

## Yellow-bellied toad *Bombina variegata*

*Habitats Directive – Annex II and IV*



*Bombina variegata* is restricted to central and south-eastern Europe. The populations in Italy, south of the Po Valley are often treated as separate species *Bombina pachypus* (Apennine yellow-bellied toad)\*.

	AT	BE <sup>°</sup>	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														

<sup>°</sup> re-introduced

### SPECIES INFORMATION

#### ECOLOGY

- Yellow-bellied toads are rather small, warty, aquatic toads with a brightly coloured underbelly;
- The adult toads are poisonous and have few natural enemies, the bright colours act as a warning signal to predators;
- Adult toads may live for more than 10 years in the wild;
- Reproduction is triggered by heavy rainfall over an extended period of time. Breeding starts 5-10 days after the toads have entered the water in spring and runs until August;
- The females produce several clutches per year during their prolonged breeding period; each clutch consists of 45 to 100 (sometimes more) eggs;
- The eggs are comparatively large and give rise to rapidly developing tadpoles;
- Egg-laying is distributed in time and space, which is seen as a risk-spreading strategy as the species often breeds in temporary pools which are permanently at risk of desiccation;
- In contrast to some other toads, yellow-bellied toads are relatively well adapted to dispersal over land in search of new breeding sites thanks to their sturdy skeleton and thick skin;
- Eggs and tadpoles are predated by leeches, aquatic beetles, dragonfly larvae, newts and various species of fish;
- Hibernation begins in September-October and ends in March-May, the toads winter in burrows, cracks, holes, under stones and logs and sometimes even in rodents' galleries;
- The diet consists of aquatic and terrestrial invertebrates.

## HABITAT REQUIREMENTS

- Yellow-bellied toads occur in many types of wetland, including lakes, ponds, swamps, rivers, stream pools, springs (including mineral and thermal springs), puddles, reservoirs, gravel pits, ditches and even water-filled wheel ruts;
- These wetlands can be found in deciduous and mixed or coniferous forests, scrubland, meadows, floodplains and grasslands, and even in urban areas;
- Breeding habitats are typically non-shaded temporary pools with little aquatic vegetation within, or close to, woodland. Such sites are favoured as they rarely hold populations of fish which prey on the eggs and tadpoles;
- Because egg laying is spread out over time and space it needs a network of water habitats to breed in;
- Compared to most other amphibians, the water quality requirements of the species are relatively modest and it is even able to tolerate some small degree of water pollution;
- It is mainly an upland species, reaching its highest population densities in foothill and mountain regions;
- It is an opportunistic species which means it is sometimes also found in urban forest parks as well as artificial lakes and ponds.

## THREATS

During the last century, many populations of yellow-bellied toad in Western Europe have disappeared or have experienced large declines, and the strongholds of species are now in Central and Eastern Europe. The causes of the decline are not always well understood but the main threats are thought to include:

- Loss of suitable habitats due to urbanisation, road and other infrastructure development, regulation of rivers, discharge of pollution, drainage of wetlands, filling in of ponds and ditches and intensification of human activities such as intensive forestry and agriculture;
- Loss of connectivity between populations caused by the fragmentation of suitable habitat. This makes the remaining, isolated populations vulnerable to catastrophic mortality, inbreeding depression etc;
- Drainage or water abstraction which lowers the water table, causing the temporary breeding ponds to disappear or to dry out too quickly in summer to allow successful breeding;
- Forestry work during reproduction: The toads often breed in water-filled wheel ruts or other small, artificial water bodies created by forestry work. Forestry work during the breeding season may drain the breeding sites and kill the toads by crushing in the wheel ruts;
- Cessation of cattle grazing which removes the need for maintaining ponds in grasslands as drinking places for livestock;
- Eutrophication or pollution of habitat caused by leaching of nutrients from surroundings, airborne nitrogen, pesticides and other agrochemicals, discharge of industrial chemicals etc;
- Collection: It is reported that in certain regions, the species is still collected for trade, scientific use, or to be used as bait even though the species is strictly protected under the Habitats Directive.

## MANAGEMENT PRACTICES FAVOURABLE TO YELLOW-BELLIED TOADS

In parts of the range, especially in Western Europe, populations of yellow-bellied toad are now small and isolated, and immediate action should be taken in order to safeguard the species. In Central and Eastern Europe, it is still a locally common species in some areas and most populations are considered secure although up-to-date monitoring data are usually lacking. However, signs of decline also occur here, and conservation measures should be implemented in due time because it is usually more efficient to maintain a secure population than to try to restore a population which is on the verge of extinction.

