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THE STATUS OF THE COMMON CRANE (*GRUS GRUS*) IN EUROPE - BREEDING, RESTING, MIGRATION, WINTERING, AND PROTECTION

HARTWIG PRANGE
Martin-Luther-University Halle- Wittenberg, prange@landw.uni-halle.de

THE STATUS OF THE COMMON CRANE (*GRUS GRUS*) IN EUROPE - BREEDING, RESTING, MIGRATION, WINTERING, AND PROTECTION

HARTWIG PRANGE,[1,2] Institute of Animal Breeding and Husbandry with Veterinary Clinic, Martin-Luther-University Halle-Wittenberg, D-06108 Halle/Saale, Germany

Abstract: At present, about 160,000 and 100,000 cranes are migrating on the West-European and on the Baltic-Hungarian routes, respectively, from the northern, middle, and northeastern parts of Europe. On both routes, the resting maxima, simultaneously determined since the 1980's, has increased three-fold. This increase in migratory cranes is the result of shorter migration routes with higher return rates, a growing passage from the northwestern part of Russia beginning in the 1990's, and a protected status in the European Union at breeding as well as at many resting and wintering sites. Hence, the cranes learn to find and use new breeding and resting locations. Further changes in the migratory behaviour are a 2 to 4 weeks earlier return of the brood-birds in spring and a likewise delayed departure of the last crane groups in autumn. Wintering locations in Western Europe have been shifted to the north: in 1980/81 some 100 cranes wintered in France, whereas in 2000/2001 there were about 68,000 birds doing so.

In several European countries there are working groups for the protection of cranes. Every year, the German group organizes an internal meeting to co-ordinate activities. Its mostly honorary members supervise the protection of the breeding and resting places over the whole country. About 50 autumn resting places with 200 up to 50,000 cranes at maximum, are systematically watched by the experts. The state co-ordinator enters the data obtained into an annual synopsis. A survey of crane resting in Germany over 25 years is available. The European Crane Working Group co-ordinates the protective strategies, data acquisition, and ringing of birds. It supports public relations, the exchange of information, scientific research, and European Crane Workshops. The positive development of the crane population in Europe is the result of the cooperation of all parties concerned. It convincingly shows that intense cultivation of the land can be consistent with successful execution of essential protective measures.

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Key words: breeding, Common Crane, European/German Crane Working Group, *Grus grus*, migration, protection, resting, wintering

THE EUROPEAN CRANE WORKING GROUP (ECWG)

Crane working groups have been formed in many European countries (Prange 2003a). The ECWG is promoting the exchange of crane information in Europe, enabling scientists and nature conservators from the countries to meet at conferences, coordinate the European ringing program, and continuously summarize the state-of-the-art knowledge in proceedings. Five European meetings have been held: in Hungary (1985, 15 countries), Estonia (1989, 23), Germany (1996, 20), France (2000, 15), Sweden (2003, 22), and a smaller one in Spain (1994, 13). For two decades the group has been working together within the European framework in an increasingly unified way. However, the economic disparity between eastern and western Europe still prevents many crane researchers from eastern countries from attending meetings.

An international data base for ringed and radio-tracked birds is being developed for the European crane ringers in the ECWG (Miikulainen 1995, Alonso and Alonso 1999, 2003, ECWG 2002, Rinne 2003). Future efforts of the European Group are to:

- organize the European Crane Workshops,
- develop strategies to protect breeding, resting, and wintering sites,
- coordinate the ringing and recording programs,
- combine EC extension programs with a re-moistening of resting regions,
- promote scientific investigations within international cooperation,
- create programs for young people contributing to the natural wildlife and preservation,
- and to exchange topical data via the Internet.

THE GERMAN CRANE WORKING GROUP

In Germany, cranes have been monitored in their breeding areas and in up to 50 resting sites for about 25 years (Mewes 1996a, b, 1999, 2003, Prange 1989, 1995a, b, 2002, 2003, Mewes et al. 2003). Further tasks of the German Crane Working Group are to:

- ensure the conservation of the crane habitats,
- guide nature tourists to observation points near the resting sites,
- carry out scientific work and promote international cooperation,

[1] Present address: Emil-Abderhalden-Str. 28, D-06108 Halle/Saale, Germany, E-mail: prange@landw.uni-halle.de, FAX: 0049 345 5522501

[2] The author was the coordinator of the ECWG from 1989 to 2003.

