

# ABRAMORAMA

An HHMI Tangled Bank Studios/ Passion Planet Production



## THE SERENGETI RULES

Directed by  
Nicolas Brown

Produced by  
David Allen  
Run Time: 1:24

[TheSerengetiRules.com](http://TheSerengetiRules.com)

Facebook.com/SerengetiRules Twitter: @SerengetiRules Instagram: @SerengetiRules  
#SerengetiRules #LearnTheRules

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## LOG LINE

Exploring some of the most remote and spectacular places on Earth, five pioneering scientists make surprising discoveries that flip our understanding of nature on its head, and offer new hope for restoring our world.

## SHORT SYNOPSIS

Academy Award-winning Passion Pictures and HHMI Tangled Bank Studios present one of the most important but untold science stories of our time—a tale with profound implications for the fate of life on our planet. Beginning in the 1960s, a small band of young scientists headed out into the wilderness, driven by an insatiable curiosity about how nature works. Immersed in some of the most remote and spectacular places on Earth—from the majestic Serengeti to the Amazon jungle; from the Arctic Ocean to Pacific tide pools—they discovered a single set of rules that govern all life. Now in the twilight of their eminent careers, these five unsung heroes of modern ecology share the stories of their adventures, reveal how their pioneering work flipped our view of nature on its head, and give us a chance to reimagine the world as it could and should be.

## SYNOPSIS

Academy Award-winning Passion Pictures and HHMI Tangled Bank Studios present one of the most important, but untold science stories of our time—a tale with profound implications for the fate of life on our planet.

Beginning in the 1960s, a small band of young scientists headed out into the wilderness, driven by an insatiable curiosity about how nature works. Immersed in some of the most remote and spectacular places on Earth—from the majestic Serengeti to the Amazon jungle; from the Arctic Ocean to Pacific tide pools—they discovered a single set of rules that govern all life. Now in the twilight of their eminent careers, these five unsung heroes of modern ecology—Bob Paine, Jim Estes, Mary Power, Tony Sinclair, and John Terborgh—share the stories of their adventures, and how their pioneering work flipped our view of nature on its head. Across the globe, they discovered that among the millions of species on our planet, some are far more important than others. They called these species “keystones,” because they hold the natural world together.

The role of keystones is both revelatory and surprising: sea otters help kelp forests flourish, supporting everything from salmon to eagles; wolves enable rivers to run clear and help forests thrive; and the humble wildebeest controls the numbers of trees, butterflies, elephants, and even giraffes on the savanna.

Unfortunately, these deep connections also work in reverse. When keystones are removed, ecosystems unravel and collapse—a phenomenon no one had imagined—or understood until their revolutionary discoveries. But with new knowledge also comes new hope, and these same visionaries reveal the remarkable resilience of nature—and how the rules they discovered can be used to upgrade and restore the natural world. They give us the chance to reimagine the world as it could and should be.

Based on the book by Sean B. Carroll, **The Serengeti Rules** will forever change the way we see nature. The film will be accompanied by a media and impact campaign to shine a light on restoration projects across the world.

## DIRECTOR'S VISION - NICOLAS BROWN

Nothing could have prepared me for our first shoot. It was early 2016 and we had contacted Bob Paine about a daylong interview in June. He was cheerful and enthusiastic—he clearly loved to talk about ecology. Then on the 6<sup>th</sup> of May, Bob emailed us with terrible news— he had leukemia and it was terminal. But he also wrote, “I’m in very good spirits and very much looking forward to participating...”

Weeks later, on the 22<sup>nd</sup> of May we got an email from Bob’s daughter, Anne. She said Bob was unlikely to survive the night. I remember feeling crushed. We cancelled the shoot and considered cancelling the film. Thankfully, Bob didn’t die that night. Two days later, Anne called us again. Amazingly, Bob insisted on doing the interview. Anne was worried how severely the disease was affecting his skin and eyes.

What remained of Bob’s life could be counted in minutes. That he was willing to spend it with a film crew was astonishing to me. But it was clear that he saw his work as connected to something bigger than himself. The obvious discomfort he suffered speaking to us from a hospital bed, for him, was trivial. What mattered was his story.