The following farming and forestry practices will help:

- Maintain or restore breeding ponds in forest and farmlands: The best sites are temporary ponds that dry out in late summer or during autumn. Ponds should be sunny and with little aquatic vegetation. Preferably, several ponds should occur in a network to enable dispersal and increase breeding success;
- Maintain or restore dispersal corridors and sites suitable for hibernation: Humid corridors such as ditches in meadows, small brooks with surrounding natural vegetation etc are very important for dispersal between breeding sites as well as between breeding ponds and hibernation sites. To provide the latter, piles of stones and branches should be retained;
- Maintain cattle grazing and other extensive grassland management: Cattle grazing provides an incentive for maintaining or creating drinking ponds and the cattle keep the pond surroundings open. If grazing is not possible, mowing of the pond surroundings once or twice a year will also prevent excessive shading of the pond;
- Avoid eutrophication and pollution of breeding ponds: Yellow-bellied toads prefer ponds with a low or modest amount of aquatic vegetation. Therefore eutrophication should be counteracted by avoiding overstocking and by using only low levels of fertilizer or manure in the pond surroundings. Also pesticide use in the vicinity of the pond should be kept to a minimum;
- Avoid forestry work during reproduction: in core areas for the species, forestry work should preferably be avoided during the breeding season to avoid drainage of breeding sites and crushing of toads in wheel ruts (where they also may bury when the ruts begin to dry out).

## OTHER SPECIES BENEFITING FROM THESE CONSERVATION MEASURES

Like every species, the yellow-bellied toad has particular habitat requirements that are unique to its ecology and lifecycle. However, several of the measures mentioned above can also benefit other species protected under the Habitats Directive that could use these ponds and humid corridors in open or forested landscapes, e.g.:

Great crested newt, *Triturus cristatus*  
Common spadefoot, *Pelobates fuscus*

Agile frog, *Rana dalmatina*  
Green toad, *Bufo viridis*

## OBLIGATIONS ARISING FROM THE HABITATS DIRECTIVE

The yellow-bellied toad is protected under the EU Habitats Directive 92/43/EEC, it is listed in Annexes II and IV of the Directive. As a result, Member States must take the following measures to ensure its conservation:

### General requirements

Member States must undertake measures that are designed to maintain or restore the yellow-bellied toad at a 'favourable conservation status' in the EU (cf Article 2).

The conservation status of a species is taken as 'favourable' when:

- populations are maintaining themselves over the long term and are no longer showing signs of continuing decline;
- their natural range is not being reduced;
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

### Protecting the species

Member States shall take the requisite measures to establish a system of strict protection for the yellow-bellied toad, and in particular to prohibit the following (cf Article 12):

- deliberate killing or capture by any method;
- deliberate disturbance, particularly during breeding, rearing, hibernation and migration;
- deliberate destruction or taking of eggs in the wild;

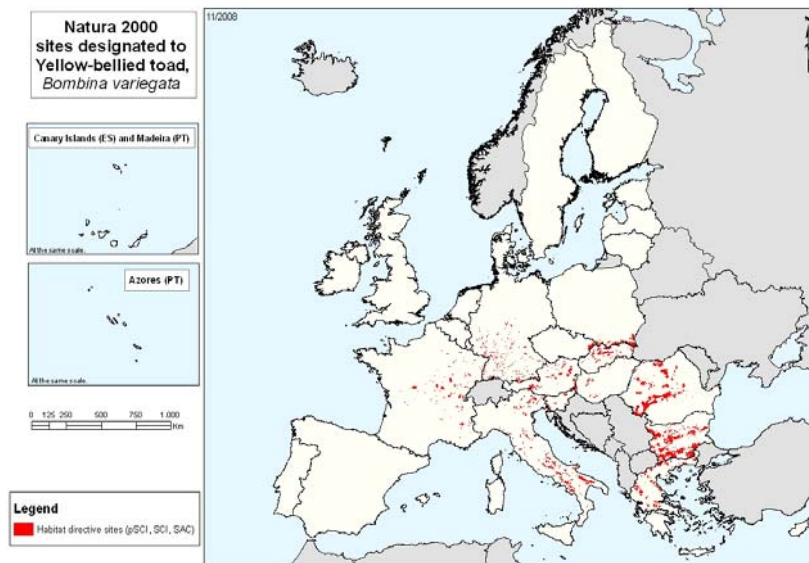
- deterioration or destruction of breeding sites or resting places;
- the keeping, sale and transport of specimens taken from the wild.

