62 years of population dynamics of European perch (Perca fluviatilis) in a mesotrophic lake tracked using angler diaries: The role of commercial fishing, predation and temperature - DTU Orbit (25/12/2018)

62 years of population dynamics of European perch (Perca fluviatilis) in a mesotrophic lake tracked using angler diaries: The role of commercial fishing, predation and temperature

Standardised angler diaries could produce useful proxy data for assessing fish population density and size distribution, but few rigorous studies about their utility exist. We use 62 years of angling diary data (1949–2010), from a large mesotrophic lake, to investigate population structure (abundance, mean size and record size) of European perch (Perca fluviatilis L.) in relation to the impact of three commercial fishers with different fishing strategies, pike (Esox lucius L.) predation and temperature. We found that anglers' harvest rates of perch varied by a factor of 10 over time, indicating large variation in population abundance over decadal time scales. Our statistical analysis revealed that the anglers’ harvest rates of perch were related to pike CPUE (proxy of pike predation), temperature and commercial fishing directly through the harvest of perch and indirectly through the harvest of pike, the top predator of the lake. The size distribution and growth rates of perch caught by anglers also changed substantially during the study period, most likely controlled by density-dependent mechanisms as well as size-selective commercial harvest. The effect of selective harvest on size-structure was stronger than ecological density dependence. We conclude that commercial harvesting may exert strong impacts on the quality of the angling experiences, at least in the studied case. Moreover, our work showcases the value of detailed angler diaries to study and monitor changes in freshwater fish populations, but it also underlines the need for supplementary data on biotic and abiotic factors to reach the full potential of angler diary data.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Freshwater Fisheries Ecology, Section for Oceans and Arctic, Humboldt University of Berlin
Contributors: Skov, C., Jansen, T., Arlinghaus, R.
Pages: 71-79
Publication date: 2017
Peer-reviewed: Yes

Publication information
Journal: Fisheries Research
Volume: 195
ISSN (Print): 0165-7836
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 1.94 SJR 0.941 SNIP 0.959
Web of Science (2017): Impact factor 1.874
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.21 SJR 1.183 SNIP 1.153
Web of Science (2016): Impact factor 2.185
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 2.01 SJR 1.092 SNIP 1.131
Web of Science (2015): Impact factor 2.23
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 2.17 SJR 1.122 SNIP 1.305
Web of Science (2014): Impact factor 1.903
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 1.85 SJR 1.049 SNIP 1.167
Web of Science (2013): Impact factor 1.843
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 1.78 SJR 0.948 SNIP 1.189