

Supporting information:

Fig S1 Temporal analysis of ammonia, nitrite and nitrate in the fishpond-3 (FP) and the reservoir (Res) water columns at the Dor aquaculture research station.





Fig S2 Relative abundance of dominant bacterial phyla in the Dor fishpond-3 (FP) and reservoir (Res) water columns.



Fig S3 Heat map showing the relative abundance of predominant virusesinfishpond-3 (Pool) and the reservoir, based on shotgun metagenomic data analysed using the highly curated COSMOSID pipeline.



Fig S4 Heat map showing the relative abundance of predominant protistsinfishpond-3 (P) and the reservoir (R), based on shotgun metagenomic data analysed using the highly curated COSMOSID pipeline.

Table S1. Samples and analyses details followed in this study.

Sampling site										
Fishpond 3 (FP3) and water storage reservoir (Res), Dor aquaculture research station, Israel										
Fish breed										
Silver Carp (Hypophthalmichthys molitrix)										
Total number of samples										
Fish pond 3: 19 samples and Reservoir: 19 samples										
	Replicates	Replicates	Samples							
Sampling Profile	processed for	processed for	processed for	Samples processed						
Samping Frome	DNA	physicochemical	Shotgun	for qPCR analysis						
	Extraction	analysis	sequencing							
July 6 th , 2015	2	2	1 (Jul 2015)	1						
August 4 th , 2015	2	2	0	1						
August 18 th , 2015	2	2	1 (Aug 2015)	1						
August 31 st , 2015	3	3	0	1						
October 14 th , 2015	3	3	0	1						
December 22^{nd} ,	3	3	1 (Dec 2015)	1						
2015										
February 10 th , 2016	1	1	0	1						
March 9 th , 2016	3	3	1 (Mar 2016)	1						
Total	19	19	4	8						
July 6 th , 2015	2	2	1 (Jul 2013)	0						
August 4 th , 2015	2	2	0	0						
August 18 th , 2015	2	2	1 (Aug 2013)	0						
August 31 st , 2015	3	3	0	0						
October 14 th , 2015	3	3	0	0						
December 22^{nd} ,	3	3	0	0						
2015										
February 10 th , 2016	1	1	1 (Jan 2014)	0						
March 9 th , 2016	3	3	1 (Mar 2014)	0						
Total	19	19	4	0						

*Water was sampled from the upper 10 cm of the water columnfrom the less disturbed areas of the pool and reservoir

C 1'	т		р · · , , ·		NT'4 '4		Aquatic	Aquatic
Samplin	Temp	рH	Precipitati	Ammoni	Nitrite	Nitrate	sul	trim
g point	(°C)	P	on (mm)	a (ppm)	(ppm)	(ppm)		
							(ppb)	(ppb)
6-Jul-15	25.6	8.2	0.0	0.18	0.09	0.10	0.00	9.63
				~ .	0.00		4.00	6 0 -
4-Aug-15	27.8	8.0	0.0	0.45	0.02	0.04	4.93	6.97
18-Aug-								
15	27.8	8.0	0.0	0.31	0.06	0.26	0.13	5.87
15								
31-Aug-			0.0	0.00	0.01	0.50	0.00	< 0 7
15	27.8	7.9	0.0	0.32	0.01	0.72	0.00	6.07
15								
14-Oct-15	23.5	8.1	58.5	0.26	0.02	1.54	0.00	4.53
22-Dec-								
	14.7	7.9	52.0	0.96	0.19	5.73	0.00	3.57
15								
10-Feb-								
16	15.9	7.7	63.7	0.22	0.01	1.68	0.10	1.93
16								
9-Mar-16	17.7	7.7	20.1	0.05	0.05	1.03	0.00	2.83
						<u> </u>		<u> </u>

S2.Physicochemical parameters at the study site during sampling

(Temp: temperature; mm: millimeter; ppm: parts per million; sul: sulfadiazine; trim: trimethoprim) 1

Table S3. Antibiotic resistance gene hits obtained in fishpond-3 and reservoir shotgun metagenomes using using COSMOSID and CARD bioinformatic pipelines. Genes with less than ten hits are not shown.

