

Mediterranean Marine Science

Vol 15, No 1 (2014)

Vol. 15, No 1 (unpublished)



New Fisheries-related data from the Mediterranean Sea (April 2014)

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doi: [10.12681/mms.738](https://doi.org/10.12681/mms.738)

To cite this article:

STERGIU, K., BOBORI, D., EKMEKÇI, F., GÖKOĞLU, M., KARACHLE, P., MINOS, G., ÖZVAROL, Y., SALVARINA, I., TARKAN, A., & VILIZZI, L. (2014). New Fisheries-related data from the Mediterranean Sea (April 2014). *Mediterranean Marine Science*, 15(1), 213–224. <https://doi.org/10.12681/mms.738>

Supplementary Data

Collective article B

New Fisheries-related data from the Mediterranean Sea (April, 2014)

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Mediterranean Marine Science, 15 (1), 213-214.

3. Natural diet of common carp (*Cyprinus carpio* L., 1758) in Anatolia (Turkey): a review

By L. Vilizzi, F.G. Ekmekçi and A.S. Tarkan

Online Supplement 1

Statistical analysis

Differences between waterbody types (i.e. man-made reservoirs and natural lakes) in the diet composition of common carp were analysed using permutational multivariate analysis of variance (PERMANOVA). The Bray-Curtis dissimilarity index was applied on presence-absence data in order to produce a distance matrix and differences between waterbody types were tested based on a single-factor experimental design (9999 permutations of the raw data; $\alpha = 0.05$). Non-metric multi-dimensional scaling (NMDS) was used as an ordination method, and a dendrogram plot also was generated through cluster analysis (group average). Statistical analyses were carried out in PERMANOVA+ for PRIMER v6 (Anderson *et al.*, 2008).

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Online Supplement 2

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Table S1. Food items making up common carp natural diet in waterbodies of Anatolia. Taxonomy after <http://www.itis.gov> (accessed 08/01/2014).

	Man-made reservoirs								Natural lakes													
	Gelingüllü Reservoir	Gelingüllü Reservoir	Hirfanlı Reservoir	Hirfanlı Reservoir	Hirfanlı Reservoir	Keban Reservoir	Lake Akşehir	Lake Akşehir	Bafra Balık Lakes	Lake Beyşehir	Lake Eğirdir	Lake Gökçöy	Lake İznik	Lake Kuş (Manyas)	Lake Marmara	Lake Mogan	Lake Mogan	Lake Nazik	Lake Sapanca	Lake Süleyman	Lake Ulubat (Apoliyont)	
	(1a)	(1b)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(6)	(6)	(9)	(6)	(6)	(6)	(10)	(11)	(12)	(6)	(6)	(6)	
Phytoplankton																						
Bacillariophyta																						
<i>Achnanthes</i>				√	√	√																
<i>Amphipleura</i>					√																	
<i>Amphiprora</i>				√																		
<i>Amphora</i>			√	√		√			√													
<i>Caloneis</i>			√	√																		
<i>Cocconeis</i>	√	√	√	√		√			√													
<i>Craticula</i>												√										
<i>Cyclotella</i>	√	√	√	√	√	√			√											√		
<i>Cymatopleura</i>	√	√	√	√					√													
<i>Cymbella</i>	√		√		√	√			√			√								√		
<i>Denticula</i>			√																			
<i>Diatoma</i>	√	√	√	√	√	√			√													
<i>Diploneis</i>	√	√																				
<i>Epithemia</i>				√																√		
<i>Fragilaria</i>	√	√		√	√	√			√													
<i>Gomphonema</i>			√	√	√	√			√													
<i>Gyrosigma</i>	√	√	√	√		√			√			√										
<i>Hantzschia</i>			√																			
<i>Licmophora</i>					√																	
<i>Melosira</i>	√	√	√	√	√				√												√	
<i>Navicula</i>	√	√	√	√	√	√			√			√									√	
<i>Nitzschia</i>	√	√	√	√	√	√			√			√									√	
<i>Pinnularia</i>				√	√				√													
<i>Rhoicosphenia</i>			√	√		√			√													
<i>Rhopalodia</i>				√																		
<i>Stauroneis</i>						√																
<i>Surirella</i>	√	√	√	√	√	√			√													
<i>Synedra</i>	√	√	√	√	√	√			√												√	
<i>Tabellaria</i>												√										
<i>Tetracyclus</i>									√													
Undefined								√									√					
Charophyta																						
<i>Closterium</i>					√				√													
<i>Cosmarium</i>			√	√		√			√		√									√		
<i>Euastrum</i>									√													
<i>Mougeotia</i>				√																		
<i>Nitella</i>									√													
<i>Spirogyra</i>		√		√	√				√		√										√	

