

## **SUPPLEMENTARY MATERIAL**

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**Comparing feeding niche, growth characteristics and exploitation level of the giraffe catfish *Auchenoglanis occidentalis* (Valenciennes, 1775) in the two largest artificial lakes of Northern Ghana**

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## Tables

Table S1: Parameter estimates based on moving averages (MA) of 5 and 9 for *A. occidentalis* from Lake Bontanga collected from July 2016 to June 2017. Lower and upper denote 95% confidence interval of the estimates

| Parameter | MA = 5 |        |         | MA = 9 |       |        |
|-----------|--------|--------|---------|--------|-------|--------|
|           | Max.   | Lower  | Upper   | Max.   | Lower | Upper  |
| Linf      | 33.15  | 27.19  | 35.31   | 30.98  | 28.19 | 35.65  |
| K         | 0.22   | 0.17   | 0.36    | 0.94   | 0.19  | 1.18   |
| t_anchor  | 0.55   | 0.17   | 0.80    | 0.31   | 0.16  | 0.87   |
| C         | 0.52   | 0.27   | 0.92    | 0.70   | 0.19  | 0.93   |
| ts        | 0.58   | 0.27   | 0.69    | 0.55   | 0.11  | 0.79   |
| phiL      | 2.39   | 2.09   | 2.65    | 2.95   | 2.18  | 3.17   |
| M_Then    | 0.47   | 0.35   | 0.65    | 0.45   | 0.38  | 1.52   |
| Z         | 0.92   | 0.56   | 1.20    | 0.89   | 0.63  | 4.10   |
| FM        | 0.50   | 0.16   | 0.62    | 0.46   | 0.21  | 2.59   |
| L50       | 14.16  | 12.82  | 15.67   | 14.41  | 12.42 | 16.00  |
| L75       | 15.32  | 13.99  | 16.78   | 15.28  | 13.27 | 17.31  |
| t50       | 2.40   |        |         | 0.60   |       |        |
| t75       | 2.70   |        |         | 0.65   |       |        |
| N         | 375573 | 330380 | 1275288 | 59874  | 43604 | 731488 |
| B         | 13.18  | 10.65  | 47.25   | 2.06   | 1.43  | 29.68  |
| F01       | 0.97   | 0.82   | 1.95    | 1.04   | 0.87  | 3.03   |
| Fmax      | 1.72   | 1.44   | 4.30    | 1.87   | 1.53  | 5.45   |
| F05       | 0.54   | 0.45   | 1.37    | 0.59   | 0.48  | 1.84   |
| E         | 0.54   | 0.29   | 0.52    | 0.52   | 0.33  | 0.63   |

Table S2: Parameter estimates based on moving averages (MA) of 5 and 9 for *A. occidentalis* from Lake Tono collected from July 2016 to June 2017. Lower and upper denote 95% confidence interval of the estimates

| Parameter | MA = 5 |        |         | MA = 9 |       |         |
|-----------|--------|--------|---------|--------|-------|---------|
|           | Max.   | Lower  | Upper   | Max.   | Lower | Upper   |
| Linf      | 38.71  | 37.47  | 42.59   | 38.01  | 36.05 | 40.46   |
| K         | 0.31   | 0.16   | 0.37    | 0.35   | 0.28  | 0.98    |
| t_anchor  | 0.40   | 0.24   | 0.77    | 0.59   | 0.22  | 0.79    |
| C         | 0.45   | 0.09   | 0.83    | 0.43   | 0.23  | 0.86    |
| ts        | 0.49   | 0.13   | 0.83    | 0.71   | 0.34  | 0.94    |
| phiL      | 2.67   | 2.36   | 2.82    | 2.70   | 2.57  | 3.20    |
| M_Then    | 0.52   | 0.32   | 0.60    | 0.57   | 0.48  | 1.23    |
| Z         | 0.71   | 0.45   | 0.83    | 0.71   | 0.65  | 2.29    |
| FM        | 0.17   | 0.07   | 0.34    | 0.15   | 0.07  | 1.01    |
| L50       | 29.31  | 27.66  | 30.49   | 29.39  | 27.74 | 30.74   |
| L75       | 30.61  | 28.97  | 31.80   | 30.64  | 29.00 | 31.97   |
| t50       | 5.10   |        |         | 3.85   |       |         |
| t75       | 5.70   |        |         | 4.23   |       |         |
| N         | 279259 | 449793 | 2229240 | 621709 | 92973 | 2497564 |
| B         | 139.94 | 51.88  | 259.79  | 79.26  | 12.31 | 316.09  |
| F01       | 0.90   | 0.60   | 1.35    | 0.98   | 0.83  | 2.49    |
| Fmax      | 3.53   | 2.17   | 5.68    | 3.56   | 3.23  | 7.00    |
| F05       | 0.77   | 0.51   | 1.14    | 0.80   | 0.72  | 2.12    |
| E         | 0.24   | 0.16   | 0.41    | 0.21   | 0.11  | 0.44    |

