Bacidia incompta (Borrer ex Hook) Anzi (1860)

PLANTLIFE

BACIDIACEAE

Status

Red Data Book – Vulnerable

BAP Priority Species

UK Biodiversity Action Plan

T1 - Maintain populations at all extant sites.

T2 - Encourage the spread of this species by maintaining or establishing suitable habitat in the vicinity of all extant sites.

Progress on targets as reported in the UKBAP 2002 reporting round can be viewed by selecting this species and logging in as a guest on the following web site:
http://www.ukbap.org.uk/

The full Action Plan for *Bacidia incompta* can be viewed on the following web site:
http://www.ukbap.org.uk/UKPlans.aspx?ID=125

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NATURAL ENGLAND

Cyngor Cefn Gwlad Cymru
Countryside Council for Wales

SCOTTISH NATURAL HERITAGE

Contents

1 Morphology, Identification, Taxonomy & Genetics

1.1 MORPHOLOGY & IDENTIFICATION

B. incompta is a crustose lichen with a fawn to grey-green or dark green mealy or granular thallus which often forms extensive patches or vertical streaks on tree trunks. The thallus is often continuous but is sometimes more dispersed particularly when apothecia are abundant. The apothecia are purplish-black, flat and have a distinct margin when young, but become convex and emarginate when mature. In the field it is only likely to be confused with *B. biatorina*, but this is largely found on Ash and Oak trees in old woodland. Under the microscope the short needle-shaped, 3-septate spores and the K + purplish hypothecium are characteristic.

Figure 1 - *Bacidia incompta* on elm bark, Isles of Scilly, 2000.

Figure 2 - *Bacidia incompta* below a wound on field maple, Dorset, 2004.

1.2 TAXONOMIC AND GENETIC CONSIDERATIONS

None

2 Distribution & Current Status

2.1 WORLD

Confined to Europe. Previous records from North America are referable to other taxa (Coppins & Coppins, 2000).

2.2 EUROPE

A review of current information on its European distribution is given by Coppins & Coppins 2000. *B. incompta* is known from scattered sites in central and eastern Europe but is rare in Scandinavia and the Mediterranean.

2.3 UNITED KINGDOM

2.3.1 ENGLAND

Before the impacts of industrial pollution and the onset of DED, *B. incompta* had a south-easterly distribution in England with the majority of records south-east of a line from the Wash to the Severn Estuary. It has apparently always been rare in oceanic areas. Apart from the New Forest, most of the historic records of this species were from elm trees in parkland and wayside habitats. In England *B. incompta* had been recorded from a total

of 48 vice-counties. By 1960 it had already been lost from 9, and by 1980 it was known only from 11 vice-counties. This catastrophic decline during the 20-year period from 1960 to 1980 coincides with the main epidemic of DED. Currently *B. incompta* is known from 31 10 km squares in 14 vice-counties.

2.3.2 WALES

This species has been the subject of recent survey in Wales (Giavarini, 2002). It has always been much less widespread here than in England, and has suffered a similar decline since the onset of Dutch Elm Disease. At present it is known only from one healthy elm tree in Brecknock, where it is associated with a sap run below a wound.

2.3.3 SCOTLAND

B. incompta has always been rare in Scotland with most records from the south and the east. It has been recorded from four sites since 1990 (Coppins & Coppins, 2000), but some of these were from diseased elms that may now be dead.

