

Sand scraper manual

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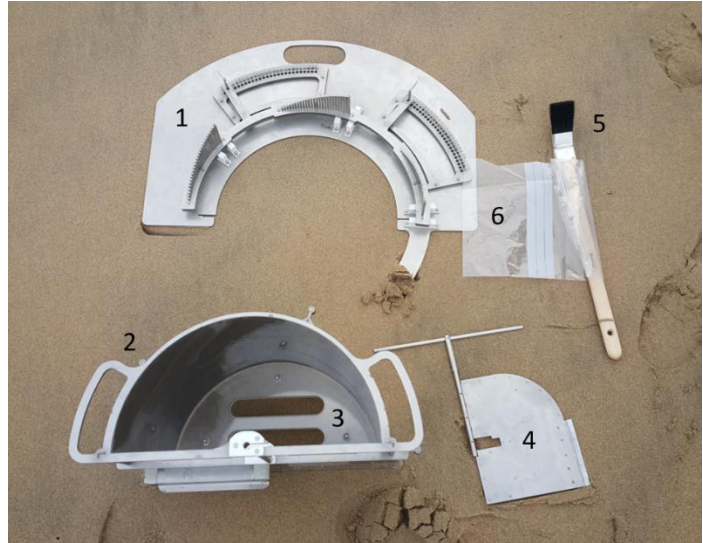


Device for collecting sand samples from the beach surface. Specifically designed to scrape smooth beach surfaces (e.g. the intertidal area) layer by layer to study vertical grain size variations up until 50 mm depth.

Parts and tools

Below you see the parts and tools needed to use the sand scraper:

- 1) Base plate with depth dialing mechanism
- 2) Cutter
- 3) Cover of cutter
- 4) Scraper
- 5) Brush
- 6) Sample bag
- 7) Optional: Small shovel, allen keys



Scraping instructions

Step 1: Remove the cover from the cutter



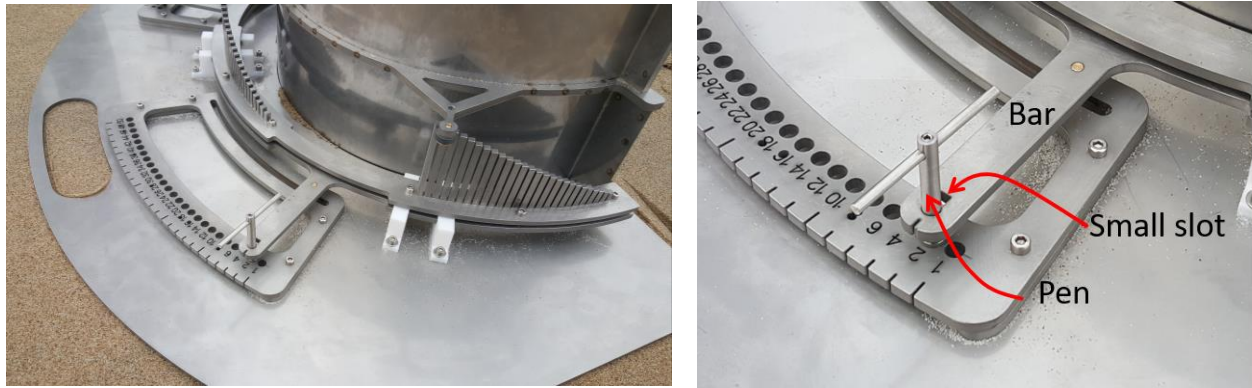
Step 2: Put the scraper into the cutter. Make sure that the scraper is turned to the right and parallel to the straight side of the cutter. Only then, the axle of the scraper goes through the round cut-outs in the white plastic.



