

Supplementary Table 1. Water samples collection sites in the Tricity area, Pomorskie voivodeship (Poland) with the number of ESBL isolates able to grow on the Chromagar ESBL plates (CFU/100 ml). *E. coli* – the number of *E. coli* ESBL strains detected, KESC – the number of strains belonging to the KESC group detected, Other – the number of all other strains able to grow on the medium.

| Sample | City | Retention reservoir/stream/river | Geographical coordinates | Retention capacity [m ³] | Area [m ²] | <i>E.coli</i> | KESC | Other |
|--------|--------|-------------------------------------|--------------------------|--------------------------------------|------------------------|---------------|------|-------|
| WS1 | Gdansk | Zabornia retention reservoir | 54.34 N, 18.59 E | 9000 | 4200 | 120 | 120 | 600 |
| WS2 | | Potokowa retention reservoir | 54.37 N, 18.56 E | 700 | 3000 | 16 | 40 | 560 |
| WS3 | | Labeledzia retention reservoir | 54.34 N, 18.57 E | 14440 | 17900 | 60 | 300 | 600 |
| WS4 | | Cedrowa retention reservoir | 54.34 N, 18.58 E | 3010 | 10400 | 0 | 54 | 200 |
| WS5 | | Jablioniowa retention reservoir | 54.33 N, 18.56 E | 5715 | 18800 | 0 | 22 | 224 |
| WS6 | | Swietokrzyska I retention reservoir | 54.32 N, 18.56 E | 129430 | 68000 | 0 | 12 | 26 |
| WS7 | | Jasien lake | 54.35 N, 18.54 E | 264028 | 21000 | 2 | 424 | 600 |
| WS8 | | Osowa II retention reservoir | 54.41 N, 18.46 E | 15000 | 13700 | 0 | 128 | 600 |
| WS9 | | Budowlanych II retention reservoir | 54.37 N, 18.46 E | 14260 | 7500 | 0 | 0 | 480 |
| WS13 | | Jasien retention reservoir | 54.35 N, 18.54 E | 48487 | 37500 | 0 | 0 | 600 |
| WS14 | | Mysliwska retention reservoir | 54.34 N, 18.58 E | 7222 | 6400 | 0 | 4 | 296 |
| WS15 | | Wilenska retention reservoir | 54.36 N, 18.60 E | 7070 | 12800 | 52 | 34 | 336 |
| WS16 | | Grunwaldzka retention reservoir | 54.40 N, 18.55 E | 8450 | 16900 | 600 | 600 | 600 |
| WS17 | | Oliwa Park retention reservoir | 54.41 N, 18.56 E | 2850 | 5700 | 58 | 100 | 600 |
| WS18 | | Opacka retention reservoir | 54.41 N, 18.56 E | 3450 | 6900 | 38 | 30 | 300 |
| b2S | | Nowiec stream | 54.35 N, 18.59 E | na | na | 0 | 0 | 216 |
| 3S | | Jasien stream | 54.35 N, 18.54 E | na | na | 0 | 0 | 32 |
| b1S | | Siedlicki stream | 54.34 N, 18.56 E | na | na | 0 | 2 | 66 |

