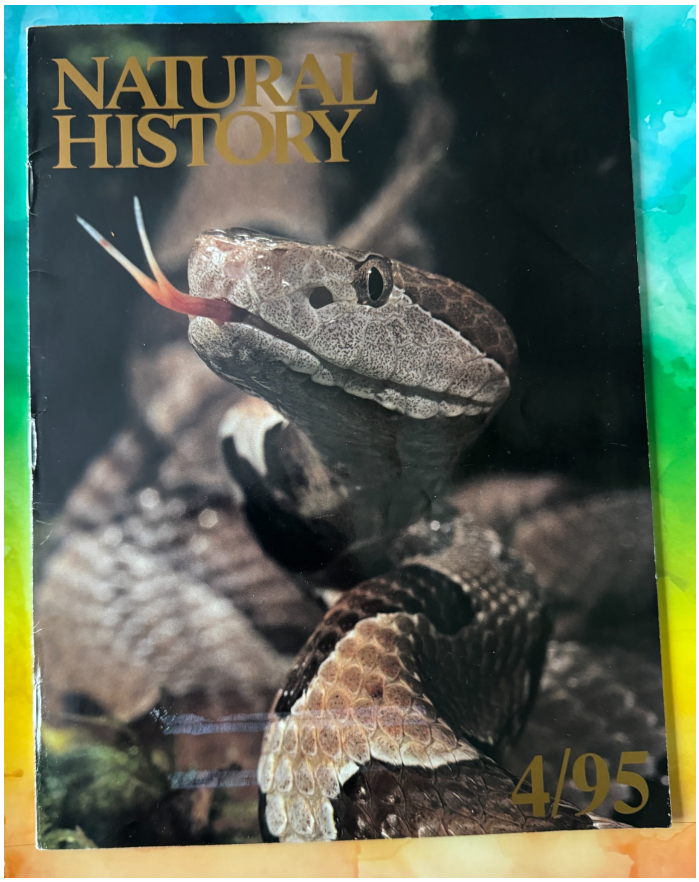
Natural History

Magazine Research Record



Natural History, 4/95. Physical issue photographed for the preservation project.

Publication Identification

Field	Information
Country	United States
Publisher	American Museum of Natural History, New York
Publisher address	Pending research update
Magazine title	Natural History
Publication status	Pending research update
Publication run	1900 onward. Exact final publication date: Pending research update
Editor	Pending research update
Printer	Pending research update
ISSN	0028-0712
Language	English
Publication type	General interest natural history and science magazine
Publication frequency	Ten issues per year
Collection coverage	One issue: April 1995, Volume 104, Number 4 (4/95)
Earliest issue represented	April 1995, Volume 104, Number 4
Latest issue represented	April 1995, Volume 104, Number 4
Issue represented in the collection	April 1995, cover designation 4/95
Volume / issue	Volume 104, Number 4
Featured article of special interest	Kurt Schwenk, “The Serpent’s Tongue,” pages 48–55

Publication record and preservation notes based on the photographed physical issue and independently located bibliographic, institutional, and author related references.

Preservation Significance

This issue has preservation value independent of its personal association. Natural History represents a long running tradition of communicating scientific research to a general audience, and this April 1995 issue preserves a period example of how research in animal sensory biology was presented outside specialist academic journals. Kurt Schwenk's article, "The Serpent's Tongue," is especially significant because it explains research into snake tongue flicking and the sensory function of the forked tongue, an area of study that contributed to a better understanding of how snakes collect and interpret chemical information from their surroundings. Preserving the issue retains both the original scientific communication and the visual and editorial context in which that research was presented to the public.

The magazine also preserves the physical context that is often lost when an individual article is separated from its original issue. The cover, typography, article layout, photography, neighboring content, pagination, and magazine design are all part of the historical record of science communication in 1995. Digital citations can preserve bibliographic facts, but the physical issue preserves the publication as readers originally encountered it.

Personal Significance

This issue also has unusual personal significance within the collection. I obtained it specifically because of Dr. Kurt Schwenk's research on snake tongue flicking, a field closely connected to the type of research I hope to pursue myself. I also had the extraordinary opportunity to meet with Dr. Schwenk and spend an extended period of time speaking with him about his overall research and related scientific interests. Because of that experience, this issue represents more than an example of historical science communication. It connects an area of research that has influenced my own academic interests with a scientist whose work I was fortunate enough to discuss with him directly.

Publication Metadata and Masthead Documentation

Field	Information
Publication	Natural History
Original title	The American Museum Journal
Launch	1900
Title change	The publication became Natural History during the late 1910s while continuing the earlier volume sequence.
Institutional origin	Founded by the American Museum of Natural History.
1995 volume	Volume 104
Subject	Natural history, zoology, biology, ecology, evolution, anthropology, earth science, and public science communication
Purpose	Public communication of science and nature for a broad readership.
Later ownership change	The magazine was sold by the American Museum of Natural History in 2002 and continued under private ownership.

