

Brief overview of the bluetongue situation in Mediterranean Europe, 1998-2004

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Summary

Until recently, the distribution of bluetongue (BT) virus (BTV) in relation to vector distribution, has been between latitudes 40° North and 35° South. Within these limits the disease occurs in parts of America, Asia, Africa and Australia. Although Europe has suffered several BT epizootics, the disease had not become endemic to the region.

The situation is changing. BT has recently emerged in some Mediterranean countries of Europe where it had never previously been reported, in particular in Italy, France, as well as in countries in which only sporadic occurrence of the virus had previously been reported, i.e. Spain (late 1950s), Greece and Turkey (late 1970s). It is relevant to underline that some of the recently affected areas in Europe are not situated within the classical latitudes for BT. Furthermore, although they coincided in time, the recent incursions of BT had two separate origins, coming from beyond the eastern and southern boundaries of Europe.

The outbreaks of BT of eastern origin commenced at the end of 1998; they were reported in the Greek islands, and then in the summer of 1999, in Turkey and Bulgaria. In 2001, the disease advanced westwards and northwards, reaching central and north-west mainland Greece, and neighbouring Balkan states; serotypes 4, 9 and 16 were incriminated in this epizootic.

The outbreaks of southern origin commenced towards the end of 1999. BTV was confirmed in Tunisia and spread to north-eastern Algeria. In the summer of 2000, the virus reached the Italian island of Sardinia, spreading also to Sicily and Calabria (the Italian mainland area closest to Sicily). In October 2000, BT was reported on the French island of Corsica and in the Spanish Balearic island of Menorca from where it spread to another Balearic island, Mallorca. In 2001, BT spread across south-west mainland Italy. Originally only serotype 2 was isolated in the epizootics of North African origin; however, in 2003-2004, BTV-4 appeared in Morocco, Spain and Portugal.

Keywords

Bluetongue – *Culicoides* – Europe – France– Italy – Mediterranean – Spain – Virus.

Prior to 1998, only a few epizootics of bluetongue (BT) occurred in Mediterranean Europe and, after a long period of freedom from BT, however, the situation changed significantly.

Epizootics of BT virus (BTV) were introduced in the region from two different origins, BTV-2 was introduced from the south and BTV-4, BTV-9 and BTV-16 from the east (Fig. 1).

BTV-2 has now been isolated in Italy, Spain (Balearic islands) and France (Corsica).

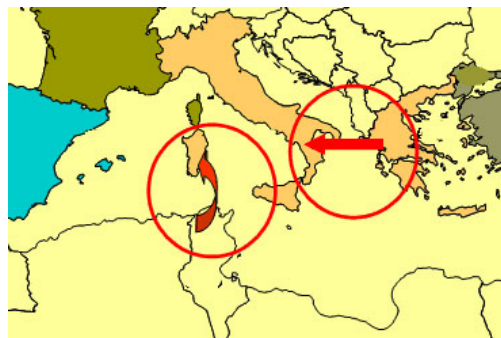


Figure 1
The two origins of the bluetongue outbreaks in Mediterranean Europe

BTV serotypes 4, 9 and 16 have been reported from various countries from Italy eastwards. More recently (2004), BTV-4 has appeared in Morocco, Spain and Portugal.

Outbreaks of southern origin

BTV-2 occurred in Tunisia in 1999 (5) and spread to the Italian island of Sardinia in 2000. From Sardinia it spread to two of the Balearic islands of Spain and to Corsica in France (Fig. 2).

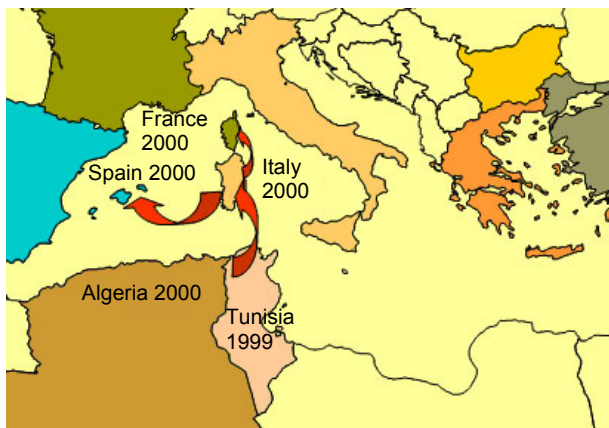


Figure 2
Bluetongue outbreaks of southern origin

Balearic islands (Spain)

Two islands were affected, namely Menorca and Mallorca.