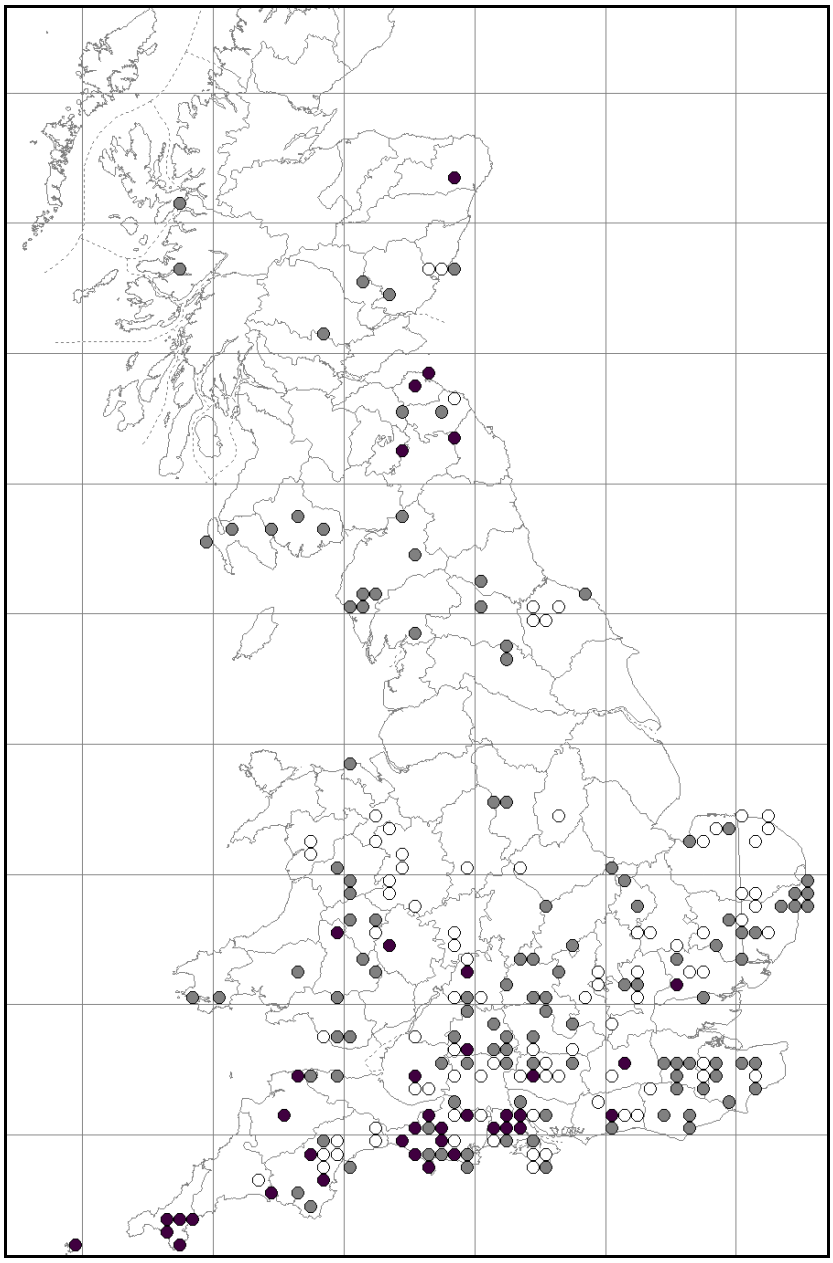

Figure 3 - Distribution of *Bacidia incompta* in England, Scotland and Wales (Black = post-1990; Grey = 1960-1989; White = <1960)

