

Data Set Citation

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Epinox C , Barbarin M , Castrec J , Churlaud C , Dabrowski M , DAVID R , Fontaine Q , Fontanaud A , Fullgrabe L , Gillet C , Gobert S , Huet V , Lejeune P , Le Vern L , Madon B , Marengo M , Pignon-Mussaud C , Pillet M , Receveur J , and Rideau P. 2022.

Water Interdisciplinary Biology and Ecology database “WIBE”: Towards FAIR, open and interdisciplinary data on biomarkers to monitor the ecological status of coastal waters.

Water Interdisciplinary Biology and Ecology database “WIBE” (<https://pndb.fr/metacat/metacat/Water Interdisciplinary Biology and Ecology database “WIBE”/default>)

General Information	
Title:	Water Interdisciplinary Biology and Ecology database “WIBE”: Towards FAIR, open and interdisciplinary data on bior waters.
Identifier:	autogen.2022081304461235329.1
Abstract:	The Water Interdisciplinary Biology and Ecology database “WIBE” database presents data from different scientific projects prog multi-biomarker study. This database gathers biological data of selected bioindicator species and environmental contextual dat concentrations of trace elements and organic pollutants were collected in the waters as well as biomarkers of effect and exposi after various analyses, were cleaned and reworked to meet FAIR and open data principles. We focused on developing a data c standards in order to make it as reusable as possible for the ecotoxicology research community. All datasets are available on tl The current dataset can be used by port and coastal water managers but also by marine ecotoxicology researchers who will be database on marine biomarkers allowing the monitoring of coastal water contamination and thus the proposal of remediation m
Keywords:	<div><div><div>◦ biomarker</div><div>◦ marine</div><div>◦ aquatic</div><div>◦ water</div><div>◦ port</div><div>◦ pollution</div><div>◦ Corsica</div><div>◦ La Rochelle</div><div>◦ ecotoxicology</div><div>◦ interdisciplinary</div><div>◦ WIBE</div><div>◦ ecology</div><div>◦ biology</div><div>◦ FAIR principles</div><div>◦ open science</div><div>◦ database</div></div></div>
Publication Date:	2022-06-15

Data Table, Image, and Other Data Details:	
Metadata download	Ecological Metadata Language (EM
Data Table:	
Name:	Field_organisms_samples.csv
Description:	Content of Field_organisms_samples.csv

Physical Structure Description:

Object Name:	Field_organisms_samples.csv		
Size:	95882 bytes		
Authentication:	4ddea7e077afd7088ff4ffd65699ad40 Caculated By MD5		
Text Format:	Number of Header Lines:	1	
	Record Delimiter:	\r\n	
	Attribute Orientation:	column	
	Simple Delimited:		Field Delim

Number Of Records: 927

Attribute(s) Info:

Name	Column Label	Definition	Type of Value	Measurement Type	Measurement Domain
Field_organism_sample_ID		Unique identifier of the collected organism or pool of organisms.	string	nominal	Def Unique identifier of the c organism or pool of orga
Fieldwork_ID		Unique identifier of the fieldwork carried out on a specific date and located at a specific station.	string	nominal	Def Unique identifier of the f carried out on a specific and located at a specific
Field_organism_sample_species_name		Species name of the sampled organism if known. If the species is not known, the genus name followed by sp. is used.	string	nominal	Domain Info
TAXREF_ID		Identifier of the sampled organism species if known according to the taxonomic repository TAXREF. If the species is not known, the genus given by the TAXREF is used, followed by sp..	string	nominal	Domain Info
Lab_pool_ID		Unique identifier of the pool of organism(s).	string	nominal	Def Unique identifier of the p organism(s).

Data Table:

Name:			Fieldwork.csv		
Description:			Content of Fieldwork.csv		
Physical Structure Description:					
Object Name:		Fieldwork.csv			
Size:		13728 bytes			
Authentication:		65b2516d631e355053d250b3bd049232 Caculated By MD5			
Text Format:		Number of Header Lines:			1
		Record Delimiter:			\r\n
		Attribute Orientation:			column
		Simple Delimited:			Field Delime
Number Of Records:			151		
Attribute(s) Info:					
Name	Column Label	Definition	Type of Value	Measurement Type	Measurement Domain

Fieldwork_ID		Unique identifier of the fieldwork carried out on a specific date and located at a specific station.	string	nominal	Def Unique identifier of the fieldwork carried out on a specific date and located at a specific station.
Sampling_station_ID		Accurate sampling location in a port.	string	nominal	Def Accurate sampling location in a port.
Sampling_date		Date of the sampling.	date	dateTime	
Project_ID		Acronym of the monetary fund used by the project linked to the identifying number of the project given by the monetary fund.	string	nominal	Def Acronym of the monetary fund used by the project linked to the identifying number of the project given by the monetary fund.
Sampling_month_value		Month of the year in which the sampling took place.	string	nominal	Def Month of the year in which the sampling took place.
Sampling_year_value		Year in which the sampling took place.	date	dateTime	

Data Table:

Name:	Project.csv
Description:	Content of Project.csv
Physical Structure Description:	
Object Name:	Project.csv
Size:	785 bytes
Authentication:	029068073a20f3e5544e86d381fdd5cb Caculated By MD5
Text Format:	Number of Header Lines: 1
	Record Delimiter: \r\n
	Attribute Orientation: column
	Simple Delimited: Field Delimited

Number Of Records:	2
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Attribute(s) Info:

Name	Column Label	Definition	Type of Value	Measurement Type	Measurement Domain
Project_ID		Acronym of the monetary fund used by the project linked to the identifying number of the project given by the monetary fund.	string	nominal	Def Acronym of the monetary fund used by the project linked to the identifying number of the project given by the monetary fund.
Project_acronym		Acronym of the scientific project from which the data are drawn.	string	nominal	Def Acronym of the scientific project from which the data are drawn.
Project_name		Full name of the scientific project from which the data are drawn.	string	nominal	Def Full name of the scientific project from which the data are drawn.
Project_number_value		Identifying number of the scientific project from which the data are drawn given by the monetary fund.	string	nominal	Def Identifying number of the scientific project from which the data are drawn given by the monetary fund.
Project_funding_name		Origin of the monetary fund used by the project.	string	nominal	Def Origin of the monetary fund used by the project.
Project_coordinator_name		Name of the project coordinator.	string	nominal	Domain Info
Project_coordinator_activity_keywords		Field of work of the project coordinator.	string	nominal	Def Field of work of the project coordinator.
Project_beginning_date		Start date of the project.	date	dateTime	
Project_end_date		Date of the project completion.	date	dateTime	

Data Table:

Physical Structure Description:

Object Name:	TAXREF.csv		
Size:	89 bytes		
Authentication:	2ae58fe83b9b0a8ba61932947be75d0d Caculated By MD5		
Text Format:	Number of Header Lines:	1	
	Record Delimiter:	\r\n	
	Attribute Orientation:	column	
	Simple Delimited:		Field Delimeter

Number Of Records: 4

Attribute(s) Info:

Name	Column Label	Definition	Type of Value	Measurement Type	Measurement Domain
TAXREF_ID		Identifier of the sampled organism species if known according to the taxonomic repository TAXREF. If the species is not known, the genus given by the TAXREF is used, followed by sp..	string	nominal	Def Identifier of the sampled organism species if known according to the taxonomic repository TAXREF. If the species is not known, the genus given by the TAXREF is used, followed by sp..

Data Table:

Name:	Water_samples_measurements.csv
Description:	Water_samples_measurements.csv

Physical Structure Description:

Object Name:	Water_samples_measurements.csv		
Size:	55049 bytes		
Authentication:	eeafa7536d922594288eb8c210e3ed52 Caculated By MD5		
Text Format:	Number of Header Lines:	1	
	Record Delimiter:	\r\n	
	Attribute Orientation:	column	
	Simple Delimited:		Field Delimeter

Number Of Records: 133

Attribute(s) Info:

Name	Column Label	Definition	Type of Value	Measurement Type	Measurement Domain
Water_sample_ID		Unique identifier of a water sample.	string	nominal	Def Unique identifier of a water sample.
Fieldwork_ID		Unique identifier of the fieldwork carried out on a specific date and located at a specific station.	string	nominal	Def Unique identifier of the fieldwork carried out on a specific date and located at a specific station.
Water_subsurface_temperature_celsius		Temperature of the subsurface water at the sampling station	float	ratio	Unit celsius Type real

		measured in celsius degrees.			<div><div>Min</div>5.28</div> <div><div>Max</div>24.71</div>
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Water_subsurface_nitrate_concentration_μM		Concentration of nitrate measured in micromol per liter of subsurface water taken at the sampling station.	float	ratio	<div><div><div><div><div>Unit</div><div>micromolePerLiter</div></div><div><div>Type</div><div>real</div></div><div><div>Min</div><div>0.16</div></div><div><div>Max</div><div>14.42</div></div></div></div></div>
Water_subsurface_silica_concentration_μM		Concentration of silica measured in micromol per liter of subsurface water taken at the sampling station.	float	ratio	<div><div><div><div><div>Unit</div><div>micromolePerLiter</div></div><div><div>Type</div><div>real</div></div><div><div>Min</div><div>0.29</div></div><div><div>Max</div><div>75.76</div></div></div></div></div>
Water_subsurface_phosphate_concentration_μM		Concentration of phosphate measured in micromol per liter of subsurface water.	float	ratio	<div><div><div><div><div>Unit</div><div>micromolePerLiter</div></div><div><div>Type</div><div>real</div></div><div><div>Min</div><div>0.02</div></div><div><div>Max</div><div>0.63</div></div></div></div></div>

Water_subsurface_ammonium_concentration_μM		Concentration of ammonium measured in micromol per liter of subsurface water taken at the sampling station.	float	ratio	<div><div>Unit</div><div>Type</div><div>Min</div><div>Max</div></div> <div><div>micromolePerLiter</div><div>real</div><div>0.11</div><div>5.21</div></div>
Water_surface_Ag_concentration_μg_per_L		Concentration of silver in microgram per liter of surface water.	float	ratio	<div><div>Unit</div><div>Type</div></div> <div><div>microgramsPerLiter</div><div>real</div></div>
Water_surface_Al_concentration_μg_per_L		Concentration of aluminium in microgram per liter of surface water.	float	ratio	<div><div>Unit</div><div>Type</div><div>Min</div><div>Max</div></div> <div><div>microgramsPerLiter</div><div>real</div><div>223.5</div><div>223.5</div></div>
Water_surface_As_concentration_μg_per_L		Concentration of arsenic in microgram per liter of surface	float	ratio	<div><div>Unit</div><div>Type</div></div> <div><div>microgramsPerLiter</div><div>real</div></div>

