

**Species Action Plan for the Dupont's Lark /*Chersophilus duponti*/  
in the European Union**



**Prepared by:**



**On behalf of the European Commission**



## Species action plan for the Dupont's Lark *Chersophilus duponti* in the European Union

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**International Species Working Group**

n/a

**Reviews**

This Action Plan should be reviewed and updated every ten years (first review in 2018). An emergency review will be undertaken if there is a sudden major change liable to affect the populations or subspecies.

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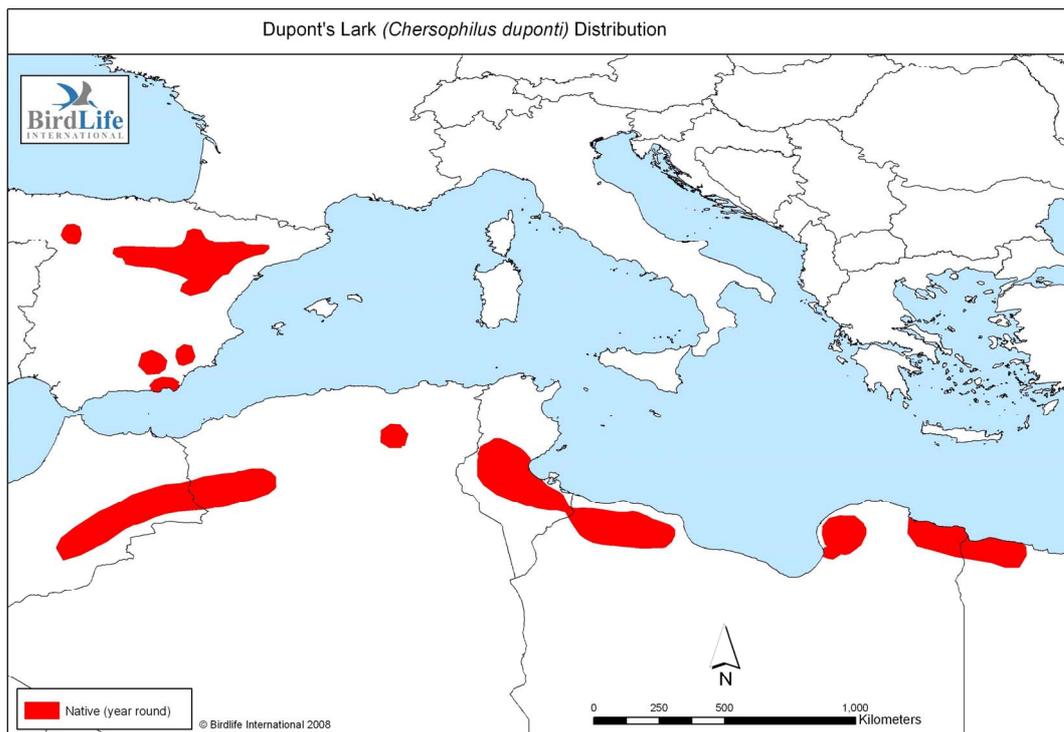
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## Geographical scope of the action plan

This Action Plan is applicable to Spain, the only range state of the Dupont's Lark *Chersophilus duponti* in the European Union. Given the significance of the populations of other range states outside the EU, the geographical scope of the Action Plan was extended to North Africa, as far as the available information permitted.

**Map 1 Distribution range of the Dupont's Lark (BirdLife International, 2008)**



**Table 1 Range states for which this Action Plan is relevant**

Range states	Breeding	Migration	Wintering
Algeria	<i>yes</i>	<i>yes</i>	<i>yes</i>
Egypt	<i>yes</i>	<i>yes</i>	<i>yes</i>
Libya	<i>yes</i>	<i>yes</i>	<i>yes</i>
Morocco	<i>yes</i>	<i>yes</i>	<i>yes</i>
<b>Spain</b>	<b><i>yes</i></b>	<b><i>yes</i></b>	<b><i>yes</i></b>
Tunisia	<i>yes</i>	<i>yes</i>	<i>yes</i>

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## **0- EXECUTIVE SUMMARY**

Dupont's Lark is classified as "Near Threatened" in the IUCN Red List of globally threatened species (BirdLife International 2008) and it is one of the most threatened Passerines in Europe. It is present only in the Iberian Peninsula where populations have shown a clearly negative trend leading to extinction of isolated ones. The last census has estimated the size of the population between 3,500 and 4,000 males spread over 11 autonomous regions and nearly 150,000 ha. Besides, this species appears in North African countries, the biggest population being in Morocco and probably in Algeria. Iberian population is isolated geographically and genetically from northern African populations.

The main cause of this decrease has been the loss and degradation of habitats, caused by changes in land use, introduction of new crops, reforestation and proliferation of wind farms. These, along with abandonment of livestock grazing have resulted in loss of scrub - steppe associations, preferred by the species for breeding.

The recovery of the species is further exacerbated due to its fragmented distribution and reduced mobility. Therefore, the conservation strategy for the species should be based on conserving its existing habitats, recovery of degraded habitats and consolidating of its range through habitat restoration.