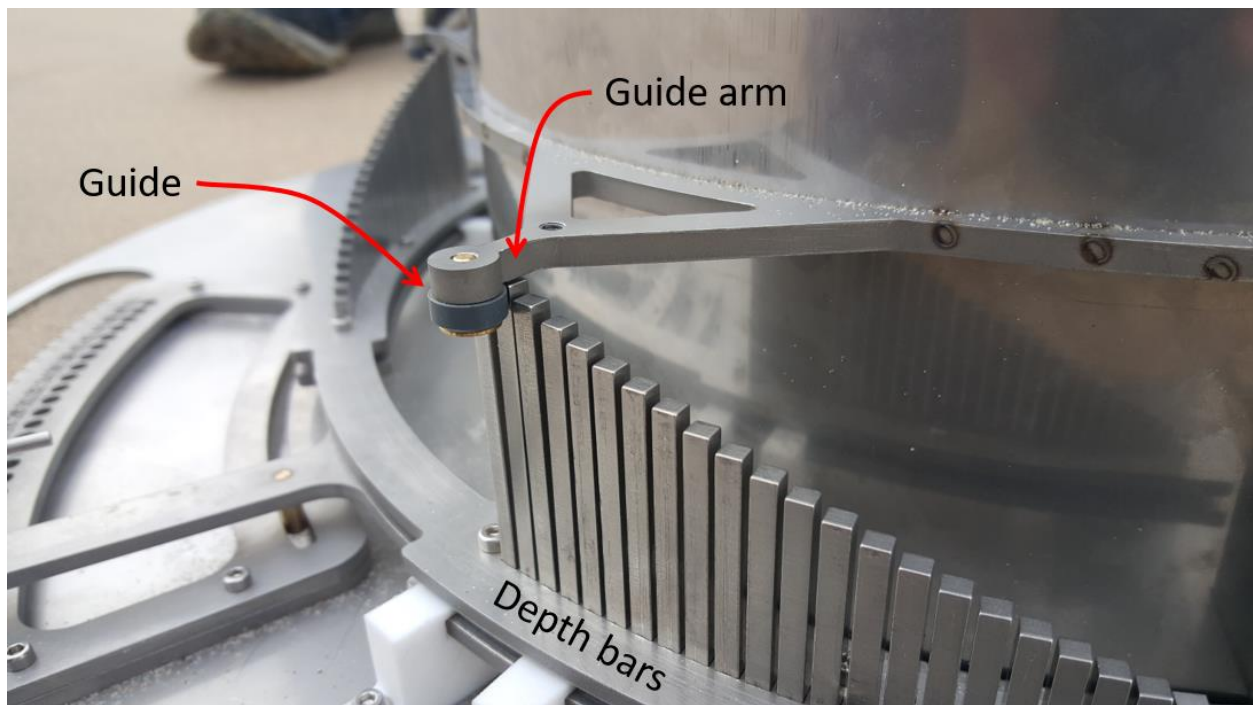
Step 3: Place the plate on the surface where you want to collect a sample and put the cutter into the slots of the base plate, both on the right and left side. Sometimes it is best to first put the right side into the slot and then force the left side into the slot with one or two hands.



Step 4: Choose the depth at which you want to take the samples. There are two dialing scales on the base plate but in practice you only have to use the scale on the left. To change the depth, make sure the bolt on the side of the pen is aligned with the small slot in the metal bar attached to the pen. Now, pull out the pen from the current setting, move the bar to the setting you desire and press the pen back down into the scale. Note, the numbers on the scale represent the depth in mm. The range of available depths is 2 – 50 mm with intervals of 2 mm.



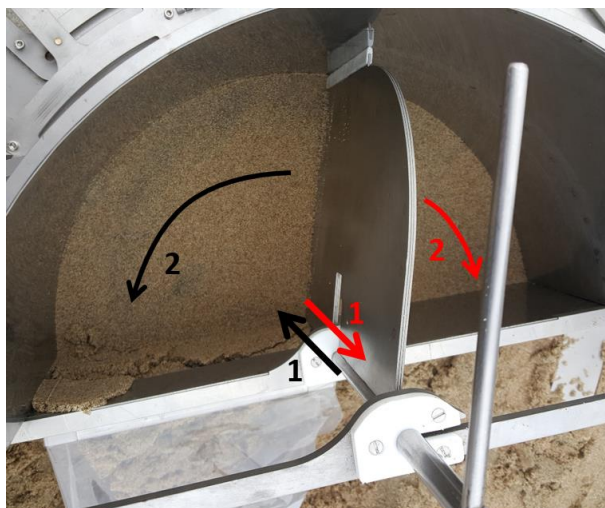
Step 5: Push the cutter into the sand by grabbing the handles on the side and putting your weight on the cutter. You will notice that the ease with which the cutter goes into the sand depends for instance on the moisture content and the presence of shells. Make sure that you press the cutter in straight so the guides on the side of the cutter move past the depth bars. Then push the cutter until all three guide arms rest on the depth bar that corresponds to the depth you chose in the previous step. If it is difficult to get the guide arms flush with the depth bar it might help to dig some sand away from under the sample bag window (step 6).



