

Bittern *Botaurus stellaris*

Birds Directive – Annex I



Botaurus stellaris breeds throughout Europe, from central and eastern Asia, Russia to Japan and China.*

	AT	BE	BU	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HU	IR
Present														
	IT	LV	LT	LU	MA	NL	PL	PT	RO	SL	SV	SE	UK	
Present														

SPECIES INFORMATION

ECOLOGY

- In Europe, bitterns are widespread but patchily distributed in the west and more continuously distributed in the east;
- Populations in southern and central Europe are mainly resident, whilst those further north tend to be migratory;
- Both males and females are solitary animals, coming together only briefly for mating;
- Males are strongly territorial and will aggressively defend their range from other males;
- They are very secretive birds, and often the only sign of their presence is the sound of the males deep booming call;
- The nest consists of a loose platform of dead reed stems placed amongst standing reeds some 10-15 cm off the ground;
- The species has only one brood a year, 4-5 eggs are laid in April-May. The female is the only one to feed the young;
- The young can leave the nest after 12 days but often stay longer (up to 30 days). Fledging takes place between June and early August in northern Europe and in May-June in Mediterranean countries;
- Young birds disperse to surrounding reedbeds;
- The bitterns are fairly flexible in their choice of food, which is predominantly fish, eels, amphibians and insects.

* Drawing courtesy of RSPB

HABITAT REQUIREMENTS

- Bitterns are restricted to lowland swamps, marshes and other densely vegetated wetlands with areas of shallow unfluctuating standing water. They tolerate brackish water which means they also occur in estuaries, delta marshes and coastal reedbeds;
- They are found mainly in reedbeds which are in early stages of natural succession sometimes mixed in with other fen plants. In Italy the species is also found in rice fields;
- The bittern prefers a mosaic of wetland habitats containing reedbeds of varying ages, open water and flooded reed edges. The proportion of each habitat varies across its range (old reeds are important for nesting);
- The size of the male's home range is mainly dependent on the quality of the habitat and the presence of other males. It can vary considerably from 1 per 2ha in particularly favourable areas to 1 per 40-50 ha in other areas;
- Research in England originally indicated that booming males required a reedbed of at least 20 hectares in extent, but it appears that smaller sites may be utilised provided that other feeding areas are available nearby. In continental Europe, where there are highly productive reedbeds, bitterns can be found in some much smaller reedbeds, but these birds are dependent on the presence of a network of reed-fringed dykes or more open wetland habitats for foraging;
- Males are largely faithful to sites year after year but may move to other sites during the winter.

THREATS

The causes of decline in bittern populations are relatively well known and are more or less the same across the species range in Europe (only the most critical threats are listed here):

- Loss, degradation and fragmentation of habitats: Reedbeds represent an early stage of natural succession. In the past, natural processes such as severe floods and ice floes would keep back succession but nowadays most reedbeds are part of highly modified and fragmented wetland systems. The loss of these natural process is caused by human induced factors such as drainage and excessive water abstraction that causes the reedbeds to dry out. In many locations, only active, continuous management (involving inter alia raising water levels, harvesting and burning reedbeds, cutting invasive scrub or digging out of the reedbed) can prevent reedbeds from turning into other types of habitats that are far less suitable for wetland birds like the bittern;
- Food availability: This is closely linked to habitat degradation which leads to a lack of food during the breeding season. Starvation is the main cause of mortality amongst chicks. The sharp decline in eel numbers in parts of Europe is likely to have a significant impact. In some cases it may be that there is enough food present but it is not accessible, for instance the dykes may be too deep and steep sided to be used for foraging by bitterns;
- Pollution: Water quality is very important. Heavy silt loads can exacerbate the drying out of reedbeds, overstocking of fishponds can cause eutrophication. Eutrophication is also caused by excessive use of pesticides and fertilisers in the surrounding agricultural land. They are known to degrade the quality of the reeds and can lead to the development of anoxic sediments and toxic algal blooms. Bitterns are also at risk from heavy metals since they are at the top of the food chain;
- Predation: Predation of nests is a problem in many EU countries. Wild boars as well as invasive alien species like the American mink and Raccoon dog are amongst the most common predators;
- Human disturbance and recreational activities: can cause damage to the habitat (e.g. trampling in the reeds) and disturbance to the species at critical times. Motorised watersports such as water-skiing or jet skis can also cause noise disturbance and physical damage from the wake of boats etc.;
- Inappropriate commercial reed cutting: The commercial management of reedbeds is often beneficial for bitterns as it keeps back succession but problems do occur if too large an area is cut in any one year or if reeds are cut too late. This can result in a lack of adequate cover in winter and a lack of suitable nesting habitats in spring;