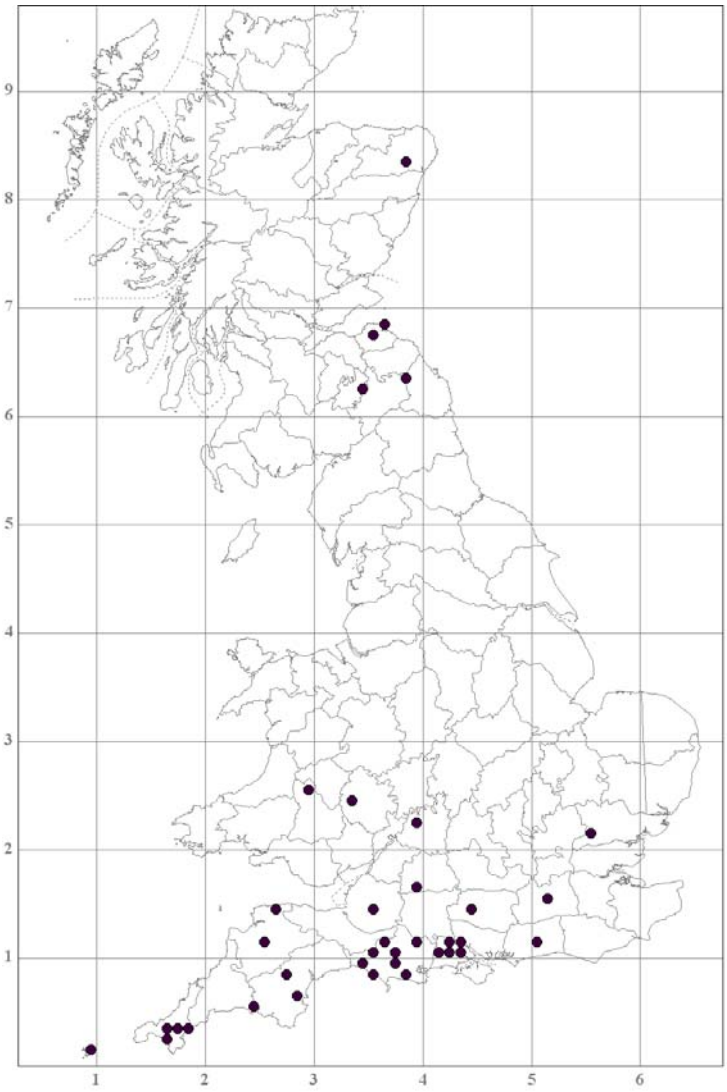

Figure 4 - Post-2000 records – 37 10km squares

Table 2 - Recent records for *Bacidia incompta* in Britain

V-C No.	Vice-County	10km Sq	Site	Date	Recorder	Phorophyte	No. of Trees
1	West Cornwall	SV91	Parting Carn, St Mary's, Isles of Scilly	5/2002	B. Edwards & Dr P. Gainey	*Ulmus* sp.	4, below or around wounds
1	West Cornwall	SW63	Godolphin Estate	10/2002	B. Edwards & Dr P. Gainey	*Acer pseudoplatanus*	1
1	West Cornwall	SW62	Lampra Mill	3/2003	B. Edwards & Dr P. Gainey	*Fraxinus excelsior*	1
1	West Cornwall	SW73	Penwarne, W of	3/2006	B. Edwards & P.W. Lambley	*Acer pseudoplatanus*	1
1	West Cornwall	SW83	Trelissick Park	12/2003	B. Edwards	*Ulmus sp.*	2 old trees
2	East Cornwall	SX45	Antony House	2001	B. Benfield	*Acer campestre*	1
3	South Devon	SX78	Whiddon Park	4/2003	B. Edwards	*Acer pseudoplatanus, Aesculus hippocastanum & Fraxinus excelsior*	3
4	North	SS64	Arlington Park	10/2002	B. Edwards	*Fagus sylvatica*	1

