Sunday, June 28, 2026

A free daily newspaper for easy reading

GENTLE.NEWS

In Today's Edition

"You can't measure the mutual affection of two human beings by the number of words they exchange."

— Milan Kundera

Predicting Future Northeast Ocean Conditions: Forecast Debuts in 2026 State of the Ecosystem Reports

Fishermen, fisheries managers, and scientists have observed changes in our oceans that are impacting the location and growth of fish stocks. Until recently, there was no reliable way to predict these changes. This year, the 2026 Mid-Atlantic and New England State of the Ecosystem reports contain the first operational seasonal and decadal ocean forecasts for U.S. coastal fisheries regions. These ocean forecasts provide predictions of future marine ecosystem conditions that could impact the availability of commercial, recreational, and protected fisheries species. They can help resource managers make more informed decisions. The Northeast Integrated Ecosystem Assessment team produces the State of the Ecosystem reports annually for the New England and Mid-Atlantic Fisheries Management Councils. They provide a synthesis of Northeast Shelf ecosystem information. They are part of a holistic approach to maintain healthy and productive fisheries by considering environmental and socioeconomic information in decision making. The reports: Contain current and long-term information about the Northeast Shelf ecosystems Document how well the ecosystems are currently meeting fishery management objectives Highlight potential risks to meeting those objectives. However, resource managers have long sought forward-looking ocean forecasts that predict future ocean conditions to help them make more informed decisions. “Due

Source: NOAA Fisheries

to limited resources, we have moved to more multi-year specifications for stocks, so the impacts of our decisions are now longer lasting. Given the increasingly dynamic nature of the ocean, and management's sometimes-limited ability to be as dynamic in response, delivery of ocean forecasts to the Council provides more tools at our disposal to make better decisions that span multiple years." — Megan Ware, member of the New England Fisheries Management Council NOAA scientists in the Northeast are now providing their Councils with predicted ocean temperatures in this year's" State of the Ecosystem reports using NOAA's Modular Ocean Model version 6 ocean forecasts, developed by NOAA's Geophysical Fluid Dynamics Laboratory . The inclusion of the forecasts marks the agency's first application of an ocean forecast in an ecosystem-based fisheries management product. Dr. Joseph Caracappa, research fisheries biologist at the Northeast Fisheries Science Center and one of the lead editors of the State of the Ecosystem reports, explains: "By including ocean forecasts in our State of the Ecosystem reports, we are providing scientists and managers with information that allows them to consider future environmental impacts on marine resources and ultimately be more informed on decisions." What do the ocean forecasts in the 2026 reports predict? The 2026 State of the Ecosystem reports contain MOM6 forecasts that predict conditions over two time periods: seasonal (3-month forecasts that are updated 4 times per year) and decadal (annual forecasts over the next 10 years that are updated once a year). The seasonal forecasts predicted cooler than average winter and spring (January–June) bottom temperatures

Source: NOAA Fisheries

in the Gulf of Maine and the Mid-Atlantic Bight in 2026 (depicted by the blue color in the maps below). This prediction was accurate, as early 2026 conditions in these areas were, and continue to be, cooler than average. As the year progresses, these areas are expected to return to historically near-average temperatures (yellow). Much of the Northeast U.S. shelf is predicted to experience above average bottom temperatures (red) by the fall (October–December). Much like weather forecasts, the uncertainty of these predictions increases as they extend farther into the future. Throughout the year, new iterations of the forecasts incorporate recent environmental conditions to produce more accurate, near-future predictions that can be delivered to and used by fishery managers. Most recent seasonal forecasts for the Northeast U.S. shelf There were cooler-than-average conditions in 2024 and 2025 along the Northeast U.S. shelf . The decadal model predicts a return to average temperatures in the region over the next 10 years. Scientists were happy to see that the decadal model accurately predicted the region's recent cold spell during its retrospective forecast trials . The cooler waters observed since 2024 are a reprieve from the anomalously high temperatures of the past decade. These ocean conditions are more suitable for bottom species like scallop, lobster, cod, and haddock. While this cold spell remains, scientists continue to monitor the ecosystems to measure their ability to bounce back from warm ocean temperatures. Variations in ocean temperatures can: Alter species migration and distribution patterns Effect metabolic rates and growth Influence predator-prey relationships, distribution, and movement outside