## Figures

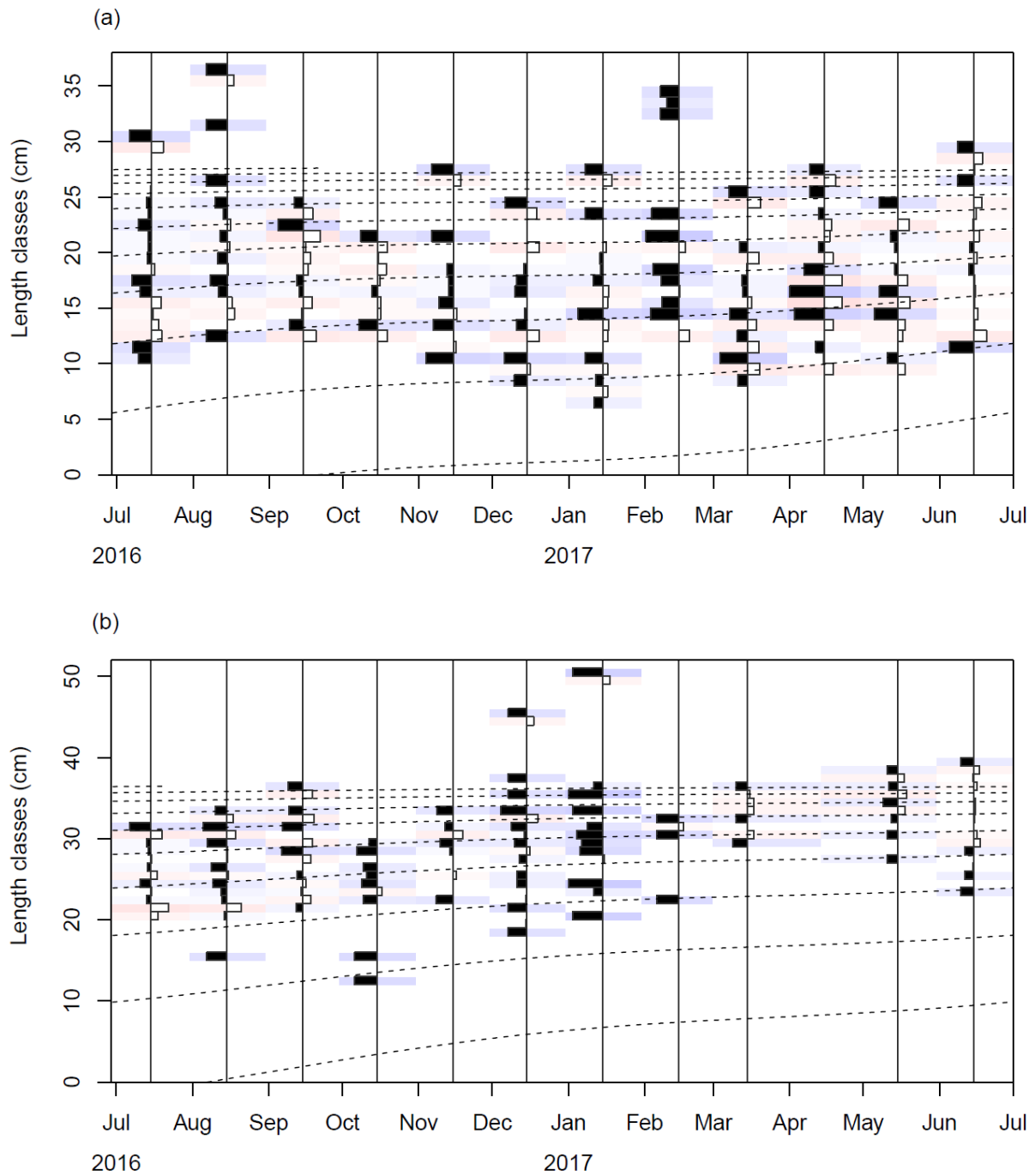


Figure S1: Length frequency histograms with the growth curves obtained through the bootstrapped ELEFAN with GA analysis superimposed for *A. occidentalis* collected from July 2016 to June 2017 at (a) Lake Bontanga and (b) Lake Tono