| | | | | | | | | |
|---------|--------|------------------------|---------------------|------------------|----|-----|-----|-----|
| Uph_W2S | | Potok Krolewski stream | 54.38 N, 18.62 E | na | na | 600 | 600 | 600 |
| WS10 | Gdynia | Chylonska stream | 54.53 N, 18.47 E | na ^a | na | 40 | 66 | 420 |
| 6S | | Chylonska stream | 54.32.N, 18.28 E | na | na | 0 | 18 | 76 |
| WS11 | | Cisowska stream | 54.53N, 18.43 E | na | na | 20 | 94 | 288 |
| WS12 | | Cisowska stream | 54.52 N, 18.43 E | na | na | 40 | 40 | 600 |
| 7S | | Cisowska stream | 54.32 N, 18.26 E | na | na | 0 | 6 | 208 |
| 8S | | Kacza river | 54.28N, 18.27 E | na | na | 0 | 36 | 72 |
| 10S | | Kolibkowski stream | 54.28 N, 18.33 E | na | na | 0 | 14 | 56 |
| SK1S | | Kolibkowski stream | 54.47 N, 18.54 E | na | na | 6 | 2 | 24 |
| SK5S | | Kolibkowski stream | 54.48 N, 18.56 E | na | na | 2 | 0 | 2 |
| 9S | | | Zrodlo Marii stream | 54.28 N, 18.30 E | na | na | 0 | 42 |
| 4S | Puck | Plutnica river | 54.43 N, 18.23 E | na | na | 0 | 64 | 176 |
| 5S | Reda | Reda river | 54.38 N, 18.26 E | na | na | 2 | 52 | 152 |
| 12S | Sopot | Babidolski stream | 54.27 N, 18.33E | na | na | 0 | 10 | 92 |
| B1S | | Babidolski stream | 54.45 N, 18.56 E | na | na | 2 | 0 | 10 |
| SB5S | | Babidolski stream | 54.45 N, 18.55 E | na | na | 2 | 0 | 2 |
| B1S | | Babidolski stream | 54.45 N, 18.56 E | na | na | 2 | 0 | 10 |
| SB5S | | Babidolski stream | 54.45 N, 18.55 E | na | na | 2 | 0 | 2 |
| 13S | | Eliza stream | 54.26 N, 18.33E | na | na | 0 | 0 | 2 |
| 14S | | Oliwa stream | 54.41 N, 18.54 E | na | na | 0 | 2 | 8 |
| 11S | | Swelina stream | 54.27 N, 18.33 E | na | na | 0 | 10 | 132 |
| S1S | | Swelina stream | 54.46 N, 18.55 E | na | na | 2 | 4 | 30 |
| S2S | | Swelina stream | 54.46 N, 18.55 E | na | na | 2 | 6 | 22 |
| S3S | | Swelina stream | 54.46 N, 18.56 E | na | na | 4 | 4 | 26 |

Supplementary Table 2. The reference strains of *E. coli* and *S. marcescens* used in the study.

| Laboratory collection | Species | International collections | Other collection numbers |
|------------------------------|----------------------------|----------------------------------|---------------------------------|
| C38 | <i>Escherichia coli</i> | | MG1655 |
| C44 | | | DH5alfa; KPD 168-BA |
| C47 | | ATCC 35049, DSM 5913 | K38; KPD 92-BA |
| C48 | | ATCC 33956 | N99; KPD 719-BA |
| C49 | | ATCC25922 | |
| C19 | <i>Serratia marcescens</i> | | KPD102-BA ^a |

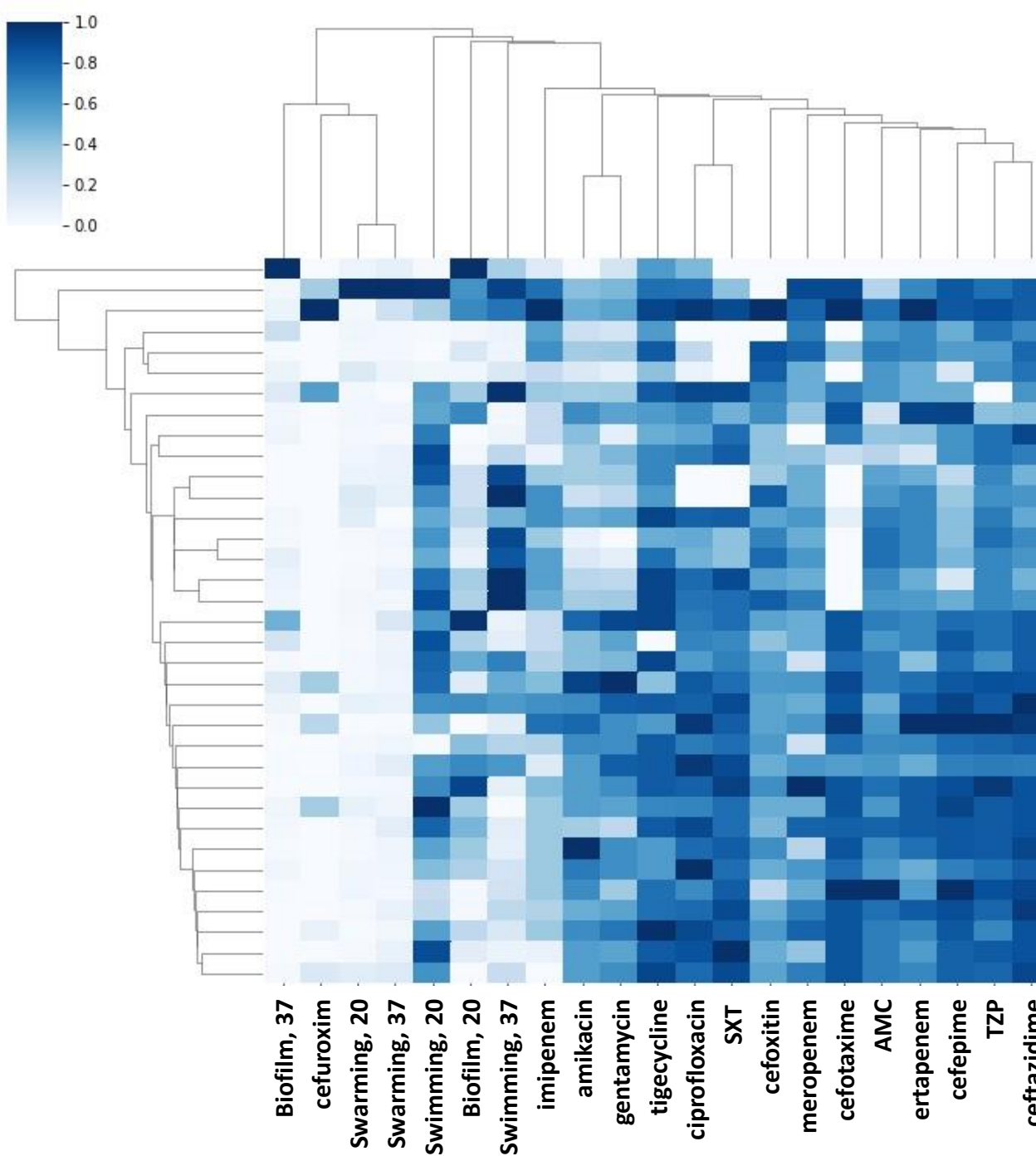
^a KPD - Collection of Plasmids and Microorganisms, University of Gdansk, Gdansk, Poland