		water.			<div><div><div>Min</div><div>Max</div></div><div><div>14.84</div><div>14.84</div></div></div>
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Water_surface_Ba_concentration_µg_per_L		Concentration of barium in microgram per liter of surface water.	float	ratio	<div><div><div>Unit</div><div>Type</div></div><div><div>microgramsPerLiter</div><div>real</div></div></div>
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Water_surface_Cd_concentration_µg_per_L		Concentration of cadmium in microgram per liter of surface water.	float	ratio	<div><div><div>Unit</div><div>Type</div></div><div><div>microgramsPerLiter</div><div>real</div></div></div>
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Water_surface_Co_concentration_µg_per_L		Concentration of cobalt in microgram per liter of surface water.	float	ratio	<div><div><div>Unit</div><div>Type</div><div>Min</div><div>Max</div></div><div><div>microgramsPerLiter</div><div>real</div><div>1.02</div><div>1.66</div></div></div>
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Water_surface_Cr_concentration_µg_per_L		Concentration of chromium in microgram per liter of	float	ratio	<div><div><div>Unit</div><div>Type</div></div><div><div>microgramsPerLiter</div><div>real</div></div></div>
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		surface water.			
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Water_surface_Cu_concentration_µg_per_L		Concentration of copper in microgram per liter of surface water.	float	ratio	Unit microgramsPerLiter Type real Min 2.56 Max 18.00
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Water_surface_Fe_concentration_µg_per_L		Concentration of iron in microgram per liter of surface water.	float	ratio	Unit microgramsPerLiter Type real
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Water_surface_In_concentration_µg_per_L		Concentration of indium in microgram per liter of surface water.	float	ratio	Unit microgramsPerLiter Type real
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Water_surface_Mn_concentration_µg_per_L		Concentration of manganese in microgram per liter of surface water.	float	ratio	Unit microgramsPerLiter Type real Min 1.10 Max 18.94
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Water_surface_Mo_concentration_µg_per_L		Concentration of molybdenum in microgram per liter of surface water.	float	ratio	Unit microgramsPerLiter Type real Min 11.02 Max 12.72
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Water_surface_Ni_concentration_µg_per_L		Concentration of nickel in microgram per liter of surface water.	float	ratio	Unit microgramsPerLiter Type real
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Water_surface_Pb_concentration_µg_per_L		Concentration of lead in microgram per liter of surface water.	float	ratio	Unit microgramsPerLiter Type real Min 1.14 Max 8.06
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Water_surface_Sb_concentration_µg_per_L		Concentration of tin in microgram per liter of surface water.	float	ratio	Unit microgramsPerLiter Type real Min 2.14 Max 2.86
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Water_surface_Se_concentration_µg_per_L		Concentration of selenium in microgram per liter of surface water.	float	ratio	Unit microgramsPerLiter Type real Min 47.82 Max 85.16
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Water_surface_Sn_concentration_µg_per_L		Concentration of antimony in microgram per liter of surface water.	float	ratio	Unit microgramsPerLiter Type real
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Water_surface_V_concentration_µg_per_L		Concentration of vanadium in microgram per liter of surface water.	float	ratio	Unit microgramsPerLiter Type real
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Water_surface_Zn_concentration_µg_per_L		Concentration of zinc in microgram per liter of surface water.	float	ratio	<div><div>Unit</div><div>microgramsPerLiter</div></div> <div><div>Type</div><div>real</div></div>
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Water_surface_naphthalene_concentration_ng_per_L		Concentration of naphthalene in nanogram per liter of surface water.	float	ratio	<div><div>Unit</div><div>nanogramsPerLiter</div></div> <div><div>Type</div><div>real</div></div> <div><div>Min</div><div>6.8</div></div> <div><div>Max</div><div>65.4</div></div>
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Water_surface_C1_naphthalene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of molecules	float	ratio	<div><div>Unit</div><div>nanogramsPerLiter</div></div> <div><div>Type</div><div>real</div></div> <div><div>Min</div><div>11.4</div></div> <div><div>Max</div><div>13.2</div></div>
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		with a common empirical formula, i.e. naphthalene with the addition of a methyl (CH3), but with a different structural formula, as the methyl may be bonded to different atoms of the naphthalene.			
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Water_surface_C2_naphthalene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of chemical molecules with a common empirical formula, i.e. naphthalene with the addition of two methyl (CH3) or one ethyl (C2H5), but with a different structural formula, as the methyls or the ethyl may be bonded to different atoms of the naphthalene.	float	ratio	<div><div>Unit</div><div>nanogramsPerLiter</div><div>Type</div><div>real</div><div>Min</div><div>5.3</div><div>Max</div><div>26.2</div></div>
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Water_surface_C3_naphthalene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of chemical molecules with a common empirical formula, i.e. naphthalene plus three methyls (CH3), one ethyl (C2H5) and one methyl, or one propyl (C3H7), but with a different structural formula, as the methyls, the ethyl and the methyl, or the propyl may be bonded to different atoms of the naphthalene.	float	ratio	<div><div>Unit</div><div>nanogramsPerLiter</div><div>Type</div><div>real</div><div>Min</div><div>5.2</div><div>Max</div><div>23.2</div></div>
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Water_surface_benzothiophene_concentration_ng_per_L		Concentration of benzothiophene in nanogram per liter of surface water.	float	ratio	<div><div>Unit</div><div>nanogramsPerLiter</div><div>Type</div><div>real</div></div>
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Water_surface_C1_benzothiophene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of molecules with a common empirical formula, i.e. benzothiophene with the addition of a methyl (CH3), but with a different structural formula, as the methyl may be bonded to different atoms of the benzothiophene.	float	ratio	<div>Unit nanogramsPerLiter</div> <div>Type real</div>
Water_surface_C2_benzothiophene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of chemical molecules with a common empirical formula, i.e. benzothiophene with the addition of two methyl (CH3) or one ethyl (C2H5), but with a different structural formula, as the methyls or the ethyl may be bonded to different atoms of the benzothiophene.	float	ratio	<div>Unit nanogramsPerLiter</div> <div>Type real</div>
Water_surface_C3_benzothiophene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of chemical molecules with a common empirical formula, i.e. benzothiophene plus three methyls (CH3), one ethyl (C2H5) and one methyl, or one propyl (C3H7), but with a different structural formula, as the methyls, the ethyl and the methyl, or the propyl may be bonded to different atoms of the benzothiophene.	float	ratio	<div>Unit nanogramsPerLiter</div> <div>Type real</div>
Water_surface_biphenyl_concentration_ng_per_L		Concentration of biphenyl in nanogram per liter of surface water.	float	ratio	<div>Unit nanogramsPerLiter</div> <div>Type real</div>