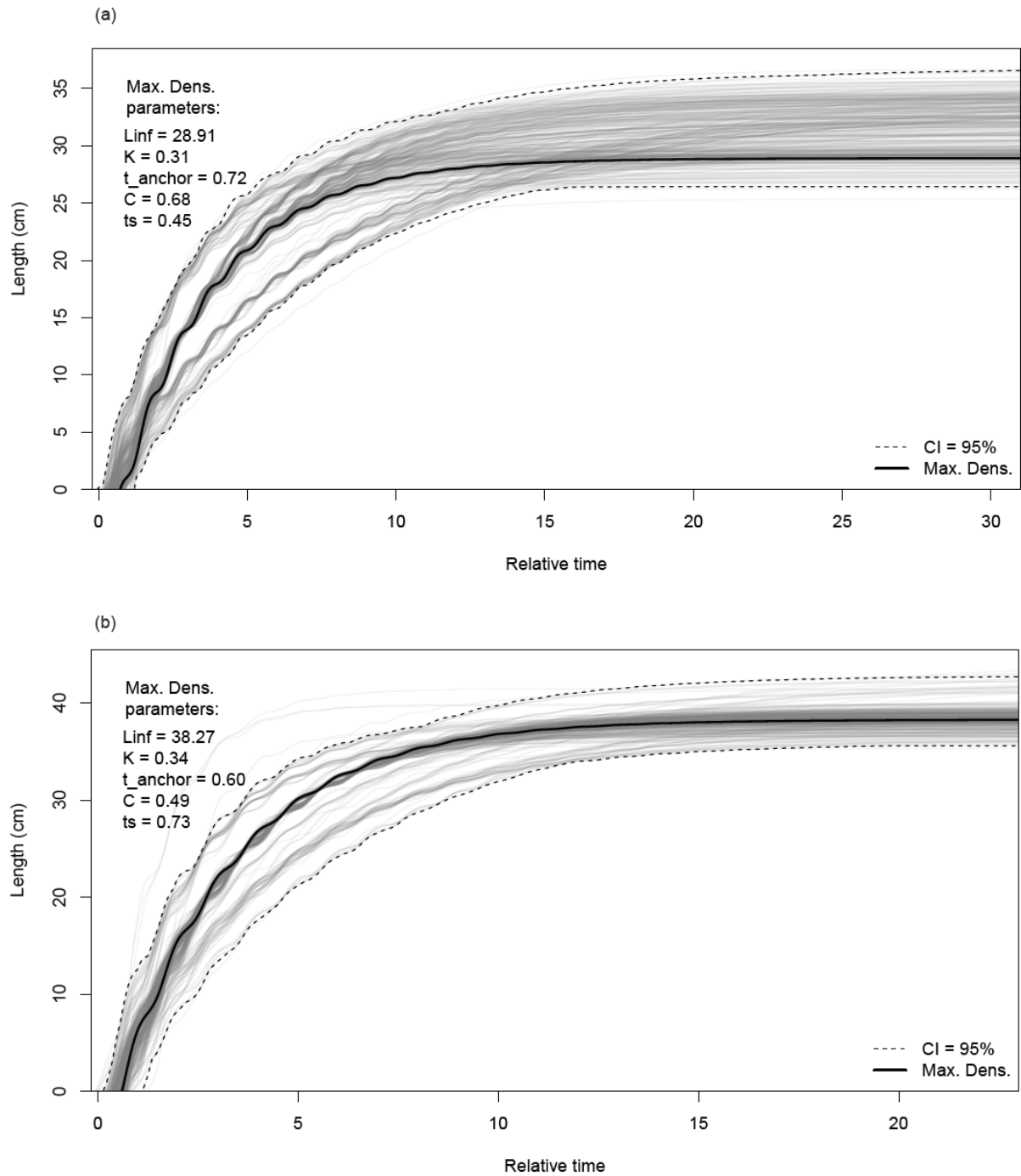


Figure S2: von Bertalanffy growth curves for *A. occidentalis* collected from (a) Lake Bontanga and (b) Lake Tono. Linf = the asymptotic length of the fish, K = growth coefficient, t\_anchor = indicates the fraction of the year where yearly repeating growth curves cross length equal to zero, C = is a constant indicating the amplitude of the oscillation, ts = is the fraction of a year (relative to the age of recruitment, t = 0) where the sine wave oscillation begins (i.e., turns positive).

