Report on the Conservation Status of the European Turtle-dove (*Streptopelia turtur*) and Common Quail (*Coturnix coturnix*)

January 2020 update

Wild Birds Regulation Unit

Contents

Page No.

Key to conservation status codes..... 2
IUCN categories..... 4

1. Conservation status of the Common Quail (*Coturnix coturnix*)..... **10**

2. Conservation status of the European Turtle-dove (*Streptopelia turtur*)..... **22**

3. Conclusion..... **35**

References..... 37

Tables and Figures

Page No.

Table 1 Common Quail EU Breeding Population (pairs) in 2004..... 14
Table 2 Common Quail EU28 Breeding Population (calling males) in 2014..... 15
Table 3 Common Quail ring recoveries (reference population) from other EU Member States and corresponding population trend..... 20
Table 4 Short-term and long-term trends at EU and reference population levels..... 21
Table 5 European Turtle-dove long-term and short-term percentage trend change (2012–2017) 27
Table 6 European Turtle-dove EU28 Breeding Population in 2004..... 29
Table 7 European Turtle-dove EU28 Breeding Population in 2014..... 30
Table 8 European Turtle-dove ring recoveries (reference population) from other EU Member States and corresponding population trend..... 33
Fig. 1 Breeding population sizes and short-term trends of Common Quail across Europe..... 17
Fig. 2 Breeding population sizes and long-term trends of Common Quail across Europe..... 17
Fig. 3 Percentage of ring recoveries for Common Quail, ringed overseas and recovered in Malta, by country..... 18
Fig. 4 Common Quail EU28 population short-term trend by Member State..... 20
Fig. 5 Common Quail EU28 population long-term trend by Member State..... 20
Fig. 6 Common Quail EU population short-term trend (ring recoveries)..... 20
Fig. 7 Common Quail EU population long-term trend (ring recoveries)..... 20
Fig. 8 European Turtle-dove long-term trend (1980–2015)..... 27
Fig. 9 Percentage of ring recoveries for European Turtle-dove, ringed overseas and recovered in Malta, by country..... 28
Fig. 10 European Turtle-dove breeding population sizes and short-term trends across Europe 32
Fig. 11 European Turtle-dove breeding population sizes and long-term trends across Europe 32
Fig. 12 European Turtle-dove EU28 population short-term trend by Member State..... 34
Fig. 13 European Turtle-dove EU28 population long-term trend by Member State..... 34
Fig. 14 European Turtle-dove EU population short-term trend (ring recoveries)..... 34
Fig. 15 European Turtle-dove EU population long-term trend (ring recoveries)..... 34

Key to conservation status codes

Category	European species of global conservation concern	Conservation status in Europe	Global population or range concentrated in Europe
SPEC 1	Yes	–	–
SPEC 2	No	Unfavourable	Yes
SPEC 3	No	Unfavourable	No
Non-SPEC[E]	No	Favourable	Yes
Non-SPEC	No	Favourable	No

Source: BirdLife International (2004: xiii)

Categories of Species of European Conservation Concern (SPECs) and Non-SPECs

Each species is initially assessed against the IUCN Red List Criteria (IUCN 2001) at a European level, and then against the additional criteria derived mainly from Birds in Europe I (Tucker and Heath 1994). All population size thresholds refer to minimum population estimates. In descending order of threat, a species is evaluated as:	
Critically Endangered (CR)	if its European population meets any of the IUCN Red List Criteria (A to E) for Critically Endangered. Such species have an Unfavourable conservation status in Europe because they are considered to be facing an extremely high risk of extinction in the wild (IUCN 2001).
Endangered (EN)	if its European population meets any of the IUCN Red List Criteria (A to E) for Endangered. Such species have an Unfavourable conservation status in Europe because they are considered to be facing a very high risk of extinction in the wild (IUCN 2001).
Vulnerable (V)	if its European population meets any of the IUCN Red List Criteria (A to E) for Vulnerable. Such species have an unfavourable conservation status in Europe because they are considered to be facing a high risk of extinction in the wild (IUCN 2001).
Declining (D)	if its European population does not meet any IUCN Red List Criteria, but declined by more than 10% over 10 years (i.e. 1990–2000) or three generations, whichever is longer. Such species have an Unfavourable conservation status in Europe because they are unable to maintain their populations and/or natural ranges in the long-term. [Birds in Europe I classified species as SPECs if the size of their population or range declined between 1970–1990 by **20%** or more in 33–65% of the population (or by 50% or more in 12–24% of the population). Given the shorter time period covered by Birds in Europe II, an overall decline exceeding **10%** is comparable with this approach.]
Rare (R)	if its European population does not meet any IUCN Red List Criteria and is not Declining, but numbers fewer than 10,000 breeding pairs (*or* 20,000 breeding individuals *or* 40,000 wintering individuals), and is not marginal to a larger non-European population. Such species have an Unfavourable conservation status in Europe because the small size of their population renders them more susceptible to accelerated declines as a result of: • break-up of social structure; • loss of genetic diversity; • large-scale population fluctuations and catastrophic chance events; • existing or potential exploitation, persecution or disturbance by humans.
Depleted (H)	if its European population does not meet any IUCN Red List Criteria and is not Rare or Declining, but has not yet recovered from a moderate or large decline suffered during 1970–1990, which led to its classification as Endangered, Vulnerable or Declining in Birds in Europe I. Such species have an Unfavourable conservation status in Europe because they have already undergone a population decline of the type that various directives, conventions and agreements intend to prevent, and have not yet recovered.
Localised (L)	if its European population does not meet any IUCN Red List Criteria and is not Declining, Rare or Depleted, but is heavily concentrated, with more that 90% of the European population occurring at 10 or fewer sites (as

	listed in Heath and Evans 2000). Such species have an Unfavourable conservation status in Europe because their dependence on a small number of sites renders them more susceptible to accelerated declines as a result of: • large-scale population fluctuations and catastrophic chance events; • existing or potential exploitation, persecution and disturbance by humans.
Secure (S)	if its European population does not meet any of the criteria listed above. Such species have a Favourable conservation status in Europe.
In addition, a species is considered to be:	
Data Deficient (DD)	if there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A species in this category may be well studied, and its biology well known, but appropriate data on its abundance and/or distribution in Europe are lacking. Data Deficient is therefore not a category of threat (IUCN 2001).
Not evaluated (NE)	if its European population has not yet been evaluated against the criteria.
Source: BirdLife International (2004: 8)	

Species trends in Birds in Europe (2004)

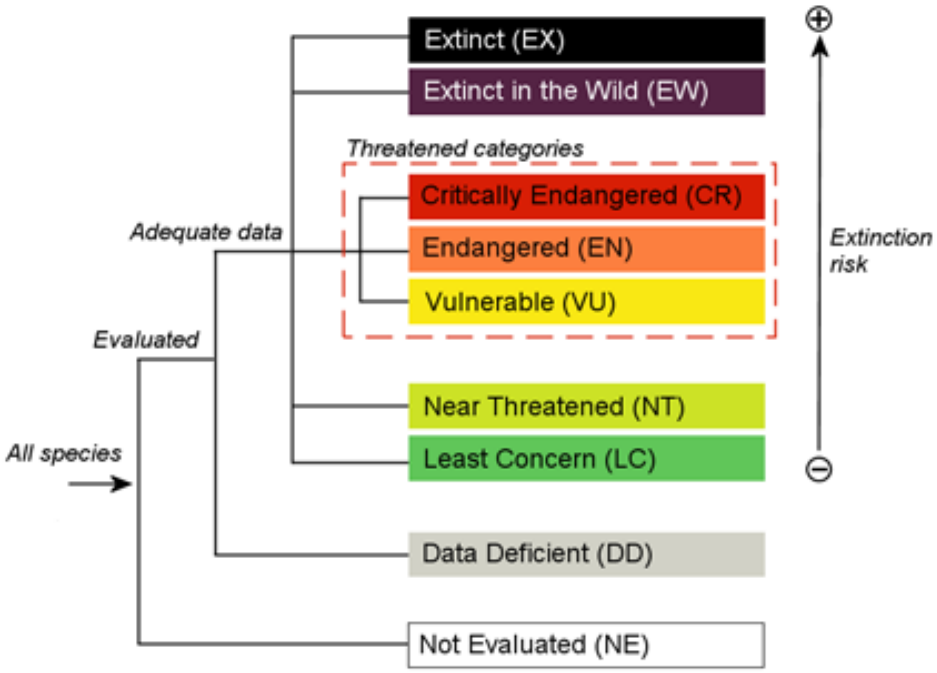
'Worst case' trend scenario 1990–2000	1990–2000 trend category	Criteria met
>30% decline	Large decline	IUCN Red List Criteria
10–29% decline	Moderate decline	Declining
<10% decline and <10% increase	Stable	-
10–29% increase	Moderate increase	-
>30% increase	Large increase	-
Unknown (insufficient data)	Unknown	-

Source: BirdLife International (2004)

IUCN Categories

EXTINCT (EX)	A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.
EXTINCT IN THE WILD (EW)	A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.
CRITICALLY ENDANGERED (CR)	A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered (see Section V), and it is therefore considered to be facing an extremely high risk of extinction in the wild.
ENDANGERED (EN)	A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered (see Section V), and it is therefore considered to be facing a very high risk of extinction in the wild.
VULNERABLE (VU)	A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable (see Section V), and it is therefore considered to be facing a high risk of extinction in the wild.
NEAR THREATENED (NT)	A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.
LEAST CONCERN (LC)	A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.
DATA DEFICIENT (DD)	A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and a threatened status. If the range of a taxon is suspected to be relatively circumscribed, and a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified.
NOT EVALUATED (NE)	A taxon is Not Evaluated when it has not yet been evaluated against the criteria.

Structure of IUCN categories



Source: IUCN Red List Categories and Criteria Ver. 3.1 2nd edition. Available at: https://portals.iucn.org/library/efiles/documents/RL-2001-001-2nd.pdf

IUCN CRITERIA FOR CRITICALLY ENDANGERED, ENDANGERED AND VULNERABLE TAXA

CRITICALLY ENDANGERED (CR)	A taxon is Critically Endangered when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing an extremely high risk of extinction in the wild: A. Reduction in population size based on any of the following: 1. An observed, estimated, inferred or suspected population size reduction of ≥90% over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following: (a) direct observation (b) an index of abundance appropriate to the taxon (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat (d) actual or potential levels of exploitation (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites. 2. An observed, estimated, inferred or suspected population size reduction of ≥80% over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1. 3. A population size reduction of ≥80%, projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1. 4. An observed, estimated, inferred, projected or suspected population size reduction of ≥80% over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have

	ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1. B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both: 1. Extent of occurrence estimated to be less than 100 km^2, and estimates indicating at least two of a-c: a. Severely fragmented or known to exist at only a single location. b. Continuing decline, observed, inferred or projected, in any of the following: (i) extent of occurrence (ii) area of occupancy (iii) area, extent and/or quality of habitat (iv) number of locations or subpopulations (v) number of mature individuals. c. Extreme fluctuations in any of the following: (i) extent of occurrence (ii) area of occupancy (iii) number of locations or subpopulations (iv) number of mature individuals. 2. Area of occupancy estimated to be less than 10 km^2, and estimate indicating at least two of a-c: a. Severely fragmented or known to exist at only a single location. b. Continuing decline, observed, inferred or projected, in any of the following: (i) extent of occurrence (ii) area of occupancy (iii) area, extent and/or quality of habitat (iv) number of locations or subpopulations (v) number of mature individuals. c. Extreme fluctuations in any of the following: (i) extent of occurrence (ii) area of occupancy (iii) number of locations or subpopulations (iv) number of mature individuals. C. Population size estimated to number fewer than 250 mature individuals and either: 1. An estimated continuing decline of at least 25% within three years or one generation, whichever is longer, (up to a maximum of 100 years in the future) OR 2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b): a. Population structure in the form of one of the following: (i) no subpopulation estimated to contain more than 50 mature individuals, OR (ii) at least 90% of mature individuals in one subpopulation. b. Extreme fluctuations in number of mature individuals. D. Population size estimated to number fewer than 50 mature individuals. E. Quantitative analysis showing the probability of extinction in the wild is at least 50% within 10 years or three generations, whichever is the longer (up to a maximum of 100 years).