Water_surface_acenapthylene_concentration_ng_per_L		Concentration of acenapthylene in nanogram per liter of surface water.	float	ratio	<div><div>Unit nanogramsPerLiter</div><div>Type real</div><div>Min 2</div><div>Max 2</div></div>
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Water_surface_acenaphthene_concentration_ng_per_L		Concentration of acenaphthene in nanogram per liter of surface water.	float	ratio	<div><div>Unit nanogramsPerLiter</div><div>Type real</div></div>
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Water_surface_fluorene_concentration_ng_per_L		Concentration of fluorene in nanogram per liter of surface water.	float	ratio	<div><div>Unit nanogramsPerLiter</div><div>Type real</div><div>Min 7.2</div><div>Max 7.2</div></div>
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Water_surface_C1_fluorene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of molecules with a common empirical formula, i.e. fluorene with the addition of a methyl (CH3), but with a different structural formula, as the methyl may be bonded to different atoms of the fluorene.	float	ratio	<div><div>Unit nanogramsPerLiter</div><div>Type real</div></div>
Water_surface_C2_fluorene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of chemical molecules with a common empirical formula, i.e. fluorene with the addition of two methyl (CH3) or one ethyl (C2H5), but with a different structural formula, as the methyls or the ethyl may be bonded to different atoms of the fluorene.	float	ratio	<div><div>Unit nanogramsPerLiter</div><div>Type real</div><div>Min 5.4</div><div>Max 9.2</div></div>
Water_surface_C3_fluorene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of chemical molecules with a common empirical formula, i.e. fluorene plus three methyls (CH3), one ethyl (C2H5) and one methyl, or one propyl (C3H7), but with a	float	ratio	<div><div>Unit nanogramsPerLiter</div><div>Type real</div><div>Min 5.4</div><div>Max 5.4</div></div>

different structural formula, as the methyls, the ethyl and the methyl, or the propyl may be bonded to different atoms of the fluorene.

Water_surface_phenanthrene_concentration_ng_per_L		Concentration of phenanthrene in nanogram per liter of surface water.	float	ratio	<div><div>Unit</div><div>nanogramsPerLiter</div><div>Type</div><div>real</div></div>
Water_surface_anthracene_concentration_ng_per_L		Concentration of anthracene in nanogram per liter of surface water.	float	ratio	<div><div>Unit</div><div>nanogramsPerLiter</div><div>Type</div><div>real</div></div>
Water_surface_C1_phenanthrene_and_anthracene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of molecules with a common empirical formula, i.e. phenanthrene or anthracene with the addition of a methyl (CH3), but with a different structural formula, as the methyl may be bonded to different atoms of the phenanthrene or the anthracene.	float	ratio	<div><div>Unit</div><div>nanogramsPerLiter</div><div>Type</div><div>real</div></div>

Water_surface_C2_phenanthrene_and_anthracene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of chemical molecules with a common empirical formula, i.e. phenanthrene or anthracene with the addition of two methyl (CH3) or one ethyl (C2H5), but with a different structural formula, as the methyls or the ethyl may be bonded to different atoms of the phenanthrene or the anthracene.	float	ratio	<div><div>Unit</div><div>nanogramsPerLiter</div><div>Type</div><div>real</div></div>
Water_surface_C3_phenanthrene_and_anthracene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of chemical molecules with a common empirical formula, i.e. phenanthrene or anthracene plus three methyls (CH3), one ethyl (C2H5) and one methyl, or one propyl (C3H7), but with a different structural formula, as the methyls, the ethyl and the methyl, or the propyl may be bonded to different atoms of the phenanthrene or the anthracene.	float	ratio	<div><div>Unit</div><div>nanogramsPerLiter</div><div>Type</div><div>real</div></div>
Water_surface_dibenzothiophene_concentration_ng_per_L		Concentration of dibenzothiophene in nanogram per liter of surface water.	float	ratio	<div><div>Unit</div><div>nanogramsPerLiter</div><div>Type</div><div>real</div></div>

Water_surface_C1_dibenzothiophene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of molecules with a common empirical formula, i.e. dibenzothiophene with the addition of a methyl (CH3), but with a different structural formula, as the methyl may be bonded to different atoms of the dibenzothiophene.	float	ratio	<div>Unit nanogramsPerLiter</div> <div>Type real</div>
Water_surface_C2_dibenzothiophene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of chemical molecules with a common empirical formula, i.e. dibenzothiophene with the addition of two methyl (CH3) or one ethyl (C2H5), but with a different structural formula, as the methyls or the ethyl may be bonded to different atoms of the dibenzothiophene.	float	ratio	<div>Unit nanogramsPerLiter</div> <div>Type real</div>
Water_surface_C3_dibenzothiophene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of chemical molecules with a common empirical formula, i.e. dibenzothiophene plus three methyls (CH3), one ethyl (C2H5) and one methyl, or one propyl (C3H7), but with a different structural formula, as the methyls, the ethyl and the methyl, or the propyl may be bonded to different atoms of the dibenzothiophene.	float	ratio	<div>Unit nanogramsPerLiter</div> <div>Type real</div>
Water_surface_fluoranthene_concentration_ng_per_L		Concentration of fluoranthene in nanogram per liter of	float	ratio	<div>Unit nanogramsPerLiter</div> <div>Type real</div>

surface water.

Water_surface_pyrene_concentration_ng_per_L		Concentration of pyrene in nanogram per liter of surface water.	float	ratio	Unit nanogramsPerLiter Type real
Water_surface_C1_fluoranthene_and_pyrene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of molecules with a common empirical formula, i.e. fluoranthene or pyrene with the addition of a methyl (CH3), but with a different structural formula, as the methyl may be bonded to different atoms of the fluoranthene or the pyrene.	float	ratio	Unit nanogramsPerLiter Type real
Water_surface_C2_fluoranthene_and_pyrene_concentration_ng_per_L		Concentration in	float	ratio	Unit nanogramsPerLiter

		nanogram per liter of surface water of a group of chemical molecules with a common empirical formula, i.e. fluoranthene or pyrene with the addition of two methyl (CH3) or one ethyl (C2H5), but with a different structural formula, as the methyls or the ethyl may be bonded to different atoms of the fluoranthene or the pyrene.			Type real
Water_surface_C3_fluoranthene_and_pyrene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of chemical molecules with a common empirical formula, i.e. fluoranthene or pyrene plus three methyls (CH3), one ethyl (C2H5) and one methyl, or one propyl (C3H7), but with a different structural formula, as the methyls, the ethyl and the methyl, or the propyl may be bonded to different atoms of the fluoranthene or the pyrene.	float	ratio	Unit nanogramsPerLiter Type real
Water_surface_benz_a_anthracene_concentration_ng_per_L		Concentration of benz[a]anthracene in nanogram per liter of surface water.	float	ratio	Unit nanogramsPerLiter Type real
Water_surface_chrysene_concentration_ng_per_L		Concentration of chrysene in nanogram per liter of surface water.	float	ratio	Unit nanogramsPerLiter Type real Min 1.7

