Table S1. Stable isotopes ($\delta^{15}N$ and $\delta^{13}C$) and elemental N (%N) and C (%C) composition of waste from salmon tanks, and of tissues (muscle bands, gonad, and intestine) in wild and captive (45 months under IMTA conditions) individuals of *Cucumaria frondosa*. Data are shown as means ± s.d. (n = 4). Comparisons between captive and wild individuals were made using *t*-test; values with different superscript letters are significantly different.

| | | **Male** | | | | | | **Female** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Muscle bands** | | **Gonad** | | **Intestine** | | **Muscle bands** | | **Gonad** | | **Intestine** | |
| | **Waste** | **Wild** | **Captive** | **Wild** | **Captive** | **Wild** | **Captive** | **Wild** | **Captive** | **Wild** | **Captive** | **Wild** | **Captive** |
| **%N** | 3.2 ± 0.1 | 10.4 ± 0.7$^{a}$ | 11.8 ± 0.5$^{b}$ | 8.2 ± 1.5$^{b}$ | 6.5 ± 0.7$^{a}$ | 8.6 ± 0.3$^{a}$ | 9.5 ± 0.4$^{b}$ | 10.8 ± 0.6$^{a}$ | 12.0 ± 0.1$^{b}$ | 8.6 ± 0.8$^{b}$ | 7.1 ± 0.9$^{a}$ | 8.4 ± 0.6$^{a}$ | 9.9 ± 0.5$^{b}$ |
| **%C** | 27.0 ± 0.9 | 41.8 ± 1.9$^{a}$ | 46.0 ± 1.9$^{b}$ | 48.0 ± 2.0$^{a}$ | 55.6 ± 1.1$^{b}$ | 47.4 ± 3.1$^{a}$ | 48.9 ± 2.4$^{a}$ | 42.7 ± 1.5$^{a}$ | 46.1 ± 0.4$^{b}$ | 50.2 ± 1.4$^{a}$ | 54.1 ± 0.7$^{b}$ | 45.7 ± 1.8$^{a}$ | 49.2 ± 2.0$^{b}$ |
| **$\delta^{15}N$** | 11.8 ± 0.2 | 10.3 ± 1.2$^{a}$ | 11.4 ± 0.3$^{b}$ | 7.7 ± 1.2$^{a}$ | 10.8 ± 0.3$^{b}$ | 7.1 ± 0.2$^{a}$ | 12.0 ± 0.8$^{b}$ | 10.3 ± 1.0$^{a}$ | 11.7 ± 0.2$^{b}$ | 8.1 ± 1.6$^{a}$ | 10.5 ± 0.6$^{b}$ | 7.4 ± 0.7$^{a}$ | 12.1 ± 0.5$^{b}$ |
| **$\delta^{13}C$** | -22.4 ± 0.3 | -18.3 ± 0.4$^{a}$ | -17.4 ± 0.2$^{b}$ | -21.1 ± 0.4$^{a}$ | -21.1 ± 0.4$^{a}$ | -21.8 ± 0.3$^{a}$ | -19.8 ± 0.5$^{b}$ | -18.1 ± 0.5$^{a}$ | -17.3 ± 0.2$^{b}$ | -20.9 ± 0.7$^{a}$ | -20.9 ± 0.3$^{a}$ | -21.1 ± 0.8$^{a}$ | -19.6 ± 0.1$^{b}$ |

Table S2. Results of PERMANOVA conducted on fatty acid profiles of salmon waste and of various tissuses in males and females of *Cucumaria frondosa*.

| **Sex** | **Tissues** | **Contrast** | ***P* (perm)** |
|---|---|---|---|
| Male | Muscle bands | Captive vs Wild | 0.046 |
| | | Captive vs Waste | 0.031 |
| | | Wild vs Waste | 0.038 |
| | Gonad | Captive vs Wild | 0.027 |
| | | Captive vs Waste | 0.024 |
| | | Wild vs Waste | 0.023 |
| | Intestine | Captive vs Wild | 0.025 |
| | | Captive vs Waste | 0.027 |
| | | Wild vs Waste | 0.025 |
| Female | Muscle bands | Captive vs Wild | 0.031 |
| | | Captive vs Waste | 0.029 |
| | | Wild vs Waste | 0.033 |
| | Gonad | Captive vs Wild | 0.029 |
| | | Captive vs Waste | 0.029 |
| | | Wild vs Waste | 0.031 |
| | Intestine | Captive vs Wild | 0.034 |
| | | Captive vs Waste | 0.034 |
| | | Wild vs Waste | 0.027 |

