Entanglement · Vertical Landscape

8th Berlin Biennale (Germany)
May 29–August 3, 2014


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In addition to an older series by the artist, *Entanglement* (2013, Kunst Halle Sankt Gallen), the 8th Berlin Biennale presents *Vertical Landscape* (2014), new works that Kopelman realized in connection to multiple visits and research in situ at different stations of the STRI, Smithsonian Tropical Research Institute in Panama. Here, an exploration of the ecology of *lianas*—long-stemmed plants that are supported by larger trees for access to sunlight, and the disposal patterns of ghost crabs are a key focus. The artist also considered the impact of the introduction of non-native species on biodiversity, particularly with regard to the Panama Canal and its historical position as an important hub for international shipping.

In the exhibition *Entanglement* Kopelman displayed three series of drawings and paintings on paper which she produced during visits to scientific expeditions in Malaysia, Panama and Peru. The artist approached the forests in very different ways in each of the cases: whereas for the Panama series of drawings, *Leaf Litter Traps*, she used the outlines of fallen leaves and small twigs which she gathered in nets—the so-called leaf litter traps as laid out by researchers, the diptychs of the Malaysia series (*Sampling Greens* ↗) show Kopelman's attempt to capture in colour studies the immeasurable and perhaps infinite varieties of shades of green in the jungle. In the Peru series (*The Exact Opposite of Distance* ↗) a system ultimately becomes visible which first enabled the artist—overwhelmed by the density and proximity of the jungle—to produce a representation. She created a section with borders made up of crossing lines—such as a tree trunk, a liana or a branch lying on the ground. She then depicts the contents of this "window" in the drawing.

i
Leaf Litter Traps, 2012

Leaf Litter Traps

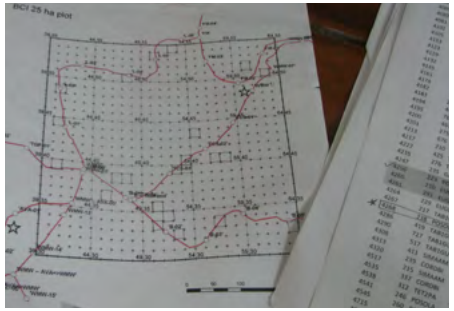
This project was made possible by the 2012 Smithsonian's Artist Research Fellowship, and with a proposal to spend time at The Smithsonian Tropical Research Institution (STRI) in Panama. In the years leading up to this, I had carried out a number of projects with material from natural history museum collections, and also worked alone in the field observing and drawing particular landscapes and natural elements. With this project, I wanted to learn more about what I felt was the missing link between these two working processes. I proposed to observe the various methodological aspects involved in the process of doing fieldwork and to learn from the techniques and rationale behind data collecting in the field—prior to its inclusion in collections or papers. I wanted to see how biologists gathered their information and more particularly, how they mark, frame and manage their subject of study; how they establish the boundaries of a (literal) field of research, in that otherwise vast category of nature.

STRI has a few different work stations in Panama. During my stay, I divided my time between Barro Colorado Island and Gamboa. Barro Colorado Island (BCI), a 1,500-hectare island, is STRI's primary site for the study of lowland moist tropical forests. The island was formed when the waters of the Chagres River were dammed to form the Gatun Lake, itself located in the middle of the Panama Canal. When the waters rose, they covered a significant part of the existing rainforest, and the hilltops remained as islands. In 1923, the island was set aside as a nature reserve and has been administered by the Smithsonian since 1946. The island's diverse ecosystem—practically unaltered by humans—make Barro Colorado's tropical forest among the most-studied in the world. It has been studied for over eighty years within a great variety of biological disciplines; various scientific studies have been conducted to document the changes in the species composition of the island.

