

## **Montagu's Harriers *Circus pygargus* in the Netherlands: Does nest protection prevent extinction?**

**Ben J. Koks and Erik G. Visser**

### **Zusammenfassung**

Die Wiesenweihe in den Niederlanden:  
Kann Nestschutz der Ausrottung vorbeugen?

Die Wiesenweihe war einst häufiger Brutvogel in den Niederlanden. In der 2. Hälfte des 20. Jahrhunderts fand ein massiver Bestandseinbruch statt, da natürliche Habitats wie Torfmoore und Heiden zerstört wurden und ein weiteres, die Dünen, sich in der Qualität verschlechterte. In den 1950er Jahren blieben nur 250 Paare; am Ende der 80er war die Art in Holland fast ausgestorben (BIJLSMA et al. 2001). Dank Stilllegungsregulierungen der EU als Teil des Landwirtschaftsplanes zur Reduktion der Getreidemengen wurden Tausende von Hektar bestellbaren Landes brachgelegt. Die Wiesenweihe profitierte von dieser Entwicklung, und von 1990 an wuchs die holländische Population wieder an, so dass zwischen 1990 und 2001 26-45 Paare festgestellt wurden (KOKS et al. 2001).

In diesem Aufsatz wird die Populationsentwicklung zwischen 1975 und 2001 beschrieben sowie die Auswirkungen von Naturschutzmaßnahmen in Getreide, ebenso die allgemeinen Ergebnisse unserer Nahrungsanalysen, in Kombination mit Maßnahmen zur Verbesserung der Qualität des bestellbaren Ackerlandes für die Vögel.

### **Montagu's Harrier as a breeding bird in the 20<sup>th</sup> century**

The number of breeding Montagu's Harrier in the period 1900-1930 comprised 500-1000 pairs and the species was widely distributed on heaths and peat-moors in the eastern and southern parts of the Netherlands. The Montagu's Harrier was also reported to be common in the dune-areas on the mainland coast and on the Wadden Sea islands and there is some proof that the species was a common breeding bird in extensively used farmland (especially in moist hayland meadows). From the 1950's onward the population crashed almost completely, but extinction was slowed down because the newly reclaimed polder areas like in Flevoland and on a smaller scale the Lauwersmeer area provided suit-

able breeding habitats. In the province of Flevoland the number of breeding birds reached a maximum of 45 pairs in 1980. A majority of these breeding pairs bred in new wood plantations in the immature polders (ZIJLSTRA & HUSTINGS 1992), a situation which came to an end in 2000 because this temporary habitat became unsuitable for breeding harriers. Therefore, the number of breeding pairs in the Netherlands continued declining and in 1987 the absolute minimum of 3 pairs were recorded on a national scale and it seemed unavoidable that the Netherlands would be the first European country where the Montagu's Harrier had become extinct as a regular breeding bird!

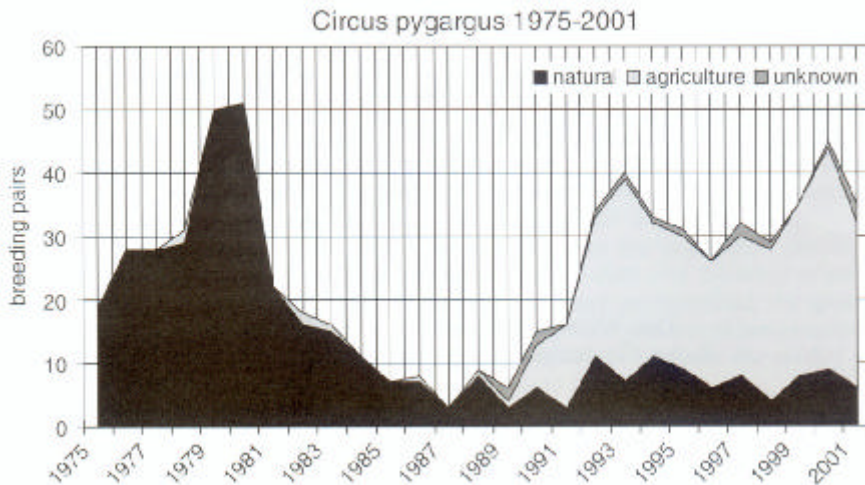


Fig. 1: Preferred breeding sites at Montagu's Harrier in the Netherlands 1975-2001. Black: natural or semi-natural habitat, grey: arable land, dark: unknown. - *Abb. 1: Bevorzugte Brutplätze der Wiesenweihe in den Niederlanden 1975-2001. Schwarz: naturbelassen, grau: Ackerland, dunkel: Brutplatz unbekannt.*

