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"The past has no power over the present moment."

— Eckhart Tolle

NASA's Hubble Spots Star-Spangled Cosmic Scene

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United States' 250th anniversary. The image showcases Messier 3 (M3), one of the Milky Way galaxy's most massive globular clusters, or spherical collections of gravitationally bound stars. Globular clusters are made up of ancient stars that formed at roughly the same time from the same cloud of gas, giving those stars similar ages. Around 150 known globular clusters are sprinkled around the outer regions of the Milky Way. In addition to its significant mass, M3 is unusual because it lies relatively far from the galactic center and has more than 240 RR Lyrae variable stars, the most of any globular cluster in our galaxy. RR Lyrae variables are some of the galaxy's oldest stars and are of special interest to astronomers, due to their age and because their light fluctuates over time in a way that tells us their intrinsic brightness. This true brightness can be used to measure distances in the cosmos, just as knowing the brightness of car headlights on a dark road can help estimate the distance to an oncoming vehicle. The M3 globular cluster also contains around 70 identified "blue straggler" candidates, which are stars that shine with a bright, blue light that makes them look like younger stars than the typical, redder residents of globular clusters. This was the first cluster in which these oddball stars were located. These stars are thought to have gravitationally pulled mass from companion stars, rejuvenating them and making them appear bluer and younger despite their true age. The unusual characteristics of M3 may arise from its origins. The globular cluster, which contains two distinct populations of stars, may be the result of a merger of two globular clusters. These two clusters were members of the same dwarf

galaxy, which was later swallowed up by the Milky Way. Hubble has taken several images of M3, also known as NGC 5272, documenting its complicated and intriguing characteristics. In this image, blue indicates the shorter wavelengths that are visible light, while red depicts the longer wavelengths of visible light, as well as some near-infrared light. Colors in Hubble images are chosen based on standard image processing techniques to best represent the wavelengths of light that pass through the filters used in the observation. Because the color and temperature of stars are directly related, we know that the blue stars in this image are hotter and the red stars are cooler. This image is part of a Hubble Treasury program survey designed to observe approximately half of the Milky Way's globular clusters to construct a detailed chronology of how the Milky Way galaxy formed. With over 30 years of observations, Hubble is one of NASA's flagship observatories and works in complement with its sibling space missions, including the infrared-detecting Webb Space Telescope and the upcoming Nancy Grace Roman Space Telescope , to weave together a comprehensive picture of our vast universe. Facebook logo @NASAHubble @NASAHubble Instagram logo @NASAHubble Explore More Exploring the Birth of Stars Hubble's Star Clusters Hubble's Nebulae Media Contact : Claire Andreoli NASA's Goddard Space Flight Center , Greenbelt, MD claire.andreoli@nasa.gov Share Details Last Updated Jul 03, 2026 Editor Andrea Gianopoulos Location NASA Goddard Space Flight Center Related Terms Hubble Space Telescope Astrophysics Astrophysics Division Globular Clusters Goddard Space Flight

Center Star Clusters Stars Keep Exploring Discover More Topics From Hubble Hubble Space Telescope Since its 1990 launch, the Hubble Space Telescope has changed our fundamental understanding of the universe. Explore the Night Sky Break out your telescope or binoculars and compare your view with Hubble's observations. What Did Hubble See on Your Birthday? Take a look at what cosmic wonders Hubble observed on your special day! Fourth of July Through Hubble's Eyes To commemorate the nation's 250th birthday, Hubble shares 13 images for the nation's 13 original colonies.

NOAA Fisheries Trains for Whale Entanglement Response with New York and New Jersey Partners

Entanglement of large whales in fishing gear and marine debris is a significant threat to recovering whale populations. In the Greater Atlantic region, an average of 26 large whale entanglements were reported each year between 2007 and 2025. This accounts for more than a third of the average of 73 reported nationwide. While some whales are successfully disentangled by trained responders, preventing entanglement is our first priority. To improve rapid reporting and potential responses to large whale entanglement cases, NOAA Fisheries staff recently led a large whale disentanglement workshop at the James J. Howard Marine Sciences Laboratory in Sandy Hook, New Jersey. The area has become a hotspot for juvenile humpback whale sightings. "This workshop demonstrates NOAA Fisheries' commitment to protected species. The Howard Lab at Sandy Hook was an ideal place to bring partners from the New York/New Jersey area together because of our location in the mid-Atlantic Bight and the recent increase in humpback whale activity in the area," explained Jim Vassslides , director of the Howard Lab. Howard Marine Science Lab Hosts Disentanglement Workshop The workshop, held on May 19, gathered 26 participants representing 12 federal, state, and non-profit agencies from across the New York and New Jersey metro area. David Morin, the Greater Atlantic Regional Fisheries Office's Large Whale Disentangle-

