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GENTLE.NEWS

In Today's Edition

"The meek may inherit the earth, but at the moment it belongs to the conceited. Like me."

— Cassandra Clare

NASA’s Chandra Finds Unexpected Fireworks in Aftermath of Stellar Explosions

6 Min Read NASA’s Chandra Finds Unexpected Fireworks in Aftermath of Stellar Explosions To view this video please enable JavaScript, and consider upgrading to a web browser that supports HTML5 video A composite image of the nearby galaxy Messier 83, and short timelapse videos of two curious supernova remnants hidden inside. X-ray: NASA/CXC/SAO; Optical: NASA/ESA/AURA/STScI, Hubble Heritage Team, W. Blair (STScI/Johns Hopkins University) and R. O’Connell (University of Virginia); Image Processing: NASA/CXC/SAO/A. Jubett, L. Frattare and P. Edmonds The aftermath of a supernova, a stellar explosion, is usually a slowly fading cloud of hot gas. So when astronomers pointed NASA’s Chandra X-ray Observatory at the nearby galaxy Messier 83 (M83), they did not expect to find a population of supernova remnants, or the debris from these explosions, showing dramatic changes in their brightness. The new results were presented at the American Astronomical Society meeting in Pasadena, California, and published in The Astrophysical Journal. The galaxy M83, located about 15 million light-years from Earth, is forming stars at a high rate. Researchers analyzed 14 years of Chandra data of the galaxy, spanning 2000 to 2014. Using this extensive set of data, the researchers caught surprising variations in the X-ray brightness of sources previously identified as supernova remnants. The

Source: NASA

researchers expected supernova remnants older than a century or so to fade gradually in X-rays, but not change dramatically in brightness. The team found that roughly half of the 22 X-ray sources associated with supernova remnants in their sample showed changes in X-ray brightness over the 14-year span of observations — a result that was completely unexpected. “We knew that individual X-ray sources could vary dramatically,” said Andrea Prestwich, of the Catholic University of America who led the study. “But finding that so many supernova remnants were behaving this way was a real surprise. Something unusual is going on in these objects. Pinpointing the cause remains a challenge, as M83’s distance limits the detail we can observe.” One of the 22 variable supernova remnants has a straightforward explanation: SN 1957D, the debris from a supernova first observed nearly 70 years ago, is ramming into material surrounding the explosion site, producing the observed X-ray flares. But this cannot explain the rest of the sample. There is no evidence to suggest that all 22 remnants were formed within the last century. Something else must be driving the variability. The most likely explanation is that the team has uncovered a population of stellar survivors stars that lived through their partner’s destruction in a supernova explosion. In this scenario, each variable X-ray source began as a pair of massive stars orbiting each other. The more massive star collapsed and exploded as a supernova, leaving behind a black hole or ultra-dense neutron star. Its companion survived. Galaxy M83 in X-ray and Optical Light. X-ray: NASA/CXC/SAO; Optical: NASA/ESA/AURA/STScI, Hubble Heritage

Source: NASA

Team, W. Blair (STScI/Johns Hopkins University) and R. O'Connell (University of Virginia); Image Processing: NASA/CXC/SAO/A. Jubett, L. Frattare and P. Edmonds "It may be that this galaxy contains a collection of supernova remnants where one massive star survives the supernova and becomes locked into an orbit with a black hole or neutron star," said co-author Michael McCollough of the Center for Astrophysics | Harvard & Smithsonian (CfA). "The neutron star or black hole can then start pulling material from the massive star's surface." That infalling material is superheated by the intense gravitational pull, producing the X-rays Chandra detects. These types of systems, known as high-mass X-ray binaries (HMXBs), are among the most variable X-ray sources in the universe. Researchers say they may be the cause of the variations seen in M83's supernova remnants. Astronomers have known about HMXBs for decades, but the difference with this group in M83 is their connection to supernova remnants. Previously, only a handful of supernova remnants associated with HMXBs had been identified across observations of all galaxies. It is unprecedented to find more than 20 strong candidates in just one galaxy. The authors found that the variable supernova remnants are in regions with higher concentrations of massive stars than in other parts of the galaxy, increasing the chances of a link between the remnants and HMXBs. There is another possible explanation: Instead of pulling in material from a companion star, the black hole or neutron star may be recapturing some of the material blasted outward by the original explosion. "This could be an example of cosmic recycling, where debris