Step 6: Dig a hole under and in front of the sample bag window (with a small shovel) to make sure that the sand can easily fall into the sample bag. Thoroughly clean the sand away from under the window sill, because otherwise it is hard to fit the sample bag onto it. It is easiest to attach the sample bag by wrapping it first around the lower corners of the window sill. Then press down on the spring system and wrap the sample bag around the upper right and upper left corner, one by one. This method works best if the spring system at the top of the sample bag window is pressed down on both sides. The fit of a sample bag is quite tight, but after some practice it becomes easier to fit it on the sample bag window.



Step 7: Press down the scraper and turn it completely to the left (anti-clockwise). Use the brush to wipe the sample into the plastic bag. If the sample is quite large the sample can partly be wiped into the sample bag and the scraper can be turned right and then left again. Make sure when turning the scraper back (clockwise) that you first pull it upwards. This prevents sand from getting stuck behind the scraper.



Step 8: Remove the sample bag from the sample bag window and seal it. Write down the location, depth, date, time and any other information that might be necessary on the bag.



Step 9: If you want to take more samples in one location you can repeat steps 4 through 8. Below you can see an example of a location where samples were taken until 50 mm depth.



Step 10: If you are done, pull the cutter from the sand and out of the base plate. Remove the scraper from the cutter by pulling it upwards and put the cover on the cutter. Remove the base plate from the surface. Fill the hole you have created to prevent others from tripping.

Storing instructions

Put the cover on the cutter for storage and transport. The cover makes sure the sharp edges of the cutter cannot bend so it stays in its round shape. Damaged edges make it much harder to push the cutter into the sand, so please be careful.

Cleaning instructions

In the field, brush off all parts of the sand scraper and put the cover back on the cutter. Once you are back from the field, rinse the base plate and the cutter under streaming water. To clean the scraper, fill a bucket with water and hold the scraper in the water. The scraper has a white, hard plastic extension that is designed to make sure the scraper follows the round shape of the cutter. While the scraper is underwater, push the extension in and out several times to allow any built-up sand to drain from the bottom of the scraper.



Maintenance

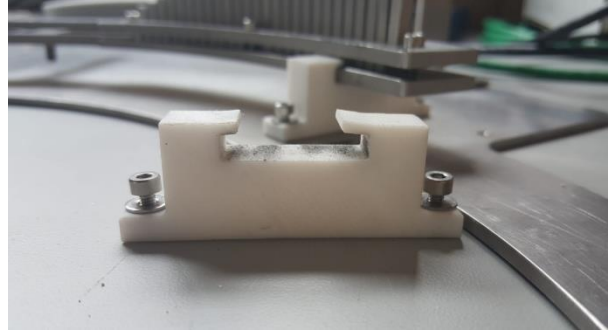
Make sure to check the white, hard plastic parts of the scraper and the plate once in a while. These parts should be very durable, however we are working with sand which causes a lot of wear and tear.

Most parts of the sand scraper are fastened using allen keys. Make sure to bring an allen key set to a field trip to be able to fasten bolts if they come loose.

Tips and tricks

It is easiest to get the cutter into the base plate when the base plate is on a flat hard surface (so unfortunately not sand). Put the round part of the cutter and the left protruding edge in the base plate and push in the right protruding edge by pushing it horizontally backward into the slot in the bottom plate. Because it can be tricky to get it in, the base plate and cutter can be moved to the next sampling location while still assembled. To prevent damage, make sure the cutter is resting on the depth bars and that the edges of the cutter do not get damaged by putting on the cover.

For transport the dialing mechanism can be removed from the bottom plate. Unscrew the white, hard plastic gliders under the mechanism and remove them. When reassembling the sand scraper, make sure the shorter edge of glider (on the left in the picture) is on the inside of the half circle in the base plate. If you do not do this the dialing mechanism will be hard to move, especially when setting it to 32 mm or deeper.



It is key to keep the sand scraper clean, when there is a lot of sand in between the cutter and the base plate it can become harder and harder to push the cutter into the sand. When done sampling at one location make sure to clean the inside of the cutter and both sides of the scraper. When there is sand still sticking on the cutter/scraper, the upper layer of the next sampling location will be contaminated with that sand.

To reduce the amount of physical effort necessary to press the cutter into the sand a top plate was added. Put the top plate on the cutter and use a rubber hammer to tap the cutter into the sand. This especially helps when the sand is wet or when there are shells present.