Gamboa, located 30km north of Panama City, is a small town located on the east bank of the Panama Canal, north of the Chagres River. In the early 1930s, the Panama Canal Company constructed Gamboa at the confluence of the Panama Canal to house its Canal Maintenance (Dredging) Division. At the Gamboa Field Station, STRI provides laboratories and accommodations for researchers who work at the 22,000-hectare Soberania National Park. The park is a protected area containing a wide variety of forest and freshwater habitats, administered by Panama's National Authority for the Environment.

I spent five weeks in Panama. The first ten days I stayed on Barro Colorado Island, where I asked the researchers about their work—what they do and how they do it. I observed people at work, and wandered around on my own, looking for the signs, marks and traces that fieldworkers leave all over the island in order to do their fieldwork.

On one of these walks I encountered a makeshift device; a PVC pipe construction with a net that captures stuff that falls from trees. The sight of those traps in the middle of the forest was quite intriguing. Back in the camp



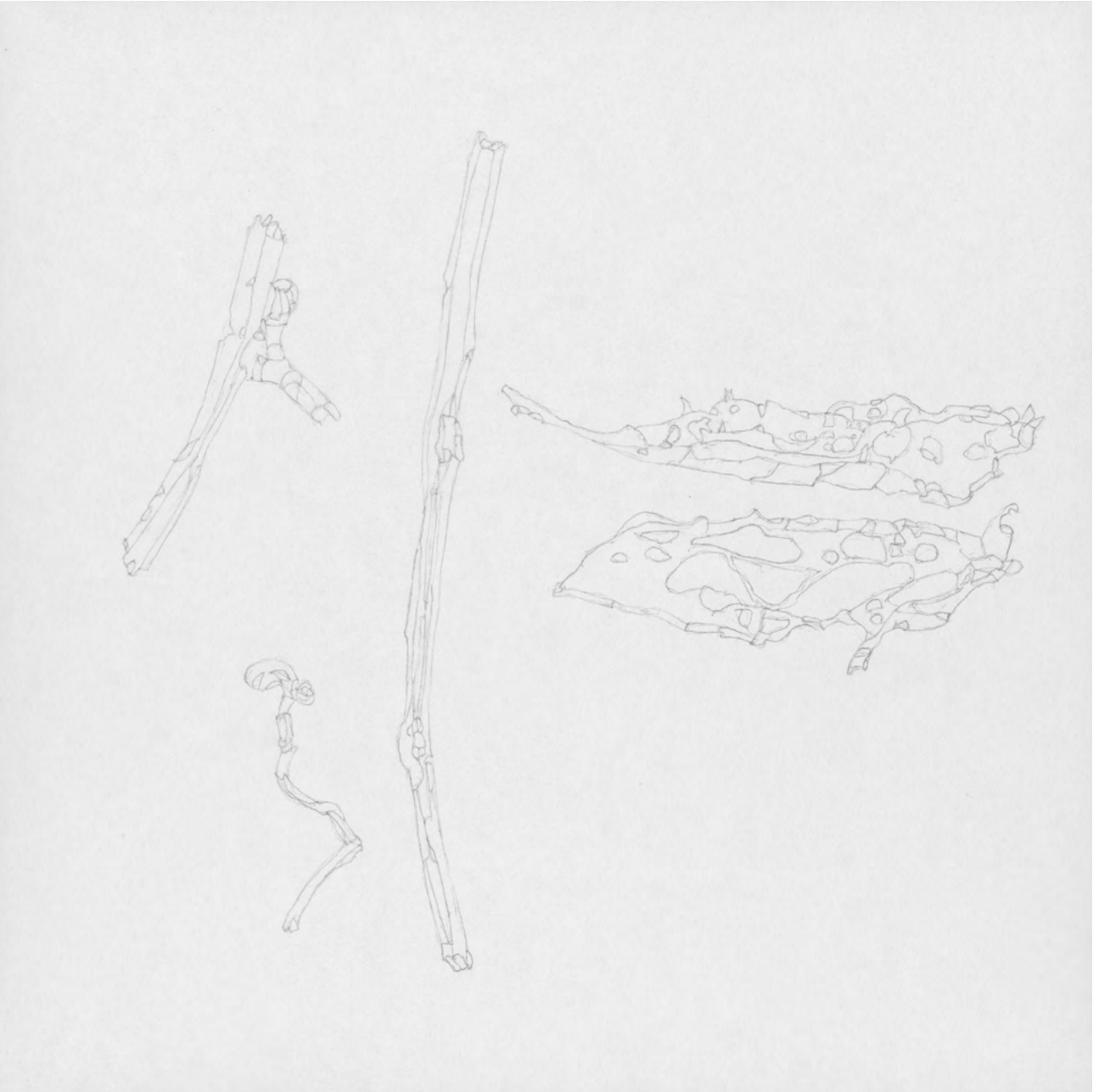
I asked about the devices I had seen during my walk and was told they were called: "leaf litter traps". I then learned that leaf litter is the denomination for any dead plant material (such as leaves, bark, needles and twigs) that has fallen to the ground. This dead organic material and its constituent nutrients are added to the top layer of soil.