(continued)

Table S1 (continued)

	Man-made reservoirs								Natural lakes													
	Gelingüllü Reservoir (1a)	Gelingüllü Reservoir (1b)	Hirfanlı Reservoir (2)	Hirfanlı Reservoir (3)	Hirfanlı Reservoir (4)	Keban Reservoir (5)	Lake Akşehir (6)	Lake Akşehir (7)	Bafra Balık Lakes (8)	Lake Beyşehir (6)	Lake Eğirdir (6)	Lake Gököy (9)	Lake İznik (6)	Lake Kuş (Manyas) (6)	Lake Marmara (6)	Lake Mogan (10)	Lake Mogan (11)	Lake Nazik (12)	Lake Sapanca (6)	Lake Süleyman (6)	Lake Ulubat (Apolyont) (6)	
<i>Staurastrum</i>				√					√													√
<i>Zygnema</i>	√	√		√	√							√										
Chlorophyta																						
<i>Actidesmium</i>						√																
<i>Ankistrodesmus</i>				√	√	√			√			√										
<i>Cladophora</i>						√																
<i>Coelastrum</i>	√	√	√																			
<i>Keratococcus</i>						√																
<i>Kirchneriella</i>				√																		√
<i>Monoraphidium</i>									√													
<i>Oedogonium</i>									√													
<i>Oocystis</i>			√	√	√																	√
<i>Pandorina</i>									√													
<i>Pediastrum</i>	√	√	√	√	√				√			√										
<i>Scenedesmus</i>		√	√	√	√				√			√										√
<i>Stigeoclonium</i>				√																		
<i>Tetraedron</i>				√		√																
<i>Ulothrix</i>	√	√																				
Undefined								√														
Cyanophycota																						
<i>Anabaena</i>				√	√	√			√			√										
<i>Aphanizomenon</i>					√																	
<i>Chroococcus</i>				√	√	√																
<i>Gloeotrichia</i>			√			√																
<i>Lyngbya</i>			√	√	√	√																
<i>Merismopedia</i>				√	√	√			√			√										
<i>Microcystis</i>				√	√				√			√										√
<i>Nostoc</i>				√	√	√																
<i>Oscillatoria</i>	√	√	√	√	√	√			√			√										√
<i>Schizothrix</i>						√																
<i>Spirulina</i>				√		√																
<i>Synploca</i>						√																
Euglenophycota																						
<i>Euglena</i>	√	√	√	√	√				√			√										√
<i>Phacus</i>			√	√																		
Pyrrhophycota																						
<i>Ceratium</i>				√																		
<i>Peridinium</i>				√	√				√													
Rhodophyta																						
<i>Lemanea</i>		√																				
Xanthophyta																						
<i>Vaucheria</i>									√													
Zooplankton																						
Cladocera																						
<i>Alona</i>	√	√	√	√	√							√										√
<i>Bosmina</i>	√	√	√				√		√	√	√	√	√	√	√						√	√
<i>Ceriodaphnia</i>			√		√	√																√
<i>Chydorus</i>	√	√			√																	√
<i>Daphnia</i>	√	√	√	√	√	√			√			√	√	√	√						√	√
<i>Diaphanosoma</i>			√	√																		√
<i>Leydigia</i>				√																		

(continued)

Table S1 (continued)