ENDANGERED (EN)	A taxon is Endangered when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing a very high risk of extinction in the wild: A. Reduction in population size based on any of the following: 1. An observed, estimated, inferred or suspected population size reduction of ≥70% over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following: (a) direct observation (b) an index of abundance appropriate to the taxon (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat (d) actual or potential levels of exploitation (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites. 2. An observed, estimated, inferred or suspected population size reduction of ≥50% over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1. 3. A population size reduction of ≥50%, projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1. 4. An observed, estimated, inferred, projected or suspected population size reduction of ≥50% over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, AND where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1. B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both: 1. Extent of occurrence estimated to be less than 5,000 km^2, and estimates indicating at least two of a-c: a. Severely fragmented or known to exist at no more than five locations. b. Continuing decline, observed, inferred or projected, in any of the following: (i) extent of occurrence (ii) area of occupancy (iii) area, extent and/or quality of habitat (iv) number of locations or subpopulations (v) number of mature individuals. c. Extreme fluctuations in any of the following: (i) extent of occurrence (ii) area of occupancy (iii) number of locations or subpopulations (iv) number of mature individuals. 2. Area of occupancy estimated to be less than 500 km^2, and estimates indicating at least two of a-c: a. Severely fragmented or known to exist at no more than five locations. b. Continuing decline, observed, inferred or projected, in any of the following: (i) extent of occurrence (ii) area of occupancy (iii) area, extent and/or quality of habitat (iv) number of locations or subpopulations (v) number of mature individuals. c. Extreme fluctuations in any of the following: (i) extent of occurrence (ii) area of occupancy

	(iii) number of locations or subpopulations (iv) number of mature individuals. C. Population size estimated to number fewer than 2,500 mature individuals and either: 1. An estimated continuing decline of at least 20% within five years or two generations, whichever is longer, (up to a maximum of 100 years in the future) OR 2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b): a. Population structure in the form of one of the following: (i) no subpopulation estimated to contain more than 250 mature individuals, OR (ii) at least 95% of mature individuals in one subpopulation. b. Extreme fluctuations in number of mature individuals. D. Population size estimated to number fewer than 250 mature individuals. E. Quantitative analysis showing the probability of extinction in the wild is at least 20% within 20 years or five generations, whichever is the longer (up to a maximum of 100 years).
VULNERABLE (VU)	A taxon is Vulnerable when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing a high risk of extinction in the wild: A. Reduction in population size based on any of the following: 1. An observed, estimated, inferred or suspected population size reduction of ≥50% over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following: (a) direct observation (b) an index of abundance appropriate to the taxon (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat (d) actual or potential levels of exploitation (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites. 2. An observed, estimated, inferred or suspected population size reduction of ≥30% over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1. 3. A population size reduction of ≥30% projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1. 4. An observed, estimated, inferred, projected or suspected population size reduction of ≥30% over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, AND where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1. B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both: 1. Extent of occurrence estimated to be less than 20,000 km^2, and estimates indicating at least two of a-c: a. Severely fragmented or known to exist at no more than 10 locations. b. Continuing decline, observed, inferred or projected, in any of the following: (i) extent of occurrence (ii) area of occupancy (iii) area, extent and/or quality of habitat

	(iv) number of locations or subpopulations (v) number of mature individuals. c. Extreme fluctuations in any of the following: (i) extent of occurrence (ii) area of occupancy (iii) number of locations or subpopulations (iv) number of mature individuals. 2. Area of occupancy estimated to be less than 2,000 km^2, and estimates indicating at least two of a-c: a. Severely fragmented or known to exist at no more than 10 locations. b. Continuing decline, observed, inferred or projected, in any of the following: (i) extent of occurrence (ii) area of occupancy (iii) area, extent and/or quality of habitat (iv) number of locations or subpopulations (v) number of mature individuals. c. Extreme fluctuations in any of the following: (i) extent of occurrence (ii) area of occupancy (iii) number of locations or subpopulations (iv) number of mature individuals. C. Population size estimated to number fewer than 10,000 mature individuals and either: 1. An estimated continuing decline of at least 10% within 10 years or three generations, whichever is longer, (up to a maximum of 100 years in the future) OR 2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b): a. Population structure in the form of one of the following: (i) no subpopulation estimated to contain more than 1,000 mature individuals, OR (ii) all mature individuals in one subpopulation. b. Extreme fluctuations in number of mature individuals. D. Population very small or restricted in the form of either of the following: 1. Population size estimated to number fewer than 1,000 mature individuals. 2. Population with a very restricted area of occupancy (typically less than 20 km^2) or number of locations (typically five or fewer) such that it is prone to the effects of human activities or stochastic events within a very short time period in an uncertain future, and is thus capable of becoming Critically Endangered or even Extinct in a very short time period. E. Quantitative analysis showing the probability of extinction in the wild is at least 10% within 100 years.

1. Conservation Status of the Common Quail (*Coturnix coturnix*)

1.1 The Common Quail (*Coturnix coturnix*) is a species of gamebird found in cropland and grassland ecosystems. BirdLife International (2020b) notes that **this species has an extremely large range, and hence does not approach the thresholds for Vulnerable under the range size criterion** (Extent of Occurrence <20,000 km^2 combined with a declining or fluctuating range size, habitat extent/quality, or population size and a small number of locations or severe fragmentation). Despite the fact that the population trend appears to be decreasing, the decline is not believed to be sufficiently rapid to approach the thresholds for Vulnerable under the population trend criterion (>30% decline over ten years or three generations). **The population size is extremely large, and hence does not approach the thresholds for Vulnerable under the population size criterion** (<10,000 mature individuals with a continuing decline estimated to be >10% in ten years or three generations, or with a specified population structure). For these reasons the species is evaluated as **Least Concern** at Global level (BirdLife International, 2020a).

Threats

1.2 BirdLife International (2020b) maintains that this species is declining owing to netting of migrating birds[1] and that local declines may be caused by changing agricultural practices, especially increased use of pesticides. In Europe agricultural intensification has led to the loss of rough grass and uncultivated land and an increase in the use of herbicides and insecticides which have led to a reduction on the availability of weeds, seeds and insects (Tucker and Heath 1994). Hybridization with Japanese Quail (*Coturnix japonica*) is a serious danger in southern Europe (Tucker and Heath 1994, Chazara *et al*. 2010). Other potential threats driving declines in Europe are hunting, long-term climactic fluctuations and drought in the sub-Saharan wintering grounds (Tucker and Heath 1994).

Breeding Population in Europe

1.3 In Europe, the breeding population is estimated to number 3,320,000–6,720,000 calling males, equating to 6,630,000–13,400,000 mature individuals. Europe forms approximately 40% of the global range, so a very preliminary estimate of the global population size is 16,575,000–33,500,000 mature individuals, although further validation of this estimate is needed. The population is therefore placed in the band 15,000,000–35,000,000 mature individuals with a

[1] It should be noted that large scale practice of trammel netting in Egypt accounts for several million quails trapped each year during migration. See materials presented during CMS Convention Mediterranean Task Force on the Illegal Killing of Birds meeting in Cairo in July 2016:
http://www.cms.int/sites/default/files/document/unep_cms_mikt1_doc-12b_Legal_Review.pdf and
http://www.cms.int/sites/default/files/document/Reducing%20Illegal%20Trapping%20of%20Migrating%20Birds%20in%20Northern%20Egypt%20-%20Mr.%20Waheel%20Salama%20Hamied%20.pdf

global extent of occurrence (breeding/resident) of 89,400,000 km² (BirdLife International, 2020a).

1.4 The European Environment Agency (EEA, 2014)[2] notes that in the EU27, *Coturnix coturnix* has a breeding population size of 1,260,000–2,980,000 calling males and a breeding range size of 2,950,000 km². BirdLife International (2020b) notes that in Europe the population size is estimated to be fluctuating.

1.5 The EU Management plan for Common Quail 2009–2011 (Perennou 2009) aims *inter alia* to "**restore the species to a favourable conservation status through reversing the declines in SE Europe and maintaining its natural genetic diversity**". The Management Plan notes that the conservation status of Common Quail within the EU Territory is favourable (Perennou 2009:10), with the EU Common Quail population numbering some 884,000–1,912,000 calling males. Perennou (2009) also notes that the analysis of the population estimates and trends for Common Quail is imprecise, resulting in large differences between minimum and maximum numbers which are due to a combination of reasons, including:

- methodological difficulties, which stem from the fact that breeding females are very difficult to detect and because, once paired, the males stop crowing. This often leads to broad ranges for national estimates, most of which do not actually rely on any field census at all. Therefore, national population estimates cannot be reliably summed up at the European level.

- inadequacy of large-scale compilations, due to the fact that the breeding pair in this species is an ephemeral phenomenon and consequently the number of singing males is widely considered by specialists to be a much more practical index of population abundance than the number of breeding pairs. Broad-scale compilations (e.g. Birdlife International 2004, Tucker & Heath 1994) often use the latter index, and also combine data relating to pairs (though inaccessible in practice, with rare exceptions) with data on calling birds (by nature unpaired).

1.6 There are also high inter-annual fluctuations in breeding numbers for any given country, which do not necessarily reflect the actual variability in the total population size for Common Quail,

[2] http://bd.eionet.europa.eu/article12/summary?period=1&subject=A113.

The population status and trends of birds under Article 12 of the Birds Directive for the reporting period 2013–2018 was not available at the time this report was drafted (January 2020). An updated version of this report will be published once the data is available online.

but rather a variability in the amplitude of the pre-breeding migration northwards. Perennou (2009) further states that Common Quail numbers seem to be growing strongly in Arabia and Morocco and probably in all the Maghreb countries. These birds do not constitute separate populations, but are part of the population that breeds in Europe in variable proportions from one year to the next. According to Perennou (2009), an overall analysis of Common Quail population trends in fact indicates that, following a decline in the 1970s (the precise quantitative amplitude of which is unknown because of the lack of earlier, reliable pan-European estimates or indexes), the overall population trend of sedentary and short migrants seems to be increasing over that of the long migrants in the Palearctic region, leading to an overall population trend which is now "likely increasing in the EU" with the exception of south-eastern Europe.

1.7 Similarly, Guyomarc'h (2003) states that figures for breeding pairs in different countries are considered inaccurate because these estimates are replicated from year to year without revision. They ignore variables such as: exchanges between the Maghreb and Europe; high mobility; possible multiple-breeding attempts; and successive pairs. Thirdly, counts of couples or pairs (a very ephemeral phenomenon in this species) are mixed with data from counts of singing males (by nature "unmated" single males). The author also states that there was a decrease in the Common Quail population in the 1970s north of ca. 45º, but that in the 1990s an overall population increase seems to have taken place.

1.8 Guyomarc'h (2003) calculated a population range of 697,000 to 2,298,710 breeding pairs, based on information obtained from 26 countries (including Russia and Turkey, but excluding Former Yugoslavia) and between 3,749,000 and 7,725,000 calling males, based on data obtained from 19 countries. Perennou (2009) gives an estimate of approximately 2.7–4.6 million breeding pairs across a total of 30 countries, including Russia (European part), Turkey (estimate for Turkey being 300–800 thousand pairs) and Ukraine. He also gives an estimate of 2.8–5.3 million calling males, based on data from just 17 countries.

1.9 The European Commission's Sustainable Hunting Guide (EC 2008) lists the Common Quail as a huntable species with an unfavourable conservation status (SPEC 3: Vulnerable, Large Decline) (EC, 2008: 90). The most recent European Bird Census Council (EBCC) report presents updated population trends and indices of 168 species for the time period 1980–2016, published by the Pan-European Common Bird Monitoring Scheme (PECBMS)[3]. However, **EBCC does not include the Common Quail in its pan-European index**. Hence, no

[3] EBCC (2018 update): https://pecbms.info/what-is-new-in-2018-data-update/

evaluation of the population trends for this species could be obtained through the Pan-European Common Bird Monitoring Scheme.