During the day, Bob had maybe an hour where he could accept visitors, the rest of the time he spent in a near coma. The waiting room at the hospital was filled with Bob’s extended family and a “who’s who” list of ecologists and scientists, all lining up to pay their respects to this great man. Bob gave us a lion’s share of his time—20 minutes per day, for two consecutive days.

Bob’s story wasn’t about “saving the planet,” and I don’t think he embraced many “campaigns.” He was a scientist. For him, science was about experimentation and deep thinking. And in the end, I think, science for him was about love. Among Bob’s last words were:

*What made this group so special is that each of us has a pretty private part of the world, some large, some small, which we understand and love. To know something intimately one recognizes change, and much of the secret of ecology today is to not only acknowledge change, but to begin to factor out causes. Why is the world we know so well changing?*

A few days later Bob was gone. But with his words ringing in my ears, I was then given the extraordinary privilege of meeting the others in his group. More than that—I was able to film them in the places they love: Tony Sinclair’s Serengeti, Mary Power’s Oklahoma streams, John Terborgh’s Amazonian rainforest, Jim Estes’ Aleutian Islands.

This film is about more than the ecology of place. Collectively, the fact that scientists have found nature working the same way all over the planet tells us that Bob (and the others) discovered something fundamental about life. Predators and keystone species may become our greatest allies in the coming fight to protect our biosphere.

## PRODUCER'S VISION - DAVID ALLEN

We find ourselves in strange and puzzling times; science is under attack like never before. News about the environment is too often marked by doom and gloom with a litany of seemingly unsurmountable challenges. Popular culture blazes forward, glamorizing youth and celebrity, seemingly unable to take the time needed to properly observe what is happening to the world all around us.

It's against this backdrop, that **The Serengeti Rules** takes an audacious stand. This feature documentary flies in the face of contemporary culture – almost defying it – from the outset this is plain to see by its choice of cast: five unsung ecologists in the twilight of their lives, one literally on his deathbed.

With extraordinarily detailed cinematography and sumptuous recreations we allow each character to delve deep into their past and relive their ever-evolving relationship with nature. Travelling to remote parts of the planet, as well as backyard streams and woodlands, **The Serengeti Rules** immerses viewers in a life-long pursuit to understand how nature works. And as our pioneers turn the scientific picture of nature on its head, like them, you too will start to see nature in a different way.

Their work helps confirm that across the planet, there are universal rules that stitch all ecosystems together. As they recount their life-time of observations, they highlight how our steady stripping out of species from the top of the food chain– in particular predators - can cause the environment around us to collapse to a lower denuded base level. It calls into question our attitude toward predators like big cats and wolves, and highlights the dangers of stripping 90 percent of predatory fish from the oceans. But more importantly, **The Serengeti Rules** is a story of hope and heart. Our characters reveal a much more exciting discovery, how using the rules of nature, we can upgrade the environment around us and begin to address some of the greatest environmental challenges of our time.

The film reveals the importance and the joy of scientific inquiry, and the rewards of a life well-lived.

## FILM TEAM

### DIRECTOR - NICOLAS BROWN

Nicolas Brown is one of the UK and USA's leading documentary filmmakers. He has won three Emmy awards, two BAFTA awards, and over 35 major festival awards in the USA, China, India, and Europe. For the past five years, he has worked for Passion Pictures as creative director of the Blue Media Lab – a media think tank dedicated to environmental filmmaking. He recently produced and directed two episodes of Passion's **Earth: A New Wild**, which



won a Panda Award at Wildscreen for "Best Series." Recently he directed National Geographic's award-winning Giant Screen film **Pandas 3D: The Journey Home**. A regular at the BBC, he directed the award-winning **Earth's Natural Wonders**, two episodes of the BAFTA-winning **Human Planet** and the multiple award-winning **Climate Chaos** with Sir David Attenborough. Nicolas' Discovery Channel film **The Truth About Global Warming** with Tom Brokaw won the Emmy for "Best Long Form Documentary." He has been invited to lecture in Central America about climate change by the UK foreign Office, and he has given presentations on filming "blue chip" Natural History in America and Germany, and is also co-author of the book **Human Planet** published by Random House and BBC Books. More information is available at [www.nicolasbrown.org](http://www.nicolasbrown.org).