The goal of the action plan is to improve the conservation status of the Dupont's Lark in Europe to favourable.

The objectives of the action plan are to:

1. Stop the decline of the Spanish population by 2015.
2. Ensure that conditions for population growth and range consolidation are in place by 2018.

To achieve these objectives, the following results have to be ensured through the implementation of actions:

1. Habitat loss is no longer a threat for the species in its core areas of distribution.
2. Further fragmentation of existing populations is avoided.
3. Research gaps are filled and actions are in place to collect precise data about the species and its conservation needs.

### **Priority actions**

- Designate as protected areas all sites containing important breeding populations.
- Define criteria based on the habitat requirements of this species to be used when assessing plans, projects or changes of land-use in the areas of occupation of the species.

- Include the species among the priority for funding species under the EU LIFE Programme to stimulate the development of specific conservation projects.
- Evaluate the effect of past and existing measures in the Rural Development Plans, targeted at steppes and promote such that favour conservation of suitable habitat conditions for the species. (E.g. avoid reforestation on steppe).
- Include the species areas of occupancy into no-go areas for wind farms, solar plants, power lines, urban development and transport infrastructure through mapping and planning.
- Restore good quality habitat for the species in the surroundings of existing populations through regeneration of natural steppe (encouragement of desertion of crops, removal of reforestations in topographically adequate areas, removal of rubbish dumps and other measures of environmental restoration).
- Improve the public understanding and support for the conservation of steppes.
- Identify habitat connection opportunities to restore the links between the isolated populations (e.g. small populations in Andalusia and Murcia, or local population patches in Northern Spain) and source populations.
- Through agri-environmental schemes and Natura 2000 management plans, promote suitable agricultural practices (fallow lands, borders, uncultivated lands, extensive dry lands, etc.) among patches of habitat with presence of the species.
- Research and promote special habitat management measures for the steppe habitat and integrate them in nature conservation and rural development programmes.

## 1 - BIOLOGICAL ASSESSMENT

### Taxonomy and biogeographic populations

Class: Aves

Order: Passeriformes

Family: Alaudidae

Genus: *Chersophilus*

Species: *duponti* (Vieillot, 1820)

Dupont's Lark is a steppe bird, belonging to the Alaudidae family within which it is the only species of the genus *Chersophilus*. Unlike the remaining Alaudidae with populations in Europe, it has a very restricted distribution, which only includes the Iberian Peninsula and Northern Africa (De Juana and Suárez, 2004).

Traditionally two subspecies are recognised (Cramp and Simmons 1988; De Juana and Suárez, 2004): *Chersophilus duponti duponti* (Vieillot, 1820) living in the Iberian Peninsula, Morocco and Northern Algeria and Tunisia and *C. duponti margaritae*, to which the southernmost populations of Algeria and Tunisia belong, as well as those of Libya and Egypt. The geographical separation of both subspecies is not clear in some regions and overlapping of ranges is recorded in Tunisia (García *et al.*, 2008a).

The subject of this action plan is *C. duponti duponti* which is the only subspecies breeding in Europe.

### Distribution throughout the annual cycle

Currently in Europe, Dupont's Lark is only found in continental Spain (Garza, 1997), although in the past the species was also found in Portugal (Bocage, in Irby, 1895) and Southern France (Ferrer *et al.*, 1896). Currently Spain hosts around 13% of the global population of the species (Suárez *et al.*, 2008).

The Spanish population is scattered over 11 autonomous regions and some 148 000 ha with the highest numbers in Aragón (50 % of the estimated population), followed by Castilla y León (28%) and Castilla-La Mancha (17%) and much smaller numbers in Navarra (2%), Valencia (1%), Murcia (1%) and Andalusia (1%). In terms of natural regions the importance of the Iberian Mountains, with 73% of the population is prominent. Another 18% of the birds are found in the Ebro Valley (Suárez and Garza, 2007).

This species is largely sedentary (Suárez and Garza, 1989; Suárez *et al.*, 2006 Laiolo *et al.*, 2007; Vögeli *et al.*, 2008). Males and females occupy their territories for at least the breeding and post-breeding periods (March-October) (Garza *et al.*, 2005; Vögeli *et al.*, 2008). The young birds seem to stay near their natal areas, where they occupy habitats of lower quality among the territories of breeding males. The individual territories of

the young tend to be bigger than those of the adults, probably due to their lower quality (Garza *et al.*, 2005; Suárez *et al.*, 2006).

According to a study of the whole of the Spanish population (Suárez *et al.*, 2006) the species would behave as a partial migratory bird, the larger part of the population staying in the breeding areas during winter. Juveniles and non-breeding birds can disperse further away and harsh weather conditions can cause dispersal (Suárez and Garza, 1989; Suárez *et al.*, 2006). Such movements could explain the rescue effect, by means of the immigration of specimens, due to which small, isolated populations still exist outside the Iberian Mountains and the Ebro Valley. The North African populations are found to be genetically isolated from the Spanish ones (García *et al.*, 2007) hence such exchange of individuals is less likely to take place.

