**Supplemental Information**

# Influence of water hyacinth (*Eichhornia crassipes*) on concentration and distribution of *Escherichia coli* in water surrounding an informal floating community in Iquitos, Peru

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**Preliminary Study of *E. coli* and coliform removal by aquatic plants in Claverito**

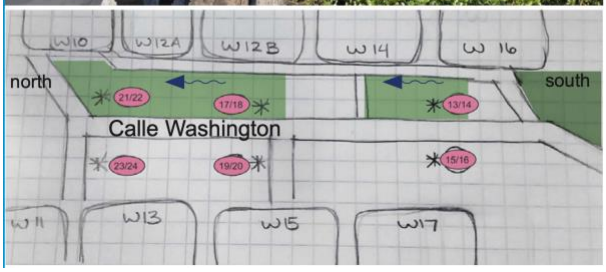
Compared naturally existing locations within Claverito that had and lacked aquatic vegetation. Collected two water samples per condition and tested for *E. coli* using 3M Petrifilm slides. Counted *E. coli* on slides after 24-hours of incubation. Averaged results for two samples. Calculated percent removal by plants by comparing averaged values between vegetated and un-vegetated locations.

TEST 1: FEBRUARY 19, 2017



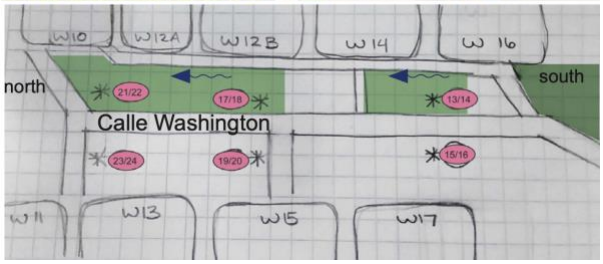
| | sample location | roots | e.coli 8 cm |
|---|---|---|---|
| #19 compared to #20 | **Calle Washington South** | vary 5-20 cm deep | highly effective 96% |
| #21 compared to #22 | **Calle Washington Center** | vary 5-20 cm deep | highly effective 96% |
| #23 compared to #24 | **Calle Washington North** | vary 5-20 cm deep | highly effective 97% |

TEST 2: APRIL 17, 2017

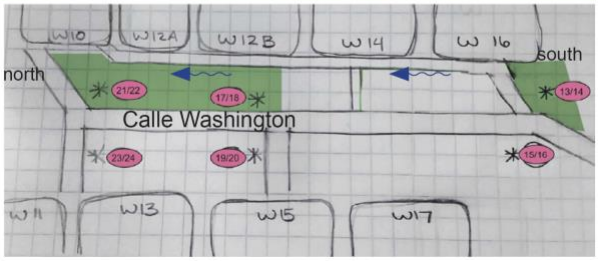

| | sample location | roots | e.coli 8 cm | e.coli 40 cm |
|---|---|---|---|---|
| #13 compared to #15<br>#14 compared to #16 | **Calle Washington South** | vary 5-20 cm deep | effective 40% | mildly effective 10% |
| #17 compared to #19<br>#18 compared to #20 | **Calle Washington Center** | vary 5-20 cm deep | effective 36% | mildly effective 1% |
| #21 compared to #23<br>#22 compared to #24 | **Calle Washington North** | vary 5-20 cm deep | mildly effective 20% | not effective -8% |

TEST 3: APRIL 26, 2017


| | sample location | roots | e.coli 8 cm | e.coli 40 cm |
|---|---|---|---|---|
| #13 compared to #15<br>#14 compared to #16<br>#17 compared to #19<br>#18 compared to #20<br>#21 compared to #23<br>#22 compared to #24 | **Calle Washington South** | vary 5-20 cm deep | effective 64% | not effective -33% |
| | **Calle Washington Center** | vary 5-20 cm deep | highly effective 74% | not effective -27% |
| | **Calle Washington North** | vary 5-20 cm deep | highly effective 72% | not effective -39% |
| #25 compared to #23 | **Juama + Putu Putu** | vary 5-20 cm deep | highly effective 75% | |

TEST 4: JUNE 26, 2017


#13 compared to #15
#14 compared to #16
#17 compared to #19
#18 compared to #20
#21 compared to #23
#22 compared to #24

| sample location | roots | e.coli 8 cm | e.coli 40 cm |
|---|---|---|---|
| Calle Washington South | vary 5-20 cm deep | highly effective 89% | effective 51% |
| Calle Washington Center | vary 5-20 cm deep | highly effective 85% | effective 41% |
| Calle Washington North | vary 5-20 cm deep | effective 59% | effective 39% |