Source: NASA

from the explosion falls back onto the very object the supernova created," said co-author Roy Kilgard of Wesleyan University. "And it's quite possible that both explanations are at play — different sources in our sample may have different origins." These results are not unique to M83. A follow-up study of the nearby star-forming galaxy M51 by Zoe Hoiland of Vassar College and Kilgard has uncovered a similar population of variable X-ray sources associated with supernova remnants, suggesting that such systems may be a feature of galaxies undergoing vigorous star formation. This is a composite image of the galaxy M51 combining data from NASA's Chandra X-ray Observatory (purple) with optical data (red, green and blue) taken with ground-based telescopes by a team of astrophotographers. A surprisingly high number of X-ray sources associated with supernova remnants in M51 show large changes in brightness, similar to the behavior seen in M83. Chandra X-ray Data: NASA/CXC/SAO; Astrobin/Optical Groundbased: C.Björk, T.Bähnck, S.Donoso, J.Gentillon, A. and D.Grelin, S.Guberski, R. Hall, T.Heuberger, J.Jacks, P.Kent, Br.Meyers, W.Ostling, N.Puig, T.Schaeffer, F.Schöfbänker, M.Vasilev The Chandra data for M83 began with single observations in 2000 and 2001, followed by 10 observations from 2010 to 2011 and another observation in 2014. NASA's Marshall Space Flight Center in Huntsville, Alabama, manages the Chandra program. The Smithsonian Astrophysical Observatory's Chandra X-ray Center controls science operations from Cambridge, Massachusetts, and flight operations from Burlington, Massachusetts. Visual Description This release features a composite image of the nearby

Source: NASA

galaxy Messier 83, and short timelapse videos of two curious supernova remnants hidden inside. In the composite image, Messier 83, or M83, is shown to have a spiral structure, viewed straight on. At the center is a brilliant white and yellow pool of light. From that light, spiral arms of hot pink cloud corkscrew out in wide, sweeping arches. The galaxy is covered in a faint grey haze, and flecked with red, green, blue, white, and yellow dots. In an annotated version of the composite image, two tiny dots to our lower right of center are highlighted by white circles. These are two of the supernova remnants being considered by researchers. Each is examined further in a separate timelapse video. Over a 14-year period from 2000 to 2014, astronomers pointed NASA's X-ray observatory at the M83 galaxy. They discovered that about half of the X-ray sources believed to be supernova remnants, the aftermath of stellar explosions, were exhibiting dramatic changes in brightness. This result was entirely unexpected. Those changes in brightness are highlighted in the timelapse videos. In each video, a series of static images flashes by, focused on one of the two X-ray sources once believed to be supernova remnants. In the videos, the X-ray sources appear as bright blue blobs with glowing cores. But in each image, taken months or years apart, the shapes change, as does the intensity of the blue color, and the brightness of the core. By presenting the substantively different images of the same objects one after another in quick succession, short timelapse videos are created. The most likely explanation for the changes in brightness is that the team has uncovered a population of stellar survivors, stars that lived through an orbiting partner's destruction in a

Source: NASA

supernova explosion. Material is being pulled from the surviving star onto the black hole or neutron star that formed in the supernova, a process known to cause rapid changes in X-ray brightness. Read more from NASA’s Chandra X-ray Observatory To learn more about NASA’s Chandra mission, visit: https://science.nasa.gov/chandra https://chandra.si.edu News Media Contact Megan Watzke Chandra X-ray Center Cambridge, Mass. 617-496-7998 mwatzke@cfa.harvard.edu Joel Wallace Marshall Space Flight Center, Huntsville, Alabama 256-544-0034 joel.w.wallace@nasa.gov About the Author Lee Mohon Share Details Last Updated Jun 15, 2026 Editor Lee Mohon Contact Joel Wallace Location Marshall Space Flight Center Related Terms Chandra X-Ray Observatory Galaxies Hubble Space Telescope Marshall Astrophysics Marshall Space Flight Center Supernova Remnants Supernovae The Universe Explore More 5 min read NASA’s Chandra Discovers Possible Supernova Remnant in Galactic Center Article 4 days ago 1 min read Pretty in Pink Saturn and its rings are prominently shown in this color image, along with three of… Article 22 years ago 4 min read NASA Connects Little Red Dots with Chandra, Webb Article 2 months ago Keep Exploring Discover More Topics From NASA Chandra X-ray Observatory The Chandra X-ray Observatory is the world’s most powerful X-ray telescope. James Webb Space Telescope Webb is the premier observatory of the next decade, serving thousands of astronomers worldwide. It studies every phase in the… Hubble Space Telescope Since its 1990 launch, the Hubble Space