### **Habitat requirements**

Dupont's Lark is a species with cryptic plumage and behaviour which only reveals its presence when emitting its characteristic songs and calls. Because of that, large part of the available information refers to a part of the population, males, and to the breeding and post-breeding periods, when they show a greater vocal activity.

Dupont's Lark is one of the larks showing higher selectivity to its habitat, for it is only found in flat steppe zones with low scrub. Two main factors seem to determine the preferred habitats - topography and fragmentation. The species scarcely lives in zones with slopes superior to 8-10 % (Garza, 2002). It inhabits a wide range of altitudes, from 0 to 1400 m above sea level; 69 % of the population lives between 1000 and 1400 m, and 24% between 250 and 500m (Garza and Suárez, 1990).

Recent surveys have found that territories often appear aggregated and among them there are empty places of apparently adequate habitat. This fragmented distribution corresponds to the spatial heterogeneity of the scrub steppe habitat (Garza *et al.*, 2003; Garza *et al.*, 2005). Different formations of scrub fulfil these requirements, although Chamaephyte scrub in the Iberian Mountains (formed by woody, calcicolous chamaephytes in which *Genista scoropus*, *Genista pumilla*, *Lavandula pedunculata*, *Salvia lavandulifolia*, *Satureja montana*, *Erinacea anthyllis*) and Gypsophilus scrub in the Ebro Valley (*Lygeum spartum*, *Rosmarinus officinalis*, *Ononis tridentate*, *Salsola vermiculata*, *Artemisia herba-alba*, *Helianthemum squamatum*, etc.) are the ones that shelter the largest number of specimens (Garza and Suárez, 1990). Besides these two formations, in the marginal areas of distribution the species is found in salt marshes and zones with halophytic vegetation, thickets, heather and esparto fields.

The areas where Dupont's lark lives are patchy landscapes, where agricultural and cattle grazing mix. In fact, the origin and maintenance of the structure of the habitat that the species selects is a consequence of its traditional use as shepherding zones of cattle. The scrub patches are typically found inside a pattern of crops, and the populations being found in areas where scrub is vast and continuous are very scarce. Therefore, for the whole of the Spanish population an inverse relationship between the density and the size of the habitat patches of scrub has been suggested which has

been described as crowding (Laiolo and Tella, 2006). The presence of crops and pastures is tolerated by the species whenever it has got scrub patches, for it is never found in totally grown zones or pure herbaceous pastures.

Densities during the breeding period vary between 0.7-1.0 territories (males)/10 ha (Garza *et al.*, 2003; Garza *et al.*, 2005) in the Iberian Mountains and 0.40-0.51 territories/10 ha in the Ebro Valley (Nogués-Bravo and Aguirre, 2006).

### **Survival and productivity**

The reproductive period of the Spanish population is quite long, from the end of February till the beginning of July, because pairs make several breeding attempts. Laying consists of 3 to 5 eggs (average 3.6 eggs), which are incubated for 12-13 days. The staying period of nestlings is very short, only 8 days; during this period, nestlings are fed with larvae of Coleoptera and Lepidoptera and spiders.

Mortality in the nest is very high with recorded 84% unsuccessful reproductive attempts in some populations largely due to predation (Herranz *et al.*, 1993; Herranz *et al.*, 1994). Breeding success can vary widely between neighbouring populations (Laiolo *et al.*, 2008).

The only available information about survival rates has been obtained by the methods of capture-recapture and acoustic identification of males of the Ebro Valley populations. An annual survival rate in males of 46% was reported using the acoustic method (Laiolo *et al.*, 2008). With the capture-recapture method the inter annual survival probability was found to be around 24-35% with most birds surviving the post-reproductive period (63-93%) and the least number (38%) surviving the winter (Laiolo *et al.*, 2008).

The generation length of the species has been estimated at 2.5 years (BirdLife International, *unpublished data*).

### **Population size and trend**

The first population size estimate for Spain was made in 1988 giving roughly 13000 individuals (Garza and Suárez, 1990). Later studies demonstrated the overvaluation of this estimate (Garza *et al.*, 2003), and much lower numbers were cited: from 1300 (Tella *et al.*, 2005) to 1900 pairs (Garza *et al.*, 2003).

The most reliable estimate of population size was obtained by a census made between 2004 and 2007 (Suárez and Garza, 2007). It used a methodology specifically designed to be able to deal with the problems of detection of Dupont's Lark. The results of this census indicate that the minimum population (counted males) was 3168 males, estimating that the actual population could be 3500-4200 males. Taking into account that the sex ratio is approximately 0.61 (Suárez *et al.*, in review), these results would

mean the existence of roughly 2.200-2.700 pairs. Some authors consider that the sex ratio is even more biased towards males (Tella *et al.*, 2004; Vögeli *et al.*, 2007) which would lead to even smaller population estimate.

The trend of the Spanish population of Dupont's Lark is clearly declining as shown by extinctions of local subpopulations during the last two decades (Tella *et al.* 2005) and the reduced numbers of individuals in extant populations.

