

Few chemical unions are as stable and straightforward as the connection between the elements sodium and chloride. The bond transpires in a 1-to-1 ratio and produces NaCl, the most common ionic compound. These fundamental elements are ubiquitous across the planet, but nature's artistic uses of time, temperature, and elevation have shaped a great diversity in salt's grand appearances across the globe. From deserts to glaciers, mega-crystals to salt pearls, see eight of salt's most interesting guises beyond the crystals enhancing your food.

DEAD SEA, JORDAN RIFT VALLEY

Do not let the name fool you. The Dead Sea is in fact Earth's deepest hypersaline lake, carved into the Jordan Rift Valley at nearly 1,500 feet below sea level at its surface. A 1,000-foot depression further shelters the water, which is fed by the Jordan River but lacks outflow. The salinity content hovers around 34 percent, roughly 10 times that of the ocean, and precludes the development of aquatic life. The extreme salt content and high evaporation rate in this shrinking body of water produces otherworldly salt formations, from intricate latticework and configurations like coral reefs to shorelines zigzagged with minicrystals, salt pebbles, and tee-pee-like cones. ▶

SALT of the EARTH

The simple chemical reaction between sodium and chloride yields some of the planet's most complex—and beautiful—landscapes. As well as the ultimate food seasoning.

by Paul Rubio

avrami/Stock



LAKE ASSAL, DJIBOUTI

Like an oyster, the petite East African country of Djibouti holds a treasure. The high-saline Lake Assal spawns unusually shaped salt crystals that accumulate along the lake's perimeter. All along the shores of the crater lake, salt pearls wash up as popcorn kernel-sized globes, marble-sized spheres, and even masses of golf ball proportions. Over time, sodium-chloride crystals meld with magnesium and other salts present in the lake. Exposed to the natural elements like atmospheric pressure, wave action, and microclimate, an unlikely geometric arrangement emerges polished and wonderful. ▶

Patrick Robert/Getty Images



ZAGROS MOUNTAINS, IRAN

In just a few pockets of barren earth, thick layers of buoyant, soluble salt rise vertically from deep within inner rock, forming salt domes that can ultimately crack the surface. If, under excessively dry climate conditions, they successfully break through, the continuum of emerging salt does not dissolve but flows downslope and spreads laterally, forming salt glaciers (a process analogous to the realization of ice glaciers). This rare phenomenon occurs primarily in southern Iran, with the foremost examples cited in the southeast region of the Zagros Mountains. These glaciers lack the sparkling white aesthetic of the earth's other salt artworks. Darker clay minerals are often swept up during the slow ride to the top.

YEKATERINBURG, RUSSIA

Underneath Russia's fourth-largest city, Yekaterinburg, an unnamed abandoned salt mine rose to Internet fame in 2014. The mine was photographed for its fantastic color schemes and the images went viral. To the east of the Ural Mountains, nature has reclaimed the series of salt-laden underground passageways, once used to excavate an estimated 3.5 billion tons of rock salt deposits. The work painted the walls in trippy swirls and paisleys by way of chemical reaction with the mineral carnallite (hydrated potassium magnesium chloride). The display is artsy and eclectic, as each cavern is embellished in different colors and patterns.

KHEWRA, PAKISTAN

Seeking the origins of pink Himalayan table salt in Pakistan may well be a harder sell than finding those of, say, fine French wines. Nonetheless, the tunnels of Khwera Salt Mine, which are accessible to the public, reveal a sparkling subterranean world worth witnessing in person. The Salt Range of Pakistan's Punjab region, a series of hills so named for their prolific natural deposits of fossilized salt, has long been of human interest. In the 1500s during the Mughal era, people began extracting these 800-million-year-old halite formations by hand. Mines opened there in the mid-19th century, including the region's largest and oldest mine Khwera. Inside are amazing amalgams of pink crystals, enormous Tetris-stacked blocks, stalactite-like formations, and walls of striated swirls in hues of pink, red, and transparent. ▶



Clockwise from far left:
Zagros Mountains,
Iran; Khwera Salt
Mine, Pakistan;
Yekaterinburg, Russia.



Top, Travel India / Alamy Stock Photo; bottom, Catersnews.com. Opposite, Amin Saberi.