Source: NOAA Fisheries

of previously inhabited locations Affect overall ecosystem productivity Making Strides Towards Ecosystem-Based Fisheries Management This year’s delivery of the forecasts is a collaborative success and a major advancement in NOAA’s efforts towards adopting ecosystem-based fisheries management . Dr. Andrew C. Ross, research scientist at the Geophysical Fluid Dynamics Laboratory explained, “These forecasts are the first fruits from a years-long effort by many NOAA scientists in NOAA’s Office of Oceanic and Atmospheric Research and NOAA Fisheries working together. We hope to continue improving and applying the forecasts in the Northwest Atlantic and are working to develop similar forecasts for all of the U.S. coastline including the West Coast, Alaska and Arctic, and Pacific Islands regions.” While the delivery of the ocean forecasts is a highlight of this year’s reports, it is just a fraction of the whole report. These reports have been well-received by the fisheries management councils for 10 years and are considered in management decisions. Ware said, “The New England Council is currently in the process of integrating aspects of the State of the Ecosystem report into our updated risk policy, so we will be directly integrating information from the report into our management decisions. To me, that speaks to the value and weight this Council puts on the information provided in that report.” To learn more about the 2026 State of the Ecosystem reports and the bottom temperature forecasts, you can tune in to “ State of the Ecosystem - 2026 Overview ,” a NOAA Library seminar on Tuesday, June 30 at 1pm.

Source: NOAA Fisheries

Measuring what comes before alpha

Published: June 24, 2026 Updated: June 24, 2026 Illustration of alpha decay of tellurium-104 over the Radioactive Isotope Beam Factory at RIKEN, Credit: Robert Grzywacz Physicists at the University of Tennessee, Knoxville (UTK) and their colleagues have made critical measurements of the lifetime and decay energy of tellurium-104 (Te-104), an important step in answering a century-old question and understanding how hundreds of nuclei decay. The results, with key contributions from researchers at the Department of Energy’s Oak Ridge National Laboratory (ORNL), are published in Nature . A particle determined to escape UTK Professor Robert Grzywacz led the experimental team at the Radioactive Isotope Beam Factory (RIBF) at RIKEN in Japan. He explained how the results match decades-old predictions that tellurium-104 is a special case in alpha decay, a process where an alpha particle (a strongly-bound system of two protons and two neutrons) tunnels through the barrier surrounding the nucleus where it resides. Though alpha radioactivity was discovered more than 125 years ago, where the particle comes from is still a mystery, especially in nuclei that have large numbers of protons and neutrons. "Alpha decay is the oldest decay mode," Grzywacz said. "The big question is how the alpha particle forms in heavy nuclei, which are known to have uniform matter distribution. There must be a mechanism which causes local 'clump' or 'cluster' formation." Clustering is connected to how a

Source: Oak Ridge National Laboratory

nucleus is structured. Called preformation, it's a signal an alpha particle is about to make a break for it. "Once formed," Grzywacz added, "the alpha particle will escape from the nucleus." He said that this emission is a well-understood quantum mechanical tunneling process that depends on available energy. Since the 1960s scientists have thought that one nucleus — tellurium-104 — has a special enhancement that could better explain how it happens. Following the decay chain While tellurium lives among the metalloids on the periodic table and can be found in nature, the isotope tellurium-104 has to be synthesized. Creating these nuclei is a challenge for multiple reasons. First, they only live for a few nanoseconds. Second, they're a result of the decay of xenon-108, which in itself is difficult to produce. In this experiment, the team overcame these still-formidable obstacles with technological advances at RIBF. Using four coupled cyclotrons, they accelerated a beam of xenon-124 into a beryllium target. The collision produced fragments of xenon-108, whose decay populates tellurium-104, which is followed in this decay chain by tin-100. "We have measured the lifetime and energy of this decay and found that the preformation probability is much larger than expected based on predictions, which used available experimental knowledge," Grzywacz said. "We also found that tellurium-104 is the shortest-lived known alpha particle radioactive nucleus, with a 7.2 nanosecond half-life. This very short half-life, corrected for decay energy, gives unusually high alpha particle preformation. It will likely be a single case like that among all nuclei." He added the only other case is the well-studied decay of polonium-212 to