1.10 Article 12 reports for the reporting period 2008–2012 (EEA, 2014)[4] provide the latest information on the short-term and long-term trends of bird species at the EU27 level (viz. all Member States, excluding Croatia). An update on population status and trends is expected to be available in 2020 following submission of Member States' Article 12 reports for the current (2013–2018) reporting cycle. An updated version of this report will be published as soon as the corresponding data is available online. The previous dataset, provided by Birds in Europe II [BirdLife International (2004)] had shown that the Common Quail population within the current territory of the European Union (EU 28, including Croatia) is Stable, with a change in the minimum number of pairs of -1.81% and a change in the maximum number of pairs of -0.56% (Table 1). According to EEA (2014), the breeding population trend in the EU27 is **Decreasing** in the short term and **Unknown** in the long-term. EEA (2014) maintains that the EU population status for *Coturnix coturnix* is **Unknown**, as the data reported were not sufficient to assess the population status of the species.

1.11 The assessment carried out as part of this update has shown that, on the basis of Article 12 reports (EEA, 2014) (Table 2), at **EU28** level, the Common Quail is **Increasing** in the long-term trend (Min. Pairs: +23.49%; Max. Pairs: +27.40%). However, this percentage increase should be interpreted with caution given that it is based on data pertaining to 69% of Common Quail population within EU28—the remaining 31% have an Unknown long-term trend.

1.12 As shown in Table 2, the short-term trend for Common Quail within the EU28 territory during the 2008–2012 Article 12 reporting period has a **Stable maximum number of calling males** (-9.23%) but a **Decreasing minimum number of calling males** (-13.65%). The short-term trend classifications for the minimum and maximum number of calling males are based on 98% of the EU28 population since two Member States reported an Unknown short-term trend, namely Belgium and Greece (the latter surrogate data was provided by the Hellenic Ornithological Society, as specified by EEA, 2014)[5].

1.13 The Common Quail is classified by IUCN as Least Concern at the EU27, European and Global scales (BirdLife International, 2015a: 38, 2018a). BirdLife International (2015b) notes that the

[4] http://bd.eionet.europa.eu/article12/summary?period=1&subject=A113

[5] It should be noted that removal of the Croatian (2004) data returns the same trend classifications at both the short-term and long-term.

Common Quail population within the territory of the European Union (EU27) constitutes 41% of the total European population (see also Figs. 1–2).

Table 1 **Common Quail EU Breeding Population (pairs) in 2004** (Bold = Ring Recoveries)

Country	EU Ring Recoveries in Malta (n=19) ∫	Breeding Pairs (Min - Max)		Trend	Mag. % (Max - Min)		Max % Change (Min Pairs)	Max % Change (Max Pairs)	Max % Change (Average Pairs)
Austria		5,000	15,000	Increase	20	29	1450	4350	2900
Belgium		2,400	5,700	Stable	0	19	-	-	-
Bulgaria		8,000	15,000	Decline	0	19	-1520	-2850	-2185
Croatia		10,000	15,000	Increase	50	79	7900	11850	9875
Cyprus		1,000	4,000	Stable	0	9	-	-	-
Czech Rep.		5,000	10,000	Increase	50	79	3950	7900	5925
Denmark		200	600	Increase	80	80	160	480	320
Estonia		10	50	Stable	0	19	-	-	-
Finland		10	100	Increase	500	500	50	500	275
France		100,000	500,000	Fluctuating	20	29	-	-	-
Germany		12,000	32,000	Increase	0	19	2280	6080	4180
Greece		2,000	5,000	Decline	0	19	-380	-950	-665
Hungary	**8%**	**70,000**	**94,000**	**Stable**	**0**	**19**	**-**	**-**	**-**
Rep. Ireland		0	20	Fluctuating	20	29	-	-	-
Italy	**92%**	**5,000**	**20,000**	**?**	**-**	**-**	**-**	**-**	**-**
Latvia		20	500	Increase	80	80	16	400	208
Lithuania		1,000	2,000	Increase	30	49	490	980	735
Luxembourg		10	25	Stable	0	19	-	-	-
Malta		1	3	Decline	30	49	0	-1	-1
Netherlands		2,000	6,500	Increase	64	64	1,280	4,160	2,720
Poland		100,000	150,000	Increase	?	?	-	-	-
Portugal		5,000	50,000	Stable	0	19	-	-	-
Romania		160,000	220,000	Decline	0	19	-30,400	-41,800	-36,100
Slovakia		2,000	6,000	Stable	0	19	-	-	-
Slovenia		1,000	2,000	Stable	0	19	-	-	-
Spain		320,000	435,000	?	-	-	-	-	-
Sweden		10	40	Fluctuating	20	29	-	-	-
UK		5	450	Stable	0	1	-	-	-
Totals	**100%**	**811,666**	**1,588,988**				**-14,724**	**-8,897**	**-11,811**
				Percentage change			**-1.81%**	**-0.56%**	**-0.98%**
				Trend (EU Population)			**Stable**	**Stable**	**Stable**

Data sources: BirdLife International (2004); ∫ Raine (2007).

Table 2 **Common Quail EU28 Breeding Population (calling males) in 2014** (Bold = Ring Recoveries)

Country	EU Ring Recoveries in Malta (n=19)∫	Calling Males (Min - Max)		Short-term Trend	Mag. % (Max - Min)		Long-term Trend	Mag. % (Max - Min)		Short-term		Long-term	
										Max % Change (Min)	Max % Change (Max)	Max % Change (Min)	Max % Change (Max)
Austria		5,000	10,000	Fluctuating	-	-	Unknown	-	-	-	-	-	-
Belgium		2,700	3,400	Unknown	-	-	Unknown	-	-	-	-	-	-
Bulgaria		15,000	35,000	Decline	40	60	Decline	20	40	-6,000	-21,000	-3,000	-14,000
Croatia*		10,000	15,000	Increase	50	79				5,000	11,850	-	-
Cyprus		2,000	5,000	Stable	0	9	Increase	10	30	-	-	200	1,500
Czech Rep.[1]		4,000	8,000	Fluctuating			Increase	6863	6863	-	-	274,520	549,040
Denmark		1,830	1,830	Increase	100	1000	Increase	1000	10000	1,830	18,300	18,300	183,000
Estonia		100	3,000	Fluctuating			Fluctuating			-	-	-	-
Finland		150	500	Stable	-	-	Increase	1635	4082	-	-	2,453	20,410
France		100,000	300,000	Increase	6.1	33.9	Decline	21.38	36.08	6,100	101,700	-21,380	-108,240
Germany		26,000	49,000	Fluctuating	-	-	Increase	96	190	-	-	24,960	93,100
Greece[2]		2,000	5,000	Unknown	-	-	Unknown	-	-	-	-	-	-
Hungary	**5%**	**29,000**	**37,000**	**Decline**	**54**	**54**	**Unknown**			**-15,660**	**-19,980**	**-**	**-**
Rep. Ireland		1	20	Stable	-	-	Stable	-	-	-	-	-	-
Italy	**95%**	**15,000**	**30,000**	**Increase**	**70**	**80**	**Unknown**	**-**	**-**	**10,500**	**24,000**	**-**	**-**
Latvia		589	956	Fluctuating	-	-	Increase	489	4680	-	-	2,880	44,741
Lithuania		2,000	5,000	Increase	20	50	Increase		50	400	2,500	0	2,500
Luxembourg		50	100	Fluctuating	-	-	Decline	20	50	-	-	-10	-50
Netherlands		1,284	15,467	Increase	47	104	Increase	62	284	603	16,086	796	43,926
Poland		85,000	135,000	Decline	30	50	Unknown	-	-	-25,500	-67,500	-	-
Portugal		100,000	500,000	Stable	-	-	Unknown	-	-	-	-	-	-
Portugal (Azores)		11,000	21,000	Stable	-	-	Unknown	-	-	-	-	-	-
Portugal (Madeira)		500	1,000	Stable	-	-	Stable	-	-	-	-	-	-
Romania		575,000	1,150,000	Fluctuating	-	-	Unknown	-	-	-	-	-	-
Slovakia		2,000	6,000	Decline		20	Decline		20	0	-1,200	0	-1,200

Slovenia		1,000	2,000	Decline	10	30	Decline	20	40	-100	-600	-200	-800
Spain		285,000	640,000	Decline	53.32	53.32	Decline			-151,962	-341,248	0	0
Spain (Canary Is.)		2,500	10,000	Decline			Decline			0	0	0	0
Sweden		600	1,400	Increase	25	75	Increase	200	400	150	1,050	1,200	5,600
UK		540	540	Decline	6	6	Decline	10	10	-32	-32	-54	-54
Total	100%	**1,279,844**	**2,991,213**							**-174,671**	**-276,075**	**300,665**	**819,473**
									Percentage change	**-13.65%**	**-9.23%**	**23.49%**	**27.40%**
									Trend (EU Population)	**Decline** (>10% change in 10 years)	**Stable** (<10% change in 10 years)	**Increase** (>20% change since 1980)	**Increase** (>20% change since 1980)

Data Sources: European Environment Agency (2014); *BirdLife International (2004); ∫ Raine (2007) and BirdLife Malta (pers. comm., 2015; 2019) [vide Section 1.14]

[1] In the absence of a report from the Czech Republic for this taxon, surrogate data were provided by ČSO / BirdLife indicating a breeding population of 4000–8000 calling males, with a fluctuating trend during 2000–2012 and an increasing trend (6863%) during 1982–2012.Source: EEA (2014) Audit Trail, available at: http://bd.eionet.europa.eu/article12/summary/audittrail/?period=1&subject=A113 [Accessed 20/01/2020].

[2] In the absence of a report from Greece for this taxon, surrogate data were provided by the Hellenic Ornithological Society (HOS), the BirdLife Partner in Greece, indicating a breeding population of 2000–5000 calling males, with an unknown trend during 2001–2012 and an unknown trend during 1980–2012. Source: EEA (2014) Audit Trail, available at: http://bd.eionet.europa.eu/article12/summary/audittrail/?period=1&subject=A113 [Accessed 20/01/2020].

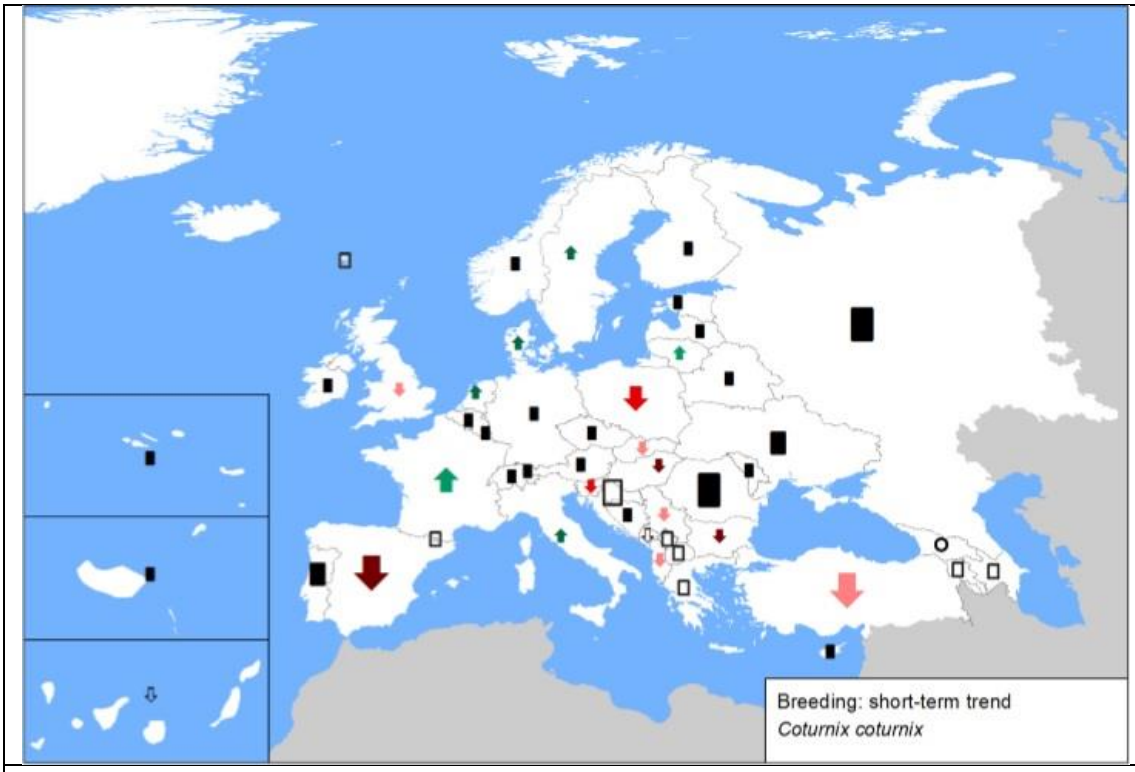


Fig 1: Breeding population sizes and short-term trends of Common Quail across Europe. Source: BirdLife International (2015b)