ment Coordinator, and Ainsley Smith, Marine Mammal Stranding Coordinator, led the group through the basics of documenting and reporting an entangled whale. Attendees familiarized themselves with the unique tools used to disentangle a whale. They reviewed case studies in which local agencies assisted trained specialists from the national marine mammal entanglement response networks during an entanglement response. The national marine mammal entanglement response networks safely and effectively respond to reports of entangled marine mammals and provide response coverage in all coastal states. For example, in July 2020, authorized responders successfully disentangled a humpback whale . It had been anchored in place by thousands of pounds of fishing gear in a busy shipping channel into the Port of New York and New Jersey. Attendees spanned a robust network of regional collaborators, including: U.S. Coast Guard Station Sandy Hook, Sector Delaware Bay, Station Manasquan Inlet and Station Barnegat Light New York State Department of Environmental Conservation Law Enforcement officers New York Police Department Emergency Services Unit New Jersey Division of Fish and Wildlife Law Enforcement officers Gateway National Recreation Area National Park Service rangers The Marine Mammal Stranding Center Marine Academy of Science and Technology Disentanglement Drills Provide On-the-Water Experience On May 20, trained and authorized NOAA Fisheries staff practiced on-water entanglement response drills. They worked closely with New Jersey Division of Fish and Wildlife Law Enforcement officers, who trailed a mock entanglement behind their

vessel. To keep authorized responders ready for an event, we conduct training to practice skills. One drill includes throwing a specialized grapple—a metal tool with a working line attached—into gear that is entangling a whale. Responders can use that working line to apply buoys, creating drag. This is a technique modified from whaling times, known as “kegging,” which slows down the whale and allows responders to work on removing gear. Responders also practiced maneuvering a small boat called a zodiac around trailing gear. These drills help responders follow NOAA’s best practices . All entanglement responses conducted in the United States are authorized under NOAA’s Marine Mammal Health and Stranding Response Program (Permit #24359). What to Do If You See an Entangled Whale Only experienced, trained, knowledgeable people with proper support and equipment—working under NOAA Fisheries permit—may respond to entangled whales. Reporting an entangled whale quickly is essential because even some entangled whales can travel miles within a few minutes. To report a live, entangled whale between Maine and Virginia, call NOAA’s 24-hour stranding hotline at (866) 755-6622 or hail the U.S. Coast Guard on Channel 16. Whale entanglements are complex and dangerous for the responders, as well as for the animal. NOAA and trained responders assess each case individually. Each report may contain valuable clues on the whales’ health, the configuration of the entanglement, and how rescue teams can best assist the whale while remaining safe.

USDA puts Montana forests back to work, supporting jobs and rural communities

U.S. Forest Service Chief Tom Schultz today signed the Montana Tri-Forest Federal Sustained-Yield Unit management plan that will support economic stability, strengthen central Montana's wood processing capacity and advance forest health through timber harvests that will be processed within the boundaries of the unit. The Tri-Forest unit includes the Beaverhead-Deerlodge, Custer Gallatin and Helena-Lewis and Clark national forests. Leadership from these forests will work together to provide forest products that support local economic stability, strengthen central Montana's wood-processing capacity and advance forest health in alignment with existing forest plans. "Our focus is restoring and sustaining the ability of forests to provide the services that people want and need. This mission is more critical than ever, and the forest products industry is a partner among many to help us achieve our healthy forest goals," said Forest Service Chief Tom Schultz. "We estimate that over the first 10 years, the three forests will offer between 350-500 million board feet to local processing facilities in central Montana. That predictable supply not only helps to carry out forest restoration work but also supports local economies in an area where national forests make up a considerable part of the land base." A stable wood-processing industry also supports investments in modern technologies, such as combined cogeneration

systems and biochar production, while enhancing the region's capacity to manage forests and reduce wildfire risk. "Establishing the sustained-yield unit reflects the collaborative work of leaders in the three central Montana forests who are committed to supporting local communities while advancing priority work on the landscape," said Regional Forester Troy Heithecker . "This plan will help provide stability for the forest products industry in central Montana while contributing to meaningful, on-the-ground progress that reduces wildfire risk, improves forest conditions for wildlife and expands outdoor opportunities for the outdoor recreation community." Visit the project website to review the plan and for more information.

