

**PREMIERES TUESDAY 1 DECEMBER, 7.30PM ON SBS**

# HONEYBEE BLUES

*Honeybee Blues* tells the story of the world's disappearing honeybees and the efforts of Australian scientist Dr Denis Anderson to save them from annihilation.

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**PREMIERES TUESDAY 1 DECEMBER, 7.30PM ON SBS**

## **Key Creatives**

Writer/Director	STEFAN MOORE
Producers	SUSAN MACKINNON and ANNA CATER
Executive Producer	SUSAN MACKINNON
Editor	RAY THOMAS
Cinematographer	PHIL BULL
Animator	AL MOORE
Composers	DAVID McCORMACK and ANTONY PARTOS
Narrator	JENNIFER VULETIC
Featuring	DR DENIS ANDERSON (CSIRO scientist) WIM DE JONG (quarantine officer) WARREN TAYLOR (live bee exporter) JULIAN WOLFHAGEN (Leatherwood honey producer)
Duration	52 minutes
Website	<a href="http://www.screenaustralia.gov.au/showcases/honeybeeblues">www.screenaustralia.gov.au/showcases/honeybeeblues</a>

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## **PREMIERES TUESDAY 1 DECEMBER, 7.30PM ON SBS**

### **Synopses**

#### **One line**

*Honeybee Blues* tells the story of the world's disappearing honeybees and the efforts of Australian scientist Dr Denis Anderson to save them from annihilation.

#### **One paragraph**

*Honeybee Blues* tells the story of the world's disappearing honeybees and the efforts of Australian scientist Dr Denis Anderson to save them from annihilation. From the native bush and orchards of Australia to the industrial farmlands of the United States and the highlands of Papua New Guinea, *Honeybee Blues* is a scientific detective story that tells a 21st century cautionary tale.

#### **One page**

*Honeybee Blues* tells the story of the world's disappearing honeybees and the efforts of Australian scientist Dr Denis Anderson to save them from annihilation.

From the native bush and orchards of Australia to the industrial farmlands of the United States and the highlands of Papua New Guinea, *Honeybee Blues* is a scientific detective story that tells a 21st century cautionary tale.

The European honeybee, or *Apis mellifera*, is used for commercial honey production and by a global pollination industry worth up to \$100 billion. Without it we would lose a third of the world's food supply.

But honeybees are under threat from all directions. Industrial agriculture and habitat destruction have taken a toll but the biggest threat is a deadly parasitic mite which Anderson discovered and called *Varroa destructor*. It has decimated bee populations everywhere except Australia which is now the only country that still has European honeybees living in the wild. While in Papua New Guinea, Anderson discovers another lethal mite, *Varroa jacobsoni*, that adds to the threat to the world's honeybees.

Denis Anderson believes the solution to eradicating the Varroa mite lies in the genes of the honeybee. He is trying to switch off the honeybee gene that tells the Varroa mite to reproduce. If he succeeds, he could save the last of the world's wild European honeybees from extinction.

The film features observational sequences and interviews with biosecurity officers, bee exporters, pollinators and honey producers. Combining macro photography of the insect world, a lively blues soundtrack and animation sequences, *Honeybee Blues* tracks the incredible journey of the world's oldest domesticated animal and its predators around the globe.

## **PREMIERES TUESDAY 1 DECEMBER, 7.30PM ON SBS**

### **Production Story**

Director Stefan Moore learned two big lessons while filming *Honeybee Blues*. One, you should always listen to the beekeeper; and two, even when you think that you understand bees, they will always surprise you.

The lessons came on the final day of filming when Moore was stung by a bee for the first time in the nine-month shoot.

“My soundman was stung, my cameraman was stung, even the beekeepers I was filming were stung,” Moore says. “I began to think that I had some special honeybee aura that was protecting me. That was before I went out on my final shoot at Denis Anderson’s hives.

“Denis warned me that the bees were angry but foolishly I didn’t put on my protective suit. It was a move I lived to regret. I was stung four times on my head and once on the lid of my right eyelid. The next day my face swelled so badly that I couldn’t open my eye.”

Apart from a few nasty encounters, luck was with the filmmakers throughout the production, which came about after producer Susan MacKinnon read a newspaper story about colony collapse disorder and the plight of the honeybee.

“It was the first time I’d heard of it and when I read that it frightened me,” MacKinnon recalls. “It got my imagination going and I thought it would make a great film. I met Denis Anderson and I loved him as soon as I met him. I loved the way he spoke about bees and how he drew us into the world of bees.”

Later MacKinnon teamed up with Anna Cater as a producing partner and they approached Moore to direct the film. Initially he knew little about bees and nothing of Anderson’s work but he began his research.

What Moore discovered was that the humble European honeybee – the *Apis mellifera* – is under threat from all directions.