Supplementary Table 3. Detailed results of antibiotic resistance of *E. coli* and *S. fonticola* ESBL strains isolated in the nTricity water reservoirs with its clinical interpretation.

AMC - amoxicillin/clavulanic acid, TZP - piperacillin/tazobactam, CXM - cefuroxime, CAZ - ceftazidime, FEP - cefepime, CTX - cefotaxime, CIP - ciprofloxacin, CN - gentamycin, AMK - amikacin, IPM - imipenem, MEM - meropenem, ETP - ertapenem, TGC - tigecycline, SXT - trimethoprim/sulfamethoxazole, FOX - ceftioxin

R - resistant, S - sensitive, I - intermediate

| Collection ID | Date of collection | City | Water reservoir | Species | Antibiotics resistance [diameter - mm] | | | | | | | | | | | | | | Antibiotics resistance [clinical interpretation] | | | | | | | | | | | | | | | | | | |
|---------------|--------------------|---------------------|-----------------------------------|---------------------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|---|
| | | | | | AMP | AMC | TZP | CXM | CTX | CAZ | FEP | IPM | MEM | ETP | AMK | CN | CIP | SXT | TGC | FOX | AMP | AMC | TZP | CXM | CTX | CAZ | FEP | IPM | MEM | ETP | AMK | CN | CIP | SXT | TGC | FOX | |
| 127 | 06.12.2019 | Gdansk | Zabornia retention eservoir | <i>Escherichia coli</i> | 6 | 21 | 24 | 6 | 6 | 21 | 17 | 24 | 27 | 28 | 16 | 17 | 22 | 18 | 19 | 21 | R | S | S | R | R | S | R | S | S | S | R | S | I | R | S | S | |
| 128 | 06.12.2019 | | Potokowa retention reservoir | <i>Escherichia coli</i> | 6 | 21 | 22 | 6 | 6 | 20 | 18 | 27 | 28 | 28 | 17 | 18 | 21 | 18 | 22 | 23 | R | S | S | R | R | R | R | S | S | S | R | S | I | R | S | S | |
| 150 | 12.03.2020 | | Oliwa Park retention reservoir | <i>Escherichia coli</i> | 6 | 18 | 24 | 6 | 6 | 21 | 19 | 27 | 29 | 28 | 18 | 19 | 6 | 6 | 20 | 6 | R | S | S | R | R | S | R | S | S | S | S | S | R | R | S | R | |
| 151 | 12.03.2020 | | Grunwaldzka retention reservoir | <i>Escherichia coli</i> | 6 | 18 | 21 | 6 | 6 | 23 | 10 | 22 | 27 | 26 | 17 | 18 | 8 | 6 | 18 | 24 | R | S | S | R | R | S | R | S | S | S | R | S | R | R | S | S | |
| 152 | 12.03.2020 | | Grunwaldzka retention reservoir | <i>Serratia fonticola</i> | 6 | 26 | 27 | 6 | 27 | 27 | 32 | 24 | 27 | 27 | 24 | 21 | 26 | 30 | 22 | 12 | R | S | S | R | S | S | S | S | S | S | S | S | S | S | S | R | |
| 153 | 12.03.2020 | | Wilenska retention reservoir | <i>Serratia fonticola</i> | 6 | 18 | 23 | 6 | 18 | 22 | 24 | 20 | 28 | 26 | 23 | 26 | 36 | 32 | 23 | 17 | R | S | S | R | R | S | R | I | S | S | S | S | S | S | S | R | |
| 154 | 12.03.2020 | | Wilenska retention reservoir | <i>Serratia fonticola</i> | 6 | 20 | 24 | 6 | 24 | 25 | 26 | 22 | 27 | 28 | 26 | 27 | 28 | 28 | 24 | 18 | R | S | S | R | R | S | R | S | S | S | S | S | S | S | S | R | |
| 155 | 12.03.2020 | | Mysliwska retention reservoir | <i>Serratia fonticola</i> | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 20 | 22 | 20 | 15 | 19 | 20 | 6 | 20 | 6 | R | R | R | R | R | R | R | I | S | R | R | S | I | R | S | R | |