USGS Scientist and National Weather Service and University of Alaska Southeast colleagues receive Alaska State Legislature Recognition for Response to Juneau's annual Suicide Basin Outburst Floods

USGS Scientist and National Weather Service and University of Alaska Southeast colleagues receive Alaska State Legislature Recognition for Response to Juneau's annual Suicide Basin Outburst Floods By Alaska Science Center July 2, 2026 On July 1, 2026, the Thirty-Fourth Alaska State Legislature recognized Jamie Pierce, Aaron Jacobs, Dr. Eran Hood, and Dr. Jason Amundson for their outstanding service and leadership in responding to Juneau's recurring glacier lake outburst flood (GLOF) events. On July 1, 2026, the Thirty-Fourth Alaska State Legislature recognized Jamie Pierce, Aaron Jacobs, Dr. Eran Hood, and Dr. Jason Amundson for their outstanding service and leadership in responding to Juneau's recurring glacier lake outburst flood (GLOF) events. Their dedication, scientific expertise, and commitment to public safety have played a vital role in helping the Juneau community understand, prepare for, and respond to these annual flood hazards. Jamie Pierce , a U.S. Geological Survey hydrologic technician, provides critical on-the-ground expertise and dependable hydrologic monitoring in challenging and hazardous conditions. The high-quality data produced is essential for informed decision-making and supports efforts to protect public safety. Aaron Jacobs, a senior service hydrologist with the National Weather

Service, has strengthened the community's ability to understand and prepare for dangerous flood conditions. Through his leadership in hydrologic forecasting and flood warning, he plays a key role in helping keep Juneau residents informed and safe. Dr. Eran Hood, professor of environmental science and chair of the Natural Sciences Department at UAS, has become a trusted public voice in helping the community understand the changing glacier system and its impacts. Through clear communication, research, and the development of accessible tools and information resources, Dr. Hood has empowered residents, policymakers, and partner organizations to navigate periods of heightened risk with greater confidence. Dr. Jason Amundson, a professor of geophysics at UAS, has advanced scientific understanding of Suicide Basin and contributed critical expertise to monitoring efforts that enhance flood forecasting and support coordinated emergency response. "Together, their work has strengthened forecasting, expanded scientific understanding, improved emergency preparedness, and built public trust. What sets these individuals apart is not only the importance of their work but also the way they have carried it out. They have served with professionalism, humility, accessibility, and dedication. They have engaged with the community directly, made complex science understandable, and helped Juneau residents face a recurring threat with greater confidence and resilience. Their efforts have provided lasting benefit to the people of Juneau, the state, and beyond in their consultations with the US Army Corps of Engineers and are an example of public service at its finest. None of the initial team could have

anticipated the scale or ongoing nature of these flood events. Yet through teamwork, scientific rigor, and unwavering commitment, they rose to meet the challenge for the benefit of the entire community.” – Thirty-Fourth Alaska State Legislature (Bryce Edgmon, Gaby Stevens, Rep. Andi Story, Sen. Jesse Kiehl, and Rep. Sara Hannan) Related Science Publications News Items per page 6 12 Label December 31, 2017 Improving Forecasts of Glacier Outburst Flood Events Suicide Basin is a glacier-fed lake that branches off Mendenhall Glacier in Juneau, Alaska. Since 2011, Suicide Basin has been collecting melt- and rainwater each summer, creating a temporary glacier-dammed lake. Water that accumulates typically gets released through channels that run beneath the glacier. These channels are normally blocked by ice, but if the water pressure gets too high... By Climate Adaptation Science Centers Improving Forecasts of Glacier Outburst Flood Events December 31, 2017 Improving Forecasts of Glacier Outburst Flood Events Suicide Basin is a glacier-fed lake that branches off Mendenhall Glacier in Juneau, Alaska. Since 2011, Suicide Basin has been collecting melt- and rainwater each summer, creating a temporary glacier-dammed lake. Water that accumulates typically gets released through channels that run beneath the glacier. These channels are normally blocked by ice, but if the water pressure gets too high the Learn More Items per page 6 12 Label May 27, 2020 Deglaciation of a marginal basin and implications for outburst floods, Mendenhall Glacier, Alaska Deglaciation of a marginal basin and implications for outburst floods, Mendenhall Glacier, Alaska Suicide Basin is a partly glacierized marginal basin of