Central to the human food supply and responsible for pollinating crops – a \$2 billion industry in Australia alone – the honeybee population has been decimated by pesticides, insecticides and industrial agriculture. Now it faces its biggest threat yet, a rapidly evolving parasitic mite called *Varroa Destructor*, which has wiped out wild bees and most commercial beehive operations around the world.

“Bees really are the canaries in the coal mine for our environment and for the world around us,” Moore says. “They are threatened by everything from pesticides to habitat destruction to industrialisation and all of it stems from us; all of it has been caused by human activity.”

Moore faced the challenge of telling a complicated story in an hour.

“Because Denis Anderson is the world’s leading bee pathologist, and is the scientist who discovered the mite that has killed the world’s bees, that became our central story. Of all the threats affecting bees that’s the biggest one,” Moore says.

Fortunately for the filmmakers – and unfortunately for the honeybees – the cameras captured several crucial developments in the story.

## ***PREMIERES TUESDAY 1 DECEMBER, 7.30PM ON SBS***

Moore was filming Anderson in Papua New Guinea when he discovered a new and previously unknown parasitic mite. He also was on hand to witness the potentially devastating incursion of the Asian honeybee that could carry the new mite in Queensland.

“We were extremely fortunate from a storytelling point of view because of the events that unfolded while we were in production,” he says. “We happened to be filming in PNG when Denis found the new mite was there; he wasn’t even aware of what he was discovering then. All the other major events in the documentary – the attempt to eradicate the Asian honeybee, the possible blockade of the export bees by the United States – were happening while we were filming.

As well as telling a fascinating story about an Australian scientist leading the way in international research, producer Anna Cater hopes the film triggers a new way of thinking in those who watch it.

“I hope that audiences will think about the way our food is produced and see that is unsustainable,” she says. “The message is not up front in the film, but the film does show the way that modern agriculture has affected the tipping point.”

But while the film could have been filled with gloom, Moore infused it with light through animation, music and entertaining characters whose enthusiasm for bees is contagious.

“The story is delivered by people who live with bees and love bees and have a wonder about bees, because bees are inherently wonderful and beautiful creatures,” he says. “The characters in the film have a sense of humour and don’t take themselves too seriously.”

Despite his nasty encounter with bee stings, Moore has grown to admire and respect the honeybee.

“They have incredible memory, they have extraordinary navigation skills and their brains are even being used as models for the human brain. They’re just endlessly fascinating.”

And he has enough honey in his cupboard to last a lifetime.

## **PREMIERES TUESDAY 1 DECEMBER, 7.30PM ON SBS**

### **Interview with Dr Denis Anderson – CSIRO bee pathologist**

Since his childhood growing up in the bush on a small property near Temora in rural NSW, Dr Denis Anderson has loved nature.

“I was always happy mucking about in the bush, looking for wild things, though I didn’t know there were any jobs where people could work in that area, looking at wild things to make money out of it,” he says.

While studying science at the Australian National University, Anderson met Professor Adrian Gibbs, the scientist responsible for first identifying viruses in honeybees. His interest was sparked.

Thirty years later he is one of the world’s leading bee pathologists, with expertise in insects, microbes and genetics. He has devoted his life to protecting the future of the European honeybee and with it a global pollination industry valued at up to \$US100 billion a year.

His long-term goal is to genetically create a new strain of honeybee with inbuilt protection against the deadly *Varroa destructor* mite. If he’s successful, it could ensure the survival of European honeybees in Australia and around the world.

“The biggest threat to bees is *Varroa* without a doubt,” he says. “It’s the way we are working bees these days. We’re treating them as expendable. We’re moving into this industrialised beekeeping where you shunt bees around the world in large numbers. You use them for a particular job and if they peter out you go and get them for somewhere else.

“The bees are placed under extreme stress. At the same time we actually spread a lot of new pathogens around the world and that’s where the *Varroa* mite has come into it. It’s come from globalisation and the effects of industrialised beekeeping.”

Anderson never ceases to be fascinated by the complex societies of the honeybee, from the division of labour among workers to the behaviour of the queen who lays 2000 eggs a day. Humans, he reckons, could learn a lot from bees.

“A beehive is like a human city,” he says. “They have to look after themselves, they have to get their food in, they have to get water in, they have to have proper shelter, they have to look after diseased individuals in the hive and get rid of them. And they’ve developed this incredible set of behaviours to do that.”

Anderson hopes *Honeybee Blues* will draw attention to the vital role his tiny subjects play in our lives. “Not enough is being done to save the bee. Governments are still reluctant to take the honeybee seriously,” he says.

“The European honeybee is the only managed pollinator that we have that will pollinate anything. If you take that out of the agricultural system then you’ve got nothing basically. Crop yields will drop. Without it, global agriculture is going to have a very hard time. About 30 per cent of our food supply relies on pollination by the honeybee. Our diets would be very much reduced.”