We also compared the *E. coli* counts for the control/open water samples to understand how changes in river levels might be impacting overall *E. coli* counts at 8 cm and 40 cm. The April tests were about 1 meter more deep than the February and June tests.

| | 1 | 2 | 3 | 4 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|
| CONTROLS | 2.19 test 5:00 PM | 4.17 test 4:00 PM | 4.26 test 1:00 PM | 6.26 test 5:00 PM | 4.17 test 4:00 PM | 4.26 test 1:00 PM | 6.26 test 5:00 PM |
| sample location | e.coli 8 cm | | | | e.coli 40 cm | | |
| Calle Washington South | 120 | 72 | 32 | 62 | 78 | 38 | 67 |
| Calle Washington Center | 140 | 71 | 20 | 40 | 75 | 23 | 42 |
| Calle Washington North | 140 | 65 | 13 | 66 | 76 | 18 | 69 |

In addition, we tested the ability of specific plants to remove *E. coli* by identifying locations dominated by a specific plant type. Used methods described above. Compared removal ability of that plant to unvegetated locations on the other side of the boardwalk.

TEST 5: MAY 10, 2017


| plant name | roots | e.coli 8 cm | e.coli 40 cm |
|---|---|---|---|
| **Plant A: Lentils** | 2-6 cm deep | effective 59% | mildly effective 13% |
| **Plant B: Grama Lote** | very thick for 15 cm, go to 1 m | highly effective 88% | effective 58% |
| **Plant C: Putu Putu** | thick for 8-10 cm, go to 25 cm | highly effective 91% | highly effective 71% |
| **Plant D: Juama** | thick for 8-10 cm, go to 15 cm | highly effective 81% | mildly effective 13% |