- Abandonment of grazing in wetland margins: This could lead to rapid succession and encroachment of other vegetation types that are not favoured by bitterns;
- Harsh winters: can have a significant impact on populations. Hard weather fluctuations are a natural process but there is some concern that the pace of population recovery is now too slow (indicating poor breeding success) and suitable wintering sites in south and west of Europe may no longer be available;
- Salt water intrusion and sea level rise: The collapse of sea defences and sea level rise could damage and degrade coastal wetlands as the influx of salt water causes changes to both vegetation composition and food availability.

MANAGEMENT PRACTICES FAVOURABLE TO BITTERN

Since habitat loss and degradation is considered to be the most significant threat to bittern populations in Europe, measures to protect and restore existing reedbeds is of major importance. Because reedbeds are unstable habitats, they require constant management to maintain the transitional phase of reedbed development favoured by bitterns. Two basic approaches to conservation management are required if natural processes are absent. The first is to retard the drying out of the reedbed, the second is to remove sections of reedbed on a rotational basis to ensure continuous provision of young reedbed.

Although modern farming rarely includes activities in wetlands, farming practices can play a role in conserving reedbeds for bitterns through preventive actions on the one hand (no drainage, limitation in fertiliser/pesticide use in surrounding areas, set aside schemes) and through regular management activities on the other (reedcutting, burning and livestock grazing, habitat restoration). These are described further below:

- Preventing further loss of reedbed: by limiting the further drainage or the ploughing up of wetlands and controlling any alterations in water levels both within existing SPAs and in the wider countryside;
- Avoiding excessive water abstraction or inappropriate water levels: which could lead to the drying out and fragmentation of the reedbeds. The ideal scenario is for reedbeds to be flooded in winter/ spring and for them to retain water during the summer as well. If sluices, ditches, bunds etc are introduced to help regulate the water flow within the area these should be developed in a way that makes them accessible to bitterns;
- Limit use of pesticides, fertilisers or spreading of manure: in areas immediately surrounding the reedbeds and if possible in the wider catchment area;
- Avoid disturbance during critical periods: such as driving of tractors along reedbed margins, or hunting near bittern nest sites;
- Encouraging a large mosaic structure of reedbeds: This is especially important in commercial reedbeds. Regular cutting of reeds is beneficial as it helps stem succession, but it is important that not all of the area is cut at once and that some reed patches are left uncut to create a mosaic structure. Such patches ensure closed vegetation cover suitable for nesting already at the beginning of the breeding season. Homogeneous reeds with even-aged stems are usually not preferred because they are too dense. The ideal reed harvesting practice could be a rotational regime where at least 20% of the reed is left uncut per year;
- Adjust reed cutting times: The cutting period should also be limited in time to avoid being done too late in season when the bitterns have settled on their winter territories or too early that it removes suitable nesting sites. Current good practice suggests that the cutting period should be limited to 15 Nov – 15 March;
- Controlled burning: of reedbeds, this traditional management technique is done during the winter when the reed is dead and dry. Like reed cutting it helps to clear away accumulated litter and maintain early succession stages but it must be carefully regulated to avoid causing damage to the bittern's habitats, e.g. by burning only patches of reeds at a time to maintain a mosaic structure;