| 166 | 12.03.2020 | | Swietokrzyska retention reservoir | <i>Serratia fonticola</i> | 6 | 20 | 26 | 6 | 24 | 26 | 27 | 19 | 26 | 27 | 23 | 23 | 33 | 35 | 23 | 17 | R | S | S | R | S | S | S | I | S | S | S | S | S | S | S | R | |
| 168 | 12.03.2020 | | Jabloniowa retention reservoir | <i>Serratia fonticola</i> | 6 | 20 | 27 | 11 | 25 | 26 | 28 | 25 | 28 | 29 | 28 | 28 | 32 | 28 | 18 | 19 | R | S | S | R | S | S | S | S | S | S | S | S | S | S | S | S | |
| 169 | 12.03.2020 | | Cedrowa retention reservoir | <i>Escherichia coli</i> | 6 | 20 | 23 | 6 | 8 | 18 | 17 | 28 | 28 | 28 | 22 | 23 | 31 | 30 | 24 | 18 | R | S | S | R | R | R | R | S | S | S | S | S | S | S | S | R | |
| 170 | 12.03.2020 | | Labeledzia retention reservoir | <i>Escherichia coli</i> | 6 | 18 | 6 | 14 | 21 | 20 | 19 | 24 | 27 | 26 | 20 | 21 | 34 | 32 | 23 | 21 | R | S | R | R | S | R | S | S | S | S | S | S | S | S | S | S | |
| 172 | 12.03.2020 | | Potokowa retention reservoir | <i>Serratia fonticola</i> | 6 | 19 | 25 | 6 | 22 | 25 | 26 | 23 | 24 | 28 | 24 | 24 | 28 | 28 | 23 | 19 | R | S | S | R | S | S | R | S | S | S | S | S | S | S | S | S | |
| 173 | 12.03.2020 | | Zabornia retention reservoir | <i>Escherichia coli</i> | 6 | 18 | 22 | 6 | 6 | 20 | 19 | 26 | 29 | 27 | 20 | 21 | 29 | 28 | 24 | 24 | R | S | S | R | R | R | R | S | S | S | S | S | S | S | S | S | |
| 174 | 12.03.2020 | | Potokowa retention reservoir | <i>Serratia fonticola</i> | 6 | 21 | 29 | 6 | 24 | 26 | 29 | 25 | 32 | 30 | 23 | 24 | 31 | 33 | 23 | 20 | R | S | S | R | S | S | S | S | S | S | S | S | S | S | S | S | |
| 182 | 12.03.2020 | | Oliwa Park retention reservoir | <i>Escherichia coli</i> | 6 | 20 | 20 | 6 | 15 | 24 | 21 | 28 | 30 | 28 | 20 | 21 | 14 | 6 | 23 | 25 | R | S | S | R | R | S | R | S | S | S | S | S | R | R | S | S | |
| 876 | 18.03.2021 | | Siedlicki stream | <i>Serratia fonticola</i> | 6 | 18 | 30 | 10 | 26 | 28 | 32 | 30 | 28 | 32 | 26 | 24 | 36 | 30 | 20 | 18 | R | S | S | R | S | S | S | S | S | S | S | S | S | S | S | R | |
| 890 | 18.03.2021 | | Nowiec stream | <i>Serratia fonticola</i> | 6 | 21 | 25 | 6 | 24 | 28 | 29 | 23 | 29 | 30 | 22 | 23 | 30 | 32 | 22 | 17 | R | S | S | R | S | S | S | S | S | S | S | S | S | S | S | R | |
| 156 | 12.03.2020 | | Gdynia | Cisowska II stream | <i>Serratia fonticola</i> | 6 | 16 | 26 | 6 | 24 | 29 | 30 | 28 | 27 | 30 | 24 | 26 | 31 | 32 | 23 | 18 | R | S | S | R | S | S | S | S | S | S | S | S | S | S | R | |
| 158 | 12.03.2020 | | | Cisowska I stream | <i>Serratia fonticola</i> | 6 | 10 | 16 | 6 | 24 | 16 | 30 | 22 | 26 | 31 | 24 | 23 | 26 | 20 | 20 | 20 | R | R | R | R | S | R | S | S | S | S | S | S | S | S | S | |
| 159 | 12.03.2020 | Cisowska I stream | | <i>Serratia fonticola</i> | 6 | 18 | 26 | 11 | 24 | 26 | 30 | 24 | 27 | 30 | 23 | 23 | 27 | 28 | 21 | 17 | R | S | S | R | S | S | S | S | S | S | S | S | S | S | S | R | |