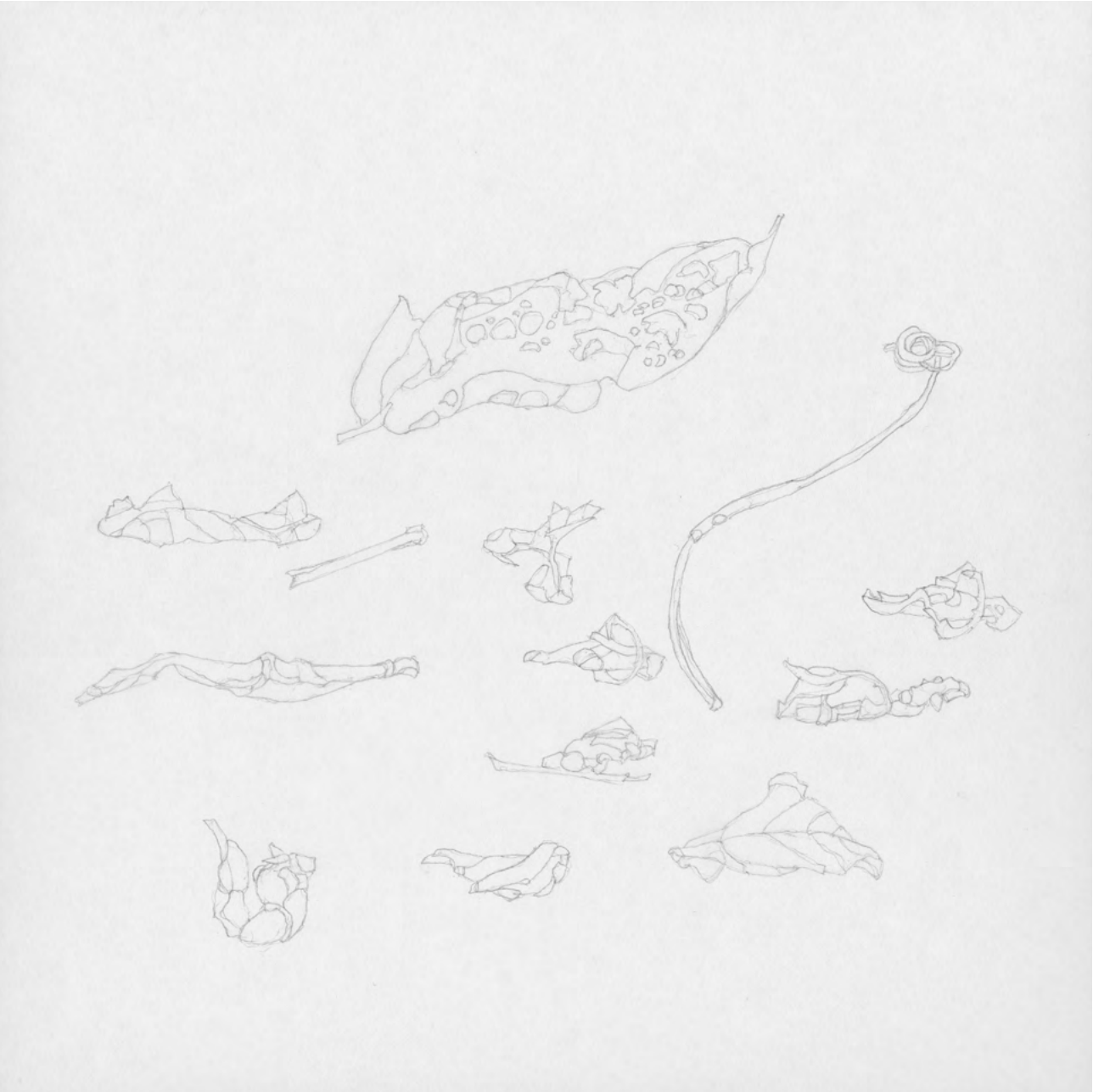
Litter has occupied a great amount of attention in ecologists' studies, because it is an essential factor in ecosystem dynamics; indicative of ecological productivity; and possibly useful in the prediction of regional nutrient cycling and soil fertility. The main objectives of litterfall sampling and analysis are to quantify litterfall production and its chemical composition over time, in order to assess the variation in litterfall quantities, and hence its role in nutrient cycling across an environmental gradient of climate (moisture and temperature) and soil conditions.