Source: Oak Ridge National Laboratory

lead-208, which has preformation probability 10 times smaller than that of tellurium-104. Grzywacz said that more than half a century ago scientists pictured tellurium-104 having a brief existence as a molecule comprising tin-100 and an alpha particle. Tin-100 is a doubly-magic nucleus, meaning it's strongly bound, as is an alpha particle. He and the research team attribute tellurium-104's high preformation to its relation to doubly-magic tin, creating favorable conditions to form an alpha particle. A trail blazed at Oak Ridge Years of previous studies made these findings possible. Much of that work was rooted at ORNL, where researchers have been at the forefront of exploring the island of alpha-emitting nuclei near tin-100 for decades. In 2006, a team including Grzywacz and ORNL physicists Krzysztof Rykaczewski and Carl Gross used the Recoil Mass Spectrometer at ORNL's historic Holifield Radioactive Ion Beam Facility (HRIBF) to discover the neighboring xenon-109 to tellurium-105 to tin-101 alpha-decay chain. The measurement suggested that alpha-particle preformation was growing as nuclei approached doubly-magic tin-100. This strengthened the case that tellurium-104 would be the definitive test of the “superallowed” prediction, where the parent nucleus is essentially the doubly-magic plus a preformed alpha particle. Independently, a 2018 experiment at Argonne National Laboratory achieved the first observation of the xenon-108 to tellurium-104 to tin-100 chain, though the two decays could not be fully separated, leaving the individual half-life and energy of tellurium-104 unmeasured. In parallel, the detector technology pioneered at Holifield—fast-response scintillator crystals coupled to position-

Source: Oak Ridge National Laboratory

sensitive photomultiplier tubes—was further developed by Grzywacz's group and ORNL collaborators at Japan's Advanced Science Research Center, and proved essential for the present RIKEN experiment. Rykaczewski, a Distinguished Senior Researcher in ORNL's Physics Division and co-spokesperson for the RIKEN experiment, played a central role in designing and executing the measurement. Toby King, a UTK physics graduate now on ORNL’s staff, was instrumental in building and operating the detection system and data acquisition. Additional ORNL support came from James “Mitch” Allmond and Thomas Ruland, now at the Air Force Institute of Technology, who provided supplemental equipment and on-site experimental assistance. "The path from the Holifield discovery of the tellurium-105 decay chain to this definitive measurement of tellurium-104 spans nearly two decades of sustained effort between UT and ORNL," Rykaczewski said. "Each step — new isotopes, new detectors, new accelerator capabilities — brought us closer to this singular nucleus." A strong foundation for students Ian Cox, who earned his doctorate from UTK in 2024, was the paper’s lead author. Now a postdoctoral appointee with Argonne National Laboratory, he began working on the project as an undergraduate physics major and handled most of the experimental analysis “in record time,” according to Grzywacz. "Studying nuclei on the edge of existence presents significant challenges but can also produce profound results,” Cox said. “It has been a pleasure to start my research career with a result that can greatly impact the field.” Following in his footsteps, current UTK graduate students Nico

Source: Oak Ridge National Laboratory

Braukman and Donnie Hoskins (physics), as well as Benjamin Kreider (engineering) were all co-authors on the Nature publication. "Getting exposure to the kind of work that goes into producing high-impact physics results is an important part of being a grad student," Braukman said. "I'm glad to have had the opportunity to participate in this experiment early in my grad school career." Hoskins shared similar sentiments. "As a graduate student, one of our goals is to learn and participate in research to prepare us for our futures," he said. "Exposure in prestigious journals, like Nature, increases visibility for me as an independent scientist to set up my own research in the future with a proven strong foundation in nuclear physics." The experimental effort included UTK Physics Research Assistant Professor Z.Y. Xu, along with partners from ORNL, RIKEN, the University of Tokyo, the University of Warsaw, the National Centre for Nuclear Research (Poland), the Universität zu Köln (Germany), Universidad Complutense de Madrid (Spain), Lawrence Livermore National Laboratory and the Japan Atomic Energy Agency. The U.S. Department of Energy Office of Science and the National Science Foundation helped support this work. 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. The Office of Science is working to address some of the most pressing challenges of our time. For more information, please visit energy.gov/science . — Catherine Longmire Reprinted from a press release by Catherine Longmire of the University of Tennessee,

Source: Oak Ridge National Laboratory

Knoxville. Media Contact Dawn M Levy , Senior Science Writer and Communications Specialist, Physical Sciences Directorate , 865.202.9465 | LEVYD@ORNL.GOV

Source: Oak Ridge National Laboratory

FDA Proposes Rule That Would Help Hold Foreign Tobacco Product Manufacturers Accountable, Protect Public Health

FDA News Release FDA Proposes Rule That Would Help Hold Foreign Tobacco Product Manufacturers Accountable, Protect Public Health If finalized, rule would level the playing field between American and foreign businesses For Immediate Release: June 26, 2026 The U.S. Food and Drug Administration today issued a proposed rule that, if finalized, would help protect the public health of Americans, including youth, by strengthening the agency’s ability to efficiently identify illegal foreign tobacco products — including youth-appealing e-cigarettes — and conduct on-site inspections abroad. Domestic tobacco product manufacturers are currently required under federal law to register their establishments and list their products with the FDA. In contrast, foreign tobacco product manufacturers are not subject to these requirements unless and until the FDA mandates their registration and product listing through regulation. This proposed regulation would implement this requirement, closing this regulatory gap. With a more complete picture of the products manufactured for sale to American consumers and where they come from, the FDA can better protect public health and more efficiently identify and take action on unauthorized tobacco products such as e-cigarettes that are imported and illegally sold in the U.S. Under the proposed rule, titled “Establishment Registration and Product Listing for Tobacco Products,” the FDA would

