

Chronic Bee Paralysis Virus

Comprehensive Findings Review

Synthesised from the abstracts and full texts of the most-cited and representative papers within a harvested corpus of 522 records (438 open access). A curated review of landmark findings, not an exhaustive catalogue. Generated 2026-06-12.

Executive Summary

Chronic bee paralysis virus (CBPV) is the causative agent of chronic bee paralysis, a well-recognised clinical disease of **adult** honey bees. Unlike most bee viruses, CBPV produces overt, visible symptoms: affected bees show trembling, an inability to fly, crawling at the hive entrance, bloated abdomens and, in a second presentation, hairless, shiny, dark ('black') bees that are rejected by guards. It is taxonomically unusual — an unclassified, multi-segmented positive-sense RNA virus that does not fit neatly into the established bee-virus families — and, unlike DWV or the AKI complex, it is not strongly dependent on the *Varroa* mite. Transmission is driven instead by crowding and direct bee-to-bee contact. This document synthesises the findings by theme and catalogues the landmark studies.

Taxonomy	Unclassified positive-sense ssRNA virus; multi-segmented genome; anisometric particles
Disease	Chronic bee paralysis — an overt clinical disease of ADULT bees (not brood)
Type I signs	Trembling, inability to fly, crawling, bloated abdomen, clustering
Type II signs	Hairless, shiny, dark 'black' bees rejected at the hive entrance
Diagnostic clue	In surveys, dark-coloured/disoriented bees were consistently CBPV-positive (Berényi 2006)
Prevalence	Patchy/clustered — ~28% of French apiaries (adults), absent in pupae (Tentcheva 2004)
Transmission	Crowding & direct contact (broken hairs); largely Varroa-independent

A Distinct Virus and a Distinct Disease

CBPV stands apart from the other major honey bee viruses in both biology and clinical presentation. Taxonomically it remains **unclassified**: it is a positive-sense, single-stranded RNA virus with an unusual multi-segmented genome and anisometric (ellipsoidal) particles, not assigned to the Iflaviridae or Dicistroviridae that contain most bee viruses. Clinically, it is the agent of **chronic bee paralysis**, a disease of adult bees that — unusually for bee viruses — produces overt, diagnosable symptoms. It is consistently associated with the adult stage and is essentially absent from pupae in field surveys (Tentcheva 2004).

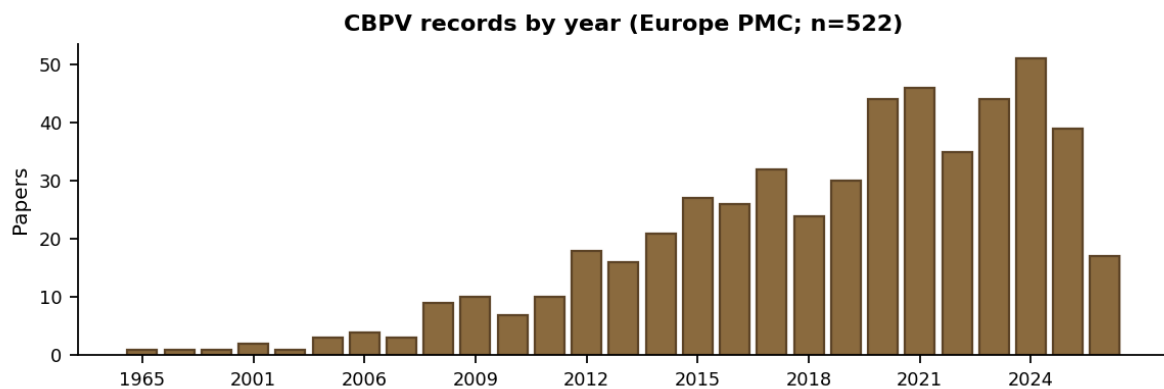
Clinical Syndromes

Chronic bee paralysis classically presents in two overlapping forms. The **Type I (paralysis) syndrome** features trembling of the wings and body, an inability to fly, crawling at the hive entrance, bloated abdomens and clustering of sick bees. The **Type II (hairless-black) syndrome** features bees that become hairless, shiny and dark, are nibbled by nestmates, and are rejected by guard bees at the entrance — historically called 'little blacks' or 'black robbers'. Field observations bear this out: in an Austrian survey, bees showing dark colouring and disorientation were always CBPV-positive (Berényi 2006), and a Greek mortality episode of sudden deaths and 'tremulous movements' implicated CBPV among the detected pathogens (Bacandritsos 2010).

Epidemiology, Prevalence and Transmission

CBPV tends to occur as patchy, sometimes explosive outbreaks rather than uniform background infection. It was found in about 28% of French apiaries in adult bees but in none of the sampled pupae (Tentcheva 2004), and in only ~10% of colonies in an Austrian survey (Berényi 2006). The disease is strongly linked to **crowding and direct contact**: transmission is facilitated when bees are confined together (for example in poor weather), with the virus entering through breaks in the cuticular hairs caused by bee-to-bee contact, in addition to faecal-oral spread. Vertical transmission from queens to offspring has also been demonstrated (Chen 2006). Notably, and unlike DWV or the AKI complex, CBPV is **not strongly dependent on the *Varroa* mite** for its epidemiology.