In 1989 a high percentage of highly productive arable land in the province of Groningen was put under a EU-regulation; the Mc Sharry-set-aside. Massive numbers of common voles *Microtis arvalis* were found in these set-aside fields and high numbers of raptors and owls were recorded in the Oldambt (KOKS & VAN SCHARENBURG 1997). In 1990 the first successful breeding case of a pair of Montagu's Harrier was found in a lucerne field in the area. This case marked the beginning of a new period for Montagu's Harriers in the intensively used Dutch landscape.

During the last two decades of the 20<sup>th</sup> century the preference for breeding places changed from natural or semi-natural (like wood plantations) to arable land (Fig. 1). From 1990 onwards three restricted areas were important for the small Dutch breeding birds; the Oldambt area, the southern part of Flevoland and the Lauwersmeer area. The Lauwersmeer is the only regularly used breeding area in the Netherlands were Montagu's do breed in a nature reserve, the birds in Groningen and Flevoland are 'farmland birds'. See Fig. 2 for the distribution in the period 1990-2001.

### The effects of nest protection in the Netherlands

In 1990 three juveniles fledged in a lucerne field in the Oldambt, Groningen. This nest was found more or less by coincidence and marked the start of a protection project of nests in crops in the Netherlands. Especially nests in lucerne fields (alfalfa) need special protection because harvesting takes place in

the egg-rearing period and even females can be killed when nests are not found before the harvest which usually takes place in May-June. Fig. 3 shows the choice of nest sites in the Netherlands in the period 1990-2001. Together with lucerne, wheat is another important crop for



Fig. 2: Distribution and long-term occupation of breeding sites of Montagu's Harrier in the Netherlands.  
 - Abb. 2: Verbreitung und langjährige Besetzung der Brutplätze der Wiesenweihe in den Niederlanden.

breeding pairs; oil-seed-rape, grass-seed-fields, winter barley etc. are regular used by breeding females. Wood plantations are a speciality of the Flevopolders and the majority of 'natural breeders' were found in the Lauwersmeer.

We calculated that 89 % of the recorded breeding pairs tried to breed ( $N = 148$ ). The mean clutch-size is  $3.89 \pm 0.11$  eggs/ pair ( $N = 79$ ) and the number of successfully fledged juveniles per nest is  $1.51 (\pm 0.17, N = 79)$ . Important causes of failure are human

disturbance (40%) and predation (52%). In 2000 we recorded two cases in which Red Foxes (*Vulpes vulpes*) were successful in killing breeding females on the nest (KOKS & VISSER 2000).

The percentage of failing nests in lucerne fields was highly reduced if special protection measurements were taken. Normally a square of 11 by 11 metre of not harvested crop, surrounded by electric fences, is sufficient to protect the nest (see photograph, Fig. 4). The question is if the present

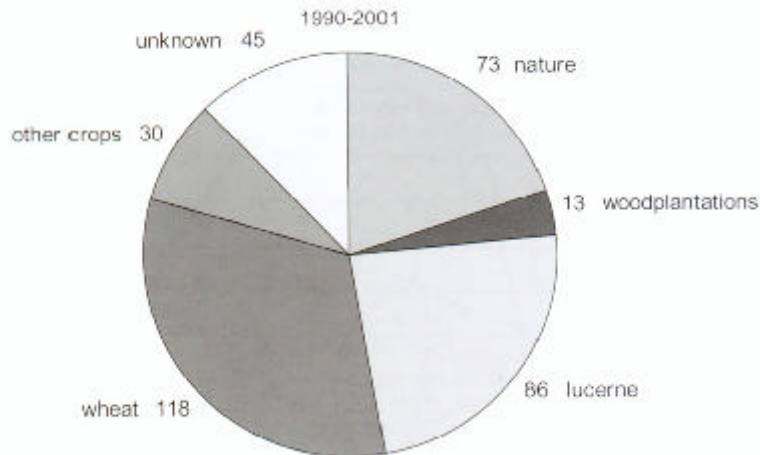


Fig. 3: Choice of nest habitat of Montagu's Harrier in the Netherlands 1990-2001. - *Abb. 3: Brutplatzwahl der Wiesenweihe in den Niederlanden 1990-2001. Im Uhrzeigersinn: naturbelassen, Schonungen, Luzerne, Weizen, andere Feldfrüchte, unbekannt.*