While the process of thinking, walking, and wandering continued, the leaf litter traps stayed on my mind. I decided that I would install my own leaf trap once I was in Gamboa, and would make drawings of everything that fell into it. Once I arrived in Gamboa and found all the necessary materials, I installed the leaf trap. I decided upon the location quite arbitrarily—I simply chose a place where there were many trees, assuming that this would be where a large amount of litter would collect. The day after I found very small things in my net. I collected them and drew them but was a bit disappointed with my catch. I didn't know what kind of conditions would produce good amounts of litter, so I kept going. The following days proceeded in the same manner and with similarly small amounts of leaf litter. By the fourth day, I decided to install two more traps at different locations, hoping that other material would fall into their nets. I installed one under a Cecropia tree (the leaves of which I very much wanted to draw) and another one under a tree which had leaves partially eaten by caterpillars, thus creating the most intriguing patterns. The following nine days were spent drawing the material that fell in the nets of these three traps.

Trap 1
13 drawings
24 × 24 cm
pencil on paper

Trap 2
10 drawings
24 × 24 cm
pencil on paper





Trap 3
9 drawings
24 × 24 cm
pencil on paper

ii
Crab Pellets, 2014

Crab Pellets

One of the most outstanding moments of this first trip was a meeting and day in the field with John H. Christy, staff biologist at the Smithsonian Tropical Research Institute, Republic of Panama. To learn more about his research, I accompanied him to Punta Culebra, where he studies crabs. We spent the morning in the vicinity of the crabs, observing their movements through binoculars while John shared stories and details about these crustaceans.

Eventually I became interested in the traces that these crabs leave in the sand while eating and discarding leftovers; tiny balls of inorganic, inedible material that form intricate patterns on the sand. Different crabs create different patterns as they have different ways to memorize their way back to the burrow in case of danger. While some memorize by counting their steps in horizontal and vertical directions, others see and memorize by sight, which seems to be the case with ghost crabs. Visual memorization enables them to move more freely in space, thus generating different patterns and many variations of forms.

I produced a series of drawings during my time at Punta Culebra that depicted these patterns. The drawings were made each day, at varying times according to the schedule of the tide. I drew during low tide: a time window of three hours, when the patterns were created and visible on the beach. After those three hours the ocean washed away the crabs' traces, producing a blank slate for the next day.