**Table 2 Population size and trend in the EU**

<b>Country</b>	<b>N# Breeding Pairs</b>	<b>Quality</b>	<b>Year(s) of the estimate</b>	<b>Breeding Population trend in the last 10 years (or 3 generations)</b>	<b>Quality</b>	<b>Maximum size of migrating or non breeding populations in the last 10 years (or 3 generations)</b>
<i>Spain</i>	2,200-2,700	Good	2004-2007	Decline	Good	Unknown

## 2 - THREATS

### General overview of threats

The main problem for the Dupont's Lark is its very small and fragmented population, well below the usual level of most Passerines. This makes it vulnerable to alterations and loss of habitat and to any other factor increasing the mortality among adults and nestlings. Fragmentation of the distribution and limited mobility are the reason why marginal nuclei that occupy very small areas of good habitat and are very far from each other and from the main population, face increased extinction risk. The various aspects of habitat loss lead to overall reduced density of the population and isolation between individual breeding groups.

The causes of habitat loss are diverse but falling within two main groups: **agricultural /forest use** and **industrial development**. Given the fact that steppes are considered of little economic value, they are often suffering from neglect (covered with rubbish dumps), destruction (quarries) or are sold to other development, e.g. wind farms.

In addition to the direct habitat loss, the presence of infrastructure brings a corresponding increase in other threats. For example, rubbish dumps provide a source of food that attracts generalist predators (dogs, foxes, corvids, etc) which also cause nest predation. Wind farms present mortal risks for larks through collision with the blades as males perform song flights at night during the breeding period. Mortality by collision with power lines has also been recorded. However, these causes of mortality are secondary to habitat loss, as they are the result of the latter. They were therefore evaluated as having a low impact on the population. The conservation strategy for this species should be focused on resolving the primary threats, which are those affecting its habitats.

### List of critical and important threats

#### 1. Habitats loss

Loss of habitat is the main threat to the species. Three factors cause habitat loss: agricultural intensification (ploughing of steppe lands, reforestation), abandonment (reduced grazing of steppes) and construction (infrastructure development, wind farms, mining). As evidence for the latter for example, of 50 analysed breeding sites rubbish dumps were found in 26%, quarries in 22%, wind farms in 8% and anemometers in 36%, a sign that the sites were considered as likely places for future wind farms (Laiolo and Tella, 2006).

The main drivers for these threats are:

**1.1 Agricultural intensification.** The transformation of the traditional land use systems and the change to intensive farming has led to irreversible loss of important part of the habitat. The increase of cereals is favoured by **land consolidation** and in

many cases this leads to **ploughing** of the flat scrub covered zones favoured by the species and which had not been cultivated for decades. In the Ebro Valley and in the South of Spain **irrigation** schemes have added to this process.

**Importance: Critical**

**1.2 Reforestation.** Ploughing of scrub steppes for reforestation is commonly taking place throughout the distribution area of the species, because of EU subsidies. Without the public subsidy, reforestation schemes are not economically viable as soil and climatic conditions limit optimal tree growth.

Reforestation schemes often take place on soils not suitable for farming and not cultivated for decades, hence turned into areas favoured by the species.

**Importance: Critical**

**1.3 Shrub succession due to reduced grazing.** The main use of Dupont's lark habitat was the extensive shepherding. Shepherding was the transforming agent of this kind of steppes, maintaining the structure of the vegetation suitable for the species. The abandonment of extensive livestock in favour of the intensive one allows the succession of the vegetation and regeneration of shrubs and trees, which in the medium term implies its transformation in a type of environment not suitable for Dupont's Lark.

**Importance: High**

## **2. Habitat fragmentation**

The increased distances among population patches caused by loss of habitat is leading to the isolation of populations. Connectivity is hindered even more by the loss of permeability of intermittent zones due to land use change (creation of woodland, irrigated lands) or infrastructures (wind farms, roads, industrial areas). Without contact among populations and recruitment of individuals, the recovery of the species is not possible.

**2.1 Infrastructure development.** The construction of large-scale infrastructures is affecting most of the populations of Dupont's Lark. Nowadays wind farms have the greatest impact through the construction and servicing (fundaments, cables and access roads).

Up to now, solar plants do not affect any population of Dupont's Lark, but with their quick expansion, it can be anticipated that their importance as a threat may grow in the near future.

The linear transport infrastructure (high speed train, highways) has affected several important populations in the Iberian mountains (Layna) and the Ebro Valley (Los Monegros), increasing their degree of fragmentation.