effort of protecting nests in arable crops is enough for a proper management and to maintain the small Dutch population of Montagu's Harrier.

The effect of the protection work was calculated by using the Mayfield method

(KOKS et al. 2001). However, in the present paper classical model predictions are compared with the results of our work in the Oldambt area. In Fig. 5 the results of this modelling are shown: without nest protection the number of breeding pairs would



Fig.4: Breeding site of Montagu's Harrier spared from harvest by electric fence. *Abb.4: Durch Elektrozaun von der Luzerneernte verschonter Brutplatz der Wiesenweihe.* Foto: Hans Hut.

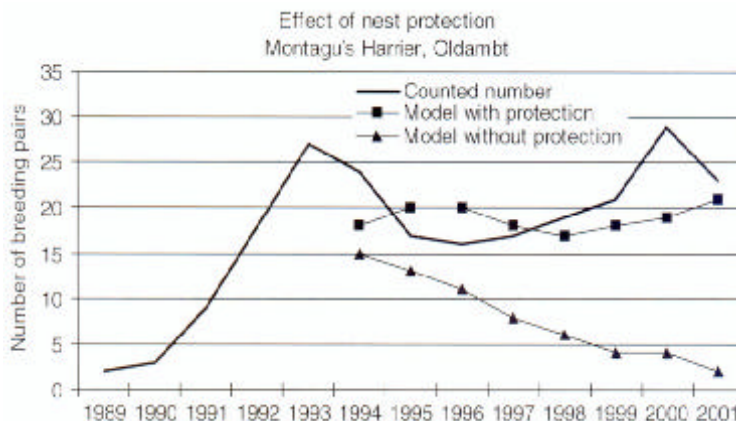


Fig.5: Number of breeding pairs of Montagu's Harrier according to model predictions compared to actually counted numbers. - *Abb. 5: Brutpaarzahlen der Wiesenweihe. Durchgezogene Linie: tatsächlich gezählt; Quadratlinie: Modellrechnung mit Schutzmaßnahmen; Dreieckslinie: Modell ohne Schutzmaßnahmen.*

decline and the Montagu's Harriers would disappear in less than 10 years as a regular breeding bird in the Netherlands (see also ARROYO & BRETAGNOLLE 1999).

One of the interesting results of the modelling was that the outcomes did not fit completely with the counted numbers of

breeding pairs. Especially in the year 2000 the counted number of breeding pairs is much higher than was predicted by the model. One plausible explanation for the difference is the possibility of immigration of birds born elsewhere in Europe to the Dutch breeding sites.

### How Dutch are the Dutch breeding birds?

The breeding population in the Netherlands is small and one hypothesis is that there must be immigration from other breeding populations elsewhere in Europe. The population recovery during the 1970's in the province of Flevoland was too fast to be explained by natural reproduction rates, and was only possible due to migration of birds born outside the Netherlands. The same holds for the rapid increase of the population in the Oldambt during the beginning of the 1990's.

From 1990 almost all juveniles which fledged in the Netherlands (> 95%) were ringed but it is quite clear that only low numbers of the observed adults (ca. 25%) are ringed. This implies that birds which

are found as breeding birds must have been born outside the Netherlands.

Proof from ringing recoveries indicate that in the period 1990-2001 at least two breeding birds were sighted in the Oldambt which did have metal rings from the German ringing-central *Vogelwarte Helgoland*. Unfortunately we could not read the full inscription of these metal rings but it is known that in the last decade only a few juveniles were ringed in the Northern part of Germany (with the exception of North-Rhine-Westphalia; pers. comm. D. Stiefel). On the other hand a male which was ringed in the Netherlands in 1992 was killed by a motorcar in Schleswig Holstein (see Fig. 5).