- organize a national meeting each year,
- and to run a Crane Information Centre within the biggest resting region at the Baltic sea coast (Ruegen-Bock-area).

The ringing of about 600 cranes, partly with radio transmitters, is coordinated by this centre in Groß Mohrdorf near the city of Stralsund.

Development of the Breeding Crane Populations

Germany is the northwestern boundary of the distribution of breeding cranes with the highest breeding density in its northeastern states (Mecklenburg-Western Pomerania: ≥ 1,500 pairs, Brandenburg: ≥ 1,200 p., Mewes 1996a, b, 1999, 2003, Prange et al. 1999b).

In Central Europe, the population shows remarkable growth (Fig. 1). It should be noted that the total number of breeding pairs in Germany (2003: about 3,800) has increased 6-fold over 3 decades. A real increase and improved methods of observation and record keeping have contributed to this result (Prange 1989, Mewes 1996a, 1999, 2003, Nowald et al. 1999, Prange et al. 1999a, b). This increase has been observed since the beginning of the 1970's. Prior, the crane population was in decline for two centuries, reaching its lowest level in the 1950's.

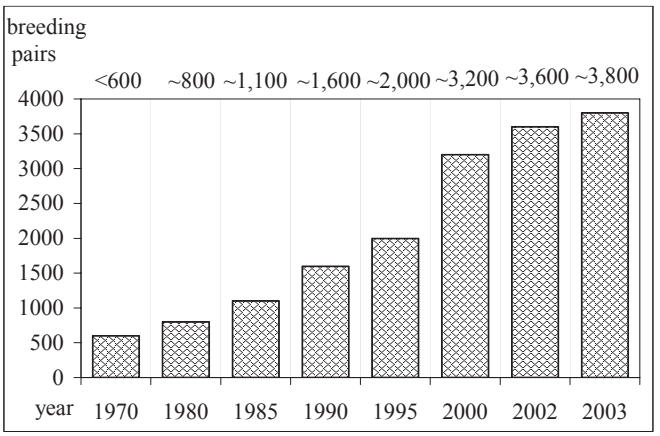

Fig. 1. Population development of the Common Crane in Germany.

This sustained growth is due to an increase in the traditional breeding regions and re-colonization of areas in the South, West and North resulting in a 150 km shift in the western distribution boundary. The reasons for this increase are improved protected status of the birds and their habitats on their whole western flyway, shorter migration courses, and an earlier onset of breeding. Within the traditionally populated areas, small moist-damp regions - even in the open surroundings and close to settlements - are increasingly occupied as breeding grounds.

An increase of breeding populations is reported from Scandinavia, Poland, the Baltic countries, Finland, and regions of the Ukraine and Russia, too. New breeding of a few pairs is known in France, England, the Netherlands, and the Czech Republic (Swanberg and Bylin 1993, Gavris 1999, Lundgren 1999, Lundin et al. 1999, Nowald et al. 1999, Prange 1999, Prange et al. 1999a, b, Tofft 1999, Treuenfels 2000, Lundin 2001, 2003, Bobek et al. 2003, Budrys 2003, Hake 2003, Markin 2003, Mewes et al. 2003, Salvi 2003a). The reproduction results of different European regions are shown in Table 1.

Table 1. Common Crane reproduction in different parts of Europe.

	Central Europe	Scandinavia	North-eastern Europe
• Breeding pairs with juv	65 %	55 %	?
• Juv/pairs with breeding attempt	0.90	0.75	0.70
• Juv/successful pairs	1.40	1.20	?
• Juv at the peak of resting	13–15 %	11–13 %	11–12 %
• Direction of population size change	↑↑↑	↑↑	↑ ?

Migration Routes in Central and Western Europe

At present, about 160,000 and 100,000 cranes are migrating on the West-European and on the Baltic-Hungarian route (Fig. 2), respectively. On both routes, the resting maxima simultaneously determined between 1980 and 2003 has increased three-fold (Prange 1989, 1995a, 1996, Fintha 1999a,b, Prange et al. 1999a, b, Salvi 2003a,b, Végvári 2003, Végvári and Tar 2003) (Fig. 3).

The Baltic-Hungarian route is used mainly by cranes from north-eastern Europe as the Finnish ringed cranes show. Less than 5 % of the Scandinavian birds use this route. In comparison with it, the West-European route is used mainly by North- and Central-European birds with a high percentage coming from the North-east (Table 2).