### PRODUCER, PASSION PLANET - DAVID ALLEN

David Allen masterminds Passion Picture's output across landmark television and theatrical release documentaries. David has four Emmys and five Wildscreen Pandas to his name, he is recognized as one of the leading independent producer/directors in his field. In 1997, the Discovery and C4 series: **Bug World** earned him an Emmy for directing. His production for BBC, **My Life as a Turkey**, was described by the New York Times "as probably the best documentary of the year." This earned him his fourth Emmy and Wildscreen's coveted "Best of Festival" Panda. Most recently, David produced the award-winning landmark series for PBS, **Earth's New Wild**.

### EDITOR - ANDY R. WORBOYS

Andy R. Worboys started his film editing career at BBC working on the scientific favorite, **Tomorrow's World**. His work covers a vast range of broadcast and corporate credits, both for the US and UK markets. This includes many of the BBC's flagship series such as **Horizon** and **Panorama**. Andy has worked on two highly acclaimed feature documentaries, BAFTA winning, **The Imposter** and The Grierson & Rose D'Or nominated **Inside the mind of Leonardo 3D**. He recently completed the Emmy nominated **Hillsborough**, which in 2017 picked up both BAFTA "Best Single Documentary" and BAFTA "Best Factual Editing."

#### **DIRECTOR OF PHOTOGRAPHY - TIM CRAGG**

Tim Cragg has been focusing on photographing theatrical feature documentaries for the last five years. Some of his most notable projects include “The Best Documentary” at the Sydney Film Festival in 2014, **35 Letters**. And **The Last Man On The Moon**, which premiered at the South by Southwest Film Festival in 2015 and then went onto Netflix. He has been in production on four feature theatrical documentaries that will be released between late 2017 and early 2018. These include **Damien Hirst - The Wreck From The Unbelievable, Three Identical Strangers** produced by RAW for CNN Films, Sundance, Ch4/ BFI, and **The Black Sea** produced by Black Sea Films. Tim has won a BAFTA for cinematography and has been nominated for two BAFTAs as well as an Emmy. He has worked on six films that have won BAFTAs and has worked on three films that have been nominated for Emmys.

#### **EXECUTIVE PRODUCER - DAVID ELISCO**

For nearly three decades, David Elisco has built a reputation as an award-winning producer and executive known for science films with a distinctive flare. His work has taken him in search of compelling stories—from the north Atlantic, exploring the Titanic, to the jungles of Africa to investigate viruses, and to the rainforest of Peru to examine the ecological underpinnings of the web of life. His films have been distributed internationally and have appeared on PBS, NBC, Discovery Channel, Smithsonian Channel, and National Geographic. Highlights include the series **Strange Days on Planet Earth**, hosted by Academy Award nominee Edward Norton; **The Shape of Life**, an eight-hour series on the rise of the animal kingdom for PBS; and **Your Inner Fish** – also for PBS – a three-hour special based on the best-selling book by Neil Shubin.

#### **EXECUTIVE PRODUCER - DENNIS LIU**

Dennis Liu has been producing media aimed at revealing the wonder, power, and joy of scientific discovery for over 20 years. He has worked with PBS on numerous programs and projects, including **NOVA ScienceNow**, NOVA Labs, The Fred Friendly Seminars, Annenberg Learner, PBS LearningMedia, and **Gorongosa Park: Rebirth of Paradise**.