Water_surface_C1_chrysene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of molecules with a common empirical formula, i.e. chrysene with the addition of a methyl (CH3), but with a different structural formula, as the methyl may be bonded to different atoms of the chrysene.	float	ratio	Unit nanogramsPerLiter Type real
Water_surface_C2_chrysene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of chemical molecules with a common empirical formula, i.e. chrysene with the addition of two methyl (CH3) or one ethyl (C2H5), but with a different structural formula, as the methyls or the ethyl may be bonded to different atoms of the chrysene.	float	ratio	Unit nanogramsPerLiter Type real
Water_surface_C3_chrysene_concentration_ng_per_L		Concentration in nanogram per liter of surface water of a group of chemical molecules with a common empirical formula, i.e. chrysene plus three methyls (CH3), one ethyl (C2H5) and one methyl, or one propyl (C3H7), but with a different structural formula, as the	float	ratio	Unit nanogramsPerLiter Type real

		methyIs, the ethyl and the methyl, or the propyl may be bonded to different atoms of the chrysene.			
Water_surface_benzo_b_k_fluranthene_concentration_ng_per_L		Concentration of benzo[b+k]fluranthene in nanogram per liter of surface water.	float	ratio	<div><div>Unit</div><div>nanogramsPerLiter</div><div>Type</div><div>real</div><div>Min</div><div>1.9</div><div>Max</div><div>4.1</div></div>
Water_surface_benzo_e_pyrene_concentration_ng_per_L		Concentration of benzo[e]pyrene in nanogram per liter of surface water.	float	ratio	<div><div>Unit</div><div>nanogramsPerLiter</div><div>Type</div><div>real</div><div>Min</div><div>2.3</div><div>Max</div><div>2.3</div></div>
Water_surface_benzo_a_pyrene_concentration_ng_per_L		Concentration of benzo[a]pyrene in nanogram per liter of surface water.	float	ratio	<div><div>Unit</div><div>nanogramsPerLiter</div><div>Type</div><div>real</div><div>Min</div><div>1</div><div>Max</div><div>1</div></div>
Water_surface_ptylene_concentration_ng_per_L		Concentration of perylene in nanogram per liter of surface water.	float	ratio	<div><div>Unit</div><div>nanogramsPerLiter</div><div>Type</div><div>real</div><div>Min</div><div>1.1</div><div>Max</div><div>1.1</div></div>

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Water_surface_indeno_1_2_3_cd_pyrene_concentration_ng_per_L		Concentration of indeno[1,2,3-cd]pyrene in nanogram per liter of surface water.	float	ratio	Unit nanogramsPerLiter Type real
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Water_surface_dibenz_a_h_anthracene_concentration_ng_per_L		Concentration of dibenz[a,h]pyrene in nanogram per liter of surface water.	float	ratio	Unit nanogramsPerLiter Type real
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Water_surface_benzo_ghi_perylene_concentration_ng_per_L		Concentration of benzo[ghi]perylene in nanogram per liter of surface water.	float	ratio	Unit nanogramsPerLiter Type real
---	--	---	-------	-------	---

Water_measurements_protocol_DOI		Digital object identifier of the publication where the protocol followed for the water sampling may be found.	string	nominal	Def Digital object identifier of the publication where the protocol followed for the water sampling may be found.
Other Entity:					
Name:		ConceptualDataModel.jpg			
Data Object Type:		image/png			
Other Entity:					
Name:		WIBE_Data_Dictionary.csv			
Data Object Type:		text/csv			

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Data Set Characteristics

Geographic Region:	
Geographic Description:	Calvi_port
Bounding Coordinates:	<div>West: 8.76163 degrees</div> <div>East: 8.76163 degrees</div> <div>North: 42.56726 degrees</div> <div>South: 42.56726 degrees</div>

Geographic Region:	
Geographic Description:	Calvi_fairing
Bounding Coordinates:	<div>West: 8.75694 degrees</div>

	East: 8.75694 degrees
	North: 42.56359 degrees
	South: 42.56359 degrees
Geographic Region:	
Geographic Description:	Calvi_oil
Bounding Coordinates:	West: 8.75768 degrees
	East: 8.75768 degrees
	North: 42.56439 degrees
	South: 42.56439 degrees
Geographic Region:	
Geographic Description:	Ile_rousse_port
Bounding Coordinates:	West: 8.93639 degrees
	East: 8.93639 degrees
	North: 42.64151 degrees
	South: 42.64151 degrees
Geographic Region:	
Geographic Description:	Ile_rousse_fairing
Bounding Coordinates:	West: 8.93554 degrees
	East: 8.93554 degrees
	North: 42.64023 degrees
	South: 42.64023 degrees
Geographic Region:	
Geographic Description:	Ile_rousse_oil
Bounding Coordinates:	West: 8.9359129 degrees
	East: 8.9359129 degrees
	North: 42.6406397 degrees
	South: 42.6406397 degrees
Geographic Region:	
Geographic Description:	St_florent_port
Bounding Coordinates:	West: 9.30031 degrees
	East: 9.30031 degrees
	North: 42.67993 degrees
	South: 42.67993 degrees
Geographic Region:	
Geographic Description:	St_florent_fairing
Bounding Coordinates:	West: 9.3009414 degrees
	East: 9.3009414 degrees