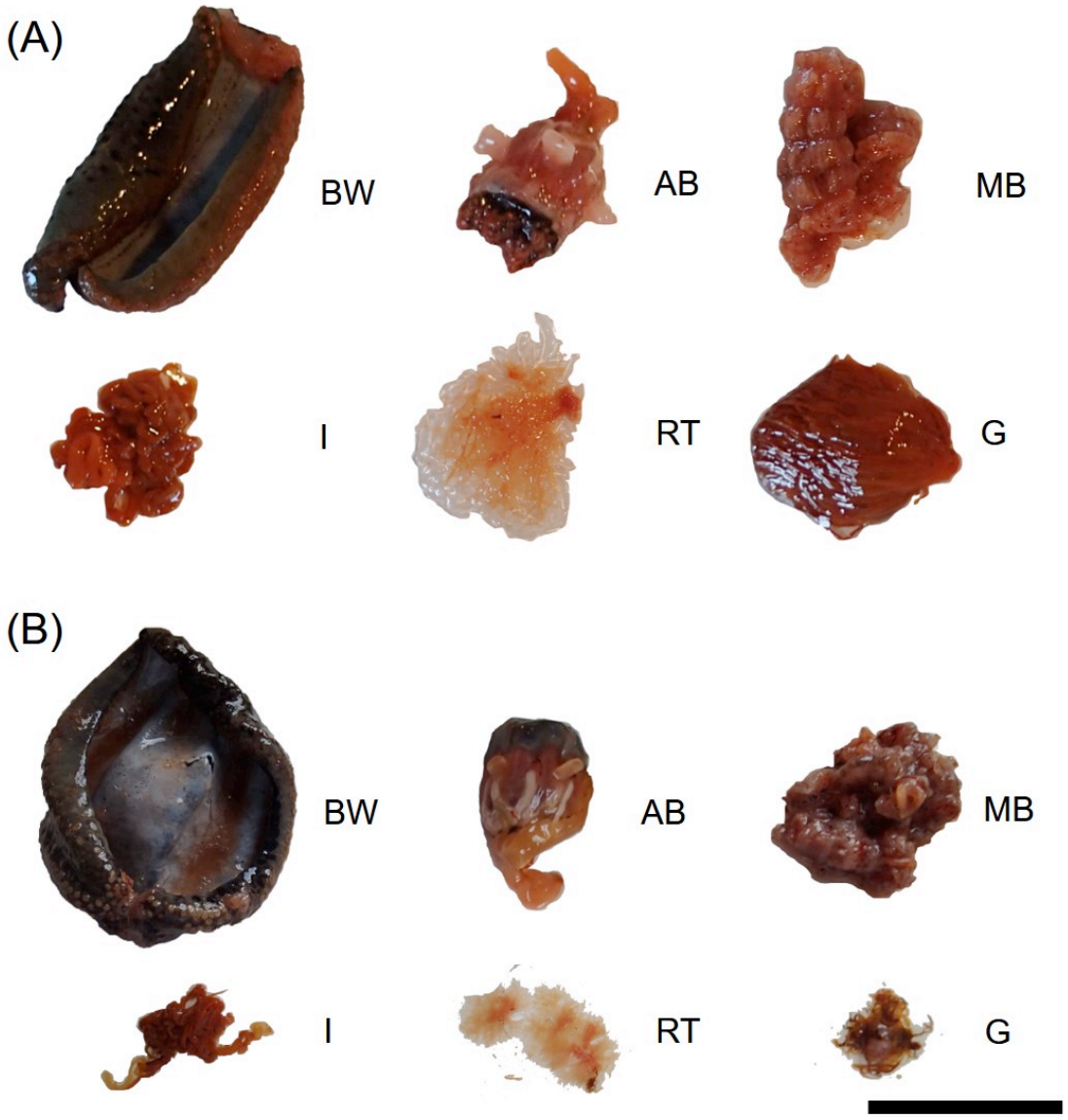


Figure S1. Morphometrics of (A) wild and (B) captive (45 months under IMTA conditions) individuals of *Cucumaria frondosa*. BW: body wall; AB: aquapharyngeal bulb; MB: muscle bands; I: intestine; RT: respiratory tree; G: gonad. Scale bar represents 3 cm.

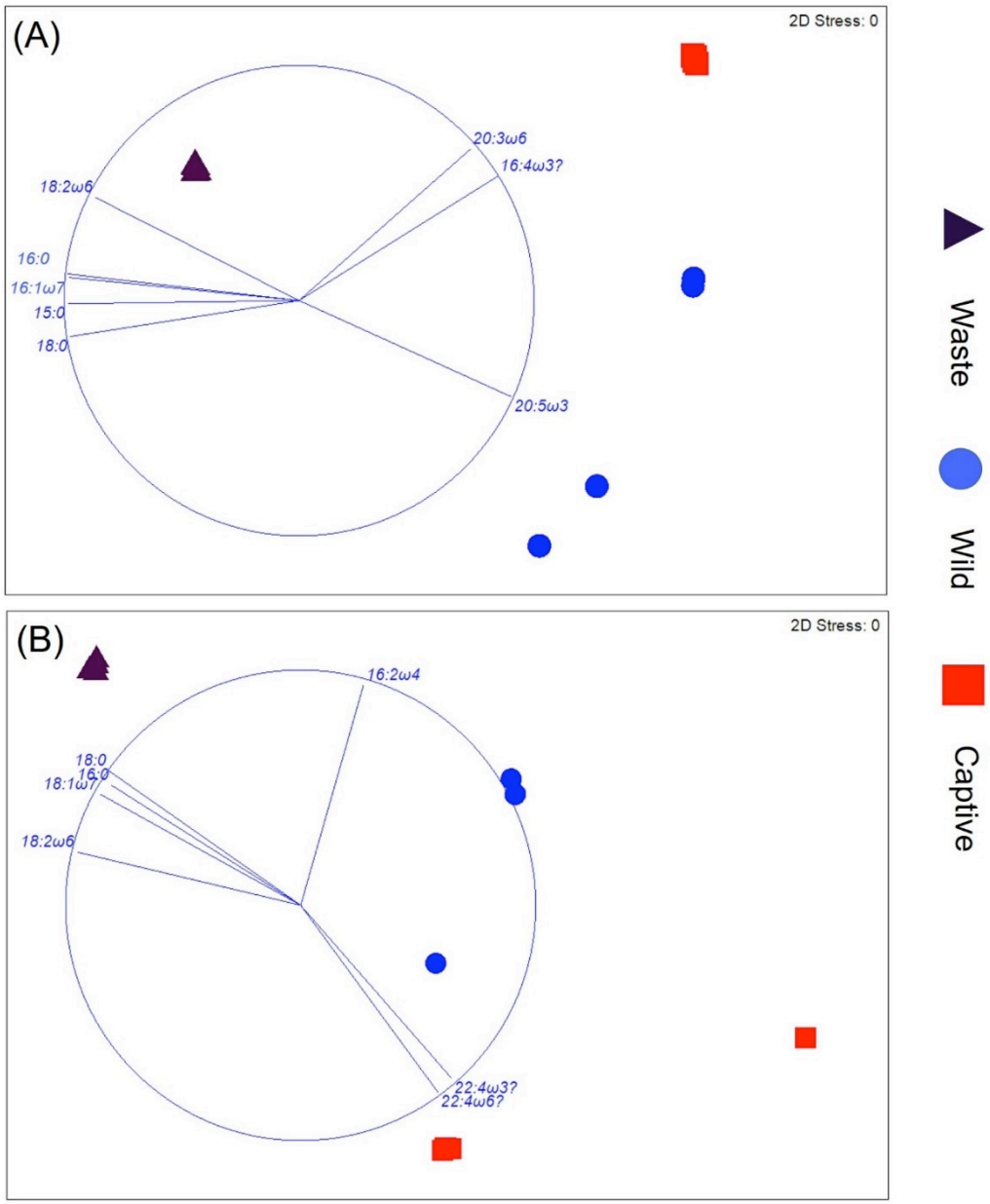


Figure S2. MDS plot of fatty acid composition of muscle bands in (A) male and (B) female individuals of wild and captive (45 months under IMTA conditions) *Cucumaria frondosa*, and in waste from salmon tanks (food for captive individuals).