#### **BASED ON THE BOOK BY SEAN B. CARROLL**

Sean B. Carroll is vice president for Science Education at the Howard Hughes Medical Institute, the largest private supporter of science education in the US, and Professor of Molecular Biology and Genetics at the University of Wisconsin. Carroll is also the author of “*Brave Genius, The Making of the Fittest*,” “*Endless Forms Most Beautiful*” and “*Remarkable Creatures*,” which was a finalist for the National Book Award for non-fiction. In 2016, he received the Lewis Thomas Prize for Writing about Science. An internationally recognized evolutionary biologist, Carroll has also received the Benjamin Franklin Medal in Life Sciences, and been elected a member of the National Academy of Sciences and the American Philosophical Society.

## CONTRIBUTORS

### ANTHONY R.E. SINCLAIR

Professor Anthony R.E. Sinclair was born in 1944 and raised in East Africa. He obtained a PhD from Oxford University in 1970. Sinclair's fascination of African nature brought him back to the continent in 1965 where he began his research on the Serengeti, work that spanned 52 years. He is now Professor Emeritus at the University of British Columbia, Vancouver, Canada. He is a Fellow of the Royal Society of London and the Royal Society of Canada and in 2013 he was awarded the Aldo Leopold medal from The Wildlife Society, USA.

Sinclair has conducted ecological research on the role of biodiversity in the functioning of ecosystems around the world including Africa, Australia, New Zealand and Canada. His work in the Serengeti focused on how the ecosystem repaired itself after the catastrophic rinderpest disease of 1890. Because of his work we now have a better understanding of the role animal migrations, food shortage and predation play on the stability of an ecosystem, knowledge that can be used to restore ecosystems around the world.

### ROBERT PAINE

Bob Paine (1933 - 2016) was a Harvard University graduate and earned his doctoral degree from the University of Michigan. In 1962, he began teaching at the University of Washington where he did his research for 36 years. After retirement, he continued his research and writing.

His most notable research was on the communities of the intertidal zone on Mukkah Bay Tatoosh Island, Wash. Paine discovered two fundamental ecological concepts - keystone species, when a species has an out-sized impact on communities, and trophic cascades, when creatures have strong indirect domino effects throughout a food chain.

Paine is one of the most honored ecologists of his generation. He received the 1983 Robert H. MacArthur Award from the Ecological Society of America, the 1996 Sewall Wright Award, and the 2013 International Cosmos Prize. He was also granted the Honorary Lifetime Membership Award from the American Society of Naturalists in 2009 and in 1986 he was elected to the National Academy of Sciences.

Peter Kareiva, director of the Institute of the Environment and Sustainability at the UCLA, wrote of Dr. Paine: "He insisted on experiments in ecology at a time when others were content with simply explaining patterns. I think he turned ecology from quantitative natural history into a modern science."

### **JAMES A. ESTES**

James A. Estes grew up in southern California and received his bachelor's degree from the University of Minnesota in 1967 and doctorate from the University of Arizona in 1974. For most of his career, he worked as a research scientist for the US Geological Survey. In 2007, he retired from federal service and joined the Department of Ecology and Evolutionary Biology at the University of California, Santa Cruz. His pioneering work on the role of sea otters as keystones in kelp forests is now a classic example of a trophic cascade. Estes has conducted research on coastal marine ecosystems in Alaska, California, Canada, Mexico, New Zealand and Russia. His most recent book, a memoir entitled "*Serendipity: An Ecologist's Quest to Understand Nature,*" was published in May 2016.

He is a Pew fellow in marine conservation, a Fellow of the California Academy of Sciences, and a member of the U.S. National Academy of Sciences. He received the Western Society of Naturalist's Lifetime Achievement Award in 2011 and the American Society of Mammologists C. Hart Merriam Award for excellence in research in 2012.

### **MARY E. POWER**

Mary E. Power is a professor in the Department of Integrative Biology at the University of California, Berkeley. She has studied food webs in temperate and tropical rivers, as well as linkages of rivers, watersheds and near-shore environments. Focal organisms include cyanobacteria, algae, invertebrates, fish, estuarine crustaceans and terrestrial grasshoppers, spiders, lizards, birds, and bats. By studying how key ecological interactions depend on landscape and temporal contexts, she and her students hope to learn how river-structured ecosystems will respond to change in climate, land use, and biota. Her group also collaborates closely with Earth and atmospheric scientists in site-based research to investigate linkages between rivers and the subsurface critical zones that mediate their flow regimes.

