Table 1: Experimental results of **YOLOv8** on the fine-grained zooplankton species classification task. "mix" refers to the combined dataset from all three depths—10 meters, 25 meters, and 35 meters.

Training dataset	Testing dataset	mAP50	mAP50-95
10 meters	10 meters	0.303	0.162
10 meters	25 meters	0.328	0.164
10 meters	35 meters	0.128	0.0547
10 meters	mix data	0.193	0.0991
25 meters	10 meters	0.182	0.0941
25 meters	25 meters	0.594	0.354
25 meters	35 meters	0.179	0.0813
25 meters	mix data	0.229	0.124
35 meters	10 meters	0.0799	0.0389
35 meters	25 meters	0.12	0.0738
35 meters	35 meters	0.411	0.284
35 meters	mix data	0.138	0.0839
mix data	10 meters	0.328	0.173
mix data	25 meters	0.619	0.358
mix data	35 meters	0.486	0.252
mix data	mix data	0.434	0.228

Table 2: Experimental results of **YOLOv8** on fin-grained zooplankton species classification task. Training on 10 meters, testing on 10 meters

Class	mAP50	mAP50-95
All	0.303	0.162
Chaetognath	0.901	0.546
Larval fish	0.133	0.0591
Hydromedusa	0.254	0.0966
Lobate ctenophore	0.041	0.00819
Pleurobrachia	0.0819	0.0421
Shrimp	0.515	0.288
Siphonophore	0.205	0.0606
Stomatopod larva	0.599	0.352
Unknown	0	0

1 Classification detail

You may notice that some classes are missing from the table. This is because there is no corresponding class in the ground truth, which results in no mAP to display.

Table 3: Experimental results of **YOLOv8** on fin-grained zooplankton species classification task. Training on 10 meters, testing on 25 meters

Class	mAP50	mAP50-95
All	0.328	0.164
Chaetognath	0.678	0.392
Larval fish	0.42	0.264
Hydromedusa	0.154	0.0762
Lobate ctenophore	0.0433	0.013
Shrimp	0.577	0.282
Siphonophore	0.409	0.082
Stomatopod larva	0.63	0.347
Unknown	0.045	0.0217
Thaliac	0	0

Table 4: Experimental results of **YOLOv8** on fin-grained zooplankton species classification task. Training on 10 meters, testing on 35 meters

Class	mAP50	mAP50-95
All	0.128	0.0547
Chaetognath	0.694	0.283
Larval fish	0.123	0.068
Hydromedusa	0.0193	0.00699
Lobate ctenophore	0.0829	0.0663
Shrimp	0.155	0.0418
Siphonophore	0.0233	0.00988
Unknown	0.058	0.0159
Thaliac	0	0
ctenophore	0	0

Table 5: Experimental results of **YOLOv8** on fin-grained zooplankton species classification task. Training on 10 meters, testing on mix meters

Class	mAP50	mAP50-95
All	0.193	0.0991
Chaetognath	0.725	0.373
Larval fish	0.181	0.107
Hydromedusa	0.071	0.0276
Lobate ctenophore	0.0331	0.0174
Pleurobrachia	0.00569	0.00288
Shrimp	0.446	0.21
Siphonophore	0.0457	0.0147
Stomatopod larva	0.574	0.324
Unknown	0.0443	0.0137
Thaliac	0	0
Ctenophore	0	0

Table 6: Experimental results of **YOLOv8** on fin-grained zooplankton species classification task. Training on 25 meters, testing on 10 meters

Class	mAP50	mAP50-95
All	0.182	0.0941
Chaetognath	0.804	0.443
Larval fish	0.165	0.0885
Hydromedusa	0.0342	0.0213
Lobate ctenophore	0	0
Pleurobrachia	0	0
Shrimp	0.203	0.111
Siphonophore	0.0027	0.000541
Stomatopod larva	0.423	0.18
Unknown	0.00361	0.00205

Table 7: Experimental results of **YOLOv8** on fin-grained zooplankton species classification task. Training on 25 meters, testing on 25 meters

Class	mAP50	mAP50-95
All	0.594	0.354
Chaetognath	0.831	0.52
Larval fish	0.589	0.415
Hydromedusa	0.711	0.323
Lobate ctenophore	0.995	0.597
Shrimp	0.607	0.375
Siphonophore	0.223	0.17
Stomatopod larva	0.872	0.519
Unknown	0.352	0.135
Thaliac	0.169	0.135

Table 8: Experimental results of **YOLOv8** on fin-grained zooplankton species classification task. Training on 25 meters, testing on 35 meters

Class	mAP50	mAP50-95
All	0.179	0.0813
Chaetognath	0.784	0.362
Larval fish	0.216	0.11
Hydromedusa	0.188	0.0895
Lobate ctenophore	0.0995	0.0398
Shrimp	0.14	0.0549
Siphonophore	0.0606	0.0333
Unknown	0.0617	0.0254
Thaliac	0.0585	0.0176
ctenophore	0	0