Source: NASA

Telescope has changed our fundamental understanding of the universe. Universe

Source: NASA

Alaska Invasive Species Awareness Week

Alaska Invasive Species Awareness Week Celebrating teamwork and invasive species prevention Jun 15, 2026 Written By Ashley Lutto Alaska Invasive Species Awareness Week (AKISAW) is more than a date on the calendar — it’s a statewide reminder that protecting Alaska’s wild lands and waters is a shared responsibility. The second week of June, agencies, tribes, nonprofits, researchers, and citizens in the state of Alaska all come together to spotlight the threats invasive species invasive species An invasive species is any plant or animal that has spread or been introduced into a new area where they are, or could, cause harm to the environment, economy, or human, animal, or plant health. Their unwelcome presence can destroy ecosystems and cost millions of dollars. Learn more about invasive species pose and the powerful impact prevention can have. Image Details In a state defined by its intact ecosystems and iconic wildlife, this collaboration isn’t just helpful. It’s essential. Recognizing this, in his executive proclamation Alaska Governor Mike Dunleavy designated June 14-20, 2026 as Alaska Invasive Species Awareness Week. At its core, the week celebrates collaboration. Alaska’s geography alone makes invasive species management a unique challenge: vast distances, remote communities, and diverse ecosystems that can be transformed quickly by a single new pest or plant. No single organization can tackle that alone. That’s why partnerships like the Alaska Invasive Species Partnership (AKISP) and

Source: U.S. Fish & Wildlife Service

Cooperative Invasive Species Management Areas (Anchorage , Kenai Peninsula , and Northern Alaska) are vital. During AKISAW, their efforts become more visible through highlights like volunteer weed pulls and community early detection events. Prevention is the star of AKISAW, and for good reason. Once an invasive species becomes established, eradication becomes expensive, difficult, and sometimes impossible. Prevention, on the other hand, is cost effective and surprisingly simple . Clean your gear Clean drain and dry your boat Don’t transport firewood Report unusual plants or animals o Call 1-877-INVASIV (1-877-468-2748) o Use Alaska Department of Fish and Game Online Invasive Species Reporter These small actions, multiplied across thousands of residents and visitors, protect fisheries, subsistence resources, recreation areas, and the biodiversity that makes Alaska unlike anywhere else. Like the nation-wide National Invasive Species Awareness Week that occurs in February, this Alaska-specific celebration commemorates and amplifies the teamwork and partnerships across the state that occur year-round. It’s a reminder that Alaska’s plants, fish, wildlife, and habitats rely on every Alaskan to do their part to prevent invasive species. Learn more about how you can get involved during Alaska Invasive Species Awareness Week and throughout the year with Alaska Invasive Species Partnership: https://alaskainvasives.org/ Image Details Story Tags Invasive species Written By Ashley Lutto Published Jun 15, 2026 Edited By Andrew LaValle Get Involved Facilities Alaska Region Headquarters Related Stories Land Management These Boots are Cleaned for Hiking May 23, 2024 Get Involved Import-

Source: U.S. Fish & Wildlife Service

ance of Investments in Prevention Nov 20, 2025 Story Get Involved National Invasive Species Awareness Week (NISAW) Feb 23, 2026 Latest Stories Wildlife Wonders Our nation's nature Jun 15, 2026 Wildlife Wonders How are pollinators connected to the American flag? Jun 14, 2026 Endangered Species Act Partners help northeastern bulrush recover by finding and conserving new populations Jun 9, 2026

Source: U.S. Fish & Wildlife Service

FDA Approves New Indication for Tzield (teplizumab) for Certain Pediatric Patients with Recently Diagnosed Stage 3 Type 1 Diabetes

FDA News Release FDA Approves New Indication for Tzield (teplizumab) for Certain Pediatric Patients with Recently Diagnosed Stage 3 Type 1 Diabetes First disease modifying therapy approval for new onset stage 3 diabetes represents a significant milestone for the pediatric type 1 diabetes community For Immediate Release: June 15, 2026 On June 12, 2026, the U.S. Food and Drug Administration granted accelerated approval to Tzield (teplizumab) for a new indication, to delay the decline of insulin production in pediatric patients ages 8 through 17 years who have been recently diagnosed with Stage 3 type 1 diabetes (T1D). This approval marks the first FDA-approved treatment for this indication and represents an important advancement for children living with type 1 diabetes and their families. "The FDA recognizes the large unmet need in patients with type 1 diabetes," said Acting Associate Director for Therapeutic Review of the Division of Diabetes, Lipid Disorders and Obesity, Mahtab Niyyati M.D. "Based on robust evidence of safety and effectiveness, this accelerated approval provides a chance for pediatric patients with recently diagnosed Stage 3 type 1 diabetes to alter the course of their disease." Tzield was previously approved to delay the onset of Stage 3 type 1 diabetes in adults and pediatric patients 1 year of age and older with Stage 2 type 1 diabetes. The newly approved indication is for the use of Tzield to