SALAR DE UYUNI, BOLIVIA

In the highest reaches of the Bolivian Andes lies the world's largest salt flat, an expanse of powdery white plains more than twice the size of Delaware. Some 30,000 or 40,000 years ago as tectonic plates shifted and the Andes rose toward the heavens, the arid conditions in southwest Bolivia caused the rapid evaporation of a prehistoric saltwater lake. What's left is Salar de Uyuni and its 10 billion tons of salt excess. At nearly 12,000 feet above sea level with steady winds and few fluctuations in temperatures, the salt-crusting earth here primarily takes shape as a series of hexagons, formed by a process of natural convection. In some sections, the salt is compacted and sturdy while in others it is fragile and penetrable, with salt water still flowing below the surface.



Hadynah/Stock

PASS THE SALT, PLEASE

Move over, wine experts. Salt specialists are the newest sommeliers.

Whether harvested off the island of Pag, hand-picked from the Andes Mountains, or handcrafted from traditional salt pans along the famous Salt Road in Sicily, exotic salts are increasingly highlighted on restaurant menus.

La Pergola, the three-star Michelin restaurant at the Waldorf Astoria Rome Cavalieri, features 18-plus globally found crystals. Anantara Mai Khao Phuket Villas' Sea.Fire.Salt. restaurant showcases more than a dozen types of the flaky, coarse, ground, or granule flavor-enhancers. And Salt at the Ritz-Carlton, Amelia Island, in Florida, presents 40 versions. Most are house-made, using a base of unbleached, naturally foraged salt.

"My goal is to figure out what ingredients infuse best with a specific salt's texture that complement the chef's menu," says Matthew Griffin, who fulfills his role as Ritz-Carlton's salt sommelier by educating foodies on salt's place in history, teaching salt-themed classes, and holding daily tastings at the Salt Shop. Created out of guests' frequent requests to take the salts home, the outlet sells many of the flavors guests taste in the restaurant. Its most expensive wares (\$18 for 1.5 ounces) include Black Truffle Salt made with Italian mushrooms; Halen Môn Gold, a finishing salt imported from Wales; and Cherry Plum salt, a Japanese variety concentrated from plum vinegar. "Several are exclusive to the restaurant; we make small batches to give away as a little take home for our guests after dinner," Griffin says.



From top: A salt sommelier at Anantara's Sea.Fire.Salt. restaurant in Phuket; the Salt Shop at the Ritz-Carlton, Amelia Island, in Florida.



Much like a wine sommelier, the salt specialist works closely with the chef to choose salt flavors that are paired with courses. The pairing process considers taste, textures, aromas, and flavors. As the instigator of many of the restaurant's creations, Griffin infuses herbs, fruits, wines, and other ingredients to create new salt concoctions. Popular picks are the Adriatic Strawberry Basil, Chocolate Sel Gris, and Trapani Garlic and Herbs, the restaurant's signature side to serve with its bread.

But perhaps the Sea Salt restaurant in Naples, Florida, wins the salt abundance award for its 20-foot-long wall, which houses more than 120 high-end and exotic sodium-chloride jewels.

"Thousands of years ago, salt was very expensive, like gold or saffron," says Jason Goddard, corporate chef of the 8-year-old restaurant, who has been part of the organization since its inception. "I've been learning, using, tasting, and infusing as many diverse varieties of salts as I can put my hands on while trying to perfect the different applications such as searing on salt blocks, salt pressing, curing, finishing, and just plain seasoning," he says.

And like wine, salt offers extensive profiles—be it fanciful flavors (espresso brava, black truffle, sundried tomato); exotic locations (Mayan Sun from El Salvador, Amethyst Bamboo 9x from Korea, Fleur de Sel from Guérande); harvesting methods; or color and texture. The light gray Velvet sel gris, for example, has a flour-like consistency, paired with a buttery feel and taste as it melts on your tongue.

"For me it's about the creativity and finding the right mix of texture, infusion, and ingredients," said Griffin. "Salt has always been looked upon as a bad thing. Not anymore. You can't live without salt. You have to have it. And if you have to have it, why not give people something that's good for them, that's artisanal, and that's handcrafted?" >

—Alix Strauss

TAMBOPATA NATIONAL RESERVE, PERU

Animals travel near and far in search of nature's vitamin store—natural salt licks and mineral licks—where earth, exposed from organic wear and tear like rain and erosion, reveals copious quantities of necessary nutrients, namely salt. One such epic scene is the Chunchu Macaw Clay Lick in southeastern Peru's Tambopata National Reserve. In this remote swath of Amazonia, macaws and parrots gather by the hundreds to feast on the salt-rich clay. Bright blue, red, and green feathers illuminate the daytime sky like fireworks and transform the muddy terrain into a living Lite-Brite panel.



Tasmania

SEA MINERS

One couple's passion for purity takes them to the ends of the earth.



The dry, crisp, pre-dawn air granted Chris Manson a moment of pure joy. Despite the lack of feeling in his toes, the weather conditions were exactly as he predicted. In the middle of winter, the eastern coast of Tasmania creates a perfect storm for crafting sustainable, unrefined sea salt.

The 37-year-old Tasmanian native and his Scottish wife, Alice Laing, 35, are the creators and proprietors of Tasman Sea Salt. The saltworks launched in 2013 and is located in Little Swanport, a remote town one and a half hours north of Hobart. The couple had been living in the U.K. and came to Tasmania to visit Mason's parents when they got the idea to start their company. A box of Essex-produced Maldon salt sat on the dining room table, "which seemed crazy. Why were my parents using a salt from the other side of the world?" Manson questioned.

Bucking the aggressive boiling and energy-intensive, fossil fuel heating techniques of industrially produced salt, the couple uses solar and seawater methods. While they are not the first to create salt in a sustainable way, they're ferrying classic practices into the technical age by establishing a briny business 100 percent based on location and some extensive scientific testing, water sampling, and weather tracking.

"Salt is the single most important nutrient in most cultures," says Mark Bitterman, a James Beard Award-winning author who has written extensively on the history and evolution of salt and owner of The Meadow salt shops (see "Stock Up," page 95). "The awesomeness of the water is directly reflected in the awesomeness of the salt." Much like bottled water, salt always contains trace elements of its surroundings.

The unadulterated quality of the saltwater used by Tasman Sea Salt, naturally low in sodium and high in potassium, is due to the

Buxton River Forest Reserve to the west, Great Oyster Bay and Freycinet National Park to the east, and, to the north, Coles Bay, home of Freycinet Marine Farm, a 150-acre oyster farm that shells out four million oysters per year. That's a lot of oceanic filter feeding into an area one-fifth the size of Los Angeles.

The result is an unrefined, snowflake white, medium-crystal flake with a fresh, bright taste. Nothing but saltwater is added during the two-step evaporation process, and nothing is removed—a common technique used to enhance a particular flavor profile. For example, Jacobsen Salt Co., an Oregon-based saltworks, removes calcium and magnesium from its salt to make it clean and briny-tasting with no bitter aftertaste. "If we left those in," says owner Ben Jacobsen, "the salt would taste chalky."

Since the 1980s many large table and kosher salt producers have added iodine to their brackish blends, a move some salt purists object to even though roughly two billion people worldwide are iodine deficient (iodine deficiency is the leading cause for mental developmental disorders in children).

"Salt is a way to mass medicate in terms of getting an increased level of iodine into people's diets," says Manson, "but not the only way. We wanted to keep our salt unrefined, so we spent the better part of a year property-hunting, knocking on farmers' doors" to seek out a particular plot of seafront land with a semi-predictable weather system and seawater with a specific nutrient profile.

A two-person operation, Tasman Sea Salt is already seducing the island state's luxury accommodations. "I hate dishes that ask for too many ingredients," says Hugh Whitehouse, the executive food and beverage manager for Federal Group and the former executive chef at Saffire Freycinet, a luxury

boutique hotel in Tasmania, "but Tasman Sea Salt is a well-executed ingredient that I've always got in my kitchen."

James Beard, the patriarch of modern American cuisine, once asked, "Where would we be without salt?"

Manson, a lawyer by trade, and Laing, a freelance caterer, would be living in the U.K. with their two daughters. Instead, the duo is expanding and experimenting with salt mixes. The first, a Wakame, originally native to Japan but now growing in the waters outside Hobart, is a hand-harvested seaweed that provides an earthy richness to the salt. The second, a Tasman mountain pepper berry, features the peppercorn-shaped berry that boasts a deep purple hue and a fruity, piquant taste.

"Rather than just doing another garlic or chili salt, which is really a gimmick, Alice and I wanted to highlight our home," says Manson. The unique flavor profiles have also granted them entrée into foreign markets—namely Germany, where 2.5 tons of Tasman Sea Salt have been imported. The couple is also in nascent talks with distributors in Hong Kong, Singapore, and the United Kingdom.

Because salt collaborates with other ingredients to both balance and enhance flavors and textures, its relationship to food is multidimensional. "We're working toward being worth our weight in salt," says Laing. >

—Alexandra Cheney

Left: Konrad Wothe/Minden Pictures/Getty Images; top right: Bianca Mellinger; far right: Osborne Images

WORLD OCEAN

Covering nearly 71 percent of our planet's surface, the interconnected bodies of water that compose the World Ocean all have one major thing in common: salt. The human eye does not see the fantastic effects of salt underwater as it does on land, but its presence is no less stunning. In the ocean, salt simply floats under the radar as an invisible 3 percent to 5 percent concentration of dissolved compounds, principally sodium chloride. However, this small percentage yields tremendous results, as salt water or saline water is essential to sustain oceanic life integral to man's overall existence.



STOCK UP

Shops dedicated to that sometimes briny, occasionally sweet, exceptionally versatile ingredient.



BONAIRE SALT SHOP

Bonaire, Venezuela
bonairesaltshop.com

From \$4.50 for bath soaking salt

Located off the northwest coast of Venezuela, this island municipality of the Netherlands dedicates roughly a quarter of its landmass to salt production. Mounds of powder-white crystals rise above the sapphire Caribbean Sea in its salt pans—private land that doubles as a flamingo reserve. Bonaire Salt Shop is run by owner/master blender Sjoerd Vanderbrug who locally sources all the bath and kitchen products.

of four books dedicated to the ingredient, collaborates with saltworks in Guatemala, New Zealand, and France for the Meadow's all-purpose table salts. The Meadow's three retail locations stock fleur de sel, sel gris (gray coarse granular), and brackish flakes from 120 different points of origin for its branded line of products.

JACOBSEN SALT CO.

Portland, Oregon
jacobsensalt.com

From \$7.50 for one pound of kosher sea salt

Taste, texture, and color are the three commandments Ben Jacobsen employs to ensure his hand-harvested sea salt is exceptional. His business, Jacobsen Salt Co., sources salt from the Pacific Ocean off the Oregonian coast. Removing calcium and magnesium, the result is a clean, briny-tasting seasoning. A line of infused sea salts features flavor blends like pinot noir, ghost chili, or cherrywood smoked.

塩屋 MA-SUYA

Tokyo, Osaka, and Okinawa, Japan
ma-suya.net

From \$3.50 for a 1.4 oz. bottle of rice ball salt

At Ma-Suya, stadium-style seating displays the approximately 120 sample-ready salts for purchase. Black bowls drizzled with white, yellow, or red flakes sit in square boxes, each accompanied by a legend that accounts for origin, best use (for example, raw fish, boiled eggs, or sake), flavor profile, and more. Salt concierges recommend products for cooking, dipping, or throwing (as sumo wrestlers do to purify the ring before they enter). ♦

—A.C.



SALT CELLAR

Portsmouth, New Hampshire; Newburyport, Massachusetts; and Portland, Maine
salt-cellar.com

From \$8 for flavored sea salts

Don and Judit Tydeman literally live and breathe salt. Twelve thousand pounds of pharmaceutical-grade salt bricks line the rose-colored backlit walls of their Portland, Maine, subterranean salt vault. The room is used for halotherapy, also called salt healing, where clients can book 40-minute salt inhalation sessions. The duo also stocks over 50 variations of salt throughout their three retail stores.

THE MEADOW

Portland, Oregon, and New York City
themeadow.com

From \$1 for a 2–4 oz. Himalayan pink salt rock

When Mark Bitterman opened his first shop in Portland, Oregon, in 2006, he claims it was the sole salt store in America. Today, the James Beard Award-winning author

SAN FRANCISCO SALT CO.

San Francisco
sfsalt.com

From \$6 for a 4 oz. gourmet stackable salt

Barrels of baby blue, pale emerald, and coral-colored bath salts line the outdoor stalls of San Francisco Salt Co.'s Pier 39 shop. Customers are encouraged to sniff, rub, and sample its wares. While gourmet sea salts are also available, founder Lee Williamson has formulated bath salts specifically for athlete rehabilitation, children, and spas.

Left, yotrak/Stock; bottom right (Salt Cellar), David Random.