Table 9: Experimental results of **YOLOv8** on fin-grained zooplankton species classification task. Training on 25 meters, testing on mix meters

Class	mAP50	mAP50-95
All	0.229	0.124
Chaetognath	0.725	0.403
Larval fish	0.292	0.189
Hydromedusa	0.232	0.104
Lobate ctenophore	0.0947	0.0516
Pleurobrachia	0	0
Shrimp	0.355	0.205
Siphonophore	0.05	0.0291
Stomatopod larva	0.621	0.317
Unknown	0.0885	0.0352
Thaliac	0.0615	0.0278
Ctenophore	0	0

Table 10: Experimental results of **YOLOv8** on fin-grained zooplankton species classification task. Training on 35 meters, testing on 10 meters

Class	mAP50	mAP50-95
All	0.0799	0.0389
Chaetognath	0.482	0.236
Larval fish	0.0443	0.0197
Hydromedusa	0.000725	0.000263
Lobate ctenophore	0	0
Pleurobrachia	0.0852	0.0426
Shrimp	0.104	0.05
Siphonophore	0.00358	0.00141
Stomatopod larva	0	0
Unknown	0.000152	0.000107

Table 11: Experimental results of **YOLOv8** on fin-grained zooplankton species classification task. Training on 35 meters, testing on 25 meters

Class	mAP50	mAP50-95
All	0.12	0.0738
Chaetognath	0.449	0.282
Larval fish	0.0503	0.0324
Hydromedusa	0.155	0.0872
Lobate ctenophore	0.0311	0.0187
Shrimp	0.151	0.0627
Siphonophore	0.038	0.031
Stomatopod larva	0	0
Unknown	0.204	0.15
Thaliac	0	0

Table 12: Experimental results of **YOLOv8** on fin-grained zooplankton species classification task. Training on 35 meters, testing on 35 meters

Class	mAP50	mAP50-95
all	0.411	0.284
Chaetognath	0.882	0.525
Larval fish	0.758	0.601
Hydromedusa	0.34	0.144
Lobate ctenophore	0.995	0.895
Shrimp	0.208	0.107
Siphonophore	0.0264	0.0128
Unknown	0.487	0.273
Thaliac	0	0
ctenophore	0	0

Table 13: Experimental results of **YOLOv8** on fin-grained zooplankton species classification task. Training on 35 meters, testing on mix meters

Class	mAP50	mAP50-95
All	0.138	0.0839
Chaetognath	0.603	0.35
Larval fish	0.0484	0.0273
Hydromedusa	0.14	0.0625
Lobate ctenophore	0.253	0.225
Pleurobrachia	0.0116	0.00581
Shrimp	0.116	0.0497
Siphonophore	0.0162	0.00878
Stomatopod larva	0	0
Unknown	0.333	0.193
Thaliac	0	0
Ctenophore	0	0

Table 14: Experimental results of **YOLOv8** on fin-grained zooplankton species classification task. Training on mix meters, testing on 10 meters

Class	mAP50	mAP50-95
All	0.328	0.173
Chaetognath	0.869	0.477
Larval fish	0.0814	0.0444
Hydromedusa	0.158	0.0602
Lobate ctenophore	0.171	0.12
Pleurobrachia	0.352	0.186
Shrimp	0.569	0.287
Siphonophore	0.036	0.0113
Stomatopod larva	0.702	0.367
Unknown	0.0141	0.00668

Table 15: Experimental results of **YOLOv8** on fin-grained zooplankton species classification task. Training on mix meters, testing on 25 meters

Class	mAP50	mAP50-95
All	0.619	0.358
Chaetognath	0.806	0.457
Larval fish	0.473	0.291
Hydromedusa	0.624	0.372
Lobate ctenophore	0.995	0.597
Shrimp	0.742	0.422
Siphonophore	0.0184	0.0125
Stomatopod larva	0.909	0.617
Unknown	0.451	0.222
Thaliac	0.548	0.23

Table 16: Experimental results of **YOLOv8** on fin-grained zooplankton species classification task. Training on mix meters, testing on 35 meters

Class	mAP50	mAP50-95
All	0.486	0.252
Chaetognath	0.869	0.395
Larval fish	0.898	0.49
Hydromedusa	0.601	0.273
Lobate ctenophore	0.995	0.697
Shrimp	0.414	0.167
Siphonophore	0.135	0.0787
Unknown	0.46	0.172
Thaliac	0	0
Ctenophore	0	0

Table 17: Experimental results of **YOLOv8** on fin-grained zooplankton species classification task. Training on mix meters, testing on mix meters

Class	mAP50	mAP50-95
All	0.434	0.228
Chaetognath	0.848	0.432
Larval fish	0.347	0.2
Hydromedusa	0.464	0.222
Lobate ctenophore	0.548	0.357
Pleurobrachia	0.32	0.167
Shrimp	0.606	0.314
Siphonophore	0.0679	0.0369
Stomatopod larva	0.774	0.462
Unknown	0.457	0.179
Thaliac	0.348	0.142
Ctenophore	0	0