- Grazing of reedbed margins: is beneficial as it helps keep the vegetation open and in a mosaic structure with abundant growth in summer but eaten back in winter; the grazing intensity should be kept low (c 0.5 LU/ha from 15 August to 15 November);
- Scrub removal: Removal of late succession plants such as willows, alder and birch is mostly done by raising water levels, cutting and burning or grubbing;
- Reedbed restoration: to help restore or recreate reedbeds in agricultural areas adjacent to wetlands or on former drained wetlands, or next to fishponds. This could help increase substantially the area of suitable wetland.

OTHER SPECIES BENEFITING FROM THESE CONSERVATION MEASURES

Like every species, the bittern has particular habitat requirements that are unique to its lifecycle and to its long term survival. However, as the bittern is essentially a species of reedbeds and marshes, several of the measures mentioned above would also benefit other species protected under the Birds Directive that are typical of these wetlands:

Purple Heron, *Ardea purpurea*
 Water Rail, *Rallus aquaticus*
 Little Crane, *Porzana parva*
 Bearded Tit, *Panurus biarmicus*

Marsh Harrier, *Circus aeruginosus*
 Savi's Warbler, *Locustella luscinioides*
 Moustached Warbler, *Acrocephalus melanopogon*
 Great Reed Warbler, *Acrocephalus arundinaceus*

In relation to the Habitats Directive certain taxonomical groups could benefit from implementation of the measures, such as dragonflies and other insect groups; one example of a listed species is the green hawker *Aeshna viridis*.

OBLIGATIONS ARISING FROM THE BIRDS DIRECTIVE

The bittern is protected under the EU Birds Directive 79/409/EEC, listed in Annex I of the Directive. As a result, Member States must take the following measures to ensure its conservation.

General requirements

Member States are required to take the requisite measures to maintain the population of the bittern at a level which corresponds in particular to its ecological, scientific and cultural requirements, or to adapt the population of the species to that level (cf Article 2).

To achieve this, Member States are required to preserve, maintain or re-establish a sufficient diversity and area of habitats for the bittern which should include primarily the following (cf Article 3):

- creation of protected areas;
- upkeep and management in accordance with the ecological needs of habitats both *inside* and *outside* protected area;
- re-establishment of destroyed habitats;
- creation of habitats.

Protecting the species

Member States should take the requisite measures to establish a general system of protection for the bittern throughout its natural range within Europe, and in particular to prohibit the following (cf Art 5):

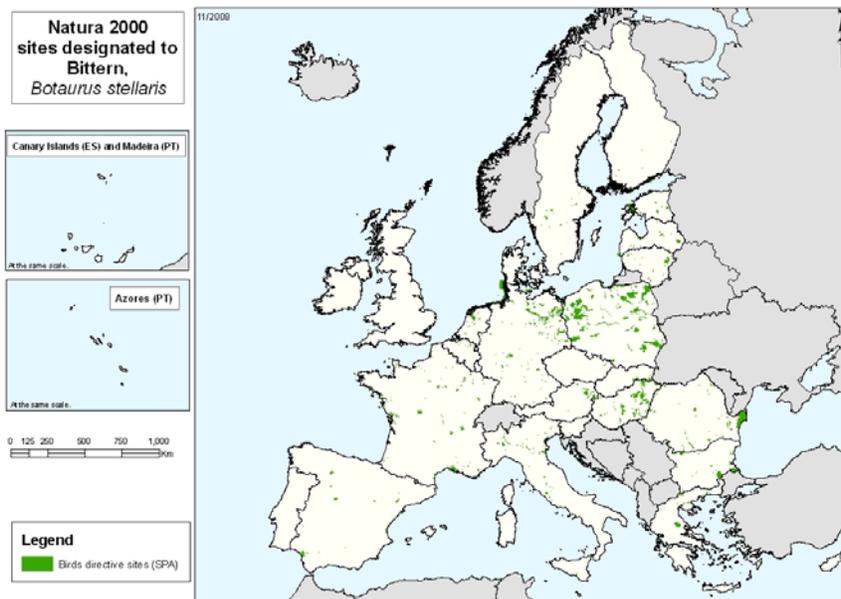
- deliberate killing or capture by any method;
- deliberate destruction of, or damage to, their nests and eggs or removal of their nests;
- taking their eggs in the wild and keeping these eggs;