		COSMO	SID characte	erizations				
	Pool_Jul 15	Pool_Aug 15	Pond_Dec 15	Pond_Mar 16	Res_Jul 13	Res_Aug 13	Res_Jan 14	Res_Mar 14
Sulphonamide sul2	2838	2899	2865	2314	0	0	0	0
Tetracycline tetBP	0	1899	0	0	0	0	0	0
Tetracycline tetRG	328	0	263	284	0	202	175	468
Tetracycline tetE	0	0	1555	0	0	0	0	0
Tetracycline tetS	1468	0	0	0	0	0	0	0
Tetracycline tetG	0	0	0	0	0	0	0	1261
Tetracycline tetR	0	0	1046	137	0	0	0	0
MDR-Efflux-pump mexQ	0	0	963	0	0	0	0	0
Sulphonamide sul1	0	416	321	205	0	0	0	0
MDR-Efflux-pump mexB	0	0	936	0	0	0	0	0
blaOXA 50	0	0	852	0	0	0	0	0
MDR-Efflux-pump mexN	0	0	744	0	0	0	0	0
MDR-Efflux-pump mexP	0	0	631	0	0	0	0	0
Repressor-of-mexJKmexL	404	0	189	0	0	0	0	0
Repressor nalD	175	0	402	0	0	0	0	0
MDR-Efflux-pump mexM	203	0	325	0	0	0	0	0
Trimethoprim dfrD	0	0	0	0	518	0	0	0
Tetracycline tet33	0	0	242	201	0	0	0	0
Outer-membrane-factor oprM	0	0	429	0	0	0	0	0
Suppressor-of-MexTmexS	0	0	360	0	0	0	0	0
Aminoglycoside aph3' IIb	0	0	342	0	0	0	0	0
MDR-Efflux-pump opmH	0	0	294	0	0	0	0	0
Trimethoprim dfrA31	0	0	0	0	282	0	0	0
Membrane-fusion-protein mexA	0	0	274	0	0	0	0	0
Efflux-pump triA	0	0	268	0	0	0	0	0
Sensor-protein soxR	0	86	173	0	0	0	0	0
Beta-lactam-resistance blaACT 60 Branch	0	0	0	138	0	0	0	0
Efflux-pump amrA	0	0	136	0	0	0	0	0
Trimethoprim d 2268 Branch	0	115	0	0	0	0	0	0
Aminoglycoside aadA 2142 Branch	0	0	0	64	0	0	0	0
Beta-lactam-resistance blaIMI 1671 Branch	0	54	0	0	0	0	0	0
Phenicol cmIA1	0	0	54	0	0	0	0	0
Tetracycline tet35	0	0	54	0	0	0	0	0
Beta-lactam amp 2082 Branch	0	0	0	49	0	0	0	0
Beta-lactam-resistance blaOXA 462 Branch	0	0	0	0	0	37	0	0
Trimethoprim dfrA 2390 Branch	0	0	36	0	0	0	0	0
Beta-lactam-resistance blaGOB 5	0	26	0	0	0	0	0	0
Integron-mediated-quinolone- resistance qnrVC5	0	0	0	0	17	0	0	0

COSMOSID characterizations

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Quinolone qnrS2	13	0	0	0	0	0	0	0
Beta-lactam-resistance blaPAO	0	0	0	12	0	0	0	0
Beta-lactam-resistance blaPDC 745 Branch	0	0	0	12	0	0	0	0

