Ignasi Arranz, Bertrand Fournier, Nigel P. Lester, Brian J. Shuter, and Pedro R. Peres-Neto. Species compositions mediate biomass conservation: the case of lake fish communities. Ecology.

Appendix S1. Additional information of the fish sampling design

Fish were caught within each depth stratum using two types of benthic multi-mesh gill nets: a small mesh net (stretch mesh size = 13 to 38 mm; and length 1.8 m x 12 m) and a large mesh net (stretch mesh size = 38 to 127 mm; and length 1.8 m x 24.8 m), the latter net conforming to standards recommended for sampling North American lakes (Bonar et al. 2009). These mesh sizes catch a broad size range of fish, providing a cost-effective way to estimate fish community size structure (Bonar et al. 2009). Nets were set overnight for 18 hours. The small mesh gear was deployed in all lakes in depth strata from 0 to 20 m. In deeper lakes (i.e., 358 lakes with depth > 20 m), the large mesh gear alone was deployed in depth strata > 20 m. This aspect of the sampling design could reduce the potential catch of small fish in deep lakes, leading to biases in estimating biomass distributions. We explored this potential bias in our analyses, but it did not affect our overall conclusions (see *Results*). Although most fish caught were identified, unidentified fish taxa representing less than 0.1 % of the total biomass were excluded from the analyses. Major species are listed in Table S1.

References

Bonar, S.A., W.A. Hubert, and D.W. Willis. 2009. Standard methods for sampling North American freshwater fishes. American Fisheries Society, Bethesda, Maryland.

**Table S1.** List of the most common fish species caught. Species are separated into two size groups based on mean body mass: Large (≥ 250 grams) and small fish (< 250 grams). Within each fish size group, species are shown in order of their frequency of occurrence (Proportion of lakes). Mean biomass per unit effort (BPUE) is the expected mean catch (in kilograms) from 200 m of gillnet with equal lengths of the small and large mesh gear, calculated for lakes where the species was present. Mean corrected BPUE is the selectivity corrected score (see Appendix S3 for details).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Fish size** | **Order** | **Family** | **Common Name** | **Scientific name** | **Proportion of lakes** | **Mean body mass (grams)** | **Mean BPUE** | **Mean corrected BPUE** |
| Large | Cypriniformes | Catostomidae | White Sucker | *Catostomus commersonii* | 0.95 | 397 | 5.90 | 11.44 |
|  | Esociformes | Esocidae | Northern Pike | *Esox lucius* | 0.75 | 1005 | 5.39 | 7.89 |
|  | Perciformes | Percidae | Walleye | *Sander vitreus* | 0.71 | 482 | 11.04 | 21.09 |
|  | Salmoniformes | Salmonidae | Lake Whitefish | *Coregonus clupeaformis* | 0.54 | 584 | 4.39 | 7.61 |
|  | Centrarchidae | Perciformes | Smallmouth Bass | *Micropterus dolomieu* | 0.47 | 340 | 1.84 | 4.03 |
|  | Salmoniformes | Salmonidae | Lake Trout | *Salvelinus namaycush* | 0.43 | 1219 | 5.05 | 6.88 |
|  | Gadiformes | Lotidae | Burbot | *Lota lota* | 0.38 | 714 | 0.89 | 1.46 |
|  | Siluriformes | Ictaluridae | Brown Bullhead | *Ameiurus nebulosus* | 0.19 | 290 | 1.08 | 2.91 |
|  | Cypriniformes | Catostomidae | Shorthead Redhorse | *Moxostoma macrolepidotum* | 0.13 | 1014 | 1.17 | 1.66 |
|  | Salmoniformes | Salmonidae | Brook Trout | *Salvelinus fontinalis* | 0.11 | 382 | 3.77 | 8.27 |
| Small | Perciformes | Percidae | Yellow Perch | *Perca flavescens* | 0.87 | 17 | 1.51 | 30.40 |
|  | Salmoniformes | Salmonidae | Cisco | *Coregonus artedi* | 0.62 | 79 | 1.64 | 8.51 |
|  | Cypriniformes | Cyprinidae | Spottail Shiner | *Notropis hudsonius* | 0.51 | 6 | 0.14 | 8.42 |
|  | Percopsiformes | Percopsidae | Trout-perch | *Percopsis omiscomaycus* | 0.45 | 7 | 0.05 | 2.33 |
|  | Perciformes | Centrarchidae | Rock Bass | *Ambloplites rupestris* | 0.44 | 40 | 0.50 | 4.27 |
|  | Perciformes | Centrarchidae | Pumpkinseed | *Lepomis gibbosus* | 0.29 | 29 | 0.32 | 3.79 |
|  | Perciformes | Percidae | Logperch | *Percina caprodes* | 0.26 | 5 | 0.01 | 0.82 |
|  | Cypriniformes | Cyprinidae | Emerald Shiner | *Notropis atherinoides* | 0.24 | 6 | 0.09 | 4.98 |
|  | Cypriniformes | Cyprinidae | Common Shiner | *Luxilus cornutus* | 0.22 | 13 | 0.63 | 16.17 |
|  | Cypriniformes | Cyprinidae | Golden Shiner | *Notemigonus crysoleucas* | 0.21 | 13 | 0.23 | 6.16 |