- deliberate disturbance of these birds particularly during the period of breeding and rearing, in so far as this would have a significant negative effect on the birds;
- keeping birds, the hunting and capture of which is prohibited;
- sale, transport for sale, keeping for sale and the offering for sale of live or dead birds and of any readily recognizable parts or derivatives of these birds (cf Article 6).

Member States may derogate from these provisions under a number of circumstances (eg in the interest of public health, or judicious use) where there is no other satisfactory solution and where the derogations do not affect the overall conservation status of the species (cf Article 9).

Protecting core habitats for the species under Natura 2000

The bittern is listed in Annex I of the Birds Directive in view of its vulnerable conservation state. This means that, in addition to the general provisions referred to above, Member States must also classify the most suitable territories in number and size as Special Protection Areas under Natura 2000 to ensure the survival and reproduction of the species across its entire area of distribution within the EU (cf Article 4). As of November 2008, 1050 SPAs have been designated in the EU-27 where the bittern is indicated to be present.



Managing Natura 2000 sites

Within these SPAs, Member States must take appropriate steps to avoid the deterioration of habitats of the bittern as well as its disturbance, in so far as such disturbance could be significant.

Measures must also be taken to manage, maintain or, if necessary, restore areas for the bittern both within SPAs and outside so that the objectives of the Directive are achieved (cf Art 3). The Birds Directive does not elaborate how this should be done as this is up to each Member State to decide but, in practice, management plans are very often developed for each SPA within Natura 2000.

Management plans are useful documents in that they:

- identify the conservation needs of the habitats and species present in that site so that it is clear to all what is being conserved and why;
- analyse the socio-economic and cultural context of the area and the interactions between different land uses and the species and habitats present;
- provide an open forum for debate amongst all interest groups and help build a consensus view on the long term management of the site;
- help find practical management solutions that are integrated into other land use practices.

Assessment and approval of plans and projects that may significantly affect Natura 2000 sites:

The EU Nature Directives support the principle of sustainable development. Their aim is to set the parameters by which the economic activities can take place whilst safeguarding Europe's biodiversity. Thus, any plans or projects that may affect the species and habitats for which the sites are designated must be first assessed to determine whether the project is likely to have a significant effect on the species and habitat types for which the site has been designated.

If the impact is not considered significant the project can go ahead. If the effect is expected to be significant then alternative less damaging options must be fully explored and selected. In exceptional cases, if no viable alternatives exist, projects with significant negative impact on Natura 2000 sites can still go ahead if they are considered to be of overriding public interest. In such cases, compensation measures will need to be taken in order to ensure that the ecological coherence of the Natura 2000 Network is not compromised (cf Articles 6 (3) & (4) of the Habitats Directive which apply to SPAs classified under the Birds Directive).

BITTERN CONSERVATION THROUGH MEASURES UNDER CAP/RDPs

The obligations arising under the Birds and Habitats Directives can be integrated into the CAP measures in the following manner:

Cross compliance

Cross compliance is a horizontal CAP tool and applies to all direct payments (Pillar I), Pillar II payments (Less Favoured Area payments, Agri-Environment, Natura 2000 compensatory payments, and certain wine payments). The cross compliance requirements consist of 19 Statutory Management Requirements (SMR), and the requirements set to keep land in good agricultural and environmental conditions (GAEC).