International Distribution

Pending research update. Specific international distribution arrangements for the April 1995 issue have not been established in this record.

Issues Represented in the Collection

Field	Information

Issue	4/95
Date	April 1995
Volume / number	104(4)
Cover subject	Close view of a snake with its forked tongue extended.
Featured article documented here	“The Serpent’s Tongue” by Kurt Schwenk
Article pages	48–55
Article subtitle	“A snake’s forked tongue keeps it from winding up on the wrong side of the tracks”
Opening spread image	African bush viper sampling the air with its tongue
Opening spread photo credit	Brian Kenney

Featured Article Identification

Field	Information
Author	Kurt Schwenk
Article title	The Serpent’s Tongue
Publication	Natural History
Date	April 1995
Volume / issue	104(4)
Pages	48–55
Verified citation	Schwenk, K. 1995. The serpent’s tongue. Natural History 104(4):48–55.
Subject	Snake tongue flicking, chemical sensing, vomeronasal sampling, prey tracking, and the functional significance of the forked tongue.

Publication History and Independent Verification

Natural History was founded in 1900 by the American Museum of Natural History as The American Museum Journal. The publication later adopted the title Natural History and continued the established volume sequence. The American Museum of Natural History identifies Natural History Magazine as a publication dating from 1900 and describes its purpose as promoting public understanding of science and nature.

The Biodiversity Heritage Library records Volume 104 as the 1995 volume of Natural History and identifies the American Museum of Natural History Library as the holding institution. The ISSN International Centre confirms the print ISSN as 0028-0712.

Independent bibliographic evidence confirms the featured article as Kurt Schwenk, “The serpent’s tongue,” Natural History 104(4):48-55. A 1995 Virginia Herpetological Society literature review cites the article using the same volume, issue, and page range. ResearchGate also records the article under Schwenk’s authorship and University of Connecticut affiliation.

Article Context and Scientific Significance

“The Serpent’s Tongue” presents snake tongue flicking as a sensory system rather than as a simple visual or behavioral curiosity. The article explains how repeated tongue flicks collect chemical information from the environment and how the forked tongue contributes to directional sampling. Its placement in Natural History is important because it brought specialist work in functional morphology, sensory biology, and snake behavior to a broad public audience in a heavily illustrated format.

The article also preserves a period snapshot of scientific explanation before later popular accounts could draw on additional decades of experimental work. The physical issue therefore documents both the scientific subject itself and the way that research was communicated to non specialist readers in the mid 1990s.

Research Continuity: 1995 to 2021

The scientific subject represented in the 1995 article continued to be developed and explained in later work by Kurt Schwenk. In June 2021, The Conversation published his article “Smelling in stereo – the real reason snakes have flicking, forked tongues.” That later article revisits the evolutionary and sensory significance of tongue flicking and explains the forked tongue as part of a directional chemical sampling system.

The later article provides useful context for the preservation record because it shows continuity between the 1995 public science article and Schwenk’s continuing work on snake sensory biology. The 1995 magazine is therefore not simply an isolated reptile article. It forms part of a longer record of scientific research and public explanation centered on how snakes gather chemical information from their surroundings.

Website Category Placement

Field	Information
Primary website section	Magazine Preservation
Country grouping	United States
Publication title	Natural History
Date	April 1995
Issue designation	4/95
Publication Identification	Country, title, date, volume / issue, publisher / organization, frequency, ISSN
Issue Metadata	Cover designation, volume / issue, featured article, article pages, visible cover subject
Publication History	1900 launch as The American Museum Journal, later title change to Natural History, American Museum of Natural History association, later 2002 sale
Preservation Significance	Historical science communication, snake sensory biology, original article context, and unusual personal research connection

Source Notes

Field	Information
Photographed physical issue	Primary evidence for cover designation 4/95, article title, author, article opening page, subtitle, page 48, opening spread photography, and visible issue design.
Virginia Herpetological Society Newsletter, August 1995	Independent contemporary citation: Schwenk, K. 1995. The serpent’s tongue. Natural History 104(4):48–55.
American Museum of Natural History, Scientific Publications	Institutional statement that Natural History Magazine has been published since 1900 and promotes public understanding of science and nature.
Biodiversity Heritage Library	Bibliographic record showing Natural History volume 104 for 1995 and the American Museum of Natural History Library holding.
ISSN International Centre	Confirmed print ISSN 0028-0712.
University of Pennsylvania, Online Books Page	Publication history identifying the 1900 origin as The American Museum Journal and later continuation as Natural History.
ResearchGate record for “The serpent’s tongue”	Independent author and article record for Kurt Schwenk and the 1995 publication.
The Conversation, June 16, 2021	Later public science article by Kurt Schwenk, “Smelling in stereo – the real reason snakes have flicking, forked tongues,” documenting continued explanation of the same research area.