She was awarded an honorary doctorate by Umea University, the Kempe Medal for distinguished ecologist, the Hutchinson Award from the American Society of Limnologists and Oceanographers, and the Award of Excellence from the Society of Freshwater Science. She is a member of the California Academy of Science, the American Academy of Arts and Sciences, and National Academy of Sciences. She has served on the Editorial Boards of PNAS (2014 to present), Science (2006-2009), and Annual Reviews of Ecology, Evolution and Systematics (2011 to present). Power also served as President of the American Society of Naturalists, and of the Ecological Society of America. Since 1988, she has been the Faculty Director of the Angelo Coast Range Reserve in Mendocino, California.

### **JOHN TERBORGH**

John Terborgh is James B. Duke Professor Emeritus of Environmental Science in Duke University and has current affiliations with the University of Florida – Gainesville and James Cook University, Cairns, Australia. His work focuses on tropical ecology, particularly plant-animal interactions and trophic cascades. He has conducted research in the West Indies, South America, Africa, Malaysia, and New Guinea and has published around 300 articles and 8 books. He is a member of the



American Academy of Arts and Sciences and the National Academy of Sciences. He was awarded a Pew Fellowship In 1992 and became a MacArthur Fellow in the same year. He was awarded the Daniel Geraud Elliot Medal by the National Academy of Sciences in 1996. He has served on the boards of numerous conservation organizations and in 1999 he founded ParksWatch, an organization dedicated to monitoring and publicizing the status of parks in developing countries. He has remained active in research and conservation to the present.

## PRODUCTION COMPANIES

### PASSION PLANET

Passion Pictures is a global production company with a worldwide reputation for its commercials, animation, feature documentaries and landmark television productions. With three Oscars, three BAFTAs, and numerous Emmy awards **Passion Pictures'** film and television department has a world-renowned output with notable titles including: Academy Award-winning **One day in September**, Academy Award-nominated **Restrepo**, Academy shortlisted **The Tillman Story** (Winner: Best Historical Doc Emmy 2012, BAFTA-winning **The Imposter**, Academy Award and BAFTA-winning **Searching For Sugar Man**, Golden Panda and Emmy-winning **My life as a Turkey**, and the Netflix original Academy Award-nominated **Winter On Fire**. Passion Planet is a department set up by four-time Emmy Award-winning producer/director David Allen to focus on natural history and specialist factual documentaries. **The Serengeti Rules** is Passion Planet's latest feature length production. Visit [www.passion-pictures.com](http://www.passion-pictures.com) for more information.

### HHMI TANGLED BANK STUDIOS

HHMI Tangled Bank Studios is a production company established and funded by the Howard Hughes Medical Institute as an extension of its longstanding science education mission. The Institute is the largest private, nonprofit supporter of science education in the United States. Dedicated to the creation of original science documentaries for broadcast, theatrical and digital distribution, HHMI Tangled Bank Studios award-winning films address important contemporary issues and capture compelling stories of discovery across all branches of scientific inquiry. Recent films include **The Farthest – Voyager in Space**, Emmy Award-nominated **Spillover – Zika, Ebola & Beyond**, and GSCA Award-winning **Amazon Adventure**.

### ABOUT ABRAMORAMA

Abramorama is the preeminent global theatrical distribution and rights management partner for documentary and music films today and is recognized for the consistent high quality of its work on award winning feature films. An innovator in the focused, personalized form of film distribution and event cinema, Abramorama provides invaluable alternatives to filmmakers and content owners. An industry leader in marketing, promotion, and distribution, Abramorama continues to trail-blaze exciting new pathways for filmmakers to find their audience.