V-C No.	Vice-County	10km Sq	Site	Date	Recorder	Phorophyte	No. of Trees
	Devon						
4	North Devon	SS51	Huish Park	2002	B. Benfield	*Acer pseudoplatanus*	
7	North Wilts	ST96	Spye Park	2003	S.R. Davey	*Fraxinus excelsior*	
8	South Wilts	ST91	Cranborne Chase – Bridmore Green	2003	N.A. Sanderson	*Fraxinus excelsior*	
9	Dorset	SY49	Netherbury	9/09/03	N.A. Sanderson	*Abies* sp.	At base of wounded Abies
9	Dorset	SY58	Abbotsbury	2003	B. Edwards	*Aesculus hippocastanum*	
9	Dorset	SY79	Tincleton	10/2002	B. Edwards	*Acer pseudoplatanus*	1
9	Dorset	SY88	Lulworth Park	10/2002	B. Edwards	*Acer pseudoplatanus*	2
9	Dorset	SY88	Whiteway Farm	8/8/2002	B. Edwards & J. Duckworth	*Acer pseudoplatanus &Fraxinus excelsior*	*2*
9	Dorset	SY88	Old Marl Plantation		B. Edwards		In side hollow tree
9	Dorset	SY88	Tyneham	8/8/2002	B. Edwards & J. Duckworth	*Fraxinus excelsior*	1
9	Dorset	ST50	Melbury Park	2/2004	B. Edwards	*Acer campestre Aesculus hippocastanum*	7
9	Dorset	ST61	Sherborne Park	8/2003	B. Edwards	*Fraxinus excelsior*	Inside hollow tree
9	Dorset	ST91	Cranborne Chase – Tanrant's Bottom	2003	N.A. Sanderson	*Acer campestre*	
11	South Hants	SU10	New Forest – Lin Wood	1992	N.A. Sanderson	*Ilex aquifolium*	inside hollow *Ilex*
11	South Hants	SU20	New Forest – Bratley Wood	1990	N.A. Sanderson	*Ilex aquifolium*	inside hollow *Ilex*
11	South Hants	SU20	New Forest – Bignell Wood	1990	V.J. Giavarini & K. Sandell	*Ilex aquifolium*	
11	South Hants	SU20	New Forest – Mark Ash Wood	1993	N.A. Sanderson	*Ilex aquifolium*	inside hollow *Ilex*
11	South Hants	SU20	New Forest – Mark Ash Wood	2005	N.A. Sanderson & B. Edwards	*Fagus sylvatica*	3+, around wounds
11	South Hants	SU20	New Forest – Hincheslea Wood	1993	N.A. Sanderson	*Ilex aquifolium*	inside hollow *Ilex*
11	South Hants	SU20	New Forest – Anses Wood	1996	N.A. Sanderson	*Fagus sylvatica*	inside hollow *Fagus*
11	South Hants	SU20	New Forest – Vinny Ridge	2/2004	N.A. Sanderson	*Ilex aquifolium*	
11	South Hants	SU21	New Forest – Long Beech	2001	B. Edwards	*Fagus sylvatica*	around wound at base of *Fagus*
11	South Hants	SU21	New Forest – Long Beech	1990	N.A. Sanderson	*Fagus sylvatica*	inside hollow *Fagus*
11	South Hants	SU21	New Forest – Long Beech Enclosure	4/2003	B. Edwards	*Fagus sylvatica*	1
11	South Hants	SU21	New Forest – Shave Wood	4/2003	B. Edwards	*Fagus sylvatica*	1
11	South Hants	SU21	New Forest – Bignall Wood	4/2003	B. Edwards	*Fagus sylvatica*	1
11	South Hants	SU21	New Forest – Canterton Glen	4/2003	B. Edwards	*Fagus sylvatica*	1
11	South Hants	SU21	New Forset – Canterton Glen	2003	N.A. Sanderson	*Fagus sylvatica*	