In the period 1911-2001 at least 1306 ju-



Fig. 6: Hypothetical connection of Dutch Montagu's Harrier populations with other European ones after ring recoveries. Outer circle: 300 km radius, within 77% recoveries (N =26). Small black circles: Other colonies in Europe with recoveries. - *Abb. 6. Hypothetische rZusammenhang der holländischen Brutkolonien mit anderen europäischen nach Ringwiederfunden. Großerer Kreis (300 km Radius): 77% (N=26) der Wiederfunde. Kleine schwarz ausgefüllte Kreise: weitere Kolonien mit Wiederfundmeldungen.*

veniles were ringed in the Netherlands, of which 8.5% were recovered (N = 111 ). If we look in more detail into these data the majority of birds which were recovered during the breeding season were reported back from a distance of less than 300 kilometres from the place where the birds were born (77%, N=26). If the hypothesis is right that there is a connection of the Dutch population with small populations within a distance of 300 kilometres, it seems plausible that there is a close relationship with the populations in Lower Saxony (40-80 pairs;

CLEMENS 1994, VON GREAVE pers. comm., MORITZ 1997), Schleswig Holstein (40-60 pairs, HOFFMAN 2001), North-Rhine Westphalia (18-45 pairs, HÖLKER 2000) and the southern part of Denmark (THORUP 2000). In Fig. 6 (map) we schematize our hypothesis and this figure shows which areas could be important sources that can deliver birds for the 'Dutch market'. On the opposite, birds born in the Netherlands can be exported abroad as breeding birds when they become mature.

#### **How to improve the quality of Dutch arable landscape**

Thanks to the outstanding fieldwork of Wim Schipper we know a lot about the diet choice of the Dutch Montagu's during

the 1960's and 1970's (SCHIPPER 1973). In several natural landscapes and the Flevo-polders the diet was diverse: passerines,

juvenile waders, lizards and small mammals were recorded as the most important prey species.

From 1992 onward data were collected which demonstrate that the Common Vole is by far the most numerous prey item (KOKS et al. 2001). The percentages of voles (in terms of biomass) differed between 15% in bad vole years and 74% in excellent vole years (N=3893 prey items). Meadow Pipit *Anthus pratensis*, Skylark *Alauda arvensis*, Yellow Wagtail *Motacilla flava* and Starling *Sturnus vulgaris* are important passerines and in terms of biomass juvenile lagomorphs (especially hares) are important as well. The densities of these prey species reach high numbers in some parts of the Oldambt landscape and the policy of the so called "farming-nature" is to raise the quantity of the prey species. Extensification of agricultural practices has al-

ready been proven to be a good tool for birds of prey and owls in the early nineties. The densities of Common Voles in set-aside fields were estimated to be 3-6 times more numerous than in regular farmland habitats (KOKS & VAN SCHARENBURG 1997). Numbers of breeding Skylarks and Quails *Coturnix coturnix* were also higher in set-aside field and nature strips (unpublished data SOVON).

In the Netherlands and especially in the province of Groningen special measurements are in practice in the so-called "blank area policy": special forms of set-aside (nature-set-aside) and the extensification of the borders of parcels of farmland. Special seed mixes with grass-seeds and herbs are sown by farmers; these measurements seem to be successful in areas where Montagu's occur as breeding birds.

### Future investigations

To further explore the hypothesis of exchange between Dutch and German populations of Montagu's Harrier, in 2002 a collaboration with harrier specialists and nature protection agencies in Lower Saxony was initiated. In the Netherlands, more attention will be paid to the impact of the farmland nature practices on the ecology

of prey species and the breeding success of Montagu's Harriers.

For this highly mobile species the sky is the limit and therefore European scientist and nature conservationists will have to collaborate to preserve this elegant breeding bird in our landscapes.