Outbreaks

The first outbreak was diagnosed on 10 October 2000 and the last on 27 November. In Menorca, a total of 114 outbreaks were reported, while in Mallorca the total reached 191.

Sheep vaccination

Vaccination of sheep with attenuated BTV-2 vaccine, commenced as early as 24 October and was completed by 10 November in Menorca and by 10 December in Mallorca (7).

In Menorca, the number of vaccinated animals, belonging to 205 farms totalled 3 918. Vaccinated animals on 5 690 farms in Mallorca totalled 313 744.

In the spring of 2001, sheep over six months of age were vaccinated in both Menorca and Mallorca. On the nearby island of Ibiza, where no outbreak had been reported, all sheep, irrespective of age, were vaccinated at that time.

Surveillance

Surveillance in the Balearic islands was based on sentinel bovines, the capture of *Culicoides* and movement controls of bovines.

Sentinel cattle were tested using the enzyme-linked immunosorbent assay (ELISA) and polymerase chain reaction (PCR) (Table I). The possible presence of BTV in the *Culicoides* captured was tested by PCR.

Table I
Sentinel bovine surveillance in the Balearic islands, 2001

Farms/animals	Menorca	Mallorca	Ibiza
Farms	6	9	1
Animals	226	533	13

As part of the movement control programme, 11 987 bovines in Mallorca and 1 193 in Menorca, were tested using PCR.

On mainland Spain, surveillance was performed along the eastern and southern coasts, covering an area that extended 100 km inland from the coastline.

Corsica (France)

Outbreaks

In Corsica, the first outbreak of BT was diagnosed on 6 October 2000. Outbreaks lasted until December. After a period of absence of new outbreaks, additional outbreaks occurred between July and November 2001. The virus isolated in both years was the same, BTV-2.

A total of 49 outbreaks were reported in 2000: 17 in the north of the island and 32 in the south. In 2001, 335 outbreaks occurred: 211 in the north and 124 in the south (2) (Table II).

Table II
Number of animals that showed clinical signs, died or were slaughtered in Corsica, 2000 and 2001

Animals	2000	2001
Clinical signs	2 634	12 518
Mortalities	273	9 828
Slaughtered	2 563	285

Sheep vaccination

Between 14 November 2000 and 30 April 2001, a total of 102 000 sheep were vaccinated with attenuated BTV-2 vaccine.

Surveillance

In Corsica, surveillance was based on sentinel bovines and the capture of *Culicoides*. Species of *Culicoides* found were *C. imicola*, *C. obsoletus*, *C. pulicaris* and *C. newsteadi* (6).

In south-east mainland France, *Culicoides* captured were *C. obsoletus*, *C. pulicaris* and *C. newsteadi*. No *C. imicola* was found (6).

Italy

Outbreaks

In 2000, BTV-2 probably reached the island of Sardinia from Tunisia, and then spread to Sicily and to the region of Calabria in the south-west mainland Italy.

Italy is therefore discussed in the 'Eastern origin' section.

Outbreaks of eastern origin

BT serotypes 4, 9 and 16 arrived from the east, most probably from Greece (Fig. 3) (1, 5).

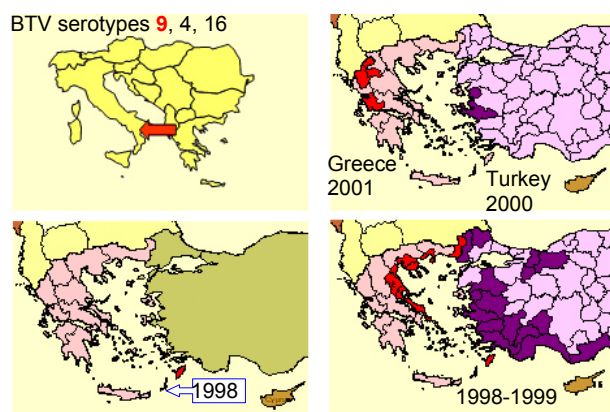


Figure 3
Bluetongue outbreaks of eastern origin

Italy

Outbreaks

In Italy, abundant outbreaks of BT were reported between 2001 and the spring of 2003 (Fig. 4). BTV-2 was the only serotype detected in Sardinia and in the regions of Lazio and Tuscany (3, 4).