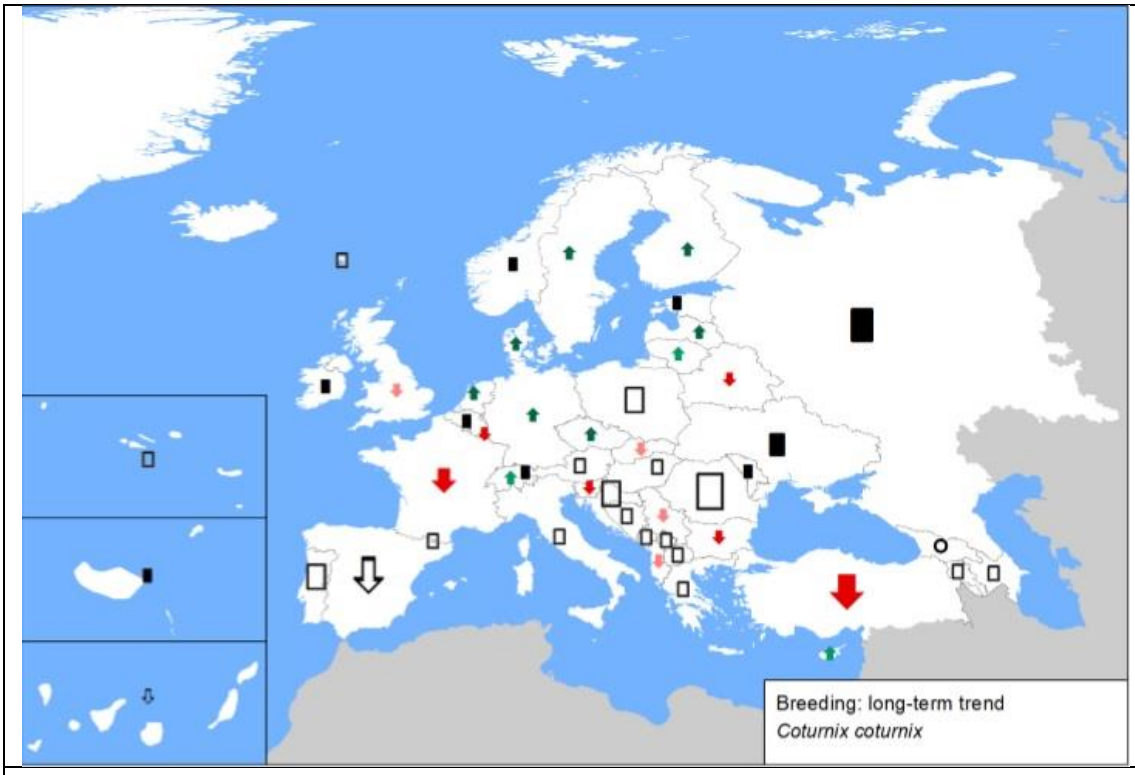


Fig 2: Breeding population sizes and long-term trends of Common Quail across Europe. Source: BirdLife International (2015b)

KEY

- Large increase (≥50%)
- Moderate increase (20–49%)
- Small increase (<20%)
- Increase of unknown magnitude
- Large decrease (≥50%)
- Moderate decrease (20–49%)
- Small decrease (<20%)
- Decrease of unknown magnitude

- Stable or fluctuating
- Unknown
- Present (no population or trend data)
- Extinct since 1980

Each symbol, with the exception of Present and Extinct, may occur in up to three different size classes, corresponding to the proportion of the European population occurring in that country.

- Large: ≥10% of the European population
- Medium: 1–9% of the European population
- Small: <1% of the European population

Source: BirdLife International (2015b).

Ring recoveries in Malta

1.14 Ring recoveries of Common Quail in Malta are provided by Raine (2007), dating from the 1920s up until the end of 2006 (Fig. 3). Following Raine's publication, the only additional ring recovery for this species was recorded by BirdLife Malta in September 2014 (Italy). On average, up to four Quails are fitted with a scientific ring in Malta every year; however none have so far been recovered abroad (BirdLife Malta, pers. comm., 2015; 2019).

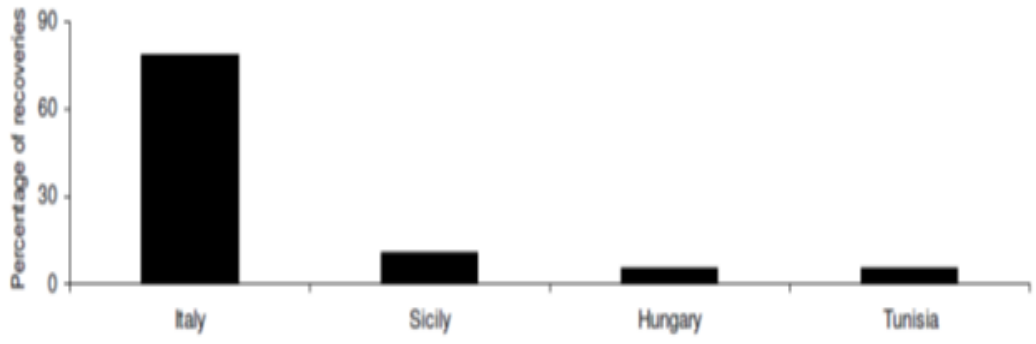


Fig 3: Percentage of ring recoveries for Common Quail (*Coturnix coturnix*), ringed overseas and recovered in Malta, by country (n=19). Source: Raine (2007: 16)

Common Quail Reference Population (Ring Recoveries)

1.15 Table 3 provides data on Common Quail ring recoveries in Malta (the reference population), the respective number of calling males of the source (reference) population, together with the overall direction of the population trend. Figures 4 and 5 illustrate the EU28 population trend categories of this species per Member State. The respective EU source (reference) population trend categories, on the basis of ring recoveries in Malta, are shown in Figures. 6 and 7.

1.16 During the 2008–2012 Article 12 reporting period, the reference population has a **Stable maximum number of calling males** (+6%) but a **Decreasing minimum number of calling males** (-11.73%). **The long-term trend classification of the reference population is Unknown** (Table 3). A summary of the population trends at EU27, EU28 and reference population levels is provided in Table 4.

Table 3 **Common Quail ring recoveries (reference population) from other EU Member States and corresponding population trend**

Country	EU Ring Recoveries in Malta (n=19)	Calling Males (Min - Max)		Trend	Mag. % (Max - Min)		Long-term Trend	Mag. % (Max - Min)		Short-term Max % Change (Min)	Short-term Max % Change (Max)	Long-term Max % Change (Min)	Long-term Max % Change (Max)
Italy	95%	15,000	30,000	Increase	70	80	Unknown	-	-	10,500	24,000	-	-
Hungary	5%	29,000	37,000	Decline	54	54	Unknown	-	-	-15,660	-19,980	-	-
Total	**100%**	**44,000**	**67,000**							**-5,160**	**4,020**	-	-
				Percentage change						**-11.73%**	**6.00%**	-	-
				Trend (Ring Recoveries)						**Decline** (>10% change in 10 years)	**Stable** (<10% change in 10 years)	**Unknown**	**Unknown**

Data Sources: European Environment Agency (2014); *BirdLife International (2004); ∫ Raine (2007) and BirdLife Malta (pers. comm., 2015; 2019)

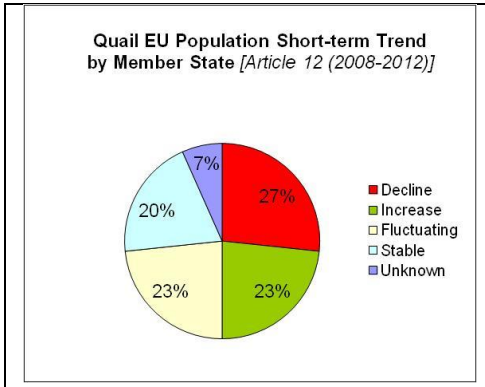


Fig. 4: Common Quail EU28 population short-term trend by Member State

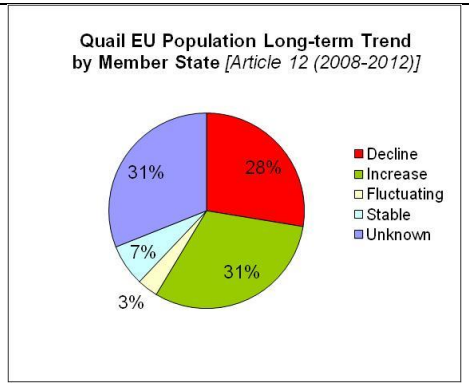


Fig. 5: Common Quail EU28 population long-term trend by Member State

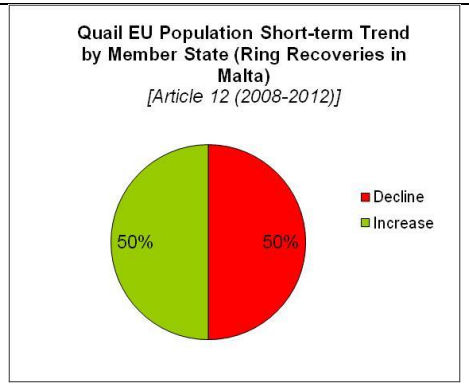


Fig. 6: Common Quail EU population short-term trend (ring recoveries)

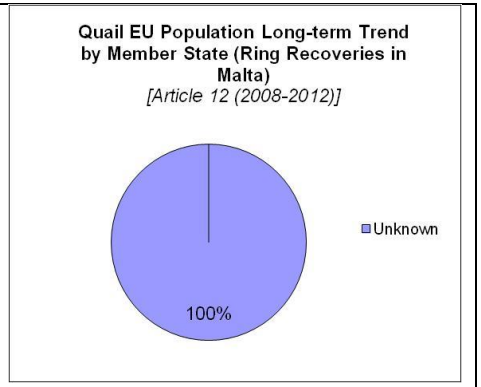


Fig. 7: Common Quail EU population long-term trend (ring recoveries)

Data sources: European Environment Agency (2014); BirdLife International (2004); Raine (2007); BirdLife Malta (pers. comm. 2015; 2019)

Table 4	Short-term and long-term trends at EU and reference population levels						
Coturnix coturnix	**EBCC**	**EU27 (Article 12)** ‡		**EU28**		**Reference Population***	
Former data† (2004) Population (EU28): 811,666–1,588,988 pairs	N/A	N/A		**Stable** (Min: +1.81%, Max: -0.56%, Geomean: -0.98%)		**Stable** (Min/Max: 0%)	
Current data (2014) Population (EU27): 1,260,000 – 2,980,000 calling males Population (EU28): 1,279,844 – 2,991,213 calling males	N/A	**Short-term** (2004) **Decreasing**	**Long-term** (1980) Unknown	**Short-term** (2004) Min. calling males: **Decreasing** (-13.65%) Max. calling males: **Stable** (-9.23%)	**Long-term** (1980) **Increasing** (Min: +23.49%/Max: +27.40%) *BUT* data based on 74% of EU population.	**Short-term** (2004) Min. calling males: **Decreasing** (-11.73%) Max. calling males: **Stable** (+6%)	**Long-term** (1980) Unknown
Data sources: †BirdLife International (2004); ‡European Environment Agency (2014); *Raine (2007) & BirdLife Malta (pers. comm., 2015; 2019).							

2. Conservation Status of the European Turtle-dove (*Streptopelia turtur*)

2.1 The European Turtle-dove (*Streptopelia turtur*) is the smallest representative of the dove family in Europe, found in cropland, woodland and forest ecosystems. In the EU, the Turtle-dove is currently found in all Member States (including all Mediterranean islands) with the exception of Ireland and Sweden, and is absent from the Alpine Arc (Parslow 1967, Sharrock 1976, Snow and Perrins 1998, BirdLife International 2020b). The species has a breeding population size of 2,330,000–4,060,000 pairs and a breeding range size of 2,640,000 km² in the EU27 (all EU Members States excluding Croatia). Major breeding populations in Europe are found in the Mediterranean countries, and the European population is entirely migratory, wintering in Sahelian Africa from Senegal to Eritrea (Bauer *et al*., 2012).