## **PREMIERES TUESDAY 1 DECEMBER, 7.30PM ON SBS**

### **About Dr Denis Anderson**

CSIRO scientist Dr Denis Anderson has turned a childhood fascination with insects into his life's work and is internationally renowned as one of the world's leading bee pathologists.

A specialist in insects, microbes and genetics, Dr Anderson was awarded a PhD in viruses in honeybees in 1985 at the Australian National University and has since expanded his expertise beyond bee pathology and microorganisms to include nutrition and stressors affecting the world's bee populations. His research has determined the cause of several unknown disorders in bees.

The biggest threat facing honeybees is the parasitic *Varroa* mite species, which Dr Anderson identified and named in 2000.

His work includes using molecular and physical methods to investigate the ecology, epidemiology, invasiveness, co-evolution and control of exotic parasitic bee mites and their Asian honeybee hosts.

He is carrying out a comprehensive study of parasitic bee mites in the genus *Tropilaelaps*, considered the next emerging biosecurity threat to world apiculture.

He also is gathering information on the reproductive system of the *Varroa* mite that could lead to innovative control methods.

Dr Anderson's career has taken him around the world, investigating beekeeping cultures throughout Asia, Papua New Guinea and the United States.

While he has been stung innumerable times – “Sometimes you find good bees and sometimes not. The good bees you like. If you get a bad bee, you can't do much about it” – he continues to be fascinated with bees and their societies.

And it's not just bees that are under threat.

Dr Anderson's favourite honey is produced from the nectar of Australia's river red gum: “The red river gum is threatened too so it's one of those honeys that are probably facing extinction in the same way as the bees. It may not be around much longer.”

### **Achievements**

Dr Anderson has received the following awards:

- CSIRO Entomology Chief's Awards, for science achievement, 2000.
- Owen J Newlin International Business Excellence Award, for overcoming the complex quarantine issues involved with importing leafcutter bees, 2001.
- Goodacre Memorial Award, for meritorious service to apiculture, 2005.

He also serves on the International Scientific Board of the journal *Apidologie* and is a sitting member on the Australian Honeybee Research and Development Committee.

## **PREMIERES TUESDAY 1 DECEMBER, 7.30PM ON SBS**

### **Glossary**

#### **Apis mellifera**

Commonly known as the European honeybee, *Apis mellifera* is by far the dominant bee used in the honey production and pollination industries. This variety of honeybee – both domestic and wild – is responsible for pollinating most of the world's food supply. The European honeybee is under threat.

#### **Apis cerana**

Commonly known as the Asian honeybee, *Apis cerana*, is distinctly smaller than the European honeybee and has more prominent abdominal stripes. In the wild, *Apis cerana* prefer to nest in small spaces, such as hollowed out tree trunks. *Apis cerana* is the natural host to the mite genus *Varroa*, a serious pest of the European honeybee.

#### **Varroa destructor**

*Varroa destructor* is a parasitic mite that has killed most of the world's wild honeybees and invaded commercial hives almost everywhere apart from Australia. The mite feeds on bee blood and transmits lethal viruses throughout bee colonies. It is believed to have infected European honeybees after Russian beekeepers shipped them to the Korean Peninsula on the trans Siberian railway some time during the last century.

#### **Colony collapse disorder**

A phenomenon first reported in late 2006, colony collapse disorder (CCD) occurs when the worker bees abandon their hives causing the colony to collapse. Researchers are investigating the roles played by viruses, fungi and pesticides, as well as stress factors such as infection by the *Varroa* mite, poor nutrition and the disruption of the honeybee's natural life cycle by transporting them long distances to pollinate crops. There is a growing consensus among scientists that CCD is the result of a combination of these factors.

#### **Beelining**

Beelining describes the method used to locate wild bee colonies by capturing and marking foraging worker bees, then releasing them from various points to establish the direction and distance of the colony's home. Sugar is placed in dishes to attract the bees.

## **PREMIERES TUESDAY 1 DECEMBER, 7.30PM ON SBS**

### **About the Filmmakers**

#### **WRITER / DIRECTOR: Stefan Moore**

Stefan Moore is an Emmy Award-winning director, who has worked as a producer/director and an executive producer of documentaries in the US, Britain and Australia. He recently produced and directed *The Cars That Ate China*, a documentary about the social impact of China's car revolution, and a National Geographic special *Race Against the Killer Flu*. From 2001 to 2005 Stefan was the Executive Producer of Science and History at the ABC; prior to that he was an Executive Producer for Film Australia. Stefan's documentaries include the critically acclaimed eight-part international series *The Trouble With Medicine*; a PBS three-hour series *America on Wheels* about the social history of the car in America; and the PBS Emmy Award-winning documentary *Presumed Innocent* about pre-trial detention inside New York's infamous Rikers Island. He has won numerous awards, including four Emmys.