Prodection	CARD characterizations								
aninocoumarin575448468428162911302851123131mfd13313311101660753528112311drE1301331110166174420322328321adeQ102612215561414444241pmE2866479477308155457174144pmK2406479474308155457373msAA109600400288156455457375mexF228335665869354168468mexF228335605869354169376masA22833560358132164130376maxF2283356035511217238maxF2283356035511237638maxF2395903142552755516376maxF439590314232244345363436maxF59031423224634355112738maxF5903142322434343614343434maxF590314232326323232		Pond_J ul 15	Pond_Au g 15	Pond_De c 15	Pond_M ar 16	Res_Jul 13	Res_Aug 13	Res_Jan 14	Res_Mar 14
nfd199169162169753529112311dffE13113311111845052060249dadeG1021215614144442pmE8885794730619574144mexK2406471722105205773meshA1066040343245513312mexF22833565869351865mexW18432743553551321282248mexF28577435351321282248mexB395577435351321282248mexB39274435351321282248mexB39274335351321282248mexB3927433535132128333634mexG3959312311917713367733rosB693123613142212121acrB4112326332454361034csB611212163316133122 </td <td>aminocoumarin</td> <td>575</td> <td>448</td> <td>406</td> <td>428</td> <td>1629</td> <td>1135</td> <td>265</td> <td>651</td>	aminocoumarin	575	448	406	428	1629	1135	265	651
drfE13113311111845032080249adeG1026121561414424mexK24068577373737373msbA1086040281651553567mexK220537518034432455132122mexF22833565869351865mexW164927445878641030mexF22833565869351865mexW164927445878641030macB774355136163634351861arfampin4692201111141771224sneE13627442527551636arfampin46922324194345910argh955011236142122121argh161232419434591034cob121636203816131614argh4426331616161442251216argh64	mfd	199	169	152	169	753	528	112	311
adeG1028121561414424pmE8685794730610574144mexK24064711723061053573msbA108804028156155353537mexB37851803432451312mexF228335658693518665mexW18432744587641039macB577435351221282248rifampin469220111141771224smeE1362744257551634rifampin469220111141771224smeE1362744257551634rifampin469220111441702121acrB141232419454361034ceoB14123241938251121mexQ341529104928716savB661316144221212124symA1612201142121216o	dfrE	131	133	111	118	450	320	80	249
pmE8685794730619574144mexK2406471722102025773msbA10960402815615535587mexE37851803432451312mexF228335658693518651macM18432744513212622481macE57743535113212622481rifampin46922001111141771224smeE138577435351614633rosB9550312361421221acrB1412324194345919mdtB642633251120ceoB164152012751216mexQ34152012751120mexQ3415201214201216ocpA158973331251120mexQ34158912163431251120mexQ341589121614121614 <td>adeG</td> <td>1026</td> <td>12</td> <td>15</td> <td>6</td> <td>14</td> <td>14</td> <td>4</td> <td>24</td>	adeG	1026	12	15	6	14	14	4	24
mexk 240 64 71 72 210 202 57 73 msbA 106 60 40 26 166 165 35 67 mexk 378 51 80 34 32 45 13 12 mexk 228 33 56 58 69 35 132 126 38 mack 184 32 74 455 87 64 10 39 mack 184 92 20 111 114 177 12 24 smeE 136 27 44 25 27 55 16 34 mtA 32 56 31 27 43 45 9 19 acrB 141 23 24 19 43 45 9 19 mtA 28 50 11 23 14 12 14 12 <t< td=""><td>pmrE</td><td>86</td><td>85</td><td>79</td><td>47</td><td>306</td><td>195</td><td>74</td><td>144</td></t<>	pmrE	86	85	79	47	306	195	74	144
msbA 108 60 40 28 156 155 35 87 mexB 376 51 80 344 22 45 13 12 mexR 228 33 56 58 69 35 138 65 mexW 164 32 74 455 67 64 10 39 macB 57 74 35 55 132 126 22 48 rifampin 46 92 20 111 114 177 12 24 smeE 133 67 7 33 16 34 15 9 10 44 25 12 7 33 16 34 16 34 16 34 45 9 19 10 34 16 34 45 9 11 35 11 12 16 34 16 13 31 25 1	mexK	240	64	71	72	210	202	57	73
mexB 378 51 80 34 32 45 13 12 mexF 228 33 56 58 69 35 18 55 mexW 184 32 74 45 67 64 10 39 macG 57 74 35 55 132 128 22 48 rifampin 46 92 20 111 114 177 12 24 smeE 136 27 44 25 27 55 16 34 rosB 32 51 19 17 133 67 7 33 rosB 64 20 33 24 140 42 10 11 acrB 64 26 13 66 13 35 11 12 acrB 64 16 36 20 10 49 28 7 16	msbA	108	60	40	28	156	155	35	87
mexF22833565869351866mexW18432744587641039macB5774353712122248smeten1367235311141171222smeten13627442527551634mtrA3251191713367733rosB5550312361421221acrB1412324194345919mdtB6426332454361034ceoB1652012755120mexQ3415529104928718sav1866171416144258621mdtC5813161331251218oqxR15889750321218cyR15889750321218oqxR15889750321218oqxR162828163317922sul2388834261113oqxR1041129<	mexB	378	51	80	34	32	45	13	12
mexW18432744587641039macBa577435351321262248rifampin469220111141771224smeE3251191713367733rosB9550312361421221acrB141232451434599mdHB64222361421221acrB14123245454631123ceB16422127551120mexQ165201275112016sav1866136130144228716sav18661316144221216oqxB4112211421218oqxB41122114221216oqxB163834261104733sul23838342611047sul238383426114sul238383426114sul238383426114sul23838 <td>mexF</td> <td>228</td> <td>33</td> <td>56</td> <td>58</td> <td>69</td> <td>35</td> <td>18</td> <td>65</td>	mexF	228	33	56	58	69	35	18	65
macB577435351321282244rifampin469220111141771224smeE13627442627561634mtA955031236142212221acrB9423241943459919mdB642633245551634ceoB1652012755123mexI642633245551123mexI642633245551120mexI6426332455163620382512mexI561652016362038251216sav186617141614425862116syl186616181211425816321216opxR15889750321216321216sul2161614425861414141412141414141414141414141414141414151415141514<	mexW	184	32	74	45	87	64	10	39
rifampin469220111141771224smeE13627442527551634mtA325119171367733rosB325031241943421221acrB141232419434591934mdtB6426332454361034ceoB165201275120mexQ341529104928716sav18661714161442586621mdtC5613161331251216oqxB411221142221834mdtB28750321216sav18661714161331251216oqxB4112211422218341224cpxR102875032121634173414odxB41122113131251634173414odxB1028333416341734351634153435163	macB	57	74	35	35	132	126	22	48
smeE13627442527551634mtA32511917133677733rosB9560312361421212acrB14123241943451934mdtB642012755127mexI2516362038251120mexQ34152910444258716sav18661714122131251216oqxB1112201142212412oqxB1112211142212412oqxB1589750321218mdS2823114221224cpxR1589750321218mdS2823101030102224cpxR1589750321218mdS282313168141022iefG102331410141014olcC10723133516815meXY278181417	rifampin	46	92	20	11	114	177	12	24
mtrA3251191713367733rosB95500311236114201221acrB141232419434509019mdtB64263324543601034ceoB165200127551120mexI255163620382551120mexQ341529104928716sav18661714161442551216oqxB411122114221224cpxR1589750321218mdtB2823114221224cpxR1589750321218mdsB282314143317922tetG102723133516815oleC10723133516815efpA27438291166bcrA11138634171014mdtB73322813351681515oleC107338	smeE	136	27	44	25	27	55	16	34