| 160 | 12.03.2020 | Chylonska stream | | <i>Serratia fonticola</i> | 6 | 20 | 25 | 8 | 24 | 27 | 27 | 18 | 29 | 28 | 23 | 24 | 30 | 32 | 24 | 18 | R | S | S | R | S | S | S | R | S | S | S | S | S | S | S | R | |
| 199 | 12.03.2020 | Chylonska stream | | <i>Serratia fonticola</i> | 6 | 12 | 24 | 6 | 11 | 22 | 22 | 19 | 26 | 22 | 20 | 22 | 28 | 30 | 21 | 15 | R | R | S | R | R | S | R | I | S | R | S | S | S | S | S | R | |
| 810 | 18.03.2021 | Kacza river | | <i>Serratia fonticola</i> | 6 | 19 | 26 | 6 | 24 | 27 | 28 | 24 | 25 | 29 | 29 | 24 | 30 | 30 | 20 | 20 | R | S | S | R | S | S | S | S | S | S | S | S | S | S | S | S | |
| 845 | 18.03.2021 | Zrodlo Marii stream | | <i>Serratia fonticola</i> | 6 | 26 | 27 | 6 | 26 | 30 | 30 | 26 | 32 | 29 | 23 | 23 | 34 | 30 | 26 | 17 | R | S | S | R | S | S | S | S | S | S | S | S | S | S | S | S | R |
| 811 | 18.03.2021 | Kolibkowski stream | | <i>Serratia fonticola</i> | 6 | 22 | 26 | 6 | 23 | 26 | 28 | 24 | 30 | 30 | 20 | 20 | 34 | 28 | 23 | 16 | R | S | S | R | S | S | S | S | S | S | S | S | S | S | S | S | R |
| 805 | 18.03.2021 | Puck | | Plutnica river | <i>Serratia fonticola</i> | 6 | 18 | 24 | 6 | 22 | 25 | 24 | 24 | 28 | 26 | 25 | 24 | 37 | 28 | 20 | 17 | R | S | S | R | S | S | R | S | S | S | S | S | S | S | S | R |
| 809 | 18.03.2021 | | | Plutnica river | <i>Serratia fonticola</i> | 6 | 14 | 24 | 6 | 21 | 27 | 22 | 22 | 22 | 25 | 21 | 18 | 23 | 28 | 19 | 15 | R | R | S | R | S | S | R | S | S | S | S | I | S | S | R | |
| 863 | 18.03.2021 | Reda | Reda river | <i>Escherichia coli</i> | 6 | 19 | 22 | 6 | 6 | 17 | 10 | 27 | 27 | 26 | 19 | 20 | 30 | 32 | 24 | 18 | R | S | S | R | R | R | R | S | S | S | S | S | S | S | S | S | |
| 102 | 17.06.2019 | Sopot | Swelina stream | <i>Escherichia coli</i> | 6 | 18 | 21 | 6 | 6 | 20 | 16 | 28 | 27 | 28 | 18 | 20 | 6 | 6 | 20 | 24 | R | S | S | R | R | R | R | S | S | S | S | S | R | R | S | S | |
| 103 | 17.06.2019 | | Swelina stream | <i>Escherichia coli</i> | 6 | 16 | 14 | 6 | 6 | 22 | 18 | 24 | 28 | 27 | 19 | 19 | 10 | 6 | 20 | 24 | R | R | R | R | R | S | R | S | S | S | S | S | R | R | S | S | |
| 104 | 17.06.2019 | | Swelina stream | <i>Escherichia coli</i> | 6 | 17 | 22 | 6 | 6 | 17 | 13 | 24 | 27 | 26 | 20 | 21 | 6 | 6 | 21 | 14 | R | S | S | R | R | R | R | S | S | S | S | S | R | R | S | R | |
| 866 | 18.03.2021 | | Elizy stream | <i>Serratia fonticola</i> | 6 | 20 | 22 | 7 | 24 | 26 | 28 | 24 | 30 | 28 | 24 | 25 | 34 | 30 | 25 | 19 | R | S | S | R | S | S | S | S | S | S | S | S | S | S | S | S | |
| 878 | 18.03.2021 | | Babidolski stream | <i>Serratia fonticola</i> | 6 | 18 | 24 | 6 | 24 | 25 | 28 | 22 | 27 | 28 | 21 | 23 | 27 | 25 | 13 | 15 | R | S | S | R | S | S | S | S | S | S | S | S | S | S | R | R | |
| 882 | 18.03.2021 | | Swelina stream | <i>Serratia fonticola</i> | 6 | 20 | 21 | 6 | 22 | 25 | 26 | 23 | 24 | 25 | 21 | 22 | 24 | 26 | 24 | 18 | R | S | S | R | S | S | S | S | S | S | S | S | I | S | S | S | R |