### Words of thank

In the first place we thank the organizers of "Würzburg Symposium" for the invitation. Kees van Scharenburg helped with the calculations of the model in Fig. 4. Dirk Zoetebier (SOVON) provided the other figures, and Kees van Scharenburg and Zwanette Jager made the English corrections. We like to thank Hans Hut for giving free permission to use his photographs for this paper. Without the help of our "monty"-colleagues Cor Dijkstra Rene Oosterhuis,

Romke Kleefsta and the 'supervolunteers' Peter de Boer, Luuk Draaijer, Gerda and Klaas Kanis, Jelle and Anneke Dijkstra, Freeke Rheebergen, Hilbrand Schoonveld and others it would have been impossible to do the protection work. We also like to thank the Provinces of Groningen and Flevoland for the financial support for our work. Last but not least we like to thank Gerrit Speek of the Dutch Ringing Centre in Heteren for his cooperation.

### Abstract

The Montagu's Harrier used to be a common breeding bird in the Netherlands. During the second half of the 20<sup>th</sup> century a massive de-cline took place due to the fact that natural habitats like peat-moors and heaths were destroyed, and another important breeding habitat - the dunes - deteriorated. In the 1950's only 250 pairs were left and at the end of the 80's the species had become almost extinct in the Netherlands (BIJLSMA et al. 2001). Due to set-aside regulations of the EU, as part of the Common Agricultural Policy of reducing the

amount of grains, thousands of hectares of arable land were laid fallow. Montagu's Harrier benefitted from this development, and from 1990 onward the Dutch population increased and between 26-45 pairs were found in the period 1990-2001 {KOKS et al. 2001 }.

In this paper the population development between 1975-2001 and the effect of nest protection in crops are described, the general results of our diet research in combination with measurements to improve the quality of the arable land for the birds.

### Literature

- ARROYO, B. & BRETAGNOLLE, V. (1999): Evaluating the long-term effectiveness of conservation practices in Montagu's Harrier *Circus pygargus* in France. - In: R. D. CHANCELLOR & B. U. MEYBURG (eds), Raptors at risk. World Working Group of Birds of Prey and Owls: 403-408.
- BIJLSMA, R. G., HUSTINGS, F. & CAMPHUYSEN, C. J. (2001 ): Algemene en schaarse vogels van Nederland (Avifauna van Nederland deel II). GMB Uitgeverij / KNNV Uitgeverij, Haarlem / Utrecht.
- CLEMENS, C. & RISCH, M. (o.J.): Schutzkonzept für Wiesenweihe in Niedersachsen. Gutachten Niedersächs. Landesamt für Ökologie, Hannover.
- HOFFMAN, D. (2001): Artenschutzprojekt Wiesenweihe *Circus pygargus* des Landes Schleswig Holstein. Abschlussbericht der Brutperiode 2001; Universität Trier - Institut für Biogeographie, Außenstelle Kiel.
- HÖLKER, M. (1999). Zur Umsetzung der EU-Vogelschutzrichtlinie in Ackerbaugebieten. Schutz der Wiesenweihe *Circus pygargus* in Deutschland. Berichte zum Vogelschutz 37: 85-92.
- KOKS, B. & van SCHARENBURG, K. (1997): Meerjarige braaklegging een kans voor vogels, in het bijzonder de Grauwe Kiekendief! De Levende Natuur 98: 218-222.
- KOKS, B. , van SCHARENBURG, & VISSER, E. (2001): The Montagu's Harrier *Circus pygargus* in the Netherlands: balancing between hope and despair. Limosa 74: 121-136.
- KOKS, B. & VISSER, E. (2000): Predatie door vossen *Vulpes vulpes* op broedende Grauwe Kiekendieven *Circus pygargus*. De Takkeling 8: 211-217.
- MORITZ, V. (1997). Wiesenweihen *Circus pygargus* in den Landkreisen Oldenburg und Diepholz 1996. Jahresber. Ornithol. Arb.gem. Oldenburg. 14: 99-110.
- SCHIPPER, W. J. A. (1973): A comparison of preyselction in sympatric Harrier *Circus* in Western Europe. Le Gerfaut 63: 17-120.
- ZIJLSTRA, M. & HUSTINGS, F. (1992): Teloorgang van de Grauwe Kiekendief *Circus pygargus* in Nederland. Limosa 65: 7-18.

Ben J. Koks & Erik G. Visser  
SOVON Dutch Centre for Field Ornithology, c/o Rijksweg 178  
NL-6573 DG Beek-Ubbergen  
www.sovon.nl