	Man-made reservoirs								Natural lakes													
	Gelingüllü Reservoir	Gelingüllü Reservoir	Hirfanlı Reservoir	Hirfanlı Reservoir	Hirfanlı Reservoir	Keban Reservoir	Lake Akşehir	Lake Akşehir	Bafra Balık Lakes	Lake Beyşehir	Lake Eğirdir	Lake Gököy	Lake Iznik	Lake Kuş (Manyas)	Lake Marmara	Lake Mogan	Lake Mogan	Lake Nazik	Lake Sapanca	Lake Süleyman	Lake Ulubat (Apolyont)	
	(1a)	(1b)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(6)	(6)	(9)	(6)	(6)	(6)	(10)	(11)	(12)	(6)	(6)	(6)	
<i>Macrothrix</i>	√	√																				
<i>Pleuroxus</i>				√																		
Undefined																	√					
Copepoda																						
<i>Canthocamptus</i>	√	√																				
<i>Cyclops</i>	√	√	√	√	√	√				√	√			√	√			√		√	√	√
<i>Diatomus</i>			√	√	√						√							√				
Undefined										√			√	√		√				√	√	√
Malacostraca																						
<i>Astacus</i>												√										
<i>Gammarus</i>									√			√										
<i>Mysis</i>												√										
Ostracoda																						
<i>Cypridopsis</i>												√										
<i>Cypris</i>			√	√	√							√						√				
Undefined	√	√								√					√	√				√	√	
Rotifera																						
<i>Ascomorpha</i>																						√
<i>Asplanchna</i>																						√
<i>Bdelloidea</i>	√																					
<i>Brachionus</i>																						√
<i>Cephalodella</i>																						√
<i>Filinia</i>					√	√																√
<i>Hexarthra</i>					√	√																√
<i>Keratella</i>	√	√	√	√	√	√			√													√
<i>Lecane</i>	√	√	√		√	√																√
<i>Polyarthra</i>					√	√																√
<i>Synchaeta</i>					√	√																√
<i>Triarthra</i>			√																			√
Undefined																√		√				√
Benthic invertebrates																						
Diptera																						
<i>Chironomus</i>			√	√	√							√						√	√			
<i>Eucorethra</i>				√	√													√				
Undefined	√	√	√				√		√	√		√	√	√	√	√				√	√	√
Gastropoda																						
<i>Gyraulus</i>												√										
<i>Physa</i>												√										
Undefined				√	√				√	√											√	√
Nematoda		√							√													
Oligochaeta			√	√														√	√			
Coleoptera																						
<i>Chaetophora</i>									√													
Detritus				√								√					√					
Plant material	√			√			√					√				√	√		√	√		
Fish																						
Eggs	√	√	√											√	√				√	√	√	
Parts	√	√						√	√													

^{1a} Kırankaya (2007) (Mirror carp); ^{1b} Kırankaya (2007) (Scale carp); ² Karaca (1995); ³ Gürbüz (2004); ⁴ Gül *et al.* (2010); ⁵ Pala *et al.* (2003); ⁶ Numann (1958); ⁷ Çetinkaya (1992); ⁸ Yılmaz *et al.* (2003); ⁹ Turker (2006–2007); ¹⁰ Tanyolaç and Karabatak (1974); ¹¹ Atasagun (1991) (same as Atasagun & Karabatak, 1995); ¹² Şen (2001).

5. Reproductive biology of common carp (*Cyprinus carpio* L., 1758) in Anatolia (Turkey): a review

By L. Vilizzi, A.S. Tarkan and F.G. Ekmekçi

Online Supplement 3

Statistical analyses

Differences in mean age at maturity, spawning period duration, absolute fecundity, relative fecundity and egg diameter with waterbody types (man-made reservoirs and natural lakes; Sakarya River was not included since it was the only watercourse in the dataset) were analysed using permutational univariate analysis of variance (PERMANOVA). Following data normalisation, the Euclidean distance was used to produce a distance matrix and differences between waterbody types were tested based on a single-factor experimental design (9999 permutations of the raw data; $\alpha = 0.05$). Statistical analyses were carried out in PERMANOVA+ for PRIMER v6 (Anderson *et al.*, 2008). Briefly, the advantage of PERMANOVA over traditional parametric analysis of variance is that the stringent assumptions of normality and homoscedasticity in the data, which are very often unrealistic when dealing with ecological datasets, are considerably relaxed (Anderson, 2001).

Trends in monthly GSI data were analysed using Dynamic Factor Analysis (DFA) after centering of the data and using a diagonal matrix. DFA is a multivariate technique estimating underlying common trends in multiple time series (Zuur *et al.*, 2003). DFA was applied using Brodgar 2.5.7 (<http://www.brodgar.com>).

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Online Supplement 4

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