- 155, Gdansk, Mysliwska R
- C19, *S. marcescens*
- 170, Gdansk, Labedzia R
- C49, *E. coli*
- 104, Sopot, Swelina Stream
- 102, Sopot, Swelina Stream
- 169, Gdansk, Cedrowa R
- 127, Gdansk, Zabornia R
- 128, Gdansk, Potok Krolewski R
- 863, Reda, Reda river
- 173, Gdansk, Zabornia R
- 158, Gdynia, Cisowska I R
- 154, Gdansk, Wilenska R
- 882, Sopot, Swelina stream
- 153, Gdansk, Wilenska R
- 878, Sopot, Babidolski stream
- 168, Gdansk, Jabloniowa R
- 156, Gdynia, Cisowska II R
- 199, Gdynia, Chylonska R
- 172, Gdansk, Potokowa R
- 811, Gdynia, Kolibkowski S
- 174, Gdansk, Potokowa R
- 809, Puck, Plutnica river
- 876, Gdansk, Siedlicki stream
- 159, Gdynia, Cisowska I R
- 810, Gdynia, Kacza river
- 890, Gdansk, Nowiec stream
- 152, Gdansk, Grunwaldzka R
- 166, Gdansk, Swietokrzyska R
- 160, Gdynia, Chylonska R
- 805, Puck, Plutnica river
- 866, Sopot, Eliza stream
- 150, Gdansk, Oliwa Park R
- 182, Gdansk, Oliwa Park R
- 151, Gdansk, Grunwaldzka R

Supplementary Figure 1. The heatmap of biofilm formation, swimming and swarming motility and antibiotics resistance of *S. fonticola* (in black) and *E. coli* ESBL strains (in violet). *E. coli* C49 and *S. marcescens* C19 were used as a reference. The biofilm formation and motility assays were performed at 37°C (37) and 20°C (20). The heatmap using Euclidean distance was created in Python 3.8 with Seaborn 0.11.1 package and Pandas for data visualization.

AMC - amoxicillin/clavulanic acid,
TZP - piperacillin/tazobactam,
SXT - trimethoprim/sulfamethoxazole,
Gd – Gdansk,
Gdy – Gdynia,
Sp – Sopot,
R – retention reservoir,
S – stream.