Derogations to the above are allowed in some special circumstances provided that no satisfactory alternatives exist and the derogation is not detrimental to the maintenance of the populations of the species concerned at a favourable conservation status. (Article 16).

#### Protecting core habitats for the species under Natura 2000

Because the yellow-bellied toad is listed in Annex II of the Habitats Directive, Member States must, in addition to the general provisions referred to above, designate sites under Natura 2000 to maintain and restore the species to a favourable conservation status (cf Articles 1 and 3).

For wide-ranging species, such as the yellow-bellied toad, these sites shall correspond to the places within the natural range of the species which present the physical or biological factors essential to their life and reproduction. As of November 2008, a total of 1455 Sites of Community Importance (SCIs) have been designated in the EU where the yellow-bellied toad is recorded being present.



#### Managing Natura 2000 sites

Within these sites, Member States must take appropriate steps to avoid the deterioration of habitats of the yellow-bellied toad as well as its disturbance, in so far as such disturbance could be significant. Member States shall also take positive measures to conserve and restore the species to a favourable conservation status. This means establishing the necessary conservation measures corresponding to the ecological requirements of the species involving, if need be, appropriate management plans specifically designed for the sites or integrated into other development plans (cf Article 6).

In practice, management plans are very often developed for each SCI 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).

### Protecting and managing landscape features outside Natura 2000

With a view to improving the ecological coherence of the Natura 2000 Network, Member States shall endeavour, in their land use planning and development policies, to maintain and restore landscape features which are of major importance for wild fauna and flora (cf Article 10). Such features could be linear structures (e.g. small rivers with their banks, hedgerows or rough herbaceous vegetation at field boundaries) that act as dispersal corridors or small ponds etc acting as stepping stones. Preservation and proper management of these landscape features could be of great value for the migration, dispersal and genetic exchange of species with limited mobility such as the yellow-bellied toad.

## **YELLOW-BELLIED TOAD CONSERVATION THROUGH MEASURES UNDER CAP/RDPs**

Obligations arising under the Birds Directive 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).

One of the 19 Statutory Management Requirements (SMR) concerns the respect of the following articles of the Habitats Directive which are relevant for the yellow-bellied toad:

- 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.

Another SMR concerns the respect of articles 4 and 5 of the Nitrates Directive (91/676/EEC). This Directive aims at reducing water pollution caused or induced by nitrates from agricultural sources. Because yellow-bellied toads are vulnerable to eutrophication of their breeding ponds, compliance with the Directive is of obvious benefit to the species. **Article 4** concerns the establishment of a code of good agricultural practice for reducing pollution by nitrates and **Article 5** is about establishing action programmes in respect of nitrate vulnerable zones.

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;
- Protection of permanent pasture;
- Establishment of buffer strips along water courses.

Member States can also voluntarily set standards for<sup>1</sup>:

- 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 yellow-bellied toads:

- **Less Favoured Area payments** (Article 37): linked to maintaining existing farming practices that help continue extensive management in areas threatened by abandonment;
- **Natura 2000 payments** (Article 38 & 46): in order to compensate for costs incurred and income foregone resulting from legal or administrative restrictions on farming within Natura 2000 areas such as maintaining suitable breeding ponds and refraining from carrying out forestry activities during the reproduction season;
- **Agri-environment and forestry-environment payments** (Article 39 & 47): linked to voluntary measures such as maintaining or restoring unshaded ponds in grassland, maintaining ditches and other humid corridors, keeping stone piles etc used for hibernation, maintaining cattle grazing, reducing fertilizer and pesticide use in pond surroundings etc;
- **Reimbursement of non-productive investments** (Article 41 & 49): can cover a range of expenses from investments linked to agri-environment or forest-environment schemes to measures identified in management plans for an SPA, such as the creation of new breeding ponds, or investments enhancing the public amenity value of a Natura 2000 area or a forest;
- **Conservation of rural heritage** (Article 57): can cover the cost of drawing up management plans for Natura 2000 sites hosting the species, restoring and upgrading the natural and cultural heritage such as pastures with natural drinking ponds, or launching awareness campaigns on the conservation requirements of yellow-bellied toads 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 yellow-bellied toads;
- **Farm Advisory Services (FAS)** (Article 24 of RDR): the cost of obtaining advisory services on how to meet the minimum cross compliance requirements, such as those under the Habitats Directive can be reimbursed to farmers, foresters and other land managers, which can be beneficial to, inter alia, great bustards.
- **LEADER** (Article 61): integration of conservation of yellow-bellied toads 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 YELLOW-BELLIED TOAD FRIENDLY MEASURES UNDER RDP**