On both routes there are now 250,000 cranes migrating. Not as much is known about the number of cranes using the East-European and Asian migration routes (Fig. 4) (Litvinenko and Neufeldt 1988, Markin and Sotnikova 1995, Prange 1995a, b, 1999, 2002, 2003, Meine and Archibald 1996, Urban 1996, Ashtiani 1999, Gavris 1999, Grinchenko et al. 1999, Rahmani 1999). World-wide the total population of the Common Crane amounts to more than 400,000 birds.

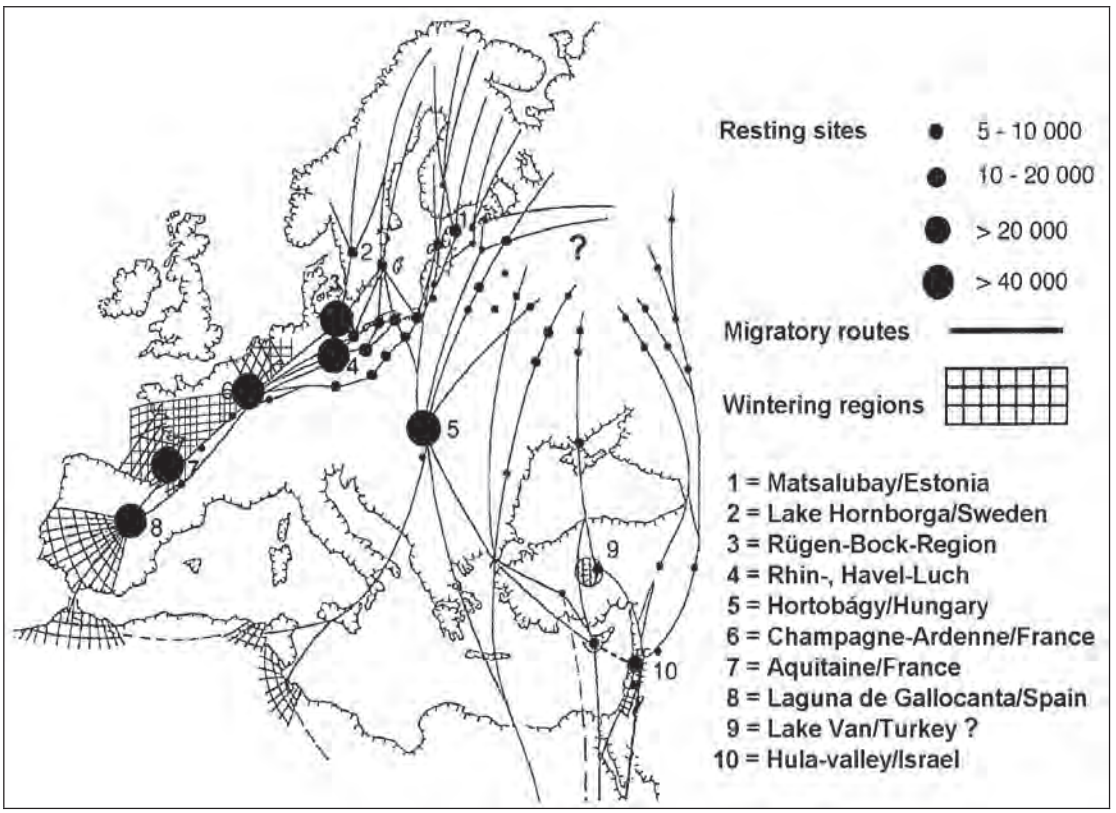

Fig. 2. Main migratory routes in Europe.

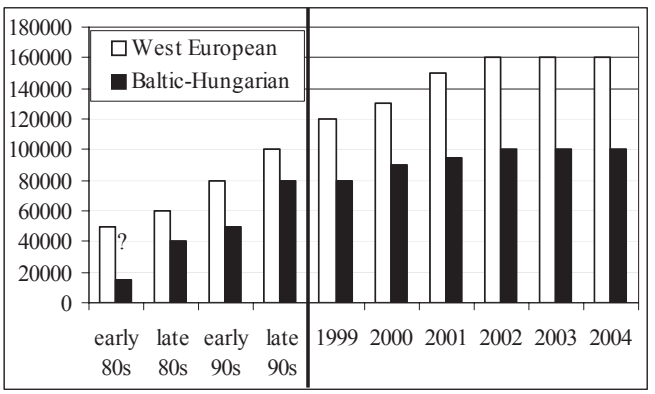

Fig. 3. Increase of the crane migration on the West-European and the Baltic-Hungarian route over three decades.