18 drawings
35.5 × 43 cm
watercolour on paper






iii
Lianas, 2014

Lianas

On that first trip I also crossed paths with Stefan Schnitzer (Professor at the Department of Biological Sciences at the University of Wisconsin, USA, and founder of the Schnitzer Lab). The Schnitzer Lab focuses on understanding the mechanisms that regulate and maintain plant species diversity, the causes and consequences of plant diversity, the mechanisms that control plant abundance and distribution, and the causes and consequences of plant competition. The research focuses on the presence of lianas—a group of long-stemmed plants that grow on trees for support, seeking sunlight at the top of forest canopies.

Lianas form an interesting presence in the tropical forest, they are literally everywhere. Once you begin to better understand this ecosystem, you realize that these lianas are very complex and not necessarily a gentle presence in their surroundings. On my first trip into the rainforest I thought that lianas were responsible for the "visual mess" of this landscape. They grow everywhere and block your vision, creating a visual disorder. You almost wish they were not there so you could appreciate the view. But after spending more time in this extraordinary landscape you begin to appreciate the force behind certain organisms. Lianas form a very powerful element of the forest; to a certain extent they are destructive, but they still form an integral part of the ecosystem.

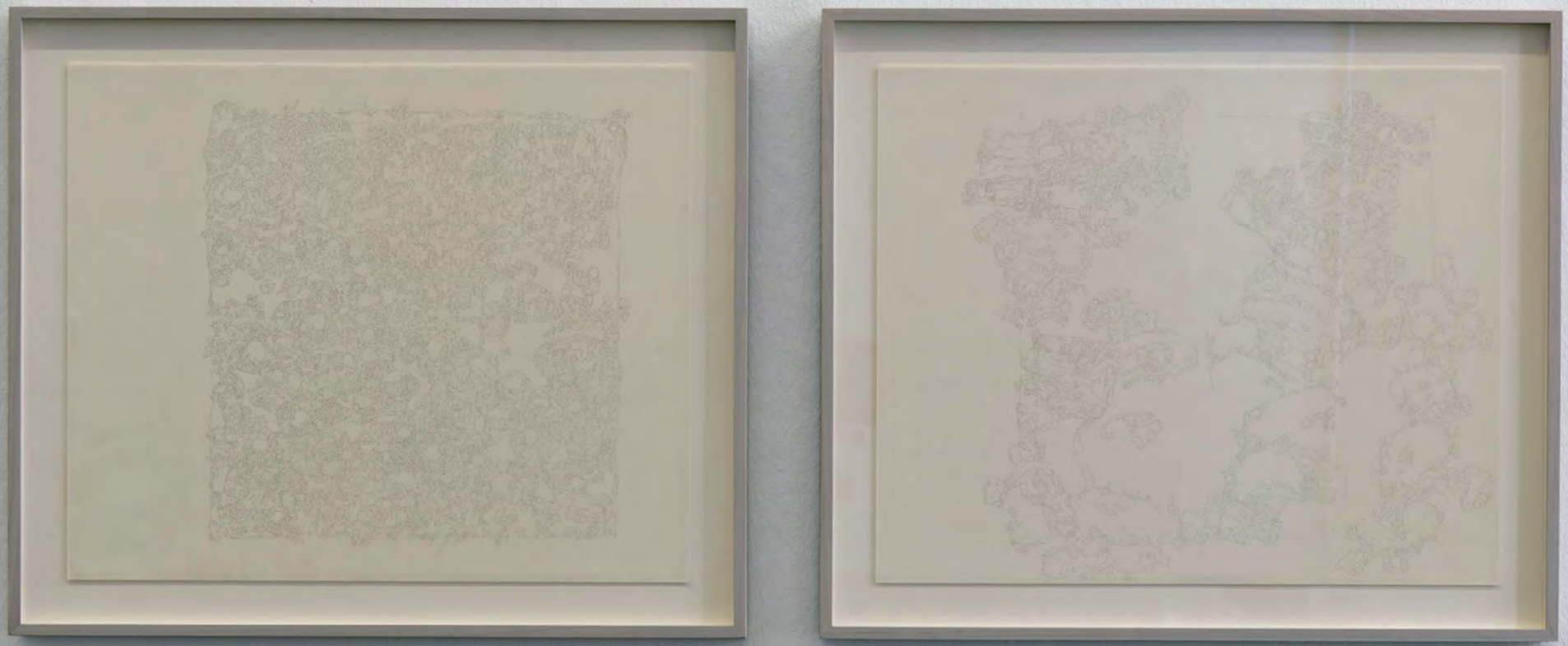







20 drawings
21 × 29 cm
pencil on paper

iv
Invasive Species, 2014

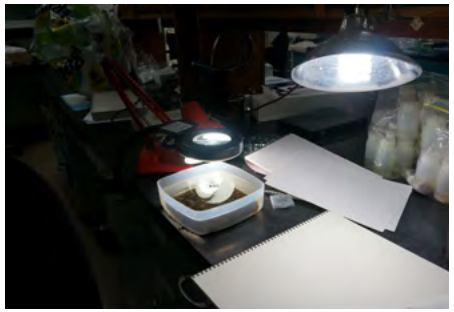


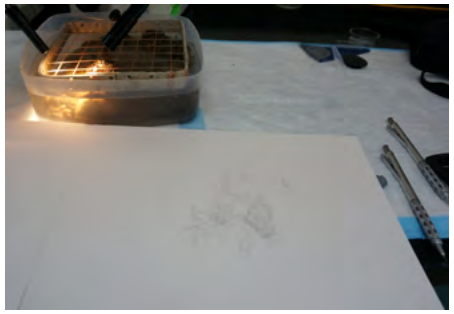
Invasive Species

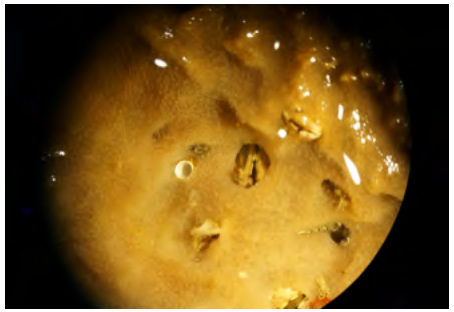
On that first trip to Panama I had not only met with researchers but also heard stories that kept lingering in my mind; one was about invasive species that travel to the Panama Canal in ballast water or on the hulls of ships. When ships cross the Panama Canal they usually discharge ballast to reduce draft (not really weight) and also to compensate when loading cargo. When the ship releases (part of) the ballast water, it may also release non-native species contained in the water, causing a complex interaction with the local species.

Mark Torchin (staff scientist, STRI Smithsonian Tropical Research Institute, Republic of Panama) is directing a project about these invasive species. Torchin's Lab is conducting several large-scale experiments that evaluate the role of the Panama Canal in biological invasions and specifically tests the role of predation as a mechanism of biotic resistance to invasion in marine invertebrate communities. For one of these experiments, plates are installed in different port areas and left under water for a period of three months. After these three months, the plates are examined in the laboratory to determine what native and introduced species are growing on them and the extent to which they interact.