**Importance: Critical**

## Population Viability Analysis

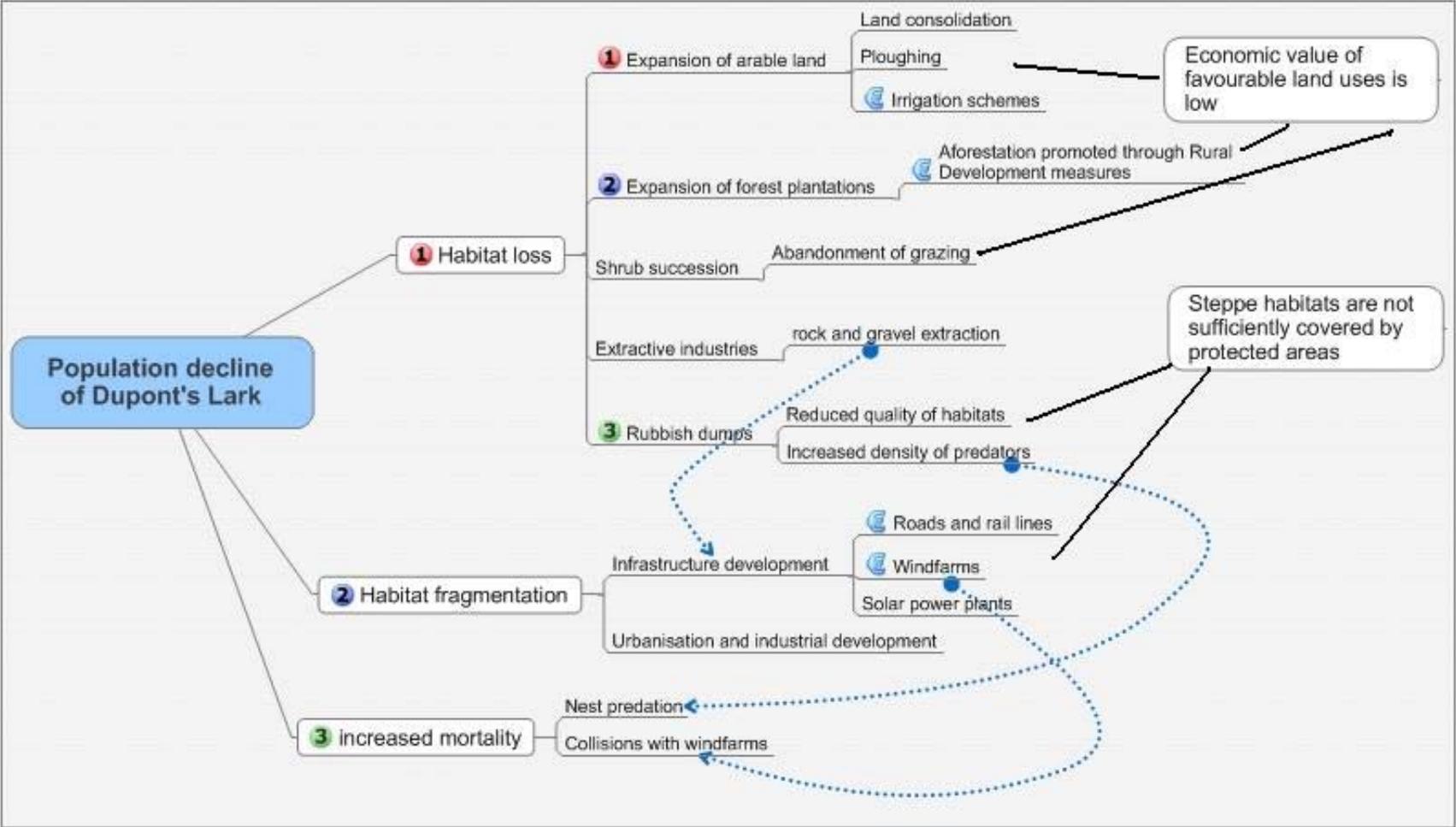
The only PVA available for the species was carried out in the Ebro Valley and it predicted an increased extinction risk in the short to medium term for more than half of the existing populations in that region (Laiolo *et al.*, 2008). The populations with highest extinction risk are those that have the smallest number and highest degree of isolation. This was confirmed by the documented extinction during the last decade of such populations (Tella *et al.* 2005, Vögeli, Serrano, Laiolo & Tella *unpublished data*).

Connectivity models analyzed at national scale show that the fragmentation and isolation increases with geographic distances. This isolation and fragmentation is less pronounced in the Iberian Mountains and increases progressively in Ebro Valley and the Southern Plateau, with extreme values in the Northern Plateau and Southern Spain (Laiolo & Tella 2006a). The limited dispersal capabilities of the species reduce the exchange of individuals between populations and increases their extinction risk.

The fragmentation effects play more important role when the local populations are small and isolated, because in such situations they depend only on their population productivity (Laiolo *et al.* 2008) and rescue effect from neighbouring 'source' populations is limited (Laiolo & Tella, 2008).

**Problem tree**

(Numbers indicate priority of threat; € - indicate public subsidies; dashed line indicates links)



### 3 - POLICIES AND LEGISLATION RELEVANT FOR MANAGEMENT

#### International conservation and legal status of the species

The current threat status of the Dupont's Lark globally is 'Near threatened' (BirdLife International, 2008) and its European threat status is 'Depleted' in (BirdLife International, 2004). Its conservation status is SPEC 3 (BirdLife International, 2004).