Table 2. Estimation of the populations 2002/03 on both migratory routes through Western Europe (West) and the Baltic-Hungarian region (South).

Country of origin	Population	Tendency	Departing to the West	Departing to the South
Scandinavia	70,000	↑	65,000	5,000
Germany	20,000	↑	20,000	?
Poland	35,000	↑	30,000	5,000
Baltic countries	30,000	↑	15,000	15,000
Finland	60,000	?	15,000	45,000
North-west of Russia	?	?	?	?
		Total	~ 160,000	~ 100,000

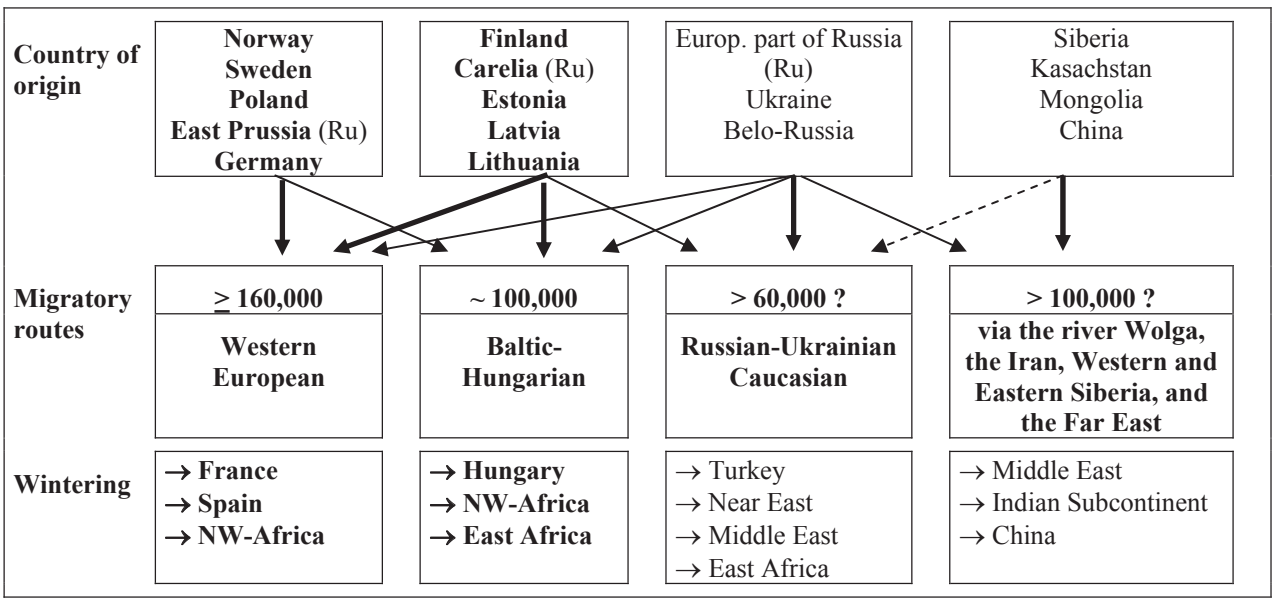

Fig. 4. Migratory routes of the Common Crane.

Resting Sites on the Migratory Routes

In middle and northern Europe, the spring migration is less significant than the autumn one, which at traditional resting sites is interrupted for weeks and months. The cranes depart to their winter quarters in batches, resting on their way.

After rearing their juveniles, the indigenous cranes gather at "assembly sites". The larger ones turn into "resting sites" of indigenous and passing populations during the months of September and October. Sites used by *Grus grus* usually are of three kinds:

- Sleeping sites are in shallow waters of ponds, lakes, rivers, swamps, and backwaters of the Baltic Sea. The cranes will go there in the evening and leave in the morning.
- Pre-assembly "stop-overs" are used at sleeping sites with small bodies of water. The short distance to the banks requires "stop-overs" at surrounding fields and meadows with short vegetation. From there, the water is approached at dusk.
- Food is collected daily, mainly from large-scale agricultural fields, up to a distance of 25 km from the sleeping sites.