Over the course of nearly 20 years, Abramorama has successfully distributed and marketed hundreds of films, including Ron Howard's Grammy Award®-winning *The Beatles: Eight Days A*

*Week – The Touring Years*; The Beatles' *Yellow Submarine*; Amir Bar-Lev's *Long Strange Trip – The Untold Story of the Grateful Dead*; Tabbert Fiiller's *The Public Image Is Rotten*; Danny Clinch and Pearl Jam's *Let's Play Two*; Corbett Redford and Green Day's *Turn It Around: The Story of East Bay Punk*; John Scheinfeld's *Chasing Trane – The John Coltrane Documentary*; Roberta Grossman and Nancy Spielberg's *Who Will Write Our History*; Brett Bern's *BANG! The Bert Berns Story*; Brett Morgen and National Geographic's seminal *Jane*; Ashley Bell's *Love & Bananas - An Elephant Story*; Charles Ferguson's *Time To Choose*; Asif Kapadia's *Senna*; Neil Young's *Greendale*; Cameron Crowe's *Pearl Jam Twenty*; Sacha Gervasi's *Anvil! The Story of Anvil*; Banksy's Academy Award® nominated *Exit Through the Gift Shop*; the surprise indie hit *Awake: The Life of Yogananda*; Laurie Anderson's astonishing New York Times critics' pick, *Heart of a Dog*; National Board of Review Winner *Listen to Me Marlon*; and 2016 Documentary Academy Award®-nominee and IDA Best Documentary Winner *The Look of Silence*. Abramorama is a founding partner of *The Seventh Art Stand* program, an act of cinematic solidarity against Islamophobia that ran in more than 50 theaters across the United States in May of 2017. Abramorama recently launched its music-centric film fund focused on the global release of iconic music documentaries. For more information visit [www.abramorama.com](http://www.abramorama.com)

## CREDITS

HHMI Tangled Bank Studios & Passion Planet present

**A Film Directed by**

Nicolas Brown

**Produced by**

David Allen

**Executive Producer**

David Guy Elisco

**Executive Producers**

Dennis WC Liu

John Battsek

**Based on the book by**

Sean B. Carroll

**Film Editor**

Andy R. Worboys

**Director of Photography**

Tim Cragg

**Original Music**

Anne Nikitin

**Story Producer**

Catherine Watling

**Natural History Producer**

Joe Loncraine

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Sarah Cooper

Sinead Casey

**Line Producer**

Heather Forbes

**Head of Production**

George Chignell

**Assistant Producer**

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Skye McCann

**Archive and Edit Coordinator**

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**Assistant Editor**

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**Researcher**

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**2D Designer/Compositor**

Jade Wheldon

**Production Executive for Passion Pictures**

Nicole Stott

### **Scientific Advisors**

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John Fryxell  
Michael Heithaus

### **Cast**

Bob Paine  
Jim Estes  
John Terborgh  
Mary Power, Age 8  
Mary Power, Age 33  
Mary Power's Mother  
Tony Sinclair

Matthieson McCrae  
Jaime Excell  
Johnathan Newport  
Ashlyn Lopez  
Samantha Nugent  
Laurie Spiegel  
Greg Kriek

### **Camera**

Chris Openshaw  
Hugh Campbell  
Joe Riis  
Nelson Hume  
Ralph Bower  
Rob Lyall  
Robin Cox  
Simon De Glanville  
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Tim Shepherd  
Tom Fitz

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Florian Graner  
Jeremy Monroe  
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Scott Snider

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Mike Mitchell  
Shane Moore  
Shaun Macwilliams

### **Jimmy Jib Operator**

Chris Lindeburg

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Bill Rudolph

David Hechenberger

Gordon Glascock

Greg Breazeale

Henry Prentice

James Payne

Joe Giannotti

John Gooch

Justin Lacroix

Mark Iler

Mark Roberts

Ray Day

Ron Osioy

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Katiso Modise

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Hayden Peters

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Jenna Hannigan	Rina Carcasole	Will Stolzenburg
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**Archive**

Alamy  
 Alan Watson Featherstone  
 Animal Ecology, Wiley  
 AP Archive/AP Images  
 BBC Motion Gallery/Getty Images  
 Brian Zgliczynski  
 British Pathé  
 Burton Historical Collection/Detroit Library  
 Charles Simenstad  
 Chris Helzer  
 Conservation Biology, Wiley