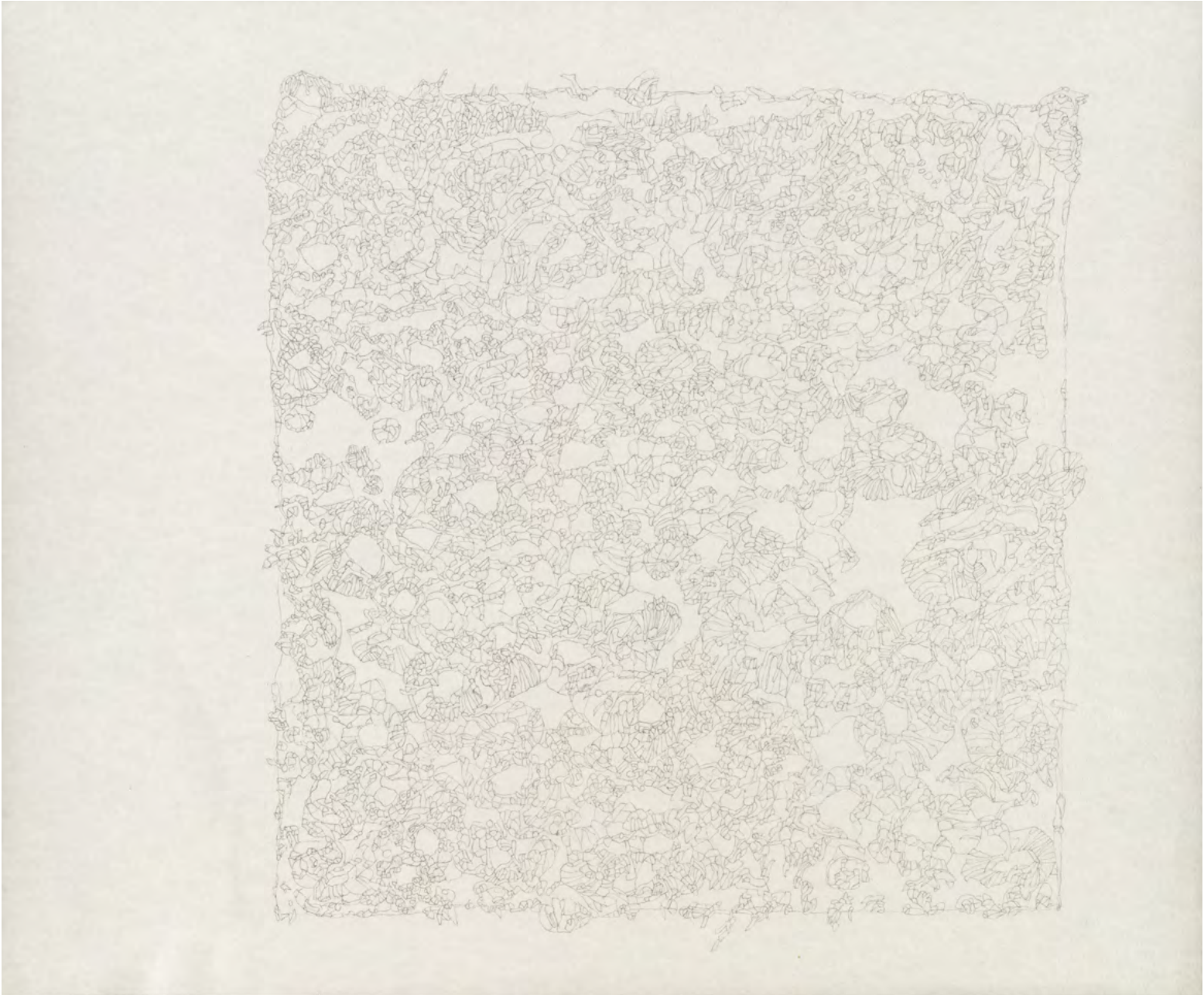
This piece was made in direct relationship with this experiment. Each drawing depicts a plate: one collected on the side of the Pacific Ocean; the other one on the side of the Atlantic. The drawings were made looking through a magnifying glass and enlarge the "findings" on the plates by four times their actual size.