Title	Work title	Year	Objective and relevance
<b>Convention on the Conservation of European Wildlife and Natural Habitats</b>	Bern Convention	1979	Conservation of wild flora and fauna and their natural habitats especially those species and habitats whose conservation requires the co-operation of several states. "Special attention [should] be given to the protection of areas that are of importance for the migratory species specified in appendices II and III (incl. most birds) and which are appropriately situated in relation to migration routes as wintering, staging, feeding, breeding or moulting areas".
<b>EU Council Directive on the Conservation of Wild Birds</b>	EU Birds Directive	1979	Conservation of birds and bird habitats by European co-operation. Establish network of protected areas: Special Protection Areas (SPAs). The Birds Directive laid the foundation for the Habitats Directive.
<b>EU Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora</b>	EU Habitats Directive	1992	Establish a strategic network (Natura 2000) of European Habitats and protect the most threatened species in Europe. Countries have to submit lists of "Special Areas of Conservation" (SACs). Two annexes list habitat types and species. The Article 6 obligations of the Habitats Directive also have to be implemented in the Special Protection Areas of the Birds Directive.
<b>Convention on Biological Diversity</b>	CBD	1992	Maintain a sustainable diversity and spread of flora and fauna across the world. Each contracting party shall develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity.

### National policies, legislation and ongoing activities

Spanish Catalogue for Threatened Species	Red Book of Spanish birds
<b>Vulnerable</b> Norma: Order MAM/2,784/2004 Date BOE: 16 august 2004	<b>Endangered</b> (IUCN 2001; EN, B2ab(ii,iii))

Dupont's Lark is included in some regional catalogues for threatened species in Spain:

<i>Autonomous Community</i>	<i>Categories</i>	<i>Normative</i>	<i>Date of publication</i>
Aragón	Endangered	Decreto 49/1995	28 Mars 1995
Castilla-La Mancha	Vulnerable	Decreto 33/98	5 May 1998
Madrid	Near threatened	Decreto 18/92	4 April 1992
Murcia	Vulnerable	Ley 7/95	21 April 1995
Navarra	Endangered	Decreto Foral 563/1995	27 November 1995
Comunidad Valenciana	Vulnerable	Decreto 32/2004	27 February 2004

## **4 - FRAMEWORK FOR ACTION**

### **Goal**

The goal of the action plan is to improve the conservation status of the Dupont's Lark in Europe to favourable.

### **Objectives**

The objectives of the action plan are to:

1. Stop the decline of the Spanish population by 2015.
2. Ensure that conditions for population growth and range consolidation are in place by 2018.

The indicators for the objectives are:

- Population growth rates of key populations, as evidenced by local and national monitoring programmes, are equal or larger than one.
- Extinction of smaller populations is not taking place after 2015.

### **Results**

1. Habitat loss is no longer a threat for the species in its core areas of distribution.
2. Further fragmentation of existing populations is avoided.
3. Research gaps are filled and actions are in place to collect precise data about the species and its conservation needs.

## Actions

<i>Main Actions</i>	<i>Detailed action</i>	<i>Priority</i>	<i>Time scale</i>	<i>Organisations responsible</i>
<b>Result: 1. Habitat loss is no longer a threat for the species in its core areas of distribution</b>				
<b>1. Maintain and support the existing populations of the species</b>	1.1 Designate as protected areas all sites containing important breeding populations (see Annex 2)	High	Short	National and Regional governments
	1.2 Define criteria based on the habitat requirements of this species to be used when assessing plans, projects or changes of land-use in the areas of occupation of the species.	High	Short	National and Regional governments, researchers and NGOs
	1.3 Include the species among the priority for funding species under the EU LIFE Programme to stimulate the development of specific conservation projects.	High	Short	European Commission
	1.4 Evaluate the effect of past and existing measures in the Rural Development Plans, targeted at steppes and promote those that favour conservation of suitable habitat conditions for the species. (E.g., avoid reforestation on steppe).	High	Medium	NGOs, Regional governments
	1.5 Include the species areas of occupancy into no-go areas for wind farms, solar plants, power lines, urban development and transport infrastructure through mapping and planning.	High	Medium	Regional Governments, planning authorities

	1.6 Improve the enforcement and control on illegal rubbish dumps.	Medium	Ongoing	Regional Governments, Municipalities, Police
	1.7 Restore good quality habitat for the species in the surroundings of existing populations through regeneration of natural steppe (encouragement of desertion of crops, removal of reforestations in topographically adequate areas, removal of rubbish dumps and other measures of environmental restoration).	High	Long	Regional governments, planning authorities
	1.8 Promote sheep grazing through Rural Development Measures to secure the maintenance of the good quality habitat for the species.	Medium	Long	National and Regional governments
	1.9 Improve the public understanding and support for the conservation of steppes.	High	Ongoing	Regional governments and NGOs
<b>Result: 2. Further fragmentation of existing populations is avoided</b>				
<b>2.Reinforce marginal populations</b>	2.1 Identify habitat connection opportunities to restore the links between the isolated populations (e.g. small populations in Andalusia and Murcia, or local population patches in Northern Spain) and source populations.	High	Short	Researchers, NGOs, regional governments
	2.2. Promote habitat conservation and restoration projects (see 1.4 and 1.7) that can improve their connectivity to source populations. (e.g. connecting the populations of south of Spain and Zamora with Iberian mountains)	Medium	Long	Regional governments, planning authorities, NGOs