The following provide some examples of how some countries have introduced yellow-bellied toad 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](http://circa.europa.eu/Public/irc/env/swfi/library?l=/species_reports&vm=detailed&sb=Title)

#### FRANCE

Management of habitats for yellow-bellied toad in France is supported mainly through Natura 2000 forest agreements and agri-environment measures. The scheme for **Natura 2000 forest agreements** was established in late 2004 and remains almost unchanged in the programming period 2007-2013. It includes at least three measures potentially useful for or directly targeted at yellow-bellied toads:

<sup>1</sup> 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.

Restoration of forest ponds. This measure supports the keeping or developing of a network of forest ponds, with the following activities being eligible for support:

- reshaping of banks with gentle slopes;
- dredging;
- sealing the bottom of the pond with clay;
- clearing of surroundings or other management for the good functioning of the pond;
- planting vegetation or trees;
- manual removal of the woody vegetation (no chemical treatment allowed);
- devitalization of trees using ring belt;
- export of woody vegetation and rubbles at, at least, 20 meters for sensitive habitats;
- export of macro wastes;
- expert advice.

Protection of reproduction habitat with fences. This measure provides funding for fences and thereby grazing of different habitat types. It will diminish the threat from overgrowth and loss of habitat for the species. Water bodies that can be used for breeding should indirectly or directly result from this measure.

Additional investments to reduce the impact of forest tracks and roads. This measure provides support for the closing of roads and tracks that have been used in relation to forestry activities. As to construction of other roads, support can be made conditional upon, e.g., fencing to prevent frogs and toads from entering the road.

The scheme for **agri-environment measures** under the French Rural Development Programme 2007-2013 is dedicated to fulfilling obligations related to the Water Framework Directive and to Natura 2000. In addition to measures dedicated to maintaining cattle breeding and pastures, which are of potential value to the species, there are at least two measures of direct relevance to yellow-bellied toad conservation:

Management of channels, ditches and rivulets (code: LINEA\_06, up to 2,84 €/meter): Funding to secure small linear water bodies will typically be beneficial for the species.

Management of ponds (code: LINEA\_07, up to 135 € per pond per year): This is a continuation of a scheme from the previous programming period and is focused on Natura 2000 agreements for rural habitat which is neither farmed nor forested. The scheme supports the implementation of conservation actions in ponds or other hydraulic components, with specific measures being proposed. When there is local support, as in Poitou-Charentes or Isère where action plans for yellow-bellied toad exist, the scheme may be helpful for the conservation of the species.

## ITALY

The regional rural development plans include under axis 2 ('Amelioration of the environment and of the rural landscape') a number of specific measures for the creation and maintenance of wetlands in order to increase biodiversity and to protect and conserve habitats, flora and fauna of the EU Habitats and Birds Directives. In addition, extensive management of grassland can also be supported. The description of the measures is very detailed and could be used for conservation actions targeted at (Apennine) yellow-bellied toads. The payments amount to 200 €/ha/year for maintenance and 1.17 €/m<sup>2</sup>/year for creation of wetlands.

The payments have already been used with significant results in the past programming period (2000-2006), e.g. in the Emilia-Romagna Region, where:

- about 1,100 hectares of permanent wetlands (freshwater marshes having 75% of their surface permanently submerged) were created, allowing the presence of many waterfowl species, amphibians, reptiles, and typical emergent and submerged vegetation;
- 2,357 hectares of permanent meadows with scrub patches were created. This kind of habitat is often created close to marshy meadows and/or permanent wetlands and is complementary to the former from an ecological point of view;
- 4,500 ha of wetlands were restored.