Source: U.S. FDA

help delay the decline in insulin production in certain pediatric patients who have recently been diagnosed with Stage 3 disease. The FDA granted this application under the agency's accelerated approval pathway. The approval was based on evidence from an adequate and well-controlled clinical trial that Tzield demonstrated a statistically significant effect on C-peptide, a surrogate endpoint reasonably likely to predict a clinical benefit. A required postapproval study is ongoing to verify clinical benefit. Healthcare professionals and patients should review the prescribing information for important safety information. The approved labeling includes a boxed warning regarding serious and life-threatening cases of viral reactivation, including Epstein-Barr virus (EBV) and cytomegalovirus (CMV) reactivation, reported with Tzield. The most common side effects of the drug are vomiting, rash, increased liver transaminase (a blood test that detects liver stress or damage) and headache. Tzield is associated with a reduction in white blood cells (leukopenia), including a reduction in different types of white blood cells (lymphopenia and neutropenia) that can increase the risk for certain infections. More information: FDA Approves Drug for Pediatric Stage 3 Type I Diabetes . ### Boilerplate The FDA, an agency within the U.S. Department of Health and Human Services, protects the public health by assuring the safety, effectiveness, and security of human and veterinary drugs, vaccines and other biological products for human use, and medical devices. The agency also is responsible for the safety and security of our nation’s food

Source: U.S. FDA

supply, cosmetics, dietary supplements, radiation-emitting electronic products, and for regulating tobacco products.

Source: U.S. FDA

Tagged and Tracked: Mapping the Journeys of Pacific Cod in the Bering Sea

Pacific cod support Alaska’s second largest groundfish fishery and play a critical role in the Bering Sea ecosystem. In recent decades—particularly from 2017 to 2019—the Bering Sea experienced unusually warm temperatures and minimal sea ice. These conditions appear to have shifted Pacific cod distributions farther north compared to colder years, raising questions about long-term changes in population distribution and demographic structure. Understanding a Shifting Species In response to industry concerns and scientific data needs to support management, a research team launched a satellite tagging study in 2019 . Led by Dr. Susanne McDermott—the Gulf of Alaska bottom trawl survey lead—the team included fisheries biologists Julie Nielsen, Kimberly Rand, and many others. McDermott recalled, “There was tremendous anxiety over what’s going on. Why are these fish in different places? Is this something that's changing on a population level? Is this just the same population moving into different areas?” The summertime distribution of Bering Sea Pacific cod is usually centered in the southeastern portion of the region. Cod distribution typically varies with the extent of sea ice in the Bering Sea during the previous winter. It shifts northward in warm years and southward in cold years. However, beginning in 2017, the Bering Sea experienced unprecedented warming that resulted in greatly reduced sea

Source: NOAA Fisheries

ice. In conjunction with warming waters, the summertime distribution of Pacific cod shifted dramatically northward into the northern Bering Sea. This study aimed to determine whether cod observed in the northern Bering Sea during the summers of 2017 and 2018 were a separate population from the southeastern Bering Sea. Or were they migrants? Tagging fish can be a critical tool for understanding how and when fish cross regulatory boundaries. “When fish move across management boundaries, it really affects our management of that species because fishermen usually get assigned a certain quota in a certain management area. So, if fish move from one management area to another, they may not be able to catch them anymore,” explained McDermott. “That has a huge impact on the commercial fleet.” Satellite Tagging for Management Insight To answer these questions, the team deployed pop-up satellite archival tags to track the movements of Pacific cod. These tags collected high-resolution data on depth, temperature, light levels, and acceleration, providing a dynamic view of both fish behavior and their surrounding environments. Light data allowed estimates of latitude and longitude based on time of sunrise, sunset, and local noon. Researchers used information on depth, longitude, and sometimes latitude to estimate daily locations of tagged cod using a geolocation model. Simultaneously being able to understand what time of day, season, environmental habitat, or region a fish is actively swimming in has provided critical insight into their behavior. The tags detach from the fish after a programmed length of time, such as 30, 90, or 300 days. They float to the surface and transmit their data to the Argos satellite