rosB9550312361421221acrB1412324194345919mdtB6426332454361034ceoB165201275517mexI251620382551120mexQ3415291049287165sav1866171416144258621mdtC5613161331251216oqxB41122114221224cpxR161331251216oqxB41122114221224cpxR161331251216oqxB28231443317922tetG10230103017922tetG10230103016815oleC10723133516815ofpA22818141721615ofpA1138634171014mdtF7819315121555suI17 </td <td>mtrA</td> <td>32</td> <td>51</td> <td>19</td> <td>17</td> <td>133</td> <td>67</td> <td>7</td> <td>33</td>	mtrA	32	51	19	17	133	67	7	33
acrB 141 23 24 19 43 45 9 19 mdtB 64 26 33 24 54 36 10 34 ceoB 165 20 12 7 5 5 1 1 mexQ 25 16 36 20 38 25 11 20 mexQ 34 15 29 10 49 28 7 16 sav1866 17 14 16 13 31 25 12 21 oqxB 41 12 2 11 42 21 2 24 cpxR 15 8 9 7 50 32 12 18 mdsB 28 23 14 33 17 9 22 tetG 10 2 30 16 30 16 41 opXR 10 12	rosB	95	50	31	23	61	42	12	21
mdtB 64 26 33 24 54 36 10 34 ceoB 165 20 12 7 5 5 1 1 mexI 25 16 36 20 38 25 11 20 mexQ 34 15 29 10 49 28 7 16 sav1866 17 14 16 14 42 58 6 21 mdtC 56 13 16 13 31 25 12 16 oqxB 41 12 2 11 42 21 2 24 cpxR 15 8 9 7 50 32 12 18 mdsB 28 23 14 33 17 9 22 teG 10 7 23 13 35 16 8 15 olcC 10 7 </td <td>acrB</td> <td>141</td> <td>23</td> <td>24</td> <td>19</td> <td>43</td> <td>45</td> <td>9</td> <td>19</td>	acrB	141	23	24	19	43	45	9	19
ceoB 165 20 12 7 5 5 1 mexI 25 16 36 20 38 25 11 20 mexQ 34 15 29 10 49 28 7 16 sav1866 17 14 16 14 42 58 6 21 mdtC 56 13 16 13 31 25 12 16 oqxB 41 58 9 7 50 32 12 38 mdsB 28 23 - 14 33 10 31 24 sul2 38 38 34 26 11 47 33 10 47 sul2 38 38 34 26 1 10 47 33 5 16 8 15 efpA 10 7 23 13 35 16 8	mdtB	64	26	33	24	54	36	10	34
mexl 25 16 36 20 38 25 11 20 mexQ 34 15 29 10 49 28 7 16 sav1866 17 144 16 14 42 58 6 21 mdtC 56 13 16 13 31 25 12 16 oqxB 41 12 2 11 42 21 2 24 cpxR 15 8 9 7 50 32 12 18 mdsB 28 23 14 33 17 9 22 tetG 10 2 30 10 30 10 47 sul2 38 38 34 26 1 10 47 sul2 38 38 34 26 1 1 47 serD 10 7 23 13	сеоВ	165	20	12	7	5	5	1	
mexQ 34 15 29 10 49 28 7 16 sav1866 17 14 16 14 42 58 6 21 mdtC 56 13 16 13 31 25 12 16 oqxB 41 12 2 11 42 21 2 24 cpxR 15 8 9 7 50 32 12 18 mdsB 28 23 - 14 33 17 9 22 teG 10 2 30 10 30 1 10 47 sul2 38 38 34 26 1 10 47 sul2 38 38 34 26 1 10 47 sul2 10 7 23 13 35 16 8 15 efpA 22 8 18 <td>mexl</td> <td>25</td> <td>16</td> <td>36</td> <td>20</td> <td>38</td> <td>25</td> <td>11</td> <td>20</td>	mexl	25	16	36	20	38	25	11	20
sav1866 17 14 16 14 42 58 6 21 mdtC 56 13 16 13 31 25 12 16 oqxB 41 12 2 11 42 21 2 24 cpxR 15 8 9 7 50 32 12 18 mdsB 28 23	mexQ	34	15	29	10	49	28	7	16
mdtC 56 13 16 13 31 25 12 16 oqxB 41 12 2 11 42 21 2 24 cpxR 15 8 9 7 50 32 12 18 mdsB 28 23 14 33 17 9 22 tetG 10 2 30 10 30 10 47 sul2 38 38 34 26 1 10 47 acrD 41 12 9 8 18 22 9 13 oleC 10 7 23 13 35 16 8 15 efpA 27 4 3 8 29 31 3 5 meXY 22 8 18 14 17 21 6 11 mdtF 78 1 9 7	sav1866	17	14	16	14	42	58	6	21
oqxB41122114221224cpxR1589750321218mdsB2823143317922tetG1023010301047sul2383834261147acrD4112981822913oleC10723133516815efpA27438293135meXY228181417216bcrA1138634171014mdtF781973233meXD278208912611tetB(P)5301315121555sul11733369arA83119302334acrF33685418552OpmH48-1281651cRP4668162618	mdtC	56	13	16	13	31	25	12	16
cpxR1589750321218mdsB2823143317922tetG1023010301047sul238383426117acrD4112981822913oleC10723133516815efpA27438293135meXY228181417216bcrA11386341710014mdtF781973223mexD278208912611tetB(P)5301315121555sul11733369arnA83119302334acrF3368541852OpmH48-12816518mexN277128311111	oqxB	41	12	2	11	42	21	2	24
mdsB2823143317922tetG1023010301047sul2383834261112acrD4112981822913oleC10723133516815efpA27438293135mexY228181417216bcrA11386341710014mdtF78197323mexD278208912611tetB(P)5301315121555sul11733369arnA83119302334opmH48-1281651cRP4668162618	cpxR	15	8	9	7	50	32	12	18
tetG1023010301047sul238383426111acrD4112981822913oleC10723133516815efpA274382931356bcrA1138634171014mdtF781973233mexD278208912611tetB(P)5301315121555sul117333691114arrA83119302334arrA48128541852OpmH481281626181mexN2771283111	mdsB	28	23		14	33	17	9	22
sul2 38 38 34 26 1 1 1 acrD 41 12 9 8 18 22 9 13 oleC 10 7 23 13 35 16 8 15 efpA 27 4 3 8 29 31 3 5 mexY 22 8 18 14 17 21 6 bcrA 1 13 8 6 34 17 10 14 mdtF 78 1 9 7 3 2 3 mexD 27 8 20 8 9 12 6 11 tetB(P) 5 30 13 15 12 15 5 5 sul1 17 33 36 9 1 1 1 1 acrF 33 6 8 5 4	tetG	10	2	30	10	30		10	47
acrD4112981822913oleC10723133516815efpA27438293135mexY228181417216bcrA11386341710014mdtF78197323mexD278208912611tetB(P)5301315121555sul11733369arnA83119302334acrF3368541852OpmH48128162618mexN2771281626111	sul2	38	38	34	26		1		
oleC 10 7 23 13 35 16 8 15 efpA 27 4 3 8 29 31 3 5 mexY 22 8 18 14 17 21 6 bcrA 1 13 8 6 34 17 10 14 mdtF 78 1 9 7 3 2 3 mexD 27 8 20 8 9 12 6 11 tetB(P) 5 30 13 15 12 15 5 5 sul1 17 33 36 9 - - - - arnA 8 3 11 9 30 23 3 4 acrF 33 6 8 5 4 18 5 2 OpmH 48 12 8 16	acrD	41	12	9	8	18	22	9	13
efpA27438293135mexY228181417216bcrA1138634171014mdtF78197323mexD278208912611tetB(P)5301315121555sul11733369arnA83119302334acrF3368541852OpmH48128162618mexN2771283111	oleC	10	7	23	13	35	16	8	15
mexY 22 8 18 14 17 21 6 bcrA 1 13 8 6 34 17 10 14 mdtF 78 1 9 7 3 2 3 mexD 27 8 20 8 9 12 6 11 tetB(P) 5 30 13 15 12 15 5 5 sul1 17 33 36 9 - - - - arnA 8 3 11 9 30 23 3 4 acrF 33 6 8 5 4 18 5 2 OpmH 48 - 12 8 1 6 5 1 CRP 4 6 6 8 36 3 1 11	efpA	27	4	3	8	29	31	3	5
bcrA1138634171014mdtF78197323mexD278208912611tetB(P)5301315121555sul11733369arnA83119302334acrF3368541852OpmH48128162618mexN2771283111	mexY	22	8	18	14	17	21		6
mdtF78197323mexD278208912611tetB(P)5301315121555sul11733369arnA83119302334acrF3368541852OpmH481281651CRP4668162618mexN2771283111	bcrA	1	13	8	6	34	17	10	14
mexD278208912611tetB(P)5301315121555sul11733369arnA83119302334acrF3368541852OpmH481281651CRP4668162618mexN2771283111	mdtF	78	1	9		7	3	2	3
tetB(P)5301315121555sul11733369arnA83119302334acrF3368541852OpmH481281651CRP4668162618mexN2771283111	mexD	27	8	20	8	9	12	6	11
sul1 17 33 36 9 Image: Constraint of the state of the s	tetB(P)	5	30	13	15	12	15	5	5
arnA83119302334acrF3368541852OpmH481281651CRP4668162618mexN2771283111	sul1	17	33	36	9				
acrF 33 6 8 5 4 18 5 2 OpmH 48 12 8 1 6 5 1 CRP 4 6 6 8 16 26 1 8 mexN 27 7 12 8 3 1 11	arnA	8	3	11	9	30	23	3	4
OpmH 48 12 8 1 6 5 1 CRP 4 6 6 8 16 26 1 8 mexN 27 7 12 8 3 1 11	acrF	33	6	8	5	4	18	5	2
CRP 4 6 6 8 16 26 1 8 mexN 27 7 12 8 3 1 11	OpmH	48		12	8	1	6	5	1
mexN 27 7 12 8 3 1 11	CRP	4	6	6	8	16	26	1	8
	mexN	27	7	12	Ű	8	3	1	11