#### **PRODUCER: Anna Cater**

Anna Cater has 20 years experience in the film industry and her films have screened around the world. Anna's credits include the award-winning film *Frank Hurley – the Man Who Made History*, which screened in Australia, the UK, Europe and Canada. Anna directed and produced *Outsourced!* (also known as *1-800-INDIA*) for PBS in the United States and SBS about four call-centre workers in India. It won several awards, including a Silver Screen Award in the 2006 US International Film and Video Festival Awards, a 2006 Cine Golden Eagle Award and an outstanding story award in the 2006 South Asian Journalists Association Awards. Anna began her career in journalism at *The Canberra Times*. She has written for newspapers around the world, and worked on ABC Radio National's *Background Briefing* and for ABC Television's *Four Corners* programs.

#### **PRODUCER: Susan MacKinnon**

During her 20-year career, Susan MacKinnon has championed new and innovative filmmaking. As a filmmaker, Susan won acclaim for documentaries including *Eternity, Loaded – The Gun Lovers, You Must Remember This, Dinner for Six, Somewhere Between Light and Reflection* and *Men and Their Sheds*. She was executive producer on the feature-length documentary *The Oasis*, by Ian Darling and Sascha Ettinger Epstein; *Global Haywire*, by Academy Award-winner Bruce Petty; *4*, directed by Tim Slade and *Over My Dead Body* directed by Ian Walker. She also consulted on *In the Company of Actors*, directed by Ian Darling. *The Oasis*, *Global Haywire* and *4* attracted nine nominations for Australian Film Institute awards, including a best documentary nomination for each. While working at the Australian Film Finance Corporation, Susan was a tireless advocate for Australian documentaries and financed more than 400 films.

#### **EDITOR: RAY THOMAS**

Screen Editor Ray Thomas has worked on many award-winning Australian documentaries over the past 30 years. His credits include *Black Harvest, Bilal No Sex No Violence No TV, Rats In The Ranks, The Diplomat, Facing The Music, Molly and Mubarak, The Good, the Bad and the Ugg Boot* and *Temple Of Dreams*. Ray won an

## **PREMIERES TUESDAY 1 DECEMBER, 7.30PM ON SBS**

AFI Award for Best Editing for *Rats in the Ranks*. He received an accreditation from Australian Screen Editors in the inaugural group of inductees in 2002.

### **ANIMATOR: AL MOORE**

Al Moore is a conceptual animator for film, documentary and TVC. Al manipulates the line between still photography, moving image and animation. As a live action director his short film, *Three Fates*, won an ACS Gold award in 2007. As a designer Al created *RedNecks*, a visual critique of Pauline Hanson 's rise in popularity – later appropriated by Mambo. Al's pre-visual graphic design and typography style has been put to use on innumerable films and spots, notably Ray Lawrence's *Lantana*.

### **COMPOSERS: DAVE McCORMACK and ANTONY PARTOS**

David McCormack is a singer/songwriter and resident composer at Supersonic. He has been the front man for numerous bands including *Custard*, *The Titanics*, *The Millionaires* and *David McCormack and the Polaroids*. Together with Antony Partos, they have collaborated on numerous projects including the Alex Proyas' feature film *Garage Days*, Peter Duncan's *Unfinished Sky* and *Valentines Day* as well as numerous television commercials.

Antony Partos is an internationally awarded composer and is a founding director of the music and sound design company Supersonic. His credits include the feature films *The Home Song Stories* and *Unfinished Sky* (both won AFI Awards consecutively for best music for a feature film). His most recent scores were for the feature film *Disgrace* and *Accidents Happen*.

## **PREMIERES TUESDAY 1 DECEMBER, 7.30PM ON SBS**

### **References**

**Honeybee Blues website**

[www.screenaustralia.gov.au/showcases/honeybeeblues](http://www.screenaustralia.gov.au/showcases/honeybeeblues)

**Denis Anderson's CSIRO profile**

<http://www.csiro.au/people/ps2dv.html>

**SBS Television**

<http://www.sbs.com.au/television>

**Australian Honey Bee Industry Council**

<http://www.honeybee.org.au>

**Parliamentary Inquiry into the Future Development of the Australian Honey Bee Industry**

<http://www.aph.gov.au/House/committee/pir/honeybee/index.htm>

**Rural Industries Research and Development Corporation**

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**The Tasmanian Honey Company – Julien Wolfhagen**

<http://www.tasmanianhoney.com/home.html>

**United States Department of Agriculture (USDA)**

[http://www.ars.usda.gov/main/site\\_main.htm?modecode=12-75-05-00](http://www.ars.usda.gov/main/site_main.htm?modecode=12-75-05-00)