Source: NOAA Fisheries

network . The number of tag transmissions were limited by battery life and summarized for transmission. Tags that were physically recovered—mailed back by fishers or beach combers—provided the full suite of data collected by the tags. Nielsen was the team's tag and modeling expert: "When you get the tag back," Nielsen remarked, "you get data every second if it's programmed for 90 days, every three seconds if it is out for 6 months or less, or every 5 seconds if it's out for a year or longer." Rand assisted the team by processing the satellite tag models, communicating results, and writing manuscripts. "It's really exciting when we dive into the data to find new and exciting patterns—things we haven't seen before," Rand shared eagerly. "We also collect genetics and otoliths for ages. It's part of this comprehensive ecological picture." Rand has witnessed the evolution of tagging research technology, including early catch-and-release studies with conventional "spaghetti" tags. Those conventional tags only provided information on release and recovery locations. Detecting seasonal movements was very difficult if tagged fish moved away after tagging but returned prior to recapture. In contrast, pop-up satellite archival tags provided a detailed understanding of seasonal movements even if the tagged fish is not recaptured. Data That Drive Discovery For this study, Pacific cod were tagged in both the summer and winter to track their movements year-round. Nielsen developed models that use the satellite tag data to reconstruct individual movement paths for the fish, and to deduce behavior. These contribute to a clearer understanding of cod life history. In the Bering Sea, the results indicated behavioral

Source: NOAA Fisheries

trends : August–November: Foraging December–January: Transition period February–April: Spawning May–July: Return migration Pacific cod tagged in summer in the northern Bering Sea left the area in November ahead of oncoming sea ice. Many went to traditional spawning areas in the eastern Bering Sea. However, some fish moved to Russian waters or the Gulf of Alaska during the winter, suggesting greater seasonal connectivity than expected. This demonstrated movement across international and management boundaries. Supporting Resilient Fisheries The team works with stock assessors to determine how these data and insights can be applied to stock and ecosystem assessments mandated under the Magnuson-Stevens Act . The team strategizes with the assessors to prioritize where they should release tags next to fill knowledge gaps. The effort helps to develop and support a framework for multi-area stock assessment models that incorporate fish movement across management zones. “We’ve all worked together for a long time,” Rand shared, and “really care about the fishery.” This research advances our understanding of how Pacific cod —and marine species more broadly—may adapt to climate-driven shifts in their environment. As the oceans continue to warm, these efforts will be useful for maintaining sustainable fisheries and resilient marine ecosystems. As scientists continue to evolve tagging methods, these advancements will help sustain healthy fish populations and support the broader marine ecosystem.

Source: NOAA Fisheries

Listen: How websites trick you with ‘dark patterns’

In a new podcast episode, a computer scientist explores tactics used in apps and online to deceive users—from subscription traps to collecting data. Why does it seem so difficult to cancel a subscription, delete an account, or opt-out of data tracking? You might think it’s just bad luck or a confusing user interface, but more often than not, it’s by design. Marshini Chetty is a professor at the University of Chicago’s computer science department. In this episode of Big Brains, Professor Chetty reveals the science behind “dark patterns”—the subtle, manipulative design choices woven into the apps and websites you use every day. Chetty digs into how these deceptive interfaces weaponize human psychology to keep us clicking, spending, and sharing our data: Read the transcript of this episode . Source: University of Chicago The post Listen: How websites trick you with ‘dark patterns’ appeared first on Futurity .

Source: Futurity.org

Activity Time - Word Search

Find the words below in the puzzle. Words go across or down only.

Words to Find:

F	C	B	X	J	L	N	P	E	K	I
L	A	B	H	O	H	Z	K	P	R	Q
W	R	T	U	O	Q	M	K	D	I	X
Q	U	X	O	R	O	Y	G	N	D	Z
Y	K	Z	I	O	C	S	D	N	I	E
M	Z	U	A	W	E	C	V	W	C	S
C	Y	K	Z	T	Z	R	S	C	D	Q
U	O	V	N	K	D	R	E	O	Z	N
L	H	X	S	H	V	U	D	L	W	Z
K	Q	W	Z	S	O	C	P	W	J	X
P	K	U	V	J	O	H	M	Q	U	B