2.2 Although the European population is still large, there is evidence that populations in most countries have been declining since the 1970s (BirdLife International 2004). **The breeding population trend in the EU27 is Decreasing in both the short-term and long-term** (European Environment Agency, 2014).

2.3 In 2015, the European Commission published the European Red List of Birds, compiled by BirdLife International. The **EU population status** of *Streptopelia turtur* was assessed as **Near Threatened**, because the species comes close to meeting the IUCN Red List criteria at the EU27 scale (EEA, 2014; BirdLife International, 2015a: 41). At **European level** the Turtle-dove has been uplisted to **Vulnerable**. The European population is estimated at 3,150,000–5,940,000 pairs, which equates to 6,310,000–11,900,000 mature individuals. Europe forms 25-49% of the global range, so a very preliminary estimate of the global population size is 19,300,000–71,400,000 individuals (BirdLife International, 2020b).

The latest breeding population estimates are 2.4 to 4.2 million birds within the EU, around 75% of the 2.9 to 5.6 million pairs in Europe. The global population is estimated to be 13 to 48 million pairs (Fisher *et al.*, 2018).

International Single Species Action Plan

2.4 At the **global level**, the European Turtle-dove was uplisted in 2015 from Least Concern to **Vulnerable.** Subsequently, an International Single Species Action Plan for the Conservation of the European Turtle-dove (Fisher *et al.*, 2018) was prepared through EuroSAP, a LIFE preparatory project, co-financed by the European Commission Directorate General for the Environment, the African-Eurasian Migratory Waterbird Agreement (AEWA), and by each of the project partners. The **goal** of the ten-year Action Plan (2018–2028), which is coordinated by BirdLife International, is **to restore the European Turtle-dove to a favourable population**

status so that it can be safely removed from the Globally Threatened categories of the IUCN Red List.

2.5 The **high level objective** of the Action Plan is *to halt the population decline of the European Turtle-dove throughout most of its range, preparing the way for an increase in population sizes within each flyway during the period of the next version of the Action Plan (2028-2038)*.

2.6 Seven **conservation objectives** are detailed in the Plan's Framework for Action, as follows (most critical first):

1. *good quality habitats, with available and accessible water and food, are maintained and increased on the breeding grounds;*
2. *illegal killing in the European Union is eradicated and reduced elsewhere;*
3. *hunting across the range of the European Turtle-dove is carried out at locally and internationally sustainable levels;*
4. *good quality habitats, with available and accessible water and food, are maintained and increased at key sites for stop-over and overwintering;*
5. *international co-operation is enhanced, through enabling sharing of information and expertise;*
6. *stakeholder awareness is raised;*
7. *knowledge gaps are filled.*

Threats

2.7 Following two action planning workshops and wide consultation, the European Turtle-dove Action Plan (Fisher *et al.,* 2018) identified the following three main threats to the species:

- habitat loss in both its breeding and wintering areas, linked to land use and land cover changes;
- illegal killing and trapping, particularly during spring migration and in the breeding season;
- unsustainable hunting levels.

2.8 The following threats were also identified by the Action Plan:

- disease (e.g. *Trichomonas gallinae*);
- competition with Collared Dove (*Streptopelia decaocto*);
- accidental and deliberate poisoning;
- weather events and climate change.

2.9 Fisher *et al* (2018) maintain that increased use of pesticides and herbicides has the potential to threaten the species both directly and indirectly. Although the authors specify that there is no direct evidence to suggest that pesticides have been responsible for declines in Turtle-dove, other avian species are known to be negatively affected, with effects ranging from reduced reproductive success and immune response to mortality (Mineau and Palmer, 2013).

2.10 BirdLife International (2020b) lists a number of threats that contribute to the decline of Turtle-doves. Transformation of agricultural land, including destruction of hedges, is thought to be an important factor in the decline of this species as well as the loss of semi-natural habitats. Changes in agricultural practices have several impacts on the species, as they can both reduce food supply and nesting habitat availability and it is likely that the decline in food is the main limiting factor rather than decline in nest site availability (Lutz 2006).

2.11 Widespread use of chemical herbicides appears to also be a very serious factor, with a consequent decline or elimination of many food plants. Hunting is also significant during migration and in its wintering range; with an annual toll in France computed at c. 40,000 birds (Baptista *et al*. 2015). The species is also vulnerable to infection by the protozoan parasite *Trichomonas gallinae*, which causes mortality (Stockdale *et al*. 2014). Severe drought in the Sahel zone is thought to be a possible factor in the decline as well as competition with Eurasian Collared-dove *Streptopelia decaocto* (Lutz 2006). A loss of suitable autumn stopping sites (field crops and trees around oases) may also have contributed to its decline as well as a change in tree composition, increased disturbance and an increase in the number of Common Myna (*Acridotheres tristis*) in cities where European Turtle-dove nested in Central Asia (R. Kashkarov *in litt.* 2015) (BirdLife International, 2017, 2020b).

Proposed Conservation Action (IUCN)

The following conservation and research actions for the European Turtle-dove are proposed by IUCN (BirdLife International, 2017) at European and Global level. These actions now form part of the International Single Species Action Plan for the conservation of the European Turtle-dove (Fisher *et al*., 2018).

- Breeding and staging habitats should be managed to ensure favourable conditions for the species (Lutz, 2006), including:
  - the conservation and re-creation of hedges with Hawthorn (*Crataegus spp.*), which is a favoured tree for breeding, and
  - reduction in agricultural herbicides (Tucker and Heath, 1994).

- Arable land under agri-environment measures can be managed to provide seed-rich foraging habitat (Dunn *et al.* 2015), which can be beneficial for post-fledging survival when located near suitable nesting habitat (Dunn *et al.* 2016).

- Introduction and enforcement of restrictions on hunting to avoid affecting late breeding birds and birds during spring migration.

- Annual national bag statistics where hunting takes place must be collected in order to develop a level of hunting which is sustainable.

- Research and population monitoring should be continued (Lutz 2006), and extended into its non-European and eastern European range where little information is currently available (J. Dunn *in litt.* 2016).

- Workshops to plan coordinated conservation and research across flyways.

2.12 The species has undergone rapid declines in much of its European range whilst in Russia and Central Asia it is thought to have experienced more severe declines. Declines are thought to be driven by a number of factors including loss of foraging and nesting sites as well as disease and hunting (BirdLife International, 2020b). The population is suspected to be in decline due to ongoing habitat destruction and unsustainable levels of exploitation. In Europe the population size is estimated to be decreasing by 30-49% in 15.9 years (three generations). In Europe, trends since 1980 show that populations have undergone a moderate decline ($p<0.01$), based on data from the Pan-European Common Bird Monitoring Scheme (EBCC/RSPB/BirdLife/Statistics Netherlands, P. Vorisek *in litt*. 2008).

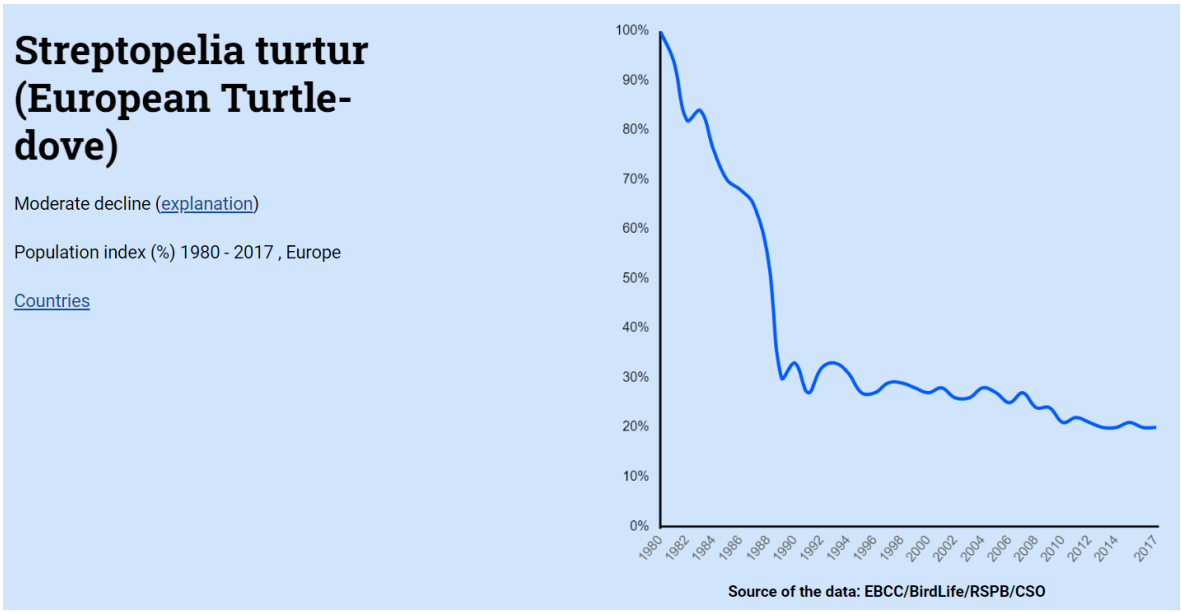
2.13 In Central Asia (Afghanistan, Kazakhstan, Kyrgystan, Tajikistan, Turkmenistan and Uzbekistan) an analysis of observations of the species suggests that it has experienced a moderate or possibly strong decline over the past two to four decades (R. Ayé *in litt*. 2015). In Uzbekistan the species has declined severely over the past thirty years (R. Kashkarov *in litt*. 2015). The formerly large population in European Russia has crashed by >80% since 2000 and by >90% since 1980 (BirdLife International 2020b). Declines have also been reported from parts of east and south-east Kazakhstan, for example the species is now rare, or even absent in the Manrak Mountains, where it was once common (Wassink and Oreel 2008) (BirdLife International, 2020b).

2.14 Voříšek & Škorpilová (2010) maintain that the population index of Turtle-dove within the territory of the European Union (EU 27) has fallen “from 100% in 1980 to 31% (32% smoothed index) in 2008”. The authors also point out that “the smoothed index shows rapid decline of

the breeding population in 1980s and less steep decline since early 1990s", concluding that "the breeding population of Turtle-dove in the EU has significantly declined to the level of almost one third of its numbers in 1980", and that "the population appears to be depleted with no signs of recovery" and that the "data from recent years suggest further decline of the population" (Voříšek & Škorpilová, 2010).

2.15 According to the European Bird Census Council (EBCC, 2019), the Pan-European population of the Turtle-dove is classified as **Moderate Decline.** The species has **declined by 80% since 1980** (long-term trend: 1980–2017) **and by 17% during the current (2008–2017) 10-year trend** (Fig. 8). When compared with the previous (2018) EBCC update, the Turtle-dove population remained at 80% decline in the long-term trend (1980–2017) [no change] and increased by 12% in the short-term (10-year) trend [from -29% to -17%] (Table 5).