Research Activity



Landmark Study Catalogue

Selected by citation impact and thematic importance. Core studies:

Tentcheva 2004 — Prevalence and seasonal variations of six bee viruses in France (2004, Applied & Environmental Microbiology; cited 285)

Large-scale PCR survey of six viruses across 36 French apiaries.

- CBPV found in 28% of apiaries in adult bees but in NONE of the pupae — confirming it as an adult-stage disease.
- CBPV was not among the viruses recovered from Varroa samples, consistent with its Varroa-independent epidemiology.
- Infections persisted in seemingly healthy colonies.

PMC535170 · doi:10.1128/aem.70.12.7185-7191.2004

Berényi 2006 — Occurrence of six honeybee viruses in diseased Austrian apiaries (2006, Applied & Environmental Microbiology; cited 106)

Surveyed 90 Austrian colonies with disease symptoms for six viruses by RT-PCR.

- CBPV detected in ~10% of colonies; its distribution varied considerably by region.
- Bees showing dark colouring and disorientation were ALWAYS CBPV-positive — a clear symptom-virus link.
- Virus loads were 10–126× higher in diseased than in apparently healthy colonies of the same apiaries.

PMC1449027 · doi:10.1128/aem.72.4.2414-2420.2006

Bacandritsos 2010 — Sudden deaths and colony population decline in Greek honey bee colonies (2010, J. Invertebrate Pathology; cited 97)

Investigated a mortality episode with tremulous movements in Peloponnese, Greece.

- Symptomatic adult bees (sudden deaths, tremulous movements, decline) tested CBPV-positive.
- Multiple pathogens (CBPV, ABPV, DWV, SBV, BQCV, Nosema ceranae, Varroa) and imidacloprid residues co-occurred.
- Concluded viruses and N. ceranae synergistically played the most important role — CBPV among them.

None · doi:10.1016/j.jip.2010.08.004

Supporting studies:

Chen 2006 — Prevalence and transmission of honeybee viruses (2006, Applied & Environmental Microbiology; cited 165)

Examined queen tissues and offspring for six viruses including CBPV.

- CBPV present in queens was detected in their offspring (eggs, larvae, workers) — vertical transmission.

PMC1352288 · doi:10.1128/aem.72.1.606-611.2006

Beaurepaire 2020 — Diversity and Global Distribution of Viruses of the Western Honey Bee (review) (2020, Insects; cited 132)

Synthesised global diversity and distribution of A. mellifera viruses.

- Places CBPV among the recognised honey bee viruses with distinctive overt symptoms.
- Notes its patchier distribution relative to the ubiquitous DWV/SBV/BQCV.

PMC7240362 · doi:10.3390/insects11040239

Scope note: studies excluded as off-topic

- **Vanengelsdorp 2009 / Cornman 2012 / Hristov 2020 / Shih 2013:** CCD/colony-loss and unrelated reviews — CBPV is one of several factors or absent from focus.
- **Fürst 2014 / McMahon 2015:** DWV/spillover-focused studies that include CBPV only peripherally.
- **Mosquito sRNA virome study:** Detected a CBPV-RELATED virus in *Anopheles* mosquitoes — informative for CBPV's wider relatives but not a honey bee study.
- **Dussaubat 2012 (Nosema):** *Nosema* gut-pathology study — different pathogen.

References

Tentcheva 2004. *Prevalence and seasonal variations of six bee viruses in France*. Applied & Environmental Microbiology (2004). doi:10.1128/aem.70.12.7185-7191.2004 · PMC535170

Berényi 2006. *Occurrence of six honeybee viruses in diseased Austrian apiaries*. Applied & Environmental Microbiology (2006). doi:10.1128/aem.72.4.2414-2420.2006 · PMC1449027

Chen 2006. *Prevalence and transmission of honeybee viruses*. Applied & Environmental Microbiology (2006). doi:10.1128/aem.72.1.606-611.2006 · PMC1352288

Bacandritsos 2010. *Sudden deaths and colony population decline in Greek honey bee colonies*. J. Invertebrate Pathology (2010). doi:10.1016/j.jip.2010.08.004

Beaurepaire 2020. *Diversity and Global Distribution of Viruses of the Western Honey Bee (review)*. Insects (2020). doi:10.3390/insects11040239 · PMC7240362

Provenance & caveat. Curated synthesis of landmark CBPV studies from a corpus of 522 records (438 open access); not exhaustive. Findings are from the cited papers' abstracts and full texts, supplemented by long-established CBPV disease descriptions; values are as reported by the original authors. Not peer-reviewed — verify against the cited DOIs.