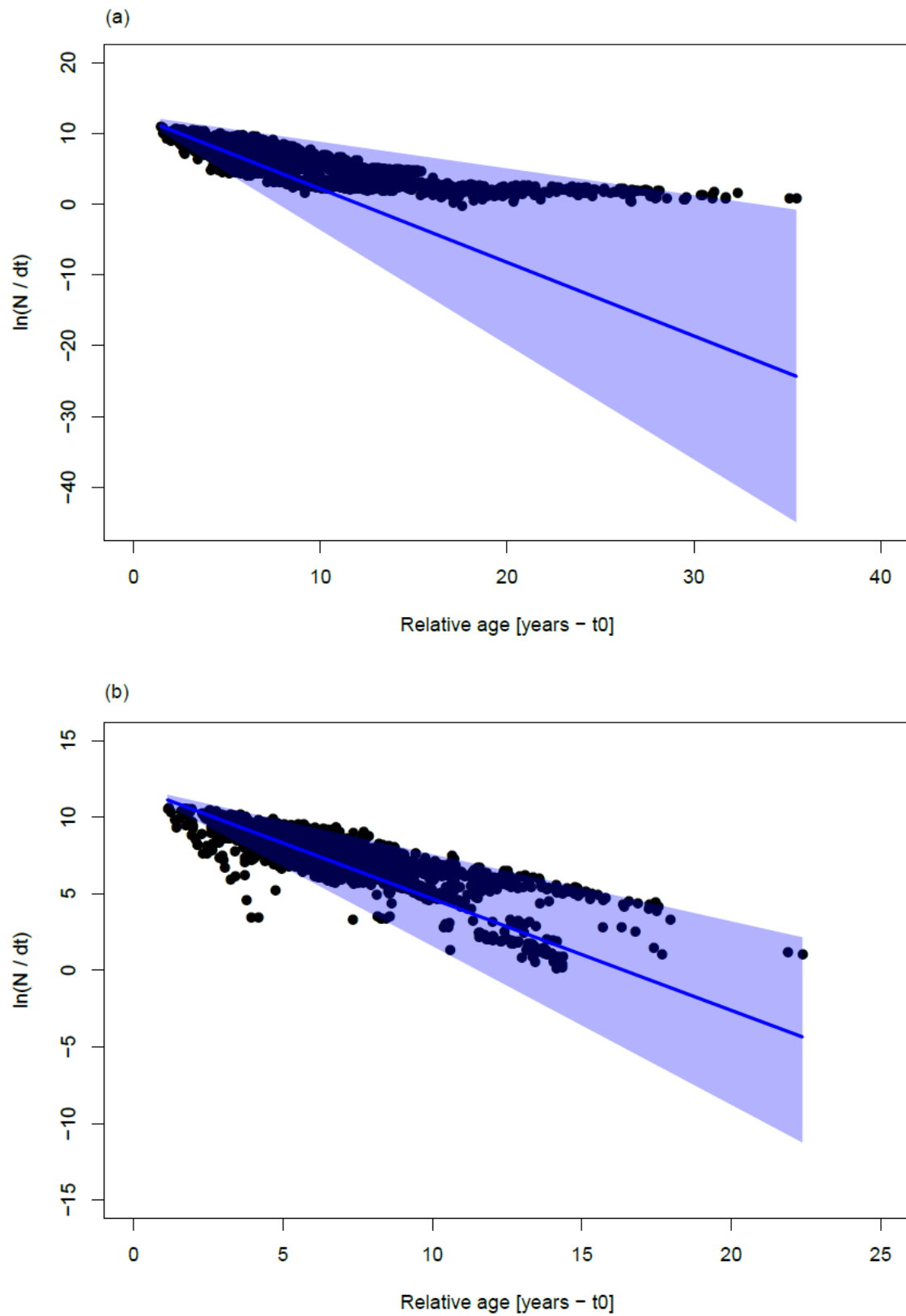


Figure S3: Bootstrapped linearised length-converted catch curve based on one year (July 2016 to June 2017) catch for *A. occidentalis* collected from (a) Lake Bontanga and (b) Lake Tono