	2.3 Through agri-environmental schemes and Natura 2000 management plans, promote suitable agricultural practices (fallow lands, borders, uncultivated lands, extensive dry lands, etc.) among patches of habitat with presence of the species.	High	Short	Regional governments
	2.4 Avoid transformations in the use of land (irrigated lands, wind farms, etc) among patches of nearby habitat used by the species that make difficult the connectivity among populations.	Medium	Medium	Regional governments, planning authorities, NGOs
<b>Result 3. Research gaps are filled and actions are in place to collect precise data about the species and its conservation needs.</b>				
<b>Research and policy development</b>	3.1 Research and promote special habitat management measures for the steppe habitat and integrate them in nature conservation and rural development programmes.	High	Medium	Regional governments, planning authorities, NGOs
<b>Monitoring</b>	3.2 Develop a coordinated monitoring scheme for the species across the regions and municipalities where it breeds.	Medium	Short	Regional governments, NGOs and researchers

<b>Research</b>	3.3 Promote the scientific research on habitat selection, restoration and dispersal in order to support the measures of habitat regeneration and connection.	Medium	Medium	Researchers and regional governments
	3.4 Improve the knowledge over the ecology and biology of the species, especially what refers to its productivity, feeding, juvenile dispersion and wintering.	Medium	Medium	Researchers and regional governments
	3.5 Evaluate methods of intra specific attraction by means of playback in patches of unused habitat	Medium	Medium	Researchers and regional governments
	3.6 Research the suitability and feasibility of conservation methods <i>ex situ</i> .	Low	Long	Researchers, Regional governments
	3.7 Evaluate the effects of predation, especially in marginal populations and develop measures to reduce it.	Medium	Medium	Researchers
	3.8 Finalize the genetic characterization of the species and its populations.	Medium	Long	Researchers

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## ANNEX 1

### Threats importance in Spain

	Threat score
<b>1. Habitat Loss</b>	
1.1.Agricultural intensification	Critical
Land consolidation	High
Ploughing of steppes	Critical
Irrigation	Critical
1.2. Reforestation	Critical
1.3 Shrub succession due to low grazing load	High
1.4 Mining activities	Medium
1.6 Infrastructures	Low
1.7 Rubbish dumps	Low
1.8 Urban development	Medium
<b>2. Habitat fragmentation</b>	
2.1. Infrastructure development	Critical
<b>3. Predation</b>	
	Low
<b>4. Non- natural mortality</b>	
4.1.Collision in power lines	Low
4.2. Collision in win farms	Low
4.3. Roads accidents (run over)	Low

## ANNEX 2

### Most important sites for the species and their status

	Population Name	Autonomous Community	Province	Area (ha)	Min (males)	Max (males)	Year	Protected Area (%)	Protected areas name	Type of protected area
1	Las Bardenas	Navarra	Navarra	460	22	22	2007	100	Bardenas Reales (ES090)	SPA
2	Ablitas	Navarra	Navarra	460	35	38	2007	95	Peñadil, el Montecillo y Monterrey (ES2200042)	SCI
3	Tábara	Castilla y León	Zamora	170	15	17	2007			
4	Zamora-oeste	Castilla y León	Zamora	1,590	37	42	2007	14	Arribes del Duero (ES0000118)	SPA
5	Soria-Sur y Altos de Alcolea	Castilla y León, Castilla-La Mancha	Soria, Guadalajara	41,580	583	688	2007	21	Altos de Barahona (ES0000203) y Páramos de Layna (ES0000255)	SPA
6	Hoces del Riaza	Castilla y León	Segovia	960	56	71	2007	54	Hoces del Río Riaza (ES4160008)	SPA
7	Hoces del Duratón	Castilla y León	Segovia	1,485	49	63	2007	44	Hoces del Río Duratón (ES0000115)	SPA
8	Tardienta	Aragón	Huesca	80	17	17	2007	20	Sierra de Alcubierre (ES0000295)	SPA
9	Campo de San Gregorio	Aragón	Zaragoza	7,720	10	131	2007			

	Population Name	Autonomous Community	Province	Area (ha)	Min (males)	Max (males)	Year	Protected Area (%)	Protected areas name	Type of protected area
10	Val de Urrea	Aragón	Zaragoza	1,890	75	82	2007	56	Dehesa de Rueda-Montolar (ES2430090)	SCI
11	Los Monegros	Aragón	Zaragoza	5,420	97	99	2007	90	Estepas de Monegrillo y Pina (ES0000180)	SPA
12	Aranda de Moncayo	Aragón	Zaragoza	710	34	39	2007	0		
13	Campo de Belchite	Aragón	Zaragoza	7,280	232	232	2007		Estepas de Belchite-El Planerón-La Lomaza (ES0000136)	SPA
14	Longares-Mezalocha	Aragón	Zaragoza	140	12	16	2007	35	Río Huerva y Las Planas (ES0000300)	SPA
15	Calatayud	Aragón	Zaragoza	3,600	87	112	2007	63	Muelas de Jiloca (ES2430101)	SPA
16	Lécera	Aragón	Zaragoza	100	15	15	2007			
17	Parameras de Molina-Monasterio de Piedra	Castilla-La Mancha, Aragón	Guadalajara, Zaragoza	6,940	267	305	2007	4	Cuenca de Gallocanta (ES0000017)	SPA
18	Segura de Los Baños-Moyuela-Muniesa	Aragón	Zaragoza, Teruel	5,870	156	168	2007	6	Desfiladeros del Río Martín (ES0000303)	