At assembly and resting sites, supervised by the older cranes, the juveniles learn group-related behavior such as looking for and taking up food, the daily rhythm of resting, ease, and activity, and the social behaviour within the group. During this period, nourishing food, from stubble-fields and fresh seeds is taken up to store fat for the migration to come.

Agriculture, hunting and tourism should cooperate in developing suitable "crane management" at large resting sites, considering interests of all the parties concerned and attaining reasonable compromises to protect the cranes as well as agricultural fields. This project could also include "diversion

feeding" with crops spread out by farmers (Prange 2001, 2002, 2004, Gallato 2003, Koskinen et al. 2003, Le Roy and Mionnet 2003, Lundin 2003, Nowald et al. 2003).

Autumn Resting on the Western-European Migratory Route

This migratory route includes larger resting regions in Sweden, northern Poland, northern Germany, north-eastern and south-western France, and north-western Spain.
The **stopover** sites can be classified in 4 categories:

- **Assembly sites** of indigenous cranes, occupied between July and September.
- **Assembly and resting sites** of indigenous and passing cranes ("long-term rest") between August and November.
- **Stopover sites for passing cranes on migration** ("short-term rest") between October and November.
- **Resting and wintering sites** in south-western Europe with changing stops between November and March.

At present, the largest numbers of cranes rest at sites in Eastern Hungary (Hortobágy: up to 70,000), in the Northwest of France (Lac du Der: up to 60,000), and in the Northeast of Spain (Laguna de Gallocanta), in the Southwest of France (Aquitaine), and in the Northeast of Germany (Ruegen-Bock region at the Baltic Sea coast, Linum-Nauen northwest of Berlin) with each up to 50,000 cranes at the peak of the resting season (Fintha 1999a, b, Le Roy 2002, Mewes et al. 2003, Salvi 2003b, Végvári and Tar 2003, and see Prange 1995a, b, Prange et al. 1999a, b, Lundin 2003, Salvi 2003a).

In north-eastern Germany there are about 50 resting sites known. In autumn there are from 200 to 50,000 cranes resting. They reached a peak of 130,000 cranes simultaneously at the resting climax in the second half of October 2001 and 2002 (Fig. 5). At the Baltic coast (Ruegen-Bock region) Scandinavian birds are resting, whereas in inland Germany mainly the resident and north-east European populations are found (Fig. 6).

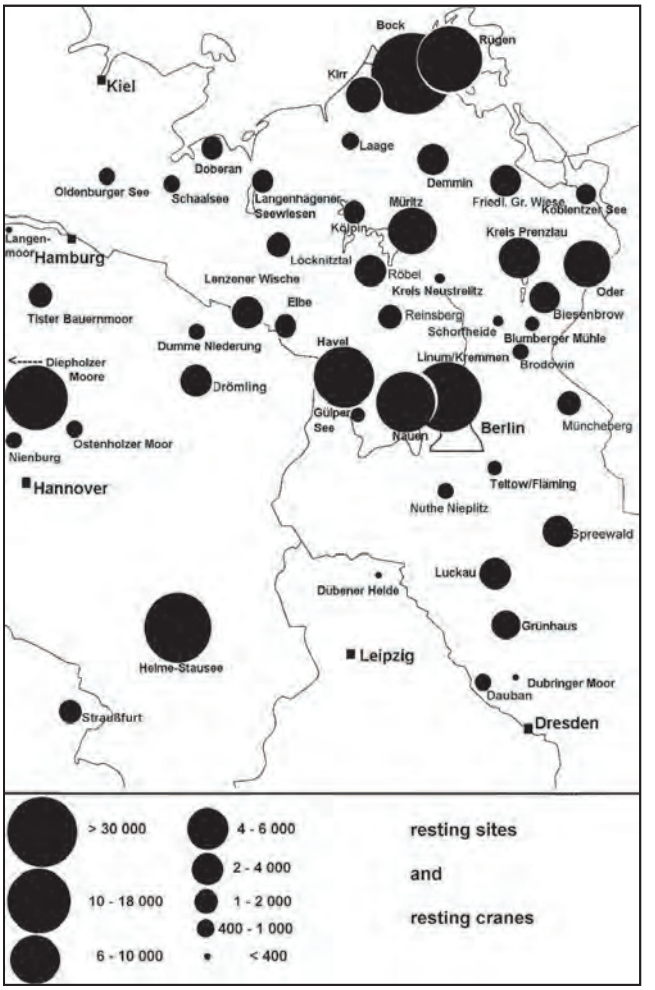

Fig. 5. Crane resting sites Germany (in 2002/03).