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New mineral named for ORNL researcher Tyler Spano

Published: July 2, 2026 Updated: July 2, 2026 Spanoite, a rare mineral discovered with unique amounts of uranium, vanadium and thallium, was named after ORNL's Tyler Spano in recognition of her contributions to the field. Credit: Sha'de Ray/ORNL, U.S. Dept. of Energy Tyler Spano's impact on the field of mineralogy is anything but small. So, when a newly discovered mineral, modest in size but significant in meaning, was named spanoite in her honor, it became a fitting tribute to her contributions to the field. The rare mineral, recently discovered by one of Spano's colleagues at the Carnegie Museum of Natural History, contains a unique combination of uranium, vanadium and thallium. This combination has not been found in a mineral before. "It's one of the highest honors that you could receive as a mineralogist," said Spano, a mineralogist at the Department of Energy's Oak Ridge National Laboratory. "So, it was on my bucket list. It's one of those things where you don't think it's actually going to happen, but it did." Since it's a rare find, spanoite occurs as a small set of crystals, needing an instrument like a Raman Spectrometer to see its properties. This is an analytical tool that uses light to read molecular vibrations. "In general, it just forms these cute little crystals," said Spano, a senior nuclear security scientist for ORNL's National Security Sciences Directorate. "That's the case for a lot of the rarer mineral species. They'll only be found in a handful of places, or they'll only exist as a few small crystals."

Her contributions to mineralogy played a role in Spano receiving this honor. She discovered new minerals during her doctorate , focused on those containing both uranium and vanadium. Then, in the past two years, her colleague Travis Olds reached out for permission in naming a new mineral after her. “He has said to me that this is like the most perfect mineral eponym because I worked so much on these materials as a graduate student,” Spano said of her colleague. “Even as a postdoc, I continued work on these minerals and found a new mineral in this group.” That new mineral she found is called finchite, named after a uranium geologist who wrote and established the literature on uranium and vanadium deposits in the American Southwest. Spano said it has a similar structure, also contains uranium and vanadium and is yellow like spanoite. The International Mineralogical Association has an established process when it comes to naming newly discovered minerals. Spano said once a mineral is discovered, the researcher cannot name it after themselves. Instead, it can be named after what it’s made of, where it was found, or another researcher. That’s how spanoite came to be. Tyler Spano always had a passion to make discoveries and solve complex issues, which led her to National Security Sciences at ORNL. Credit: Sha’de Ray/ORNL, U.S. Dept. of Energy “An international community recognizes that I am an expert. It's been a confidence boost,” she said. While the connection between mineralogy and national security may not be clear at first, Spano said she uses the principles of her expertise every day, helping in nuclear forensics research and nonproliferation missions. “There's a lot of

structural similarities in uranium minerals and nuclear fuel cycle materials,” said Spano. “The structures of both of those things can tell us a lot about how something was made or how it aged in the environment, how it was stored.” These similarities allow for greater understanding of the chemical composition of nuclear fuel cycle materials and how composition and structure relate back to a material’s process history. That’s what keeps her going, the ability to learn something new, make new discoveries, contribute to new research. It helps Spano feel like her work is making an impact. “It’s just leading to a greater understanding of the types of materials that exist for uranium, and how that relates back to how they were made and what that can tell us about keeping the country safe,” she said. This drive to learn something new and solve difficult questions is why Spano became a scientist. And it makes the honor of having a mineral named after her feel so much more special. It shows there’s payoff to using your expertise in a way you never expected. “One of the things I like the most about my career is being able to work with lots of different people who did just that,” Spano said, “who come from very different backgrounds and work on similar problems but have different perspectives.” UT-Battelle manages ORNL for DOE’s Office of Science, the single largest supporter of basic research in the physical sciences in the United States. DOE’s Office of Science is working to address some of the most pressing challenges of our time. For more information, visit energy.gov/science . — Sha’de Ray Media Contact Eric J Swanson , Communications

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Activity Time - Word Search

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

Words to Find:

