



Wikipedia Features Sand  
Gold in Sand • Oregon Dunes  
The Oregon Trail • Sand Displays  
Sand from Greece • Beach Renourishment

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vol. 3, no. 2 Copyright, 2022

## WIKIPEDIA: April 2, 2022

### Today's featured picture



Photo from Siim Sepp ([www.sandatlas.org](http://www.sandatlas.org))

1. Glass sand from Kauai, Hawaii
2. Dune sand from the Gobi Desert
3. Quartz sand with green glauconite from Estonia
4. Volcanic sand with reddish weathered basalt from Maui, Hawaii
5. Biogenic coral sand from Molokai, Hawaii
6. Coral pink sand from Utah
7. Volcanic glass sand from California
8. Garnet sand from Emerald Creek, Idaho
9. Olivine sand from Papakolea, Hawaii

**Mark down this date, April 2, 2022:** On this day, sand collecting (arenophilia to some) made it to the modern-day digital world. Each and every day, that wonderful online encyclopedia called Wikipedia publishes what they call a “featured picture.” In early April, they featured sand, specifically a photo depicting nine diverse sand types. Although the photo attempts to be international in scope with inclusion of sand from the Gobi Desert and from Estonia, the sands were certainly United States dominated. In fact, four of them are from Hawaii, an island dominated by volcanic rock!

The Wikipedia caption was short and sweet. In addition to listing the location of the sands, they simply say: “Sand is a granular material composed of finely divided rock and mineral particles”. Of course, if you do want to see what else Wikipedia has to say about sand, you can read a lot more on their [Sand page](#). If you do, you will be faced with this gorgeous picture of dunes from the Ubari Desert in Libya. Who has sand from there?



Photo from Wikipedia Commons

Credit: Luca Galuzzi, [www.galuzzi.it](http://www.galuzzi.it)

At least Wikipedia elected to recognize sand on April 2<sup>nd</sup> and not the day before!

## Filthy Rich at Last: Scottish Gold by Jacques Feijen



In the Netherlands, the saying has been around for centuries that Scots are stingy, Belgians are crazy, and Germans have no sense of humor. Fortunately, these are just funny descriptions of our neighbors and there is no truth in them. And I plan to prove that here, at least the part about Scots.

For some time, I have been participating in a Facebook site called "Minerals of Scotland". This includes Lea Martin who is quite crazy (he must be part Belgian) about collecting gold from various Scottish rivers and streams. When he wrote about this, he also pointed out that heavy and unusually dark sands can be a good indication for finding gold. Naturally as a sand collector, this immediately caught my attention. So I told him about my interest in sand and that heavy sands can contain fascinating minerals. Imagine my surprise when last October I received a nice surprise from Lea Martin in my mailbox: some bags of sand from Scotland.

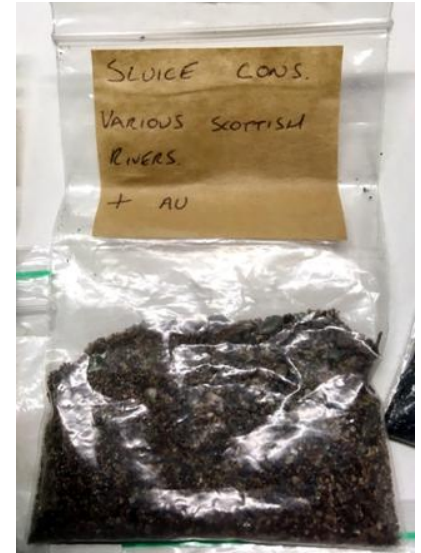


There were some beautiful sands among them, including this fantastic monster from Tallisker Bay on the Isle of Skye. Talisker is famous for its whiskey which, according to connoisseurs, including my good friend Henk, is an absolute winner (but I digress!). I will write a separate story about this sand soon because under my microscope it looks fabulously beautiful.

But this note is about some special sand in the package from Lea's favorite gold-bearing locations. This is Lea's passion, searching for gold in the

Scottish streams and rivers. As you can see from the bag on the right in the preceding image he has kept his location a secret, something any true prospector would do. I'm pretty sure Secret River is not the correct name for the site and I cannot provide proper coordinates. But that does not detract from the sample or the generosity of its donor.

Another bag Lea sent me was simply labeled "Sluice – various Scottish rivers + gold". It took me an entire evening to sort out the dark sand grains, enough to fill a dessert spoon, under my microscope. That was a lot of fun and exciting to do. I worked with a very fine brush, each time I found a gold grain it was removed and placed in a separate bottle. That yielded more than 30 grains of gold. I suspect Lea has lavishly drawn from his stash to provide me with an evening's entertainment, a wonderful new sample, and a new subject to write about!



Besides gold, there were quite a few pieces of magnetite, garnet, and quartz in the sluice sand. I also found small chunks of granite, and here and there a grain of biotite. But it is crazy: when a man sees gold, he is enchanted!



**Gold in heavy sluice concentrate from "somewhere" in Scotland:** An amazing spectacle, isn't it, such beautiful golden flecks of pure gold metal between all those rough stones? FOV is 6mm across.

**continued on next page (see Scottish Gold)**

## Scottish Gold (cont. from previous page)

Gold has no value to me, but it does evoke a bit of a primal longing, a kind of hidden homesick feeling. I think most people can probably relate to that. Gold is also the symbol of the sun. Gold points to the deeply hidden eternal core within every human being.

And I especially get that feeling when I see a pure grain of that wonderful metal, no, not the processed stuff that gets turned into beautiful jewels or anything. Rather, I prefer to see that tiny pure grain, too small to be seen with the naked eye, enchanting me under the microscope. And the best part is that it doesn't matter how small a grain it is, when you put it under your microscope, it is suddenly transformed into a much larger object.

One more thing about observing and photographing gold sand grains is that it is very easy to take many pictures. Here are a few more:



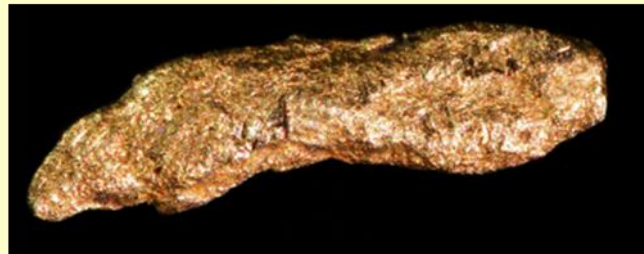
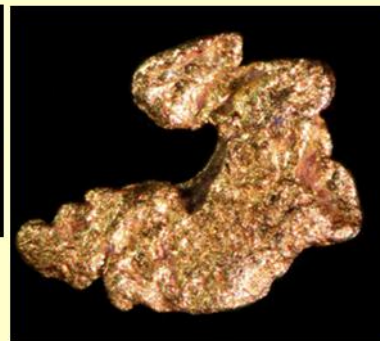
**In this view, a coarse gold grain is surrounded by other finer-grained sand.** This photo reveals a bit about the history of this heavy sand. The smaller grains of stone and minerals indicate that this material has not been transported far through the water. The grains are still rough and angular in shape. They are barely rounded. Field of view is 6 mm.



**No caption necessary!** Field of view is 6 mm.



The field of view for each photo is 2 mm.



Of course it is also fun to isolate and photograph individual grains. I call the one in the upper right my Golden Rabbit. And when I view the photograph I can pretend that the scale bar is in centimeters, or inches for my American friends, who are all known to like to exaggerate!



**This note does come with a warning.** During my entire evening selecting, isolating, and photographing tiny grains of gold, sneezing was strictly prohibited.

**Editor's note:** Jacques Feijen is a Dutch mineral collector and arenophile who is a frequent contributor to the International Sand Collector's Facebook Group. He plans to attend that organization's SandFest in September in Oregon and I look forward to meeting him there. I hope we can trade sands there, but I doubt he will be carrying any of his Scottish gold grains across the pond.



## By Fred Haynes

In September, the International Sand Collectors Society will sponsor SandFest, a gathering of sand collectors from around the world. The event will be held in Coos Bay, Oregon. The last ISCS SandFest was in Jacksonville, Florida in 2018.

The first two days of the 4-day event will be full of field trips, mostly to coastal beaches along the Pacific Oregon coast. The varied geology and topography of the Oregon coastline has created conditions for spectacular scenery, gorgeous beaches and wonderful sand collecting. And then there are the Oregon Dunes.

The Oregon Dunes National Recreation Area extends from Coos Bay 55 miles north to Sea Lion Point, which is just north of Florence, Oregon. The wind-swept dunes average two miles in width along the coastline. In places, the dunes reach 150 m (500') above sea level. With these dimensions, the Oregon Dunes is the largest expanse of coastal dunes in North America and one of the largest temperate climate coastal dune sets in the world.

The dunes constitute a unique set of landforms with an origin involving geology, geography, and weather. The desert-like landscape is spotted with lakes, rivers, ocean coastline, and even forests creating varied ecosystems for both plants and animals. The Oregon Dunes National Recreation Area (NRA) is managed by the USDA Forest Service.

Much of the wind-blown sand in the Oregon Dunes originated from the Middle Eocene (~45 mya) Tyee Formation that was deposited offshore as immature micaceous, feldspathic and arkosic sandstones in a forearc basin. By 30 million years ago, the mountain building event that formed the Coast Range had pushed these sediments above sea level. Active erosion has been ongoing since and some of the sediment is now part of the Oregon Dunes.

But it is the landforms that distinguish Oregon Dunes. There are hummocks, foredunes, parabolic dunes, all shaped by the variable forces of winds and water that grace the Oregon coast. Summer winds

blow steadily from the north. Mountains and coastal headlands along the coast deflect wind currents, sculpting the sand into many different shapes. The winds are generally lighter in the winter, but offshore winds accompanying intense cyclonic winter storms can exceed 100 mph. These winds typically blow from the south and southwest and move large amounts of wet sand into the interior regions of the dunes. The seasonal change in wind direction reshapes dune sculptures and ridges on an annual basis.

Storm-related winter winds are responsible for one of the most unique of these aeolian landforms. Yardangs, some 15 feet high, are formed in the more saturated and lightly consolidated interior regions of the dunes. A yardang is a streamlined landform carved from semi-consolidated sediment by wind action and associated wind abrasion by sand. If you are a regular reader of our other club newsletter you may remember the discussion of yardangs in the [October 2021 WCGMC Newsletter](#).



**The internal layering and unique scoured surfaces of yardangs makes them incredibly photogenic.**

Steven Michael Photography



**Of course, the hummocks and internal fresh-water lakes make for a unique ecosystem as well.**

Steven Michael Photography

Sand collectors like to collect sands from the various dune styles. One such landform is the so-called tree islands which populate the eastern sides of large oblique dunes. Tree islands are small isolated remnants of older coastal forests that are almost completely buried by sand and surrounded by non-vegetated dunes. Trees such as shore pine, Sitka spruce, Port Orford cedar, and Douglas fir, along with evergreen huckleberry shrubs hold the surrounding sand in place creating steep unstable slopes. But sometimes, as with Skeleton Tree Island pictured below, the relentless sand wins.

sands are not completely devoid of other mineralogy. There are certainly feldspars and a minor dark grain component that includes a few grains of garnet. It will be interesting to learn what other minerals are in the Oregon Dunes sand.

**References:**

Webpage: "[Oregon Dunes National Recreation Area](#)", USDA Forest Service , URL

Webpage: "[Geology of the Dunes](#)", USDA Forest Service ,

Malik, J.,2001, "Shaped by the Season - A Season in the Oregon Dunes", University of Oregon IPRE Blog URL: <https://blogs.uoregon.edu/cscenter/2019/02/20/shaped-by-the-wind-a-season-in-the-oregon-dunes/>

**ACKNOWLEDGEMENT:** Thanks to Steven Michael for permission to publish his photography.

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Skeleton Tree Island

Steven Michael Photography

The sand in most of the aeolian dunes is dominated by subrounded quartz grains and the winds have generally sorted the sands well. There is grain-size variation from place to place and from unit to unit which reflects the wind speed and/or the amount of reworking that has occurred.



Quartz-rich, well sorted sand from Skeleton Tree Island (N43.596096, W124.190580) which is located just north of Lakeside on the eastern margin of the largest set of oblique dunes in the park. FOV is 11 mm. Photo by Leo Kenney

**It is not too late to sign up to attend SandFest.** Over 40 have already sent pre-registration information to help ISCS plan. The event will include 2 days of field trips and 2 two days of workshops and seminar sessions to be held at the Oregon Marine Institute, September 8-11, 2022. There will be ample opportunity for sand trading also.

Visit the ISCS Webpage (<https://sandcollectors.org/>) for details and to pre-register.

## Sand from Greece by Fred Haynes



All successful sand collectors know one secret about how to obtain a large number of geographically distributed sands. Simply tell your family members and friends about your hobby and how easy it is to collect 30 ml (2-3 tablespoons is probably a better way to say it). Do this enthusiastically. Engage them in your hobby. Focus on those family members and friends that travel to exotic places. And then sit back and wait. Your new sand samples should come.

Last Thanksgiving I attended a family reunion at a cottage in the Finger Lakes area of New York. I had not been there long when I was approached by a college age nephew. Stephen was carrying a full lunch-size paper bag and was smiling broadly. "Uncle Fred," he said, "I have something for you."

Stephen had been to Europe, specifically to the eastern Mediterranean, and the group he was with had visited some rather out of the way locations in Greece/Crete, including several places with beaches and sand. And Stephen had remembered me. The bag contained 8 sands, two from rivers in Germany where the group had first landed and six from Greece. I had previously acquired three sands from Greece (all from the island of Crete) via trade with two different European arenophiles. Effectively, this offering from my nephew had tripled the number of sands from Greece in my collection.

I thanked him and we looked at each sand for a few minutes. Stephen explained where they had been collected and I made observations about what I saw in them. He even had GPS coordinates for them all. Apparently, I had trained him well. I made sure everyone else present knew how happy I was to acquire these new sands. You know, just in case someone else was headed to Egypt or Chile or Svalbard.

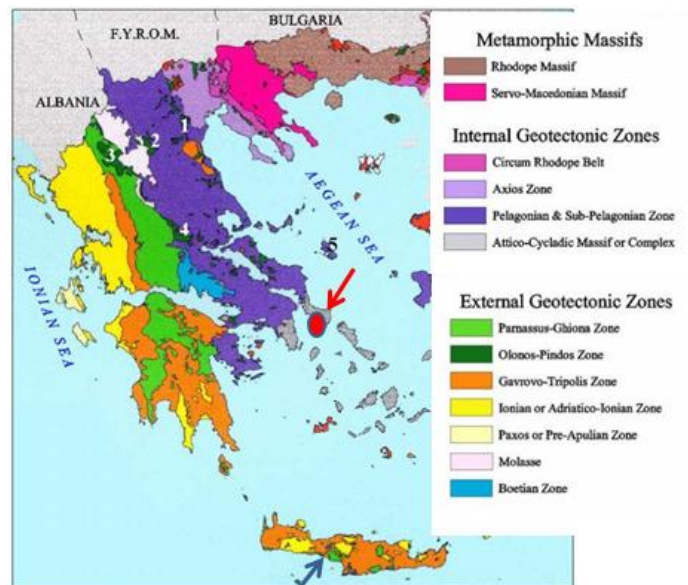
Once home it was time to look at my sands and learn exactly where they came from. Two were from Crete and four were from the mainland or other islands east and southeast of Athens. I entered them into my Google Map of sand locations and sent a couple of them to Leo Kenney, who can take much better pictures of sand than I can. And then, one cold winter day, it became time to do some research and learn a bit about the locations where these fine sands came from.



from my Google Map file of sand locations

I learned quickly that the geology of Greece and the eastern Mediterranean is complex. The region is a mishmash of small broken pieces of tectonic plates caught up in the Alpine orogeny when Africa and Eurasian plates collided in the late Cretaceous Period, 70-80 million years ago. A number of exotic terranes (not terrain) have been sutured together, separated by large scale thrust faults.

The rocks can be identified, but in many cases the relationship between the mapped units are unclear. Most are metamorphic rocks indicating deep burial and subsequent uplift. The best, and most current, map I can find (Mountrakis, 1992) labels more than ten separate tectonic terranes in an area about the size of New York State.



Geologic terranes in Greece (mostly metamorphic rocks) from Mountrakis, 1992

*continued on next page*

A review of the geology of these terranes suggested to me that the sample from a rocky beach near Karystos on the island of Euboea (red marker and red arrow on both maps) might be an interesting one to investigate. The discussion of that terrane (called the Attico-Cycladic Terrane) indicated the presence of blueschist (Xypolias, et. al., 2012). Blueschist is a metamorphosed volcanic rock colored blue by the presence of the minerals glaucophane and lawsonite. Xypolias et. al. determined that the blueschist rocks were transported along thrust faults during the Oligocene (30-25 million years ago) before being exhumed during the early Miocene (~20 million years ago)..

Sure enough, when I looked at the coarse grained sand Steven had given me from Karystos beach there were blue schistose grains. I've marked a couple of the larger grains in the upper right of the sand photo with yellow arrows..

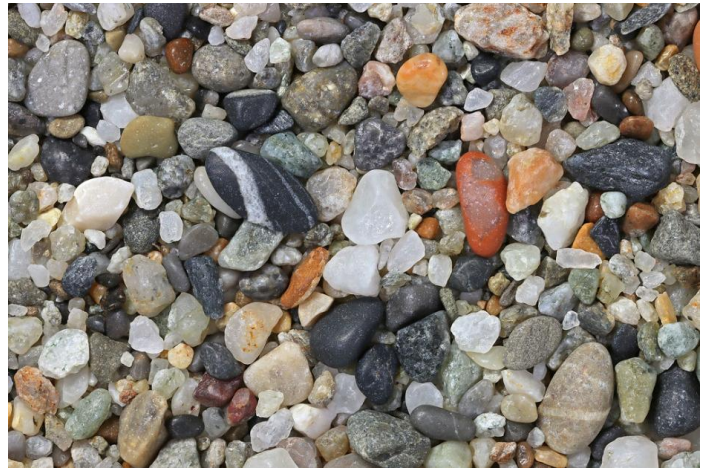


**Coarse-grained sand from the shoreline of the Mediterranean Sea near Karystos, Greece:** Field of view is 22 mm. Photo by Leo Kenney

The rest of the sand looks like what you might expect from a region with a highly varied set of rocks in the provenance area. There are quartz grains, but most grains appear to be rock fragments. The grains are generally subangular suggestive of a local origin without a lot of reworking by the waters of the Mediterranean Sea.

One of the samples from Crete offers a marked contrast to the sand from Karystos. It is from Plakias Beach on the southern unprotected exposure of Crete with the Mediterranean Sea (blue arrow on both maps). The grains in this sample were quite rounded, indicating longer exposure to active weathering and natural tumbling. I noted what appear to be grains of jasper and one interesting black grain with a small veinlet of quartz.

Crete is a small island, but the geologic map indicates at least three separate geologic terranes and the presence of a highly variable set of rock types. It is, therefore not surprising to see the variation in the beach sand. I imagine a careful study of the grains in this beach would reveal contributions from more than just the island of Crete. However, unlike beaches in older and more stable geologic settings, the sands are not mature. They are not dominated by quartz.



**Coarse sand from Plakias Beach, south central Crete**  
Field of view is 22mm. Photo by Leo Kenney

**References:**

Moudrakis, D., 1992. Introduction to the geology of Macedonia and Trace: aspects of the geotectonic evolution of the Hellenides. Bull Geol Soc Greece 30, 31–46.

Wikipedia entry "[Geology of Greece](#)"

Xypolias, P., et. al., 2012: Subduction- and exhumation-related structures in the Cycladic Blueschists: Insights from south Evia Island (Aegean region, Greece), Tectonics, V. 31, 22 p.

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**I also went to Greece this month !!**

## A Thematic Sand Display: Oregon Trail by Bill Beiriger



## The Oregon Trail 1804-1806

I call my thematic exhibit on The Oregon Trail, “**Lewis and Clark Trail of Discovery Exhibition**”. The journey that Meriwether Lewis and William Clark led in the middle of the first decade of the 19<sup>th</sup> century took them from Wood River, Illinois (near St. Louis) to the mouth of the mighty Columbia River (where the town of Astoria, Oregon now exists). Quite a trip today, I cannot imagine what it was like back then.

It is certain that they saw a lot of sand along the way. It would have been blowing in their faces and sticking to their wagon wheels as they forded muddy creeks and even large rivers. I suspect no one on those expeditions gave one thought to collecting a bit of sand here and there along the way: you know, to later display once back in the east.

But some years ago I had an idea to do so. I researched the route and set out to find individuals who would trade sands from as many locations along the trail as needed for an adequate collection to display.

I ended up using 23 in my exhibit and I also included photographs from each site as support for the sand that is displayed in a vial just about each photo. The back of the case has a map that links the sand location to its position along the trail. A version of that map, modified for a presentation such as this and accompanied by a spreadsheet of the data can be found on the next page.

I did not get to all these sites to collect. Many were obtained by trade with other sand collectors. For others I wrote to schools, mineral clubs, or churches in the regions. It was sure fun when the mailman would bring me a sand for my newest exhibit.



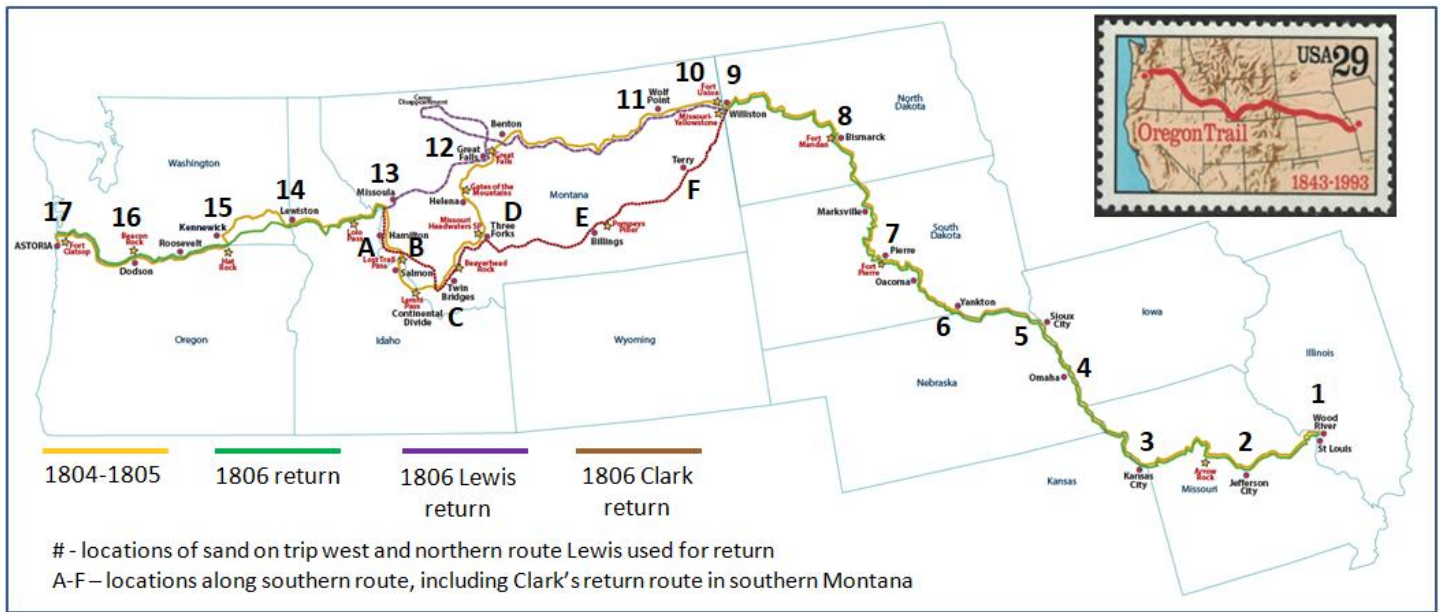
“**Lewis and Clark Trail of Discovery Exhibition**”, a display of sands from along the Oregon Trail by sand collector Bill Beiriger

I have been making sand displays since 2006, and they all have different themes. Coming up with thematic ideas is easy; geographic themes, sands from your home state, beaches you have been to, sand from along a certain river, a sand from each of the 50 states, etc. are all excellent ideas. Sometimes historical events offer excellent themes and that will be the topic of the display I will describe here. But first a few notes about how to develop a display once you have your creative idea or theme. Some do's and don'ts, if you will.

- Limit the number of sands in your display. You may have hundreds of beach sands from California beaches, but once you go beyond about 25-30 locations you are likely going to end up with an overcrowded exhibit sand and lose folks who happen by to see your exhibit.
- Do some research on the locations of your sands. The internet permits one to quickly look for interesting background information, even photos that can highlight the sands in your exhibit.
- Set up a spreadsheet (an Excel file or other program) to capture locations and other identifying information on your sands. A portion of that spreadsheet may be a useful part of your exhibit.
- Keep the text portion of the display to a minimum and keep it simple. The typical viewer does not want to spend a lot of time reading a lot of text. Put some text, or text and a map, on the vertical back panel of the display, and a minor amount of text, photos with the sand samples on the bottom of the display.
- If appropriate, don't be afraid to include some interesting support items, a coin, a model, or some souvenir item from the site.
- Finally, be sure you put your Name and Email Address in the display case, you may be able to get some new samples from individuals who viewed the display, or you may find a person with whom to trade sand samples.



**“Lewis and Clark Trail of Discovery Exhibition”, A Thematic Sand Display by Bill Beiriger**



**The Oregon Trail, and the location of 23 sands I acquired and displayed from sites along the route that Lewis and Clark followed across the central plains and over the northern mountains.** The Excel file below lists the sites from both the two-year trek west and their return routes. For a part of the trip back, Lewis and Clark took different routes.

	State	City	Significance of this location on the Oregon Trail
1	Illinois	Wood River	Expedition Begins from Wood River (Camp Dubois) Eastern side of Mississippi River.
2	Missouri	Jefferson City	Expedition passes Arrow Rock Bluffs, Missouri River.
3	Kansas	Kansas City	They camped on the Kansas River, noting the colorful Carolina Parakeets, now extinct.
4	Nebraska	Omaha	Expedition camps near Fort Atkinson.
5	Iowa	Sioux City	Sargent Floyd was the only member to die on the expedition, he is buried at Sioux City.
6	South Dakota	Yankton	Lewis smoked ‘Pipe of Peace’ with Yankton Sioux.
7	South Dakota	Pierre	The L&C party and the Teton Sioux didn’t see eye to eye for the trip west.
8	North Dakota	Bismark	Clark’s return, group Winters at Fort Mandan on the Missouri River.
9	North Dakota	Knife River	Earth Lodges of the Mandan and Hidatsas Indians. Sacagawea gives birth to Son.
10	Montana	Fort Union	Arrived Confluence Missouri and Yellowstone Rivers.
11	Montana	Wolf Point	Six members of the expedition encountered a Grizzly Bear near Fort Peck Lake.
12	Montana	Great Falls	Great Falls of the Missouri River. One month to portage the falls.
13	Montana	Missoula	Lewis and Clark enter the mouth of the Clearwater River at the Snake River.
14	Idaho	Lewiston	Lewis and Clark enter the mouth of the Clearwater River at the Snake River.
15	Oregon	Hat Rock	Expedition reaches Columbia River near present day Kennewick, Washington.
16	Washington	Stevenson	Lewis and Clark camped down stream from Beacon Rock near Stevenson.
17	Oregon	Astoria	Build Fort Clatsop on the South side of Columbia River.
A	Montana	Hamilton	Expedition was lost and low on food, Lost Trail Pass.
B	Idaho	Salmon	Shoshone Chief Camaeawait, Sacagawea’s Brother, greets the expedition.
C	Montana	Twin Bridges	Sacagawea recognizes Beaverhead Rock Near headwaters of the Missouri River.
D	Montana	Three Forks	They reach the forks of the Missouri River, name them the Gallatin, Madison, & Jefferson.
E	Montana	Billings	Clark names a rock outcropping Pompey’s Tower near present-day Billings.
F	Montana	Terry	Clark traveled through these Badlands on his return trip East.

*Bill Beiriger is a sand collector from California and a member of the International Sand Collectors Society.*



Here I have placed one of each case atop a wall-mounted mineral case where the top of four shelves is also displayed. The upper surface of the case is at eye level, perfect to observe the variation in sand. The mineral case has internal lighting (which is off for this photo) so the sands do not block lighting for the minerals. There is a ceiling mounted light shining onto the sand vials.

On December 11, 2021, Joost van de Leur posted his satisfaction with a recent sand trade on the ISCS Facebook page. I immediately noticed the upright display units in the upper right of his photograph behind his newly acquired sands. The vials look like the 20 mm corked glass vials that I use. I inquired about the units and where he had acquired them.



ISCS Facebook member Mithriel MacKay uses 30ml vials for her sand that are 1.5" in diameter and they did not fit, but her collection of shark teeth fit very well into the units.



Image from Joost van de Leur's Facebook post of December 11, 2021

Joost replied that the tiered acrylic "display" units were designed to hold small bottles of nail polish and that they could be acquired online. I decided to investigate. In the United States both 3-tier and 6-tier versions can be acquired for less than \$20 each from Kingtailly through Amazon, and probably from other site also. I decided to order one of each and test them out.

It turns out that the 6-tier rack can hold 72 of my 20 mm vials and the 3-tier rack can hold 27. The internal depth of each row is slightly less than 1 3/8" and each row is mounted about 1" above the one in front of it. The 3-tier case is 9 3/4" wide and the 6-tier case is 12" wide. I have since ordered several more as both sizes will work well in various locations where I store/display sands that I have collected or acquired by trade. One application I have found is shown to the upper right.

I was asked how I keep my samples that are in these displays labeled. I use Avery Easy Peel Return Address Labels (#5195). They come with an easy-to-use MS Word template. They are on the backside in the stand in the original pictures, but I turned one around (see below). I use them on the 2" by 3" trade bags also. The top of the vials is cork and I write the number of the sample on the cork also.



## Beach Renourishment in Action

We have all probably read that ocean front communities that rely on a stable and consistent shoreline often find it necessary to dredge sand from offshore and pump it back to the shoreline to restore a beach. In some cases the effort is necessary to attempt to save important coastal ecosystems. In other cases coastal homes or communities are at risk.

The overall process is often referred to as beach restoration or beach nourishment. But did you ever wonder how it is actually accomplished? In February, Sonja Brown DeChene placed a video link on the International Sand Collectors Facebook Group page that captured a major beach restoration program in action along the North Carolina coast, specifically at the east end of Ocean Isle Beach. Sonja writes that a series of hurricanes over the past few decades have removed the beach.

The video was filmed on February 20, 2022. To the right are a couple of pictures taken from the video. The sand is being pumped from a dredge operation out in the adjoining bay where multiple bulldozers push it into position.

To watch the video, go to YouTube and search for "Ocean Isle Beach renourishment". It should be one of the first videos shown (3:22 minutes long)



*Grand Isle Beach, North Carolina*

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Secretary – Beth Webster

Treasurer - Bill Lesniak

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Glenn Weiler – Workshop Coordinator

Linda Schmidtgal – Collection Curator

Fred Haynes – Facebook Administrator

Jim Rienhardt – Sand Chapter

Club meets 2<sup>nd</sup> Friday of each month starting in Sept.

Social meeting at 6:30 PM Regular meeting at 7:00 PM

Park Presbyterian Church, Maple Court, Newark, NY

Website – <http://www.wcgmc.org/>

Dues are only \$15 individual or \$20 family for a full season of fun. Renewal is in October. Send to:

WCGMC, P.O. Box 4, Newark, NY 14513