Cristian Dimitrius  
Dan Lebbin  
Dawn Hart  
Dawson Dunning  
Day's Edge Productions  
Doclights GmbH  
Donald Croll  
Doug McLaughlin  
Dr Ingrid N Visser, Orca Research Trust  
Dusty Harpole  
Emiliano Donadio  
Ernie Kovacs  
Florian Graner/Sealife Productions  
Freshwater Illustrated  
Gianluca Serra  
Google  
Graphic Films and Serengeti Partners Ltd  
Greenpeace  
Grizzly Creek Films  
HOME by Yann Arthus-Bertrand, My Planet, Elzevir Films, Goodplanet Foundation  
Hudson Bay Project  
Jared Diamond  
Jennifer Smith  
John Frank, USDA, Forest Service  
John Knox  
Journal of Ecology, Wiley  
K.L. Heong  
Kate Kiefer, AAD  
Ken Feeley  
Los Angeles Times, 2015/Geoffrey Mohan  
Laurie Campbell  
Luke Painter  
Michael Dalton-Smith  
Mike Kenner  
Mohsen Kayal  
National Academy of Sciences  
National Geographic Television  
NatureFootage  
New Scientist  
NHNZ Moving Images  
Norman Kroon  
Okapia KG Michael Grzimek & Co  
ORF Enterprise  
Paul Dayton

Papa Sierra/Hope Production  
Peter Kragh  
Pond5  
Richard Keighley  
Rivers for Change  
Sandhill Restoration, The Nature Conservancy, Liberty County Florida, D. Printiss  
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William J. Ripple

**Graphics & Animation by Passion Animation Studios**

Director	Jake Mengers
Producer	Juliette Stern
Design & Animation	Niels Prayer
Executive Producers	Lucie Friar/ Debbie Crossup

**Visual Effects**

Blue Spill  
Mick Connaire  
Moonraker VFX

**Illustrators**

April Murray  
Christopher Mayer

**Music Supervisor**

Gary Welch

**Additional Archive Research**

Clare Darken

**Post Production Facilities**

Molinare TV & Film

**Post Production Manager**

Charlotte Airth

**DI Colorist**

Chris Rodgers

**DI Online Editors**

Nick Anderson

Beren Croll

**DI Coordinator**

Theresa Crooks

**Dialogue Editor**

Claire Ellis

**Sound Re-recording Mixer**

George Foulgham

**Assistant Re-recording Mixer**

Chad Orororo

**Sound Effects Editor**

Jonny Crew, Wounded Buffalo Sound Studios

**Transcription Services (UK)**

Bye Jones Productions

Wickens Media Services

**Production Accountant**

Kendrah Matthews

**Film Production Legal Services**

Dermot Desmond, SmithDehn LLP

Jonathan Blair, Simkins LLP

**Production Insurance**

Brenda Mazariegos

Gabriela Padilla

John O'Sullivan

Natasha Boyne

**Production Health and Safety**

Fiona Drews, Remote Trauma

### Original Music

Score Supervisor	Amanda Street for DNA Music Limited
Orchestrations	Tom Kelly, Jessica Jones, Anne Nikitin
Additional Music	Jessica Jones, Tom Kelly
Score Performed by	The City of Prague Philharmonic Orchestra
Conducted by	Richard Hein
Score Recorded	Smecky Music Studio, Prague
Recording Engineer	Vitek Kral
Translator/Music Assistant	Stanja Vomackova
Session Supervisor & Orchestra Contractor	James Fitzpatrick for Tadlow Music
Score Recorded at	TYE London
Recording Engineer	Joe Rubel
Studio Manager	Sean Hargreaves
Studio Assistant	Harry Bryson
Piano	Tom Kelly
Guitars	Adam Double
Score Mixer	Joe Rubel
Assistant Score Mixer	Jack Sugden
Score Mixed at	Pixel

### MUSIC 'Society'

Performed by Eddie Vedder

Written by Jerry Hannan

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