		North: 42.6798025 degrees
		South: 42.6798025 degrees
Geographic Region:		
Geographic Description:		St_florent_oil
Bounding Coordinates:		West: 9.29801 degrees
		East: 9.29801 degrees
		North: 42.68093 degrees
		South: 42.68093 degrees
Geographic Region:		
Geographic Description:		STARESO_port
Bounding Coordinates:		West: 8.72542 degrees
		East: 8.72542 degrees
		North: 42.58044 degrees
		South: 42.58044 degrees
Geographic Region:		
Geographic Description:		Diana_mussel_farm
Bounding Coordinates:		West: 9.536647 degrees
		East: 9.5366473 degrees
		North: 42.131517 degrees
		South: 42.131517 degrees
Geographic Region:		
Geographic Description:		L'Houmeau_marsh_reference
Bounding Coordinates:		West: -1.19539 degrees
		East: -1.19539 degrees
		North: 46.20382 degrees
		South: 46.20382 degrees
Geographic Region:		
Geographic Description:		Minimes_fairing
Bounding Coordinates:		West: -1.16187 degrees
		East: -1.16187 degrees
		North: 46.14675 degrees
		South: 46.14675 degrees
Geographic Region:		
Geographic Description:		Minimes_rain_waters
Bounding Coordinates:		West: -1.16605 degrees
		East: -1.16605 degrees
		North: 46.14143 degrees

South: 46.14143 degrees

Geographic Region:

Geographic Description: Minimes_oil

Bounding Coordinates:	West:	-1.16749	degrees
	East:	-1.16749	degrees
	North:	46.14688	degrees
	South:	46.14688	degrees

Time Period:

Begin: 2019-06-03

End: 2022-12-31

Taxonomic Range:

Classification:	1			
	Rank Name:	kingdom		
	Rank Value:	Animalia		
	Classification:	50		
	Rank Name:	phylum		
	Rank Value:	Echinodermata		
	Classification:	222		
	Rank Name:	class		
	Rank Value:	Holothuroidea		
	Classification:	9505681		
		Rank Name:	order	
		Rank Value:	Holothuriida	
		Classification:	9548	
			Rank Name:	
			Rank Value:	
			Classification:	

Classification:	1		
	Rank Name:	kingdom	
	Rank Value:	Animalia	
	Classification:	52	
	Rank Name:	phylum	
	Rank Value:	Mollusca	
	Classification:	137	
		Rank Name:	class

[illegible]

		Rank Name:	phylum		
		Rank Value:	Ascomycota		
		Classification:	316		
			Rank Name:	class	
			Rank Value:	Pezizomycetes	
			Classification:	1057	
				Rank Name:	order
				Rank Value:	Pezizales
				Classification:	4131
					Rank Name:
					Rank Value:
					Classification:
Classification:	Rank Value: Holothuria sp.				
Classification:	Rank Value: Mimachlamys varia				
Classification:	Rank Value: Mytilus galloprovincialis				
Classification:	Rank Value: Patella sp.				

Sampling, Processing and Quality Control Methods

Step by Step Procedures	
Step 1:	
Description:	## Method of the QUAMPO project: Three species (*Mytilus galloprovincialis, Patella sp. and Holothuria sp.*) were collected from different ports of North Corsica (France). St-Florent (42.67993, 9.30031), Ile Rousse (42.64151, 8.93639) and C site while the STARESO (42.58044, 8.72542) was chosen as the control site. ## Method of the QUALIPERTUIS Minimes* (La Rochelle, Region Nouvelle-Aquitaine). These sites were chosen following previous studies carried out to assess anthropogenic contamination: careening station (CAR), fuel station (NFS), storm water outfall (PLU) (Breitwiese 2017). The reference site selected for this study is a former oyster farm, in a semi-open environment, and not subject to anthropogenic contamination.
Sampling Area And Frequency:	## QUAMPO In situ and caging experiment In January 2020, mussels (n=17) were found only in St-Florent port everywhere except in St-Florent port. Sea cucumbers (n = 4-7 per location) were collected in the four ports in June and July afterwards. In September 2020, limpets (n = 15-16 per location) were collected in the four ports. As mussels were used for the following collections. Mussels were bought from the mussel farm of the Etang de Diana in Jur and then installed in the different ports for three months. In September 2020, they (n = 16 per location) were collected and mussels survived and were used for bioaccumulation analyses. In January 2021, limpets (n = 10 in each location per location) were collected in the ports of Calvi, St-Florent and Île Rousse but not in STARESO. In September 2021, limpets were collected in all of the four ports. Finally, in January 2022, mussels (n = 20) were collected in each port except in St-Florent in the four studied ports. ### Test on the “pool” techniques During the January 2020 sampling, additional organic material was collected using “individual” sampling techniques: 13 mussels (length = 68.56 ± 8.84 mm) and 4 sea cucumber (length = 193.25 ± 10.12 mm) at Ile Rousse. To test the “pool” sampling technique, the tissues of 7 individuals from each species (limpet) were dissected, pooled and processed as detailed below for all the analyses (enzymes and bioaccumulation). The biological model used for this study is the same as that used in previous publications: the black scallop Mimachlamys varia. For this, individuals were fished at the Loix site (Ile de Ré, less subject to port influences, (Breitwieser et al. 2017)).

They are caged in the reference site (Marsh) for a minimum of 15 days to acclimate before being transplanted to the individuals were counted in order to assess mortality, then seven individuals per site were taken (the D0 sample in liquid nitrogen in order to preserve enzymatic activities. Low mortality (less than 10 %) at both sites was observed -80°C before being prepared for biochemical analysis. Once in the laboratory, the individuals are processed in a recovered from each sample become one sample). A previous study compared pooled and individual data, the results of the two methods (Breitwieser et al., 2018). Statistical analysis is performed using R software (RStudio, version 1.2.1335) by seasons (7), sites (4) and sampling days (4). For all variables, the homogeneity of variances is assessed using Shapiro-Wilk test.