Changes in the Crane Migration over three Decades

Due to growth in population and an immense immigration from the Northeast, the number of migrating cranes in central Europe has increased from less than 50,000 at the beginning of the 1970's to more than 160,000 birds in the year 2004. A similar increase has also occurred in the passage on the Baltic-Hungarian route (Prange 1989, 2002, 2003b, 2004, Mewes et al. 2003). There are many reasons for the increase in the number of migratory cranes (Tables 3 and 4). Three key factors are: a) shorter migration routes with higher return rates, particularly in Western Europe, b) a growing passage from the north-western part of Russia from the beginning of the 1990's, maybe as a result of food shortage in agriculture (Anzigitova et al. 2003, Salvi 2003a, and c) protected status in most of the European countries in the areas of breeding as well as of resting and wintering. Hence, the cranes learn to find and open new breeding and resting locations.

In addition to these changes, brood birds are returning 2 to 4 weeks earlier in the spring. Likewise, the last crane groups are departing later in the fall. Thus, wintering sites in western Europe have been shifted to the North: in 1980/81 some 100 cranes wintered in France, whereas in 2000/01/02 there were about 70,000 birds (Fig. 7) doing so (Salvi et al. 1995, 1996, Salvi 1999, 2003a, Le Roy 2002, Prange 2002, Alonso et al. 2003). The positive development of the crane population is also the result of the readiness of all parties concerned to co-operate. Besides, the data convincingly shows that intense cultivation of the land can be consistent with the successful execution of protective measures necessary.

New Results and Developments

A large number of ringed and radio-marked cranes provided new information about individual histories, onset and interruption of breeding, behaviour at breeding, resting, and winter-

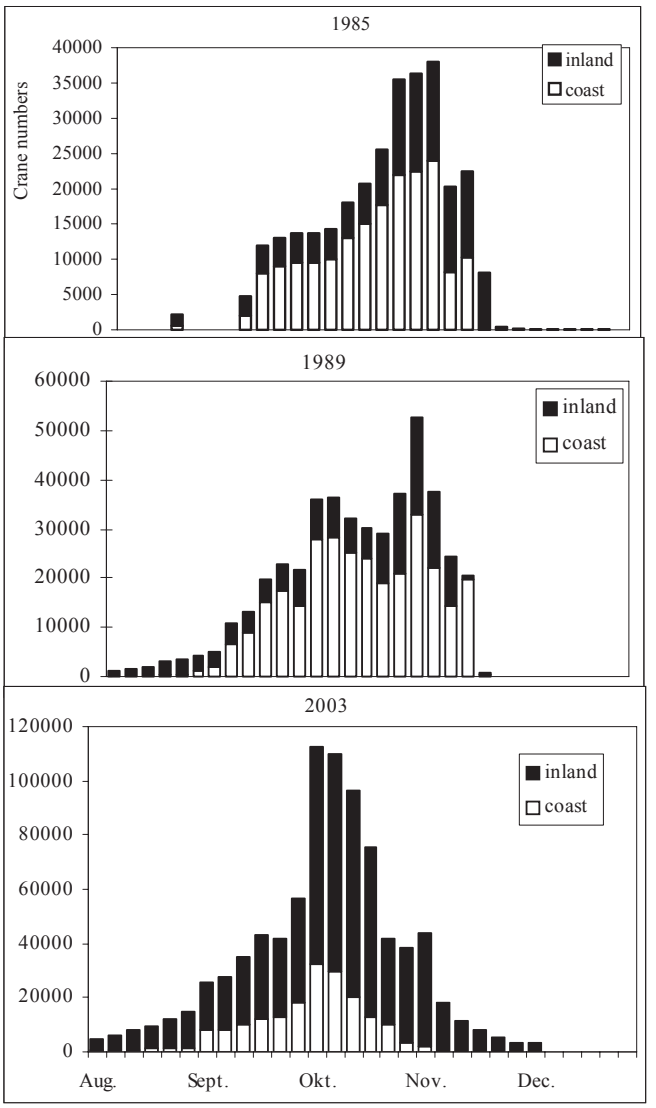

Fig. 6. Crane autumn resting in Germany (inland and Baltic sea coast).

