Supplemental materials

Figure S1

Figure S1 Map of sampling site at Bangpu Recreational Center (black star), Samut Prakan, Thailand. Arrows represent migratory direction of Brown-headed gull (Chroicocephalus brunnicephalus) from central Asia to inland lakes and coastal regions in southern Asia including Thailand. Triangles represent range map of C. brunnicephalus in Thailand. Data provided by Thai National Parks (2022).
Figure S2

The 1% (w/v) agarose gel electrophoresis of *V. parahaemolyticus* PCR products of 7 housekeeping genes positive control of strain VP902. Lane M: 1 kb ladder (Thermo Scientific, USA); Lane 1-7: PCR products of 7 housekeeping genes including *dnaE* (776 bp), *gyrB* (758 bp), *recA* (896 bp), *dtdS* (572 bp), *pntA* (676 bp), *pyrC* (681 bp) and *tnaA* (600 bp), respectively.
Figure S3

Figure S3 Comparison of the gene organization of T3SSα-related genes in *Vibrio parahaemolyticus* RIMD2210633 and MUVP22. Green arrows indicate the gene encoding putative apparatus protein of T3SS2α, yellow arrows indicate the gene encoding putative effector protein of T3SS2α, orange arrows indicate the gene encoding putative translocon protein of T3SS2α, purple arrows indicate transposase genes, dark blue arrows indicate rearranged DUF4116 domain containing protein, light blue arrows indicated additional hypothetical protein, and gray arrows indicate other proteins.
Figure S4 Comparison of the gene organization of T3SS2β-related genes in *Vibrio parahaemolyticus* TH3996, MUVP8, MUVP9, MUVP10 and MUVP20. Green arrows indicate the gene encoding putative apparatus protein of T3SS2β, yellow arrows indicate the gene encoding putative effector protein of T3SS2β, orange arrows indicate the gene encoding putative translocon protein of T3SS2β, purple arrows indicate mobile element protein, light blue arrows indicated additional hypothetical protein, and gray arrows indicate other proteins.
| Gene | Sequence (5’ to 3’ | Product size (bp) | Reference |
|------|------------------|------------------|-----------|
| ldh<sup>a</sup> | Forward 5’-AAACGGAATTATGCAGAAGCAGTGC3’ | 450 | (31) |
|     | Reverse 5’-GCTACTTTCTAGCATTTCCTCTGC-3’ |  |
| tdh<sup>b</sup> | Forward 5’-GTACCGATATTTTGGCAA-3’ | 382 | (33) |
|     | Reverse 5’-ATGTTGAAGGCTTTGACTTA-3’ |  |
| trh<sup>b</sup> | Forward 5’-CTCTACTTTGCTTTGAT-3’ | 276 | (34) |
|     | Reverse 5’-TACGCTTTATATAGCAGCCTA-3’ |  |
| T3SS1 | Forward 5’-TCGGTTAGCGAAGGCGTA-3’ | 716 | (16) |
|     | Reverse 5’-CCGCTGATAATGCCAGTA-3’ |  |
| VP1680<sup>c</sup> | Forward 5’-CCGCTGATAATGCCAGTA-3’ | 386 | (35) |
| (vopQ) | Reverse 5’-GTCAAGCAGGCAGCAG-3’ |  |
| T3SS2α<sup>c</sup> | Forward 5’-ATTACACCTTTGACTTCTGC-3’ | 379 | (81) |
| (vopP) | Reverse 5’-ACCTAAAGATACCGCTGCT-3’ |  |
| T3SS2β<sup>c</sup> | Forward 5’-AACCAACTTTGCGACTAAATC-3’ | 594 | (32) |
| (vopC) | Reverse 5’-TCCCGACAGTTTTTCTGAC-3’ |  |

<sup>a</sup>species specific

<sup>b</sup>virulence genes

<sup>c</sup>Type 3 secretion system genes

<sup>ldh</sup> = lecithin dependent hemolysin

<sup>tdh</sup> = thermolabile direct hemolysin

<sup>trh</sup> = thermolabile direct hemolysin-related hemolysin

<sup>T3SS1</sup> = Type 3 secretion system 1

<sup>T3SS2α</sup> = Type 3 secretion system 2α

<sup>T3SS2β</sup> = Type 3 secretion system 2β
### Table S2 List and properties of 49 V. *parahaemolyticus* isolates from aquatic bird fecal samples