smeR		7	7	7	10	25	4	9
adeJ	10	8	2	20	12	8		5
novA	3	16	3	4	21	7	4	5
bacA	11	5	6		15	15		8
mtrD	12	2	10	4	10	8	5	5
adeB	30	6	7	4	1			6
floR	3		18	4	6	2	5	15
smeB	3	10	13	2	3	11	1	9
mexC	11	1	6	6	7	6	6	5
oprN	29	4	7	8				
efrB	3		3	8	12	15	1	2
rosA	21	4	4	2	7	1	4	1
adeF	42			1				
mexA	15	6	12	7		3		
OXA-36	17	4	4	2	7	6	1	2
TriC	6	11	16	1	4	1		4
kdpE	16	3	1	1	5	12		3
mexL	22		8	6		2		
smeF	19	2	7	3	4	2		
drrA	5		2	1	16	8	1	3
smeD	13	4	3	1	6	4	2	3
nalD	19	1	12	3				
RbpA	14	2	6	3	4	3	1	2
tet33	3		21	8	3			
amrB	1		8	4	7	8	2	4
oprM	14	1	15	1	2		1	
golS	9	7	8	2		3		3
mexE	13	2	10	5	1			
qepA	20	5	1	2	1	1		1
tetT	4	3	3	5	3	1		10
tetA(P)		13	3	6		5		1
cmeB	5		4	2	9	3	2	1
dtrA3	1	1	8		8	4		4
tet35	1	1			5	3	1	15
ceoA								24
emrA	5	3		3	6	4	2	1
mdsC			23			1		
mexv	7	3	11	3		-		_
	2		14	1		2		5
	21				1	_		1
	1	1	4		6	1		4
	3	5	12	1		1		
0AA-190		2	2	2	2	10		4
nn-flo	4	4	7		14	1	4	5
<u>тру-по</u> теуТ			1	0	5	7	4	10
OXA-50	0		10	2	5	/		4
natA	3	1	13	2	<u> </u>	E		
totM	2	4	4	3	5 4	D 10		4
IGUVI			3			13		L I