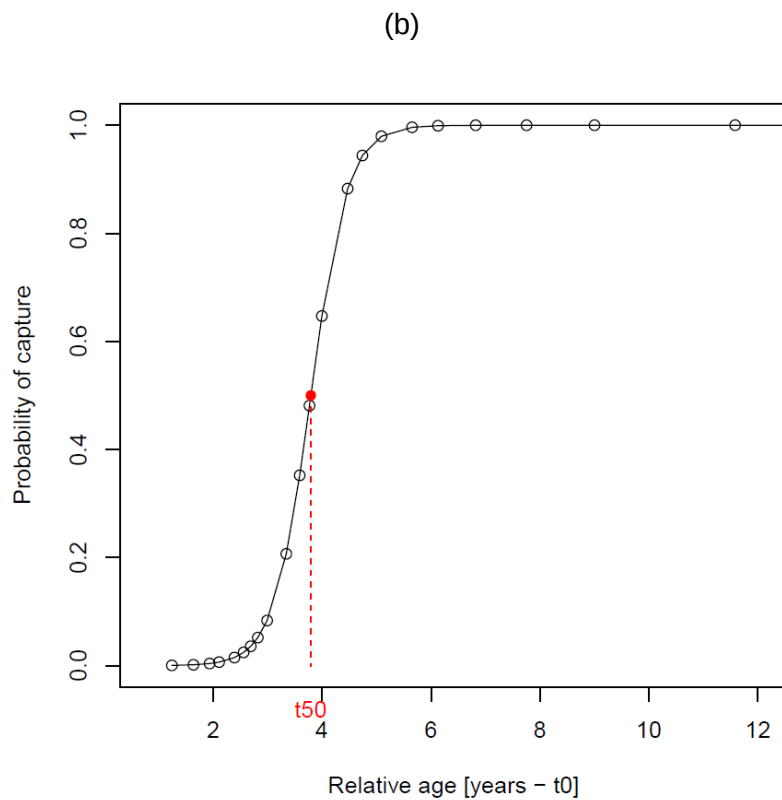
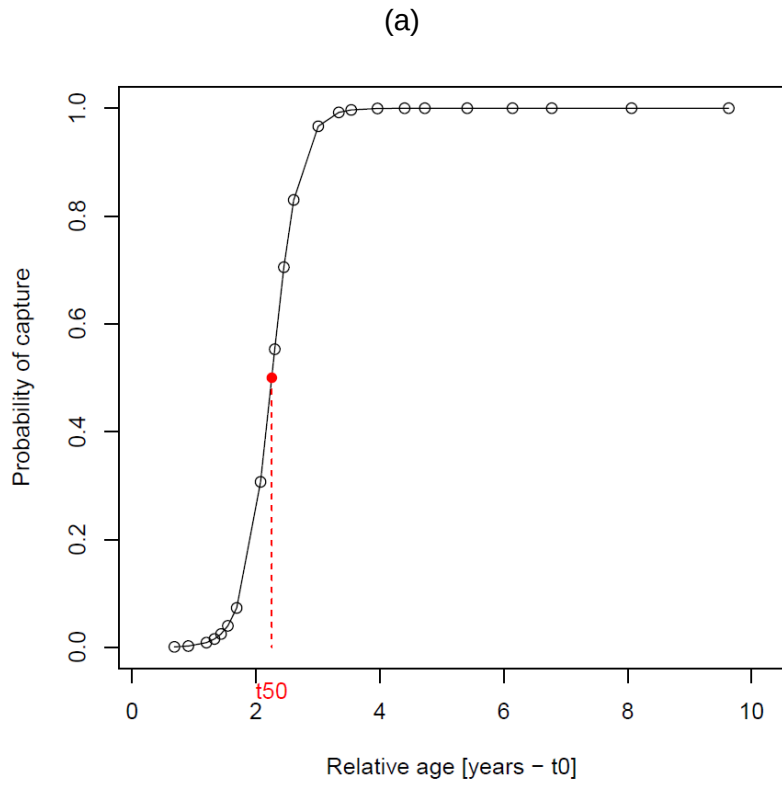


Figure S4: Probability of capture of *A. occidentalis* from (a) Lake Bontanga and (b) Lake Tono estimated from ascending axis of the linearised length-converted catch curve.  $t_{50}$  is the time corresponding to the length at first capture ( $L_c$ )