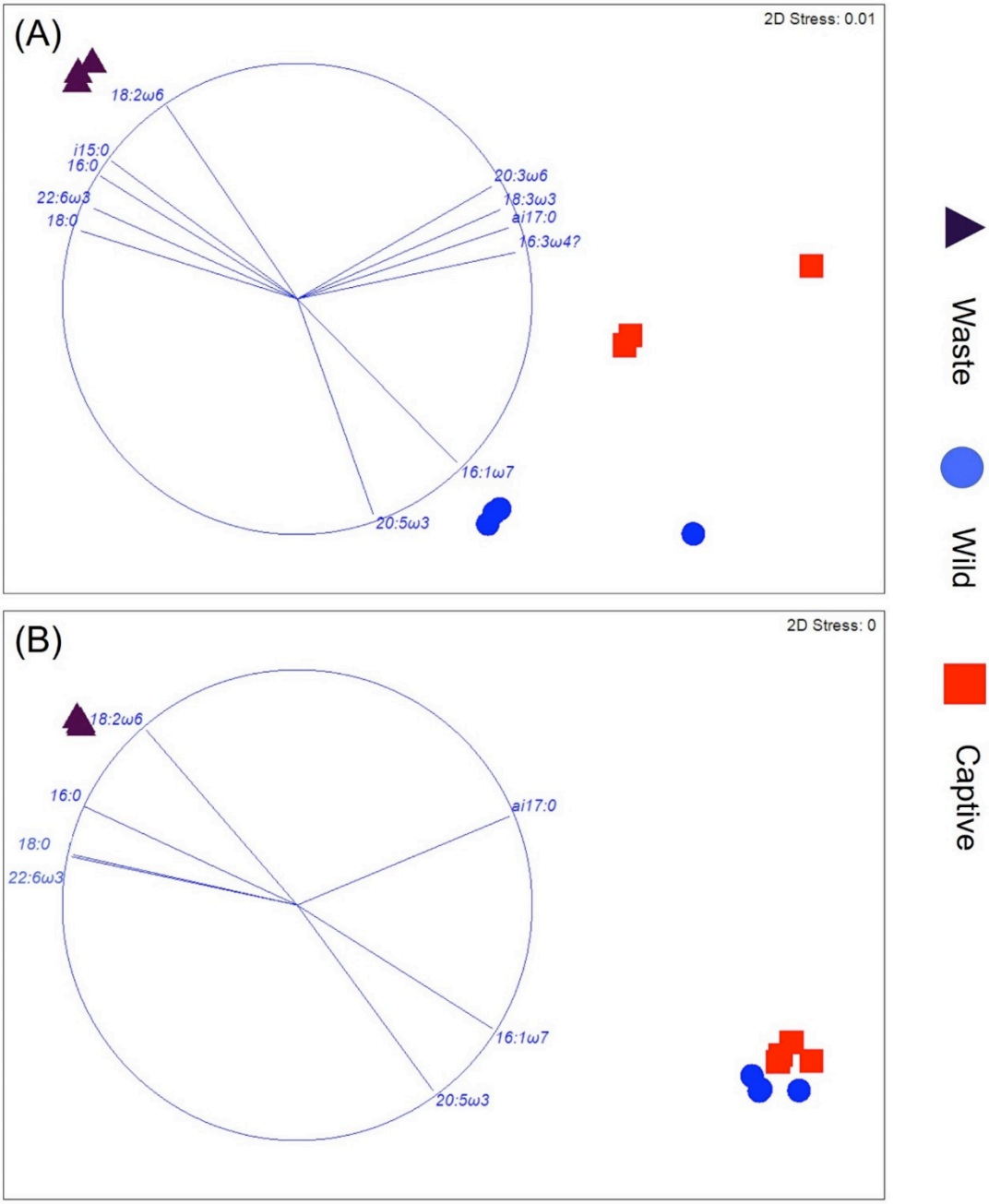


Figure S3. MDS plot of fatty acid composition of gonad in (A) male and (B) female individuals of wild and captive (45 months under IMTA conditions) *Cucumaria frondosa*, and in waste from salmon tanks (food for captive individuals).