tsnr	2	3	1	1	5	6		1
acrA	11	1	1	2	2	1		
OXA-209			12	1	1	1		2
oprJ	3	1	9	1		1		
OXA-12	3	1	1	2	4	4		
pmrB	1	2	6	2		2	1	
qacH	1	1			9			3
tetC	3	1		1	6	1		2
toIC	6				5	1		2
adel	1	1				11		
emrB	5		3	1	1	1		2
vatF			1		8	4		
opmE	6	1	5					
PmrF	1		1	2	2	6		
tetS	11		1					
tetX				1	6			5
TriA	3	1	5	2			1	
ANT(2")-la		1	7	3				
cat	1		1	3	4		1	1
efrA		3		1	3	2	1	1
mexJ	2		2	2		2	1	2
mexM	3	1	6	1				
орсМ	9	1			1			
VanRO	8				1			2
AAC(6')-Ib8			2			1	4	3
baeR				2	3	1	3	1
dfrD						10		
mexX	1		2	1			6	
oprA	1	2	1	1	1	3	1	
OXA-205	4	2	4					
OXA-53	3				1	5		1

Table S4. Pearson's correlation coefficients followed by Canonical Correspondence Analysis (CCA) between phyla (with relative abundance >5.0% at any of the sampling profile), ARGs, integrase genes and environmental parameters (temperature and precipitation).