Source: U.S. FDA

prescribe the format, content, and procedures for establishment registration and tobacco product listing. This would include both foreign and domestic establishments that manufacture, prepare, compound, or process tobacco products. “All companies selling tobacco products in the United States should play by the same rules,” said Bret Koplow, Ph.D., J.D., Acting Director of the FDA’s Center for Tobacco Products . “The FDA is working hard to close the gap between domestic and foreign companies, level the playing field for American businesses, and ensure that all manufacturers are held to the same standards.” The FDA has existing authority to enforce against illegal tobacco products and has taken action on products manufactured abroad, including recent record-breaking seizures of unauthorized e-cigarettes . If finalized, this proposed rule would significantly expand the agency’s knowledge of tobacco products manufactured abroad for import into the U.S. and allow the agency to be more proactive. The proactive establishment registration, systematic inspections, and product surveillance included in this proposed regulation would give the FDA significantly more tools to identify and act against illegal foreign tobacco products. For unauthorized e-cigarettes, many of which are manufactured outside the U.S., this is a critical step forward for protecting public health. “If finalized, this proposed rule would strengthen the FDA’s ability to enforce against illegal foreign tobacco products that may threaten the health and safety of Americans, including youth,” Dr. Koplow added . “By inspecting foreign manufacturing facilities, we can verify compliance at the source and stop illegal products before they reach

Source: U.S. FDA

American consumers.” The rule, if finalized, would also require all manufacturers to maintain product labeling, advertising, and consumer information records for at least four years after their use. The FDA could then more easily verify compliance with labeling and advertising requirements and ensure that products are not marketed in ways that, for example, appeal to youth or make unauthorized health claims. Additionally, this rule would require all manufacturers to provide information to uniquely identify each tobacco product, including products’ FDA-assigned Submission Tracking Number, nicotine concentration and source, characterizing flavors, package sizes and types, and product dimensions. For e-cigarettes, manufacturers would also need to provide specifications such as e-liquid volume, battery capacity, and wattage. To streamline and increase efficiency, in most cases manufacturers would be required to submit information electronically through the FDA’s online system, enabling them to register more quickly. They would also be required to review and update their establishment registrations annually and their product listings twice a year to ensure the agency has current information. The proposed rule is available for public comment. Submit your comments by Sept. 14, 2026, at Regulations.gov. The agency will review all comments as part of the rulemaking process. Related Information Related Information Proposed Rule: Establishment Registration and Product Listing for Tobacco Products Tobacco Registration & Product Listing Module Media: FDA Request for Comment 202-690-6343 Consumer: 888-INFO-FDA

Source: U.S. FDA

BLM and RCCC Announce Saddle Started Wild Horse Adoption During Days of the American West

< All Events & Meetings BLM and RCCC Announce Saddle Started Wild Horse Adoption During Days of the American West California Event Coordinator Philip Oviatt 661-432-4252 BLM Office: Central California District Office Event Dates Jul 23, 2026 3:00 pm PDT to Jul 30, 2026 3:00 pm PDT Online Corral Event Description ELK GROVE, Calif. — The Bureau of Land Management and the Rio Cosumnes Corrections Center (RCCC) have announced a saddle-started wild horse adoption event taking place from July 23-30, 2026, through the Wild Horse and Burro Online Corral . The animals will be offered as part of the Days of the American West Wild Horse and Burro Private Care and Placement Blitz. Up to four saddle-started wild horses — trained by the RCCC inmates and Walt Rodman —will be offered for adoption or sale. These once-wild horses originate from the Twin Peaks Herd Management Area in California, range in age from three- to four-years old, and vary in weight and color. Each animal has completed at least 120 days of training as part of the RCCC inmate training program. “RCCC continues to do a great job highlighting the versatility of these animals and showcasing their true athleticism.” said Travis Tolbert, BLM Headquarters Wild Horse and Burro Private Care Coordinator (acting). “I am excited for the opportunity to work with this program and offer these animals nationally as part of the