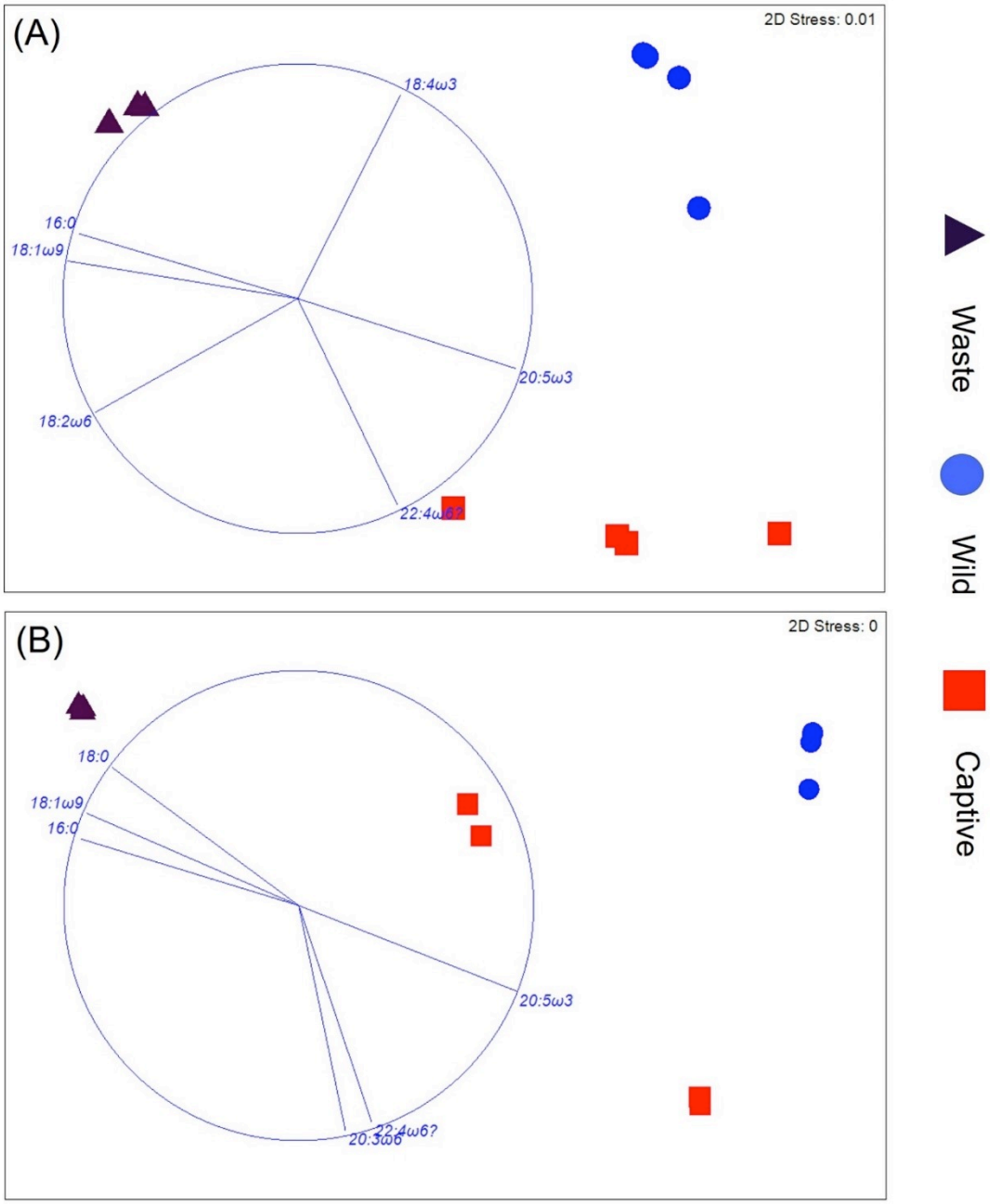


Figure S4. MDS plot of fatty acid composition of intestine of (A) male and (B) female individuals of wild and captive (45 months under IMTA conditions) *Cucumaria frondosa*, and in waste from salmon tanks (food for captive individuals).