Fig. 8: European Turtle-dove long-term trend (1980–2017)



Source: EBCC (2019)

Table 5 European Turtle-dove long-term and short-term percentage trend change (2012–2018)

Year (EBCC update)	Species	Long-term Trend 1980 (%)	Long-term Slope	% Annual change*	10-year Trend (%)	10-year Slope	% Annual change*	Habitat
2012	*Streptopelia turtur*	-73	0.9611	-3.89%	-29	0.9884	-1.16%	farm
2013	*Streptopelia turtur*	-74	0.961	-3.9%	-30	0.9879	-1.21%	farm
2014	*Streptopelia turtur*	-77	0.9607	-3.93%	-21	0.9712	-2.88%	farm
2015	*Streptopelia turtur*	-78	0.96	-4.00%	-29	0.9629	-3.71%	farm
2016	*Streptopelia turtur*	-79	0.9597	-4.03%	-28	0.9632	-3.68%	farm
2017	*Streptopelia turtur*	-78	0.9597	-4.03%	-15	0.9686	-3.14%	farm
2018	*Streptopelia turtur*	-80	0.9609	-3.91%	-29	0.9676	-3.24%	farm
2019	***Streptopelia turtur***	**-80**	**0.9611**	**-3.89%**	**-17**	**0.9781**	**-2.19%**	**farm**
Change from previous update (2018–2019)		**0%**			**+12%**			

Data sources: EBCC updates (2012–2019)

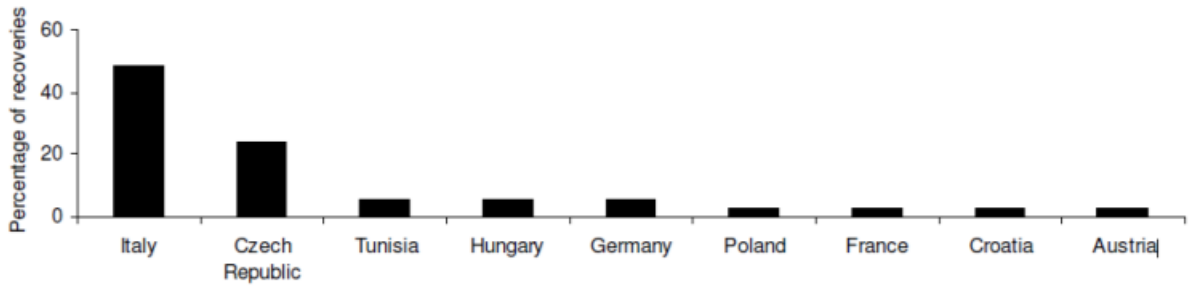
List of Countries: Austria | Belgium-Wallonia | Bulgaria | Cyprus | Czech Republic | Estonia | France | Germany | Greece | Hungary | Italy | Latvia | Lithuania | Netherlands | Poland | Portugal | Romania | Slovakia | Slovenia | Spain | Switzerland | United Kingdom.

* *Multiplicative trend over a time period considered, reflects average percentage change per year. If the slope value is 1, there is no trend. If > 1, there is a positive trend, if < 1, trend is negative. For instance, 1.08 means 8% increase per year, 0.93 means 7% decline per year* (EBCC).

Ring recoveries in Malta

1.17 Ring recoveries of Turtle-dove in Malta are provided by Raine (2007), dating from the 1920s to 2006 (Fig. 9). Following Raine's publication, an additional two ring recoveries for this species were recorded by BirdLife Malta in May 2013 (Italy) and April 2015 (Hungary). On average, 5–10 Turtle-doves are fitted with a scientific ring in Malta every year (BirdLife Malta, pers. comm., 2015; 2019). Additional data emerged in 2016 and 2017. Fisher *et al.* (2018) note that according to preliminary data from Turtle-doves fitted with tracking devices in Malta, in 2016 one bird spent the breeding season in Italy and the winter in Nigeria, before returning to Italy for the following breeding season. Moreover, three of four Turtle-doves tagged in Malta in April 2017 spent the breeding season in Italy, Slovakia and around the border of Bulgaria/Romania/Serbia respectively. Contact was lost with the fourth bird over Gozo (Fisher *et al*, 2018). On the basis of this new information, Romania and Slovakia are considered to also form part of Malta's Turtle-dove reference population (refer to Tables 7 and 8).

Fig. 9: Percentage of ring recoveries for European Turtle-dove (*Streptopelia turtur*), ringed overseas and recovered in Malta, by country (n=37)



Source: Raine (2007: 16)

Article 12 Reports (2008–2012)

2.16 Article 12 reports for the reporting period 2008–2012 provides the latest information on the short-term and long-term trends of bird species at the EU27 level (all Member States, excluding Croatia), which shows that the breeding population trend in the EU27 is **Decreasing** in both the short-term and in the long-term (EEA, 2014; see also Figures 10 and 11). The previous dataset, provided by Birds in Europe II [BirdLife International (2004)] had shown that the Turtle-dove populations within the current territory of the European Union (EU 28, including Croatia) decreased by 25.08% (minimum pairs) and by 17.82% (maximum pairs) with a change in the geomean population of -20.50% (Table 6). According to BirdLife International (2004), this equated to a Moderate Decline for the minimum, maximum and geomean number of breeding pairs (a change not more than 10% in 10 years is considered to be Stable). Table 7 shows the

trend categories of the Turtle-dove population on the basis of EU Member States' Article 12 reports (2008–2012) and Croatian data (EU28).

Table 6 **European Turtle-dove EU28 Breeding Population in 2004** (Bold = Ring Recoveries)

Country	EU Ring Recoveries in Malta (n=35)	Breeding Pairs (Min - Max)		Trend	Mag. % (Max - Min)		Max % Change (Min Pairs)	Max % Change (Max Pairs)	Max % Change (Average Pairs)
Austria	**2.9%**	**8,000**	**15,000**	**Stable**	**0**	**19**	**-**	**-**	**-**
Belgium		5,800	9,600	Decline	50	79	-4,582	-7,584	-6,083
Bulgaria		20,000	100,000	Stable	0	19	-	-	-
Croatia	**2.9%**	**50,000**	**100,000**	**Increase**	**0**	**19**	**9,500**	**19,000**	**14,250**
Cyprus		5,000	15,000	Decline	0	19	-950	-2,850	-1,900
Czech Rep.	**25.7%**	**60,000**	**120,000**	**Stable**	**0**	**19**	**-**	**-**	**-**
Denmark		25	75	Decline	50	50	-13	-38	-25
Estonia		4,000	8,000	Decline	20	29	-1,160	-2,320	-1,740
Finland		5	30	Decline	80	80	-4	-24	-14
France	**2.9%**	**150,000**	**450,000**	**Increase**	**10**	**10**	**15,000**	**45,000**	**30,000**
Germany	**5.7%**	**55,000**	**81,000**	**Decline**	**20**	**29**	**-15,950**	**-23,490**	**-19,720**
Greece		10,000	30,000	Decline	0	19	-1,900	-5,700	-3,800
Hungary	**5.7%**	**165,000**	**215,000**	**Stable**	**0**	**19**	**-**	**-**	**-**
Italy	**51.4%**	**200,000**	**400,000**	**Stable**	**0**	**19**	**-**	**-**	**-**
Latvia		500	2,000	Decline	50	79	-395	-1,580	-988
Lithuania		2,000	5,000	Decline	30	49	-980	-2,450	-1,715
Luxembourg		1,800	2,000	Stable	0	19	-	-	-
Malta		2	5	Decline	0	19	0	-1	-1
Netherlands		10,000	12,000	Decline	53	53	-5,300	-6,360	-5,830
Poland	**2.9%**	**40,000**	**70,000**	**Decline**	**0**	**19**	**-7,600**	**-13,300**	**-10,450**
Portugal		10,000	100,000	?	-	-	-	-	-
Romania		15,000	25,000	Increase	0	19	2,850	4,750	3,800
Slovakia		15,000	30,000	Stable	0	19	-	-	-
Slovenia		2,000	3,000	Stable	0	19	-	-	-
Spain		790,000	1,000,000	Decline	30	49	-387,100	-490,000	-438,550
Sweden		0	1	?	-	-	-	-	-
UK		44,000	44,000	Decline	42	42	-18,480	-18,480	-18,480
Total	100%	**1,663,132**	**2,836,711**				-417,064	-505,426	-461,245
				Percentage change			**-25.08%**	**-17.82%**	**-20.50%**
				Trend (EU Population)			**Moderate Decline**	**Moderate Decline**	**Moderate Decline**

Source: Birds in Europe II (BirdLife International, 2004)

Table 7 **European Turtle-dove EU28 Breeding Population in 2014** (Bold = Ring Recoveries)

Country	EU Ring Recoveries in Malta (n=40) ∫ †	Breeding Pairs (Min - Max)		Short-term Trend	Mag. % (Max - Min)		Long-term Trend	Mag. % (Max - Min)		Breeding Pairs (2004) (Min - Max)		Short-term		Long-term	
												Max % Change (Min Pairs)	Max % Change (Max Pairs)	Max % Change (Min Pairs)	Max % Change (Max Pairs)
Austria	**2.5%**	**12,000**	**18,000**	**Decline**	**30**	**50**	**Unknown**	**?**	**?**	**18,000**	**27,000**	**-6,000**	**-9,000**	**-**	**-**
Belgium		3,000	4,500	Decline	38	58	Decline	84	90	4,740	7,110	-1,740	-2,610	-2,520	-4,050
Bulgaria		35,000	100,000	Decline	27	27	Unknown	?	?	44,450	127,000	-9,450	-27,000	-	-
Croatia*	**2.5%**	**50,000**	**100,000**	**Increase**	**0**	**19**				**40,500**	**81,000**	**9,500**	**19,000**	**-**	**-**
Cyprus		3,000	10,000	Stable	0	0	Decline	10	30	3,300	13,000	-	-	-300	-3,000
Czech Rep	**25%**	**38,000**	**76,000**	**Decline**	**3**	**33**	**Decline**	**62**	**94**	**50,540**	**101,080**	**-12,540**	**-25,080**	**-23,560**	**-71,440**
Denmark		100	100	Increase	50	50	Stable	0	0	50	50	50	50	-	-
Estonia		1,000	3,000	Decline	20	50	Decline	50	70	1,500	4,500	-500	-1,500	-500	-2,100
Finland		5	10	Decline	27	61	Decline	82	90	8	16	-3	-6	-4	-9
France	**2.5%**	**397,000**	**481,000**	**Decline**	**11**	**20**	**Decline**	**20**	**30**	**476,400**	**577,200**	**-79,400**	**-96,200**	**-79,400**	**-144,300**
Germany	**5.0%**	**25,000**	**45,000**	**Decline**	**38**	**58**	**Decline**	**20**	**60**	**39,500**	**71,100**	**-14,500**	**-26,100**	**-5,000**	**-27,000**
Greece		30,000	80,000	Decline	5	15	Decline	10	20	34,500	92,000	-4,500	-12,000	-3,000	-16,000
Hungary	**7.5%**	**64,000**	**150,000**	**Stable**	**0**	**0**	**Unknown**	**?**	**?**	**165,000**	**215,000**	**-**	**-**	**-**	**-**
Italy	**50.0%**	**150,000**	**300,000**	**Unknown**	**?**	**?**	**Unknown**	**?**	**?**	**200,000**	**400,000**	**-**	**-**	**-**	**-**
Latvia		10,341	30,431	Stable	0	0	Stable	0	0	10,341	30,431	-	-	-	-
Lithuania		4,000	7,000	Decline	5	10	Decline	60	80	4,400	7,700	-400	-700	-2,400	-5,600
Luxembourg		150	200	Decline	20	20	Decline	30	50	180	240	-30	-40	-45	-100
Netherlands		4,763	5,715	Decline	27	55	Decline	82	90	7,383	8,858	-2,620	-3,143	-3,906	-5,144
Poland	**2.5%**	**25,000**	**49,000**	**Decline**	**25**	**55**	**Unknown**	**?**	**?**	**38,750**	**75,950**	**-13,750**	**-26,950**	**-**	**-**
Portugal		10,000	50,000	Decline	39	59	Decline	20	40	15,900	79,500	-5,900	-29,500	-2,000	-20,000
Romania†	**2.5%**	**120,000**	**300,000**	**Fluctuating**	**-**	**-**	**Unknown**	**-**	**-**	**120,000**	**300,000**	**-**	**-**	**-**	**-**
Slovakia†	**2.5%**	**15,000**	**30,000**	**Stable**	**0**	**0**	**Stable**	**0**	**0**	**15,000**	**30,000**	**-**	**-**	**-**	**-**
Slovenia		3,500	5,000	Decline	30	50	Decline	30	50	5,250	7,500	-1,750	-2,500	-1,050	-2,500
Spain		1,370,000	2,285,000	Decline	29	29	Decline	0.80	2.50	1,767,300	2,947,650	-397,300	-662,650	-10,960	-57,125

UK		14,000	14,000	Decline	76.70	76.70	Decline	91.73	91.73	24,738	24,738	-10,738	-10,738	-12,842	-12,842
Total	100%	**2,384,859**	**4,143,956**							**3,087,730**	**5,228,623**	**-551,571**	**-916,667**	**-147,487**	**-371,210**
				Percentage change								-23.13%	-22.12%	-6.18%	-8.96%
				Trend (EU Population)								**Decline** (> 10% change in 10 years)	**Decline** (>10% change in 10 years)	**Stable** (<20% change since 1980)	**Stable** (< 20% change since 1980)

Data Sources: European Environment Agency (2014); *BirdLife International (2004); ∫ Raine (2007) and BirdLife Malta (pers. comm., 2015; 2019); † Fisher *et al* (2018).