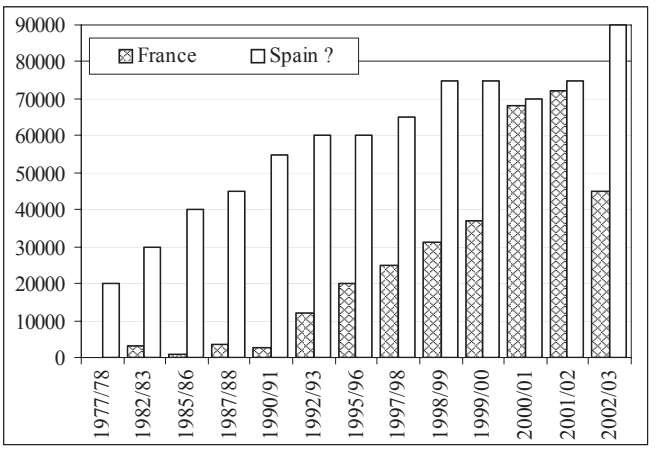

Figure 7. Common Crane wintering in France and Spain.

Table 3. Reasons for different population developments.

	Central Europe	Scandinavia	North-eastern Europe
• Migration distance /km	500-2,500	1,200-4,000	1,500-5,000
• Arrival at breeding places	February	March/ April	April/May
• Beginning with breeding	March	April	April/May
• Success of a second clutch	++	+	+/±

Table 4. Changes of the Central European crane population over two decades (1980 → 2000).

1.	• Increase of breeding pairs	• six times
	• More breeding pairs out of woodlands	
	• Extension of the breeding area	• 150 km to the West • 50 km to the North • 160 km to the South
	• Increase of breeding pair density	• double the density
2.	• Increase of migrating/ resting cranes	50,000 → 160,000
	• Changes in the origin of migrating cranes	• from North: from East/% 70:30 → 40:60
3.	• More wintering further north	• esp. France
4.	• 3 weeks earlier return of breeding pairs	• March → February

ing places, and about migration routes as they can be crossed and changed from year to year by a smaller portion of birds (Alonso and Alonso 1999, Alonso et al. 2003, ECWG 2002, Hermansson and Traneving 2003, Nowald et al. 1996, Prange 2001).

The cranes wintering sometimes in Germany belong to the indigenous population. Radio-tracked cranes from western Siberia were wintering in Israel : "Carolina" needed 70 days for flying about 6,500 km, resting 41 times whereas "Dora" needed 40 days for 6,000 km, resting at 10 sites (Alon et al. 2003). Wessling (2002) developed a new method of computer-analyzing crane calls, which allows one to differentiate between individuals in pairs and at breeding places.

Protective Measures

In Germany the crane is considered the leading bird of the

moist-damp areas. As a result, about 80% of the resting sites are officially protected. Protected status allows a vital crane population to thrive near human activity. In spite of the progress, problems remain. While not a significant factor in the European Union, hunting disturbs crane populations in other countries. Everywhere flights are being actively expelled from agricultural fields. In Germany as a rule, farmers do not get any compensation for evident damage. But, for some years now, within large resting sites "diversion feeding" has been adopted (always some acres, away from paths, using waste corn), which in combination with an appropriate crane management (leaving the corn fields as stubble-fields, early new sowing) has been incorporated in large-scale agriculture and financed sometimes by the local state government. The local crane working groups try to present conclusions considering the different interests and positions. Other efforts are necessary to lead nature tourists to observation points, away from the suitable sleeping sites at the resting places. A new big problem arises from rapidly growing wind power stations which should not be built on traditional resting places that are within a few kilometres of sleeping sites. The specific requirements for the protection of the Common Crane are summarized in Table 5. With the needs of the Common Cranes given consideration there is no reason to believe that we will not have this magnificent bird among us in abundance for generations to come.

Table 5. Specific requirements for the protection of the Common Crane in Europe.

1. Protection and supervision of resting and wintering sites
   - – protection status
   - – disturbances as small as possible
   - – availability of enough water
   - – restricted hunting
2. Ensuring food
   - – agricultural crane management
   - – artificial feedings for diversion
3. Protection of breeding sites
   - – protection status as far as possible
   - – restricted hunting and visiting
   - – reduction of predators, esp. wild boars
4. Guiding tourists
   - – offering information
   - – observation points

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