In Sicily and in the south of the Italian mainland, outbreaks were not only caused by BTV-2, but also by BTV-9.

In mid-August 2003, outbreaks of BTV-4 were reported in Sardinia (11); the origin of these outbreaks is still unknown. This was followed by the appearance of BTV-16 towards the end of 2003.

Vaccination

Ruminants in Italy were vaccinated both in 2002 and 2003 (4).

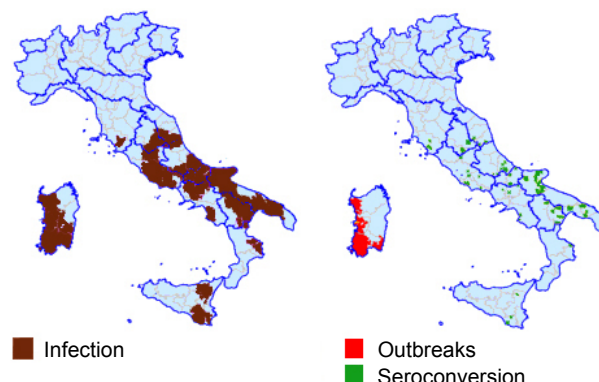


Figure 4
Bluetongue in Italy in 2003
Source: Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise, Teramo, Italy

Monovalent attenuated BTV-2 vaccine was used in Sardinia and the regions of Lazio and Tuscany.

Bivalent attenuated BTV-2 and BTV-9 vaccine was used in Sicily and in the southern areas of the mainland.

Corsica (France)

Outbreaks of BTV-4 were reported in Corsica in October 2003 (10).

In September 2004 outbreaks of BTV-16 were reported for first time in Corsica as well as one outbreak of BTV-4 (12).

The presence of these two new serotypes in Corsica has modified the vaccination programme to include vaccination against BTV-4 and BTV-16 in addition to BTV-2.

Menorca (Spain)

Outbreaks of BTV-4 were reported in Menorca in October 2003 (10). A total of 16 outbreaks have been diagnosed in Menorca. BTV-4 did not affect Mallorca.

Vaccination against only BTV-4 has been performed in Menorca.

New areas affected by bluetongue in 2004

In the late 1950s an epizootic of BTV-10 affected Morocco, mainland Spain and Portugal. Since then, this area was free until 2004, when BTV-4 was reported in the area.

Morocco

In September 2004, Morocco reported several outbreaks (13) in four provinces of the north-west on the Atlantic coast. The disease spread to other regions of the country. The virus isolated was BTV-4 but the origin has not yet been established. Until 22 November, the date of the last reported case, 380 outbreaks have been diagnosed (M. El Harrak, personal communication) (Table III).

Table III
Number of outbreaks and morbidity and mortality rates of bluetongue in Morocco, 2004

Outbreaks	Morbidity (%)	Mortality (%)
230	8.2	1.3

Spain

In October 2004, BTV-4 was detected in sentinel bovines in the south of mainland Spain, in the Cadiz province of Andalusia. Since then, the disease spread to other municipalities of the south and south-west of the mainland affecting four provinces in Andalusia and two in Extremadura. Outside the mainland outbreaks, the disease was detected in Ceuta, a Spanish province on the border of Morocco. Until the last outbreak reported in Spain on 14 December, a total of 328 outbreaks were reported (8) (Table IV).

Table IV
Number of outbreaks of bluetongue on mainland Spain, 2004

Location	No. of outbreaks
Andalusia	274
Extremadura	50
Ceuta	4
Total	328

The virological, serological and entomological surveillance that was in place in Spain has been modified and improved in accordance with the new epidemiological situation in the country.

Vaccination

A total of 754 504 sheep were vaccinated on mainland Spain against BTV-4, 426 246 in Extremadura and 3 528 258 in Andalusia (8).

Portugal

Four outbreaks were reported in November 2004. These were located in two districts, one in the south-

east of the country and the other in the east; both cases occurred near the Spanish border (14). Until the last case which occurred on 14 December, a total of nine outbreaks have been reported in Portugal (9). Serological and entomological surveillance is in progress.

As the outbreaks are located near the border with Spain, the level of northern limit of the restricted zone established in Portugal is the same as that of the restricted zone in Spain.

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