V-C No.	Vice-County	10km Sq	Site	Date	Recorder	Phorophyte	No. of Trees
11	South Hants	SU21	New Forest – Rockram Wood	2003	N.A. Sanderson	*Fagus sylvatica*	
11	South Hants	SU30	New Forest – Matley Wood	1997	N.A. Sanderson	*Ilex aquifolium*	inside hollow Ilex
11	South Hants	SU30	New Forest – Matley Wood	2002	B. Edwards	*Ilex aquifolium*	inside hollow Ilex
11	South Hants	SU30	New Forest – Ladycross	1998	N.A. Sanderson	*Acer campestre*	inside hollow Acer
11	South Hants	SU30	New Forest – Rushpole Wood	1/2004	N.A. Sanderson	*Ilex aquifolium*	
11	South Hants	SU30	New Forest – Undersley Wood	1/2004	N.A. Sanderson	*Ilex aquifolium*	
11	South Hants	SU30	New Forest – Hanger Corner	2003	N.A. Sanderson	*Fagus sylvatica*	
11	South Hants	SU31	New Forest – Busketts Wood	3/2003	B. Edwards	*Fagus sylvatica*	1
12	North Hants	SU44	Hurstourne Park	2005	N.A. Sanderson	*Acer campestre & Aesculus hippocastanum*	4
13	West Sussex	TQ01	Parham Park	2003	S. Davey	*Fraxinus excelsior*	
17	Surrey	TQ15	Box Hill	2003	F. Dobson	*Fraxinus excelsior*	
19	North Essex	TL51	Hatfield Forest	2005	S. Davey	*Fraxinus excelsior*	Inside one hollow tree
33	East Gloucester	SO91	Thrift Wood	2006	B. Edwards	*Acer/Ulmus?*	1 wounded
36	Hereford	SO34	Moccas Park	2002	B. Edwards	*Acer campestre, Aesculus hippocastanum*	
42	Brecknock	SN95		2002	R.G. Woods & V.J. Giavarini	*Ulmus glabra*	1
68	Cheviot	NT83	Kilham	2005	John Douglass	*Acer pseudoplatanus*	On one tree with *Caloplaca luteoalba*
80	Roxburgh	NT42	Selkirk, SSE of	1995	A.M & B.J. Coppins	*Ulmus*	Tree dead in 1996
82	East Lothian	NT57	East Linton, 3.5 km SW of	2000	B.J. Coppins	*Ulmus*	Tree dead
82	East Lothian	NT68	Garvald	2002	B.J. Coppins	*Ulmus*	Tree dead
82	East Lothian	NT68	North Berwick, E of	1993	B.J. Coppins	*Ulmus*	Tree healthy
93	North Aberdeen	NJ83	Haddo House	1996	A.M & B.J. Coppins	*Ulmus*	

3 Ecology & Life Cycle

Formerly, *B. incompta* was associated with wound tracks on large Elms, where it was often found with *Caloplaca luteoalba*, in a rather specialised community allied to the *Physcietum ascendentis* (James *et al.*, 1977). The trees were mainly found in parkland, pastures and along trackways and roadsides. More rarely it was found on old wych elm trees in closed canopy woodlands.

In the extant sites, *B. incompta* is mainly associated with wounded or hollow trees in parkland and wayside habitats. Tree species include ash, beech, field maple, horse chestnut and sycamore. In the Isles of Scilly and west Cornwall the species is still found on mature elms. When present in hollow trees or around wounds, *B. incompta* is often the only species present in that particular niche, although living bark adjacent to the colonies can have a rich flora.

In the New Forest, *B. incompta* behaves as an old forest species favouring old growth and ancient old growth woodlands (Sanderson, 1998). Since 1990 it had been recorded

from 19 woodlands, but mostly from only one or two trees at each site. It is found in two distinct niches either around wounds on old beech trees or on lignum inside hollow beech or holly trees. In these rather specialised niches it is often the only lichen species present. The Forest also supports other species that were also formerly more frequent on old elms, namely *Collema fragrans* and *Cryptolechia carneolutea*.

4 Habitat requirements

From observations on the current British sites the following factors play an important role in the survival of the species:

- Low atmospheric pollution
- Continuity of old trees with a naturally high bark pH
- The presence of hollow or wounded trees

4.1 The Landscape Perspective

Low Atmospheric Pollution

Sites for *B. incompta* must have lost before the epidemic of DED in the mid-1970s. Figure 4 shows the overall distribution of the species to have a strong south-easterly bias and it is relatively rare in strongly oceanic areas of south-west England and western Scotland and Wales. Figure 5 shows that most post-2000 records are from southern and south-west England and it is largely absent from its former strongholds.

4.2 Communities & Vegetation

Continuity of Old Trees with a Naturally High Bark pH

B. incompta has always shown a preference for trees with a naturally high bark pH and, in this country, has never been recorded from acid-barked species such as alder, birch and oak. In many sites the pH of the bark has been increased further by exposure to dust particles from tracks or manure particles from grazing animals. Wounds and sap runs favoured by the species also increases the pH of the surface of the bark or lignum.