In the case of the **Birds Directive** one of the 19 SMRs concerns the requirements resulting from the following articles that must be respected by farmers:

- Article 3 (1) & (2)(b): preserve and maintain a sufficient diversity of habitats for wild birds; in particular introduce measures for their upkeep and management in accordance with the ecological needs of habitats inside and outside of protected zones;
- Article 4 (1), (2), (4): special conservation measures in Natura 2000 sites and taking appropriate steps to avoid pollution or deterioration of these areas;
- Article 5 (a), (b) & (d): obligations under the general system or protection for all wild birds, and in particular prohibitions of the deliberate killing or capture by any method, the deliberate destruction of, or damage to, their nests and eggs or removal of their nests and/or the deliberate disturbance of these birds particularly during the period of breeding and rearing, in so far as disturbance would be significant.

In the case of SPAs another SMR based on the **Habitats Directive**, must be respected:

- Article 6: within Natura 2000 sites take the necessary conservation measures to restore and maintain the species and habitat types for which the site is designated and prevent their deterioration, destruction or significant disturbance.

The exact requirements of the above mentioned SMRs vary between Member States and depend on the way the requirements of the Birds and Habitats Directives are translated into their laws and administrative measures (e.g. management plans for Natura 2000 sites) applicable to farmers, and consequently cross compliance.

In addition to meeting the SMRs, farmers must also keep farms in good agricultural and environmental conditions (GAEC) which requires a minimum level of maintenance through compulsory standards for:

- Retention of landscape features including where appropriate, hedges, ponds, ditches, trees (in line, in group or isolated) and field margins;
- Avoidance of encroachment of unwanted vegetation on agricultural land;
- Establishment of buffer strips along water courses.

Member States can also voluntarily set standards for¹:

- Minimum livestock stocking rates or/and appropriate regimes;
- Establishment and/or retention of habitats;

Measures under Rural Development Programmes funded from EAFRD:

The following measures could be used to benefit bitterns:

- **Less Favoured Area payments:** (Article 37) linked to existing farming practices where they support upkeep of traditional low-input farming systems;
- **Natura 2000 payments:** (Article 38) in order to compensate for costs incurred and income foregone resulting from legal or administrative restrictions on farming within Natura 2000 areas. such as allowing continued winter flooding or not intensifying grassland management;
- **Agri-environmental schemes:** (Article 39) linked to voluntary measures such as rotational or mosaic reed cutting, adjustments to reed cutting times, seasonal livestock grazing, limited use of pesticides and fertilisers, controlled burning, scrub removal;
- **Reimbursement of non-productive investments:** (Article 41) can cover a range of investments from on-farm investments linked AE schemes or to measures identified in management plans for an SPA such as restoring the natural hydrology of reedbeds or removing invading vegetation or which enhance the public amenity value of a Natura 2000 area;
- **Conservation of rural heritage** (Article 57): for instance to cover the cost of drawing up management plans for Natura 2000 sites hosting bitterns, undertaking habitat restoration measures in areas currently or potentially suitable for bitterns, launching awareness campaigns on bittern conservation requirements amongst farmers.

In addition the following could also be used:

- **Training and information** (Article 21): e.g. could help make AE schemes more effective and train farmers and experts in the Farm Advisory Services on conservation and management requirements linked to wildlife such as bitterns;
- **Farm Advisory Services (FAS)** (Articles 24 and 25): to advise farmers on how to apply cross compliance rules e.g. those based on the Habitats and Birds Directives that are beneficial, inter alia, for bitterns;
- **LEADER** (Article 61): integration of bittern conservation into area-based local development strategies and enhancement of dialogue and collaboration between farmers, conservationists and other rural stakeholders in the area concerned.