[1] In the absence of a report from the Czech Republic for this taxon, surrogate data were provided by ČSO / BirdLife indicating a breeding population of 38000–76000 pairs, with a decreasing trend (3–33%) during 2000–2012 and a decreasing trend (62–94%) during 1982–2012.Source: EEA (2014) Audit Trail, available at: http://bd.eionet.europa.eu/article12/summary/audittrail/?period=1&subject=A210 [Accessed 20/01/2020].

[2] In the absence of a report from Greece for this taxon, surrogate data were provided by the Hellenic Ornithological Society (HOS), the BirdLife Partner in Greece, indicating a breeding population of 30000–80000 pairs, with a decreasing trend (5–15%) during 2007–2013 and a decreasing trend (10–20%) during 1980–2012. Source: EEA (2014) Audit Trail, available at: http://bd.eionet.europa.eu/article12/summary/audittrail/?period=1&subject=A210 [Accessed 20/01/2020].

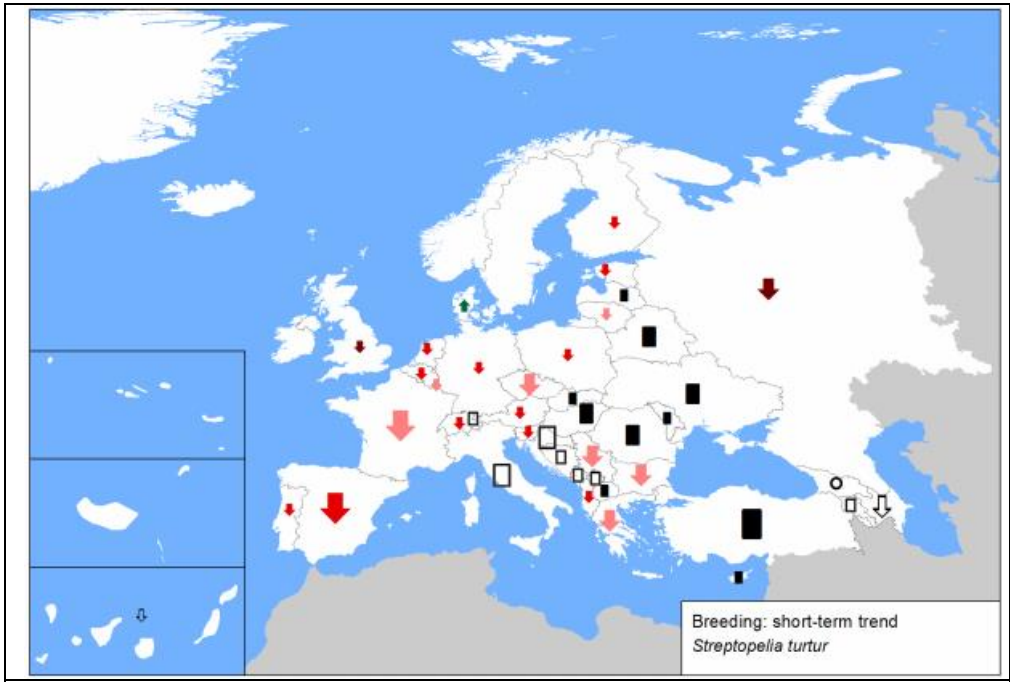


Fig. 10: European Turtle-dove breeding population sizes and short-term trends across Europe.
Source: BirdLife International (2015c)

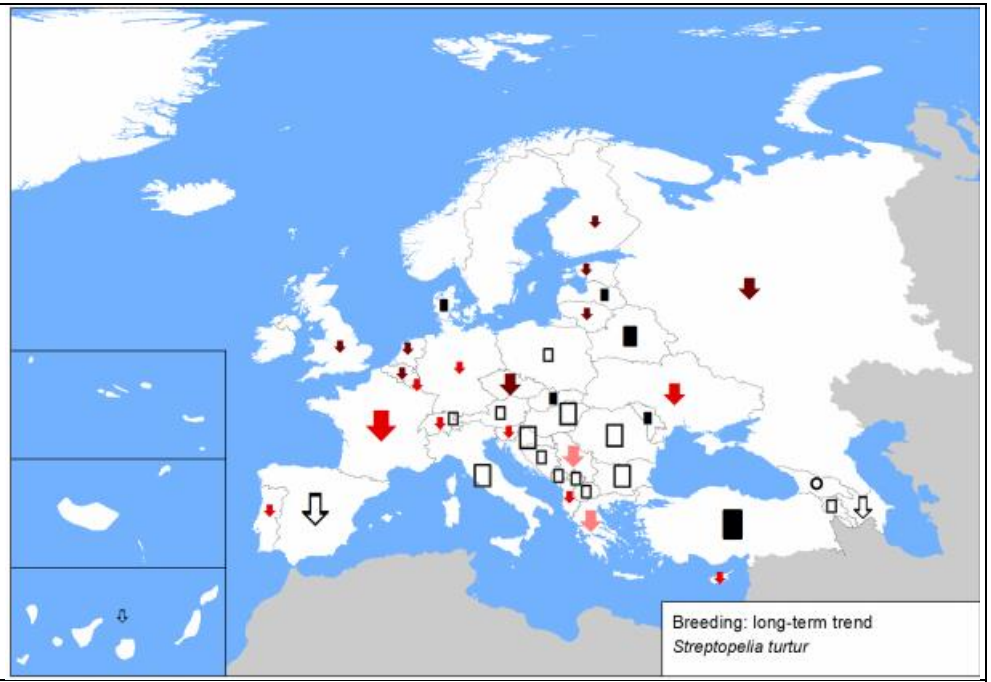


Fig. 11: European Turtle-dove breeding population sizes and long-term trends across Europe.
Source: BirdLife International (2015c)

KEY

- Large increase (≥50%)
- Moderate increase (20–49%)
- Small increase (<20%)
- Increase of unknown magnitude
- Large decrease (≥50%)
- Moderate decrease (20–49%)
- Small decrease (<20%)
- Decrease of unknown magnitude
- Stable or fluctuating
- Unknown
- Present (no population or trend data)
- Extinct since 1980

Each symbol, with the exception of Present and Extinct, may occur in up to three different size classes, corresponding to the proportion of the European population occurring in that country.

- Large: ≥10% of the European population
- Medium: 1–9% of the European population
- Small: <1% of the European population

Source: BirdLife International (2015c).

Turtle-dove Reference Population (Ring Recoveries)

2.17 Table 8 provides data on ring recoveries of Turtle-doves in Malta (the reference population), the respective number of breeding pairs pertaining to the source (reference) population, together with the overall direction of the population trend. Figs. 8 and 9 illustrate the EU population trend categories of this species per Member State. The respective EU source (reference) population trend categories, on the basis of ring recoveries in Malta, are shown in Figs. 10 and 11.

Table 8 European Turtle-dove ring recoveries (reference population) from other EU Member States and corresponding population trend

Country	EU Ring Recoveries in Malta (n=37) ∫ †	Breeding Pairs (Min - Max)		Short-term Trend	Mag. % (Max - Min)		Long-term Trend	Mag. % (Max - Min)		Breeding Pairs (2004) (Min - Max)		Short-term		Long-term	
												Max % Change (Min Pairs)	Max % Change (Max Pairs)	Max % Change (Min Pairs)	Max % Change (Max Pairs)
Italy	50.0%	150,000	300,000	Unknown	?	?	Unknown	?	?	200,000	400,000	-	-	-	-
Czech Rep	22.5%	38,000	76,000	Decline	3.00	33.00	Decline	62.00	94.00	50,540	101,080	-12,540	-25,080	-23,560	-71,440
Hungary	7.5%	64,000	150,000	Stable	0.00	0.00	Unknown	?	?	165,000	215,000	-	-	-	-
Germany	5.0%	25,000	45,000	Decline	38.00	58.00	Decline	20.00	60.00	39,500	71,100	-14,500	-26,100	-5,000	-27,000
Austria	2.5%	12,000	18,000	Decline	30.00	50.00	Unknown	?	?	18,000	27,000	-6,000	-9,000	-	-
Croatia*	2.5%	50,000	100,000	Increase	0.00	19.00	-	-	-	40,500	81,000	9,500	19,000		
France	2.5%	397,000	481,000	Decline	11.00	20.00	Decline	20.00	30.00	476,400	577,200	-79,400	-96,200	-79,400	-144,300
Poland	2.5%	25,000	49,000	Decline	25.00	55.00	Unknown	?	?	38,750	75,950	-13,750	-26,950	-	-
Romania†	2.5%	120,000	300,000	Fluctuating	-	-	Unknown	?	?	120,000	300,000	-	-	-	-
Slovakia†	2.5%	15,000	30,000	Stable	0	0	Stable	0	0	15,000	30,000	-	-	-	-
Total	100%	**761,000**	**1,219,000**							**1,163,690**	**1,878,330**	**-116,690**	**-164,330**	**-107,960**	**-242,740**
											Percentage change	-13.02%	-10.61%	-12.05%	-15.67%
											Trend (Ring Recoveries)	**Decline** (> 10% change in 10 years)	**Decline** (>10% change in 10 years)	**Stable** (<20% change since 1980)	**Stable** (< 20% change since 1980)

Data Sources: European Environment Agency (2014); *BirdLife International (2004); ∫ Raine (2007) and BirdLife Malta (pers. comm., 2015; 2019); † Fisher *et al* (2018).

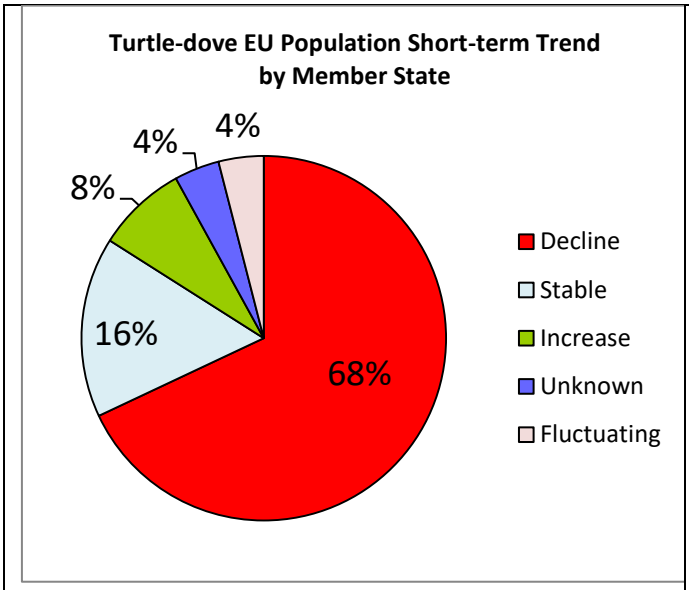


Fig. 12: European Turtle-dove EU28 population short-term trend by Member State

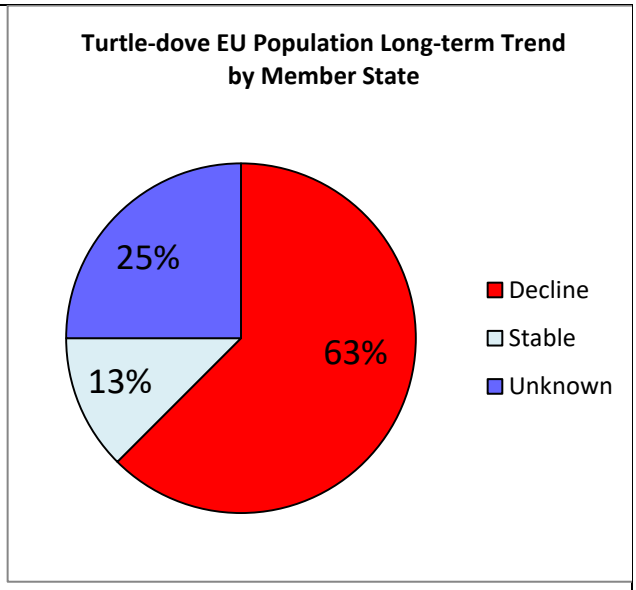


Fig. 13: European Turtle-dove EU28 population long-term trend by Member State

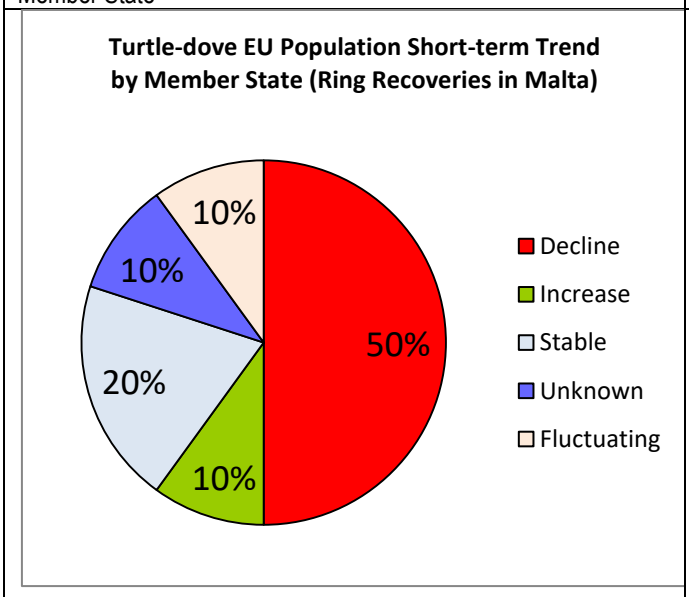


Fig. 14: European Turtle-dove EU population short-term trend (ring recoveries)