	Population Name	Autonomous Community	Province	Area (ha)	Min (males)	Max (males)	Year	Protected Area (%)	Protected areas name	Type of protected area
19	Albalate del Arzobispo-Urrea de Gaen	Aragón	Teruel	190	44	44	2007	96	Desfiladeros del Río Martín (ES0000303)	
20	Altiplano de Teruel	Aragón	Teruel	24,250	395	460	2007	20	Desfiladeros del Río Martín (ES0000303)	SPA
21	Blancas-Odón-Torralba de Los Sisonos	Aragón	Teruel	4,470	175	177	2007	66	Parameras de Blancas (ES0000302)	SPA
22	Molinos-Hoya de Ejulve	Aragón	Teruel	830	28	28	2007	37	Río Guadalope y Maestrazgo (ES0000306)	SPA
23	Villar del Salz	Aragón	Teruel	420	13	13	2007	0		
24	Pozondón	Aragón	Teruel	1,690	38	38	2007	81	Parameras de Pozondón (ES0000308)	SPA
25	Celadas	Aragón	Teruel	1,200	13	17	2007	0		
26	Sierra de Javalambre	Aragón	Teruel	970	75	77	2007	39	Sierra de Javalambre II (ES2420129)	SCI
27	Ballobar-Ontiñena	Aragón	Huesca	70	3	4	2007	70	El Basal-Las Menorcasy llanos de Cardiel (ES0000183)	SPA

	Population Name	Autonomous Community	Province	Area (ha)	Min (males)	Max (males)	Year	Protected Area (%)	Protected areas name	Type of protected area
28	Riba de Saelices	Castilla-La Mancha	Guadalajara	1,547	37	54	2007	0	Alto de Tajo y Tajuña	IBA
29	El Pobo de Dueñas-Tordelpalo	Castilla-La Mancha	Guadalajara	2,300	35	42	2007	0		
30	Uclés-Saelices	Castilla-La Mancha	Cuenca	750	33	38	2007	0	Tarancón-Ocaña-Corral de Almaguer	IBA
31	Landete-Ademuz	Castilla-La Mancha, Valencia	Cuenca, Valencia	2,550	109	128	2007	0		
32	Carboneras de Guadazaón	Castilla-La Mancha	Cuenca	1,096	9	16	2007	0		
33	Zafra de Zancara	Castilla-La Mancha	Cuenca	120	14	14	2007	0		
34	Valeria	Castilla-La Mancha	Cuenca	690	36	39	2007	100	Hoz del Río Gritos y Páramos de Valeras (ES0000160)	SPA
35	Chinchilla	Castilla-La Mancha	Albacete	350	11	12	2007	0		
36	Sierra del Picarcho	Murcia	Murcia	1,520	27	35	2007	0		

	Population Name	Autonomous Community	Province	Area (ha)	Min (males)	Max (males)	Year	Protected Area (%)	Protected areas name	Type of protected area
37	Gádor	Andalucía	Almería	270	4	5	2007	100	Sierra de Gador y Enix (ES6110008)	SCI
38	Las Amoladeras	Andalucía	Almería	60	3	4	2007	100	Cabo de Gata-Nijar (ES0000046)	SPA
39	Padul	Andalucía	Granada	690	8	11	2007	0		
				<b>13,2418</b>	<b>3,011</b>	<b>3,304</b>			<b>59% coverage with SPAs</b>	

### ANNEX 3

#### **National legal status.**

<b>Country</b>	<b>Legal protection</b>	<b>For game species, give opening/closing dates</b>
<i>Spain</i>	Yes, Vulnerable (Orden MAM/2784/2004)	n/a

#### **Recent conservation measures.**

<b>Country</b>	<b>Is there a national action plan for the species?</b>	<b>Is there a national working group?</b>
<i>Spain</i>	No. Spain plans to develop a national action plan as soon as possible	No for the moment

#### **Ongoing monitoring schemes for the species.**

<b>Country</b>	<b>Is there a national survey / monitoring programme?</b>	<b>Is there a monitoring programme in protected areas?</b>
<i>Spain</i>	Yes, a big monitoring programme has been developed during the last 4 years (2003-2007)	Yes, in protected and non-protected areas. It's in all the areas where the species has been detected, independent if it has been detected during this monitoring programme

#### **Overview of the coverage of the species in networks of sites with legal protection status.**

<b>Country</b>	<b>Percentage of national population included in IBAs</b>	<b>Percentage of population included in Ramsar sites</b>	<b>Percentage of population included in SPAs<sup>1</sup></b>	<b>Percentage of population included in protected areas under national law</b>
<i>Spain</i>	50-90%	0-10%	10-50%	0-10%