EXAMPLES OF BITTERN FRIENDLY MEASURES UNDER RDP

The following provide some examples of how different countries have introduced bittern friendly farming through the Rural Development Regulations for 2000-2006 and 2007-2013. Further details are provided in the Wildlife and Sustainable Farming Initiative: http://circa.europa.eu/Public/irc/env/swfi/library?l=/species_reports&vm=detailed&sb=Title

UNITED KINGDOM

In the **UK**, various agri-environment schemes have been in use since 1987 in an attempt to halt and reverse the widespread loss of wildlife habitats in farmland. The agri-environment scheme under the Rural Development Programme for 2007-2013 comprises three elements: Entry Level Stewardship (ELS), Organic Entry Level Stewardship (OELS), and Higher Level Stewardship (HLS), which is a more targeted scheme aimed at the most valuable habitats and environmental features that require locally adapted management.

¹ These standards are however compulsory for those Member States who had already set a minimum requirements for these standards before 1 January 2009 or where national rules addressing the standard are applied in the Member State.

More specifically, the following HLS options may benefit bittern habitat:

- **Option WT11 maintenance or restoration of reedbeds (89 €/ha):** aims at maintaining or restoring reedbeds to provide a valuable habitat for birds, insects and small mammals. Management includes: maintaining water control structures in good working order, controlling scrub cover and retaining some open water, cleaning ditches and foot-drains no more than once every 5 years, cutting ditch banks in rotation, no use of fertilizer and no use of poor quality water to top-up water levels. Restoration may include clearing of scrub, cutting reeds in the summer, implementing a water management regime and restoring the ditch network. Initial expenses for restoration or installation of water control structures and restoration of ditches may be funded under a Capital Works Plan (non-productive investments under the EAFRD Regulation);
- **Option WT12 creation of reedbeds (562 €/ha):** aims at creating new reedbeds on land of existing low conservation interest. It is suitable for use on arable, lay grassland or permanent improved grassland. The site must have a reliable summer water supply as it is necessary to maintain up to 30 cm depth of water over part of the site in the summer months. Establishment will be informed by a management plan, which details the design and construction of the reedbed and includes creating a variety of land forms with areas of higher ground and areas of shallow open water, excavating ditches, installing bunds and sluices, and establishing reeds;
- **Option WT18 wetland cutting supplement (518 €/ha):** supports a cutting regime where this is the most appropriate form of management. This option may also help maintaining local techniques and traditions that may otherwise disappear.

FRANCE

For the 2000-2006 period, a new agri-environmental measure for extensive exploitation of reedbeds was proposed in the national RDP. However, only 3 of the 21 regions adopted this possibility at local level. The scheme was also very complex and it became mandatory to sign a contract (CAD) for the entire holding instead of only part of it which discouraged farmers. However, several other successful experiences with reedbeds management in France led to the maintenance and improvement of the proposed measure in the new 2007-2013 French Rural Development Program. This is now called the measure "MILIEU 04 – reedbed's exploitation in favour of biodiversity" (M.A.P. 2007) and, again, the details are decided at a regional (local) level.

This measure aims at encouraging management practices which will maintain a favourable conservation status of the habitat especially in favour of avifauna and insects (dragonflies). It also favours the maintenance and management of the reedbeds for their typical landscape features and for their water purification capabilities. The commitment applies in reedbeds usually exploited every year for thatch production. The farming subsidies are calculated by comparing yield production on the overall surface with yield production on only a part of the reedbed (specified at local level), the other part being laid fallow to offer a shelter for the avifauna.

The following details have to be provided at local level:

- To define and to locate eligible reedbeds for each defined territory (as a Natura 2000 site);
- To define at this level, the conditions of reedbeds exploitation:
 - The minimal surface of reed not to be cut each year : it must be at least 20 % of the total surface committed and 80 % at the most (fixed or revolving);
 - The types of material and machinery authorized for cutting;
 - The period where mechanical cutting is prohibited (breeding periods);
 - If needed, schemes for fight against alien invasive species: list of species, description of removal methods (chemical destruction being prohibited), and prescriptions on waste disposal.