Table 1 - Tree species from which there are recent records for *B. incompta*

Tree Species	Number Of Sites
Abies sp.	1
Acer campestre Field Maple	6
Acer pseudoplatanus Sycamore	8
Aesculus hippocastanum Horse Chestnut	5
Fagus sylvatica Beech	13 all but one in the New Forest
Ilex aquifolium Holly	11 all in the New Forest
Fraxinus excelsior Ash	10
Ulmus Elm species	8

The Presence of Hollow or Wounded Trees

B. incompta shows a strong preference for growing on wounded, damaged or hollow trees. Examination of many herbarium specimens showed that even when growing on elm it was often found below or around wounds and sap runs. In its current sites it is restricted to trees with wounds, particularly those which have been formed by branches being cut or snapped off creating a sap run down the trunk. On one beech it is found on lignum on the base of the tree where animals have eaten the bark. Its other main niche is on hard lignum inside hollow trees, mostly old Holly pollards in the New Forest, but occasionally hollow ash, beech, field maple and sycamore.

The conservation of this species is highly dependant on the presence and continuity of damaged and wounded trees in its remaining sites. In the New Forest there are many such trees and the survival of the species here is secure. In other large parkland and pasture woodland systems, such as Melbury Park, Moccas Park and Whiddon Deer Park,

there are also numerous veteran and wounded trees and the species has a good chance of long-term survival.

Figure 5 - *Bacidia incompta* forming an extensive streak below a wound on an old living elm tree, St Mary's, Isles of Scilly.

Figure 6 - *Bacidia incompta* is abundant on hard lignum inside hollow ash tree near Lulworth, Dorset

Figure 7 - Habitat of *Bacidia incompta* in ancient old growth pasture woodland, Shave Wood, New Forest. *B. incompta* is present beside a sap run on the old beech tree in the left of the picture.

Figure 8 - Habitat of *Bacidia incompta* either of sap run on ancient beech tree, Canterton Glen, New Forest.

5 Threats / Factors Leading to Loss or Decline or Limiting Recovery

At present *Bacidia incompta* can be considered viable in conservation terms only in the New Forest where it occurs widely in the ancient old-growth pasture woodlands.

Elsewhere it is often restricted to just single trees, many of which are in a decrepit or senescent state. The most immediate threat to the species is the loss of the host trees through natural ageing, wind-throw or felling for safety reasons. In most sites tree continuity is a problem as there are not sufficient old wounded trees to support viable populations.

6 Current Conservation Measures

6.1 *IN SITU* MEASURES

Of the four Elm Lichens under our care, *B. incompta* seems to be the most adaptable, being found on quite a wide variety of tree species. However, in many sites it is restricted to just one tree and the trees are often old and in a senescent state. In the long term the species will probably survive only in large pasture-woodland and parkland sites where there is a large number of old trees with hollows and wounds. In the ancient old-growth woodlands of the New Forest the species has proved to be quite widespread, being present in at least 19 woodlands, and its future seems secure. In other ancient parkland sites, such as Melbury Park, Moccas Park and Whiddon Park, the species is found on several trees and is likely to survive as long as there are enough wounded trees of sufficient age to support the species.

In the majority of other sites the species is still vulnerable to the tree dying naturally, collapsing or being blown down. As with many crustose lichens it is difficult to suggest specific conservation measures for this species. Initially, Tree Preservation Orders ought to be put on particularly threatened trees to prevent accidental felling. New wounds could be created by pruning branches, preferably in the growing season to create a sap run. If there are younger trees adjacent to the *Bacidia* tree these could be pollarded or pruned to create wounds and sap runs to provide a suitable habitat for the lichen. More research work is needed to see how quickly *B. incompta* colonies wounds, and whether it colonises the sap encrusted bark, or the algal 'gunge' that often surrounds sap runs.

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10 Links

- ARKive species web page for *Bacidia incompta:* http://www.arkive.org/species/ARK/fungi/Bacidia_incompta/
- British Lichen Society: http://www.thebls.org.uk/.

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