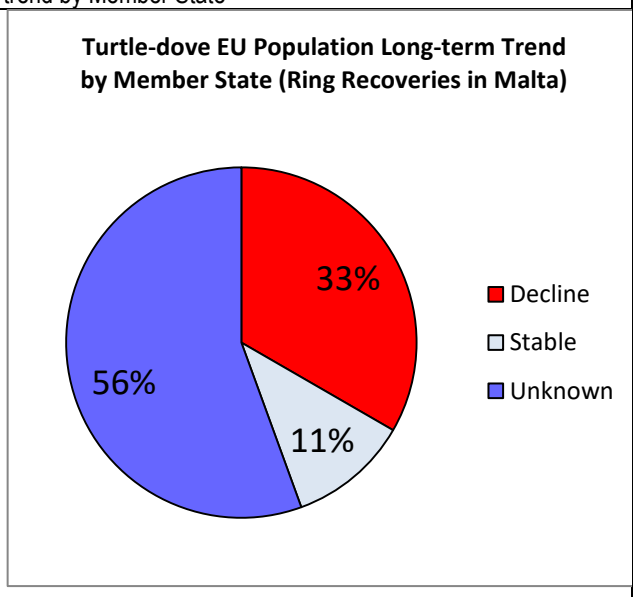


Fig. 15: European Turtle-dove EU population long-term trend (ring recoveries)

Data sources: European Environment Agency (2014); BirdLife International (2004); Raine (2007); BirdLife Malta (pers. comm. 2015; 2019)

2.18 The Turtle-dove reference population is **Declining in the short-term trend** (Min. Pairs: -13.02%; Max. Pairs: -10.61%) but appears to have remained **Stable in the long-term trend** (minimum and maximum pairs). However, given that both the short-term and long-term trend categories for the major source population in Italy (half the total reference population) is 'Unknown', such trend classification should be interpreted with caution, taking into full account the overall decline of this species at EU (Near Threatened), European (Vulnerable) and Global (Vulnerable) scales.

3. Conclusion

Common Quail (*Coturnix coturnix*)

3.1 The European Environment Agency (2014) notes that the breeding population trend of the Common Quail (*Coturnix coturnix*) at EU27 level is **Decreasing** in the short-term and **Unknown** in the long-term. The EU population status for Common Quail is **Unknown**, as the data reported were not sufficient to assess the population status of the species (EEA, 2014). The Common Quail has an **IUCN Least Concern classification** at both the EU27 and European scale (BirdLife International, 2015a: 38). The population of Common Quail within EU27 constitutes 41% of the total European population (BirdLife International, 2015b).

3.2 This species is not included in the Pan-European Common Bird Monitoring Scheme. The assessment carried out as part of this update has shown that, on the basis of Article 12 reports (EEA, 2014) at EU28 level (EU27 Article 12 reports + Croatian data for 2004), the Common Quail is **Increasing** in the long-term trend (Min. calling males: +23.49%; Max. calling males: +27.40%). However, this percentage increase should be interpreted with caution given that it is based on data pertaining to only 69% of Common Quail population within EU28—the remaining 31% have an Unknown long-term trend.

3.3 In the short-term, the EU28 population of Common Quail has a **Stable maximum number of calling males** (-9.23%) but a **Decreasing minimum number of calling males** (-13.65%).

3.4 Similarly, the reference population of the Common Quail has a short-term trend classification of **Stable** in the **maximum number of calling males** (+6%) but **Decreasing** in the **minimum number of calling males** (-11.73%). **The long-term trend of the reference population is Unknown**.

European Turtle-dove (*Streptopelia turtur*)

3.5 In 2015 the **EU population status** of Turtle-dove (*Streptopelia turtur*) was assessed as **Near Threatened**, because the species comes close to meeting the IUCN Red List criteria at the EU27 scale (BirdLife International, 2015a: 41). At the **European and Global levels** the Turtle-dove has been uplisted to **Vulnerable**. A ten-year (2018–2028) international single species action plan was drafted *to restore the European Turtle-dove to a favourable population status so that it can be safely removed from the Globally Threatened categories of the IUCN Red List* (Fisher *et al,* 2018).

3.6 The latest (2019) European Bird Census Council update has shown that at Pan-European level, **the Turtle-dove declined by 80% when compared with the 1980 baseline data and**

by 17% during the 10-year trend (2008–2017). Compared with the previous (2018) EBCC update, the Turtle-dove population remained at 80% decline in the long-term trend [no change] and increased by 12% in the short-term (10-year) trend [from -29% to -17%].

3.7 On the basis of recent geo-tagging data (Fisher *et al*, 2018), the Turtle-dove populations of Slovakia and Romania were added to Malta's reference population. Subsequently, this update re-assessed the corresponding short-term and long-term trend categories of the species. It has been shown that the reference population is **Declining in the short-term trend** (Min. Pairs: -13.02%; Max. Pairs: -10.61%) but appears to have remained **Stable in the long-term trend** (minimum and maximum pairs). However, given that both the short-term and long-term trend categories for the major source population in Italy (half the total reference population) is 'Unknown', such trend classification should be interpreted with caution, taking into full account the overall decline of this species at EU (Near Threatened), European (Vulnerable) and Global (Vulnerable) scales.

References

Baptista, L.F., Trail, P.W., Horblit, H.M., Boesman, P. and Sharpe, C.J. (2015). European Turtle-dove (*Streptopelia turtur*). In: del Hoyo, J., Elliott, A., Sargatal, J., Christie, D.A. and de Juana, E. (eds), *Handbook of the Birds of the World Alive*, Lynx Edicions, Barcelona.

Bauer H-G., Bezzel E. and Fiedler W. (2012). *Das Compendium der Vögel Mitteleuropas*. AULA-Verlag Wiebelscheim. pp 671–674.

BirdLife International (2004). *Birds in Europe: population estimates, trends and conservation status* (BirdLife Conservation Series No. 12). BirdLife International, Cambridge, U.K.

BirdLife International (2015a). *European Red List of Birds*. Luxembourg: Office for Official Publications of the European Communities. Available at: http://datazone.birdlife.org/userfiles/file/Species/erlob/EuropeanRedListOfBirds_June2015.pdf

BirdLife International (2015b). *European Red List of Birds*. Luxembourg: Office for Official Publications of the European Communities. Available at: http://datazone.birdlife.org/userfiles/file/Species/erlob/supplementarypdfs/22678944_coturnix_coturnix.pdf

BirdLife International (2015c). *European Red List of Birds*. Luxembourg: Office for Official Publications of the European Communities. Available at: http://datazone.birdlife.org/userfiles/file/Species/erlob/supplementarypdfs/22690419_streptopelia_turtur.pdf

BirdLife International (2017). *Streptopelia turtur* (amended version published in 2017). The IUCN Red List of Threatened Species 2017: e.T22690419A119457869. Available at: http://www.iucnredlist.org/details/22690419/0 [Accessed on 20 January 2020].

BirdLife International (2020a). Species factsheet: *Coturnix coturnix*. Available at: http://datazone.birdlife.org/species/factsheet/common-quail-coturnix-coturnix

BirdLife International (2020b). Species factsheet: *Streptopelia turtur*. Available at: http://datazone.birdlife.org/species/factsheet/european-turtle-dove-streptopelia-turtur

Dunn, J.C., Grice, P.V., Morris, A.J. (2015). Testing bespoke management of foraging habitat for European turtle doves Streptopelia turtur. *Journal for Nature Conservation* 25: 23-34.

Dunn, J.C., Grice, P.V., Morris, A.J. (2016). Post-fledging habitat selection in a rapidly declining farmland bird, the European Turtle Dove Streptopelia turtur. *Bird Conservation International*: DOI: https://doi.org/10.1017/S0959270916000022.

EBCC (2018). *Trends of common birds in Europe, 2018 update*. European Bird Census Council. Available at: https://pecbms.info/trends-and-indicators/species-trends

EC (2008). *Guidance document on hunting under Council Directive 79/409/EEC on the conservation of wild birds "The Birds Directive"*. European Commission, Brussels.

EEA (2014). *Population status and trends at the EU and Member State levels* (Article 12 reports for the reporting period 2008–2012). *European Topic Centre on Biological Diversity (EIONET).* European Environment Agency.

Fisher I., Ashpole J., Scallan D., Carboneras C. and Proud T. (compilers) (2018). *International Single Species Action Plan for the conservation of the European Turtle-dove* Streptopelia turtur *(2018 to 2028)*. European Commission Technical Report xxx-2018.

Guyomarc'h, J.C. (2003). *Elements for a common quail (*Coturnix c. coturnix*) management plan*. Game and Wildlife Science 20: 1-92.

Lutz, M. (2006). *Management Plan for Turtle Dove* (Streptopelia turtur) *2007 –2009*. Technical Report - 007 – 2007.

Mineau P. and Palmer C. (2013). *The Impact of the Nation's Most Widely Used Insecticides on Birds.* American Bird Conservancy, The Plains. pp 1-97.

Parslow J.L.F. (1967). Changes in status among breeding birds in Britain and Ireland. *British Birds* 60: 177-202.

Perennou, C. (2009). *European Union Management Plan 2009-2011 – Common Quail* Coturnix coturnix. Technical Report 2009-032. EU Commission, Brussels. 69 pp.

Raine, A. (2007). *The international impact of hunting and trapping in the Maltese islands.* BirdLife Malta, Malta.

Sharrock J.T.R. (1976). *The atlas of breeding birds in Britain and Ireland*. British Trust for Ornithology, Thetford.

Snow D.W. and Perrins C.M. (1998). *The Birds of the Western Palearctic. Concise Edition Vol. 1 Non-passerines.* Oxford University Press, Oxford. pp 856–859.

Stockdale, J.E., Dunn, J.C., Goodman, S.J., Morris, A.J., Sheehan, D.K., Grice, P.V., and Hamer, K.C. (2015). The protozoan parasite *Trichomonas gallinae* causes adult and nestling mortality in a declining population of European Turtle Doves, *Streptopelia turtur*. *Parasitology* 142(03): 490-498.

Tucker, G.M. and Heath, M.F. (1994). *Birds in Europe: their conservation status*. BirdLife Conservation Series No. 3. BirdLife International, Cambridge, U.K.

Voříšek P. and Škorpilová J. (2010). *European trends of Turtle Dove* (Streptopelia turtur). Pan-European Common Bird Monitoring Scheme (PECBMS) Fact Sheet. Czech Society for Ornithology, Prague.