Phylum	Temp	pptn	intl	sul1	tetA	blaTEM	sul2	dfrA1
Proteobacteria FP	-0.698*	0.836**	0.049	-0.387	0.246	-0.405	-0.303	0.104
Actinobacteria FP	-0.076	0.250	0.026	0.158	0.057	0.230	0.465	-0.030
Verrucomicrobia FP	-0.531	0.227	-0.063	-0.062	0.168	-0.030	0.403	0.109
					0.869*			
Bacteroidetes FP	-0.402	0.322	0.928**	0.718*	*	0.096	0.135	0.594
Cyanobacteria FP	0.801*	-0.706	0.098	0.542	-0.383	-0.127	0.434	0.260
Planctomycetes FP	0.604	-0.390	-0.275	0.119	-0.435	-0.436	0.002	-0.146

Proteobacteria Res	-0.509	0.553	0.020	-0.023	0.238	-0.195	0.263	0.080
Actinobacteria Res	-0.182	0.436	0.597	0.390	0.429	-0.031	0.305	0.674
Verrucomicrobia Res	-0.535	0.252	-0.009	0.061	0.082	-0.235	0.250	-0.163
Bacteroidetes Res	-0.900**	0.658	0.498	0.092	0.637	-0.151	-0.097	0.247
Cyanobacteria Res	0.896**	-0.660	-0.044	0.373	-0.478	-0.266	0.232	0.196
Planctomycetes Res	0.805*	-0.593	-0.247	0.305	-0.502	-0.212	0.329	-0.073

*Significant at $\mathbf{P} < 0.05$, **Significant at $\mathbf{P} < 0.01$ (temp: temperature; pptn: precipitation).