Sampling Description:

QUAMPO ### Tissue sampling After sampling, individuals were immediately placed in dry ice and shipped to the lab, half (n = ~7) of the mussels, limpets and sea cucumber tissues were kept at -20°C for trace element bioaccumulation for all the other analyses. **### Biomarkers of exposure (= trace element bioaccumulation)** The soft tissues of mussels were homogenized using a mortar and pestle. The body wall of sea cucumber was cut in pieces as small as possible. The samples were freeze-dried and stored at -80°C. For trace element analysis, samples were digested in microwave digestion vessels (DOLT-5, dogfish liver, and TORT-3, lobster hepatopancreas, National Research Council Canada) with concentrated acids (v/v) 67-70% HNO₃/34-37% HCl mixture (Fisher, trace metal quality). The digestion process was carried out over 2 hours (30 min with constantly increasing temperature up to 120 °C, then 15 min at this temperature). At the end of the digestion, the samples were diluted with deionized water until 50 mL. aluminium (Al), silver (Ag), arsenic (As), barium (Ba), cadmium (Cd), cobalt (Co), chromium (Cr) (Mo), nickel (Ni), lead (Pb), antimony (Sb), selenium (Se), tin (Sn), vanadium (V) and zinc (Zn) contents were analyzed using an ICP-AES (PerkinElmer AAnalyst 800, Waltham, MA, USA) and an ICP-MS XSeries 2 (ThermoFisher Scientific, Waltham, 192 Massachusetts, USA). Mean values (n=7) for trace elements (µg.g⁻¹ of dry weight) were: Al 19.28, Cd 0.01, Co 0.01, Cr 0.1, Cu 0.01, Fe 0.96, Mn 0.1, Mo 0.01, Ni 0.01, Pb 0.01, Se 0.01, Sn 0.01, V 0.01, Zn 3.86. The trace element contamination of the water samples was also analyzed using seawater standards, in 2 % nitric acid) and ICP-MS (dilution to 1/20 for water samples and seawater standards, Tissues samples processing Individuals were dissected to keep the digestive gland for mussel, the whole soft tissues of limpets and sea cucumber. The soft tissues were weighted and grinded in liquid nitrogen using a MM400 Retsch® (GmbH, Éragny, Luxemburg) mixer mill. The homogenates were centrifuged at 12500 g for 15 min at 4°C (Sorvall Legeng Micro 17R, ThermoFisher Scientific, Waltham, MA, USA) and the supernatant was divided into aliquots and used for the subsequent biomarkers of effect and protein analyses. **#### Enzymatic biomarkers** were evaluated using superoxide dismutase (SOD), catalase (CAT) and glutathione peroxidase (GPx) activities. SOD activity was measured using a colorimetric assay based on the superoxide-driven NADH oxidation and was measured following the rate of NADH oxidation at 340 nm (Paoletti et al., 1984) by measuring the rate of decomposition of hydrogen peroxide at 240 nm. GPx activity was assayed according to Janssens et al. (2000) by monitoring the consumption of NADPH at 340 nm. The glutathione S-transferase (GST) activity, involved in the detoxification process, were respectively determined by measuring the production of GS-DNB at 340 nm (Habig et al., 1974) and 340 nm (Carlberg and Mannervik 1985). Acetylcholinesterase (AChE) is widely used to estimate neurotoxic impact of pesticides, carbamates, several heavy metals and surfactants. Its activity was assayed by recording the production of 5-thio-2-nitrobenzoic acid (5-TNBA) from the reaction of 5-thio-2-nitrobenzyl chloride (5-TNBCl) with the laccase-type phenoloxidase (LAC) is involved in the immune, antioxidant and detoxification processes (Luna-Arocas et al., 2010) and measured according to (Luna-Arocas et al. 2010) by following the oxidation of p-phenylenediamine at 420 nm. The protein assay kit (Sigma-Aldrich®) that is similar to the Lowry et al. (1951) procedure. All activities were measured using a microplate reader (BMG labtech, Champigny-sur-Marne, France). All chemicals were obtained from Sigma-Aldrich. The standard methods adapted for a microplate reader. For all enzymatic analysis, homogenates were diluted to obtain a protein concentration of 25 µg.g⁻¹ of wet tissue. Total and specific enzymatic activities were measured and expressed as 242 U (1 µmol.min⁻¹).g⁻¹ of wet tissue. Malondialdehyde (MDA) content, a secondary product of lipid peroxidation, was quantified using the thiobarbituric acid method following Heath and Packer (1968) and Bird and Draper (1984), adapted by Torres et al. (2020). This method estimates the concentration of thiobarbituric acid-malondialdehyde complex produced during the reaction is followed by a colorimetric assay. Nonspecific turbidity is applied by recording the absorbance at 600 nm. **#### Integrated biomarker response (IBR)** (IBR, (Devin et al. 2014)) was calculated using the response of biomarkers of effect. On R software, the function `IBR` are based on Beliaeff and Burgeot (2002) revisited by Devin et al. (2014). **## QUALIPERTUIS** All biochemical analyses were performed using the same instrument: SpectroStar Nano with specific absorbance for each type of biomarker. The assays were performed at D0, D07, D21 and D30 (one pool (n=7 individuals) per site and per date). Data obtained for MDA are in µM.mg protein⁻¹. Total protein concentrations are determined using the BCA kit method (Pierce and Warriner 2003). The BCA kit contains bovine serum albumin (BSA) as a standard and involves the reduction of alkaline Cu(II) protein to Cu(I) and the formation of a purple complex. Superoxide dismutase (SOD) activity plays an important role in the oxidative stress response (Paoletti et al., 2017). The specific activity of glutathione S-transferase (GST) plays a major role in the detoxification of xenobiotics (Paoletti et al., 2017). The specific activity of glutathione S-transferase (GST) is determined according to the Sigma kit method (CS0410-1 KT) (Breitwieser et al., 2017). In addition to GST, the concentration of malondialdehyde (MDA), a chemical metabolite of cellular lipid breakdown. The concentration of MDA is determined using the thiobarbituric acid method (Breitwieser et al., 2017; Milinkovitch et al., 2015). AChE is an enzyme involved in the neurotransmission by converting acetylcholine to choline and acetic acid. Its inhibition is directly related to the mechanism of toxic action of organophosphorus pesticides on the inhibition of cholinesterase activity as a diagnostic tool for organophosphorus pesticide contamination in marine invertebrates (Galgani et al., 1992; Zinkl et al., 1987), but few studies have been carried out on marine invertebrates, which are