Research Cautions

- Preserve the cover designation exactly as printed: 4/95.
- Use Volume 104, Number 4 when a conventional bibliographic issue designation is needed.
- Do not describe the issue as a specialist reptile magazine. Natural History is a broad natural science publication; the importance of this particular issue to the collection comes from the Schwenk article.

- Do not imply that the magazine was acquired because of the cover alone. The issue was obtained specifically to read and preserve “The Serpent’s Tongue.”
- Separate the neutral preservation value of the issue from the personal research connection. Both are legitimate, but they serve different purposes in the record.
- The 2021 The Conversation article is contextual evidence of research continuity. It is not part of the 1995 magazine and should not be represented as content from that issue.
- The personal section may use first person because the personal connection is itself part of the acquisition and preservation history of this issue.

Visual Evidence



The Serpent’s Tongue

A snake’s forked tongue keeps it from winding up on the wrong side of the tracks

by Kurt Schwenk

On a windswept California hillside, amid the parched grass and live oak, a western rattlesnake waits. Coiled beneath a rock overhang, its scaly skin and muted tones blend with the grass, earth, and stone. Lidless eyes stare, transfixed; the snake’s only movement is the occasional flicker of its forked tongue. Ever vigilant, a ground squirrel hesitantly approaches in search of food. Imperceptibly, the snake’s body tenses, slitted pupils shift, the accordionlike folds of the front third of its body prepare to extend. The squirrel—moving, stopping, moving, stopping—draws nearer. When the squirrel is within reach, the snake straightens explosively, hurling itself at the still unaware animal.

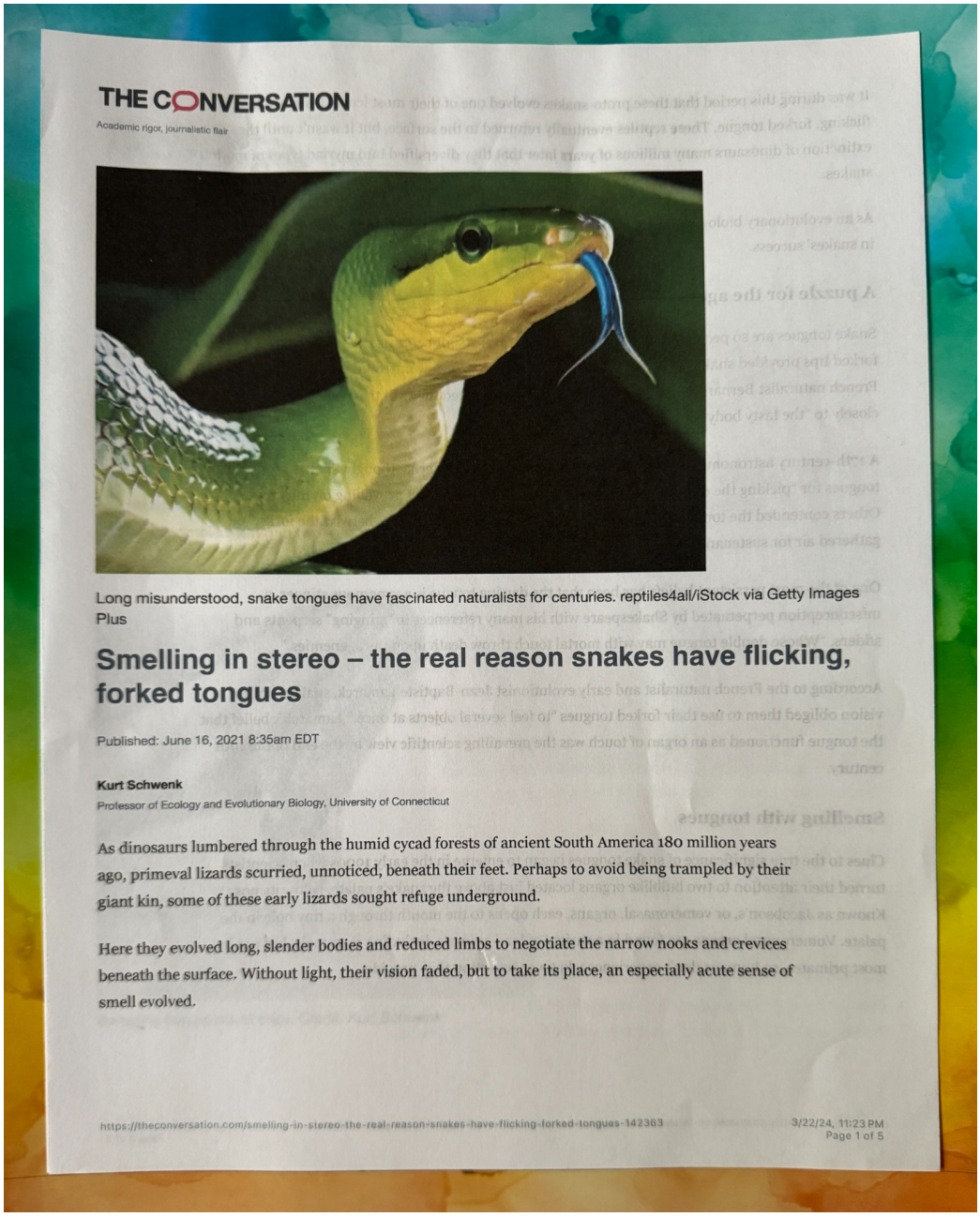
As it traverses the short distance between itself and the prey, the snake opens its mouth and erects its formidable fangs. Too late, the squirrel sees the snake and stares death in the mouth. It is thrown backward by the impact of the snake’s head, impaled by the fangs, and poisoned deep within its core. The rattlesnake releases the squirrel and, after the concentrated fury of its attack, seems strangely unconcerned as the squirrel runs off in panicked flight. The squirrel soon slows, for each bound has pumped the poison farther and farther through its system. A witches’ brew of enzymes and other compounds, the venom has already begun the process of digestion within the body of the squirrel. Now, fifty yards away, the doomed animal seeks refuge within the hollow of a log, where its labored breathing soon ceases.