2 drawings
35.5 × 43 cm
pencil on paper

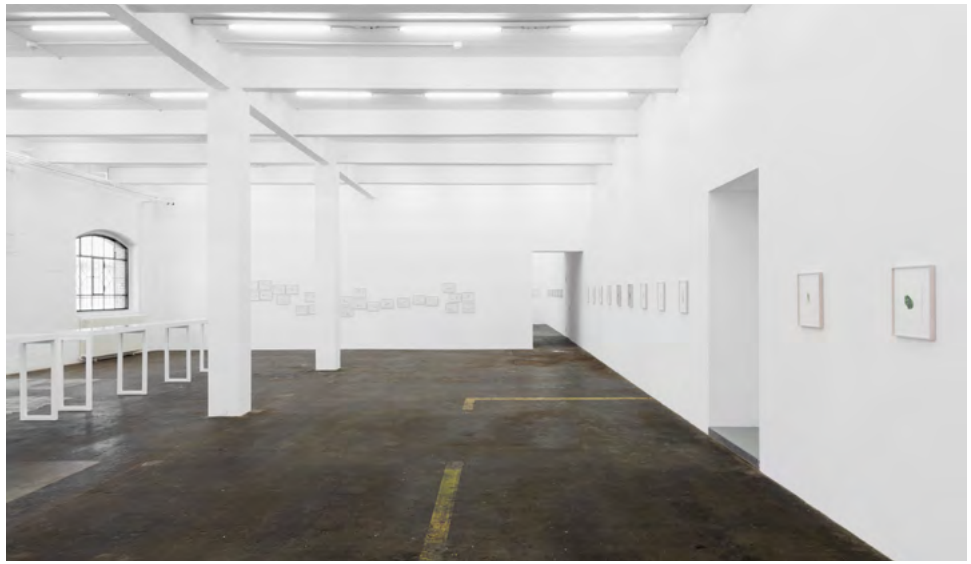


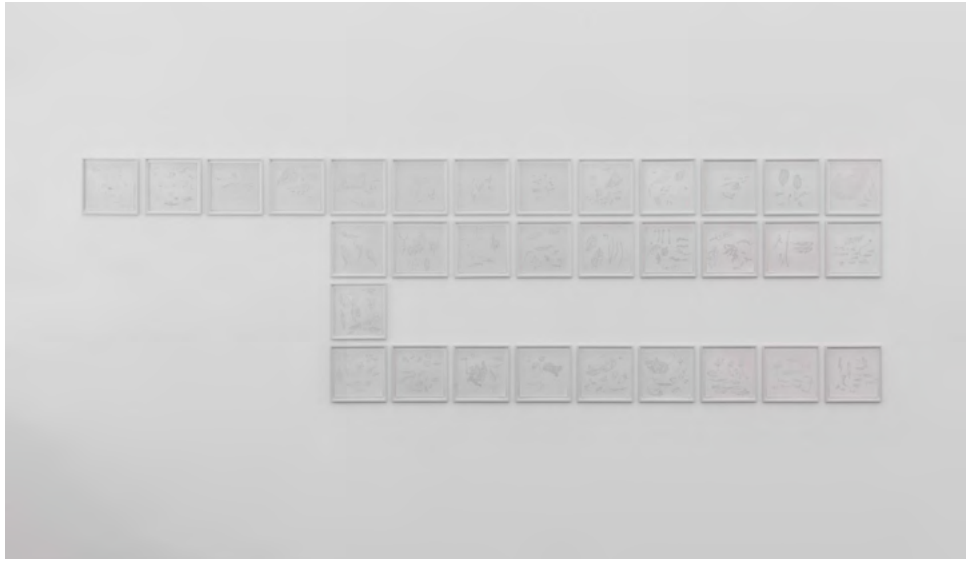
Related exhibition

Entanglement

Kunst Halle Sankt Gallen (St. Gallen, Switzerland)
March 16–May 12, 2013

For more details of each work, see also:
The Exact Opposite of Distance, 2012
Sampling Greens, 2012





Irene Kopelman
Entanglement · Vertical Landscape

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Giovanni Carmine (*Entanglement* – Kunst Halle Sankt Gallen, 2013)

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