| No. | Isolate name | Date of isolation | Virulence genes |
|-----|--------------|-------------------|-----------------|
|     |              |                   | *tdh* | *trh* | T3SS1 | T3SS2α | T3SS2β |
| 1   | MUVP1        | 22/08/2016        | -     | -     | +      | -      | -      |
| 2   | MUVP2        | 22/08/2016        | -     | -     | +      | -      | -      |
| 3   | MUVP3        | 22/08/2016        | -     | -     | +      | -      | -      |
| 4   | MUVP4        | 5/9/2016          | -     | -     | +      | -      | -      |
| 5   | MUVP5        | 5/9/2016          | -     | -     | +      | -      | -      |
| 6   | MUVP6        | 5/9/2016          | -     | -     | +      | -      | -      |
| 7   | MUVP7        | 5/9/2016          | -     | -     | +      | -      | -      |
| 8   | MUVP8        | 5/9/2016          | -     | +     | +      | -      | +      |
| 9   | MUVP9        | 3/10/2016         | -     | +     | +      | -      | +      |
| 10  | MUVP10       | 17/10/2016        | -     | +     | +      | -      | +      |
| 11  | MUVP11       | 17/10/2016        | -     | +     | +      | -      | +      |
| 12  | MUVP12       | 31/10/2016        | -     | -     | +      | -      | -      |
| 13  | MUVP13       | 31/10/2016        | -     | -     | +      | -      | -      |
| 14  | MUVP14       | 31/10/2016        | -     | -     | +      | -      | -      |
| 15  | MUVP15       | 31/10/2016        | -     | -     | +      | -      | -      |
| 16  | MUVP16       | 30/01/2017        | -     | -     | +      | -      | -      |
| 17  | MUVP17       | 30/01/2017        | -     | -     | +      | -      | -      |
| 18  | MUVP18       | 14/02/2017        | -     | -     | +      | -      | -      |
| 19  | MUVP19       | 14/02/2017        | -     | -     | +      | -      | -      |
| 20  | MUVP20       | 13/03/2017        | +     | +     | +      | -      | +      |
| 21  | MUVP21       | 27/03/2017        | -     | -     | +      | -      | -      |
| 22  | MUVP22       | 27/03/2017        | +     | -     | +      | +      | -      |
| 23  | MUVP23       | 27/03/2017        | +     | -     | +      | +      | -      |
| 24  | MUVP24       | 27/03/2017        | +     | -     | +      | +      | -      |
| 25  | MUVP25       | 27/03/2017        | -     | -     | +      | -      | -      |
| 26  | MUVP26       | 14/11/2016        | -     | -     | +      | -      | -      |
| 27  | MUVP27       | 14/11/2016        | -     | -     | +      | -      | -      |
| 28  | MUVP28       | 14/11/2016        | -     | -     | +      | -      | -      |
| 29  | MUVP29       | 14/11/2016        | -     | -     | +      | -      | -      |
| 30  | MUVP30       | 28/11/2016        | -     | -     | +      | -      | -      |
| 31  | MUVP31       | 28/11/2016        | -     | -     | +      | -      | -      |
| 32  | MUVP32       | 13/12/2016        | -     | -     | +      | -      | -      |
| 33  | MUVP33       | 13/12/2016        | -     | -     | +      | -      | -      |
| 34  | MUVP34       | 13/12/2016        | -     | -     | +      | -      | -      |
| 35  | MUVP35       | 13/12/2016        | -     | -     | +      | -      | -      |
| 36  | MUVP36       | 30/01/2017        | -     | -     | +      | -      | -      |
Table S2 List and properties of 49 *V. parahaemolyticus* isolates from aquatic bird fecal samples (cont.)

| No. | Isolates name | Date of isolation | Virulence genes |
|-----|---------------|-------------------|-----------------|
|     |               |                   | tdh  | trh | T3SS1 | T3SS2α | T3SS2β |
| 37  | MUVP37        | 30/01/2017        | -    | -   | +     | -      | -      |
| 38  | MUVP38        | 30/01/2017        | -    | -   | +     | -      | -      |
| 39  | MUVP39        | 30/01/2017        | -    | -   | +     | -      | -      |
| 40  | MUVP40        | 14/02/2017        | -    | -   | +     | -      | -      |
| 41  | MUVP41        | 27/02/2017        | -    | -   | +     | -      | -      |
| 42  | MUVP42        | 13/03/2017        | -    | -   | +     | -      | -      |
| 43  | MUVP43        | 13/03/2017        | -    | -   | +     | -      | -      |
| 44  | MUVP45        | 28/04/2017        | -    | -   | +     | -      | -      |
| 45  | MUVP46        | 28/04/2017        | -    | -   | +     | -      | -      |
| 46  | MUVP47        | 28/04/2017        | -    | -   | +     | -      | -      |
| 47  | MUVP48        | 28/04/2017        | -    | -   | +     | -      | -      |
| 48  | MUVP49        | 28/04/2017        | -    | -   | +     | -      | -      |
| 49  | MUVP50        | 28/04/2017        | -    | -   | +     | -      | -      |