Source: Bureau of Land Management

Day of the American West celebration through the Online Corral platform. The horses have made immense progress in their training and have come along well in a short time." "The RCCC Wild Horse and Burro Training Program continues to be one of the many reentry and vocational programs we are proud to offer. The dedication and hard work demonstrated by both inmates and staff reflects our commitment to rehabilitation, personal responsibility, and positive community impact," said Sergeant Ed Igoe, spokesperson for the Sacramento County Sheriff's Office. " We are honored to play a role in preparing these remarkable animals for new homes, while helping participants develop valuable skills for a successful future. We offer multiple programs that benefit both the animals and the inmates by providing valuable vocational training ." Animal marketing descriptions and training demos will be available to the public through YouTube , which can be found in the animal marketing description in the Online Corral. To view this training demo, please visit the individual animal page via the Online Corral. Starting bids for the animals will begin at $125 and the auction will start on July 23 rd at 3 p.m. PST and end on July 30 th at 3 p.m. PST. Potential adopters should apply through the Online Corral website to participate in the auction event. For specific questions, please contact Travis Tolbert at . Published on: June 24, 2026 The BLM manages about 245 million acres of public land located primarily in 12 western states, including Alaska, on behalf of the American people. The BLM also administers 700 million acres of sub-surface mineral estate throughout the nation. Our mission is to sustain the

Source: Bureau of Land Management

health, diversity, and productivity of America’s public lands for the use and enjoyment of present and future generations.

Source: Bureau of Land Management

NASA Identifies More Than 40 Space Technologies for Collaboration

Credit: NASA NASA selected 41 proposals from 37 companies to advance technologies in support of the agency’s goals to establish a long-term presence on the Moon and enable human exploration of Mars. These American companies, picked from NASA’s 2025 Announcement of Collaboration Opportunity (ACO), will mature technologies creating solutions for space transportation, planetary surface operations, and lunar surface infrastructure. “We are empowering American industry to become active partners in NASA’s missions to the Moon, Mars, and beyond,” said Greg Stover, director, Advanced Research and Technology Division in the agency’s Research and Technology Mission Directorate at NASA Headquarters in Washington. “By tapping into commercial industry, NASA can rapidly develop key capabilities to support its most ambitious missions while fostering the nation’s robust space economy.” NASA’s ACO establishes mutually beneficial partnerships between the agency and industry without the exchange of funds. Through this opportunity, companies leverage NASA’s specialized facilities, software, hardware, and subject matter experts, allowing them to rapidly mature their technologies for both commercial markets and future government missions. Since launching the first ACO in 2015, NASA has supported more than 110 projects. The total estimated value of agency resources to support the agreements is approximately $30 million, which leverages an additional

Source: NASA

$32 million of industry contributions. The period of performance will be negotiated for each agreement, with an expected duration of 12 to 24 months. Industry proposers were tasked with responding to agency technology topics that would benefit from the rapid development enabled by a public-private partnership, including space transportation engine elements, guidance and navigation systems, landing systems, in-space servicing assembly and manufacturing, and energy management technologies. The complete list of selections can be found on the agency's website and span cross-cutting capabilities, including: Power generation Lockheed Martin will mature a modular, compact energy solution that could support sustained power generation in the Moon's permanently shadowed regions, helping future crew and resources survive the long lunar night. The company's wireless power transfer system aims to advance power-beaming technology using fiber lasers and a space-based heat rejection system for durability. In-space logistics To enhance orbital missions, Kall Morris Inc. will develop Asteria, a supplemental payload attachment system. Asteria can attach to legacy, current, and next-generation orbital assets using a non-destructive, controlled-release adhesive without requiring pre-installed infrastructure. This technology enables advanced maneuvering, improved object tracking, asset protection, data collection, and satellite life extension. Dust mitigation technology Moonprint Solutions, a small business, is proposing flexible isolation covers to protect critical hardware and systems from abrasive dust in the harsh lunar environment. Flexible covers provide a strategic advantage by offering

Source: NASA

protection that conforms to complex shapes for a variety of hardware. These durable covers could be used on rovers, robotic joints, hoses, and other articulated equipment to support long-term operations on the Moon and Mars. Selected projects could make a significant impact on the commercial space sector, such as expanding existing or opening new markets, lowering price, increasing choice, or providing entirely new capabilities. Organizations interested in developing space technology with NASA can explore opportunities online. For more information about NASA’s space technology investments, visit: www.nasa.gov/spacetech -end- Jennifer Dooren / Rob Margetta Headquarters, Washington 202-358-1600 jennifer.m.dooren@nasa.gov / robert.j.margetta@nasa.gov Share Details Last Updated Jun 26, 2026 Editor Jessica Taveau Location NASA Headquarters Related Terms Technology Space Technology Mission Directorate

Source: NASA

Activity Time - Word Search

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

Words to Find:

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