TEST 6: JUNE 27, 2017

PLANT A: UNKNOWN

PLANT B: PUTU PUTU

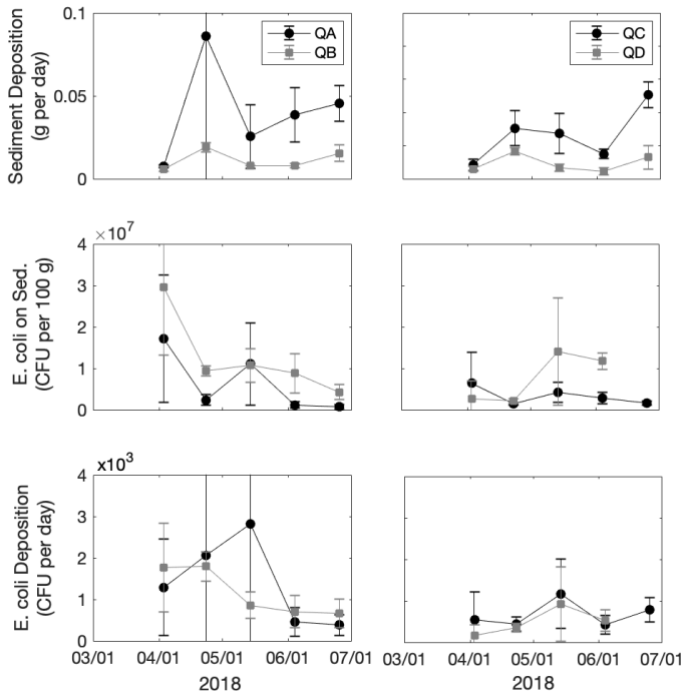
PLANT C: JUAMA

PLANT D: GRAMA LOTE

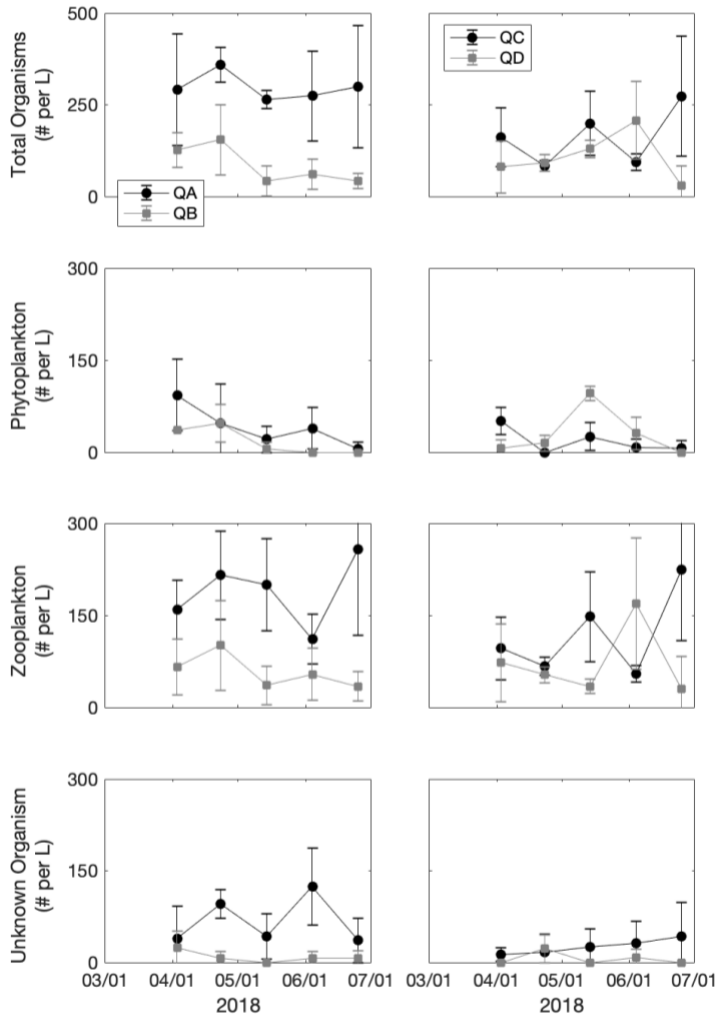
PLANT E: LENTILS

| plant name | roots | e.coli 8 cm | e.coli 40 cm |
|---|---|---|---|
| **Plant A: Unknown** | rhizomous mat, thick for 8-10 cm | effective 38% | effective 43% |
| **Plant B: Putu Putu** | thick for 8-10 cm, go to 30 cm | highly effective 89% | effective 60% |
| **Plant C: Juama** | thick, and up to 20 cm | highly effective 90% | effective 55% |
| **Plant D: Grama Lote** | very thick for 15 cm, go to 1 m | highly effective 79% | effective 47% |
| **Plant E: Lentils** | 2-6 cm deep | mildly effective 31% | |

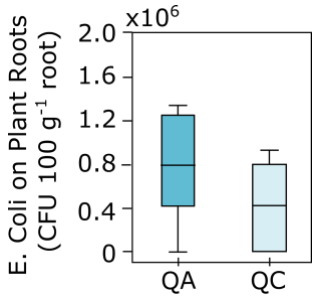
## Data from 2018 Study Outlined in Main Manuscript



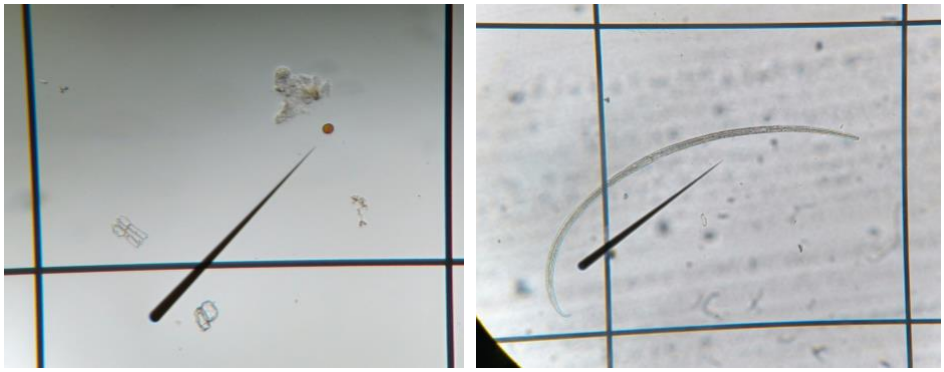

*SI Figure 1:* Sediment deposition rate (top row), number of *E. coli CFU* associated with sediment (middle row), and deposition rate of *E. coli* CFU due to sediment settling (bottom row) over the experiment for treatments QA and QB (left column) and QC and QD (right column).




*SI Figure 2:* Number of total organisms (top row), phytoplankton (second row), zooplankton (third row) and other unknown aquatic organisms (bottom row) per liter of water within treatments QA and QB (left column) and QC and QD (right column).




*SI Figure 3*. Number of *E. coli* CFU associated with plant roots. Box plots represent collection of measurements from one plant taken during each sampling event. Explanation of box plots is in caption of Fig. 7 in main manuscript.



*SI Figure 4*. Possible parasite egg (left hand side) and parasite larvae (right hand side).