programs (Day and Scott, 1990). AChE activity (IU.mg protein⁻¹) was measured using the AcetylCholinEsterase phenoloxidase (Laccase) activity reveals an alteration of the bivalve immune system. Its enzymatic activity is se Luna-Acosta et al., 2010a) and plays a crucial role in the immune defense mechanism of marine invertebrates. I (Breitwieser et al., 2017). ## Environmental parameters ### QUAMPO One water sample was taken from each element contamination of the environment. The water samples were collected using a Niskin bottle and Falcon t (temperature, salinity, dissolved oxygen and pH) were measured in-situ using a YSI-Exo2 multi-parameters prof nutrient concentrations as well as chlorophyll a concentrations are described by Fullgrabe et al. (2020) while the (PCBs, PAHs) are described by Frantzen et al. (2016). The trace element contamination of the water samples w samples and seawater standards, in 2 % nitric acid) and ICP-MS (dilution to 1/20 for water samples and seawat each day of sampling (D0, D07, D21, D30), the physico-chemical parameters of the water (Temperature (°C) an (multiparameter HI9829). The probe was calibrated before each sampling period.

Quality Control Step 1:

Description:

QUAMPO Statistics analyses ### Test on the pool technique To test the pool technique, the mean of the ind the pooled samples. The percentage of difference between these two values was compared for effect and biom: homogeneity of variances were verified by Shapiro and Levene tests and data were log transformed to avoid he case of heteroscedasticity) correlations between total and specific enzymatic activity responses were verified for ANOVAs were used to test the effects of location and sampling period on the biomarkers of effect. When signific to compare means ($\hat{\alpha} = 0.05$). Except for LAC activity in limpet, no significant interaction between exposure and effect, analyses for simple main effects were then applied to the data (Tybout and Sternthal 2001). Student t-tes applied to test the effect of sampling period on each location. One-way ANOVAs (or non-parametric Kruskal-W: for each sampling period, followed by respectively Tukey or Mann-Whitney Wilcoxon post-hoc test when a signif location in January, Student t-tests (or non-parametric Mann-Whitney Wilcoxon test) were applied to test the effi ANOVAs (or non-parametric Kruskal-Wallis tests), followed by respectively Tukey or Mann-Whitney Wilcoxon p performed to analyse the effect of location in September on mussel. Finally, multi-correlations were run between parameters of individuals to visualize the link between the response of organism and its condition. ### Biomark January samples, the September samples were processed in pool. First, the normality and homogeneity of vari effect of location in January, one-way ANOVAs (or non-parametric Kruskal-Wallis tests) were performed, follow post-hoc test when a significant effect was found. ### Environmental parameters Graphs and analysis were dor were weekly regularized in order to obtain 48 data per year (four per month) using the pastecs R package (regu (<https://github.com/phgrosjean/pastecs>). Average abundances over different time periods (year, month, week) w dynamics were described by integrating the time series over one year using boxplot diagrams in order to observ (described as data point standing 1.5 times outside the interquartile range above the upper quartile and below th group were further explored by computing the smoothed annual variation of the median, 10th and 90th percentil highlight both annual and interannual variability. Smoothing was performed using the lowess R function which u 1981). Further on, cumulative relative abundances were computed over an average year in order to observe the order to describe the succession of the peaks of absolute or relative abundance of each group over an average cluster analysis on zooplankton samples based on the complete linkage method using Bray-Curtis dissimilarity (grouped depending on both abundance and general composition similarities. A cut at a distance of 0.80 in the re each resulting cluster suggesting a different community state. These eight community states were labelled A to et al., 2009) was then applied. The analysis used as criteria of classification both absolute and relative abundan decision node of the resulting classification tree corresponded to a condition to which zooplankton samples migl zooplankton samples were classified in one of the eight community states. The succession of the main commun Multiple Factor Analysis (MFA) enables an integrative analysis of all parameters including factors and was perfo community states, months, zooplankton and environmental time series. Cube root transformation was applied o highly abundant groups, whilst other variables were standardized to zero mean and scaled to unit variance. The structure was explored by depicting the succession of the community states over the 13-year time series, along abundance as well as the weekly anomalies of water temperature. Finally, in order to further explore the underly particular emphasis was placed on the spring peak event, since it was found to be a major aspect characterizing (Dauby, 1980). Therefore we considered the abundance of the group responsible for the spring peak, i.e., calan March to the third week of May). The 0.80 quantile values were computed to minimize the influence of extreme spring peak. To explore potential link between each of the environmental variables with the spring peak magnitu from two to seven months were tested using Spearman's rank correlation coefficient. Relationships with the mos linear or cubic spline regressions. Similarly, the relationship between spring peak magnitude and the winter Nor //climatedataguide.ucar.edu/climate-data/hurrell-north-atlantic- oscillation-nao-index-station-based) was also inv analysis is performed using R software (RStudio, version 1.4.1103) and Excel 2013. The data exploration is org all variables (five biomarkers (SOD, GST, MDA, AChE, LAC), two physicochemical water parameters (Salinity, using Fligner-Killeen tests. Normality is also tested using a Shapiro-Wilk test. Several tests were then carried ou

equation for each biomarker, taking into account each of the confounding factors (Press et al., 2013; Saporta 2013). Regression formulae were obtained for each biomarker and using these equations, predicted values and residuals measuring a deviation from the model, were classified into three groups for each biomarker using the k-means clustering algorithm. The resulting clusters were then used to determine, for each biomarker, the expected ranges of variation according to the different environmental conditions.

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Additional Metadata

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