Slowly at first, the snake moves off. Its tongue extends and retracts constantly, its oscillations a blur. With each flick, the tips of the forked tongue splay, and just before their retreat back into the mouth, they gently brush the ground. With no hesitation, the rattlesnake glides through the grass and among the stones, moving directly toward the hollow log, as if it had known all along where the squirrel would go. Only once does the snake pause, swinging its head back and forth while flicking its tongue. Then it again moves along the ground to the log and the still warm body

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Prey’s eye view of an African bush viper sampling the air with its tongue
Brian Kenney

Opening spread of “The Serpent’s Tongue” by Kurt Schwenk. The photographed left page shows page 48 of Natural History 4/95.



THE CONVERSATION

Academic rigor, journalistic flair

Long misunderstood, snake tongues have fascinated naturalists for centuries. reptiles4all/iStock via Getty Images Plus

Smelling in stereo – the real reason snakes have flicking, forked tongues

Published: June 16, 2021 8:35am EDT

Kurt Schwenk

Professor of Ecology and Evolutionary Biology, University of Connecticut

As dinosaurs lumbered through the humid cycad forests of ancient South America 180 million years ago, primeval lizards scurried, unnoticed, beneath their feet. Perhaps to avoid being trampled by their giant kin, some of these early lizards sought refuge underground.

Here they evolved long, slender bodies and reduced limbs to negotiate the narrow nooks and crevices beneath the surface. Without light, their vision faded, but to take its place, an especially acute sense of smell evolved.

https://theconversation.com/smelling-in-stereo-the-real-reason-snakes-have-flicking-forked-tongues-142363 3/22/24, 11:23 PM Page 1 of 5

Printed copy of Kurt Schwenk's 2021 The Conversation article retained as contextual evidence of the continuing research subject.

Web Sources Consulted

- American Museum of Natural History. Scientific Publications. https://www.amnh.org/research/scientific-publications
- American Museum of Natural History. About the Museum. https://www.amnh.org/about
- Biodiversity Heritage Library. Natural history, Volume 104 (1995). https://field.biodiversitylibrary.org/bibliography/39140
- ISSN International Centre. Natural history, ISSN 0028-0712. https://portal.issn.org/resource/ISSN/0028-0712
- University of Pennsylvania, The Online Books Page. Natural History archives. https://onlinebooks.library.upenn.edu/webbin/serial?id=naturalhistory

- Virginia Herpetological Society Newsletter, August 1995. Literature Review citation to Schwenk, K. 1995. https://virginiaherpetologicalsociety.com/newsletters/news-v5n2/news5n2.pdf
- ResearchGate. Kurt Schwenk, “The serpent’s tongue.” https://www.researchgate.net/publication/258914155_The_serpent%27s_tongue
- The Conversation. Kurt Schwenk, “Smelling in stereo – the real reason snakes have flicking, forked tongues,” June 16, 2021. https://theconversation.com/smelling-in-stereo-the-real-reason-snakes-have-flicking-forked-tongues-142363