L)	N/A
removal of forest undergrowth (B02.03)	medium importance (M)	N/A

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2.6.1 Method used – pressures	based only on exper	t judgements (1)	
2.7 Main Threats			
Threat		ranking	pollution qualifier(s)
forestry clearance (B02.02)		low importance (L)	N/A
removal of dead and dying trees (B02.	04)	medium importance (M)	N/A
reduction or loss of specific habitat fea	atures (J03.01)	low importance (L)	N/A
grazing in forests/ woodland (B06)		low importance (L)	N/A
removal of forest undergrowth (B02.0	3)	medium importance (M)	N/A
2.7.1 Method used – threats	expert opinion (1)		
2.8 Complementary Information			
<ul><li>2.8.1 Justification of % thresholds for trends</li><li>2.8.2 Other relevant Information</li></ul>			
2.8.3 Trans-boundary assessment			
2.9 Conclusions (assessment of co	nservation status at e	end of reporting period)	
2.9.1 Range	assessment Favoura		
2.9.2. Population	assessment Favoura	able (FV)	
2.9.3. Habitat	assessment Unknov qualifiers N/A	wn (XX)	
2.9.4. Future prospects	assessment Favoura qualifiers N/A	able (FV)	
2.9.5 Overall assessment of Conservation Status	Favourable (FV)		
2.9.5 Overall trend in Conservation Status	N/A		

# 3. Natura 2000 coverage and conservation measures - Annex II species

# 3.1 Population 3.1.1 Population Size Unit N/A min max 3.1.2 Method used 3.1.3 Trend of population size within N/A 3.2 Conversation Measures

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### Species name: Muscardinus avellanarius (1341) Region code: ALP

Field label Note User

2.5.9 Area of suitable habitat (km2)

The area of suitable habitat (2.5.9) has been calculated by intersecting habitat suitability models with each biogeographical region in which the species is present. The habitat suitability models are those included in the Italian Ecological Network (Rete Ecologica Nazionale – REN; Boitani et al. 2002), and were developed at the national scale for all vertebrate species, based on species-environments relationships defined with inputs from leading species' experts. The models were created integrating into a Geographic Information System geographic and environmental data, such as Corine Land Cover, Digital Terrain Model, water and road networks.

ISPRA\_ AUNA

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Source: Boitani L., Corsi F., Falcucci A., Maiorano L., Marzetti I., Masi M., Montemaggiori A., Ottaviani D., Reggiani G., Rondinini C., 2002. Rete Ecologica Nazionale. Un approccio alla conservazione dei vertebrati italiani. Università di Roma "La Sapienza", Dipartimento di Biologia Animale e dell'Uomo; Ministero dell'Ambiente, Direzione per la Conservazione della Natura; Istituto di Ecologia Applicata. Http://www.gisbau.uniroma1.it/REN

# Species name: Muscardinus avellanarius (1341) Region code: CON

Field label Note User

2.5.9 Area of suitable habitat (km2)

The area of suitable habitat (2.5.9) has been calculated by intersecting habitat suitability models with each biogeographical region in which the species is present. The habitat suitability models are those included in the Italian Ecological Network (Rete Ecologica Nazionale – REN; Boitani et al. 2002), and were developed at the national scale for all vertebrate species, based on species-environments relationships defined with inputs from leading species' experts. The models were created integrating into a Geographic Information System geographic and environmental data, such as Corine Land Cover, Digital Terrain Model, water and road networks.

Source: Boitani L., Corsi F., Falcucci A., Maiorano L., Marzetti I., Masi M., Montemaggiori A., Ottaviani D., Reggiani G., Rondinini C., 2002. Rete Ecologica Nazionale. Un approccio alla conservazione dei vertebrati italiani. Università di Roma "La Sapienza", Dipartimento di Biologia Animale e dell'Uomo; Ministero dell'Ambiente, Direzione per la Conservazione della Natura; Istituto di Ecologia Applicata. Http://www.gisbau.uniroma1.it/REN

Species name: Muscardinus avellanarius (1341) Region code: MED

Field label Note User

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2.5.9 Area of suitable habitat (km2)

The area of suitable habitat (2.5.9) has been calculated by intersecting habitat suitability models with each biogeographical region in which the species is present. The habitat suitability models are those included in the Italian Ecological Network (Rete Ecologica Nazionale – REN; Boitani et al. 2002), and were developed at the national scale for all vertebrate species, based on species-environments relationships defined with inputs from leading species' experts. The models were created integrating into a Geographic Information System geographic and environmental data, such as Corine Land Cover, Digital Terrain Model, water and road networks.

**ISPRA** 

**AUNA** 

Source: Boitani L., Corsi F., Falcucci A., Maiorano L., Marzetti I., Masi M., Montemaggiori A., Ottaviani D., Reggiani G., Rondinini C., 2002. Rete Ecologica Nazionale. Un approccio alla conservazione dei vertebrati italiani. Università di Roma "La Sapienza", Dipartimento di Biologia Animale e dell'Uomo; Ministero dell'Ambiente, Direzione per la Conservazione della Natura; Istituto di Ecologia Applicata. Http://www.gisbau.uniroma1.it/REN

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